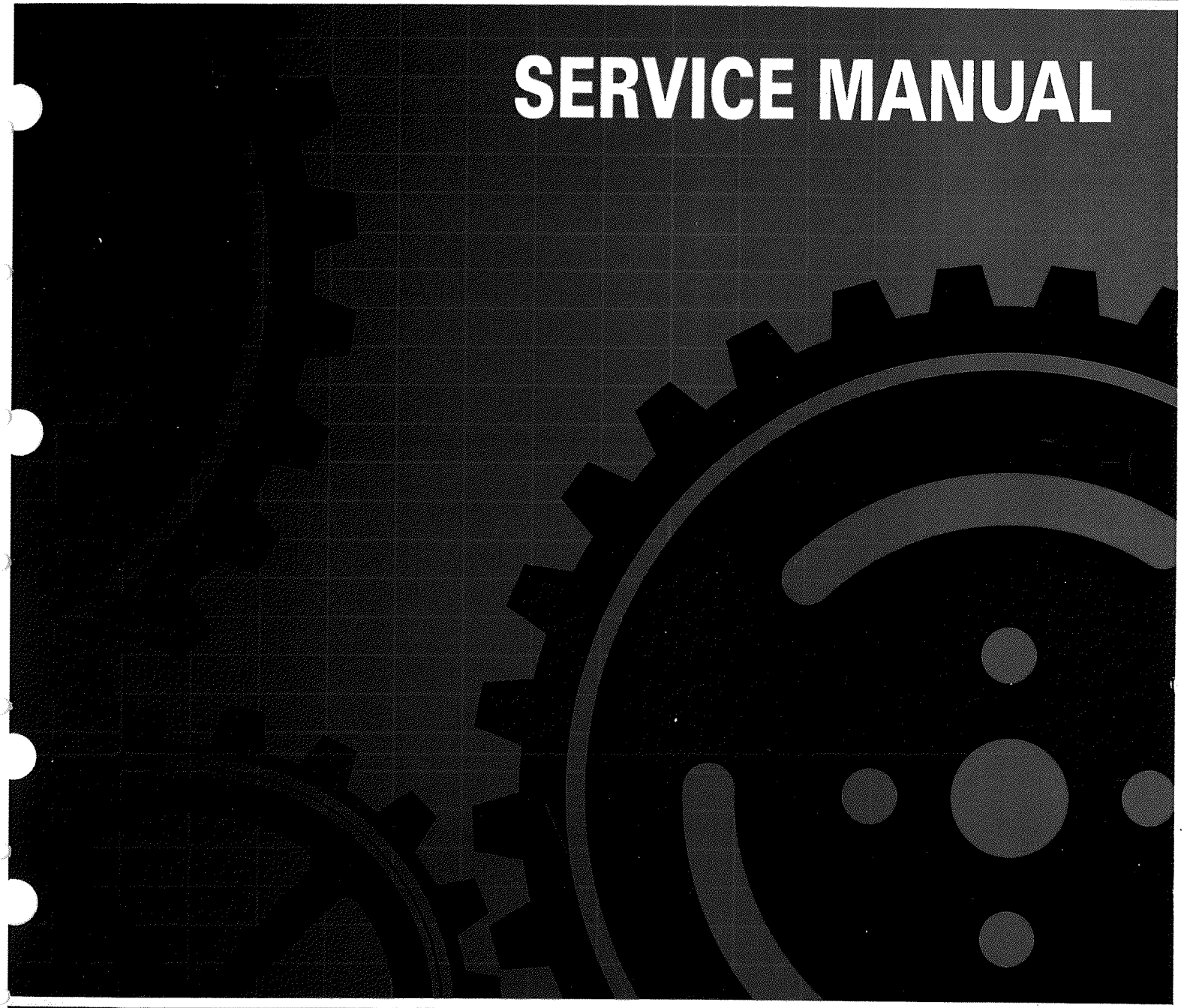
2014

HONDA

# SERVICE MANUAL



## CTX700/D, CTX700N/ND

# How To Use This Manual

This manual describes the service procedures for the CTX700/A/D/N/NA/ND-E.

Sections 1, 2 and 3 apply to the whole motorcycle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections.
Section 4 through 22 describe parts of the motorcycle, grouped according to location.

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the motorcycle is in peak operating condition and the emission levels are within the standards set by the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) and Transport Canada.
Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Find the section you want on this page, then turn to the table of contents on the first page of the section.

Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedure.

Refer to the troubleshooting in each section according to the malfunction or symptom. In case of an engine trouble, refer to PGM-FI section troubleshooting first.

Your safety, and the safety of others, is very important. To help you make informed decisions we have provided safety messages and other information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle.
You must use your own good judgement.
You will find important safety information in a variety of forms including:

- Safety Labels – on the vehicle
- Safety Messages – preceded by a safety alert symbol ⚠ and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

**⚠DANGER** You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

**⚠WARNING** You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

**⚠CAUTION** You CAN be HURT if you don't follow instructions.

- Instructions – how to service this vehicle correctly and safely.

# SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it would be explained specifically in the text without the use of the symbols.

| | |
|---|---|
|   | Replace the part(s) with new one(s) before assembly. |
|   | Use the recommended engine oil, unless otherwise specified. |
|   | Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1). |
|   | Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent). |
|   | Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent).<br>Example:<br>• Molykote® BR-2 plus manufactured by Dow Corning U.S.A.<br>• Multi-purpose M-2 manufactured by Mitsubishi Oil, Japan |
|   | Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent).<br>Example:<br>• Molykote® G-n Paste manufactured by Dow Corning U.S.A.<br>• Honda Moly 60 (U.S.A. only)<br>• Rocol ASP manufactured by Rocol Limited, U.K.<br>• Rocol Paste manufactured by Sumico Lubricant, Japan |
|   | Use silicone grease. |
|   | Apply locking agent. Use a medium strength locking agent unless otherwise specified. |
|   | Apply sealant. |
|   | Use DOT 4 brake fluid. Use the recommended brake fluid unless otherwise specified. |
|   | Use fork or suspension fluid. |

# CONTENTS

# MEMO

# 1. GENERAL INFORMATION

# SERVICE RULES

1. Use Honda Genuine or Honda-recommended parts and lubricants or their equivalents. Parts that don't meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as show in the Cable and Harness Routing (page 1-21).
9. Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

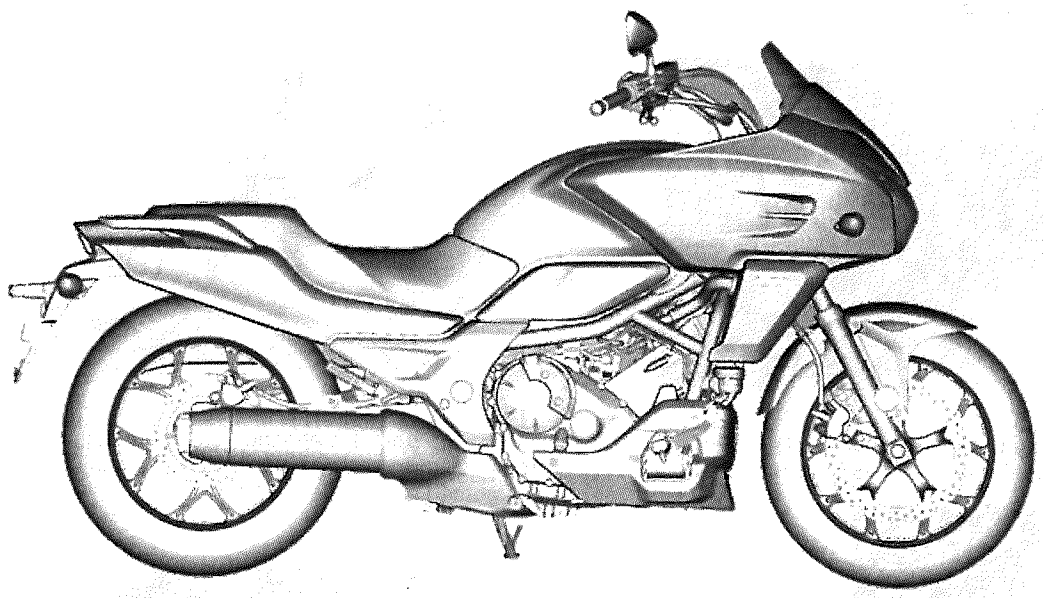
## ABBREVIATION

Throughout this manual, the following abbreviations are used to identify the respective parts or systems.

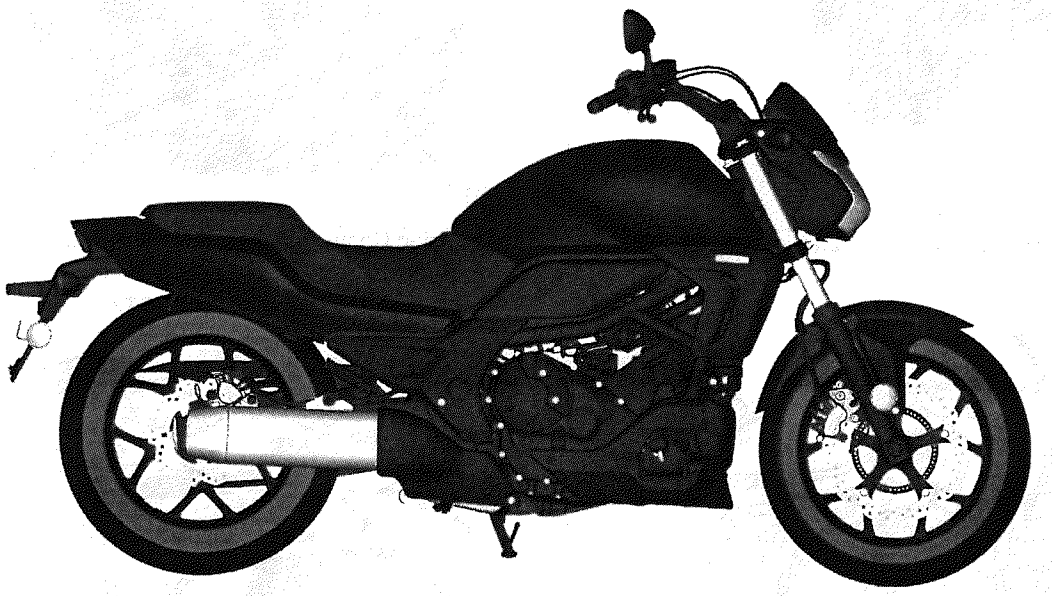
| Abbrev. term | Full term |
|---|---|
| ABS | Anti-lock Brake System |
| CKP sensor | Crankshaft Position sensor |
| DCT | Dual Clutch Transmission |
| DLC | Data Link Connector |
| DTC | Diagnostic Trouble Code |
| ECM | Engine Control Module |
| ECT sensor | Engine Coolant Temperature sensor |
| EEPROM | Electrically Erasable Programmable Read Only Memory |
| EOP sensor | Engine Oil Pressure sensor |
| EOP switch | Engine Oil Pressure switch |
| EOT sensor | Engine Oil Temperature sensor |
| EVAP | Evaporative Emission |
| IACV | Idle Air Control Valve |
| IAT sensor | Intake Air Temperature sensor |
| MAP sensor | Manifold Absolute Pressure sensor |
| MCS | Motorcycle Communication System |
| MIL | Malfunction Indicator Lamp |
| $O_2$ sensor | Oxygen sensor |
| PCM | Power Control Module |
| PGM-FI | Programmed Fuel Injection |
| SCS service connector | Service Check Short service connector |
| TP sensor | Throttle Position sensor |
| TR sensor | Transmission Range Sensor |
| VS sensor | Vehicle Speed sensor |

# MODEL IDENTIFICATION

**CTX700 shown:**



**CTX700NA shown:**



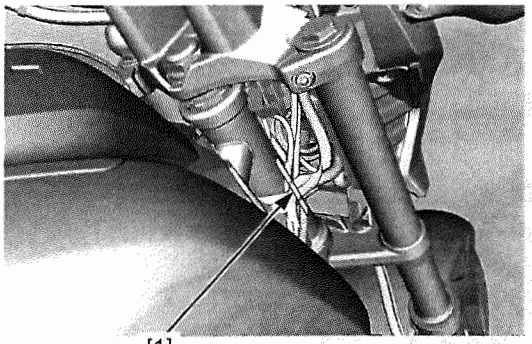
This manual covers following types of CTX700:

| TYPE | REGION | EVAP | ABS | DCT | FRONT SIDE COWL | REAR GRIP |
|---|---|---|---|---|---|---|
| CTX700 | U.S.A. | – | – | – | O | O |
| | U.S.A. (50 state model) | O | | | | |
| CTX700A | Canada | – | O | – | O | O |
| CTX700D | U.S.A. | – | O | O | O | O |
| | U.S.A. (50 state model) | O | | | | |
| CTX700N | U.S.A. | – | – | – | – | – |
| | U.S.A. (50 state model) | O | | | | |
| CTX700NA | Canada | – | O | – | – | – |
| CTX700ND | U.S.A. | – | O | O | – | – |
| | U.S.A. (50 state model) | O | | | | |

Be sure to refer to the procedure for the appropriate version of the CTX700.

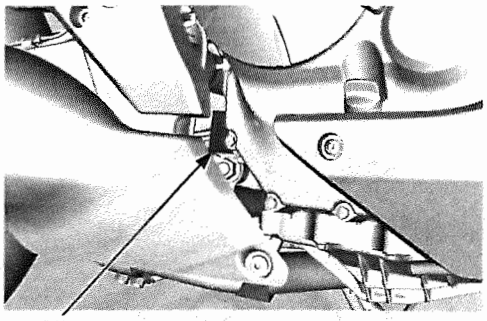
## SERIAL NUMBERS/LABELS

The Vehicle Identification Number (V.I.N) [1] is stamped on the right side of the steering head.



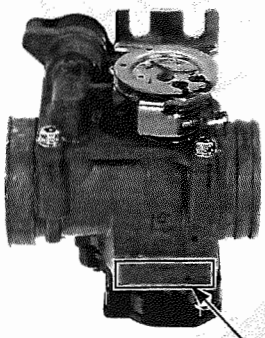
[1]

The engine serial number [1] is stamped on the lower right side of the crankcase.



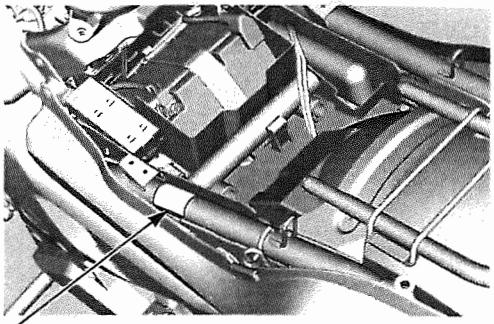
[1]

The throttle body identification number [1] is stamped on the lower left side of the throttle body as shown.



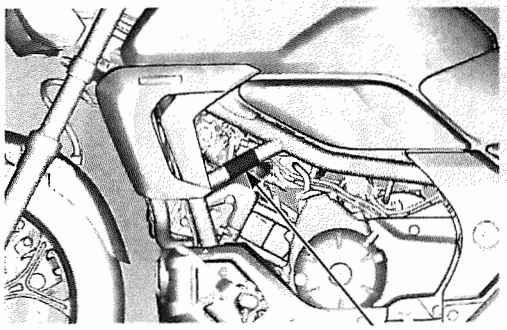
[1]

The color label [1] is attached on the left side of the rear frame. When ordering color-coded parts, always specify the designated color code.



[1]

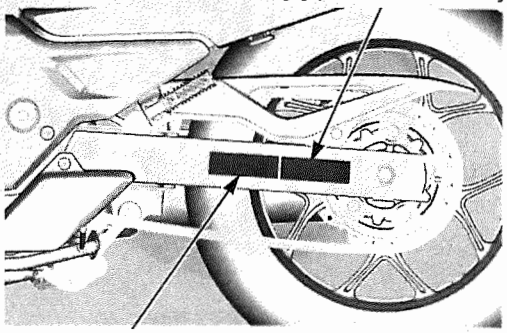
The safety certification label [1] is located on the left side of the frame.



[1]

The Emission Control Information Label [1] is located on the left side of the swingarm.

[1] (CTX700A/NA only)



[1]

# SPECIFICATIONS

## GENERAL SPECIFICATIONS

| ITEM | | | | SPECIFICATIONS |
|---|---|---|---|---|
| DIMENSIONS | Overall length | | | 2,265 mm (89.2 in) |
| | Overall width | CTX700/A/N/NA | | 855 mm (33.7 in) |
| | | CTX700D/ND | | 840 mm (33.1 in) |
| | Overall height | CTX700/A/D | | 1,165 mm (45.9 in) |
| | | CTX700N/NA/ND | | 1,155 mm (45.5 in) |
| | Wheelbase | | | 1,530 mm (60.2 in) |
| | Seat height | | | 720 mm (28.4 in) |
| | Footpeg height | | | 308 mm (12.1 in) |
| | Ground clearance | | | 130 mm (5.1 in) |
| | Curb weight | CTX700 | | 224 kg (494 lbs) |
| | | | 50 state model | 225 kg (496 lbs) |
| | | CTX700A | | 226 kg (498 lbs) |
| | | CTX700D | | 234 kg (516 lbs) |
| | | | 50 state model | 235 kg (518 lbs) |
| | | CTX700N | | 217 kg (478 lbs) |
| | | | 50 state model | 218 kg (481 lbs) |
| | | CTX700NA | | 219 kg (483 lbs) |
| | | CTX700ND | | 227 kg (500 lbs) |
| | | | 50 state model | 228 kg (503 lbs) |
| | Maximum weight capacity | | | 176 kg (388 lbs) |
| FRAME | Frame type | | | Diamond |
| | Front suspension | | | Telescopic fork |
| | Front axle travel | | | 107 mm (4.2 in) |
| | Rear suspension | | | Swingarm |
| | Rear axle travel | | | 110 mm (4.3 in) |
| | Front tire size | | | 120/70ZR17M/C (58W) |
| | Rear tire size | | | 160/60ZR17M/C (69W) |
| | Front tire brand | BRIDGESTONE | | BT023F G |
| | | METZELER | | ROADTEC Z8 INTERACT E |
| | Rear tire brand | BRIDGESTONE | | BT023R G |
| | | METZELER | | ROADTEC Z8 INTERACT |
| | Front brake | | | Hydraulic single disc |
| | Rear brake | | | Hydraulic single disc |
| | Caster angle | | | 27° 40' |
| | Trail length | | | 114 mm (4.5 in) |
| | Fuel tank capacity | | | 12.4 liters (3.28 US gal, 2.7 Imp gal) |
| ENGINE | Cylinder arrangement | | | 2 cylinders in-line, slant angle 55° |
| | Bore and stroke | | | 73.0 x 80.0 mm (2.87 x 3.15 in) |
| | Displacement | | | 670.0 $cm^3$ (40.9 cu-in) |
| | Compression ratio | | | 10.7:1 |
| | Valve train | | | Chain driven, OHC with rocker arm |
| | Intake valve | opens | at 1 mm (0.04 in) lift | No.1: – 20° BTDC |
| | | | | No.2: – 25° BTDC |
| | | closes | at 1 mm (0.04 in) lift | 27° ABDC |
| | Exhaust valve | opens | at 1 mm (0.04 in) lift | 30° BBDC |
| | | closes | at 1 mm (0.04 in) lift | No.1: – 15° ATDC |
| | | | | No.2: – 20° ATDC |
| | Lubrication system | | | Forced pressure and wet sump |
| | Oil pump type | | | Trochoid |
| | Cooling system | | | Liquid cooled |
| | Air filtration | | | Paper element |
| | Engine dry weight | CTX700/A/N/NA | | 60.5 kg (133.4 lbs) |
| | | CTX700D/ND | | 67.3 kg (148.4 lbs) |
| | Firing order | | | 1 - 2 |

| ITEM | | | | SPECIFICATIONS |
|---|---|---|---|---|
| FUEL DELIVERY SYSTEM | Type | | | PGM-FI (Programmed Fuel Injection) |
| | Throttle bore | | | 36 mm (1.4 in) |
| DRIVE TRAIN | Clutch system | CTX700/A/N/NA | | Multi-plate, wet |
| | | CTX700D/ND | | 2 Multi-plate wet clutches |
| | Clutch operation system | CTX700/A/N/NA | | Cable operating |
| | | CTX700D/ND | | Automatic |
| | Transmission | | | Constant mesh, 6-speeds |
| | Primary reduction | CTX700/A/N/NA | | 1.731 (71/41) |
| | | CTX700D/ND | | 1.921 (73/38) |
| | Final reduction | CTX700/A/N/NA | | 2.687 (43/16) |
| | | CTX700D/ND | | 2.437 (39/16) |
| | Gear ratio | CTX700/A/N/NA | 1st | 2.812 (45/16) |
| | | | 2nd | 1.894 (36/19) |
| | | | 3rd | 1.454 (32/22) |
| | | | 4th | 1.200 (30/25) |
| | | | 5th | 1.033 (31/30) |
| | | | 6th | 0.837 (31/37) |
| | | CTX700D/ND | 1st | 2.666 (40/15) |
| | | | 2nd | 1.904 (40/21) |
| | | | 3rd | 1.454 (32/22) |
| | | | 4th | 1.200 (30/25) |
| | | | 5th | 1.033 (31/30) |
| | | | 6th | 0.837 (31/37) |
| | Gearshift pattern | CTX700/A/N/NA | | Left foot operated return system, 1 - N - 2 - 3 - 4 - 5 - 6 |
| | | CTX700D/ND | | Automatic and electric shift (left hand operated) return system, N - 1 - 2 - 3 - 4 - 5 - 6 |
| ELECTRICAL | Ignition system | | | Computer-controlled digital transistorized with electric advance |
| | Starting system | | | Electric starter motor |
| | Charging system | | | Triple phase output alternator |
| | Regulator/rectifier | | | FET shorted/triple phase full wave rectification |
| | Lighting system | | | Battery |

## PGM-FI SPECIFICATIONS

| ITEM | SPECIFICATIONS |
|---|---|
| IAT sensor resistance (at 20°C/68°F) | 2.2 – 2.7 kΩ |
| ECT sensor resistance (at 40°C/104°F) | 1.0 – 1.3 kΩ |
| Fuel injector resistance (at 20°C/68°F) | 11.6 – 12.4 Ω |

## IGNITION SYSTEM SPECIFICATIONS

| ITEM | SPECIFICATIONS |
|---|---|
| Spark plug (Iridium) | IFR6G-11K (NGK) |
| Spark plug gap | 1.0 – 1.1 mm (0.039 – 0.043 in) |
| Ignition coil peak voltage | 100 V minimum |
| CKP sensor peak voltage (at 20°C/68°F) | 0.7 V minimum |
| Ignition timing ("F" mark) | 12° BTDC at idle |

## ELECTRIC STARTER SPECIFICATION

Unit: mm (in)

| ITEM | STANDARD | SERVICE LIMIT |
|---|---|---|
| Starter motor brush length | 12.0 – 13.0 (0.47 – 0.51) | 6.5 (0.26) |

## FUEL SYSTEM SPECIFICATIONS

| ITEM | SPECIFICATIONS |
|---|---|
| Throttle body identification number | GQ3UA |
| Idle speed | 1,200 ± 100 rpm |
| Throttle grip freeplay | 2 – 6 mm (0.1 – 0.2 in) |
| Fuel pressure at idle | 343 kPa (3.5 kgf/cm$^2$, 50 psi) |
| Fuel pump flow (at 12 V) | 230 cm$^3$ (7.8 US oz, 8.1 Imp oz) minimum/10 seconds |
| EVAP purge control solenoid valve resistance (at 20°C/68°F) | 30 – 34 Ω |

## COOLING SYSTEM SPECIFICATIONS

| ITEM | | SPECIFICATIONS |
|---|---|---|
| Coolant capacity | Radiator and engine | 1.69 liters (1.79 US qt, 1.49 Imp qt) |
| | At draining | 1.41 liters (1.49 US qt, 1.24 Imp qt) |
| | Reserve tank | 0.13 liter (0.14 US qt, 0.11 Imp qt) |
| Radiator cap relief pressure | | 108 – 137 kPa (1.1 – 1.4 kgf/cm$^2$, 16 – 20 psi) |
| Thermostat | Begin to open | 80 – 84°C (176 – 183°F) |
| | Fully open | 95°C (203°F) |
| | Valve lift | 8 mm (0.3 in) minimum |
| Recommended antifreeze | | Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors |
| Standard coolant concentration | | 1:1 (mixture with distilled water) |

## LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm (in)

| ITEM | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|
| Engine oil capacity | CTX700/A/N/NA | After draining | 3.1 liters (3.3 US qt, 2.7 Imp qt) | – |
| | | After draining/ filter change | 3.4 liters (3.6 US qt, 3.0 Imp qt) | – |
| | | After disassembly | 3.7 liters (3.9 US qt, 3.3 Imp qt) | – |
| | CTX700D/ND | After draining | 3.2 liters (3.4 US qt, 2.8 Imp qt) | – |
| | | After draining/ filter change | 3.4 liters (3.6 US qt, 3.0 Imp qt) | – |
| | | After disassembly | 4.1 liters (4.3 US qt, 3.6 Imp qt) | – |
| Recommended engine oil | | | Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motorcycle oil<br>API service classification: SG or Higher<br>JASO T 903 standard: MA<br>Viscosity: SAE 10W-30 | – |
| Oil pressure at engine oil filter | | | 470 kPa (4.8 kgf/cm$^2$, 68 psi) at 5,000 rpm/(80°C/176°F) | – |
| Oil pump rotor (CTX700/A/N/NA) | | Tip clearance | 0.15 (0.006) | 0.20 (0.008) |
| | | Body clearance | 0.15 – 0.21 (0.006 – 0.008) | 0.35 (0.014) |
| | | Side clearance | 0.04 – 0.09 (0.002 – 0.004) | 0.12 (0.005) |
| Engine oil pump rotor (CTX700D/ND) | | Tip clearance | 0.15 (0.006) | 0.20 (0.008) |
| | | Body clearance | 0.15 – 0.21 (0.006 – 0.008) | 0.35 (0.014) |
| | | Side clearance | 0.04 – 0.09 (0.002 – 0.004) | 0.12 (0.005) |
| Clutch oil pump rotor (CTX700D/ND) | | Tip clearance | 0.15 (0.006) | – |
| | | Body clearance | 0.15 – 0.21 (0.006 – 0.008) | – |
| | | Side clearance | 0.04 – 0.09 (0.002 – 0.004) | – |

## CYLINDER HEAD/VALVES SPECIFICATIONS

Unit: mm (in)

| ITEM | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|
| Cylinder compression at 470 rpm | | | 1,775 kPa (18.1 kgf/cm², 257 psi) | – |
| Valve clearance | | IN | 0.17 ± 0.02 (0.007 ± 0.001) | – |
| | | EX | 0.28 ± 0.02 (0.011 ± 0.001) | – |
| Rocker arm, rocker arm shaft | Rocker arm I.D. | | 20.012 – 20.030 (0.7879 – 0.7886) | 20.041 (0.7890) |
| | Rocker arm shaft O.D. | | 19.972 – 19.993 (0.7863 – 0.7871) | 19.961 (0.7859) |
| | Rocker arm-to-shaft clearance | | 0.019 – 0.058 (0.0007 – 0.0023) | 0.08 (0.003) |
| Cam chain tensioner wedge B length | | | – | 6.0 (0.24) |
| Camshaft | Cam lobe height | IN | 34.7897 – 35.0297 (1.36967 – 1.37912) | 34.7697 (1.36888) |
| | | EX | 34.9227 – 35.1627 (1.37491 – 1.38436) | 34.9027 (1.37412) |
| | Runout | | – | 0.04 (0.002) |
| | Camshaft journal O.D. | | 41.935 – 41.950 (1.6510 – 1.6516) | 41.927 (1.6507) |
| Valve, valve guide | Valve stem O.D. | IN | 4.975 – 4.990 (0.1959 – 0.1965) | 4.965 (0.1955) |
| | | EX | 4.965 – 4.980 (0.1955 – 0.1961) | 4.955 (0.1951) |
| | Valve guide I.D. | IN/EX | 5.000 – 5.012 (0.1969 – 0.1973) | 5.04 (0.198) |
| | Stem-to-guide clearance | IN | 0.010 – 0.037 (0.0004 – 0.0015) | 0.075 (0.0030) |
| | | EX | 0.020 – 0.047 (0.0008 – 0.0019) | 0.085 (0.0033) |
| | Valve guide projection above cylinder head | IN | 17.7 – 18.0 (0.70 – 0.71) | – |
| | | EX | 19.6 – 19.9 (0.77 – 0.78) | – |
| | Valve seat width | IN | 0.90 – 1.10 (0.035 – 0.043) | 1.5 (0.06) |
| | | EX | 1.30 – 1.50 (0.051 – 0.059) | 1.9 (0.07) |
| Valve spring free length | | | 49.07 (1.932) | 48.1 (1.89) |
| Cylinder head warpage | | | – | 0.10 (0.004) |
| Cylinder head camshaft journal I.D. | | | 41.995 – 42.019 (1.6533 – 1.6543) | 42.027 (1.6546) |
| Cylinder head-to-camshaft clearance | | | 0.045 – 0.084 (0.0018 – 0.0033) | 0.10 (0.004) |

## CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (CTX700/A/N/NA)

Unit: mm (in)

| ITEM | | STANDARD | SERVICE LIMIT |
|---|---|---|---|
| Clutch lever freeplay | | 10 – 20 (0.4 – 0.8) | – |
| Clutch | Spring free length | 43.2 (1.70) | 41.7 (1.64) |
| | Disc thickness | 2.62 – 2.78 (0.103 – 0.109) | 2.3 (0.09) |
| | Plate warpage | – | 0.30 (0.012) |
| Clutch outer guide | I.D. | 21.991 – 22.016 (0.8658 – 0.8668) | 22.03 (0.867) |
| | O.D. | 31.959 – 31.975 (1.2582 – 1.2589) | 31.92 (1.257) |
| Mainshaft O.D. at clutch outer guide | | 21.967 – 21.980 (0.8648 – 0.8654) | 21.95 (0.864) |
| Clutch outer guide-to-mainshaft clearance | | 0.011 – 0.049 (0.0004 – 0.0019) | 0.08 (0.003) |
| Primary driven gear I.D. | | 32.000 – 32.025 (1.2598 – 1.2608) | 32.09 (1.263) |
| Primary driven gear-to-clutch outer guide clearance | | 0.025 – 0.066 (0.0010 – 0.0026) | 0.10 (0.004) |

## DUAL CLUTCH TRANSMISSION SPECIFICATIONS (CTX700D/ND)

Unit: mm (in)

| ITEM | STANDARD | SERVICE LIMIT |
|---|---|---|
| Clutch clearance | 0.9 – 1.1 (0.035 – 0.043) | 2.0 (0.08) |
| EOT sensor resistance (20°C/68°F) | 2.5 – 2.8 kΩ | – |

## ALTERNATOR/STARTER CLUTCH SPECIFICATIONS

Unit: mm (in)

| ITEM | STANDARD | SERVICE LIMIT |
|---|---|---|
| Starter driven gear boss O.D. | 57.749 – 57.768 (2.2736 – 2.2743) | 57.73 (2.273) |
| Starter clutch outer I.D. | 74.412 – 74.442 (2.9296 – 2.9308) | 74.46 (2.931) |

## CRANKCASE/TRANSMISSION/BALANCER SPECIFICATIONS

**CTX700/A/N/NA**

Unit: mm (in)

| ITEM | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|
| Transmission | Gear I.D. | M5, M6, C1 | 28.000 – 28.021 (1.1024 – 1.1032) | 28.04 (1.104) |
| | | C2, C3, C4 | 31.000 – 31.025 (1.2205 – 1.2215) | 31.04 (1.222) |
| | Gear bushing O.D. | M5, M6 | 27.959 – 27.980 (1.1007 – 1.1016) | 27.94 (1.100) |
| | | C2 | 30.955 – 30.980 (1.2187 – 1.2197) | 30.93 (1.218) |
| | | C3, C4 | 30.950 – 30.975 (1.2185 – 1.2195) | 30.93 (1.218) |
| | Gear-to-bushing clearance | M5, M6 | 0.020 – 0.062 (0.0008 – 0.0024) | 0.08 (0.003) |
| | | C2 | 0.020 – 0.070 (0.0008 – 0.0028) | 0.10 (0.004) |
| | | C3, C4 | 0.025 – 0.075 (0.0010 – 0.0030) | 0.11 (0.004) |
| | Gear bushing I.D. | M5 | 25.000 – 25.021 (0.9843 – 0.9851) | 25.04 (0.986) |
| | | C2 | 27.985 – 28.006 (1.1018 – 1.1026) | 28.02 (1.103) |
| | Mainshaft O.D. | At M5 bushing | 24.972 – 24.993 (0.9831 – 0.9840) | 24.95 (0.982) |
| | Countershaft O.D. | At C2 bushing | 27.967 – 27.980 (1.1011 – 1.1016) | 27.95 (1.100) |
| | Bushing-to-shaft clearance | M5 | 0.007 – 0.049 (0.0003 – 0.0020) | 0.09 (0.004) |
| | | C2 | 0.005 – 0.039 (0.0002 – 0.0015) | 0.06 (0.002) |
| Shift fork, fork shaft | Fork I.D. | | 12.000 – 12.018 (0.4724 – 0.4731) | 12.03 (0.474) |
| | Claw thickness | | 5.93 – 6.00 (0.233 – 0.236) | 5.9 (0.23) |
| | Shift fork shaft O.D. | | 11.957 – 11.968 (0.4707 – 0.4712) | 11.95 (0.470) |

**CTX700D/ND**

Unit: mm (in)

| ITEM | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|
| Transmission | Gear I.D. | M5 | 33.000 – 33.025 (1.2992 – 1.3002) | 33.04 (1.301) |
| | | M6 | 43.000 – 43.025 (1.6929 – 1.6939) | 43.04 (1.694) |
| | | C1 | 31.010 – 31.035 (1.2209 – 1.2218) | 31.06 (1.223) |
| | | C2 | 25.000 – 25.021 (0.9843 – 0.9851) | 25.03 (0.985) |
| | | C3, C4 | 31.000 – 31.025 (1.2205 – 1.2215) | 31.04 (1.222) |
| | Gear bushing O.D. | M5 | 32.955 – 32.980 (1.2974 – 1.2984) | 32.93 (1.296) |
| | | M6 | 42.950 – 42.975 (1.6909 – 1.6919) | 42.93 (1.690) |
| | | C1 | 30.970 – 30.995 (1.2193 – 1.2203) | 30.94 (1.218) |
| | | C2 | 24.959 – 24.980 (0.9826 – 0.9835) | 24.94 (0.982) |
| | | C3, C4 | 30.950 – 30.975 (1.2185 – 1.2195) | 30.93 (1.218) |
| | Gear-to-bushing clearance | M5 | 0.020 – 0.070 (0.0008 – 0.0028) | 0.10 (0.004) |
| | | M6 | 0.025 – 0.075 (0.0010 – 0.0030) | 0.11 (0.004) |
| | | C1 | 0.015 – 0.065 (0.0006 – 0.0026) | 0.10 (0.004) |
| | | C2 | 0.020 – 0.062 (0.0008 – 0.0024) | 0.09 (0.004) |
| | | C3, C4 | 0.025 – 0.075 (0.0010 – 0.0030) | 0.11 (0.004) |
| | Gear bushing I.D. | M5 | 29.985 – 30.006 (1.1805 – 1.1813) | 30.03 (1.182) |
| | | M6 | 40.007 – 40.028 (1.5751 – 1.5759) | 40.038 (1.5763) |
| | | C1 | 28.000 – 28.021 (1.1024 – 1.1032) | 28.04 (1.104) |
| | | C2 | 21.985 – 22.006 (0.8655 – 0.8664) | 22.02 (0.867) |
| | Inner mainshaft O.D. | At M5 bushing | 29.957 – 29.970 (1.1794 – 1.1799) | 29.93 (1.178) |
| | Outer mainshaft O.D. | At M6 bushing | 39.975 – 39.991 (1.5738 – 1.5744) | 39.965 (1.5734) |
| | Countershaft O.D. | At C1 bushing | 27.967 – 27.980 (1.1011 – 1.1016) | 27.95 (1.100) |
| | | At C2 bushing | 21.952 – 21.965 (0.8643 – 0.8648) | 21.94 (0.864) |
| | Bushing-to-shaft clearance | M5 | 0.015 – 0.049 (0.0006 – 0.0019) | 0.09 (0.004) |
| | | M6 | 0.016 – 0.053 (0.0006 – 0.0021) | 0.10 (0.004) |
| | | C1 | 0.020 – 0.054 (0.0008 – 0.0021) | 0.08 (0.003) |
| | | C2 | 0.020 – 0.054 (0.0008 – 0.0021) | 0.08 (0.003) |
| Shift fork, fork shaft | Fork I.D. | | 12.000 – 12.018 (0.4724 – 0.4731) | 12.03 (0.474) |
| | Claw thickness | | 5.93 – 6.00 (0.233 – 0.236) | 5.9 (0.23) |
| | Shift fork shaft O.D. | | 11.957 – 11.968 (0.4707 – 0.4712) | 11.95 (0.470) |

## CRANKSHAFT/PISTON/CYLINDER SPECIFICATIONS

Unit: mm (in)

| ITEM | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|
| Crankshaft | Connecting rod side clearance | | 0.15 – 0.35 (0.006 – 0.014) | 0.45 (0.018) |
| | Runout | Right side | – | 0.03 (0.001) |
| | | Left side | – | 0.03 (0.001) |
| | Main journal bearing oil clearance | | 0.019 – 0.037 (0.0007 – 0.0015) | 0.05 (0.002) |
| Cylinder | I.D. | | 73.000 – 73.015 (2.8740 – 2.8746) | 73.07 (2.877) |
| | Out-of-round | | – | 0.10 (0.004) |
| | Taper | | – | 0.10 (0.004) |
| | Warpage | | – | 0.10 (0.004) |
| Piston, piston rings | Piston O.D. at 13 mm (0.5 in) from bottom | | 72.976 – 72.990 (2.8731 – 2.8736) | 72.970 (2.8728) |
| | Piston pin bore I.D. | | 18.010 – 18.013 (0.7091 – 0.7092) | 18.023 (0.7096) |
| | Piston pin O.D. | | 17.996 – 18.000 (0.7085 – 0.7087) | 17.988 (0.7082) |
| | Piston-to-piston pin clearance | | 0.010 – 0.017 (0.0004 – 0.0007) | 0.035 (0.0014) |
| | Piston ring end gap | Top | 0.15 – 0.30 (0.006 – 0.012) | 0.6 (0.02) |
| | | Second | 0.30 – 0.42 (0.012 – 0.017) | 0.6 (0.02) |
| | | Oil (side rail) | 0.20 – 0.70 (0.008 – 0.028) | 0.8 (0.03) |
| | Piston ring-to-ring groove clearance | Top | 0.035 – 0.080 (0.0014 – 0.0032) | 0.15 (0.006) |
| | | Second | 0.030 – 0.055 (0.0012 – 0.0022) | 0.13 (0.005) |
| Cylinder-to-piston clearance | | | 0.010 – 0.039 (0.0004 – 0.0015) | 0.05 (0.002) |
| Connecting rod small end I.D. | | | 17.964 – 17.977 (0.7072 – 0.7078) | 17.985 (0.7081) |
| Crankpin bearing oil clearance | | | 0.026 – 0.044 (0.0010 – 0.0017) | 0.05 (0.002) |

## FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

| ITEM | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|
| Minimum tire tread depth | | | – | 1.5 (0.06) |
| Cold tire pressure | Up to 90 kg (200 lbs) load | | 250 kPa (2.50 kgf/cm$^2$, 36 psi) | – |
| | Up to maximum weight capacity | | 250 kPa (2.50 kgf/cm$^2$, 36 psi) | – |
| Axle runout | | | – | 0.2 (0.01) |
| Wheel rim runout | | Radial | – | 1.0 (0.04) |
| | | Axial | – | 1.0 (0.04) |
| Wheel balance weight | | | – | 60 g (2.1 oz) max. |
| Fork | Spring free length | | 357.0 (14.06) | 349.9 (13.78) |
| | Tube runout | | – | 0.2 (0.01) |
| | Recommended fork fluid | | Pro Honda Suspension Fluid SS-47 (10W) | – |
| | Fluid level | | 103 (4.1) | – |
| | Fluid capacity | | 518 ± 2.5 cm$^3$ (17.5 ± 0.08 US oz, 18.2 ± 0.09 Imp oz) | – |

## REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

| ITEM | | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|---|
| Minimum tire tread depth | | | | – | 2.0 (0.08) |
| Cold tire pressure | Up to 90 kg (200 lbs) load | | | 250 kPa (2.50 kgf/cm$^2$, 36 psi) | – |
| | Up to maximum weight capacity | | | 290 kPa (2.90 kgf/cm$^2$, 42 psi) | – |
| Axle runout | | | | – | 0.2 (0.01) |
| Wheel rim runout | | Radial | | – | 1.0 (0.04) |
| | | Axial | | – | 1.0 (0.04) |
| Wheel balance weight | | | | – | 60 g (2.1 oz) max. |
| Drive chain | Size/link | CTX700/A/N/NA | DID | DID520V0-114LE | – |
| | | | RK | RK520KHO-114LE | – |
| | | CTX700D/ND | DID | DID520V0-112LE | – |
| | | | RK | RK520KHO-112LE | – |
| | Slack | | | 25 – 35 (1.0 – 1.4) | – |

## HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

| ITEM | | STANDARD | SERVICE LIMIT |
|---|---|---|---|
| Front | Specified brake fluid | DOT 4 | – |
| | Brake disc thickness | 4.8 – 5.2 (0.19 – 0.20) | 4.0 (0.16) |
| | Brake disc warpage | – | 0.30 (0.012) |
| | Master cylinder I.D. | 11.000 – 11.043 (0.4331 – 0.4348) | 11.055 (0.4352) |
| | Master piston O.D. | 10.957 – 10.984 (0.4314 – 0.4324) | 10.945 (0.4309) |
| | Caliper cylinder I.D. | 27.000 – 27.050 (1.0630 – 1.0650) | 27.06 (1.065) |
| | Caliper piston O.D. | 26.918 – 26.968 (1.0598 – 1.0617) | 26.91 (1.059) |
| Rear | Specified brake fluid | DOT 4 | – |
| | Brake disc thickness | 4.8 – 5.2 (0.19 – 0.20) | 4.0 (0.16) |
| | Brake disc warpage | – | 0.30 (0.012) |
| | Master cylinder I.D. | 12.700 – 12.743 (0.5000 – 0.5017) | 12.755 (0.5022) |
| | Master piston O.D. | 12.657 – 12.684 (0.4983 – 0.4994) | 12.645 (0.4978) |
| | Caliper cylinder I.D. | 38.18 – 38.23 (1.503 – 1.505) | 38.24 (1.506) |
| | Caliper piston O.D. | 38.098 – 38.148 (1.4999 – 1.5019) | 38.09 (1.500) |

## BATTERY/CHARGING SYSTEM SPECIFICATIONS

| ITEM | | | SPECIFICATIONS |
|---|---|---|---|
| Battery | Type | | YTZ12S |
| | Capacity | | 12 V – 11.0 Ah (10HR) |
| | Current leakage | | 0.2 mA maximum |
| | Voltage (20°C/68°F) | Fully charged | 13.0 – 13.2 V |
| | | Needs charging | Below 12.4 V |
| | Charging current | Normal | 1.1 A/5 – 10 h |
| | | Quick | 5.5 A/1 h |
| Alternator | Capacity | | 0.45 kW/5,000 rpm |
| | Charging coil resistance (20°C/68°F) | | 0.1 – 0.5 Ω |

## LIGHTS/METERS/SWITCHES SPECIFICATIONS

| ITEM | | | SPECIFICATIONS |
|---|---|---|---|
| Bulbs | Headlight | | 12 V – 60/55 W |
| | Brake/tail light | | LED |
| | License light | | 12 V – 5 W |
| | Front turn signal/position light | | 12 V – 21/5 W x 2 |
| | Rear turn signal light | | 12 V – 21 W x 2 |
| | Instrument light | | LED |
| | Turn signal indicator | | LED |
| | High beam indicator | | LED |
| | Neutral indicator | | LED |
| | Engine oil pressure indicator | | LED |
| | High coolant temperature indicator | | LED |
| | MIL | | LED |
| | ABS indicator (CTX700A/D/NA/ND) | | LED |
| | Parking brake indicator (CTX700D/ND) | | LED |
| Fuse | Main fuse | | 30 A |
| | PGM-FI fuse | | 15 A |
| | Sub fuse | | 15 A x 2, 7.5 A x 4 |
| | ABS fuse (CTX700A/D/NA/ND) | | 30 A, 7.5 A |
| | DCT fuse (CTX700D/ND) | | 30 A, 7.5 A |
| ECT sensor resistance | | 40°C (104°F) | 1.0 – 1.3 kΩ |
| | | 100°C (212°F) | 0.1 – 0.2 kΩ |
| Fuel level sensor resistance | | Full | 4 – 6 Ω |
| | | Empty | 80 – 83 Ω |

# TORQUE VALUES

## STANDARD TORQUE VALUES

| FASTENER TYPE | TORQUE N·m (kgf·m, lbf·ft) | FASTENER TYPE | TORQUE N·m (kgf·m, lbf·ft) |
|---|---|---|---|
| 5 mm bolt and nut | 5.2 (0.5, 3.8) | 5 mm screw | 4.2 (0.4, 3.1) |
| 6 mm bolt (Include SH flange bolt) and nut | 10 (1.0, 7) | 6 mm screw | 9.0 (0.9, 6.6) |
| | | 6 mm flange bolt (Include NSHF) and nut | 12 (1.2, 9) |
| 8 mm bolt and nut | 22 (2.2, 16) | | |
| 10 mm bolt and nut | 34 (3.5, 25) | 8 mm flange bolt and nut | 27 (2.8, 20) |
| 12 mm bolt and nut | 54 (5.5, 40) | 10 mm flange bolt and nut | 39 (4.0, 29) |

## ENGINE & FRAME TORQUE VALUES

### FRAME BODY PANELS/EXHAUST SYSTEM

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Combination meter mounting screw | 3 | 5 | 1.0 (0.1, 0.7) | |
| Main step mounting bolt | 6 | 8 | 27 (2.8, 20) | |
| Gearshift arm pinch bolt (CTX700/A/N/NA) | 1 | 6 | 12 (1.2, 9) | ALOC bolt; replace with a new one. |
| Reflector mounting nut | 5 | 5 | 1.7 (0.2, 1.3) | |
| Muffler band bolt | 2 | 8 | 20 (2.0, 15) | Apply engine oil to the threads and seating surface |
| Muffler cover socket bolt | 1 | 6 | 10 (1.0, 7) | |
| Exhaust pipe joint nut | 3 | 8 | 28 (2.9, 21) | See page 2-19 |
| Exhaust pipe stud bolt | 3 | 8 | – | See page 2-19 |

### MAINTENANCE

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Air cleaner housing cover screw | 6 | 5 | 1.1 (0.1, 0.8) | |
| Spark plug | 2 | 14 | 22 (2.2, 16) | |
| Valve adjusting screw lock nut | 8 | 7 | 14 (1.4, 10) | Apply engine oil to the threads and seating surface. |
| Camshaft maintenance cap | 1 | 36 | 4.0 (0.4, 3.0) | See page 3-9 |
| Timing hole cap | 1 | 14 | 10 (1.0, 7) | Apply grease to the threads. |
| Crankshaft hole cap | 1 | 30 | 15 (1.5, 11) | Apply grease to the threads. |
| Engine oil drain bolt | 1 | 12 | 30 (3.1, 22) | |
| Engine oil filter cartridge | 1 | 20 | 26 (2.7, 19) | Apply engine oil to the threads. |
| Rear axle nut | 1 | 18 | 98 (10.0, 72) | U-nut |
| Drive chain adjuster lock nut | 2 | 8 | 21 (2.1, 15) | |
| Drive sprocket bolt | 1 | 10 | 54 (5.5, 40) | |
| Driven sprocket nut | 5 | 12 | 108 (11.0, 80) | U-nut |
| Front master cylinder reservoir cover screw | 2 | 4 | 1.5 (0.2, 1.1) | |
| Rear master cylinder reservoir mounting bolt | 1 | 6 | 10 (1.0, 7) | |
| Rear master cylinder push rod lock nut | 1 | 8 | 17 (1.7, 13) | |
| Parking brake adjuster bolt lock nut (CTX700D/ND) | 1 | 8 | 17 (1.7, 13) | |
| Sidestand pivot bolt | 1 | 10 | – | See page 3-21<br>Apply grease to the sliding surface. |
| Sidestand pivot nut | 1 | 10 | 39 (4.0, 29) | U-nut |

### PGM-FI SYSTEM

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| ECT sensor | 1 | 10 | 12 (1.2, 9) | |
| $O_2$ sensor | 1 | 12 | 24.5 (2.5, 18) | |

### IGNITION SYSTEM

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Timing hole cap | 1 | 14 | 10 (1.0, 7) | Apply grease to the threads. |
| Right crankcase cover wire clamp bolt (CTX700D/ND) | 2 | 6 | 12 (1.2, 9) | Apply locking agent to the threads. Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |

### ELECTRIC STARTER

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Starter motor terminal nut | 1 | 6 | 10 (1.0, 7) | |

### FUEL SYSTEM

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Fuel pump mounting nut | 6 | 6 | 12 (1.2, 9) | For tightening sequence (page 7-13) |
| Sensor unit torx screw | 3 | 5 | 3.4 (0.3, 2.5) | |
| IACV torx screw | 2 | 4 | 2.1 (0.2, 1.5) | |
| Air cleaner connecting hose band screw | 1 | 4 | 1.5 (0.2, 1.1) | |
| Insulator band screw | 2 | 5 | – | See page 7-16 |

### COOLING SYSTEM

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Fan motor shroud mounting bolt | 3 | 6 | 8.4 (0.9, 6.2) | |
| Fan motor mounting screw | 3 | 4 | 2.7 (0.3, 2.0) | |
| Cooling fan mounting nut | 1 | 3 | 1.0 (0.1, 0.7) | Apply locking agent to the threads. |

### LUBRICATION SYSTEM

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Oil filter boss | 1 | 20 | – | Apply locking agent to the threads. Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) from tip |
| Engine oil filter cartridge | 1 | 20 | 26 (2.7, 19) | Apply engine oil to the threads. |

### CYLINDER HEAD/VALVES

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Cylinder head cover socket bolt | 3 | 6 | 10 (1.0, 7) | |
| Rear master cylinder reservoir mounting bolt | 1 | 6 | 10 (1.0, 7) | |
| Breather plate mounting bolt | 8 | 6 | 12 (1.2, 9) | Apply locking agent to the threads. Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Rocker arm shaft bolt | 3 | 8 | 29 (3.0, 21) | Apply engine oil to the threads and seating surface. |
| Camshaft maintenance cap | 1 | 36 | 4.0 (0.4, 3.0) | See page 10-10<br>See page 10-24 |
| Cam chain tensioner bolt | 2 | 6 | 12 (1.2, 9) | |
| Cam sprocket bolt | 1 | 10 | 56 (5.7, 41) | Apply engine oil to the threads and seating surface. |
| Insulator band screw | 1 | 5 | – | See page 10-22 |
| Cylinder head special bolt | 6 | 9 | 44 (4.5, 32) | Apply molybdenum oil solution to the threads and seating surface. |

### CLUTCH/GEARSHIFT LINKAGE (CTX700/A/N/NA)

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Right engine side cover socket bolt | 2 | 6 | 10 (1.0, 7) | |
| Clutch center lock nut | 1 | 18 | 128 (13.1, 94) | Apply engine oil to the threads and seating surface.<br>Lock nut; replace with a new one and stake. |
| Clutch lifter plate bolt | 4 | 6 | 12 (1.2, 9) | |
| Primary drive gear mounting bolt | 1 | 10 | 93 (9.5, 69) | Apply engine oil to the threads and seating surface. |
| Shift drum stopper arm pivot bolt | 1 | 6 | 12 (1.2, 9) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Shift drum center socket bolt | 1 | 8 | 23 (2.3, 17) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Gearshift pedal pivot bolt | 1 | 10 | 39 (4.0, 29) | |
| Gearshift arm pinch bolt | 1 | 6 | 12 (1.2, 9) | ALOC bolt; replace with a new one. |
| Gearshift pedal adjuster lock nut | 2 | 6 | 10 (1.0, 7) | |

### DUAL CLUTCH TRANSMISSION (DCT) (CTX700D/ND)

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Solenoid valve stopper plate bolt | 1 | 6 | 12 (1.2, 9) | Apply locking agent to the threads.<br>Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Right crankcase cover wire clamp bolt | 2 | 6 | 12 (1.2, 9) | Apply locking agent to the threads.<br>Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Linear solenoid valve body mounting bolt | 6 | 6 | – | For tightening sequence (page 12-62) |
| Shift spindle angle sensor bolt | 1 | 6 | 12 (1.2, 9) | |
| Primary drive gear mounting bolt | 1 | 10 | 93 (9.5, 69) | Apply engine oil to the threads and seating surface. |
| Reduction gear cover bolt | 3 | 6 | 14 (1.4, 10) | |
| TR sensor bolt | 1 | 6 | 12 (1.2, 9) | |
| Shift control motor bolt | 3 | 6 | 14 (1.4, 10) | |
| Shift drum center bolt | 1 | 8 | 23 (2.3, 17) | Apply locking agent to the threads.<br>Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Drum shifter guide plate bolt | 2 | 6 | 12 (1.2, 9) | Apply locking agent to the threads.<br>Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Clutch line EOP sensor | 3 | 10 | 19.6 (2.0, 14) | |
| EOT sensor | 1 | 10 | 14 (1.4, 10) | Apply engine oil to the threads and seating surface. |

**ALTERNATOR/STARTER CLUTCH**

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Flywheel mounting bolt | 1 | 12 | 157 (16.0, 116) | Left hand thread<br>Apply engine oil to the threads and seating surface. |
| Starter clutch socket bolt | 6 | 8 | 30 (3.1, 22) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Alternator stator mounting bolt | 4 | 6 | 10 (1.0, 7) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Alternator wire clamp bolt | 1 | 6 | 10 (1.0, 7) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |

**CRANKCASE/TRANSMISSION/BALANCER**

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Mainshaft bearing set plate bolt | 3 | 6 | 12 (1.2, 9) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Shift drum bearing set plate bolt | 2 | 6 | 12 (1.2, 9) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Balancer shaft bearing set plate bolt | 3 | 6 | 12 (1.2, 9) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Crankcase main journal bolt (new) | 6 | 9 | 20 (2.0, 15) + 150° | See page 14-24<br>Replace with a new one. |
| Crankcase 10 mm bolt | 1 | 10 | 39 (4.0, 29) | |
| Crankcase 8 mm bolt | 3 | 8 | 24 (2.4, 18) | |
| Crankcase 8 x 45 mm bolt | 1 | 8 | 24 (2.4, 18) | Apply locking agent to the threads.<br>Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) from tip |
| Crankcase 6 mm bolt | 8 | 6 | 12 (1.2, 9) | |

**CRANKSHAFT/PISTON/CYLINDER**

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Crankpin bearing cap bolt | 4 | 6 | 10 (1.0, 7) + 90° | See page 15-7<br>See page 15-12<br>Replace with a new one.<br>Apply engine oil to the threads and seating surface. |
| Crankcase main journal bolt (retightening) | 6 | 9 | 20 (2.0, 15) + 120° | See page 15-9<br>Apply engine oil to the threads and seating surface. |

### ENGINE REMOVAL/INSTALLATION

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Rear lower engine hanger nut | 1 | 12 | 59 (6.0, 44) | |
| Front lower engine hanger bolt | 2 | 12 | 54 (5.5, 40) | |
| Upper engine hanger bolt | 2 | 12 | 54 (5.5, 40) | |
| Rear upper engine hanger nut | 1 | 12 | 54 (5.5, 40) | |
| Drive sprocket bolt | 1 | 10 | 54 (5.5, 40) | |
| Main step base plate mounting bolt | 6 | 8 | 27 (2.8, 20) | |
| Rear brake bracket mounting bolt | 2 | 8 | 27 (2.8, 20) | |
| Rear master cylinder reservoir mounting bolt | 1 | 6 | 10 (1.0, 7) | |
| Starter motor terminal nut | 1 | 6 | 10 (1.0, 7) | |
| Right engine side cover socket bolt | 2 | 6 | 10 (1.0, 7) | |
| Rear master cylinder reservoir mounting bolt | 1 | 6 | 10 (1.0, 7) | |

### FRONT WHEEL/SUSPENSION/STEERING

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Handlebar switch housing screw | 4 | 5 | 2.5 (0.3, 1.8) | |
| Front master cylinder holder bolt | 2 | 6 | 12 (1.2, 9) | |
| Handlebar weight mounting screw | 2 | 6 | 10 (1.0, 7) | ALOC screw; replace with a new one. |
| Front brake disc mounting bolt | 5 | 8 | 42 (4.3, 31) | ALOC bolt; replace with a new one. |
| Front axle | 1 | 18 | 74 (7.5, 55) | Apply grease to the sliding surface. |
| Front axle pinch bolt | 1 | 8 | 22 (2.2, 16) | |
| Fork socket bolt | 2 | 8 | 20 (2.0, 15) | Apply locking agent to the threads. |
| Bottom bridge pinch bolt | 2 | 10 | 39 (4.0, 29) | |
| Fork cap | 2 | 37 | 22 (2.2, 16) | |
| Top bridge pinch bolt | 2 | 8 | 22 (2.2, 16) | |
| Front brake caliper mounting bolt | 2 | 8 | 30 (3.1, 22) | ALOC bolt; replace with a new one. |
| Steering stem adjusting nut | 1 | 26 | 23 (2.3, 17) | See page 17-28<br>Apply engine oil to the threads. |
| Steering stem adjusting lock nut | 1 | 26 | – | See page 17-28 |
| Steering stem nut | 1 | 24 | 103 (10.5, 76) | See page 17-28 |

### REAR WHEEL/SUSPENSION

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Driven sprocket nut | 5 | 12 | 108 (11.0, 80) | U-nut |
| Rear brake disc mounting bolt | 5 | 8 | 42 (4.3, 31) | ALOC bolt; replace with a new one. |
| Rear axle nut | 1 | 18 | 98 (10.0, 72) | U-nut |
| Muffler end cover socket bolt | 2 | 6 | 10 (1.0, 7) | |
| Shock absorber mounting nut | 2 | 10 | 44 (4.5, 32) | U-nut |
| Shock arm nut | 1 | 10 | 44 (4.5, 32) | U-nut |
| Shock link nut | 2 | 10 | 44 (4.5, 32) | U-nut |
| Drive chain slider mounting screw | 2 | 5 | 5.9 (0.6, 4.4) | |
| Swingarm pivot nut | 1 | 18 | 98 (10.0, 72) | U-nut |

**HYDRAULIC BRAKE**

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Brake caliper bleed valve | 2 | 8 | 5.4 (0.6, 4.0) | |
| Front master cylinder reservoir cover screw | 2 | 4 | 1.5 (0.2, 1.1) | |
| Rear master cylinder reservoir mounting bolt | 1 | 6 | 10 (1.0, 7) | |
| Brake pad pin | 2 | 10 | 17 (1.7, 13) | |
| Rear brake caliper mounting bolt | 1 | 8 | 22 (2.2, 16) | ALOC bolt; replace with a new one. |
| Parking brake caliper mounting bolt (CTX700D/ND) | 2 | 8 | 31 (3.2, 23) | ALOC bolt; replace with a new one. |
| Parking brake pad pin (CTX700D/ND) | 2 | 8 | 17 (1.7, 13) | ALOC bolt; replace with a new one. |
| Front master cylinder holder bolt | 2 | 6 | 12 (1.2, 9) | |
| Brake hose oil bolt | 4 | 10 | 34 (3.5, 25) | |
| Front brake light switch screw | 1 | 4 | 1.2 (0.1, 0.9) | |
| Front brake lever pivot bolt | 1 | 6 | 1.0 (0.1, 0.7) | Apply 0.10 g (0.004 oz) silicone grease to the sliding surface. |
| Front brake lever pivot nut | 1 | 6 | 5.9 (0.6, 4.4) | |
| Rear master cylinder mounting bolt | 2 | 6 | 12 (1.2, 9) | |
| Rear brake bracket mounting bolt | 2 | 8 | 27 (2.8, 20) | |
| Rear master cylinder hose joint screw | 1 | 4 | 1.5 (0.2, 1.1) | Apply locking agent to the threads. |
| Rear master cylinder push rod lock nut | 1 | 8 | 17 (1.7, 13) | |
| Front brake caliper mounting bolt | 2 | 8 | 30 (3.1, 22) | ALOC bolt; replace with a new one. |
| Front brake caliper pin | 1 | 8 | 22 (2.2, 16) | Apply locking agent to the threads. Apply 0.4 g (0.01 oz) silicone grease to the sliding surface. |
| Front brake caliper bracket pin | 1 | 8 | 12 (1.2, 9) | Apply locking agent to the threads. Apply 0.4 g (0.01 oz) silicone grease to the sliding surface. |
| Rear brake caliper pin | 1 | 12 | 27 (2.8, 20) | Apply 0.4 g (0.01 oz) silicone grease to the sliding surface. |
| Parking brake caliper pin bolt (CTX700D/ND) | 1 | 8 | 22 (2.2, 16) | Apply locking agent to the threads. |
| Parking brake adjuster bolt lock nut (CTX700D/ND) | 1 | 8 | 17 (1.7, 13) | |
| Parking brake cable mounting nut (CTX700D/ND) | 1 | 10 | 10 (1.0, 7) | |
| Parking brake guide (CTX700D/ND) | 2 | 5 | 1.3 (0.1, 1) | |

**ANTI-LOCK BRAKE SYSTEM (ABS) (CTX700A/D/NA/ND)**

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Brake pipe joint nut | 12 | 10 | 14 (1.4, 10) | Apply brake fluid to the threads. |

**LIGHTS/METERS/SWITCHES**

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Turn signal light special screw | 4 | 4 | 1.5 (0.2, 1.1) | |
| Combination meter mounting screw | 3 | 5 | 1.0 (0.1, 0.7) | |
| EOP switch | 1 | PT 1/8 | 18 (1.8, 13) | Apply sealant to the threads. |
| Ignition switch mounting bolt | 2 | 8 | 25 (2.5, 18) | One way bolt; replace with a new one. |
| Neutral switch | 1 | 10 | 12 (1.2, 9) | |
| Parking brake switch screw (CTX700D/ND) | 1 | 4 | 1.2 (0.1, 0.9) | |
| Sidestand switch bolt | 1 | 6 | 10 (1.0, 7) | ALOC bolt; replace with a new one. |

**OTHERS**

| ITEM | Q'TY | THREAD DIA. (mm) | TORQUE N·m (kgf·m, lbf·ft) | REMARKS |
|---|---|---|---|---|
| Cam chain tensioner set plate bolt | 1 | 6 | 12 (1.2, 9) | Apply locking agent to the threads. Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Camshaft cap | 1 | 20 | 30 (3.1, 22) | |
| Gearshift spindle return spring pin | 1 | 8 | 23 (2.3, 17) | |
| Clutch lever pivot bolt (CTX700/A/N/NA) | 1 | 6 | 1.0 (0.1, 0.7) | Apply grease to the sliding surface. |
| Clutch lever pivot nut (CTX700/A/N/NA) | 1 | 6 | 6.0 (0.6, 4.4) | |

# LUBRICATION & SEAL POINTS

## ENGINE

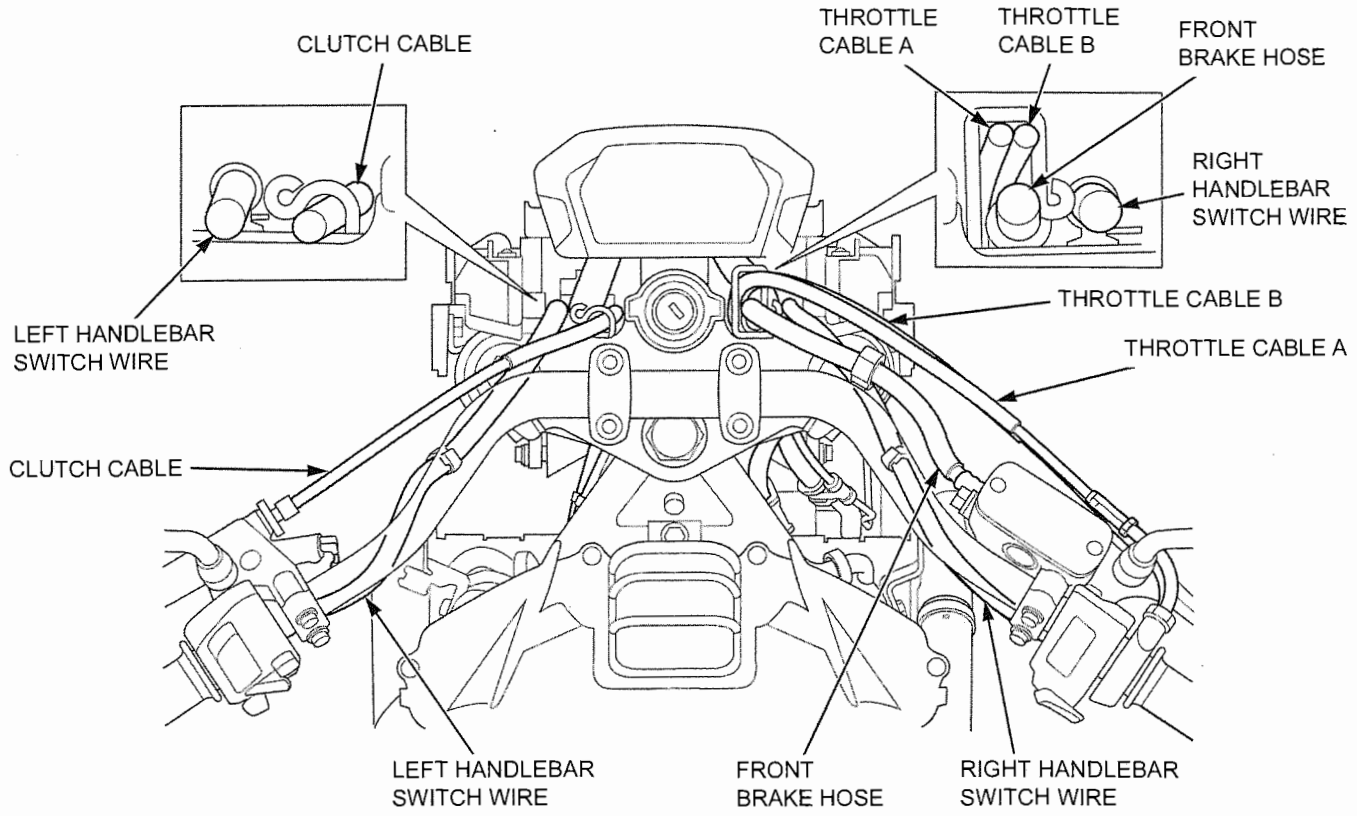
| MATERIAL | LOCATION | REMARKS |
|---|---|---|
| Liquid sealant (TB1207B manufactured by Three Bond or equivalent) | Oil pan mating surface | See page 9-11 |
| | Right crankcase cover mating surface | CTX700/A/N/NA: See page 11-5 |
| | | CTX700D/ND: See page 12-64 |
| | CKP sensor wire grommet | |
| | Linear solenoid valve wire grommet (CTX700D/ND) | |
| | Alternator wire grommet | |
| | Alternator cover mating surface | See page 13-5 |
| | Crankcase mating surface | See page 14-23 |
| Molybdenum oil solution (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease) | Rocker arm sliding surface | |
| | Rocker arm shaft outer surface | |
| | Camshaft lobes, journals and thrust surface | |
| | Valve stem (valve guide sliding surface) and stem end | |
| | Clutch outer guide sliding surface (CTX700/A/N/NA) | |
| | Starter reduction and idle gear shaft outer surface | |
| | M3/4, C5, C6 gear (shift fork grooves) (CTX700/A/N/NA) | |
| | M3, M4, C5, C6 gear (shift fork grooves) (CTX700/A/N/NA) | |
| | Each transmission spline collar outer surface | |
| | Each transmission collar inner and outer surface | |
| | Shift fork guide area and guide pin | |
| | Shift fork shaft outer surface | |
| | Main journal bearing sliding surface | |
| | Crankpin bearing sliding surface | |
| | Crankshaft thrust surface | |
| Engine oil | Oil filter cartridge O-ring | |
| | Oil filler cap O-ring | |
| | Timing hole cap O-ring | |
| | Crankshaft hole cap O-ring | |
| | Clutch oil filter cover O-ring (CTX700D/ND) | |
| | Oil joint pipe O-ring (CTX700D/ND) | |
| | Clutch oil guide collar O-rings (CTX700D/ND) | |
| | Oil strainer seal ring | |
| | Starter motor O-ring | |
| | Fuel injector seal ring | |
| | Water pump large O-ring | |
| | Valve stem seal | |
| | Clutch disc entire surface (CTX700/A/N/NA) | |
| | Clutch lifter rod A sliding surface (CTX700/A/N/NA) | |
| | Clutch lifter rod B sliding surface (CTX700/A/N/NA) | |
| | Mainshaft seal rings (CTX700D/ND) | |
| | Starter one-way clutch | |
| | Piston sliding surface | |
| | Piston ring sliding surface | |
| | Piston pin outer surface | |
| | Each bearing | |
| | Each gear teeth and rotating surface | |
| | Each O-ring (except water sealing) | |
| | Other rotating area and sliding surface | |
| Multi-purpose grease | Each oil seal lips | |
| Locking agent | CKP sensor mounting bolt threads | Coating width; 6.5 ± 1.0 mm (0.26 ± 0.04 in) except 2.0 ± 1.0 mm (0.08 ± 0.04 in) from tip |
| Unirex N3 grease (Exxon Mobil) | Electric shift reduction gear teeth and journal (CTX700D/ND) | 2 – 4 g (0.07 – 0.14 oz) |

## FRAME

| MATERIAL | LOCATION | REMARKS |
|---|---|---|
| Urea based multi-purpose grease with extreme pressure (example: EXCELITE EP2 manufactured by Kyodo Yushi, Stamina EP2 manufactured by Shell or equivalent) | Steering head bearing sliding surface | 3 – 5 g (0.1 – 0.2 oz) |
| | Steering head dust seal lips | |
| Molybdenum disulfide grease | Shock arm needle bearings | |
| | Rear shock absorber needle bearing | |
| | Rear shock absorber dust seal lips | |
| | Swingarm pivot needle bearings | |
| | Swingarm pivot ball bearing | |
| | Swingarm pivot dust seal lips | |
| Multi-purpose grease | Seat catch hook sliding area | |
| | Gearshift pedal pivot collar and dust seal lips (CTX700/A/N/NA) | |
| | Gearshift pedal tie-rod ball joint area (CTX700/A/N/NA) | |
| | Throttle cable end and throttle grip pipe flange groove | |
| | Front axle sliding surface | |
| | Front wheel dust seal lips | |
| | Rear wheel hub O-ring | |
| | Rear wheel dust seal lips | |
| | Rear axle sliding surface | |
| | Swingarm pivot sliding surface | |
| | Rear brake pedal pivot sliding area | |
| | Parking brake ratchet A, B teeth and sliding surface (CTX700D/ND) | |
| | Parking brake lever, washer sliding surface (CTX700D/ND) | |
| | Parking brake switch spring sliding surface (CTX700D/ND) | |
| | Main step sliding area | |
| | Pillion step sliding area | |
| Cable lubricant | Seat lock cable inside | |
| | Clutch cable inside (CTX700/A/N/NA) | |
| | Parking brake cable inside (CTX700D/ND) | |
| Honda bond A or Pro Honda Handgrip Cement (U.S.A. only) or equivalent | Handlebar grip rubber inside | |
| Honda bond A or equivalent | Brake pad retainer mating surface | |
| Silicone grease | Front brake lever sliding surface and lever-to-master piston contacting area | 0.10 g (0.004 oz) |
| | Rear brake master cylinder push rod sliding surface and boot fitting area | |
| | Brake caliper dust seals | |
| | Rear brake caliper boot inside | 0.4 g (0.01 oz) |
| | Brake pad pin stopper ring | |
| | Parking brake shaft outer surface (CTX700D/ND) | 0.4 g (0.01 oz) minimum |
| | Parking brake adjuster bolt threads and caliper piston sliding surface (CTX700D/ND) | 0.4 g (0.01 oz) minimum |
| | Parking brake shaft boot lips (CTX700D/ND) | 0.4 g (0.01 oz) minimum |
| | Parking brake caliper bracket pin sliding surface (CTX700D/ND) | 0.4 g (0.01 oz) minimum |
| | Parking brake caliper sleeve sliding surface (CTX700D/ND) | 0.4 g (0.01 oz) minimum |
| DOT 4 brake fluid | Brake caliper piston and piston seals | |
| | Brake master piston and cups | |
| | Brake master cylinder inside | |
| | Rear master cylinder reservoir hose joint O-ring | |
| Fork fluid | Fork cap O-ring | |
| | Fork dust seal and oil seal lips | |
| Drive chain lubricant (Pro Honda HP Chain Lube or equivalent) | Drive chain whole surface | |

# CABLE & HARNESS ROUTING

**CTX700/A/N/NA:**

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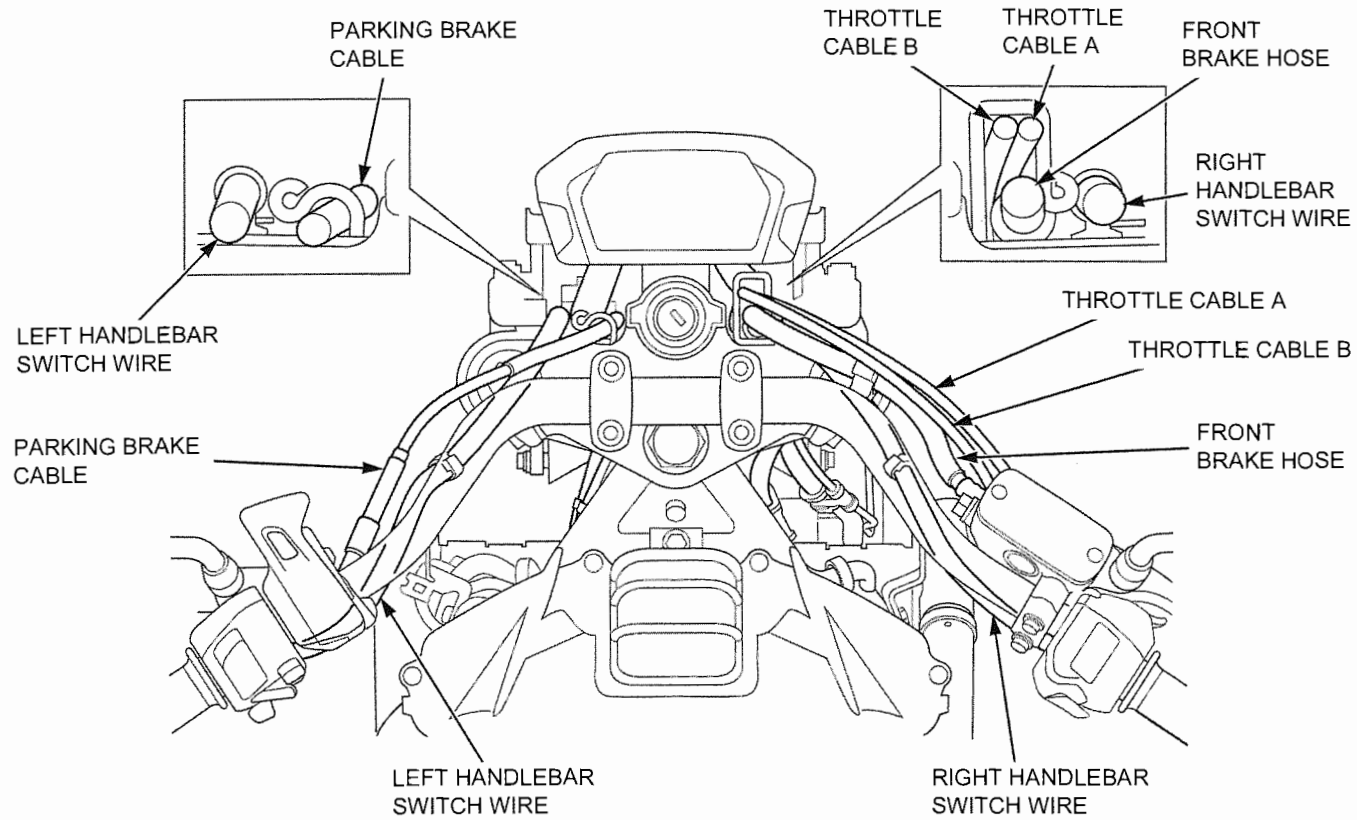

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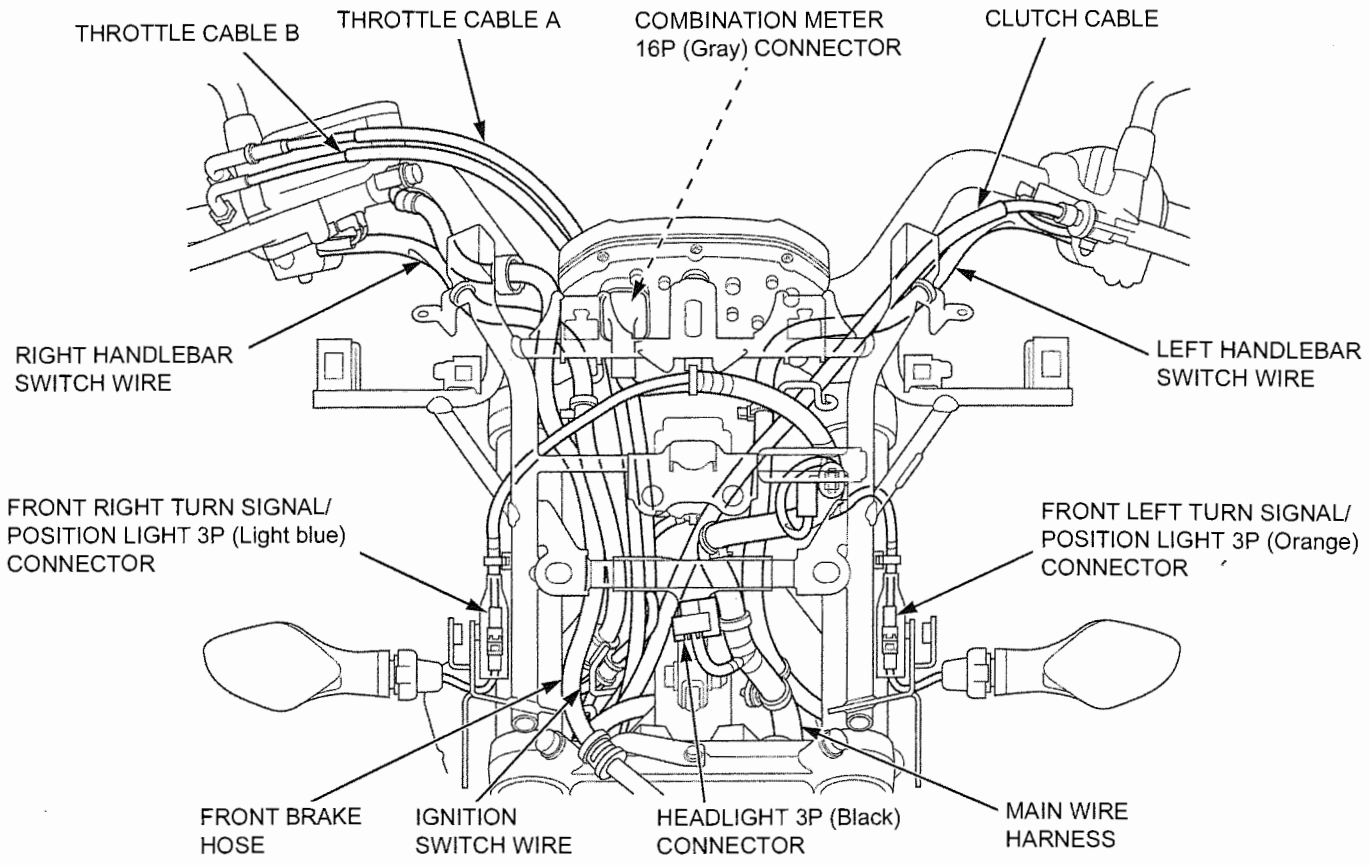


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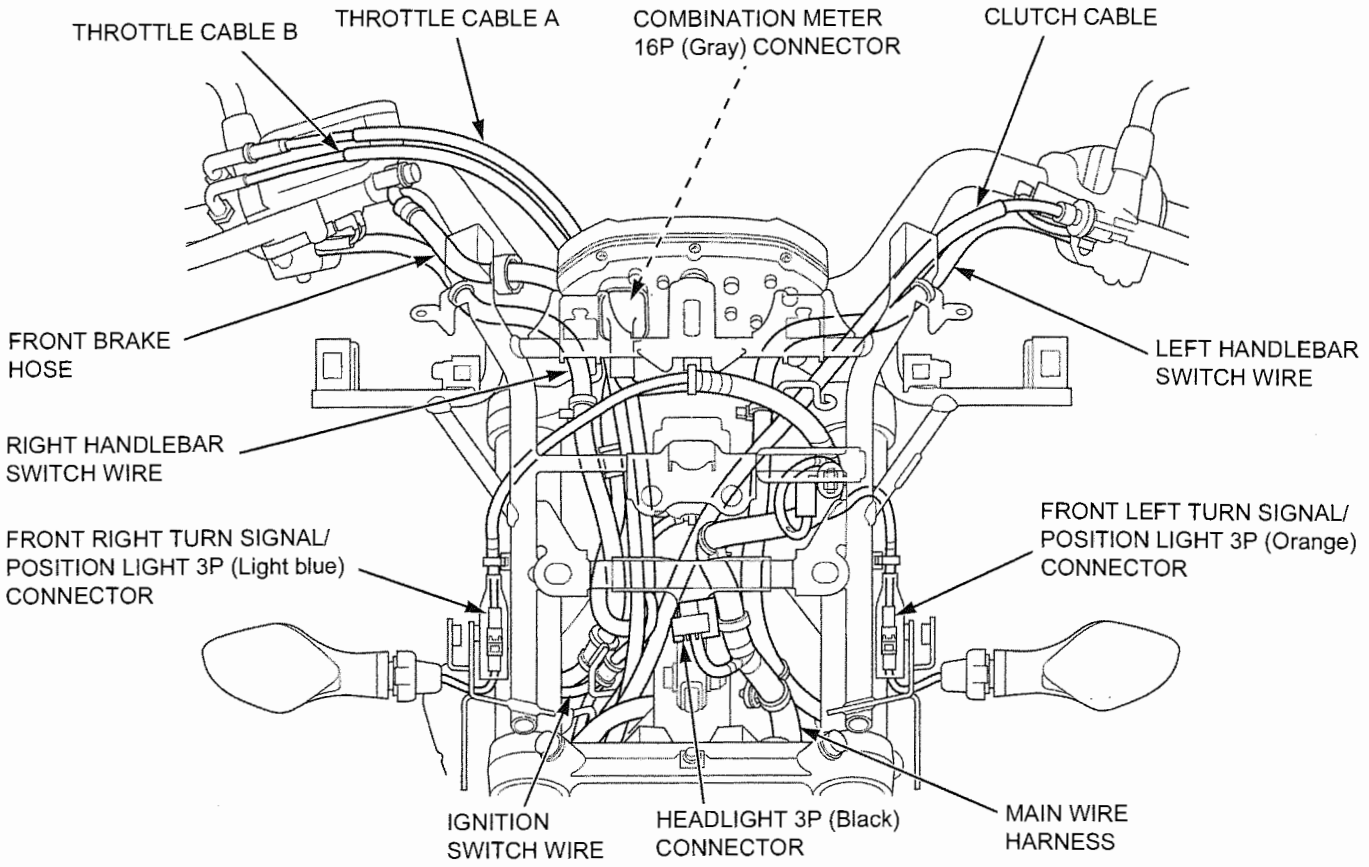

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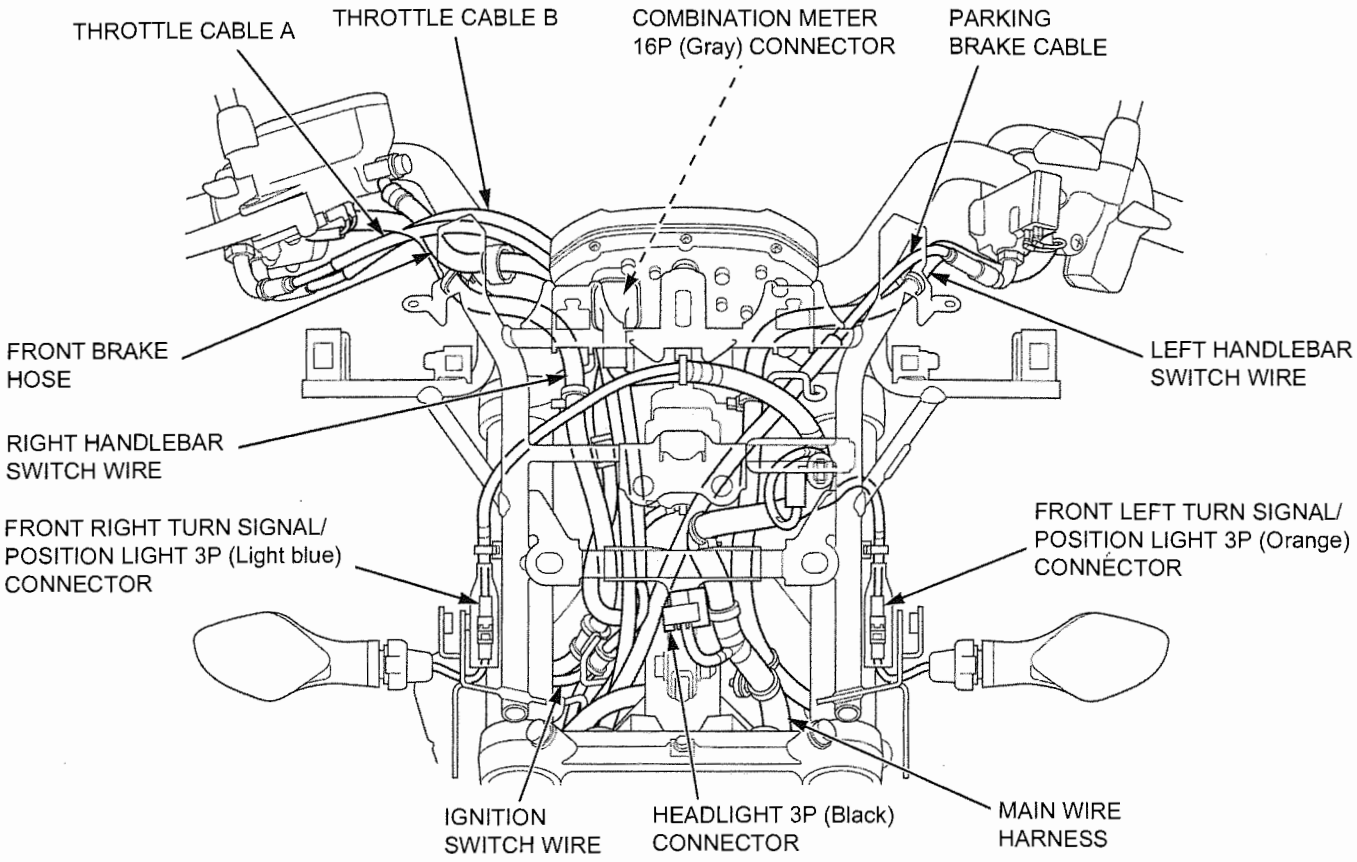


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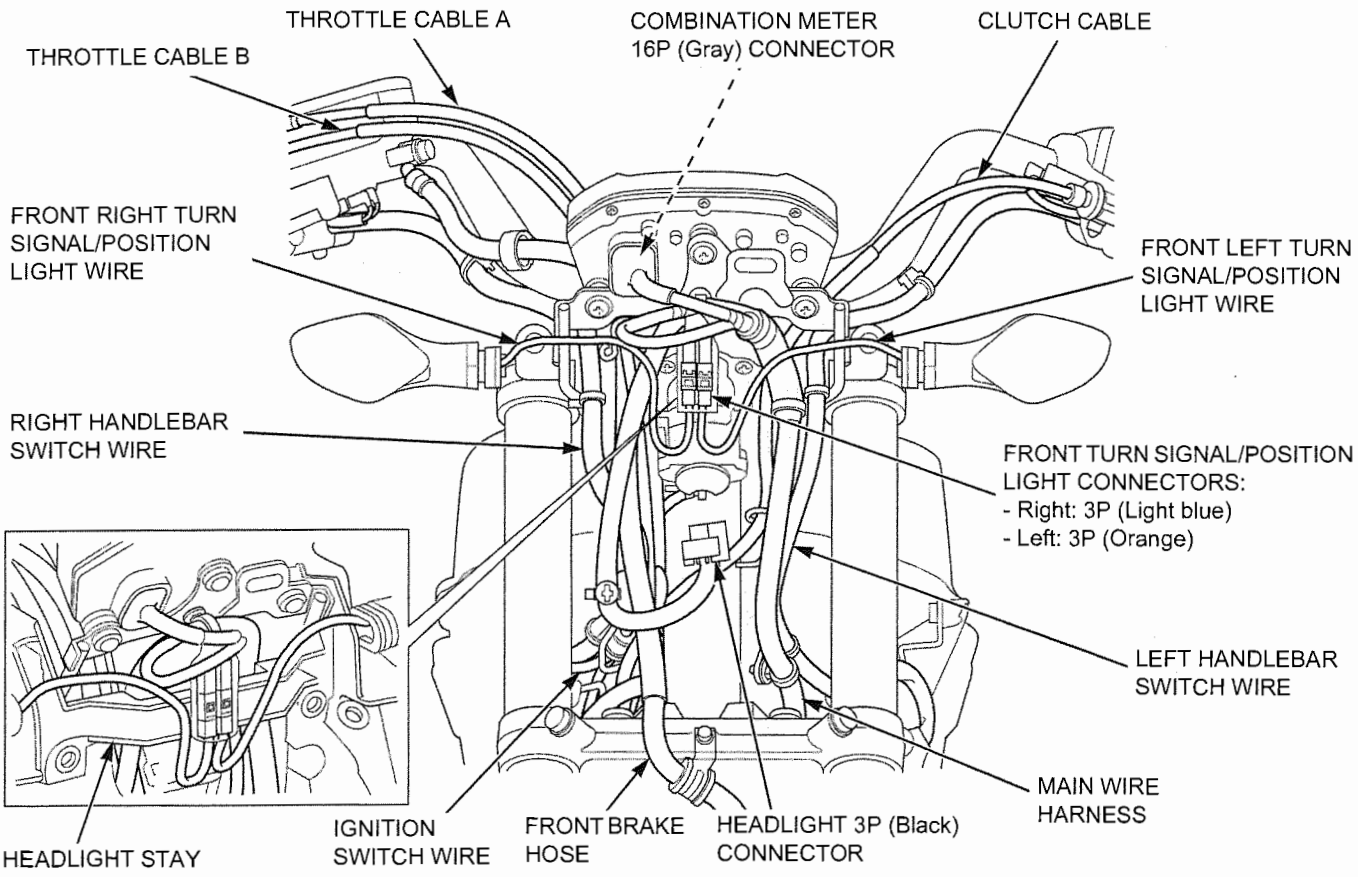

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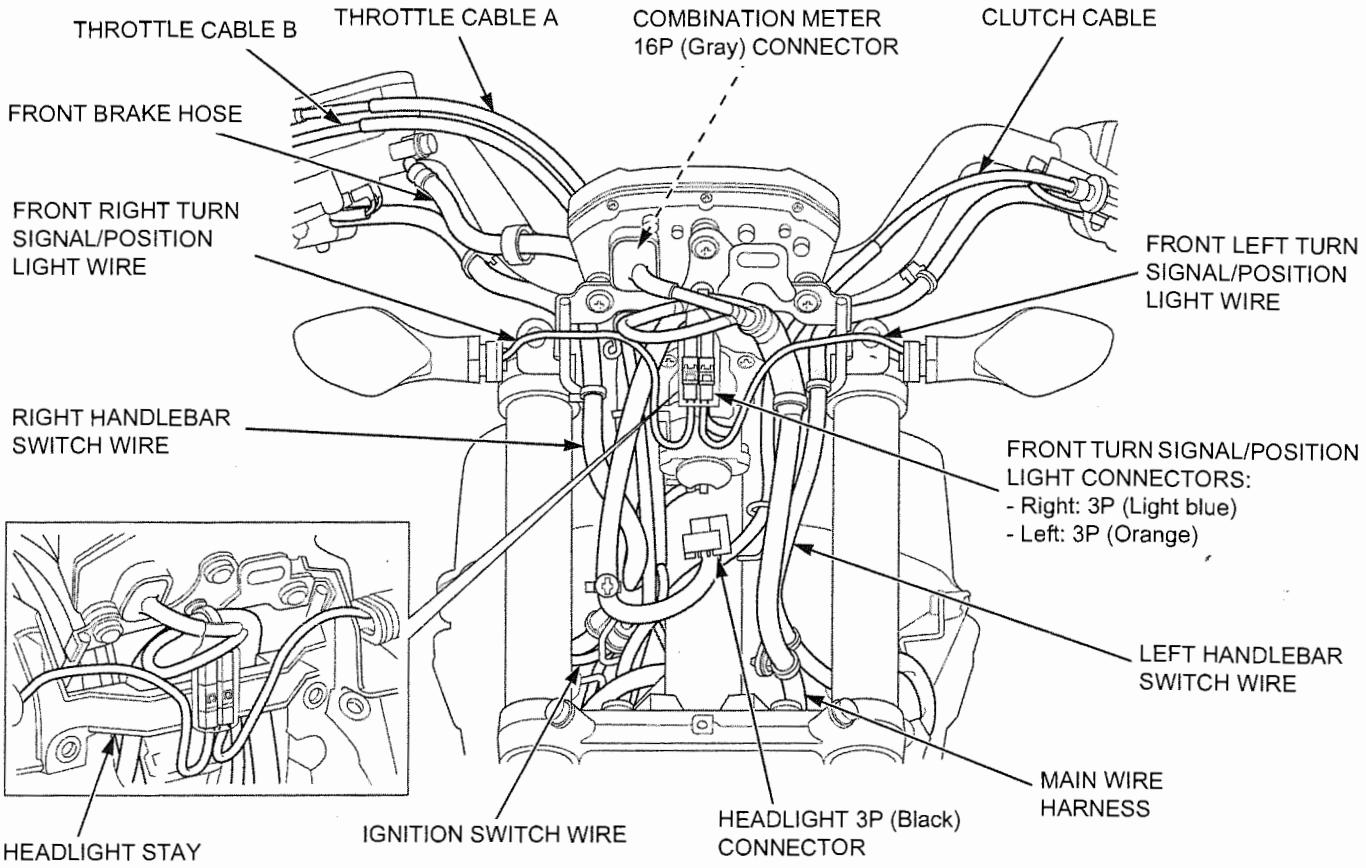


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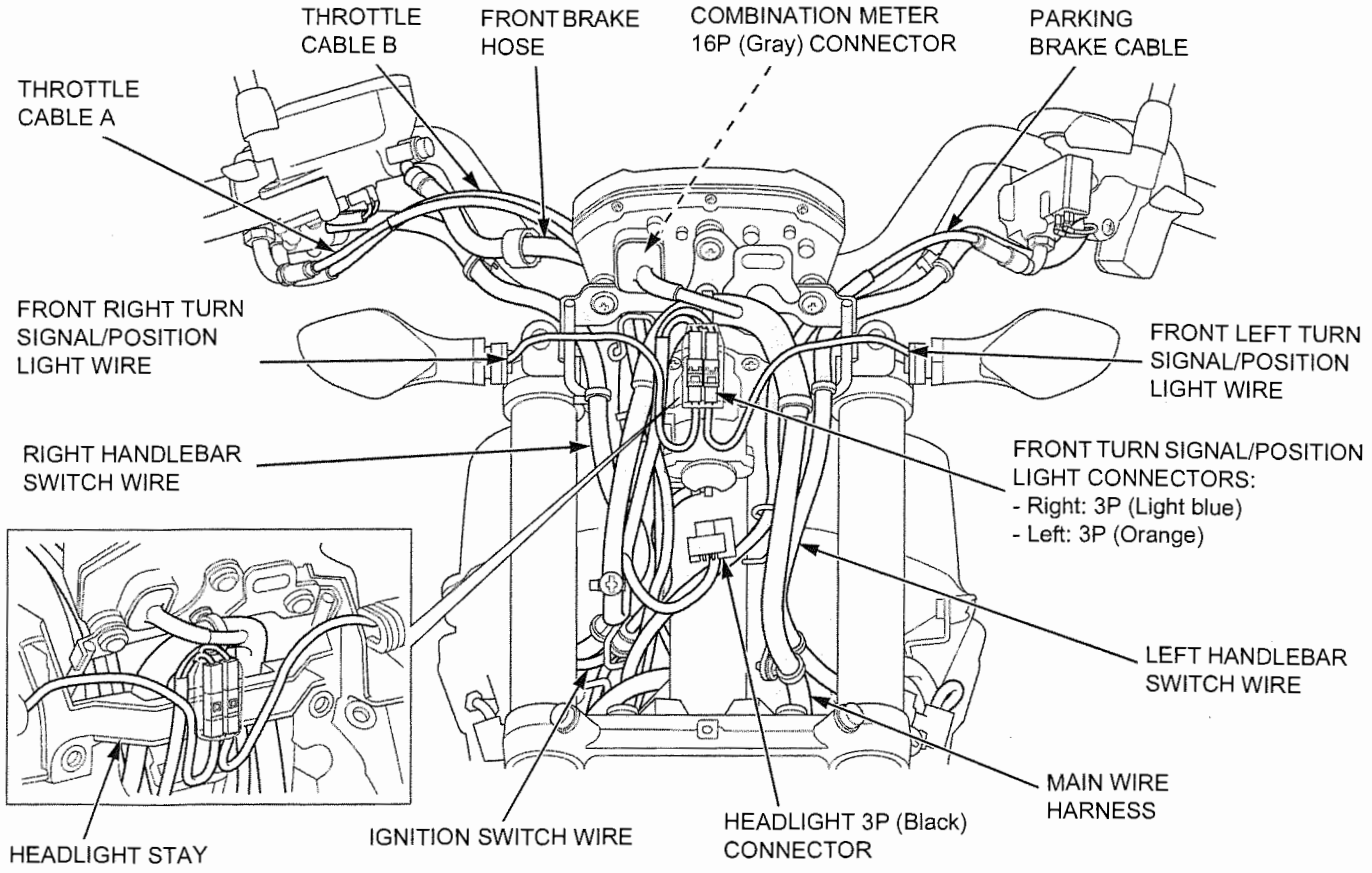

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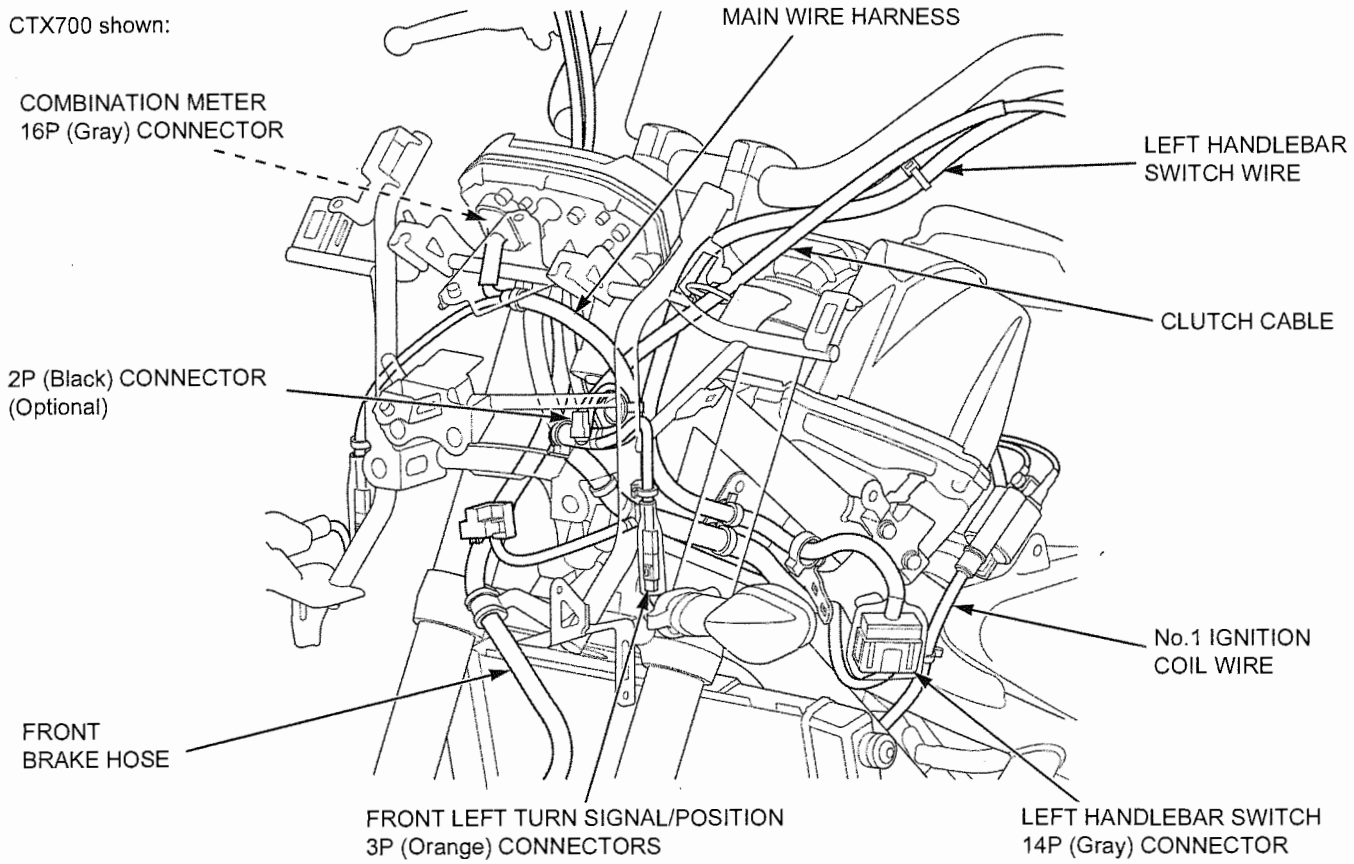


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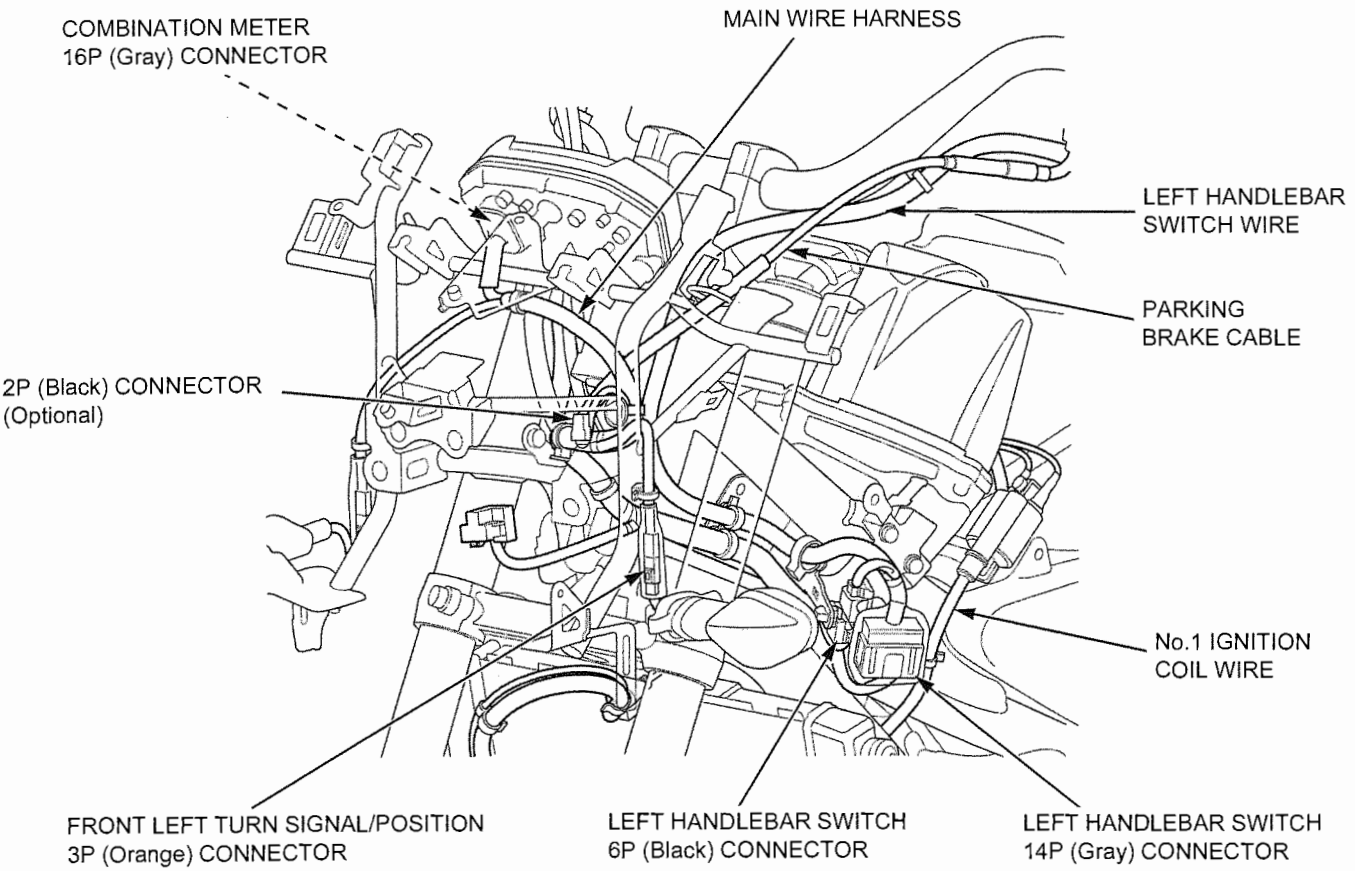

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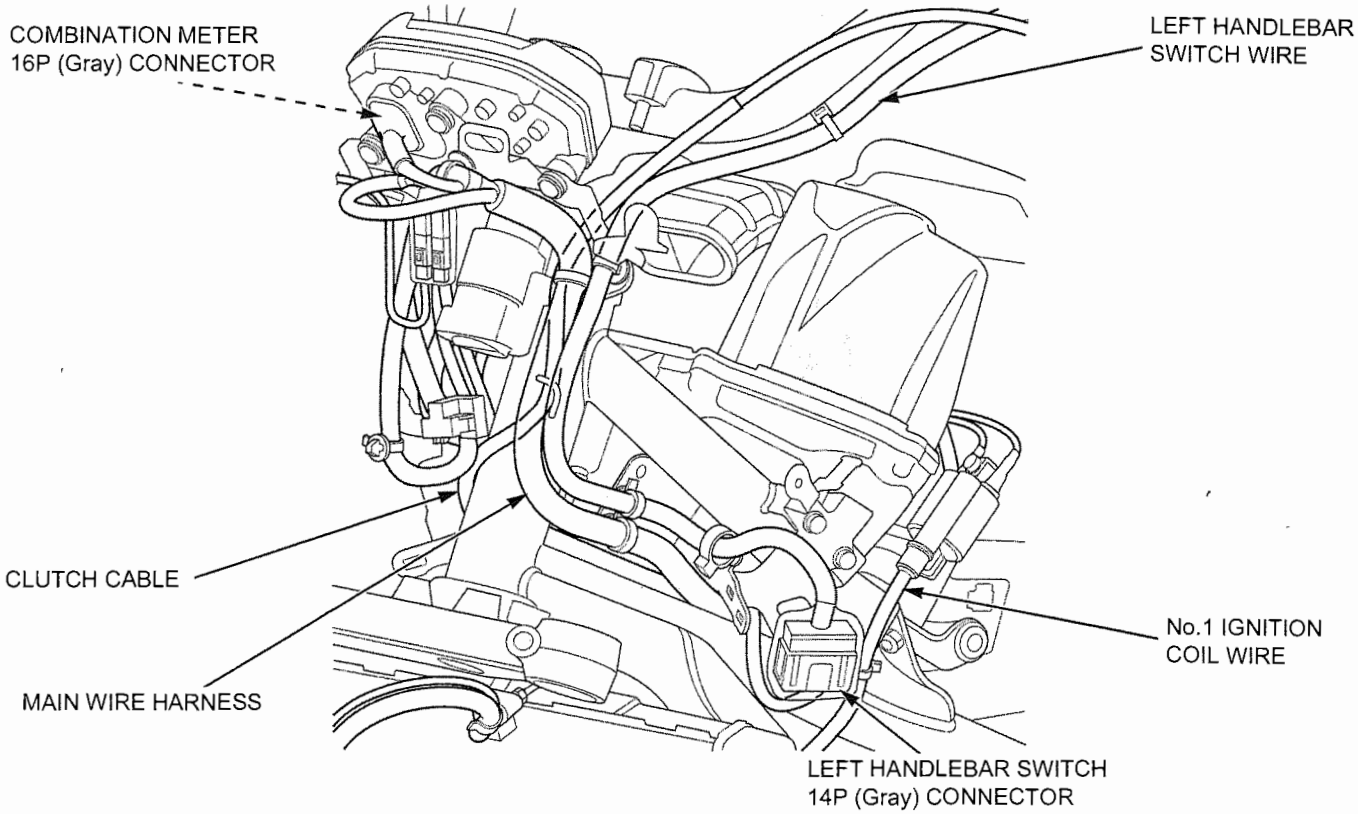


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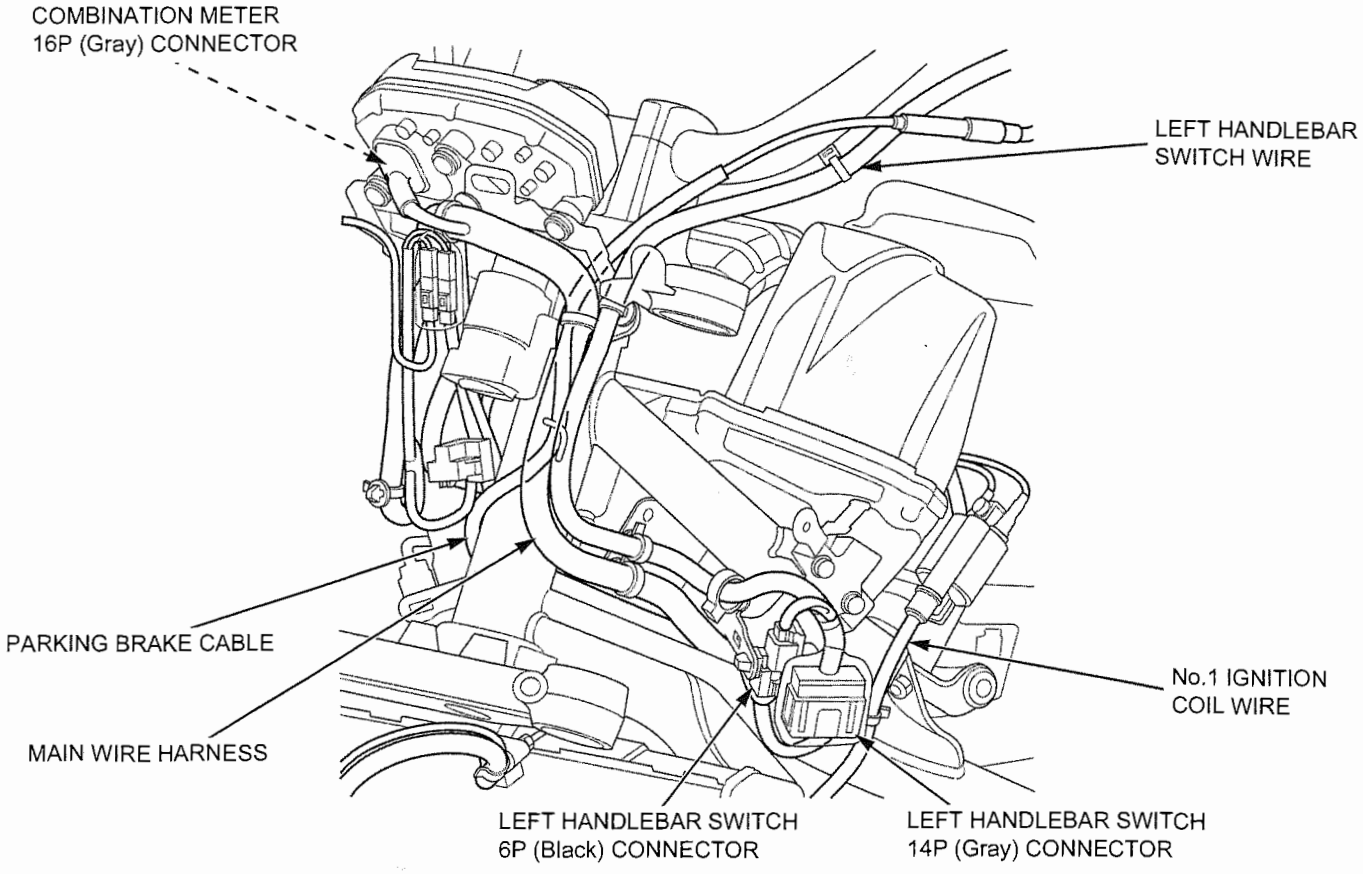

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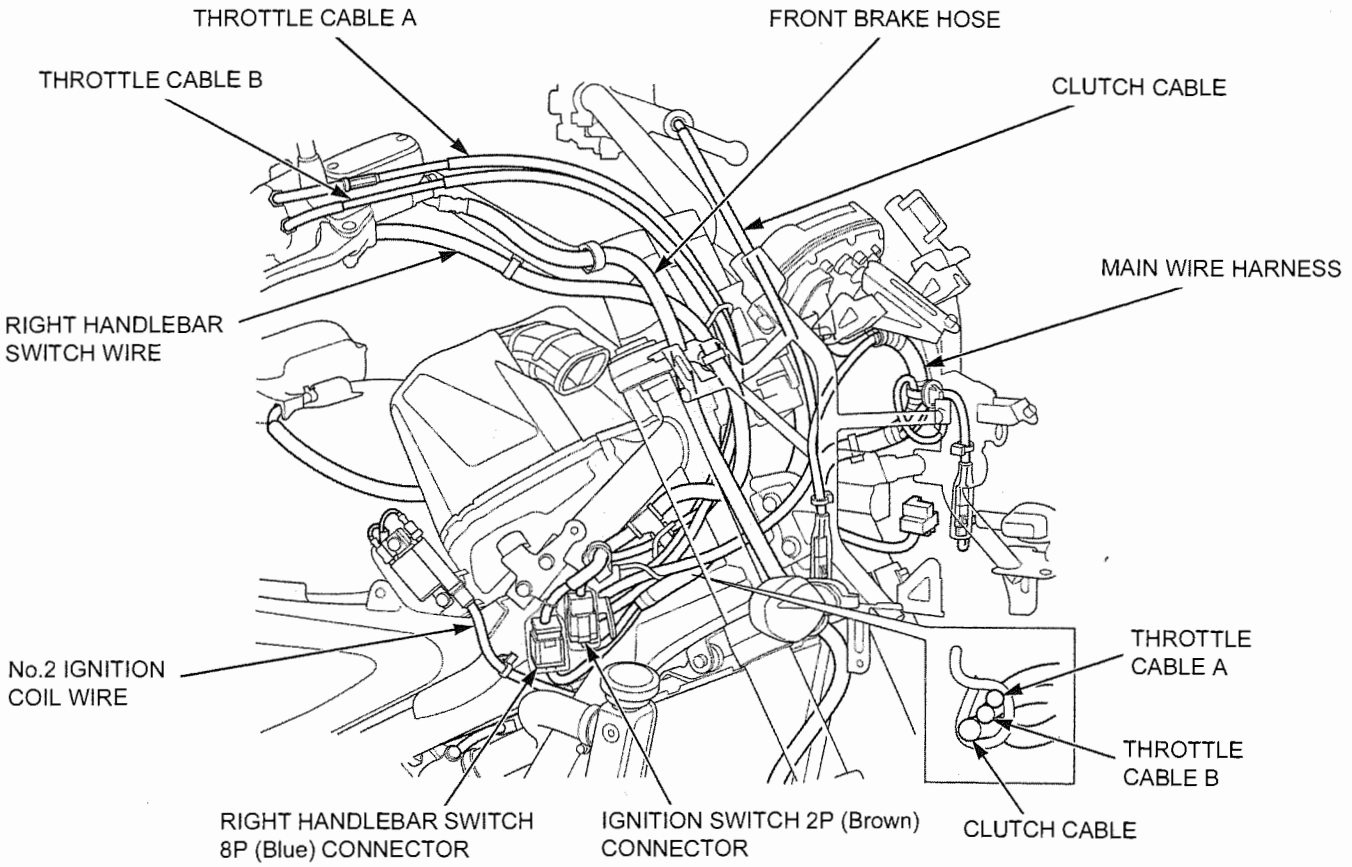


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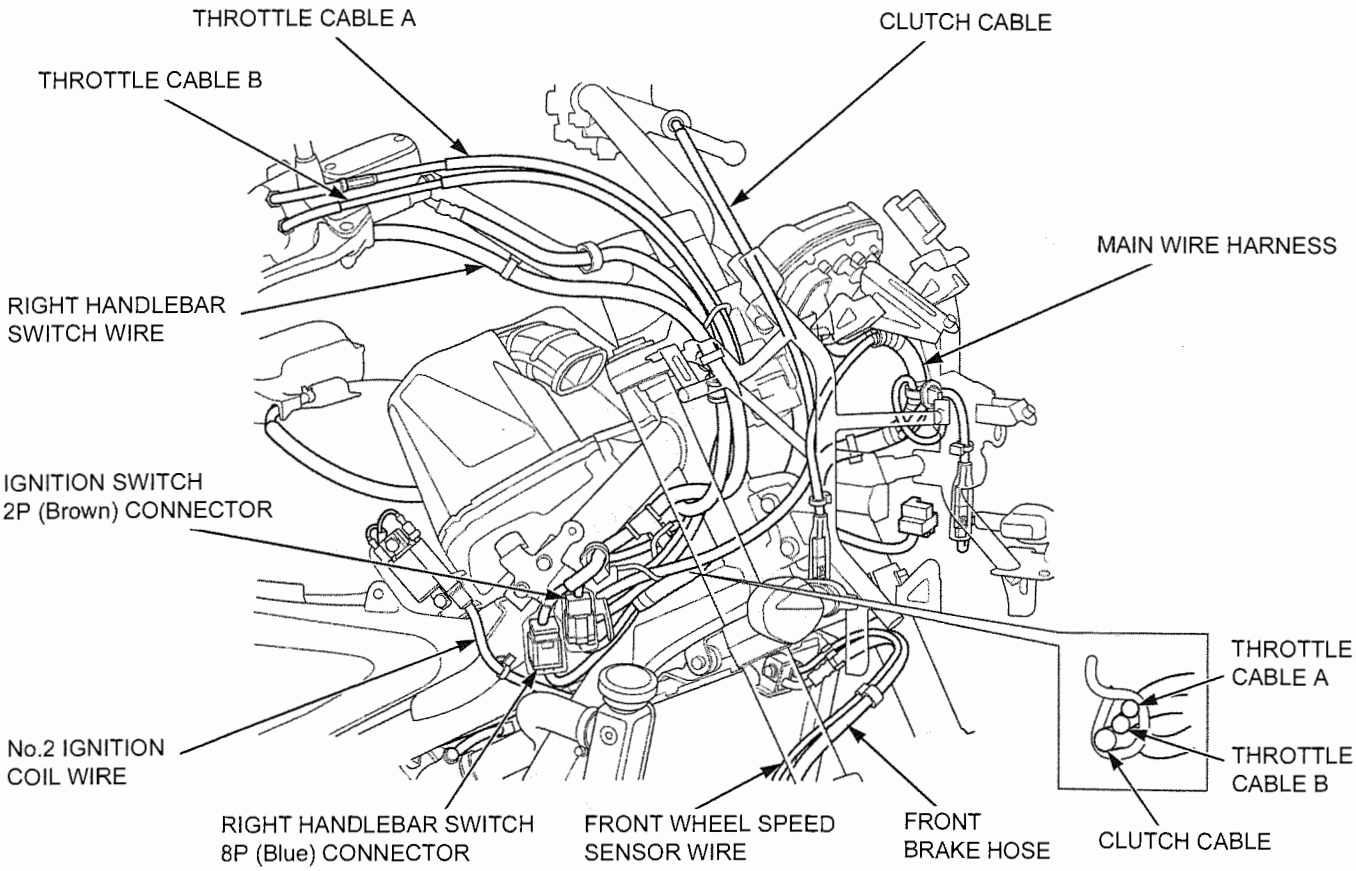

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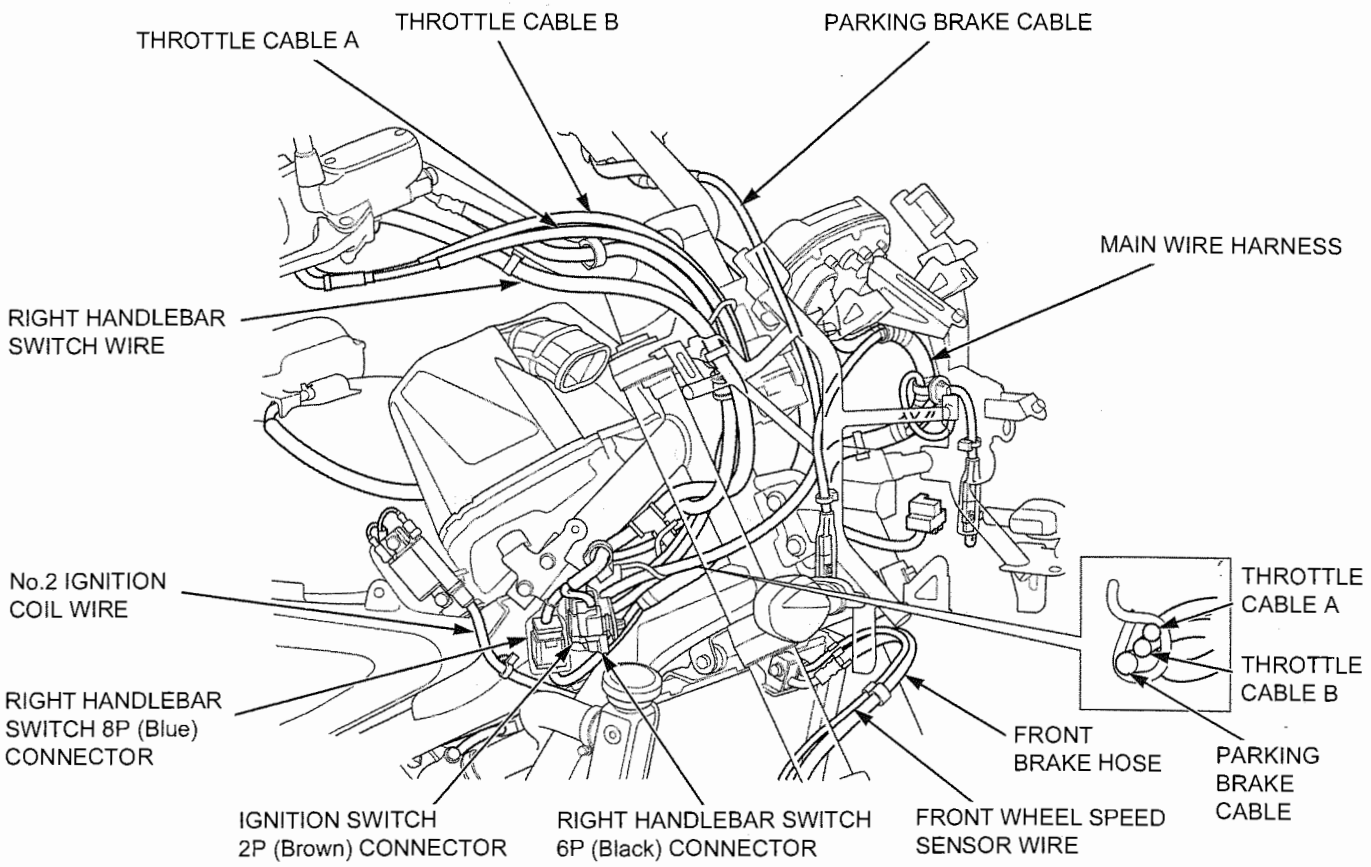


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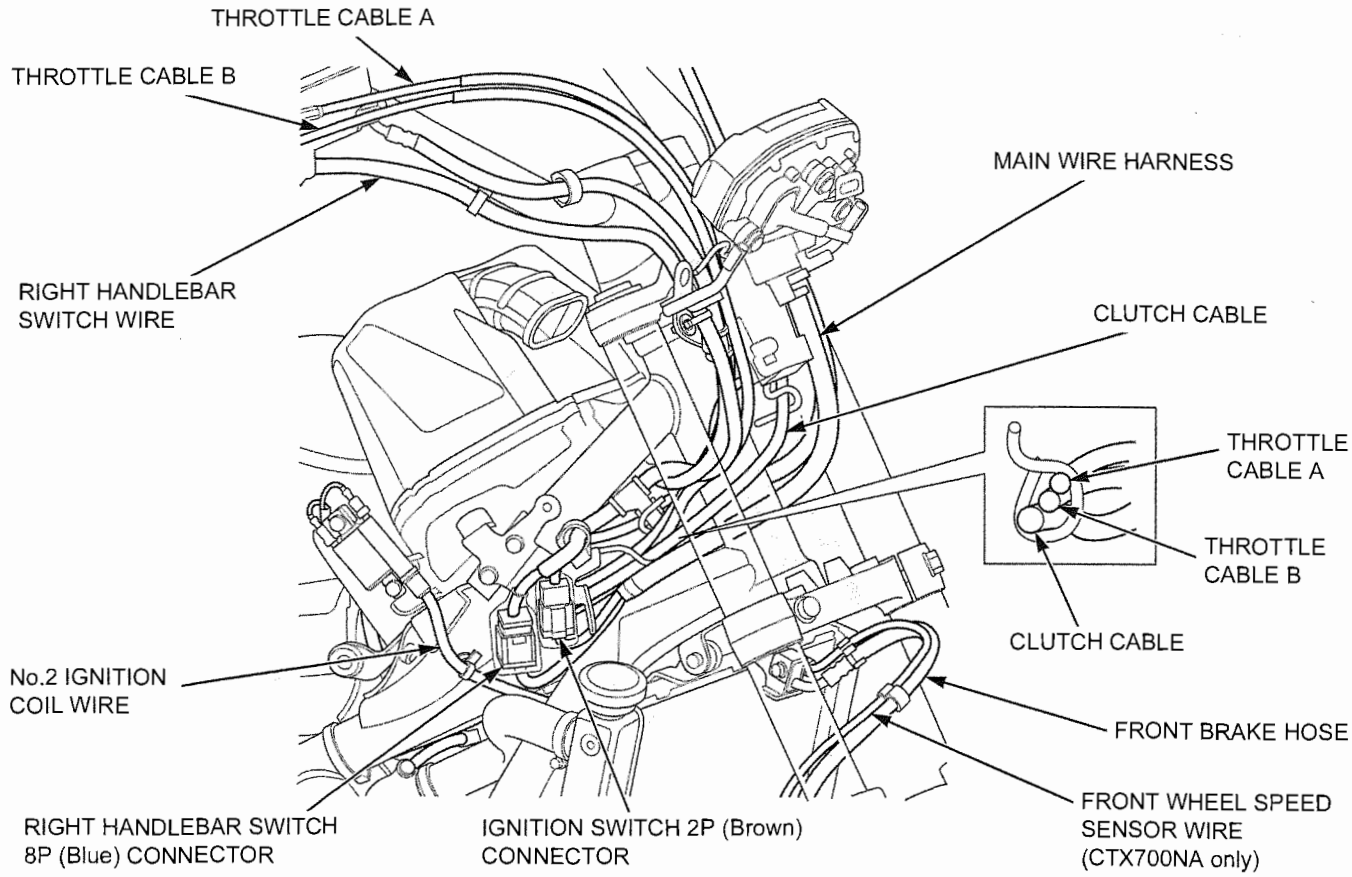

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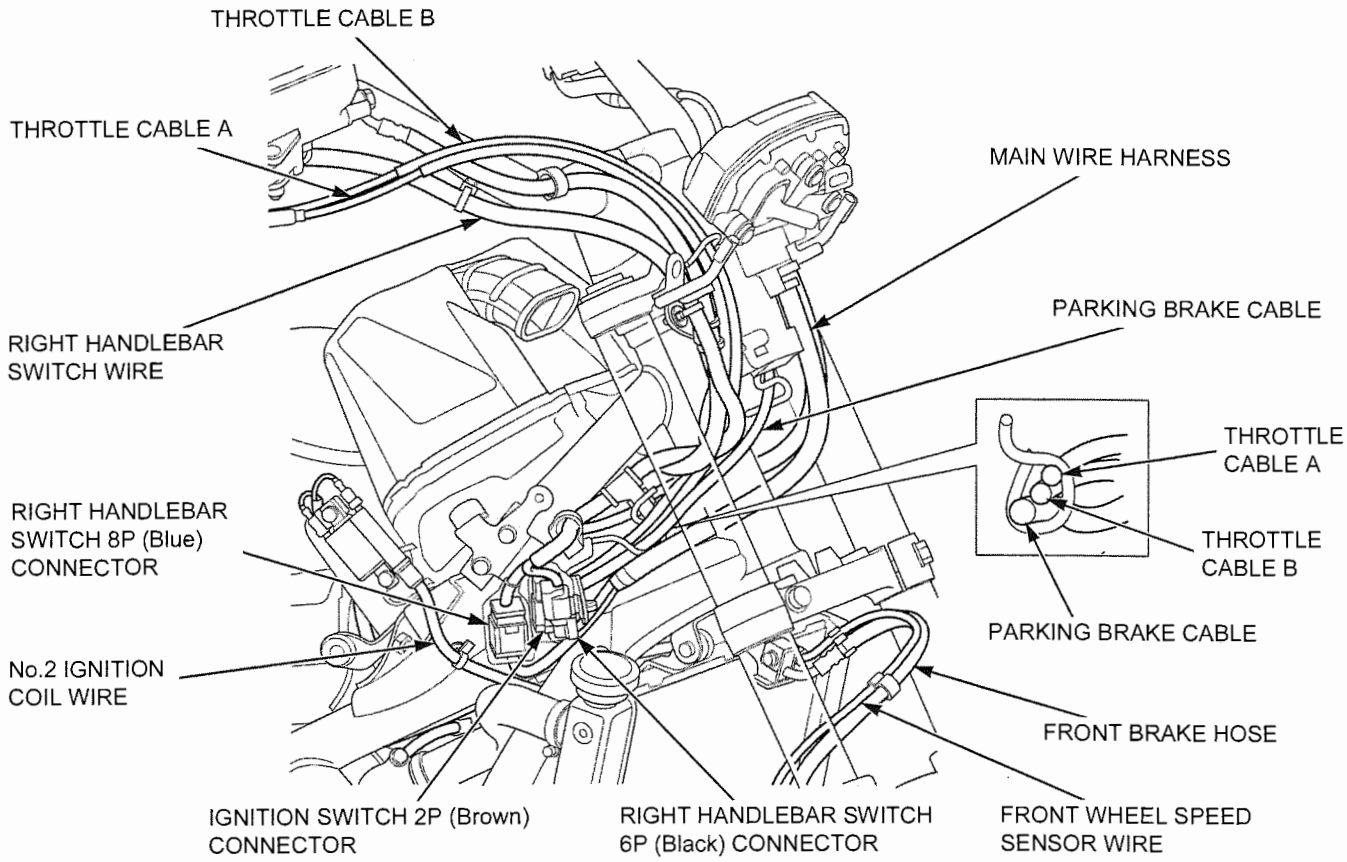
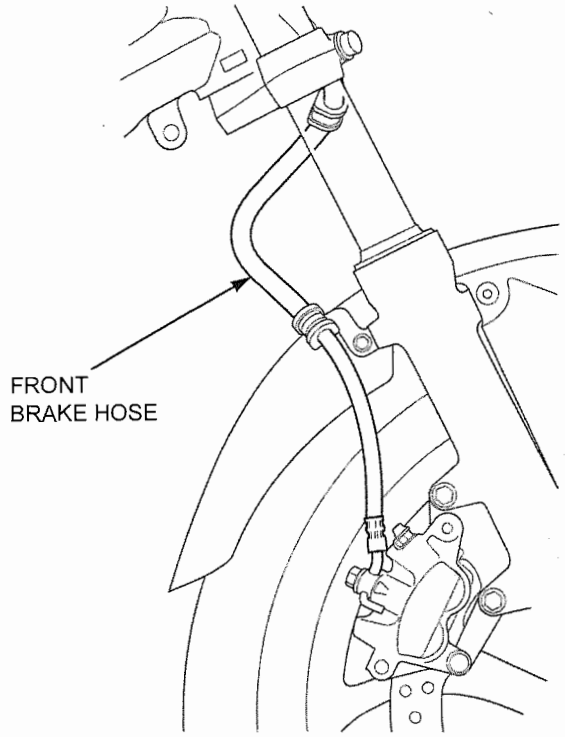



**All type:**

CTX700/N:

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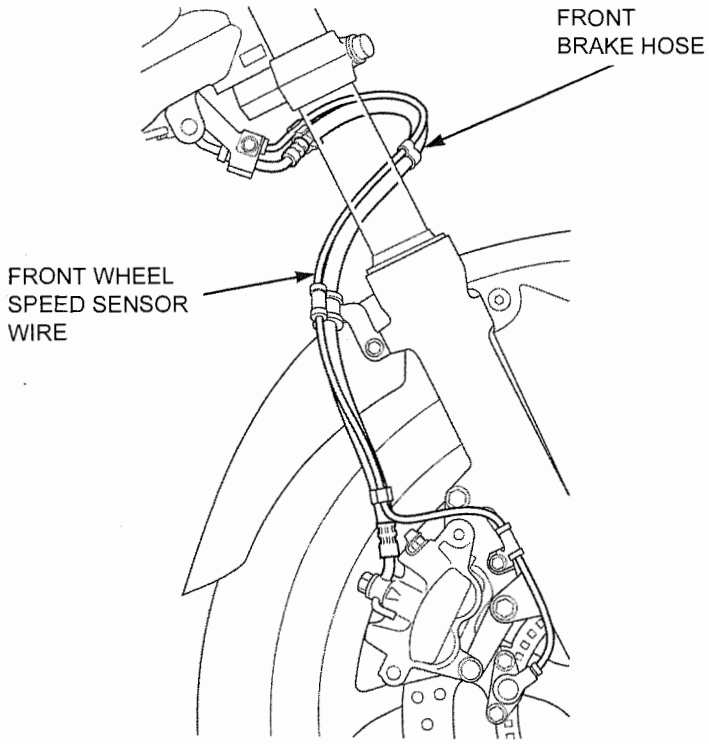

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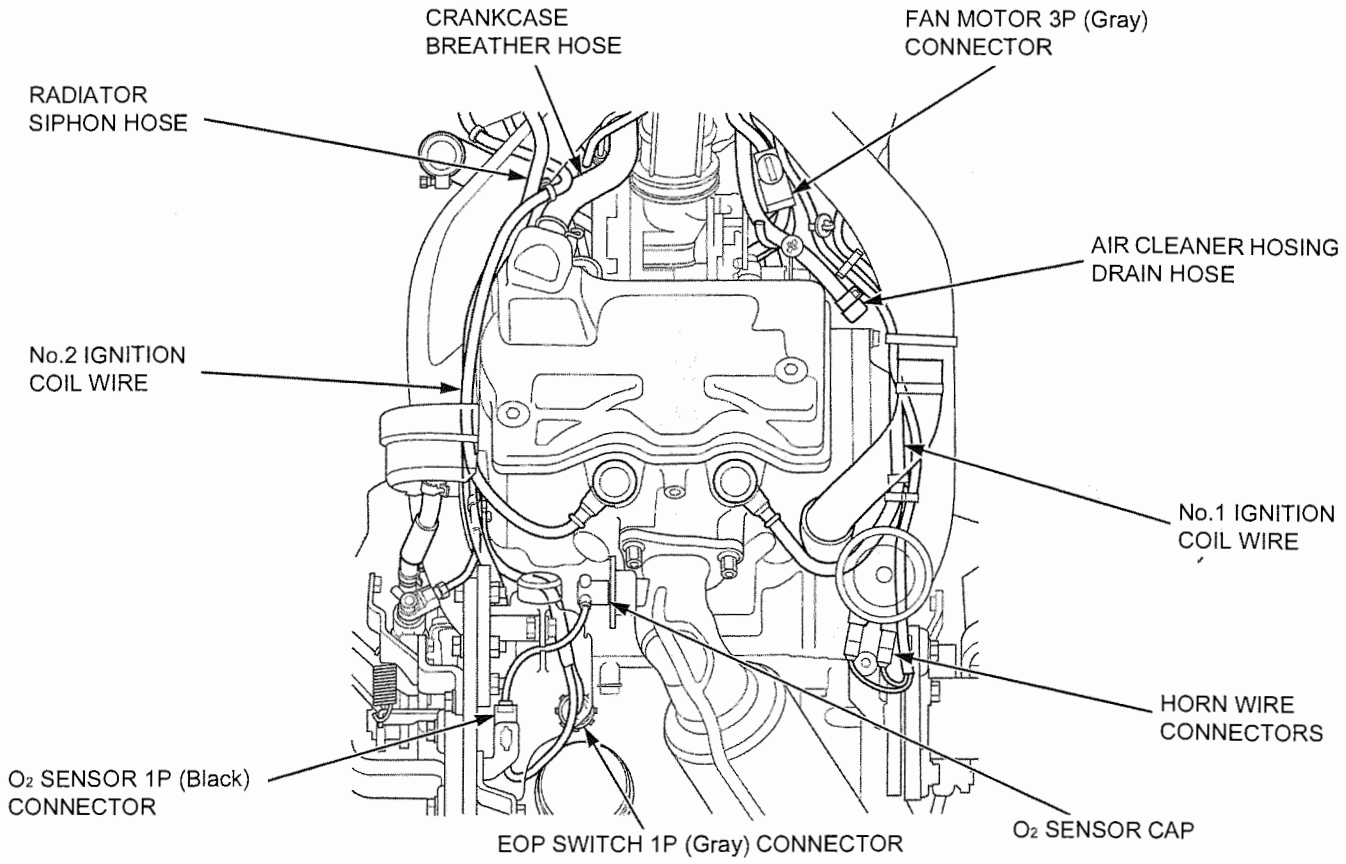


**All type:**

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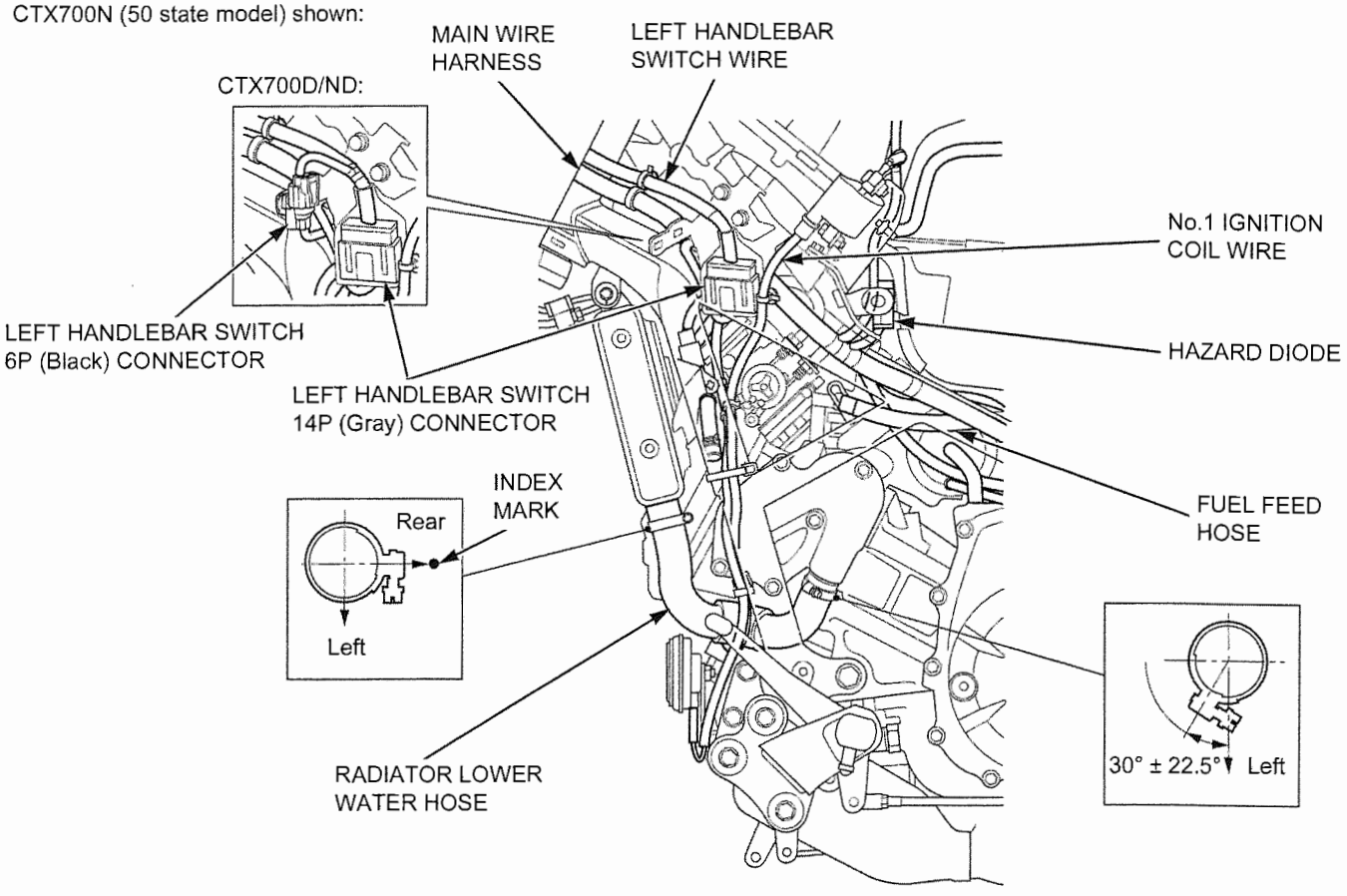

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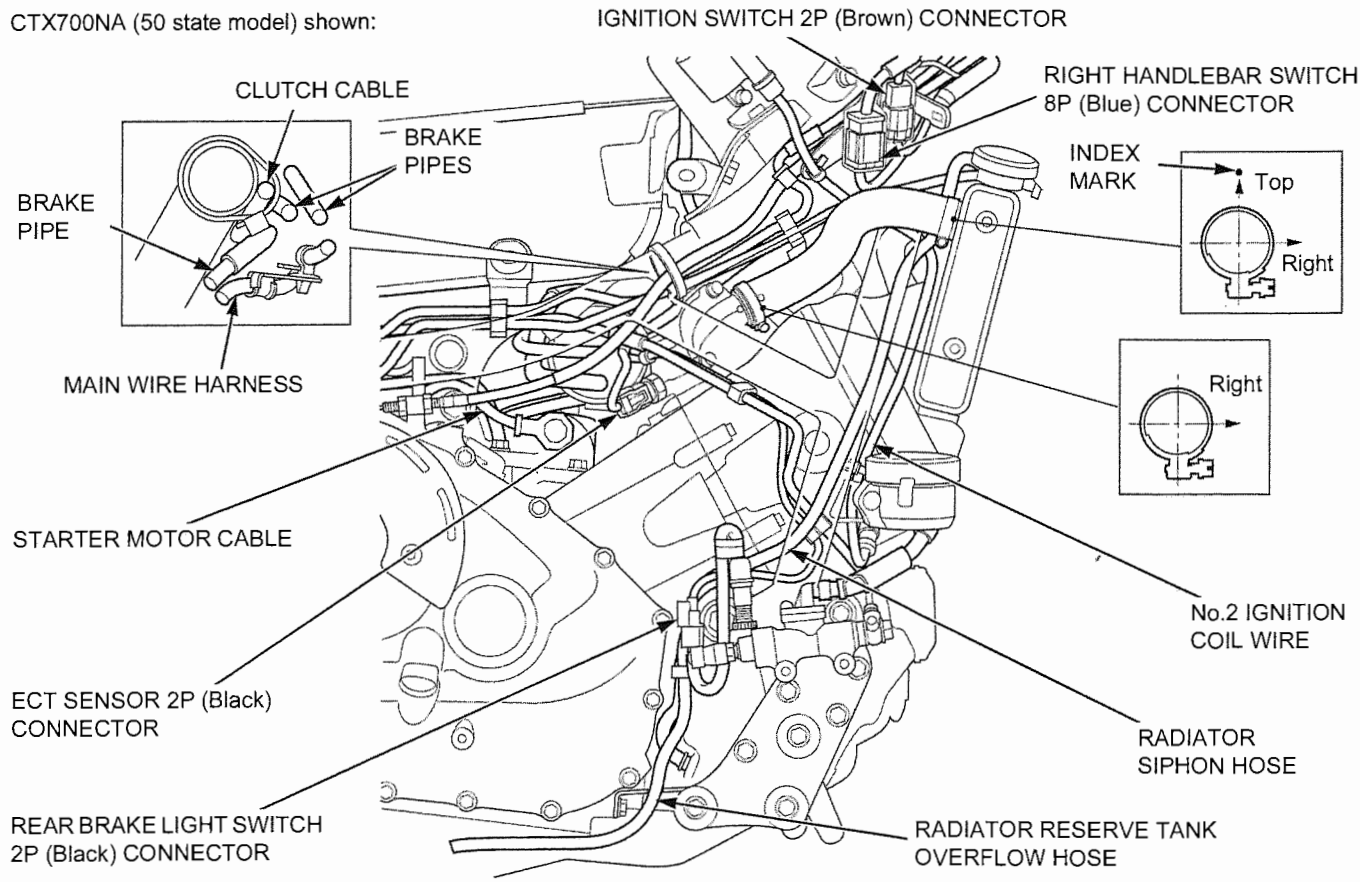


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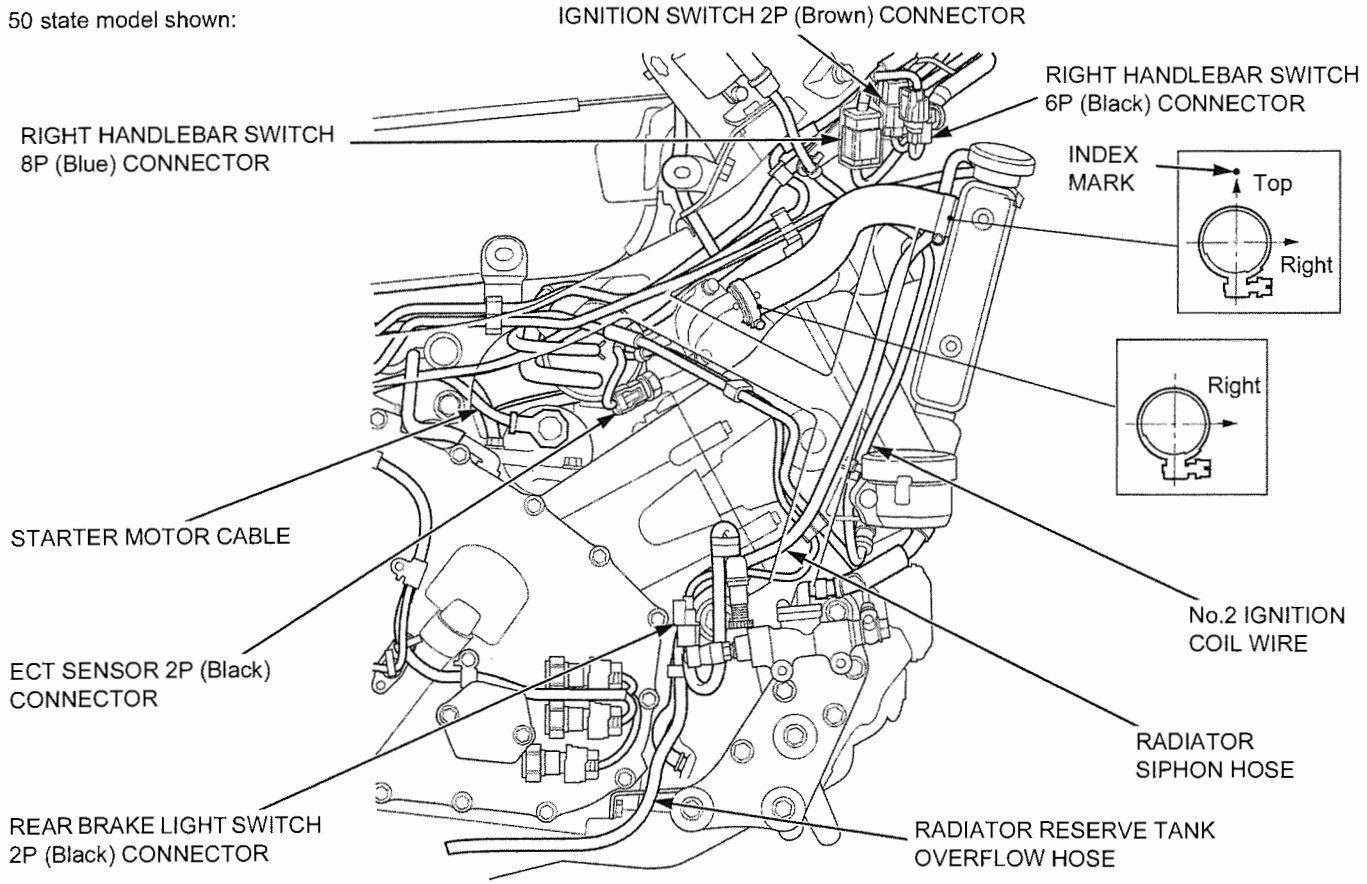

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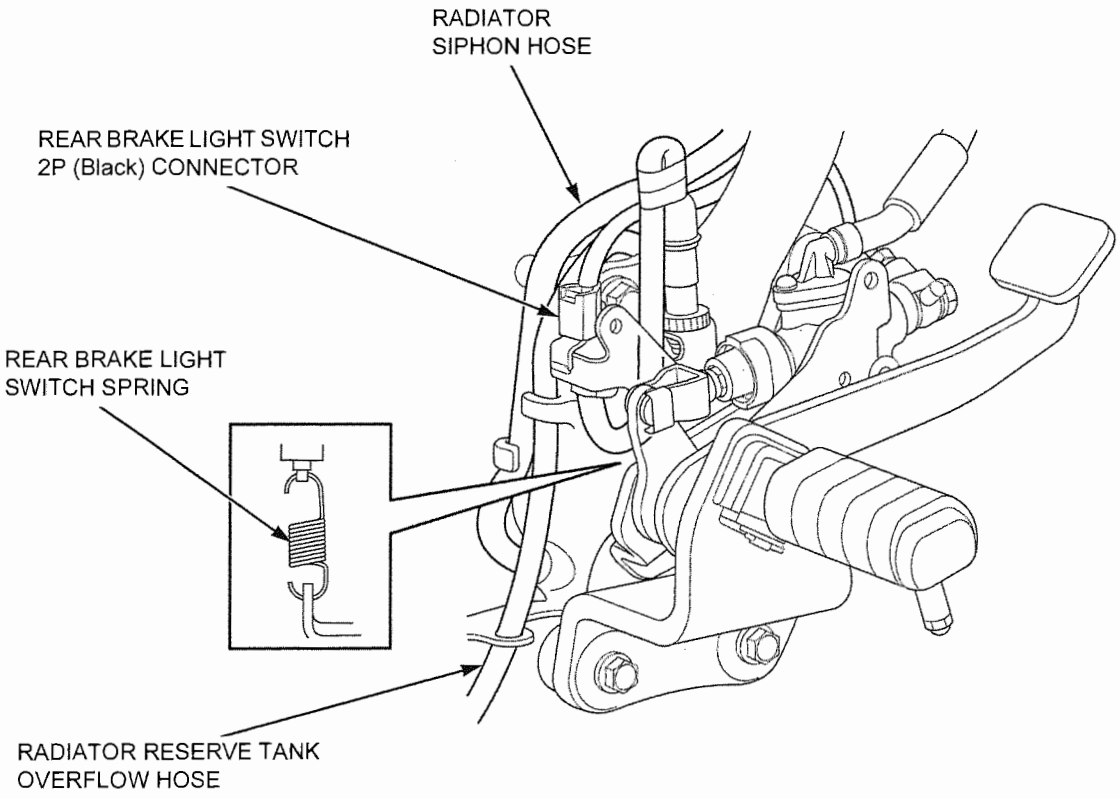


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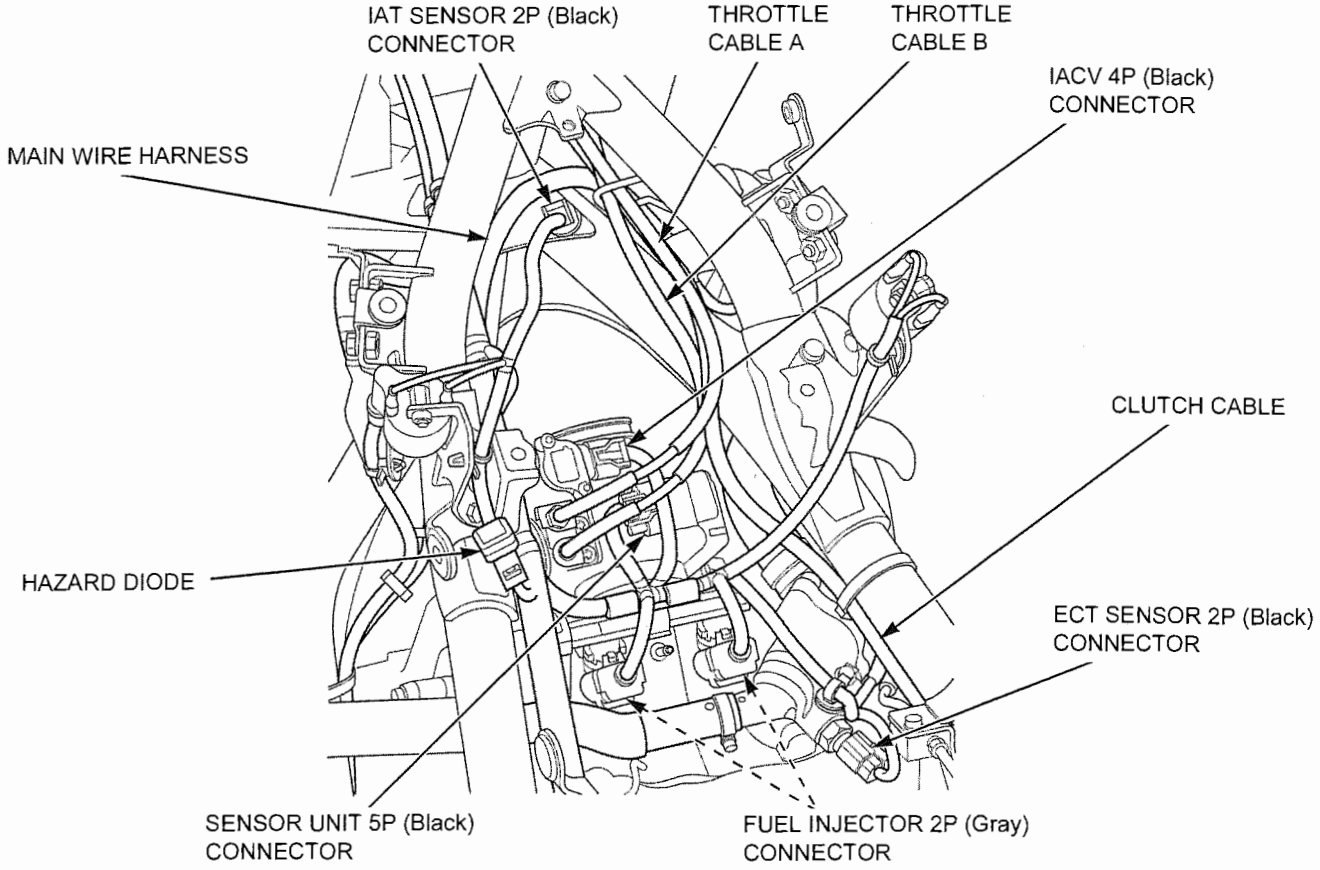

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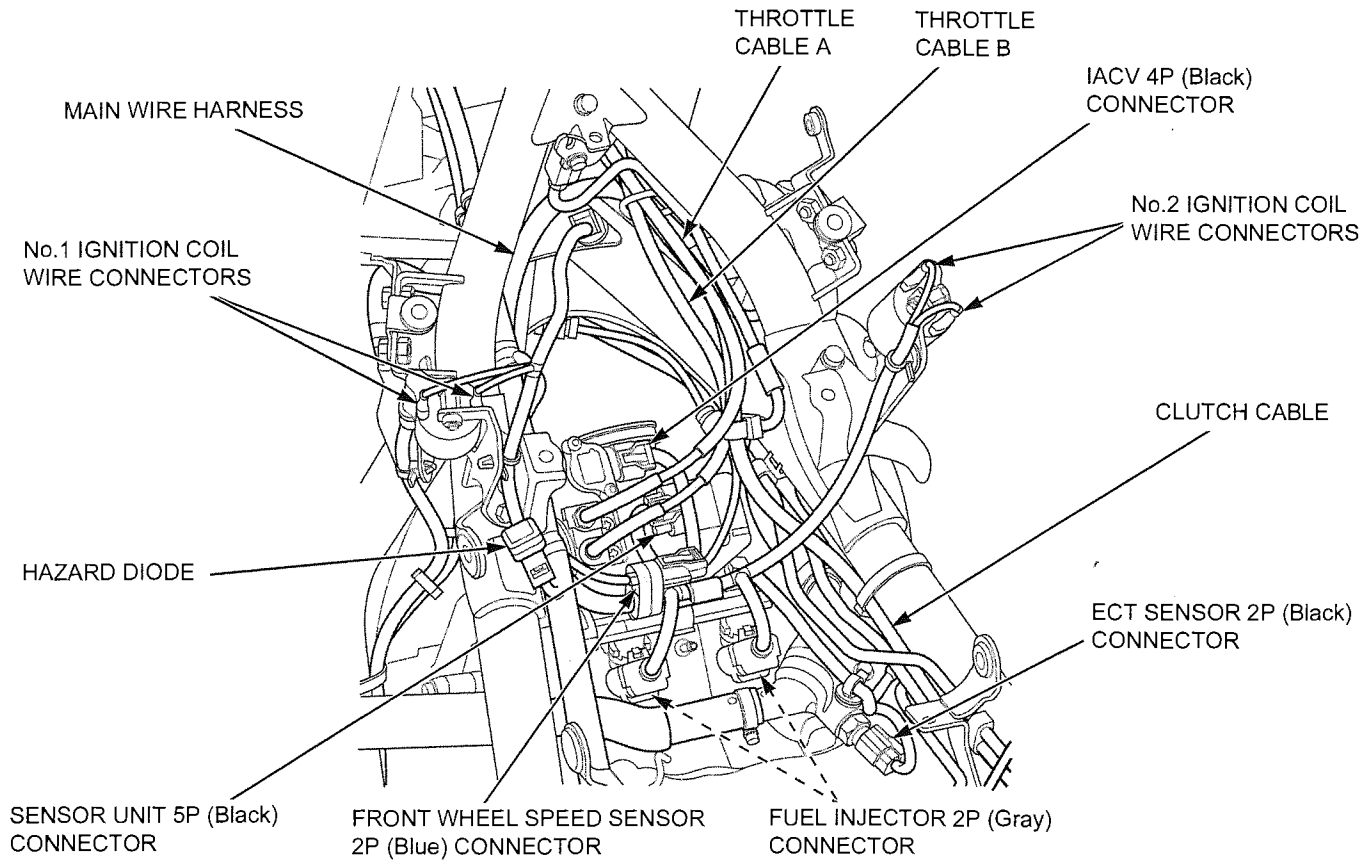


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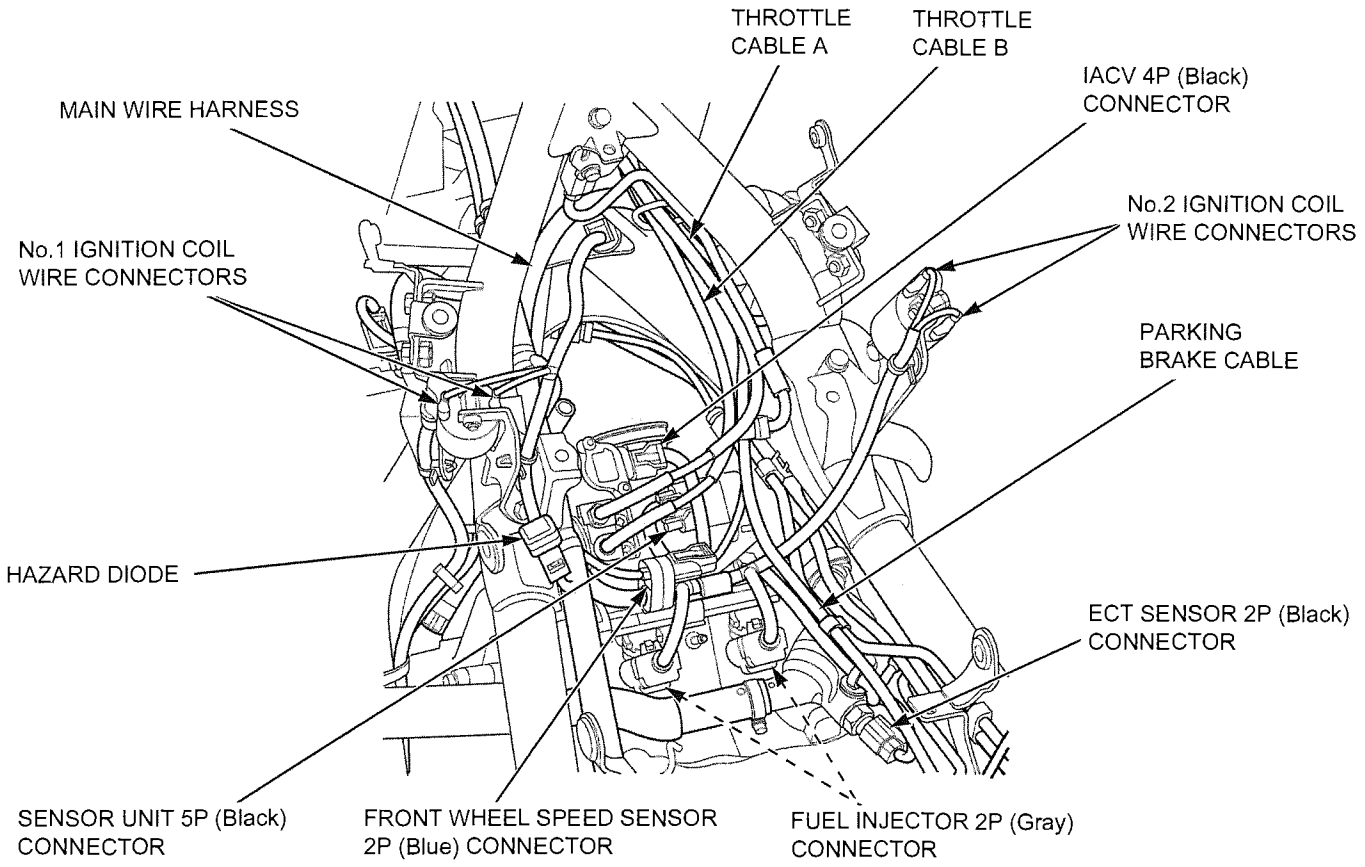

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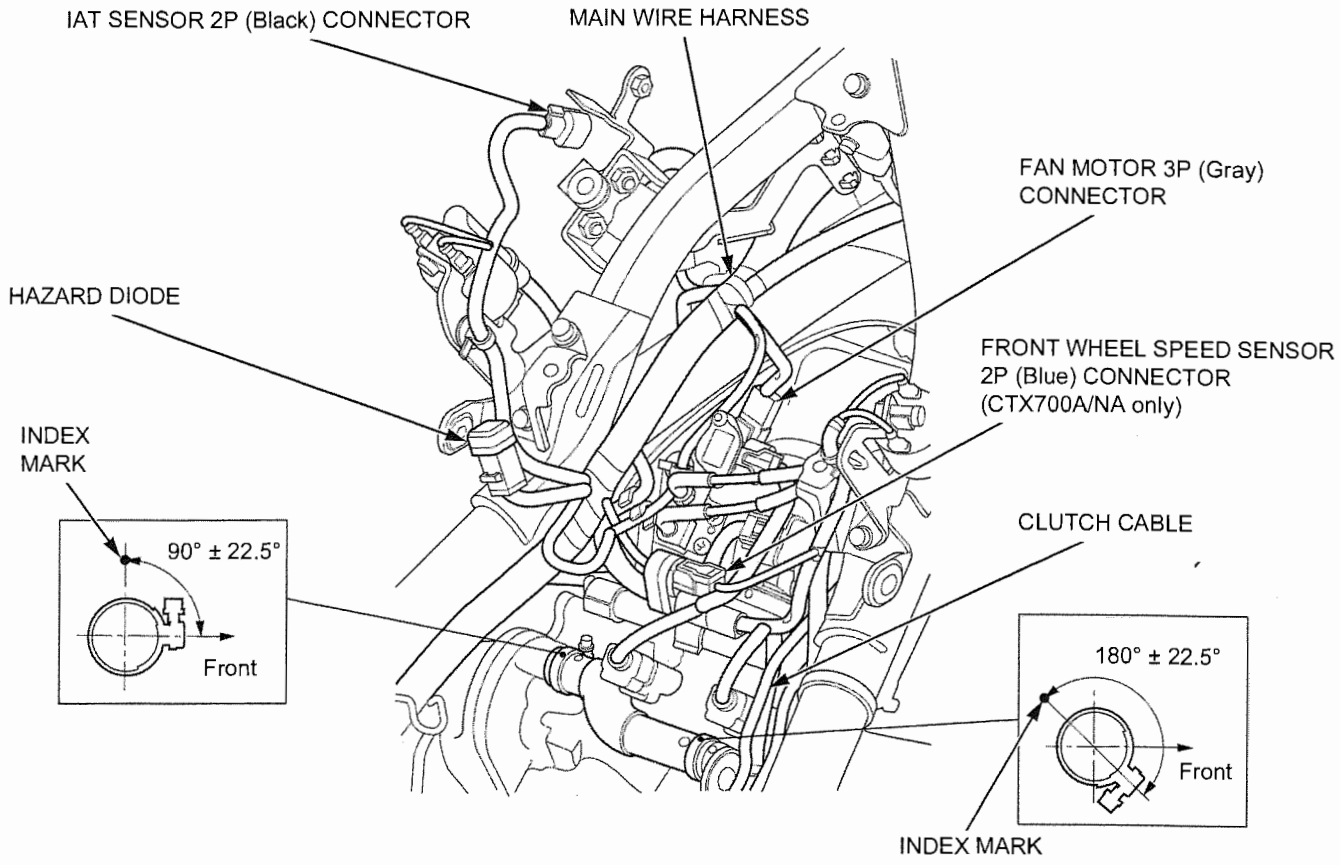


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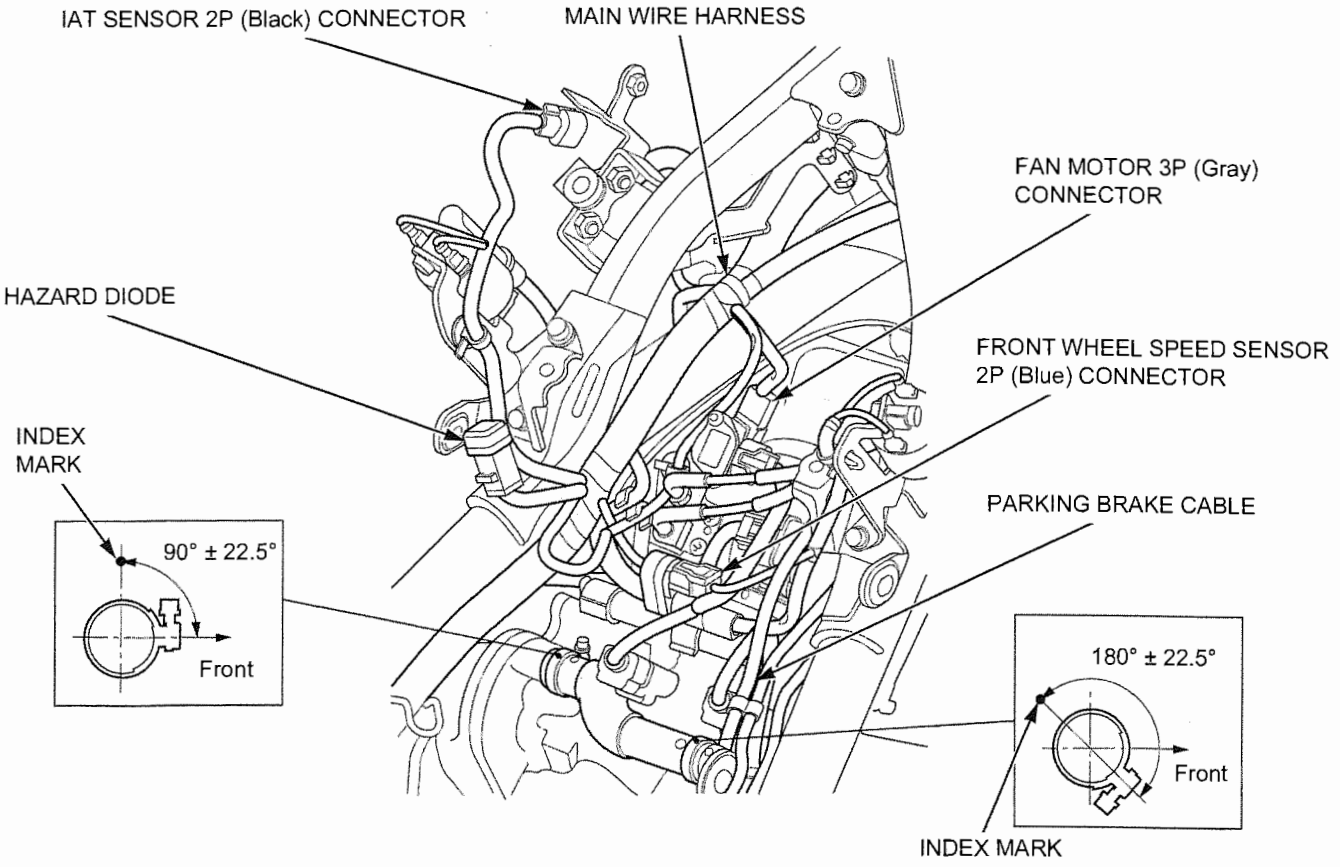

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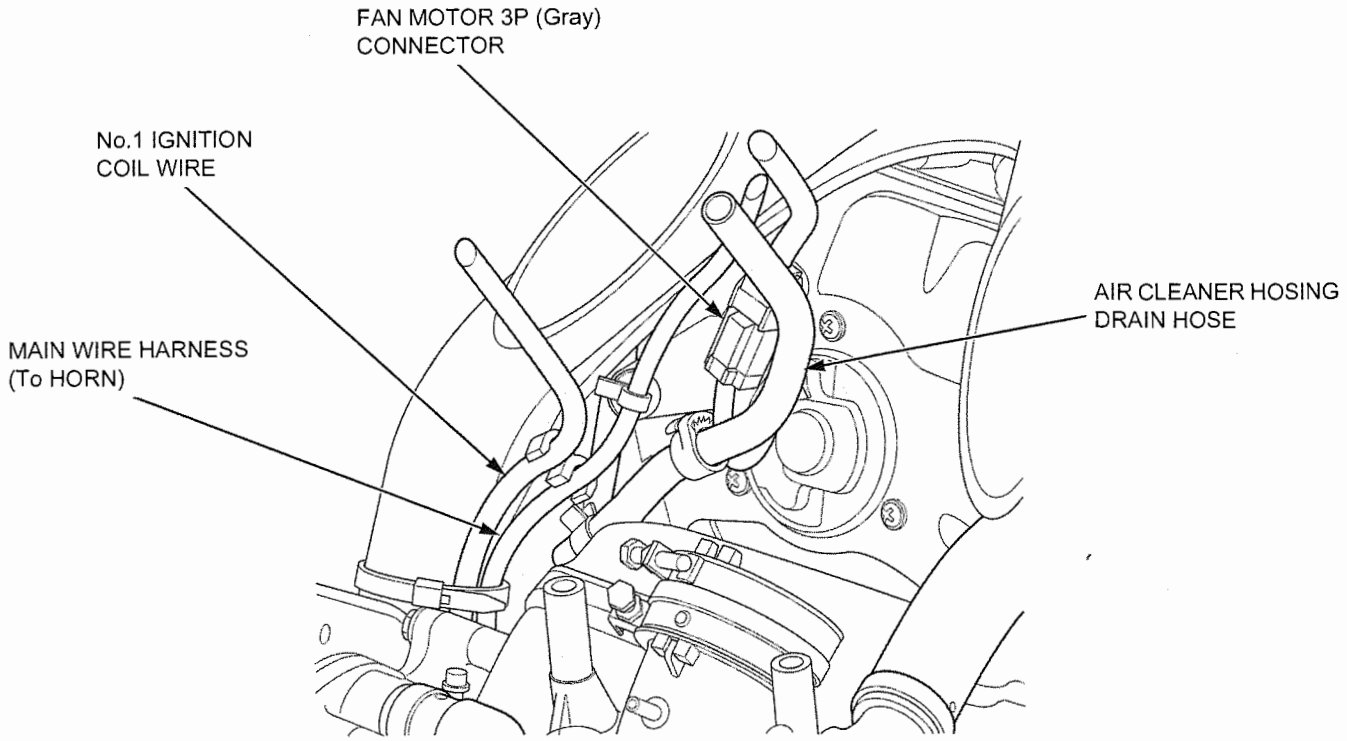


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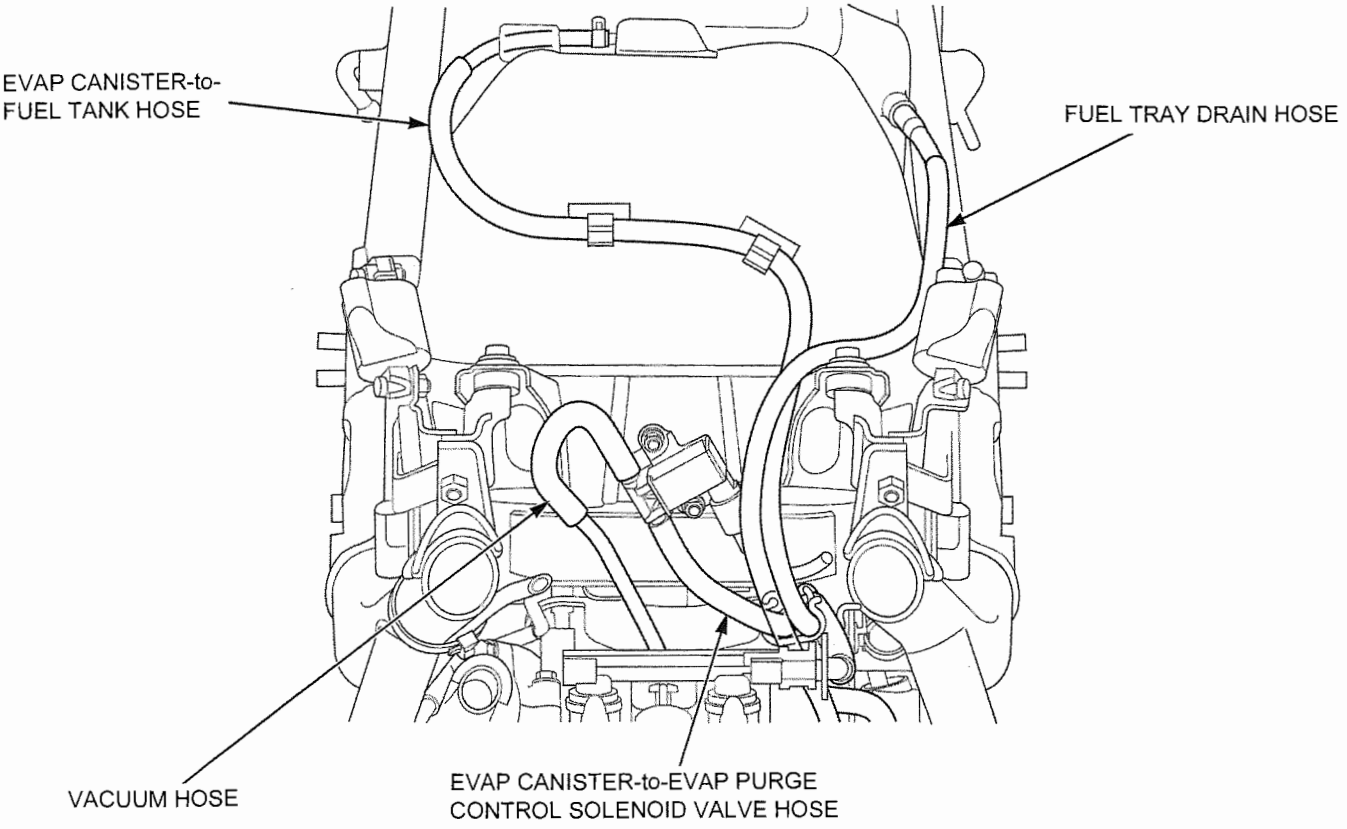

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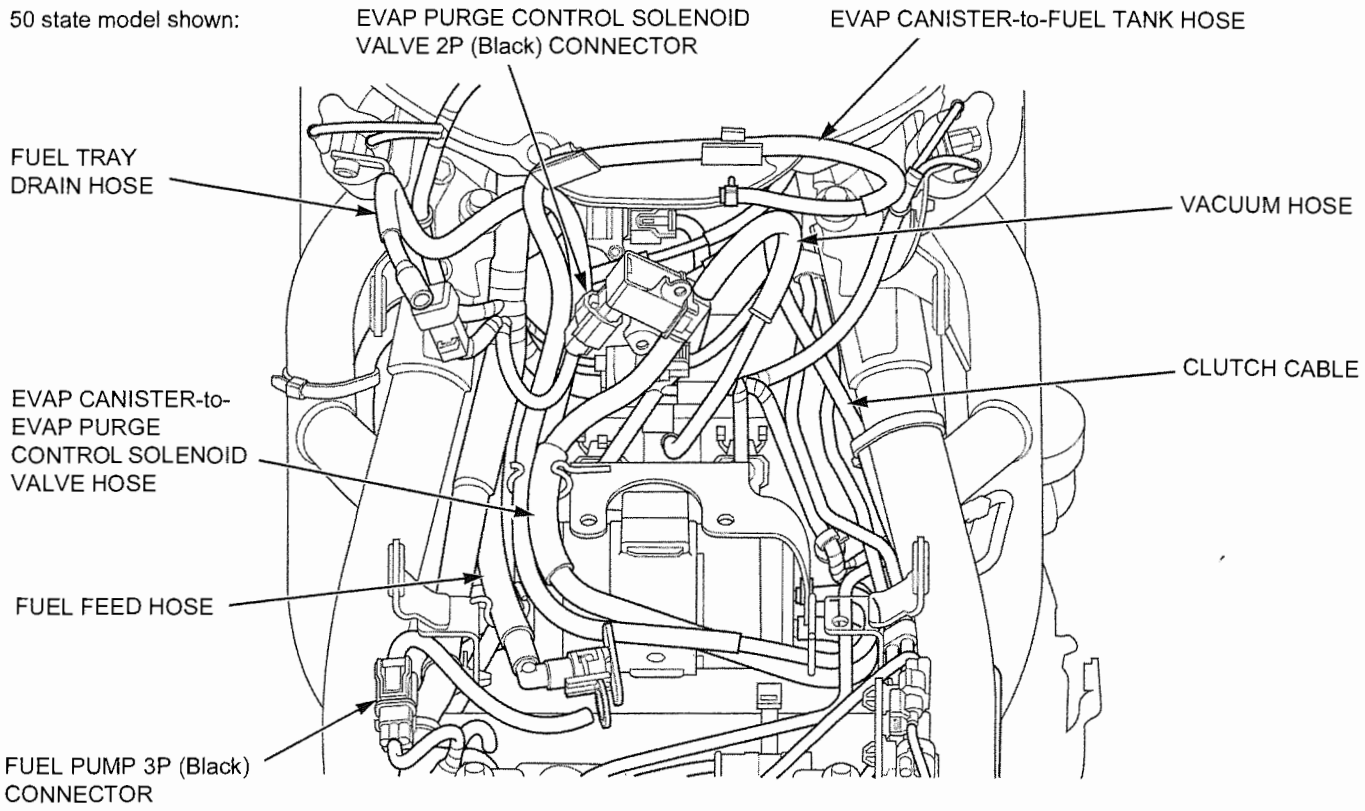


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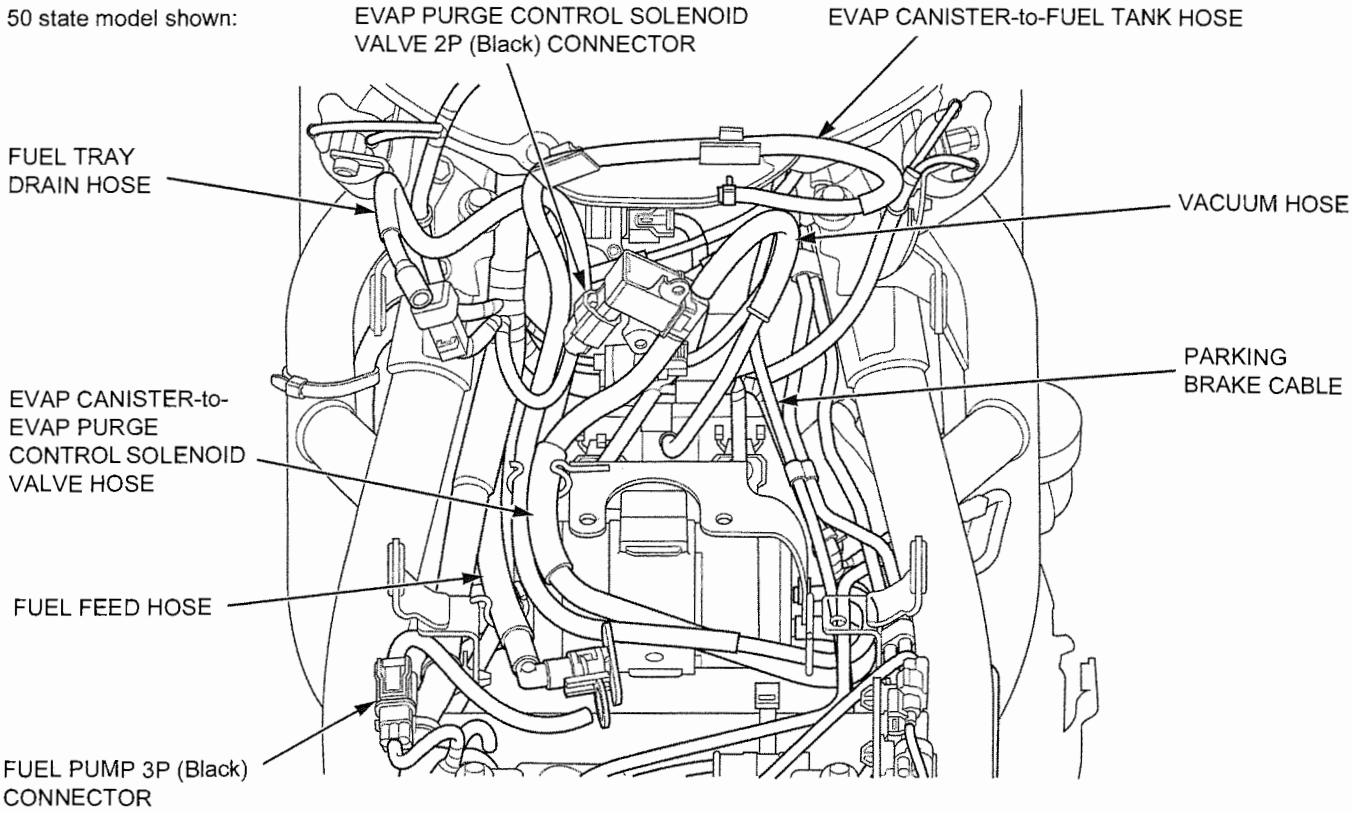

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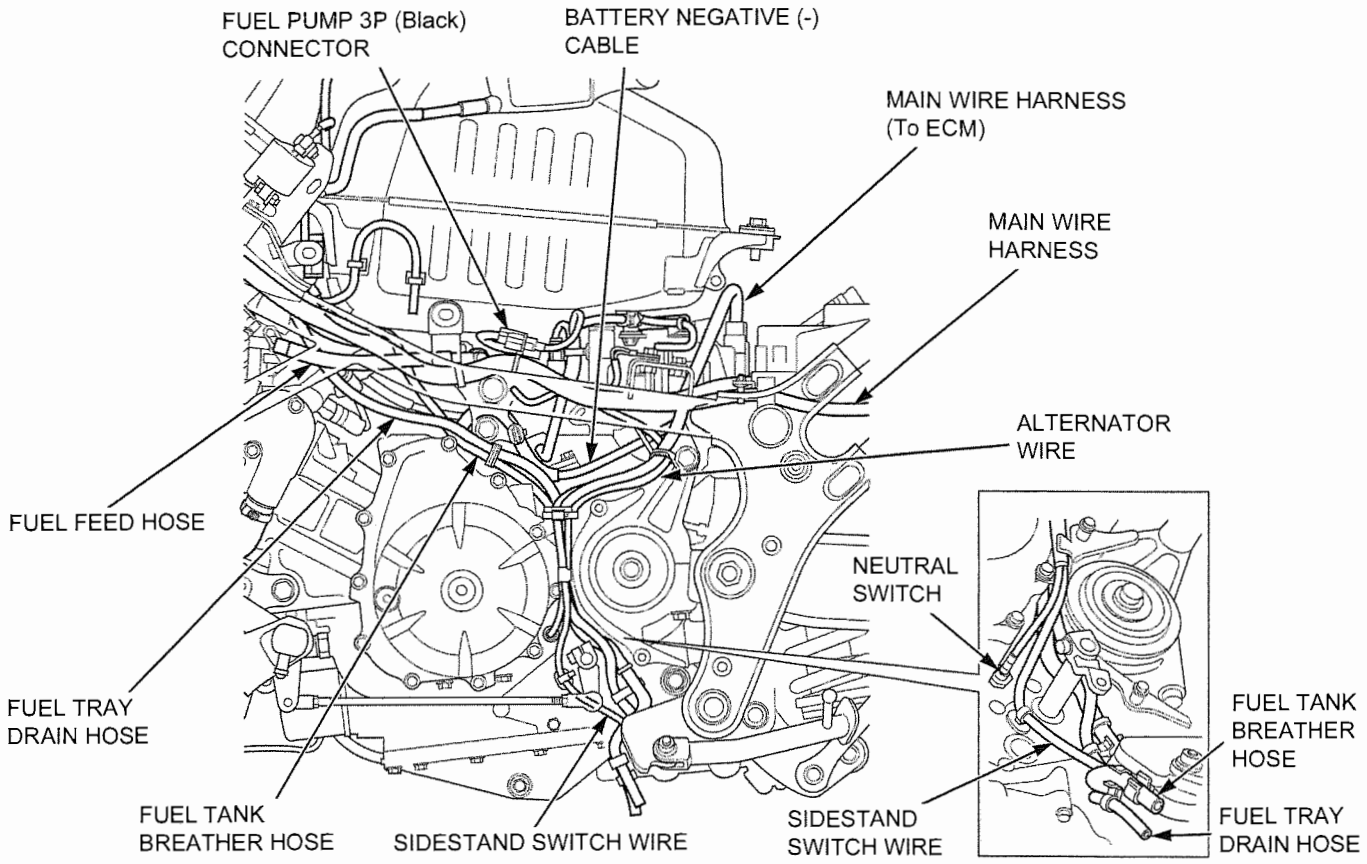


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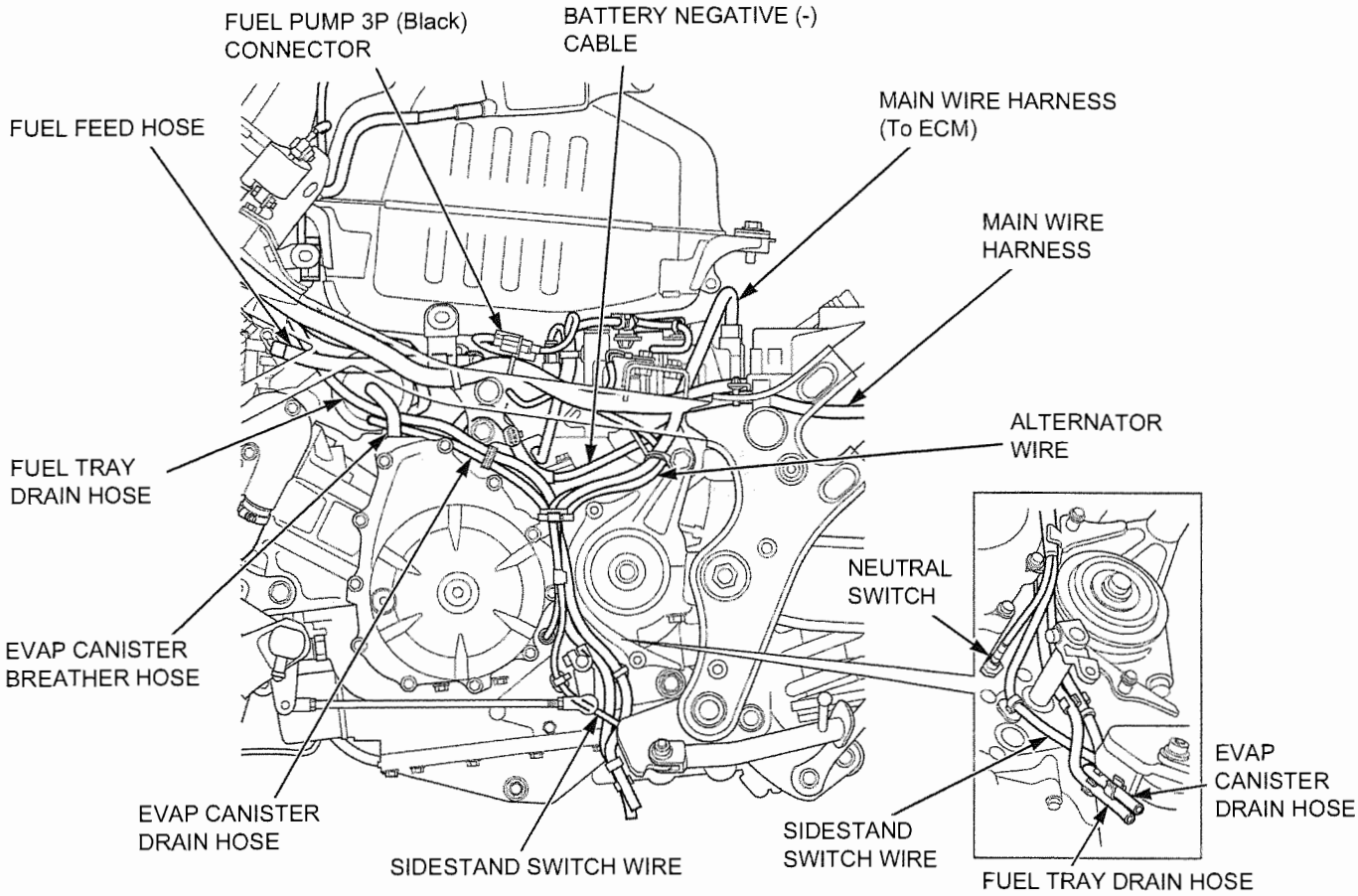

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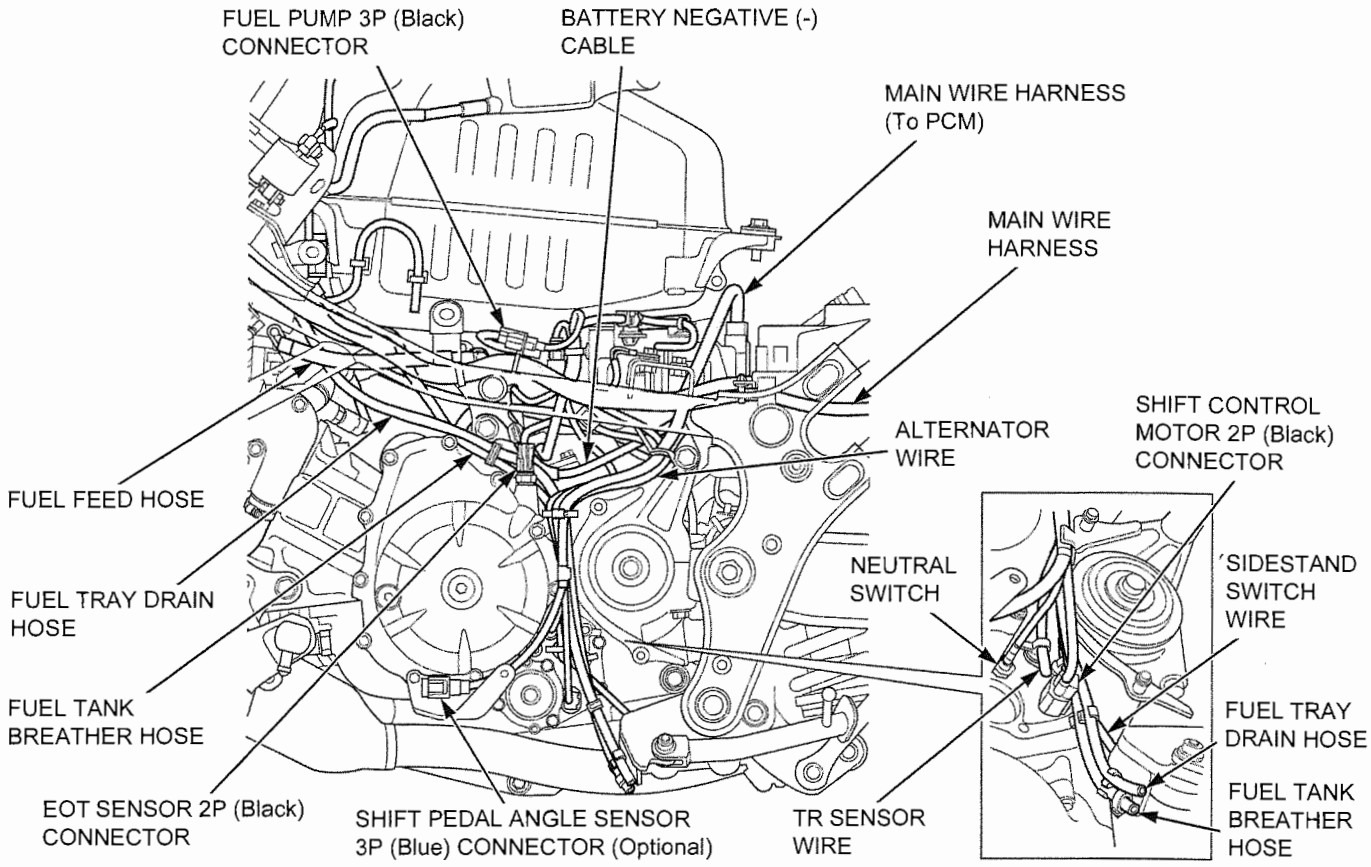


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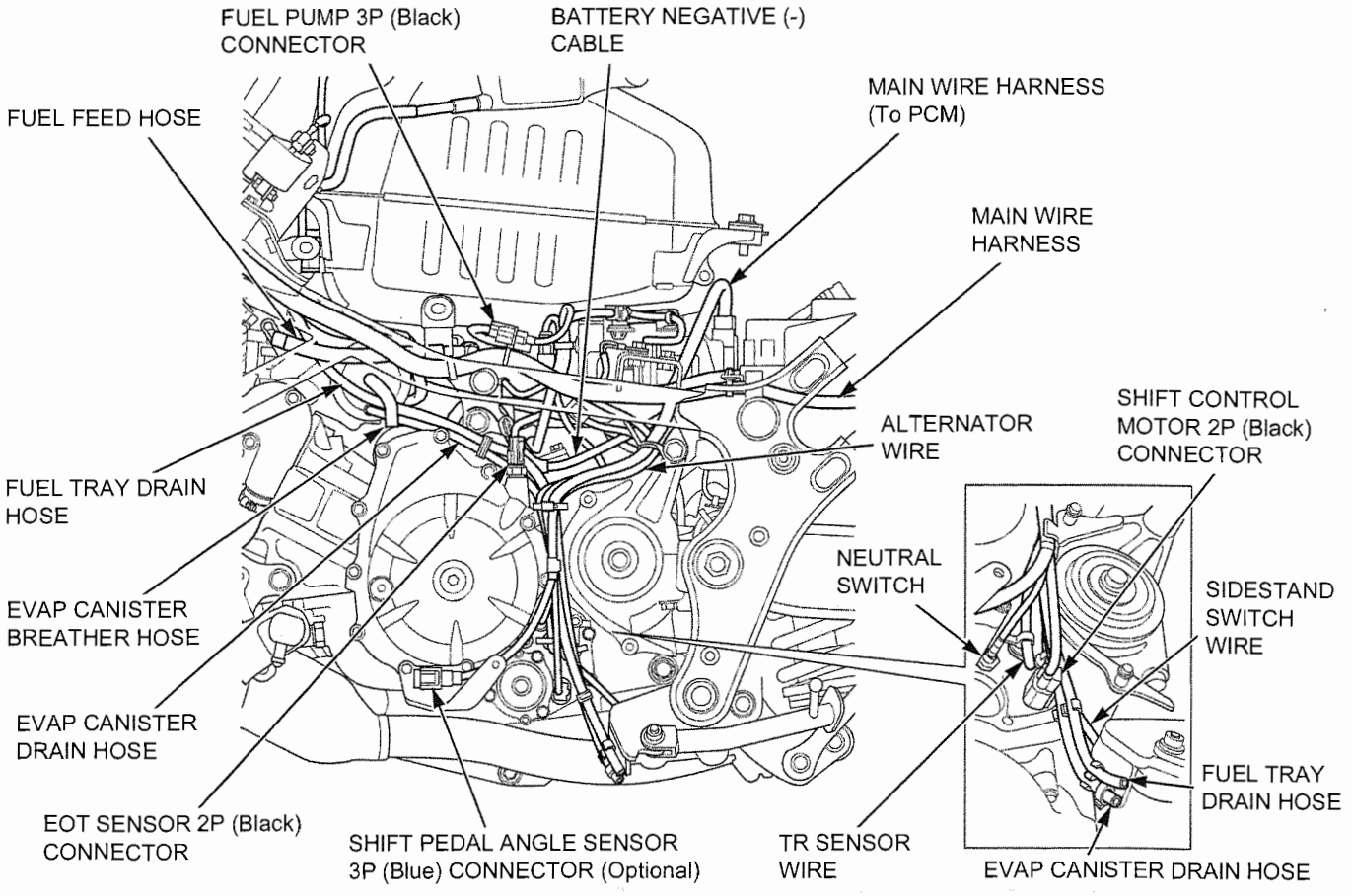

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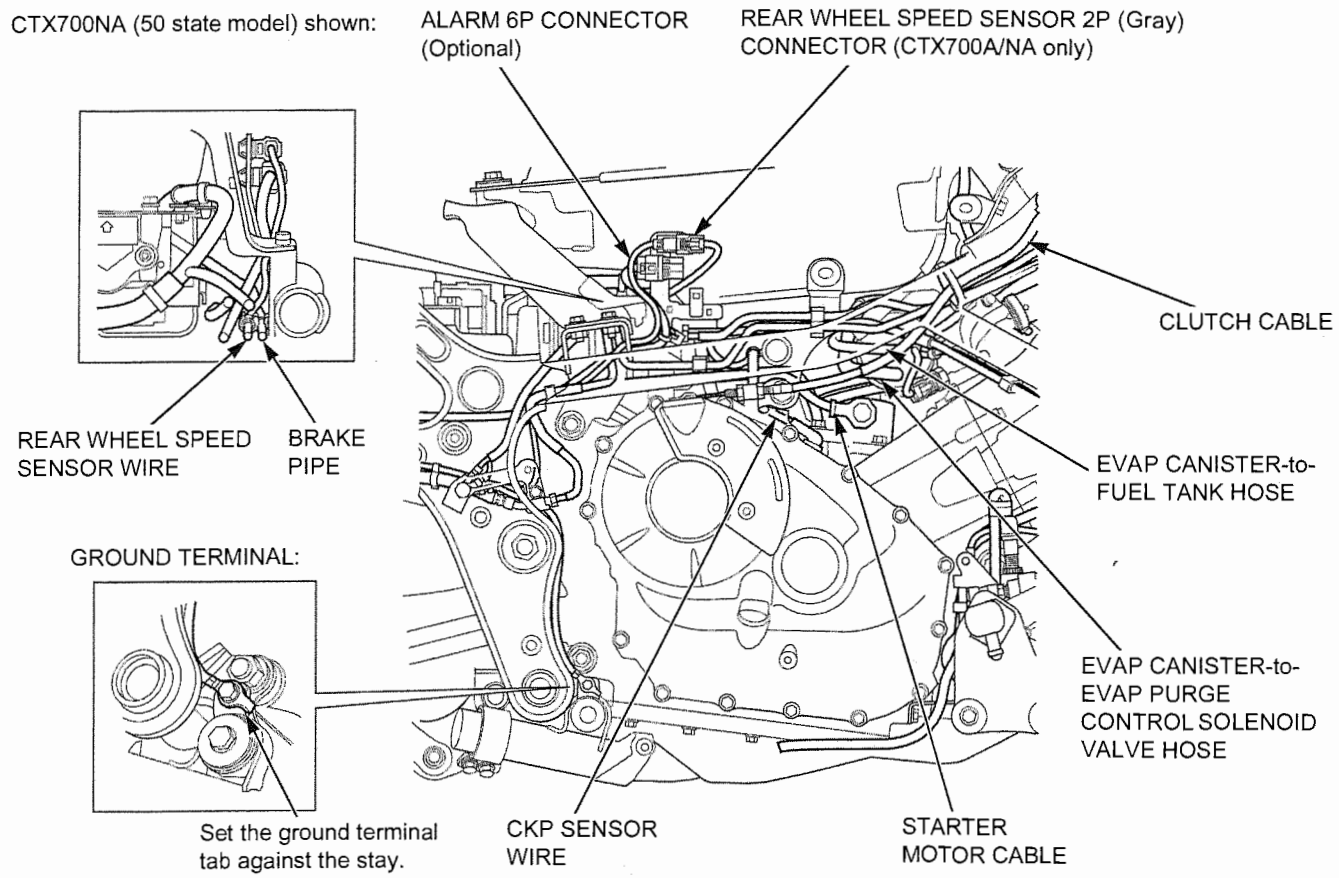


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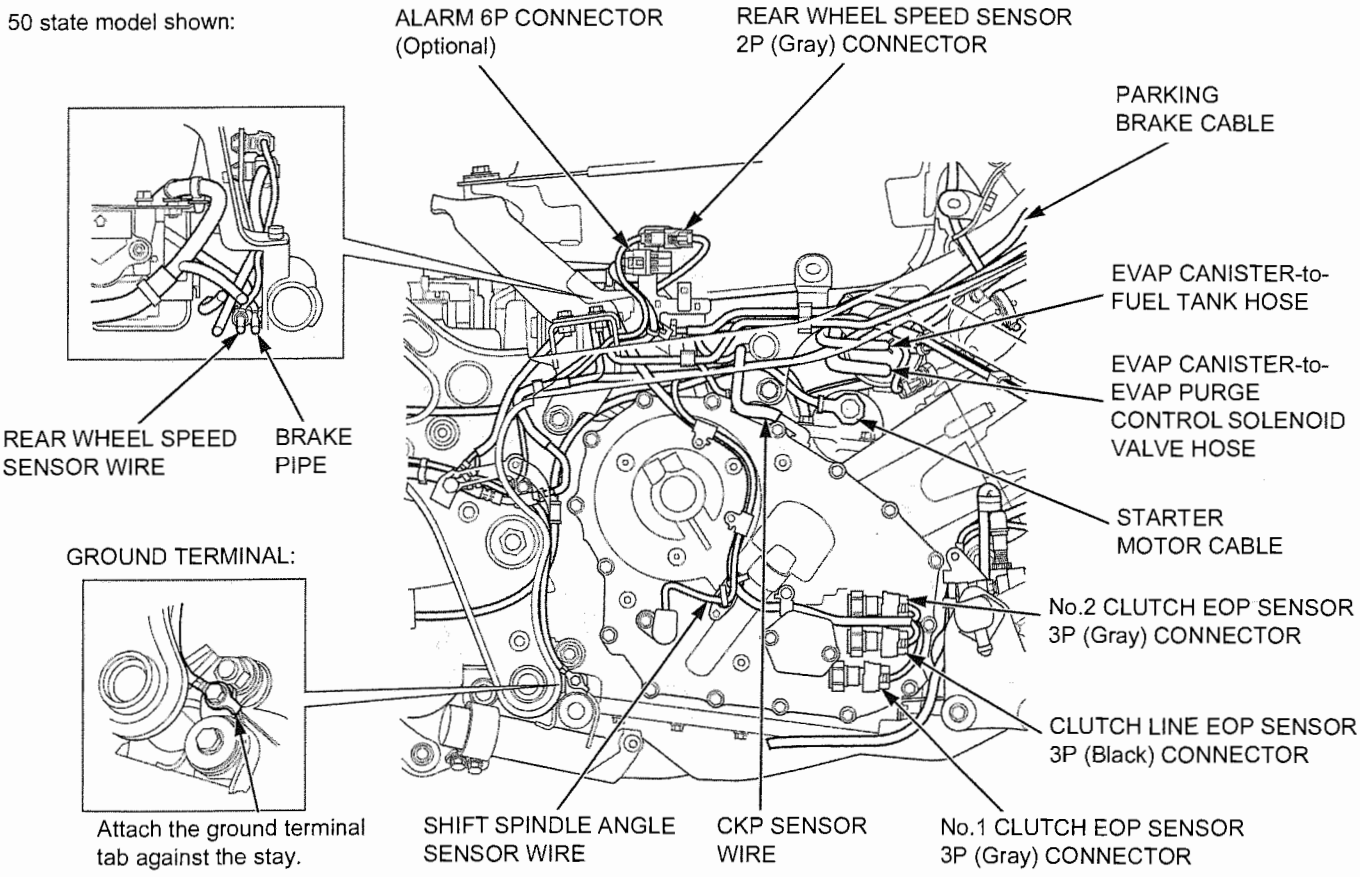

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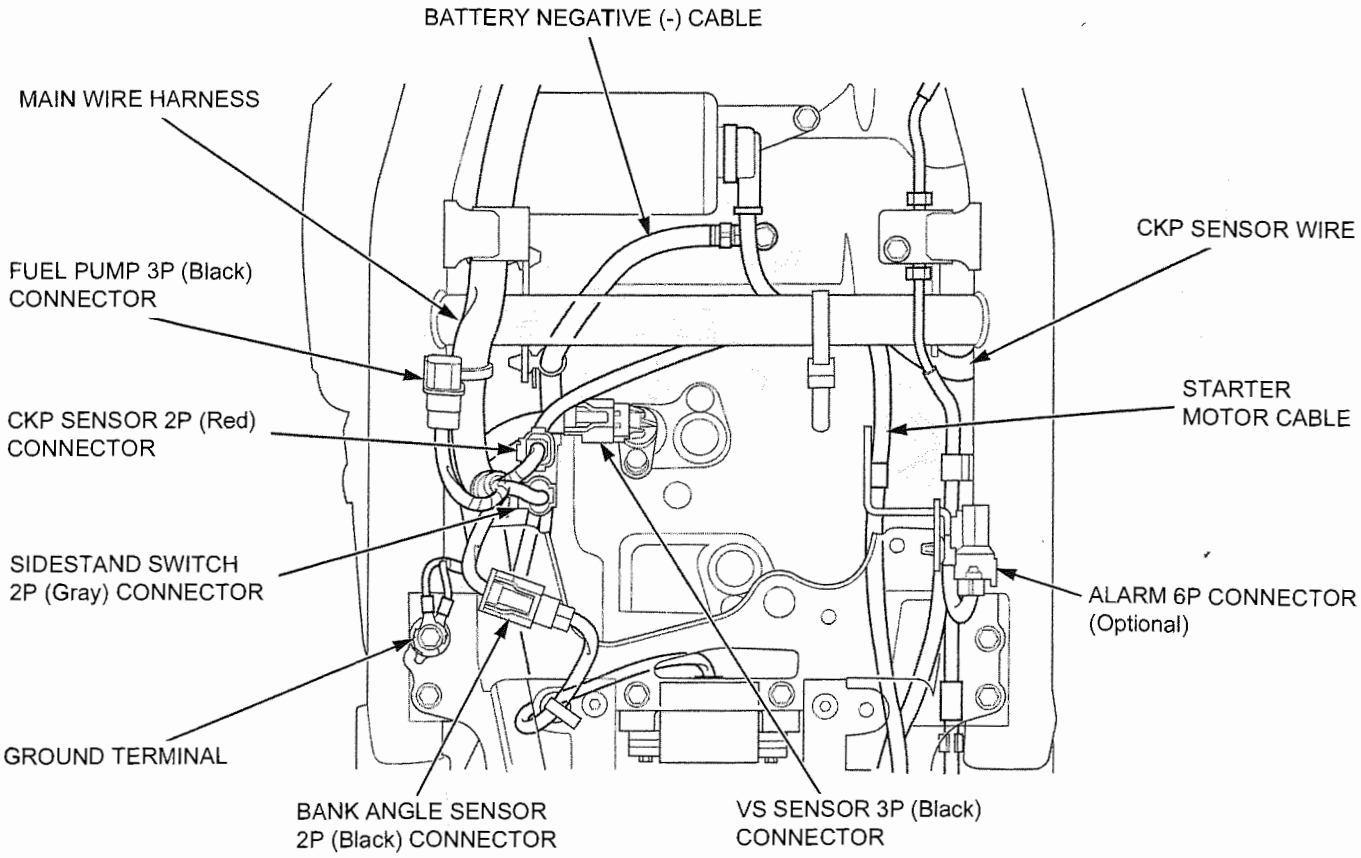


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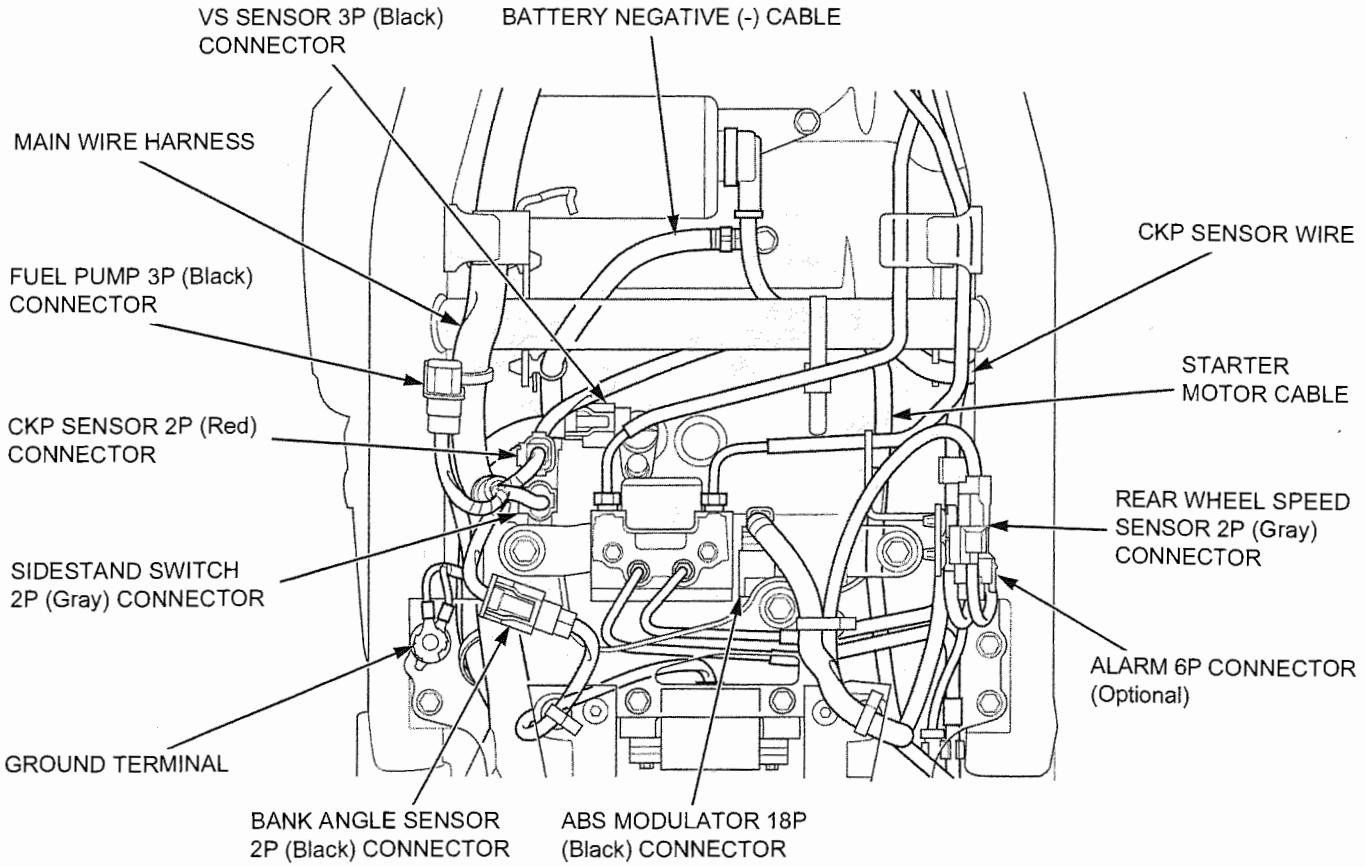

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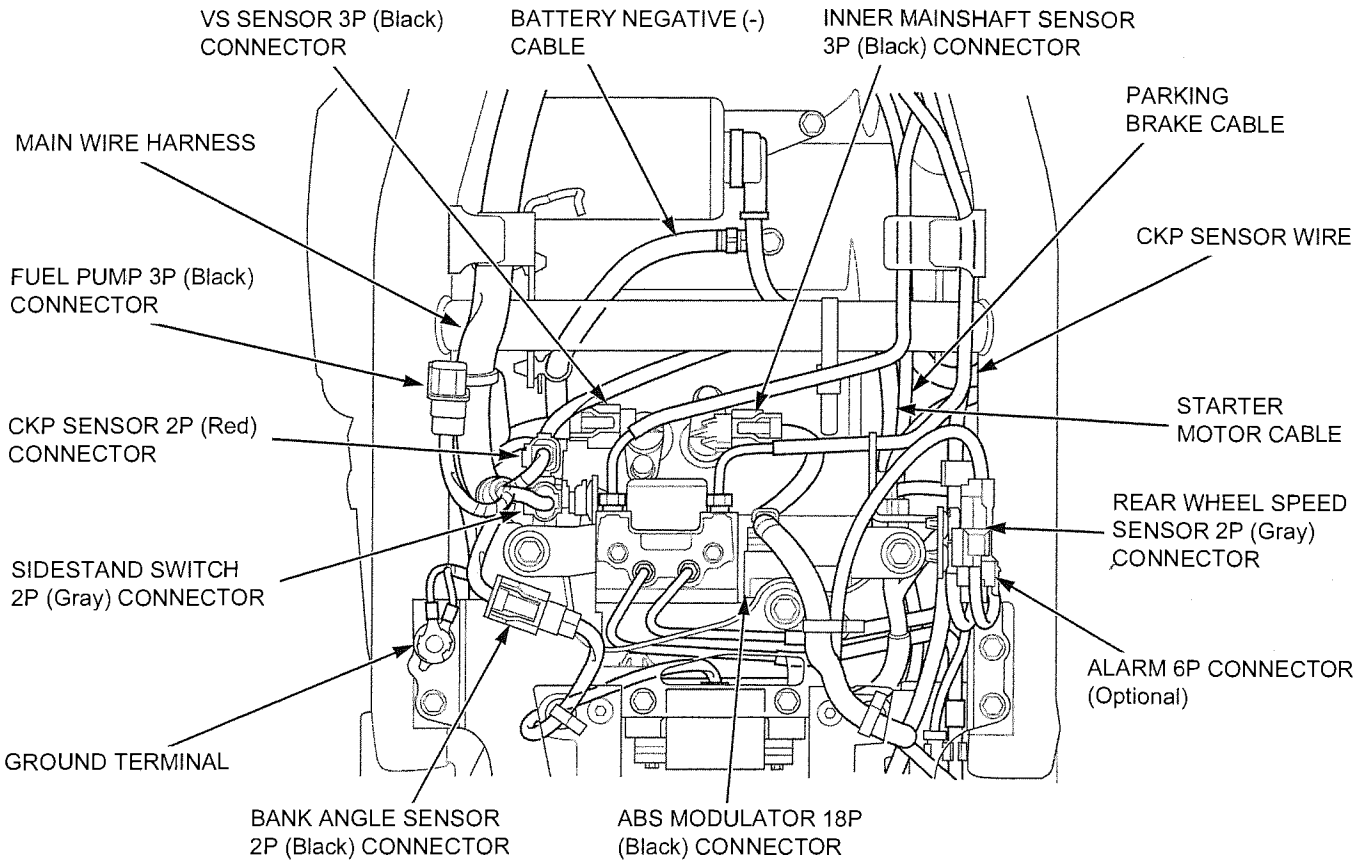


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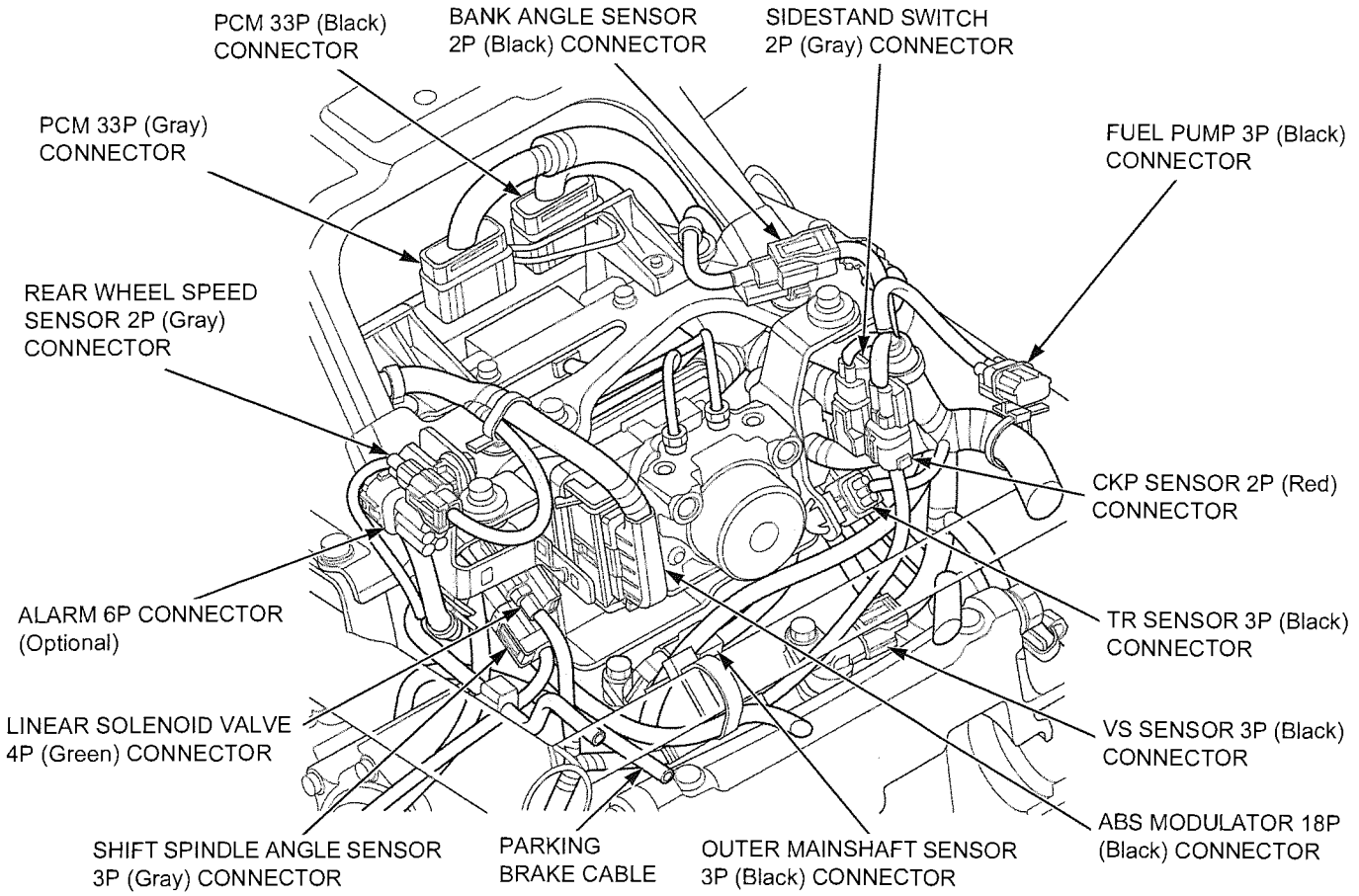

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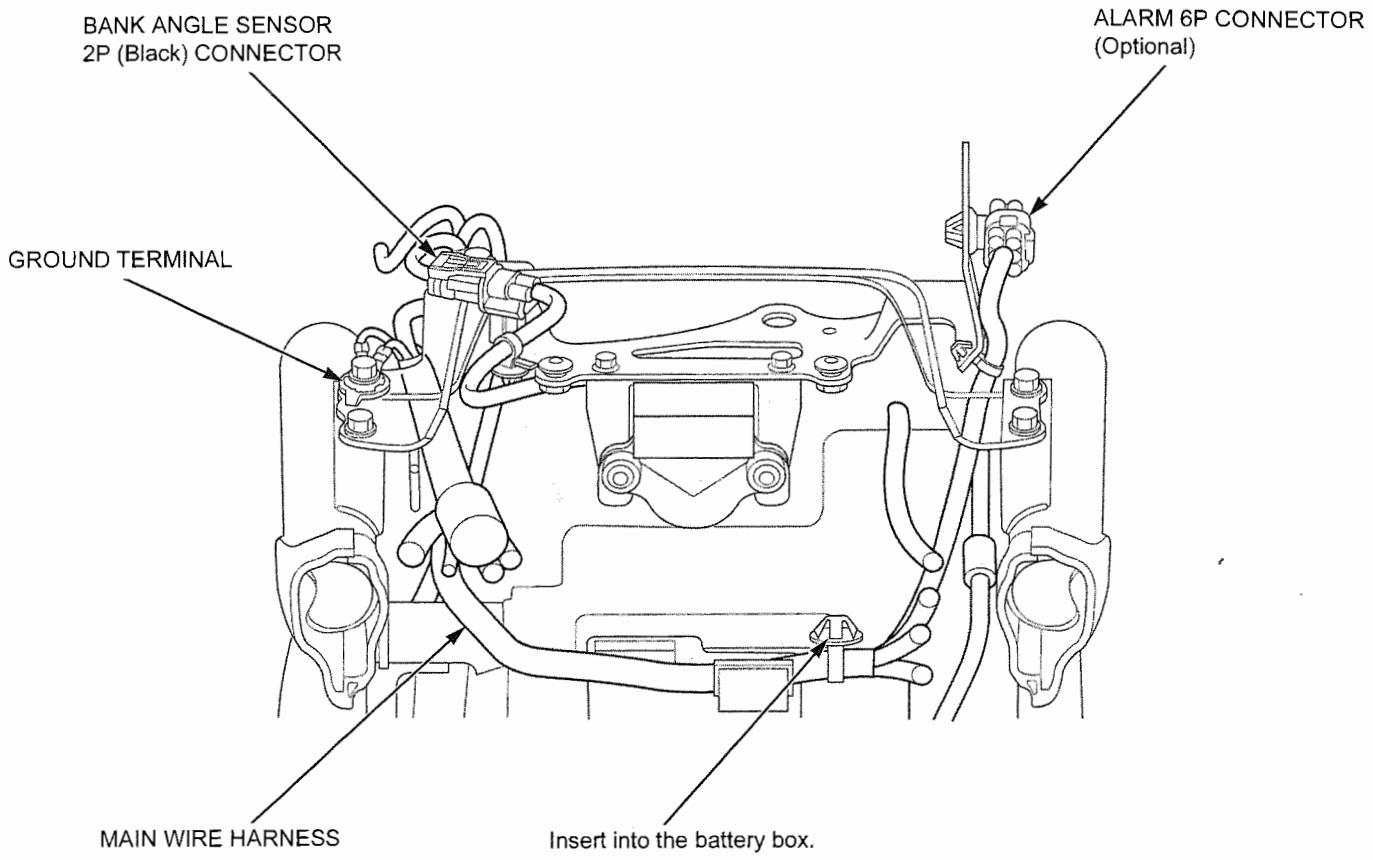


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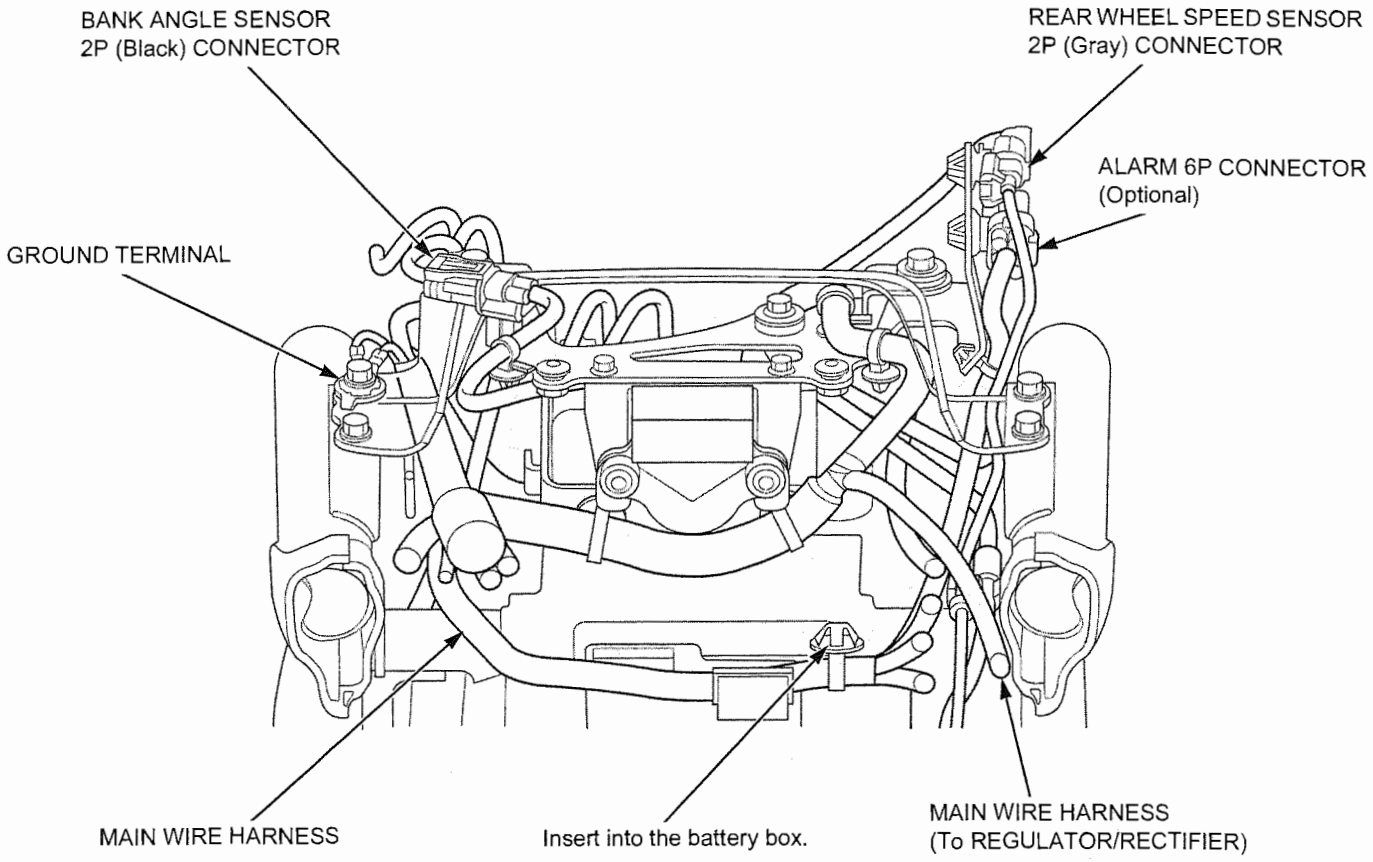

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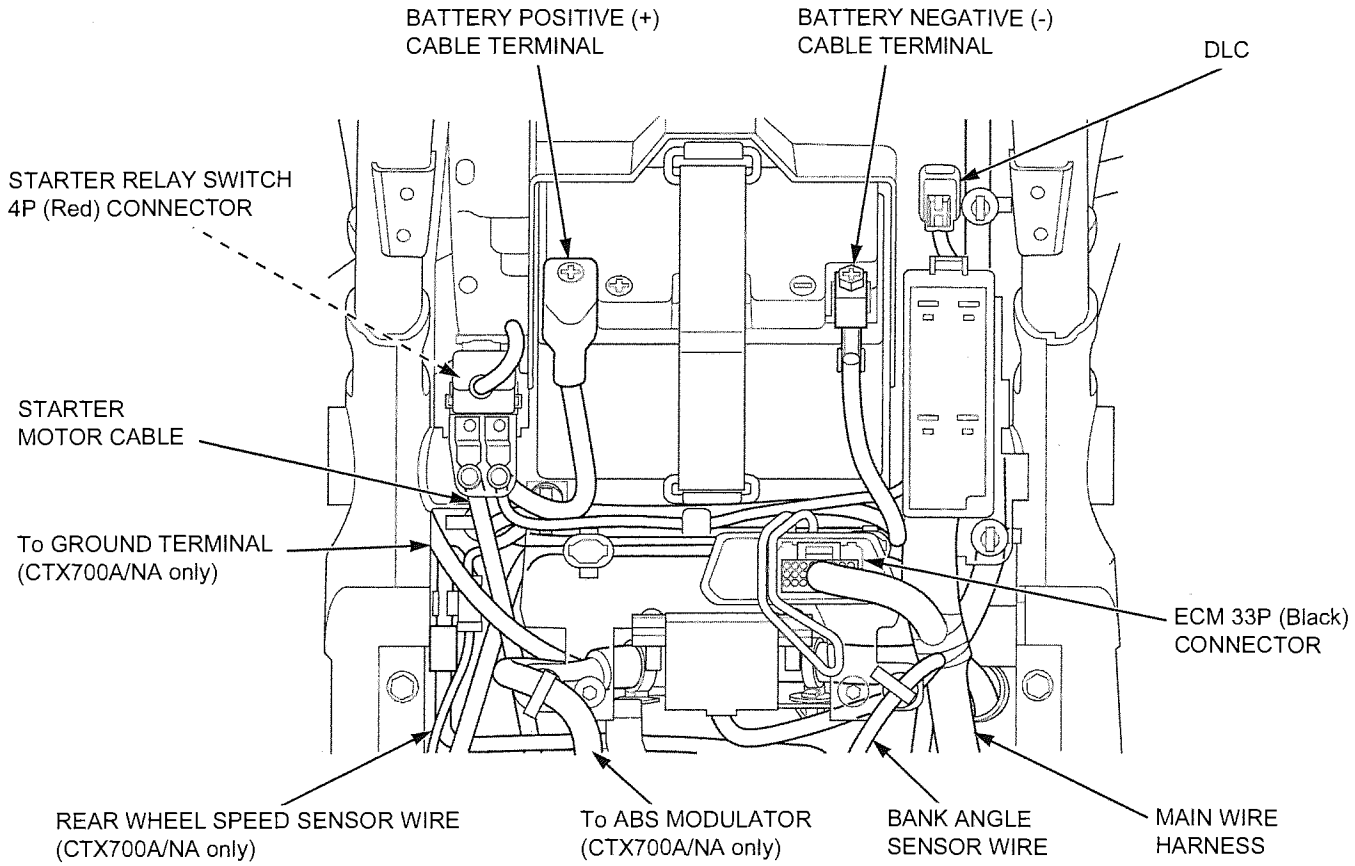


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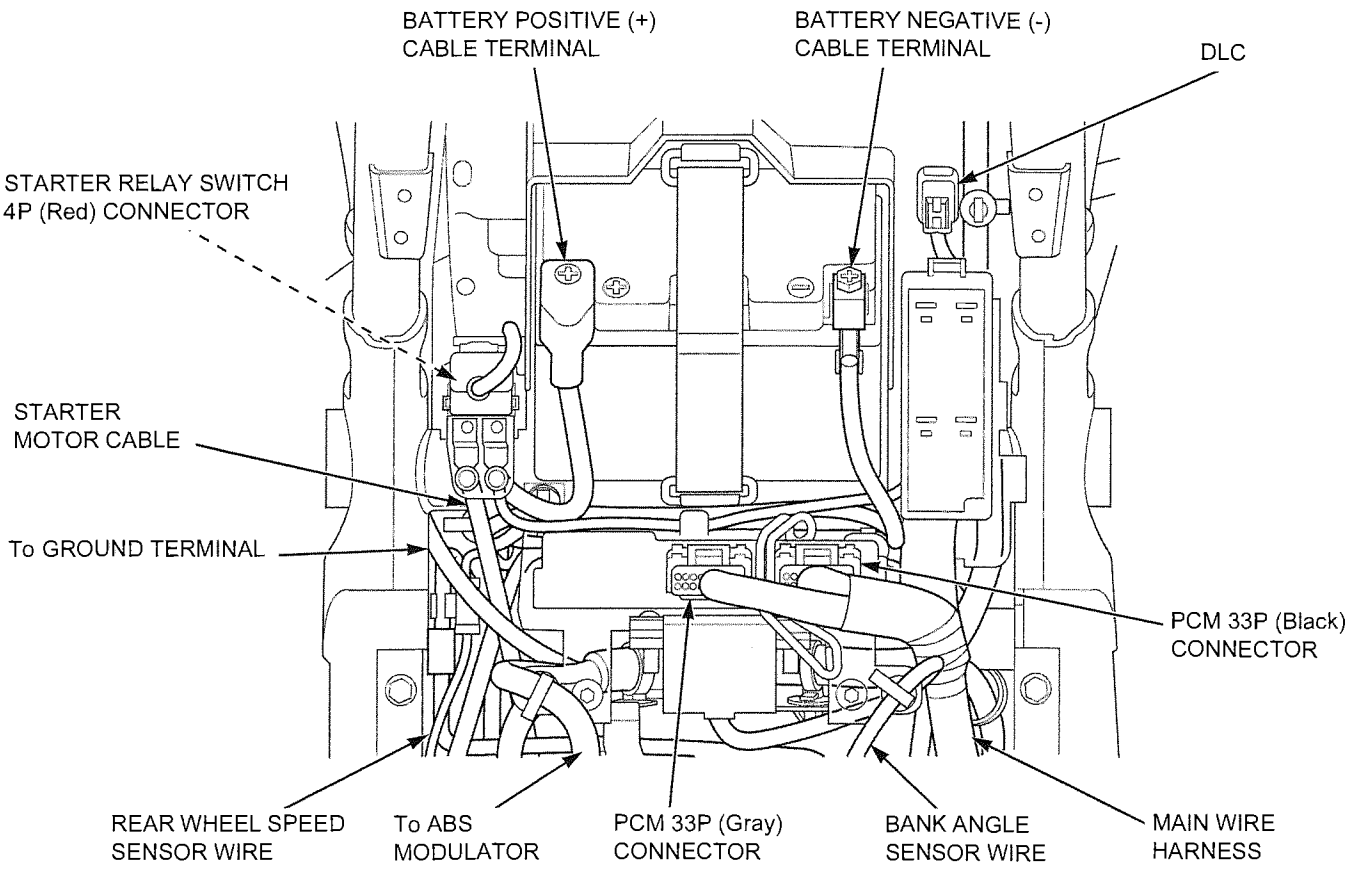

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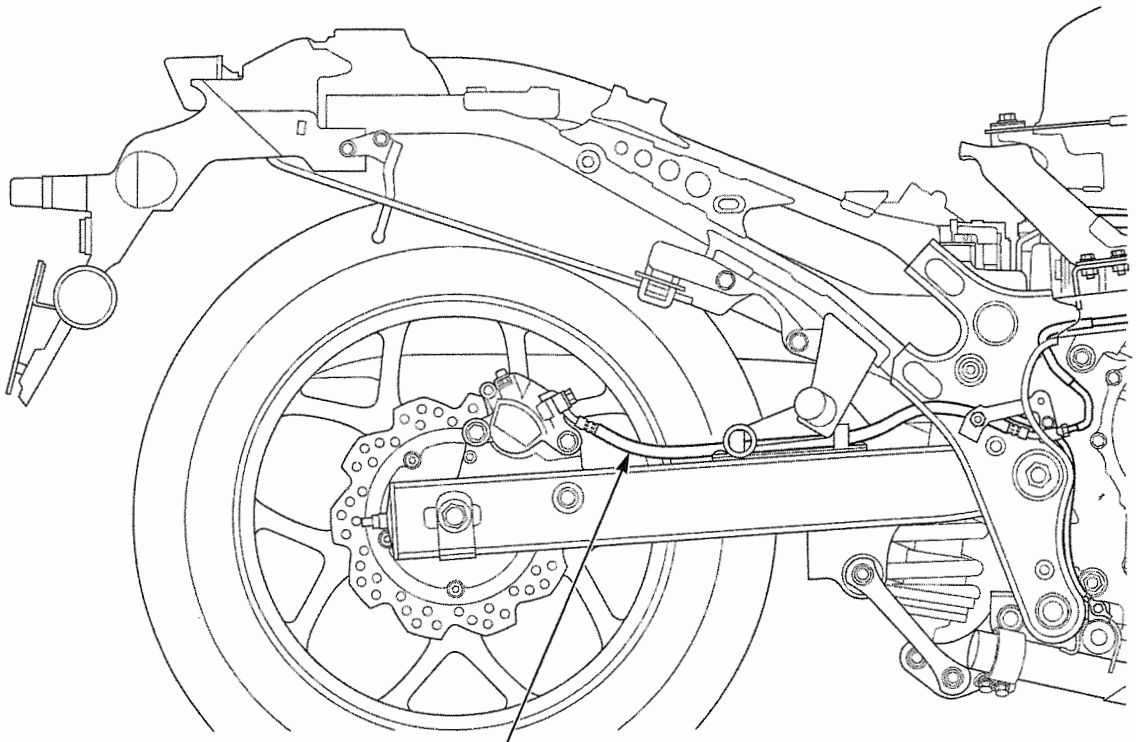


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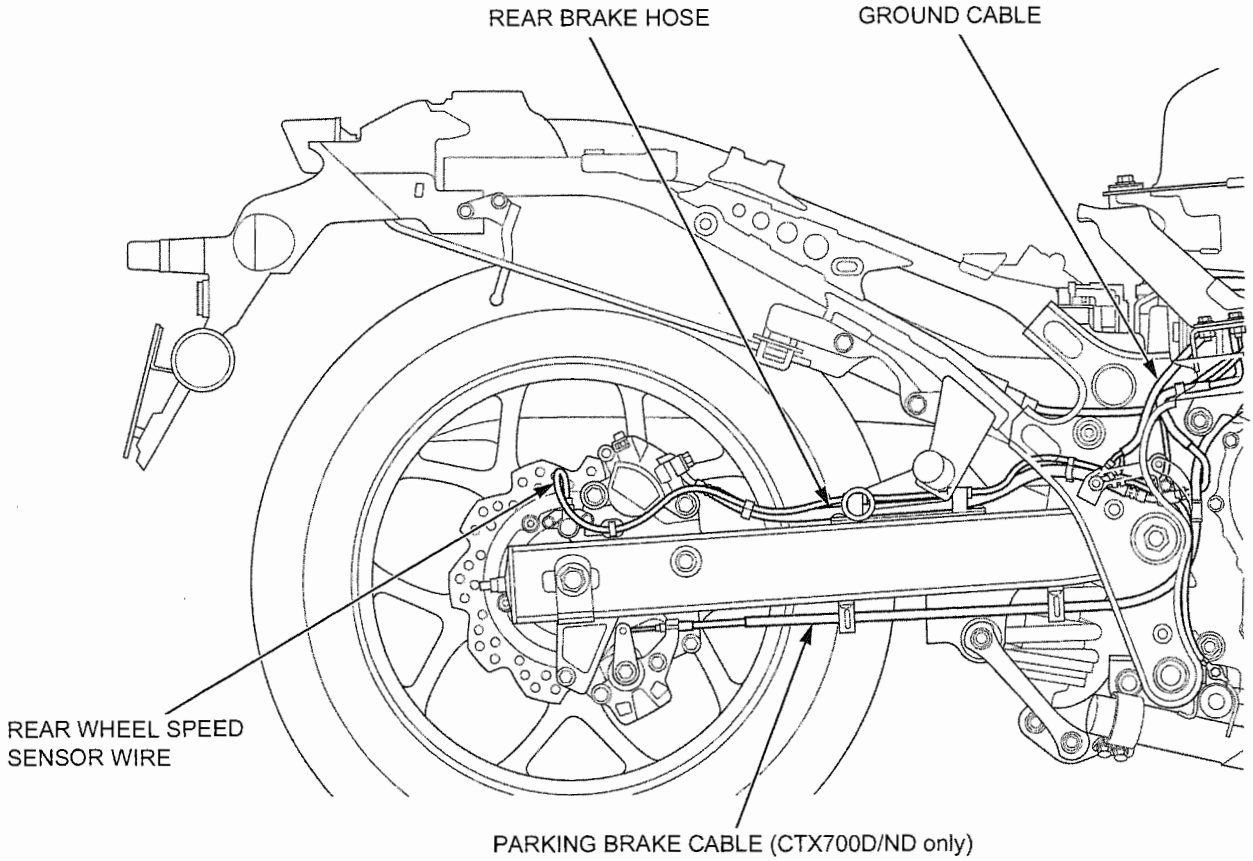

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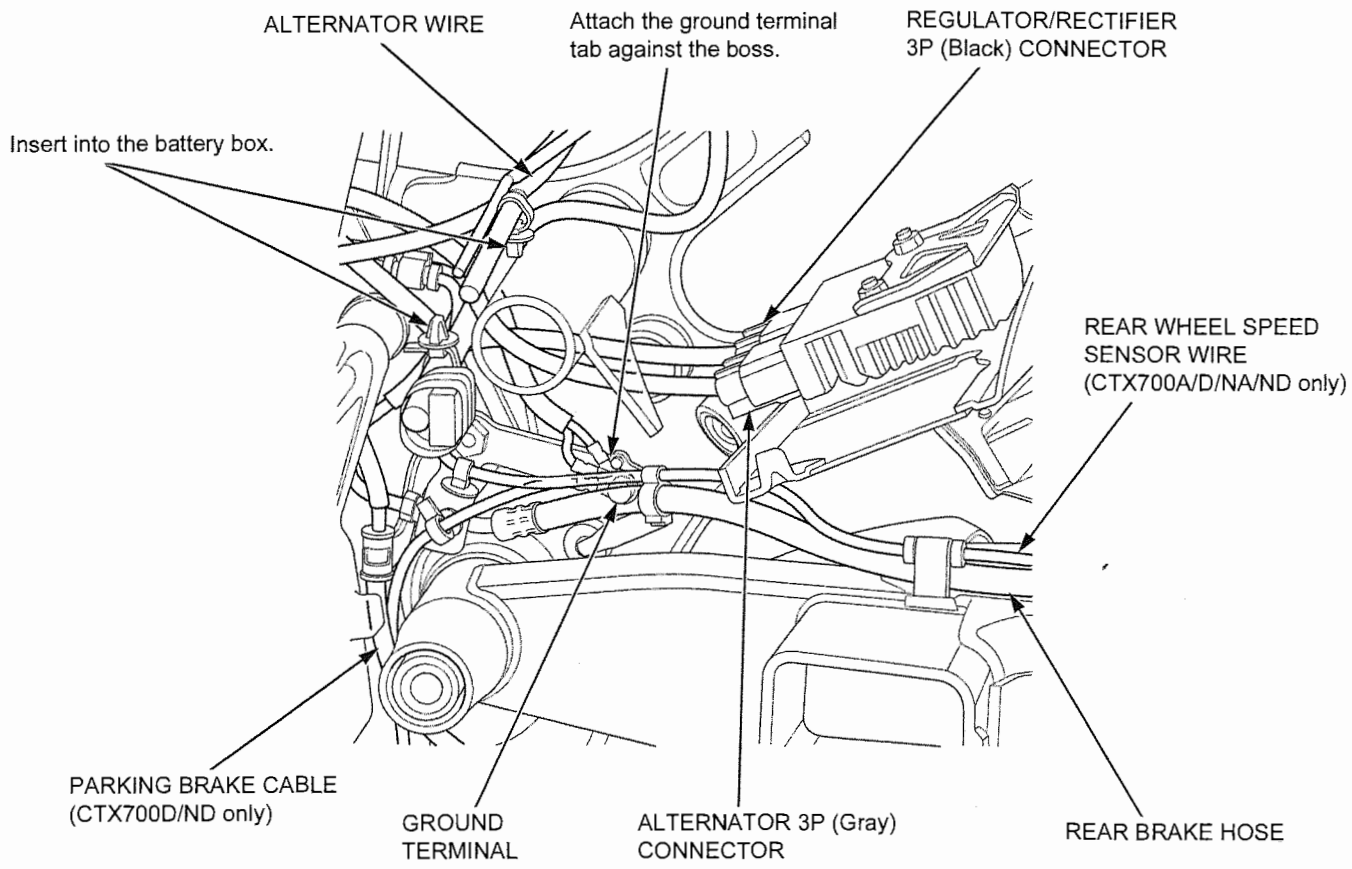


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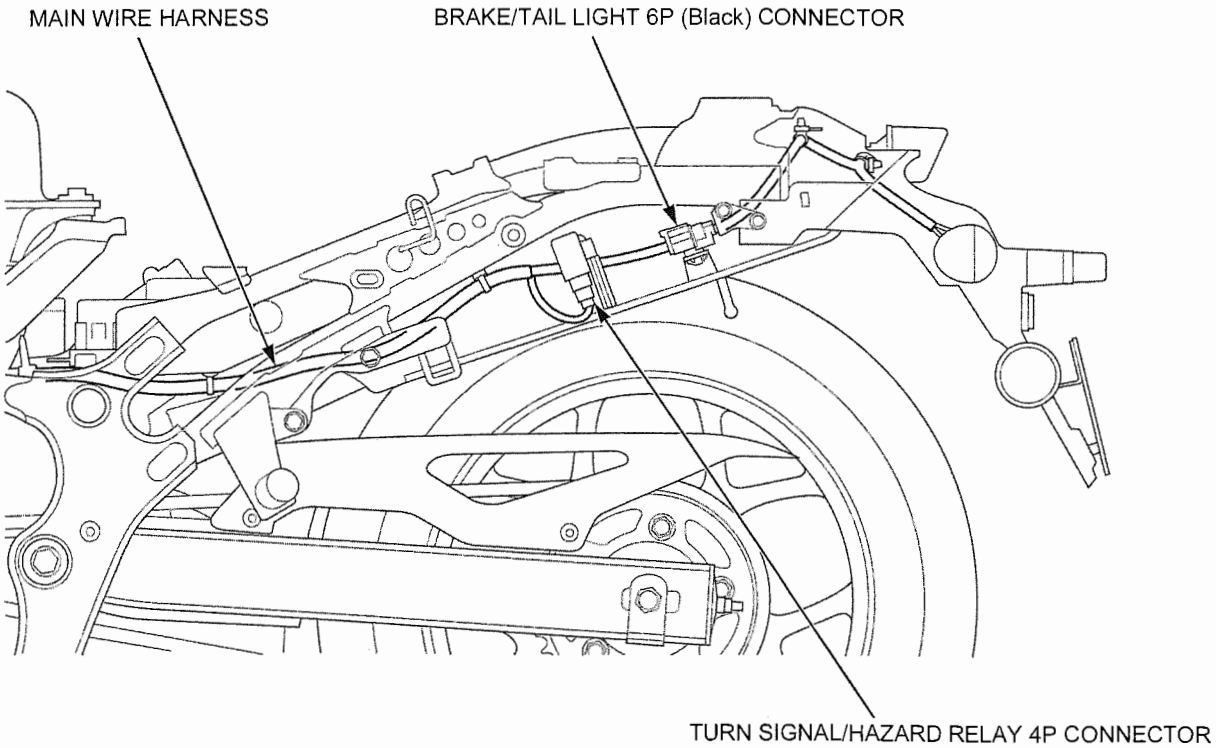

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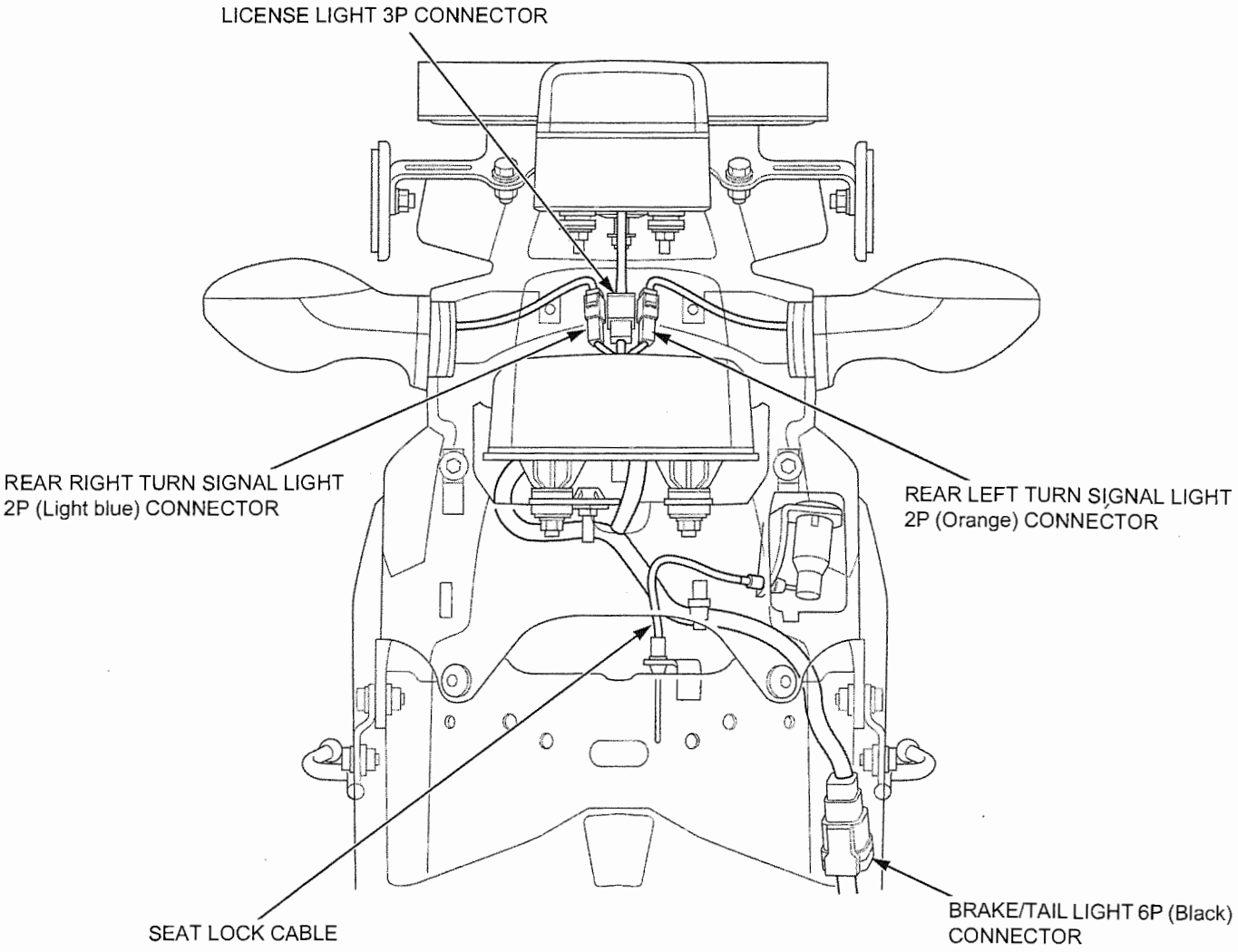


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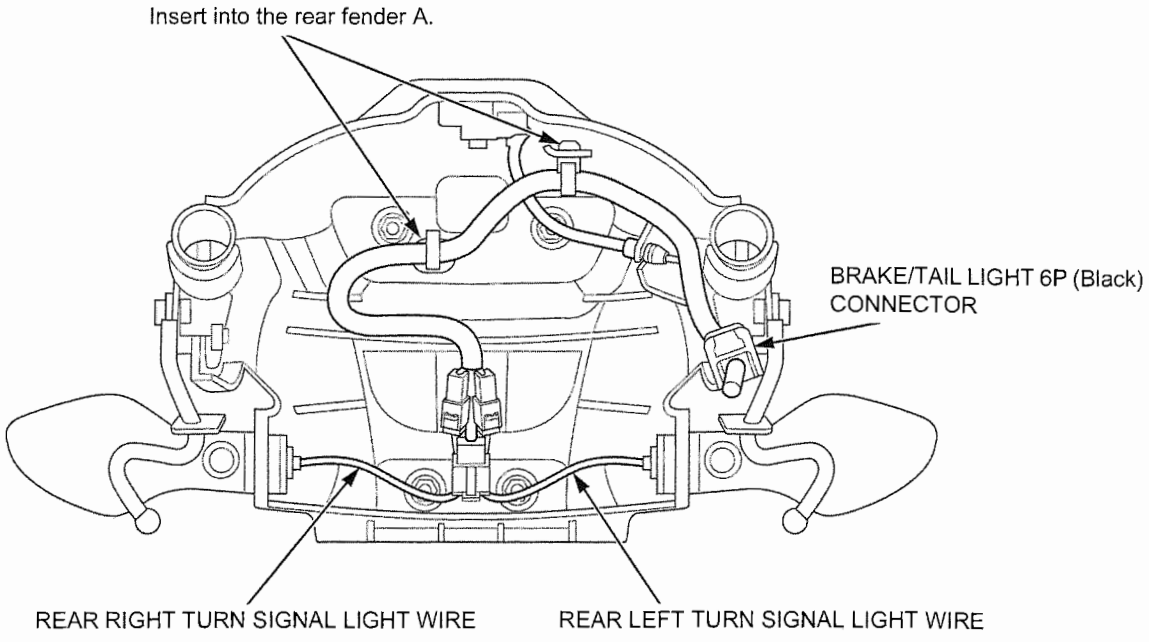


# EMISSION CONTROL SYSTEMS

## EXHAUST EMISSION REQUIREMENT

The U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB) and Transport Canada require manufacturers to certify that their motorcycles comply with applicable exhaust emissions standards during their useful life, when operated and maintained according to the instructions provided.

## NOISE EMISSION REQUIREMENT

The EPA also requires that motorcycles built after January 1, 1983 comply with applicable noise emission standards for one year or 3,730 miles (6,000 km) after the time of sale to the ultimate purchaser, when operated and maintained according to the instructions provided.

## WARRANTY COMPLIANCE

Compliance with the terms of the Distributor's Limited Warranty for Honda Motorcycle Emission Control Systems is necessary in order to keep the emissions system warranty in effect.

## SOURCE OF EMISSIONS

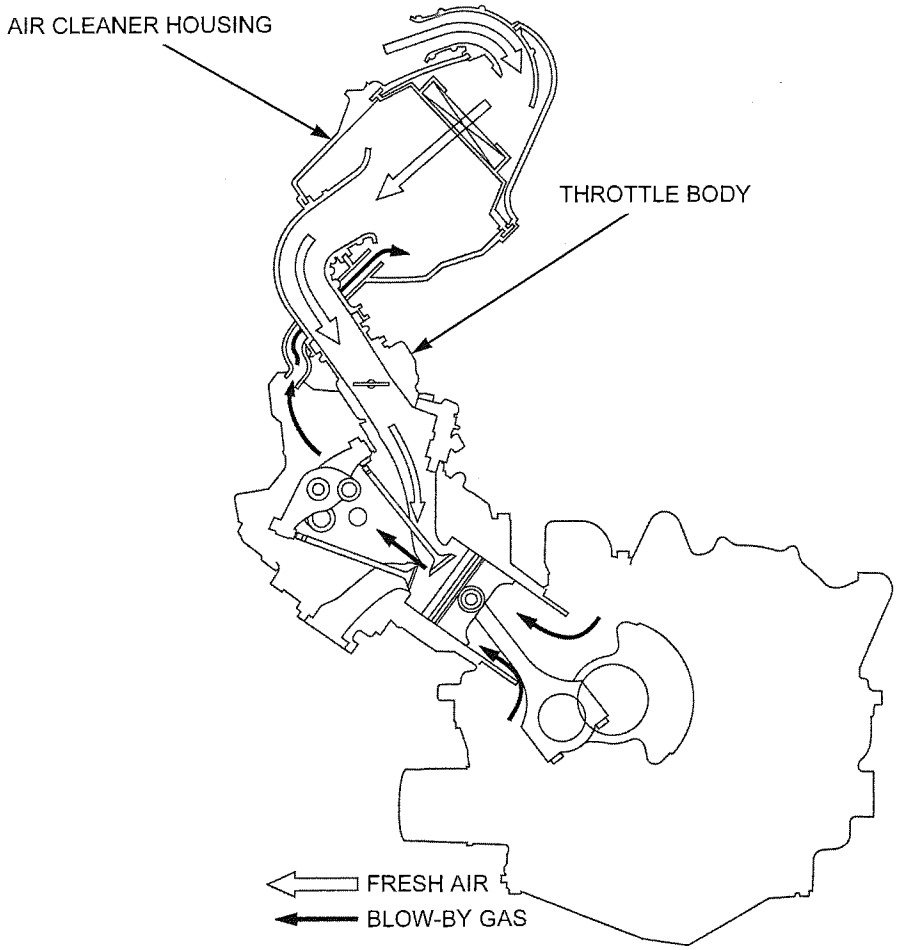
The combustion process produces carbon monoxide (CO), oxides of nitrogen (NOx) and hydrocarbons (HC). The control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic. Uncontrolled fuel evaporation also releases hydrocarbons to the atmosphere.

Honda Motor Co., Ltd. utilizes various systems (page 1-48) to reduce carbon monoxide, oxides of nitrogen and hydrocarbons.

## CRANKCASE EMISSION CONTROL SYSTEM

The engine is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere.

Blow-by gas is returned to the combustion chamber through the air cleaner and throttle body.



## EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a three-way catalytic converter and PGM-FI system.

The exhaust emission control system is separate from the crankcase emission control system.

**THREE-WAY CATALYTIC CONVERTER**

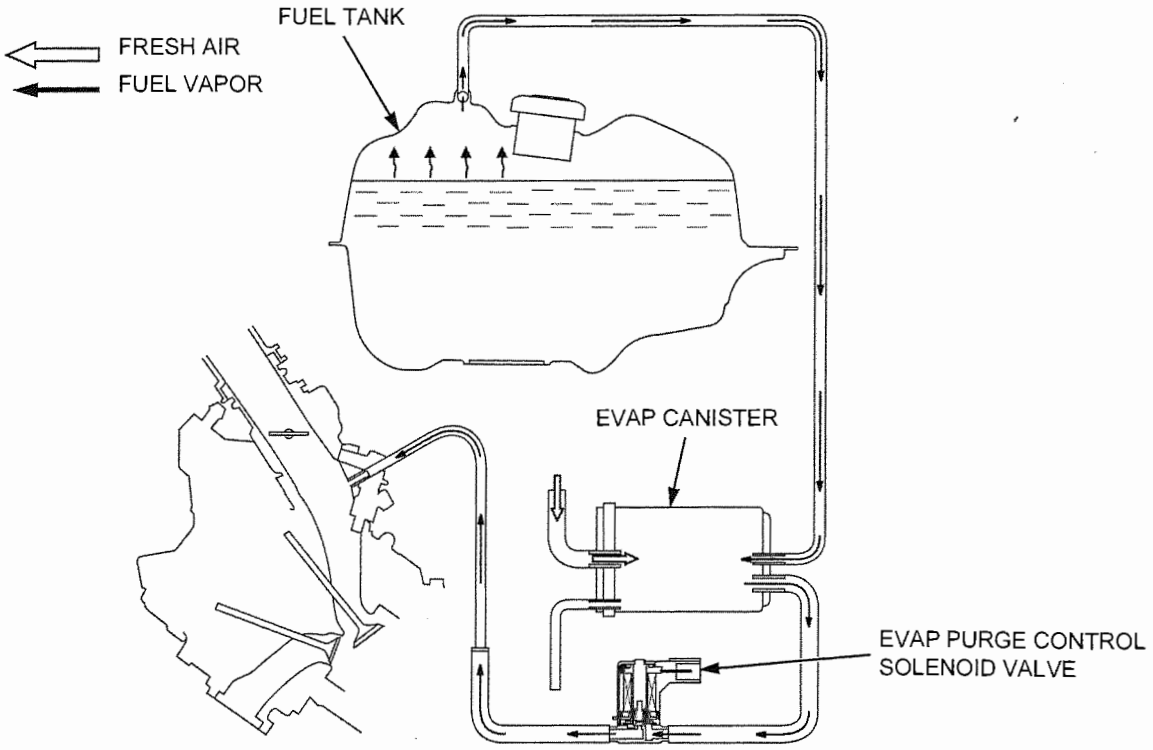
This motorcycle is equipped with a three-way catalytic converter.

The three-way catalytic converter is in the exhaust system. Through chemical reactions, it converts HC, CO, and NOx in the engine's exhaust to carbon dioxide ($CO_2$), nitrogen ($N_2$), and water vapor.

No adjustment to these systems should be made although periodic inspection of the components is recommended.

## EVAPORATIVE EMISSION CONTROL SYSTEM (50 STATE MODEL ONLY)

Fuel vapor from the fuel tank is routed into the EVAP canister where it is absorbed and stored while the engine is stopped. When the engine is running and the EVAP purge control solenoid valve is open, fuel vapor in the EVAP canister is drawn into the engine.




## NOISE EMISSION CONTROL SYSTEM

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: U.S. Federal law prohibits, or Canadian provincial law may prohibit the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any vehicle for the purpose of noise control prior to its sale or delivery to the ultimate customer or while it is in use; (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW:

1. Removal of, or puncturing of the muffler, baffles, header pipes or any other component which conducts exhaust gases.
2. Removal of, or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Removing or disabling any emissions compliance component, or replacing any compliance component with a non-compliant component.

## FUEL PERMEATION EMISSION CONTROL SYSTEM

This motorcycle complies with the Fuel Permeation Emission Control regulations of the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Environment Canada (EC). The fuel tank, fuel hoses, and fuel vapor charge hoses used on this motorcycle incorporate fuel permeation control technologies. Tampering with the fuel tank, fuel hoses, or fuel vapor charge hoses to reduce or defeat the effectiveness of the fuel permeation technologies is prohibited by federal regulations.

# 2. FRAME/BODY PANELS/EXHAUST SYSTEM

# SERVICE INFORMATION

## GENERAL

- This section covers removal and installation of the body panels and exhaust system.
- Serious burns may result if the exhaust system is not allowed to cool before components are removed or serviced.
- Always replace the exhaust pipe gasket with new ones after removing the exhaust pipe from the engine.
- When installing the exhaust system, loosely install all of the exhaust pipe fasteners. Always tighten the exhaust pipe joint nuts first, then tighten the mounting bolts.
- Always inspect the exhaust system for leaks after installation.

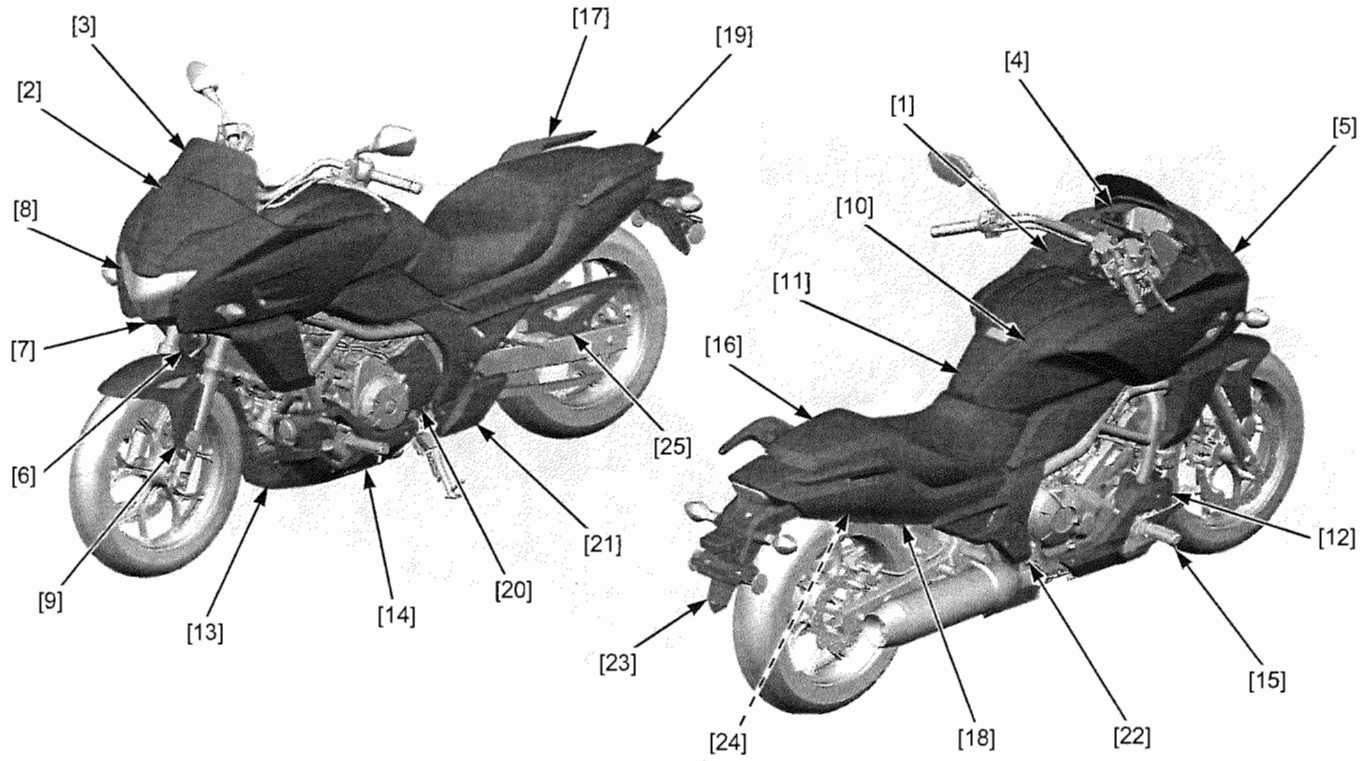
# TROUBLESHOOTING

**Excessive exhaust noise**
- Broken exhaust system
- Exhaust gas leak

**Poor performance**
- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

# BODY PANEL LOCATIONS

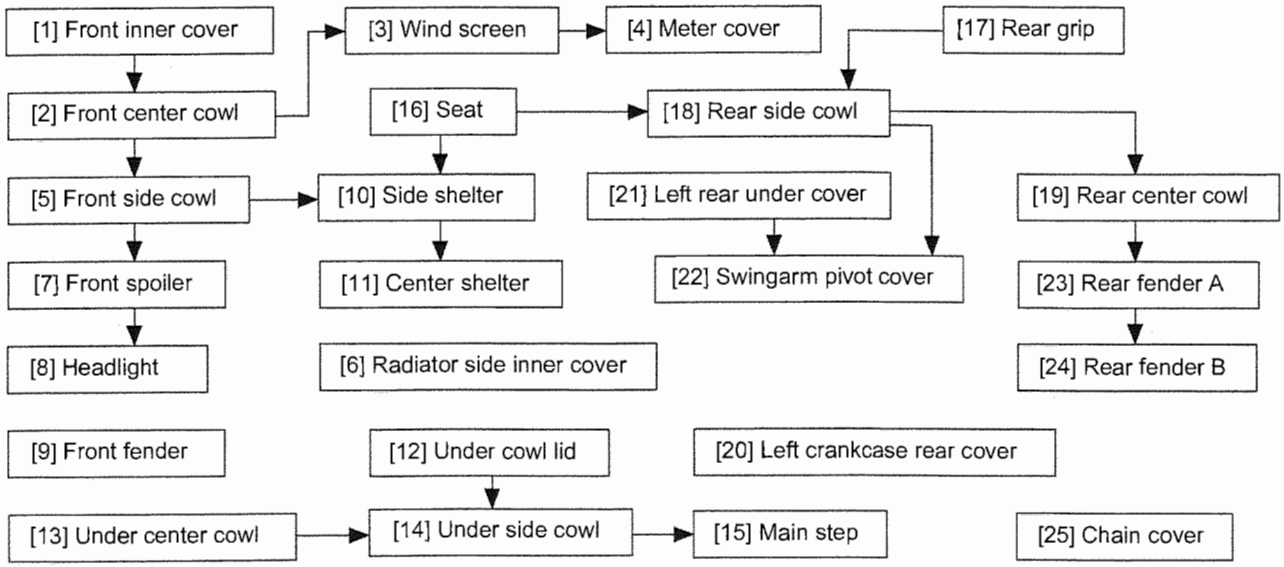
## CTX700/A/D



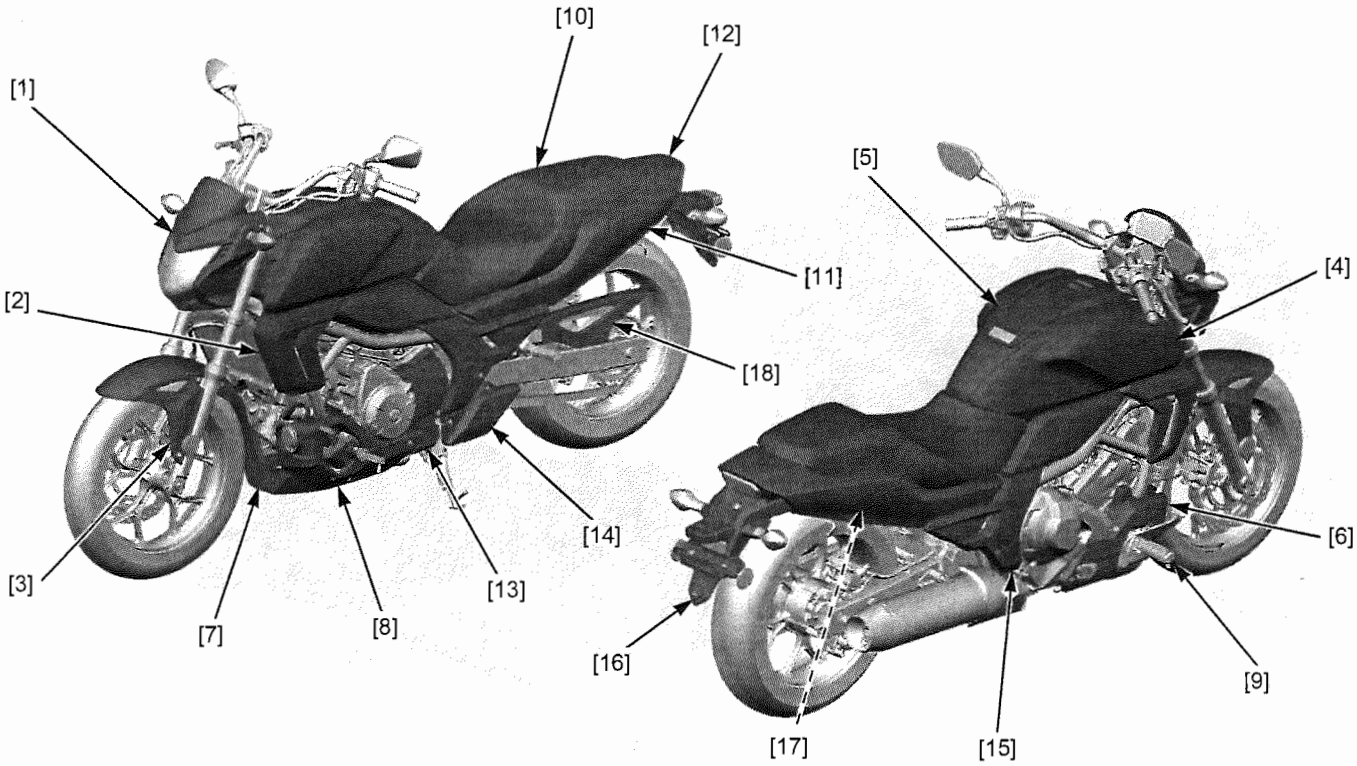

[1] Front inner cover (page 2-5)
[2] Front center cowl (page 2-5)
[3] Wind screen (page 2-5)
[4] Meter cover (page 2-6)
[5] Front side cowl (page 2-6)
[6] Radiator side inner cover (page 2-7)
[7] Front spoiler (page 2-7)
[8] Headlight (page 2-8)
[9] Front fender (page 2-10)
[10] Side shelter (page 2-11)
[11] Center shelter (page 2-12)
[12] Under cowl lid (page 2-12)
[13] Under center cowl (page 2-13)
[14] Under side cowl (page 2-13)
[15] Main step (page 2-14)
[16] Seat (page 2-14)
[17] Rear grip (page 2-15)
[18] Rear side cowl (page 2-15)
[19] Rear center cowl (page 2-16)
[20] Left crankcase rear cover (page 2-16)
[21] Left rear under cover (page 2-17)
[22] Swingarm pivot cover (page 2-17)
[23] Rear fender A (page 2-17)
[24] Rear fender B (page 2-18)
[25] Chain cover (page 2-18)

### BODY PANEL REMOVAL CHART

This chart shows removal order of frame covers by means of arrow.



## CTX700N/NA/ND




[1] Headlight (page 2-8)
[2] Radiator side cover (page 2-10)
[3] Front fender (page 2-10)
[4] Side shelter (page 2-11)
[5] Center shelter (page 2-12)
[6] Under cowl lid (page 2-12)
[7] Under center cowl (page 2-13)
[8] Under side cowl (page 2-13)
[9] Main step (page 2-14)
[10] Seat (page 2-14)
[11] Rear side cowl (page 2-15)
[12] Rear center cowl (page 2-16)
[13] Left crankcase rear cover (page 2-16)
[14] Left rear under cover (page 2-17)
[15] Swingarm pivot cover (page 2-17)
[16] Rear fender A (page 2-17)
[17] Rear fender B (page 2-18)
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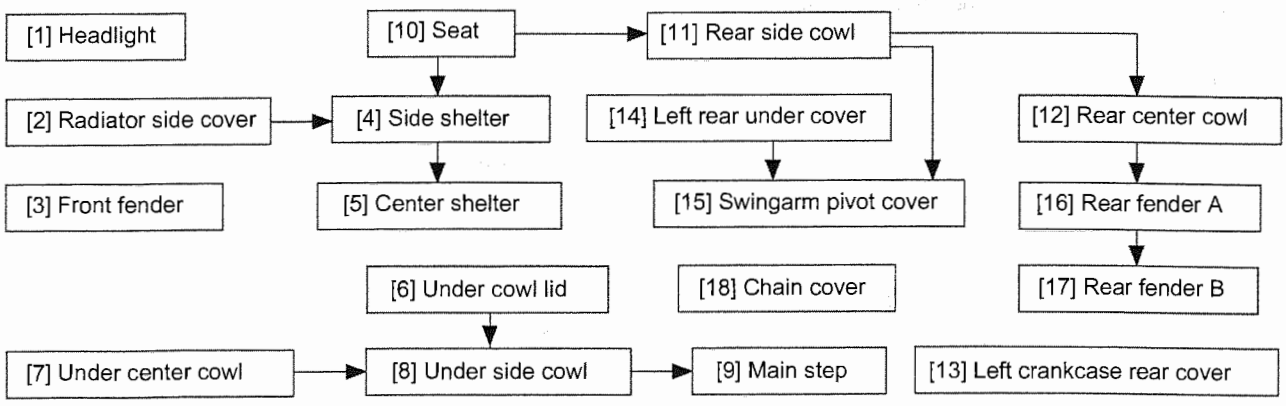


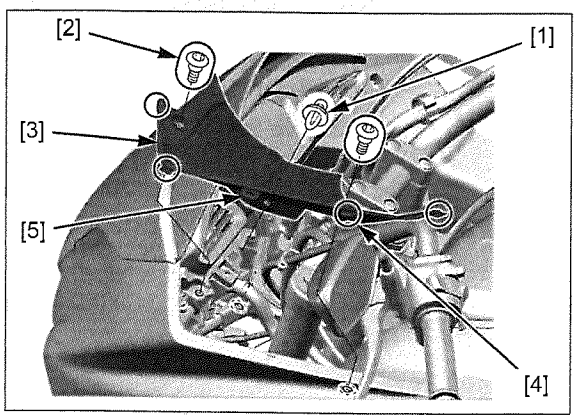
# FRONT INNER COVER (CTX700/A/D)

## REMOVAL/INSTALLATION

Remove the trim clip [1] and two socket bolts [2].

Remove the front inner cover [3] by releasing the tabs [4] and slot [5].

Installation is in the reverse order of removal.




# FRONT CENTER COWL (CTX700/A/D)

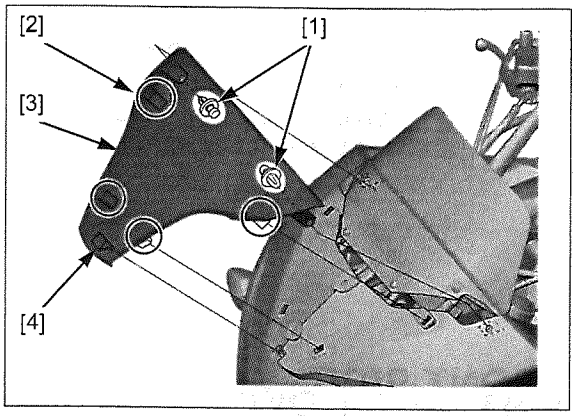
## REMOVAL/INSTALLATION

Remove the front inner cover (page 2-5).

Remove the two trim clips [1].

Release the four snap fit clips [2] and remove the front center cowl [3] by releasing the lower side tab [4].

Installation is in the reverse order of removal.




# WIND SCREEN (CTX700/A/D)

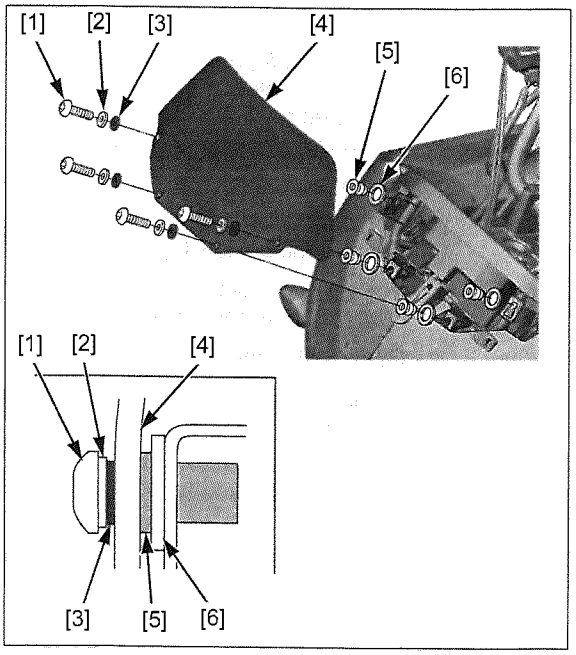
## REMOVAL/INSTALLATION

Remove the front center cowl (page 2-5).

Remove the following:

- Socket bolts [1]
- Plastic washers [2]
- Rubber washers [3]
- Wind screen [4]
- Cushion rubbers [5]
- Washers [6]

Installation is in the reverse order of removal.



# METER COVER (CTX700/A/D)

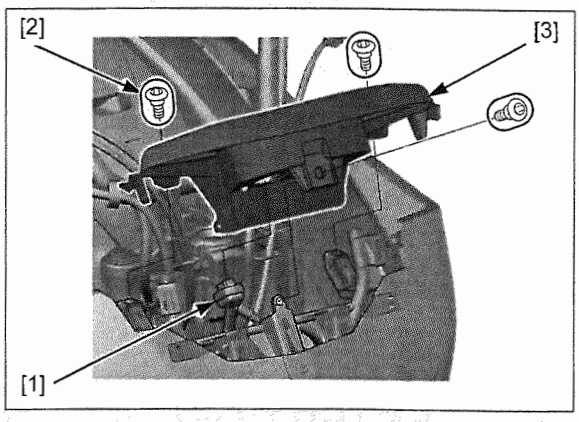
## REMOVAL/INSTALLATION

Remove the wind screen (page 2-5).

Disconnect the combination meter 16P (Gray) connector [1].

Remove the three socket bolts [2] and meter cover [3].

Installation is in the reverse order of removal.



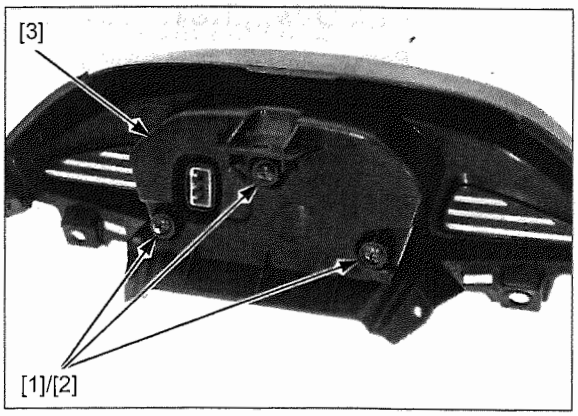

## DISASSEMBLY/ASSEMBLY

Remove the screws [1], washers [2] and combination meter [3].

Assembly is in the reverse order of disassembly.

**TORQUE:**

**Combination meter mounting screw:**
**1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)**




# FRONT SIDE COWL (CTX700/A/D)

## REMOVAL/INSTALLATION

Remove the front center cowl (page 2-5).

Remove the following:

- Trim clip A [1]
- Two trim clips B [2]
- Socket bolt [3]/collar [4]
- Two socket bolts [5]/washers [6]

Disconnect the front turn signal/position light 3P connector [7].

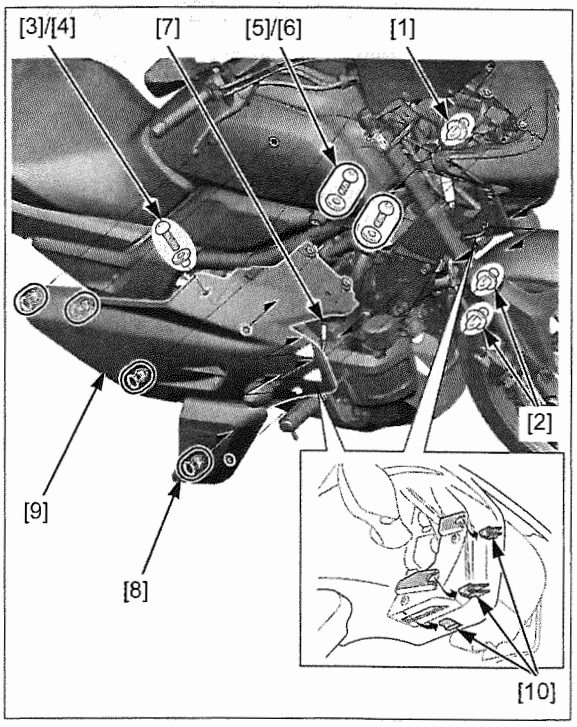
Release the bosses [8] from the grommets.

Pull the right front side cowl [9] forward and release the tabs [10] from the slots of the front spoiler as shown.

Remove the right front side cowl.

Remove the left front side cowl in the same manner of the right side.

Installation is in the reverse order of removal.

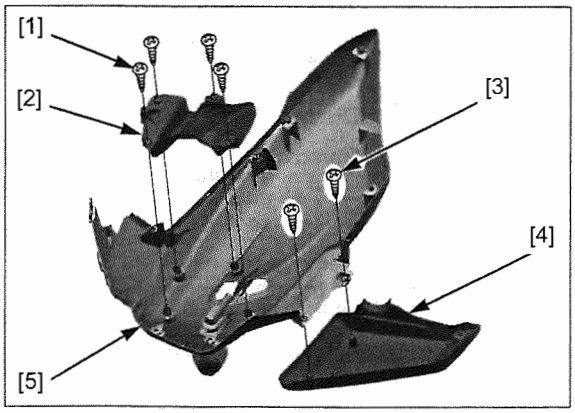


### DISASSEMBLY/ASSEMBLY

Remove the four screws [1] and inner panel [2].

Remove the two screws [3] and radiator side cover [4] from the front side cowl [5].

Assembly is in the reverse order of disassembly.

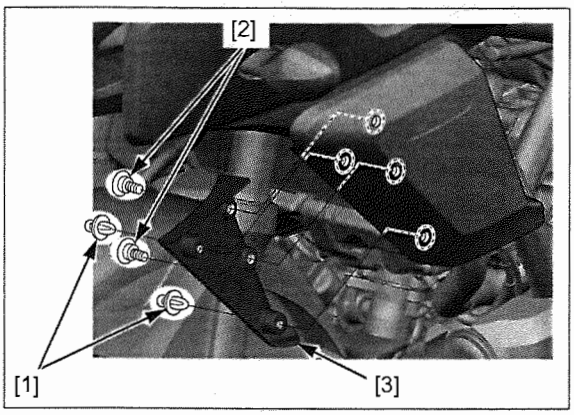



## RADIATOR SIDE INNER COVER (CTX700/A/D)

### REMOVAL/INSTALLATION

Remove the two trim clips [1], socket bolts [2] and radiator side inner cover [3].

Installation is in the reverse order of removal.



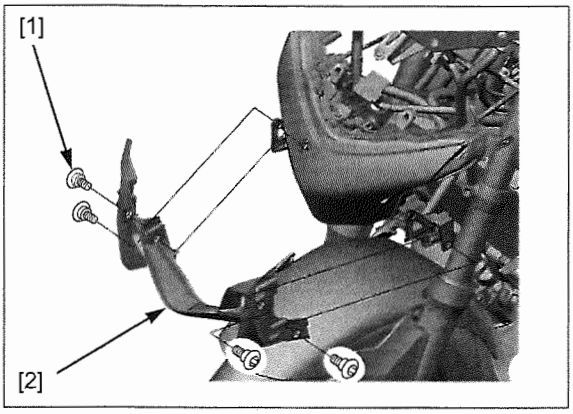

## FRONT SPOILER (CTX700/A/D)

### REMOVAL/INSTALLATION

Remove the front side cowls (page 2-6).

Remove the four socket bolts [1] and front spoiler [2].

Installation is in the reverse order of removal.



# HEADLIGHT (CTX700/A/D)

## REMOVAL/INSTALLATION

Remove the front spoiler (page 2-7).

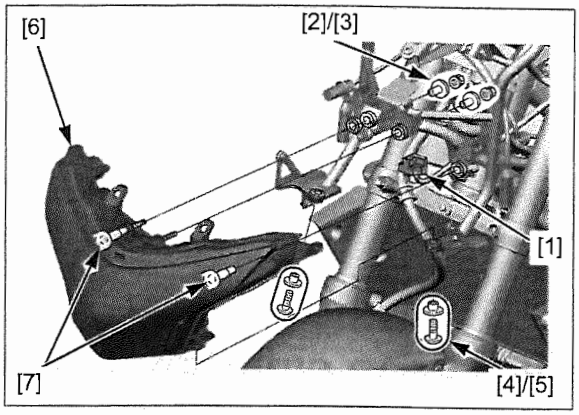
Disconnect the headlight 3P (Black) connector [1].

Remove the following:

- Two nuts [2]/collars [3]
- Two socket bolts [4]/collars [5]

Remove the headlight unit [6] by releasing the bosses [7] from the grommets.

Installation is in the reverse order of removal.




# HEADLIGHT (CTX700N/NA/ND)

## REMOVAL/INSTALLATION

Remove the two socket bolts [1] and collars [2].

Remove the headlight assembly [3] by releasing it from the holes [4] of the bottom bridge.

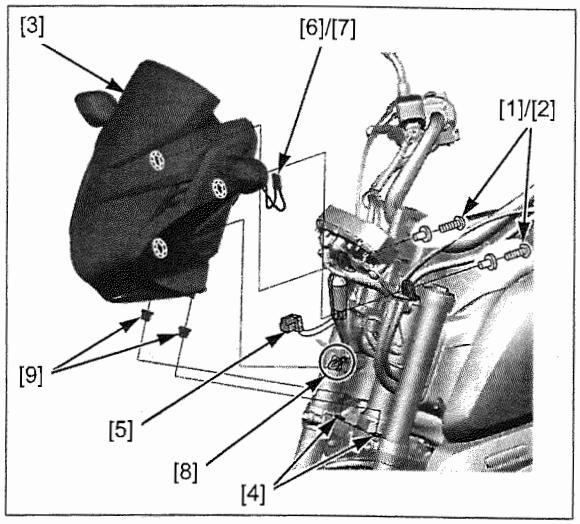
Disconnect the following:

- Headlight 3P (Black) connector [5]
- Right turn signal/position light 3P (Light blue) connector [6]
- Left turn signal/position light 3P (Orange) connector [7]

Release the wire band boss [8].

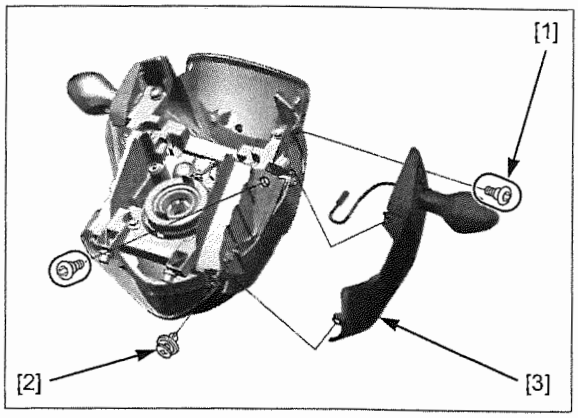
Remove the rubber caps [9].

Installation is in the reverse order of removal.

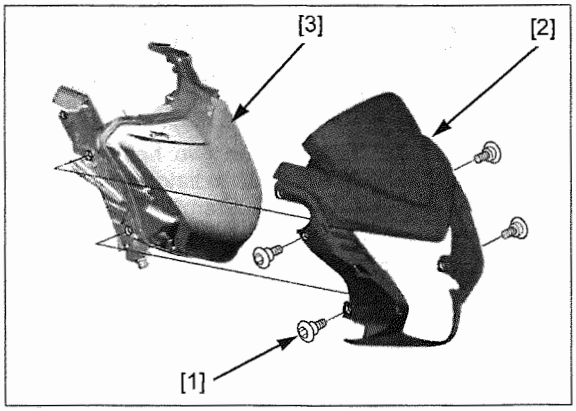



## DISASSEMBLY/ASSEMBLY

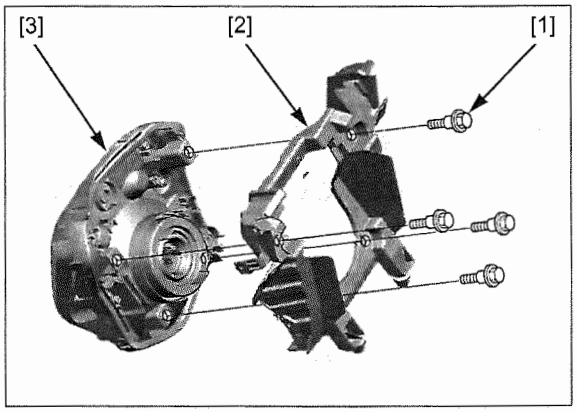
Remove the two socket bolts [1], trim clip [2] and headlight side cover assembly [3].



Remove the four socket bolts [1] and headlight cover [2] from the headlight [3].

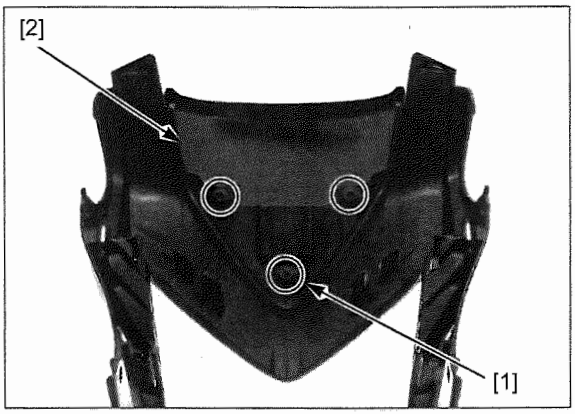



Remove the four special bolts [1] and headlight stay [2] from the headlight unit [3].




Remove the three socket bolts [1] and meter upper cover [2].

Assembly is in the reverse order of disassembly.



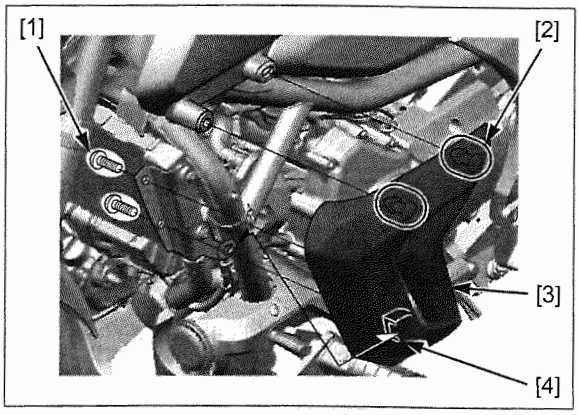
# RADIATOR SIDE COVER (CTX700N/NA/ND)

## REMOVAL/INSTALLATION

Remove the two socket bolts [1].

Release the two bosses [2] from the grommets and remove the radiator side cover [3] by releasing the slot [4] from the frame.

Installation is in the reverse order of removal.



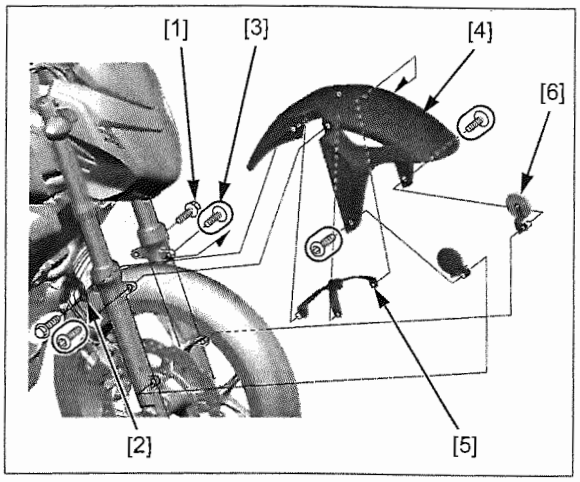

# FRONT FENDER

## REMOVAL/INSTALLATION

Remove the following

- Two bolts [1]/hose guide [2]
- Four socket bolts [3]
- Front fender [4]
- Stay [5]
- Front side reflectors [6]

Installation is in the reverse order of removal.



# SIDE SHELTER

## REMOVAL/INSTALLATION

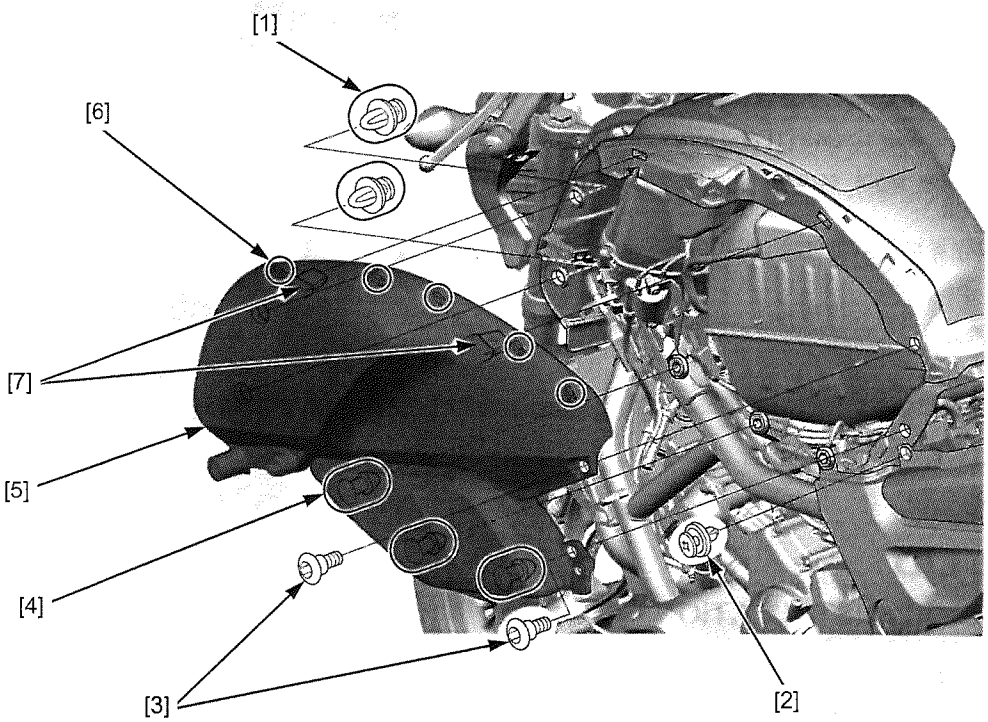
Remove the following:

- Front side cowl (page 2-6) (CTX700/A/D)
- Radiator side cover (page 2-10) (CTX700N/NA/ND)
- Seat (page 2-14)
- Two trim clips [1] (Large head)
- Trim clip [2]
- Two socket bolts [3]

Release the three bosses [4] from the grommets.

Remove the side shelter [5] by releasing the upper side tabs [6] and two snap fit clips [7].

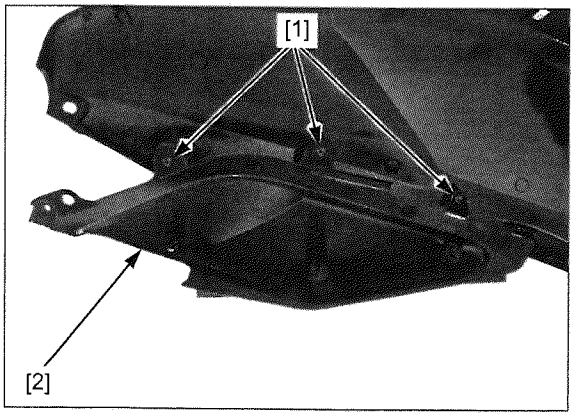
Installation is in the reverse order of removal.




## DISASSEMBLY/ASSEMBLY

Remove the three screws [1] and side cover [2].

Assembly is in the reverse order of disassembly.



# CENTER SHELTER

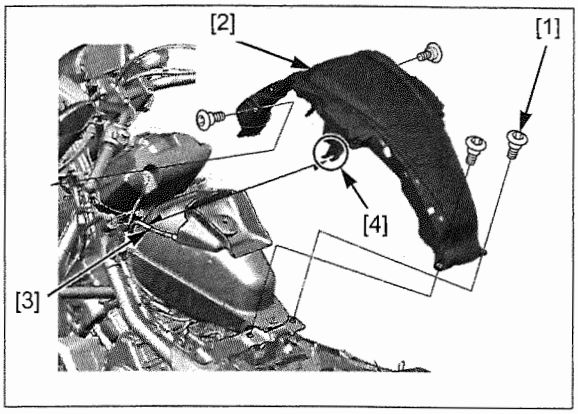
## REMOVAL/INSTALLATION

Remove the side shelters (page 2-11).

Remove the four socket bolts [1].

Remove the center shelter [2] by releasing the fuel tray drain hose [3] from the hose guides [4].

Installation is in the reverse order of removal.

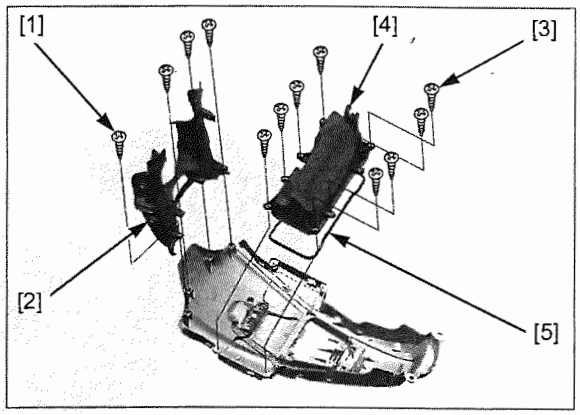



## DISASSEMBLY/ASSEMBLY

Remove the four screws [1] and inner center cover [2].

Remove the eight screws [3], luggage box [4] and packing [5].

Assembly is in the reverse order of disassembly.



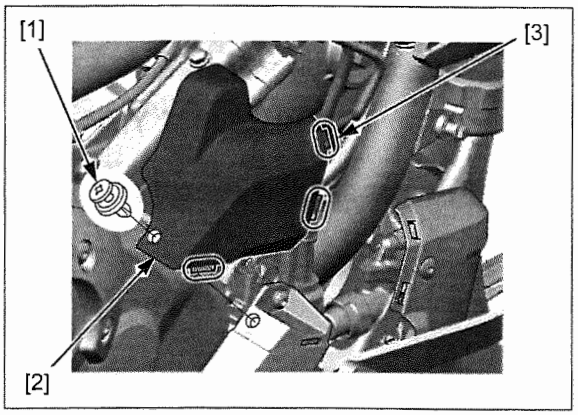

# UNDER COWL LID

## REMOVAL/INSTALLATION

Remove the trim clip [1].

Remove the under cowl lid [2] by releasing the tabs [3] from the grooves.

Installation is in the reverse order of removal.

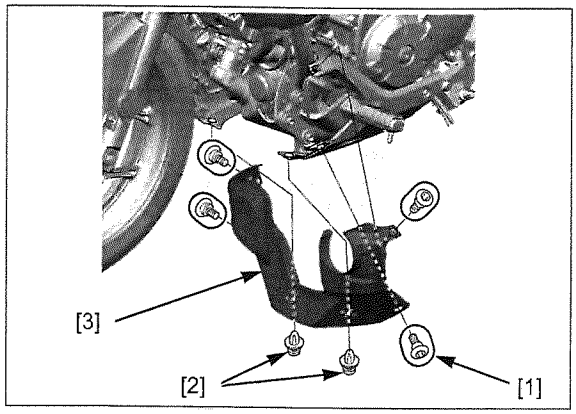


# UNDER CENTER COWL

## REMOVAL/INSTALLATION

Remove the four socket bolts [1], two trim clips [2] and under center cowl [3].

Installation is in the reverse order of removal.




# UNDER SIDE COWL

## REMOVAL/INSTALLATION

### RIGHT SIDE

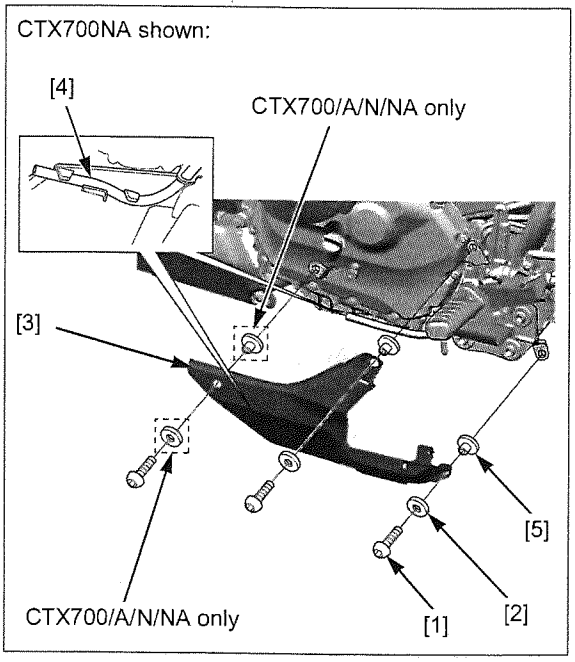
Remove the following:

- Under center cowl (page 2-13)
- Under cowl lid (page 2-12)
- Socket bolts [1]/washers [2]

Remove the right under side cowl [3] by releasing the hose [4] from the hose guides as shown.

Remove the collars [5] from the under side cover.

Installation is in the reverse order of removal.



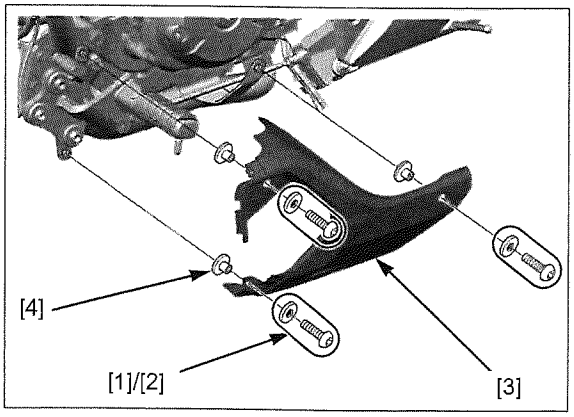

### LEFT SIDE

Remove the under center cowl (page 2-13).

Remove the three socket bolts [1], washers [2] and left under side cover [3].

Remove the three collars [4] from the under side cover.

Installation is in the reverse order of removal.



# MAIN STEP

## REMOVAL/INSTALLATION

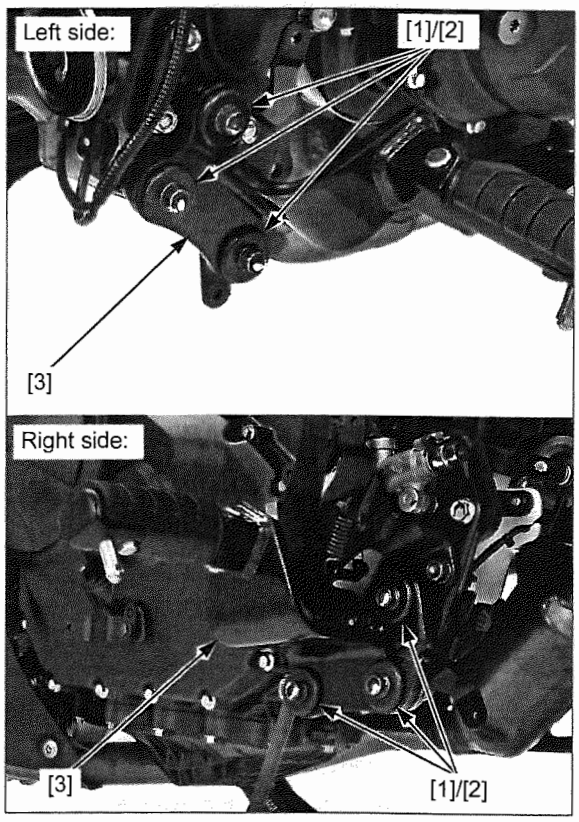
Remove the under side cowls (page 2-13).

Remove the bolts [1], collars [2] and main step [3].

Installation is in the reverse order of removal.

**TORQUE:**

**Main step mounting bolt:**
**27 N·m (2.8 kgf·m, 20 lbf·ft)**




# SEAT

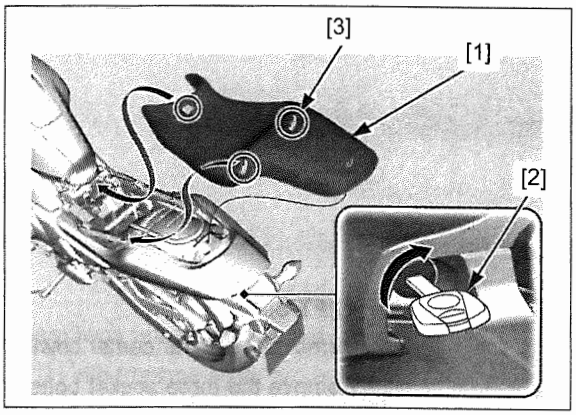
## REMOVAL/INSTALLATION

Unlock the seat [1] using the ignition key [2].

Pull the seat backward and remove it.

Install the seat by aligning the hooks [3] with grooves of the frame.

Push the rear end of the seat and lock the seat catch.



### KEY CYLINDER REMOVAL/INSTALLATION

Remove the seat (page 2-14).

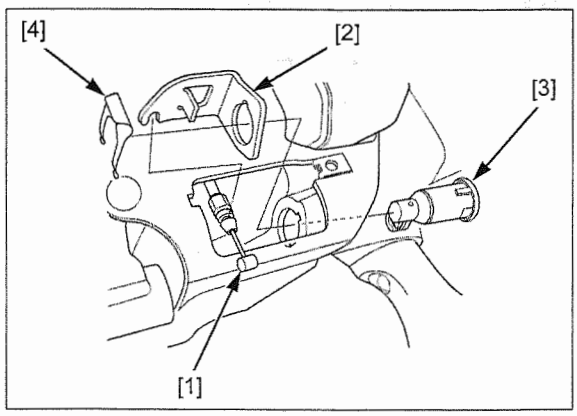
Release the seat lock cable [1] from cable guide [2], then disconnect it from the key cylinder [3]

Remove the following:

- Spring [4]
- Cable guide
- Key cylinder

Installation is in the reverse order of removal.

- When installing the key cylinder, align each part direction as shown.



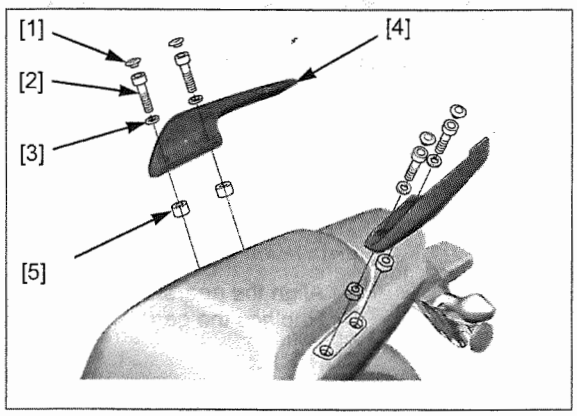

# REAR GRIP (CTX700/A/D)

## REMOVAL/INSTALLATION

Remove the following:

- Caps [1]
- Socket bolts [2]
- Washers [3]
- Rear grips [4]
- Collars [5]

Installation is in the reverse order of removal.




# REAR SIDE COWL

## REMOVAL/INSTALLATION

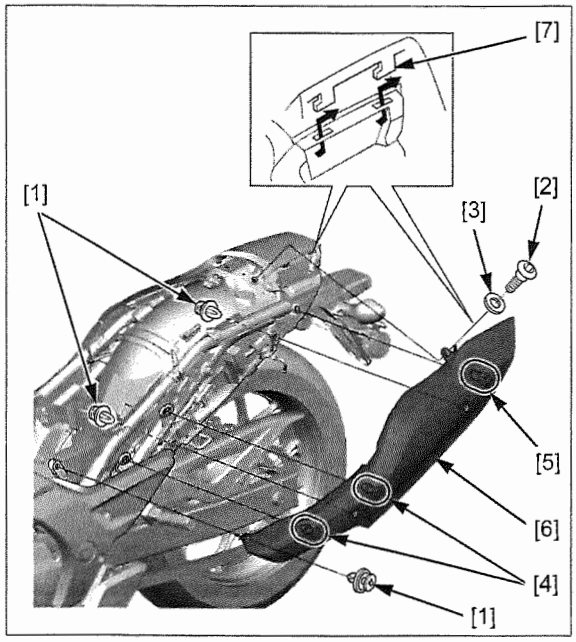
Remove the following:

- Seat (page 2-14)
- Rear grip (page 2-15) (CTX700/A/D)
- Three trim clips [1]
- Socket bolt [2]
- Rubber washer [3]

Release the two bosses [4] and snap fit clip [5].

Slightly pull the rear cowl [6] backward and release the hooks [7], then remove the rear cowl.

Installation is in the reverse order of removal.



# REAR CENTER COWL

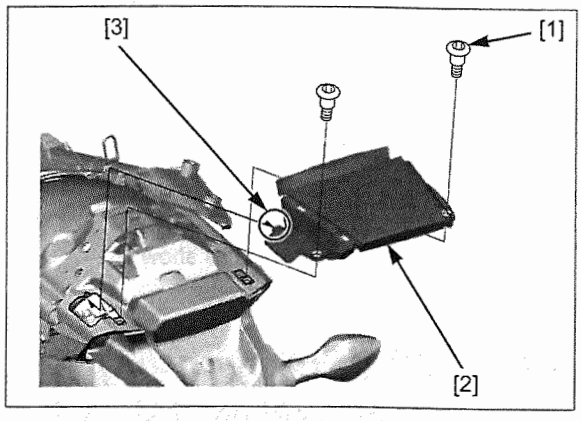
## REMOVAL/INSTALLATION

Remove the rear side cowls (page 2-15).

Remove the two socket bolts [1].

Remove the rear center cowl [2] by releasing the tabs [3] from the slots of frame.

Installation is in the reverse order of removal.




# LEFT CRANKCASE REAR COVER

## REMOVAL/INSTALLATION

### CTX700/A/N/NA

Remove the gearshift arm pinch bolt [1] and gearshift arm [2].

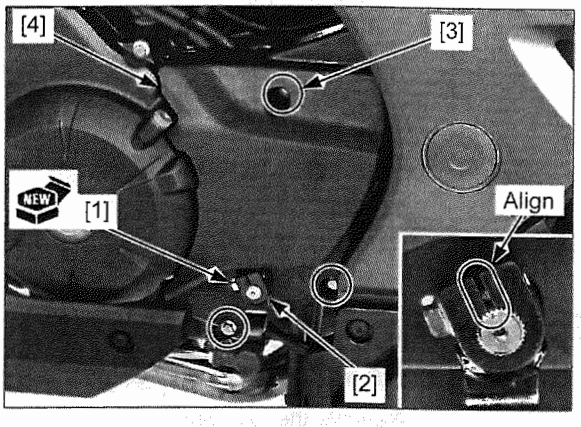
Remove the three bolts [3] and left crankcase rear cover [4].

Installation is in the reverse order of removal.

- Align the gearshift arm slit with the punch mark.
- Replace the gearshift arm pinch bolt with a new one.

**TORQUE:**

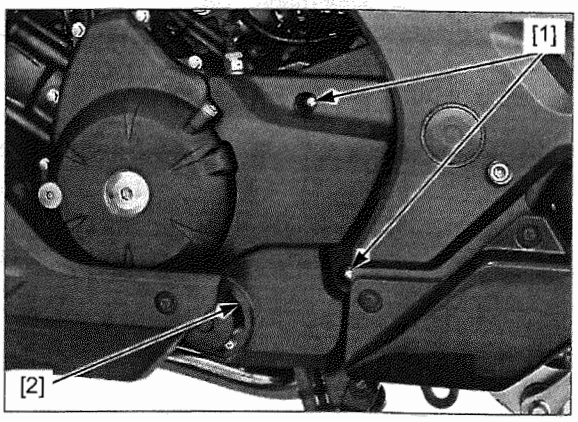
**Gearshift arm pinch bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**




### CTX700D/ND

Remove the two bolts [1] and left crankcase rear cover [2].

Installation is in the reverse order of removal.

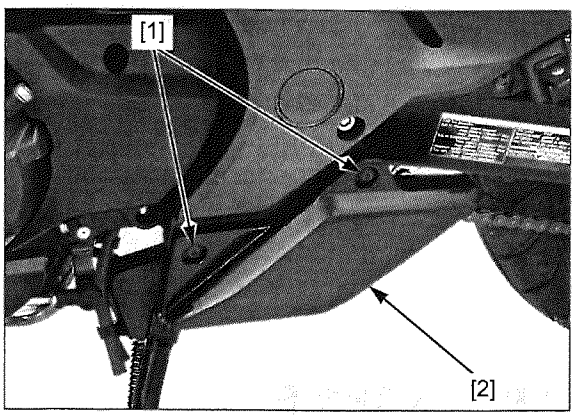


# LEFT REAR UNDER COVER

## REMOVAL/INSTALLATION

Remove the two socket bolts [1] and left rear under cover [2].

Installation is in the reverse order of removal.




# SWIGARM PIVOT COVER

## REMOVAL/INSTALLATION

Remove the rear side cowl (page 2-15).

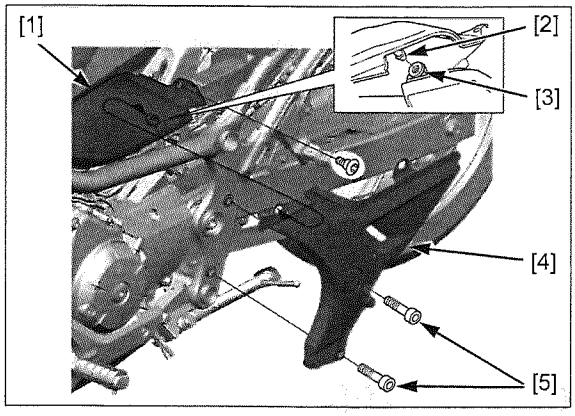
*Right side:* Remove the muffler cover (page 2-19).

*Left side:* Remove the left rear under cover (page 2-17).

Slightly pull the side cover [1] and release its boss [2] from the grommet [3] of the swingarm pivot cover [4].

Remove the two socket bolts [5] and swingarm pivot cover.

Installation is in the reverse order of removal.




# REAR FENDER A

## REMOVAL/INSTALLATION

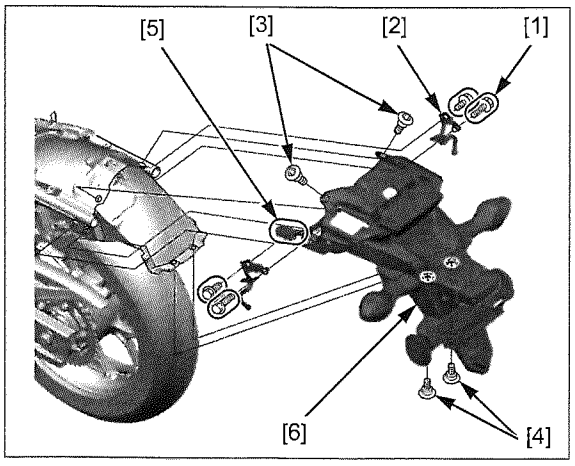
Remove the following:

- Rear center cowl (page 2-16)
- Seat lock key cylinder (page 2-15)
- Four bolts [1] and luggage hooks [2]
- Two socket bolts [3] (large head)
- Two socket bolts [4]

Disconnect the brake/tail light 6P (Black) connector [5].

Pull the rear fender A [6] backward and remove it.

Installation is in the reverse order of removal.



## REAR REFLECTORS REMOVAL/INSTALLATION

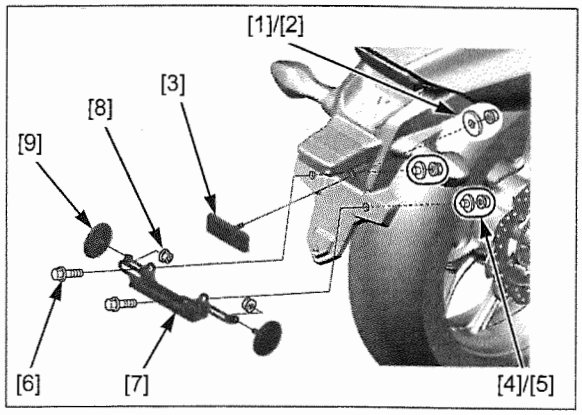
Remove the nut [1], washer [2] and rear reflector [3].

Remove the two nuts [4], collars [5[, bolts [6] and number plate stay [7].

Remove the nuts [8] and rear side reflectors [9].

Installation is in the reverse order of removal.

**TORQUE:**
**Reflector mounting nut:**
**1.7 N·m (0.2 kgf·m, 1.3 lbf·ft)**



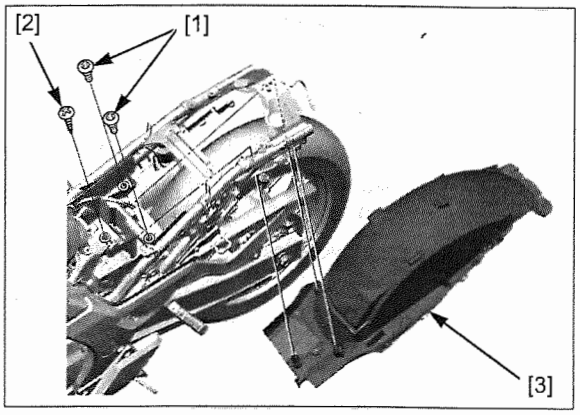

# REAR FENDER B

## REMOVAL/INSTALLATION

Remove the following:

- Rear fender A (page 2-17)
- Turn signal/hazard relay (page 22-22)
- Battery (page 21-5)
- Two socket bolts [1]
- Screw [2]
- Rear fender B [3]

Installation is in the reverse order of removal.



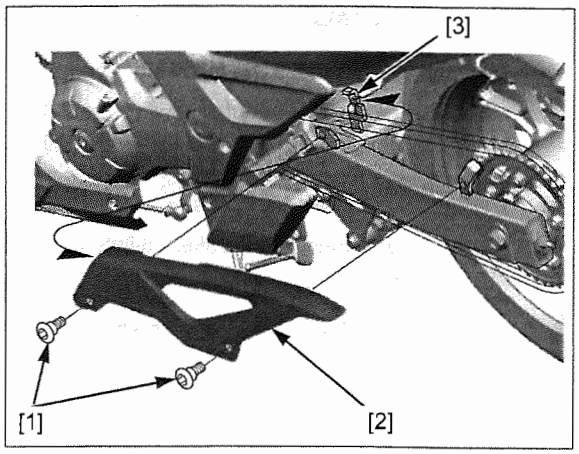

# CHAIN COVER

## REMOVAL/INSTALLATION

Remove the two socket bolts [1].

Remove the chain cover [2] by releasing it from the tab [3] of the swingarm.

Installation is in the reverse order of removal.



# EXHAUST PIPE/MUFFLER

## MUFFLER REMOVAL/INSTALLATION

Remove the socket bolt [1].

Remove the muffler cover [2] by releasing the bosses [3] from the slots [4] of the muffler [5].

Loosen the muffler band bolts [6].

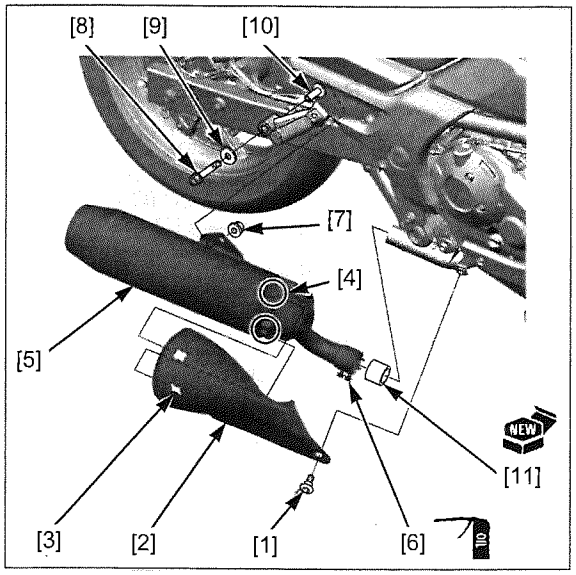
Remove the following:

- Muffler mounting nut [7]/bolt [8]/washer [9]
- Muffler
- Collar [10]
- Gasket [11]

Installation is in the reverse order of removal.

- Replace the gasket with a new one.
- Apply engine oil to the muffler band bolt threads and seating surface.

**TORQUE:**
**Muffler band bolt:**
**20 N·m (2.0 kgf·m, 15 lbf·ft)**
**Muffler cover socket bolt:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**




## EXHAUST PIPE REMOVAL/INSTALLATION

Remove the muffler (page 2-19).

Disconnect the $O_2$ sensor 1P (Black) connector (page 4-36).

Remove the bolt [1] and release the ground terminal [2].

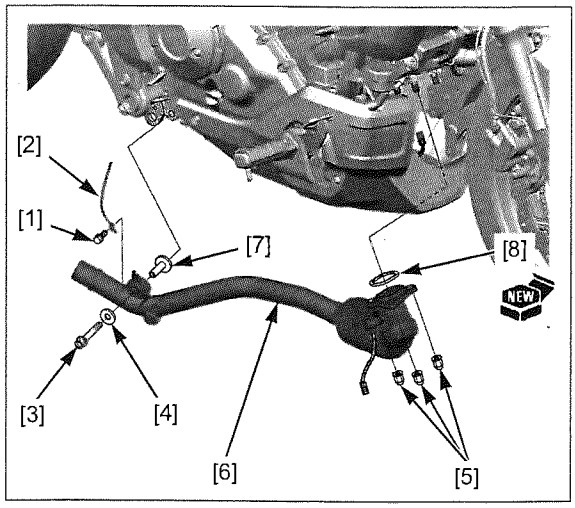
Remove the following:

- Exhaust pipe mounting bolt [3]/washer [4]
- Three joint nuts [5]
- Exhaust pipe [6]
- Collar [7]
- Gasket [8]

Installation is in the reverse order of removal.

- Replace the gasket with a new one.

**TORQUE:**
**Exhaust pipe joint nut:**
**28 N·m (2.9 kgf·m, 21 lbf·ft)**




## STUD BOLT REPLACEMENT

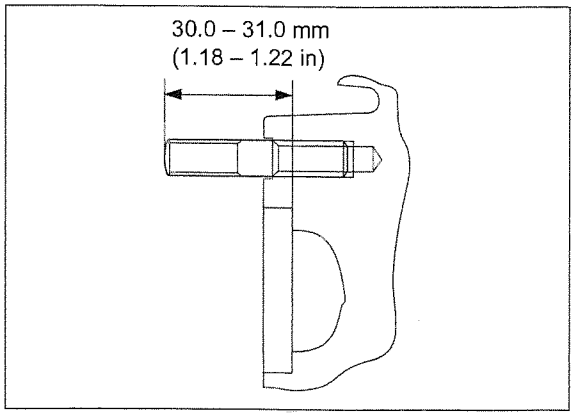
Remove the exhaust pipe (page 2-19).

Thread two nuts onto the stud and tighten them together, and use a wrench on them to turn the stud bolt out.

Install new stud bolts into the cylinder head as shown.

After installing the stud bolts, check that the length from the bolt head to the cylinder head surface is within specification.

Install the exhaust pipe (page 2-19).



# CENTER CROSS PLATE

## REMOVAL/INSTALLATION

Remove the fuel tank (page 7-7).

Disconnect the ABS modulator 18P (Black) connector (CTX700A/D/NA/ND) (page 20-7).

Release the following from the center cross plate [1]:

- Alarm 6P connector (Optional) [2]
- CKP sensor 2P (Red) connector [3]
- Sidestand switch 2P (Gray) connector [4]
- Wire band bosses [5]

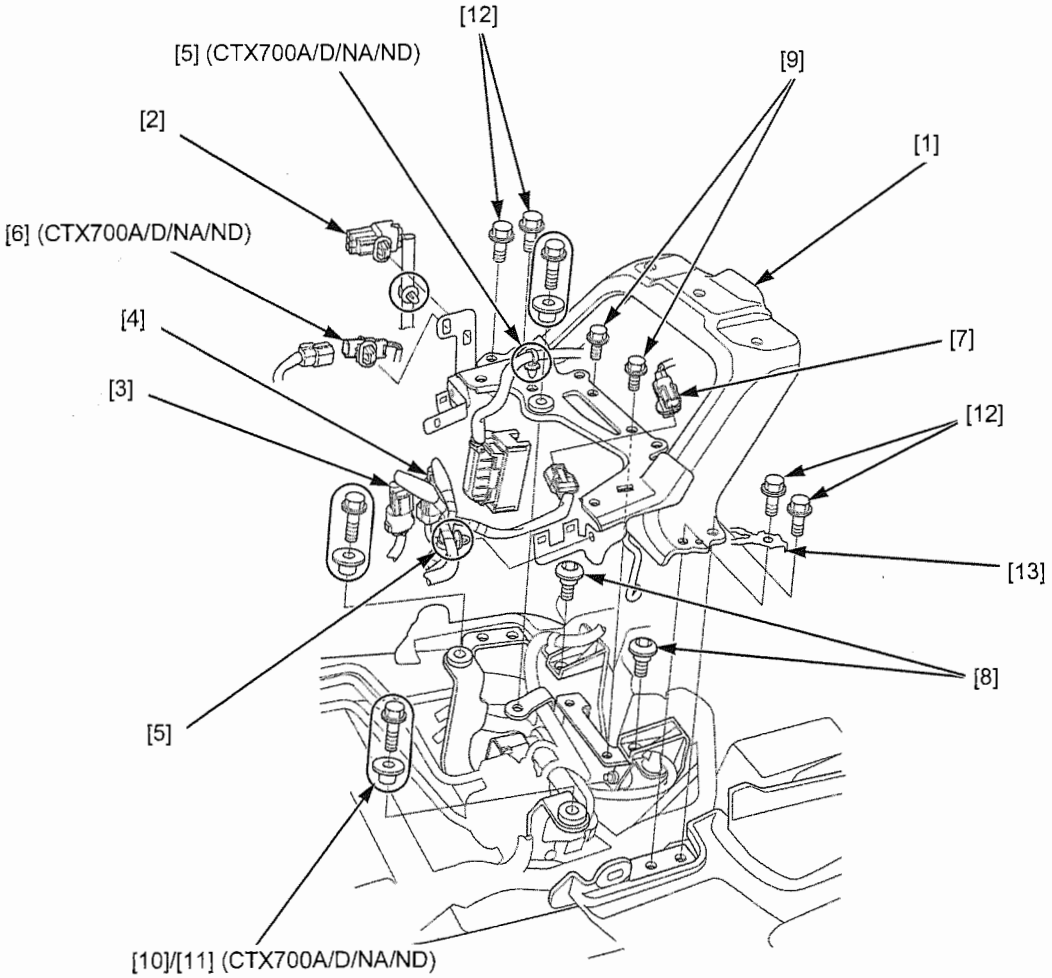
Release and disconnect the following:

- Rear wheel speed sensor 2P (Gray) connector [6] (CTX700A/D/NA/ND)
- Bank angle sensor 2P (Black) connector [7]

Remove the following:

- Two socket bolts [8]
- Two bolts [9]
- Three bolts [10]/collars [11] (CTX700A/D/NA/ND)
- Four bolts [12]/ground terminals [13]
- Center cross plate

Installation is in the reverse order of removal.



# SERVICE INFORMATION

## GENERAL

- Place the motorcycle on level surface before starting any work.
- Gasoline is extremely flammable and is explosive under certain conditions.
- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire or explosion.
- The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

# MAINTENANCE SCHEDULE

## CTX700/A/N/NA

Perform the Pre-ride inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace if necessary. C: Clean. R: Replace. A: Adjust. L: Lubricate.

The following items require some mechanical knowledge. Certain items (particularly those marked * and **) may require more technical information and tools. Consult a dealer.

| | | FREQUENCY | ODOMETER READING (NOTE 1) | | | | | | | | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | x 1,000 mi | 0.6 | 4 | 8 | 12 | 16 | 20 | 24 | TO |
| | ITEMS | NOTE | x 1,000 km | 1.0 | 6.4 | 12.8 | 19.2 | 25.6 | 32.0 | 38.4 | PAGE |
| * | FUEL LINE | | | | | I | | I | | I | 3-4 |
| * | THROTTLE OPERATION | | | | | I | | I | | I | 3-4 |
| | AIR CLEANER | NOTE 2 | | | | | R | | | R | 3-5 |
| | CRANKCASE BREATHER | NOTE 3 | | | C | C | C | C | C | C | 3-6 |
| | SPARK PLUG | | EVERY 16,000 mi (25,600 Km) I, EVERY 32,000 mi (51,200 Km) R | | | | | | | | 3-6 |
| * | VALVE CLEARANCE | | | | | I | | I | | I | 3-7 |
| | ENGINE OIL | | INITIAL = 600 mi (1,000 km) or 1 month: R REGULAR = EVERY 8,000 mi (12,800 km) or 12 months: R | | | | | | | | 3-9 |
| | ENGINE OIL FILTER | | | R | | R | | R | | R | 3-10 |
| * | ENGINE IDLE SPEED | | | I | I | I | I | I | I | I | 3-11 |
| | RADIATOR COOLANT | NOTE 5 | | | | I | | I | | R | 3-12 |
| * | COOLING SYSTEM | | | | | I | | I | | I | 3-12 |
| * | EVAPORATIVE EMISSION CONTROL SYSTEM | NOTE 4 | | | | | I | | | I | 3-13 |
| | DRIVE CHAIN | | EVERY 500 mi (800 Km) I, L | | | | | | | | 3-13 |
| | BRAKE FLUID | NOTE 5 | | | I | I | R | I | I | R | 3-16 |
| | BRAKE PADS WEAR | | | | I | I | I | I | I | I | 3-17 |
| | BRAKE SYSTEM | | | I | | I | | I | | I | 3-18 |
| | BRAKE LIGHT SWITCH | | | | | I | | I | | I | 3-18 |
| | HEADLIGHT AIM | | | | | I | | I | | I | 3-19 |
| | CLUTCH SYSTEM | | | I | I | I | I | I | I | I | 3-20 |
| | SIDESTAND | | | | | I | | I | | I | 3-20 |
| * | SUSPENSION | | | | | I | | I | | I | 3-21 |
| * | NUTS, BOLTS, FASTENERS | | | I | | I | | I | | I | 3-21 |
| ** | WHEELS/TIRES | | | | | I | | I | | I | 3-22 |
| ** | STEERING HEAD BEARINGS | | | I | | I | | I | | I | 3-22 |

* Should be serviced by a dealer, unless the owner has proper tools and service data and is mechanically qualified.

** In the interest of safety, we recommend these items be serviced only by a dealer.

NOTES:

1. At higher odometer readings, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. 50 state model only.
5. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.

## CTX700D/ND

Perform the Pre-ride inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace if necessary. C: Clean. R: Replace. A: Adjust. L: Lubricate.

The following items require some mechanical knowledge. Certain items (particularly those marked * and **) may require more technical information and tools. Consult a dealer.

| | ITEMS | FREQUENCY NOTE | ODOMETER READING (NOTE 1) x 1,000 mi | 0.6 | 4 | 8 | 12 | 16 | 20 | 24 | REFER TO PAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | x 1,000 km | 1.0 | 6.4 | 12.8 | 19.2 | 25.6 | 32.0 | 38.4 | |
| * | FUEL LINE | | | | | I | | I | | I | 3-4 |
| * | THROTTLE OPERATION | | | | | I | | I | | I | 3-4 |
| | AIR CLEANER | NOTE 2 | | | | | R | | | R | 3-5 |
| | CRANKCASE BREATHER | NOTE 3 | | | C | C | C | C | C | C | 3-6 |
| | SPARK PLUG | | EVERY 16,000 mi (25,600 Km) I, EVERY 32,000 mi (51,200 Km) R | | | | | | | | 3-6 |
| * | VALVE CLEARANCE | | | | | I | | I | | I | 3-7 |
| | ENGINE OIL | | INITIAL = 600 mi (1,000 km) or 1 month: R REGULAR = EVERY 8,000 mi (12,800 km) or 12 months: R | | | | | | | | 3-9 |
| | ENGINE OIL FILTER | | | R | | R | | R | | R | 3-10 |
| | CLUTCH OIL FILTER | | | R | | | | R | | | 3-11 |
| * | ENGINE IDLE SPEED | | | I | I | I | I | I | I | I | 3-11 |
| | RADIATOR COOLANT | NOTE 5 | | | | I | | I | | R | 3-12 |
| * | COOLING SYSTEM | | | | | I | | I | | I | 3-12 |
| * | EVAPORATIVE EMISSION CONTROL SYSTEM | NOTE 4 | | | | | I | | | I | 3-13 |
| | DRIVE CHAIN | | EVERY 500 mi (800 Km) I, L | | | | | | | | 3-13 |
| | BRAKE FLUID | NOTE 5 | | | I | I | R | I | I | R | 3-16 |
| | BRAKE PADS WEAR | | | | I | I | I | I | I | I | 3-17 |
| | BRAKE SYSTEM | | | I | | I | | I | | I | 3-18 |
| | BRAKE LIGHT SWITCH | | | | | I | | I | | I | 3-18 |
| * | BRAKE LOCK OPERATION | | | I | I | I | I | I | I | I | 3-18 |
| | HEADLIGHT AIM | | | | | I | | I | | I | 3-19 |
| | SIDESTAND | | | | | I | | I | | I | 3-20 |
| * | SUSPENSION | | | | | I | | I | | I | 3-21 |
| * | NUTS, BOLTS, FASTENERS | | | I | | I | | I | | I | 3-21 |
| ** | WHEELS/TIRES | | | | | I | | I | | I | 3-22 |
| ** | STEERING HEAD BEARINGS | | | I | | I | | I | | I | 3-22 |

* Should be serviced by a dealer, unless the owner has proper tools and service data and is mechanically qualified.

** In the interest of safety, we recommend these items be serviced only by a dealer.

NOTES:

1. At higher odometer readings, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. 50 state model only.
5. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.

# FUEL LINE

## INSPECTION

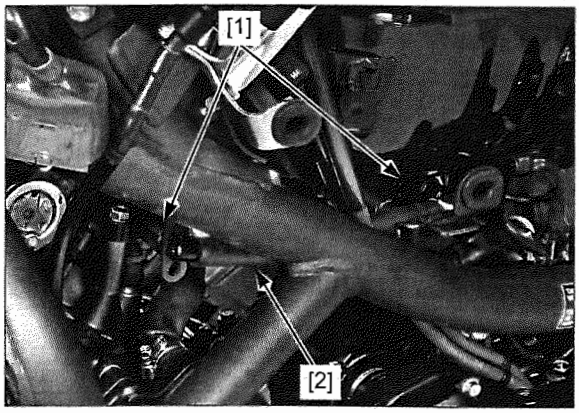
Remove the left side shelter (page 2-11).

Check the quick connect fitting [1] for looseness.

Check the fuel feed hose [2] for deterioration, damage or leakage.

Check the quick connect fittings for dirt, and clean if necessary.

Replace the fuel pump packing if necessary (page 7-10)




# THROTTLE OPERATION

Check for any deterioration or damage to the throttle cable.
Check the throttle grip for smooth operation.
Check that the throttle opens and automatically closes in all steering positions.

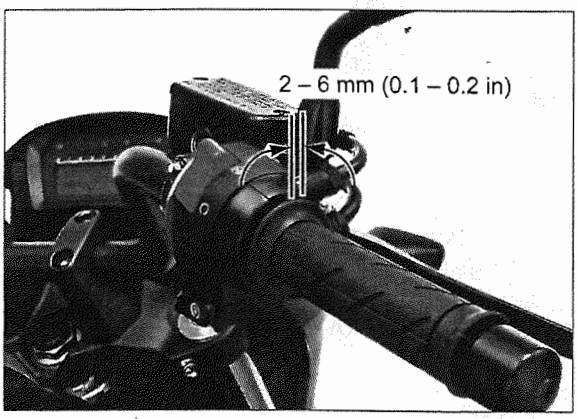
If the throttle grip does not return properly, lubricate the throttle grip housing.

If the throttle grip still does not return properly, replace the throttle cable.

With the engine idling, turn the handlebar all the way to the right and left to ensure that the idle speed does not change.
If idle speed increases, check the throttle grip freeplay and throttle cable connection.

Measure the throttle grip freeplay at the throttle grip flange.

**FREEPLAY: 2 – 6 mm (0.1 – 0.2 in)**



Throttle grip freeplay can be adjusted at either end of the throttle cable.

Minor adjustment is made with the upper adjuster at throttle housing adjuster.

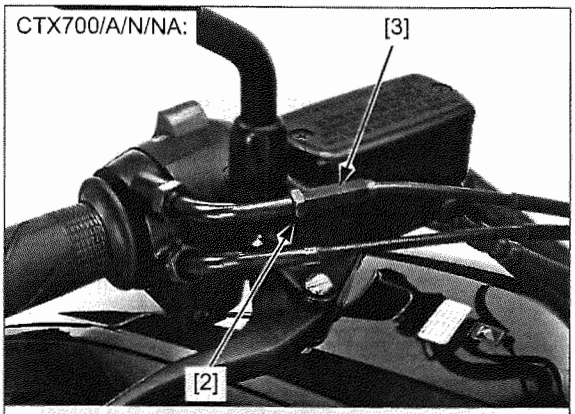
*CTX700D/ND only:* Release the dust cover [1].

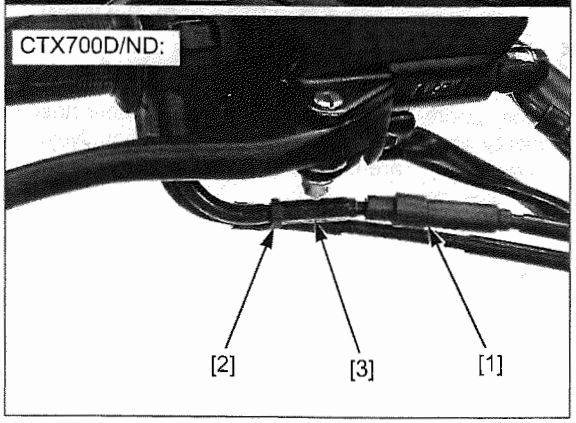
Loosen the lock nut [2] and turning the adjuster [3].

Tighten the lock nut while holding the adjuster

*CTX700D/ND only:* Reposition the dust cover properly on the adjuster.

Recheck the throttle operation.

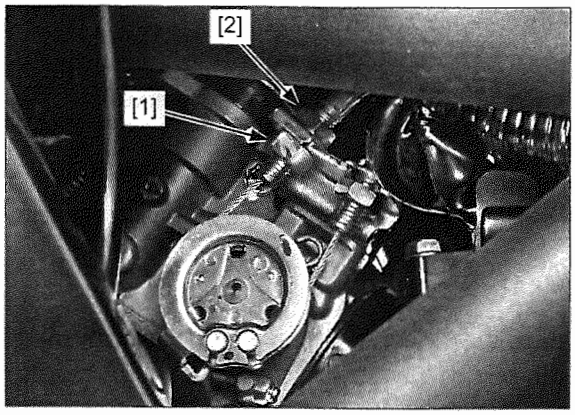



Major adjustment is made with the lower adjuster nut at the throttle body.

Loosen the lock nut [1] and turn the adjuster nut [2]. Tighten the lock nut while holding the adjuster nut.

Recheck the throttle operation.



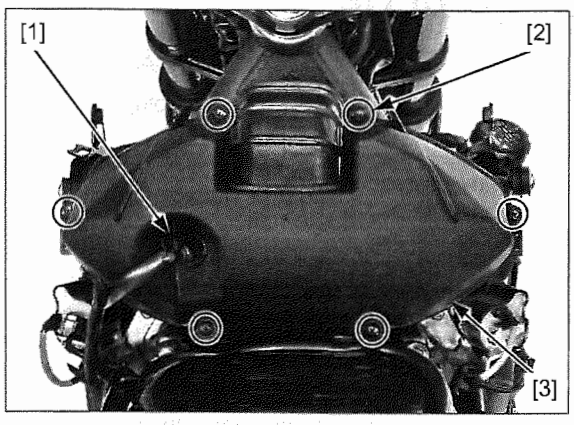

# AIR CLEANER

## REMOVAL/INSTALLATION

Remove the center shelter (page 2-12).

Disconnect the IAT sensor 2P (Black) connector [1].

Remove the air cleaner housing cover screws [2] and air cleaner housing cover [3].



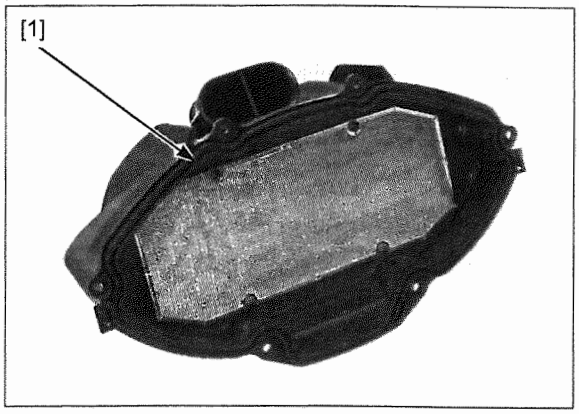
Remove the air cleaner element [1] from the housing cover.

Inspect the air cleaner element in accordance with the maintenance schedule (page 3-2) or any time the motorcycle has been ridden in unusually wet or dusty areas.

Install the air cleaner element in the reverse order of removal.

- Check that the condition of the packings, replace them if necessary.

**TORQUE:**
**Air cleaner housing cover screw:**
**1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)**

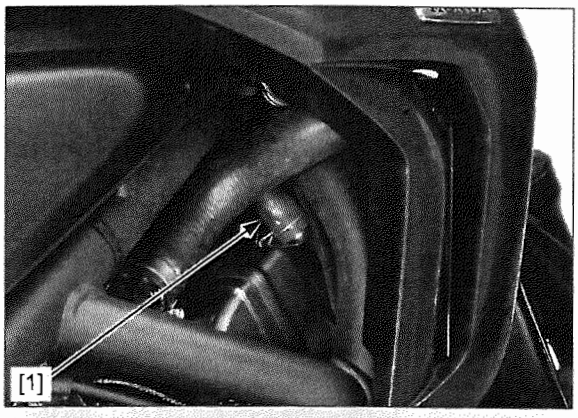



# CRANKCASE BREATHER

*Service more frequently when ridden in rain, at full throttle, or after the motorcycle is washed or overturned.*

Check the crankcase breather hose [1] for deterioration, damage or loose connection. Make sure that the hoses are not kinked, pinched or cracked.

Replace the crankcase breather hose if necessary.

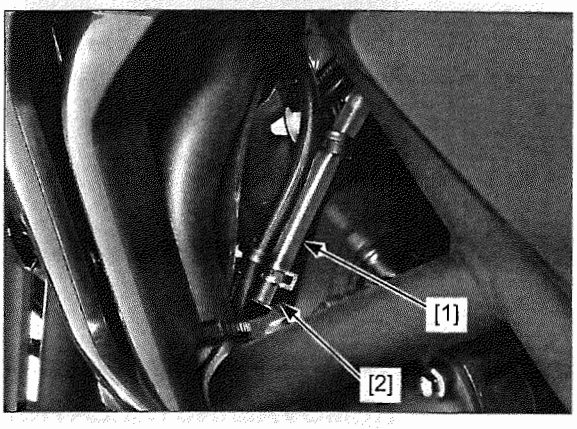



*Service if the deposits level can be seen in the transparent section of the air cleaner housing drain hose.*

Check the air cleaner housing drain hose [1].

If necessary, remove the drain plug [2] from the air cleaner housing drain hose and drain the deposits into a suitable container.

Reinstall the drain plug securely.




# SPARK PLUG

## REMOVAL/INSTALLATION

Disconnect the spark plug caps [1].

*Clean around the spark plug base with compressed air before removing the spark plug, and be sure that no debris is allowed to enter the combustion chamber.*

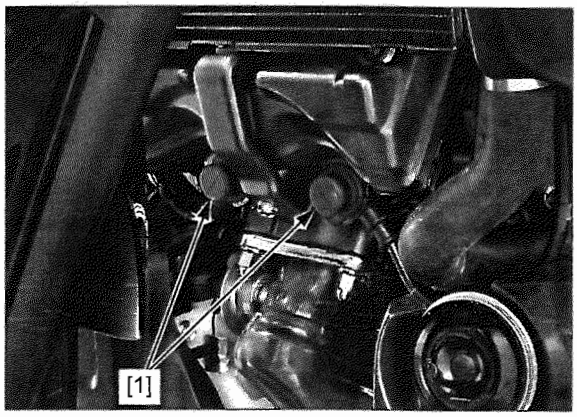
Remove the spark plug using the equipped spark plug wrench.

Inspect or replace the spark plug as described in the maintenance schedule (page 3-2).

Install and hand tighten the spark plug to the cylinder head, then tighten the spark plug to the specified torque using the equipped spark plug wrench.

**TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)**

Connect the spark plug caps securely.

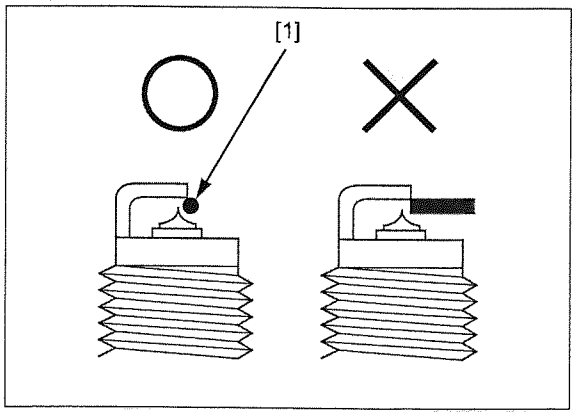


## INSPECTION

*To prevent damaging the iridium center electrode, use a wire type feeler gauge to check the spark plug gap.*

Check the spark plug gap between the center and side electrodes with a wire type feeler gauge [1].

Make sure that the Φ 1.2 mm (0.05 in) plug gauge does not insert between the gap.




*Do not adjust the spark plug gap. If the gap is out of specification, replace with a new one.*

If the gauge can be inserted into the gap, replace the plug with a new one.

# VALVE CLEARANCE

## INSPECTION

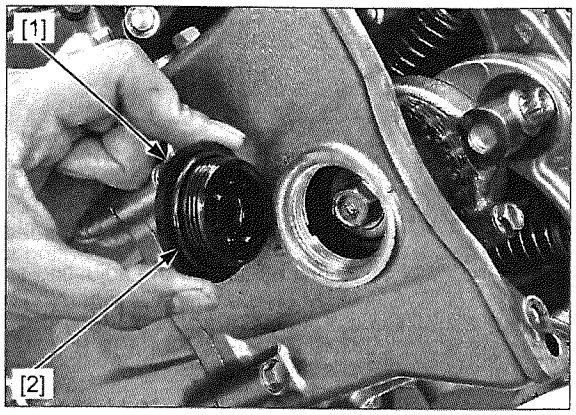
NOTE:

- Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).
- After the valve clearance inspection, check the engine idle speed (page 3-11).
- Inspection and adjustment of the valve clearance can be serviced with the engine installed in the frame.

Remove the cylinder head cover (page 10-5).

Remove the timing hole cap and crankshaft hole cap.

Remove the camshaft maintenance cap [1] and O-ring [2].

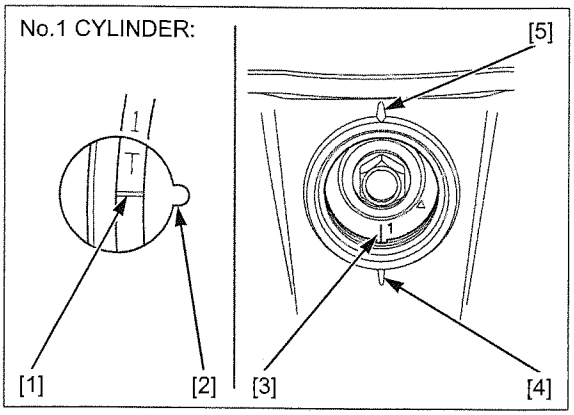



*No.1 Cylinder:*

Rotate the crankshaft counterclockwise and align the "1T" mark [1] on the flywheel with the index notch [2] on the alternator cover.

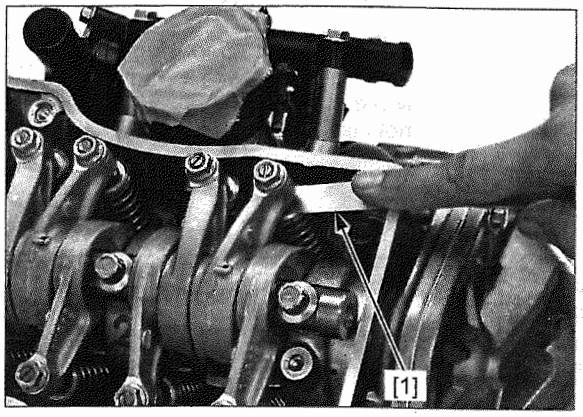
Make sure that the "1" mark [3] on the cam sprocket is aligned with the lower cylinder head index line [4].

If the "1" mark is facing upper cylinder head index line [5], turn the crankshaft counterclockwise one full turn (360°) and realign the "1T" mark with the index notch.



Check the valve clearance by inserting a feeler gauge [1] between the valve adjusting screw and valve stem.

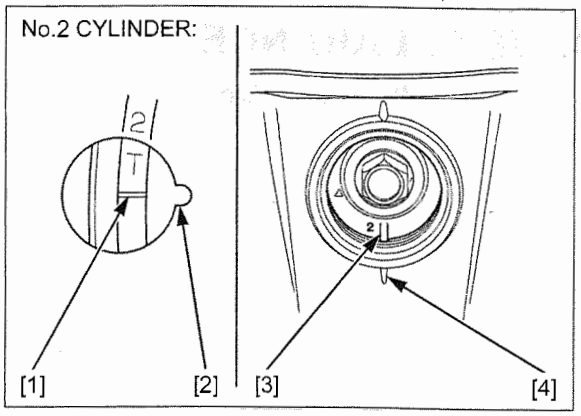
**VALVE CLEARANCE:**
**IN: 0.17 ± 0.02 mm (0.007 ± 0.001 in)**
**EX: 0.28 ± 0.02 mm (0.011 ± 0.001 in)**




*No.2 Cylinder:* Rotate the crankshaft counterclockwise 3/4 turn (270°) and align the "2T" mark [1] on the flywheel with the index notch [2] on the alternator cover.

Make sure that the "2" mark [3] on the cam sprocket is aligned with the lower cylinder head index line [4].

Check the valve clearance in the same manner as No.1 cylinder.




## ADJUSTMENT

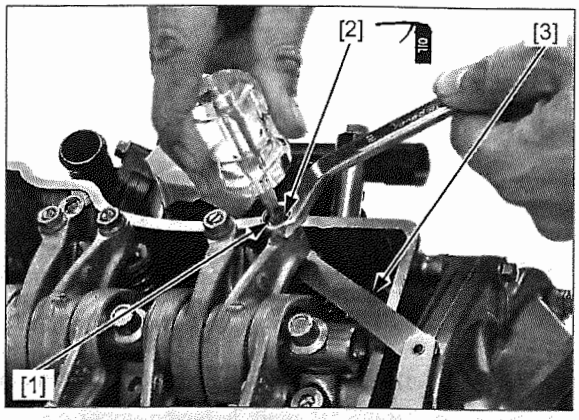
Loosen the lock nut [1] and apply engine oil to the adjusting screw threads and seating surface.

Adjust by turning the adjusting screw [2] until there is a slight drag on the feeler gauge [3].

Hold the adjusting screw and tighten the lock nut to the specified torque.

**TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)**

After tightening the lock nut, recheck the valve clearance.

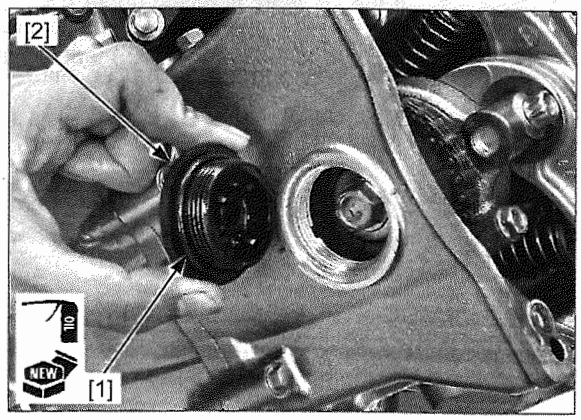



Apply engine oil to a new O-ring [1] and install it to the camshaft maintenance cap [2].

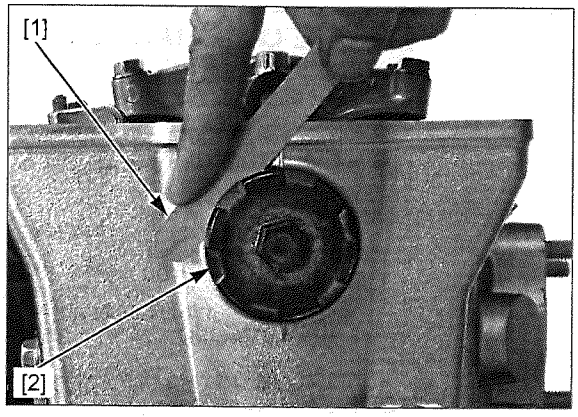
Temporarily Install the camshaft maintenance cap to the cylinder head.

If the engine is removed from the frame, tighten the camshaft maintenance cap to the specified torque.

**TORQUE: 4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)**



If the engine is installed on the frame, insert a feeler gauge (0.1 mm) [1] between the camshaft maintenance cap and cylinder head.




Tighten the camshaft maintenance cap securely.

Remove the feeler gauge.

Further tighten the camshaft maintenance cap at 30°.

NOTE:

- The length of one concave area [2] on the camshaft maintenance cap is equivalent with 30°.

Install the cylinder head cover (page 10-5).

Apply engine oil to new O-rings and install them to the timing hole cap and crankshaft hole cap.

Apply grease to the timing hole cap and crankshaft hole cap threads, then install and tighten them.

**TORQUE:**
**Timing hole cap:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**
**Crankshaft hole cap:**
**15 N·m (1.5 kgf·m, 11 lbf·ft)**

# ENGINE OIL

## OIL LEVEL INSPECTION

Hold the motorcycle in an upright position.

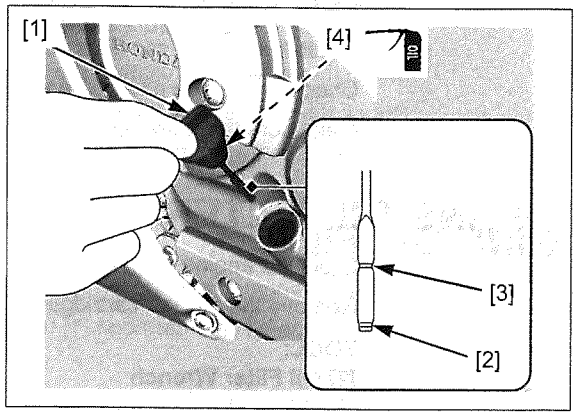
Start the engine and let it idle for 3 – 5 minutes.
Stop the engine and wait 2 – 3 minutes.

Remove the oil filler cap/dipstick [1] and wipe it clean.

Reinstall the oil filler cap/dipstick, but do not screw it.

Remove the oil filler cap/dipstick and check the oil level.

If the level is below or near the lower level [2] on the dipstick, fill the recommended engine oil to the upper level [3].




**RECOMMENDED ENGINE OIL:**
**Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motorcycle oil**
**API service classification: SG or Higher**
**JASO T 903 standard: MA**
**Viscosity: SAE 10W-30**

Check that the O-ring [4] is in good condition, replace it if necessary.

Apply engine oil to the O-ring.

Install the oil filler cap/dipstick.

## ENGINE OIL CHANGE

Warm up the engine.

Stop the engine and remove the oil filler cap/dipstick.

Place an oil pan under the engine to catch the engine oil, then remove the engine oil drain bolt [1]/sealing washer [2].

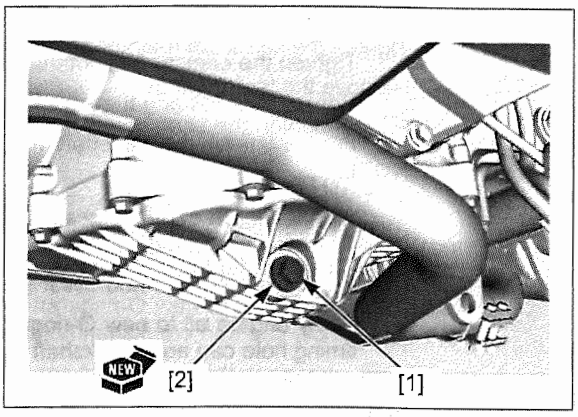
Drain the engine oil completely.

Install a new sealing washer onto the drain bolt.

Install and tighten the drain bolt/sealing washer to the specified torque.

**TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)**

Fill the engine with the recommended engine oil (page 3-9).




**ENGINE OIL CAPACITY:**

**CTX700/A/N/NA:**

**3.1 liters (3.3 US qt, 2.7 Imp qt) at draining**

**3.4 liters (3.6 US qt, 3.0 Imp qt) at oil filter change**

**3.7 liters (3.9 US qt, 3.3 Imp qt) at disassembly**

**CTX700D/ND:**

**3.2 liters (3.4 US qt, 2.8 Imp qt) at draining**

**3.4 liters (3.6 US qt, 3.0 Imp qt) at oil filter change**

**4.1 liters (4.3 US qt, 3.6 Imp qt) at disassembly**

Install the oil filler cap/dipstick [1].

Check the engine oil level (page 3-9).

Make sure there are no oil leaks.

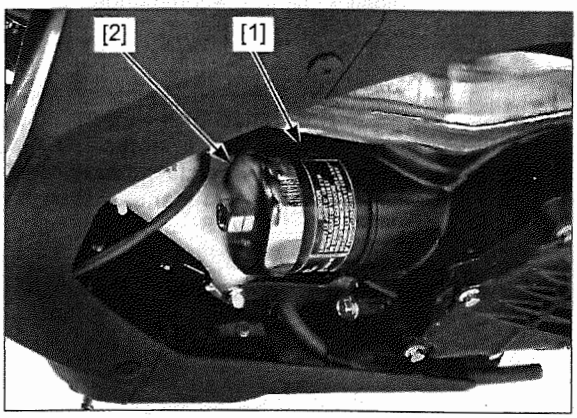
# ENGINE OIL FILTER

Drain the engine oil (page 3-10).

Remove the oil filter cartridge [1] using the special tool.

**TOOL:**

| | |
|---|---|
| **[2] Oil Filter Wrench** | **07HAA-PJ70101 or 07AAA-PLCA100 (U.S.A. only)** |

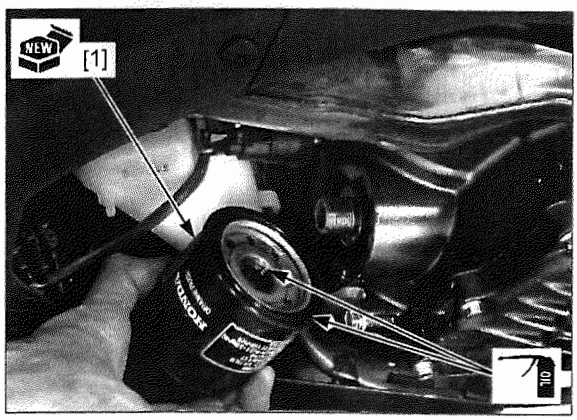



Apply engine oil to a new oil filter cartridge threads and O-ring.

Install and tighten the oil filter cartridge [1] to the specified torque.

**TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)**

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-9).



# CLUTCH OIL FILTER (CTX700D/ND)

NOTE:
Replace the engine oil filter when the clutch oil filter is replaced.

**NOTICE**

*Ensure the model-specific engine oil filter is used. Filters with a similar physical appearance may have different flow characteristics. The use of such filters could cause severe engine damage.*

Drain the engine oil (page 3-10).

Remove the right under side cowl (page 2-13).

Remove the following:

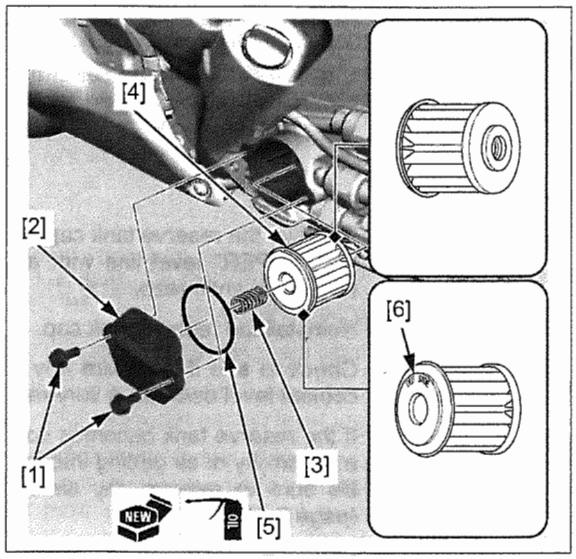
- Bolts [1]
- Clutch oil filter cover [2]
- Spring [3]
- Clutch oil filter [4]
- O-ring [5]

Install a new clutch oil fitter with the "OUTSIDE" mark [6] facing out.

Installation is in the reverse order of removal.

- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-9).




# ENGINE IDLE SPEED

NOTE:
- Inspect the idle speed after all other engine maintenance items have been performed and are within specifications.
- Before checking the idle speed, inspect the following items.
  - No DTC and MIL blinking
  - Spark plug condition (page 3-6)
  - Air cleaner element condition (page 3-5)
- The engine must be warm for accurate idle speed inspection.
- This system eliminates the need for manual idle speed adjustment compared to previous designs.

Turn the ignition switch ON and engine stop switch "○".

Start the engine and let it idle.
Check the idle speed.

**IDLE SPEED: 1,200 ± 100 rpm**

If the idle speed is out of the specification, check the following:

- Intake air leak or engine top-end problem (page 10-4)
- Throttle operation and freeplay (page 3-4)
- IACV operation (page 7-20)

# RADIATOR COOLANT

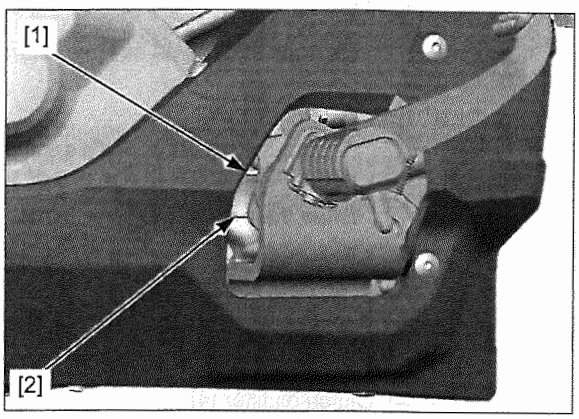
Check the coolant level of the reserve tank with the engine running at normal operating temperature.

The level should be between the "UPPER" level line [1] and "LOWER" level line [2] with the motorcycle in an upright position.

If necessary, add recommended coolant.

**RECOMMENDED ANTIFREEZE:**

**Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors**

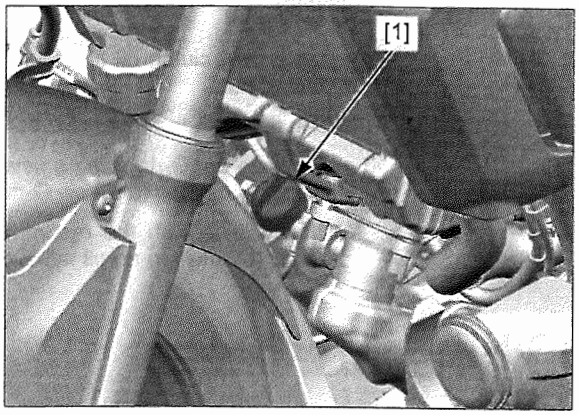



Remove the reserve tank cap [1] and add the coolant to the "UPPER" level line with a 1:1 mixture of distilled water and antifreeze.

Reinstall the reserve tank cap.

Check to see if there are any coolant leaks when the coolant level decreases very rapidly.

If the reserve tank becomes completely empty, there is a possibility of air getting into the cooling system.
Be sure to remove any air from the cooling system (page 8-4).




# COOLING SYSTEM

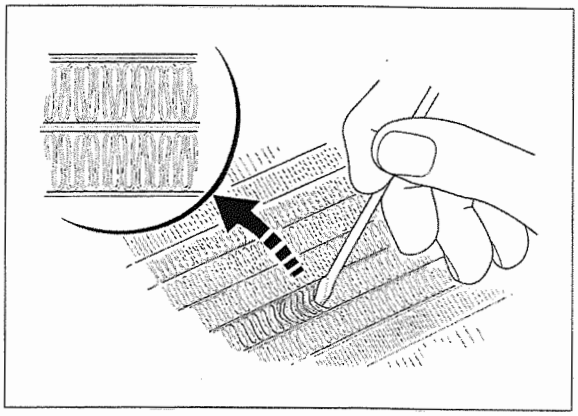
Check the radiator air passages for clogging or damage.

Straighten bent fins, and remove insects, mud or other obstructions with compressed air or low water pressure.

Replace the radiator if the air flow is restricted over more than 20 % of the radiating surface.

Inspect the water hoses for cracks or deterioration, and replace them if necessary.

Check the tightness of all water hose band screws (page 8-8).

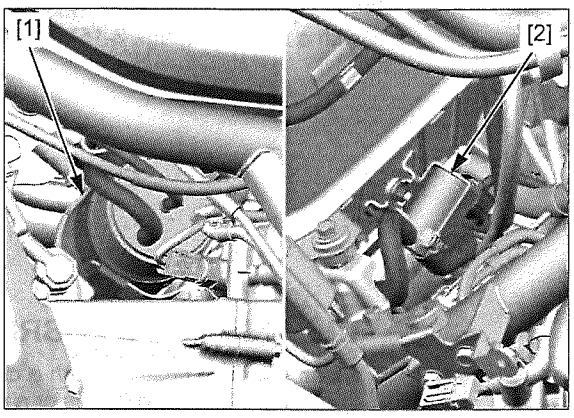


# EVAPORATIVE EMISSION CONTROL SYSTEM (50 STATE MODEL ONLY)

Remove the center shelter (page 2-12).

Check the hoses between the fuel tank, EVAP canister [1], EVAP purge control solenoid valve [2] for deterioration, damage or loose connection.

Check the EVAP canister for cracks or other damage.



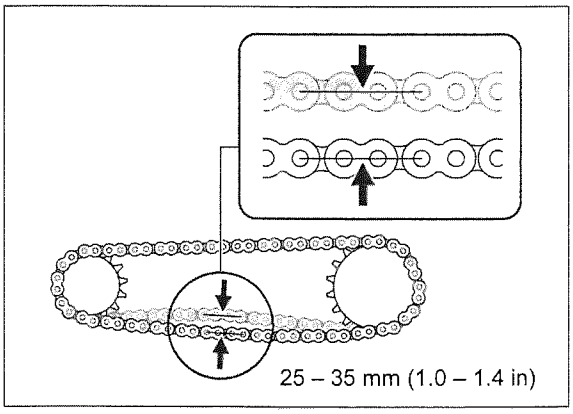

# DRIVE CHAIN

## DRIVE CHAIN SLACK INSPECTION

Turn the ignition switch OFF, support the motorcycle on its sidestand and shift the transmission into neutral.

Check the slack in the drive chain lower run midway between the sprockets.

**DRIVE CHAIN SLACK: 25 – 35 mm (1.0 – 1.4 in)**




**NOTICE**

- *Excessive chain slack, 50 mm (2.0 in) or more, may damage the frame.*

**⚠WARNING**

Amputation hazard. Never inspect or adjust the drive chain while the engine is running.

## ADJUSTMENT

Loosen the rear axle nut [1].

Loosen the lock nuts [2] and turn the adjusting nuts [3] until the correct drive chain slack is obtained.

Make sure the index lines [4] on both adjusting plates are aligned with the rear end of the axle slots [5] in the swingarm.

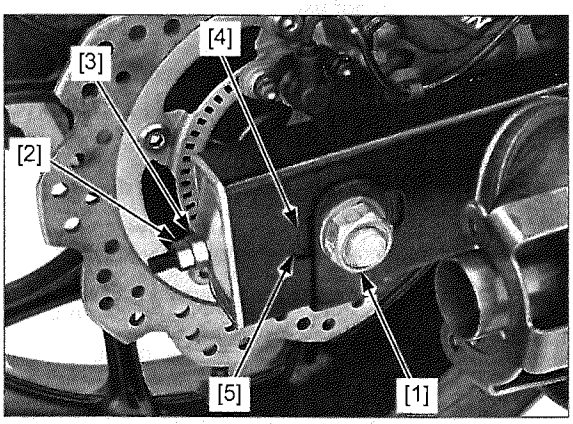
Tighten the axle nut to the specified torque.

**TORQUE: 98 N·m (10.0 kgf·m, 72 lbf·ft)**

Hold the adjusting nuts and tighten the lock nuts to the specified torque.

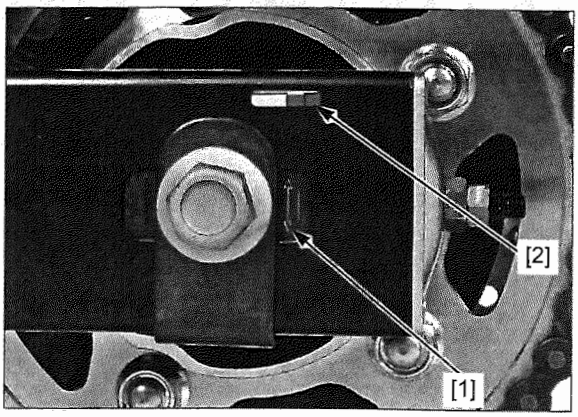
**TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)**

Recheck the drive chain slack and free wheel rotation.



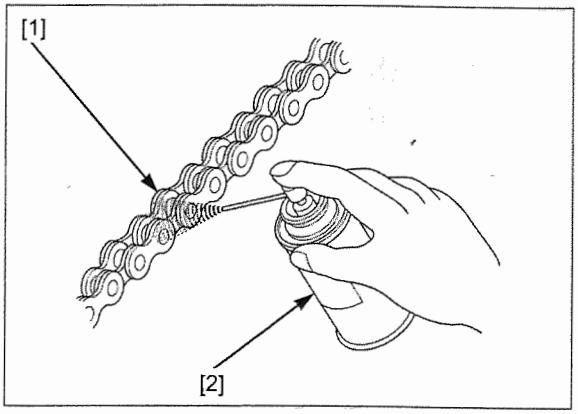
Check the drive chain wear indicator label attached on the left swingarm.

If the drive chain adjuster arrow mark [1] reaches red zone [2] of the indicator label, replace the drive chain with a new one (page 3-15).




## CLEANING AND LUBRICATION

Clean the drive chain [1] with a chain cleaner designed specifically for O-ring chains or a neutral detergent. Use a soft brush if the drive chain is dirty.




**NOTICE**

*Do not use a steam cleaner, high pressure cleaner, wire brush, volatile solvent such as gasoline and benzene, abrasive cleaner or a chain cleaner NOT designed specifically for O-ring chains to clean the drive chain.*

Inspect the drive chain for possible damage or wear.

Replace any drive chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.

Be sure the drive chain has dried completely before lubricating.

Lubricate the drive chain with drive chain lubricant [2].

**RECOMMENDED LUBRICANT:**
**Pro Honda HP Chain Lube or equivalent**

**NOTICE**

*Do not use a chain lubricant NOT designed specifically for use with O-ring chains to lubricate the drive chain.*

Wipe off the excess oil or drive chain lubricant.

## SPROCKET INSPECTION

Remove the left crankcase rear cover (page 2-16).

Inspect the drive and driven sprocket teeth for wear or damage, replace if necessary.

Never use a new drive chain on worn sprockets.
Both chain and sprockets must be in good condition, or new replacement chain will wear rapidly.

Check the attaching bolts and nuts on the drive and driven sprockets.

If any are loose, torque them.

**TORQUE:**
**Drive sprocket bolt:**
**54 N·m (5.5 kgf·m, 40 lbf·ft)**
**Driven sprocket nut:**
**108 N·m (11.0 kgf·m, 80 lbf·ft)**

Install the left crankcase rear cover (page 2-16).

## REPLACEMENT

This motorcycle uses a drive chain with a staked master link.

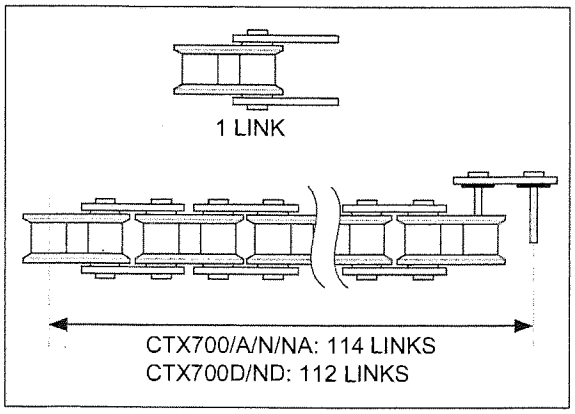
Fully slacken the drive chain (page 3-13).

Remove the drive chain using the special tool.

- When using the special tool, follow the manufacturer's instruction.

**TOOL:**

| | |
|---|---|
| **Drive chain tool set** | **07HMH-MR10103 or 07HMH-MR1010C (U.S.A. only)** |




Remove the excess drive chain links from a new drive chain with the drive chain tool set.

**STANDARD LINKS:**
**CTX700/A/N/NA/: 114 LINKS**
**CTX700D/ND: 112 LINKS**

**REPLACEMENT CHAIN**
**DID: DID520V0**
**RK: RK520KHO**

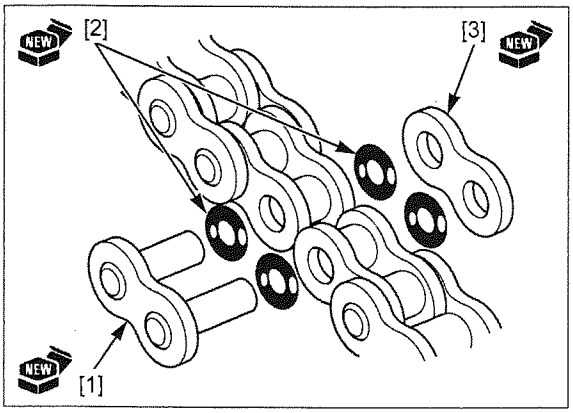
*Never reuse the old drive chain, master link, master link plate and O-rings.*

Insert a new master link [1] with new O-rings [2] from the inside of the drive chain, and install a new plate [3] and O-rings with the identification mark facing the outside.

Assemble the master link, O-rings and plate.

**TOOL:**

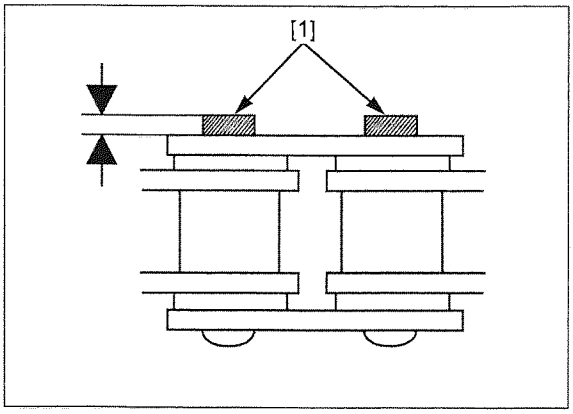
| | |
|---|---|
| **Drive chain tool set** | **07HMH-MR10103 or 07HMH-MR1010C (U.S.A. only)** |




Make sure that the master link pins [1] are installed properly.
Measure the master link pin length projected from the plate.

**STANDARD LENGTH:**
**Approx. 1.3 mm (0.05 in)**

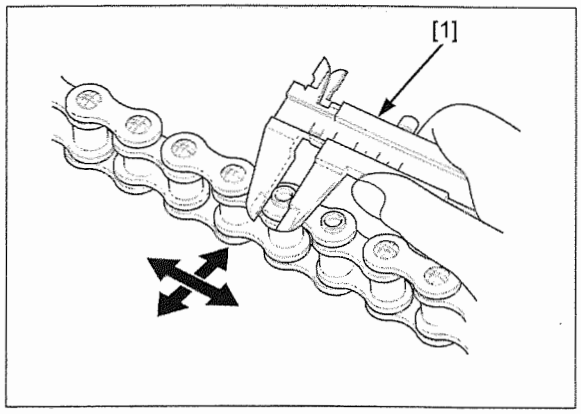
Stake the master link pins.



Make sure that the pins are staked properly by measuring the diameter of the staked area using a slide caliper [1].

**DIAMETER OF THE STAKED AREA:**
**DID: 5.40 – 5.60 mm (0.213 – 0.220 in)**
**RK: 5.30 – 5.70 mm (0.209 – 0.224 in)**

After staking, check the staked area of the master link for cracks.
If there is any cracking, replace the master link, O-rings and plate.




# BRAKE FLUID

**NOTICE**

*Spilled fluid can damage painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.*

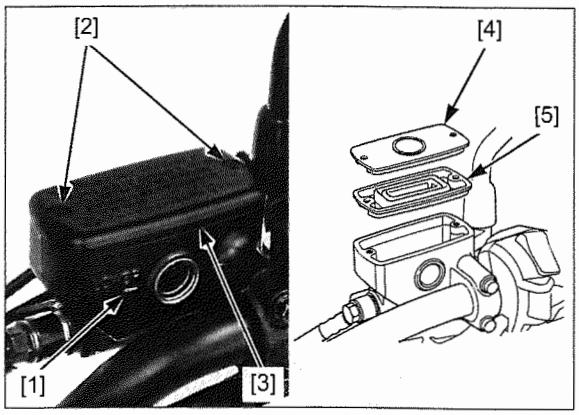
NOTE:
- Do not mix different types of fluid, as they are not compatible with each other.
- Do not allow foreign material to enter the system when filling the reservoir.
- When the fluid level is low, check the brake pads for wear (page 3-17).
- A low fluid level may be due to wear of the brake pads. If the brake pads are worn and caliper pistons are pushed out, this accounts for a low fluid level. If the brake pads are not worn and fluid level is low, check the entire system for leaks (page 3-18).

## FRONT BRAKE

Turn the handlebar to the left so that the reservoir is level and check the front brake fluid level through the sight glass.
If the level is near the "LOWER" level line [1], fill the recommended brake fluid.

Remove the following:

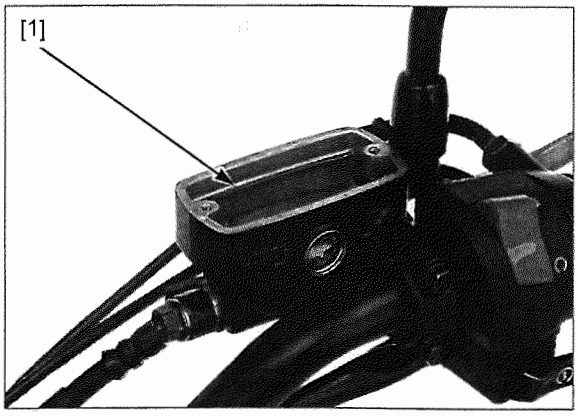
– Screws [2]
– Reservoir cover [3]
– Set plate [4]
– Diaphragm [5]




Fill the reservoir with DOT 4 brake fluid from a sealed container to the casting ledge [1].

Install the diaphragm, set plate and reservoir cover.
Install and tighten the cover screws to the specified torque.

**TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**

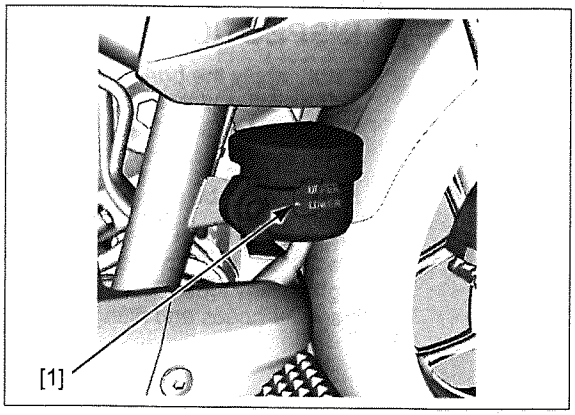


## REAR BRAKE

Support the motorcycle on a level surface, and check the rear brake fluid level.

Check the brake fluid level.

If the level is near the "LOWER" level line [1], fill the recommended brake fluid.




Remove the bolt [1], reservoir cover [2] and rear master cylinder reservoir [3].

Temporarily install the reservoir and mounting bolt to the stay.

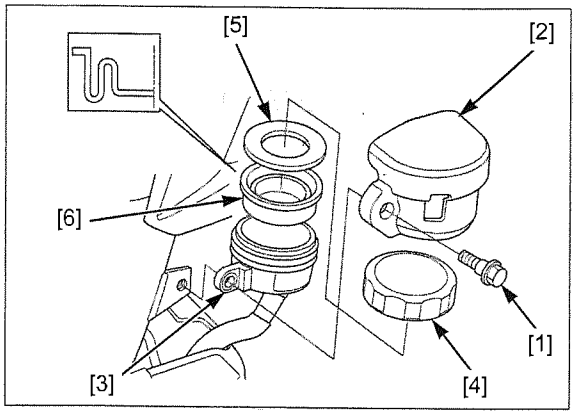
Remove the cover cap [4], set plate [5] and diaphragm [6].

Fill the reservoir with DOT 4 brake fluid from a sealed container to the "UPPER" level line.

Install the removed parts in the reverse order of removal.

**TORQUE:**

**Rear master cylinder reservoir mounting bolt:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**




# BRAKE PADS WEAR

## BRAKE PADS

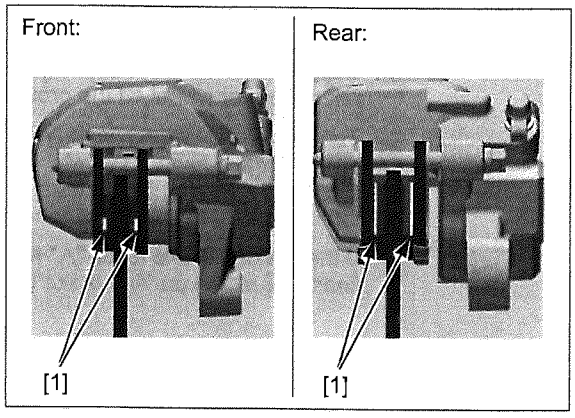
Check the brake pads for wear.

*Always replace the brake pads as a set to assure even disc pressure.*

Replace the brake pads if either pad is worn to the bottom of wear limit grooves [1].

For brake pad replacement.

- Front brake pad (page 19-9)
- Rear brake pad (page 19-10)



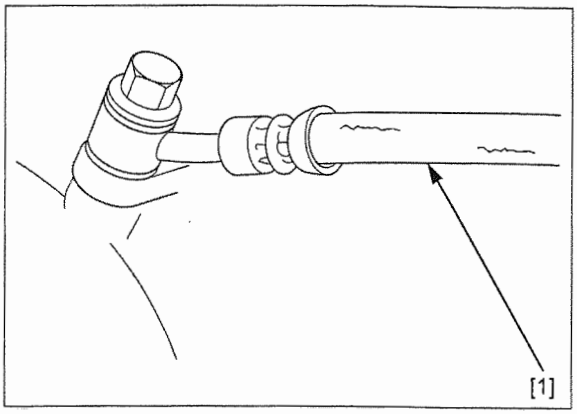
# BRAKE SYSTEM

## INSPECTION

Firmly apply the brake lever or pedal, and check that no air has entered the system.
If the lever or pedal feels soft or spongy when operated, bleed the air from the system.

For brake air bleeding (page 19-7).

Inspect the brake hose [1] and fittings for deterioration, cracks and signs of leakage.
Tighten any loose fittings.
Replace hoses and fittings as required.




# BRAKE LIGHT SWITCH

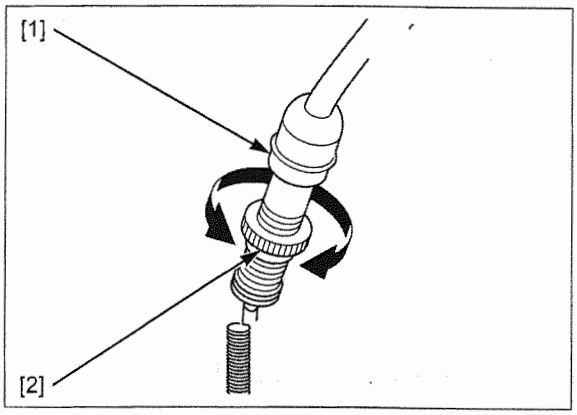
Remove the under cowl lid (page 2-12).

*The front brake light switch does not require adjustment.*

Adjust the brake light switch [1] so that the brake light comes on just prior to the brake actually being engaged.
If the light fails to come on, adjust the switch so that the light comes on at the proper time.

- Hold the switch body and turn the adjuster [2]. Do not turn the switch body.

Install the under cowl lid (page 2-12).



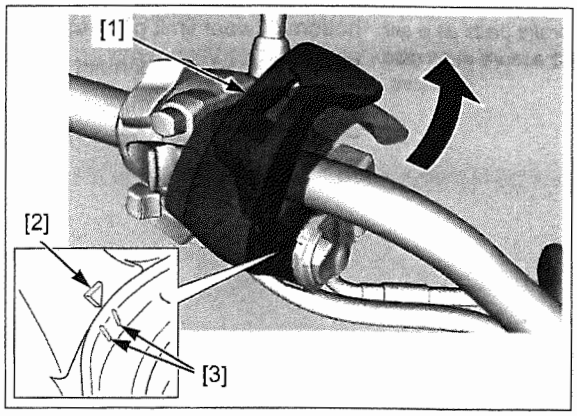

# BRAKE LOCK OPERATION (CTX700D/ND)

## INSPECTION

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Turn the rear wheel with your hands and pull the parking brake lever [1] slowly.
Check the parking brake lever "△" mark [2] within the index lines [3] at the rear wheel stopped.

If the parking brake lever "△" mark not within the index lines, adjust the parking brake (page 3-19).



## ADJUSTMENT

Parking brake lever position can be adjusted at the upper end of the parking brake cable and at the parking brake caliper adjuster bolt.

Minor adjustment is made with the upper adjuster.

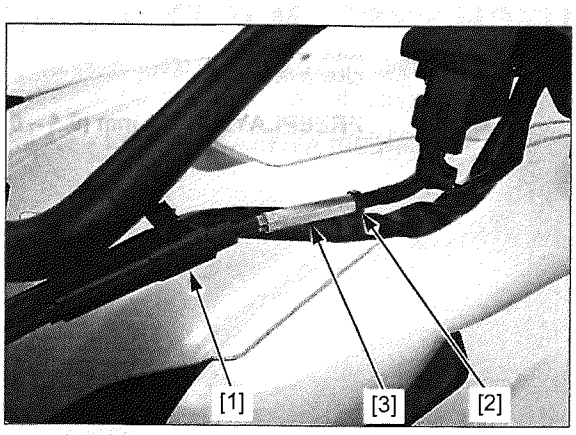
Release the dust cover [1].

Adjust the lever position by loosening the lock nut [2], and turning the adjuster [3].

After adjustment, tighten the lock nut securely.

If the correct freeplay cannot be gained from the upper adjuster, turn the adjuster all the way in.

Make major adjustments with the parking brake caliper adjuster bolt.



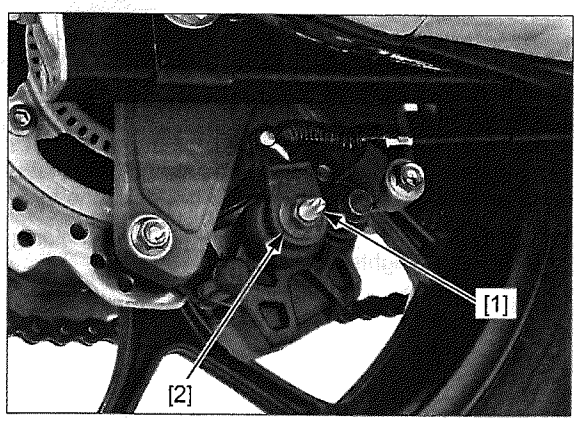

Major adjustment is made with the parking brake caliper adjuster bolt [1].

Loosen the lock nut [2].

Turn the adjuster bolt clockwise until bolt resistance is felt (brake pads contact with the brake disc).
Then turn the adjuster bolt 1/4 turn counterclockwise and tighten the lock nut to the specified torque while holding the adjuster bolt.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**

Recheck the parking brake operation.



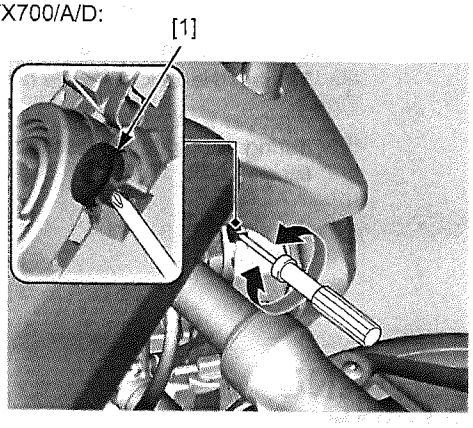

# HEADLIGHT AIM

Support the motorcycle in an upright position.

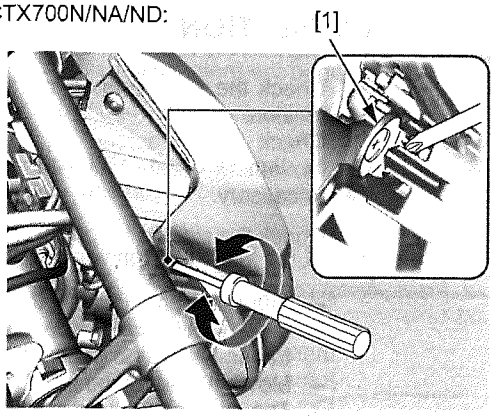
*Adjust the headlight aim as specified by local laws and regulations.*

Adjust the headlight aim vertically by turning the vertical beam adjusting screw [1].
A clockwise rotation moves the beam up and counterclockwise rotation moves the beam down.

CTX700/A/D:



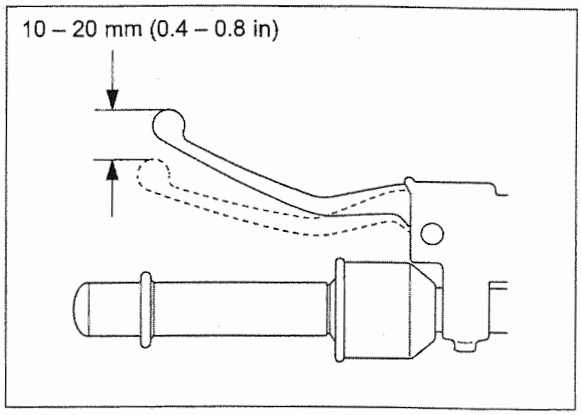

CTX700N/NA/ND:



# CLUTCH SYSTEM (CTX700/A/N/NA)

Measure the clutch lever freeplay at the end of the clutch lever.

**FREEPLAY:10 – 20 mm (0.4 – 0.8 in)**




*The adjuster may be damaged if it is positioned too far out, leaving minimal thread engagement.*

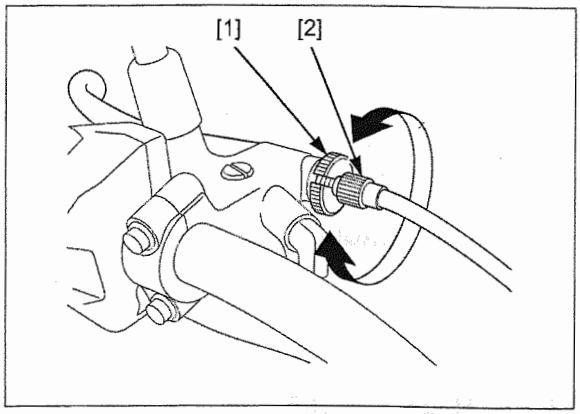
Minor adjustment is made with the upper adjuster at the clutch lever.

Loosen the lock nut [1] and turn the adjuster [2].

If the adjuster is threaded out near its limit and the correct freeplay cannot be obtained, turn the adjuster all the way in and back out one turn.

Tighten the lock nut while holding the adjuster.

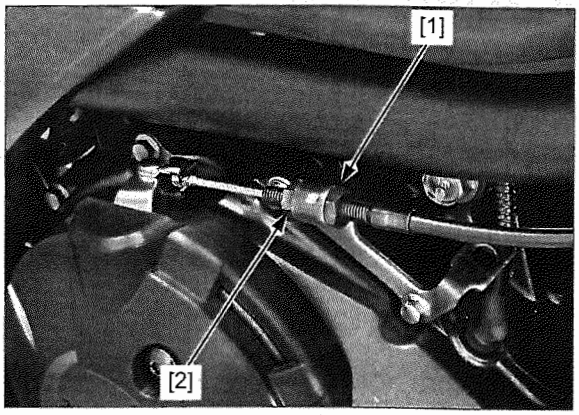
Recheck the clutch lever freeplay.




Major adjustment is made with the lower adjusting nut [1] at the clutch lifter arm.

Loosen the lock nut [2] and turn the adjusting nut to adjust the freeplay.
Tighten the lock nut while holding the adjusting nut.

If proper freeplay cannot be obtained, or the clutch slips during test ride, disassemble and inspect the clutch (page 11-8).




# SIDESTAND

## INSPECTION

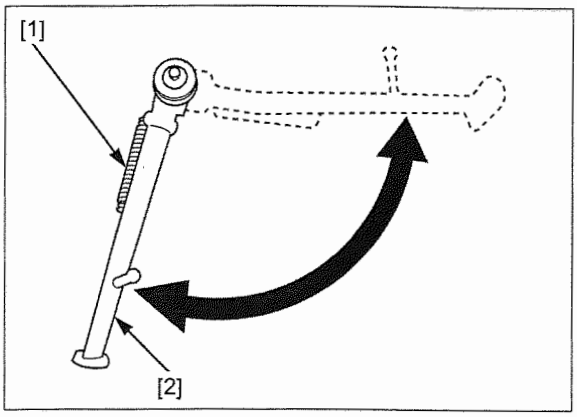
Support the motorcycle using a safety stand or hoist.

Check the sidestand spring [1] for damage or loss of tension.
Check the sidestand [2] assembly for freedom of movement and lubricate the sidestand pivot if necessary.

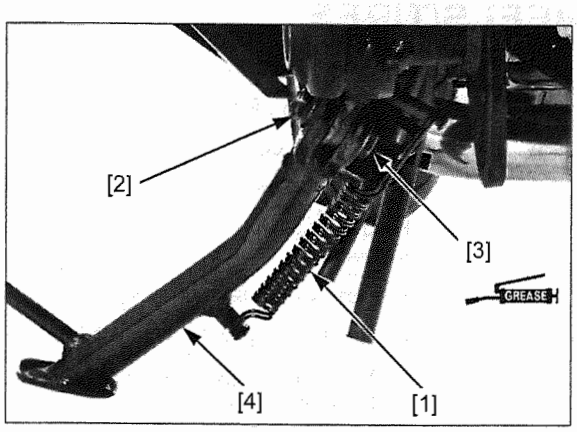
Check the sidestand ignition cut-off system:

- Sit astride the motorcycle and raise the sidestand.
- Start the engine with the transmission in neutral, then, with the clutch lever fully squeezed, shift the transmission into gear.
- Move the sidestand full down.
- The engine should stop as the sidestand is lowered.

If there is a problem with the system, check the sidestand switch (page 22-21).



### REMOVAL/INSTALLATION




Support the motorcycle upright on a level surface.

Remove the sidestand switch bolt and sidestand switch (page 22-21).

Remove the sidestand springs [1].

Remove the sidestand pivot nut [2], bolt [3] and sidestand [4].

Apply grease to the sidestand pivot bolt sliding surface.

Install the sidestand and sidestand pivot bolt.

Tighten the sidestand pivot bolt to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Loosen the sidestand pivot bolt 45 – 90°.

Install and tighten the sidestand pivot nut to the specified torque while holding the pivot bolt.

**TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)**

Install the sidestand springs.

Install the sidestand switch (page 22-21).

## SUSPENSION

### FRONT SUSPENSION INSPECTION

Check the action of the forks by operating the front brake and compressing the front suspension several times.
Check the entire assembly for signs of leaks, damage or loose fasteners.

Replace damaged components which cannot be repaired.

- Loose, worn or damaged suspension parts impair motorcycle stability and control.

Tighten all nuts and bolts.

For fork service (page 17-18).

### REAR SUSPENSION INSPECTION

Check the action of the rear shock absorber by compressing the rear end several times.
Check the entire shock absorber assembly for leaks, damage or loose fasteners.

Replace damaged components which cannot be repaired.

- Loose, worn or damaged suspension parts impair motorcycle stability and control.

Tighten all nuts and bolts.

For shock absorber service (page 18-11).

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Check for worn swingarm bearings by grabbing the rear wheel and attempting to move the wheel side to side.

Replace the bearings if any looseness to noted.

For swingarm service (page 18-13).

## NUTS, BOLTS, FASTENERS

Check that all chassis nuts, screws and bolts are tightened to their correct torque values (page 1-12).

Check that all cotter pins, safety clips, hose clamps and cable stays are in place and properly secured.

# WHEELS/TIRES

Support the motorcycle using a safety stand or hoist, raise the front wheel off the ground.

Hold the front fork leg and move the front wheel sideways with force to see if the wheel bearings are worn.

For front wheel service (page 17-14).

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Hold the swingarm and move the rear wheel sideways with force to see if the wheel and driven flange bearings are worn.

For rear wheel service (page 18-5).

Check the tire pressure with a tire pressure gauge when the tires are cold.

- Front tire (page 1-10)
- Rear tire (page 1-10)

Check the tires for cuts, embedded nails, or other damage.
Check the front and rear wheels for trueness.

Measure the tread depth at the center of the tires.
Replace the tires when the tread depth reaches the following limits.

- Front tire (page 1-10)
- Rear tire (page 1-10)

# STEERING HEAD BEARINGS

Support the motorcycle using a safety stand or hoist, raise the front wheel off the ground.

Check that the handlebar moves freely from side to side. Make sure the control cables do not interfere with the handlebar rotation.

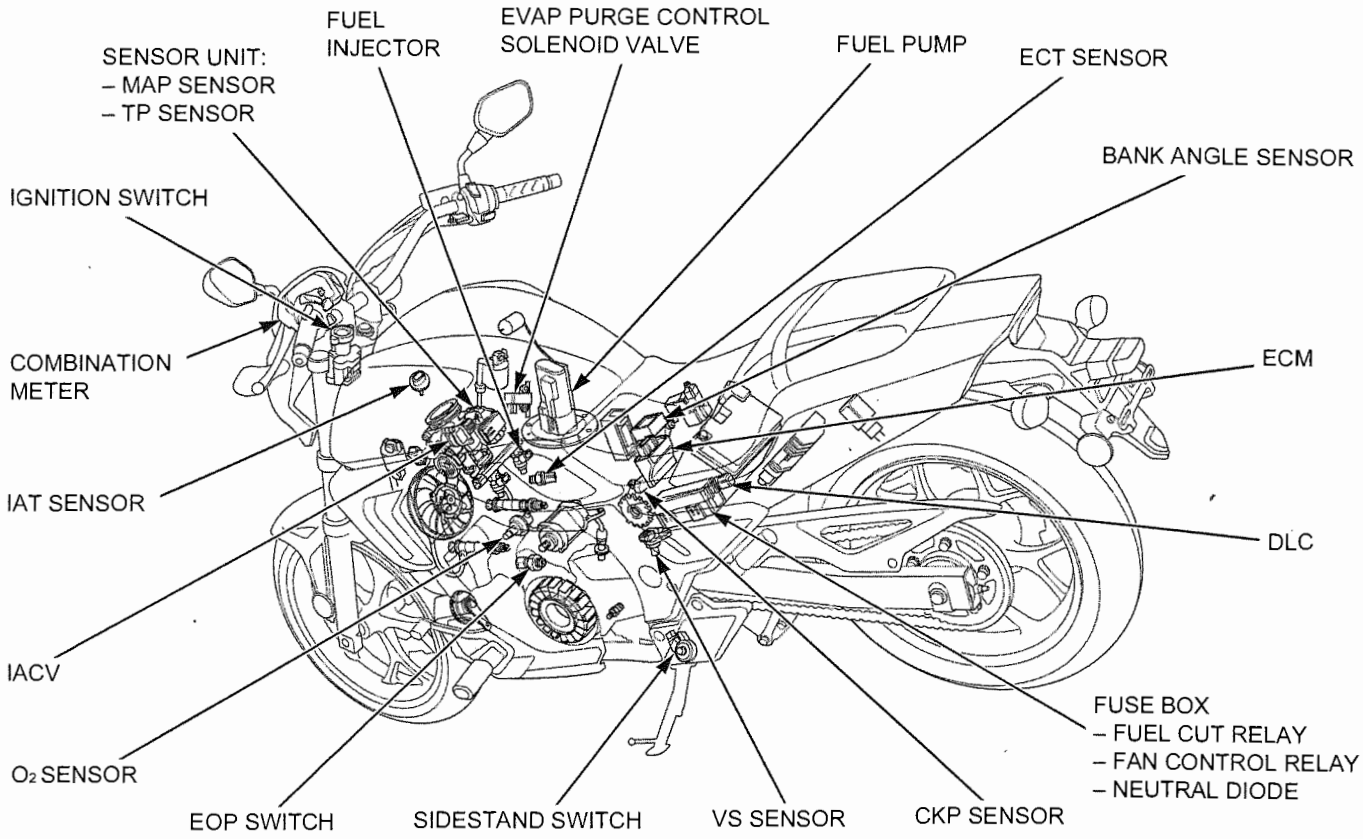
Check for steering stem bearings by grabbing the fork legs and attempting to move the front fork forward to backward.

If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 17-4).

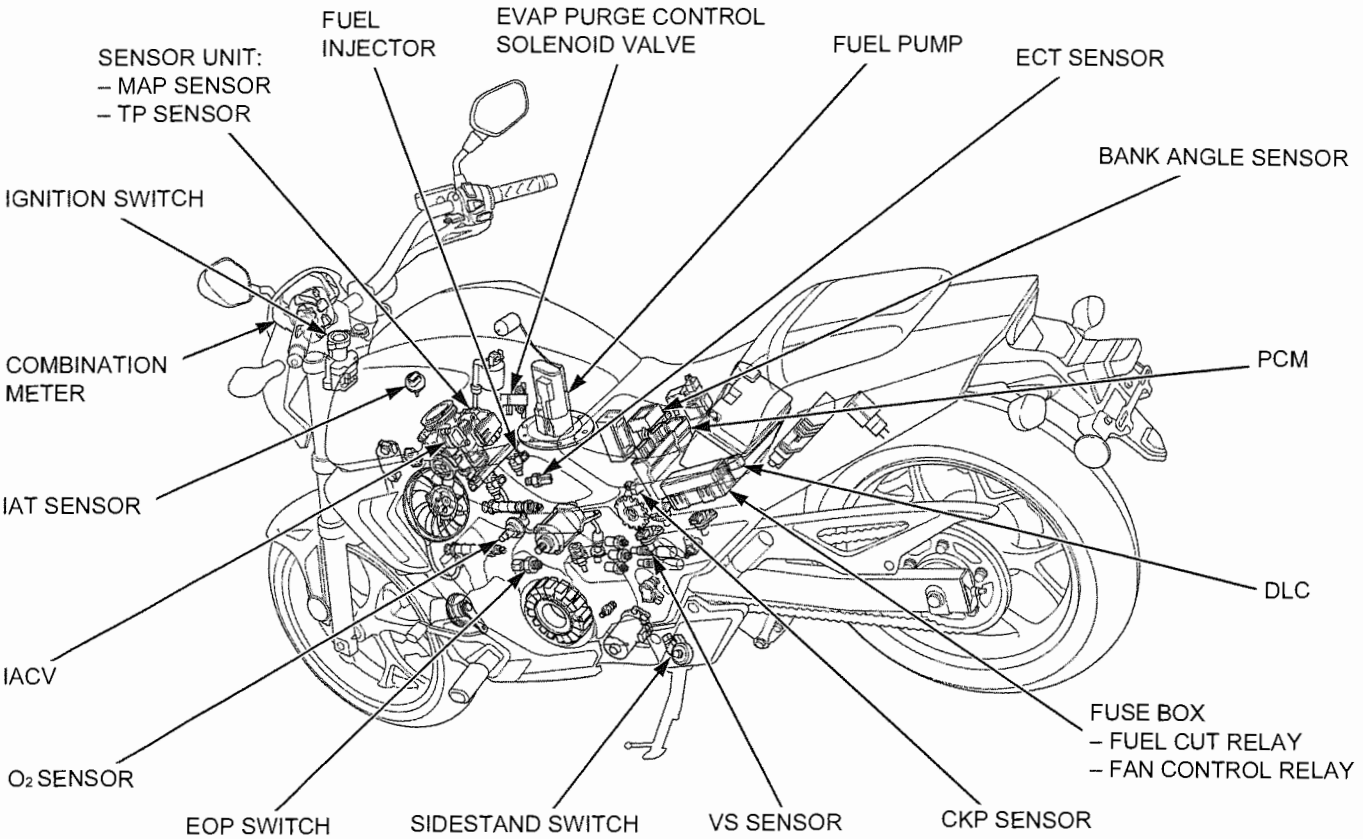
# 4. PGM-FI SYSTEM

# PGM-FI SYSTEM LOCATION

**CTX700/A/N/NA:**

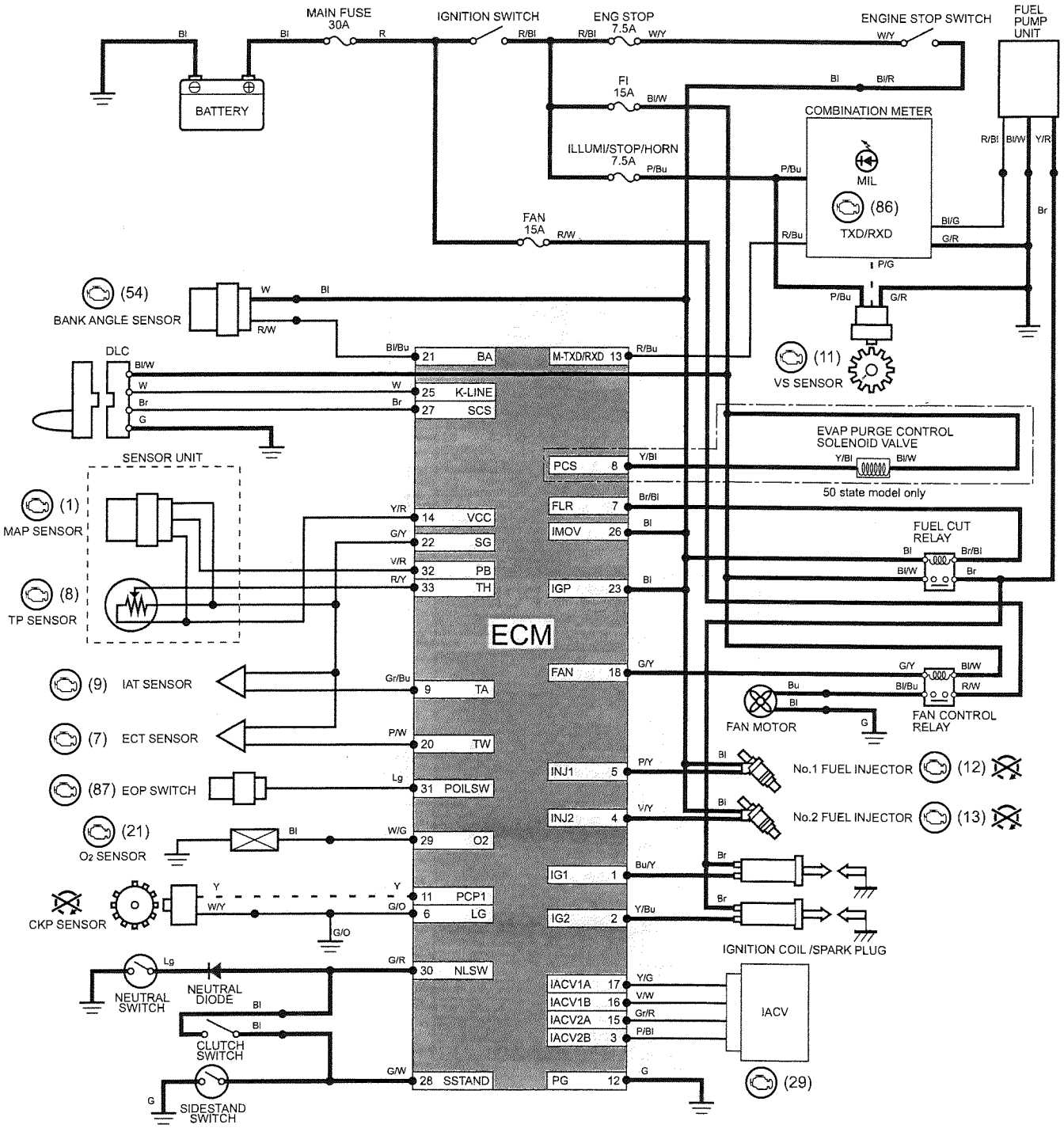



**CTX700D/ND:**



# PGM-FI SYSTEM DIAGRAM

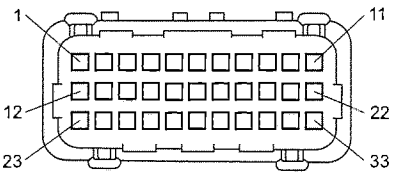
**CTX700/A/N/NA:**




( ) = DTC/MIL number

= Engine does not start when detecting DTC/MIL

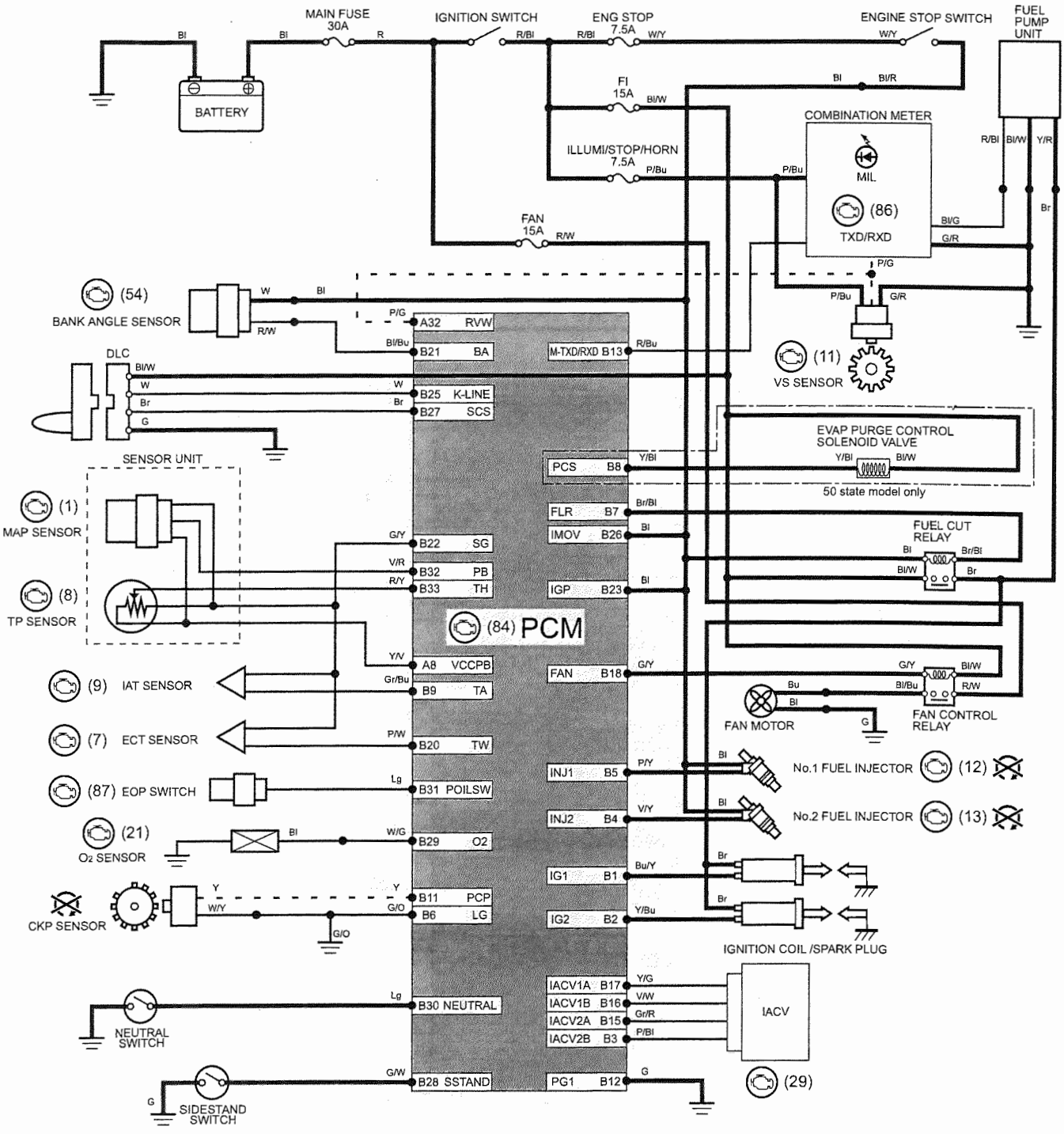
= Short terminals for reading DTC/MIL




ECM 33P CONNECTOR
ECM side of male terminals

Bl : Black
Br : Brown
Bu : Blue
G : Green
Gr : Gray
Lg : Light green
O : Orange
P : PINK
R : Red
V : Violet
W : White
Y : Yellow

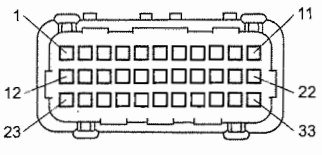
**CTX700D/ND:**



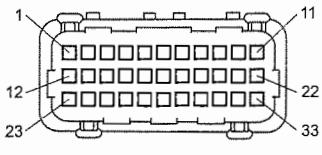

( ) = DTC/MIL number

= Engine does not start when detecting DTC/MIL

= Short terminals for reading DTC/MIL




PCM 33P (BLACK) CONNECTOR
PCM side of male terminals




PCM 33P (GRAY) CONNECTOR
PCM side of male terminals

Bl : Black
Br : Brown
Bu : Blue
G : Green
Gr : Gray
Lg : Light green
O : Orange
P : PINK
R : Red
V : Violet
W : White
Y : Yellow

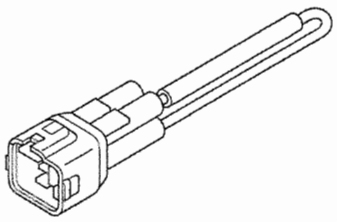
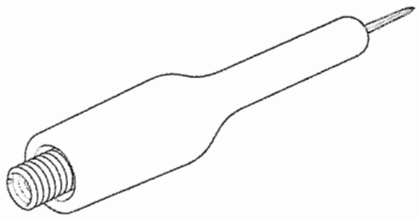
# SERVICE INFORMATION

## GENERAL

- Use an electric heating element to heat the water for the ECT sensor inspection, keep flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- The PGM-FI system is equipped with the Self-Diagnostic System (page 4-7). If the MIL blinks, follow the Self-Diagnostic Procedures to remedy the problem.
- When checking the PGM-FI, always follow the steps in the troubleshooting flow chart.
- The PGM-FI system is provided with fail-safe function to secure a minimum running capability even when there is any trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is secured by making use of the numerical values of a situation preset in the simulated program map.
  It must be remembered, however, that when any abnormality is detected in injector, the fail-safe function stops the engine to protect it from damage.
- For PGM-FI system location (page 4-2).
- Use a digital tester for PGM-FI system inspection.
- The following color codes are used throughout this section.

| | | | | | |
|---|---|---|---|---|---|
| Bl = Black | Bu = Blue | Gr = Gray | O = Orange | R = Red | W = White |
| Br = Brown | G = Green | Lg = Light green | P = Pink | V = Violet | Y = Yellow |

## TOOLS

| | |
|---|---|
| SCS service connector<br>070PZ-ZY30100 | Test probe, 2 packs<br>07ZAJ-RDJA110 |
|  |  |

## ECM/PCM-to-COMBINATION METER TWO-WAY SERIAL COMMUNICATION

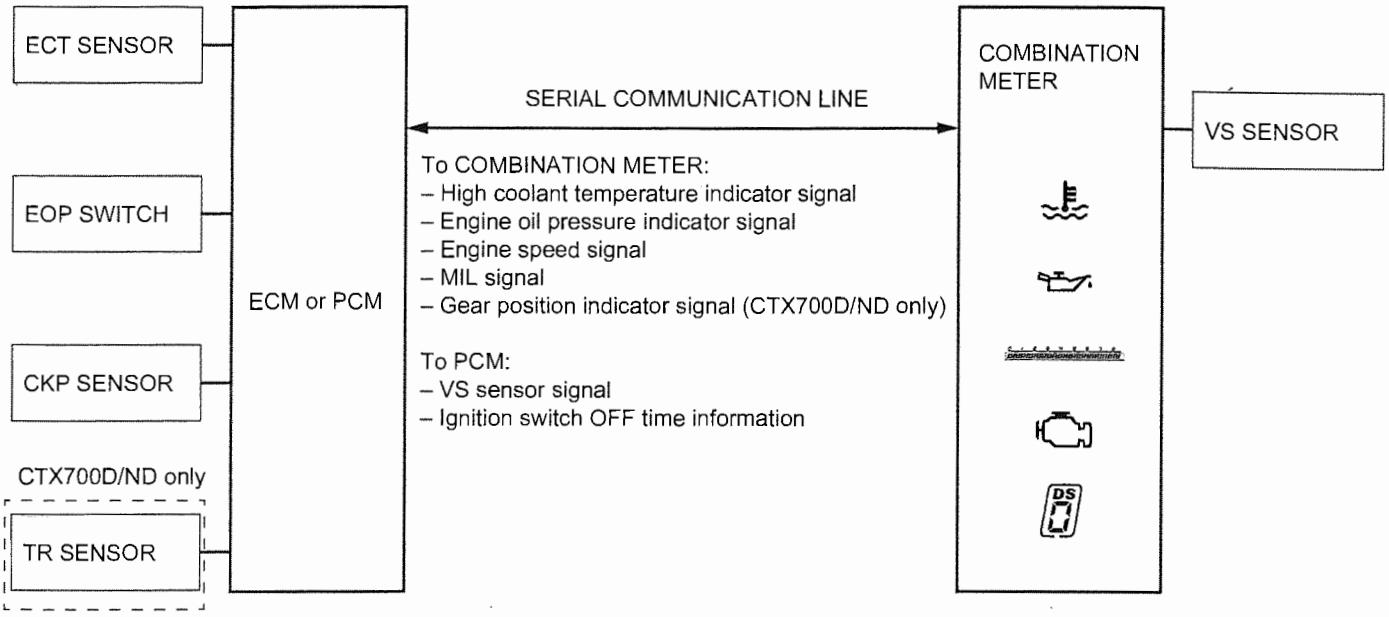
This motorcycle is equipped with a ECM/PCM-to-combination meter two-way serial communication system.

The ECM/PCM sends the following information to combination meter:

- High coolant temperature indicator signal
- Engine oil pressure indicator signal
- Engine speed signal
- MIL signal
- Gear position indicator signal (CTX700D/ND)

The combination meter sends the VS sensor signal and ignition switch OFF time information (elapsed time after the ignition switch is turned OFF) to the ECM/PCM. The ECM/PCM uses this information and the VS sensor signal to detect an open circuit in the EOP line.

These signals are communicated between the combination meter and ECM/PCM via one wire. This wire is called the serial communication line.




### WHEN THERE IS A PROBLEM IN THE SERIAL COMMUNICATION LINE

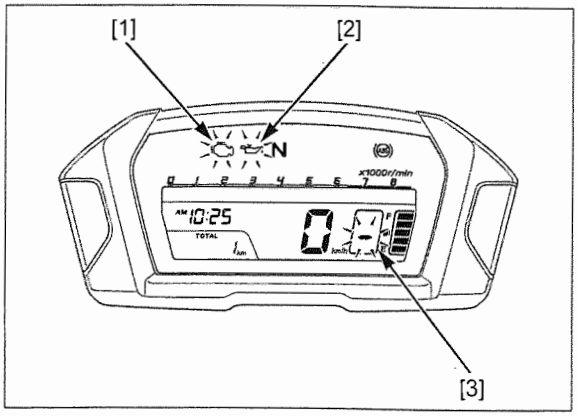
When an open or short circuit occurs in the serial communication line, the combination meter will indicate the problem in the following ways:

- The MIL [1] will come on.
- The engine oil pressure indicator [2] will come on.
- The tachometer will go off.
- The high coolant temperature indicator will go off.
- Shift indicator "–" [3] is blinking. (CTX700D/ND only)

When the ECM does not receive combination meter information, the ECM will store DTC 86-1. Check DTC 86-1 with the MCS (page 4-8).

Check the ECM in the ECM communication diagnostic mode (page 4-30).

Check the combination meter with the combination meter communication diagnostic mode (page 22-8).



# PGM-FI SYMPTOM TROUBLESHOOTING

When the motorcycle has one of these symptoms, check the DTC or MIL blinking, refer to the DTC index (page 4-10) and begin the appropriate troubleshooting procedure. If there are no DTC/MIL blinking stored in the ECM/PCM memory, do the diagnostic procedure for the symptom, in sequence listed below, until you find cause.

| Symptom | Diagnosis procedure | Also check for |
|---|---|---|
| Engine cranks but won't start (No DTC and MIL blinking) | 1. Inspect the spark plug condition (page 3-6).<br>2. Inspect the ignition system (page 5-6).<br>3. Inspect the cylinder compression (page 10-5).<br>4. Inspect the IACV (page 7-20).<br>5. Inspect the fuel supply system (page 7-10). | • No fuel to fuel injector<br>– Clogged fuel filter<br>– Pinched or clogged fuel feed hose<br>– Faulty fuel pump<br>– Faulty fuel pump circuits<br>• Intake air leak<br>• Contaminated/deteriorated fuel<br>• Faulty fuel injector |
| Engine cranks but won't start (No fuel pump operation sound when the turning the ignition ON) | 1. ECM/PCM power/ground circuits malfunction (page 4-35).<br>2. Inspect the fuel supply system (page 7-10). | • Open circuit in the power input and/or ground wire of the ECM/PCM<br>• Blown main fuse (30 A)<br>• Blown sub fuse 15 A (FI)<br>• Blown sub fuse 7.5 A (ENG STOP) |
| Engine stalls, hard to start, rough idling | 1. Inspect the engine idle speed (page 3-11).<br>2. Inspect the IACV (page 7-20).<br>3. Inspect the fuel supply system (page 7-4).<br>4. Inspect the battery charging system (page 21-6).<br>5. Inspect the ignition system (page 5-6). | • Restricted fuel feed hose<br>• Contaminated/deteriorated fuel<br>• Intake air leak<br>• Faulty MAP sensor<br>• Restricted fuel tank breather hose |
| Afterburn when engine braking is used | Inspect the ignition system (page 5-6). | |
| Backfiring or misfiring during acceleration | Inspect the ignition system (page 5-6). | |
| Poor performance (driveability) and poor fuel economy | 1. Inspect the fuel supply system (page 7-4).<br>2. Inspect the air cleaner element (page 3-5).<br>3. Inspect the ignition system (page 5-6). | • Faulty pressure regulator (fuel pump)<br>• Faulty fuel injector<br>• Faulty MAP sensor |
| Idle speed is below specifications or fast idle too low (No DTC and MIL blinking) | 1. Inspect the engine idle speed (page 3-11).<br>2. Inspect the IACV (page 7-20).<br>3. Inspect the ignition system (page 5-6). | |
| Idle speed is above specifications or fast idle too high (No DTC and MIL blinking) | 1. Inspect the engine idle speed (page 3-11).<br>2. Inspect the throttle operation and freeplay (page 3-4).<br>3. Inspect the IACV (page 7-20).<br>4. Inspect the ignition system (page 5-6). | • Intake air leak<br>• Engine top-end problem<br>• Air cleaner element condition |
| MIL stays ON but no DTCs set, or MIL never comes ON at all | Inspect the MIL circuit (page 4-32). | |

# PGM-FI TROUBLESHOOTING INFORMATION

## GENERAL TROUBLESHOOTING

### Intermittent Failure

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the MIL does not come on, check for poor contact or loose pins at all connectors related to the circuit that of the troubleshooting. If the MIL was on, but then went out, the original problem may be intermittent.

### Opens and Shorts

"Opens" and "Shorts" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. With ECM/PCMs this can something mean something work, but not the way it's supposed to.

### If the MIL has come on

Refer to DTC READOUT (page 4-9).

### If the MIL did not stay on

If the MIL did not stay on, but there is a driveability problem, do the SYMPTOM TROUBLESHOOTING (page 4-7).

# SYSTEM DESCRIPTION

### SELF-DIAGNOSIS SYSTEM

The PGM-FI system is equipped with the self-diagnostic system. When any abnormality occurs in the system, the ECM/PCM turns on the MIL and stores a DTC in its erasable memory.

### FAIL-SAFE FUNCTION

The PGM-FI system is provided with a fail-safe function to secure a minimum running capability even when there is trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is maintained by pre-programed value in the simulated program map. When any abnormality is detected in the fuel injector, the fail-safe function stops the engine to protect it from damage.

### DTC

- The DTC is composed of a main code and a sub code and it is displayed as a hyphenated number when retrieved from the ECM/PCM with the MCS.
  The digits in front of the hyphen are the main code, they indicate the component of function failure.
  The digits behind the hyphen are the sub code, they detail the specific symptom of the component or function failure.
  For example, in the case of the TP sensor:
  – DTC 08 – 1 = (TP sensor voltage) – (lower than the specified value)
  – DTC 08 – 2 = (TP sensor voltage) – (higher than the specified value)
- The MAP, ECT, TP and IAT sensor diagnosis will be made according to the voltage output of the affected sensor.
  If a failure occurs, the ECM/PCM determines the Function Failure, compares the sensor voltage output to the standard value, and then outputs the corresponding DTC to the MCS.

### MIL Blink Pattern

- If the MCS is not available, DTC can be read from the ECM/PCM memory by the MIL [1] blink pattern.
- The number of MIL blinks is the equivalent the main code of the DTC (the sub code cannot be displayed by the MIL).
- The MIL will blink the current DTC, in case the ECM/PCM detects the problem at present, when the ignition switch ON and engine stop switch "○" or idling with the sidestand down. The MIL will stay ON when the engine speed is over 1,850 rpm or with the sidestand up.
- The MIL has two types of blinks, a long blink and short blink. The long blinking lasts for 1.3 seconds, the short blinking lasts for 0.3 seconds. One long blink is the equivalent of ten short blinks. For example, when two long blinks are followed by five short blinks, the MIL is 25 (two long blinks = 20 blinks, plus five short blinks).
- When the ECM/PCM stores more than one DTC, the MIL will indicate them by blinking in the order from the lowest number to highest number.

### MIL Check

When the ignition switch is turned ON and engine stop switch "○" the MIL will stay on for a few seconds, then go off. If the MIL does not come on, troubleshoot the MIL circuit (page 4-32).

### CURRENT DTC/FREEZE DTC

The DTC is indicated in two ways according to the failure status.

- In case the ECM/PCM detects the problem at present, the MIL will come on and the MIL will start to blink as its DTC when the sidestand is lowered. It is possible to readout the MIL blink pattern as the current DTC.
- In case the ECM/PCM does not detect any problem at present but has a problem stored in its memory, the MIL will not light and blink. If it is necessary to retrieve the past problem, readout the freeze DTC by following the DTC readout procedure (page 4-9).

# MCS INFORMATION

- The MCS can readout the DTC, freeze data, current data and other ECM/PCM condition.

### How to connect the MCS

Turn the ignition switch OFF.

Remove the dummy connector from the DLC (page 4-9).

Connect the MCS to the DLC.

Turn the ignition switch ON and engine stop switch "○" check the DTC and freeze data.

NOTE:
Freeze data indicates the engine conditions when the first malfunction was detected.

### ECM/PCM reset

The MCS can reset the ECM/PCM data including the DTC, freeze data and some learning memory.

## DTC READOUT

Start the engine and check the MIL.

NOTE:
When the ignition switch is turned ON and engine stop switch "○", the MIL will stay on for a few seconds, then go off.

If the MIL stays on or blinks, connect the MCS to the DLC (page 4-8).
Read the DTC, freeze data and follow the troubleshooting index (page 4-10).

To read the DTC with the MIL blinking, refer to the following procedure.

**Reading DTC with the MIL**

Turn the ignition switch OFF.

Remove the seat (page 2-14).

Remove the DLC [1] from the battery box.
Remove the dummy connector from the DLC.

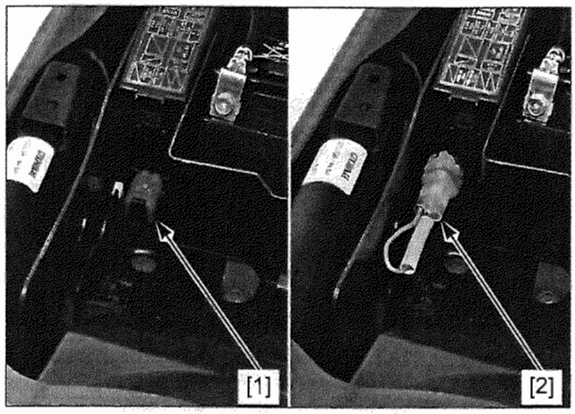
Short the DLC terminals using a special tool.

**CONNECTION: Brown – Green**

**TOOL:**
**[2] SCS service connector 070PZ-ZY30100**

Turn the ignition switch ON and engine stop switch "○", read, note the MIL blinks and refer to the DTC index (page 4-10).

NOTE:
If the ECM/PCM has any DTC in its memory, the MIL will start blinking.

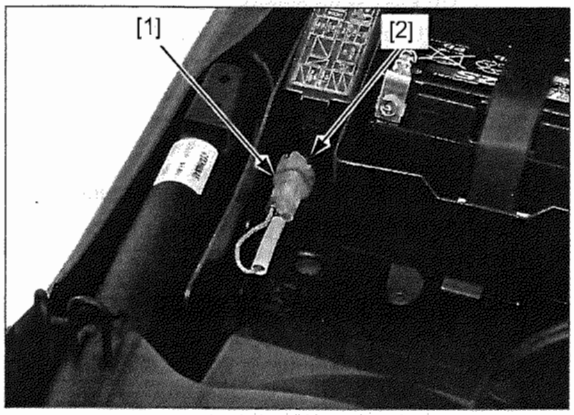



## How to clear the DTC with SCS connector

1. Connect the SCS connector to the DLC (page 4-9).
2. Turn the ignition switch ON and engine stop switch "○".
3. Disconnect the SCS connector [1] from the DLC [2].

   Connect the SCS connector to the DLC again while the MIL stays ON about 5 seconds (reset receiving pattern).
4. The stored DTC is erased if the MIL goes off and starts blinking (successful pattern).

- The DLC must be jumped while the MIL lights. If not, the MIL will not start blinking. In that case, turn the ignition switch OFF and try again from step 3.
- Note that the self-diagnostic memory cannot be erased if the ignition switch is turned "OFF" before the MIL starts blinking.

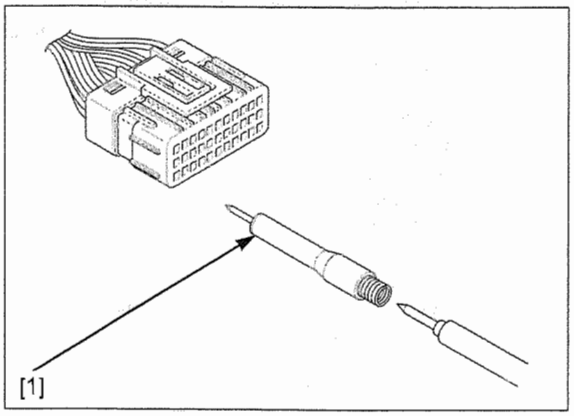



## CIRCUIT INSPECTION

**INSPECTION AT ECM/PCM CONNECTOR**

- Always clean around and keep any foreign material away from the ECM/PCM 33P connector(s) before disconnecting it.
- A faulty PGM-FI system is often related to poorly connected or corroded terminals. Check those connections before proceeding.
- In testing at ECM/PCM 33P connector(s) (wire harness side) terminal, always use the test probe [1]. Insert the test probe into the connector terminal, then attach the digital multimeter probe to the test probe.

**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**



# DTC INDEX

| DTC (MIL blinks) | Function Failure | Symptom/Fail-safe function | Refer to page |
|---|---|---|---|
| 1-1 (1) | MAP sensor circuit low voltage (less than 0.029 V)<br>• MAP sensor or its circuit malfunction | • Engine operates normally<br>• Pre-program value: 225 mmHg/30 kPa | 4-12 |
| 1-2 (1) | MAP sensor circuit high voltage (more than 3.809 V)<br>• Loose or poor contact of the sensor unit connector<br>• MAP sensor or its circuit malfunction | • Engine operates normally<br>• Pre-program value: 225 mmHg/30 kPa | 4-14 |
| 7-1 (7) | ECT sensor circuit low voltage (less than 0.049 V)<br>• ECT sensor or its circuit malfunction | • Hard start at a low temperature<br>• Pre-program value: 110°C/230°F<br>• Cooling fan turns on | 4-15 |
| 7-2 (7) | ECT sensor circuit high voltage (more than 4.946 V)<br>• Loose or poor contact of the ECT sensor connector<br>• ECT sensor or its circuit malfunction | • Hard start at a low temperature<br>• Pre-program value: 110°C/230°F<br>• Cooling fan turns on | 4-16 |
| 8-1 (8) | TP sensor circuit low voltage (less than 0.122 V)<br>• Loose or poor contact of the sensor unit connector<br>• TP sensor or its circuit malfunction | • Poor engine acceleration<br>• Pre-program value: 0° | 4-17 |
| 8-2 (8) | TP sensor circuit high voltage (more than 4.966 V)<br>• TP sensor or its circuit malfunction | • Poor engine acceleration<br>• Pre-program value: 0° | 4-18 |
| 9-1 (9) | IAT sensor circuit low voltage (less than 0.049 V)<br>• IAT sensor or its circuit malfunction | • Engine operates normally<br>• Pre-program value: 35°C/95°F | 4-19 |
| 9-2 (9) | IAT sensor circuit high voltage (more than 4.946 V)<br>• Loose or poor contact of the IAT sensor connector<br>• IAT sensor or its circuit malfunction | • Engine operates normally<br>• Pre-program value: 35°C/95°F | 4-20 |
| 11-1 (11) | VS sensor no signal<br>• Loose or poor contact of the VS sensor connector<br>• Open or short circuit in the VS sensor wire<br>• Faulty VS sensor | • Engine operates normally | 4-21 |
| 12-1 (12) | No.1 Fuel injector circuit malfunction<br>• Loose or poor contact of the fuel injector connector<br>• Fuel injector or its circuit malfunction | • Engine does not start<br>• Fuel injector, fuel pump and ignition coil shut down | 4-22 |
| 13-1 (13) | No.2 Fuel injector circuit malfunction<br>• Loose or poor contact of the fuel injector connector<br>• Fuel injector or its circuit malfunction | • Engine does not start<br>• Fuel injector, fuel pump and ignition coil shut down | 4-23 |
| 21-1 (21) | $O_2$ sensor malfunction<br>• Loose or poor contact of the $O_2$ sensor connector<br>• $O_2$ sensor or its circuit malfunction | • Engine operates normally | 4-24 |
| 29-1 (29) | IACV circuit malfunction<br>• Loose or poor contact of the IACV connector<br>• IACV or its circuit malfunction | • Engine stalls, hard to start, rough idling | 4-25 |
| 33-2 (–) | ECM/PCM EEPROM malfunction | • Engine operates normally | 4-26 |
| 54-1 (54) | Bank angle sensor circuit low voltage (less than 0.020 V)<br>• Bank angle sensor or its circuit malfunction | • Engine operates normally<br>• Engine stop function does not operate | 4-27 |
| 54-2 (54) | Bank angle sensor circuit high voltage (more than 4.986 V)<br>• Loose or poor contact of the bank angle sensor connector<br>• Bank angle sensor or its circuit malfunction | • Engine operates normally<br>• Engine stop function does not operate | 4-28 |
| 84-1 (84) | CPC in the PCM malfunction<br>• Faulty PCM | • Gearshift system stops | 4-29 |
| 86-1 (86) | Meter communication malfunction<br>• Open or short circuit in the TXD/RXD wire<br>• Faulty combination meter | • Engine operates normally | 4-29 |
| 87-1 (87) | EOP switch high voltage (more than 1.001 V)<br>• Loose or poor contact of the EOP switch connector<br>• Open circuit in the EOP switch wire<br>• EOP switch or its circuit malfunction | • Engine operates normally<br>• Oil pressure indicator stays on | 4-31 |

# SENSOR UNIT POWER LINE INSPECTION

## BEFORE DTC TROUBLESHOOTING

NOTE:

- When the DTC displays 1-1, 1-2, 8-1 and 8-2, check the following before DTC troubleshooting.
- Before starting the inspection, check for loose or poor contact on the sensor unit 5P (Black) connector and ECM/PCM 33P connector(s).
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

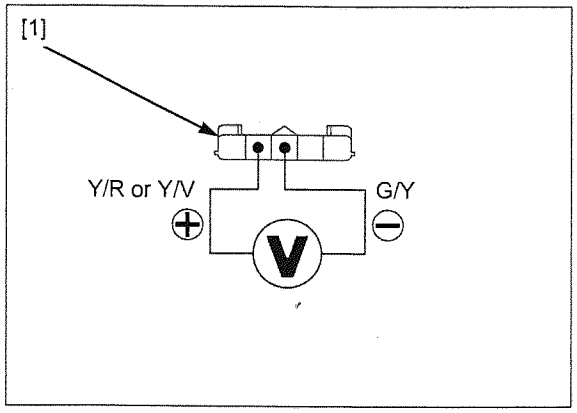
**1. Sensor Unit Power Input Voltage Inspection**

Turn the ignition switch OFF.

Disconnect the sensor unit 5P (Black) connector (page 7-14).

Turn the ignition switch ON and engine stop switch "○".

Measure the voltage at the sensor unit 5P (Black) connector [1] of the wire harness side.




**Connection:**
**CTX700/A/N/NA:**
**Yellow/red (+) – Green/yellow (–)**
**CTX700D/ND:**
**Yellow/violet (+) – Green/yellow (–)**

**Standard: 4.75 – 5.25 V**

***If the voltage within 4.75 – 5.25 V?***

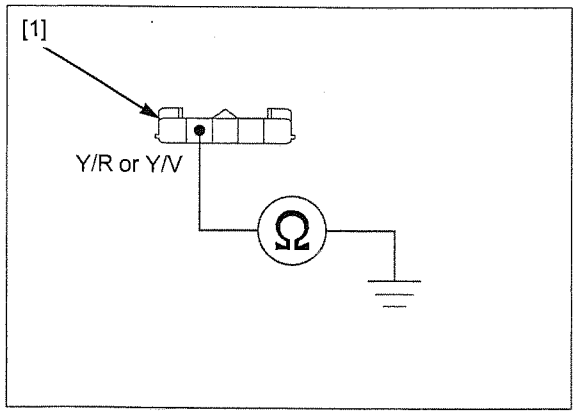
**YES** – Turn the ignition switch OFF. Connect the sensor unit 5P (Black) connector and start the DTC troubleshooting (page 4-12).

**NO** – GO TO STEP 2.

**2. Sensor Unit Input Voltage Line Short Circuit Inspection**

Turn the ignition switch OFF.

Check for continuity between the sensor unit 5P (Black) connector [1] of the wire harness side and ground.




**Connection:**
**CTX700/A/N/NA:**
**Yellow/red – Ground**
**CTX700D/ND:**
**Yellow/violet – Ground**

***Is there continuity?***

**YES** – • Short circuit in the Yellow/red wire
• Short circuit in the Yellow/violet wire

**NO** – GO TO STEP 3.

3. **Sensor Unit Power Line Open Circuit Inspection**

Disconnect the following:

- ECM 33P (Black) connector [1] (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Black) [2]/33P (Gray) [3] connectors (page 4-34) (CTX700D/ND)

Check for continuities between the sensor unit 5P (Black) connector [4] and ECM/PCM 33P connector.

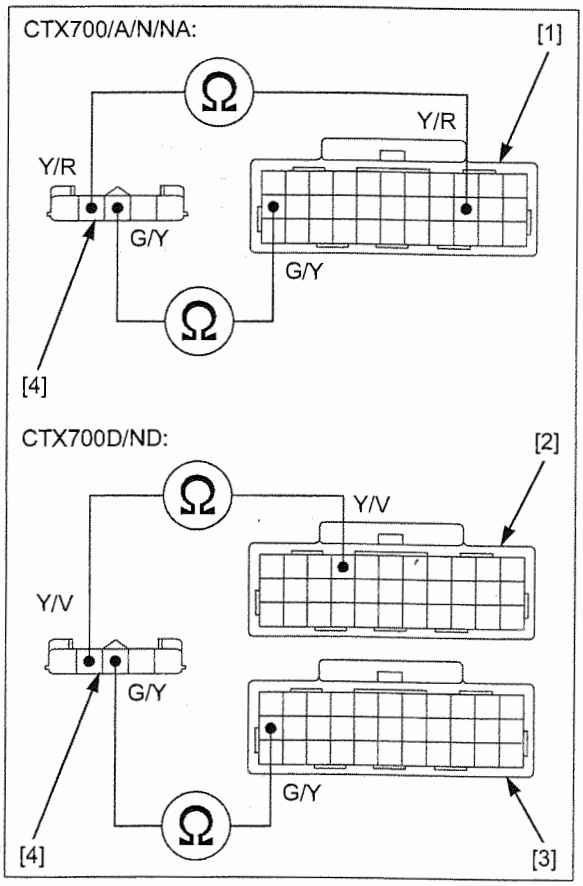
**Connection:**
**CTX700/A/N/NA:**
**Yellow/red – Yellow/red**
**Green/yellow – Green/yellow**
**CTX700D/ND:**
**Yellow/violet – Yellow/violet**
**Green/yellow – Green/yellow**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – • Open circuit in the Yellow/red wire
• Open circuit in the Yellow/violet wire
• Open circuit in the Green/yellow wire




# DTC TROUBLESHOOTING

## DTC 1-1 (MAP SENSOR LOW VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **MAP Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "○".

Check the MAP sensor with the MCS.

***Is about 0 V indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **Sensor Unit Power Line Inspection**

Check the sensor unit power line inspection (page 4-11).

***Is the sensor unit power line normal?***

**YES** – GO TO STEP 3.

**NO** – Replace or repair the abnormal circuit.

3. **MAP Sensor Output Voltage Inspection**

Turn the ignition switch OFF.

Disconnect the sensor unit 5P (Black) connector (page 7-14).

Turn the ignition switch ON.

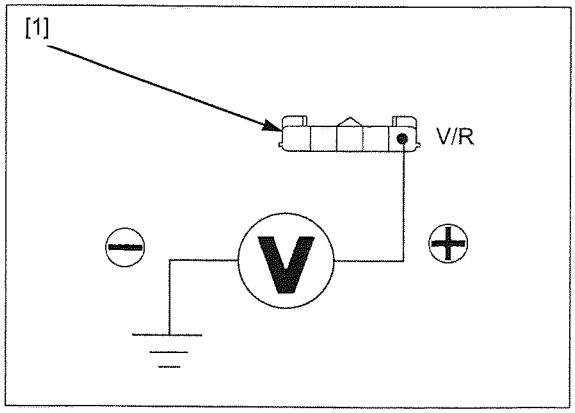
Measure the voltage at the sensor unit 5P (Black) connector [1] of the wire harness side.

**Connection: Violet/red (+) – ground (–)**
**Standard: 4.75 – 5.25 V**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 5.

**NO** – GO TO STEP 4.




4. **MAP Sensor Output Line Short Circuit Inspection**

Turn the ignition switch OFF.

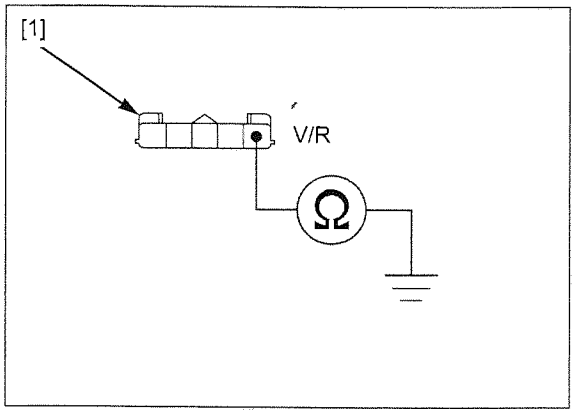
Check for continuity between the sensor unit 5P (Black) connector [1] of the wire harness side and ground.

**Connection: Violet/red – ground**

***Is there continuity?***

**YES** – Short circuit in the Violet/red wire

**NO** – GO TO STEP 5.




5. **MAP Sensor Inspection**

Replace the sensor unit with a known good one (page 7-14).

Turn the ignition switch OFF.

Connect the sensor unit 5P (Black) connector.

Erase the DTCs (page 4-9).

Turn the ignition switch ON.

Check the MAP sensor with the MCS.

***Is DTC 1-1 indicated?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – Faulty original sensor unit (MAP sensor)

## DTC 1-2 (MAP SENSOR HIGH VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **MAP Sensor System Inspection 1**

   Turn the ignition switch ON and engine stop switch "Ω".

   Check the MAP sensor with the MCS.

   ***Is about 5 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – • Intermittent failure
   • Loose or poor contact on the sensor unit 5P (Black) connector

2. **Sensor Unit Power Line Inspection**

   Check the sensor unit power line inspection (page 4-11).

   ***Is the sensor unit power line normal?***

   **YES** – GO TO STEP 3.

   **NO** – Replace or repair the abnormal circuit.

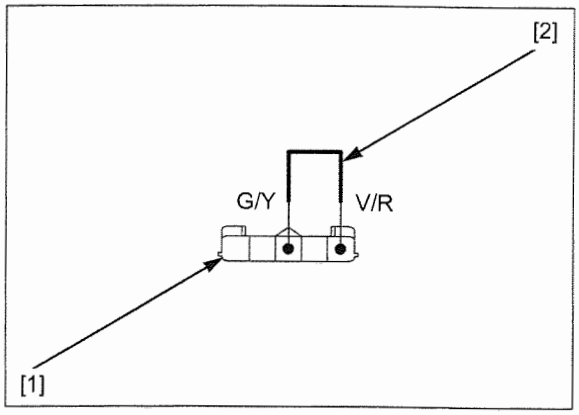
3. **MAP Sensor System Inspection 2**

   Turn the ignition switch OFF.

   Disconnect the sensor unit 5P (Black) connector (page 7-14).

   Connect the sensor unit 5P (Black) connector [1] terminals at the wire harness side with a jumper wire [2].

   **Connection: Violet/red – Green/yellow**




   Turn the ignition switch ON.

   Check the MAP sensor with the MCS.

   ***Is about 0 V indicated?***

   **YES** – Faulty sensor unit (MAP sensor)

   **NO** – GO TO STEP 4.

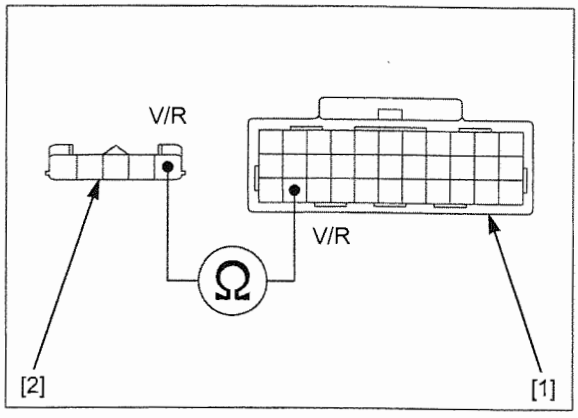
4. **MAP Sensor Output Line Open Circuit Inspection**

   Turn the ignition switch OFF.

   Remove the jumper wire.

   Disconnect the following:

   – ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
   – PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)




   Check for continuity between the ECM/PCM 33P connector [1] and sensor unit 5P (Black) connector [2] of the wire harness side.

   **Connection: Violet/red – Violet/red**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – Replace the ECM/PCM with a known good one, and recheck.

   **NO** – Open circuit in the Violet/red wire

## DTC 7-1 (ECT SENSOR LOW VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **ECT Sensor System Inspection**

   Turn the ignition switch ON and engine stop switch "○".

   Check the ECT sensor with the MCS.

   ***Is about 0 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **ECT Sensor Inspection**

   Turn the ignition switch OFF.

   Disconnect the ECT sensor 2P (Black) connector (page 4-33).

   Turn the ignition switch ON.

   Check the ECT sensor with the MCS.

   ***Is about 0 V indicated?***

   **YES** – GO TO STEP 4.

   **NO** – GO TO STEP 3.

3. **ECT Sensor Resistance Inspection**

   Turn the ignition switch OFF.

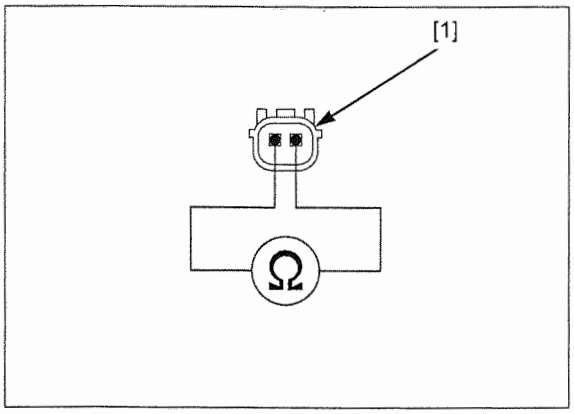
   Measure the resistance at the ECT sensor 2P (Black) connector [1] terminals of the sensor side.

   **Standard: 1.0 – 1.3 kΩ (40°C/104°F)**

   ***Is the resistance within 1.0 – 1.3 kΩ (40°C/104°F)?***

   **YES** – Replace the ECM/PCM with a known good one, and recheck.

   **NO** – Faulty ECT sensor




4. **ECT Sensor Output Line Short Circuit Inspection**

   Turn the ignition switch OFF.

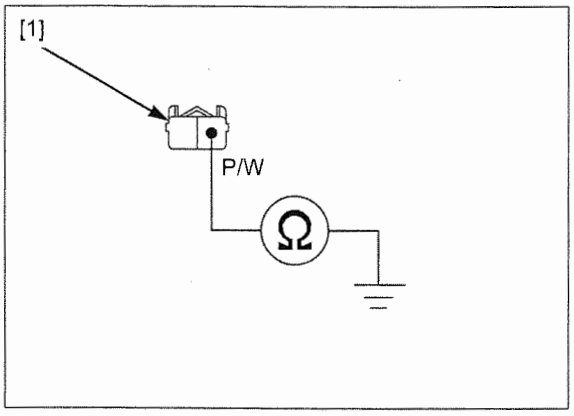
   Check for continuity between the ECT sensor 2P (Black) connector [1] of the wire harness side and ground.

   **Connection: Pink/white – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Pink/white wire

   **NO** – Replace the ECM/PCM with a known good one, and recheck.



## DTC 7-2 (ECT SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the ECT sensor 2P (Black) connector and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **ECT Sensor System Inspection**

   Turn the ignition switch ON and engine stop switch "○".

   Check the ECT sensor with the MCS.

   ***Is about 5 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

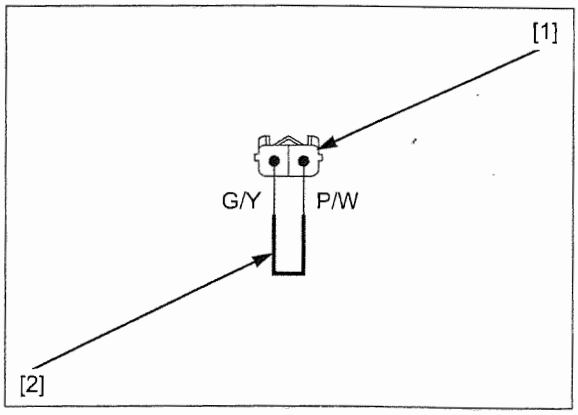
2. **ECT Sensor Inspection**

   Turn the ignition switch OFF.

   Disconnect the ECT sensor 2P (Black) connector (page 4-33).

   Connect the ECT sensor 2P (Black) connector [1] terminals at the wire harness side with a jumper wire [2].

   **Connection: Pink/white – Green/yellow**




   Turn the ignition switch ON.

   Check the ECT sensor with the MCS.

   ***Is about 0 V indicated?***

   **YES** – Inspect the ECT sensor (page 22-13).

   **NO** – GO TO STEP 3.

3. **ECT Sensor Line Open Circuit Inspection**

   Turn the ignition switch OFF.

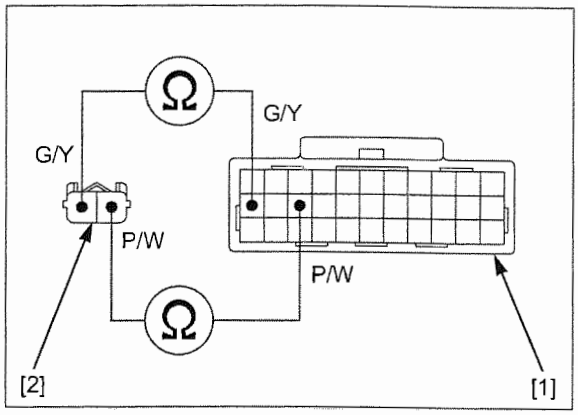
   Remove the jumper wire.

   Disconnect the following:

   – ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
   – PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

   Check for continuities between the ECM/PCM 33P connector [1] and ECT sensor 2P (Black) connector [2] of the wire harness side.

   **Connection: Pink/white – Pink/white**
   **Green/yellow – Green/yellow**




   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – Replace the ECM/PCM with a known good one, and recheck.

   **NO** – • Open circuit in the Pink/white wire
   • Open circuit in the Green/yellow wire

## DTC 8-1 (TP SENSOR LOW VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the sensor unit 5P (Black) connector and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **TP Sensor System Inspection**

   Turn the ignition switch ON and engine stop switch "○".

   Check the TP sensor with the MCS with the throttle fully closed.

   ***Is about 0 V indicated?***

   **YES** – Intermittent failure

   **NO** – GO TO STEP 2.

2. **Sensor Unit Power Line Inspection**

   Check the sensor unit power line inspection (page 4-11).

   ***Is the sensor unit power line normal?***

   **YES** – GO TO STEP 3.

   **NO** – Replace or repair the abnormal circuit.

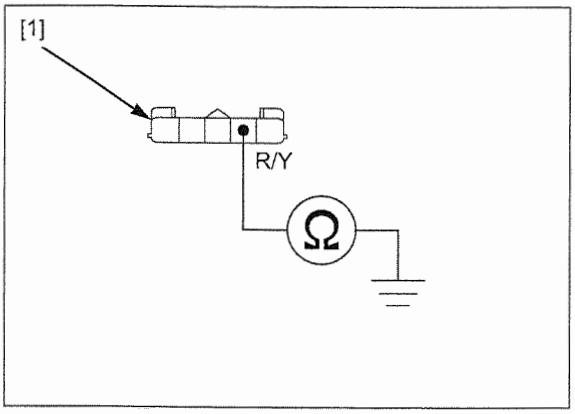
3. **TP Sensor Output Line Short Circuit Inspection**

   Turn the ignition switch OFF.

   Disconnect the sensor unit 5P (Black) connector (page 7-14).

   Check for continuity between the sensor unit 5P (Black) connector [1] of the wire harness side and ground.

   **Connection: Red/yellow – Ground**


   ***Is there continuity?***

   **YES** – Short circuit in the Red/yellow wire

   **NO** – GO TO STEP 4.

4. **TP Sensor Output Line Open Circuit Inspection**

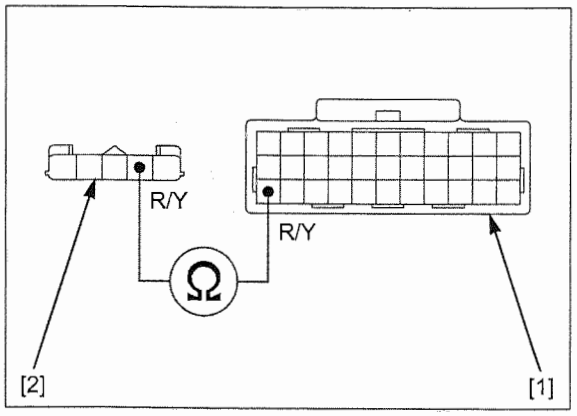
   Disconnect the following:

   - ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
   - PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

   Check for continuity between the ECM/PCM 33P connector [1] and sensor unit 5P (Black) connector [2] of the wire harness side.

   **Connection: Red/yellow – Red/yellow**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**


   ***Is there continuity?***

   **YES** – GO TO STEP 5.

   **NO** – Open circuit in the Red/yellow wire

5. **TP Sensor Inspection**

Replace the sensor unit with a known good one (page 7-14).

Connect the following:

- Sensor unit 5P (Black) connector
- ECM/PCM 33P connector

Erase the DTCs (page 4-9).

Turn the ignition switch ON.

Check the TP sensor with the MCS.

***Is DTC 8-1 indicated?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – Faulty original sensor unit (TP sensor)

## DTC 8-2 (TP SENSOR HIGH VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **TP Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "Ω".

Check the TP sensor with the MCS.

***Is about 5 V indicated?***

**YES** – GO TO STEP 3.

**NO** – GO TO STEP 2.

2. **TP Sensor Inspection**

Check that the TP sensor voltage increases continuously when moving the throttle from fully closed to fully opened using the data list menu of the MCS.

***Is the voltage increase continuously?***

**YES** – Intermittent failure

**NO** – Replace the TP sensor (sensor unit) with a known good one, and recheck.

3. **TP Sensor Resistance Inspection**

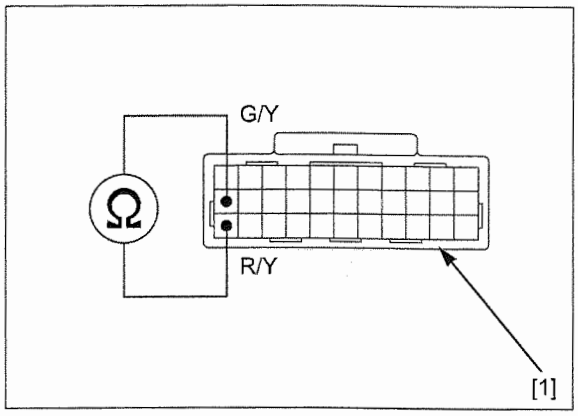
Turn the ignition switch OFF.

Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Measure the resistance at the ECM/PCM 33P connector [1] of the wire harness side.

**Connection: Red/yellow – Green/yellow**
**Standard: 0.29 – 0.71 Ω (20°C/68°F)**




**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**

***Is the resistance within 0.29 – 0.71 Ω (20°C/68°F)?***

**YES** – GO TO STEP 4.

**NO** – Faulty sensor unit (TP sensor)

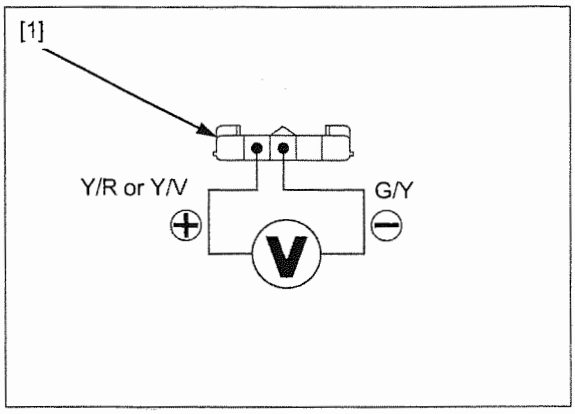
4. **TP Sensor Power Input Voltage Inspection**

Connect the ECM/PCM 33P connector.
Disconnect the sensor unit 5P (Black) connector (page 7-14).

Turn the ignition switch ON.

Measure the voltage at the sensor unit 5P (Black) connector [1] of the wire harness side.

**Connection:**
**CTX700/A/N/NA:**
**Yellow/red (+) – Green/yellow (–)**
**CTX700D/ND:**
**Yellow/violet (+) – Green/yellow (–)**




**Standard: 4.75 – 5.25 V**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – • Open circuit in the Green/yellow wire
• Open circuit in the Yellow/red or Yellow/violet wire

## DTC 9-1 (IAT SENSOR LOW VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **IAT Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "○".

Check the IAT sensor with the MCS.

***Is about 0 V indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **IAT Sensor Inspection**

Turn the ignition switch OFF.

Disconnect the IAT sensor 2P (Black) connector (page 4-32).

Turn the ignition switch ON.

Check the IAT sensor with the MCS.

***Is about 0 V indicated?***

**YES** – GO TO STEP 3.

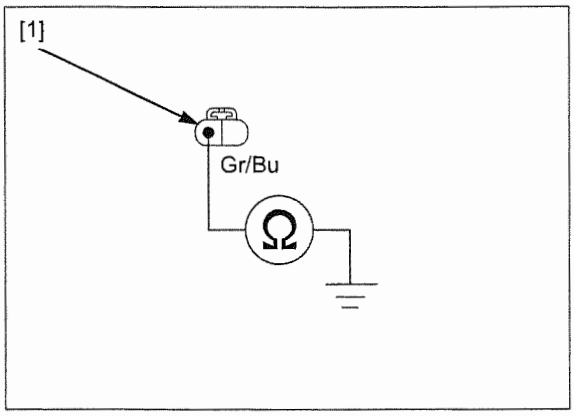
**NO** – Faulty IAT sensor

3. **IAT Sensor Voltage Output Line Short Circuit Inspection**

Turn the ignition switch OFF.

Check for continuity between the IAT sensor 2P (Black) connector [1] of the wire harness side and ground.

**Connection: Gray/blue – Ground**




***Is there continuity?***

**YES** – Short circuit in the Gray/blue wire

**NO** – Replace the ECM/PCM with a known good one, and recheck.

## DTC 9-2 (IAT SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the IAT sensor 2P (Black) connector and ECM/PCM 33P connector, then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

**1. IAT Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "○".

Check the IAT sensor with the MCS.

***Is about 5 V indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

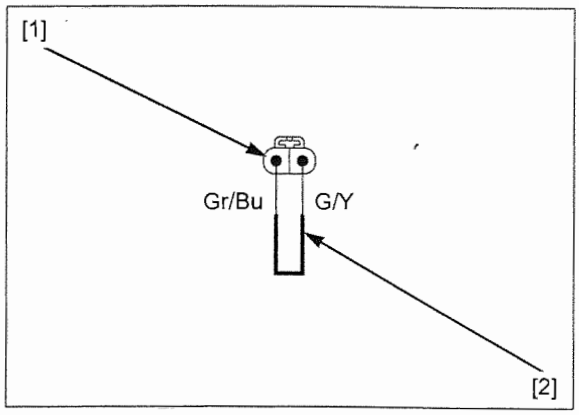
**2. IAT Sensor Inspection**

Turn the ignition switch OFF.

Disconnect the IAT sensor 2P (Black) connector (page 4-32).

Connect the IAT sensor 2P (Black) connector [1] terminals at the wire harness side with a jumper wire [2].

**Connection: Gray/blue – Green/yellow**




Turn the ignition switch ON.

Check the IAT sensor with the MCS.

***Is about 0 V indicated?***

**YES** – Faulty IAT sensor

**NO** – GO TO STEP 3.

**3. IAT Sensor Line Open Circuit Inspection**

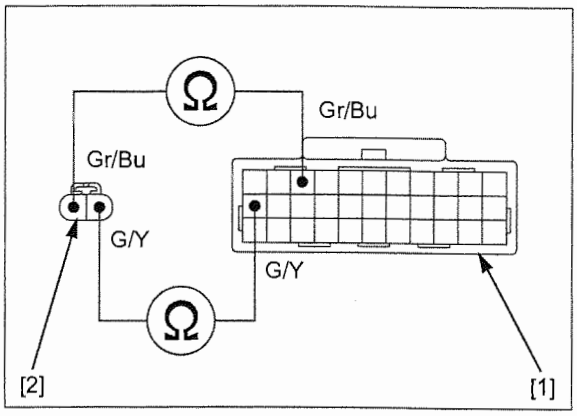
Turn the ignition switch OFF.

Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Check for continuity between the ECM/PCM 33P connector [1] and IAT sensor 2P (Black) connector [2] of the wire harness side.

**Connection: Gray/blue – Gray/blue**
**Green/yellow – Green/yellow**




**TOOL:**

| | |
|---|---|
| **Test probe, 2 packs** | **07ZAJ-RDJA110** |

***Is there continuity?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – • Open circuit in the Gray/blue wire
• Open circuit in the Green/yellow wire

## DTC 11-1 (VS SENSOR)

NOTE:

- Before starting the inspection, check for loose or poor contact on the VS sensor 3P (Black) and combination meter 16P (Gray) connector, then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **VS Sensor System Inspection**

   Erase the DTCs (page 4-9).

   Test-ride the motorcycle above 2,000 rpm.

   Stop the engine.

   Turn the ignition switch ON and engine stop switch "○".

   Check the VS sensor with the MCS.

   ***Is the DTC 11-1 indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Speedometer Inspection**

   Check for operation of speedometer.

   ***Does the speedometer operate normally?***

   **YES** – GO TO STEP 3.

   **NO** – GO TO STEP 4.

3. **DTC Recheck**

   Check the DTC with the MCS.

   ***Is the DTC 86-1 indicated?***

   **YES** – Check the meter communication malfunction (page 4-29).

   **NO** – Replace the combination meter with a known good one, and recheck.

4. **VS Sensor Input Voltage Inspection**

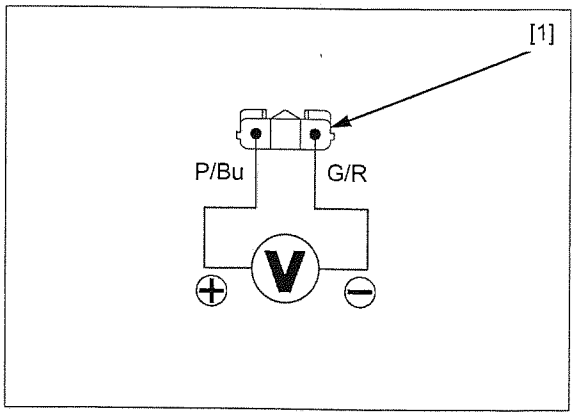
   Turn the ignition switch OFF.

   Disconnect the VS sensor 3P (Black) connector (page 22-12).

   Turn the ignition switch ON.

   Measure the voltage at the VS sensor 3P (Black) connector [1] of the wire harness side.

   **Connection: Pink/blue (+) – Green/red (–)**
   **Standard: Battery voltage**

   ***Is there battery voltage?***

   **YES** – GO TO STEP 5.

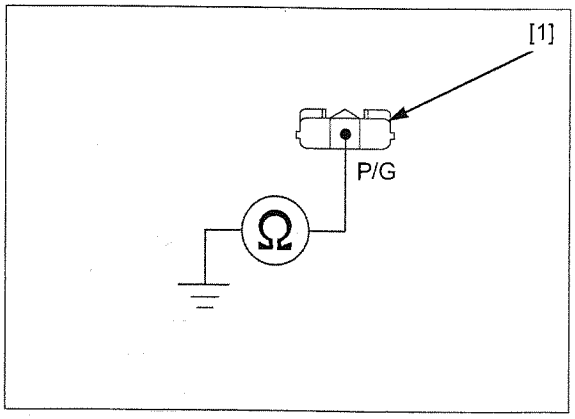
   **NO** – • Open circuit in the Pink/blue wire
   • Open circuit in the Green/red wire

5. **VS Sensor Signal Line Short Circuit Inspection**

   Turn the ignition switch OFF.

   Check for continuity between the VS sensor 3P (Black) connector [1] of the wire harness side and ground.

   **Connection: Pink/green – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Pink/green wire

   **NO** – GO TO STEP 6.

6. **VS Sensor Signal Line Open Circuit Inspection**

Disconnect the combination meter 16P (Gray) connector.

- CTX700/A/D (page 2-6)
- CTX700N/NA/ND (page 22-7)

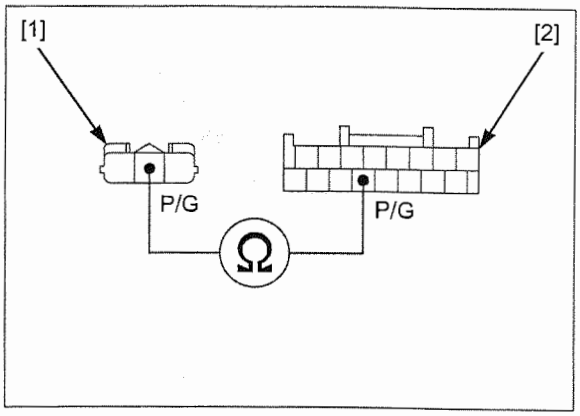
Check for continuity between the VS sensor 3P (Black) connector [1] and combination meter 16P (Gray) connector [2] of the wire harness side.

**Connection: Pink/green – Pink/green**

***Is there continuity?***

**YES** – GO TO STEP 7.

**NO** – Open circuit in the Pink/green wire




7. **VS Sensor Inspection**

Replace the VS Sensor with a known good one (page 22-12).

Connect the combination meter 16P (Gray) connector.

Erase the DTCs (page 4-9).

Test-ride the motorcycle above 2,000 rpm.

Stop the engine.

Turn the ignition switch ON and engine stop switch "○".

Check the VS sensor with the MCS.

***Is the DTC 11-1 indicated?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – Faulty original VS sensor

## DTC 12-1 (No.1 FUEL INJECTOR)

NOTE:

- Before starting the inspection, check for loose or poor contact on the fuel injector 2P (Gray) connector and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **Fuel Injector System Inspection**

Erase the DTCs (page 4-9).

Turn the ignition switch ON and engine stop switch "○".
Check the fuel injector with the MCS.

***Is the DTC 12-1 indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **Fuel Injector Input Voltage Inspection**

Turn the ignition switch OFF.

Disconnect the fuel injector 2P (Gray) connector (page 7-18).

Turn the ignition switch ON.

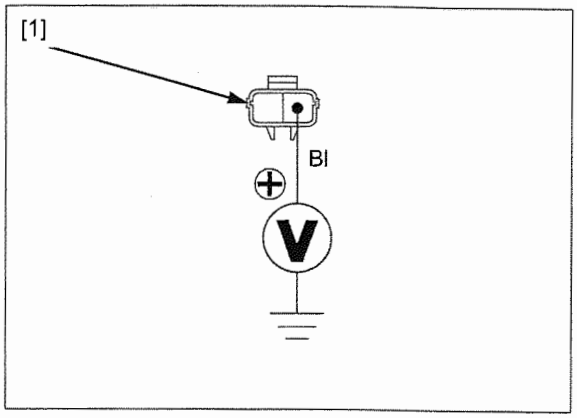
Measure the voltage between the fuel injector 2P (Gray) connector [1] of the wire harness side and ground.

**Connection: Black (+) – Ground (–)**
**Standard: Battery voltage**

***Does the standard voltage exist?***

**YES** – GO TO STEP 3.

**NO** – Open or short circuit in the Black wire



3. **Fuel Injector Signal Line Short Circuit Inspection**

Turn the ignition switch OFF.

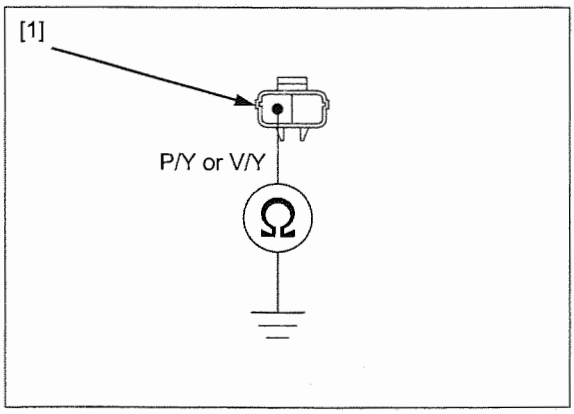
Check for continuity between the fuel injector 2P (Gray) connector [1] of wire harness side and ground.

**Connection: No.1: Pink/yellow – Ground**
**No.2: Violet/yellow – Ground**

***Is there continuity?***

**YES** – • Short circuit in the Pink/yellow wire
• Short circuit in the Violet/yellow wire

**NO** – GO TO STEP 4.




4. **Fuel Injector Resistance Inspection**

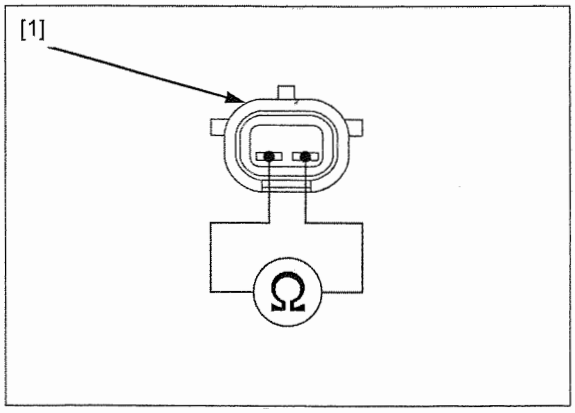
Measure the resistance between the fuel injector 2P (Gray) connector [1] terminals.

**Standard: 11.6 – 12.4 Ω (20°C/68°F)**

***Is the resistance within 11.6 – 12.4 Ω (20°C/68°F)?***

**YES** – GO TO STEP 5.

**NO** – Faulty fuel injector




5. **Fuel Injector Signal Line Open Circuit Inspection**

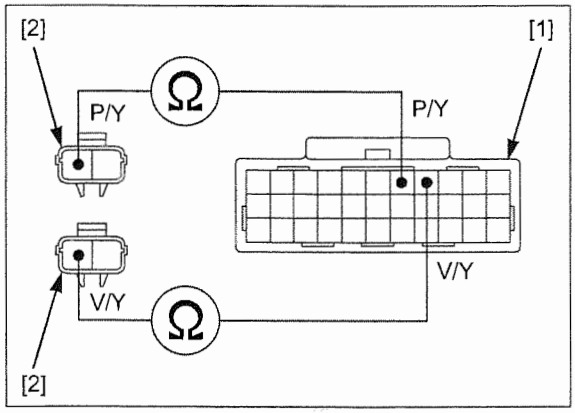
Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Check for continuity between the ECM/PCM 33P connector [1] and fuel injector 2P (Gray) connector [2] of the wire harness side.

**Connection: No.1: Pink/yellow – Pink/yellow**
**No.2: Violet/yellow – Violet/yellow**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**




***Is there continuity?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – • Open circuit in the Pink/yellow wire
• Open circuit in the Violet/yellow wire

## DTC 13-1 (No.2 FUEL INJECTOR)

See page 4-22

## DTC 21-1 ($O_2$ SENSOR)

NOTE:

- Before starting the inspection, check for loose or poor contact on the $O_2$ sensor 1P (Black) connector or $O_2$ sensor cap and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

**1. $O_2$ Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "○".

Start the engine and warm up the engine up to coolant temperature is 80°C (176°F).

Test-ride the motorcycle and check the $O_2$ sensor with the MCS.

***Is the DTC 21-1 indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

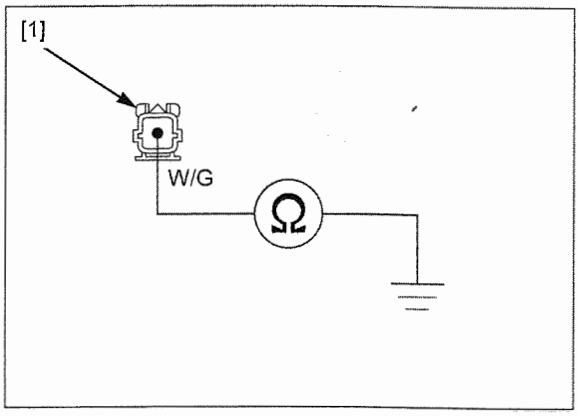
**2. $O_2$ Sensor Short Circuit Inspection**

Turn the ignition switch OFF.

Disconnect the $O_2$ sensor 1P (Black) connector (page 4-36).

Check for continuity between the $O_2$ sensor 1P (Black) connector [1] of the wire harness side and ground.

**Connection: White/green – Ground**




***Is there continuity?***

**YES** – Short circuit in the White/green wire

**NO** – GO TO STEP 3.

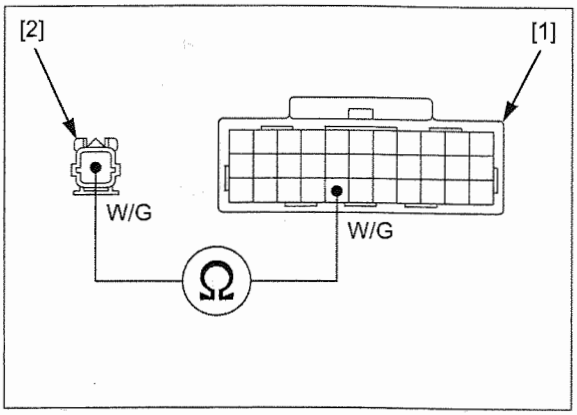
**3. $O_2$ Sensor Line Open Circuit Inspection 1**

Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Check for continuity between the ECM/PCM 33P connector [1] and $O_2$ sensor 1P (Black) connector [2] of the wire harness side.

**Connection: White/green – White/green**




**TOOL:**

| | |
|---|---|
| **Test probe, 2 packs** | **07ZAJ-RDJA110** |

***Is there continuity?***

**YES** – GO TO STEP 4.

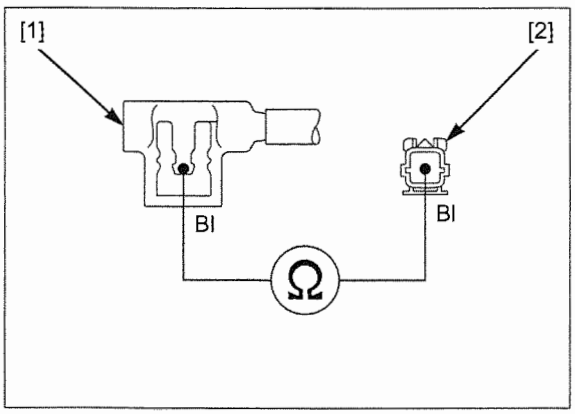
**NO** – Open circuit in the White/green wire

4. **$O_2$ Sensor Line Open Circuit Inspection 2**

Disconnect the $O_2$ sensor cap (page 4-36).

Check for continuity between the $O_2$ sensor cap [1] and $O_2$ sensor 1P (Black) connector [2] of the sensor side.

**Connection: Black – Black**




***Is there continuity?***

**YES** – GO TO STEP 5.

**NO** – Open circuit in the Black wire

5. **$O_2$ Sensor Inspection**

Replace the $O_2$ sensor with a known good one (page 4-36).

Connect the following:

- $O_2$ sensor 1P (Black) connector
- ECM/PCM 33P connector

Erase the DTCs (page 4-9).

Start the engine and warm up the engine up to coolant temperature is 80°C (176°C).

Test-ride the motorcycle and recheck the $O_2$ sensor with the MCS.

***Is the DTC 21-1 indicated?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – Faulty original $O_2$ sensor and/or $O_2$ sensor cord

## DTC 29-1 (IACV)

NOTE:

- Before starting the inspection, check for loose or poor contact on the IACV 4P (Black) connector and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **Recheck DTC**

Erase the DTCs (page 4-9).

Turn the ignition switch ON and engine stop switch "○".

Check the IACV with the MCS.

***Is the DTC 29-1 indicated?***

**YES** – GO TO STEP 2.

**NO** –
- Intermittent failure
- Loose or poor contact on the IACV 4P (Black) connector

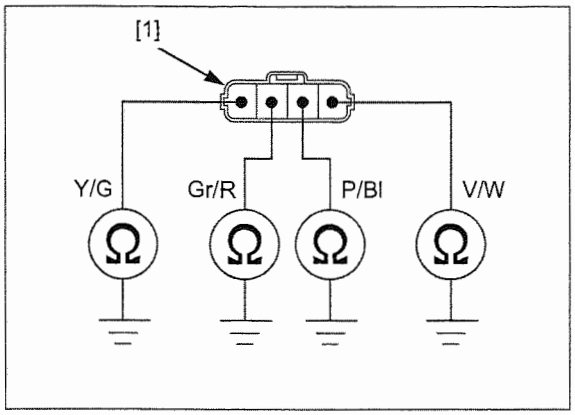
2. **IACV Short Circuit Inspection**

Turn the ignition switch OFF.

Disconnect the IACV 4P (Black) connector (page 7-20).

Check for continuities between the IACV 4P (Black) connector [1] of the wire harness side and ground.

**Connection: Yellow/green – Ground**
**Gray/red – Ground**
**Violet/white – Ground**
**Pink/black – Ground**




***Is there continuity?***

**YES** –
- Short circuit in the Yellow/green or Gray/red or Violet/white or Pink/black wire

**NO** – GO TO STEP 3.

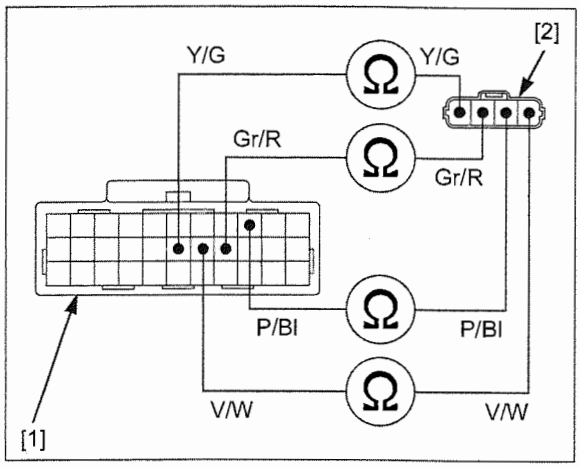
**3. IACV Open Circuit Inspection**

Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Check for continuities between the ECM/PCM 33P connector [1] and IACV 4P (Black) connector [2] of the wire harness side.

**Connection: Yellow/green – Yellow/green**
**Gray/red – Gray/red**
**Violet/white – Violet/white**
**Pink/black – Pink/black**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

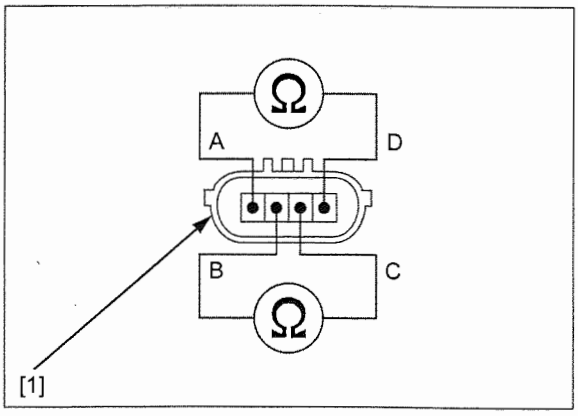
**YES** – GO TO STEP 4.

**NO** – • Open circuit in the Yellow/green or Gray/red wire
• Open circuit in the Violet/white or Pink/black wire

**4. IACV Resistance Inspection**

Measure the resistance at the IACV 4P (Black) connector [1] at the motor side.

**Connection: A – D**
**B – C**
**Standard: 110 – 150 Ω (25°C/77°F)**




***Is the resistance within 110 – 150 Ω (25°C/77°F)?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – Faulty IACV

## DTC 33-2 (EEPROM)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

**1. Recheck DTC**

Erase the DTCs (page 4-9).

Turn the ignition switch ON and engine stop switch "○".

Recheck the ECM EEPROM.

***Is the DTC 33-2 indicated?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – Intermittent failure

## DTC 54-1 (BANK ANGLE SENSOR LOW VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **Recheck DTC**

   Erase the DTCs (page 4-9).

   Turn the ignition switch ON and engine stop switch "○".

   Check the bank angle sensor with the MCS.

   ***Is about 0 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Bank Angle Sensor Power Input Line Short Circuit Inspection**

   Turn the ignition switch OFF.

   Disconnect the bank angle sensor 2P (Black) connector (page 4-33).

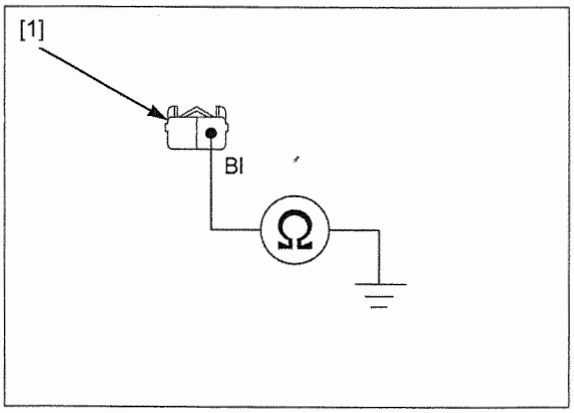
   Check for continuity between the bank angle sensor 2P (Black) connector [1] of the wire harness side and ground.

   **Connection: Black – Ground**

   ***Is there continuity?***

   **YES** – GO TO STEP 3.

   **NO** – Short circuit in the Black wire




3. **Bank Angle Sensor Output Line Short Circuit Inspection**

   Disconnect the following:

   - ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
   - PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

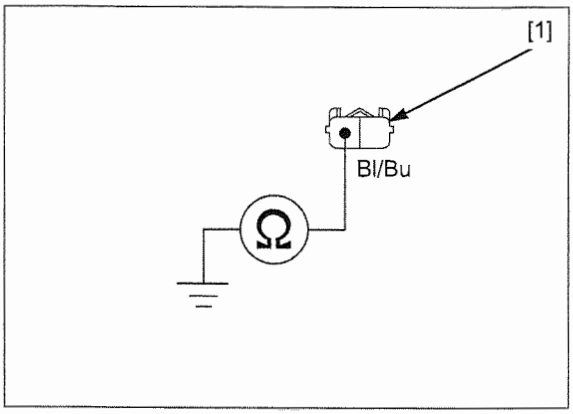
   Check for continuity between the bank angle sensor 2P (Black) connector [1] of the wire harness side and ground.

   **Connection: Black/blue – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Black/blue wire

   **NO** – GO TO STEP 4.




4. **Bank Angle Sensor Inspection**

   Replace the bank angle sensor with a known good one (page 4-33).

   Connect the following:

   - Bank angle sensor 2P (Black) connector
   - ECM/PCM 33P connector

   Erase the DTCs (page 4-9).

   Turn the ignition switch ON.

   Check the bank angle sensor with the MCS.

   ***Is DTC 54-1 indicated?***

   **YES** – Replace the ECM/PCM with a known good one, and recheck.

   **NO** – Faulty original bank angle sensor

## DTC 54-2 (BANK ANGLE SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the bank angle sensor 2P (Black) connector and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **Recheck DTC**

   Erase the DTCs (page 4-9).

   Turn the ignition switch ON and engine stop switch "○".

   Check the bank angle sensor with the MCS.

   ***Is about 5 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Bank Angle Sensor Power Input Voltage Inspection**

   Turn the ignition switch OFF.

   Disconnect the bank angle sensor 2P (Black) connector (page 4-33).

   Turn the ignition switch ON.

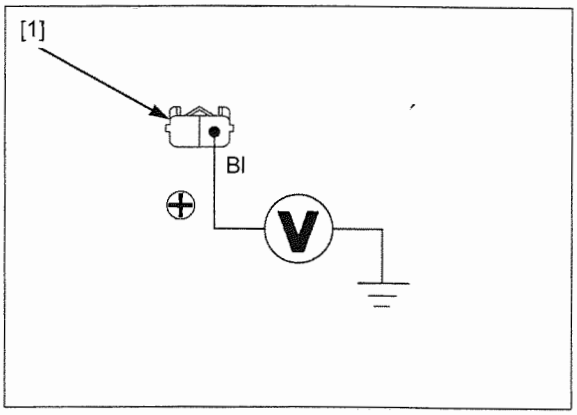
   Measure the voltage at the bank angle sensor connector [1] of the wire harness side and ground.

   **Connection: Black (+) – Ground (–)**
   **Standard: Battery voltage**

   ***Does the standard voltage exist?***

   **YES** – GO TO STEP 3.

   **NO** – Open circuit in the Black wire




3. **Bank Angle Sensor Output Line Short Circuit Inspection**

   Turn the ignition switch OFF.

   Disconnect the following:

   – ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
   – PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

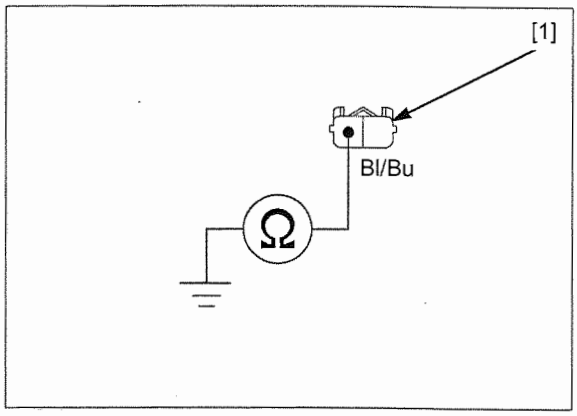
   Check for continuity between the bank angle sensor 2P (Black) connector [1] of the wire harness side and ground.

   **Connection: Black/blue – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Black/blue wire

   **NO** – GO TO STEP 4.




4. **Bank Angle Sensor Output Line Open Circuit Inspection**

   Check for continuity between the ECM/PCM 33P connector [1] and bank angle sensor 2P (Black) connector [2] of the wire harness side.

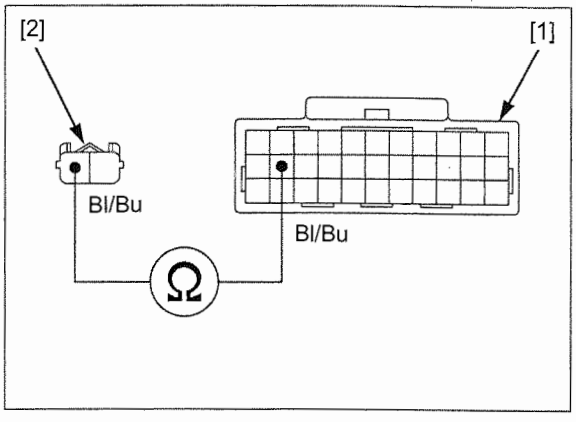
   **Connection: Black/blue – Black/blue**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – • Inspect the bank angle sensor (page 4-34).
   • Replace the ECM/PCM with a known good one, and recheck.

   **NO** – Open circuit in the Black/blue wire



## DTC 84-1 (CPU IN THE PCM MALFUNCTION) (CTX700D/ND)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (CTX700D/ND) (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 4-9).

   Check the DTC with the MCS.

   ***Is DTC 84-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Intermittent failure

## DTC 86-1 (METER COMMUNICATION MALFUNCTION)

NOTE:
- Before starting the inspection, check for loose or poor contact on the combination meter 16P (Gray) connector and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

1. **Recheck DTC**

   Erase the DTCs (page 4-9).

   Turn the ignition switch ON and engine stop switch "○".

   Check the meter communication with the MCS.

   ***Is the DTC 86-1 indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Combination Meter Serial Line Short Circuit Inspection**

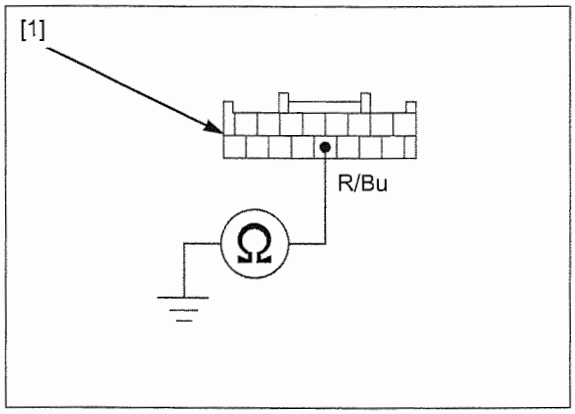
   Turn the ignition switch OFF.

   Disconnect the following:

   – Combination meter 16P (Gray) connector
     – CTX700/A/D (page 2-6)
     – CTX700N/NA/ND (page 22-7)
   – ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
   – PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

   Check for continuity between the combination meter 16P (Gray) connector [1] of the wire harness side and ground.

   **Connection: Red/blue – Ground**




   ***Is there continuity?***

   **YES** – Short circuit in the Red/blue wire

   **NO** – GO TO STEP 3.

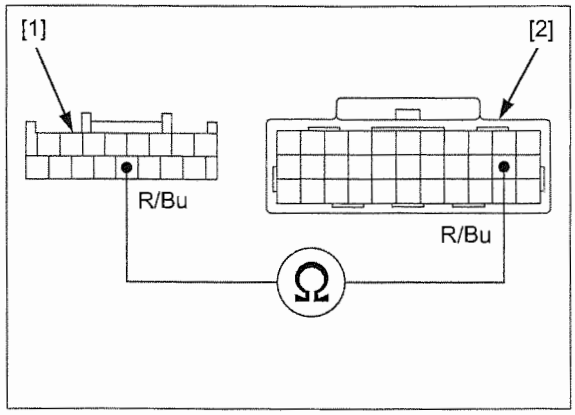
3. **Combination Meter Serial Line Open Circuit Inspection**

   Turn the ignition switch OFF.

   Check for continuity between the combination meter 16P (Gray) connector [1] and ECM/PCM 33P connector [2] of the wire harness side.

   **Connection: Red/blue – Red/blue**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**




   ***Is there continuity?***

   **YES** – GO TO STEP 4.

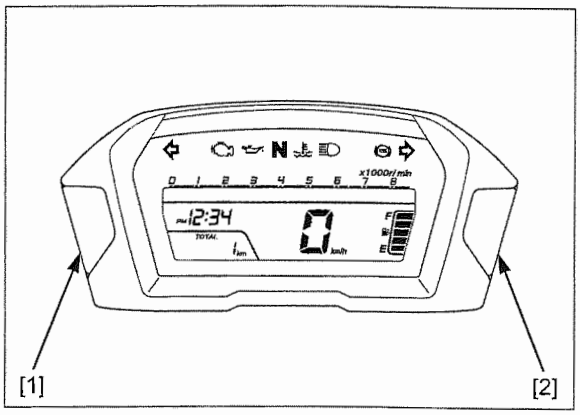
   **NO** – Open circuit in the Red/blue wire

**4. Combination Meter Serial Line Output Voltage Inspection**

Turn the ignition switch OFF.

Connect the combination meter 16P (Gray) connector.

Turn the ignition switch ON while pushing and holding combination meter A button [1] and B button [2] over 10 seconds.
The combination meter enters the communication diagnostic mode.




Measure the voltage at the ECM/PCM 33P connector [1] of the wire harness side and ground.

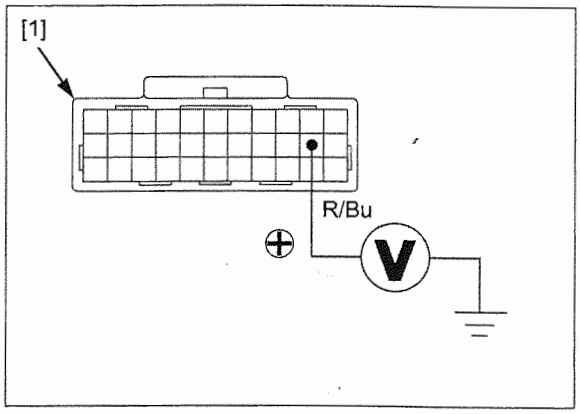
**Connection: Red/blue (+) – Ground (–)**
**Standard: 8 V or more (Every 5 seconds)**

**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**

***Does the standard voltage exist?***

**YES** – GO TO STEP 5.

**NO** – Inspect the combination meter (page 22-7).




**5. ECM Serial Line Output Voltage Inspection**

Turn the ignition switch OFF.

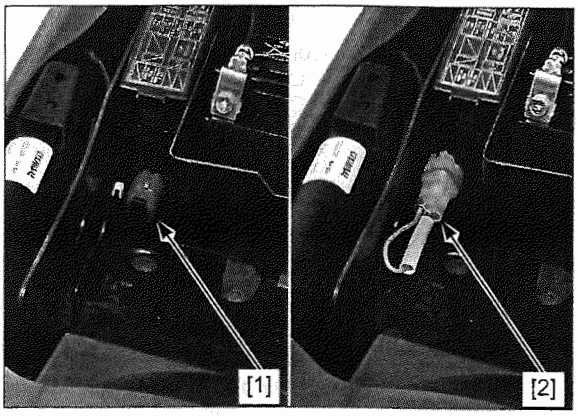
Disconnect the combination meter 16P (Gray) connector.

Connect the ECM/PCM 33P connector.

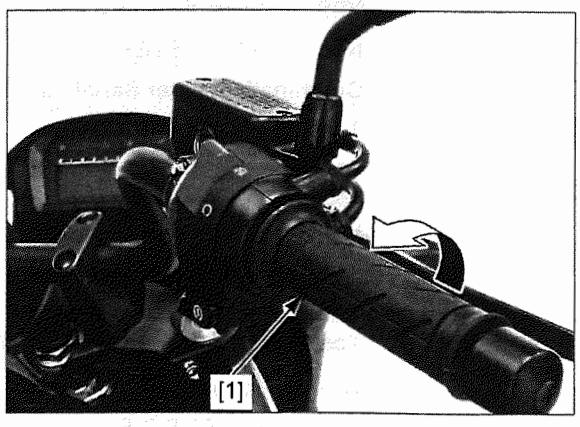
Remove the DLC [1] from the battery box.
Remove the dummy connector from the DLC.
Short the DLC terminals using a special tool.

**Connection: Brown – Green**

**TOOL:**
**[2] SCS service connector 070PZ-ZY30100**




Rotate and hold the throttle grip [1] to the fully open position.
Turn the ignition switch ON while holding the throttle grip at the fully open position over 10 seconds.
The ECM enters the communication diagnostic mode.



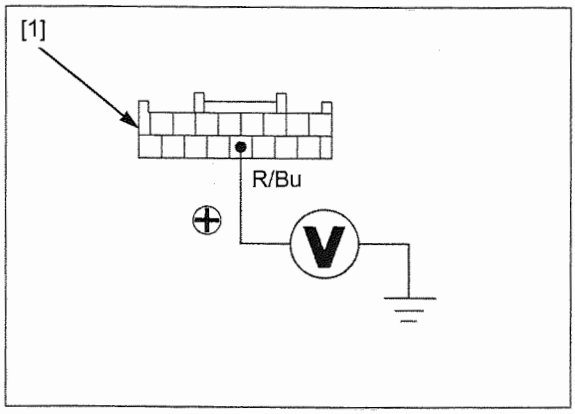
Measure the voltage at the combination meter 16P (Gray) connector [1] of the wire harness side and ground.

**Connection: Red/blue (+) – Ground (–)**
**Standard: 8 V or more (Every 5 seconds)**

***Does the standard voltage exist?***

**YES** – Inspect the combination meter (page 22-7).

**NO** – Replace the ECM/PCM with a known good one, and recheck.




## DTC 87-1 (EOP SWITCH MALFUNCTION)

NOTE:

- Before starting the inspection, check for loose or poor contact on the combination meter 16P (Gray) connector, EOP switch 1P (Gray) connector and ECM/PCM 33P connector(s), then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

**1. EOP Switch System Inspection**

Erase the DTCs (page 4-9).

Turn the ignition switch ON and engine stop switch "○".

Check the EOP switch with the MCS.

***Is the DTC 87-1 indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. EOP Switch Output Line Open Circuit Inspection**

Turn the ignition switch OFF.

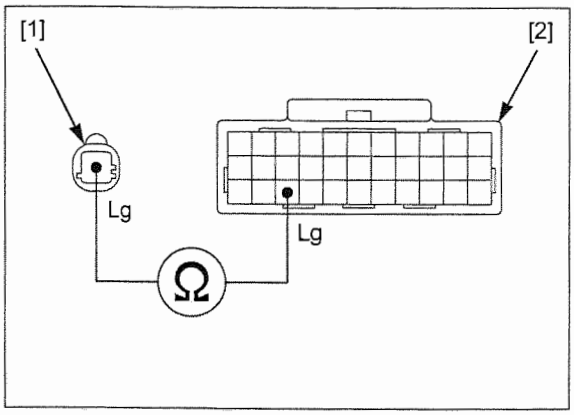
Disconnect the following:

- EOP switch 1P (Gray) connector (page 22-14)
- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Check for continuity between the EOP switch 1P (Gray) connector [1] and ECM/PCM 33P connector [2] of the wire harness side.

**Connection: Light green – Light green**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**




***Is there continuity?***

**YES** – GO TO STEP 3.

**NO** – Open circuit in the Light green wire

**3. EOP Switch Inspection**

Replace the EOP switch with a known good one.

Connect the following:

- EOP switch 1P (Gray) connector
- ECM/PCM 33P connector

Erase the DTCs (page 4-9).

Turn the ignition switch ON and check the EOP switch with the MCS..

***Is the DTC 87-1 indicated?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – Faulty original EOP switch

# MIL CIRCUIT TROUBLESHOOTING

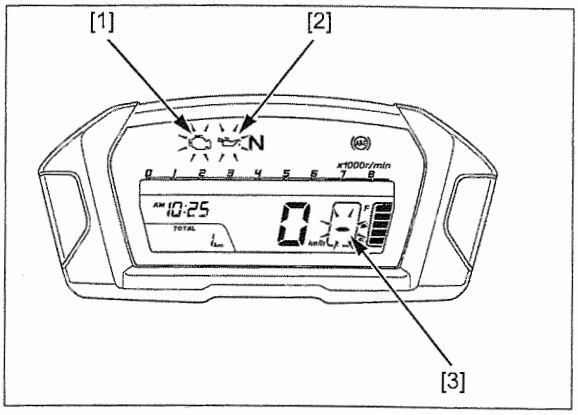
NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

Check that the MIL comes on for 2 seconds and goes off when the ignition switch is turned ON and engine stop switch "○".

If the MIL does not come on at all, inspect the combination meter (page 22-7).

*CTX700/A/N/NA:* If the MIL [1] and engine oil pressure indicator [2] are stay on, and the tachometer, high coolant temperature indicator do not come on, inspect the serial communication line (page 22-8).

*CTX700D/ND:* If the MIL [1] and engine oil pressure indicator [2] stay on, the shift indicator "–" [3] is blinking, and the tachometer, high coolant temperature indicator do not come on, inspect the serial communication line (page 22-8).




If the MIL stays on, check as follows:

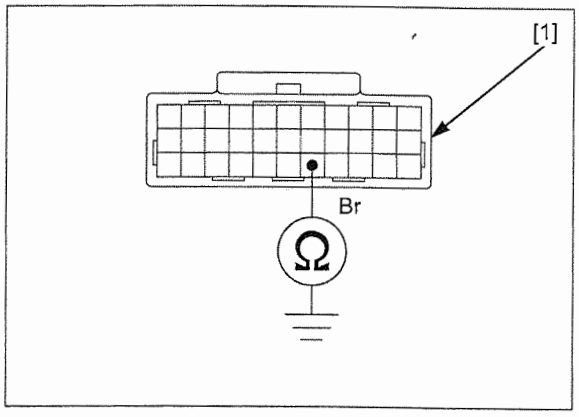
Turn the ignition switch OFF.

Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Check for continuity between the ECM/PCM 33P connector [1] of the wire harness side and ground.

**CONNECTION: Brown – Ground**
**STANDARD: No continuity**




**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**

If there is continuity, check for short circuit in the Brown wire between the DLC and ECM/PCM.

If there is no continuity, replace the ECM/PCM with a known good one, and recheck.

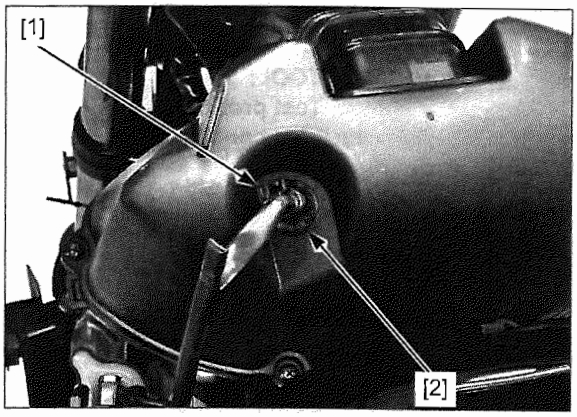
# IAT SENSOR

## REMOVAL/INSTALLATION

Remove the center shelter (page 2-12).

Disconnect the IAT sensor 2P (Black) connector [1] and remove the IAT sensor [2].

Installation is in the reverse order of removal.



# ECT SENSOR

## REMOVAL/INSTALLATION

Drain the coolant (page 8-4).

*Remove the ECT sensor while the engine is cold.*

Disconnect the ECT sensor 2P (Black) connector [1].

Remove the ECT sensor [2] and O-ring [3].

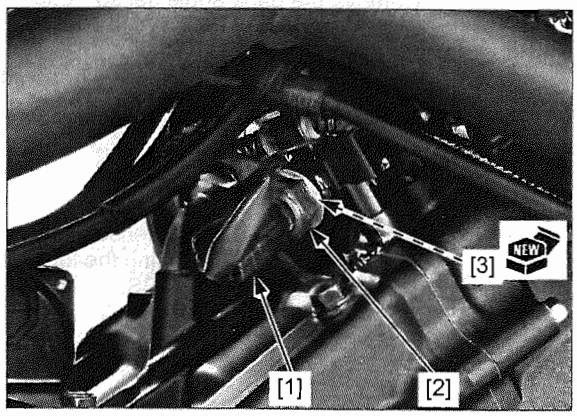
Install a new O-ring onto the ECT sensor and install them.

Tighten the ECT sensor to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Connect the ECT sensor 2P (Black) connector.

Fill the cooling system with recommended coolant (page 8-4).

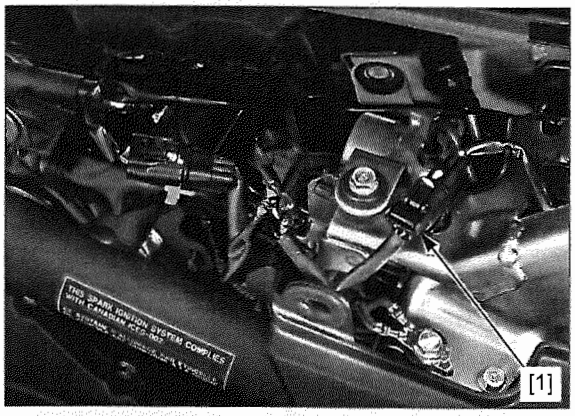



# BANK ANGLE SENSOR

## REMOVAL/INSTALLATION

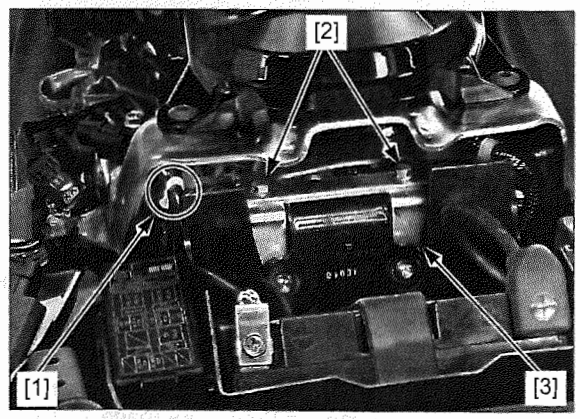
Remove the left side shelter (page 2-11).

Disconnect the bank angle sensor 2P (Black) connector [1] and release it from the center cross plate.




Release the wire band boss [1].

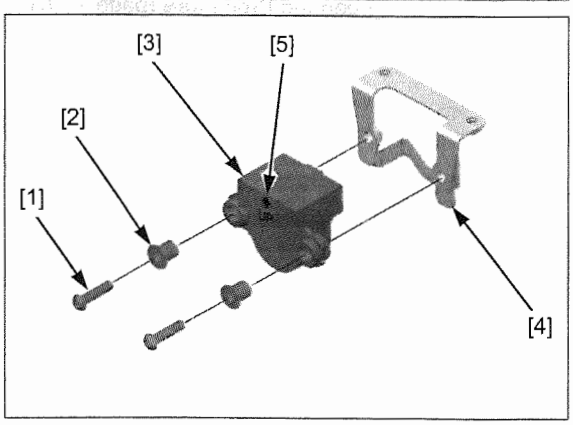
Remove the two bolts [2] and bank angle sensor assembly [3].




Remove the two socket bolts [1], collars [2] and bank angle sensor [3] from the stay [4].

Installation is in the reverse order of removal.

- Install the bank angle sensor with its "UP" mark [5] facing up.



## SYSTEM INSPECTION

Connect the MCS (page 4-8).
Remove the bank angle sensor (page 4-33).

Connect the bank angle sensor 2P (Black) connector.

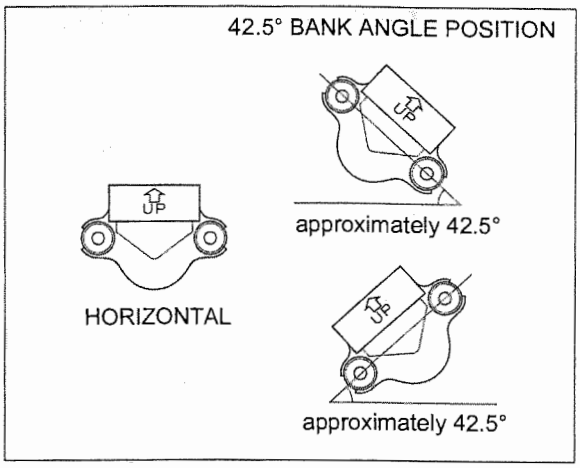
Place the bank angle sensor is horizontal as shown.

Turn the ignition switch ON and engine stop switch "○".
Read the voltage with the MCS.

**STANDARD: 3.5 – 3.8 V**

Incline the bank angle sensor approximately 42.5° to the left or right with keeping the ignition switch ON.
Read the voltage with MCS.

**STANDARD: 6.7 – 7.2 V**




# ECM/PCM

## ECM REMOVAL/INSTALLATION (CTX700/A/N/NA)

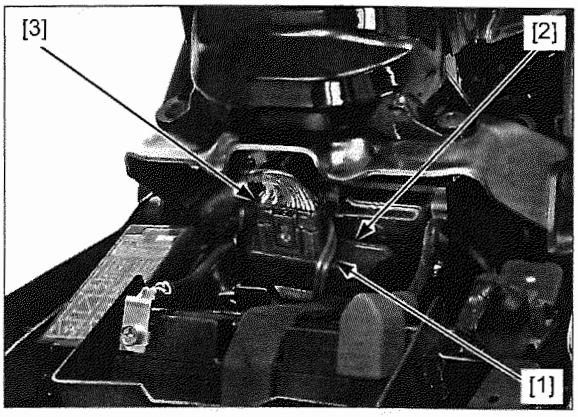
Remove the seat (page 2-14).

Turn the ignition switch OFF.

Release the band [1] and remove the ECM [2] from the battery box.

Disconnect the ECM 33P (Black) connector [3].

Installation is in the reverse order of removal.




## PCM REMOVAL/INSTALLATION (CTX700D/ND)

Remove the seat (page 2-14).

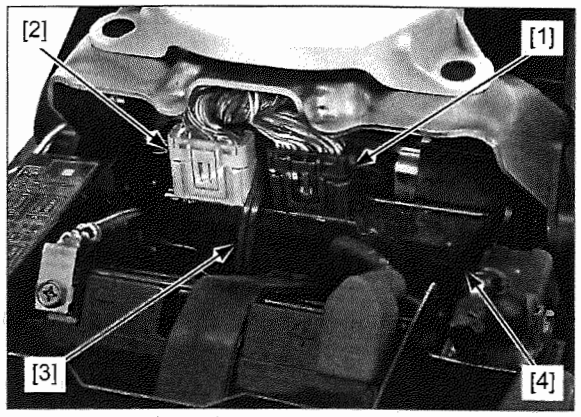
Turn the ignition switch OFF.

Disconnect the PCM 33P (Black) connector [1] and PCM 33P (Gray) connector [2].

Release the band [3] and remove the PCM [4] from the battery box.

Installation is in the reverse order of removal.

- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).



## ECM/PCM POWER/GROUND LINE INSPECTION

NOTE:

- Before starting the inspection, check for loose or poor contact on the ECM/PCM 33P connector and recheck the MIL blinking.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

**ENGINE DOES NOT START (MIL does not blink)**

**1. ECM/PCM Power Input Voltage Inspection**

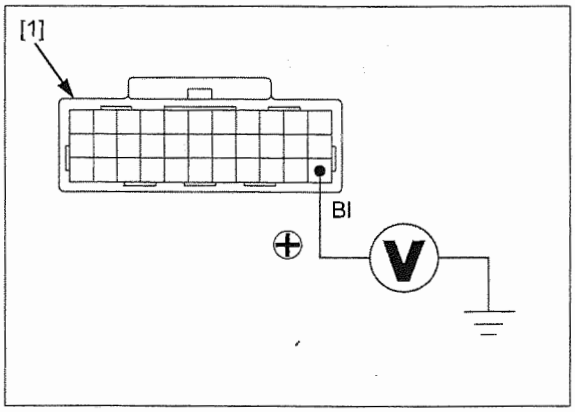
Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)

Turn the ignition switch ON and engine stop switch "○".

Measure the voltage at the ECM/PCM 33P connector [1] of the wire harness side and ground.

**Connection: Black (+) – Ground (–)**
**Standard: Battery voltage**




**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**

***Does the standard voltage exist?***

**YES** – GO TO STEP 2.

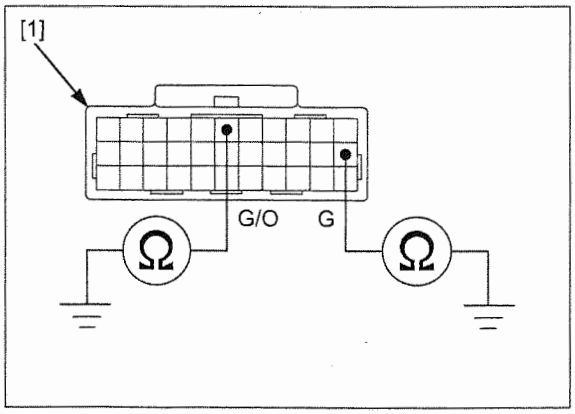
**NO** – • Open or short circuit in the Black wire
• Faulty ignition switch
• Blown main fuse 30 A
• Blown sub fuse 7.5 A (ENG STOP)
• Faulty engine stop switch

**2. ECM/PCM Ground Line Inspection**

Turn the ignition switch OFF.

Check for continuities between the ECM/PCM 33P connector [1] of the wire harness side and ground.

**Connection: Green/orange – Ground**
**Green – Ground**




**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the ECM/PCM with a known good one, and recheck.

**NO** – • Open circuit in the Green/orange wire
• Open circuit in the Green wire

# O2 SENSOR

**NOTICE**

- *Do not get grease, oil or other materials in the $O_2$ sensor air hole.*
- *The $O_2$ sensor may be damaged if dropped. Replace it with a new one, if dropped.*

NOTE:

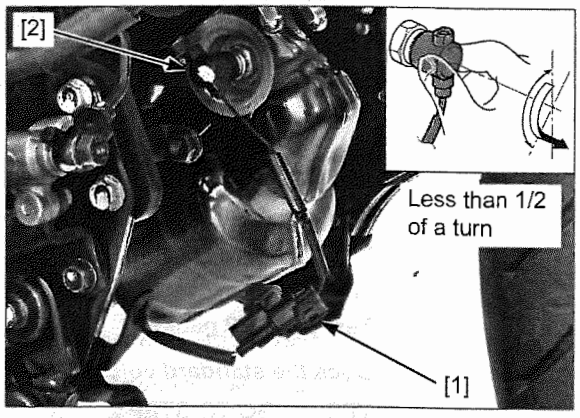
- Handle the $O_2$ sensor with care.
- Do not service the $O_2$ sensor while it is hot.

## REMOVAL/INSTALLATION

Remove the radiator reserve tank (page 8-11).

Disconnect the $O_2$ sensor 1P (Black) connector [1].

Disconnect the cap [2] from the sensor while slightly turning it, less than 1/2 of a turn.




Remove the $O_2$ sensor [1].

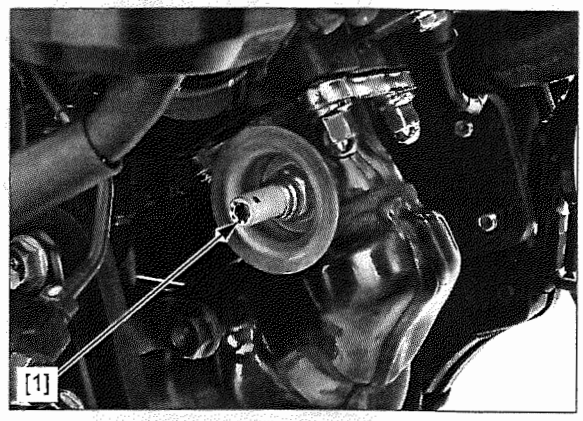
**NOTICE**

*Do not use an impact wrench while removing or installing the $O_2$ sensor, or it may be damaged.*

Install and hand tighten the $O_2$ sensor [1].

Tighten the $O_2$ sensor to the specified torque.

**TORQUE: 24.5 N·m (2.5 kgf·m, 18 lbf·ft)**



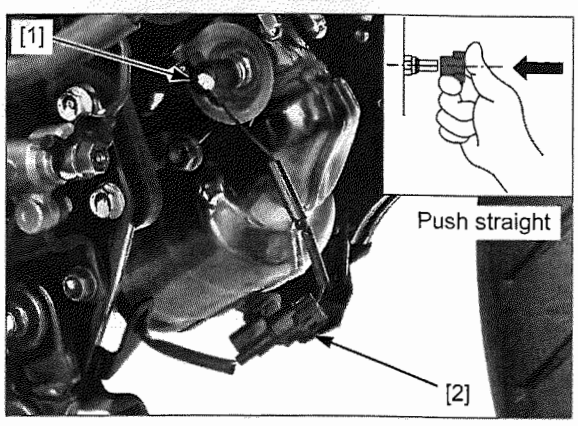

Connect the $O_2$ sensor cap [1] to the $O_2$ sensor by pushing it straight.

Connect the $O_2$ sensor 1P (Black) connector [2].

**NOTICE**

- *Take care not to tilt the $O_2$ sensor cap when connecting the cap to the $O_2$ sensor.*
- *Do not turn the $O_2$ sensor cap, after connecting it.*

Install the radiator reserve tank (page 8-11).

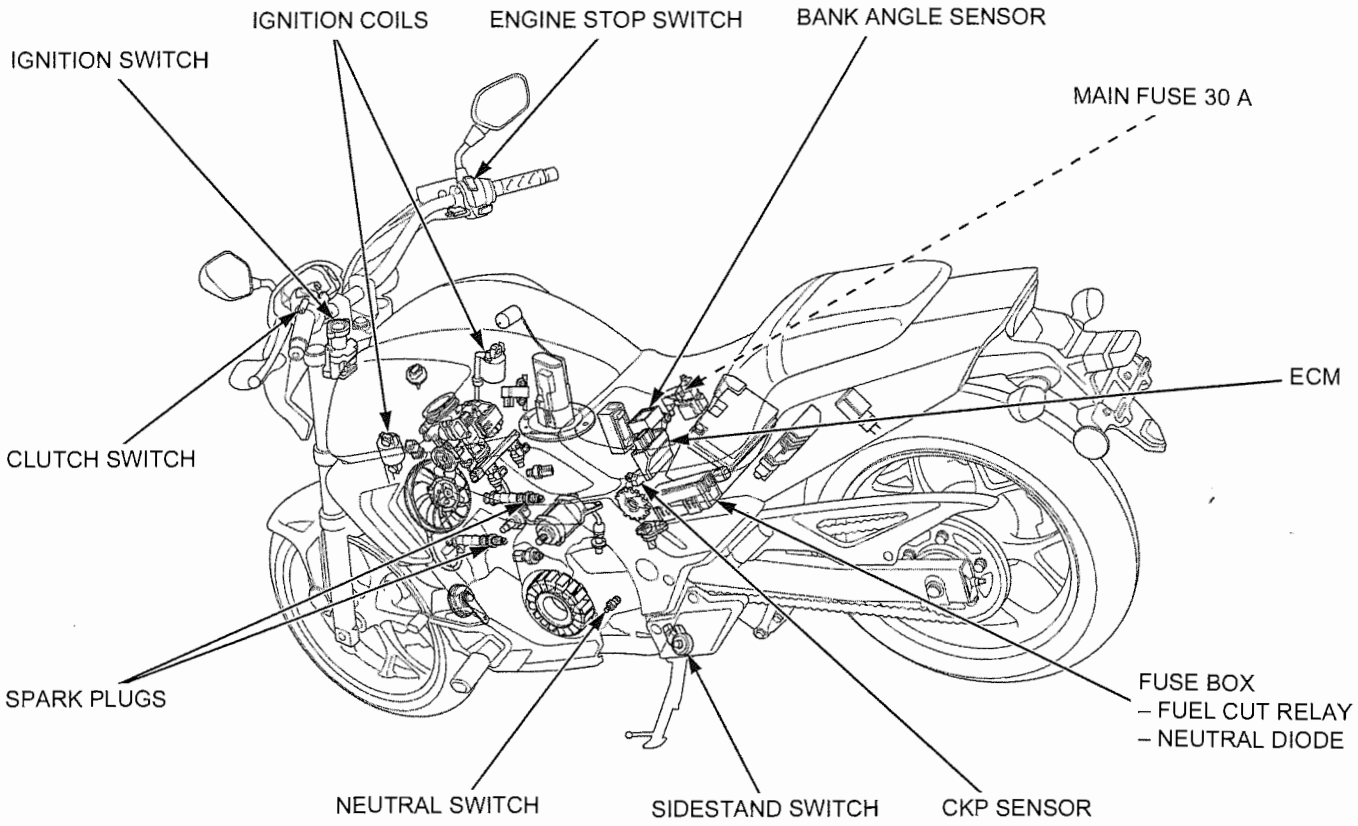


# 5. IGNITION SYSTEM

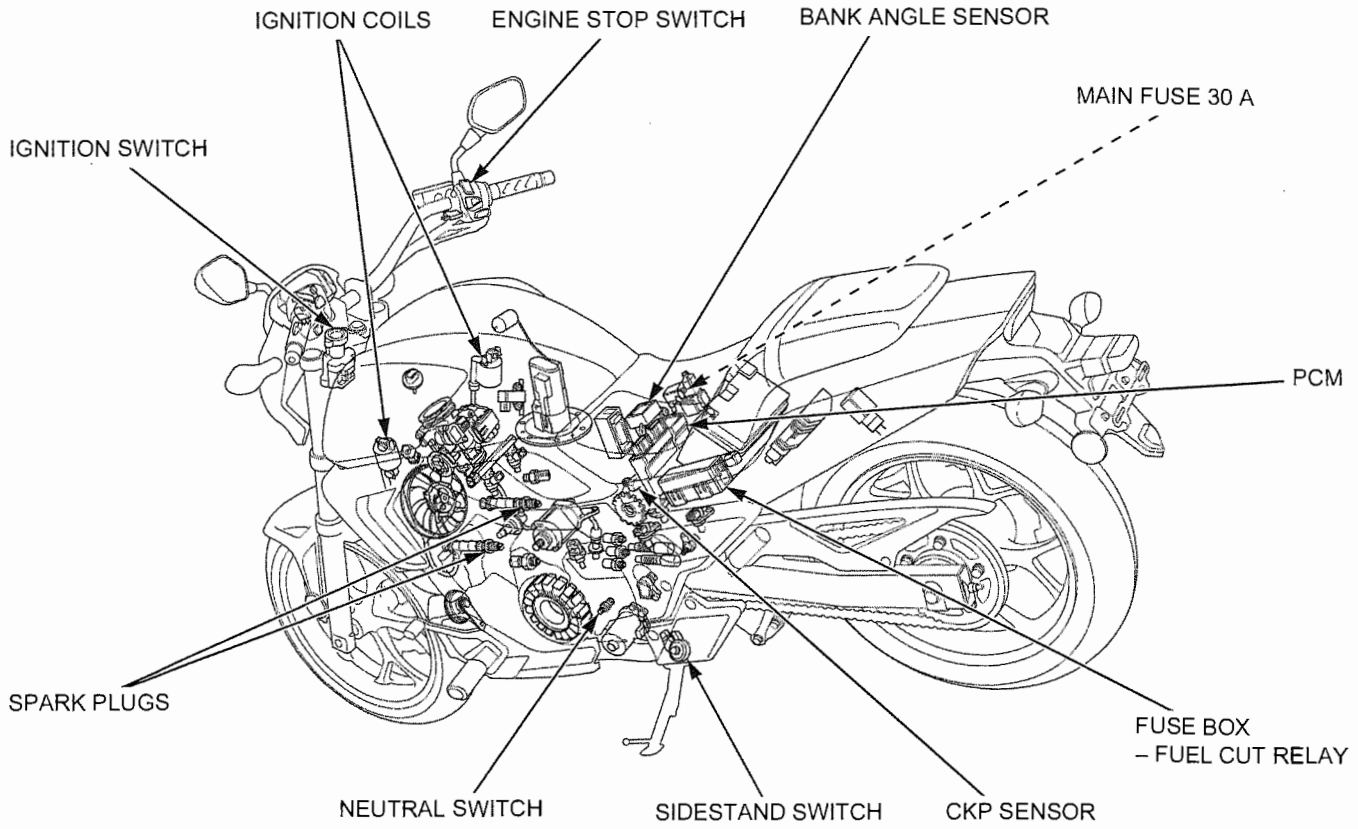
5

# SYSTEM LOCATION

**CTX700/A/N/NA:**

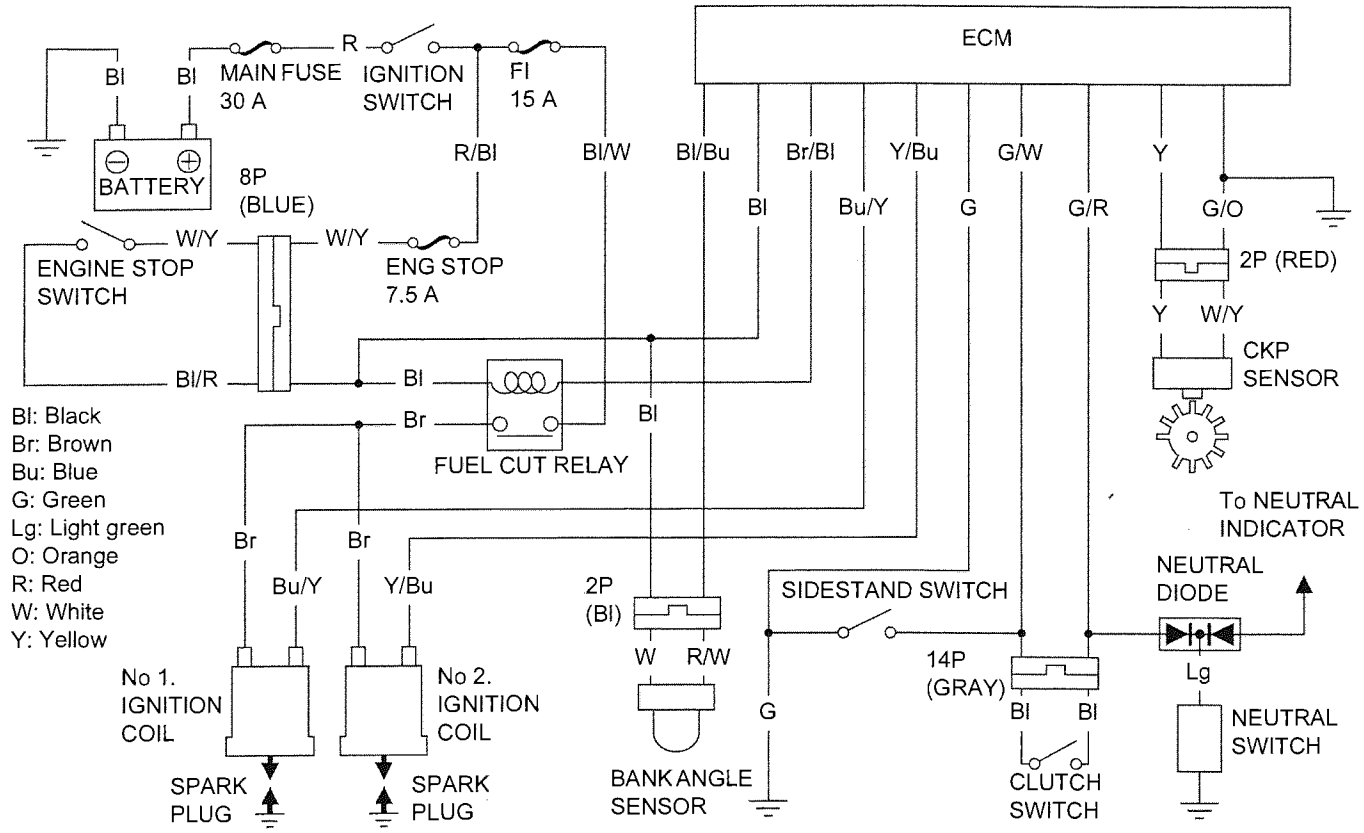



**CTX700D/ND:**

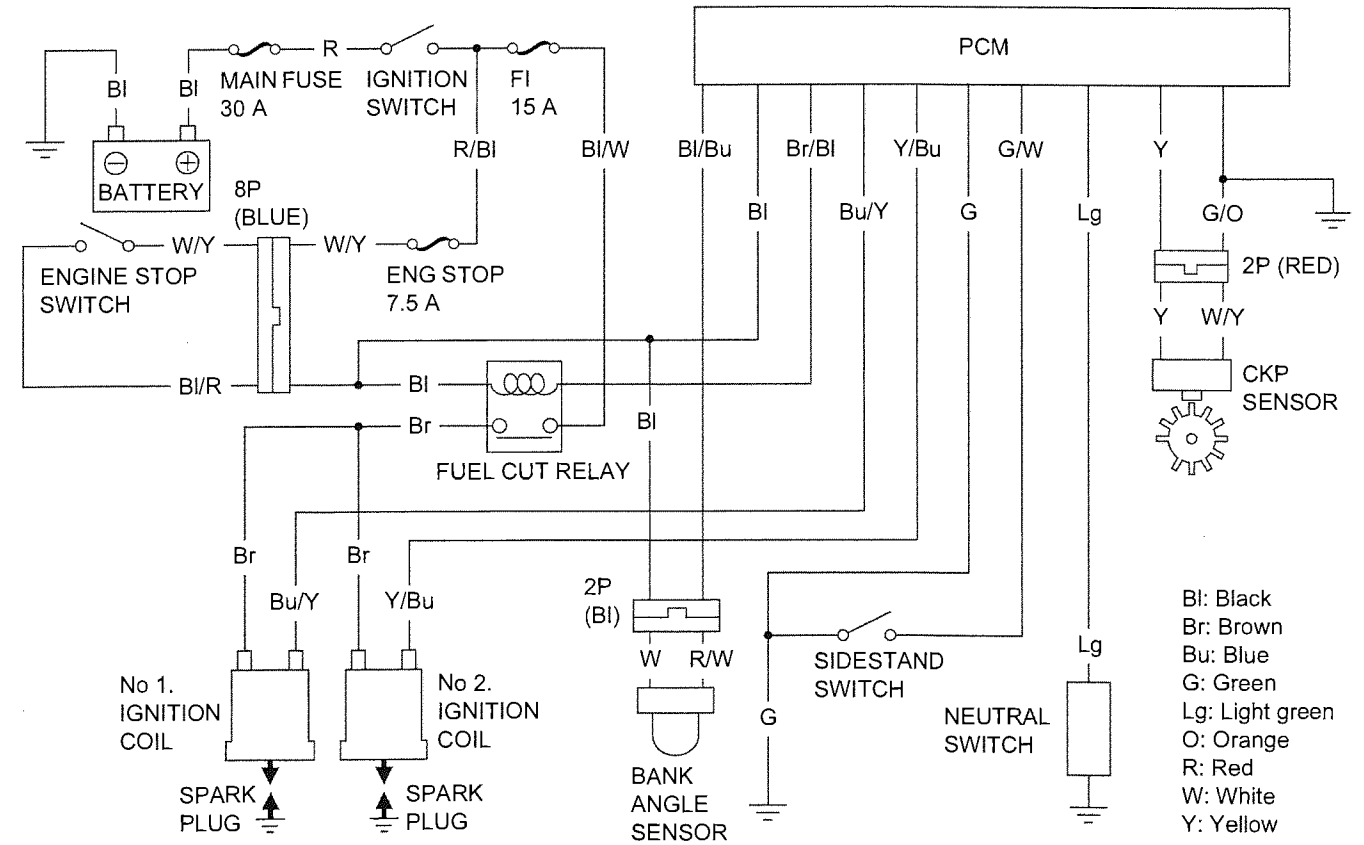


# SYSTEM DIAGRAM

**CTX700/A/N/NA:**




**CTX700D/ND:**



# SERVICE INFORMATION

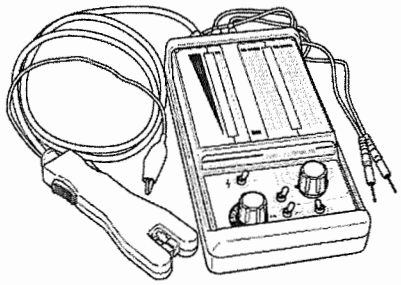
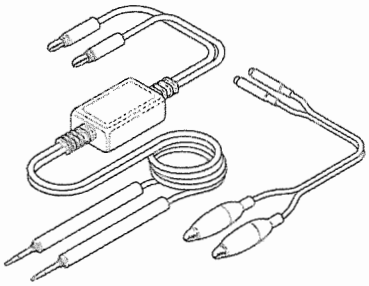
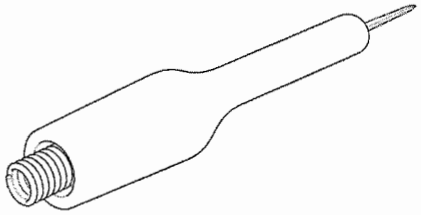
## GENERAL

**NOTICE**

- *The ECM/PCM may be damaged if dropped. Also if the connector is disconnected when current is flowing, the excessive voltage may damage the module. Always turn off the ignition switch before servicing.*
- *Use spark plug of the correct heat range. Using a spark plug with an incorrect heat range can damage the engine.*
- When servicing the ignition system, always follow the steps in the troubleshooting table (page 5-5).
- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is turned to ON position and current is present.
- A faulty ignition system is often related to poorly connected or corroded connections. Check those connections before proceeding.
- Make sure the battery is adequately charged. Using the starter motor with a weak battery results in a slower engine cranking speed as well as no spark at the spark plug.
- For ECM/PCM service (page 4-34).
- Refer to following components informations:
  - Ignition switch (page 22-17)
  - Engine stop switch (page 22-18)
  - Bank angle sensor (page 4-33)
  - Sidestand switch (page 22-21)
  - Neutral switch (page 22-20)
  - Fuel cut relay (page 7-21)
- The following color codes are used throughout this section.

| | | | | |
|---|---|---|---|---|
| Bl = Black | Bu = Blue | Lg = Light green | R = Red | Y = Yellow |
| Br = Brown | G = Green | O = Orange | W = White | |

## TOOLS

| | | |
|---|---|---|
| IgnitionMate peak voltage tester<br>MTP07-0286 (U.S.A. only)<br>  | Peak voltage adaptor<br>07HGJ-0020100<br>  <br>(Not available in U.S.A.) with commercially available digital multimeter (impedance 10 MΩ/DCV minimum) | Test probe, 2 packs<br>07ZAJ-RDJA110<br>  |

# TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  – Faulty spark plug
  – Loose spark plug cap or spark plug wire connection
  – Water got into the spark plug cap (Leaking the ignition coil secondary voltage)
- If there is no spark at cylinder, temporarily exchange the ignition coil with a known-good one and perform the spark test. If there is spark, the original ignition coil is faulty.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch turned ON and engine stop switch "○" (The engine is not cranked by the starter motor).

**No spark at spark plug**

| Unusual condition | | Probable cause (Check in numerical order) |
|---|---|---|
| Ignition coil primary voltage | No initial voltage with the ignition switch turned ON and engine stop switch "○" (Other electrical components are normal). | 1. Faulty ignition switch<br>2. Faulty engine stop switch<br>3. Faulty fuel cut relay or its related circuits<br>4. An open circuit in Brown wire between the ignition coil and fuel cut relay<br>5. Loose or poor connection of the primary terminal, or an open circuit in the primary coil<br>6. Faulty ECM/PCM (in case when the initial voltage is normal with the ECM/PCM connector disconnected). |
| | Initial voltage is normal, but it drops by 2 – 4 V while cranking the engine. | 1. Incorrect peak voltage adaptor connections (System is normal if measured voltage is over the specifications with reverse connections).<br>2. Battery is undercharged (Voltage drops largely when the engine is started).<br>3. No voltage between the Black (+) wire and body ground (–) at the ECM/PCM connector or loosen ECM/PCM connection<br>4. An open circuit or loose connection in Green and Green/orange wire at the ECM/PCM<br>5. An open circuit or loose connection in Blue/yellow or Yellow/blue wire between the ignition coil and ECM/PCM<br>6. Faulty sidestand switch, neutral diode (CTX700/A/N/NA) or neutral switch<br>7. Loose or poor connection or an open circuit in No. 6 related wires<br>– Sidestand switch line: Green/white and Green<br>– Neutral switch line (CTX700/A/N/NA): Green/red and Light green<br>– Neutral switch line (CTX700D/ND): Light green<br>8. Faulty CKP sensor (Measure peak voltage)<br>9. Faulty ECM/PCM (in case when above No. 1 through 8 are normal). |
| | Initial voltage is normal but there is no peak voltage while cranking the engine. | 1. Incorrect peak voltage adaptor connections<br>2. Faulty peak voltage adaptor<br>3. Faulty CKP sensor<br>4. Faulty ECM/PCM (in case when above No. 1 through 3 are normal). |
| | Initial voltage is normal but peak voltage is lower than the standard value. | 1. The multimeter impedance is too low; below 10 MΩ/DCV.<br>2. Cranking speed is too slow (Battery is undercharged).<br>3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once).<br>4. Faulty ECM/PCM (in case when above No. 1 through 3 are normal). |
| | Initial and peak voltages are normal but no spark jumps. | 1. Faulty spark plug or leaking ignition coil secondary current ampere<br>2. Faulty ignition coil |
| CKP sensor | Peak voltage is lower than standard value. | 1. The multimeter impedance is too low; below 10 MΩ/DCV.<br>2. Cranking speed is too low. (Battery is undercharged.)<br>3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once).<br>4. Faulty CKP sensor (in case when above No.1 through 3 are normal). |
| | No peak voltage | 1. Faulty peak voltage adapter<br>2. Faulty CKP sensor |

# IGNITION SYSTEM INSPECTION

NOTE:

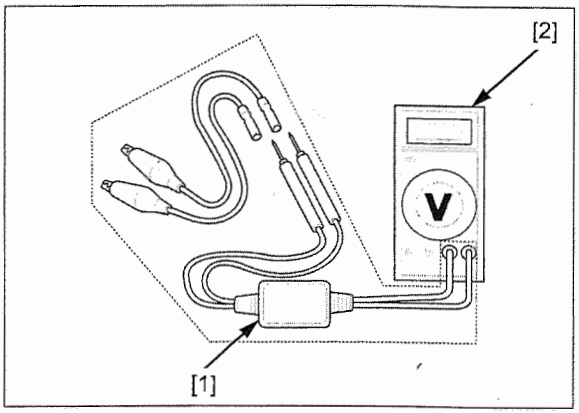
- If there is no spark at the plug, check all connections for loose or poor contact before measuring the peak voltage.
- Use a commercially available digital multimeter with an impedance of 10 MΩ/DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If the peak voltage tester (U.S.A. only) is used, follow the manufacturer's instructions.

Connect the peak voltage adaptor [1] to the digital multimeter [2], or use the peak voltage tester.

**TOOLS:**

| | |
|---|---|
| **IgnitionMate peak voltage tester** | **MTP07-0286 (U.S.A. only) or** |
| **Peak voltage adaptor** | **07HGJ-0020100 (Not available in U.S.A.)** |

**with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)**



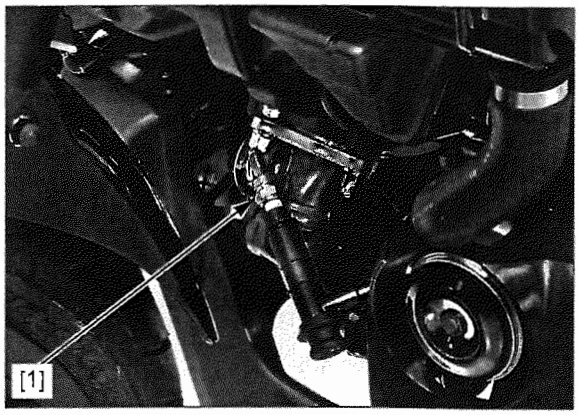

## IGNITION COIL PRIMARY PEAK VOLTAGE

NOTE:

- Check all system connections before performing this inspection. Loose connectors can cause incorrect readings.
- If the system is disconnected, incorrect peak voltage might be measured.
- Check the cylinder compression and check that the spark plug is installed correctly in the cylinder head.

Disconnect the spark plug caps (page 3-6).

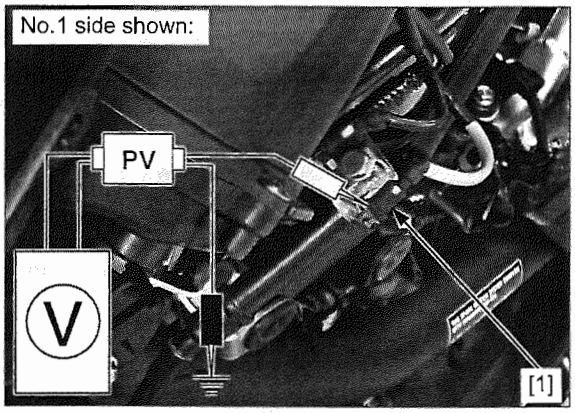
Connect a known good spark plug [1] to the spark plug cap and ground it to the cylinder head as done in a spark test.



Remove the side shelters (page 2-11).

*Do not disconnect the ignition coil primary wire.*

With the ignition coil primary wire connected, connect the peak voltage tester (U.S.A. only) or peak voltage adaptor probes to the ignition coil primary terminal [1] and ground.




**TOOLS:**

| | |
|---|---|
| **IgnitionMate peak voltage tester** | **MTP07-0286 (U.S.A. only) or** |
| **Peak voltage adaptor** | **07HGJ-0020100 (Not available in U.S.A.)** |

**with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)**

**CONNECTION:**
**No.1: Blue/yellow (+) – Ground (–)**
**No.2: Yellow/blue (+) – Ground (–)**

Turn the ignition switch ON and engine stop switch "○".

Check the initial voltage at this time.
The battery voltage should be measured.
If the initial voltage cannot be measured, follow the checks described in the troubleshooting table (page 5-5).

Shift the transmission into neutral.

*Avoid touching the spark plug and tester probes to prevent electric shock.*

Crank the engine with the starter motor and measure the ignition coil primary peak voltage.

**PEAK VOLTAGE: 100 V minimum**

If the peak voltage is abnormal, follow the checks described in the troubleshooting table (page 5-5).

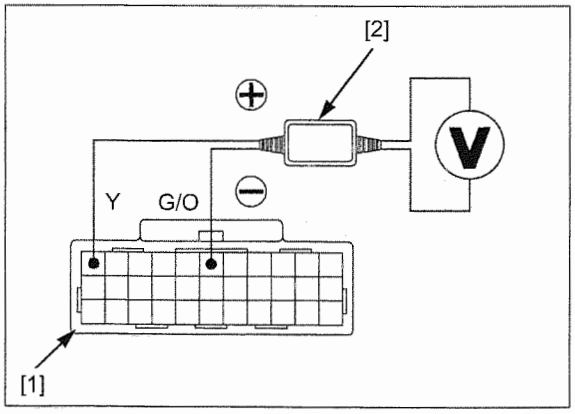
Install the side shelters (page 2-11).

## CKP SENSOR PEAK VOLTAGE

NOTE:
Check the cylinder compression and check that the spark plugs are installed correctly in the cylinder head.

Disconnect the following:

- ECM 33P (Black) connector (page 4-34) (CTX700/A/N/NA)
- PCM 33P (Gray) connector (page 4-34) (CTX700D/ND)




Connect the peak voltage tester (U.S.A. only) or peak voltage adaptor probes to the ECM/PCM 33P connector [1] terminals of the wire harness side.

**TOOLS:**

| | |
|---|---|
| **IgnitionMate peak voltage tester** | **MTP07-0286 (U.S.A. only) or** |
| **[2] Peak voltage adaptor** | **07HGJ-0020100 (Not available in U.S.A.)** |

**with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)**

| | |
|---|---|
| **Test probe, 2 packs** | **07ZAJ-RDJA110** |

**CONNECTION: Yellow (+) – Green/orange (–)**

Shift the transmission into neutral.
Turn the ignition switch ON and engine stop switch "○".

Crank the engine with the starter motor and measure the CKP sensor peak voltage.

**PEAK VOLTAGE: 0.7 V minimum**

If the peak voltage measured at the ECM/PCM 33P connector is abnormal, measure the peak voltage at the CKP sensor connector.

Turn the ignition switch OFF.

Disconnect the CKP sensor 2P (Red) connector [1] and connect the tester probes to the connector terminals of the CKP sensor side.


**CONNECTION: Yellow (+) – White/yellow (–)**

In the same manner as at the ECM/PCM 33P connector, measure the peak voltage and compare it to the voltage measured at the ECM/PCM 33P connector.

- If the peak voltage measured at the ECM is abnormal and the one measured at the CKP sensor is normal, the wire harness has an open or short circuit or loose connection.
- If the peak voltage of the CKP sensor side is lower than standard value, follow the checks described in the troubleshooting table (page 5-5).

For CKP sensor replacement (page 5-9).

Install the removed parts in the reverse order of removal.

# IGNITION TIMING

Warm up the engine.

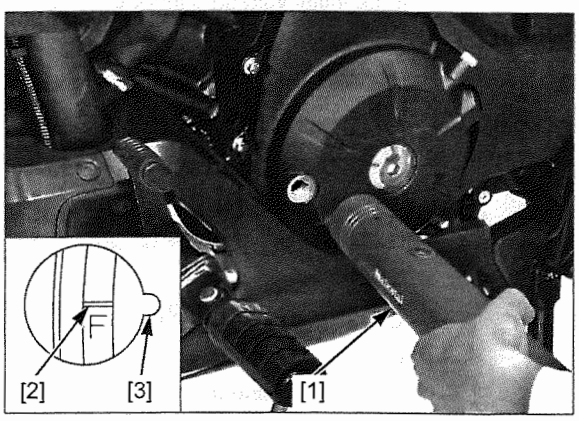
Stop the engine and remove the timing hole cap.

Connect the timing light [1] to the spark plug wire.

- Read the instructions for timing light operation.

Start the engine and let it idle.

**IDLE SPEED: 1,200 ± 100 rpm**




The ignition timing is correct if the "F" mark [2] on the flywheel aligns with the index notch [3] on the alternator cover.

Apply engine oil to a new O-ring and install it to the timing hole cap.

Apply grease to the timing hole cap threads.

Install and tighten the timing hole cap to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

# IGNITION COIL

## REMOVAL/INSTALLATION

### No.1 IGNITION COIL

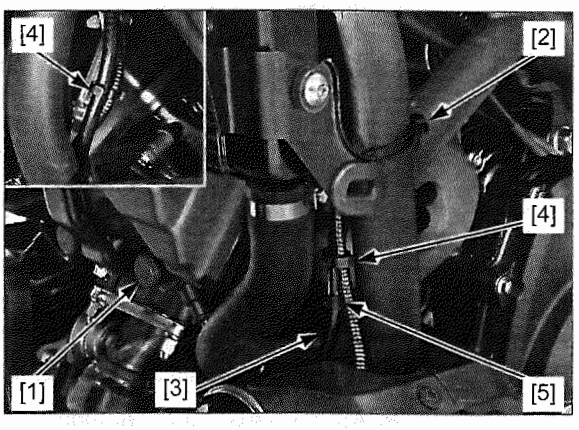
Remove the left side shelter (page 2-11).

Disconnect the spark plug cap [1].

Release the wire band [2] from the frame pipe.

Release the spark plug wire [3] from the two clamps [4].

Release the clamp [5] from the frame tab.

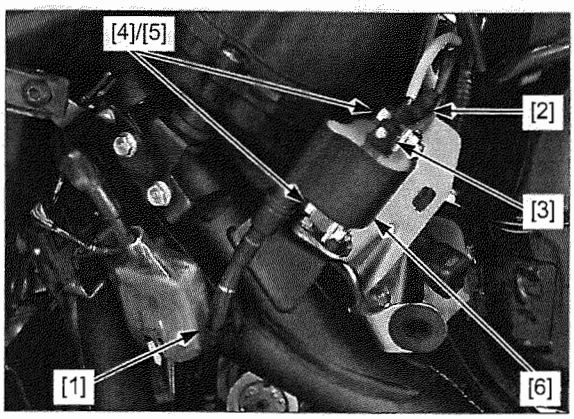


Release the wire band boss [1].

Disconnect the primary wire (Brown) connector [2] and wire (Blue/yellow) connector [3].

Remove the bolts [4], spacers [5] and ignition coil [6] from the ignition coil stay.

Installation is in the reverse order of removal.

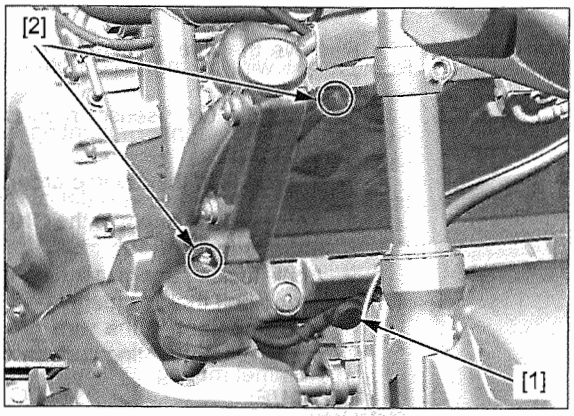



**No.2 IGNITION COIL**

Remove the right side shelter (page 2-11).

Disconnect the spark plug cap [1].

Release the two clamps [2] from the frame tab.

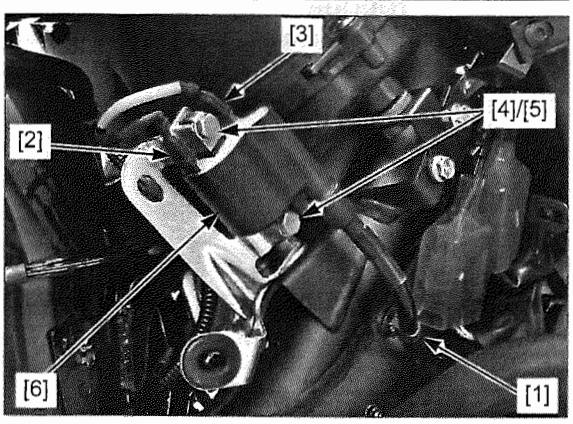



Release the wire band boss [1].

Disconnect the primary wire (Brown) connector [2] and wire (Yellow/blue) connector [3].

Remove the bolts [4], spacers [5] and ignition coil [6] from the ignition coil stay.

Installation is in the reverse order of removal.




# CKP SENSOR

## REMOVAL/INSTALLATION (CTX700/A/N/NA)

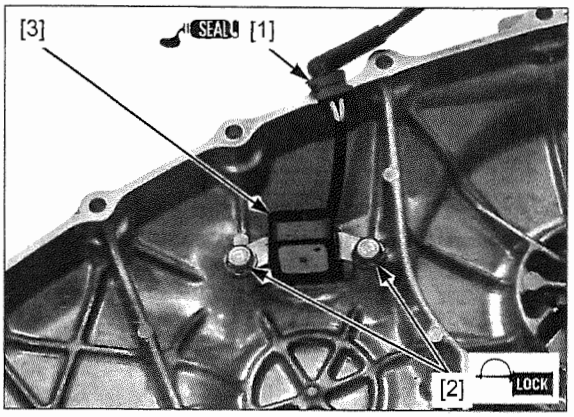
Remove the right crankcase cover (page 11-4).

Remove the wire grommet [1] from the right crankcase cover.

Remove the CKP sensor mounting bolts [2] and CKP sensor [3].

Installation is in the reverse order of removal.

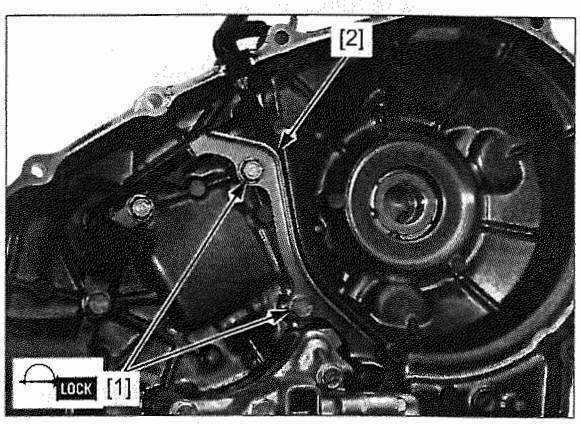
- Apply locking agent to the CKP sensor mounting bolts threads (page 1-19).
- Apply liquid sealant (Three bond 1207B or equivalent) to the CKP sensor wire grommet sealing surface.



## REMOVAL/INSTALLATION (CTX700D/ND)

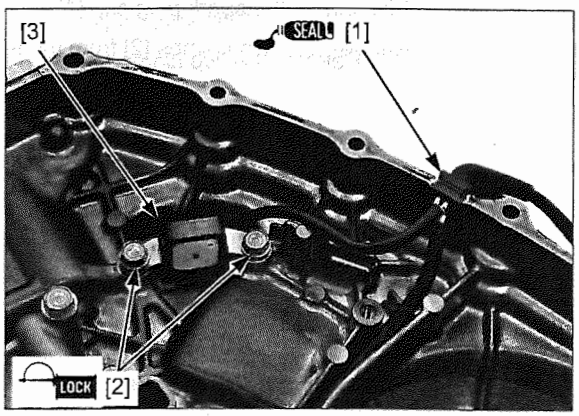
Remove the right crankcase cover (page 12-57).

Remove the right crankcase cover wire clamp bolts [1] and wire clamp [2].




Remove the wire grommet [1] from the right crankcase cover.

Remove the CKP sensor mounting bolts [2] and CKP sensor [3].




Installation is in the reverse order of removal.

- Apply locking agent to the CKP sensor mounting bolt threads (page 1-19).
- Apply locking agent to the right crankcase cover wire clamp bolt threads (page 1-13).
- Apply sealant to the wire grommet seating surface and grommet mating surface.

**TORQUE:**

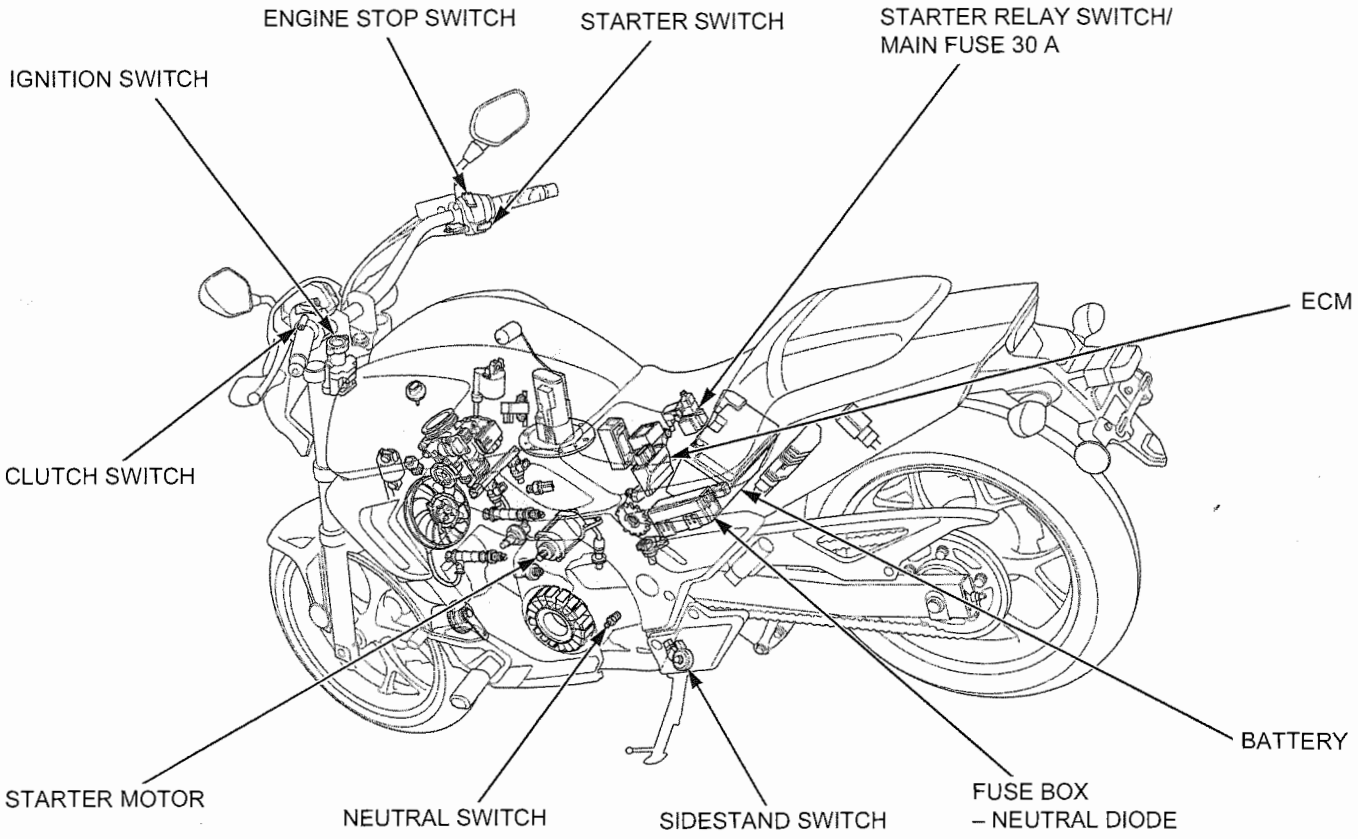
**Right crankcase cover wire clamp bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

# 6. ELECTRIC STARTER

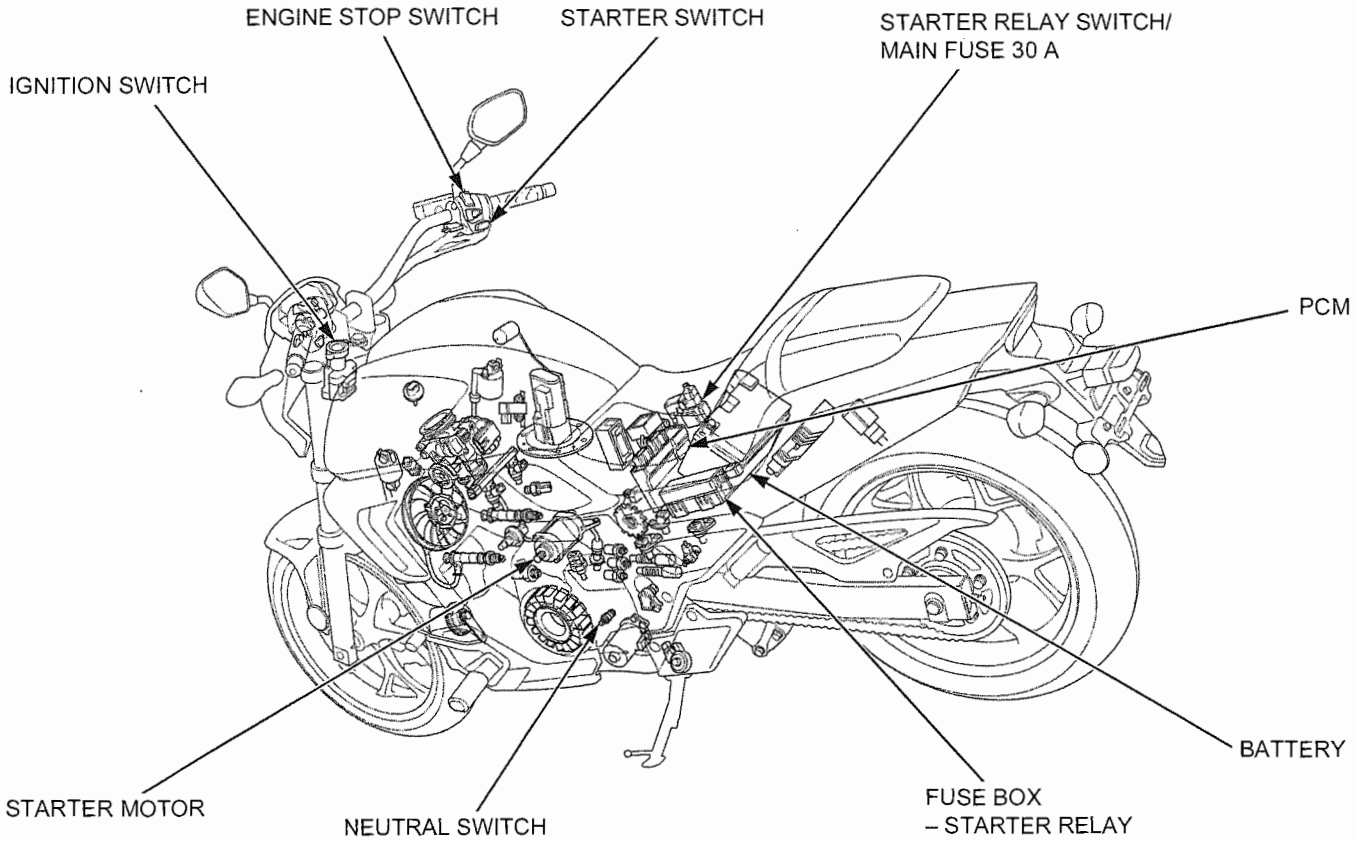
6

# SYSTEM LOCATION

**CTX700/A/N/NA:**

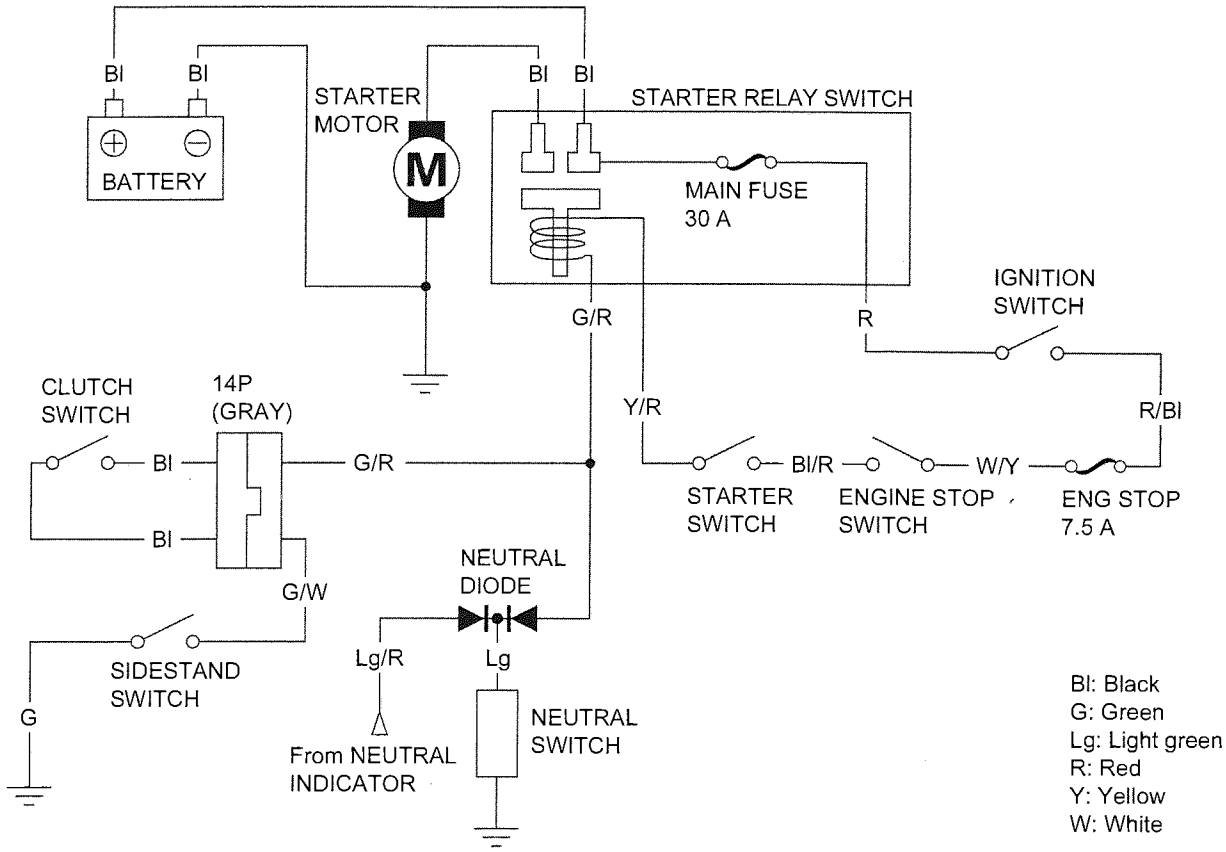



**CTX700D/ND:**

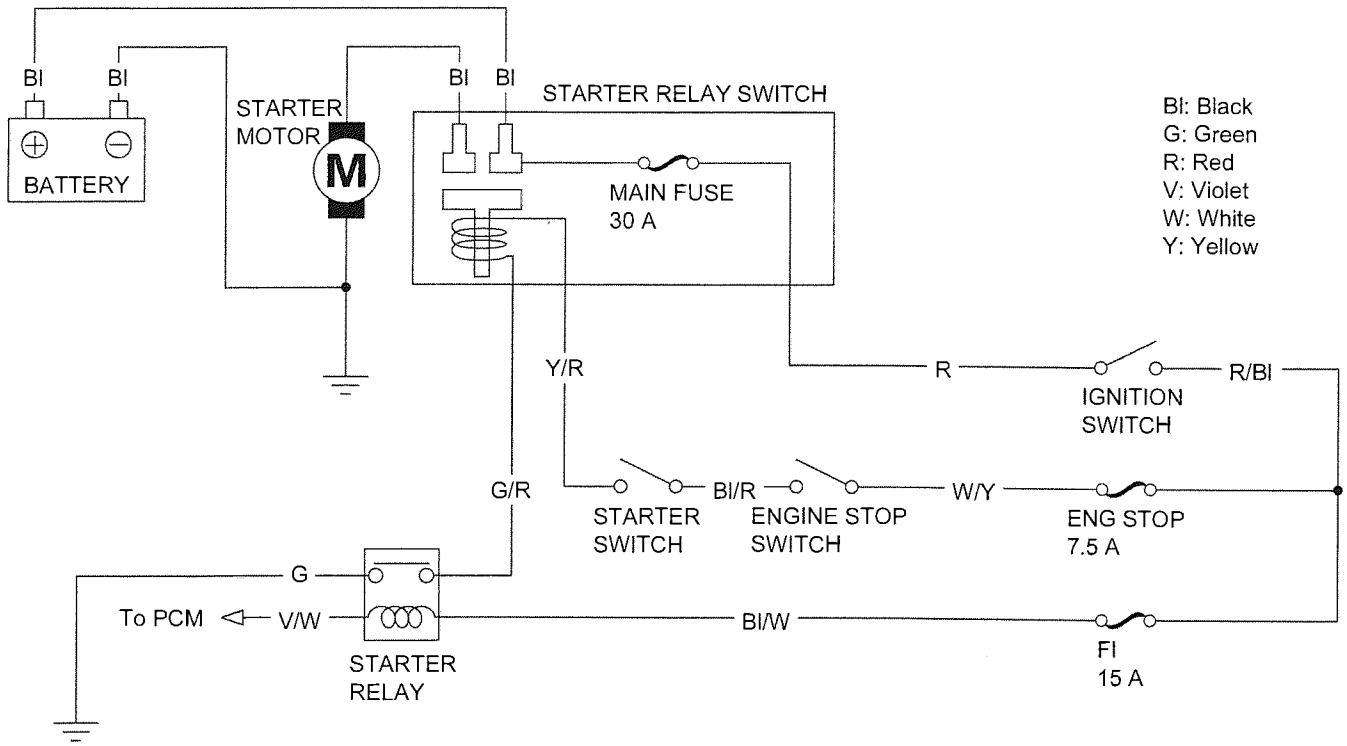


# SYSTEM DIAGRAM

**CTX700/A/N/NA:**




**CTX700D/ND:**



# SERVICE INFORMATION

## GENERAL

**NOTICE**

*If the current is kept flowing through the starter motor causing it to turn while the engine is not cranking over, the starter motor may be damaged.*

- The starter motor can be serviced with the engine installed in the frame.
- Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- When servicing the starter system, always follow the steps in the troubleshooting flow chart (page 6-5).
- Refer to the following components information:
  - Ignition switch (page 22-17)
  - Starter switch (page 22-18)
  - Engine stop switch (page 22-18)
  - Neutral switch (CTX700/A/N/NA) (page 22-20)
  - Sidestand switch (CTX700/A/N/NA) (page 22-21)
  - Clutch switch (CTX700/A/N/NA) (page 22-19)

# TROUBLESHOOTING

**Starter motor does not turn (CTX700/A/N/NA)**

1. **Fuse Inspection**

   Check for blown main fuse 30 A or sub fuse 7.5 A (ENG STOP).

   ***Is the fuse blown?***

   **YES** – Replace the fuse.

   **NO** – GO TO STEP 2.

2. **Battery Inspection**

   Make sure the battery is fully charged and in good condition (page 21-5).

   ***Is the battery in good condition?***

   **YES** – GO TO STEP 3.

   **NO** – Charge or replace the battery.

3. **Starter Relay Switch Operation**

   Check the starter relay switch operation.
   You should hear the relay "CLICK" when the starter switch button is depressed.

   ***Is there a "CLICK"?***

   **YES** – GO TO STEP 4.

   **NO** – GO TO STEP 5.

4. **Starter Motor Inspection**

   Apply battery voltage directly to the starter motor and check the operation.

   ***Does the starter motor turn?***

   **YES** –
   - Poorly contacted starter motor cable
   - Faulty starter relay switch (page 6-10)

   **NO** – Faulty starter motor (page 6-8)

5. **Relay Coil Ground Lines Inspection**

   Disconnect the starter relay switch connector, and check the relay coil ground wire line as below for continuity:

   1. Green/red terminal – neutral diode – neutral switch line (with the transmission in neutral and clutch lever released).
   2. Green/red terminal – clutch switch – sidestand switch (in any gear except neutral, and with the clutch lever pulled in and sidestand up.)

   ***Is there continuity?***

   **YES** – GO TO STEP 6.

   **NO** –
   - Loose or poor contact connector
   - Open circuit in wire harness
   - Faulty neutral diode (page 6-11)
   - Faulty neutral switch (page 22-20)
   - Faulty sidestand switch (page 22-21)
   - Faulty clutch switch (page 22-19)

6. **Starter Relay Input Voltage Inspection**

   Connect the starter relay switch connector.

   With the ignition switch turned ON and engine stop switch "○" and the starter switch is pushed, measure the voltage at the starter relay switch connector (between Yellow/red (+) and ground (–)).

   ***Does the battery voltage exist?***

   **YES** – GO TO STEP 7.

   **NO** –
   - Faulty ignition switch (page 22-17)
   - Faulty starter switch (page 22-18)
   - Faulty engine stop switch (page 22-18)
   - Loose or poor contact connector
   - Open circuit in wire harness

7. **Starter Relay Switch Continuity Inspection**

   Remove and check the operation of the starter relay switch (page 6-11).

   ***Is there continuity?***

   **YES** – Loose or poor contact starter relay switch connector

   **NO** – Faulty starter relay switch

**Starter motor does not turn (CTX700D/ND)**

1. **Fuse Inspection**

   Check for blown main fuse (30 A), ENG STOP fuse (7.5 A) and FI fuse (15 A).

   ***Are the fuses in good condition?***

   **YES** – GO TO STEP 2.

   **NO** – Replace the blown fuse.

2. **Battery Inspection**

   Make sure the battery is fully charged and in good condition (page 21-5).

   ***Is the battery in good condition?***

   **YES** – GO TO STEP 3.

   **NO** – Charge or replace the battery.

3. **Starter Relay Switch Operation Inspection**

   Check the starter relay switch operation (page 6-10).

   ***Does the starter relay switch click?***

   **YES** – GO TO STEP 4.

   **NO** – GO TO STEP 5.

4. **Starter Motor Inspection**

   Turn the ignition switch OFF.
   Apply battery voltage directly to the starter motor and check the operation.

   ***Does the starter motor turn?***

   **YES** –
   - Poorly contacted battery positive cable or starter motor cable
   - Faulty starter relay switch

   **NO** – Faulty starter motor (page 6-8)

5. **Relay Coil Input Line Inspection**

   Check the relay coil input line of the starter relay switch (page 6-10).

   ***Is the input line normal?***

   **YES** – GO TO STEP 6.

   **NO** –
   - Faulty ignition switch (page 22-17)
   - Faulty starter switch (page 22-18)
   - Faulty engine stop switch (page 22-18)
   - Loose or poor connected connector
   - Open circuit in the wire harness

6. **Relay Coil Ground Line Inspection**

   Check the relay coil ground line of the starter relay switch (page 6-10).

   ***Is the ground line normal?***

   **YES** – GO TO STEP 7.

   **NO** – GO TO STEP 8.

7. **Starter Relay Switch Continuity Inspection**

   Check the starter relay switch (page 6-11).

   ***Is there continuity?***

   **YES** – Loose or poor contact starter relay switch connector

   **NO** – Faulty starter relay switch

8. **Starter Relay Inspection**

   Check the starter relay (page 6-12).

   ***Is the starter relay normal?***

   **YES** – • Loose or poor connected connector
   • Open circuit in the wire harness
   • Faulty neutral switch or its circuit
   • Faulty PCM

   **NO** – Faulty starter relay

**The starter motor turns when the transmission is in neutral, but does not turn with the transmission in any position except neutral, with the sidestand up and the clutch lever pulled in. (CTX700/A/N/NA)**

1. **Clutch Switch Inspection**

   Check the clutch switch operation (page 22-19).

   ***Is the clutch switch operation normal?***

   **YES** – GO TO STEP 2.

   **NO** – Faulty clutch switch

2. **Sidestand Switch Inspection**

   Check the sidestand switch operation (page 22-21).

   ***Is the sidestand switch operation normal?***

   **YES** – • Loose or poor contact connector
   • Open circuit in wire harness

   **NO** – Faulty sidestand switch

**Starter motor turns slowly**
- Low battery voltage
- Poorly connected battery terminal cable
- Poorly connected starter motor cable
- Faulty starter motor
- Poorly connected battery ground cable

**Starter motor turns, but engine does not turn**
- Starter motor is running backwards
  – Case assembled improperly
  – Terminals connected improperly
- Faulty starter clutch
- Damaged or faulty starter reduction gear/shaft
- Damaged or faulty starter idle gear/shaft

**Starter relay switch "Clicks", but engine does not turn over**
- Crankshaft does not turn due to engine problems

# STARTER MOTOR

## REMOVAL/INSTALLATION

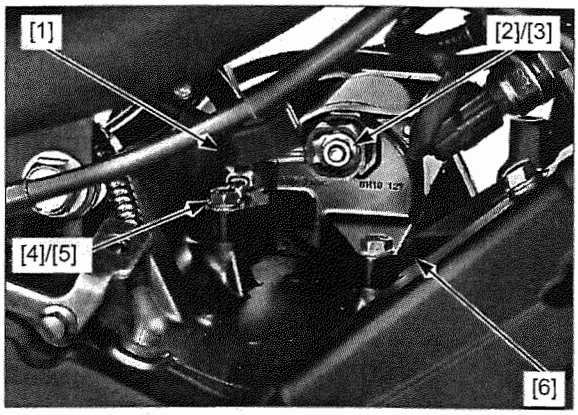
Disconnect the battery negative cable (page 21-5).

Release the rubber cap [1].

Remove the starter motor terminal nut [2] and starter motor cable [3].

Remove the stater motor mounting bolts [4] and ground cable [5].

Remove the starter motor [6].

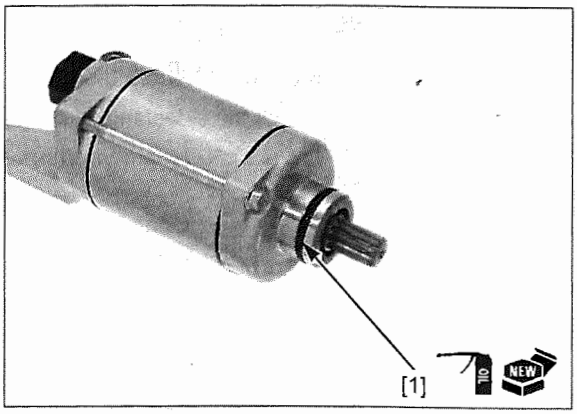



Remove the O-ring [1].

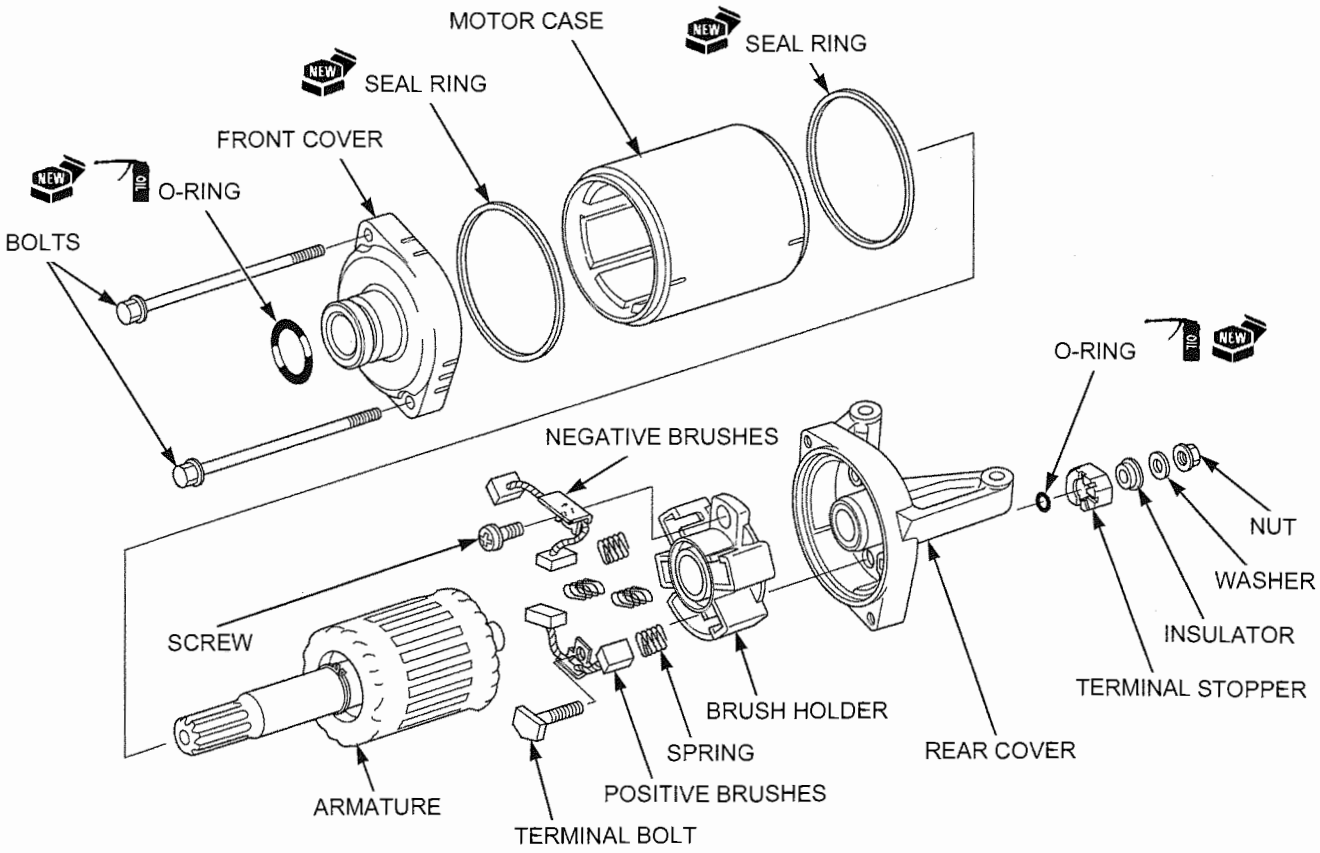
Installation is in the reverse order of removal.

- Apply engine oil to a new O-ring.

**TORQUE:**
**Starter motor terminal nut:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**




## DISASSEMBLY/ASSEMBLY



## INSPECTION

### FRONT COVER

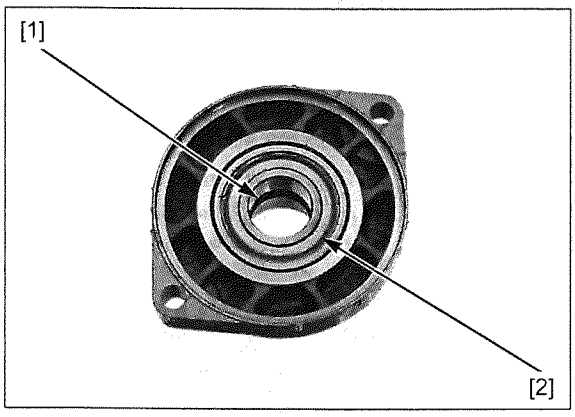
Check the oil seal [1] in the front cover for deterioration, wear or damage.

Turn the inner race of bearing [2] in the front cover with your finger.

The bearings should turn smoothly and quietly.

Also check that the outer race fits tightly in the front cover.

Replace the starter motor as an assembly if necessary.



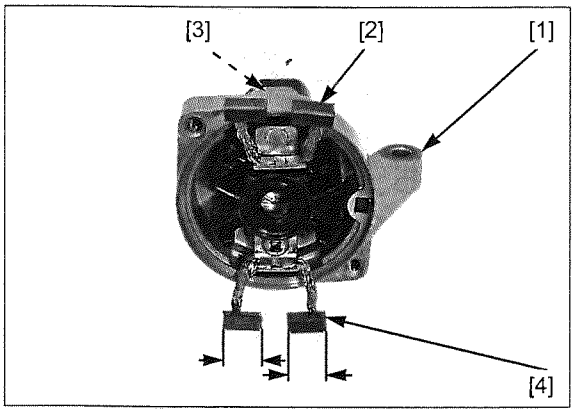

### REAR COVER

Inspect the brushes for damage and measure the brush length.

**SERVICE LIMIT: 6.5 mm (0.26 in)**

Check for continuity or no continuity for each part of rear cover [1] as below:

- Between the positive brush [2] and cable terminal [3]: should be continuity.
- Between the cable terminal and the rear cover: should be No continuity.
- Between the positive brush and rear cover: should be No continuity.
- Between positive brush and negative brush [4]: should be No continuity.




### ARMATURE

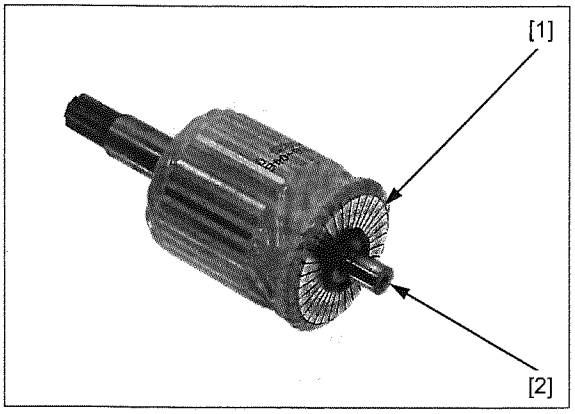
Clean the metallic debris off between commutator bars [1].

Check the commutator bars of the armature for discoloration.

Check for continuity or no continuity for each part of armature as below:

- Between pair of commutator bars: should be continuity.
- Between each commutator bar and the armature shaft [2]: should be No continuity.

Replace the starter motor as an assembly if necessary.



# STARTER RELAY SWITCH

## INSPECTION

Remove the seat (page 2-14).

Shift the transmission into neutral.

Turn the ignition switch ON and engine stop switch "○". Push the starter switch.

The coil is normal if the starter relay switch clicks.

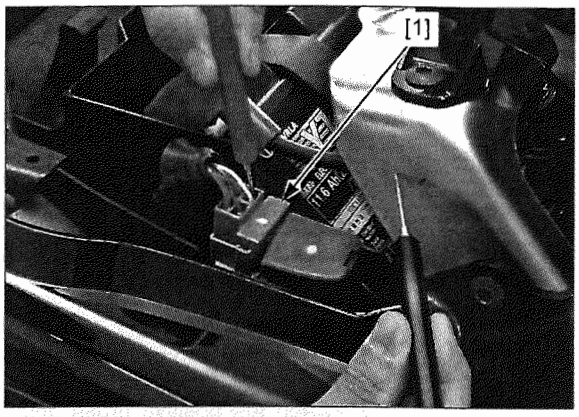
If you don't hear the starter relay switch "CLICK", inspect the starter relay switch using a procedure below.

### STARTER RELAY INPUT VOLTAGE

Turn the ignition switch ON and engine stop switch "○".

Measure the voltage between the Yellow/red (+) wire terminal at the starter relay switch 4P (Red) connector [1] and ground (–).

If the battery voltage appears only when the starter switch is pushed with the ignition switch turned ON and engine stop switch "○", the starter relay input voltage is normal.

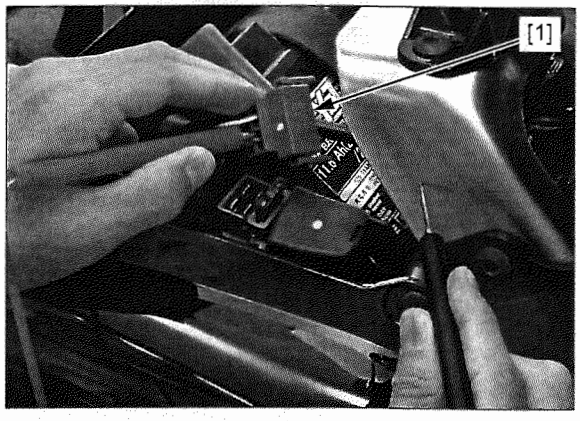



### GROUND LINE (CTX700/A/N/NA)

Disconnect the starter relay switch 4P (Red) connector [1].

Check for continuity between the Green/red wire of the wire harness side (ground line) and ground.

If there is continuity when the transmission is in neutral or when the clutch is disengaged and the sidestand is retracted, the ground circuit of the relay coil is normal. (In neutral, there is a slight resistance due to the diode.)

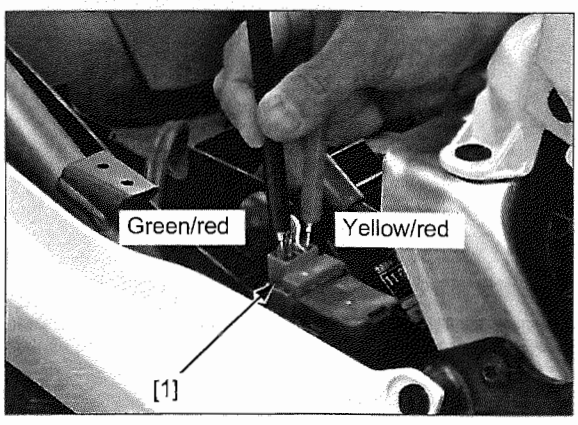



### GROUND LINE (CTX700D/ND)

Turn the ignition switch ON and engine stop switch "○".

Measure the voltage between the Yellow/red (+) and Green/red (–) wire terminals at the starter relay switch 4P (Red) connector [1].

If the battery voltage appears only when the starter switch is pushed with the ignition switch turned ON and engine stop switch "○", the starter relay ground line is normal.

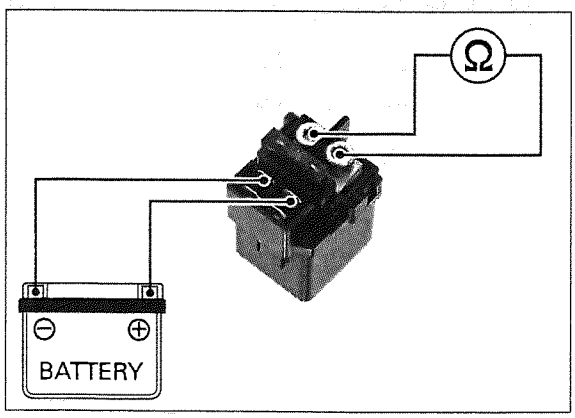


### OPERATION CHECK

Remove the starter relay switch (page 6-11).

Connect a 12 V battery to the starter relay switch as shown.

There should be continuity between the cable terminals when the battery is connected, and not continuity when the battery is disconnected.




## REMOVAL/INSTALLATION

Remove the seat (page 2-14).

Disconnect the battery negative (–) cable (page 21-5).

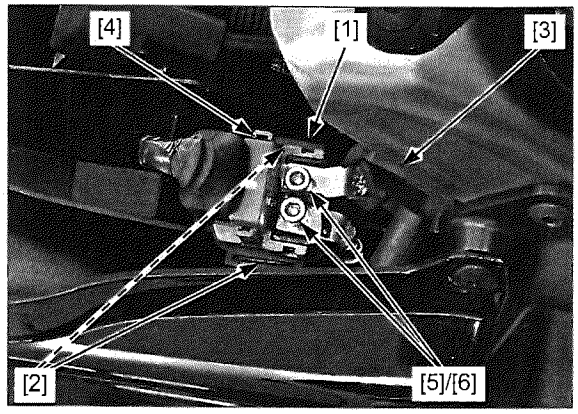
Release the starter relay switch [1] from the battery box tabs [2].

Release the rubber cover [3].

Disconnect the starter relay switch 4P (Red) connector [4].

Remove the bolts [5] and cables [6].

Installation is in the reverse order of removal.




# NEUTRAL DIODE (CTX700/A/N/NA)

## INSPECTION

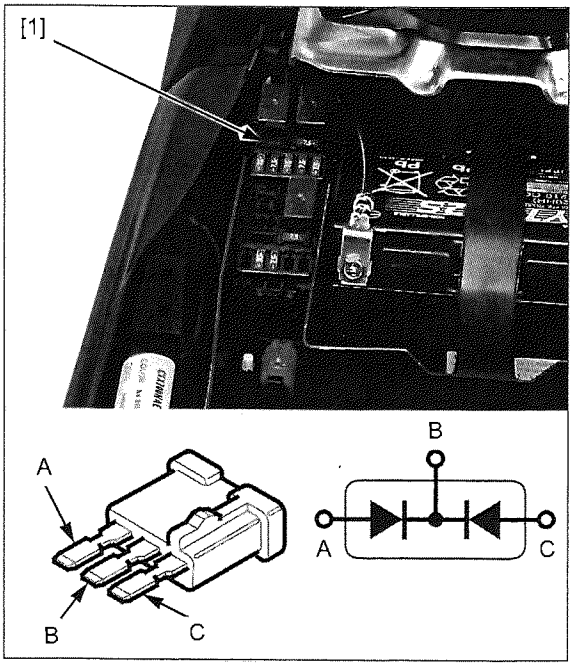
Remove the seat (page 2-14).

Open the fuse box cover and remove the neutral diode [1].

Check for continuity between the neutral diode terminals.

When there is continuity, a small resistance value will register.

If there is continuity, in direction shown by the arrow, the neutral diode is normal.

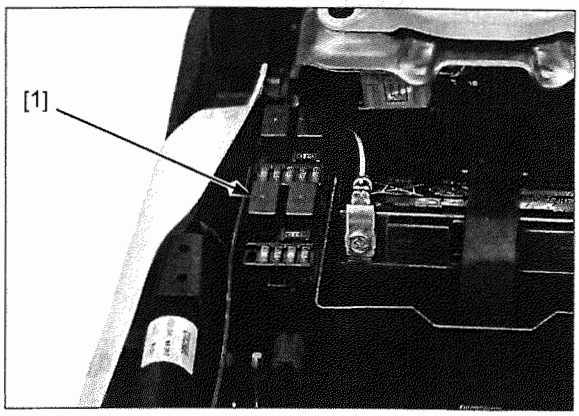


# STARTER RELAY (CTX700D/ND)

## INSPECTION

Remove the seat (page 2-14).

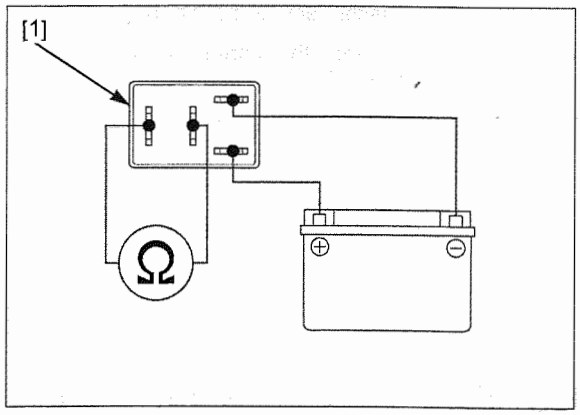
Open the fuse box cover and remove the starter relay [1].




Connect an ohmmeter to the starter relay [1] connector terminals.

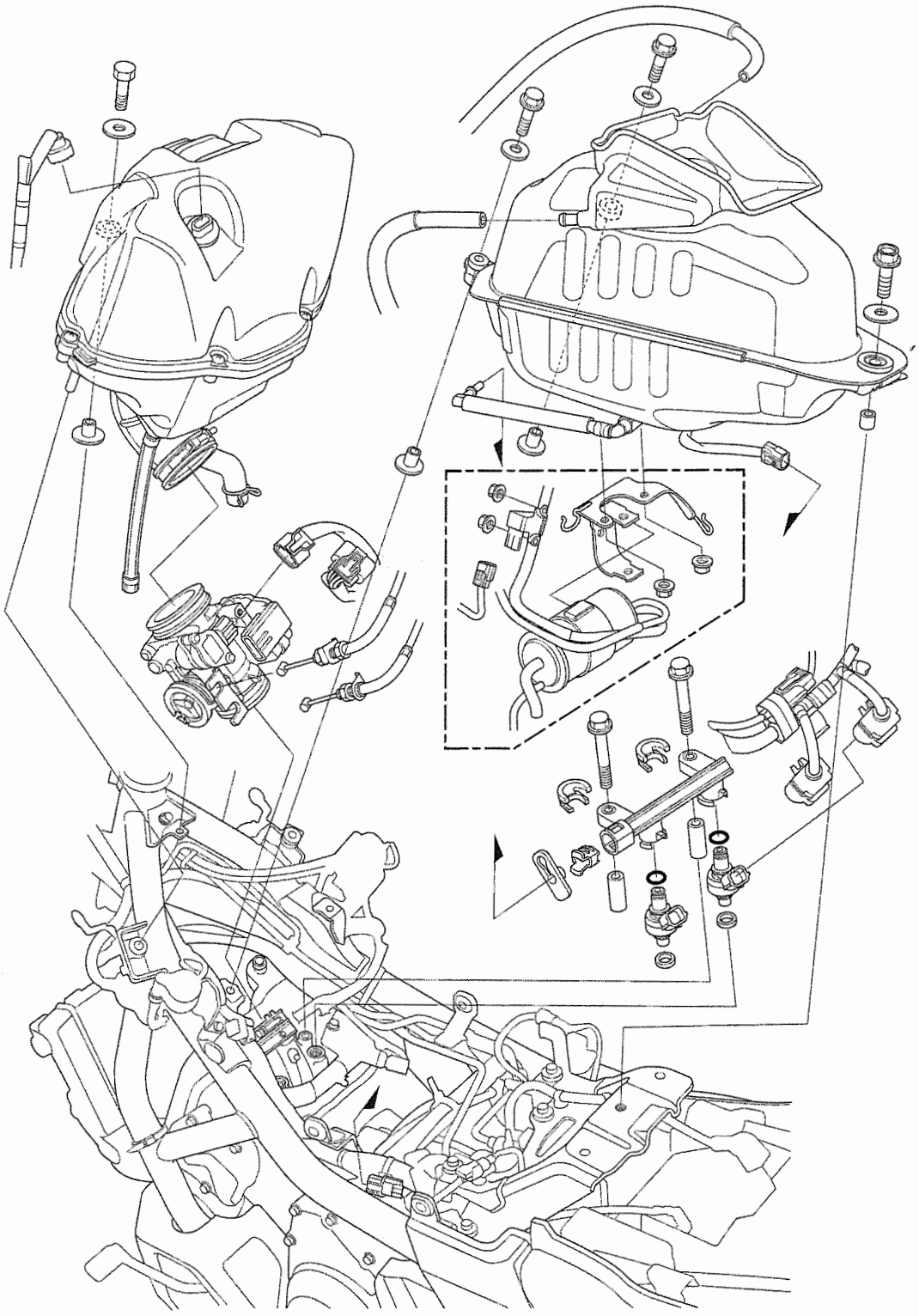
Connect a 12 V battery to the starter relay connector terminals as shown.

There should be continuity only when 12 V battery is connected.
If there is no continuity only when the 12 V battery is connected, replace the starter relay.



# 7. FUEL SYSTEM

# COMPONENT LOCATION

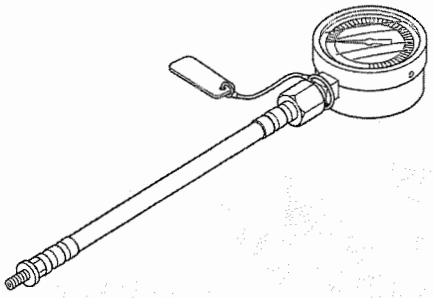
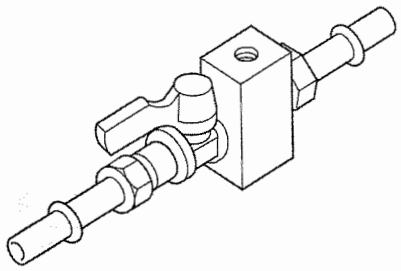
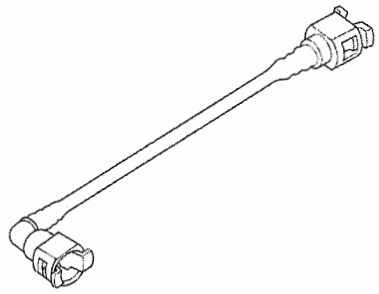
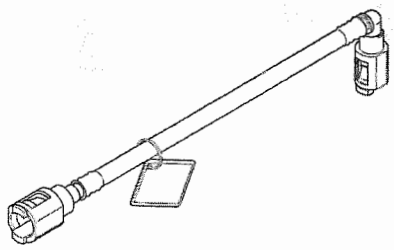
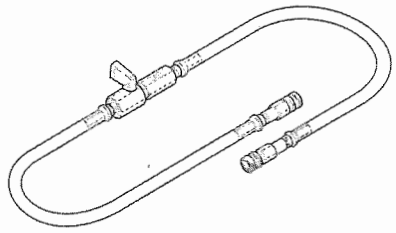
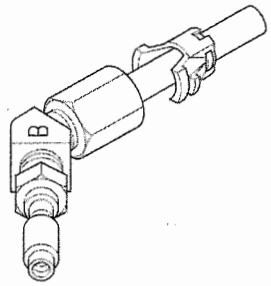
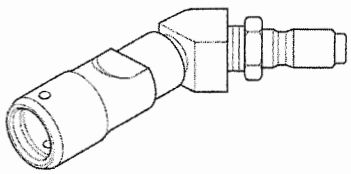
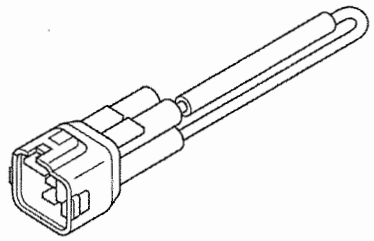


# SERVICE INFORMATION

## GENERAL

- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- Before disconnecting the fuel feed hose, relieve fuel pressure from the system (page 7-4).
- Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Seal the intake ports with tape or a clean cloth to keep dirt and debris from entering the engine after the throttle body or fuel rail has been removed.
- Do not damage the throttle body. It may cause incorrect throttle valve operation.
- Prevent dirt and debris from entering the throttle bore and air passages after the throttle body has been removed. Clean them using a compressed air if necessary.
- Do not loosen or tighten the white painted nut and screw of the throttle body. Loosening or tightening them can cause throttle valve and idle control failure.
- The parts of the throttle body not shown in this manual should not be disassembled.
- For fuel level sensor inspection (page 22-15).

## TOOLS

| | | |
|---|---|---|
| Fuel pressure gauge, 0 - 100 psi<br>07406-0040004<br>  <br>or 07406-004000B or 07406-004000C<br>(U.S.A. only) | Pressure gauge manifold<br>07ZAJ-S5A0111<br>  <br>(Not available in U.S.A.) | Hose attachment, 9 mm/9 mm<br>07ZAJ-S5A0120<br>  <br>(Not available in U.S.A.) |
| Hose attachment, 6 mm/9 mm<br>07ZAJ-S5A0130<br>  <br>(Not available in U.S.A.) | Attachment joint, 8 mm/9 mm<br>07ZAJ-S7C0200<br>  <br>(Not available in U.S.A.) | Pressure manifold hose<br>07AMJ-HW3A100 (U.S.A. only)<br>  |
| Adaptor C, male<br>07AAJ-S6MA200 (U.S.A. only)<br>  | Adaptor C, female<br>07AAJ-S6MA500 (U.S.A. only)<br>  | SCS service connector<br>070PZ-ZY30100<br>  |

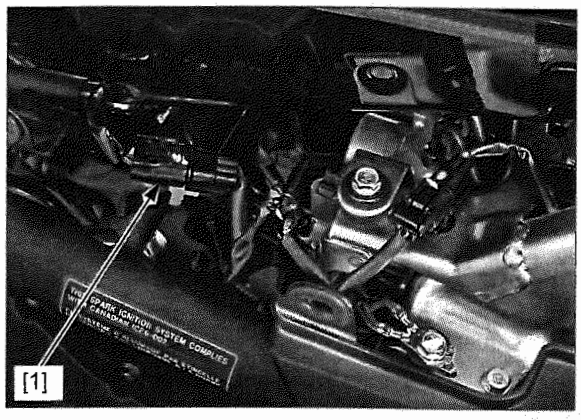
# FUEL LINE REPLACEMENT

## FUEL PRESSURE RELIEVING

NOTE:
Before disconnecting fuel feed hose, relieve pressure from the system as follows.

1. Turn the ignition switch OFF.
2. Remove the left side shelter (page 2-11).
3. Disconnect the fuel pump 3P (Black) connector [1].

   Turn the ignition switch ON and engine stop switch "○".
4. Start the engine, and let it idle until the engine stalls.
5. Turn the ignition switch OFF.
6. Disconnect the battery negative (–) cable (page 21-5).




## QUICK CONNECT FITTING REMOVAL

### FUEL PUMP SIDE

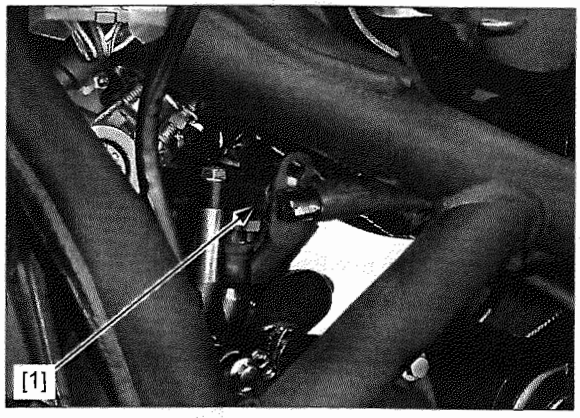
Refer to page 7-7.

### FUEL INJECTOR SIDE

1. Relieve the fuel pressure (page 7-4).

   Check the fuel quick connect fitting [1] for dirt, and clean if necessary.

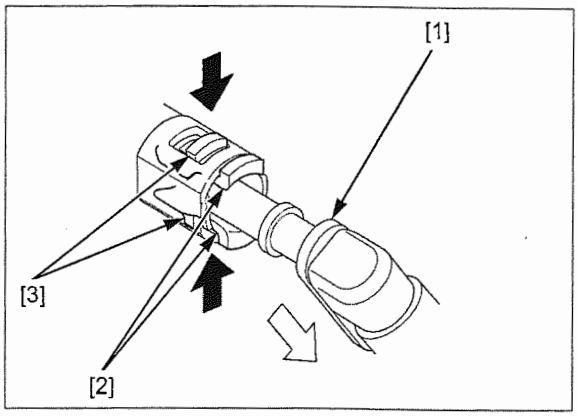
   Place a shop towel over the quick connect fitting.




2. Pull and release the joint rubber [1] tabs from the retainer.
3. Squeeze the retainer tabs [2] with the hand or special tool to release them from the locking pawls [3].

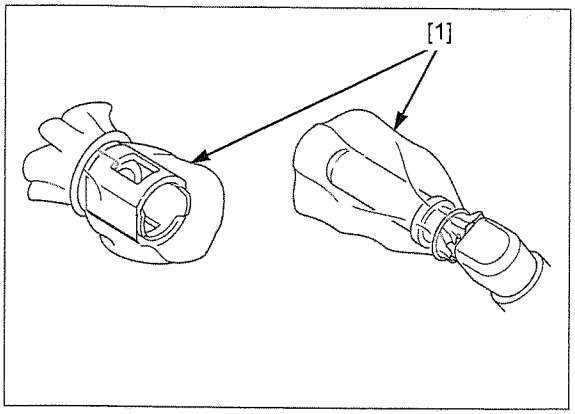
   **U.S.A. TOOL:**
   **Fuel retainer compressor 07AMF-001A100**

   Pull the fuel feed hose off and remove the retainer.




- Absorb the remaining fuel in the fuel feed hose from flowing out with a shop towel.
- Be careful not to damage the hose or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.

4. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with the plastic bags [1].



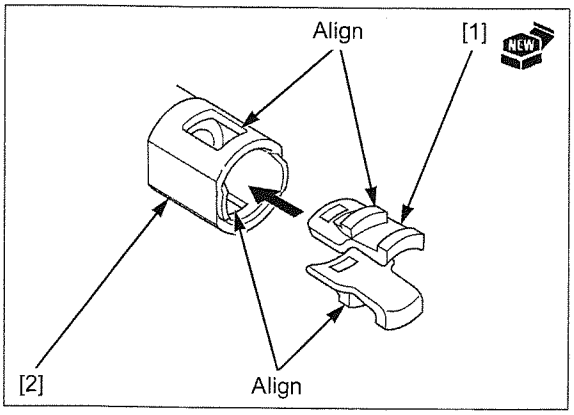

## QUICK CONNECT FITTING INSTALLATION

### FUEL PUMP SIDE

Refer to page 7-7.

### FUEL INJECTOR SIDE

1. Insert a new retainer [1] into the connector [2].
   - Align new retainer locking pawls with the connector grooves.
   - Replace the retainer and joint rubber with the same manufacturer's item that was removed.

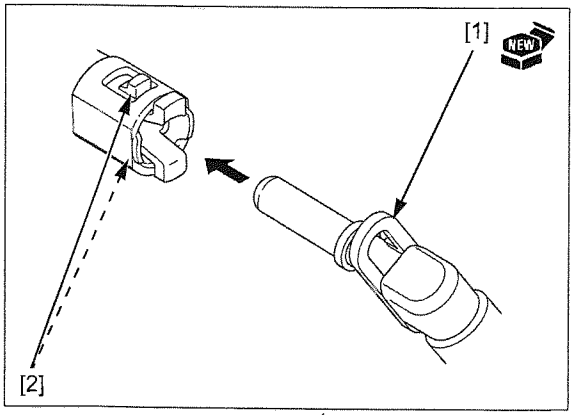



2. Set a new joint rubber [1] as shown.

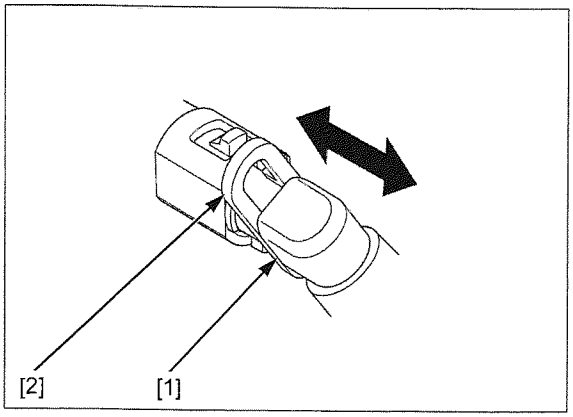
   Then press the fuel feed hose into the quick connect fitting until both retainer pawls [2] lock with a "CLICK".

   - Align retainer tabs with joint rubber grooves.

     If it is hard to connect, put a small amount of engine oil on the fuel injector joint.




3. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the fuel feed hose [1].
4. Make sure the joint rubber [2] is in place (between the retainer tabs).
5. Increase the fuel pressure and check that there is no leakage in fuel supply system (page 7-6).



## FUEL PRESSURE NORMALIZATION

1. Connect the fuel pump 3P (Black) connector [1].

   Connect the battery negative (–) cable (page 21-5).

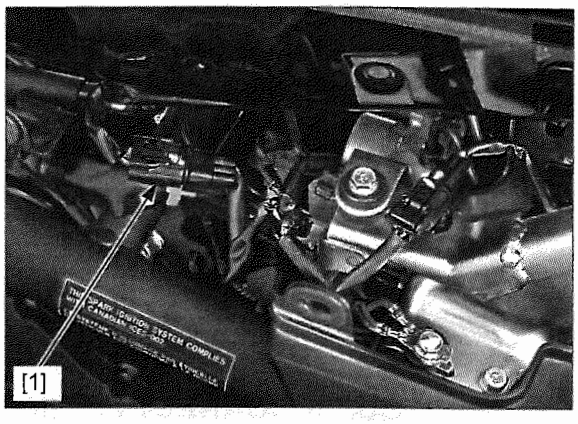
2. Turn the ignition switch ON and engine stop switch "○".

- Do not start the engine.

  The fuel pump will run for about 2 seconds, and fuel pressure will rise.

3. Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.
4. Turn the ignition switch OFF.

   Install the seat (page 2-14).




## FUEL PRESSURE TEST

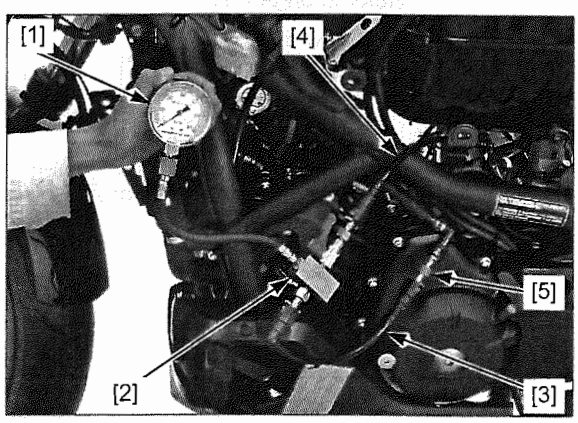
Relieve the fuel pressure (page 7-4).

Disconnect the quick connect fitting from the fuel pump (page 7-8).

Attach the fuel pressure gauge, attachments and manifold.

**TOOLS:**

| | |
|---|---|
| **[1] Fuel pressure gauge, 0 - 100 psi** | **07406-0040004** |
| **[2] Pressure gauge manifold** | **07ZAJ-S5A0111** |
| **[3] Hose attachment, 9 mm/9 mm** | **07ZAJ-S5A0120** |
| **[4] Hose attachment, 8 mm/9 mm** | **07ZAJ-S7C0100** |
| **[5] Attachment joint, 8 mm/9 mm** | **07ZAJ-S7C0200** |




**U.S.A. TOOLS:**

| | |
|---|---|
| **Fuel pressure gauge, 0 -100 psi** | **07406-004000B or 07406-004000C** |
| **Pressure manifold hose** | **07AMJ-HW3A100** |
| **Adaptor C, male** | **07AAJ-S6MA300** |
| **Adaptor C, female** | **07AAJ-S6MA500** |

Temporarily connect the battery negative (–) cable and fuel pump 3P (Black) connector.

Turn the ignition switch ON and engine stop switch "○".

Start the engine and let it idle.
Read the fuel pressure.

**STANDARD: 343 kPa (3.5 kgf/cm$^2$, 50 psi)**

If the fuel pressure is higher than specified, replace the fuel pump assembly.
If the fuel pressure is lower than specified, inspect the following:

- Pinched or clogged fuel tank breather hose
- Fuel pump unit (page 7-10)
- Clogged fuel filter (page 7-10)

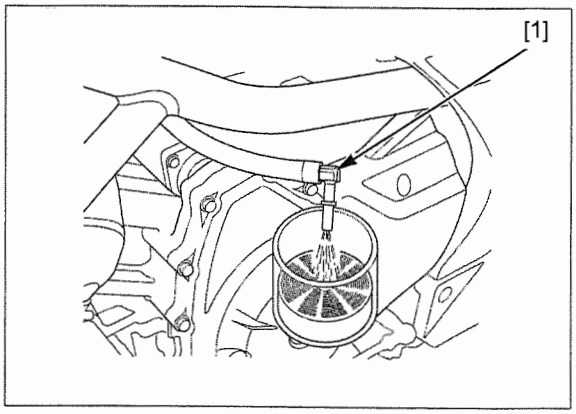
After inspection, relieve the fuel pressure (page 7-4).

Remove the fuel pressure gauge, attachment and manifold from the fuel injector.

Connect the quick connect fitting to the fuel pump and normalize the fuel pressure (page 7-9).

## FUEL FLOW INSPECTION

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector (page 7-4).




*Clean up any spilled fuel.*

Place the end of the hose [1] into an approved fuel container.

Temporarily connect the battery negative (–) cable and fuel pump 3P (Black) connector.

Turn the ignition switch ON and engine stop switch "○".

Measure the amount of fuel flow.

- The fuel pump operates for 2 seconds. Repeat 5 times so that the total measuring time.
- Return fuel to the fuel tank when the first fuel is flowed.

**Amount of fuel flow:**
**230 cm³ (7.8 US oz, 8.1 Imp oz) minimum/ 10 seconds at 12 V**

If fuel flow is less than specified, inspect the following:

- Fuel line leaking
- Pinched or clogged fuel feed hose
- Fuel pump unit (page 7-10)
- Clogged fuel filter (page 7-10)

Connect the quick connect fitting and normalize the fuel pressure (page 7-5).

# FUEL TANK

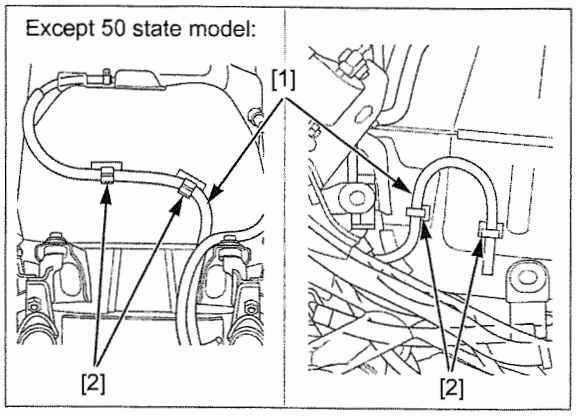
## REMOVAL/INSTALLATION

Remove the center shelter (page 2-12).

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector (page 7-4).

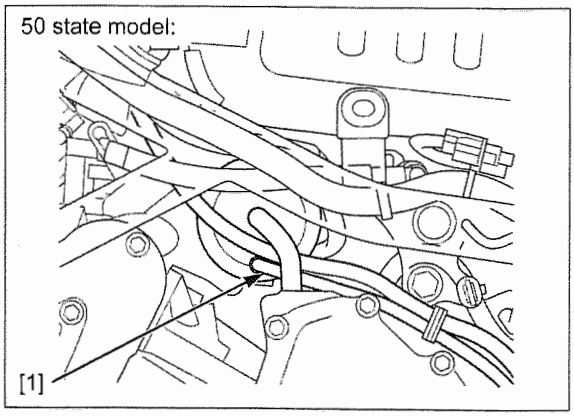
*Except 50 state model:*

Release the fuel tank breather hoses [1] from the wire guides [2].




*50 state model:*

Disconnect the EVAP canister drain hose [1] from the EVAP canister.



Disconnect the following:

- Fuel tray drain hose [1]
- Fuel tank breather hose [2] (Except 50 model only)

Remove the following:

- Two bolts [3]/washers [4]/collars [5]
- Bolts [6]/washer [7]/collar [8]

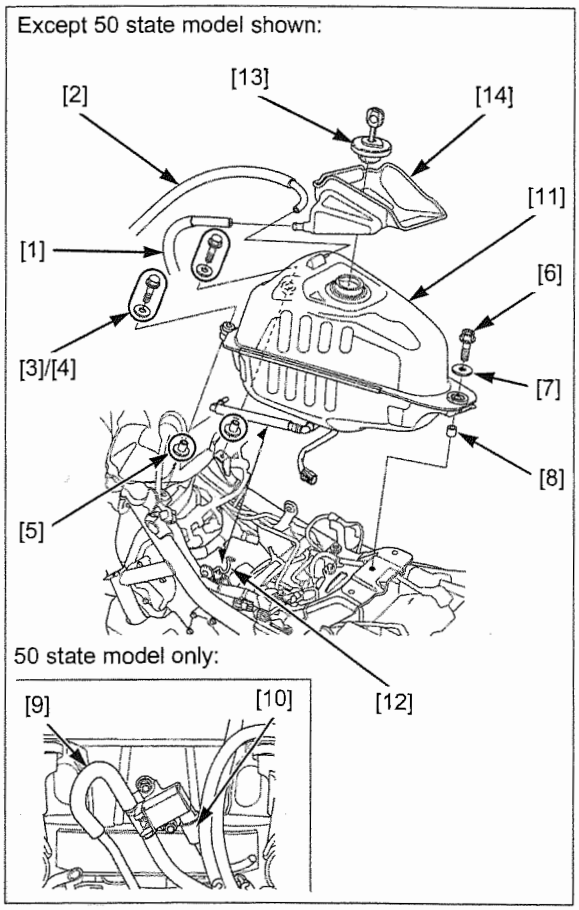
*50 state model only:* Move the fuel tank and disconnect the vacuum hose [9] and EVAP purge control solenoid valve 2P (Black) connector [10].

Remove the fuel tank [11] by releasing the fuel feed hose from the hose clamp [12].

Remove the tank cap [13] and fuel tray [14] as necessary.

Installation is in the reverse order of removal.

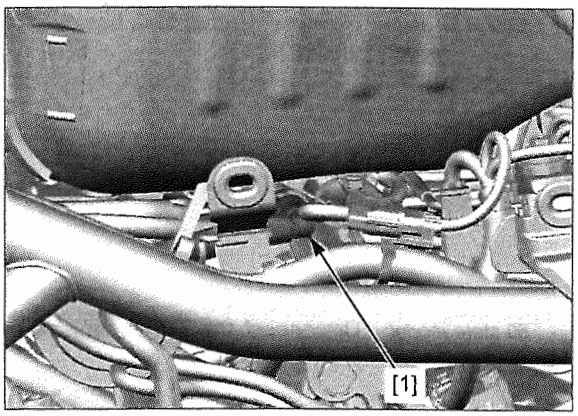
- After installing quick connect fittings, normalize the fuel pressure (page 7-6).




**FUEL PUMP SIDE QUICK CONNECT FITTING REMOVAL**

1. Remove the center shelter (page 2-12).
2. Relieve the fuel pressure (page 7-4).
3. Remove the fuel tank mounting bolts, then lift up and support the fuel tank (page 7-13).
4. Check the fuel quick connect fitting [1] for dirt, and clean if necessary.

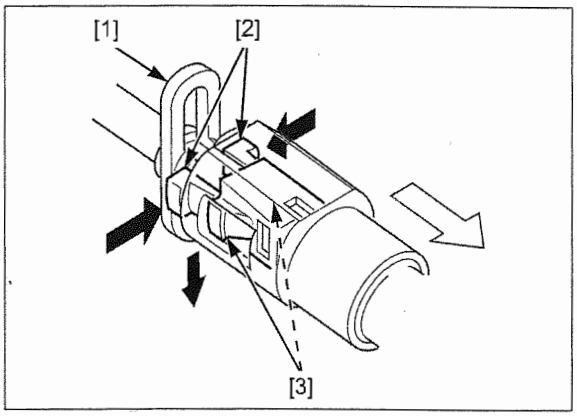
   Place a shop towel over the quick connect fitting.




5. Pull and release the joint rubber [1] from the retainer.
6. Hold the connector with one hand and squeeze the retainer tabs [2] with the other hand or special tool to release them from the locking pawls [3].

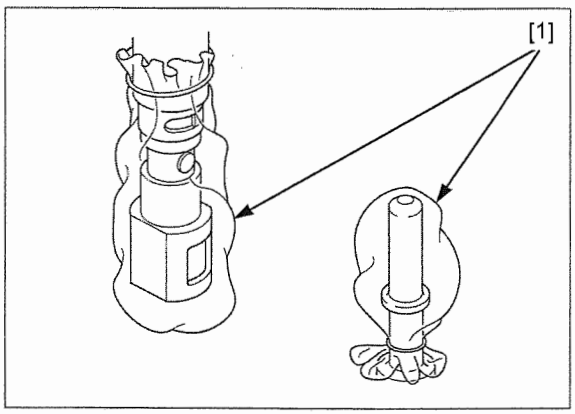
   **U.S.A. TOOL:**
   **Fuel retainer compressor 07AMF-001A100**

   Pull the connector off and remove the retainer.




- Absorb the remaining fuel in the fuel feed hose from flowing out with a shop towel.
- Be careful not to damage the hose or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.

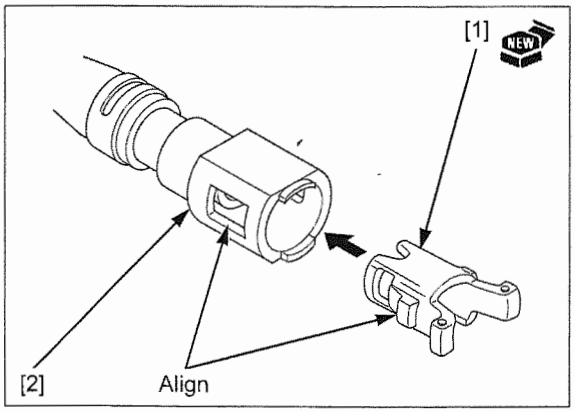
7. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with the plastic bags [1].




**FUEL PUMP SIDE QUICK CONNECT FITTING INSTALLATION**

1. Insert a new retainer [1] into the connector [2].

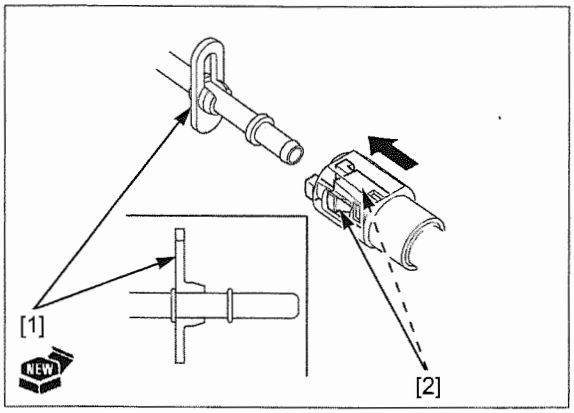
- Align new retainer locking pawls with the connector grooves.
- Replace the retainer and joint rubber with the same manufacturer's item that was removed.




2. Set a new joint rubber [1] as shown.

   Then press the quick connect fitting onto the pipe until both retainer pawls [2] lock with a "CLICK".

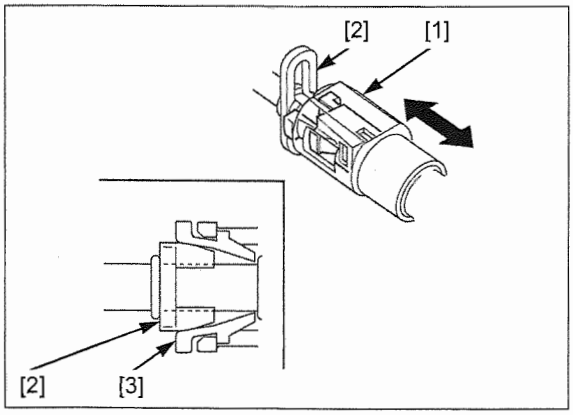
- Align the quick connect fitting with the pipe.
- If it is hard to connect, put a small amount of engine oil on the pipe end.




3. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector [1].
4. Make sure the joint rubber [2] is in place (between the retainer tabs [3]).
5. Normalize the fuel pressure and check that there is no leakage in fuel supply system (page 7-6).

   Set the fuel tank in position, install and tighten the three mounting bolts (page 7-13).

   Install the center shelter (page 2-12).



# FUEL PUMP UNIT

## REMOVAL

Remove the fuel tank (page 7-7).

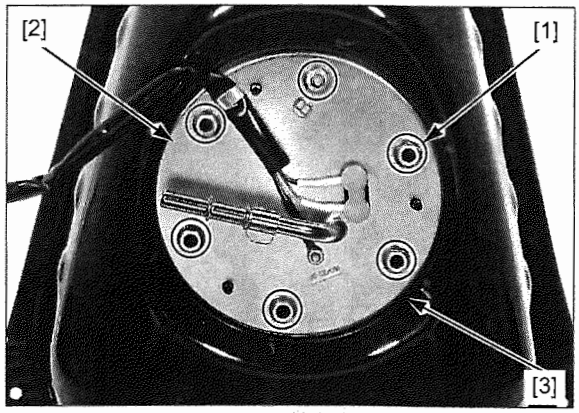
Disconnect the quick connect fitting from the fuel pump (page 7-4).

Clean around the fuel pump.

Loosen the fuel pump mounting nuts [1] in a crisscross pattern in 2 or 3 steps and remove the nuts.

Remove the fuel pump unit [2] and packing [3].

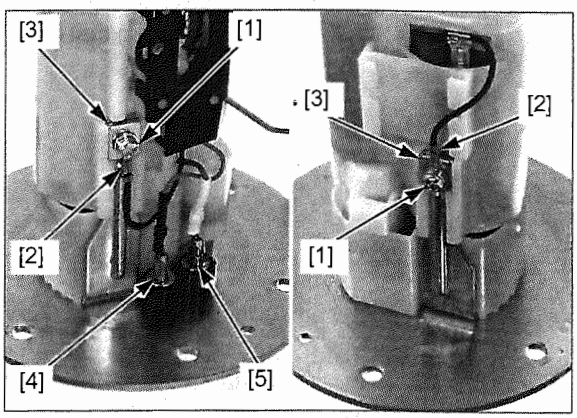
- Be careful not to damage the fuel level sensor float arm.



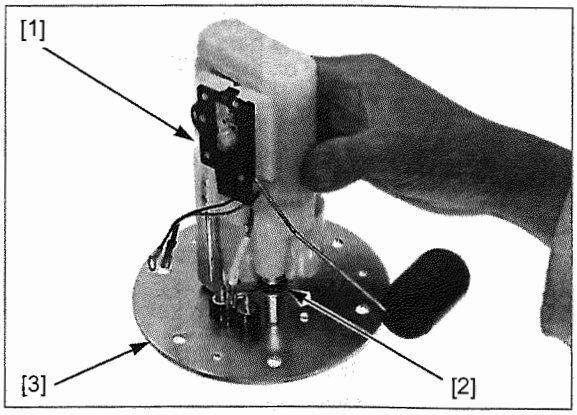

## DISASSEMBLY/INSPECTION

Remove the screws [1], Black wire terminals [2] and stoppers [3].

Disconnect the Pink wire connector [4] and Blue wire connector [5].

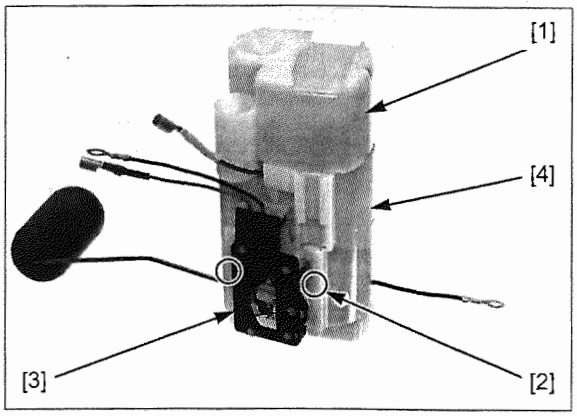



Remove the fuel pump unit assembly [1] and O-ring [2] from the fuel pump stay [3].




Remove the chamber [1].

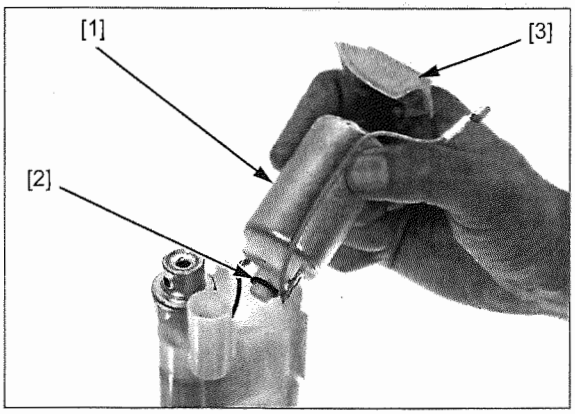
Release the tabs [2] and remove the fuel level sensor assembly [3] from the fuel filter [4].



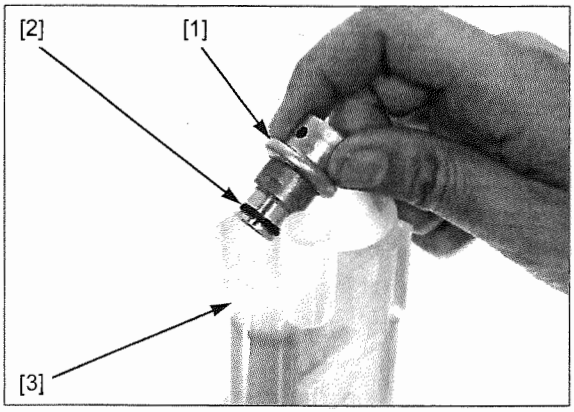
Remove the fuel pump [1] and O-ring [2].

Visually inspect the fuel pump filter [3] for dirt, debris or any clogging.

Replace fuel pump unit as an assembly if necessary.




Remove the pressure regulator [1] and O-ring [2] from the fuel filter [3].

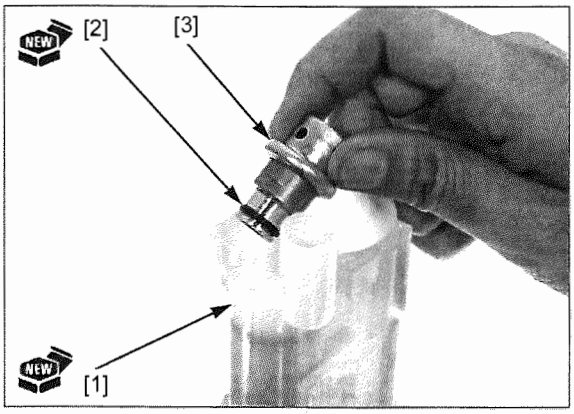



## ASSEMBLY

Replace the fuel filter [1] with a new one.

Install a new O-ring [2] to the pressure regulator [3].

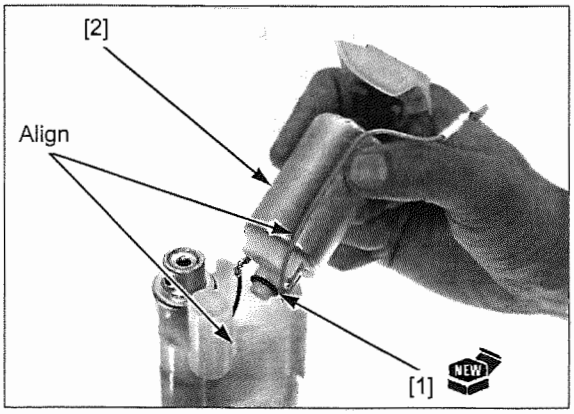
Install the pressure regulator.




Install a new O-ring [1] to the fuel pump [2].

Install the fuel pump.

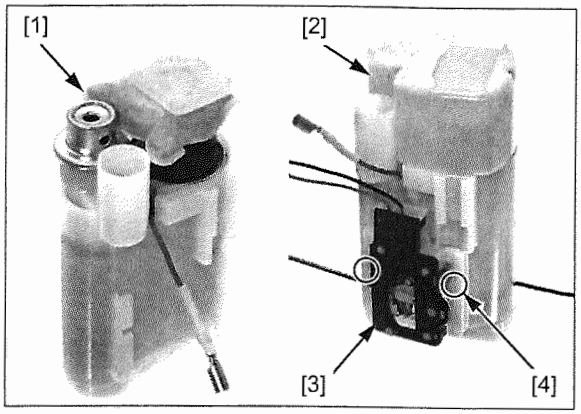
- Align the Blue wire with the fuel filter groove.



Insert the fuel pump filter edge [1] between the fuel pump and pressure regulator.

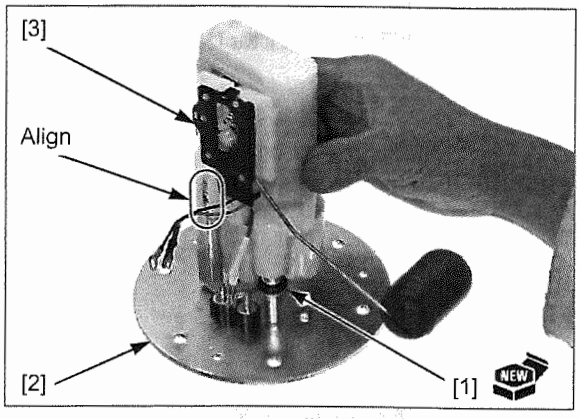
Install the chamber [2].

Install the fuel level sensor assembly [3] until tabs [4] lock with a "CLICK".




Install a new O-ring [1] to the fuel pump stay [2].

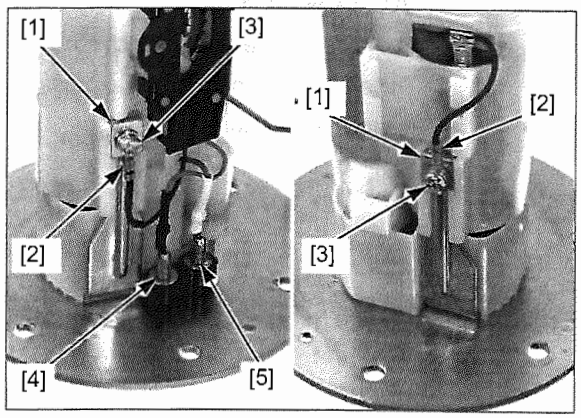
Install the fuel pump unit assembly [3] by aligning the groove with the fuel pump stay tab.




Install the stoppers [1], Black wire terminals [2] and screws [3].

Tighten the screws securely.

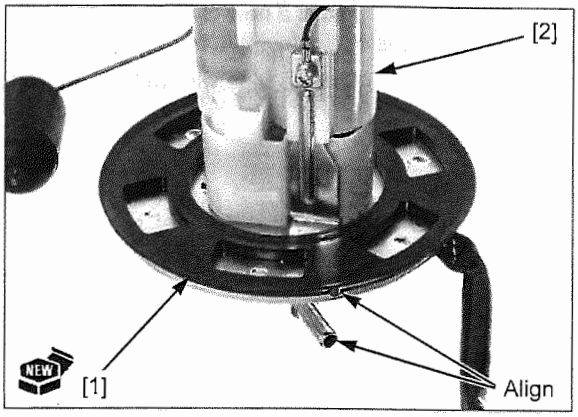
Connect the Pink wire connector [4] and Blue wire connector [5].




## INSTALLATION

Install a new packing [1] onto the fuel pump unit [2].

- Always replace the packing with a new one.
- Be careful not to pinch any dirt or debris between the fuel pump unit and packing.
- Align the packing tab with the fuel pipe.

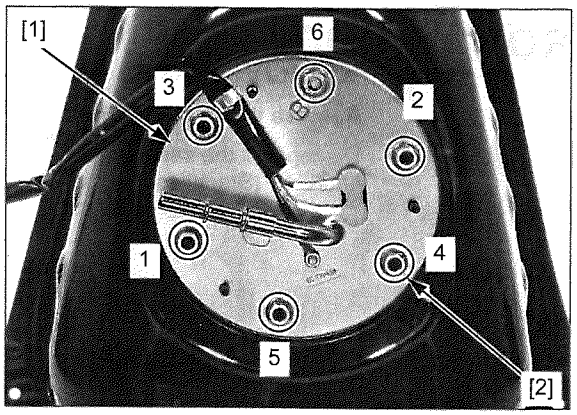


Install the fuel pump unit [1] into the fuel tank.

Install and tighten the fuel pump mounting nuts [2] to the specified torque in the sequence as shown.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Install the fuel tank (page 7-7).

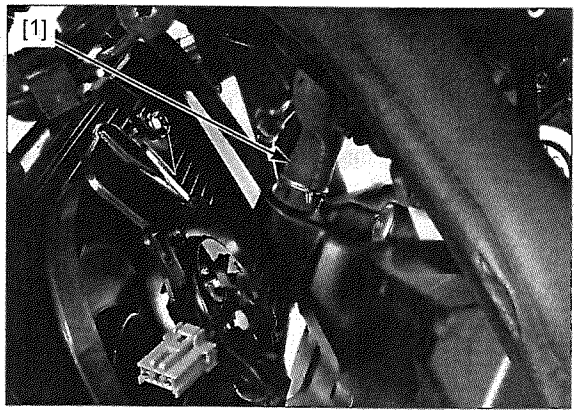



# AIR CLEANER HOUSING

## REMOVAL/INSTALLATION

Pull down the radiator (page 8-7).

Disconnect the crankcase breather hose [1] from the cylinder head.




Disconnect the IAT sensor 2P (Black) connector [1].

Loosen the air cleaner connecting hose band screw [2].

Remove the bolts [3], washer [4] and collar [5].

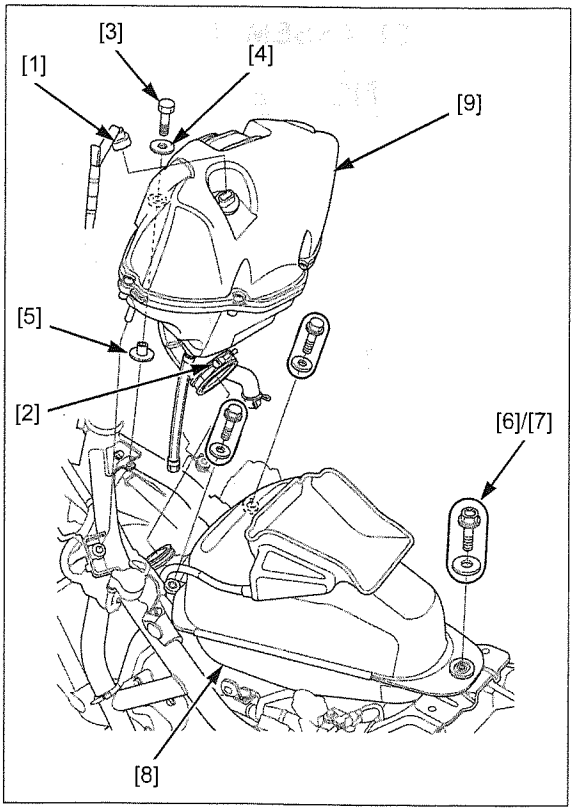
Remove the fuel tank mounting bolts [6] and washer [7], then slightly pull the fuel tank [8] backward.

Disconnect connecting hose and remove the air cleaner housing [9].

Installation is in the reverse order of removal.

**TORQUE:**

**Air cleaner connecting hose band screw:**
**1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**

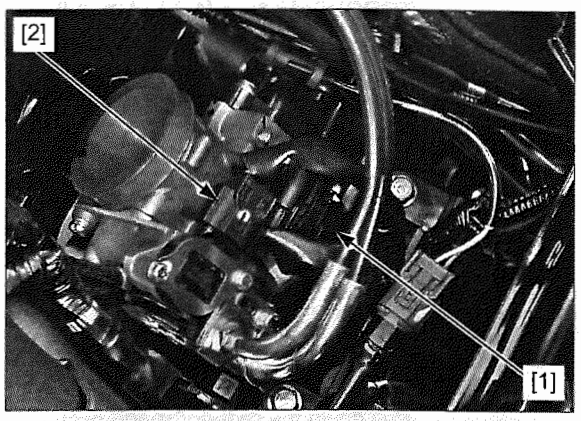


# THROTTLE BODY

## REMOVAL

Remove the air cleaner housing (page 7-13).

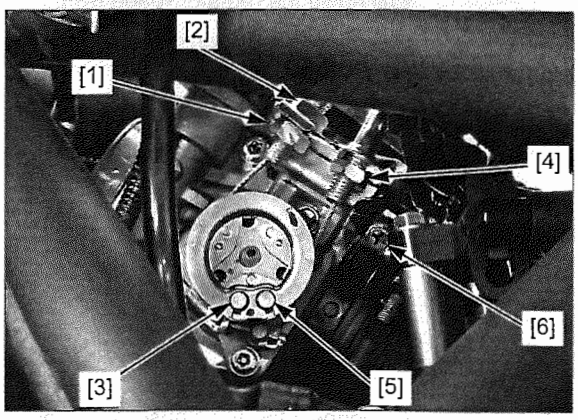
Disconnect the sensor unit 5P (Black) connector [1] and IACV 4P (Black) connector [2].




Loosen the throttle cable A adjuster lock nut [1] and adjusting nut [2] then disconnect the throttle cable A [3] from the throttle drum and cable stay.

Loosen the throttle cable B lock nut [4] then disconnect the throttle cable B [5] from the throttle drum and cable stay.

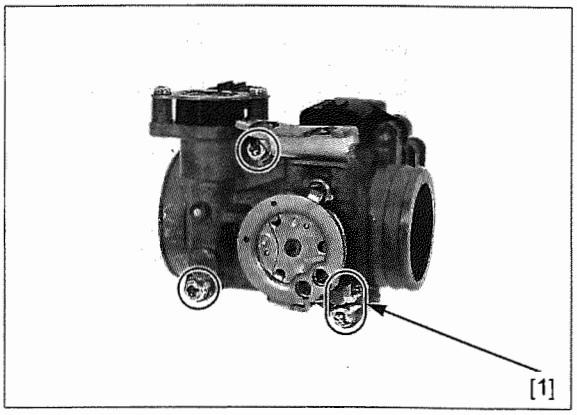
Loosen the insulator band screw [6] and remove the throttle body assembly.




## DISASSEMBLY

**NOTICE**

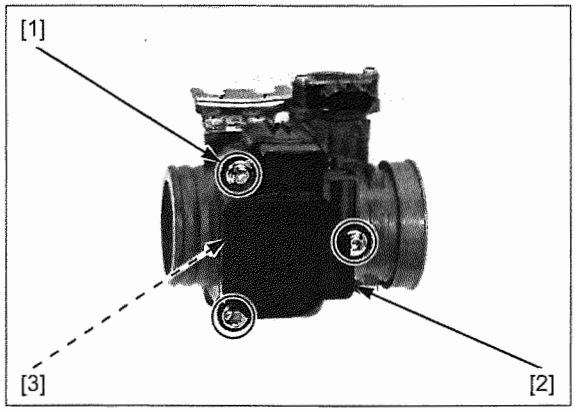
- *Do not remove the sensor unit unless it is replaced.*
- *The throttle body/sensor unit is factory pre-set. Do not disassemble in a way other than shown in this manual.*
- *Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.*
- *Do not damage the throttle body. It may cause incorrect throttle valve operation.*
- *Do not loosen or tighten the white painted nut and screw [1] of the throttle body. Loosening or tightening it can cause throttle valve and idle control failure.*
- *Always clean around the throttle body before each sensor removal to prevent dirt and debris from entering the air passage.*




NOTE:

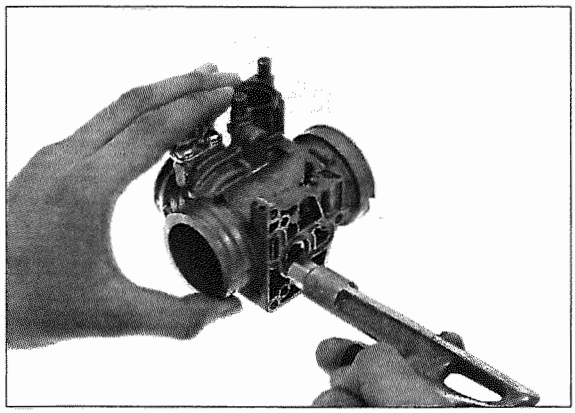
For IACV removal (page 7-20).

Remove the sensor unit torx screws [1], sensor unit [2] and O-ring [3].



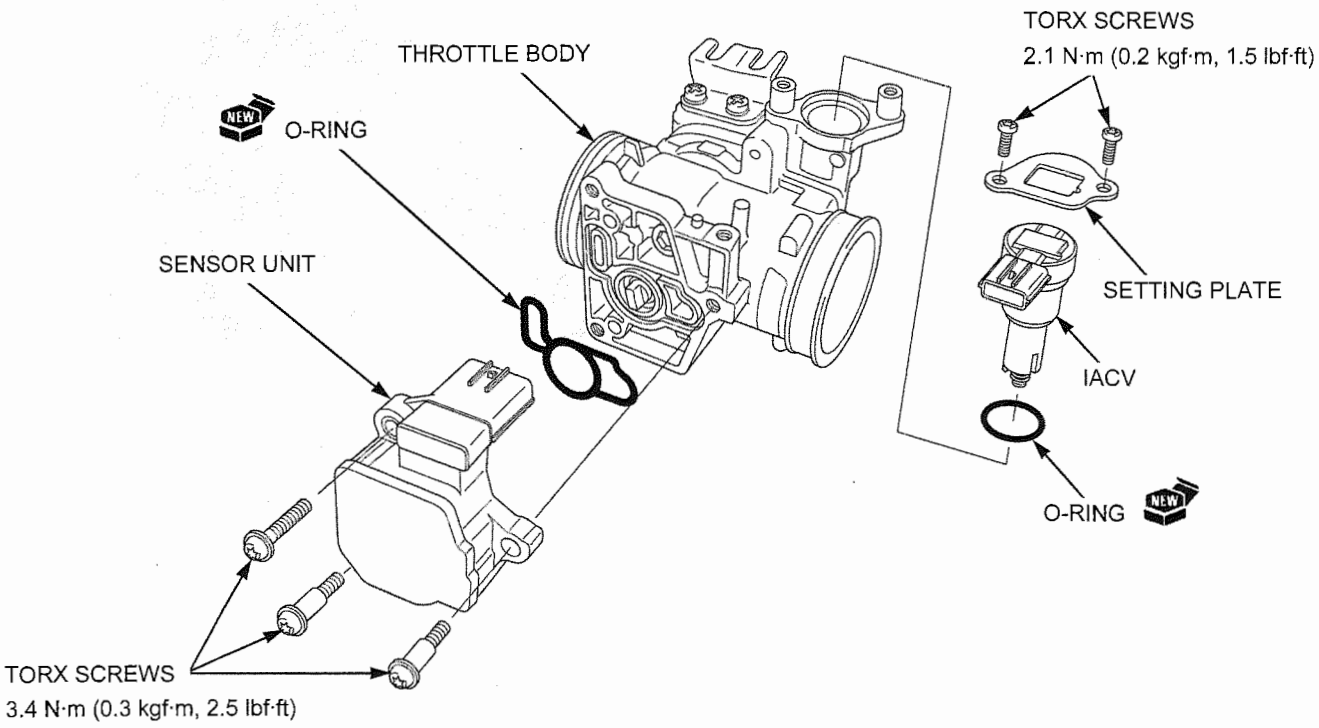

*Cleaning the air passages and sensor hole with a piece of wire will damage the throttle body.*

Clean the air passage of the throttle body using compressed air.
Check the air passage for clogs.



## ASSEMBLY

NOTE:
For IACV installation (page 7-21).

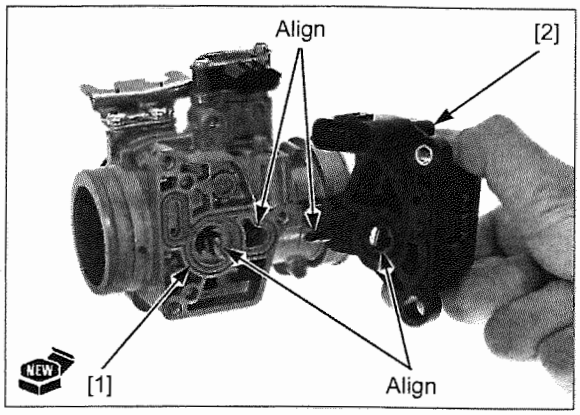


*If the O-ring is not installed properly, the idle air will leak and engine idle speed will be unstable.*

Install a new O-ring [1] to the throttle body properly.

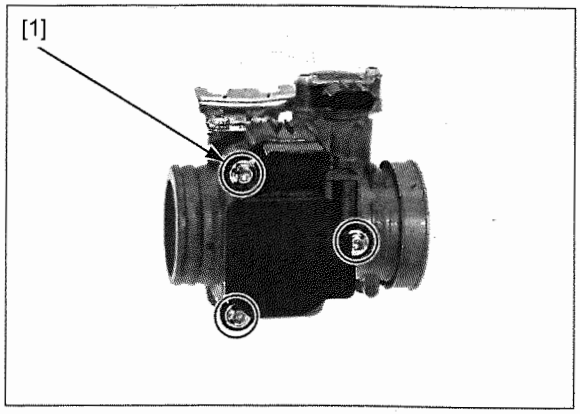
When installing the sensor unit [2] to the throttle body, align the following:

– The TP sensor clip with the throttle valve boss
– The sensor unit tab with the throttle body hole




Install and tighten the sensor unit torx screws [1] to the specified torque.

**TORQUE: 3.4 N·m (0.3 kgf·m, 2.5 lbf·ft)**




## INSTALLATION

Install the throttle body assembly [1] to the cylinder head by aligning the tab with the insulator groove.

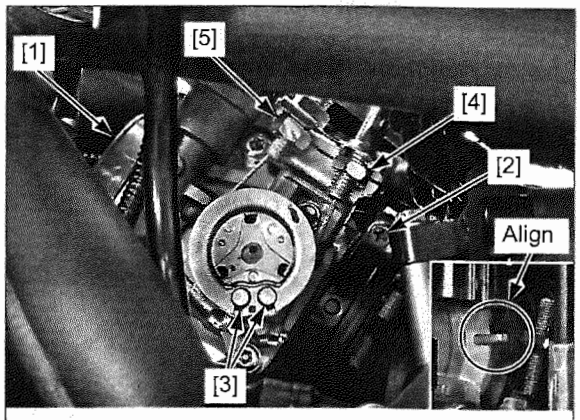
Tighten the insulator band screw [2] to the specified range.

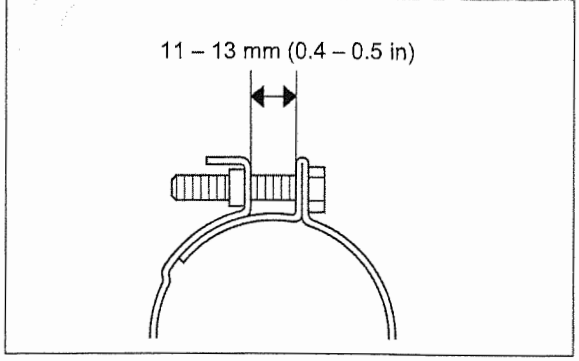
Connect the throttle cables [3] to the throttle drum and throttle cable stay.

Tighten the throttle cable B lock nut [4] securely.

Temporarily tighten the throttle cable A adjuster lock nut [5].

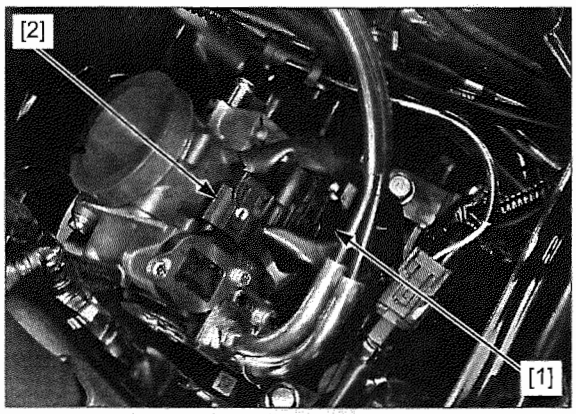
Adjust the throttle grip freeplay (page 3-4).



Connect the sensor unit 5P (Black) connector [1] and IACV 4P (Black) connector [2].

Install the air cleaner housing (page 7-13).



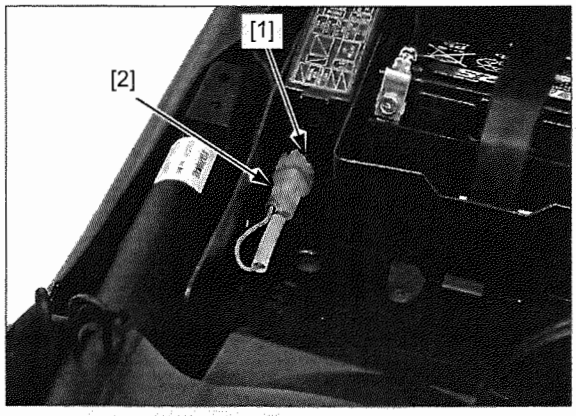

## THROTTLE VALVE FULLY CLOSED POSITION RESET PROCEDURE

NOTE:
If the sensor unit is removed, reset the throttle valve fully closed position as following.

1. Erase the DTC's (page 4-9).
2. Turn the ignition switch OFF.
3. Short the DLC [1] terminals using a special tool.

   **Connection: Brown – Green**

   **TOOL:**
   **[2] SCS service connector 070PZ-ZY30100**

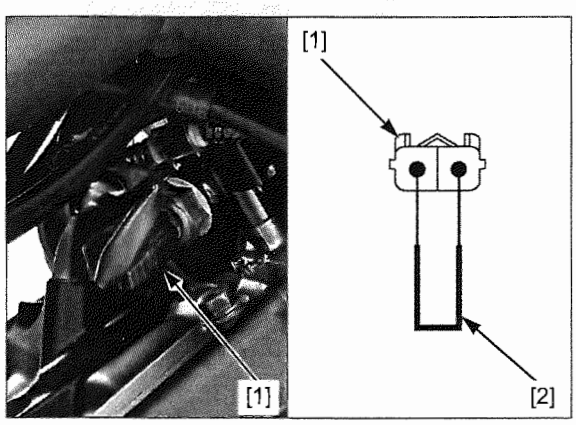



4. Disconnect the ECT sensor 2P (Black) connector [1].

   Short the ECT sensor 2P (Black) connector terminals of the wire harness side with a jumper wire [2].
5. Turn the ignition switch ON and engine stop switch "○", then MIL will start blinking.

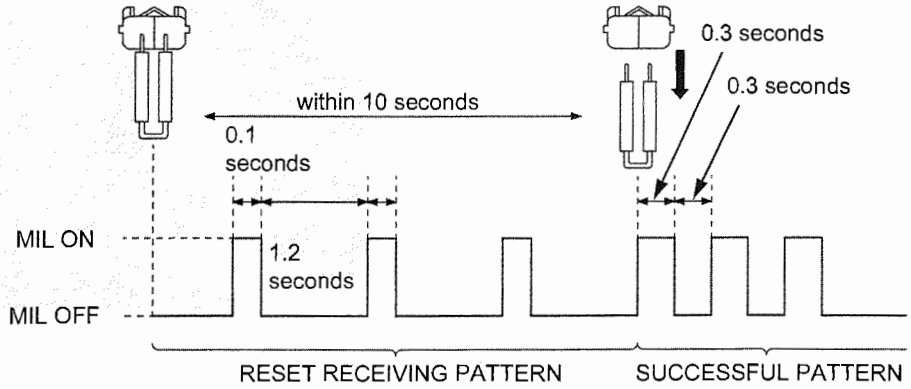
   Disconnect the jumper wire while the MIL blinking (within 10 seconds).

   After disconnection of the jumper wire, the MIL start to short blinking.



6. Check if the MIL blinks.

   If the MIL begins short blink (0.3 seconds), the throttle valve fully closed position is reset.




   If the MIL stays lit, the throttle valve fully closed position is not reset, repeat the reset procedure from step 1.

7. Turn the ignition switch OFF.
8. Install the removed parts in the reverse order of removal.

# FUEL INJECTOR

## REMOVAL

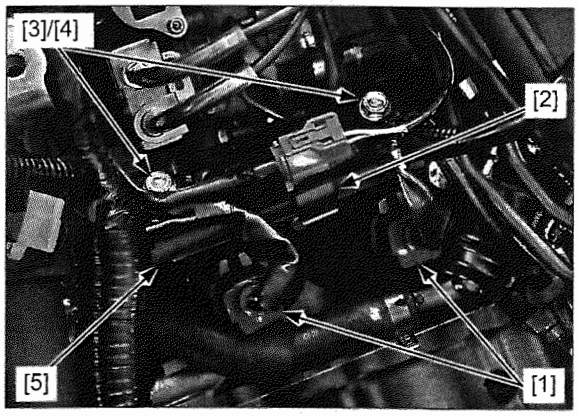
Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector side (page 7-4).

Remove the fuel tank (page 7-7).

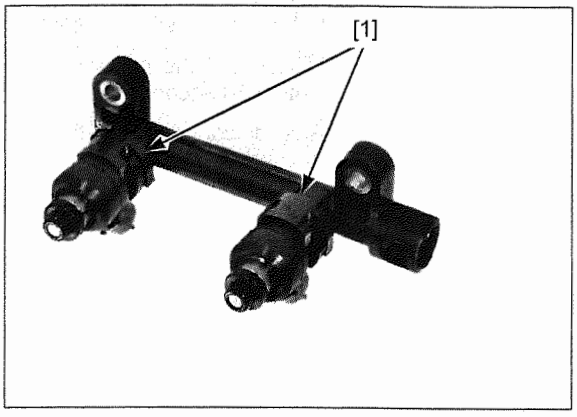
Disconnect the fuel injector 2P (Gray) connectors [1].

Remove the clip [2] from the fuel rail.

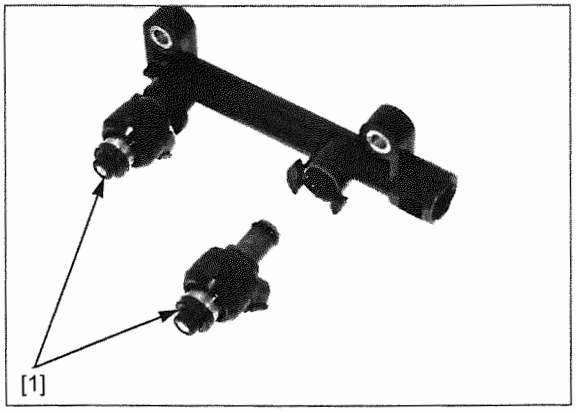
Remove the bolts [3], collars [4] and fuel injector assembly [5].




Remove the retainers [1] from the fuel injector/fuel rail.

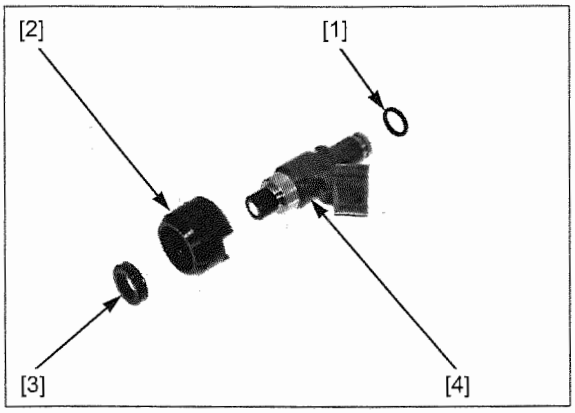


Remove the fuel injectors [1] from the fuel rail.




Remove the O-ring [1], cushion rubber [2] and seal ring [3] from the fuel injector [4].

Check the removed parts for wear or damage and replace them if necessary.




## INSTALLATION

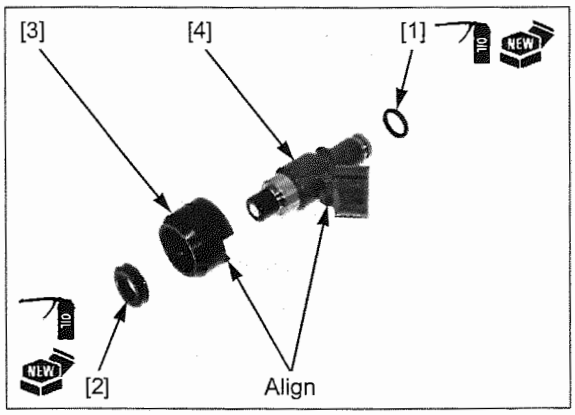
Apply engine oil to a new O-ring [1] and a new seal ring [2].

Install the cushion rubber [3] until it is fully seated.

- Align the cushion rubber cut out with the fuel injector connector.

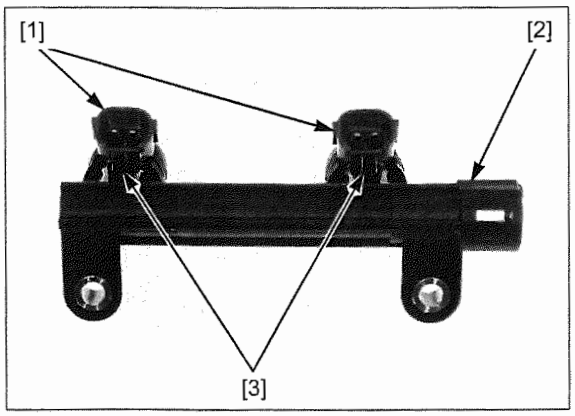
Install the seal ring to the fuel injector [4], being careful not to damage them.

Install the O-ring to the fuel injector.

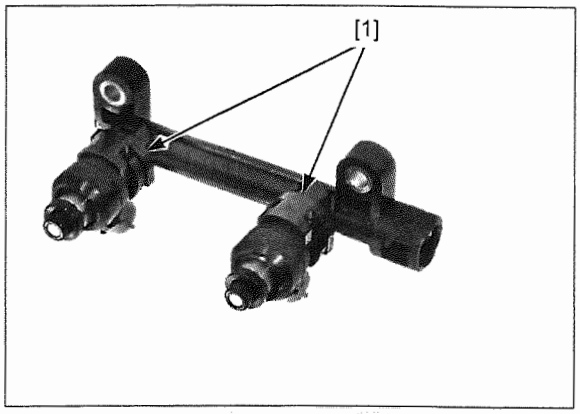



Install the fuel injectors [1] to the fuel rail [2], being careful not to damage the O-ring.

- Align the fuel injector body with the fuel rail tab [3] as shown.



Install the retainers [1] to the fuel injector/fuel rail.




Install the fuel injector assembly [1], bolts [2] and collars [3].

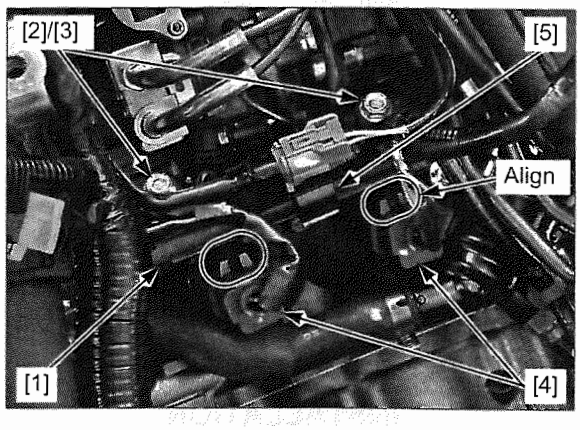
Tighten the fuel rail mounting bolts securely.

Connect the fuel injector 2P (Gray) connectors [4] while aligning their grooves with the fuel rail tabs.

Install the clip [5] to the fuel rail.

Install the fuel tank (page 7-7).

Connect the quick connect fitting to the fuel injector side and normalize the fuel pressure (page 7-5).




# IACV

## REMOVAL

Remove the air cleaner housing (page 7-13).

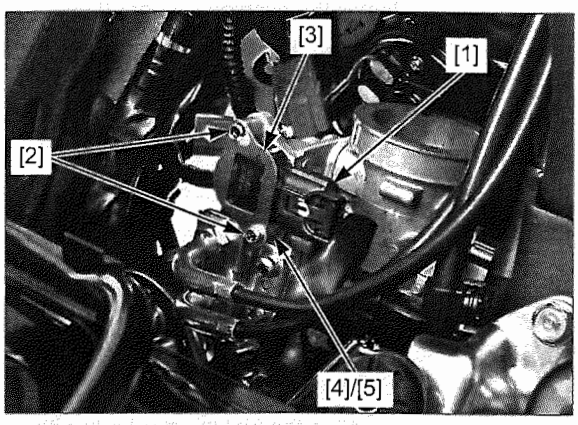
The IACV is installed on the throttle body and is operated by the step motor. When the ignition switch is turned ON and engine stop switch "○", the IACV operates for a few seconds.

Check the step motor operating (beep) sound with the ignition switch turned ON and engine stop switch "○".

Disconnect the IACV 4P (Black) connector [1].

Remove the IACV setting plate torx screws [2] and setting plate [3].

Remove the IACV [4] and O-ring [5].



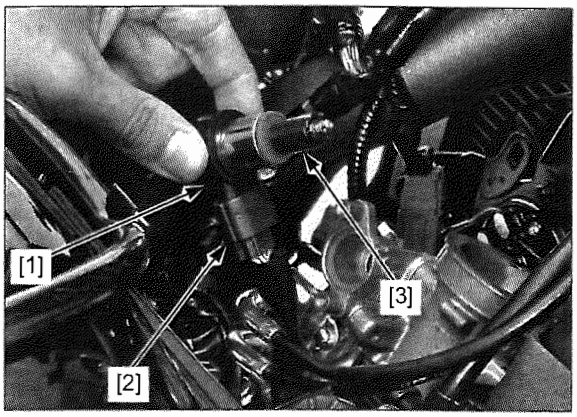

## INSPECTION

Remove the IACV (page 7-20).

Check the IACV [1] for wear or damage.

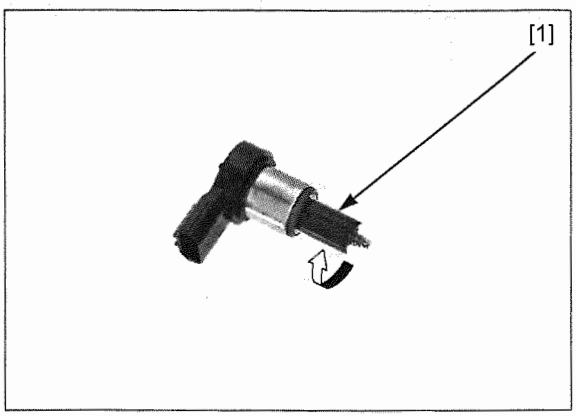
The IACV operation can be checked visually as follows:

1. Connect the IACV 4P (Black) connector [2].
2. Turn ignition switch ON and engine stop switch "○", the slide valve [3] should move back and forth.
3. After inspection, install the IACV (page 7-21).



## INSTALLATION

Turn the slide valve [1] clockwise until lightly seated on IACV.




Install a new O-ring [1] to the IACV [2].

Install the IACV by aligning its groove with the slide valve housing pin.

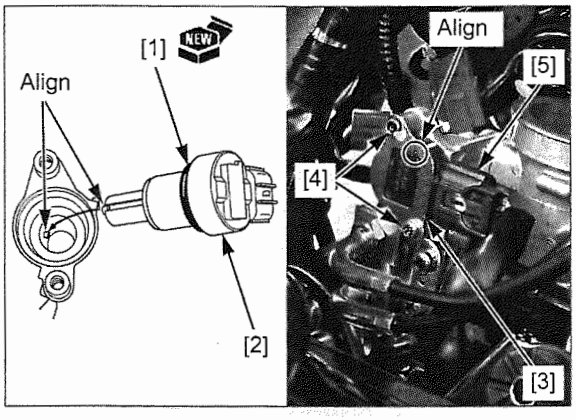
Install the setting plate [3] while aligning its cut-out with the tab on the IACV.

Install and tighten the IACV setting plate torx screws [4] to the specified torque.

**TORQUE: 2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)**

Connect the IACV 4P (Black) connector [5].

Install the air cleaner housing (page 7-13).

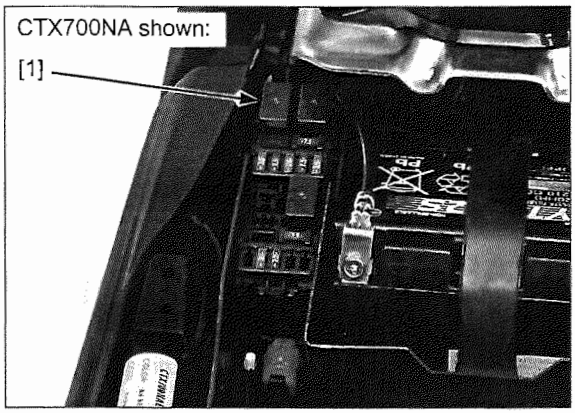



# FUEL CUT RELAY

## INSPECTION

Remove the seat (page 2-14).

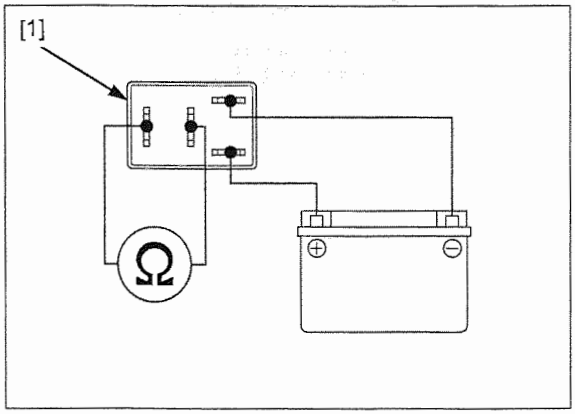
Open the fuse box cover and remove the fuel cut relay [1].




Connect a ohmmeter to the fuel cut relay [1] terminals.

Connect a 12 V battery to the fuel cut relay terminals as shown.

There should be continuity only when 12 V battery is connected.
If there is no continuity only when the 12 V battery is connected, replace the fuel cut relay.



# EVAP PURGE CONTROL SOLENOID VALVE (50 STATE MODEL)

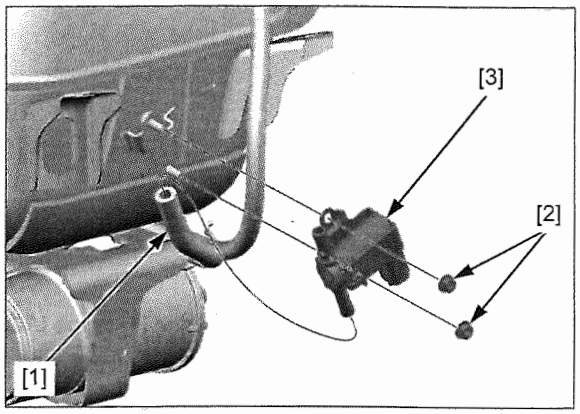
## REMOVAL/INSTALLATION

Remove the fuel tank (page 7-7).

Disconnect the canister-to-EVAP purge control solenoid valve hose [1].

Remove the two nuts [2] and EVAP purge control solenoid valve [3].

Installation is in the reverse order of removal.




## INSPECTION

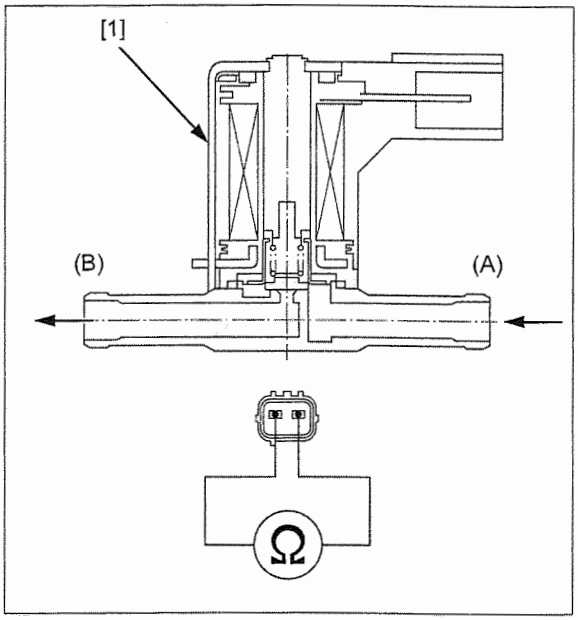
Remove the EVAP purge control solenoid valve [1] (page 7-22).

Check that air should not flow (A) to (B), only when a 12 V battery is connected to the EVAP purge control solenoid valve terminals.

Check the resistance between the terminals of the EVAP purge control solenoid valve.

**STANDARD: 30 – 34 Ω (20°C/68°F)**

If the resistance is out of specification, replace the EVAP purge control solenoid valve.




# EVAP CANISTER (50 STATE MODEL)

## REMOVAL/INSTALLATION

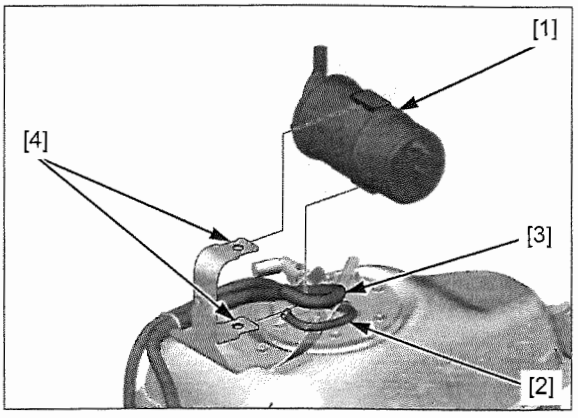
Remove the fuel tank (page 7-7).

Disconnect the following from the EVAP canister [1]:

- EVAP canister-to-fuel tank hose [2]
- Canister-to-EVAP purge control solenoid valve hose [3]

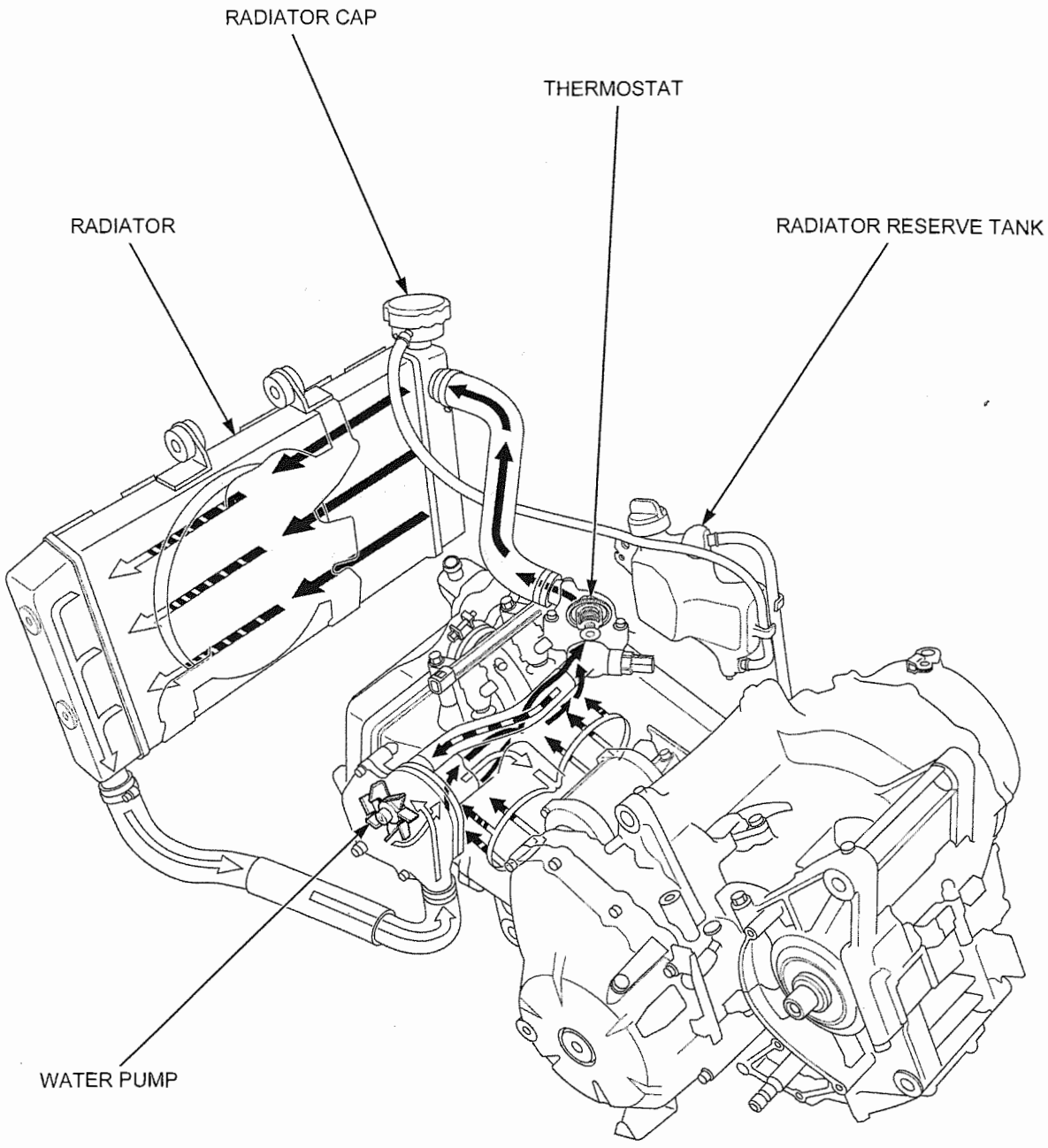
Remove the EVAP canister from the tabs [4] of the stay.

Installation is in the reverse order of removal.



# 8. COOLING SYSTEM

# SYSTEM FLOW PATTERN



# SERVICE INFORMATION

## GENERAL

**⚠ WARNING**

Removing the radiator cap while the engine is hot can allow the coolant to spray out, seriously scalding you.
Always let the engine and radiator cool down before removing the radiator cap.

**NOTICE**

*Using coolant with silicate inhibitors may cause premature wear of water pump seals or blockage of radiator passages. Using tap water may cause engine damage.*

- Add coolant at the reserve tank. Do not remove the radiator cap except to refill or drain the system.
- All cooling system services can be done with the engine installed in the frame.
- Avoid spilling coolant on painted surfaces.
- After servicing the system, check for leaks with a cooling system tester.
- Refer to the ECT sensor inspection (page 22-13).

# TROUBLESHOOTING

**Engine temperature too high**
- Faulty high coolant temperature indicator or ECT sensor
- Thermostat stuck closed
- Faulty radiator cap
- Insufficient coolant
- Passage blocked in radiator, hoses or water jacket
- Air in system
- Faulty cooling fan motor
- Faulty fan control relay
- Faulty water pump

**Engine temperature too low**
- Faulty high coolant temperature indicator or ECT sensor
- Thermostat stuck open
- Faulty fan control relay

**Coolant leak**
- Faulty water pump mechanical seal
- Deteriorated O-rings
- Faulty radiator cap
- Damaged or deteriorated cylinder head gasket
- Loose hose connection or clamp
- Damaged or deteriorated hose
- Damaged radiator

# SYSTEM TESTING

## RADIATOR CAP/SYSTEM PRESSURE INSPECTION

Remove the radiator cap (page 8-4).

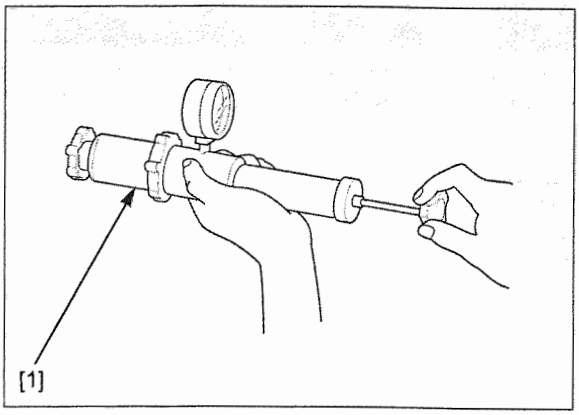
Wet the sealing surfaces of the cap, then install the cap onto the tester [1].

Pressure test the radiator cap.
Replace the radiator cap if it does not hold pressure, or if relief pressure is too high or too low.
It must hold specified pressure for at least 6 seconds.

**RADIATOR CAP RELIEF PRESSURE:**
**108 – 137 kPa (1.1 – 1.4 kgf/cm², 16 – 20 psi)**

Install the tester to the radiator.

Pressure the radiator, engine and hoses, and check for leaks.




**NOTICE**

*Excessive pressure can damage the cooling system components. Do not exceed 137 kPa (1.4 kgf/cm², 20 psi).*

Repair or replace components if the system will not hold specified pressure for at least 6 seconds.

# COOLANT REPLACEMENT

## REPLACEMENT/AIR BLEEDING

NOTE:
When filling the system or reserve tank with coolant or checking the coolant level, place the motorcycle in an upright position on a flat, level surface.

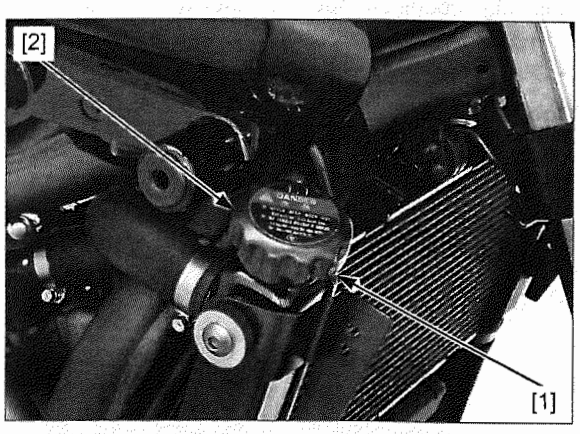
Remove the following:

- Right front side cowl (page 2-6) (CTX700/A/D)
- Right radiator side cover (page 2-10) (CTX700N/NA/ND)

Remove the screw [1] and radiator cap [2].

**⚠CAUTION**

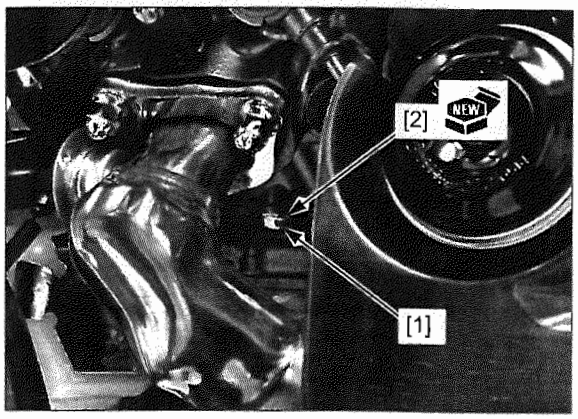
The engine must be cool before removing the radiator cap, or severe scalding may result.




Remove the drain bolt [1], sealing washer [2] and drain the coolant.

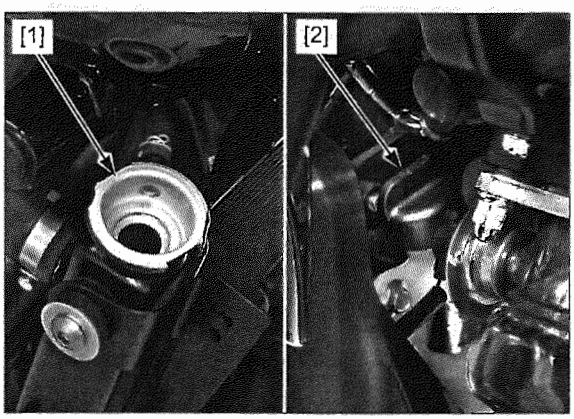
Reinstall the drain bolts with a new sealing washer.

Tighten the drain bolt securely.



Fill the system with the recommended coolant through the filler opening up to filler neck [1].

Remove the radiator reserve tank cap [2] and fill the reserve tank to the upper level line.




Bleed air from the system as follows:

1. Shift the transmission into neutral.

   Start the engine and let it idle for 2 – 3 minutes.
2. Snap the throttle 3 or 4 times to bleed air from the system.
3. Stop the engine and add coolant up to the filler neck if necessary.

   Install the radiator cap.
4. Check the level of coolant in the reserve tank and fill to the upper level line if it is low (page 3-12).

NOTE:

- When air bleeding is insufficient, level of coolant in the reserve tank will decrease. If so, fill to the upper level line with coolant.

After installation, check that there are no coolant leaks.

Install the following:

– Right front side cowl (page 2-6) (CTX700/A/D)
– Right radiator side cover (page 2-10) (CTX700N/NA/ND)

# THERMOSTAT/THERMOSTAT HOUSING

## REMOVAL/INSTALLATION

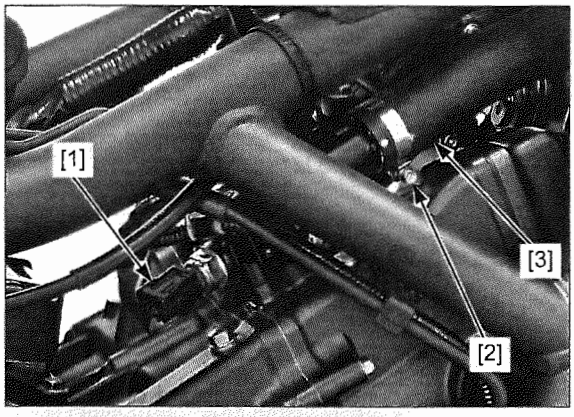
Drain the coolant (page 8-4).

Remove the following:

– Air cleaner housing (page 7-13)
– Fuel tank (page 7-7)

Disconnect the ECT sensor 2P (Black) connector [1].

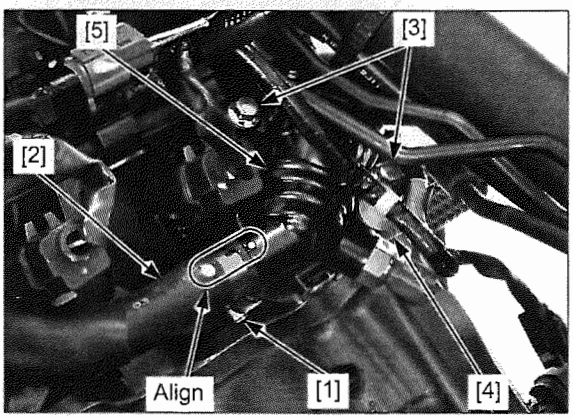
Loosen the water hose band screw [2] and disconnect the radiator upper water hose [3].




Loosen the water hose band screw [1] and disconnect the water bypass hose [2].

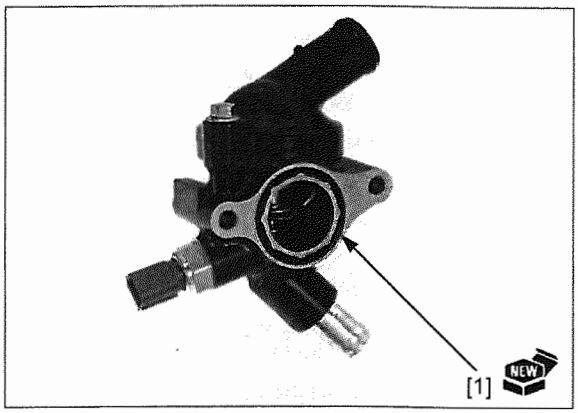
Remove the bolts [3], stay [4] and thermostat housing [5].

- When connecting the hose, align the index mark with the thermostat housing tab.

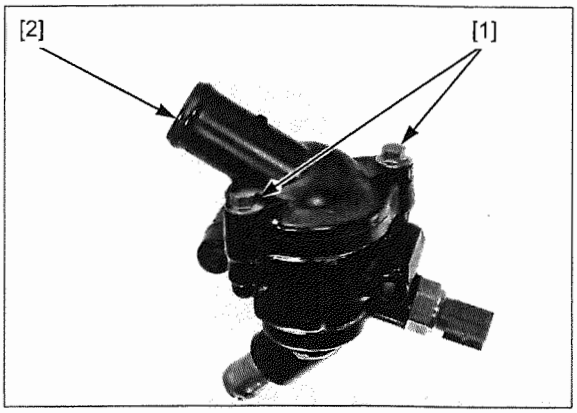


Remove the O-ring [1].

- Replace the O-ring with a new one.




Remove the bolts [1] and thermostat housing cover [2].

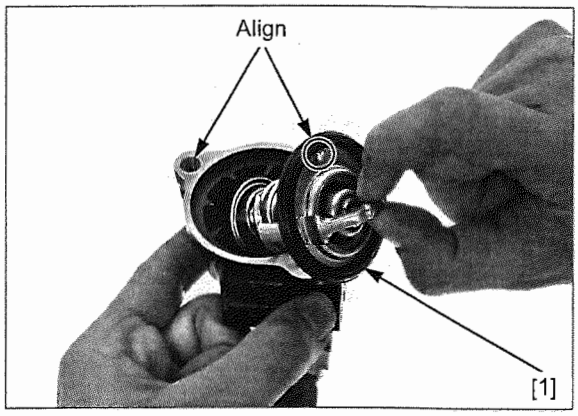



Remove the thermostat [1] from the housing.

Installation is in the reverse order of removal.

- Align the thermostat air bleed hole with the rib side bolt hole.
- Tighten the water hose band screws to the specified range (page 8-8).

Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).

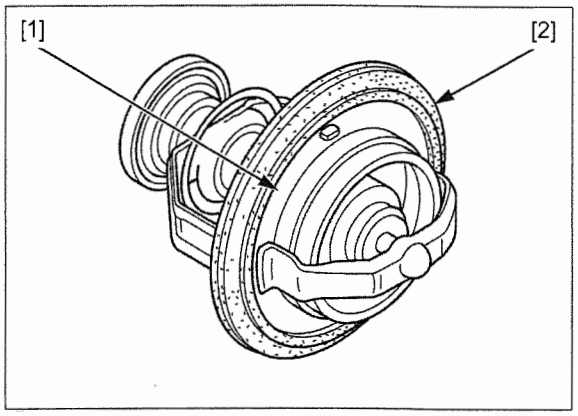



## INSPECTION

Visually inspect the thermostat [1] for damage.

Check for damage of the seal ring [2].

Wear insulated gloves and adequate eye protection. Keep flammable materials away from the electric heating element.



*Do not let the thermostat or thermometer [1] touch the pan, or you will get false reading.*

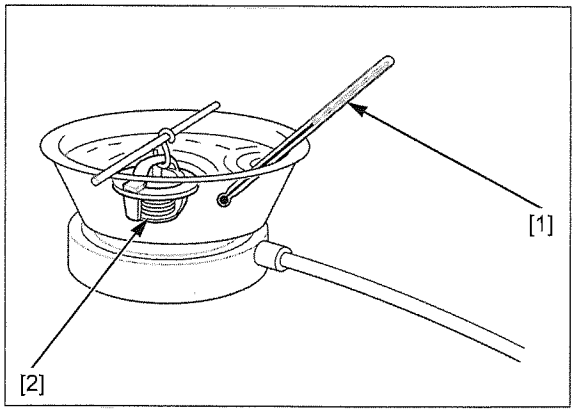
Heat the water with an electric heating element to operating temperature for 5 minutes.

Suspend the thermostat [2] in heated water to check its operation.

Replace the thermostat if the valve stays open at room temperature, or if it responds at temperatures other than those specified.

**THERMOSTAT BEGIN TO OPEN:**
**80 – 84°C (176 – 183°F)**

**VALVE LIFT:**
**8 mm (0.3 in) minimum at 95°C (203°F)**




# RADIATOR

## PULL DOWN THE RADIATOR

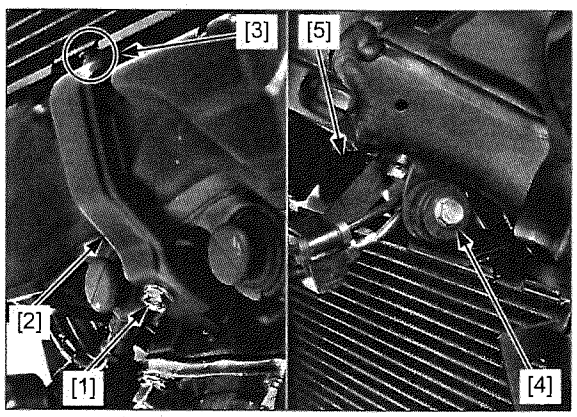
- Perform this procedure, before removing the following:
  - Air cleaner housing (page 7-13)
  - Cylinder head cover (page 10-5)
  - Radiator (page 8-7)
  - Front wheel speed sensor (page 20-21)

Remove the following:

- Front side cowls (page 2-6) (CTX700/A/D)
- Radiator side covers (page 2-10) (CTX700N/NA/ND)

Remove the bolt [1] and radiator lower stay [2] by releasing it from the radiator boss [3].

Remove the bolt [4] and release the radiator mounting rubbers [5] from the boss of the frame.

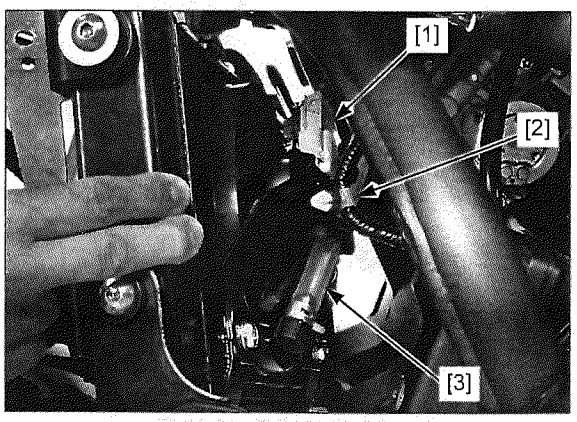



Disconnect the fan motor 3P (Gray) connector [1].

Release the wire band boss [2] and air cleaner housing drain hose [3] from the radiator.

Pull down the radiator.

Installation is in the reverse order of removal.




## REMOVAL/INSTALLATION

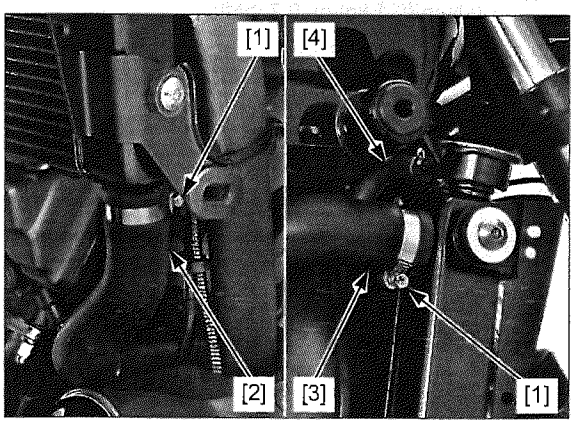
Drain the coolant (page 8-4).

*CTX700/A/D only:* Remove the radiator side inner cover (page 2-7).

Pull down the radiator (page 8-7).

Loosen the water hose band screws [1] and disconnect the radiator lower water hose [2] and radiator upper water hose [3].

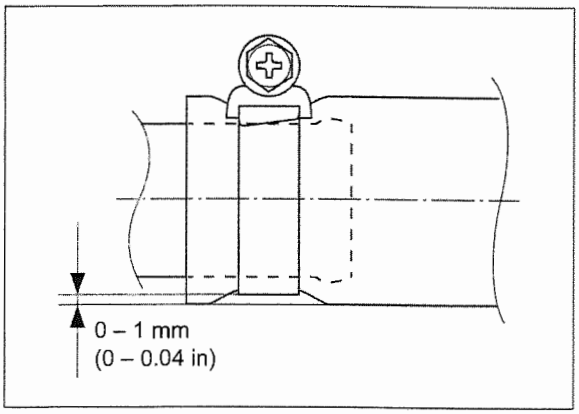
Disconnect the siphon hose [4].



Installation is in the reverse order of removal.

- Tighten the water hose band screws to the specified range as shown.

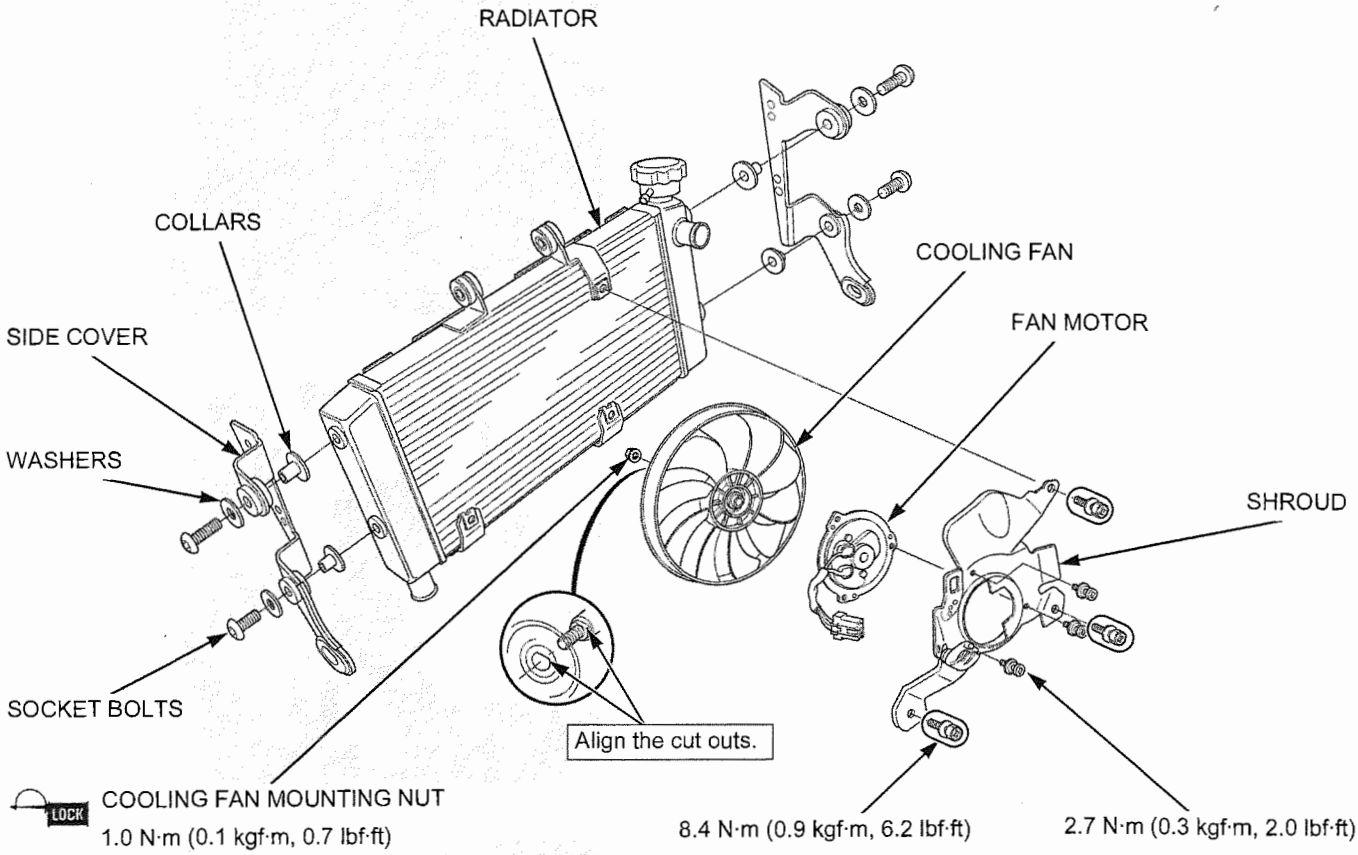
Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).




## DISASSEMBLY/ASSEMBLY

Disassemble and assemble the radiator as following the illustration.

- Align the cooling fan and fan motor shaft flat surfaces.
- Apply locking agent to the cooling fan mounting nut threads.



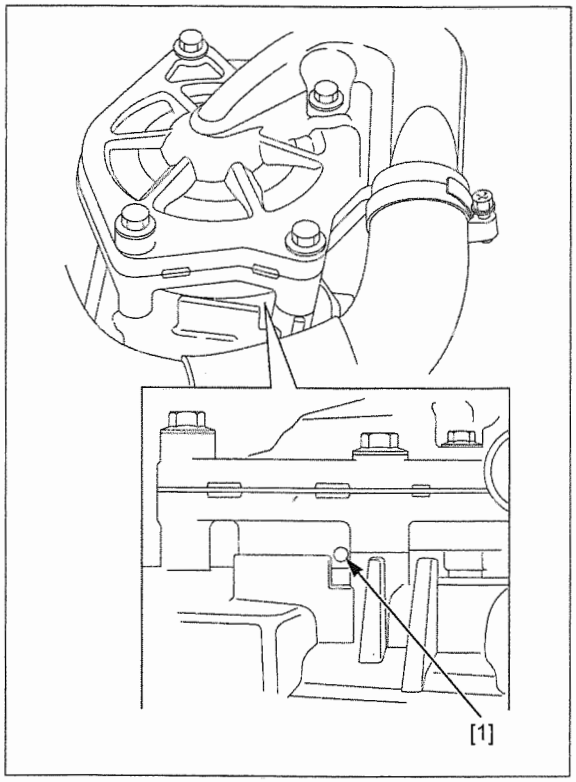
# WATER PUMP

## MECHANICAL SEAL INSPECTION

Check the bleed hole [1] of the water pump for signs of coolant leakage.

- A small amount of coolant weeping from the bleed hole is normal.
- Make sure that there are no continuous coolant leakage from the bleed hole while operating the engine.

Replace the water pump as an assembly if necessary.




## REMOVAL/INSTALLATION

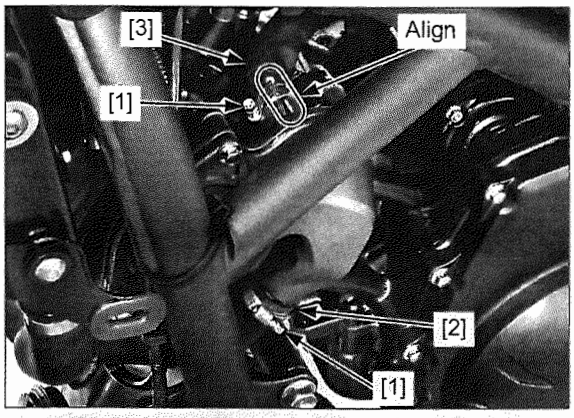
Remove the following:

- Left front side cowl (page 2-6) (CTX700/A/D)
- Left radiator side cover (page 2-10) (CTX700N/NA/ND)
- Left under side cowl (page 2-13)

Drain the coolant (page 8-4).

Loosen the water hose band screws [1] and disconnect the radiator lower water hose [2] and water bypass hose [3].

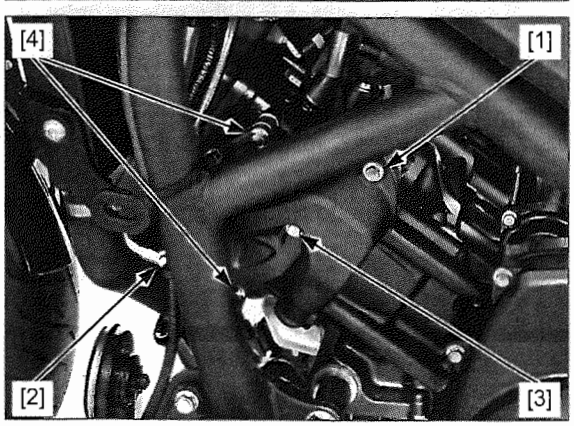
- When connecting the water bypass hose, align the index mark with the water pump tab.




Remove the following:

- 6 x 50 mm bolt [1]
- 6 x 32 mm bolt [2]

Loosen the 6 x 32 mm bolt [3] and 6 x 35 mm bolts [4].



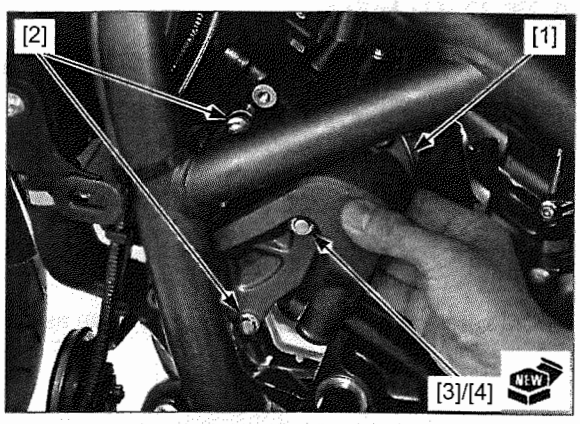
Pull out and slide the water pump assembly [1].

Remove the 6 x 35 mm bolts [2].

Reinstall the water pump assembly.

Remove the 6 x 32 mm bolt [3] and sealing washer [4].

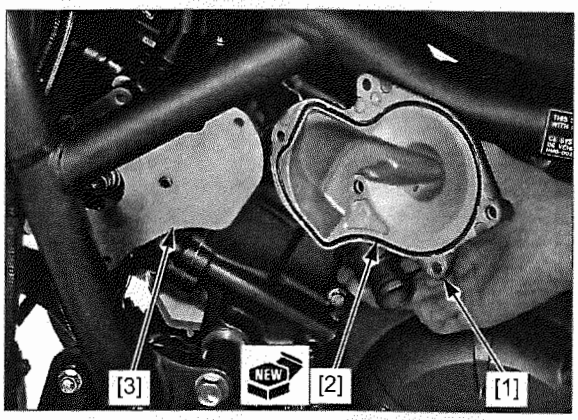
- Replace the sealing washer with new one.




Remove the following:

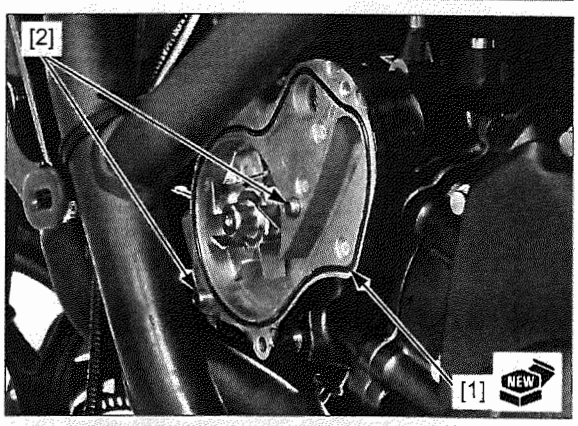
– Water pump cover [1]
– Packing [2]
– Plate [3]

- Replace the packing with new one.




Remove the packing [1] and dowel pins [2] from the water pump body.

- Replace the packing with new one.

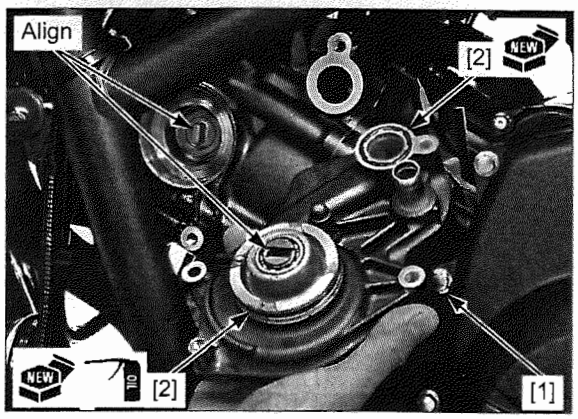



Remove the water pump body [1] and O-rings [2] from the cylinder head.

Installation is in the reverse order of removal.

- Replace the O-rings with new ones.
- Apply engine oil to the large O-ring.
- Align the water pump slit with camshaft tab.
- Tighten the water hose band screws to the specified range (page 8-8).

Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).



# RADIATOR RESERVE TANK

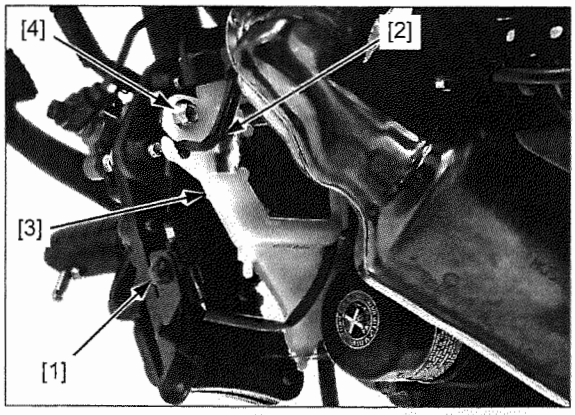
## REMOVAL/INSTALLATION

Remove the left under side cowl (page 2-13).

Release the $O_2$ sensor 1P (Black) connector [1] from the stay.

Release the $O_2$ sensor wire [2] from the radiator reserve tank [3].

Remove the bolt [4].




Release the reserve tank overflow hose [1] from the tank stay [2].

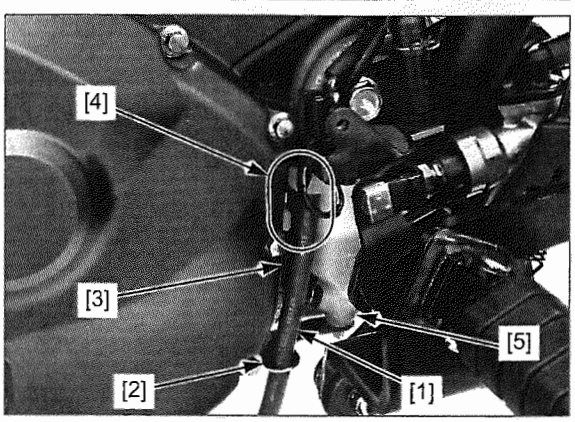
Release the overflow hose and siphon hose [3] from the hose guide [4].

Remove the radiator reserve tank [5] from the tank stay hole.

Disconnect the siphon hose and drain the coolant from the reserve tank.

Installation is in the reverse order of removal.

Fill the radiator reserve tank with the recommended coolant (page 3-12).

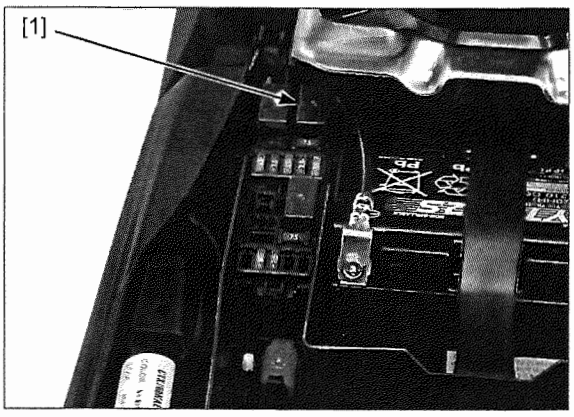



# FAN CONTROL RELAY

## INSPECTION

Remove the seat (page 2-14).

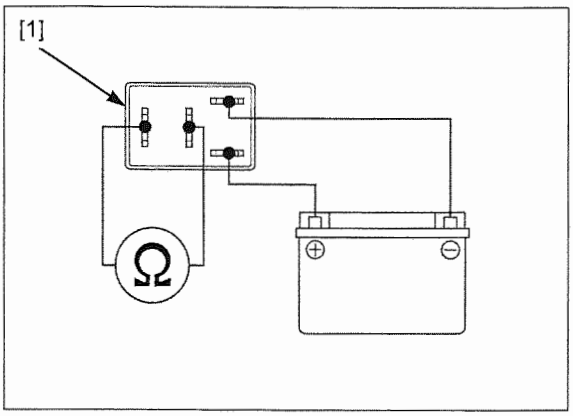
Open the fuse box cover and remove the fan control relay [1].




Connect an ohmmeter to the fan control relay [1] connector terminals.

Connect a 12 V battery to the fan control relay connector terminals as shown.

There should be continuity only when 12 V battery is connected.
If there is no continuity only when the 12 V battery is connected, replace the fan control relay.

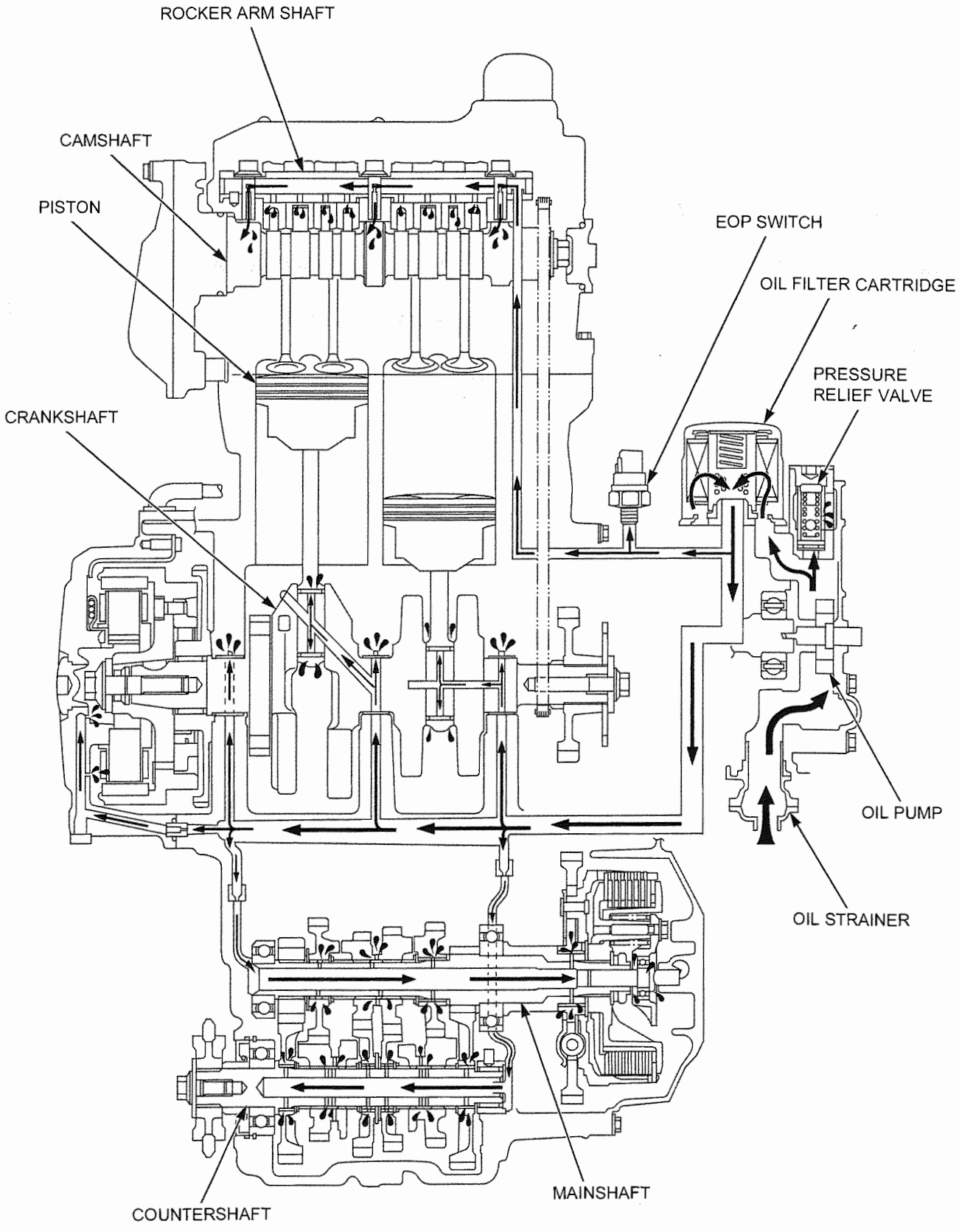


# MEMO

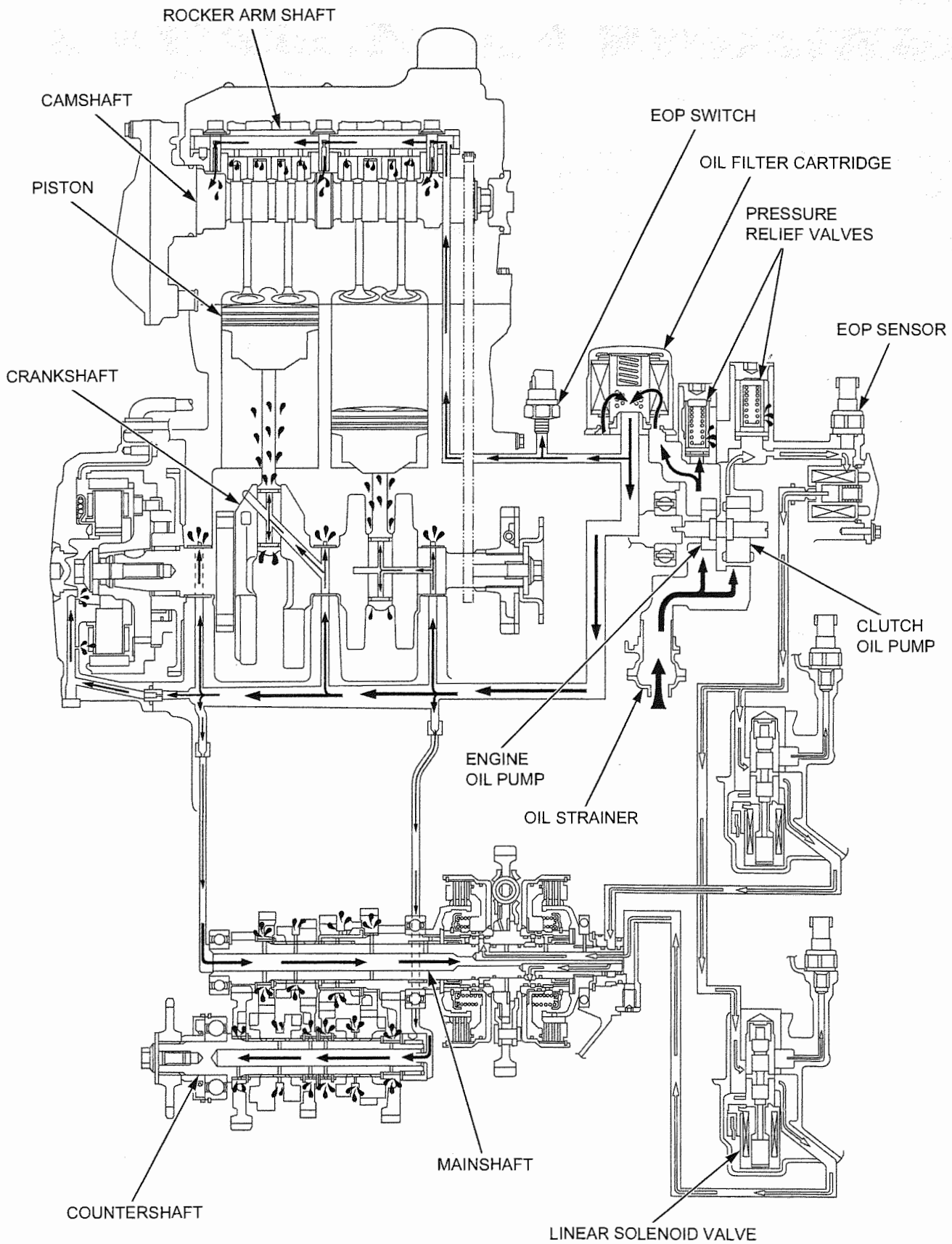
# 9. LUBRICATION SYSTEM

# LUBRICATION SYSTEM DIAGRAM

**CTX700/A/N/NA:**



**CTX700D/ND:**


ROCKER ARM SHAFT
CAMSHAFT
PISTON
CRANKSHAFT
EOP SWITCH
OIL FILTER CARTRIDGE
PRESSURE RELIEF VALVES
EOP SENSOR
CLUTCH OIL PUMP
ENGINE OIL PUMP
OIL STRAINER
MAINSHAFT
COUNTERSHAFT
LINEAR SOLENOID VALVE

# SERVICE INFORMATION

## GENERAL

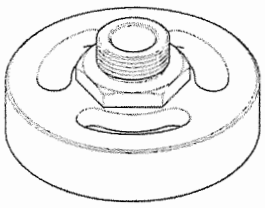
**⚠CAUTION**

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

- This section covers service of the oil pump and oil strainer.
- The oil pump and oil strainer can be serviced with the engine installed in the frame.
- The service procedures in this section must be performed with the engine oil drained.
- When removing and installing the oil pump, use care not to allow dust or dirt to enter the engine.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump as an assembly.
- After the oil pump has been installed, check that there are no oil leaks and that oil pressure is correct.

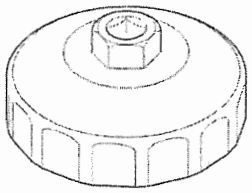
## TOOLS

Oil pressure gauge attachment
070MJ-0010101



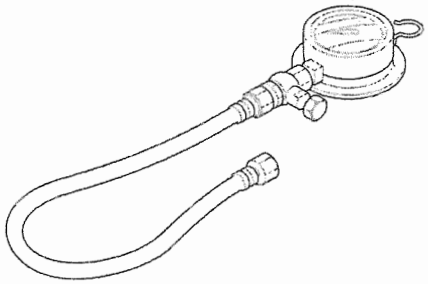
or 07AMJ-001A100 (U.S.A. only)

Oil filter wrench
07HAA-PJ70101



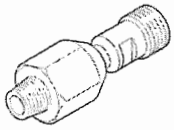
or 07AAA-PLCA100 (U.S.A. only)

Oil pressure gauge set
07506-3000001



or equivalent commercially available

Oil pressure gauge attachment
07406-0030000



or equivalent commercially available

# TROUBLESHOOTING

**Oil level too low**
- Oil consumption
- External oil leak
- Worn piston rings
- Improperly installed piston rings
- Worn cylinders
- Worn valve stem seals
- Worn valve guide

**Low oil pressure**
- Oil level low
- Clogged oil strainer
- Faulty oil pump
- Internal oil leak
- Incorrect oil being used

**No oil pressure**
- Oil level too low
- Oil pressure relief valve stuck open
- Damaged oil pump
- Internal oil leak

**High oil pressure**
- Oil pressure relief valve stuck closed
- Clogged oil filter, oil gallery or metering orifice
- Incorrect oil being used

**Oil contamination**
- Oil or filter not changed often enough
- Worn piston rings

**Oil emulsification**
- Blown cylinder head gasket
- Leaky coolant passage
- Entry of water

# OIL PRESSURE INSPECTION

Remove the engine oil filter cartridge (page 3-10).

Apply engine oil to the O-ring and install the oil pressure attachment [1] onto the oil filter boss.

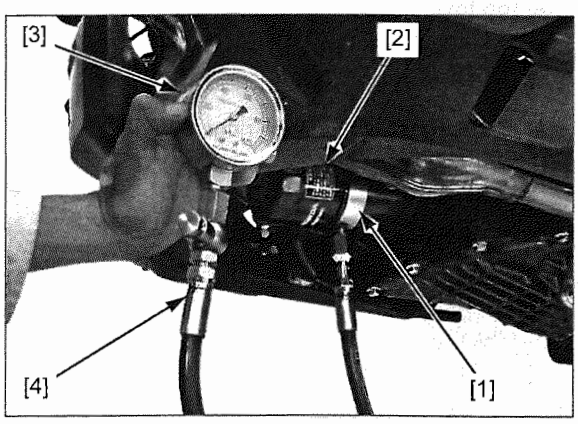
**TOOL:**

| | |
|---|---|
| **Oil pressure gauge attachment** | **070MJ-0010101 or 07AMJ-001A100 (U.S.A. only)** |

Apply engine oil to the O-ring and install the engine oil filter cartridge [2] onto the oil pressure attachment.

**TOOL:**

| | |
|---|---|
| **Oil filter wrench** | **07HAA-PJ70101 or 07AAA-PLCA100 (U.S.A. only)** |




**TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)**

Connect the oil pressure gauge [3] and attachment [4] to the oil pressure gauge attachment.

**TOOLS:**

| | |
|---|---|
| **Oil pressure gauge set** | **07506-3000001 or equivalent commercially available** |
| **Oil pressure gauge attachment** | **07406-0030000 or equivalent commercially available** |

Fill the engine with the recommended engine oil (page 3-10).

Warm the engine to normal operating temperature (approximately 80°C/176°F) and increase the engine speed to 5,000 rpm and read the oil pressure.

**STANDARD:**

**470 kPa (4.8 kgf/cm$^2$, 68 psi) at 5,000 rpm/(80°C/176°F)**

Stop the engine and remove the tools.

Install the engine oil filter cartridge (page 3-10).

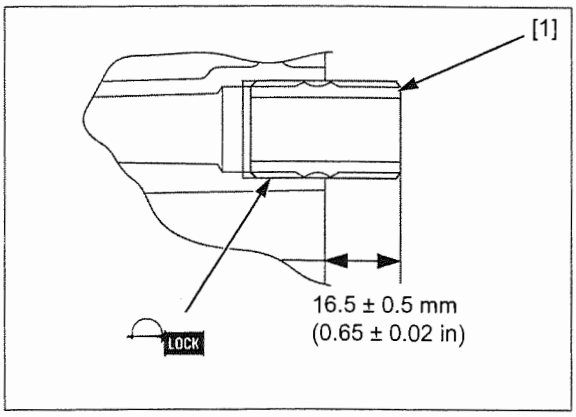
# OIL FILTER BOSS

## INSPECTION

Remove the engine oil filter (page 3-10).

Check that the oil filter boss [1] protrusion from the crankcase is specified length as shown.

**SPECIFIED LENGTH: 16.5 ± 0.5 mm (0.65 ± 0.02 in)**




If the length is out of specification, correct the oil filter boss length as specified.

When removing the oil filter boss, apply locking agent to the threads (page 1-13).

Install and tighten the oil filter boss.

Check that the oil filter boss protrusion from the crankcase is specified length (See above).

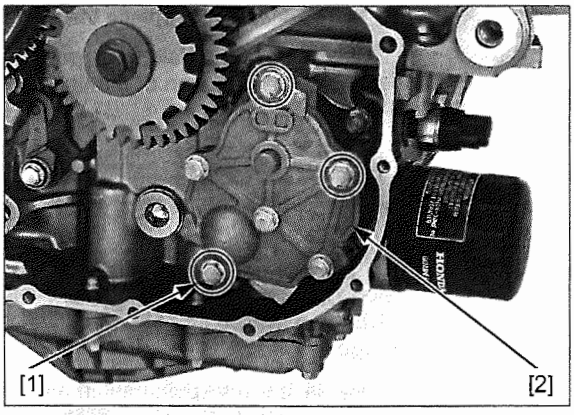
Install the engine oil filter (page 3-10).

# OIL PUMP (CTX700/A/N/NA)

## REMOVAL/INSTALLATION

Remove the right crankcase cover (page 11-4).

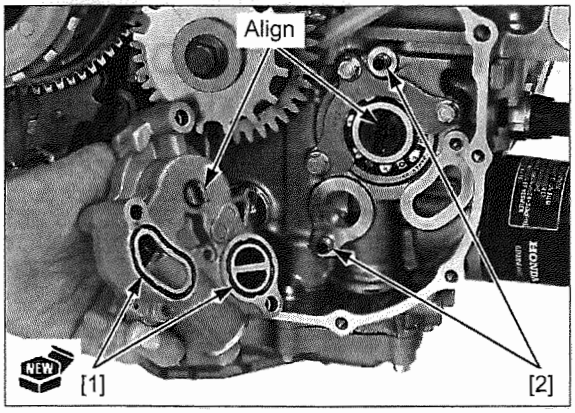
Remove the bolts [1] and oil pump [2].




Remove the O-rings [1] and dowel pins [2].

Installation is in the reverse order of removal.

- Replace the O-rings with a new one.
- Align the oil pump shaft tab with the balancer shaft slit.




## DISASSEMBLY/ASSEMBLY

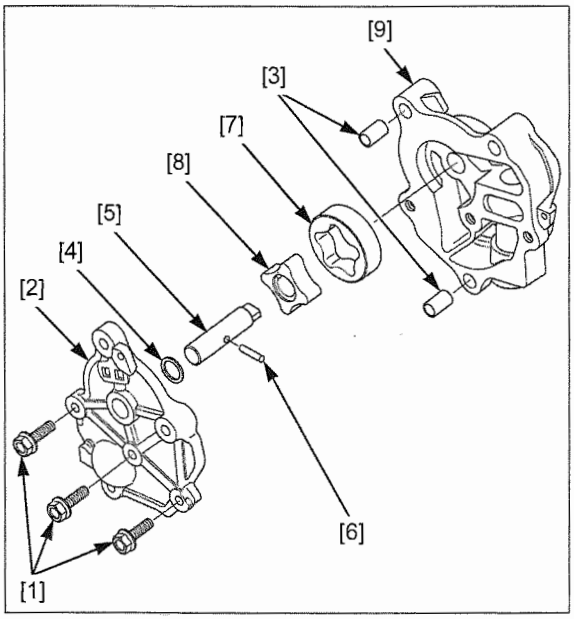
Remove the bolts [1], oil pump cover [2] and dowel pins [3].

Remove the thrust washer [4], oil pump shaft [5], drive pin [6], outer rotor [7] and inner rotor [8] from the oil pump body [9].

Clean all disassembled parts thoroughly.

Assembly is in the reverse order of disassembly.

- Dip all parts in clean engine oil.



## INSPECTION

NOTE:

- If any portion of the oil pump is worn beyond the service limit, replace the oil pump as an assembly.

Inspection the following parts for damage, abnormal wear, deformation or burning:

- Oil pump shaft
- Drive pin
- Inner rotor
- Outer rotor
- Oil pump body

Measure the oil pump clearances according to LUBRICATION SYSTEM SPECIFICATIONS (page 1-7).

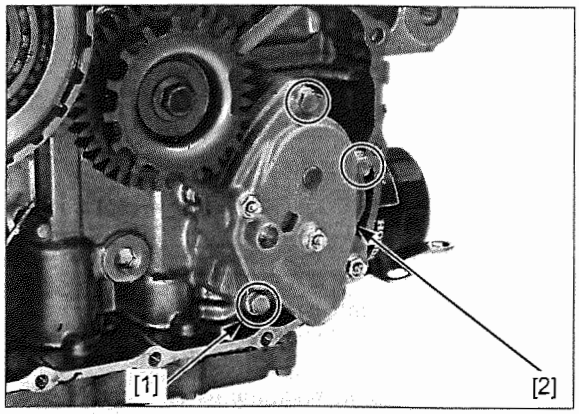
If any of the measurement is out of the service limit, replace the oil pump as an assembly.

# OIL PUMP (CTX700D/ND)

## REMOVAL/INSTALLATION

Remove the right crankcase cover (page 12-57).

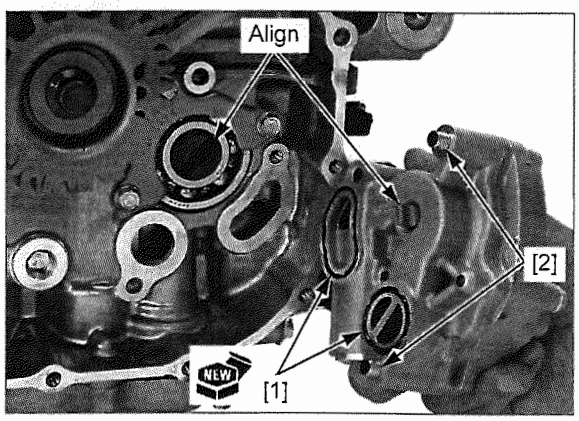
Remove the bolts [1] and oil pump [2].




Remove the O-rings [1] and dowel pins [2].

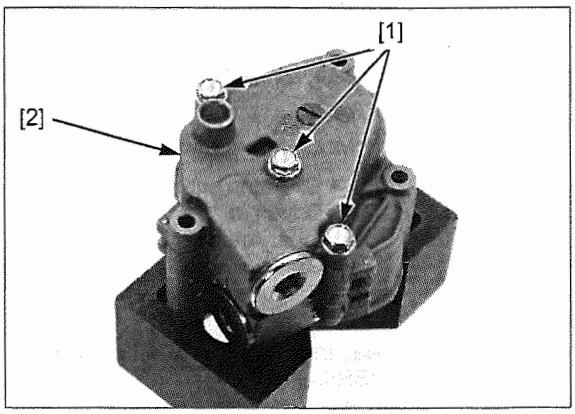
Installation is in the reverse order of removal.

- Replace the O-rings with new ones.
- Align the oil pump shaft end with the balancer shaft groove.

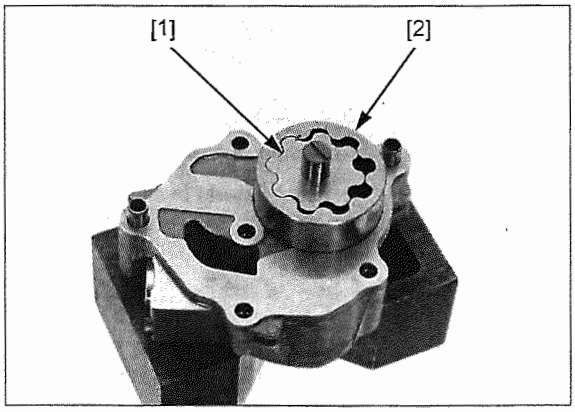


## DISASSEMBLY

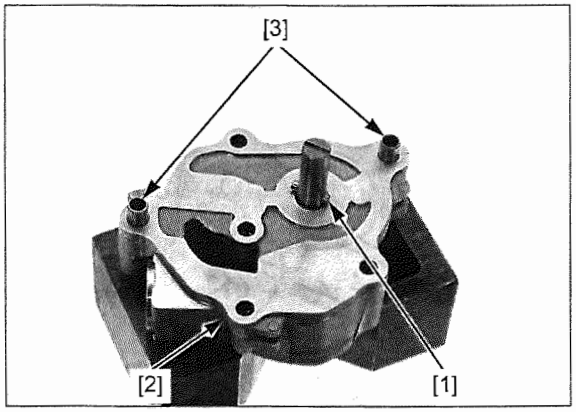
Remove the bolts [1] and oil pump cover [2].



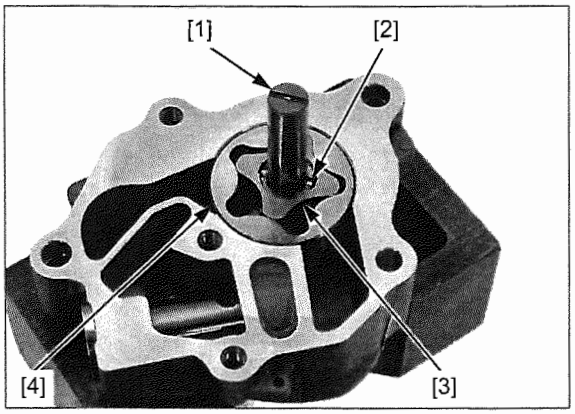

Remove the clutch oil pump inner rotor [1] and outer rotor [2].




Remove the drive pin [1], oil pump plate [2] and dowel pins [3].




Remove the oil pump shaft [1], drive pin [2], engine oil pump inner rotor [3] and outer rotor [4].



## INSPECTION

NOTE:

If any portion of the oil pump is worn beyond the service limit, replace the oil pump as an assembly.

Inspection the following parts for damage, abnormal wear, deformation or burning:

- Oil pump shaft
- Drive pin
- Inner rotor
- Outer rotor
- Oil pump body

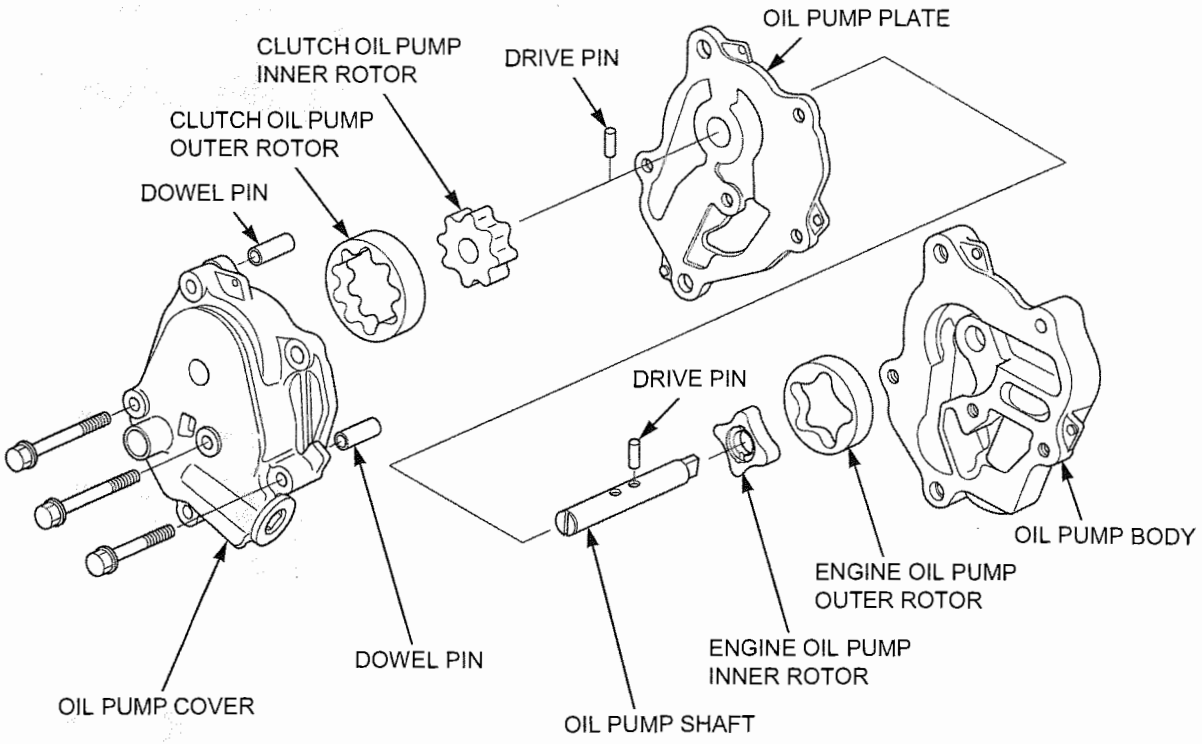
Measure the oil pump clearances according to LUBRICATION SYSTEM SPECIFICATIONS (page 1-7).

If any of the measurement is out of the service limit, replace the oil pump as an assembly.

## ASSEMBLY

Assembly is in the reverse order of disassembly.

- Dip all parts in clean engine oil.



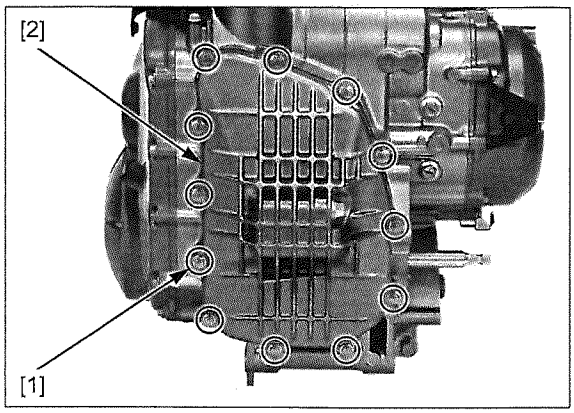
# OIL STRAINER

## REMOVAL

Drain the engine oil (page 3-10).

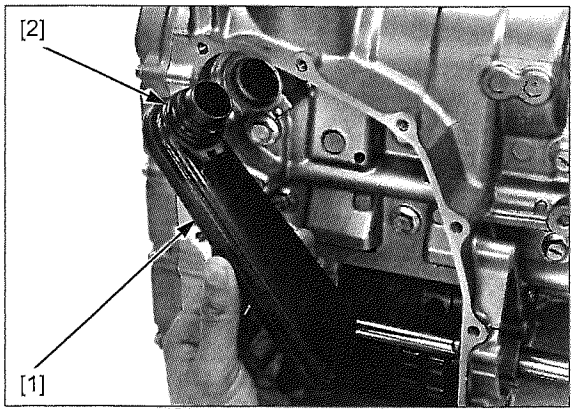
Remove the exhaust pipe/muffler (page 2-19).

Loosen the bolts [1] in a crisscross pattern in 2 or 3 steps, and remove the bolts and oil pan [2].




Remove the oil strainer [1] and seal ring [2].

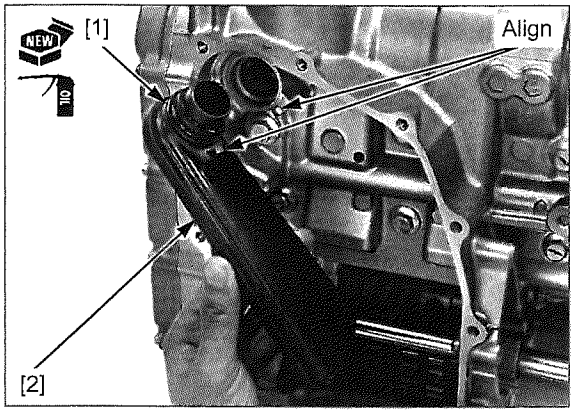
Clean the oil strainer screen and check for damage, replace it if necessary.




## INSTALLATION

Apply engine oil to a new seal ring [1] and install it onto the oil strainer [2].

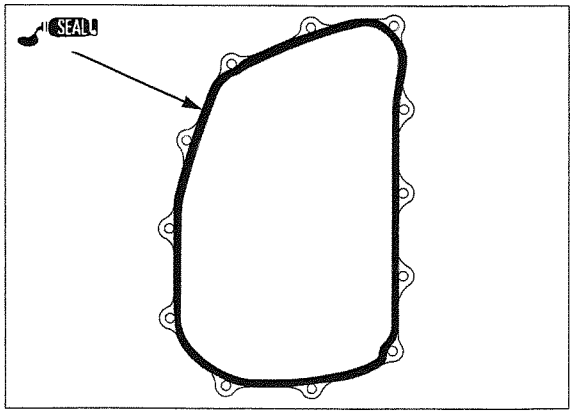
Install the oil strainer into the crankcase while aligning the oil strainer boss with the crankcase groove.




Clean the oil pan mating surface thoroughly.

Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the oil pan mating surface as shown.

- Do not apply more liquid sealant than necessary.

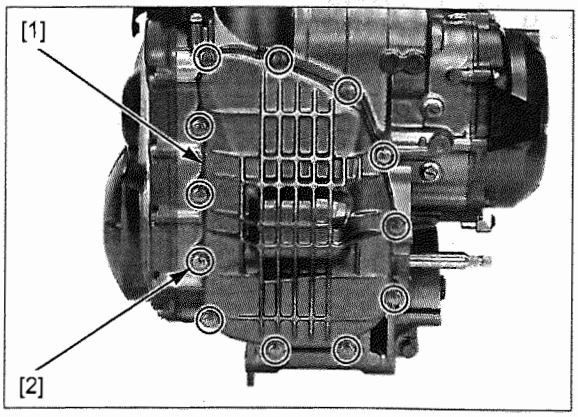


Install the oil pan [1] and bolts [2].

Tighten the bolts in a crisscross pattern in 2 or 3 steps.

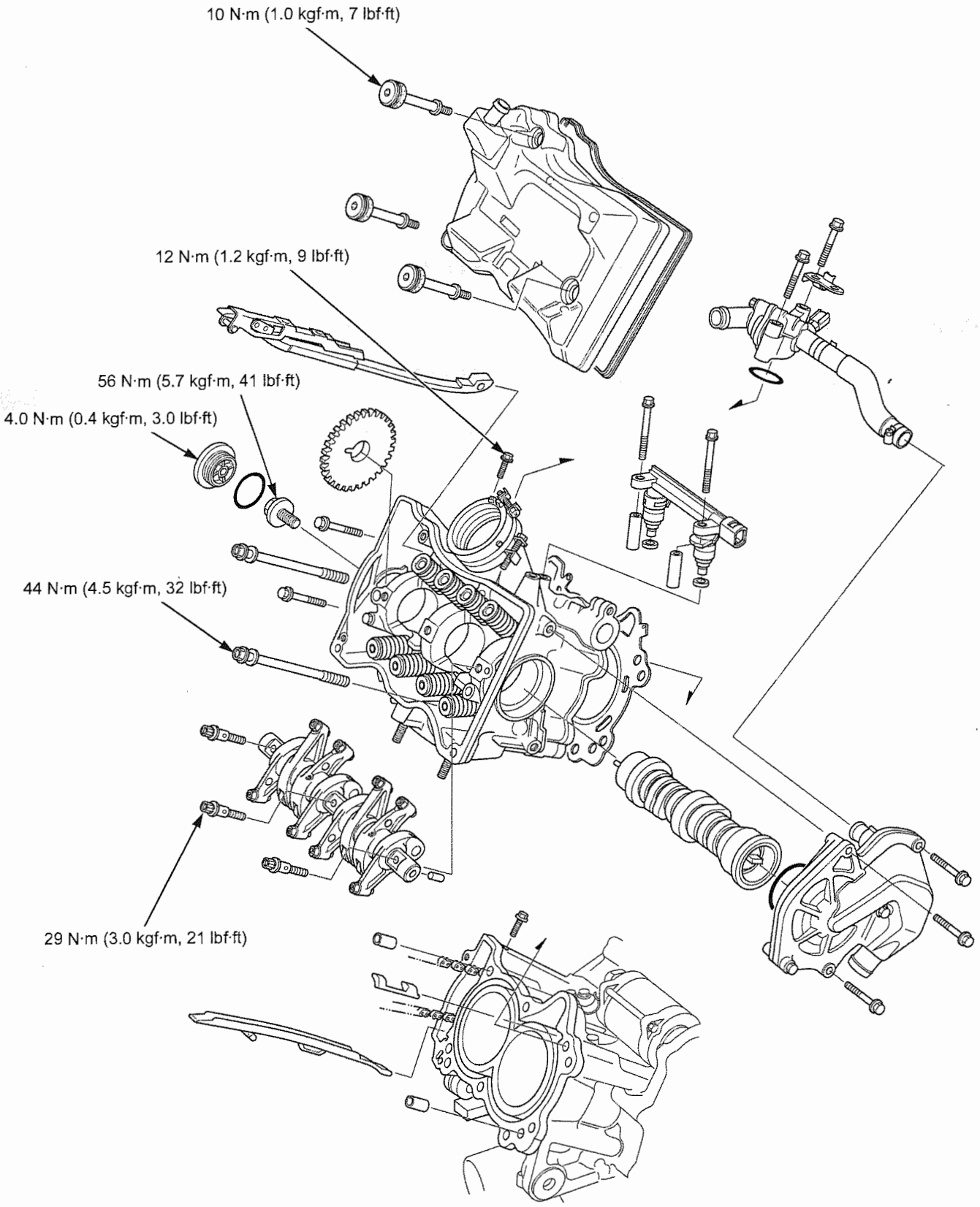
Install the exhaust pipe/muffler (page 2-19).

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-9).



# 10. CYLINDER HEAD/VALVES

# COMPONENT LOCATION

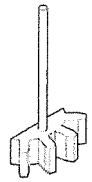
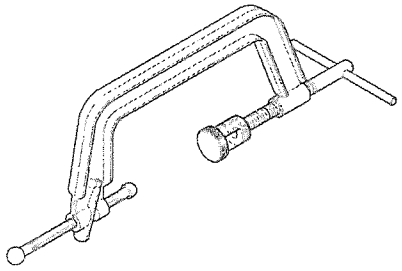
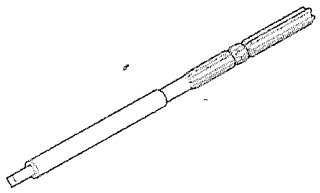
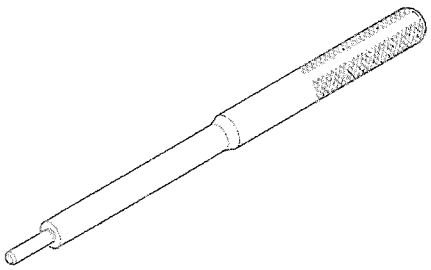
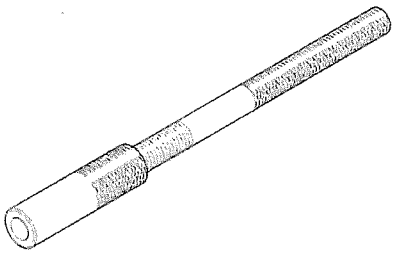
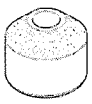
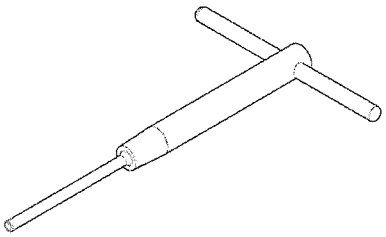


# SERVICE INFORMATION

## GENERAL

- This section covers service of the cylinder head, valves, camshaft and rocker arm.
- The rocker arm services can be done with the engine installed in the frame. The cylinder head, valves and camshaft service requires engine removal.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Camshaft lubricating oil is fed through oil passages in the cylinder head. Clean the oil passages before assembling cylinder head.
- Be careful not to damage the mating surfaces when removing the cylinder head cover and cylinder head.

## TOOLS

| | | |
|---|---|---|
| Gear holder, 2.5<br>07724-0010100<br>  <br>or 07724-001A100 (U.S.A. only) | Valve spring compressor<br>07757-0010000<br>  | Valve guide reamer, 5.010 mm<br>07984-MA60001<br>  <br>or 07984-MA6000D (U.S.A. only) |
| Valve guide driver<br>07942-8920000<br>  | Valve guide driver<br>07743-0020000<br>  <br>(Not available in U.S.A.) | Seat cutter, 27.5 mm (45° IN)<br>07780-0010200<br>  <br>or equivalent commercially available in U.S.A. |
| Seat cutter, 24 mm (45° EX)<br>07780-0010600<br>  <br>or equivalent commercially available in U.S.A. | Cutter holder, 5.0 mm<br>07781-0010400<br>  <br>or equivalent commercially available in U.S.A. | Flat cutter, 28 mm (32° IN)<br>07780-0012100<br>  <br>or equivalent commercially available in U.S.A. |

| | | |
|---|---|---|
| Flat cutter, 25 mm (32° EX)<br>07780-0012000<br><br>or equivalent commercially available in U.S.A. | Interior cutter, 26 mm (60° IN)<br>07780-0014500<br><br>or equivalent commercially available in U.S.A. | Interior cutter, 22 mm (60° EX)<br>07780-0014202<br><br>or equivalent commercially available in U.S.A. |

# TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test or by tracing engine noises to the top-end with a sounding rod stethoscope.
- If the performance is poor at low speeds, check for white smoke in the crankcase breather hose. If the hose is smoky, check for a seized piston ring (page 15-16).

**Compression too low, hard starting or poor performance at low speed**

- Valves:
  - Incorrect valve clearance adjustment
  - Burned or bent valve
  - Incorrect valve timing
  - Broken valve spring
  - Uneven valve seating
- Cylinder head:
  - Leaking or damaged cylinder head gasket
  - Warped or cracked cylinder head
  - Loose spark plug
- Worn cylinder, piston or piston rings (page 15-16)

**Compression too high, overheating or knocking**

- Excessive carbon build-up on piston crown or on combustion chamber

**Excessive smoke**

- Cylinder head:
  - Worn valve stem or valve guide
  - Damaged stem seal
- Worn cylinder, piston or piston rings (page 15-16)

**Excessive noise**

- Cylinder head:
  - Incorrect valve clearance adjustment
  - Sticking valve or broken valve spring
  - Damaged or worn camshaft
  - Loose or worn cam chain
  - Worn or damaged cam chain
  - Worn or damaged cam chain tensioner
  - Worn cam sprocket teeth
  - Worn rocker arm and/or shaft
  - Worn rocker arm and valve stem end
- Worn cylinder, piston or piston rings (page 15-16)

**Rough idle**

- Low cylinder compression

# CYLINDER COMPRESSION TEST

Warm the engine to normal operating temperature. Stop the engine and remove the all spark plug caps and spark plugs (page 3-6).

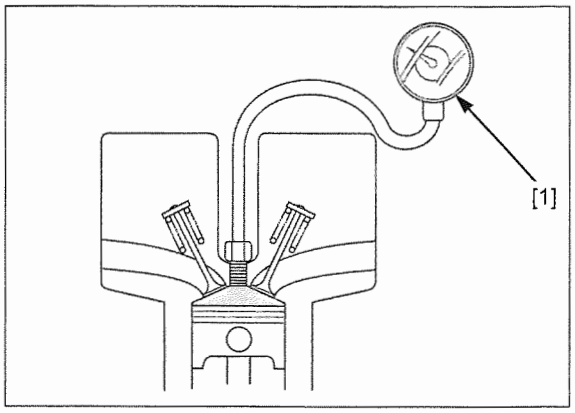
Disconnect the fuel pump 3P (Black) connector (page 7-4).

Install a compression gauge [1] into the spark plug hole.

Open the throttle all the way and crank the engine with the starter motor until the gauge reading stops rising.

The maximum reading is usually reached within 4 – 7 seconds.

**STANDARD:**
**1,775 kPa (18.1 kgf/cm², 257 psi) at 470 rpm**




Low compression can be caused by:

- Blown cylinder head gasket
- Improper valve clearance adjustment
- Valve leakage
- Worn piston ring or cylinder

High compression can be caused by:

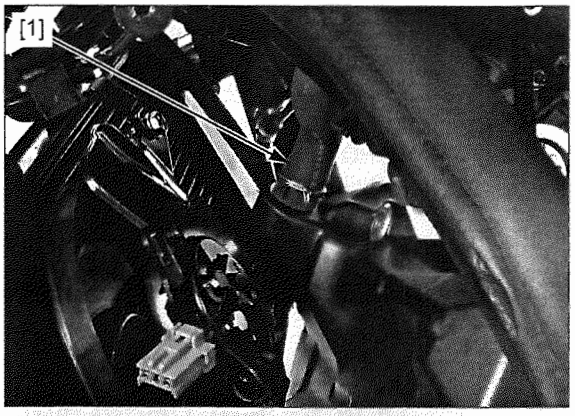
- Carbon deposits in combustion chamber or on piston head

# CYLINDER HEAD COVER

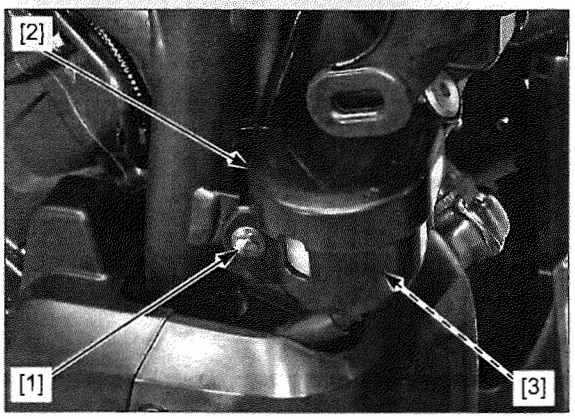
## REMOVAL/INSTALLATION

Pull down the radiator (page 8-7).

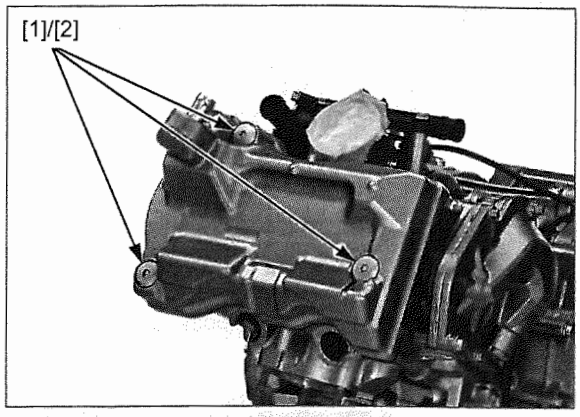
Disconnect the crankcase breather hose [1].




Remove the bolt [1], reservoir cover [2] and rear master cylinder reservoir [3] from the frame.



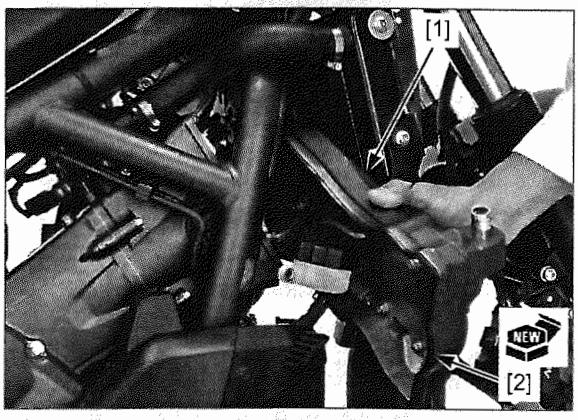
Remove the cylinder head cover socket bolts [1] and mounting rubbers [2].




Remove the cylinder head cover [1] from the cylinder head.

Remove the cylinder head cover packing [2] from the cylinder head cover.

- Replace the cylinder head cover packing with a new one.



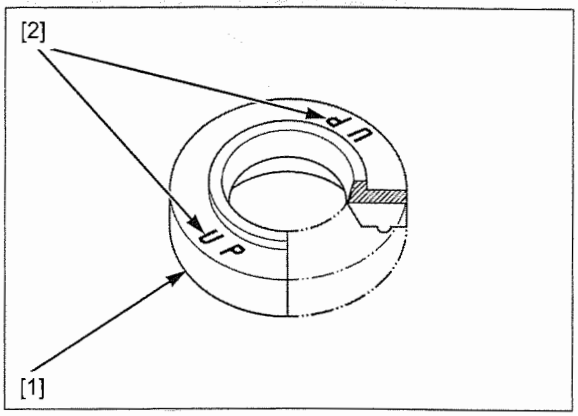

Installation is in the reverse order of removal.

- Check the mounting rubbers [1] are in good condition, replace them if necessary.
- Install the mounting rubbers with their "UP" mark [2] facing up.

**TORQUE:**

**Cylinder head cover socket bolts:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**

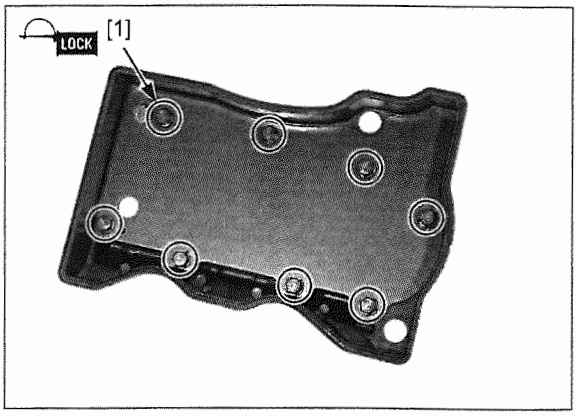
**Rear master cylinder reservoir mounting bolt:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**




## DISASSEMBLY/ASSEMBLY

Remove the breather plate mounting bolts [1].

- When assembly, apply locking agent to the breather plate mounting bolt threads (page 1-13).

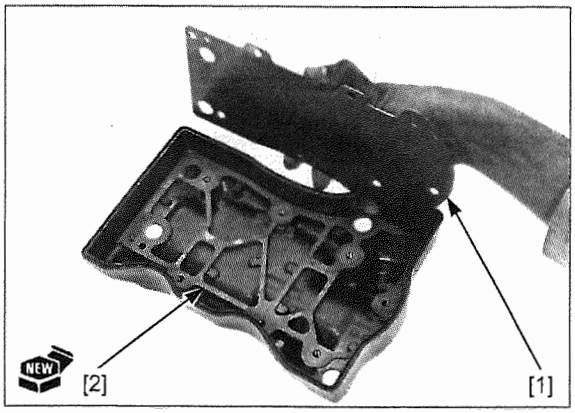


Remove the breather plate [1] and gasket [2].

Assembly is in the reverse order of disassembly.

- Replace the breather plate gasket with a new one.

**TORQUE:**
**Breather plate mounting bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

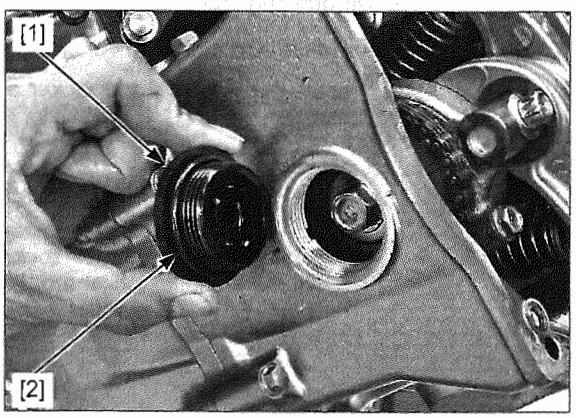



# ROCKER ARM

## REMOVAL

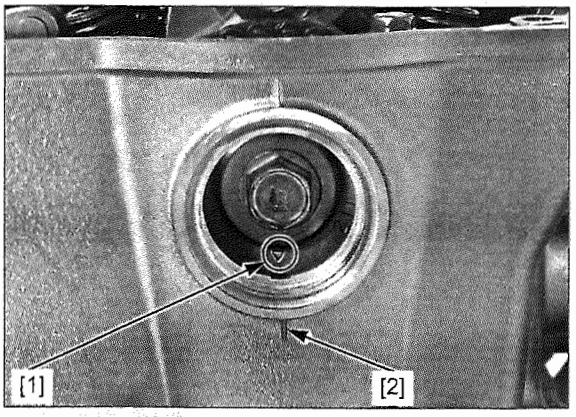
Remove the cylinder head cover (page 10-5).

Remove the camshaft maintenance cap [1] and O-ring [2].

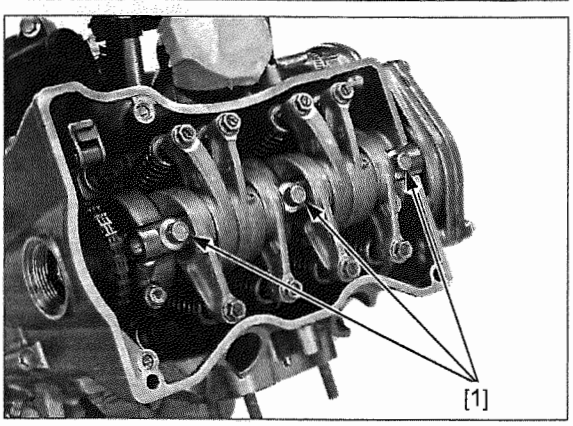



Remove the crankshaft hole cap.

Turn the crankshaft counterclockwise and align the "△" mark [1] on the cam sprocket with the lower cylinder head index line [2].



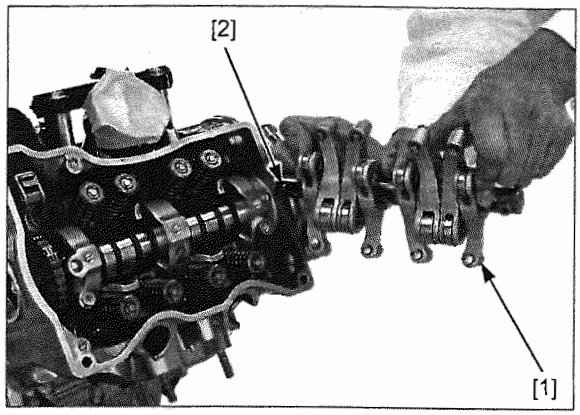

Remove the rocker arm shaft bolts [1].



Remove the rocker arm assembly [1].

- Be careful not to let the dowel pin [2] fall into the crankcase.

Remove the dowel pin from the rocker arm shaft.




## DISASSEMBLY/ASSEMBLY

Remove the washers [1] and rocker arms from the rocker arm shaft [2].

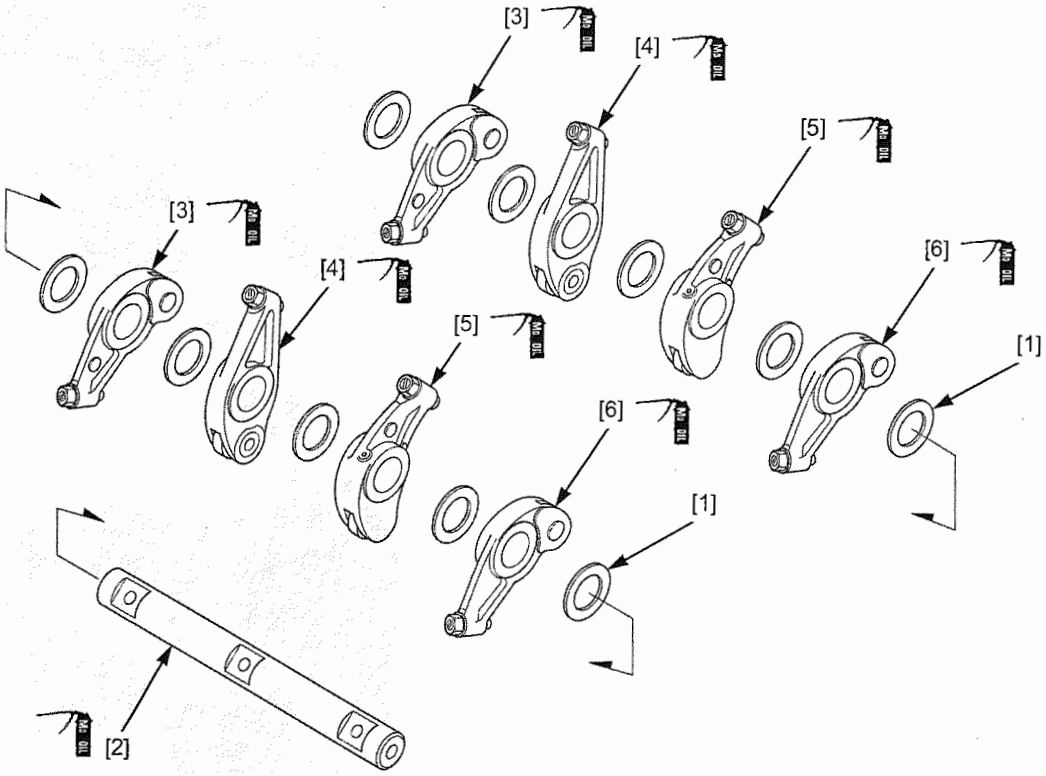
Apply molybdenum oil solution to the rocker arm sliding surface and rocker arm shaft outer surface.

Install the washers and rocker arms to the rocker arm shaft.

NOTE:

Rocker arm identification tips

- "PWC-A" mark: exhaust rocker arm A [3]
- White paint mark: Intake rocker arm S [4]
- No mark: Intake rocker arm P [5]
- "PWC-B" mark: exhaust rocker arm B [6]



## INSPECTION

inspect the following parts for damage, abnormal wear, deformation, burning or clogs in oil passages.

- Rocker arms
- Rocker arm shafts

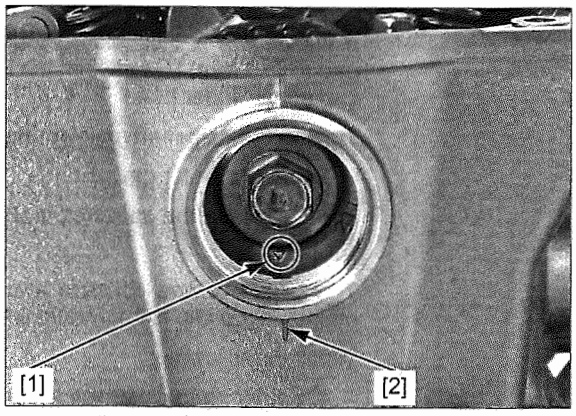
Measure each part and clearance according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-8).

Replace any part if it is out of service limit.

## INSTALLATION

Make sure the "△" mark [1] on the cam sprocket facing the lower cylinder head index line [2].

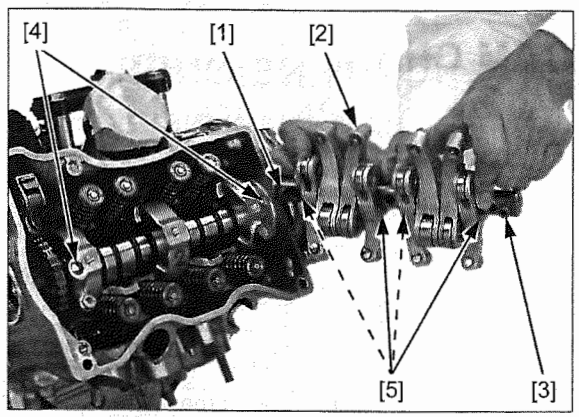
If it does not align, turn the crankshaft counterclockwise and align it.




Install the dowel pin [1] to the rocker arm shaft.

Install the rocker arm assembly [2].

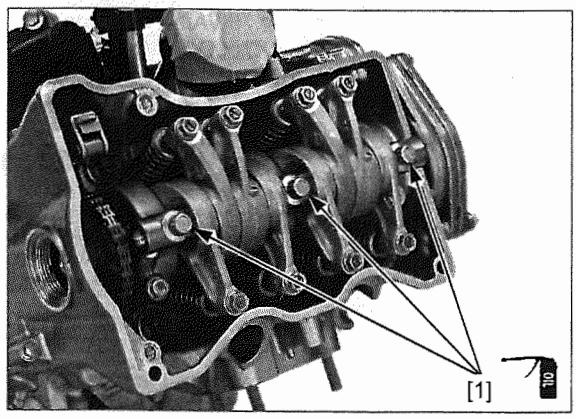
- Align boss [3] and dowel pin with the cylinder head holes [4].
- Make sure the washers [5] are installed in correct position.
- Be careful not to let the dowel pin fall into the crankcase.




Apply engine oil to the rocker arm shaft bolts threads and seating surface.

Install and tighten rocker arm shaft bolts [1] to the specified torque.

**TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)**

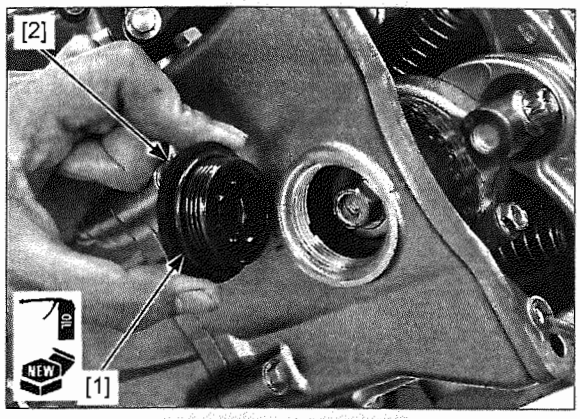


Apply engine oil to a new O-ring [1] and install it to the camshaft maintenance cap [2].

Temporarily install the camshaft maintenance cap to the cylinder head.

If the engine is removed from the frame, tighten the camshaft maintenance cap to the specified torque.

**TORQUE: 4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)**




If the engine is installed on the frame, insert a feeler gauge (0.1 mm) [1] between the camshaft maintenance cap and cylinder head.

Tighten the camshaft maintenance cap securely.

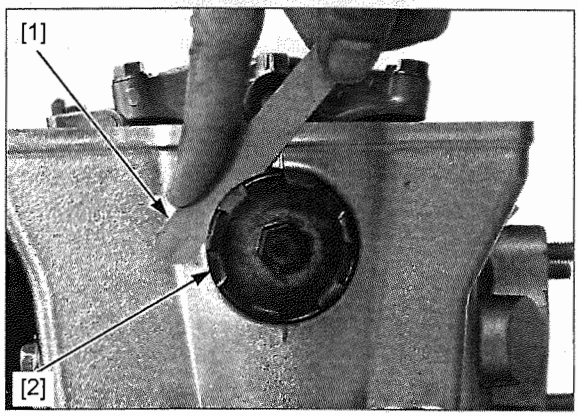
Remove the feeler gauge.

Further tighten the camshaft maintenance cap at 30°.

NOTE:
The length of one concave area [2] on the camshaft maintenance cap is equivalent with 30°.

Install the following:

- Cylinder head cover (page 10-5)
- Crankshaft hole cap (page 3-9)




# CAM CHAIN TENSIONER

## CAM CHAIN INSPECTION

Remove the cylinder head cover (page 10-5).

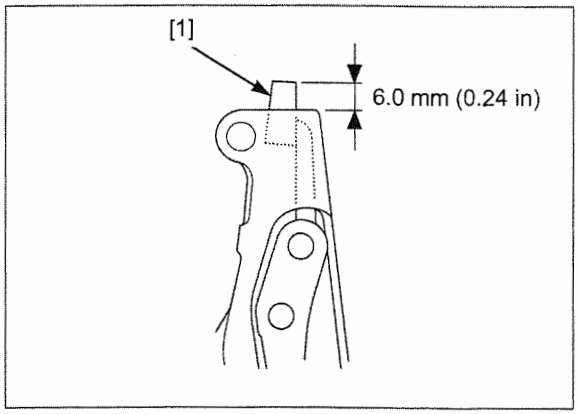
Measure the cam chain tensioner wedge B [1] length.

**SERVICE LIMIT: 6.0 mm (0.24 in)**

Replace the cam chain with a new one if the projection exceeds the service limit.

For the cam chain replacement, remove the following:

- Cam sprocket (page 10-12)
- Primary drive gear
  - CTX700/A/N/NA (page 11-11)
  - CTX700D/ND (page 12-69)

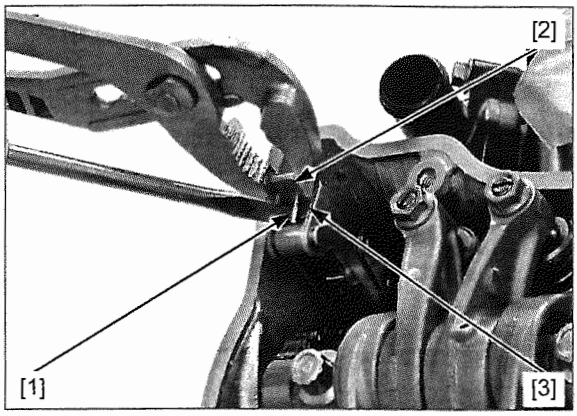



## RELEASING CAM CHAIN TENSION

Remove the cylinder head cover (page 10-5).

Install an O.D. 2 mm pin [1] into the cam chain tensioner wedge A hole while pulling the wedge A [2] straight up and pushing down the wedge B [3].

- Be careful not to let the 2 mm pin fall into the crankcase.



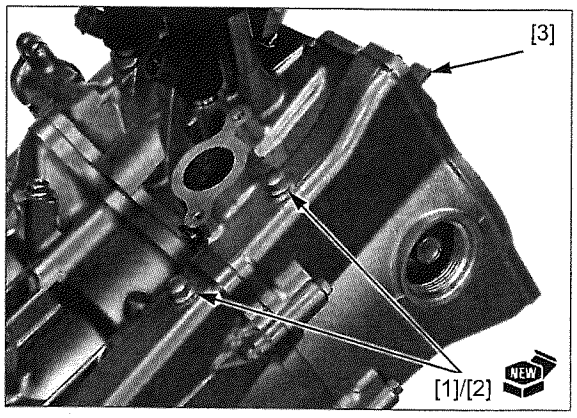
## REMOVAL/INSTALLATION

Remove the thermostat housing (page 8-5).

Release the cam chain tension (page 10-10).

Remove the cam chain tensioner bolts [1] and sealing washers [2].

Remove the cam chain tensioner [3].



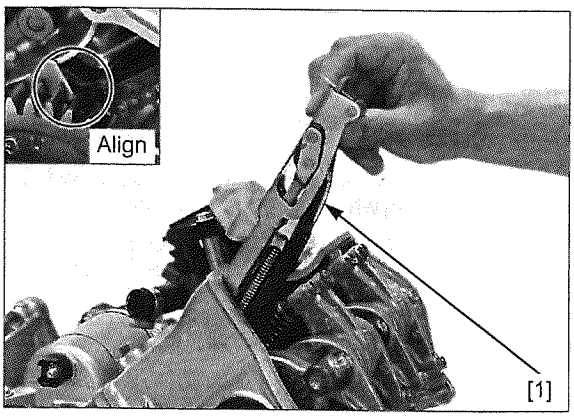

Install the cam chain tensioner [1] while aligning tensioner end with the groove in the crankcase.

Install new sealing washers, cam chain tensioner bolts and tighten the cam chain tensioner bolts to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Apply the cam chain tension (page 10-11).

Install the thermostat housing (page 8-5).




## INSPECTION

Remove the cam chain tensioner (page 10-11).

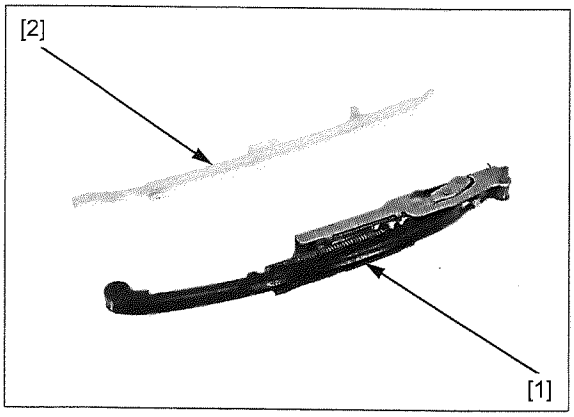
Check the cam chain tensioner [1] for wear or damage.

Replace the cam chain tensioner if necessary.

Remove the cam chain guide (page 10-14).

Check the cam chain guide [2] for wear or damage.

Replace the cam chain guide if necessary.

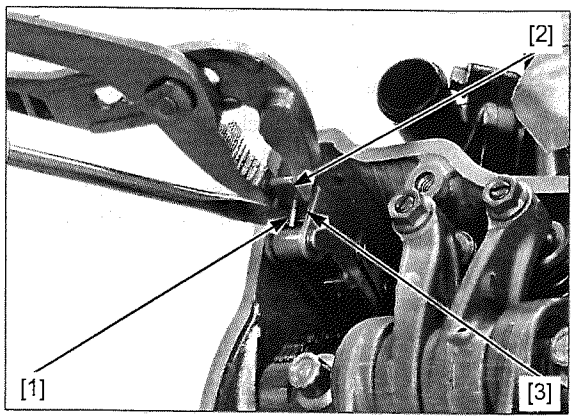



## APPLYING CAM CHAIN TENSION

Remove the O.D. 2 mm pin [1] from the cam chain tensioner wedge A hole while pulling the wedge A [2] straight up and pushing down the wedge B [3].

- Be careful not to let the 2 mm pin fall into the crankcase.

Install the cylinder head cover (page 10-5).



# CAMSHAFT

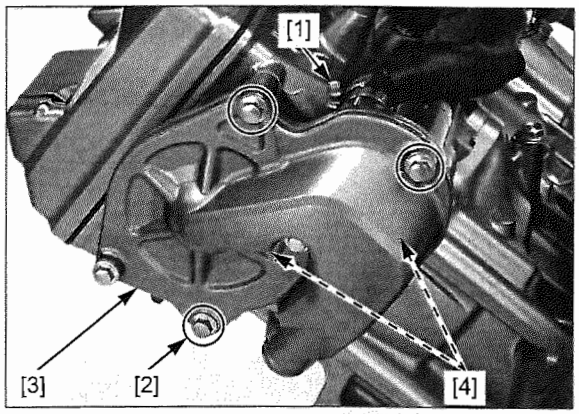
## REMOVAL

Remove the engine.

- CTX700/A/N/NA (page 16-5)
- CTX700D/ND (page 16-14)

Loosen the water hose band screw [1] and disconnect the water bypass hose.

Remove the bolts [2], water pump [3] and O-rings [4].



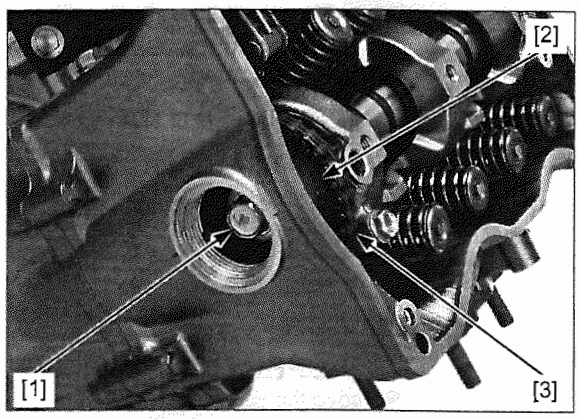

Remove the rocker arm (page 10-7).

Release the cam chain tension (page 10-10).

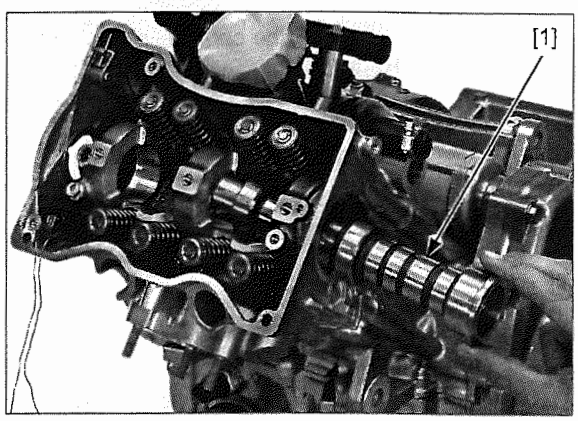
Loosen the cam sprocket bolt [1] by holding the flywheel mounting bolt and remove it.

Remove the cam sprocket bolt and cam sprocket [2] by removing the cam chain [3] from the cam sprocket.

- Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.




Remove the camshaft [1].




## INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning or clogs in oil passages.

- Cam sprocket
- Camshaft

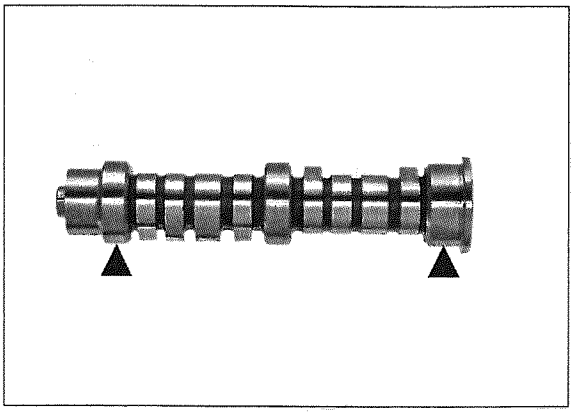
Measure each part according to CYLINDER HEAD/ VALVES SPECIFICATIONS (page 1-8).

Replace any part if it is out of service limit.

### CAMSHAFT RUNOUT

Support both sides of the camshaft (at journals) with V-blocks and check the camshaft runout with a dial gauge.

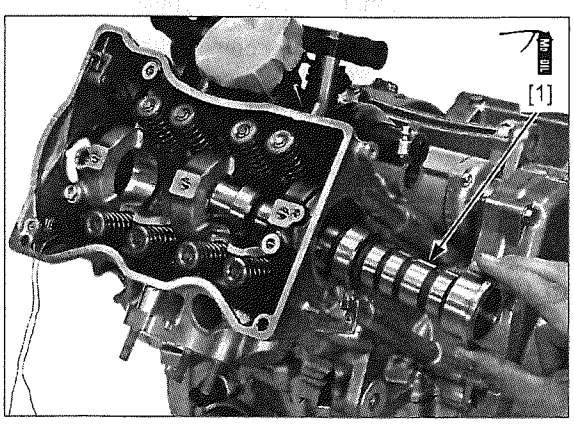
**SERVICE LIMIT: 0.04 mm (0.002 in)**



## INSTALLATION

Apply molybdenum oil solution to the camshaft lobes, journals and thrust surfaces.

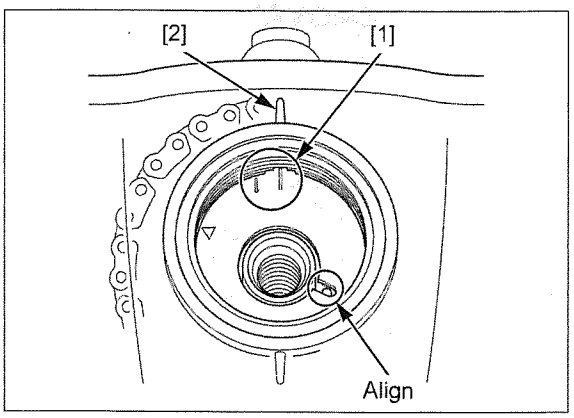
Install the camshaft [1].




Align the "1T" mark on the flywheel with the index notch on the alternator cover (page 3-7).

Align the "1" mark [1] on the cam sprocket with the upper index line [2] on the cylinder head and install the cam chain onto the cam sprocket.

Install the cam sprocket onto the camshaft by aligning the groove with the pin.




Apply engine oil to the cam sprocket bolt threads and seating surface.

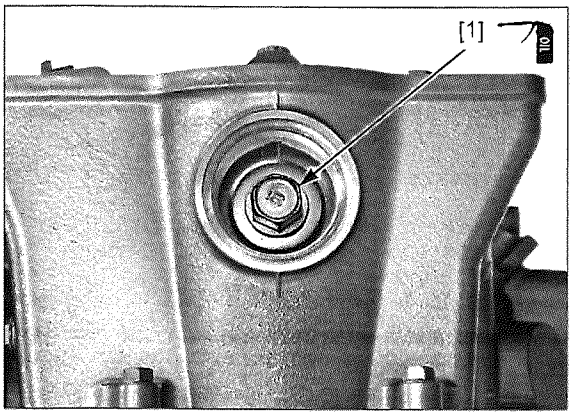
Install the cam sprocket bolt [1].

Hold the flywheel mounting bolt and tighten the cam sprocket bolt to the specified torque.

**TORQUE: 56 N·m (5.7 kgf·m, 41 lbf·ft)**

Apply the cam chain tension (page 10-11).

Install the rocker arm (page 10-9).

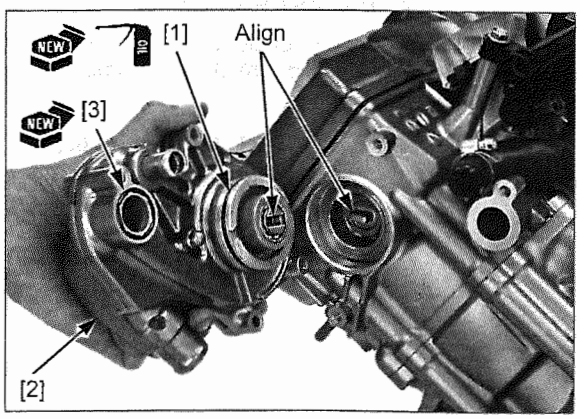


Apply engine oil to a new large O-ring [1] and install it to the water pump [2].

Install a new O-ring [3] to the water pump.

Install the water pump to the cylinder head.

- Align the water pump shaft groove with camshaft tab.




Install and tighten the bolts [1].

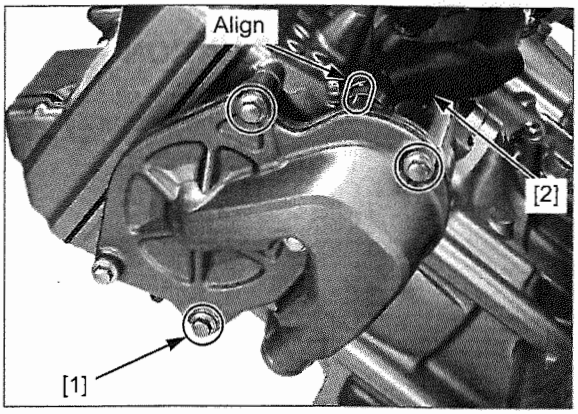
Connect the water bypass hose [2].

- Align the water bypass hose index mark with the water pump tab.

Tighten the water hose band screws to the specified range (page 8-8).

Install the engine.

– CTX700/A/N/NA (page 16-9)
– CTX700D/ND (page 16-18)



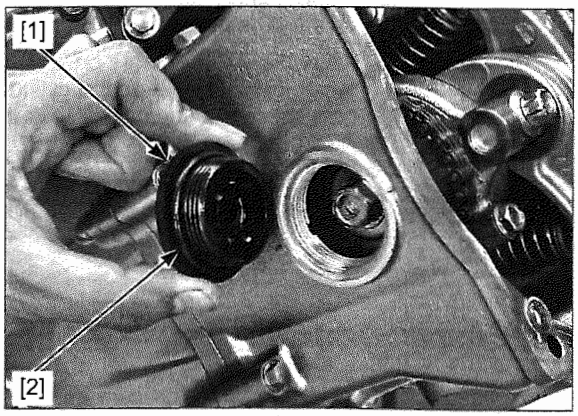

# CYLINDER HEAD

## REMOVAL

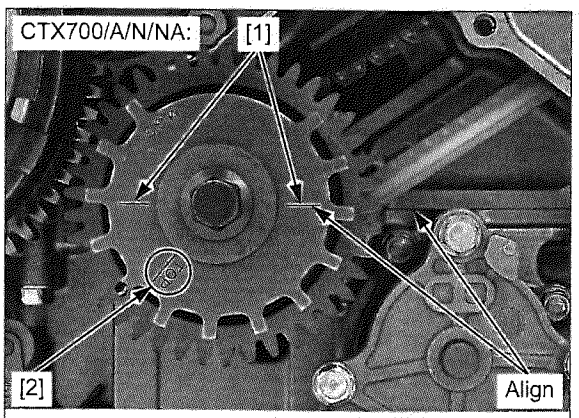
Remove the following:

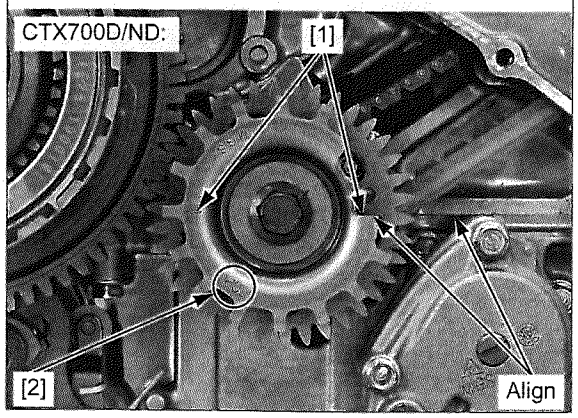
– Engine
  – CTX700/A/N/NA (page 16-5)
  – CTX700D/ND (page 16-14)
– Cylinder head cover (page 10-5)
– Right crankcase cover
  – CTX700/A/N/NA (page 11-4)
  – CTX700D/ND (page 12-57)

Remove the camshaft maintenance cap [1] and O-ring [2].



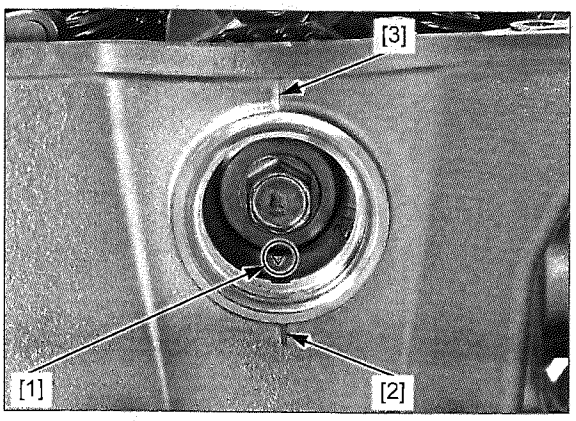
Turn the crankshaft clockwise and align the index lines [1] with the crankcase matting surface, while the "TOP" mark [2] is facing down.




Make sure the "△" mark [1] on the cam sprocket facing the lower cylinder head index line [2].

If the "△" mark on the cam sprocket is facing the upper cylinder head index line [3], turn the crankshaft clockwise one full turn (360°) and realign the "△" mark with the lower cylinder head index line.




Remove the cam chain tensioner (page 10-11).

Insert the gear holder [1] between the primary drive gear and driven gear.

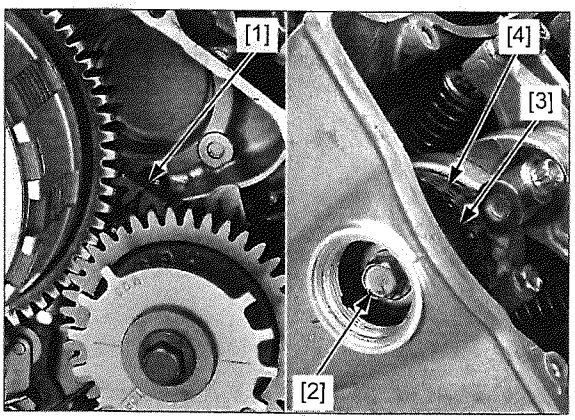
**TOOL:**

| | |
|---|---|
| **Gear holder, 2.5** | **07724-0010100 or 07724-001A100 (U.S.A. only)** |

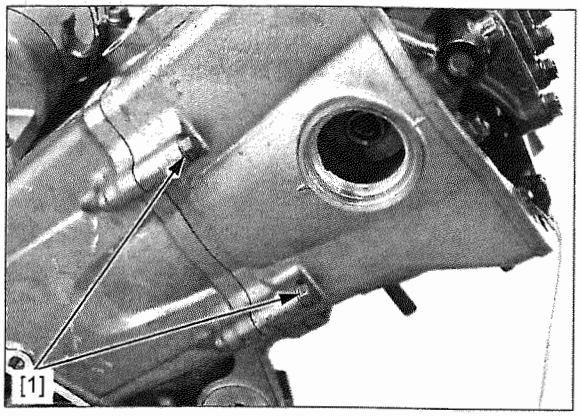
Remove the cam sprocket bolt [2].

Remove the cam sprocket [3] by removing the cam chain [4] from the cam sprocket.

- Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.



Remove the 6 mm bolts [1].

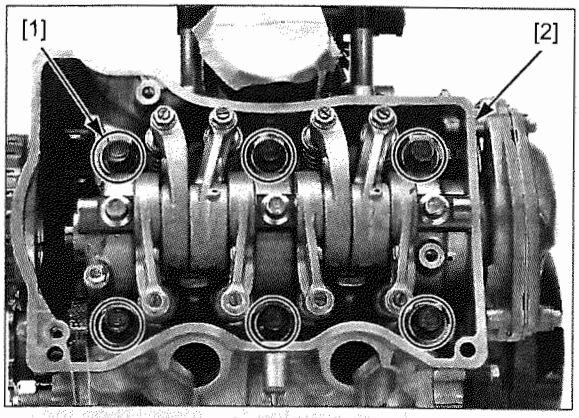



Remove the cylinder head special bolts [1].

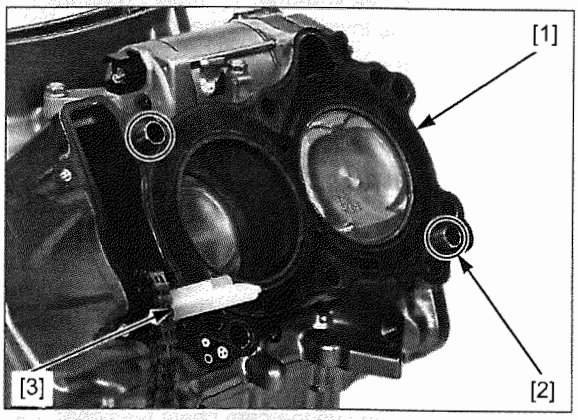
- Loosen the cylinder head special bolts in a crisscross pattern in 2 or 3 steps.

Remove the cylinder head [2].

- Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.
- Do not strike the cylinder too hard and do not damage the mating surface with a screwdriver.

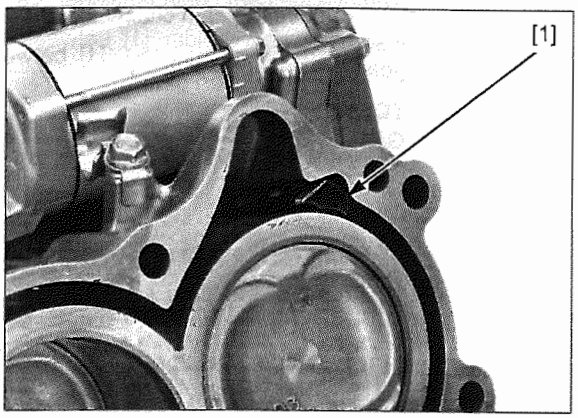



Remove the gasket [1], dowel pins [2] and cam chain guide [3].




Remove the partition plate [1].

Check the partition plate for deterioration or damage.

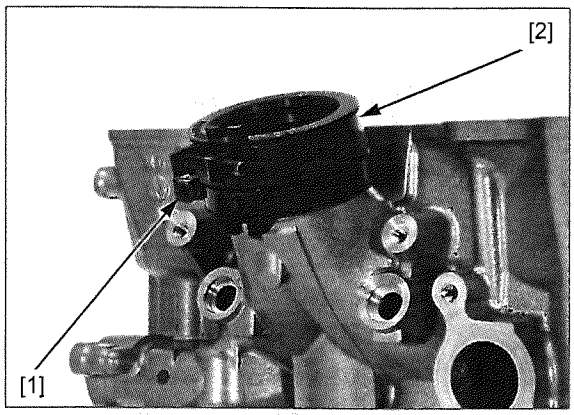


## DISASSEMBLY

Remove the following:

- Cylinder head (page 10-14)
- Spark plug (page 3-6)
- Injector (page 7-18)
- Camshaft (page 10-12)

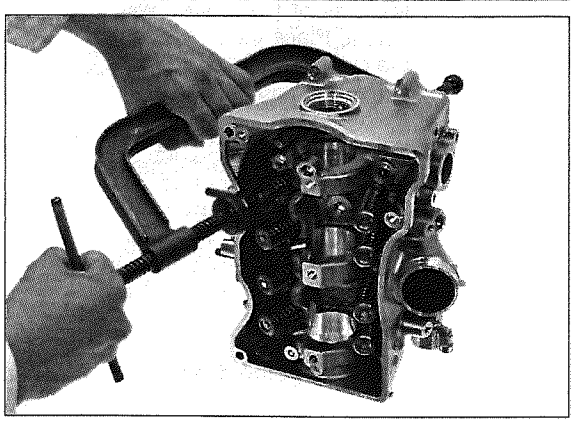
Loosen the insulator band screws [1] and remove the insulator [2].




Remove the valve spring cotters using the special tool as shown.

**TOOL:**
**Valve spring compressor 07757-0010000**

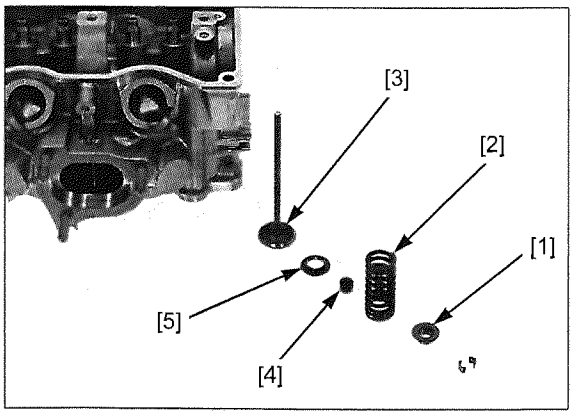
- To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.



Remove the following:

- Spring retainer [1]
- Valve spring [2]
- Valve [3]
- Stem seal [4]
- Valve spring seat [5]

- Mark all parts during disassembly so they can be placed back in their original locations.




## INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning or clogs in oil passages.

- Cylinder head
- Inner/outer valve springs
- Valve guides

Measure each part and clearance according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-8).

Replace any part if it is out of service limit.

- Ream the valve guide using the valve guide reamer to remove any carbon build up before measuring the guide (page 10-18).
- Refer to valve seat inspection (page 10-18).

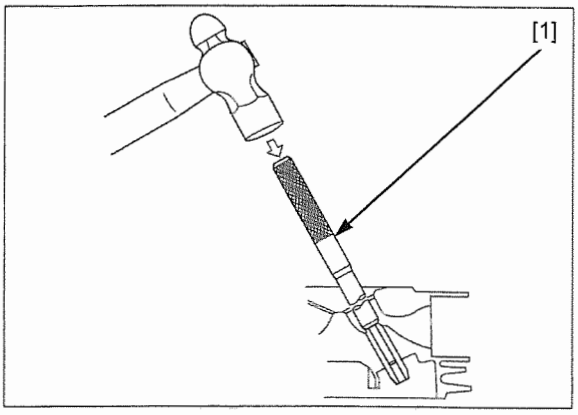
## VALVE GUIDE REPLACEMENT

Chill the replacement valve guides in the freezer section of a refrigerator for about an hour.

*Do not use a torch to heat the cylinder head; it may cause warping.*

Heat the cylinder head to 100 – 150°C (212 – 302°F) with a hot plate or oven.
To avoid burns, wear heavy gloves when handling the heated cylinder head.

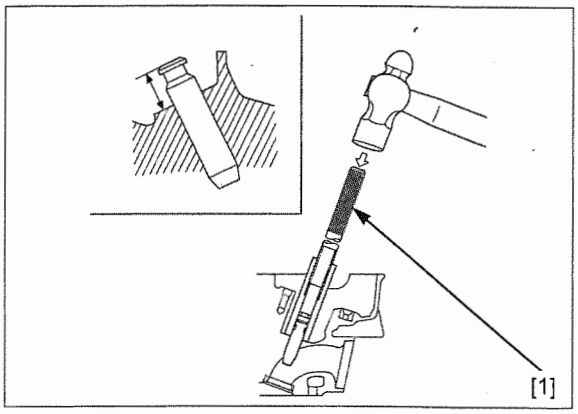
Support the cylinder head and drive out the valve guides from combustion chamber side of the cylinder head.




**TOOL:**
**[1] Valve guide driver** **07942-8920000**

USA Only:
Mark all of the guides with a sharpie at the specified height. Place them in a freezer for at least 1 hour. Heat the cylinder head to the specified temp.
Drive the guides in to the line and check with a pair of calipers.

Drive in the valve guides to the specified depth from the top of the cylinder head.




**SPECIFIED DEPTH:**
**IN: 17.7 – 18.0 mm (0.70 – 0.71 in)**
**EX: 19.6 – 19.9 mm (0.77 – 0.78 in)**

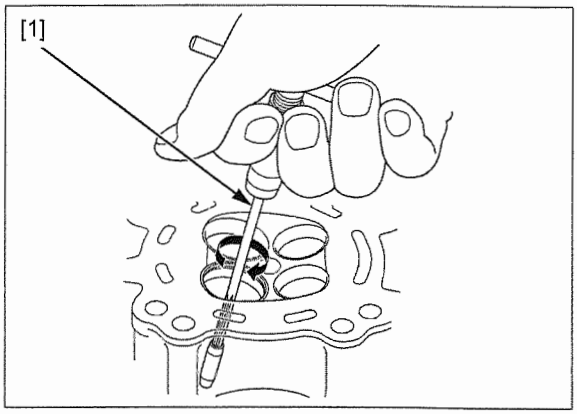
**TOOL:**
**[1] Valve guide driver** **07743-0020000 (Not available in U.S.A.)**

Let the cylinder head cool to room temperature.

*Use cutting oil on the reamer during this operation.*

Ream new valve guides after installation.

Insert the reamer [1] from the combustion chamber side of the cylinder head and always rotate the reamer clockwise.




**TOOL:**
**Valve guide reamer, 5.010 mm** **07984-MA60001 or 07984-MA6000D (U.S.A. only)**

Clean the cylinder head thoroughly to remove any metal particles.

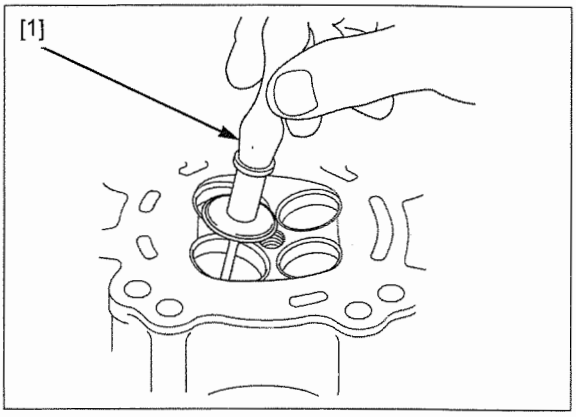
Reface the valve seat (page 10-18).

## VALVE SEAT INSPECTION/REFACING

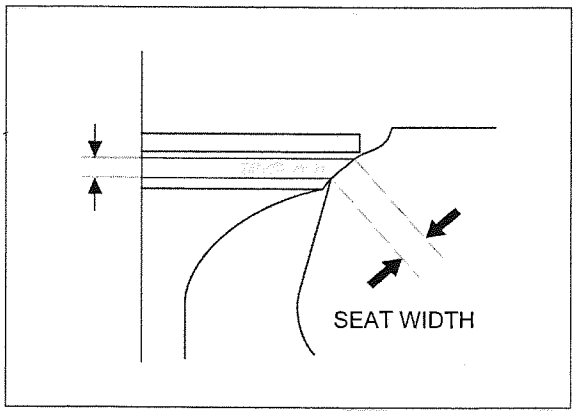
Clean the intake and exhaust valves thoroughly to remove carbon deposits.

Apply a light coating of Prussian Blue to the valve seats.

Tap the valves and seats using a rubber hose or other hand-lapping tool [1].



Remove the valve and inspect the valve seat face. The valve seat contact should be within the specified width and even all around the circumference.




**STANDARD:**
**IN: 0.90 – 1.10 mm (0.035 – 0.043 in)**
**EX: 1.30 – 1.50 mm (0.051 – 0.059 in)**
**SERVICE LIMITS:**
**IN: 1.5 mm (0.06 in)**
**EX: 1.9 mm (0.07 in)**

If the seat width is not within specification, reface the valve seat (page 10-19).

Inspect the valve seat face for:

- Uneven seat width:
  – Replace the valve and reface the valve seat.
- Damaged face:
  – Replace the valve and reface the valve seat.

The valves cannot be ground.

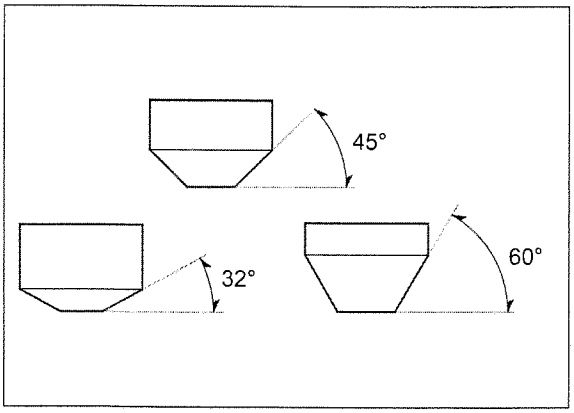
If a valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.

- Contact area (too high or too low)
  – Reface the valve seat.

## VALVE SEAT REFACING

*Follow the refacing manufacturer's operating instructions.*

Valve seat cutters/grinders or equivalent valve seat refacing equipment are recommended to correct worn valve seats.




If the contact area is too high on the valve, the seat must be lowered using a 32° flat cutter.

If the contact area is too low on the valve, the seat must be raised using a 60° interior cutter.

Refinish the seat to specifications, using a 45° finish cutter.

*Reface the seat with a 45° cutter whenever a valve guide is replaced.*

Use a 45° cutter to remove any roughness or irregularities from the seat.

**TOOLS:**

| | |
|---|---|
| **Seat cutter, 27.5 mm (45° IN)** | **07780-0010200** |
| **Seat cutter, 24 mm (45° EX)** | **07780-0010600** |
| **Cutter holder, 5.0 mm** | **07781-0010400** |

Use a 32° cutter to remove the top 1/4 of the existing valve seat material.

**TOOLS:**

| | |
|---|---|
| **Flat cutter, 28 mm (32° IN)** | **07780-0012100** |
| **Flat cutter, 25 mm (32° EX)** | **07780-0012000** |
| **Cutter holder, 5.0 mm** | **07781-0010400** |

Use a 60° cutter to remove the bottom 1/4 of the old seat.

**TOOLS:**

| | |
|---|---|
| **Interior cutter, 26 mm (60° IN)** | **07780-0014500** |
| **Interior cutter, 22 mm (60° EX)** | **07780-0014202** |
| **Cutter holder, 5.0 mm** | **07781-0010400** |

Using a 45° seat cutter, cut the seat to the proper width. Make sure that all pitting and irregularities are removed. Refinish if necessary.

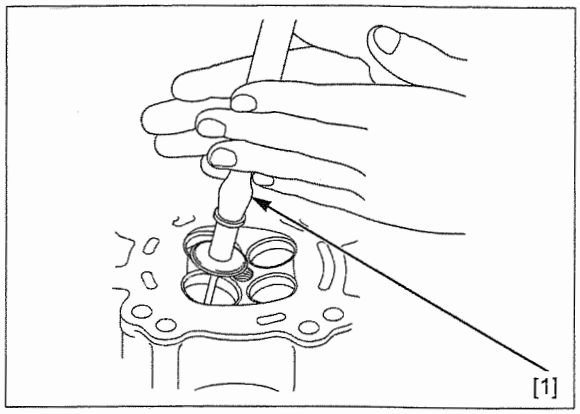
After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

**NOTICE**

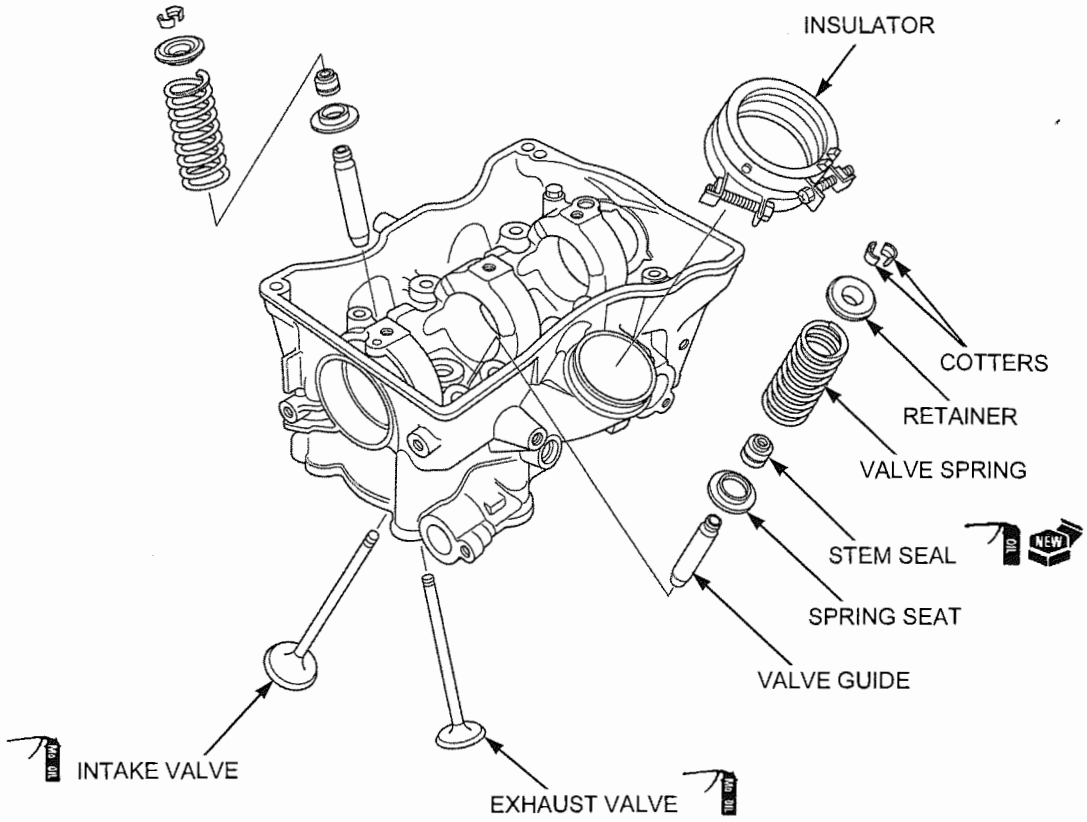
- *Excessive lapping pressure may deform or damage the seat.*
- *Change the angle of lapping tool [1] frequently to prevent uneven seat wear.*
- *Do not allow lapping compound to enter the guides.*

After lapping, wash all residual compound off the cylinder head and valve.

Recheck the seat contact after lapping.




## ASSEMBLY



Install the valve spring seats [1].

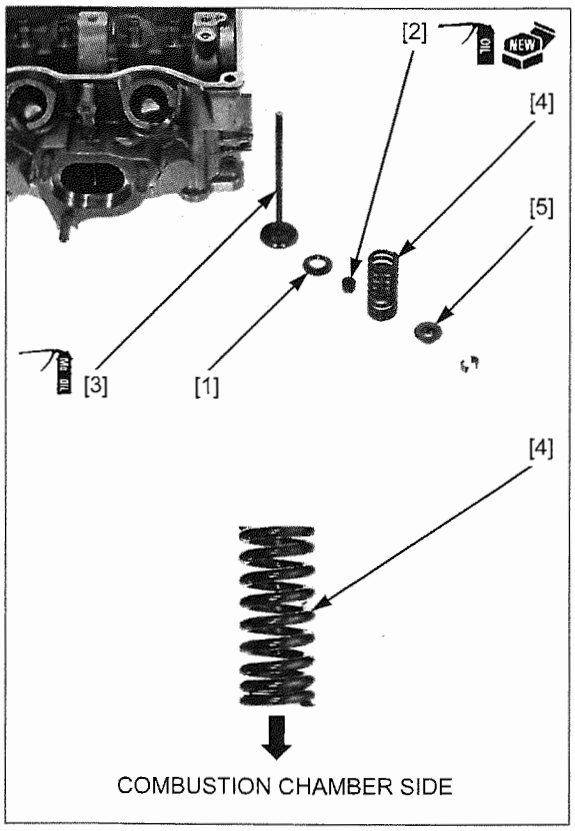
Apply engine oil to new stem seals [2] inside and install them.

Apply molybdenum oil solution to the valve stem sliding surface and stem end.

Insert the valve [3] into the valve guide while turning it slowly to avoid damage to the stem seal.

Install the valve springs [4] with the tightly wound coils facing the combustion chamber.

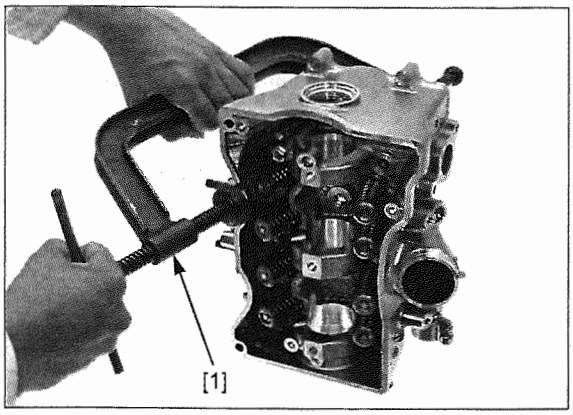
Install the valve spring retainer [5].




Install the valve cotters using the special tool as shown.

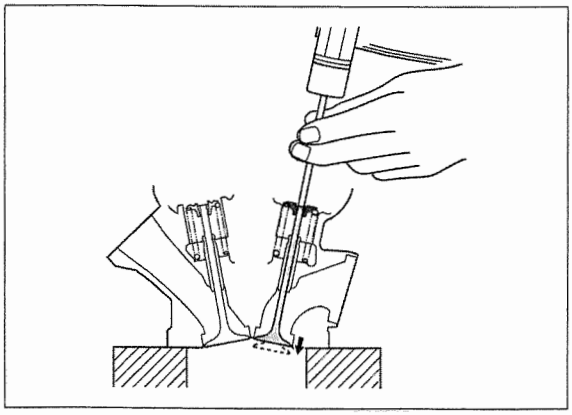
**TOOL:**
**Valve spring compressor 07757-0010000**

- To prevent loss of tension, do not compress the valve spring more than necessary.
- Grease the cotters to ease installation.




Tap the valve stems gently with plastic hammer and shaft as shown to seat the cotters firmly.

- Support the cylinder head above the work bench surface to prevent possible valve damage.

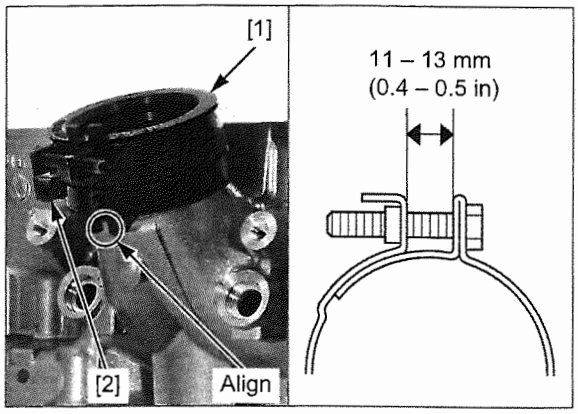


Install the insulator [1] while aligning its slit with cylinder head tab.

Tighten the band screw [2] to the specified range.

Install the following:

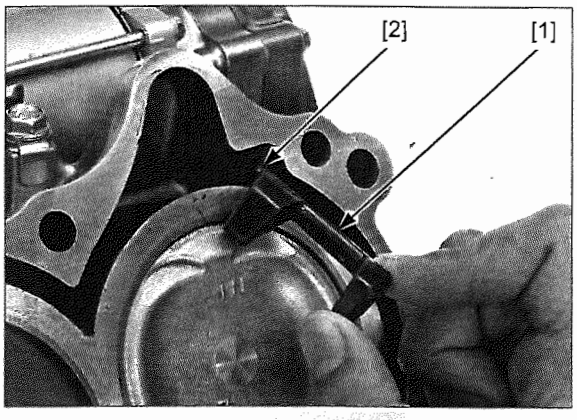
- Camshaft (page 10-13)
- Injector (page 7-19)
- Spark plug (page 3-6)
- Cylinder head (page 10-22)




## INSTALLATION

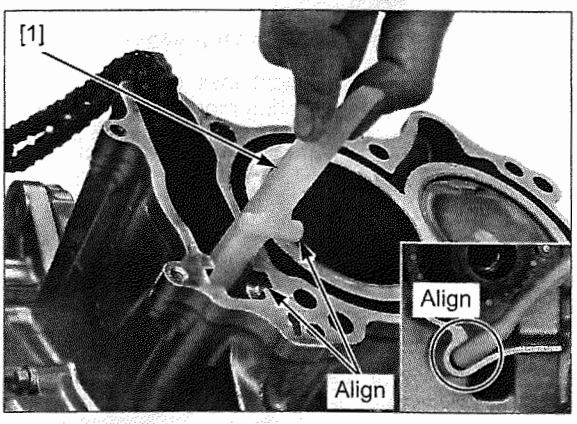
Install the partition plate [1] to the No.1 cylinder intake side.

- Install the partition plate with its tab [2] side facing inside.

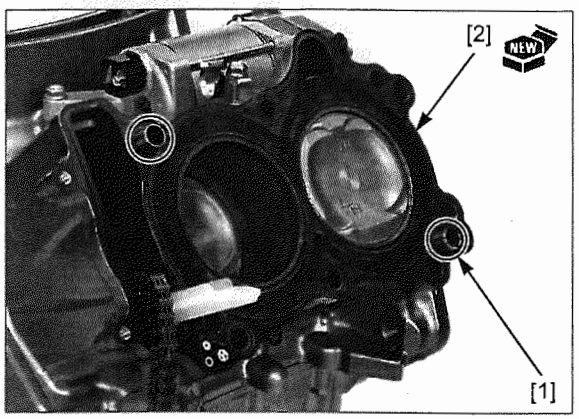



Install the cam chain guide [1].

- Align the cam chain guide end with the groove in the crankcase.
- Align the cam chain guide tabs with the grooves in the crankcase.




Install the dowel pins [1] and new gasket [2].

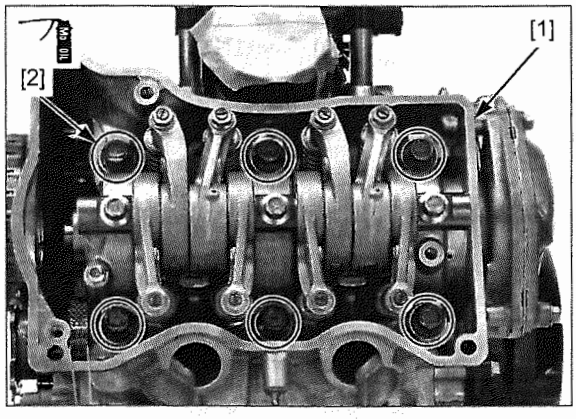


Route the cam chain through the cylinder head and install the cylinder head [1] onto the cylinder.

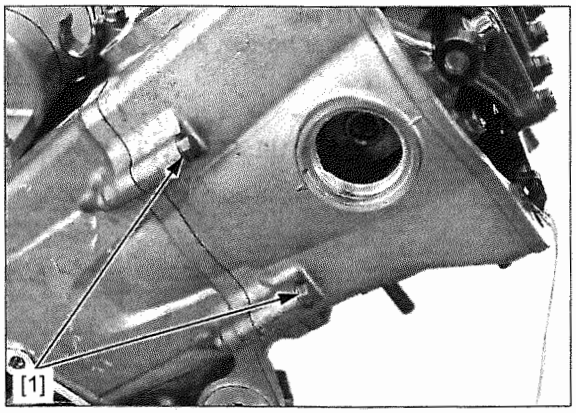
Apply molybdenum oil solution to the cylinder head special bolts [2] threads and seating surface.

Install and tighten the cylinder head special bolts in a crisscross pattern in 2 or 3 steps to the specified torque.

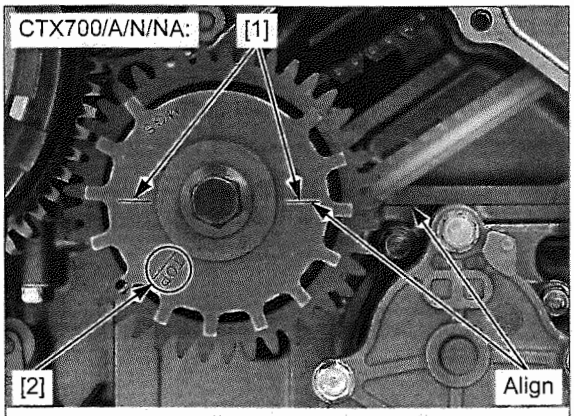
**TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)**

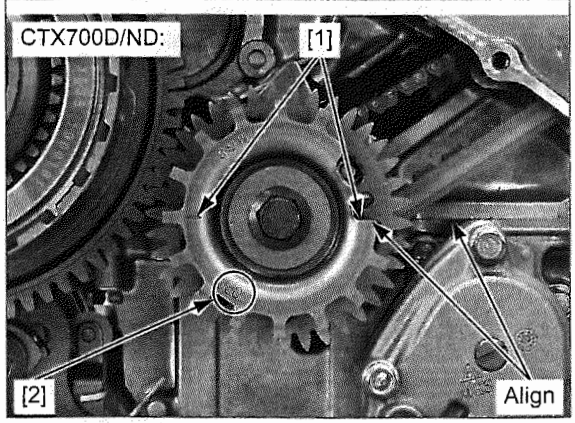



Install and tighten the 6 mm bolts [1].




Turn the crankshaft clockwise and align the index lines [1] with the crankcase matting surface, while the "TOP" mark [2] is facing down.



Install the cam sprocket to the camshaft while installing cam chain [1] onto the cam sprocket.

- Install the cam sprocket with its "MGS" mark [2] facing out.
- Align the cam sprocket slit with camshaft pin.
- Align the cam sprocket "△" mark with cylinder head lower index line.

Apply engine oil to the cam sprocket bolt threads and seating surface.

Install the cam sprocket bolt [3].

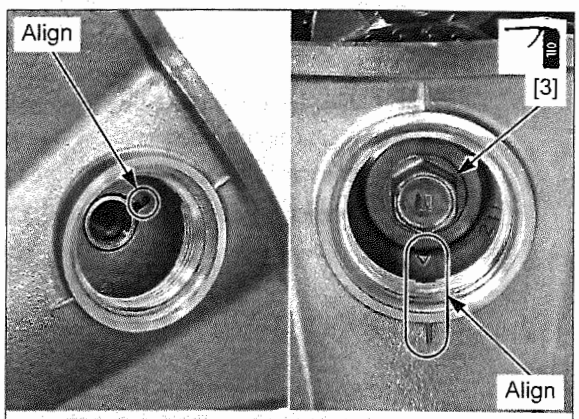
Insert the gear holder [4] between the primary drive gear and driven gear, then tighten the cam sprocket bolt to the specified torque.

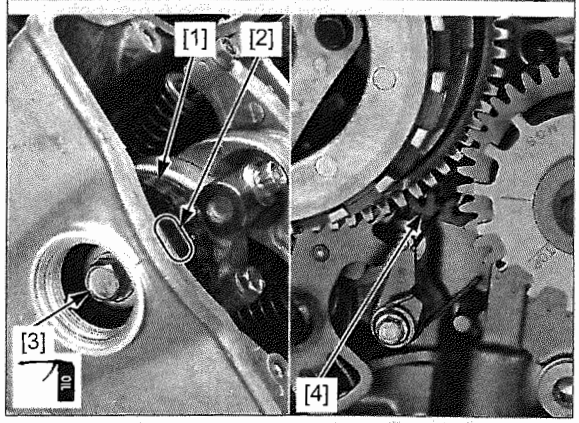
**TOOL:**

| | |
|---|---|
| **Gear holder, 2.5** | **07724-0010100 or 07724-001A100 (U.S.A. only)** |

**TORQUE: 56 N·m (5.7 kgf·m, 41 lbf·ft)**

Install the cam chain tensioner (page 10-11).



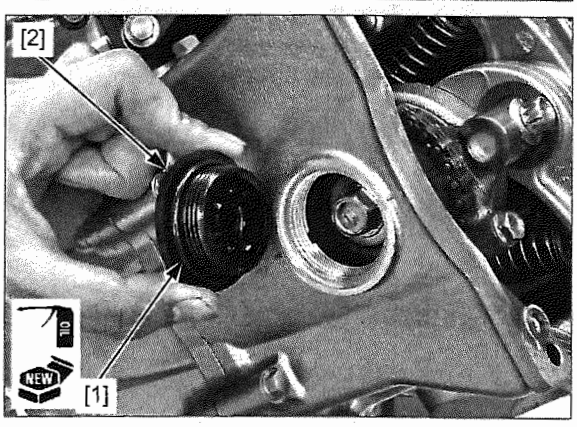




Apply engine oil to a new O-ring [1] and install it to the camshaft maintenance cap [2].

Temporarily install the camshaft maintenance cap to the cylinder head.

If the engine is removed from the frame, tighten the camshaft maintenance cap to the specified torque.

**TORQUE: 4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)**




If the engine is installed on the frame, insert a feeler gauge (0.1 mm) [1] between the camshaft maintenance cap and cylinder head.

Tighten the camshaft maintenance cap securely.

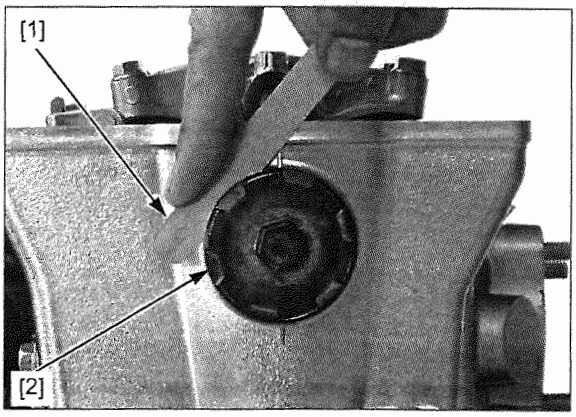
Remove the feeler gauge.

Further tighten the camshaft maintenance cap at 30°.

- One concave area [2] size is equivalent with 30°.

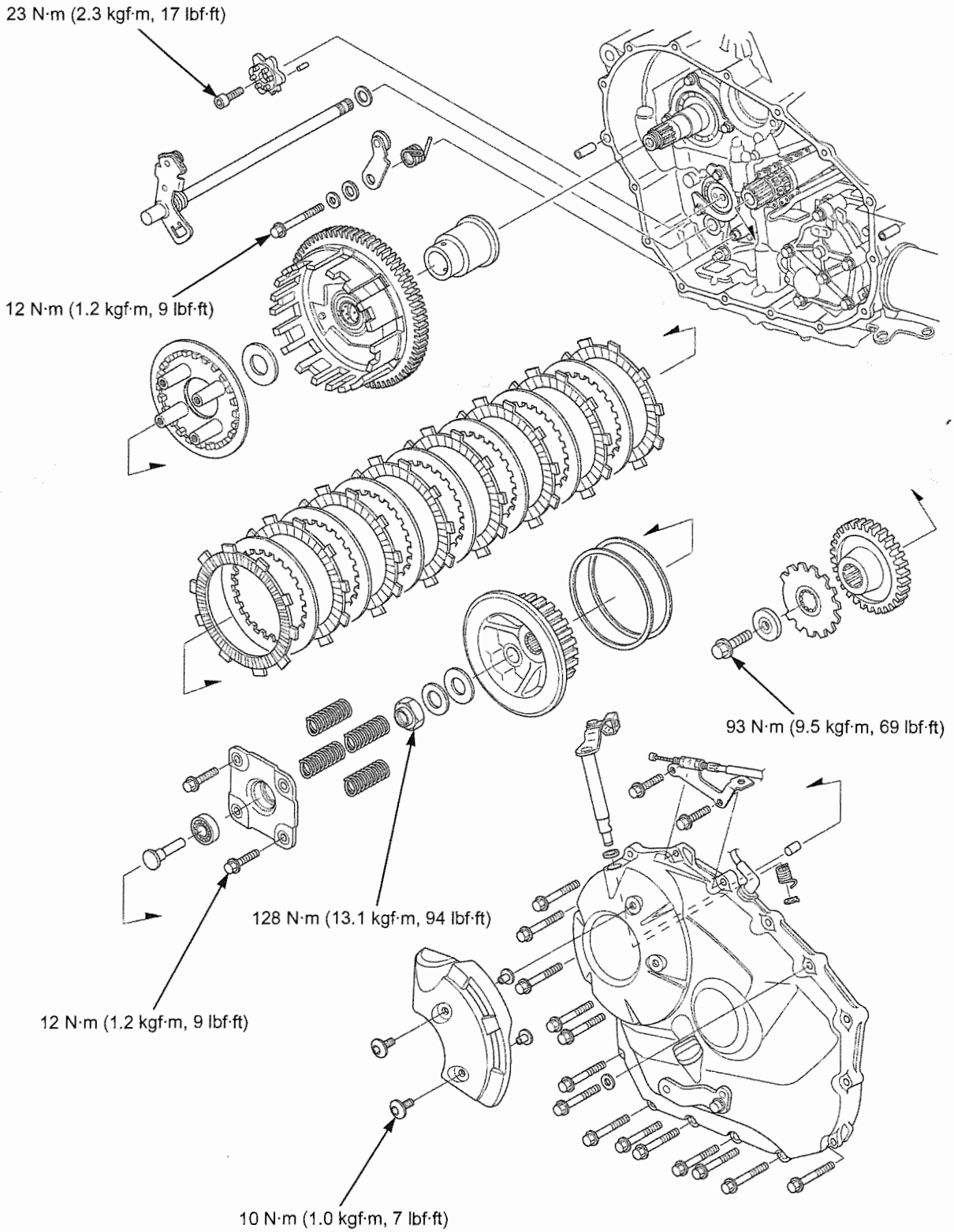
Install the following:

– Cylinder head cover (page 10-5)
– Right crankcase cover
  – CTX700/A/N/NA (page 11-4)
  – CTX700D/ND (page 12-64)
– Engine
  – CTX700/A/N/NA (page 16-9)
  – CTX700D/ND (page 16-18)



# 11. CLUTCH/GEARSHIFT LINKAGE (CTX700/A/N/NA)

# COMPONENT LOCATION

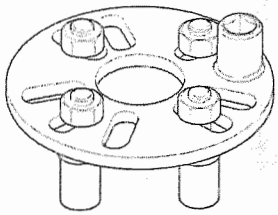
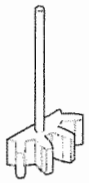



# SERVICE INFORMATION

## GENERAL

- This section covers service of the clutch and gearshift linkage. All service can be done with the engine installed in the frame.
- Engine oil viscosity and level have an effect on clutch disengagement. Oil additives also effect clutch performance and are not recommended. When the clutch does not disengage or the motorcycle creeps with the clutch lever pulled in, inspect the engine oil level before servicing the clutch system.

## TOOLS

| | |
|---|---|
| Holder Clutch Center<br>07JMB-MN50302<br>  <br>Holder plate<br>07HGB-001010B (U.S.A. only)<br>Holder collar<br>07HGB-001020B (U.S.A. only) | Gear holder, 2.5<br>07724-0010100<br>  <br>or 07724-001A100 (U.S.A. only) |

# TROUBLESHOOTING

**Clutch lever is too hard to pull in**
- Damaged, kinked or dirty clutch cable
- Improperly routed clutch cable
- Damaged clutch lifter mechanism
- Faulty clutch lifter bearing
- Clutch lifter piece installed improperly

**Clutch slips when accelerating**
- Clutch lifter sticking
- Worn clutch disc
- Weak clutch springs
- No clutch lever freeplay
- Engine oil mixed with molybdenum or graphite additive

**Clutch will not disengage or motorcycle creeps with clutch disengaged**
- Excessive clutch lever freeplay
- Clutch plate warped
- Engine oil level too high, improper engine oil viscosity or additive used
- Loose clutch center lock nut
- Damaged clutch lifter mechanism
- Clutch lifter rod installed improperly
- Worn clutch outer slot and clutch center grooves
- Improper clutch operation

**Hard to shift**
- Misadjusted clutch cable
- Improper clutch operation
- Improper engine oil viscosity
- Damaged or bent shift fork
- Bent shift fork shaft
- Bent shift fork claw
- Loose shift drum stopper plate bolt
- Damaged shift drum stopper plate
- Damaged shift drum guide grooves
- Damaged or bent gearshift spindle

**Transmission jumps out of gear**
- Worn shift drum stopper arm
- Weak or broken shift drum stopper arm return spring
- Loose shift drum stopper plate bolt
- Damaged shift drum stopper plate
- Bent shift fork shaft
- Damaged or bent shift forks
- Worn gear engagement dogs or slots

**Gearshift pedal will not return**
- Weak or broken gearshift spindle return spring
- Damaged or bent gearshift spindle

# RIGHT CRANKCASE COVER

## REMOVAL/INSTALLATION

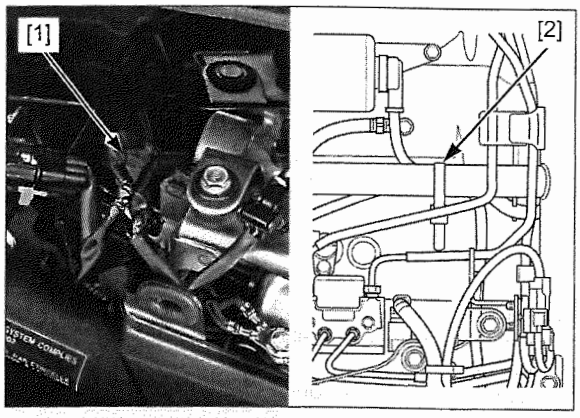
Remove the following:

- Left side shelter (page 2-11)
- Right under side cover (page 2-13)

Drain the engine oil (page 3-10).

Release the CKP sensor 2P (Red) connector [1] from the stay and disconnect it.

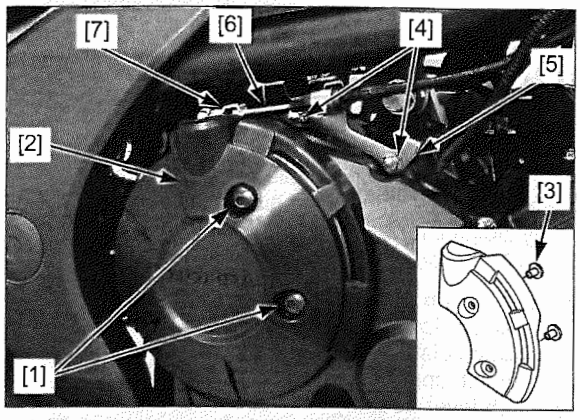
Release the wire band [2] from the frame pipe.




Remove the two socket bolts [1] and right engine side cover [2].

Remove the two collars [3] from the right engine side cover.

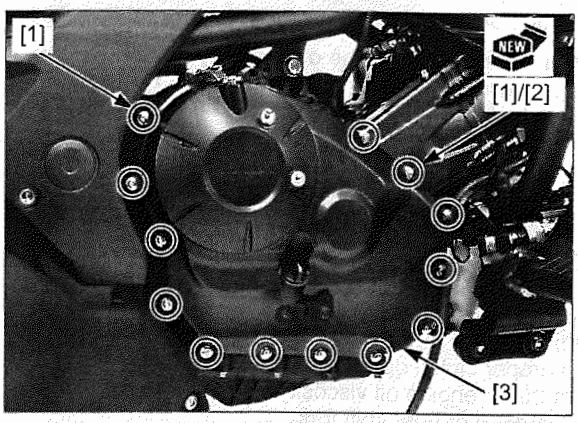
Remove the bolts [4] and clutch cable guide [5], then disconnect the clutch cable [6] from the clutch lifter arm [7].




Loosen the right crankcase cover bolts [1] in a crisscross pattern in 2 or 3 steps, and remove the bolts and sealing washer [2].

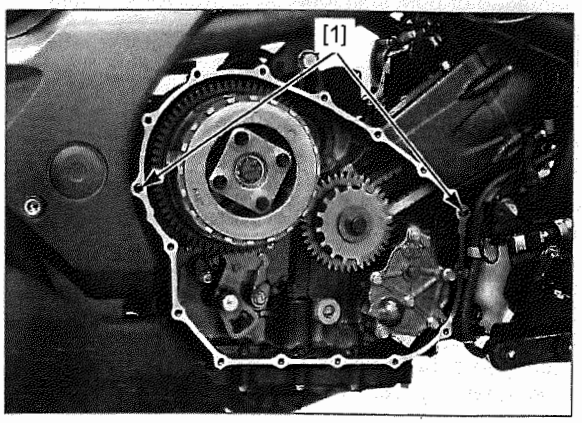
- Replace the sealing washer with a new one.

Remove the right crankcase cover [3].



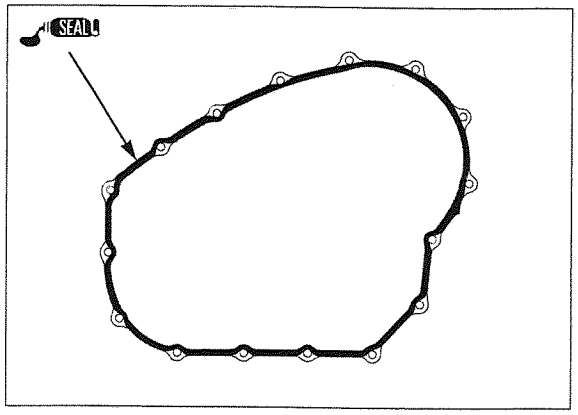

Remove the dowel pins [1].

Clean off any sealant from the right crankcase cover mating surfaces.



Installation is in the reverse order of removal.

- Apply liquid sealant (TB1207B manufactured by Three bond or equivalent) to the right crankcase cover mating surface as shown.
- Do not apply more liquid sealant than necessary.
- Apply liquid sealant (TB1207B manufactured by Three bond or equivalent) to the CKP sensor wire grommet sealing surface.




**TORQUE:**
**Right engine side cover socket bolt:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**

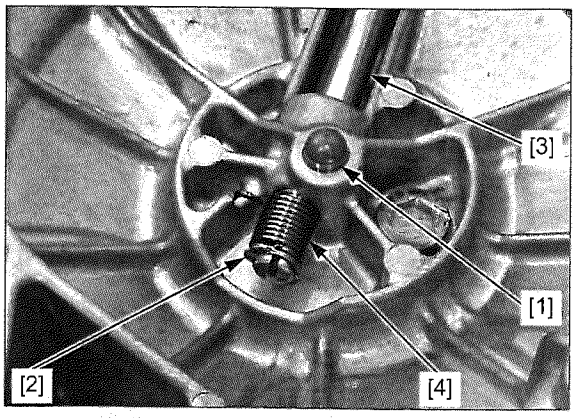
Adjust the clutch lever freeplay (page 3-20).

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-9).

## CLUTCH LIFTER ARM REMOVAL/ INSTALLATION

Remove the clutch lifter rod A [1].

Remove the snap ring [2], clutch lifter arm [3] and return spring [4] from the right crankcase cover.

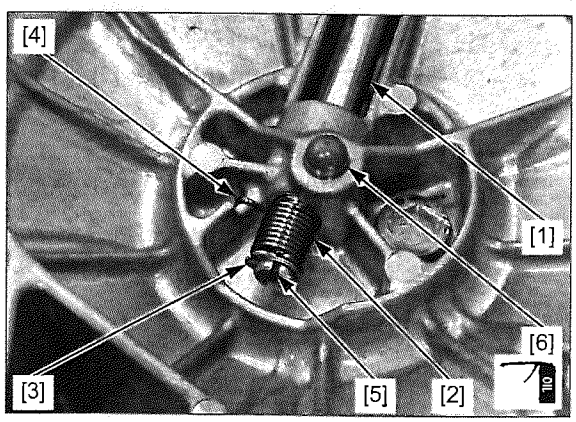



Install the clutch lifter arm [1], return spring [2] and snap ring [3].

- Align the return spring hook [4] with right crankcase cover.
- Align the return spring end [5] with clutch lifter arm groove.
- Make sure the snap ring is firmly seated in the groove.

Apply engine oil to the clutch lifter rod A sliding surface.

Install the clutch lifter rod A [6].




## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Clutch lifter arm bushing
- Clutch lifter arm
- Return spring
- Clutch lifter rod A

Replace if necessary.

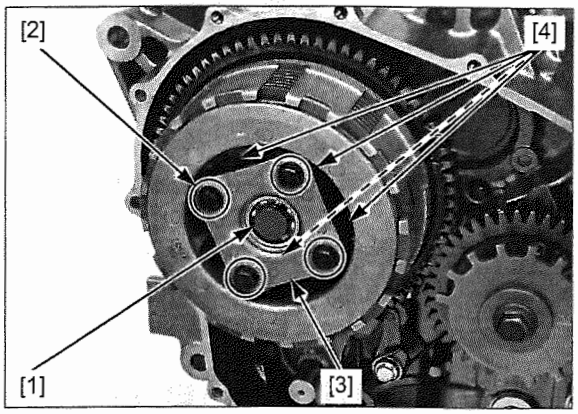
# CLUTCH

## REMOVAL

Remove the right crankcase cover (page 11-4).

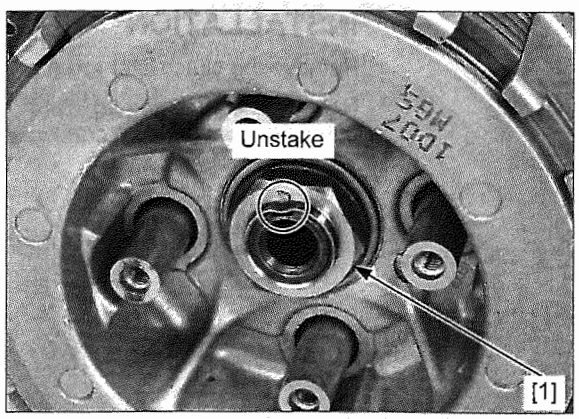
Remove the clutch lifter rod B [1].

Loosen the clutch lifter plate bolts [2] in a crisscross pattern in 2 or 3 steps, and remove the bolts, lifter plate/ bearing [3] and clutch springs [4].




Unstake the clutch center lock nut [1].

- Be careful not to damage the mainshaft threads.




Hold the clutch pressure plate with the special tool and loosen the clutch center lock nut [1].

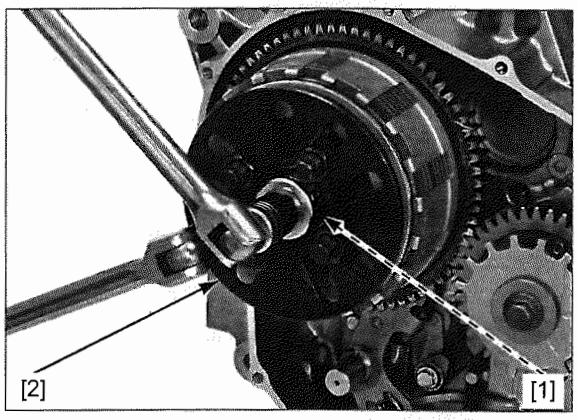
**TOOL:**

| | |
|---|---|
| **Clutch center holder [2]** | **07JMB-MN50302** |

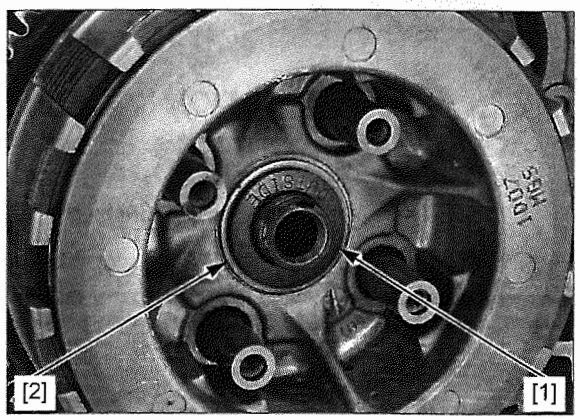
**U.S.A. TOOLS:**

| | |
|---|---|
| **Holder plate** | **07HGB-001010B** |
| **Holder collar** | **07HGB-001020B** |

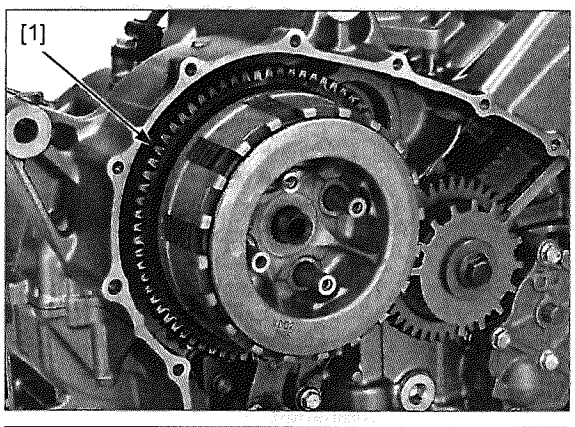
Remove and discard the lock nut.




Remove the lock washer [1] and thrust washer [2].

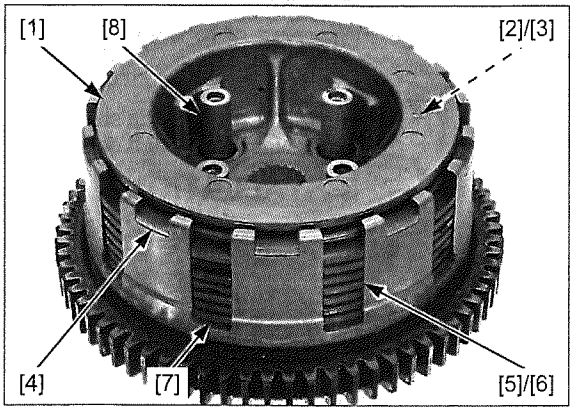


Remove the clutch assembly [1].

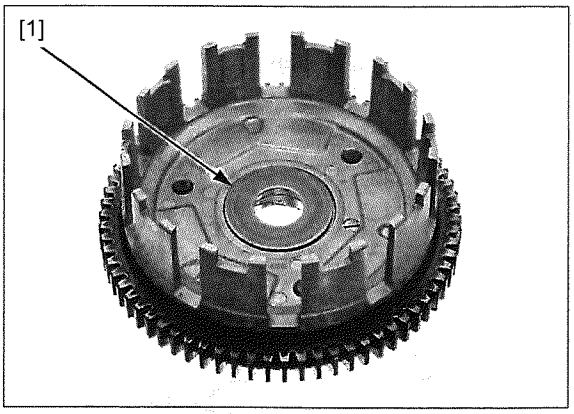



Remove the following:

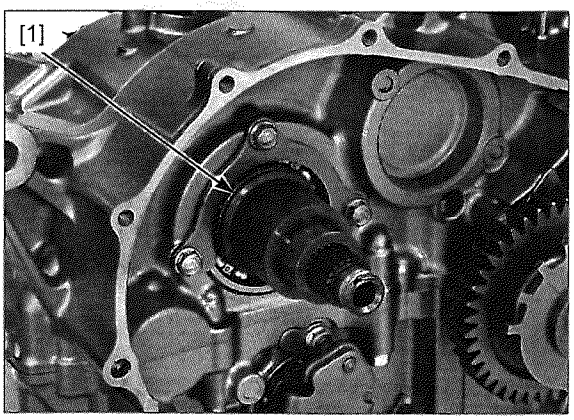
- Clutch center [1]
- Spring seat [2]
- Judder spring [3]
- Clutch disc B [4]
- Seven clutch plates [5]
- Six clutch discs C [6]
- Clutch disc A [7]
- Pressure plate [8]




Remove the thrust washer [1].




Remove the clutch outer guide [1].



## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

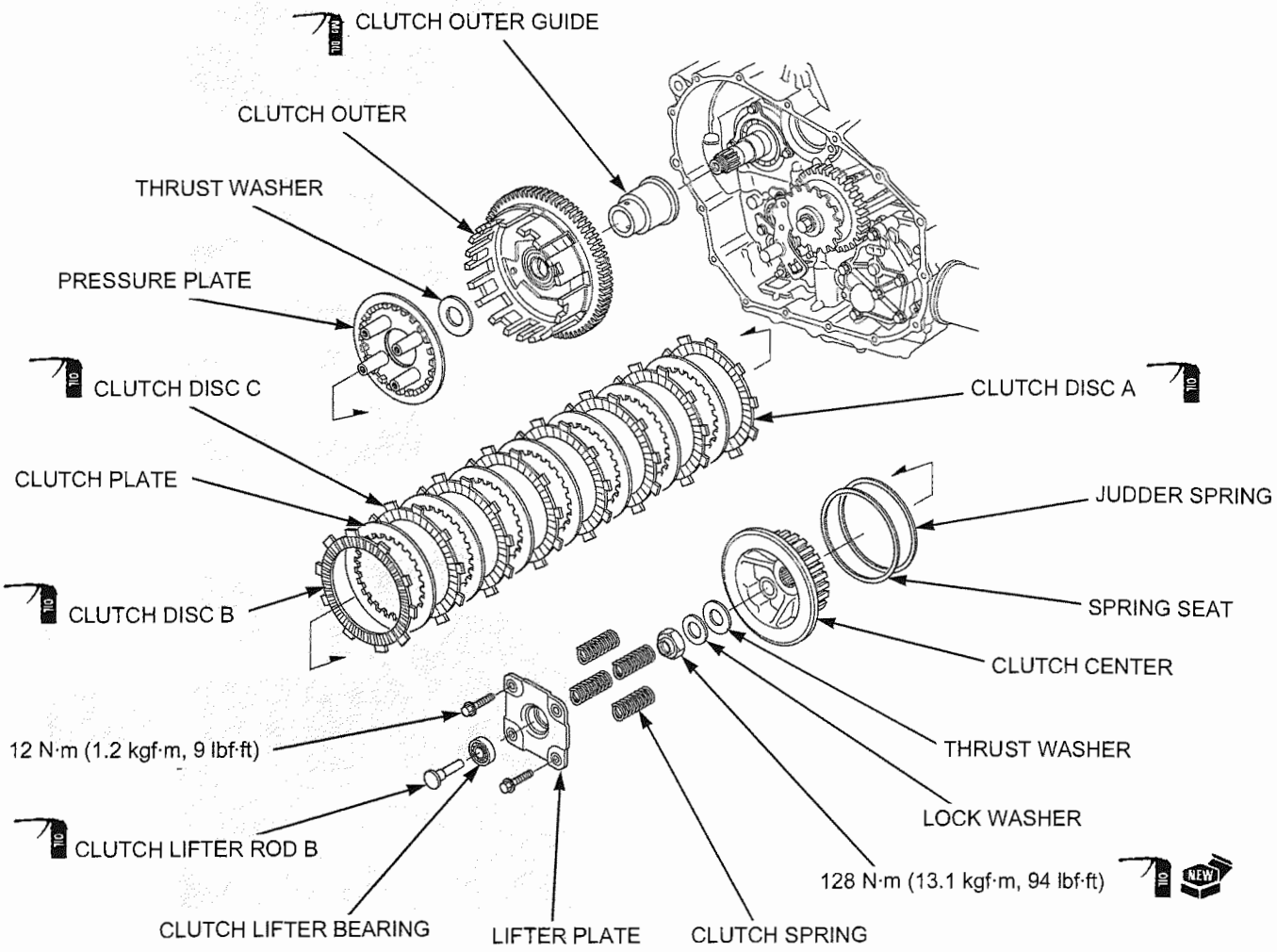
- Clutch lifter rod B
- Clutch lifter bearing
- Clutch lifter plate
- Clutch springs
- Clutch center
- Spring seat
- Judder spring
- Clutch discs/plates
- Clutch outer/primary driven gear/needle bearing
- Clutch outer guide
- Mainshaft

Measure each part according to CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (page 1-8).

Replace any if it is out of service limit.

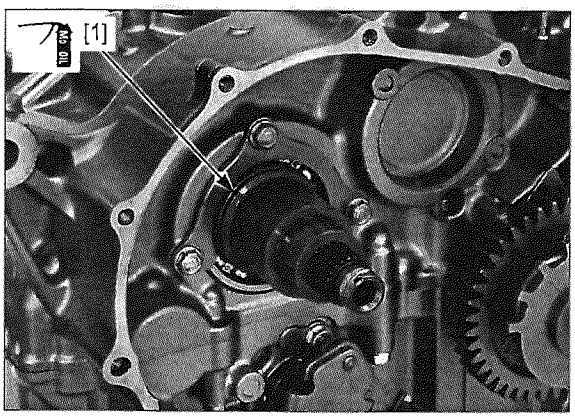
- Replace the clutch springs as a set.
- Replace the clutch discs and plates as a set.

## INSTALLATION

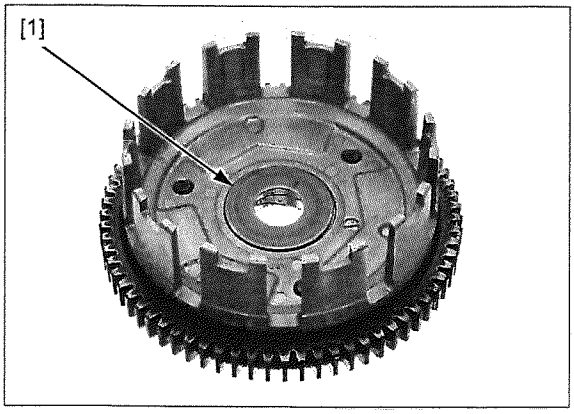


Apply molybdenum oil solution to the clutch outer guide sliding surface.

Install the clutch outer guide [1] to the mainshaft.




Install the thrust washer [1] to the clutch outer.



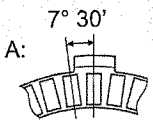

Apply engine oil to the clutch discs entire surface.

Install the spring seat [1], judder spring [2] and clutch disc B [3] to the clutch center [4].

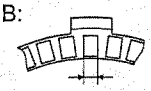
Install the clutch discs C [5] and clutch plates [6] alternately, starting with the clutch plate.

Install the clutch disc A [7] and pressure plate [8].

CLUTCH DISC A:

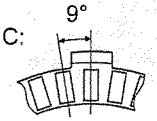


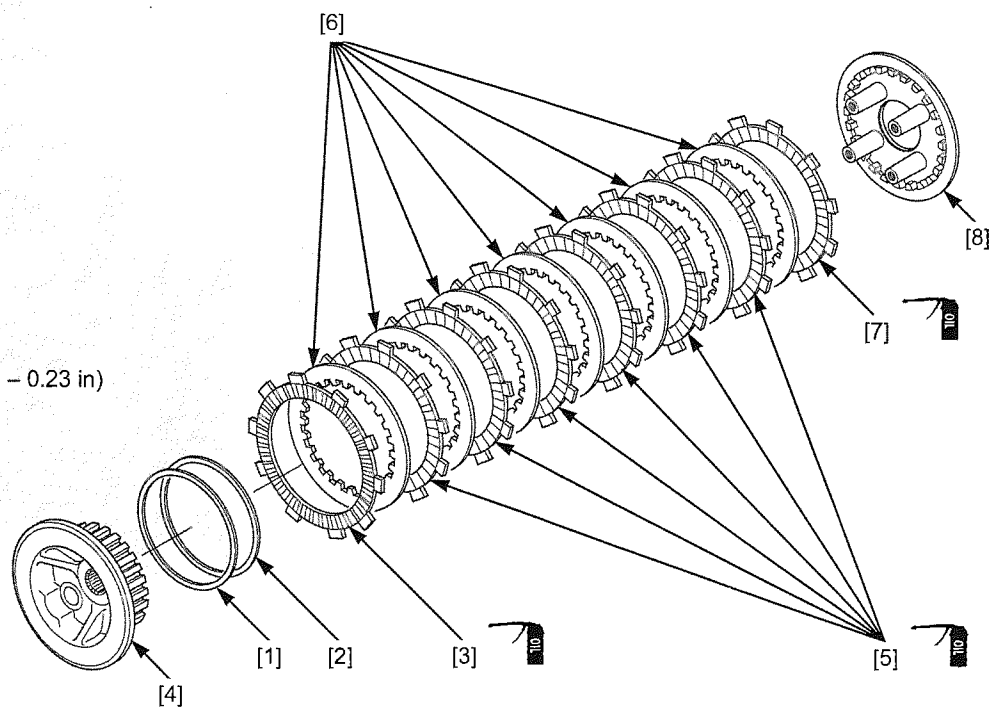

CLUTCH DISC B:



5.3 – 5.9 mm (0.21 – 0.23 in)

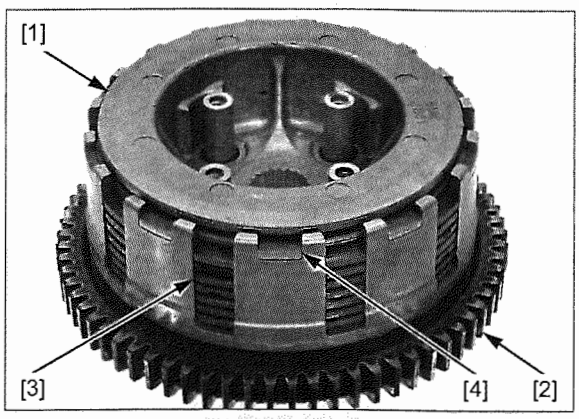
CLUTCH DISC C:



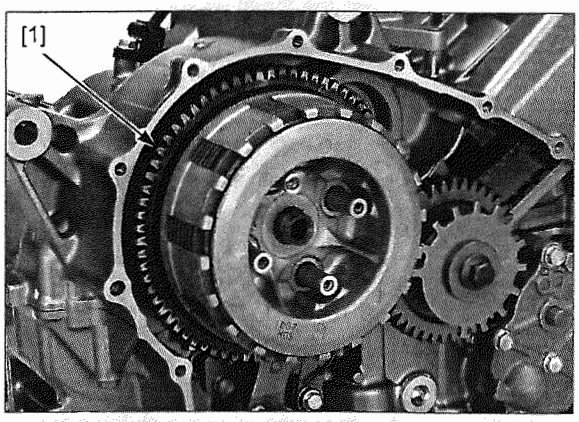



Install the clutch center assembly [1] to the clutch outer [2].

- Align the clutch disc A/C tabs with clutch outer slits [3].
- Align the clutch disc B tabs with clutch outer shallow slots [4].

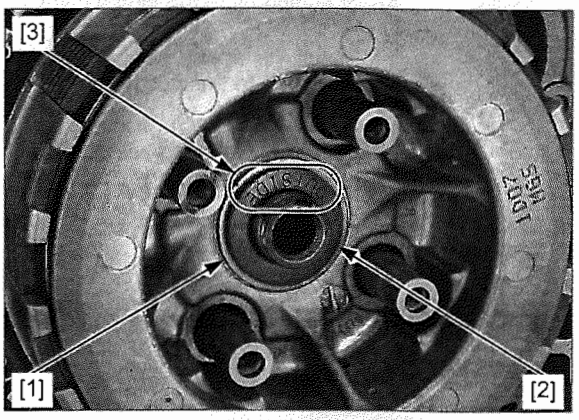



Install the clutch assembly [1] to the clutch outer guide.




Install the thrust washer [1].

Install the lock washer [2] with its "OUTSIDE" mark [3] facing out.




Apply engine oil to a new clutch center lock nut threads and seating surface.

Install the clutch center lock nut [1] onto the mainshaft.

Hold the pressure plate with the special tool and tighten the lock nut to the specified torque.

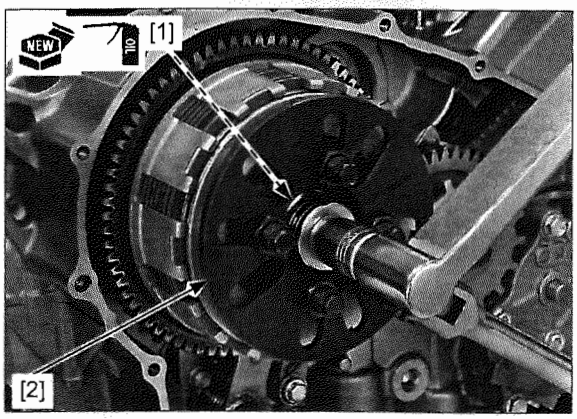
**TOOL:**

| | |
|---|---|
| **Clutch center holder [2]** | **07JMB-MN50302** |

**U.S.A. TOOLS:**

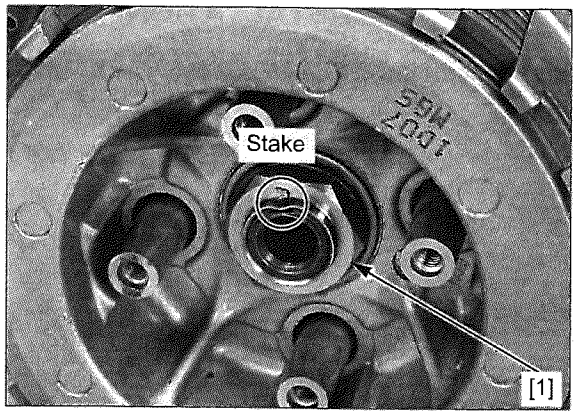
| | |
|---|---|
| **Holder plate** | **07HGB-001010B** |
| **Holder collar** | **07HGB-001020B** |

**TORQUE: 128 N·m (13.1 kgf·m, 94 lbf·ft)**



Stake the clutch center lock nut [1] into the mainshaft groove.

- Be careful not to damage the mainshaft threads.




Install the clutch springs [1], lifter plate/bearing [2] and clutch lifter plate bolts [3].

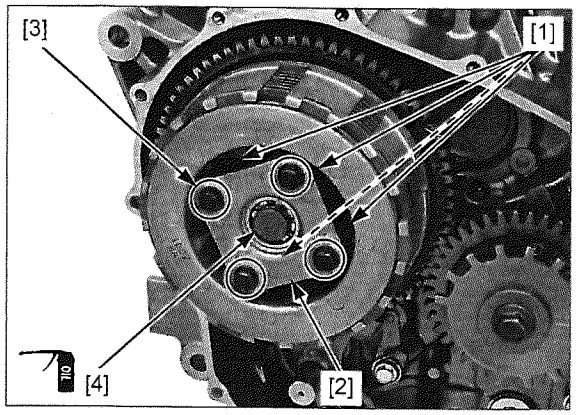
Tighten the clutch lifter plate bolts to the specified torque in a crisscross pattern in 2 or 3 steps.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Apply engine oil to the clutch lifter rod B sliding surface.

Install the clutch lifter rod B [4].

Install the right crankcase cover (page 11-4).




# PRIMARY DRIVE GEAR/CKP SENSOR ROTOR

## REMOVAL

Remove the right crankcase cover (page 11-4).

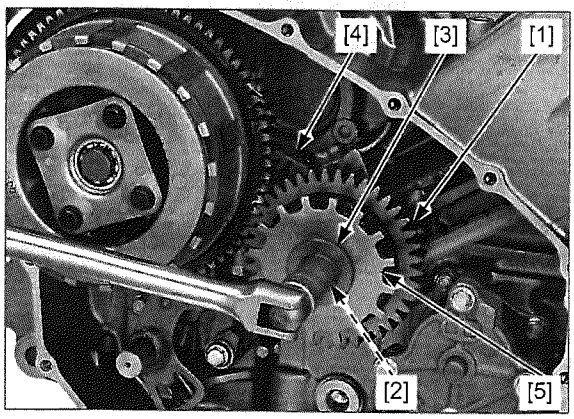
Hold the primary drive gear [1] using a special tool and remove the primary drive gear mounting bolt [2] and washer [3].

**TOOL:**

| | |
|---|---|
| **[4] Gear holder, 2.5** | **07724-0010100 or 07724-001A100 (U.S.A. only)** |

Remove the gear holder.

Remove the CKP sensor rotor [5] and primary drive gear.




## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

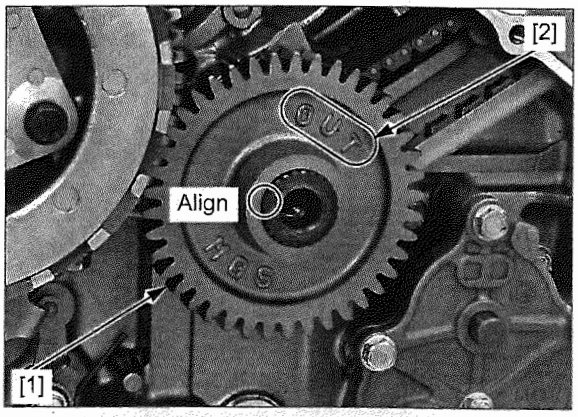
- Primary drive gear
- CKP sensor rotor

Replace if necessary.

## INSTALLATION

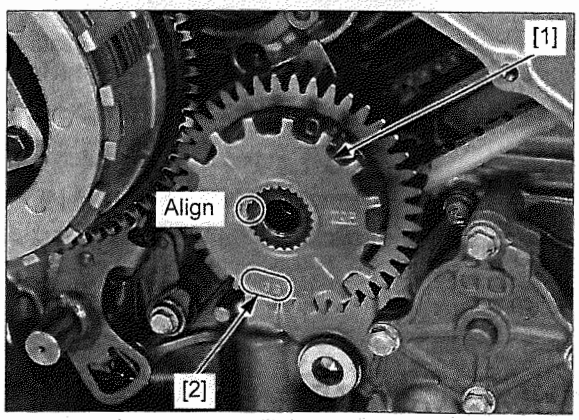
Install the primary drive gear [1] on the crankshaft.

- Align the primary drive gear wide groove with the crankshaft wide tooth.
- Install the primary drive gear with its "OUT" mark [2] facing out.




Install the CKP sensor rotor [1] on the crankshaft.

- Align the CKP sensor rotor wide groove with the crankshaft wide tooth.
- Install the CKP sensor rotor with its "MGS" mark [2] facing out.




Apply engine oil to the primary drive gear mounting bolt threads and seating surface.

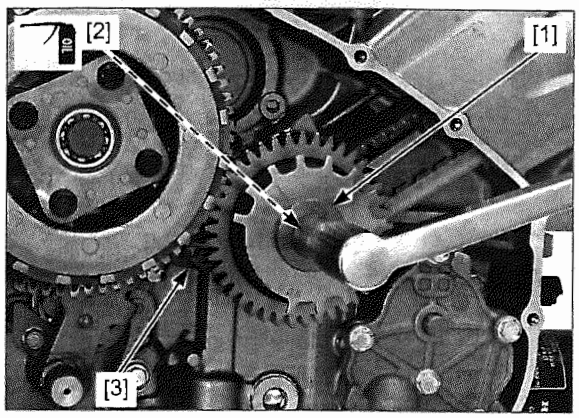
Install the washer [1] and primary drive gear mounting bolt [2].

Hold the primary drive gear using a special tool and tighten the primary drive gear mounting bolt to the specified torque.

**TOOL:**

| | |
|---|---|
| **[3] Gear holder, 2.5** | **07724-0010100 or 07724-001A100 (U.S.A. only)** |

**TORQUE: 93 N·m (9.5 kgf·m, 69 lbf·ft)**




Remove the gear holder.

Install the right crankcase cover (page 11-4).

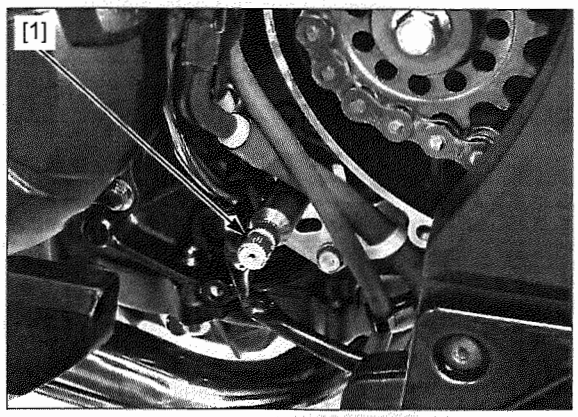
# GEARSHIFT LINKAGE

## REMOVAL

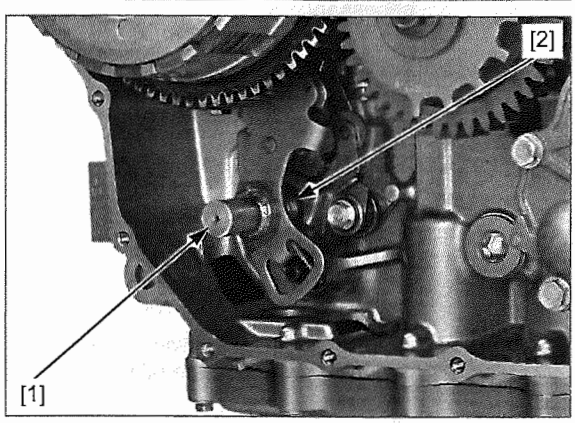
Remove the following:

- Left rear cover (page 2-16)
- Right crankcase cover (page 11-4)

Clean the gearshift spindle [1].



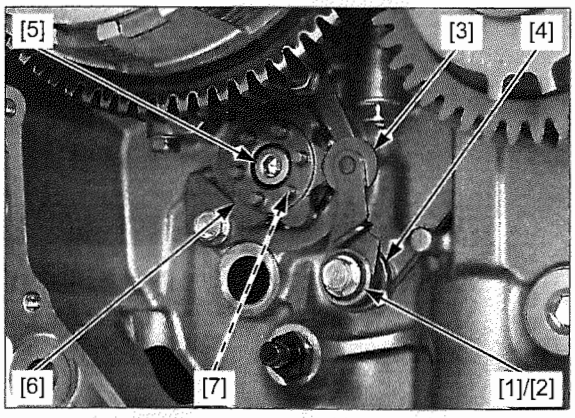

Remove the gearshift spindle [1] and washer [2].




Remove the following:

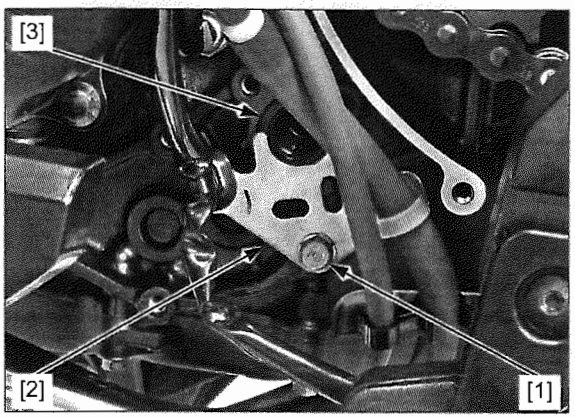
- Shift drum stopper arm pivot bolt [1]
- Washers [2]
- Stopper arm [3]
- Return spring [4]

Remove the shift drum center socket bolt [5], shift drum stopper plate [6] and dowel pin [7].




Remove the bolt [1] and setting plate [2].

Remove the gearshift spindle oil seal [3].



## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Shift drum stopper plate
- Shift drum stopper arm
- Shift drum stopper arm return spring

Replace if necessary.

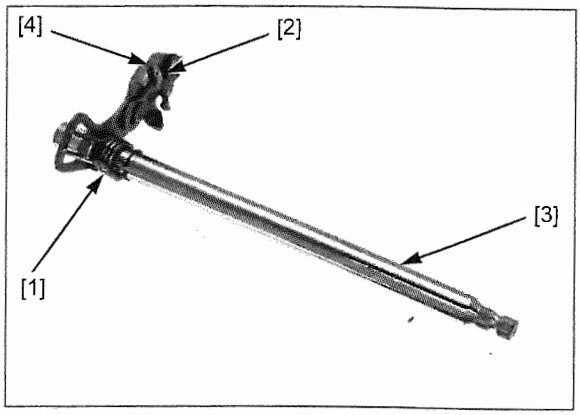
**GEARSHIFT SPINDLE**

Check the return springs [1] and spindle arm spring [2] for fatigue or damage replace them if necessary.

Check the gearshift spindle [3] for wear or bend.

Check the spindle arm [4] for wear, damage or deformation.

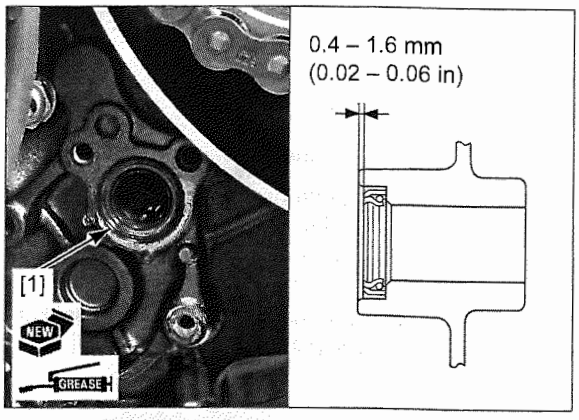
Replace the gearshift spindle as an assembly if necessary.




## INSTALLATION

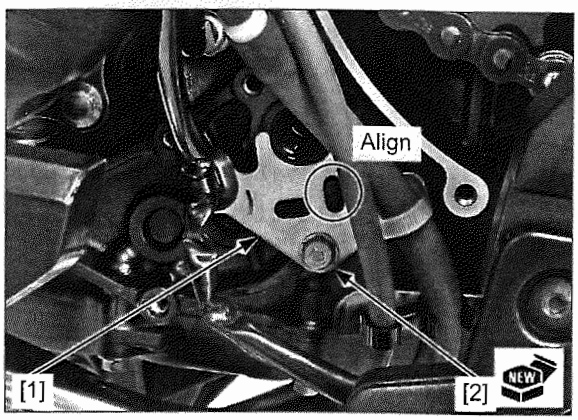
Install a new gearshift spindle oil seal [1] as shown.

- Install the oil seal with its marked side facing out.
- Apply grease to the oil seal lips.




Install the setting plate [1] and a new bolt [2].

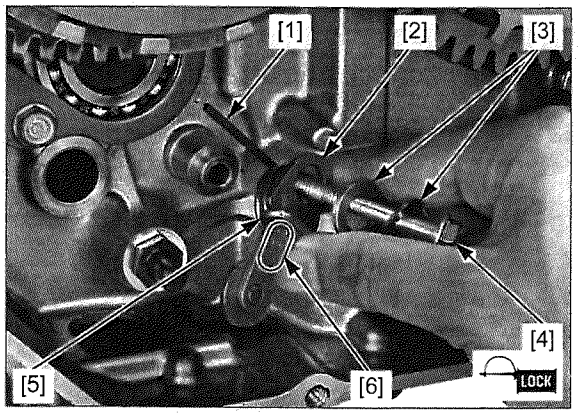
- Align the setting plate hole with the crankcase boss.



Install the following:

- Return spring [1]
- Stopper arm [2]
- Washers [3]
- Shift drum stopper arm pivot bolt [4]

• Apply locking agent to the shift drum stopper arm pivot bolt threads (page 1-14).
• Align the return spring hook [5] with stopper arm cut-out.
• Install the stopper arm with its "MGS" mark [6] facing out.

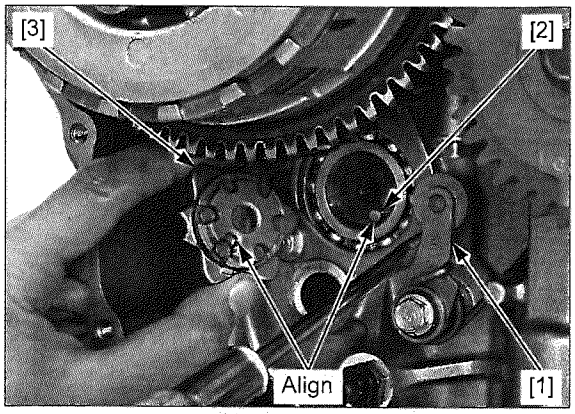



**TORQUE:**
**Shift drum stopper arm pivot bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

Hold the stopper arm [1] with a screwdriver.

Install the dowel pin [2] into the shift drum hole.

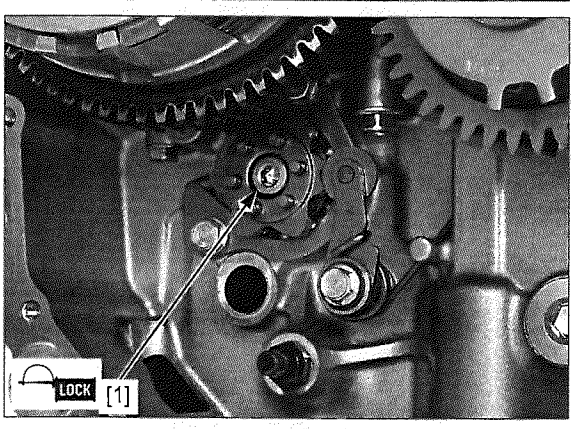
Install the shift drum stopper plate [3] while aligning its slit with the dowel pins.




Apply locking agent to the shift drum center socket bolt threads (page 1-14).

Install and tighten the shift drum center socket bolt [1] to the specified torque.

**TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)**

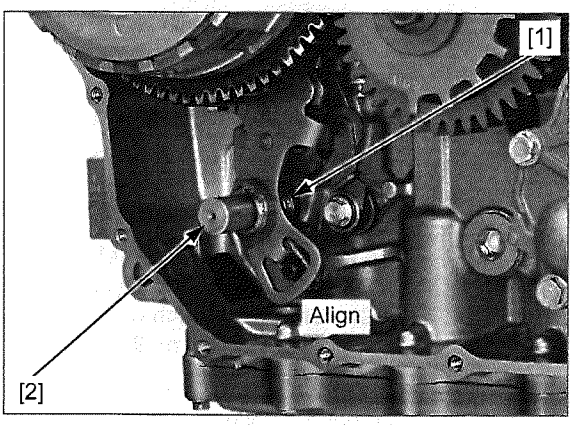



Install the washer [1] and gearshift spindle [2].

• Align the return spring ends with the spring pin.

Install the following:

- Right crankcase cover (page 11-4)
- Left rear cover (page 2-16)

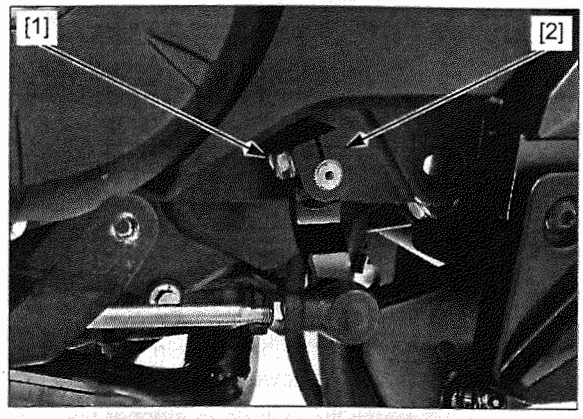


# GEARSHIFT PEDAL

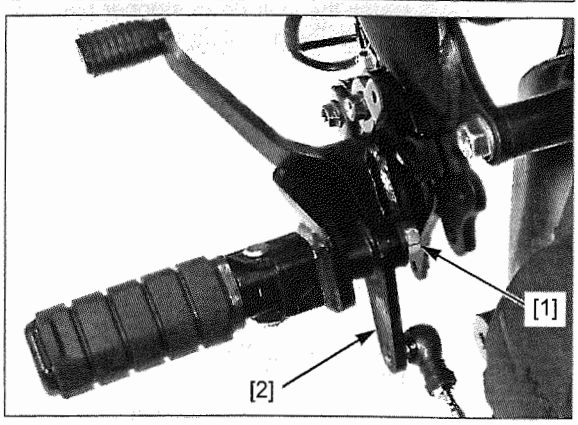
## REMOVAL/INSTALLATION

Remove the left under side cover (page 2-13).

Remove the bolt [1] and disconnect the gearshift arm [2] from the spindle.

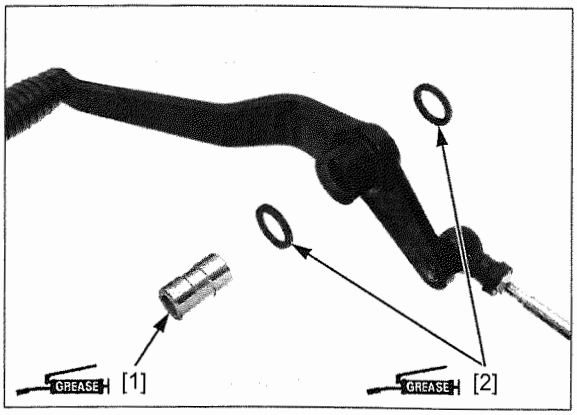



Remove the gearshift pedal pivot bolt [1] and gearshift pedal [2].




Remove the pivot collar [1] and dust seals [2].

- When installation, apply grease to the gearshift pedal pivot collar sliding surface and dust seal lips.




Installation is in the reverse order of removal.

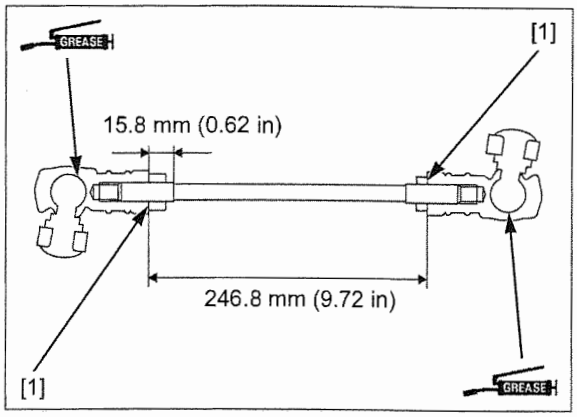
- Apply grease to the gearshift pedal tie-rod ball joint area.

**TORQUE:**
**Gearshift pedal pivot bolt:**
**39 N·m (4.0 kgf·m, 29 lbf·ft)**
**Gearshift arm pinch bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

Adjust the tie-rod length so that the distance between the ball joint ends is standard length as shown.

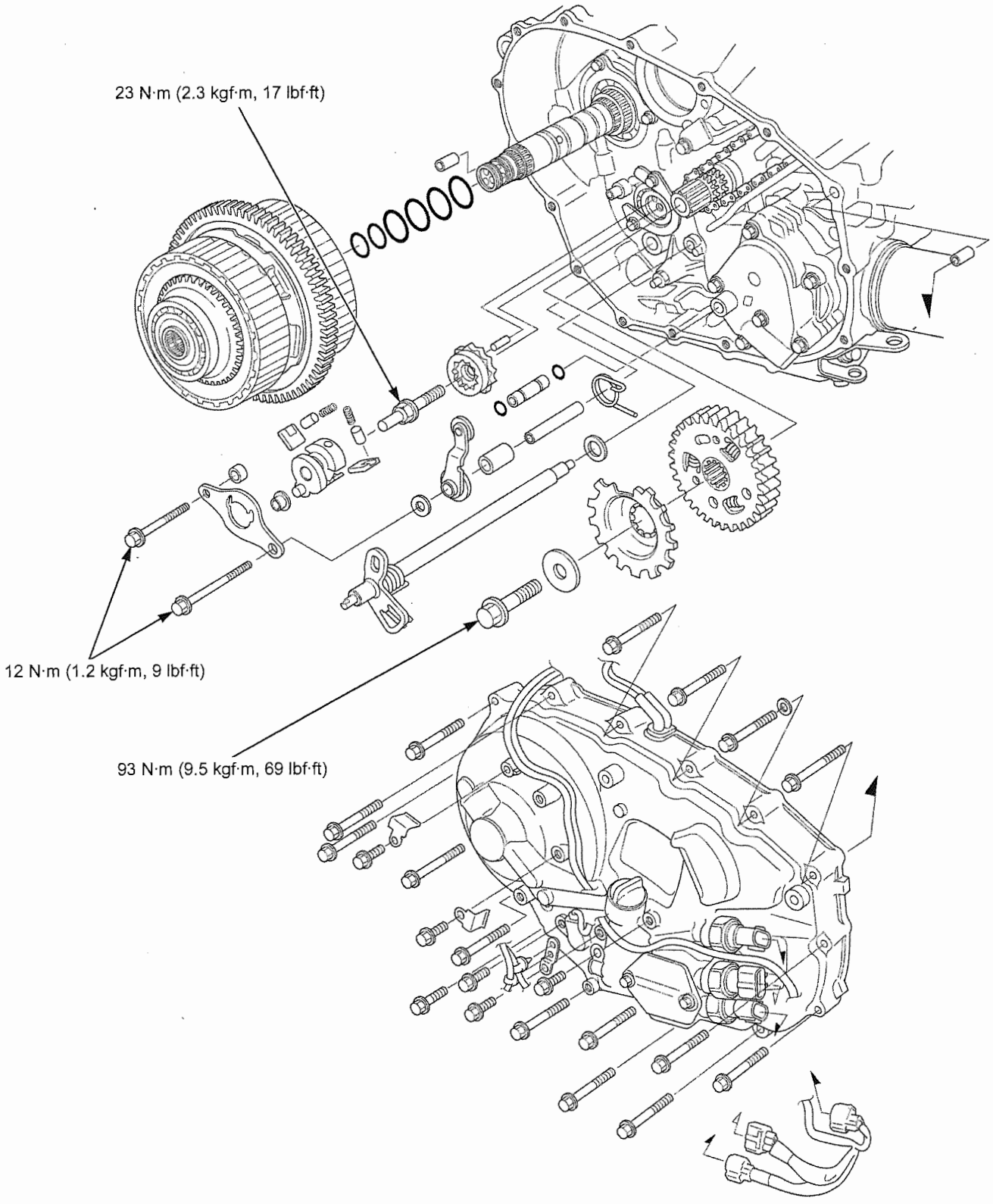
After adjustment tighten the gearshift pedal adjuster lock nut [1] to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**



# 12. DUAL CLUTCH TRANSMISSION (DCT) (CTX700D/ND)

# COMPONENT LOCATION



# SERVICE INFORMATION

## GENERAL

- This section covers service of the electrical and mechanical systems of the Dual Clutch Transmission (DCT).
- A faulty DCT system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- Read the "DCT Troubleshooting Information" carefully, and inspect and troubleshoot the DCT system according to the DTC. Observe each step of the procedures one by one. Note the DTC and probable faulty part before starting diagnosis and troubleshooting.
- The PCM may be damaged if dropped. Also, if a connector is disconnected when current is flowing, the excessive voltage may damage the PCM. Always turn off the ignition switch before servicing.
- The drive mode AT or MT are changed electrically with the AT/MT mode switch.
- Be sure to use the recommended tires, and the specified drive and driven sprocket to operate the dual clutch transmission system normally.
- For oil pump service (page 9-8).
- For neutral switch service (page 22-20).
- For VS sensor service (page 22-12).
- The following color codes are used throughout this section.

| | | | | | |
|---|---|---|---|---|---|
| Bl = Black | Bu = Blue | Gr = Gray | O = Orange | R = Red | W = White |
| Br = Brown | G = Green | Lg = Light green | P = Pink | V = Violet | Y = Yellow |

### For DCT System Troubleshooting

- The DCT system is controlled by the PCM. Therefore some detection items are shared in the PGM-FI and DCT systems, and they may affect the operation of both systems.
- Before starting any troubleshooting, check the following items and refer to the appropriate troubleshooting.
  - MIL blinks or DTC for the PGM-FI system (page 4-9).
  - Shift indicator blinks or DTC for the DCT system (page 12-7)
  - Symptom of the DCT system operation (page 12-5)
  - Serial communication line (page 22-8)
- Refer to the "PGM-FI Troubleshooting Information" for the "CIRCUIT INSPECTION" information (page 4-9).
- The gearshift mechanism included the following items. If the gearshift mechanism is faulty, refer to each component service.
  - Shift control motor/reduction gears (page 12-70)
  - Gearshift linkage (page 12-73)
  - Shift drum/shift fork (page 14-14)

### Shift Control Motor Function Procedures

NOTE:

- If the PCM has a DTC, the function test does not work.
- The function test is not for the quality check of the shift control motor.

Conduct a test of the shift control motor when the following items have been serviced or replaced.

- Shift control motor
- Reduction gears
- TR sensor
- Shift spindle angle sensor

1. Connect the MCS (page 4-8).
2. Select the "DRIVE TRAIN MODE MENU".
3. Select the "FUNCTION TEST" and then select the "SHIFT CONTROL MOTOR".
4. Place the motorcycle on its centerstand to raise the rear wheel off the ground.
5. Select the "Shift Up" or "Shift Down" mode while turning the rear wheel above 5 km/h (3 mph) with your hands. Measure the shift spindle angle sensor voltage at this time. This also tests the mechanical function of the DCT to shift between gears.

**Linear Solenoid Valve Function Procedures**

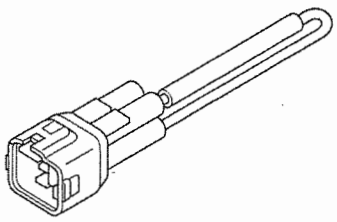
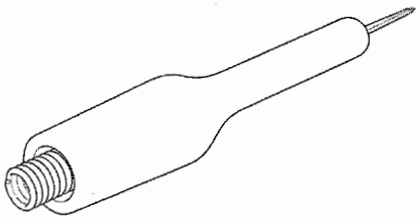
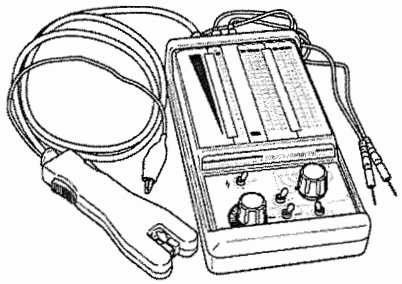
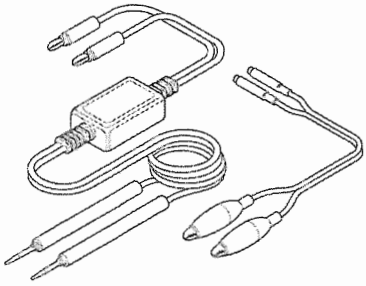
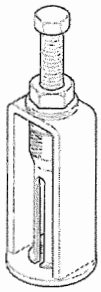
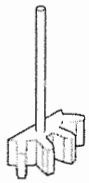
NOTE:

- If the PCM has a DTC, the function test does not work.
- The function test is not for the quality check of the linear solenoid valve.
- Do not open the throttle while testing the linear solenoid valve function.

Conduct a test of the linear solenoid valves when the linear solenoid valves have been serviced or replaced.

1. Connect the MCS.
2. Select the "DRIVE TRAIN MODE MENU".
3. Select the "FUNCTION TEST" and then select the "Linear Solenoid".
4. Select the "Linear Solenoid 1" or "Linear Solenoid 2".
5. Start the engine and let it idle.
6. Make sure that the transmission is in neutral position.
7. Select the "Drive Linear Solenoid To 0 kPa", "Drive Linear Solenoid To 400 kPa" or "Drive Linear Solenoid To 800 kPa" mode. Measure the linear solenoid current at each mode.

## TOOLS

| | | |
|---|---|---|
| SCS service connector<br>070PZ-ZY30100<br>  | Test probe, 2 packs<br>07ZAJ-RDJA110<br>  | IgnitionMate peak voltage tester<br>MTP07-0286 (U.S.A. only)<br>  |
| Peak voltage adaptor<br>07HGJ-0020100<br>  <br>(Not available in U.S.A.) with commercially available digital multimeter (impedance 10 MΩ/DCV minimum) | Bearing remover, 20 mm<br>07931-MA70000<br>  <br>(Not available in U.S.A.) | Gear holder, 2.5<br>07724-0010100<br>  <br>or 07724-001A100 (U.S.A. only) |

# DCT SYMPTOM TROUBLESHOOTING

Check the shift indicator "–" blinking of the combination meter (page 12-7).

If the shift indicator "–" is blinking, refer to the DTC index (page 12-11) and begin the appropriate troubleshooting procedure.

If there are no "–" blinking, inspect the engine oil condition and follow the symptom troubleshooting described below.

## CLUTCH SLIPS AND MOTORCYCLE DOES NOT ACCELERATE

Check the clutch clearance (page 12-67).

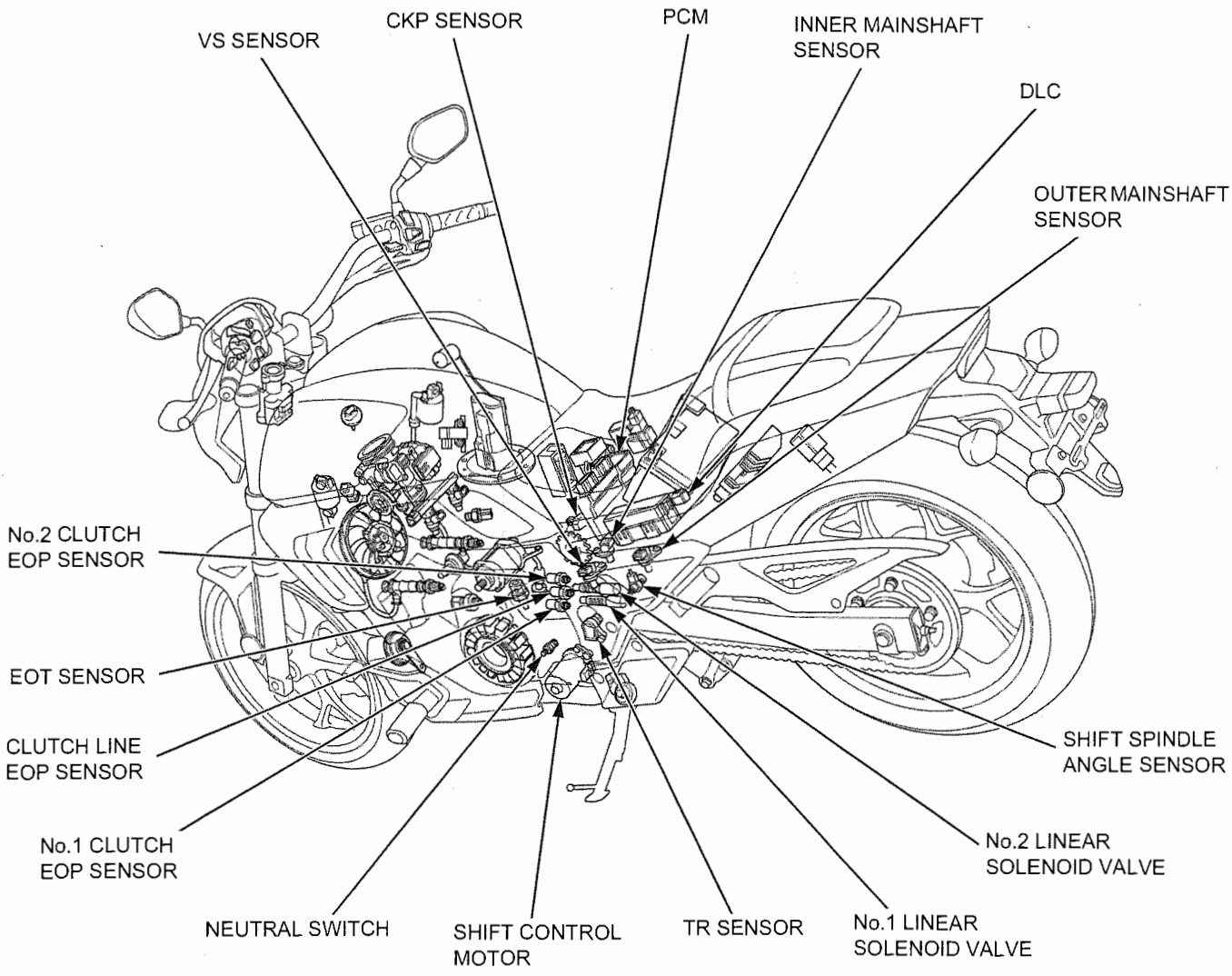
## EXCESSIVE NOISE OR VIBRATION AROUND THE DCT SYSTEM

Inspect the following components:

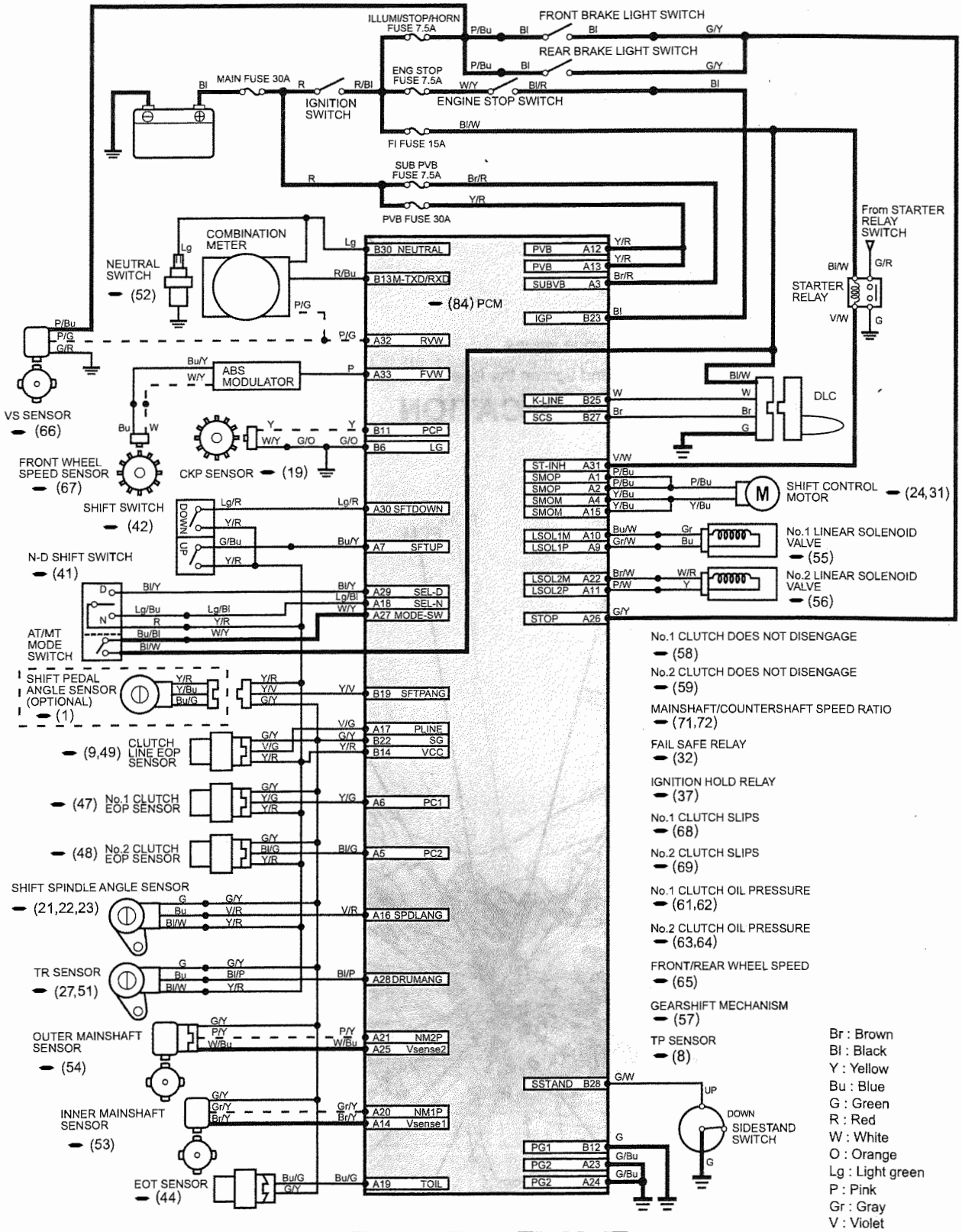
- Clutch clearance
- Dual clutch needle bearings for wear or damage
- Primary drive/sub-gear for wear or damage
- Primary driven gear for wear or damage
- Each fasteners are tightened to their correct torque values

Replace the damaged components if necessary and tighten the loose fasteners to the specified torque.

# DCT ELECTRICAL SYSTEM LOCATION



# DCT SYSTEM DIAGRAM



# DCT TROUBLESHOOTING INFORMATION

## GENERAL TROUBLESHOOTING

### Intermittent Failure

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the shift indicator "–" does not come on, check for poor contact or loose pins at all connectors related to the circuit that you are troubleshooting. If the shift indicator "–" was on, but then went out, the original problem may be intermittent.

### Opens and Shorts

"Opens" and "Shorts" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. With PCMs this can sometimes mean something works, but not the way it's supposed to.

### If the shift indicator "–" has come on

Refer to DTC READOUT (page 12-9).

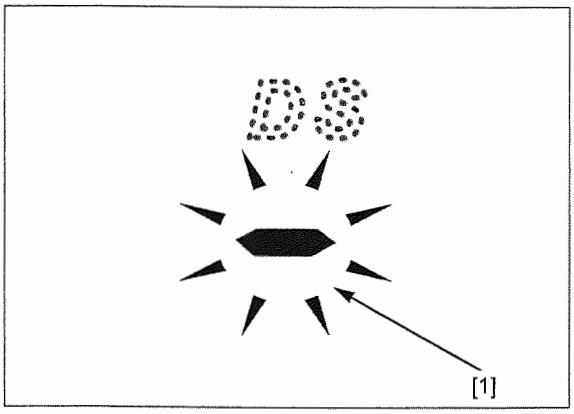
### If the shift indicator "–" did not stay on

If the shift indicator "–" did not stay on, but there is a driveability problem, do the SYMPTOM TROUBLESHOOTING (page 12-5).

## SYSTEM DESCRIPTION

### SELF-DIAGNOSIS SYSTEM

The DCT system is equipped with the self-diagnostic system. When any abnormality occurs in the DCT system, the PCM have the shift indicator [1] blinking "–" and stores a DTC in its erasable memory for the relevant system failure.




### FAIL-SAFE FUNCTION

The DCT system is provided with a fail-safe function to secure a minimum running capability even when there is trouble in the system.

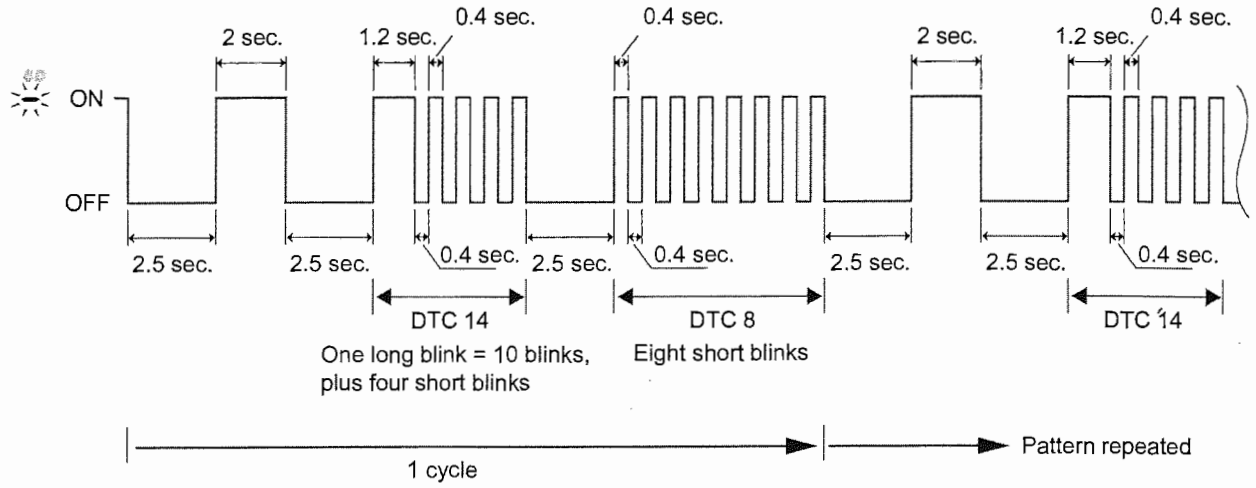
When the PCM detects a problem in the DCT system, the PCM stops the gearshift function, and hold the gear position. Also, the shift indicator blinks "–" to indicate the DTC.

### DTC (Diagnostic Trouble Code)

- The DTC is composed of a main code and a sub code and it is displayed as a hyphenated number when retrieved from the PCM with the MCS.
  The digits in front of the hyphen are the main code, they indicate the component of function failure.
  The digits behind the hyphen are the sub code, they detail the specific symptom of the component or function failure.
  For example, in the case of the shift spindle angle sensor:
  – DTC 21 – 1 = (Shift spindle angle sensor voltage) – (lower than the specified value)
  – DTC 21 – 2 = (Shift spindle angle sensor voltage) – (higher than the specified value)

**Shift indicator "–" Blink Pattern**

- If the MCS is not available, DTC can be read from the PCM memory by the shift indicator "–" blink pattern.
- The number of shift indicator "–" blinks is the equivalent of the main code of the DTC (the sub code cannot be displayed by the shift indicator "–").
- The shift indicator "–" has two types of blinks, a long blink and short blink. The long blinking lasts for 1.2 seconds, the short blinking lasts for 0.4 seconds. One long blink is the equivalent of ten short blinks. For example, DTC 14 and DTC 8 are indicated in the following blink pattern.
- When there isn't a DTC, the shift indicator "–" lights for 2 seconds at intervals of 3 seconds (page 12-10).




**Shift indicator Check**

When the ignition switch is turned ON with the engine stop switch to "○", the shift indicator will stay on for a few seconds, then go off.

**CURRENT DTC/STORED DTC**

The DTC is indicated in two ways according to the failure status.

- If the PCM detects a current problem, the shift indicator "–" will come on and begin to blink when the sidestand is lowered. The shift indicator "–" blink pattern will indicate the current DTC.
- If the PCM does not detect any current but has a problem stored in its memory, the shift indicator "–" will not light and blink. If it is necessary to retrieve the past problem, readout the stored DTC by following the DTC readout procedure (page 12-9).

## MCS INFORMATION

Refer to the PGM-FI system (page 4-8).

NOTE:

The front wheel speed sensor signal can be disabled with the MCS for testing. Never ride the motorcycle with the PCM in this mode.

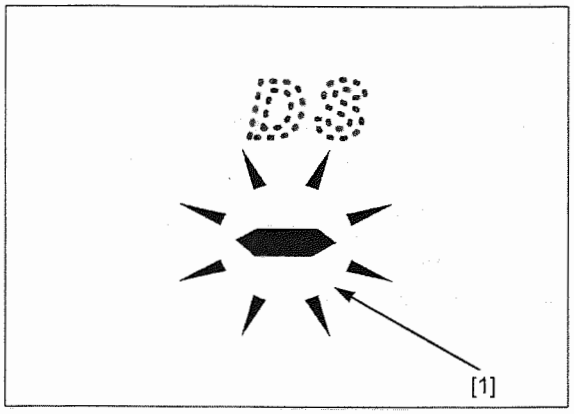
## DTC READOUT

NOTE:

- If the shift indicator [1] blinks, check the PGM-FI DTC (page 4-9). If there is any problem in the PGM-FI system, troubleshoot it first. Then recheck the DCT system after erasing the PGM-FI DTC.
- After performing diagnostic troubleshooting, erase the problem code(s) (page 12-10) and test-ride the motorcycle to be sure that the problem(s) have been removed.

Read the DTC and stored data with the MCS, and follow the troubleshooting index (page 12-11).

To read the DTC without the MCS, use the following procedure.




**Reading DTC with the shift indicator "–"**

1. Turn the ignition switch OFF.

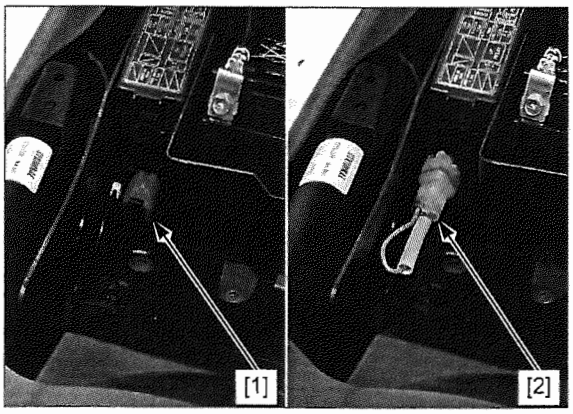
   Remove the seat (page 2-14).

2. Remove the DLC [1] from the battery box.
   Remove the dummy connector from the DLC.

   Short the DLC terminals using a special tool.

   **Connection: Brown – Green**

   **TOOL:**
   **[2] SCS service connector 070PZ-ZY30100**

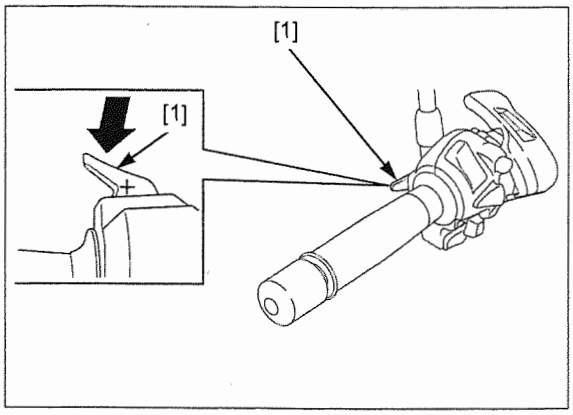



3. Make sure the engine stop switch is turned to "○".
   While pushing the shift switch (+) [1], turn the ignition switch ON. Read, note the shift indicator "–" blinks and refer to the troubleshooting index (page 12-11).

NOTE:

- If the PCM has no DTC in its memory, the shift indicator "–" will start blinking (page 12-10).

4. Release the shift switch (+).



## ERASING DTC

Connect the MCS to the DLC (page 4-8).

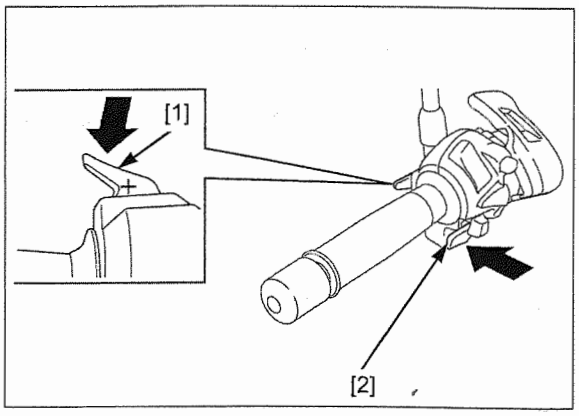
Erase the DTC with the MCS while the engine is stopped.

To erase the DTC without MCS, refer to the following procedure.

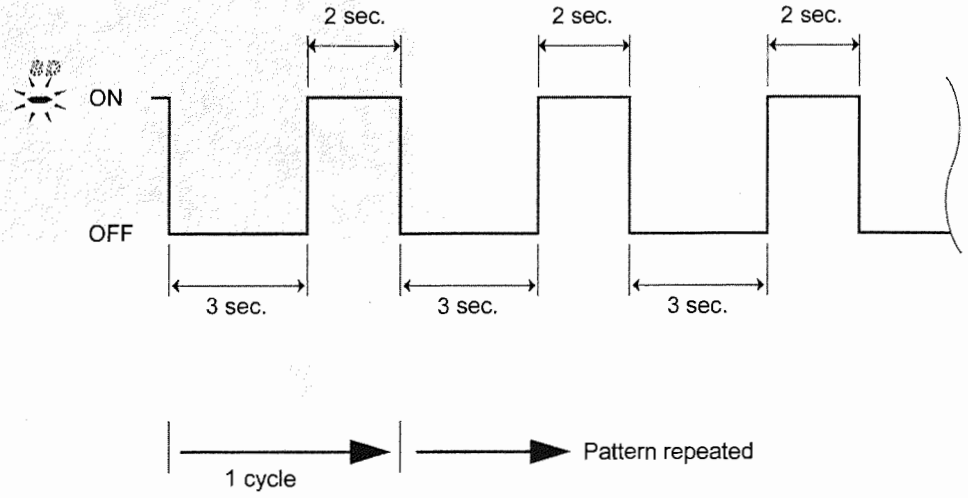
**How to erase the DTC without MCS**

1. Connect the SCS connector to the DLC (page 12-9).

   Make sure the engine stop switch is turned to "○".
   While pushing the shift switch (+) [1], turn the ignition switch ON and engine stop switch "○".
2. Push the shift switch (–) [2].
3. Push the shift switch (+).




4. The self-diagnostic memory is erased if the shift indicator "–" goes off and starts blinking as shown.




NOTE:
Note that the self-diagnostic memory cannot be erased if the ignition switch is turned to "OFF" before the shift indicator "–" starts blinking.

5. Turn the ignition switch OFF.
6. Remove the special tool from the DLC.

# DTC INDEX

| DTC ("–" blinks) | Function Failure | Symptom/Fail-safe function | Refer to page |
|---|---|---|---|
| 8-1 (8) | TP sensor abnormal voltage<br>• Loose or poor contact of the TP sensor connector<br>• TP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function works normally | 12-16 |
| 9-1 (9) | Clutch line EOP sensor low voltage<br>• Clutch line EOP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function works normally | 12-16 |
| 9-2 (9) | Clutch line EOP sensor high voltage<br>• Loose or poor contact of the clutch line EOP sensor connector<br>• Clutch line EOP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function works normally | 12-17 |
| 19-1 (19) | CKP sensor no signal<br>• Loose or poor contact of the CKP sensor connector<br>• Electromagnetic interference at CKP sensor<br>• CKP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-18 |
| 21-1 (21) | Shift spindle angle sensor low voltage<br>• Loose or poor contact of the shift spindle angle sensor connector<br>• Shift spindle angle sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Only shifted into 1st gear | 12-19 |
| 21-2 (21) | Shift spindle angle sensor high voltage<br>• Shift spindle angle sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Only shifted into 1st gear | 12-20 |
| 22-1 (22) | Shift spindle operation malfunction (after operating gearshift mechanism)<br>• Gearshift mechanism malfunction<br>• Shift spindle angle sensor malfunction | • Gearshift function does not work (while driving)<br>• Only shifted into 1st gear | 12-21 |
| 23-1 (23) | Shift spindle operation malfunction (while operating gearshift mechanism)<br>• Gearshift mechanism malfunction<br>• Shift spindle angle sensor malfunction | • Gearshift function does not work (while driving)<br>• Only shifted into 1st gear | 12-22 |
| 24-1 (24) | Shift control motor drive circuit<br>• Shift control motor or its circuit malfunction<br>• Shift control motor drive circuit in the PCM malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-23 |
| 27-1 (27) | Shift drum position malfunction<br>• TR sensor malfunction<br>• Gearshift mechanism malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-24 |
| 31-1 (31) | Shift control motor low voltage<br>• Shift control motor circuit malfunction<br>• Ignition hold relay circuit in the PCM malfunction<br>• Blown PVB fuse (30 A)<br>• Loose or poor contact of the PCM 33P (Black) connector<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-25 |
| 32-1 (32) | Fail safe relay circuit malfunction<br>• PCM (DCT drive circuit) power input line malfunction<br>• Blown PVB fuse (30 A)<br>• Fail safe relay in the PCM malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-26 |
| 37-1 (37) | Ignition hold relay malfunction<br>• PCM (DCT drive circuit) sub power input line malfunction<br>• Blown SUB PVB fuse (7.5 A)<br>• Ignition hold relay in the PCM malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-26 |
| 41-1 (41) | N-D shift switch malfunction<br>• Loose or poor contact of the N-D shift switch connector<br>• N-D shift switch or its circuit malfunction<br>• Faulty PCM | • N-D shift switch does not operate | 12-27 |

| DTC ("–" blinks) | Function Failure | Symptom/Fail-safe function | Refer to page |
|---|---|---|---|
| 42-1 (42) | Shift switch malfunction<br>• Loose or poor contact of the shift switch connector<br>• Shift switch or its circuit malfunction<br>• Faulty PCM | • Shift switch does not operate | 12-28 |
| 44-1 (44) | EOT sensor low voltage<br>• EOT sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function works normally | 12-29 |
| 44-2 (44) | EOT sensor high voltage<br>• Loose or poor contact of the EOT sensor connector<br>• EOT sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function works normally | 12-30 |
| 47-1 (47) | No.1 clutch EOP sensor low voltage<br>• No.1 clutch EOP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | 12-31 |
| 47-2 (47) | No.1 clutch EOP sensor high voltage<br>• Loose or poor contact of the No.1 clutch EOP sensor connector<br>• No.1 clutch EOP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | 12-32 |
| 48-1 (48) | No.2 clutch EOP sensor low voltage<br>• No.2 clutch EOP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | 12-31 |
| 48-2 (48) | No.2 clutch EOP sensor high voltage<br>• Loose or poor contact of the No.2 clutch EOP sensor connector<br>• No.2 clutch EOP sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | 12-32 |
| 49-1 (49) | Clutch line low oil pressure (when clutch engage)<br>• Engine oil level low<br>• Faulty oil pump<br>• Faulty clutch oil circuit<br>• Clutch line EOP sensor malfunction<br>• Faulty PCM | • Engine does not operate | 12-34 |
| 49-2 (49) | Clutch line low oil pressure (when engine running)<br>• Engine oil level low<br>• Faulty oil pump<br>• Faulty clutch oil circuit<br>• Clutch line EOP sensor malfunction<br>• Faulty PCM | • Engine does not operate | |
| 51-1 (51) | TR sensor low voltage<br>• Loose or poor contact of the TR sensor connector<br>• TR sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-35 |
| 51-2 (51) | TR sensor high voltage<br>• TR sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-36 |
| 52-1 (52) | Neutral switch stuck OFF<br>• Loose or poor contact of the neutral switch connector<br>• Neutral switch or its circuit malfunction<br>• Faulty PCM | • Operates normally<br>• Shift indicator blinking | 12-37 |
| 52-2 (52) | Neutral switch stuck ON<br>• Neutral switch or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-37 |
| 53-1 (53) | Inner mainshaft sensor speed low<br>• Loose or poor contact of the inner mainshaft sensor connector<br>• Inner mainshaft sensor or its circuit malfunction<br>• Electromagnetic interference<br>• Faulty PCM | • Gearshift function does not work | 12-38 |
| 54-1 (54) | Outer mainshaft sensor speed low<br>• Loose or poor contact of the outer mainshaft sensor connector<br>• Outer mainshaft sensor or its circuit malfunction<br>• Electromagnetic interference<br>• Faulty PCM | • Gearshift function does not work | 12-40 |

| DTC ("–" blinks) | Function Failure | Symptom/Fail-safe function | Refer to page |
|---|---|---|---|
| 55-1 (55) | No.1 linear solenoid valve current failure<br>• Loose or poor contact of the No.1 linear solenoid valve connector<br>• No.1 linear solenoid valve or its circuit malfunction<br>• No.1 linear solenoid valve drive circuit in the PCM malfunction<br>• Faulty PCM | • Gearshift function does not work | 12-43 |
| 55-2 (55) | No.1 linear solenoid valve driver in the PCM failure<br>• Loose or poor contact of the No.1 linear solenoid valve connector<br>• Loose or poor contact of the PCM 33P connector<br>• No.1 linear solenoid valve or its circuit malfunction<br>• No.1 linear solenoid valve drive circuit in the PCM malfunction<br>• Faulty PCM | • Gearshift function does not work | |
| 56-1 (56) | No.2 linear solenoid valve current failure<br>• Loose or poor contact of the No.1 linear solenoid valve connector<br>• No.2 linear solenoid valve or its circuit malfunction<br>• No.2 linear solenoid valve drive circuit in the PCM malfunction<br>• Faulty PCM | • Gearshift function does not work | 12-44 |
| 56-2 (56) | No.2 linear solenoid valve driver in the PCM failure<br>• Loose or poor contact of the No.2 linear solenoid valve connector<br>• Loose or poor contact of the PCM 33P connector<br>• No.2 linear solenoid valve or its circuit malfunction<br>• No.2 linear solenoid valve drive circuit in the PCM malfunction<br>• Faulty PCM | • Gearshift function does not work | |
| 57-1 (57) | Gearshift mechanism malfunction<br>• Gearshift mechanism malfunction<br>• TR sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-45 |
| 57-2 (57) | Gear position malfunction (jumps out of gear)<br>• Gearshift mechanism malfunction<br>• TR sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-45 |
| 58-1 (58) | No.1 clutch does not disengage (when shifting gear)<br>• No.1 clutch sticking<br>• Faulty clutch oil circuit | • Engine does not operate | 12-45 |
| 59-1 (59) | No.2 clutch does not disengage (when shifting gear)<br>• No.2 clutch sticking<br>• Faulty clutch oil circuit | • Engine does not operate | 12-46 |
| 61-1 (61) | No.1 clutch oil pressure malfunction (at clutch initial diagnosis)<br>• No.1 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• Faulty PCM | • Gearshift function does not work | 12-46 |
| 61-2 (61) | No.1 clutch no oil pressure<br>• No.1 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.1 linear solenoid valve or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | |
| 61-3 (61) | No.1 clutch oil pressure degradation<br>• No.1 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.1 linear solenoid valve malfunction<br>• Faulty PCM | • Gearshift function does not work | |
| 61-4 (61) | No.1 clutch oil pressure canceling malfunction<br>• No.1 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• Loose or poor contact of the linear solenoid valve and No.1 clutch EOP sensor connectors<br>• No.1 linear solenoid valve malfunction<br>• Faulty PCM | • Engine does not operate | |

| DTC ("–" blinks) | Function Failure | Symptom/Fail-safe function | Refer to page |
|---|---|---|---|
| 62-1 (62) | No.1 clutch oil pressure high<br>• No.1 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.1 linear solenoid valve malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-46 |
| 62-2 (62) | No.1 clutch oil pressure high (Prevention of motorcycle creeps)<br>• No.1 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.1 linear solenoid valve malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | |
| 63-1 (63) | No.2 clutch oil pressure malfunction (at clutch initial diagnosis)<br>• No.2 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• Faulty PCM | • Gearshift function does not work | 12-47 |
| 63-2 (63) | No.2 clutch no oil pressure<br>• No.2 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.2 linear solenoid valve or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | |
| 63-3 (63) | No.2 clutch oil pressure degradation<br>• No.2 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.2 linear solenoid valve malfunction<br>• Faulty PCM | • Gearshift function does not work | |
| 63-4 (63) | No.2 clutch oil pressure canceling malfunction<br>• No.2 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• Loose or poor contact of the linear solenoid valve and No.2 clutch EOP sensor connectors<br>• No.2 linear solenoid valve or its circuit malfunction<br>• Faulty PCM | • Engine does not operate | |
| 64-1 (64) | No.2 clutch oil pressure high<br>• No.2 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.2 linear solenoid valve malfunction<br>• Faulty PCM | • Gearshift function does not work (while driving)<br>• Engine does not operate | 12-47 |
| 64-2 (64) | No.2 clutch oil pressure high (Prevention of motorcycle creeps)<br>• No.2 clutch EOP sensor malfunction<br>• Faulty clutch oil circuit<br>• No.2 linear solenoid valve malfunction<br>• Faulty PCM | • Engine does not operate | |
| 65-1 (65) | Front and rear wheel speed signal malfunction<br>• Front wheel speed sensor or its circuit malfunction<br>• VS sensor or its circuit malfunction<br>• Faulty ABS modulator<br>• Faulty PCM | • Gearshift function does not work | 12-48 |
| 66-1 (66) | VS sensor no signal<br>• VS sensor or its circuit malfunction<br>• Loose or poor contact of the VS sensor connector<br>• Electromagnetic interference at VS sensor<br>• Faulty PCM | • Gearshift function does not work | 12-49 |
| 67-1 (67) | Front wheel speed sensor no signal<br>• Front wheel speed sensor or its circuit malfunction<br>• Loose or poor contact of the front wheel speed sensor connector<br>• Electromagnetic interference at front wheel speed sensor<br>• Faulty ABS modulator<br>• Faulty pulser ring<br>• Faulty PCM | • Gearshift function does not work | 12-51 |
| 68-1 (68) | No.1 clutch operation malfunction (clutch slips)<br>• VS sensor or its circuit malfunction<br>• Faulty No.1 clutch<br>• Faulty PCM | • Gearshift function does not work | 12-52 |

| DTC ("–" blinks) | Function Failure | Symptom/Fail-safe function | Refer to page |
|---|---|---|---|
| 69-1 (69) | No.2 clutch operation malfunction (clutch slips)<br>• VS sensor or its circuit malfunction<br>• Faulty No.2 clutch<br>• Faulty PCM | • Gearshift function does not work | 12-52 |
| 71-1 (71) | Inner mainshaft / countershaft speed ratio failure<br>• VS sensor or its circuit malfunction<br>• Inner mainshaft sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | 12-53 |
| 72-1 (72) | Outer mainshaft / countershaft speed ratio failure<br>• VS sensor or its circuit malfunction<br>• Outer mainshaft sensor or its circuit malfunction<br>• Faulty PCM | • Gearshift function does not work | |
| 84-1 (84) | CPU in the PCM malfunction<br>• Faulty PCM | • Gearshift system stops | 12-53 |
| 1-1 (1) | Shift pedal angle sensor (Optional) malfunction<br>• Shift pedal angle sensor or its circuit malfunction<br>• DCT shift pedal (Optional) mechanism malfunction<br>• Loose or poor contact of the shift pedal angle sensor connector<br>• Faulty PCM | • DCT shift pedal (Optional) function does not work | 12-54 |

# DTC TROUBLESHOOTING

## DTC 8-1 (TP SENSOR ABNORMAL VOLTAGE)

1. **TP Sensor System Inspection**

   Check the TP sensor with the MCS when the throttle is fully closed.

   ***Is Low voltage (about 0 V) or High voltage (about 5 V) indicated?***

   **YES** – • About 0 V: See DTC 8-1 (page 4-17)
   • About 5 V: See DTC 8-2 (page 4-18)

   **NO** – Intermittent failure

## DTC 9-1 (CLUTCH LINE EOP SENSOR LOW VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Clutch Line EOP Sensor System Inspection**

   Connect the MCS and start the engine.
   Check the clutch line EOP sensor with the MCS.

   ***Is about 0 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Clutch Line EOP Sensor Inspection**

   Stop the engine.
   Disconnect the clutch line EOP sensor 3P (Black) connector (page 12-78).
   Turn the ignition switch ON and engine stop switch "○".
   Check the clutch line EOP sensor with the MCS.

   ***Is about 0 V indicated?***

   **YES** – GO TO STEP 3.

   **NO** – Replace the clutch line EOP sensor with a known good one, and recheck.

3. **Clutch Line EOP Sensor Input Line Open Circuit Inspection**

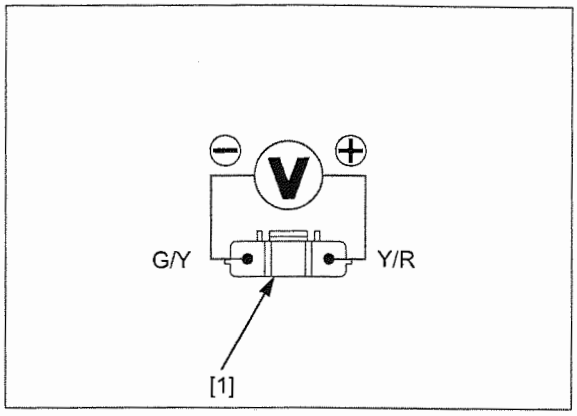
   Measure the voltage between the wire harness side clutch line EOP sensor 3P (Black) connector [1] terminals.

   **Connection: Yellow/red (+) – Green/yellow (–)**

   ***Is the voltage within 4.75 – 5.25 V?***

   **YES** – GO TO STEP 4.

   **NO** – Open circuit in the Yellow/red wire



4. **Clutch Line EOP Sensor Output Line Short Circuit Inspection**

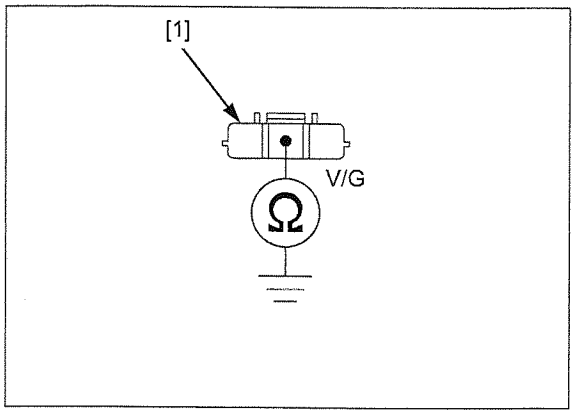
   Check for continuity between the wire harness side clutch line EOP sensor 3P (Black) connector [1] terminal and ground.

   **Connection: Violet/green – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Violet/green wire

   **NO** – Replace the PCM with a known good one, and recheck.




## DTC 9-2 (CLUTCH LINE EOP SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the clutch line EOP sensor 3P (Black) and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Clutch Line EOP Sensor System Inspection**

   Check the clutch line EOP sensor with the MCS.

   ***Is about 5 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Clutch Line EOP Sensor Inspection**

   Turn the ignition switch OFF.
   Disconnect the clutch line EOP sensor 3P (Black) connector (page 12-78).
   Connect the wire harness side clutch line EOP sensor 3P (Black) connector [1] terminals with a jumper wire [2].

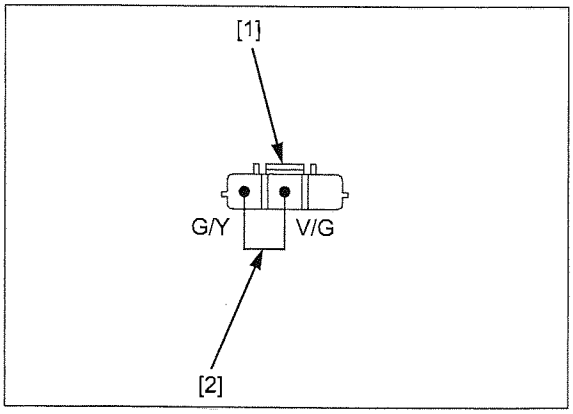
   **Connection: Violet/green – Green/yellow**

   Turn the ignition switch ON and engine stop switch "○".
   Check the clutch line EOP sensor with the MCS.

   ***Is the 0 V indicated?***

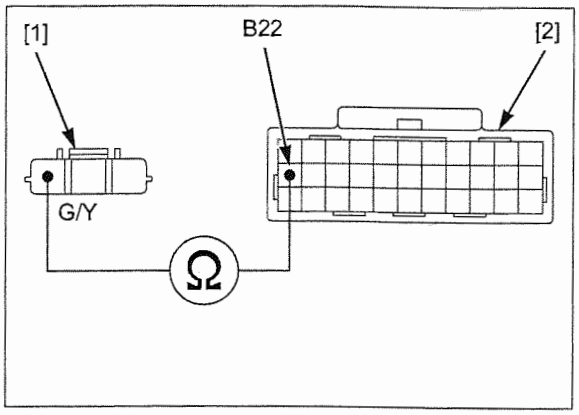
   **YES** – Faulty clutch line EOP sensor

   **NO** – GO TO STEP 3.



3. **Clutch Line EOP Sensor Ground Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the wire harness side clutch line EOP sensor 3P (Black) connector [1] and PCM 33P (Gray) connector [2] terminals.




**Connection: Green/yellow – B22**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

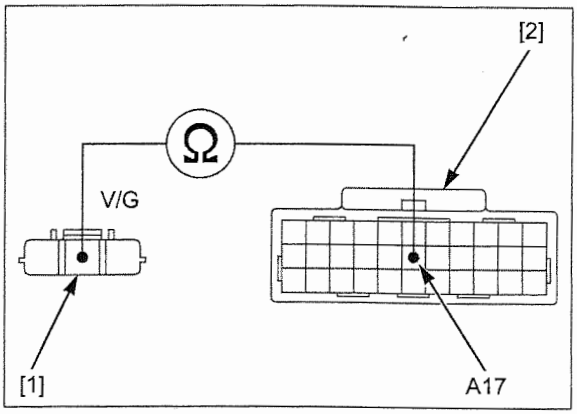
***Is there continuity?***

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Green/yellow wire

4. **Clutch Line EOP Sensor Output Line Open Circuit Inspection**

Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side clutch line EOP sensor 3P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.




**Connection: Violet/green – A17**

**TOOL: Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Open circuit in the Violet/green wire

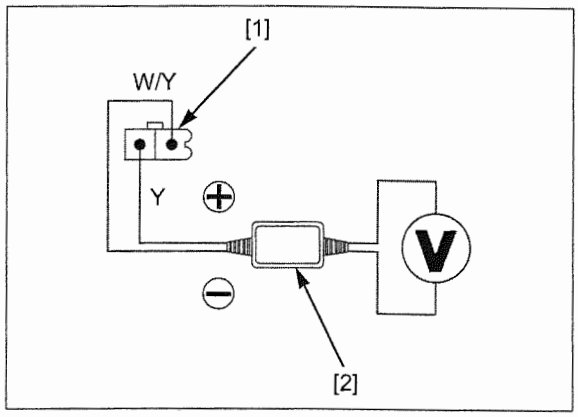
## DTC 19-1 (CKP SENSOR NO SIGNAL)

NOTE:

- Before starting the inspection, check for loose or poor contact on the CKP sensor 2P (Red) and PCM 33P (Gray) connectors, then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **CKP sensor Peak Voltage Inspection**

Disconnect the CKP sensor 2P (Red) connector (page 12-57).
Turn the ignition switch ON with the engine stop switch "○".
Crank the engine with the starter motor, and measure the CKP sensor peak voltage at the CKP sensor 2P (Red) connector [1] terminals of the CKP sensor side.




**Connection: Yellow (+) – White/yellow (–)**

**TOOLS:**

| | |
|---|---|
| **IgnitionMate peak voltage tester** | **MTP07-0286 (U.S.A. only) or** |
| **Peak voltage adaptor [2]** | **07HGJ-0020100 (Not available in U.S.A.)** |

**with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)**

***Is the voltage more than 0.7 V?***

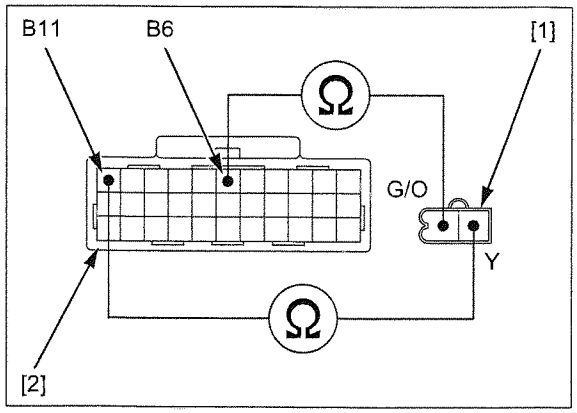
**YES** – GO TO STEP 2.

**NO** – Faulty CKP sensor

**2. CKP sensor Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the CKP sensor 2P (Red) connector [1] and PCM 33P (Gray) connector [2] terminals.

**Connection: Yellow – B11**
**Green/orange – B6**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Short circit in the Yellow wire

**NO** – • Open circuit in the Yellow wire
• Open circuit in the Green/orange wire

## DTC 21-1 (SHIFT SPINDLE ANGLE SENSOR LOW VOLTAGE)

NOTE:
- Before starting the inspection, check for loose or poor contact on the shift spindle angle sensor 3P (Gray) and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

**1. Shift Spindle Angle Sensor System Inspection**

Check the shift spindle angle sensor with the MCS.

***Is about 0 V indicated?***

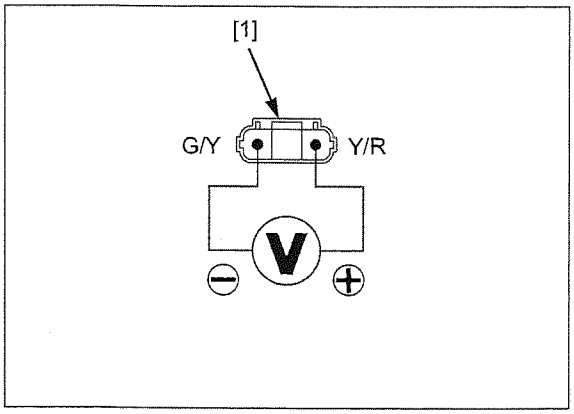
**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. Shift Spindle Angle Sensor Input Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the shift spindle angle sensor 3P (Gray) connector (page 12-77).
Turn the ignition switch ON and engine stop switch "○".
Measure the voltage between the wire harness side shift spindle angle sensor 3P (Gray) connector [1] terminals.

**Connection: Yellow/red (+) – Green/yellow (–)**




***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 3.

**NO** – Open circuit in the Yellow/red wire

3. **Shift Spindle Angle Sensor Output Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side shift spindle angle sensor 3P (Gray) connector [1] and PCM 33P (Black) connector [2] terminals.

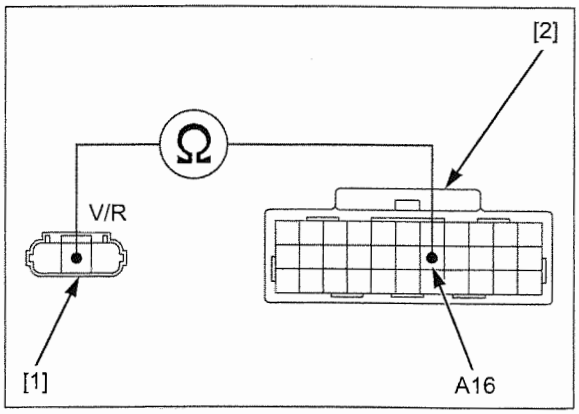
**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

**Connection: Violet/red – A16**

***Is there continuity?***

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Violet/red wire




4. **Shift Spindle Angle Sensor Output Line Short Circuit Inspection**

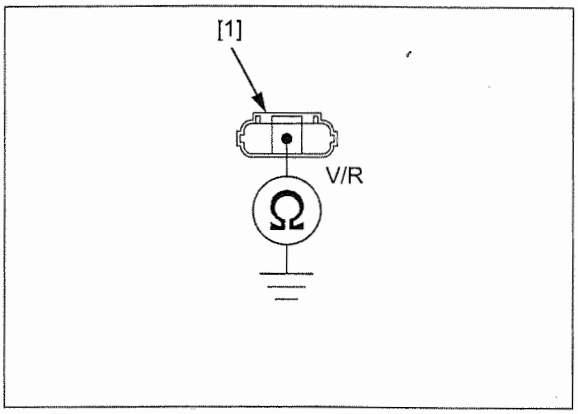
Check for continuity between the wire harness side shift spindle angle sensor 3P (Gray) connector [1] terminal and ground.

**Connection: Violet/red – ground**

***Is there continuity?***

**YES** – Short circuit in the Violet/red wire

**NO** – GO TO STEP 5.




5. **Shift Spindle Angle Sensor Inspection**

Replace the shift spindle angle sensor with a known good one (page 12-77).
Connect the shift spindle angle sensor 3P (Gray) connector and PCM 33P (Black) connector.
Turn the ignition switch ON.
Check the shift spindle angle sensor with the MCS.

***Is about 0 V indicated?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Faulty original shift spindle angle sensor

## DTC 21-2 (SHIFT SPINDLE ANGLE SENSOR HIGH VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Shift Spindle Angle Sensor System Inspection**

Check the shift spindle angle sensor with the MCS.

***Is about 5 V indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **Shift Spindle Angle Sensor Ground Line Open Circuit Inspection**

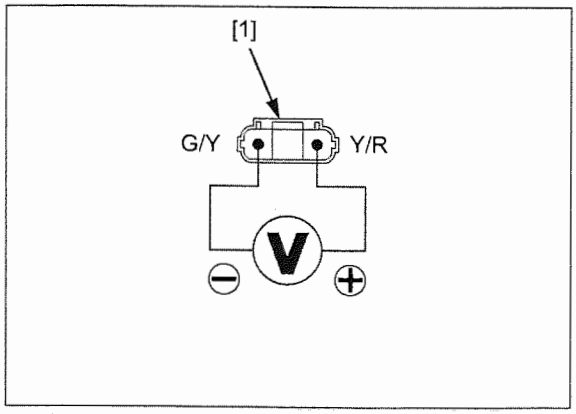
Turn the ignition switch OFF.
Disconnect the shift spindle angle sensor 3P (Gray) connector (page 12-77).
Turn the ignition switch ON and engine stop switch "○".
Measure the voltage between the wire harness side shift spindle angle sensor 3P (Gray) connector [1] terminals.

**Connection: Yellow/red (+) – Green/yellow (–)**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 3.

**NO** – Open circuit in the Green/yellow wire




3. **Shift Spindle Angle Sensor System Inspection**

Replace the shift spindle angle sensor with a known good one (page 12-77).
Connect the shift spindle angle sensor 3P (Gray) connector.
Turn the ignition switch ON.
Check the shift spindle angle sensor with the MCS.

***Is about 5 V indicated?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Faulty shift spindle angle sensor

## DTC 22-1 (SHIFT SPINDLE OPERATION MALFUNCTION: AFTER OPERATING GEARSHIFT MECHANISM)

1. **Shift Spindle Angle Sensor System Inspection**

Check the shift spindle angle sensor with the MCS.

***Is Low voltage (about 0 V) or High voltage (about 5 V) indicated?***

**YES** – • About 0 V: See DTC 21-1 (page 12-19).
• About 5 V: See DTC 21-2 (page 12-20).

**NO** – GO TO STEP 2.

2. **Shift Control Motor/Reduction Gear Condition**

Check the shift control motor and reduction gears are installed properly and are not damaged.

***Are the shift control motor and reduction gears in normal condition?***

**YES** – GO TO STEP 3.

**NO** – Install the shift control motor and reduction gears properly or replace faulty parts.

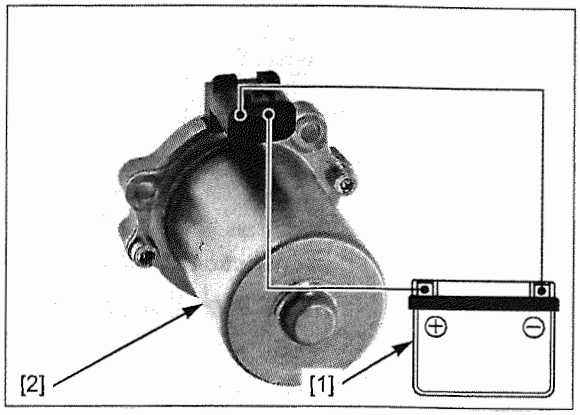
3. **Shift Control Motor Condition Inspection**

Remove the shift control motor (page 12-70).
Connect a fully charged 12 V battery [1] to the shift control motor [2] 2P connector terminals to check the motor operation.
Change the battery connection to check the reverse operation.

***Does the shift control motor turn in both directions?***

**YES** – GO TO STEP 4.

**NO** – Faulty shift control motor




4. **Shift Spindle Angle Sensor System Inspection**

Remove the shift spindle angle sensor with the connector connected (page 12-77).
Turn the ignition switch ON.
While turning the shift spindle angle sensor shaft, check the shift spindle angle sensor voltage with the MCS.

**When turning the sensor shaft clockwise:**
**Voltage increase**
**When turning the sensor shaft counterclockwise:**
**Voltage decrease**

***Does the voltage vary properly?***

**YES** – GO TO STEP 5.

**NO** – Faulty shift spindle angle sensor

5. **Shift Spindle Angle Sensor Condition Inspection**

Check that the shift spindle angle sensor is installed properly.

***Is the shift spindle angle sensor in normal condition?***

**YES** – GO TO STEP 6.

**NO** – Install the shift spindle angle sensor properly.

6. **DTC Recheck**

Recheck the DTC with the MCS.

***Is DTC 22-1 indicated?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Intermittent failure

## DTC 23-1 (SHIFT SPINDLE OPERATION MALFUNCTION: WHILE OPERATING GEARSHIFT MECHANISM)

Refer to DTC 22-1 (page 12-21)

## DTC 24-1 (SHIFT CONTROL MOTOR DRIVE CIRCUIT)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

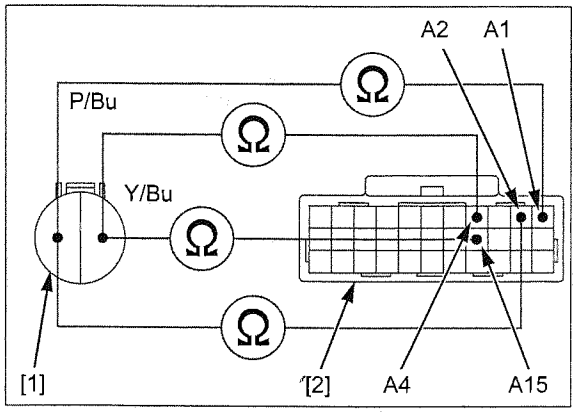
**1. Shift Control Motor Line Open Circuit Inspection**

Disconnect the following:

- PCM 33P (Black) connector (page 4-34)
- Shift control motor 2P (Black) connector (page 12-70)

Check for continuity between the wire harness side shift control motor 2P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

**Connection: Pink/blue – A1**
**Pink/blue – A2**
**Yellow/blue – A4**
**Yellow/blue – A15**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

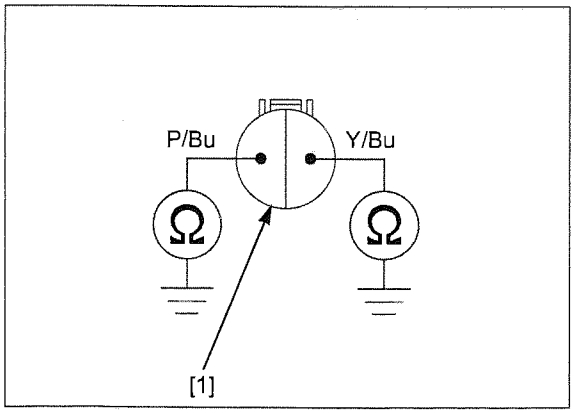
**YES** – GO TO STEP 2.

**NO** – • Open circuit in the Pink/blue wire
• Open circuit in the Yellow/blue wire

**2. Shift Control Motor Line Short Circuit Inspection**

Check for continuity between the wire harness side shift control motor 2P (Black) connector [1] terminals and ground.

**Connection: Pink/blue – Ground**
**Yellow/blue – Ground**



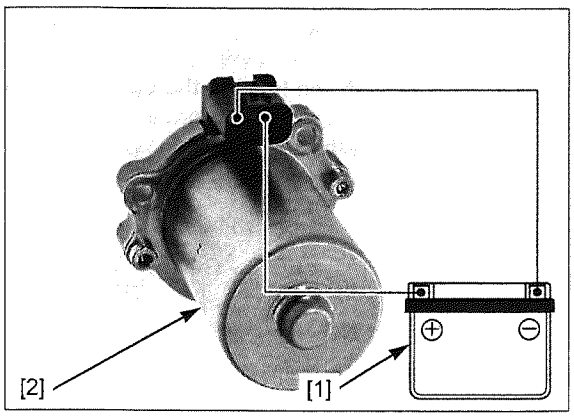

***Is there continuity?***

**YES** – • Short circuit in the Pink/blue wire
• Short circuit in the Yellow/blue wire

**NO** – GO TO STEP 3.

**3. Shift Control Motor Inspection**

Remove the shift control motor (page 12-70).
Connect a fully charged 12 V battery [1] to the shift control motor [2] 2P connector terminals to check the motor operation.
Change the battery connection to check the reverse operation.




***Does the shift control motor turn in both directions?***

**YES** – Replace the PCM with a known good one.

**NO** – Faulty shift control motor

## DTC 27-1 (SHIFT DRUM POSITION MALFUNCTION)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **TR Sensor System Inspection**

   Check the TR sensor with the MCS.

   ***Is Low voltage (about 0 V) or High voltage (about 5 V) indicated?***

   **YES** – • About 0 V: See DTC 51-1 (page 12-35).
   • About 5 V: See DTC 51-2 (page 12-36).

   **NO** – GO TO STEP 2.

2. **Shift Control Motor/Reduction gear condition**

   Check the shift control motor and reduction gears are installed properly and are not damaged.

   ***Are the shift control motor and reduction gears in normal condition?***

   **YES** – GO TO STEP 3.

   **NO** – Install the shift control motor and reduction gears properly or replace faulty parts.

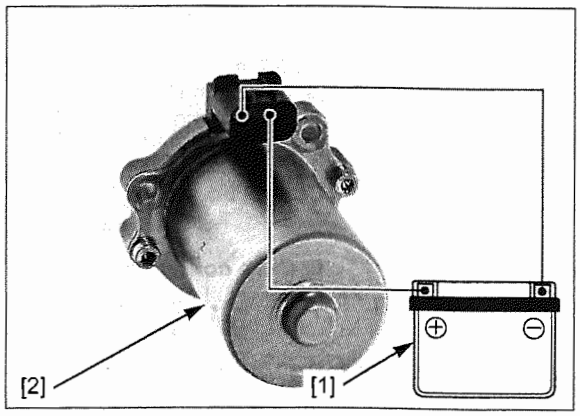
3. **Shift Control Motor Condition Inspection**

   Remove the shift control motor (page 12-70).
   Connect a fully charged 12 V battery [1] to the shift control motor [2] 2P connector terminals to check the motor operation.
   Change the battery connection to check the reverse operation.

   ***Does the shift control motor turn in both directions?***

   **YES** – GO TO STEP 4.

   **NO** – Faulty shift control motor




4. **TR Sensor System Inspection**

   Remove the TR sensor with the connector connected (page 12-76).
   Turn the ignition switch ON.
   While turning the TR sensor shaft, check the TR sensor voltage with the MCS.

   **When turning the sensor shaft clockwise:**
   **Voltage increase**
   **When turning the sensor shaft counterclockwise:**
   **Voltage decrease**

   ***Does the voltage vary properly?***

   **YES** – GO TO STEP 5.

   **NO** – Faulty TR sensor

5. **TR Sensor Condition Inspection**

   Check that the TR sensor is installed properly and is not damaged.

   ***Is the TR sensor in normal condition?***

   **YES** – GO TO STEP 6.

   **NO** – Install the TR sensor properly.

6. **DTC Recheck**

   Recheck the DTC with the MCS.

   ***Is DTC 27-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Intermittent failure

## DTC 31-1 (SHIFT CONTROL MOTOR LOW VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the shift control motor 2P (Black) and PCM 33P (Black) connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Check the DTC with the MCS.

   ***Is DTC 32-1 or 37-1 indicated?***

   **YES** – • DTC 32-1 indicated (page 12-26).
   • DTC 37-1 indicated (page 12-26).

   **NO** – GO TO STEP 2.

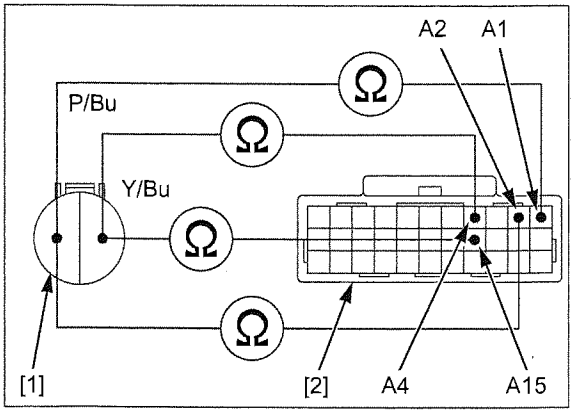
2. **Shift Control Motor Line Open Circuit Inspection**

   Disconnect the following:

   – PCM 33P (Black) connector (page 4-34)
   – Shift control motor 2P (Black) connector (page 12-70)

   Check for continuity between the wire harness side shift control motor 2P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

   **Connection: Pink/blue – A1**
   **Pink/blue – A2**
   **Yellow/blue – A4**
   **Yellow/blue – A15**




   TOOL:
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – • Open circuit in the Pink/blue wire
   • Open circuit in the Yellow/blue wire

## DTC 32-1 (FAIL SAFE RELAY CIRCUIT MALFUNCTION)

NOTE:
- Before starting the inspection, check for loose or poor contact on the PCM 33P (Black) connector and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Shift Control Motor Power Supply Voltage Inspection**

   Check the shift control motor power supply voltage with the MCS.

   ***Is there battery voltage?***

   **YES** – GO TO STEP 2.

   **NO** – • Open circuit in the Yellow/red wire between the PCM 33P (Black) connector and fuse box
   • Open circuit in the Red wire between the fuse box and starter relay switch 4P (Red) connector
   • Blown PVB fuse (30 A)

2. **DTC Recheck**

   Recheck the DTC with the MCS.

   ***Is DTC 32-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Intermittent failure

## DTC 37-1 (IGNITION HOLD RELAY MALFUNCTION)

NOTE:
- Before starting the inspection, check for loose or poor contact on the PCM 33P (Black) connector and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **PCM (DCT Drive Circuit) Sub Power Voltage Inspection**

   Check the PCM sub power voltage with the MCS.

   ***Is the battery voltage indicated?***

   **YES** – GO TO STEP 2.

   **NO** – • Open circuit in the Brown/red wire between the PCM 33P (Black) connector and fuse box
   • Open circuit in the Red wire between the fuse box and starter relay switch 4P (Red) connector
   • Blown SUB PVB fuse (7.5 A)

2. **DTC Recheck**

   Recheck the DTC with the MCS.

   ***Is DTC 37-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Intermittent failure

## DTC 41-1 (N-D SHIFT SWITCH MALFUNCTION)

NOTE:

- Before starting the inspection, check for loose or poor contact on the right handlebar switch and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

**1. N-D Shift Switch Power Input Voltage Inspection**

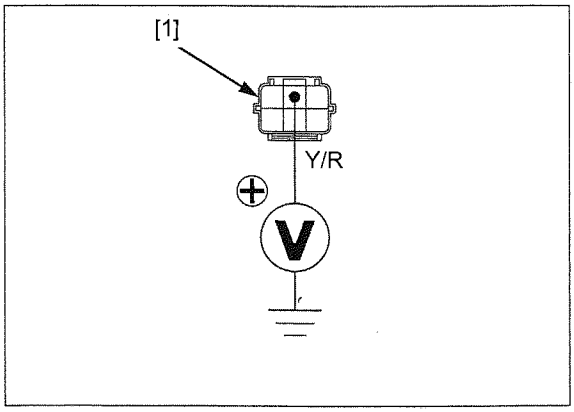
Disconnect the right handlebar switch 6P (Black) connector (page 22-18).
Turn the ignition switch ON with the engine stop switch "○".
Measure the voltage between the wire harness side right handlebar switch 6P (Black) connector [1] terminal and ground.

**Connection: Yellow/red (+) – Ground (–)**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 2.

**NO** – Open circuit in the Yellow/red wire




**2. N-D Shift Switch Inspection**

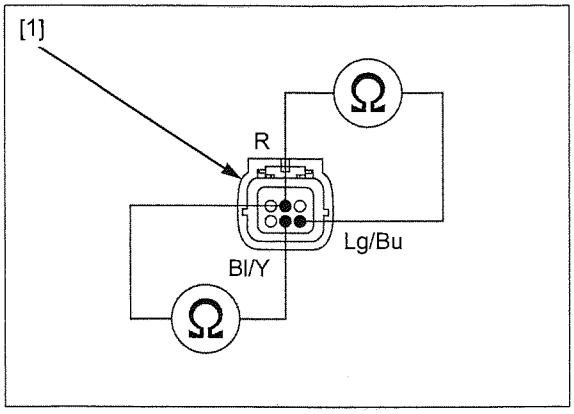
Turn the ignition switch OFF.
Check for continuity between the switch side right handlebar switch 6P (Black) connector [1] terminals in each switch position.

**Connection:**
**N switch:**
**Light green/blue – Red**
**D switch:**
**Black/yellow – Red**

***Is there continuity with the switch pushed and no continuity with the switch released?***

**YES** – GO TO STEP 3.

**NO** – Faulty N-D shift switch




**3. N-D Shift Switch Input Line Open Circuit Inspection**

Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side right handlebar switch 6P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

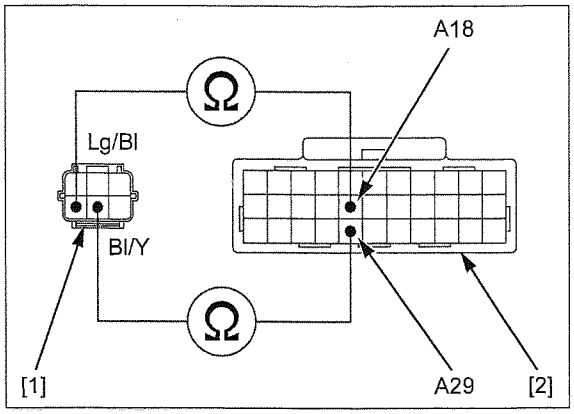
**Connection: Light green/black – A18**
**Black/yellow – A29**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 4.

**NO** – • Open circuit in the Light green/black wire
• Open circuit in the Black/yellow wire



**4. N-D Shift Switch Input Line Short Circuit Inspection**

Check for continuity between the wire harness side PCM 33P (Black) connector [1] terminals and ground.

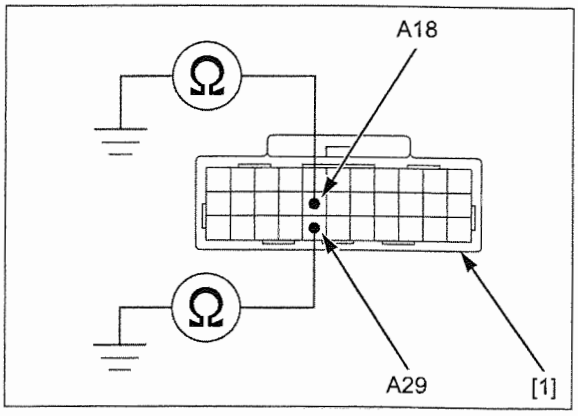
**Connection: A18 – Ground**
**A29 – Ground**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – • Short circuit in the Light green/black wire
• Short circuit in the Black/yellow wire

**NO** – Replace the PCM with a known good one, and recheck.




## DTC 42-1 (SHIFT SWITCH MALFUNCTION)

NOTE:
- Before starting the inspection, check for loose or poor contact on the left handlebar switch and PCM 33P connectors, then recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

**1. Shift Switch Power Input Voltage Inspection**

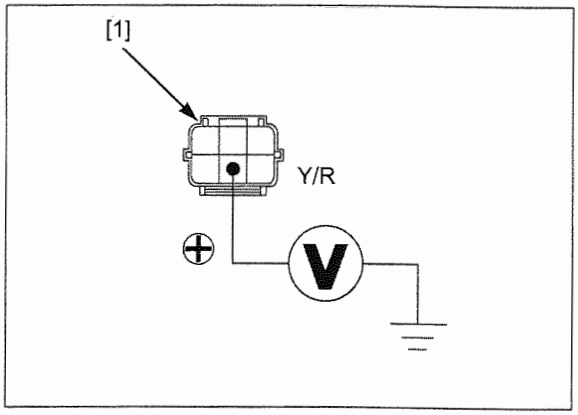
Disconnect the left handlebar switch 6P (Black) connector (page 22-18).
Turn the ignition switch ON with the engine stop switch "○".
Measure the voltage between the wire harness side left handlebar switch 6P (Black) connector [1] terminal and ground.

**Connection: Yellow/red (+) – Ground (–)**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 2.

**NO** – Open circuit in the Yellow/red wire




**2. Shift Switch Inspection**

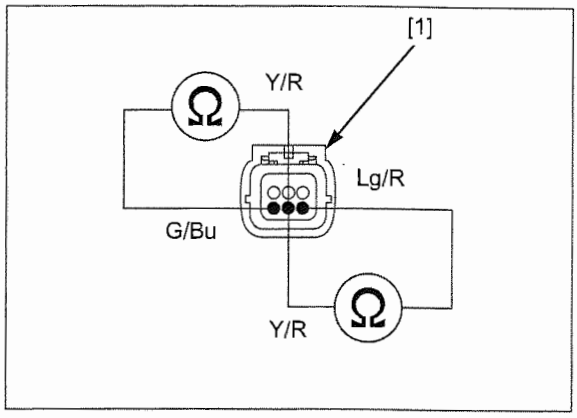
Turn the ignition switch OFF.
Check for continuity between the switch side left handlebar switch 6P (Black) connector [1] terminals in each switch position.

**Connection:**
**"+" switch:**
**Green/blue – Yellow/red**
**"–" switch:**
**Light green/red – Yellow/red**

***Is there continuity with the switch pushed and no continuity with the switch released?***

**YES** – GO TO STEP 3.

**NO** – Faulty shift switch



3. **Shift Switch Input Line Open Circuit Inspection**

Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side left handlebar switch 6P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

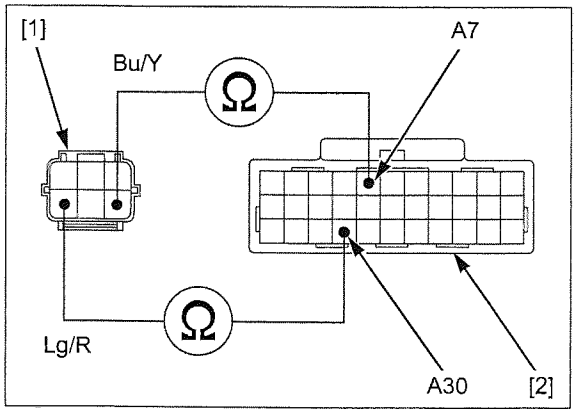
**Connection: Blue/yellow – A7**
**Light green/red – A30**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 4.

**NO** – • Open circuit in the Blue/yellow wire
• Open circuit in the Light green/red wire




4. **Shift Switch Input Line Short Circuit Inspection**

Check for continuity between the wire harness side PCM 33P (Black) connector [1] terminals and ground.

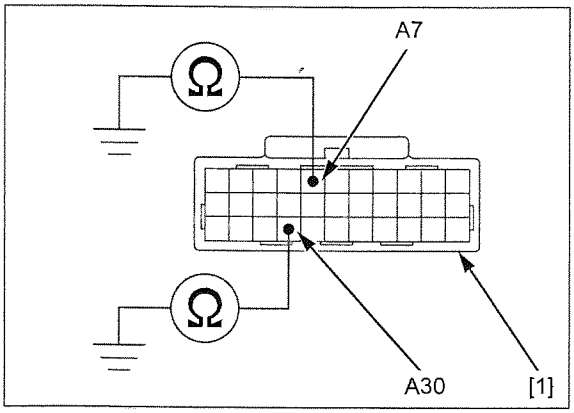
**Connection: A7 – Ground**
**A30 – Ground**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – • Short circuit in the Blue/yellow wire
• Short circuit in the Light green/red wire

**NO** – Replace the PCM with a known good one, and recheck.




## DTC 44-1 (EOT SENSOR LOW VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **EOT Sensor System Inspection**

Check the EOT sensor with the MCS.

***Is about 0 V indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **EOT Sensor Inspection**

Turn the ignition switch OFF.
Disconnect the EOT sensor 2P (Black) connector (page 12-79).
Turn the ignition switch ON and engine stop switch "○".
Check the EOT sensor with the MCS.

***Is about 0 V indicated?***

**YES** – GO TO STEP 4.

**NO** – GO TO STEP 3.

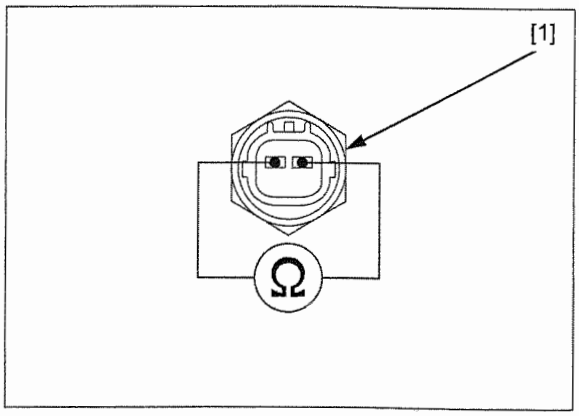
3. **EOT Sensor Resistance Inspection**

Turn the ignition switch OFF.
Measure the resistance at the EOT sensor [1] terminals.

***Is the resistance within 2.5 – 2.8 kΩ (20°C/68°F)?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Faulty EOT sensor




4. **EOT Sensor Input Line Short Circuit Inspection**

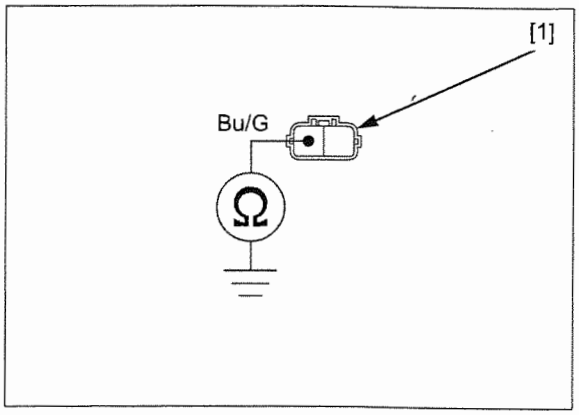
Check the continuity between the wire harness side 2P (Black) connector [1] terminal and ground.

**Connection: Blue/green – Ground**

***Is there continuity?***

**YES** – Short circuit in the Blue/green wire

**NO** – Replace the PCM with a known good one, and recheck.




## DTC 44-2 (EOT SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the EOT sensor 2P (Black) and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **EOT Sensor System Inspection**

Check the EOT sensor with the MCS.

***Is about 5 V indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **EOT Sensor Inspection**

Turn the ignition switch OFF.
Disconnect the EOT sensor 2P (Black) connector (page 12-79).
Short the wire harness side EOT sensor 2P (Black) connector [1] terminals with a jumper wire [2].

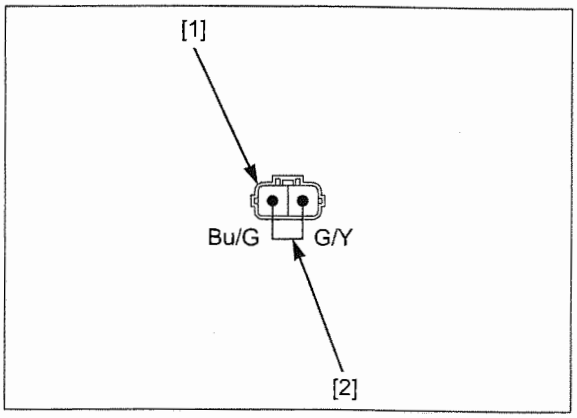
**Connection: Blue/green – Green/yellow**

Turn the ignition switch ON and engine stop switch "○".
Check the EOT sensor with the MCS.

***Is about 0 V indicated?***

**YES** – Faulty EOT sensor.

**NO** – GO TO STEP 3.



3. **EOT Sensor Input Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side EOT sensor 2P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

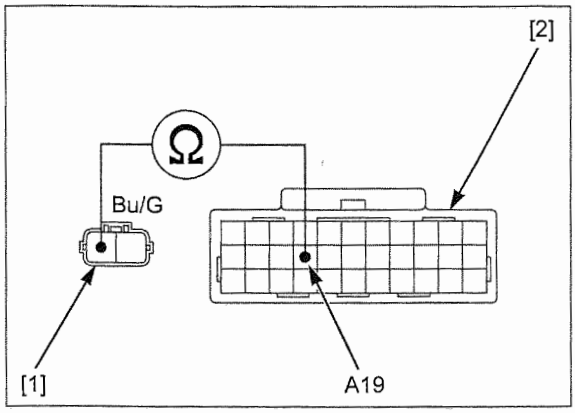
**Connection: Blue/green – A19**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Blue/green wire




4. **EOT Sensor Ground Line Open Circuit Inspection**

Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the wire harness side EOT sensor 2P (Black) connector [1] and PCM 33P (Gray) connector [2] terminals.

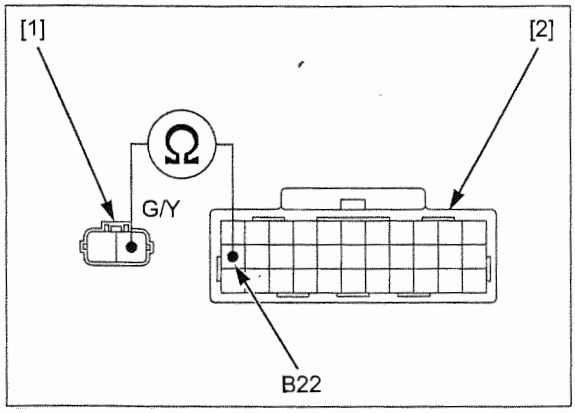
**Connection: Green/yellow – B22**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Open circuit in the Green/yellow wires




## DTC 47-1 or 48-1 (No.1 or No.2 CLUTCH EOP SENSOR LOW VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Clutch EOP Sensor System Inspection**

Connect the MCS and start the engine.
Check the clutch EOP sensor with the MCS.

***Is about 0 V indicated?***

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **Clutch EOP Sensor Inspection**

Stop the engine.
Disconnect the clutch EOP sensor 3P (Gray) connector (page 12-78).
Turn the ignition switch ON and engine stop switch "○".
Check the clutch EOP sensor with the MCS.

***Is about 0 V indicated?***

**YES** – GO TO STEP 3.

**NO** – Faulty clutch EOP sensor

3. **Clutch EOP Sensor Input Line Open Circuit Inspection**

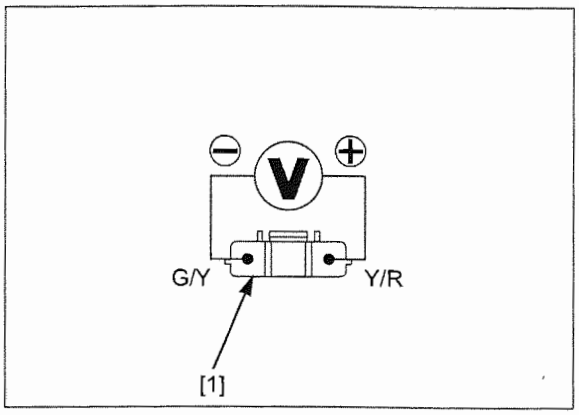
Measure the voltage between the wire harness side clutch EOP sensor 3P (Gray) connector [1] terminals.

**Connection: Yellow/red (+) – Green/yellow (–)**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Yellow/red wire




4. **Clutch EOP Sensor Output Line Short Circuit Inspection**

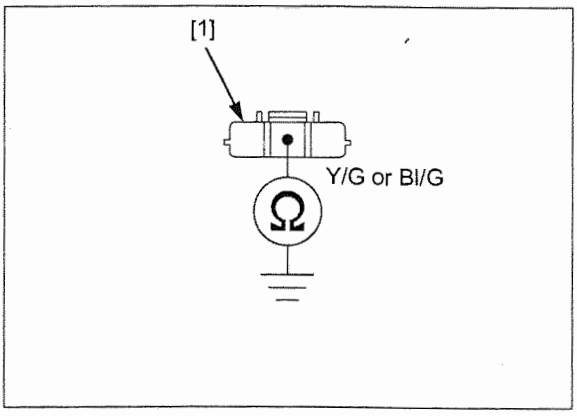
Turn the ignition switch OFF.
Check for continuity between the wire harness side clutch EOP sensor 3P (Gray) connector [1] terminal and ground.

**Connection:**
**No.1 clutch EOP sensor:**
**Yellow/green – Ground**
**No.2 clutch EOP sensor:**
**Black/green – Ground**

***Is there continuity?***

**YES** – • Short circuit in the Yellow/green wire
• Short circuit in the Black/green wire

**NO** – Replace the PCM with a known good one, and recheck.




## DTC 47-2 or 48-2 (No.1 or No.2 CLUTCH EOP SENSOR HIGH VOLTAGE)

NOTE:
- Before starting the inspection, check for loose or poor contact on the clutch EOP sensor 3P (Gray) and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Clutch EOP Sensor System Inspection**

Check the clutch EOP sensor with the MCS.

***Is about 5 V indicated?***

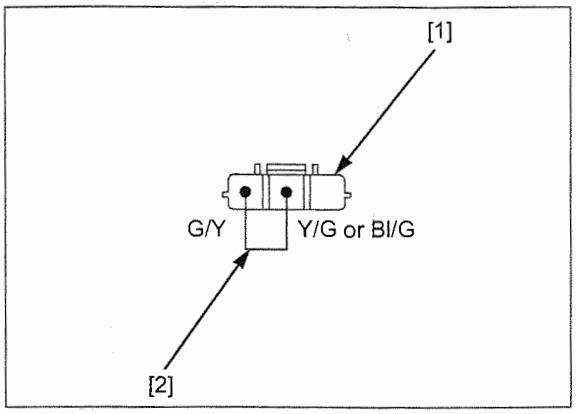
**YES** – GO TO STEP 2.

**NO** – Intermittent failure

2. **Clutch EOP Sensor Inspection**

Turn the ignition switch OFF.
Disconnect the clutch EOP sensor 3P (Gray) connector (page 12-78).
Short the wire harness side clutch EOP sensor 3P (Gray) connector [1] terminals with a jumper wire [2].

**Connection:**
**No.1 clutch EOP sensor:**
**Yellow/green – Green/yellow**
**No.2 clutch EOP sensor:**
**Black/green – Green/yellow**




Turn the ignition switch ON and engine stop switch "○".
Check the clutch EOP sensor with the MCS.

***Is about 0 V indicated?***

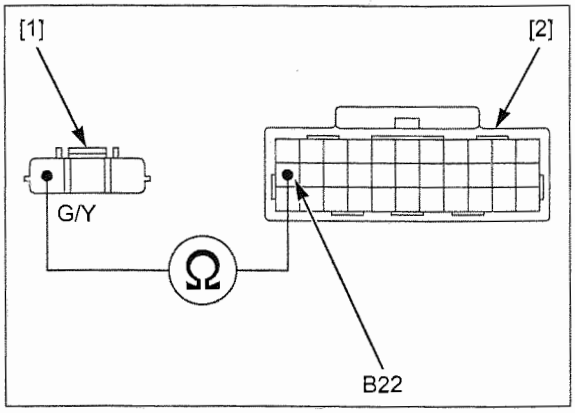
**YES** – Faulty clutch EOP sensor

**NO** – GO TO STEP 3.

3. **Clutch EOP Sensor Ground Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the wire harness side clutch EOP sensor 3P (Gray) connector [1] and PCM 33P (Gray) connector [2] terminals.

**Connection: Green/yellow – B22**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

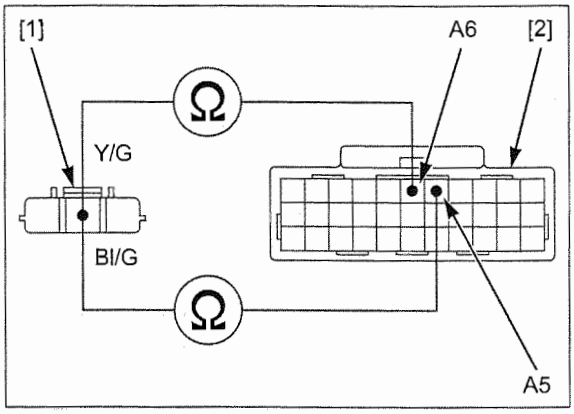
**YES** – GO TO STEP 4.

**NO** – Open circuit in the Green/yellow wire

4. **Clutch EOP Sensor Output Line Open Circuit Inspection**

Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side clutch EOP sensor 3P (Gray) connector [1] and PCM 33P (Black) connector [2] terminals.

**Connection:**
**No.1 clutch EOP sensor:**
**Yellow/green – A6**
**No.2 clutch EOP sensor:**
**Black/green – A5**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – • Open circuit in the Yellow/green wire
• Open circuit in the Black/green wire

## DTC 49-1, 49-2 (CLUTCH LINE LOW OIL PRESSURE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Clutch Line EOP Sensor System Inspection**

   Check the clutch line EOP sensor with the MCS.

   ***Is Low voltage (about 0 V) or High voltage (about 5 V) indicated?***

   **YES** – • About 0 V (while engine running): See DTC 9-1 (page 12-16).
   • About 5 V: See DTC 9-2 (page 12-17).

   **NO** – GO TO STEP 2.

2. **Engine Oil Level Inspection**

   Check the engine oil level (page 3-9).

   ***Is the engine oil level correct?***

   **YES** – GO TO STEP 3.

   **NO** – Add the recommended oil to the upper level.

3. **Clutch Line Oil Filter Condition Inspection**

   Check the clutch oil filter (page 3-11).

   ***Is the oil filter in good condition?***

   **YES** – GO TO STEP 4.

   **NO** – Replace the clutch oil filter.

4. **Clutch Line EOP Sensor Inspection**

   Replace the clutch line EOP sensor with a known good one (page 12-78).
   Erase the DTCs (page 12-10).
   Test-ride the motorcycle above 2,000 rpm and stop the engine.
   Check the clutch line EOP sensor with the MCS.

   ***Is DTC 49-1 or 49-2 indicated?***

   **YES** – GO TO STEP 5.

   **NO** – Faulty original clutch line EOP sensor

5. **PCM Inspection**

   Replace the PCM with a known good one (page 4-34).
   Test-ride the motorcycle above 2,000 rpm and stop the engine.
   Check the clutch line EOP sensor with the MCS.

   ***Is DTC 49-1 or 49-2 indicated?***

   **YES** – • Oil pressure relief valve stuck open
   • Damaged oil pump
   • Internal oil leak in the clutch oil line

   **NO** – Faulty original PCM

## DTC 51-1 (TR SENSOR LOW VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the TR sensor 3P (Black) and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **TR Sensor System Inspection**

   Check the TR sensor with the MCS.

   ***Is the voltage about 0 V?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **TR Sensor Input Line Open Circuit Inspection**

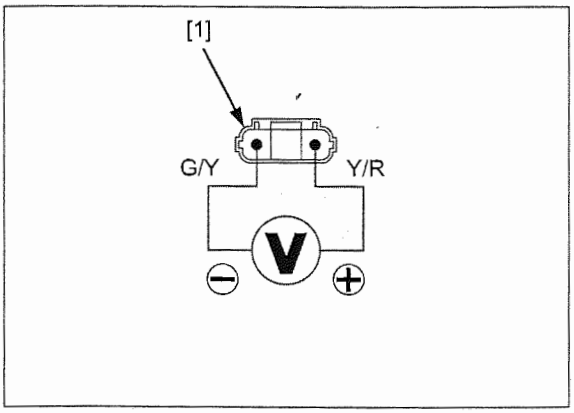
   Turn the ignition switch OFF.
   Disconnect the TR sensor 3P (Black) connector (page 12-76).
   Turn the ignition switch ON and engine stop switch "○".
   Measure the voltage between the wire harness side TR sensor 3P (Black) connector [1] terminals.

   **Connection: Yellow/red (+) – Green/yellow (–)**

   ***Is the voltage within 4.75 – 5.25 V?***

   **YES** – GO TO STEP 3.

   **NO** – Open circuit in the Yellow/red wire




3. **TR Sensor Output Line Open Circuit Inspection**

   Turn the ignition switch OFF.
   Disconnect the PCM 33P (Black) connector (page 4-34).
   Check for continuity between the wire harness side TR sensor 3P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

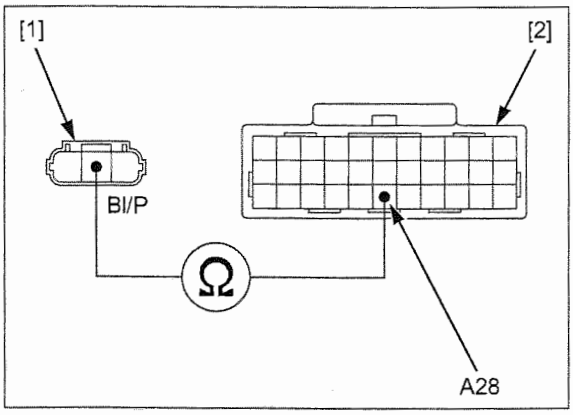
   **Connection: Black/pink – A28**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – GO TO STEP 4.

   **NO** – Open circuit in the Black/pink wire




4. **TR Sensor Output Line Short Circuit Inspection**

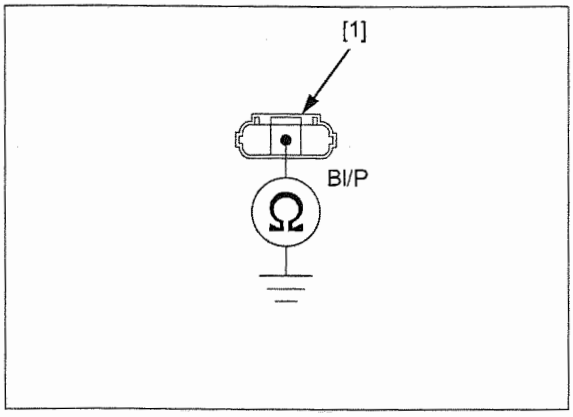
   Check for continuity between the wire harness side TR sensor 3P (Black) connector [1] terminal and ground.

   **Connection: Black/pink – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Black/pink wire

   **NO** – GO TO STEP 5.



5. **TR Sensor Inspection**

   Replace the TR sensor with a known good one (page 12-76).
   Connect the TR sensor 3P (Black) connector and PCM 33P (Black) connector.
   Turn the ignition switch ON.
   Check the TR sensor with the MCS.

   ***Is the voltage about 0 V?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Faulty original TR sensor

## DTC 51-2 (TR SENSOR HIGH VOLTAGE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **TR Sensor System Inspection**

   Check the TR sensor with the MCS.

   ***Is about 5 V indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **TR Sensor Ground Line Open Circuit Inspection**

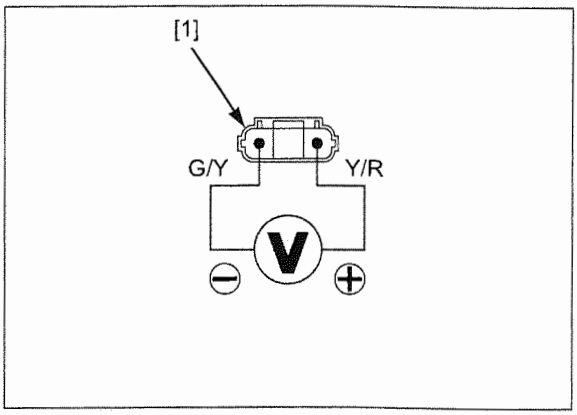
   Turn the ignition switch OFF.
   Disconnect the TR sensor 3P (Black) connector (page 12-76).
   Turn the ignition switch ON and engine stop switch "○".
   Measure the voltage between the wire harness side TR sensor 3P (Black) connector [1] terminals.

   **Connection: Yellow/red (+) – Green/yellow (–)**

   ***Is the voltage within 4.75 – 5.25 V?***

   **YES** – GO TO STEP 3.

   **NO** – Open circuit in the Green/yellow wire




3. **TR Sensor Inspection**

   Replace the TR sensor with a known good one (page 12-76).
   Connect the TR sensor 3P (Black) connector.
   Turn the ignition switch ON.
   Check the TR sensor with the MCS.

   ***Is about 5 V indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Faulty original TR sensor

## DTC 52-1 (NEUTRAL SWITCH STUCK OFF)

NOTE:

- Before starting the inspection, check for loose or poor contact on the neutral switch and PCM 33P (Gray) connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Recheck the DTC with the MCS.

   ***Is DTC 52-1 indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Neutral Switch Line Open Circuit Inspection**

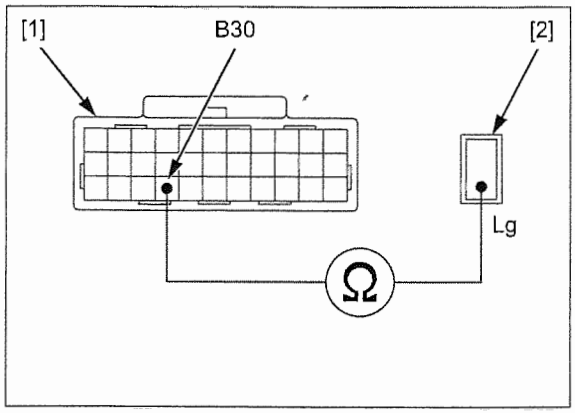
   Turn the ignition switch OFF.
   Disconnect the following:

   – PCM 33P (Gray) connector (page 4-34)
   – Neutral switch connector (page 22-20)

   Check for continuity between the wire harness side PCM 33P (Gray) connector [1] and neutral switch connector [2] terminals.

   **Connection: B30 – Light green**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – GO TO STEP 3.

   **NO** – Open circuit in the Light green wire

3. **Neutral Switch Inspection**

   Replace the neutral switch with a known good one (page 22-20).
   Connect the PCM 33P (Gray) connector and neutral switch connector.
   Turn the ignition switch ON and engine stop switch "○".
   Recheck the DTC with the MCS.

   ***Is DTC 52-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Faulty original neutral switch

## DTC 52-2 (NEUTRAL SWITCH STUCK ON)

NOTE:

If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Neutral Switch Line Short Circuit Inspection**

   Disconnect the neutral switch connector (page 22-20).
   Check for continuity between the neutral switch connector terminal and ground.

   **Connection: Light green – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Light green wire.

   **NO** – GO TO STEP 2.

2. **Neutral Switch Inspection**

   Replace the neutral switch with a known good one (page 22-20).
   Connect the neutral switch connector.
   Check the DTC with the MCS.

   ***Is DTC 52-2 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Faulty original neutral switch

## DTC 53-1 (INNER MAINSHAFT SENSOR SPEED LOW)

NOTE:

- Before starting the inspection, check for loose or poor contact on the inner mainshaft sensor 3P (Black) and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Test-ride the motorcycle and stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 53-1 indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **Inner Mainshaft Sensor Input Voltage Inspection**

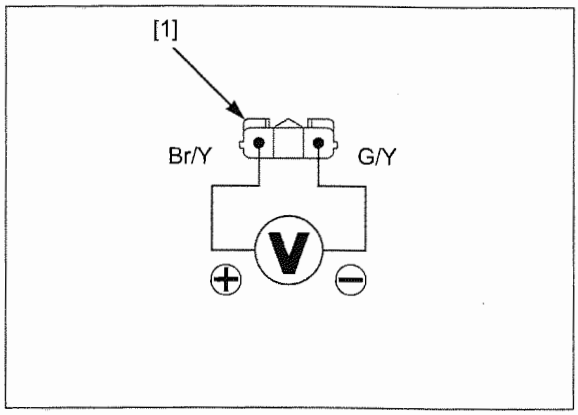
   Turn the ignition switch OFF.
   Disconnect the inner mainshaft sensor 3P (Black) connector (page 12-76).
   Turn the ignition switch ON and engine stop switch "○".
   Measure the voltage between the wire harness side inner mainshaft sensor 3P (Black) connector [1] terminals.

   **Connection: Brown/yellow (+) – Green/yellow (–)**

   ***Is there about battery voltage?***

   **YES** – GO TO STEP 3.

   **NO** – GO TO STEP 4.




3. **Inner Mainshaft Sensor Output Line Inspection**

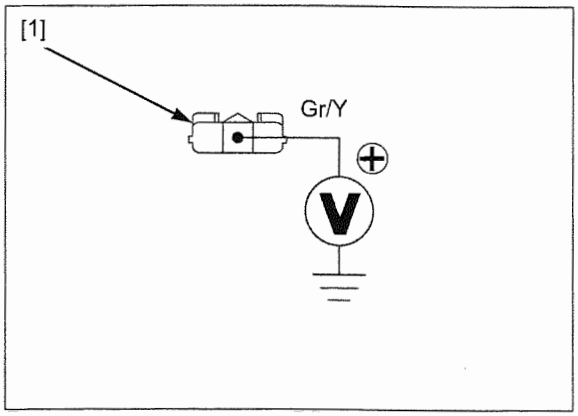
   Measure the voltage between the wire harness side 3P (Black) connector [1] terminal and ground.

   **Connection: Gray/yellow (+) – Ground (–)**

   ***Is the voltage within 4.75 – 5.25 V?***

   **YES** – GO TO STEP 8.

   **NO** – GO TO STEP 6.



4. **Inner Mainshaft Sensor Input Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side inner mainshaft sensor 3P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

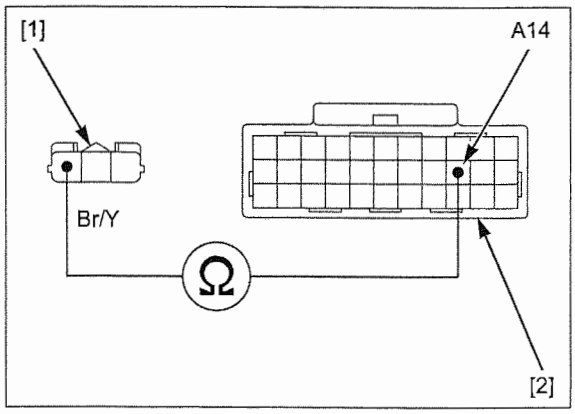
**Connection: Brown/yellow – A14**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 5.

**NO** – Open circuit in the Brown/yellow wire




5. **Inner Mainshaft Sensor Ground Line Open Circuit Inspection**

Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the wire harness side inner mainshaft sensor 3P (Black) connector [1] and PCM 33P (Gray) connector [2] terminals.

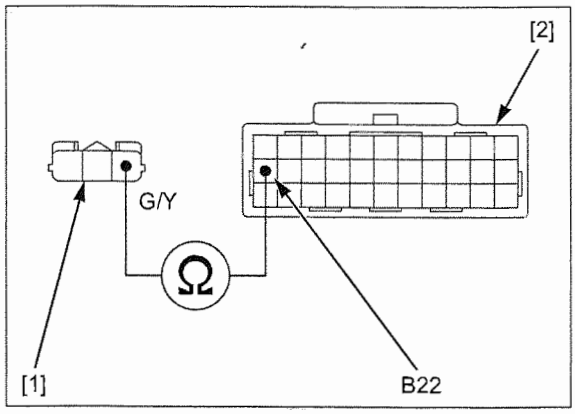
**Connection: Green/yellow – B22**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Open circuit in the Green/yellow wire




6. **Inner Mainshaft Sensor Output Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side inner mainshaft sensor 3P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

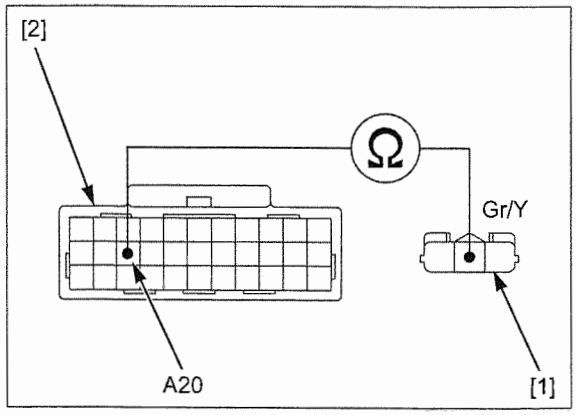
**Connection: Gray/yellow – A20**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 7.

**NO** – Open circuit in the Gray/yellow wire



7. **Inner Mainshaft Sensor Output Line Short Circuit Inspection**

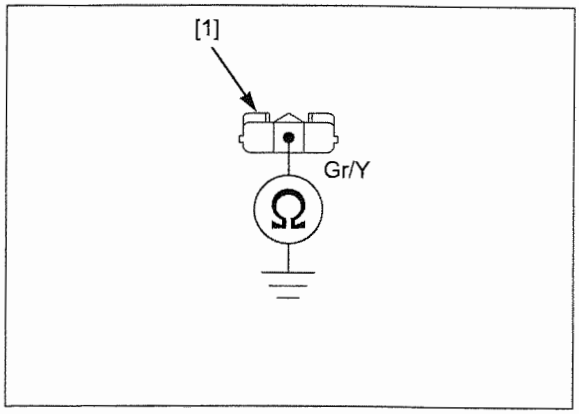
   Check for continuity between the wire harness side inner mainshaft sensor 3P (Black) connector [1] terminal and ground.

   **Connection: Gray/yellow – Ground**

   ***Is there continuity?***

   **YES** – Short circuit in the Gray/yellow wire

   **NO** – GO TO STEP 8.




8. **Inner Mainshaft Sensor Inspection**

   Turn the ignition switch OFF.
   Replace the inner mainshaft sensor with a known good one (page 12-76).
   Erase the DTCs (page 12-10).
   Test-ride the motorcycle and stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 53-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Faulty original inner mainshaft sensor

## DTC 54-1 (OUTER MAINSHAFT SENSOR SPEED LOW)

NOTE:

- Before starting the inspection, check for loose or poor contact on the outer mainshaft sensor 3P (Black) and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Test-ride the motorcycle and stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 54-1 indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

**2. Outer Mainshaft Sensor Input Voltage Inspection**

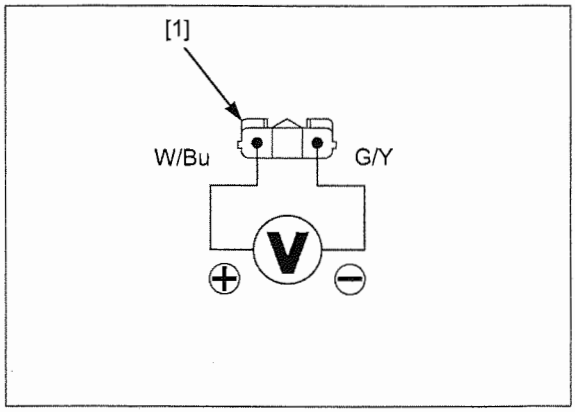
Turn the ignition switch OFF.
Disconnect the outer mainshaft sensor 3P (Black) connector (page 12-76).
Turn the ignition switch ON and engine stop switch "○".
Measure the voltage between the wire harness side outer mainshaft sensor 3P (Black) connector [1] terminals.

**Connection: White/blue (+) – Green/yellow (–)**

***Is there about battery voltage?***

**YES** – GO TO STEP 3.

**NO** – GO TO STEP 4.




**3. Outer Mainshaft Sensor Output Line Inspection**

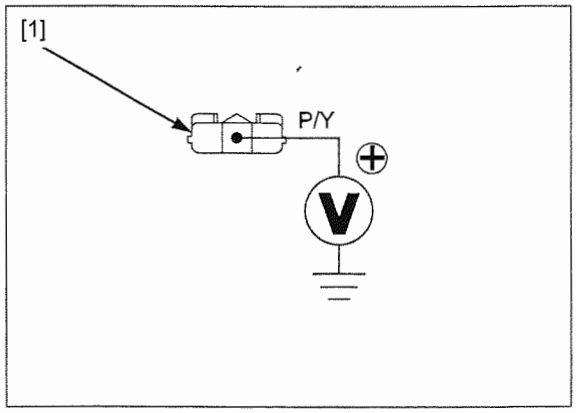
Measure the voltage between the wire harness side 3P (Black) connector [1] terminal and ground.

**Connection: Pink/yellow (+) – Ground (–)**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 8.

**NO** – GO TO STEP 6.




**4. Outer Mainshaft Sensor Input Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side outer mainshaft sensor 3P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

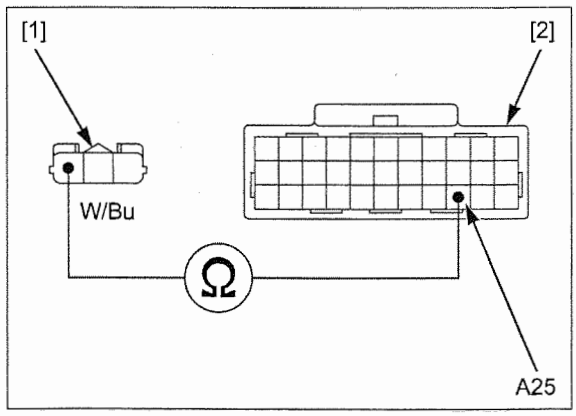
**Connection: White/blue – A25**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 5.

**NO** – Open circuit in the White/blue wire



5. **Outer Mainshaft Sensor Ground Line Open Circuit Inspection**

Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the wire harness side outer mainshaft sensor 3P (Black) connector [1] and PCM 33P (Gray) connector [2] terminals.

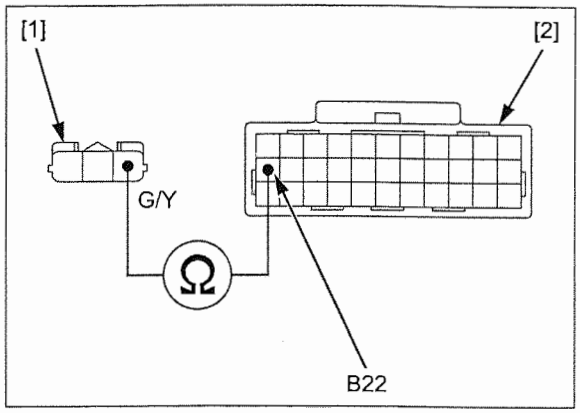
**Connection: Green/yellow – B22**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Open circuit in the Green/yellow wire




6. **Outer Mainshaft Sensor Output Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side outer mainshaft sensor 3P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

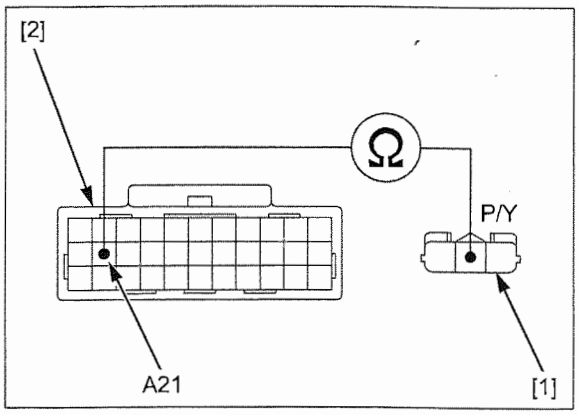
**Connection: Pink/yellow – A21**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 7.

**NO** – Open circuit in the Pink/yellow wire




7. **Outer Mainshaft Sensor Output Line Short Circuit Inspection**

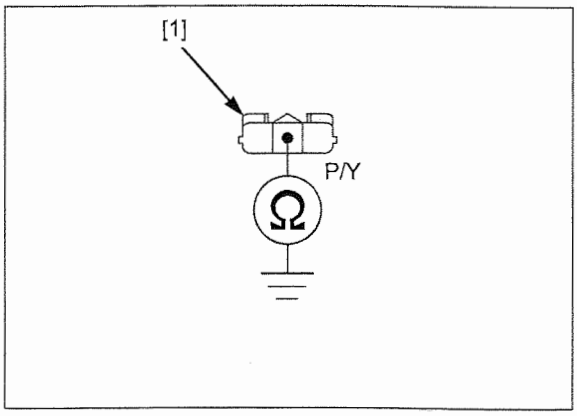
Check for continuity between the wire harness side outer mainshaft sensor 3P (Black) connector [1] terminal and ground

**Connection: Pink/yellow – Ground**

***Is there continuity?***

**YES** – Short circuit in the Pink/yellow wire

**NO** – GO TO STEP 8.




8. **Outer Mainshaft Sensor Condition Inspection**

Turn the ignition switch OFF.
Replace the outer mainshaft sensor with a known good one (page 12-76).
Erase the DTCs (page 12-10).
Test-ride the motorcycle and stop the engine.
Check the DTC with the MCS.

***Is DTC 54-1 indicated?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Faulty original outer mainshaft sensor

## DTC 55-1, 55-2 (No.1 LINEAR SOLENOID VALVE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the linear solenoid valve 4P (Green) and PCM 33P (Black) connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

**1. DTC Recheck**

Recheck the DTC with the MCS.

***Is DTC 55-1 or 55-2 indicated?***

**YES** – GO TO STEP 2.

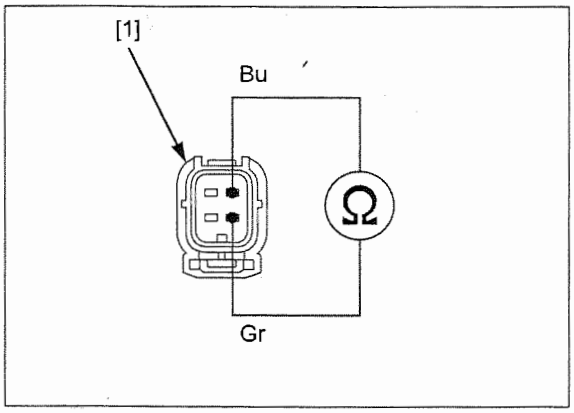
**NO** – Intermittent failure

**2. No.1 Linear Solenoid Valve Inspection**

Turn the ignition switch OFF.
Disconnect the linear solenoid valve 4P (Green) connector (page 12-57).
Measure the resistance between the linear solenoid valve side 4P (Green) connector [1] terminals.

**Connection: Blue – Gray**

**Standard: 5.0 – 5.6 Ω (20°C/68°F)**




***Is the resistance within standard range?***

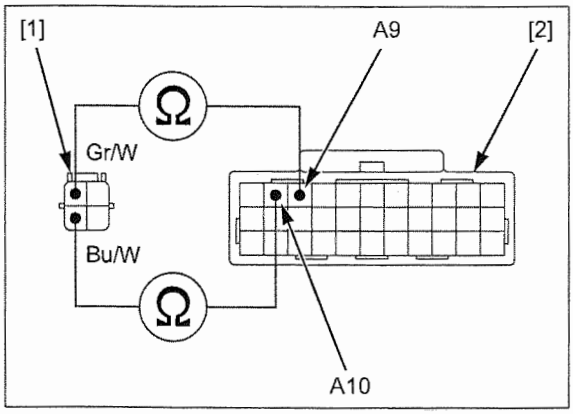
**YES** – GO TO STEP 3.

**NO** – Faulty linear solenoid valve

**3. No.1 Linear Solenoid Valve Input/ground Line Open Circuit Inspection**

Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side linear solenoid valve 4P (Green) connector [1] and PCM 33P (Black) connector [2] terminals.

**Connection: Gray/white – A9**
**Blue/white – A10**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is the continuity normal?***

**YES** – GO TO STEP 4.

**NO** – • Open circuit in the Gray/white wire
• Open circuit in the Blue/white wire

4. **No.1 Linear Solenoid Valve Input/ground Line Short Circuit Inspection**

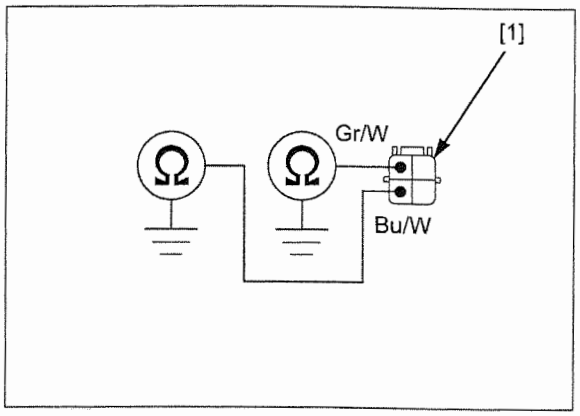
   Check for continuity between the wire harness side linear solenoid valve 4P (Green) connector [1] terminals and ground.

   **Connection: Gray/white – Ground**
   **Blue/white – Ground**

   ***Is there continuity?***

   **YES** – • Short circuit in the Gray/white wire
   • Short circuit in the Blue/white wire

   **NO** – Replace the PCM with a known good one, and recheck.




## DTC 56-1, 56-2 (No.2 LINEAR SOLENOID VALVE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the linear solenoid valve 4P (Green) and PCM 33P (Black) connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Recheck the DTC with the MCS.

   ***Is DTC 56-1 or 56-2 indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **No.2 Linear Solenoid Valve Inspection**

   Turn the ignition switch OFF.
   Disconnect the linear solenoid valve 4P (Green) connector (page 12-57).
   Measure the resistance between the linear solenoid valve side 4P (Green) connector [1] terminals.

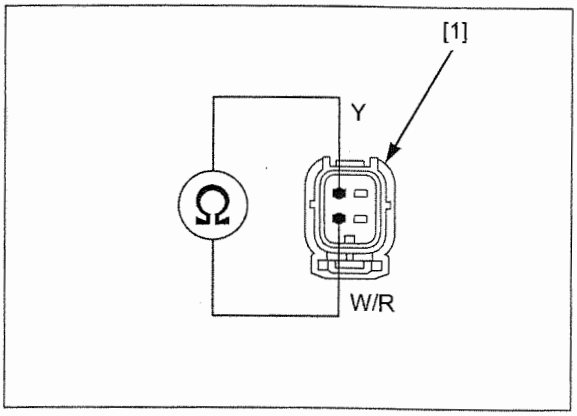
   **Connection: Yellow – White/red**

   **Standard: 5.0 – 5.6 Ω (20°C/68°F)**

   ***Is the resistance within standard range?***

   **YES** – GO TO STEP 3.

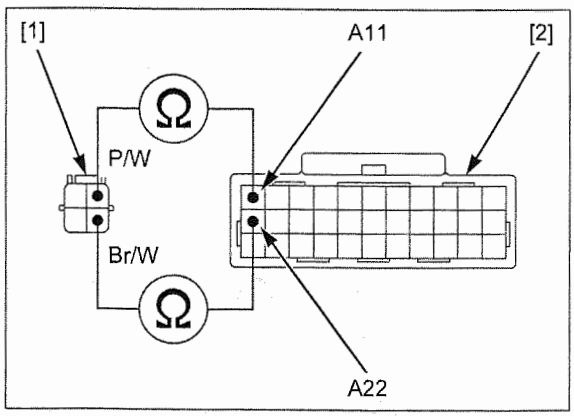
   **NO** – Faulty linear solenoid valve



3. **No.2 Linear Solenoid Valve Input/ground Line Open Circuit Inspection**

Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side linear solenoid valve 4P (Green) connector [1] and PCM 33P (Black) connector [2] terminals.

**Connection: Pink/white – A11**
**Brown/white – A22**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is the continuity normal?***

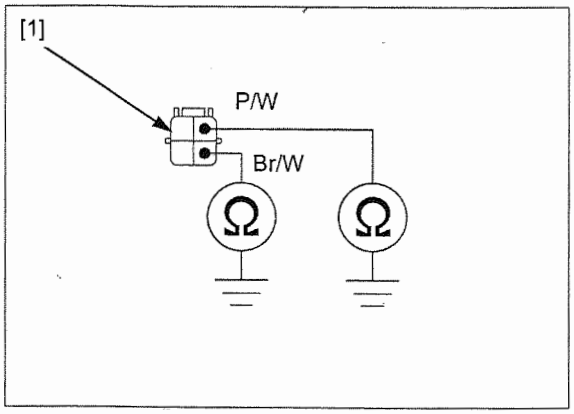
**YES** – GO TO STEP 4.

**NO** – • Open circuit in the Pink/white wire
• Open circuit in the Brown/white wire

4. **No.2 Linear Solenoid Valve Input/ground Line Short Circuit Inspection**

Check for continuity between the wire harness side linear solenoid valve 4P (Green) connector [1] terminals and ground.

**Connection: Pink/white – Ground**
**Brown/white – Ground**




***Is there continuity?***

**YES** – • Short circuit in the Pink/white wire
• Short circuit in the Brown/white wire

**NO** – Replace the PCM with a known good one, and recheck.

## DTC 57-1 (GEARSHIFT MECHANISM MALFUNCTION)

See page 12-24

## DTC 57-2 (GEAR POSITION MALFUNCTION; JUMPS OUT OF GEAR)

See page 12-24

## DTC 58-1 (No.1 CLUTCH DOES NOT DISENGAGE; WHEN SHIFTING GEAR)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **Clutch Condition Inspection**

Remove the dual clutch assembly and inspect the clutch for sticking (page 12-66).

***Is the No.1 clutch stuck?***

**YES** – Faulty clutch

**NO** – GO TO STEP 2.

2. **Clutch Oil Line Inspection**

   Check the clutch oil passages in the right crankcase cover and mainshaft for clogging.

   ***Is the oil passage clogged?***

   **YES** – Clean the oil passage.

   **NO** – Replace the PCM with a known good one, and recheck.

## DTC 59-1 (No.2 CLUTCH DOES NOT DISENGAGE; WHEN SHIFTING GEAR)

See page 12-45

## DTC 61-1, 61-2, 61-3, 61-4, 62-1, 62-2 (No.1 CLUTCH OIL PRESSURE MALFUNCTION)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Recheck the DTC with the MCS.

   ***Is DTC 47-1, 47-2, 55-1 or 55-2 indicated?***

   **YES** – • DTC 47-1 is indicated (page 12-31).
   • DTC 47-2 is indicated (page 12-32).
   • DTC 55-1 is indicated (page 12-43).
   • DTC 55-2 is indicated (page 12-43).

   **NO** – GO TO STEP 2.

2. **No.1 Clutch EOP Sensor Inspection**

   Replace the No.1 clutch EOP sensor with a known good one (page 12-78).
   Erase the DTCs (page 12-10).
   Test-ride the motorcycle and stop the engine.
   Check the No.1 clutch EOP sensor with the MCS.

   ***Is DTC 61-1, 61-2, 61-3, 61-4, 62-1 or 62-2 indicated?***

   **YES** – GO TO STEP 3.

   **NO** – Faulty original No.1 clutch EOP sensor

3. **PCM Inspection**

   Replace the PCM with a known good one (page 4-34).
   Test-ride the motorcycle and stop the engine.
   Check the No.1 clutch EOP sensor with the MCS.

   ***Is DTC 61-1, 61-2, 61-3, 61-4, 62-1 or 62-2 indicated?***

   **YES** – • Faulty No.1 linear solenoid valve
   • Clogged No.1 clutch oil line
   • Internal oil leak in the No.1 clutch oil line

   **NO** – Faulty original PCM

## DTC 63-1, 63-2, 63-3, 63-4, 64-1, 64-2 (No.2 CLUTCH OIL PRESSURE MALFUNCTION)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Recheck the DTC with the MCS.

   ***Is DTC 48-1, 48-2, 56-1 or 56-2 indicated?***

   **YES** – • DTC 48-1 is indicated (page 12-31).
   • DTC 48-2 is indicated (page 12-32).
   • DTC 56-1 is indicated (page 12-44).
   • DTC 56-2 is indicated (page 12-44).

   **NO** – GO TO STEP 2.

2. **No.2 Clutch EOP Sensor Inspection**

   Replace the No.2 clutch EOP sensor with a known good one (page 12-78).
   Erase the DTCs (page 12-10).
   Test-ride the motorcycle and stop the engine.
   Check the No.2 clutch EOP sensor with the MCS.

   ***Is DTC 63-1, 63-2, 63-3, 63-4, 64-1 or 64-2 indicated?***

   **YES** – GO TO STEP 3.

   **NO** – Faulty original No.2 clutch EOP sensor

3. **PCM Inspection**

   Replace the PCM with a known good one (page 4-34).
   Test-ride the motorcycle and stop the engine.
   Check the No.2 clutch EOP sensor with the MCS.

   ***Is DTC 63-1, 63-2, 63-3, 63-4, 64-1 or 64-2 indicated?***

   **YES** – • Faulty No.2 linear solenoid valve
   • Clogged No.2 clutch oil line
   • Internal oil leak in the No.2 clutch oil line

   **NO** – Faulty original PCM

## DTC 65-1 (FRONT AND REAR WHEEL SPEED SIGNAL MALFUNCTION)

NOTE:

- Before starting the inspection, check that the tire sizes are correct, and the drive and driven sprockets are the specified ones.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Test-ride the motorcycle above 18 km/h (11 mph) for more than 30 seconds.
   Stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 66-1 or 67-1 indicated?***

   **YES** – • DTC 66-1 is indicated (page 12-49).
   • DTC 67-1 is indicated (page 12-51).

   **NO** – GO TO STEP 2.

2. **Front Wheel Speed Sensor Air Gap Inspection**

   Measure the front wheel speed sensor air gap (page 20-20).

   ***Is the air gap correct?***

   **YES** – GO TO STEP 3.

   **NO** – Check each part for deformation and looseness and correct accordingly. Recheck the air gap.

3. **Front Wheel Speed Sensor Condition Inspection**

   Inspect the area around the front wheel speed sensor.
   Check that there is no iron or other magnetic deposits between the pulser ring and wheel speed sensor, and check the pulser ring slots for obstructions.
   Check installation condition of the pulser ring or wheel speed sensor for looseness.
   Check the pulser ring and sensor tip for deformation or damage.

   ***Are the sensor and pulser ring in good condition?***

   **YES** – GO TO STEP 4.

   **NO** – Remove any deposits. Install properly or replace faulty part.

4. **VS Sensor Condition Inspection**

   Remove the VS sensor (page 22-12).
   Check the VS sensor for damage or contaminated.

   ***Is the VS sensor in good condition?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Replace the VS sensor with a known good one, and recheck.

## DTC 66-1 (VS SENSOR NO SIGNAL)

NOTE:

- Before starting the inspection, check for loose or poor contact on the VS sensor 3P (Black) and PCM 33P (Black) connector, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

**1. DTC Recheck**

Erase the DTCs (page 12-10).
Test-ride the motorcycle above 18 km/h (11 mph) for more than 30 seconds.
Stop the engine.
Check the DTC with the MCS.

***Is DTC 66-1 indicated?***

**YES** – GO TO STEP 2.

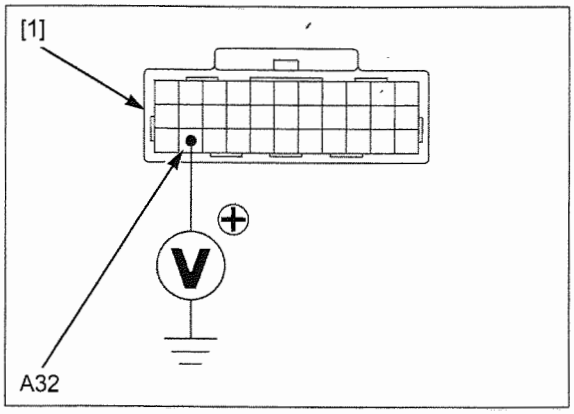
**NO** – Intermittent failure

**2. VS Sensor Pulse Inspection**

Support the motorcycle securely and raise the rear wheel off the ground.
Disconnect the PCM 33P (Black) connector (page 4-34).
Turn the ignition switch ON and engine stop switch "○".
Measure the voltage between the PCM 33P (Black) connector [1] and ground while slowly turning the rear wheel by hand.

**Connection: A32 (+) – Ground (–)**
**Standard: Repeat 0 to 5 V**

**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**




***Is the indicated voltage at the standard value?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – GO TO STEP 3.

**3. VS Sensor Input Voltage Inspection**

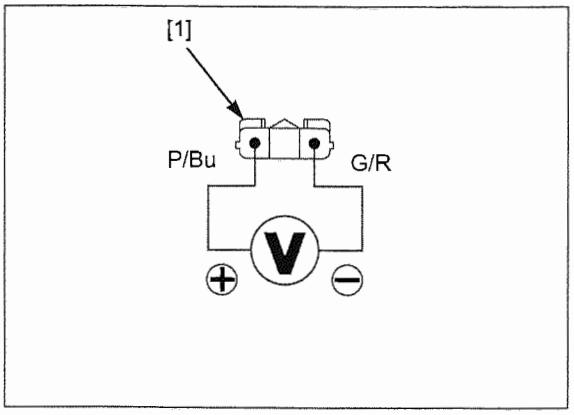
Turn the ignition switch OFF.
Disconnect the VS sensor 3P (Black) connector (page 22-12).
Turn the ignition switch ON.
Measure the voltage between the wire harness side VS sensor 3P (Black) connector [1] terminals.

**Connection: Pink/blue (+) – Green/red (–)**

***Is there battery voltage?***

**YES** – GO TO STEP 4.

**NO** – • Open circuit in the Pink/blue wire
• Open circuit in the Green/red wire



4. **VS Sensor Output Line Inspection**

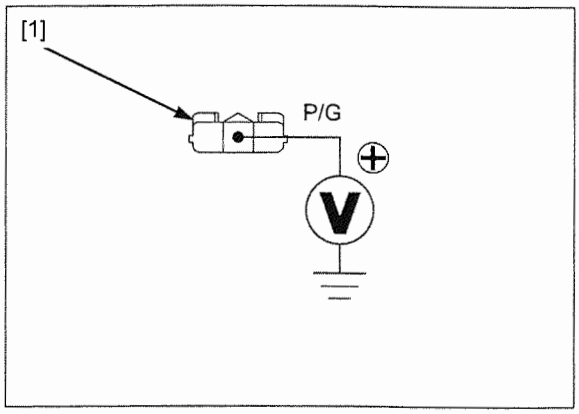
Measure the voltage between the wire harness side 3P (Black) connector [1] terminal and ground.

**Connection: Pink/green (+) – Ground (–)**

***Is the voltage within 4.75 – 5.25 V?***

**YES** – GO TO STEP 7.

**NO** – GO TO STEP 5.




5. **VS Sensor Output Line Open Circuit Inspection**

Turn the ignition switch OFF.
Check for continuity between the wire harness side VS sensor 3P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

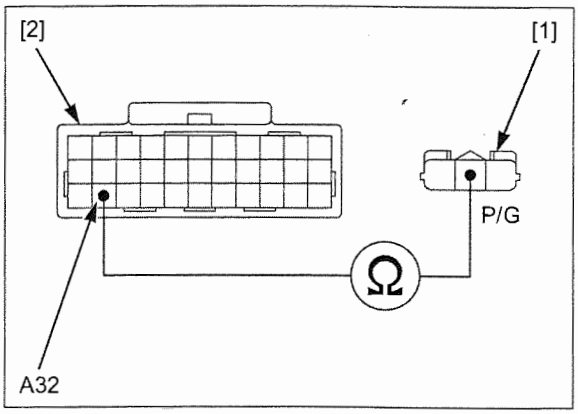
**Connection: Pink/green – A32**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – GO TO STEP 6.

**NO** – Open circuit in the Pink/green wire




6. **VS Sensor Output Line Short Circuit Inspection**

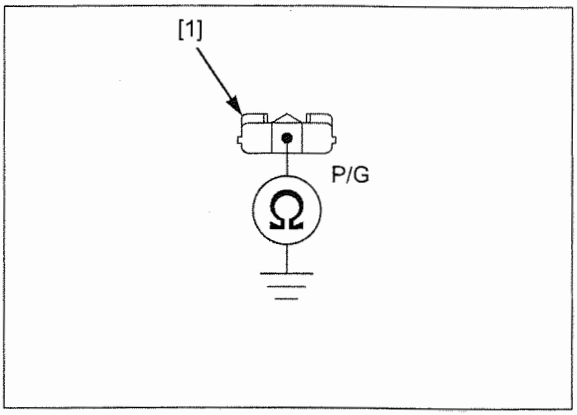
Check for continuity between the wire harness side VS sensor 3P (Black) connector [1] terminal and ground.

**Connection: Pink/green – Ground**

***Is there continuity?***

**YES** – Short circuit in the Pink/green wire

**NO** – GO TO STEP 7.




7. **VS Sensor Inspection**

Turn the ignition switch OFF.
Replace the VS sensor with a known good one (page 22-12).
Erase the DTCs (page 12-10).
Test-ride the motorcycle above 18 km/h (11 mph) for more than 30 seconds.
Stop the engine.
Check the DTC with the MCS.

***Is DTC 66-1 indicated?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Faulty original VS sensor

## DTC 67-1 (FRONT WHEEL SPEED SENSOR NO SIGNAL)

NOTE:

- Before starting the inspection, check for loose or poor contact on the front wheel speed sensor 2P (Blue), ABS modulator 18P and PCM 33P (Black) connectors, and recheck the DTC.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Test-ride the motorcycle above 18 km/h (11 mph).
   Stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 67-1 indicated?***

   **YES** – GO TO STEP 2.

   **NO** – Intermittent failure

2. **ABS Problem Code Inspection**

   Check the ABS problem code (page 20-8).

   ***Does the ABS modulator have any problem code?***

   **YES** – Follow the problem code index (page 20-8).

   **NO** – GO TO STEP 3.

3. **Front Wheel Speed Sensor Line Open Circuit Inspection**

   Turn the ignition switch OFF.
   Disconnect the following:

   – ABS modulator 18P connector (page 20-7)
   – PCM 33P (Black) connector (page 4-34)

   Check for continuity between the ABS modulator 18P connector [1] and PCM 33P (Black) connector [2] terminals.

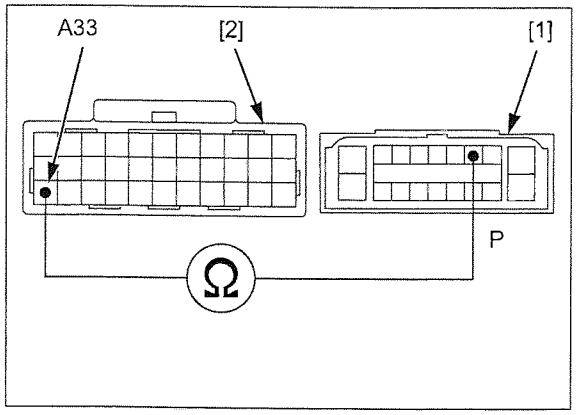
   **Connection: Pink – A33**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – GO TO STEP 4.

   **NO** – Open circuit in the Pink wire




4. **Front Wheel Speed Sensor Line Short Circuit Inspection**

   Check for continuity between the wire harness side PCM 33P (Black) connector [1] and ground.

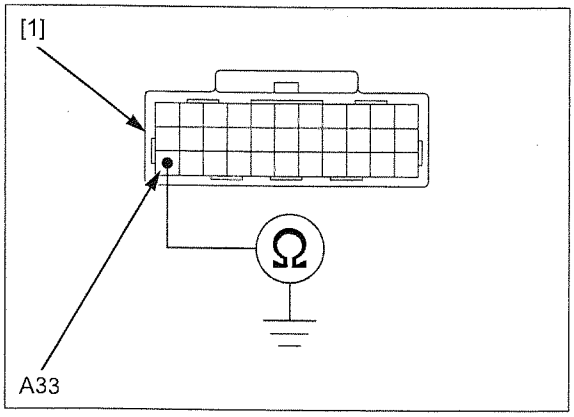
   **Connection: A33 – Ground**

   **TOOL:**
   **Test probe, 2 packs** **07ZAJ-RDJA110**

   ***Is there continuity?***

   **YES** – Short circuit in the Pink wire

   **NO** – Replace the PCM with a known good one, and recheck.



## DTC 68-1 (No.1 CLUTCH OPERATION MALFUNCTION; CLUTCH SLIPS)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Test-ride the motorcycle above 18 km/h (11 mph).
   Stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 66-1 indicated?***

   **YES** – Refer to DTC 66-1 troubleshooting (page 12-49).

   **NO** – GO TO STEP 2.

2. **Clutch Clearance Inspection**

   Remove the No.1 clutch assembly and measure the clutch clearance (page 12-66).

   ***Is the clearance within the standard range?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Faulty No.1 clutch assembly

## DTC 69-1 (No.2 CLUTCH OPERATION MALFUNCTION; CLUTCH SLIPS)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Test-ride the motorcycle above 18 km/h (11 mph).
   Stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 66-1 indicated?***

   **YES** – Refer to DTC 66-1 troubleshooting (page 12-49).

   **NO** – GO TO STEP 2.

2. **Clutch Condition Inspection**

   Remove the No.2 clutch assembly and measure the clutch clearance (page 12-66).

   ***Is the clearance within the standard range?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Faulty No.2 clutch assembly.

## DTC 71-1, 72-1 (INNER, OUTER MAINSHAFT/COUNTERSHAFT SPEED RATIO FAILURE)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck 1**

   Check the DTC with the MCS.

   ***Is DTC 53-1, 54-1 or 66-1 indicated?***

   **YES** – • DTC 53-1 is indicated (page 12-38).
   • DTC 54-1 is indicated (page 12-40).
   • DTC 66-1 is indicated (page 12-49).

   **NO** – GO TO STEP 2.

2. **DTC Recheck 2**

   Erase the DTCs (page 12-10).
   Test-ride the motorcycle above 18 km/h (11 mph).
   Stop the engine.
   Check the DTC with the MCS.

   ***Is DTC 71-1 or 72-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Intermittent failure

## DTC 84-1 (CPU IN THE PCM MALFUNCTION)

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

1. **DTC Recheck**

   Erase the DTCs (page 12-10).
   Check the DTC with the MCS.

   ***Is DTC 84-1 indicated?***

   **YES** – Replace the PCM with a known good one, and recheck.

   **NO** – Intermittent failure

## DTC 1-1 (SHIFT PEDAL ANGLE SENSOR (OPTIONAL) MALFUNCTION)

NOTE:

- Before starting this inspection, check for loose or poor contact on the shift pedal angle sensor 3P (Blue) connector and PCM 33P connectors, and recheck the DTC.
- If the PCM is replaced, perform the following:
  - Clutch Initialize Learning Procedure (page 12-81)
  - DCT Shift Pedal (Optional) Registration (page 12-79)
- If the DCT shift pedal (Optional) is removed from the vehicle, perform the DCT Shift Pedal Registration Cancellation (page 12-80).

**1. Recheck the DTC**

Erase the DTCs (page 12-10).
Turn the ignition switch ON and engine stop switch "○".
Operate the DCT shift pedal up and down several times with the engine stopped.
Recheck the DTC with the MCS.

***Is the DTC 1-1 indicated?***

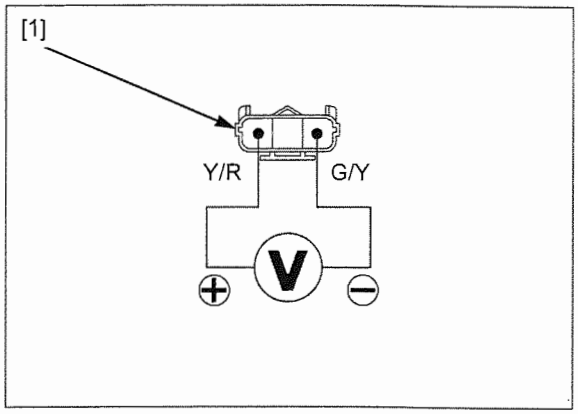
**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. Shift Pedal Angle Sensor Input Voltage Inspection**

Turn the ignition switch OFF.
Remove the left under side cowl (page 2-13)
Disconnect the shift pedal angle sensor 3P (Blue) connector.
Turn the ignition switch ON.
Measure the voltage between the wire harness side shift pedal angle sensor 3P (Blue) connector [1] terminals.

**Connection: Yellow/red (+) – Green/yellow ( – )**




***Is the voltage within 4.75 – 5.25 V?***

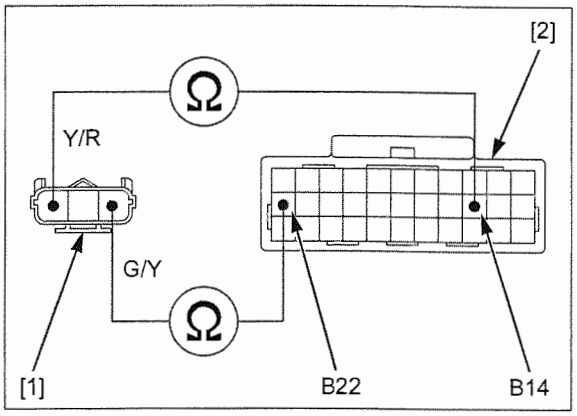
**YES** – GO TO STEP 4.

**NO** – GO TO STEP 3.

**3. Shift Pedal Angle Sensor Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the wire harness side shift pedal angle sensor 3P (Blue) connector [1] and PCM 33P (Gray) connector [2] terminals.

**Connection: Green/yellow – B22**
**Yellow/red – B14**




**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the PCM with a known good one, and recheck.

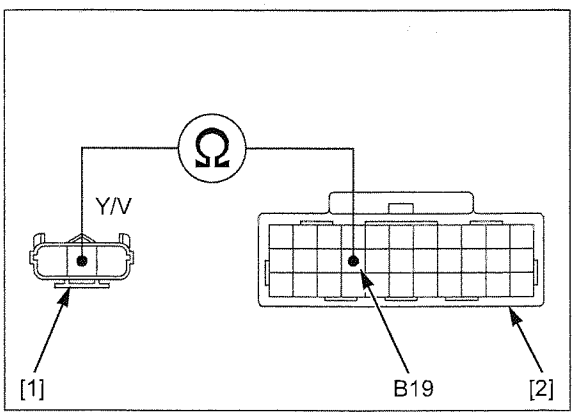
**NO** – • Open circuit in Green/yellow wire
• Open circuit in Yellow/red wire

4. **Shift Pedal Angle Sensor Output Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the PCM 33P (Gray) connector (page 4-34).
Check for continuity between the wire harness side shift pedal angle sensor 3P (Blue) connector [1] and PCM 33P (Gray) connector [2] terminals.

**Connection: Yellow/violet – B19**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**




***Is there continuity?***

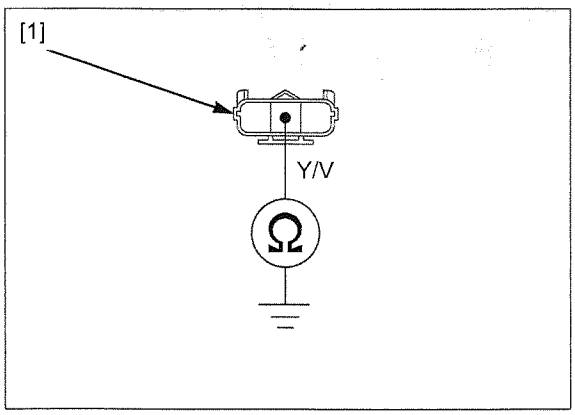
**YES** – GO TO STEP 5.

**NO** – Open circuit in Yellow/violet wire

5. **Shift Pedal Angle Sensor Output Line Short Circuit Inspection**

Check for continuity between the wire harness side shift pedal angle sensor 3P (Blue) connector [1] and ground.

**Connection: Yellow/violet – Ground**




***Is there continuity?***

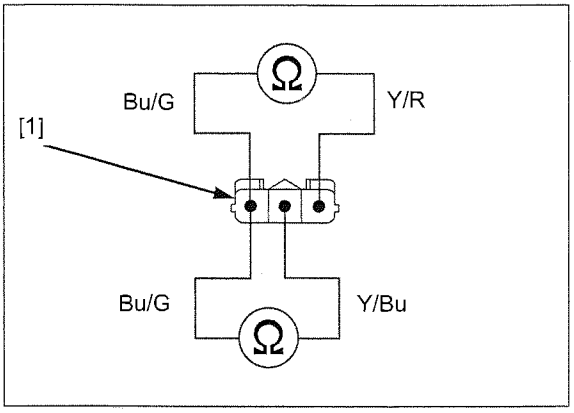
**YES** – Short circuit in Yellow/violet wire.

**NO** – GO TO STEP 6.

6. **Shift Pedal Angle Sensor Resistance Inspection**

Measure the resistance at the sensor side shift pedal angle sensor 3P (Black) connector [1] terminals.

**Connection: Yellow/red – Blue/green**
**Standard: 4 – 6 kΩ (20°C/68°F)**




Operate the DCT shift pedal to check that the resistance changes in accordance with the pedal operation.

**Connection: Yellow/blue – Blue/green**

**When moving the pedal up:**
**Resistance decreases**
**When moving the pedal down:**
**Resistance increases**

***Are the resistance inspections normal?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Faulty shift pedal angle sensor, replace the DCT shift pedal as an assembly.

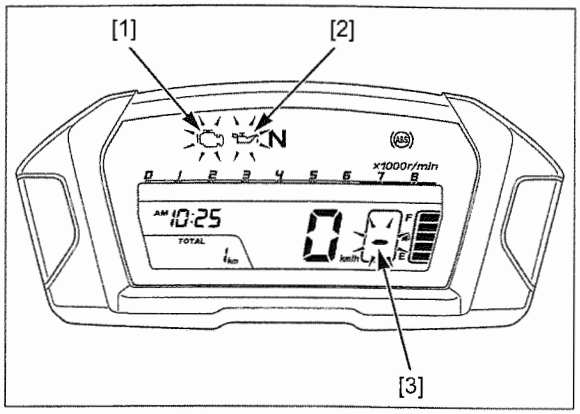
# MODE/SHIFT INDICATOR CIRCUIT TROUBLESHOOTING

If the mode indicator does not operate, check that the combination meter shows following when the ignition switch is turned ON with the engine stop switch "○".

- MIL [1] and engine oil pressure indicator [2] stay on.
- Shift indicator "–" [3] is blinking.
- Tachometer and high coolant temperature indicator do not come on.

If so, check the serial communication line (page 22-8).

If not so, replace the combination meter.




# AT/MT MODE SWITCH TROUBLESHOOTING

If the engine can be started but AT/MT mode cannot be changed, perform this troubleshooting.

NOTE:

- Before starting the inspection, check for loose or poor contact on the right handlebar switch and PCM 33P connectors, and recheck the AT/MT mode switch operation.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81).

**1. AT/MT mode switch Power Input Voltage Inspection**

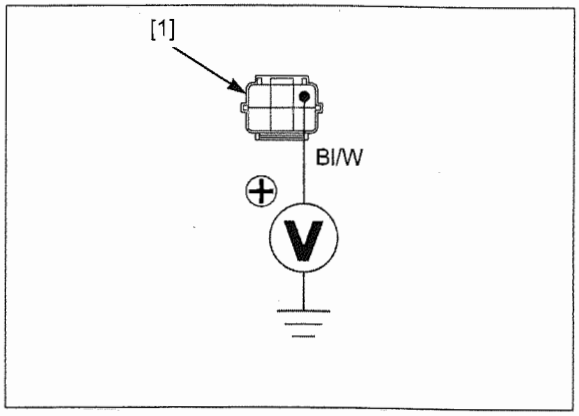
Disconnect the right handlebar switch 6P (Black) connector (page 22-18).
Turn the ignition switch ON with the engine stop switch "○".
Measure the voltage between the wire harness side right handlebar switch 6P (Black) connector [1] terminal and ground.

**Connection: Black/white (+) – Ground (–)**

***Is there battery voltage?***

**YES** – GO TO STEP 2.

**NO** – Open circuit in the Black/white wire between the right handlebar switch connector and fuse box (FI fuse)




**2. AT/MT mode switch Inspection**

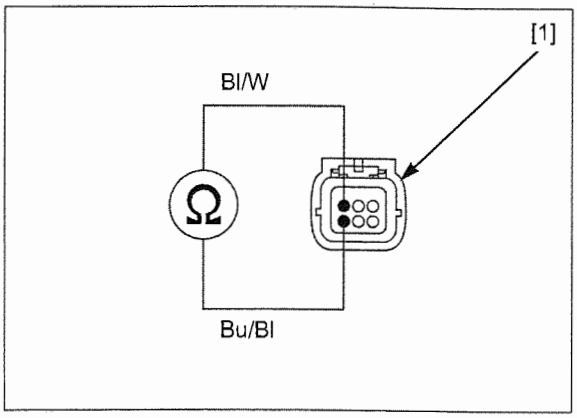
Turn the ignition switch OFF.
Check for continuity between the switch side right handlebar switch 6P (Black) connector [1] terminals in each switch position.

**Connection: Black/white – Blue/black**

***Is there continuity with the switch pushed and no continuity with the switch released?***

**YES** – GO TO STEP 3.

**NO** – Faulty AT/MT mode switch



3. **AT/MT mode switch Input Line Open Circuit Inspection**

Disconnect the PCM 33P (Black) connector (page 4-34).
Check for continuity between the wire harness side right handlebar switch 6P (Black) connector [1] and PCM 33P (Black) connector [2] terminals.

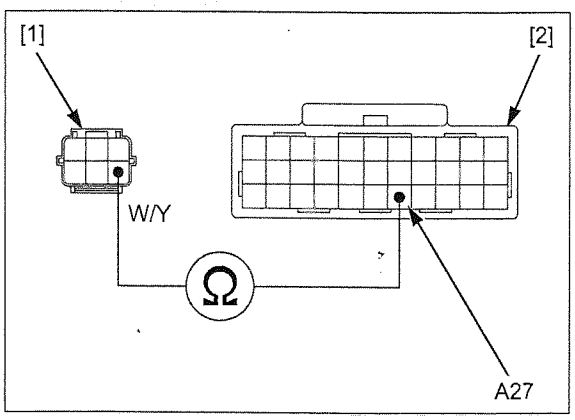
**Connection: White/yellow – A27**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**

***Is there continuity?***

**YES** – Replace the PCM with a known good one, and recheck.

**NO** – Open circuit in the White/yellow wire



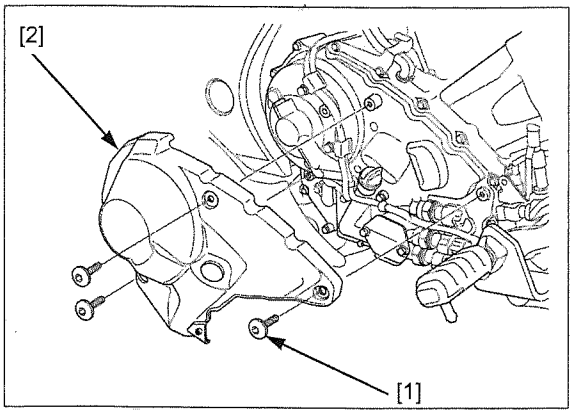

# RIGHT ENGINE SIDE COVER

## REMOVAL/INSTALLATION

Remove the right under side cowl (page 2-13).

Remove the three socket bolts [1] and right engine side cover [2].

Installation is in the reverse order of removal.




# RIGHT CRANKCASE COVER

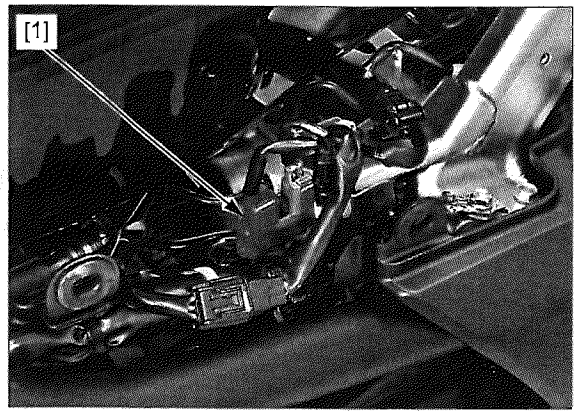
## REMOVAL

Drain the engine oil (page 3-10).

Remove the following:

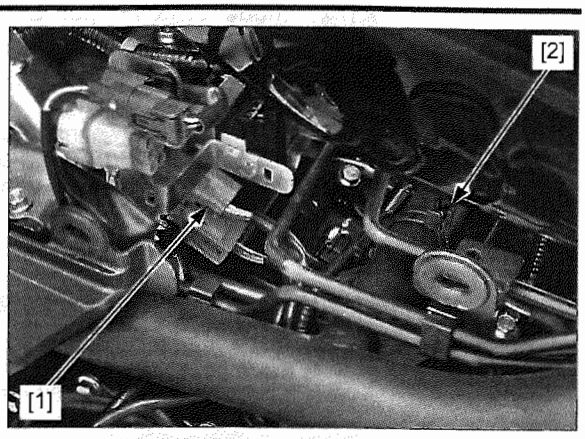
- Side shelters (page 2-11)
- Right under side cowl (page 2-13)
- Right engine side cover (page 12-57)

Release the CKP sensor 2P (Red) connector [1] from the stay and disconnect it.



Release the linear solenoid valve 4P (Green) connector [1] from the stay and disconnect it .

Release the wire band [2] from the frame pipe.

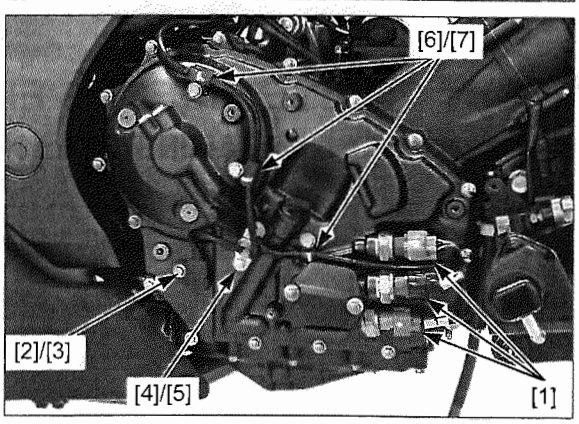



Disconnect the clutch EOP sensor 3P connectors [1].

Remove the following:

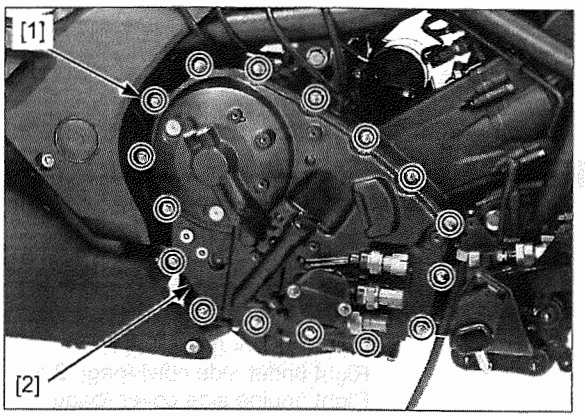
- Bolt [2] and shift spindle angle sensor [3]
- Bolt [4] and wire clip stay [5]
- Bolts [6] and wire clamps [7]

Remove the wire harness and shift spindle angle sensor wire from the right crankcase cover.




*Do not allow dust or dirt to enter the oil passages.*

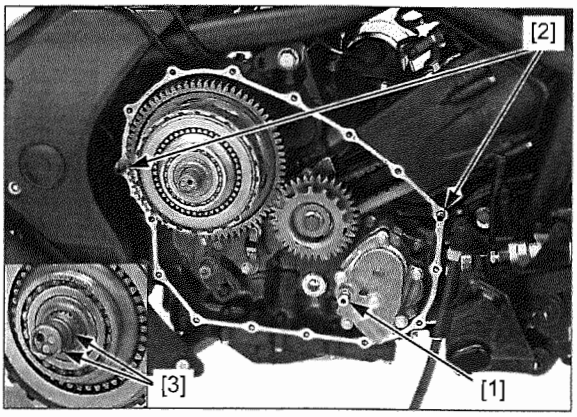
Remove the bolts [1] and right crankcase cover [2].




Remove the oil joint pipe [1] and dowel pins [2].

Remove the O-rings from the joint pipe.

Remove the seal rings [3] from the mainshaft end.



## LINEAR SOLENOID VALVE BODY DISASSEMBLY

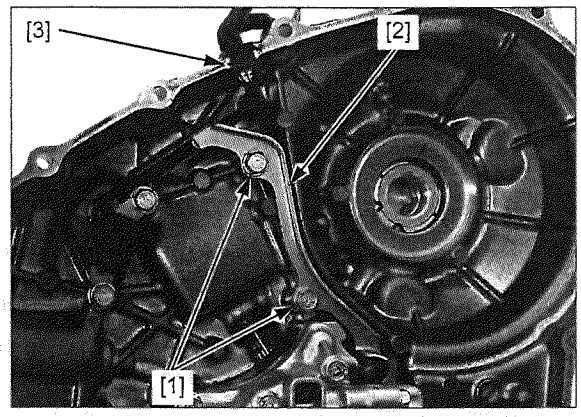
NOTE:

- Keep dust and dirt away from all the parts.
- Be careful not to damage the mating surfaces of the valve body components.

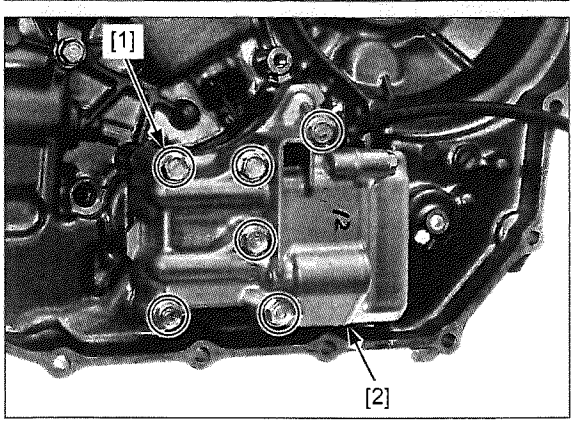
Remove the right crankcase cover (page 12-57).

Remove the right crankcase cover wire clamp bolt [1] and wire clamp [2].

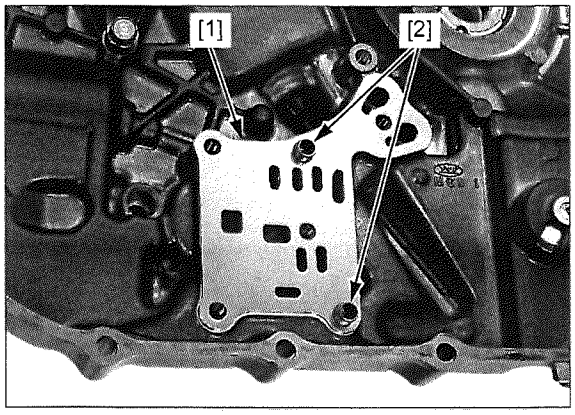
Remove the wire grommets [3] from the right crankcase cover.




Remove the bolts [1] and linear solenoid valve body [2].

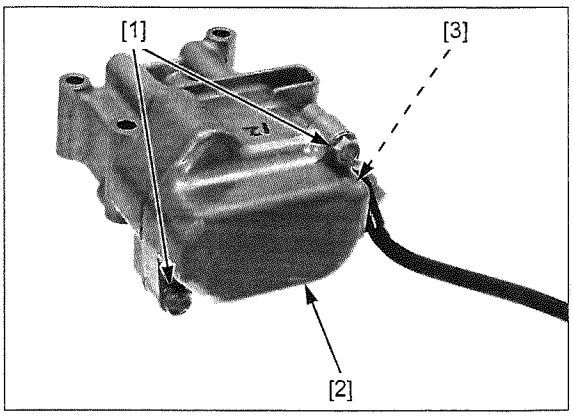



Remove the separate plate [1] and dowel pins [2],



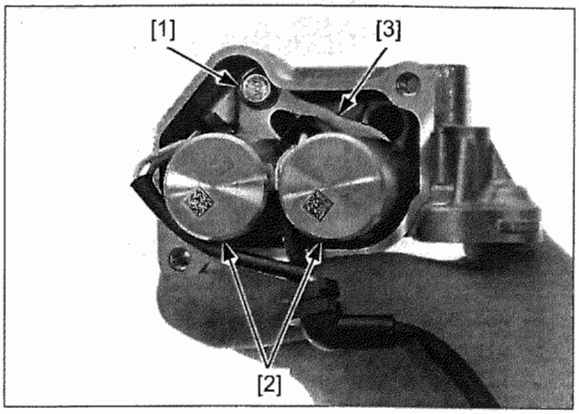

Remove the bolts [1] and valve body cover [2].

Remove the wire grommet [3] from the valve body cover.



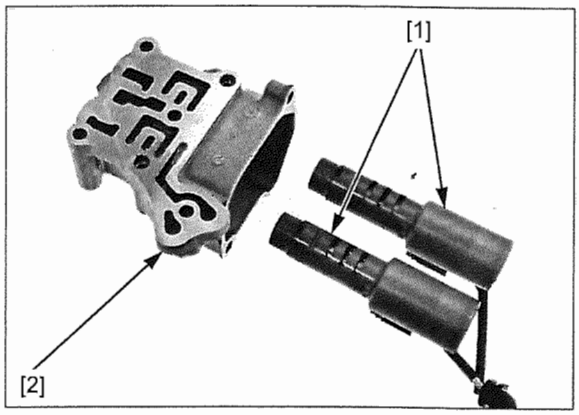
Remove the bolt [1], linear solenoid valves [2] and stopper plate [3] from the valve body.

Remove the stopper plate from the linear solenoid valves.



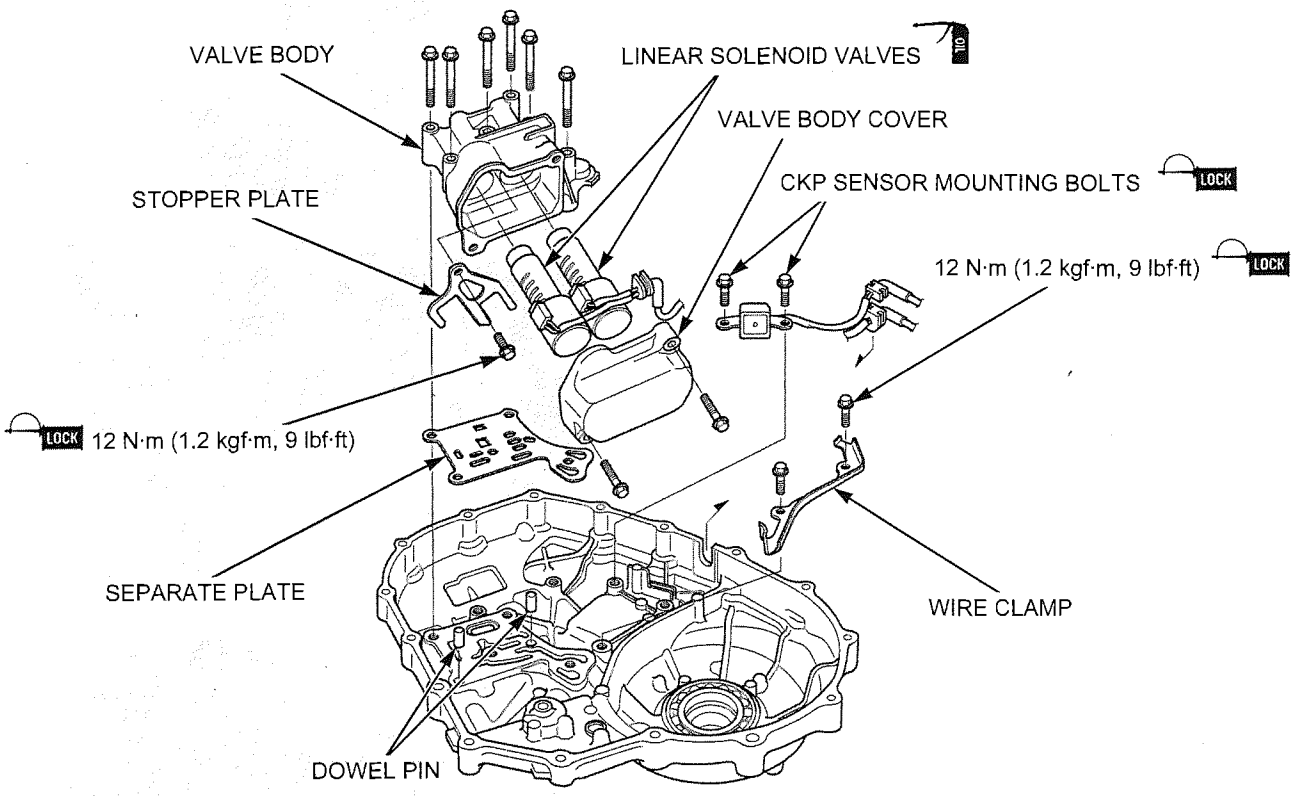

Wash all the parts with a high flash point or non-flammable solvent and blow through all oil passages with compressed air to clean completely.

Check the linear solenoid valves [1] and valve body [2] for scratches, scoring or damage.



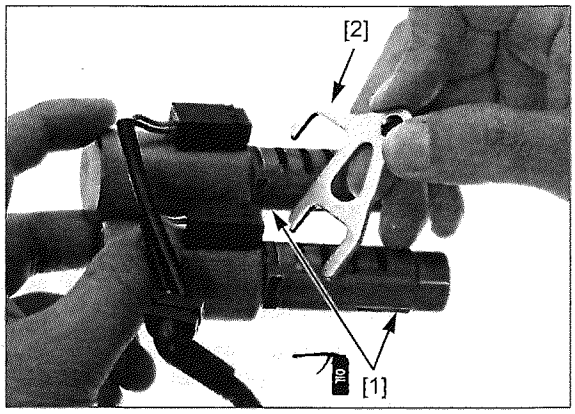
## LINEAR SOLENOID VALVE BODY ASSEMBLY

NOTE:
Clean all the parts with compressed air. Make sure that there is no dust or lint on any parts.




Coat linear solenoid valves [1] with engine oil.

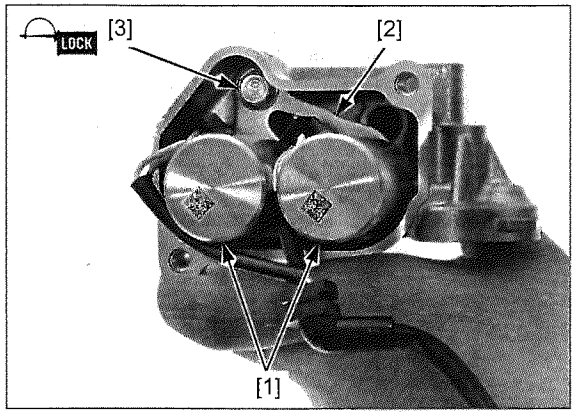
Set the stopper plate [2] into the grooves in the solenoid valves.




Install the linear solenoid valves [1] and stopper plate [2] into the valve body.

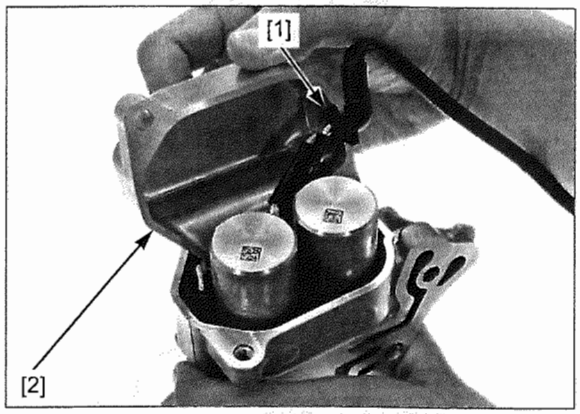
Apply locking agent to the threads of the stopper plate bolt [3] (page 1-14).
Install the stopper plate bolt and tighten it.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**



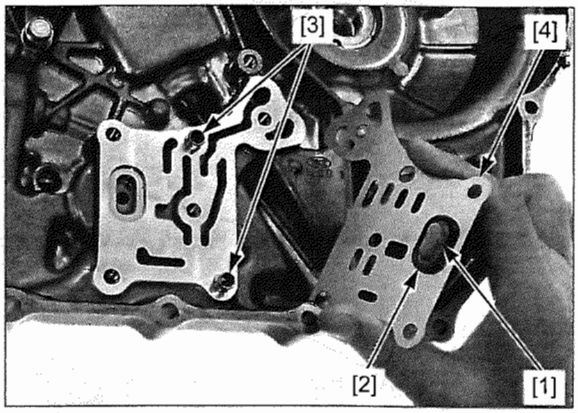
Set the wire grommet [1] into the groove in the body cover [2].

Install the valve body cover onto the valve body and tighten the bolts securely.

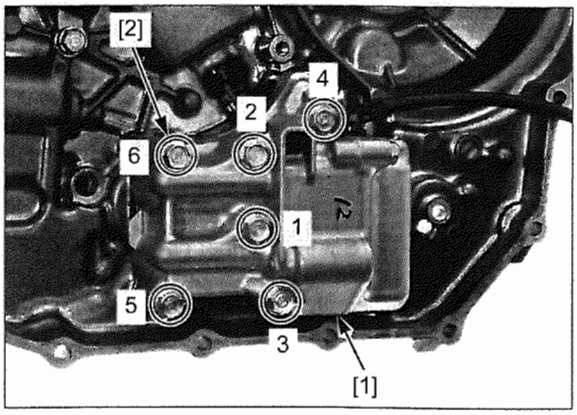



Check the oil filter screen [1] and packing [2] for damage and replace them if necessary.

Install the dowel pins [3] and separate plate [4] onto the right crankcase cover.




Install the valve body [1] and bolts [2], and tighten the bolts in the sequence as shown.



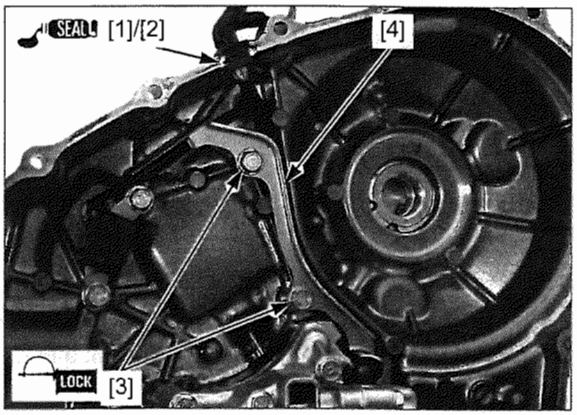

Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the CKP sensor wire grommet and linear solenoid valve wire grommet sealing surface.

Set the linear solenoid valve wire grommet [1] and CKP sensor wire grommet [2] into the groove in the right crankcase cover.

Apply locking agent to the threads of the right crankcase cover wire clamp bolts [3] (page 1-14).
Install the wire clamp [4] and tighten bolts.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

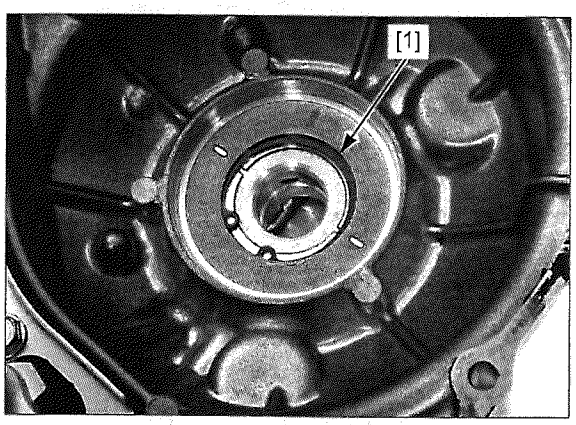
Install the right crankcase cover (page 12-64).



## OIL GUIDE COLLAR REMOVAL/ INSTALLATION

Remove the right crankcase cover (page 12-57).

Remove the snap ring [1] from the right crankcase cover.

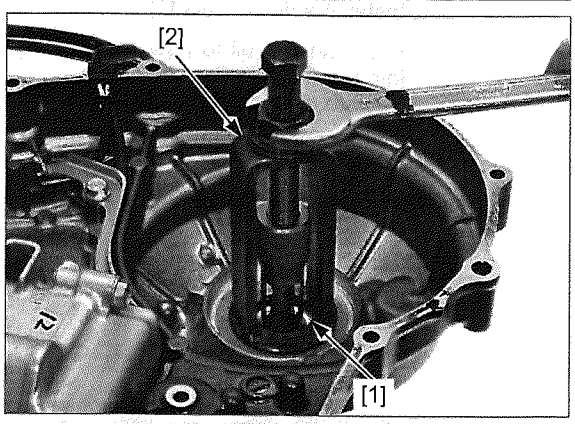



Remove the oil guide collar [1] from the right crankcase cover with the special tool.

**TOOL:**

| | |
|---|---|
| **[2] Bearing remover, 20 mm** | **07931-MA70000 (Not available in U.S.A.)** |

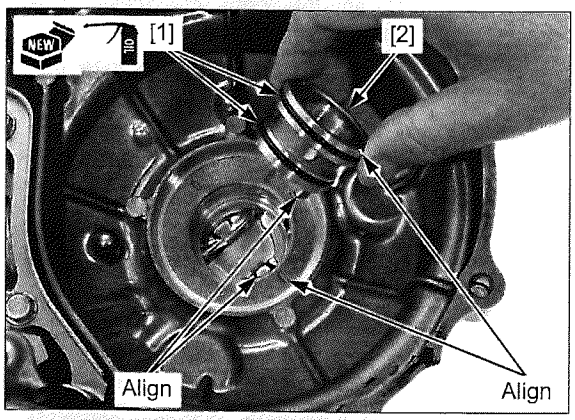
Remove the O-rings from the oil guide collar.




Coat new O-rings [1] with engine oil and install them into the grooves in the oil guide collar [2].

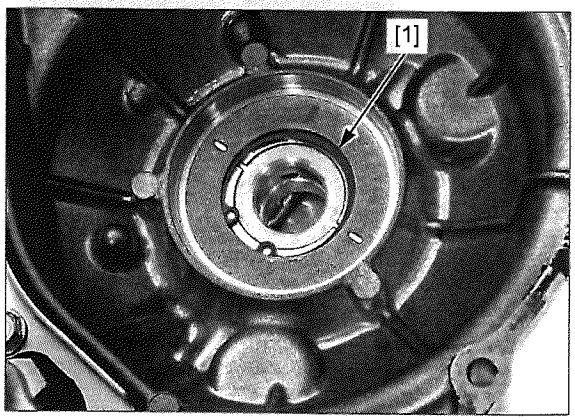
Install the oil guide collar into the right crankcase cover until it is seated.

- Align the oil guide collar index mark and tabs with the right crankcase cover index mark and slits.




Install the snap ring [1] into the right crankcase cover groove with the chamfered edge facing in.

Install the right crankcase cover (page 12-64).

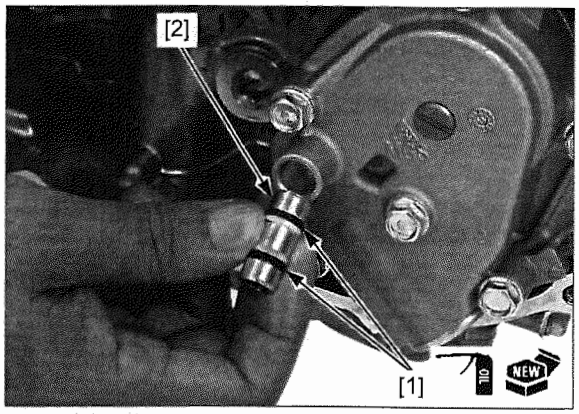


## INSTALLATION

*Do not allow dust or dirt to enter the oil passages.*

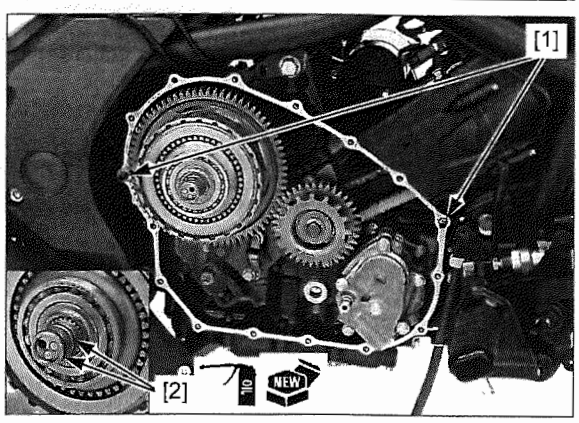
Coat new O-rings [1] with engine oil and install them onto the oil joint pipe [2].

Install the oil joint pipe into the oil pump.



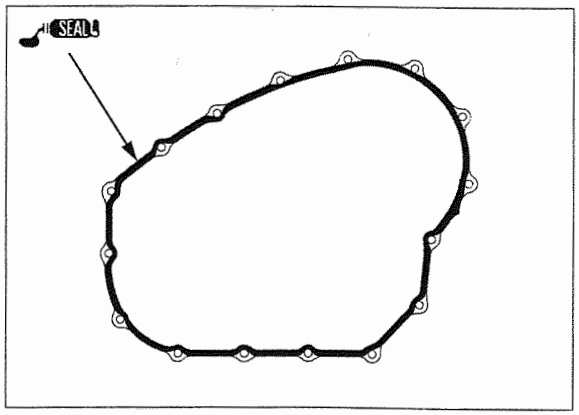

Install the dowel pins [1].

Apply engine oil to new seal rings [2] and install them into the mainshaft grooves.
Push in the seal rings to seat them into the grooves.



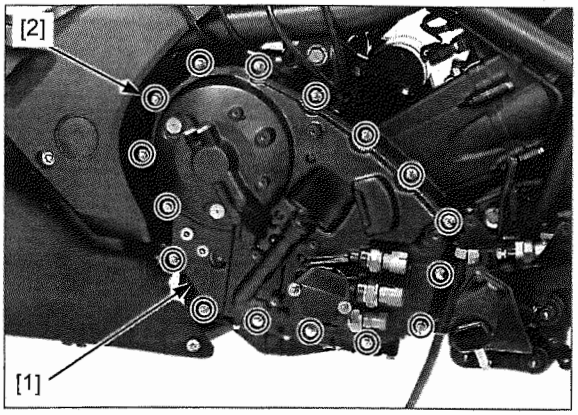

Clean the right crankcase cover mating surfaces thoroughly.

Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the right crankcase cover mating surface as shown.




Install the right crankcase cover [1].

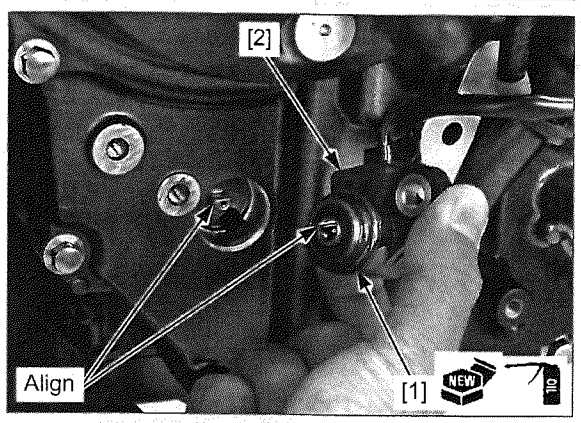
Install the bolts [2] and tighten them in a crisscross pattern in 2 or 3 steps.



Route the wire harness and shift spindle angle sensor wire on the right crankcase cover properly (page 1-21).

Coat a new O-ring [1] with engine oil and install it onto the shift spindle angle sensor [2].

Install the shift spindle angle sensor by aligning the flat surfaces of the sensor and spindle.



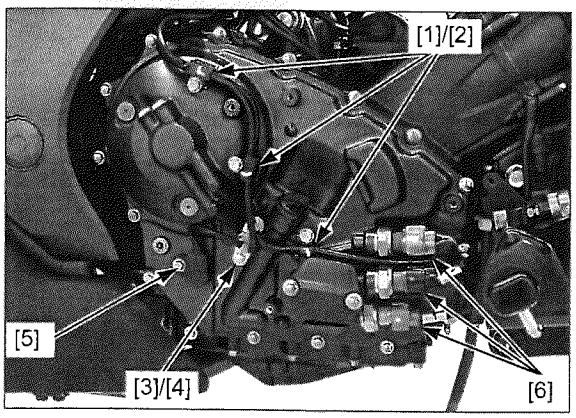

Install the following:

- Wire clamps [1] and bolts [2]
- Wire clip stay [3] and bolt [4]

Install the shift spindle angle sensor bolt [5] and tighten it.

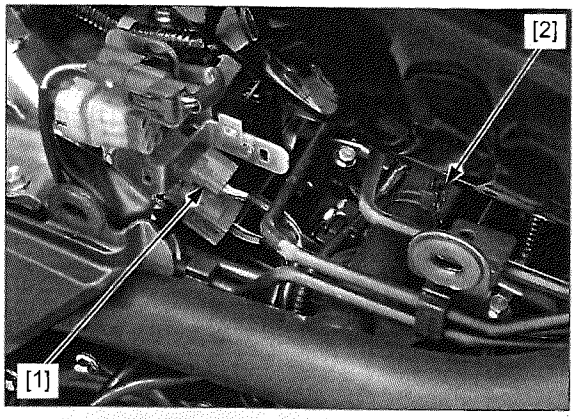
**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Connect the clutch EOP sensor 3P connectors [6]. (Connector with no mark to the upper sensor, connector with "P" mark to the middle sensor and connector with "1" mark to the lower sensor.)




Connect the linear solenoid valve 4P (Green) connector [1] and install it to the ABS modulator stay.

Secure the wire band [2] to the frame pipe with the starter motor cable.

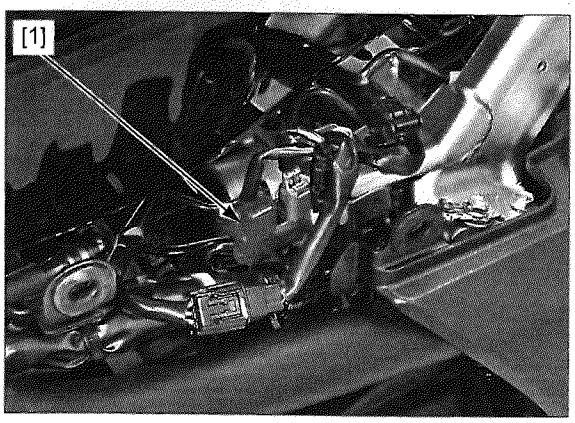



Connect the CKP sensor 2P (Red) connector [1].

Install the following:

- Side shelters (page 2-11)
- Right under side cowl (page 2-13)
- Right engine side cover (page 12-57)

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-9).

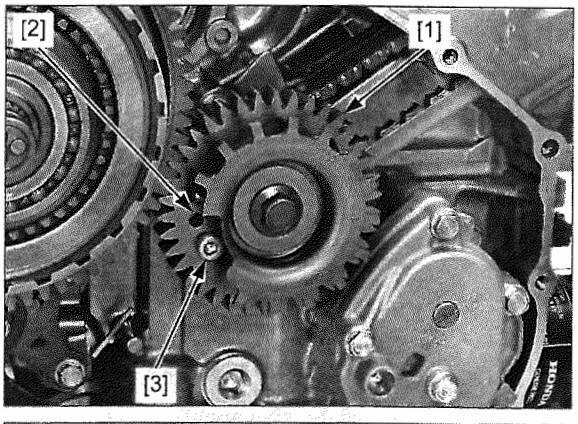


# DUAL CLUTCH

## REMOVAL

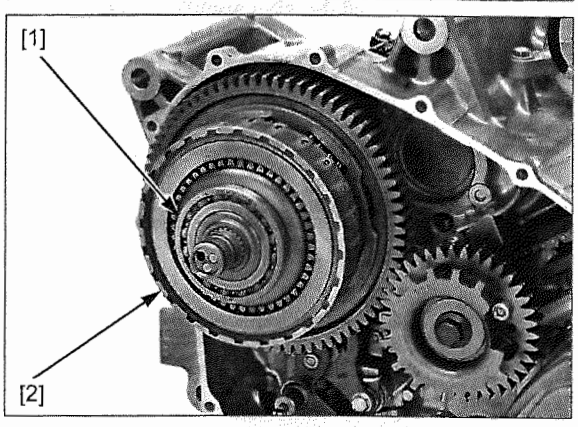
Remove the right crankcase cover (page 12-57).

Align the gear teeth of the primary drive gear and sub-gear [1] by prying the gears through the holes [2] and hold them with a 6 mm socket bolt [3].

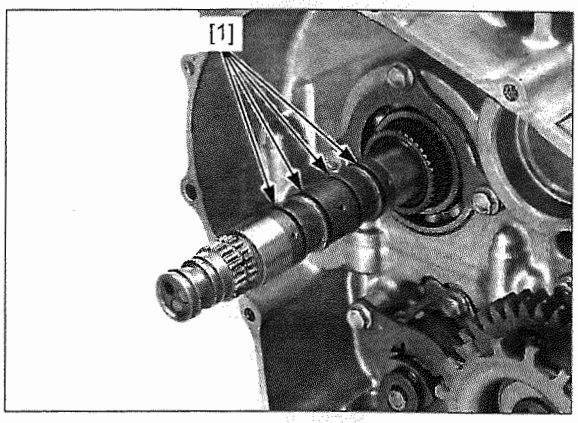



Remove the ball bearing [1].

Remove the dual clutch assembly [2] from the mainshaft.

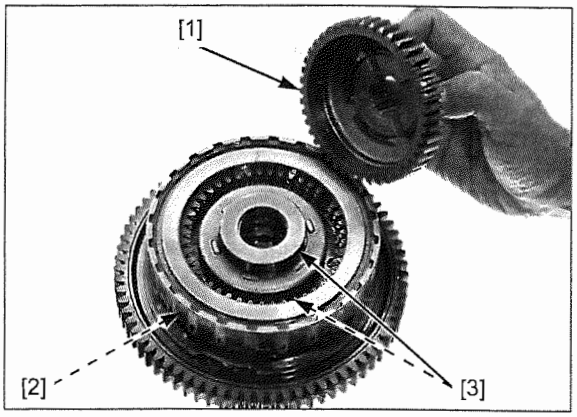



Remove the seal rings [1] from the mainshaft grooves.



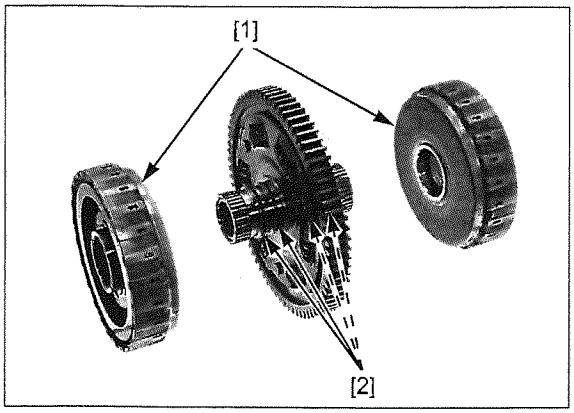

## DISASSEMBLY

Remove clutch guide 1 [1], clutch guide 2 [2] and washers [3] from the clutches.



Remove the clutch assemblies [1] and O-rings [2] from the primary driven gear.

- Do not disassemble the clutch assembly.
- The No.1 clutch assembly (for inner mainshaft) and No.2 clutch assembly (for outer mainshaft) are the same parts.




## CLUTCH CLEARANCE INSPECTION

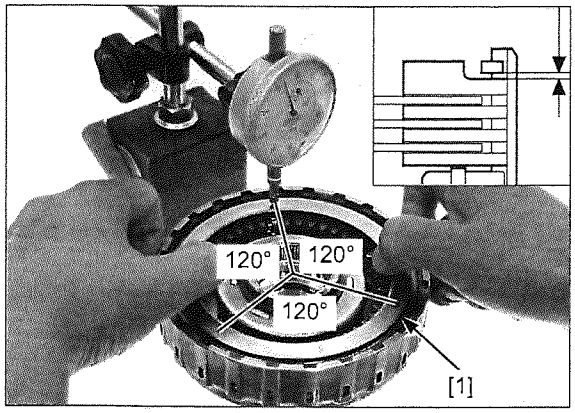
Set a dial indicator on the end plate [1] with the plate bottomed.

Measure the clearance by lifting the end plate against the snap ring and record it.

Perform this inspection at three points in 120° apart.

**SERVICE LIMIT: 2.0 mm (0.08 in)**

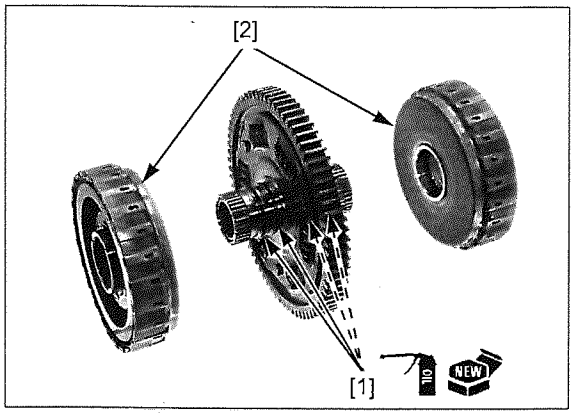
If the measured value exceeds the service limit, replace the clutch assembly.




## ASSEMBLY

Coat new O-rings [1] with engine oil and install them into the grooves in the primary driven gear.

Install the clutch assemblies [2] onto the primary driven gear.



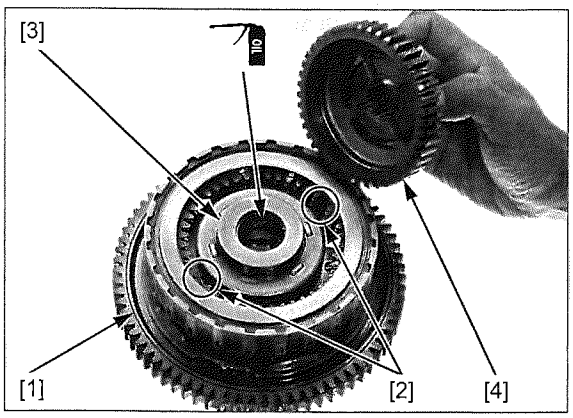

Apply engine oil to the needle bearings in the primary driven gear.

- The primary driven gear has the index line [1] on its flange for the installation direction. The dual clutch assembly should be installed with the index line facing the outside.

Line up the clutch disc tabs with the two wide grooves [2] aligned as shown.

Install the washer [3] onto the clutch assembly.

Install clutch guide 1 [4] into the clutch on the index line side by aligning the gear teeth with the clutch disc tabs.



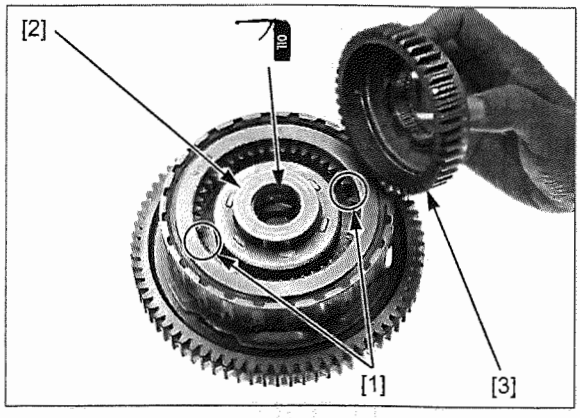
Turn over the dual clutch assembly while holding clutch guide 1.

Apply engine oil to the needle bearings in the primary driven gear.

Line up the clutch disc tabs with the two wide grooves [1] aligned as shown.

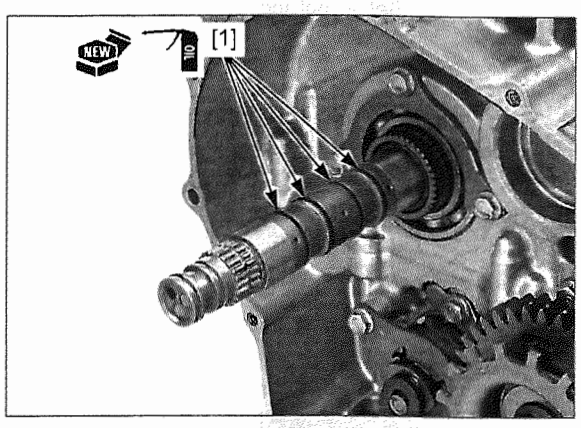
Install the washer [2] onto the clutch assembly.

Install clutch guide 2 [3] into the clutch by aligning the gear teeth with the clutch disc tabs.



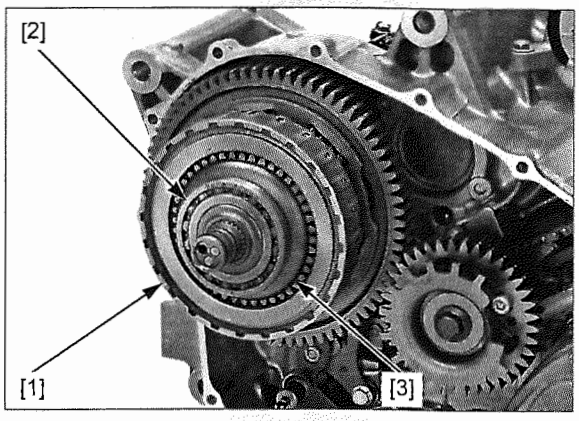

## INSTALLATION

Apply engine oil to new seal rings [1] and install them into the mainshaft grooves.
Push in the seal rings to seat them into the grooves.



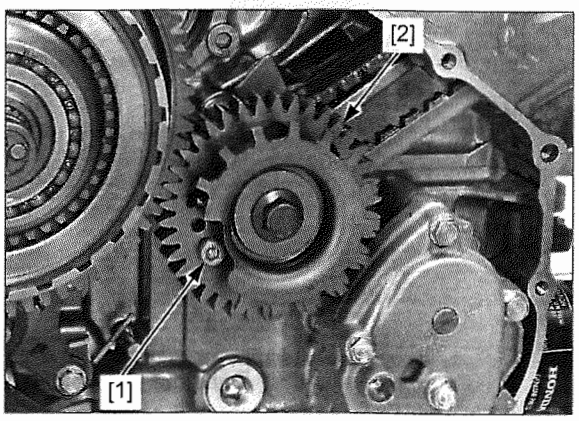

Install the dual clutch assembly [1] onto the mainshaft, being careful not to damage the seal rings.

Install the ball bearing [2] onto clutch guide 1 [3] with the marked side facing out.




Remove the 6 mm socket bolt [1] to free the primary drive gear and sub-gear [2].

Install the right crankcase cover (page 12-64).



# PRIMARY DRIVE GEAR/CKP SENSOR ROTOR

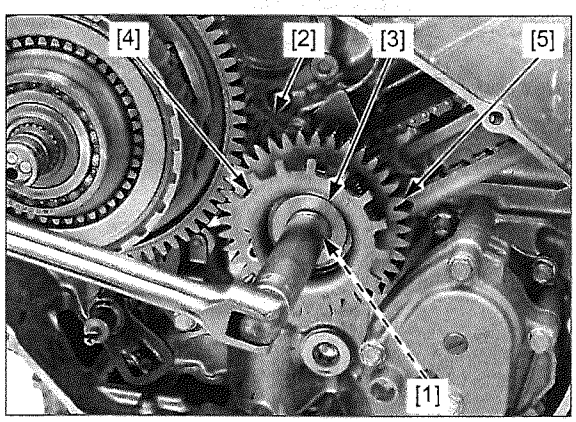
## REMOVAL

Remove the right crankcase cover (page 12-57).

Hold the primary drive gear and sub-gear with a 6 mm socket bolt (page 12-66).

Install the special tool between the primary drive and driven gears, and loosen the primary drive gear bolt [1].

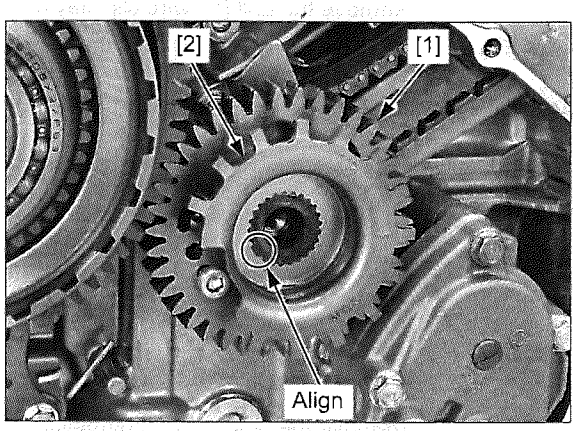
**TOOL:**
**[2] Gear holder, 2.5** — **07724-0010100 or 07724-001A100 (U.S.A. only)**




*Do not separate the sub-gear from the primary drive gear unless necessary.*

## INSTALLATION

Install the primary drive gear/sub-gear [1] and CKP sensor rotor [2] onto the crankshaft by aligning their wide grooves with the wide tooth.

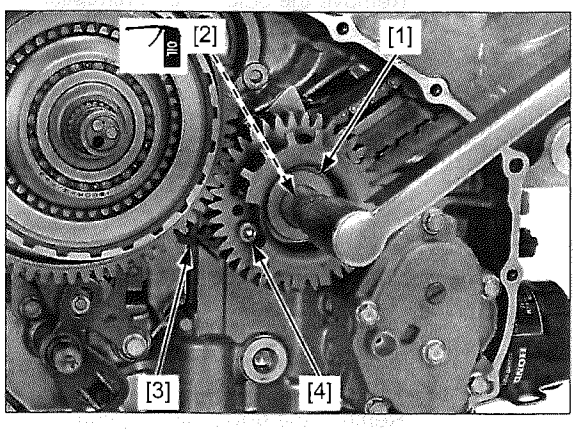



Apply engine oil to the primary drive gear bolt threads and seating surface.
Install the washer [1] and primary drive gear bolt [2].

Install the special tool between the primary drive and driven gears, and tighten the primary drive gear bolt.

**TOOL:**
**[2] Gear holder, 2.5** — **07724-0010100 or 07724-001A100 (U.S.A. only)**

**TORQUE: 93 N·m (9.5 kgf·m, 69 lbf·ft)**




Remove the 6 mm socket bolt [4] to free the primary drive gear and sub-gear.

Install the right crankcase cover (page 12-64).

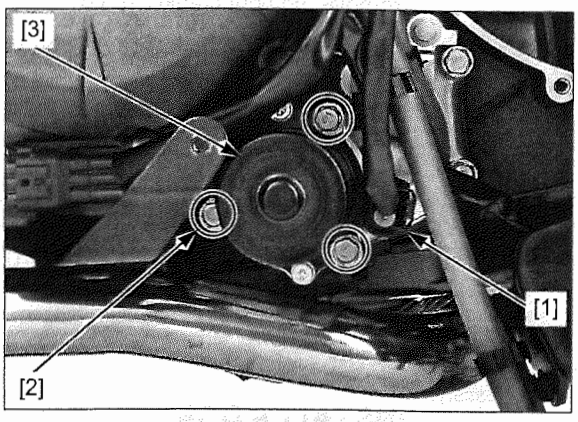
# SHIFT CONTROL MOTOR/REDUCTION GEARS

## REMOVAL

Remove the left crankcase rear cover (page 2-16).

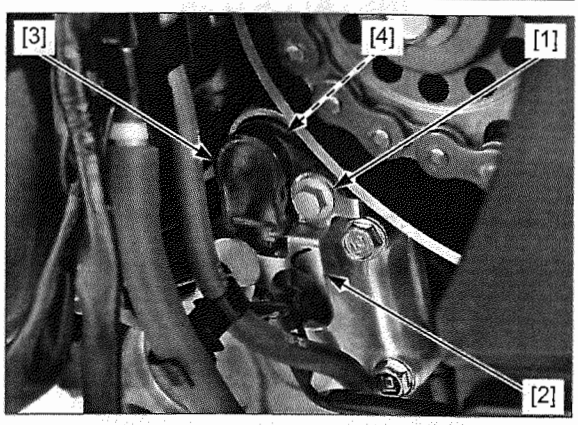
Disconnect the shift control motor 2P (Black) connector [1].

Remove the bolts [2] and shift control motor [3].

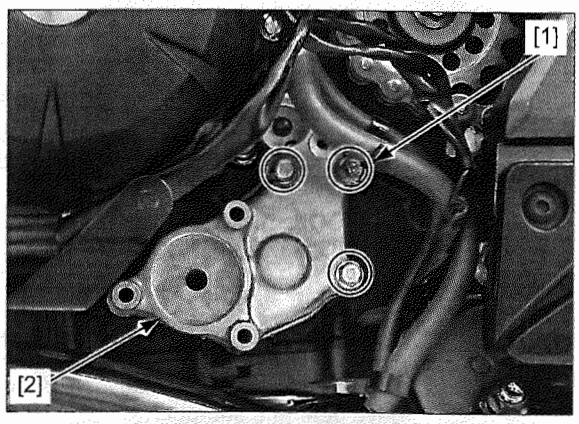



Remove the bolt [1], wire clip stay [2] and TR sensor [3].

Remove the O-ring [4] from the TR sensor.

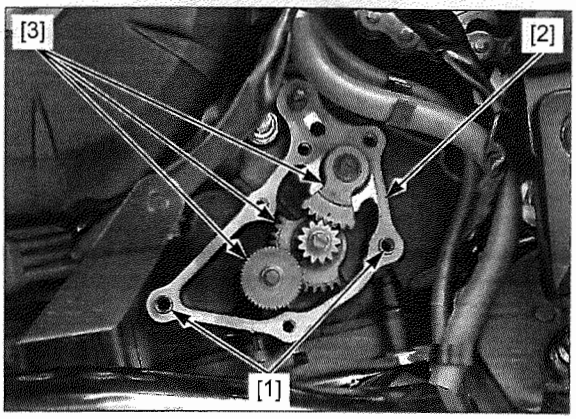



Remove the bolts [1] and reduction gear cover [2].

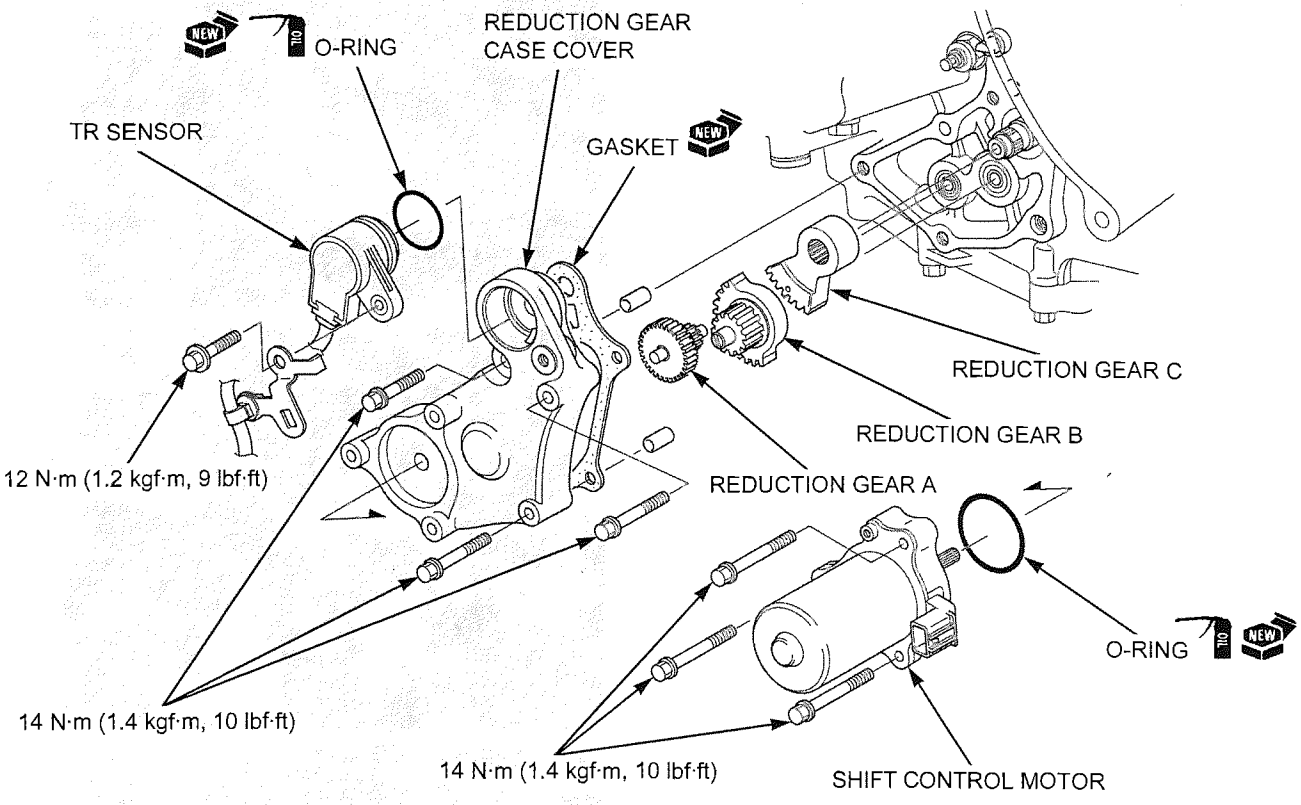



Remove the dowel pins [1] and gasket [2].

Remove the reduction gears [3].



## INSTALLATION



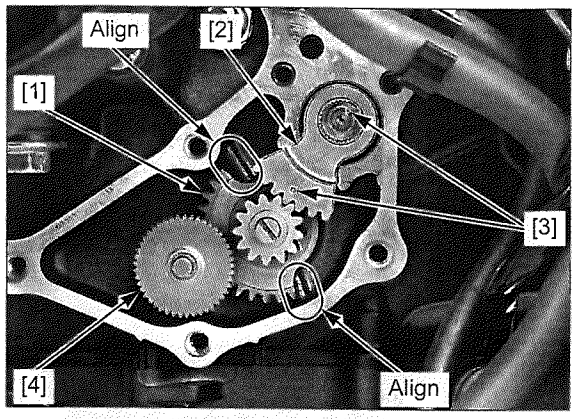

Apply 2 – 4 g (0.07 – 0.14 oz) of specified grease to the reduction gear journals and teeth.

**SPECIFIED GREASE: Unirex N3 grease (Exxon Mobil)**

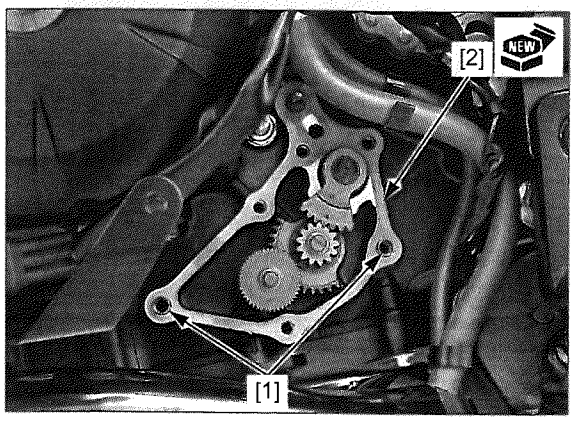
Install the reduction gear B [1] and reduction gear C [2] by aligning the gear ends with the ribs of the crankcase.

Check that the punch marks [3] on the gear and shift spindle line up as shown.

Install reduction gear A [4].

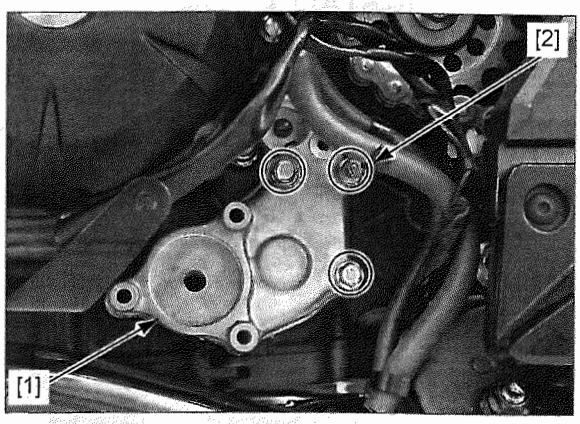



Install the dowel pins [1] and a new gasket [2].



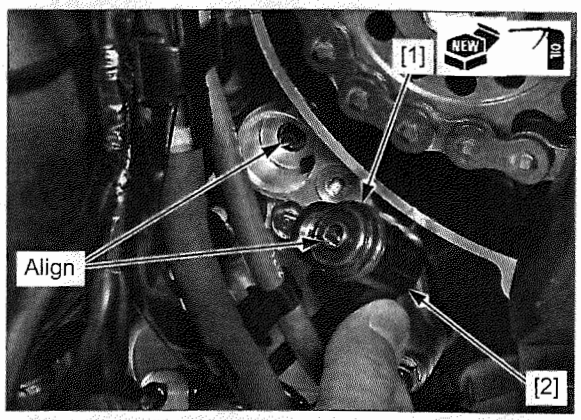
Install the reduction gear cover [1] and bolts [2], then tighten the bolts.

**TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)**



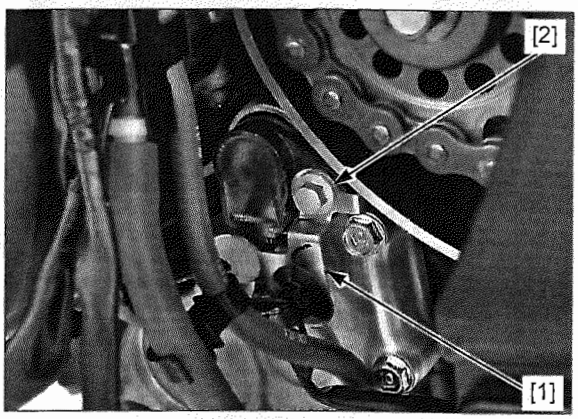

Coat a new O-ring [1] with engine oil and install it into the groove in the TR sensor [2].

Install the TR sensor into the crankcase by aligning the flat surfaces of the sensor and shift drum end.

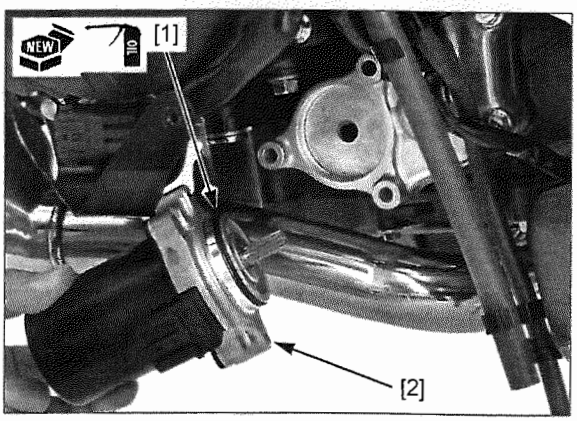



Install the wire clip stay [1] and TR sensor bolt [2], and tighten the bolt.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**




Coat a new O-ring [1] with engine oil and install it into the groove in the shift control motor [2].

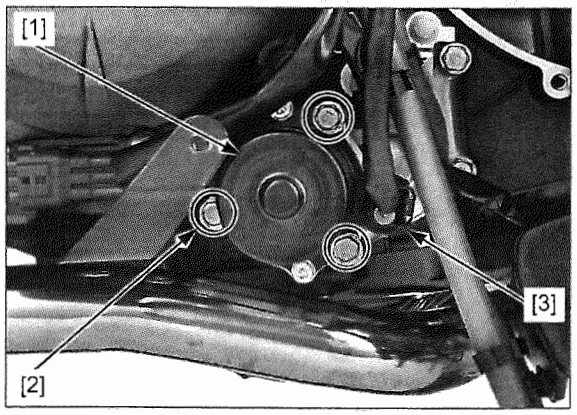


Install the shift control motor [1] and bolts [2], and tighten the bolts.

**TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)**

Connect the shift control motor 2P (Black) connector [3].

Install the left crankcase rear cover (page 2-16).

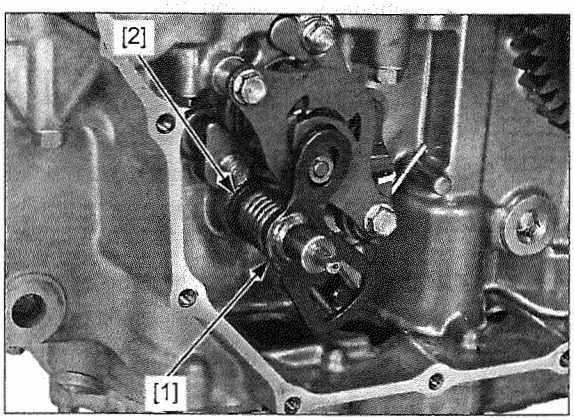



# GEARSHIFT LINKAGE

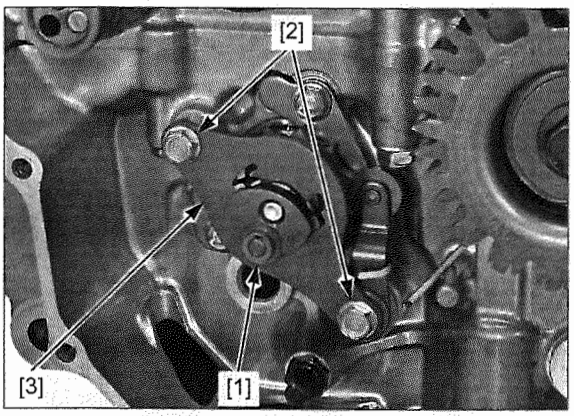
## REMOVAL

Remove the following:

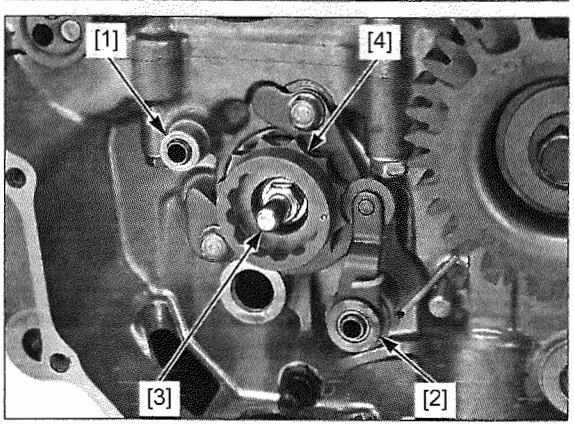
- Shift control motor/reduction gears (page 12-70)
- Dual clutch (page 12-66)
- Gearshift spindle [1]
- Washer [2]



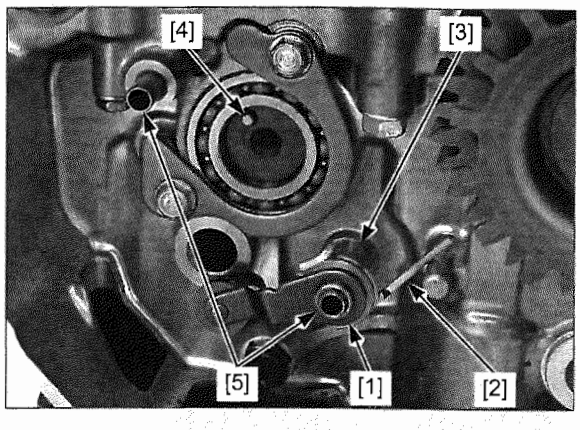

- Drum shifter collar [1]
- Bolts [2]
- Drum shifter guide plate/drum shifter assembly [3]




- Guide plate distance collar [1]
- Stopper arm side collar [2]
- Shift drum center bolt [3]
- Shift drum center [4]



- Shift drum stopper arm [1]
- Stopper arm return spring [2]
- Stopper arm distance collar [3]
- Shift drum center dowel pins [4]
- 8 x 20 mm dowel pins [5] if necessary




## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Drum shifter guide plate
- Drum shifter
- Ratchet pawls
- Plungers
- Plunger springs

Replace if necessary.

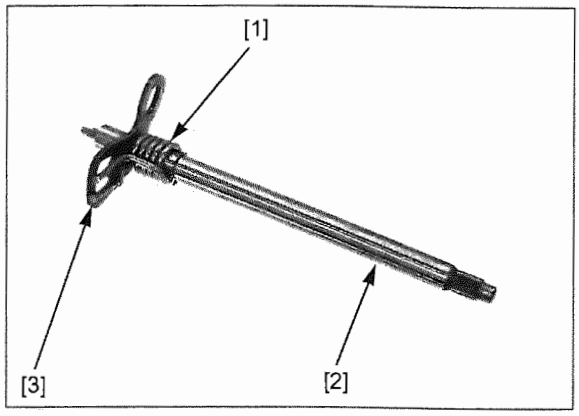
**GEARSHIFT SPINDLE**

Check the return springs [1] for fatigue or damage replace them if necessary.

Check the gearshift spindle [2] for wear or bend.

Check the spindle arm [3] for wear, damage or deformation.

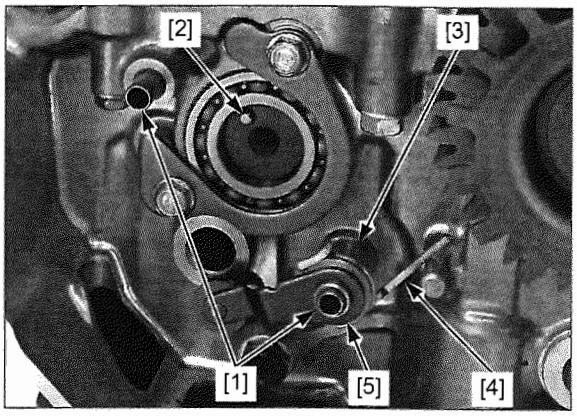
Replace the gearshift spindle as an assembly if necessary.



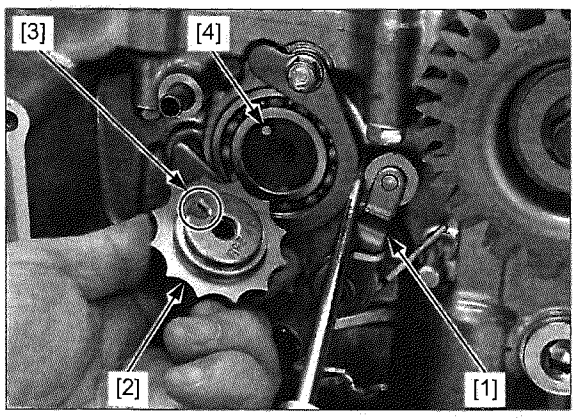

## INSTALLATION

Install the following:

- 8 x 20 mm dowel pins [1]
- Shift drum center dowel pins [2]
- Stopper arm distance collar [3]
- Stopper arm return spring [4]
- Shift drum stopper arm [5]



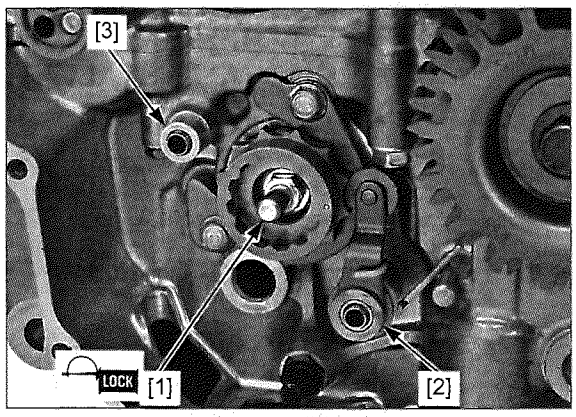
Hold the shift drum stopper arm [1] with a screwdriver and install the shift drum center [2] by aligning the groove [3] with the dowel pin [4].



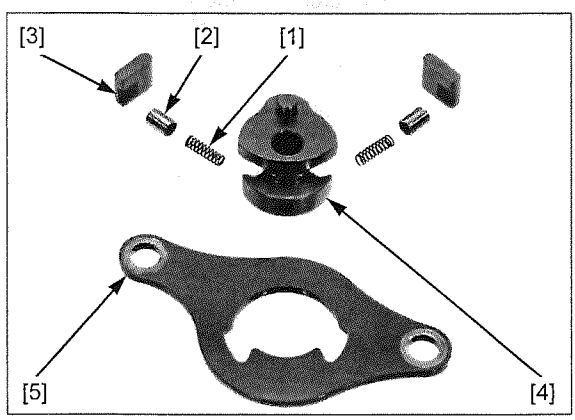

Apply locking agent to the threads of the shift drum center bolt [1] (page 1-14).
Install the shift drum center bolt and tighten it.

**TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)**

Install the stopper arm side collar [2] and guide plate distance collar [3].




Install the plunger springs [1], plungers [2] and ratchet pawls [3] into the drum shifter [4] and set them in the drum shifter guide plate [5].

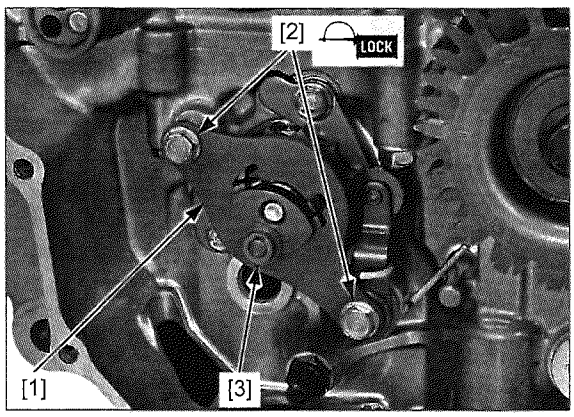



Install the drum shifter guide plate/drum shifter assembly [1].

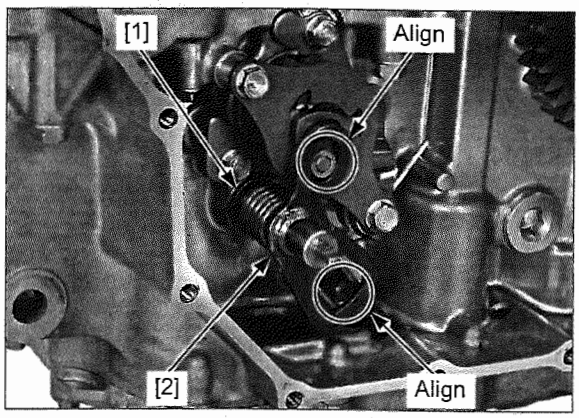
Apply locking agent to the threads of the guide plate bolts [2] (page 1-14).
Install the guide plate bolts and tighten them.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Install the drum shifter collar [3] onto the drum shifter.



Install the washer [1] onto the gearshift spindle [2] and insert the spindle into the crankcase while aligning the return spring ends with spring pin and the spindle arm hole with the drum shifter collar.




Install the following:

- Dual clutch (page 12-68)
- Reduction gears/shift control motor (page 12-71)

# MAINSHAFT SENSOR

## REMOVAL/INSTALLATION

NOTE:
The mainshaft sensors and VS sensor are the same parts.

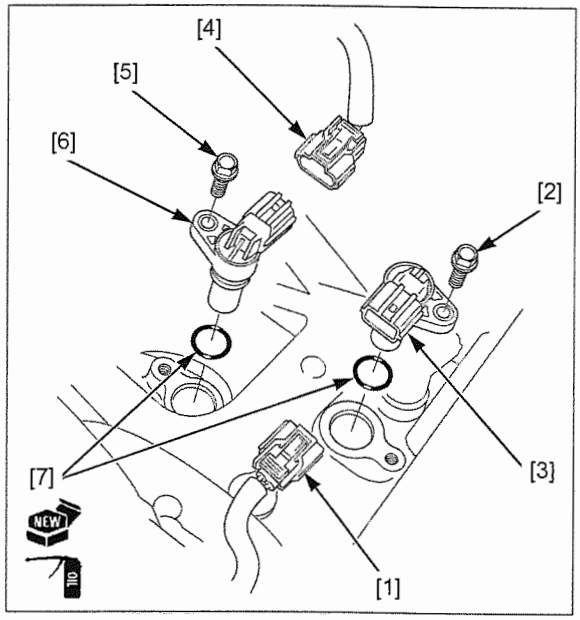
*Inner mainshaft sensor:* Remove the fuel tank (page 7-7).
Disconnect the inner mainshaft sensor 3P (Black) connector [1], then remove the bolt [2] and inner mainshaft sensor [3].

*Outer mainshaft sensor:* Remove the ABS modulator (page 20-23).
Disconnect the outer mainshaft sensor 3P (Black) connector [4], then remove the bolt [5] and outer mainshaft sensor [6].

Remove the O-rings [7] from the mainshaft sensors.

Installation is in the reverse order of removal.

- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.



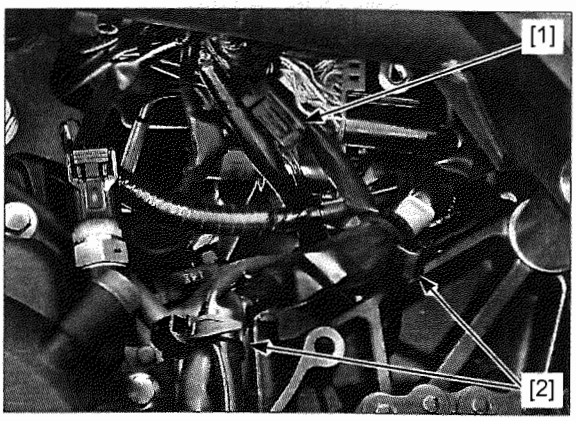

# TR SENSOR

## REMOVAL/INSTALLATION

Remove the left crankcase rear cover (page 2-16).

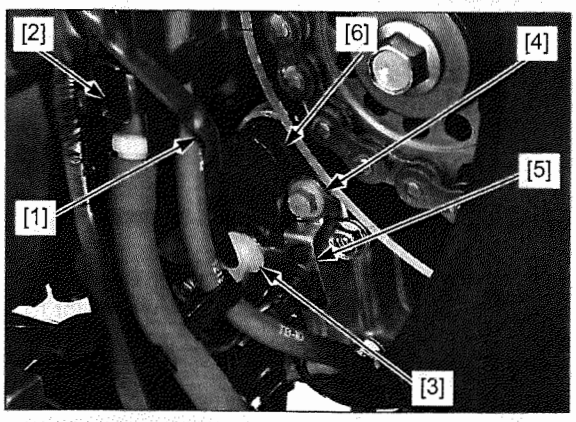
Release the TR sensor 3P (Black) connector [1] from the stay and disconnect it.

Remove the two wire bands [2].



Release the TR sensor wire [1] from the stay [2] and release the wire band boss [3].

Remove the bolt [4], wire clip stay [5] and TR sensor [6].

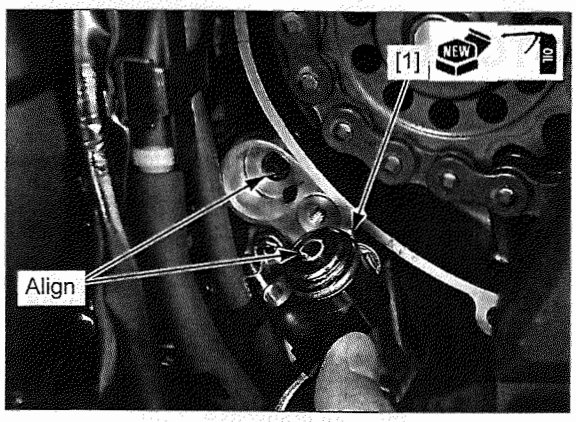



Remove the O-ring [1] from the TR sensor.

Installation is in the reverse order of removal.

- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.
- Align the flat surfaces of the TR sensor and shift drum end.

**TORQUE:**
**TR sensor bolt: 12 N·m (1.2 kgf·m, 9 lbf·ft)**



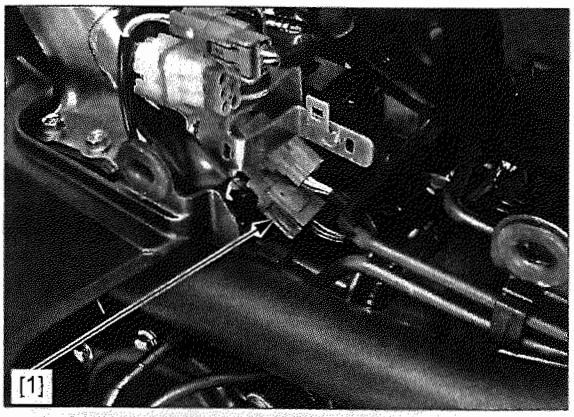

# SHIFT SPINDLE ANGLE SENSOR

## REMOVAL/INSTALLATION

Remove the following:

- Right side shelter (page 2-11)
- Right engine side cover (page 12-57)

Disconnect the shift spindle angle sensor 3P (Gray) connector [1] and remove it from the ABS modulator stay.

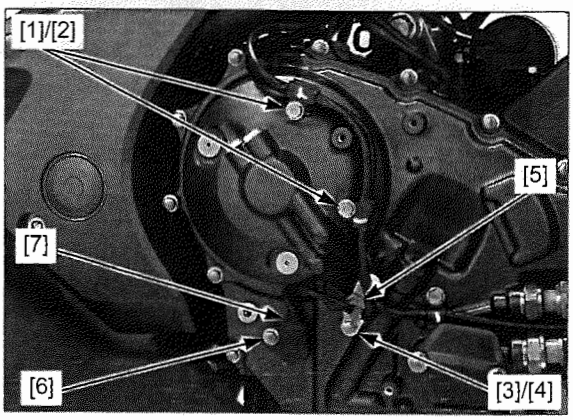



Remove the bolts [1] and clamps [2].

Remove the bolts [3] and wire clip stay [4].

Remove the shift spindle angle sensor wire clip [5] from the clip stay.

Remove the shift spindle angle sensor bolt [6] and shift spindle angle sensor [7].

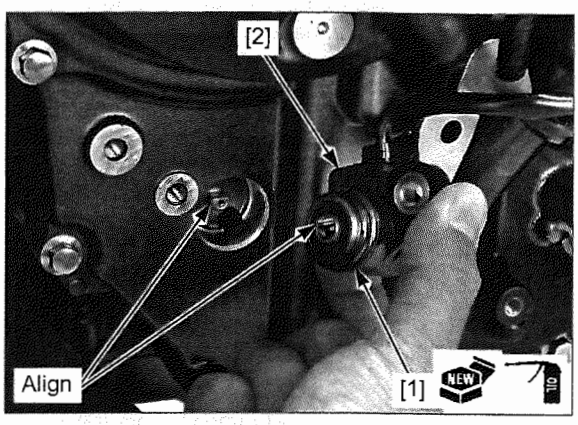


Remove the O-ring [1] from the shift spindle angle sensor [2].

Installation is in the reverse order of removal.

- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.
- Align the flat surfaces of the shift spindle angle sensor and gearshift spindle end.

**TORQUE:**
**Shift spindle angle sensor bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**




# CLUTCH EOP SENSOR

## REMOVAL/INSTALLATION

NOTE:

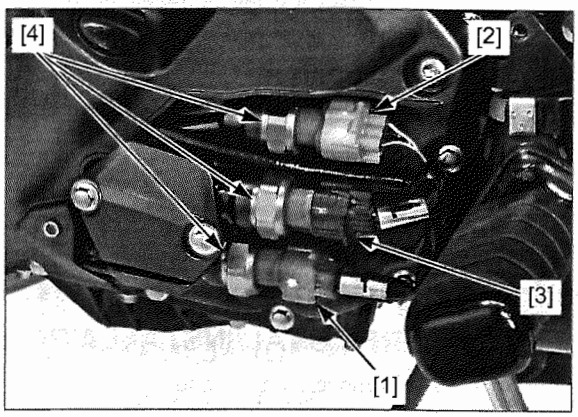
- These three clutch EOP sensors are the same parts.

Remove the right engine side cover (page 12-57).

Disconnect the following:

– No.1 clutch EOP sensor 3P (Gray) connector [1]
– No.2 clutch EOP sensor 3P (Gray) connector [2]
– Clutch line EOP sensor 3P (Black) connector [3]

Remove the clutch EOP sensors [4] and O-rings from the right crankcase cover.




Coat a new O-ring [1] with engine oil and install it into the right crankcase cover.

Install the clutch EOP sensor [2] and tighten it.

**TORQUE: 19.6 N·m (2.0 kgf·m, 14 lbf·ft)**

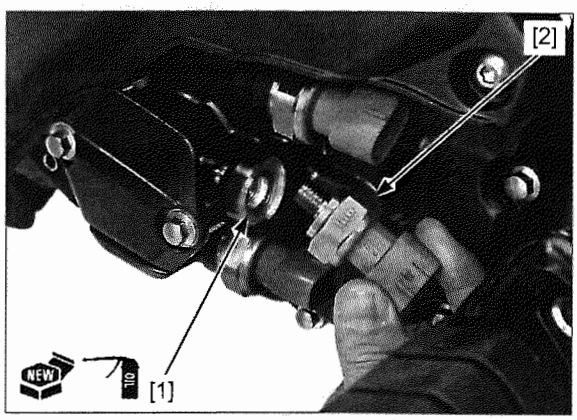
Connect the 3P connector to the proper sensor.

NOTE:

Each sensor wires has the following identification mark near the connector.

- 1: No.1 clutch (lower) EOP sensor
- P: Clutch line (middle) EOP sensor
- No mark: No.2 clutch (upper) EOP sensor

Install the right engine side cover (page 12-57).



# EOT SENSOR

## REMOVAL/INSTALLATION

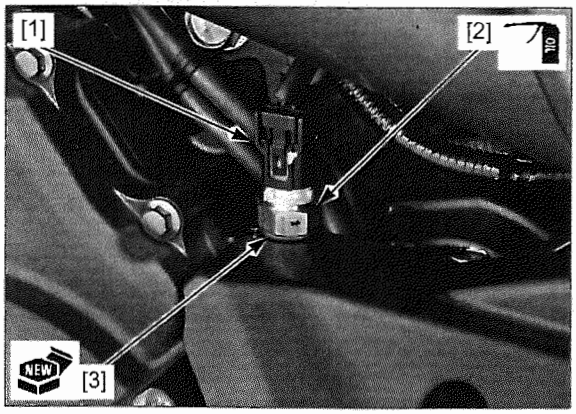
Disconnect the EOT sensor 2P (Black) connector [1].

Remove the EOT sensor [2] and sealing washer [3] from the crankcase.

Apply engine oil to the EOT sensor threads and seating surface.
Install the EOT sensor with a new sealing washer and tighten it.

**TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)**

Connect the EOT sensor 2P (Black) connector.




# DCT SHIFT PEDAL (OPTIONAL)

## REGISTRATION (TO ENABLE THE PEDAL)

NOTE:

- The following registration procedure must be performed in order to enable the optional shift pedal.
- Make sure that the CLUTCH INITIALIZE LEARNING (PCM) (page 12-81) is complete before starting the registration.
- The registration will fail if any of the following condition presents during the procedure.
  - The vehicle is moved.
  - The engine is started.
  - The transmission is in gear.
  - The shift pedal is operated incorrectly.
  - The shift pedal angle sensor 3P (Blue) connector is disconnected.

1. Install the shift pedal to the vehicle and connect the shift pedal angle sensor 3P (Blue) connector.
2. Turn the ignition switch ON and engine stop switch "○".

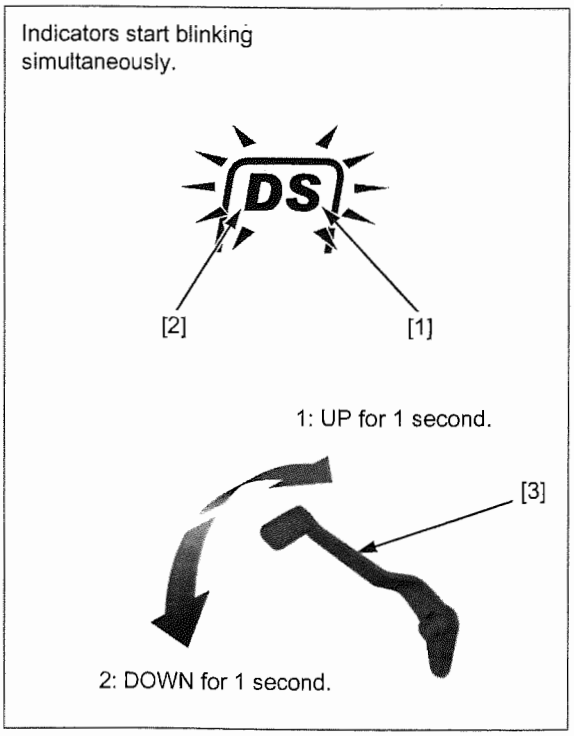
   After 2 seconds, "S" [1] and "D" [2] indicators will start short blinking (0.5 seconds) simultaneously.

   Within 5 seconds after blinking starts, move the shift pedal [3] up and hold for 1 second.

   Within 5 seconds after moving the shift pedal up, move it down and hold for 1 second.

NOTE:

- The short blinking (0.5 seconds) lasts 5 seconds.



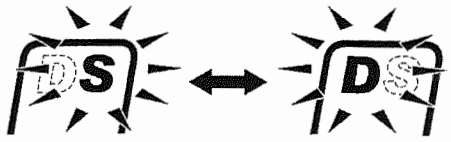
3. If the "S" and "D" indicators start short blinking (0.5 seconds) alternately, registration is successful.

   Turn the ignition switch OFF.

NOTE:

- If the "S" and "D" indicators go OFF during the procedure, registration is unsuccessful. Turn the ignition switch OFF and perform the registration procedure from step 2 again.

Successful:



Indicators blink alternately.

Unsuccessful:

Both go OFF

## REGISTRATION CANCELLATION (TO DISABLE THE PEDAL)

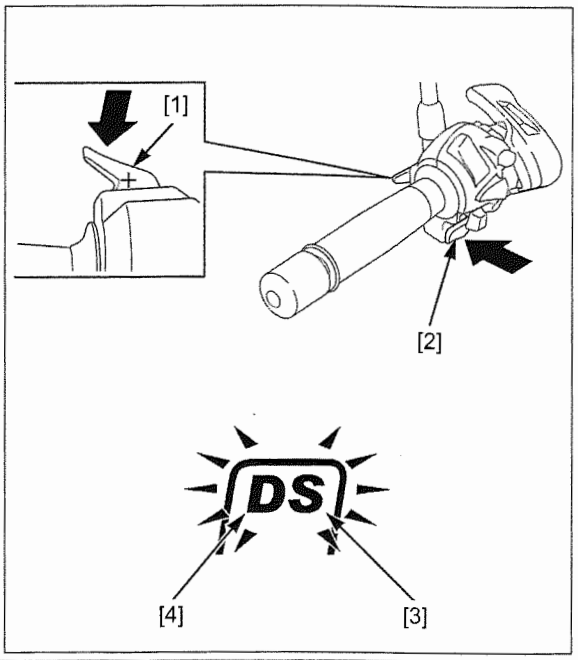
NOTE:

- The registration must be cancelled after removing the optional shift pedal from the vehicle. If the registration is not cancelled, DTC 1-1 (DTC 1 blink) "SHIFT PEDAL ANGLE SENSOR MALFUNCTION" will be indicated.
- The cancellation will fail if any of the following condition presents during the procedure.
  - The vehicle is moved.
  - The engine is started.
  - The transmission is in gear.
  - The shift switch (+)/(–) is operated incorrectly.
  - The shift pedal angle sensor 3P (Blue) connector is connected.

1. Remove the shift pedal from the vehicle and disconnect the shift pedal angle sensor 3P (Blue) connector.
2. While pressing down and holding the shift switch (+) [1] and shift switch (–) [2], turn the ignition switch ON and engine stop switch "○".

   The "S" [3] and "D" [4] indicators will start short blinking (0.5 seconds) simultaneously.

- Do not release the shift switch (+) and shift switch (–) until the successful pattern described in the next step is indicated.



3. After 5 seconds, the "S" and "D" indicators will start short blinking (0.5 seconds) alternately.

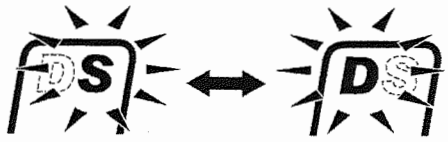
   If so, cancellation is successful.

   Turn the ignition switch OFF.

NOTE:

- If the "S" and "D" indicators go OFF during the procedure, cancellation is unsuccessful. Turn the ignition switch OFF and perform the cancellation procedure from step 1 again.

Successful:



Indicators blink alternately.

Unsuccessful:

Both go OFF

# CLUTCH INITIALIZE LEARNING (PCM)

NOTE:

- If the PCM and/or clutch assembly are replaced, perform this procedure.
- Before starting this procedure, check the following:
  - PGM-FI system and DCT system have no DTC.
  - Engine idle speed is normal.
  - Transmission is in neutral and cooling fan stops.
- Do not operate the throttle during clutch initialize learning

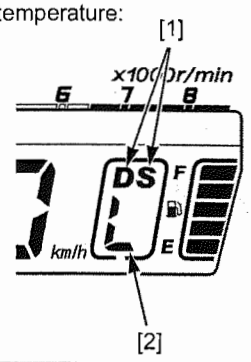
1. Warm up the engine to the normal operating temperature (engine oil temperature: 50 – 110°C/122 – 230°F) and stop it.

NOTE:

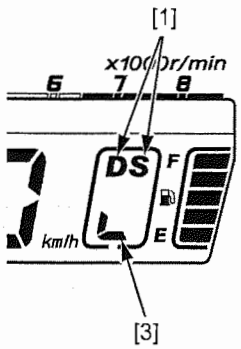
If the PCM is replaced with a new one, when the ignition switch is turned on the "D" and "S" indicators [1] will come on to indicate that the clutch initialization learning procedure is necessary.

Furthermore, if the large "L" (extremely low oil temperature indicator) [2], or small "L" (low oil temperature indicator) [3] is displayed on the shift indicator, the engine must be warmed before proceeding.

Extremely low oil temperature:



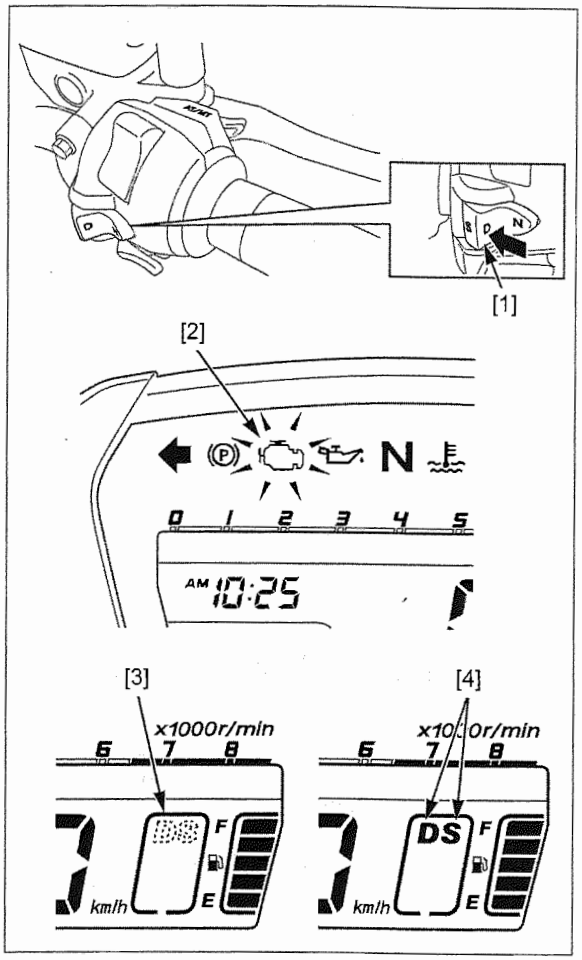

Low oil temperature:



2. Turn the ignition switch ON with the engine stop switch "○" while pushing the D switch [1] of the N-D shift switch. The MIL [2] will come on.

   Release the D switch after the MIL goes off.

- When only the dual clutch assembly is replaced: No indication appears on the shift indicator [3].
- When the PCM is replaced: The "D" and "S" indicators [4] come on.



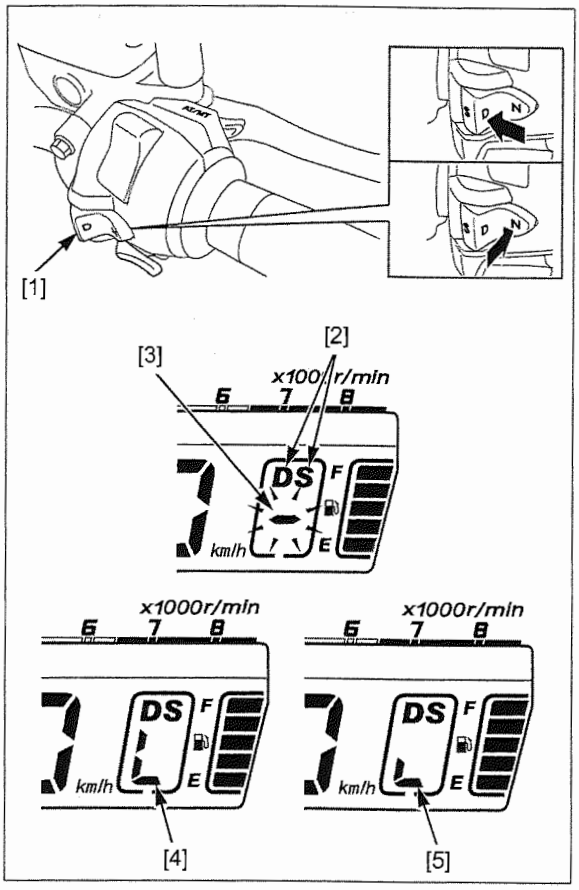

3. Operate the N-D shift switch [1] in the sequence as follows:

– Push the D switch
– Push the D switch
– Push the N switch
– Push the D switch
– Push the N switch

- When only the dual clutch assembly is replaced: The PCM is ready to clutch initialize learning when the "D" and "S" indicators [2] lights, and the "–" [3] is displayed on the shift indicator and blinks at interval of 2 seconds.
- When the PCM is replaced: The PCM is ready to clutch initialize learning when the "–" is displayed on the shift indicator and blinks at interval of 2 seconds.

NOTE:

When the engine is not warmed up enough, the large "L" [4] (extremely low oil temperature) or small "L" [5] (low oil temperature) is displayed on the shift indicator. If so, warm up the engine until the "L" on the shift indicator goes off. Stop the engine and perform the steps 2 and 3 again.

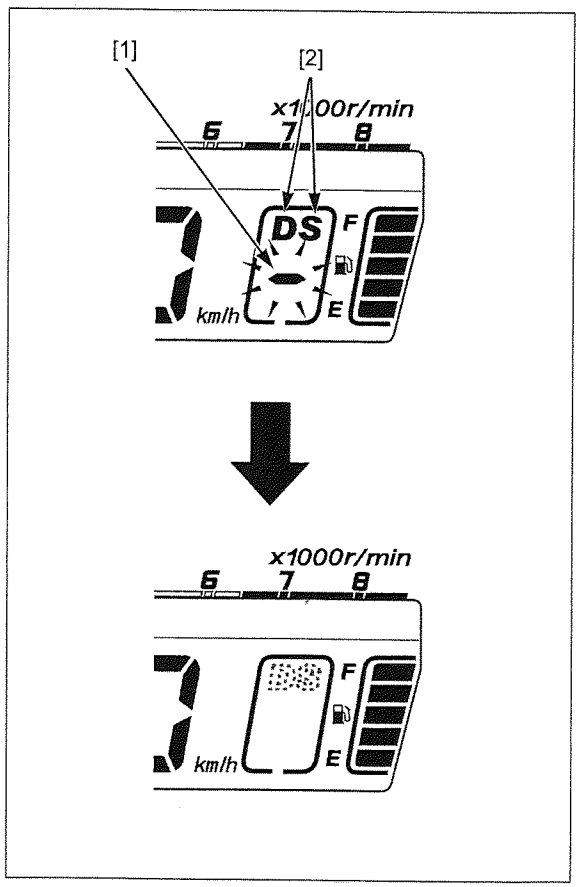


4. Start the engine and let it idle. The "–" [1] on the shift indicator starts blinking at interval of 2 seconds. The Clutch Initialize Learning is successful, when the "–", "D" and "S" indicators [2] go off.
   Stop the engine.

NOTE:

The clutch initialize learning is unsuccessful, if the "–" starts blinking at interval of 0.5 second or it goes off, and the "D" and "S" indicators stay on. Perform the initialize learning procedure from step 2 again.

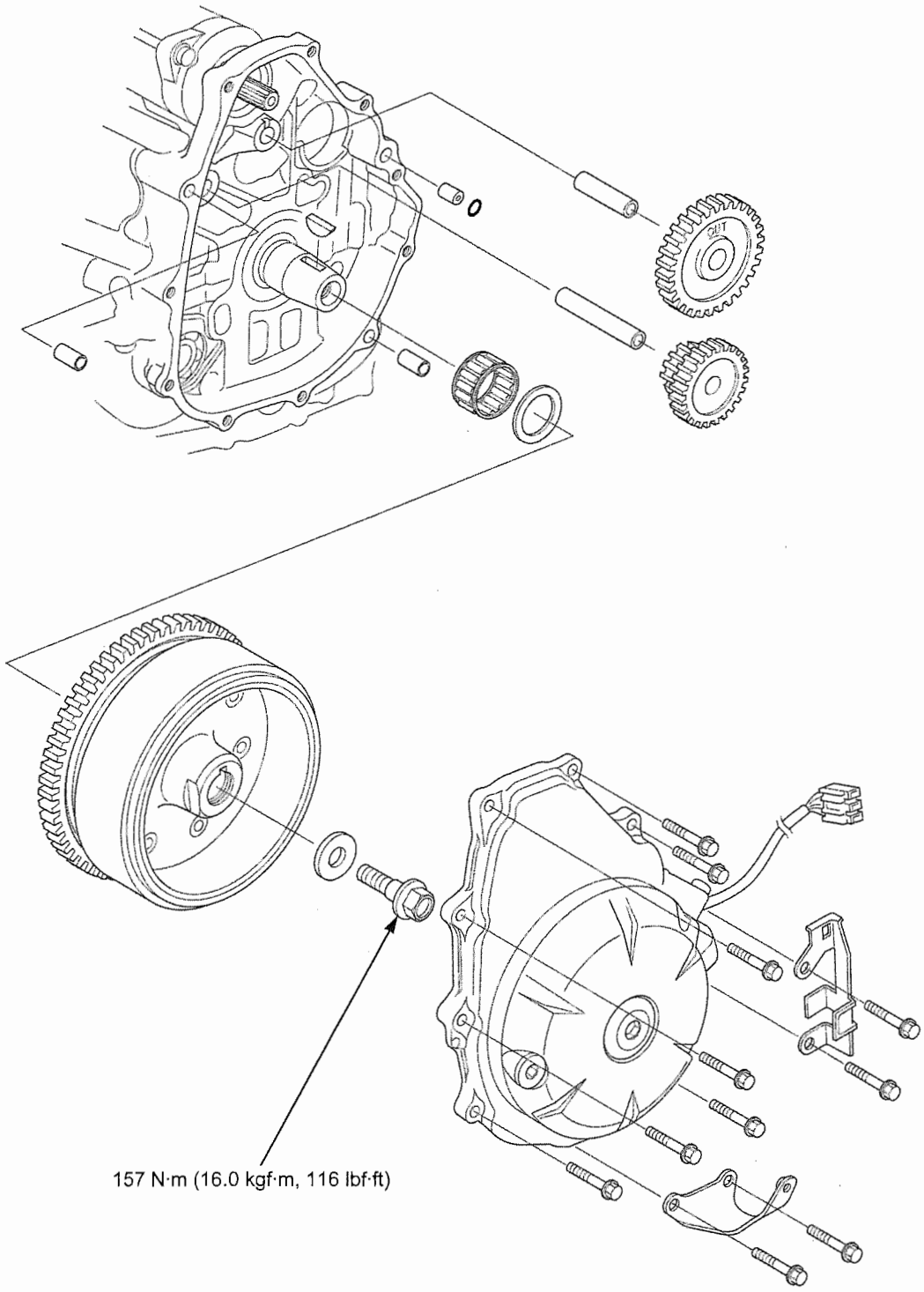
5. Stop the engine.
6. Restart the engine, push the D switch of the N-D shift switch and check that the "D" indicator comes on.



# MEMO

# 13. ALTERNATOR/STARTER CLUTCH

# COMPONENT LOCATION

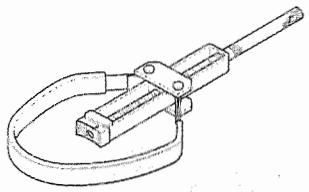
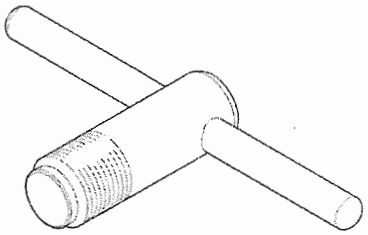


# SERVICE INFORMATION

## GENERAL

- This section covers service of the alternator and starter clutch. All service can be done with the engine installed in the frame.
- For alternator inspection (page 21-8).
- For CKP sensor inspection (page 5-6).
- For starter motor service (page 6-8).

## TOOLS

| | |
|---|---|
| Flywheel holder<br>07725-0040001 | Rotor puller<br>07933-3290001 |
|  |  |

# TROUBLESHOOTING

**Starter motor turns, but engine does not turn**

- Faulty starter clutch
- Damaged starter reduction gear/shaft
- Damaged starter idle gear/shaft
- Damaged or faulty starter motor pinion gear
- Damaged starter driven gear

# ALTERNATOR COVER

## REMOVAL/INSTALLATION

Remove the following:

- Right swingarm pivot cover (page 2-17)
- Left crankcase rear cover (page 2-16)

Disconnect the following:

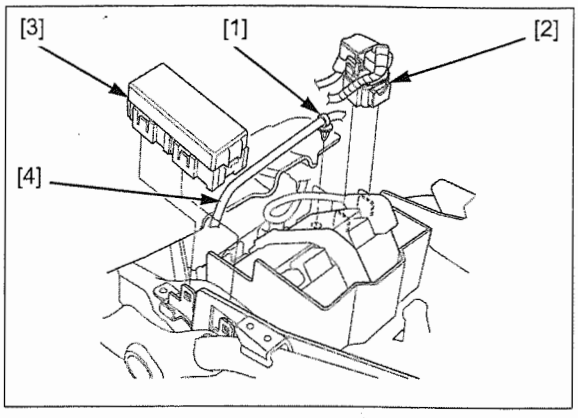
- Battery negative (–) cable (page 21-5)
- Alternator 3P (Gray) connector (page 21-7)

Release the wire band boss [1].

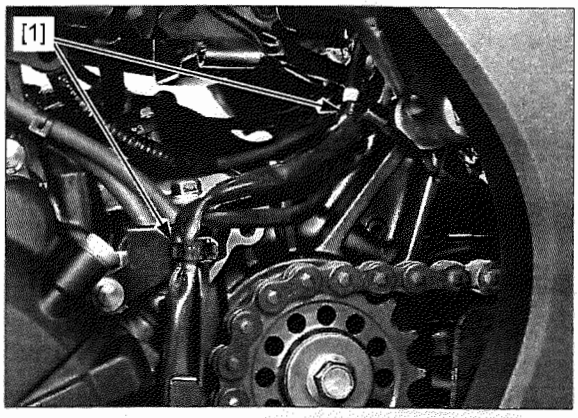
Release the following from the battery box:

- Starter relay switch [2]
- Fuse box [3] (CTX700D/ND only)

Pull out the alternator wire harness [4] from the frame.




Release the wire bands [1].

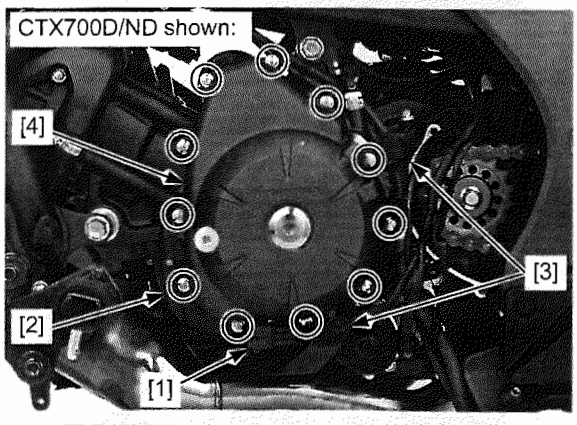



*CTX700D/ND only:* Release the shift pedal angle sensor 3P (Blue) connector (Optional) [1] from the stay.

Loosen the alternator cover bolts [2] in a crisscross pattern in 2 or 3 steps, and remove the bolts and stays [3].

Remove the alternator cover [4].

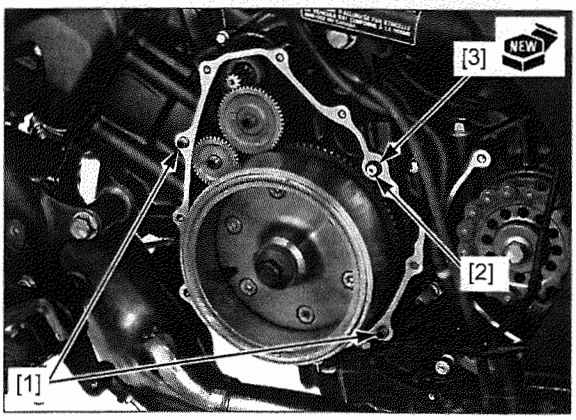
NOTE:
The alternator cover (stator) is magnetically attracted to the flywheel, be careful during removal.




Remove the dowel pins [1], oil orifice [2] and O-ring [3].

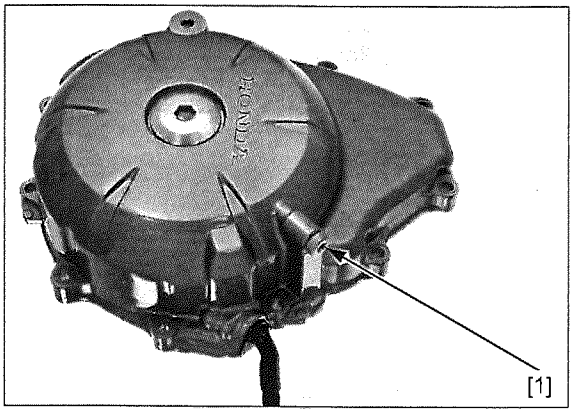
- Replace the O-ring with a new one.

Clean off any sealant from the alternator cover mating surfaces.



**NOTICE**

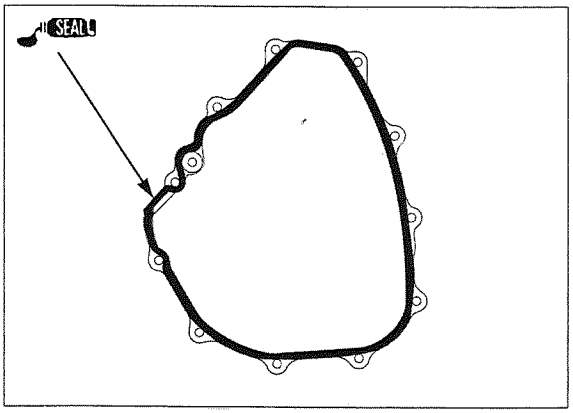
*Do not loosen the alternator cover sealing bolt [1].*




Installation is in the reverse order of removal.

- Apply liquid sealant (TB1207B manufactured by Three bond or equivalent) to the alternator cover mating surface as shown.
- Apply liquid sealant (TB1207B manufactured by Three bond or equivalent) to the alternator wire grommet sealing surface.
- Do not apply more liquid sealant than necessary.

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-9).



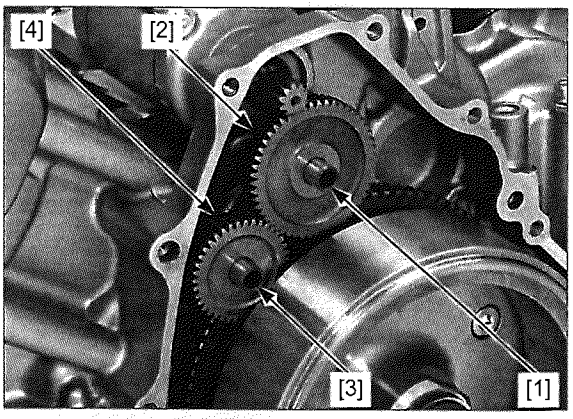

# FLYWHEEL

## REMOVAL

Remove the alternator cover (page 13-4).

Remove the starter idle gear shaft [1] and starter idle gear [2].

Remove the starter reduction gear shaft [3] and starter reduction gear [4].




Hold the flywheel [1] using the special tool and loosen the flywheel mounting bolt [2].

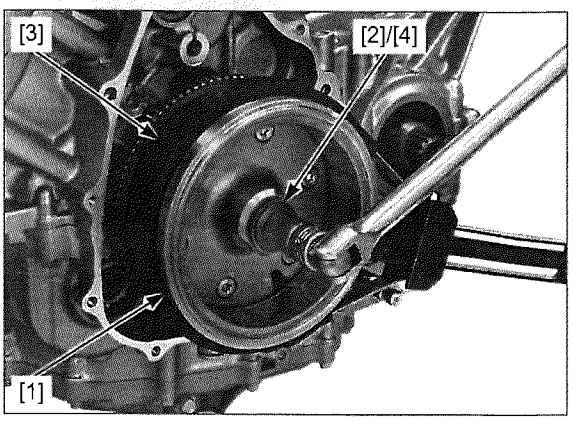
**TOOL:**

**[3] Flywheel holder** **07725-0040001**

NOTE:

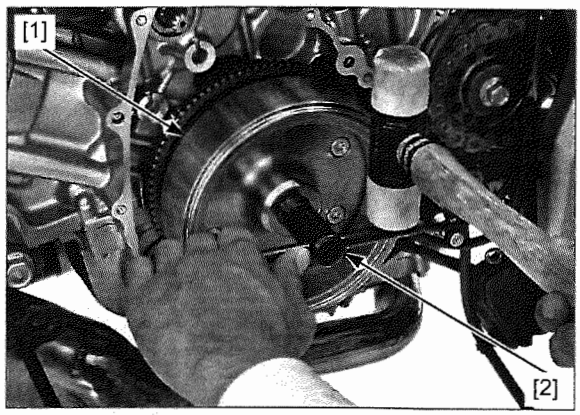
The flywheel mounting bolt has left hand threads.

Remove the flywheel mounting bolt and washer [4].



Remove the flywheel [1] using the special tool.

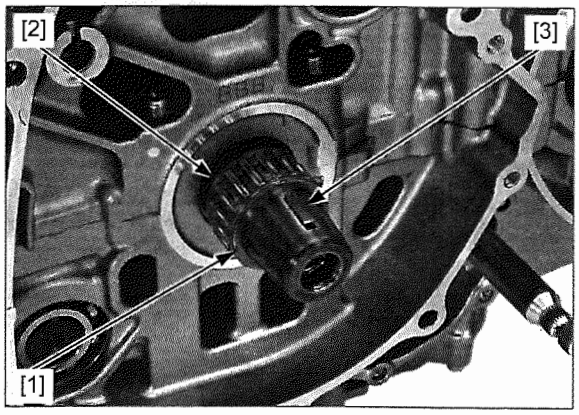
**TOOL:**
**[2] Rotor puller** **07933-3290001**




Remove the washer [1] and needle bearing [2].

Remove the woodruff key [3].

- Be careful not to damage the key groove and crankshaft.




## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Starter reduction gear shaft
- Starter reduction gear
- Woodruff key
- Needle bearing

Replace if necessary.

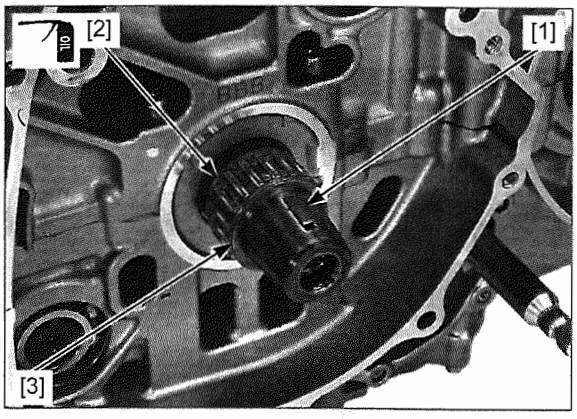
## INSTALLATION

Install the woodruff key [1].

- Be careful not to damage the key groove and crankshaft.

Apply engine oil to the needle bearing rotating area.

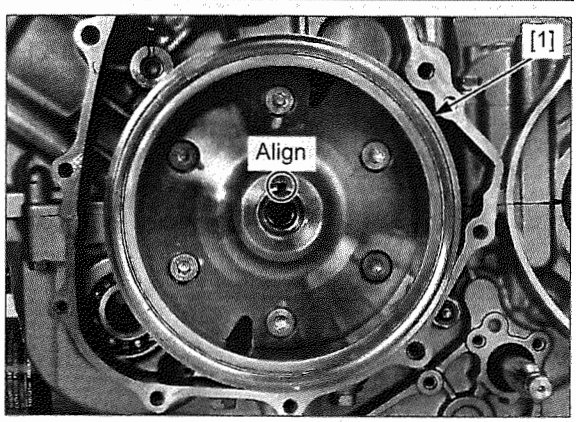
Install the needle bearing [2] and washer [3].



Clean any oil from the crankshaft tapered area and flywheel thoroughly.

Install the flywheel [1] to the crankshaft.

- Align the woodruff key with flywheel keyway.




Apply engine oil to the flywheel mounting bolt threads and seating surface.

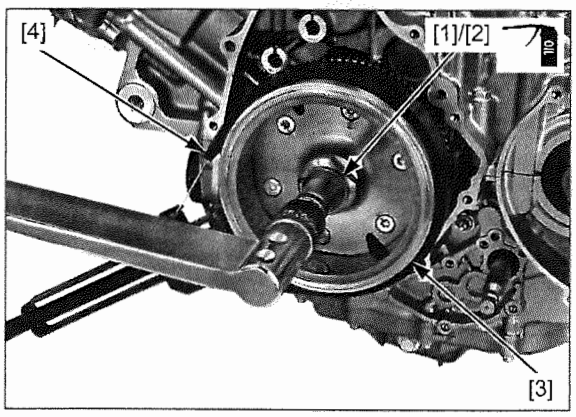
Install the washer [1] and flywheel mounting bolt [2].

Hold the flywheel [3] using the special tool and tighten the flywheel mounting bolt to the specified torque.

**TOOL:**
**[4] Flywheel holder 07725-0040001**

**TORQUE: 157 N·m (16.0 kgf·m, 116 lbf·ft)**

NOTE:
The flywheel mounting bolt has left hand threads.



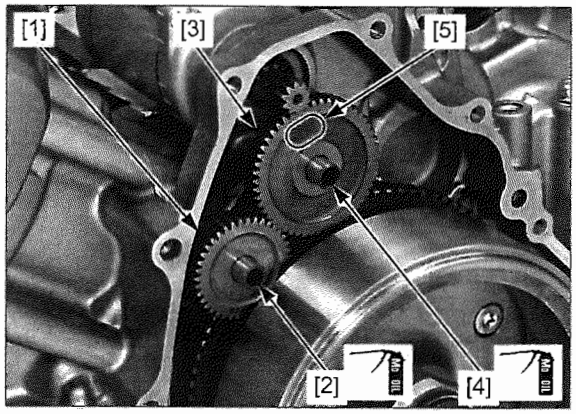

Apply molybdenum oil solution to the starter reduction and idle gear shaft outer surface.

Install the starter reduction gear [1] and shaft [2].

Install the starter idle gear [3] and shaft [4].

- Install the starter reduction gear with its "OUT" mark [5] facing out.

Install the alternator cover (page 13-4).

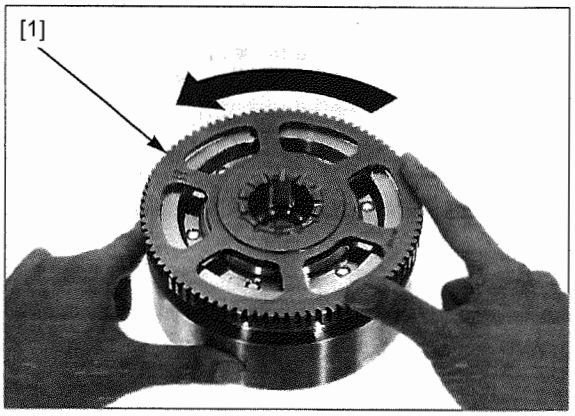



# STARTER CLUTCH

## REMOVAL

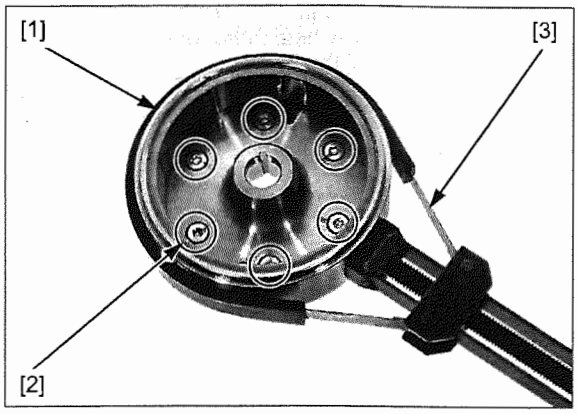
Remove the flywheel (page 13-5).

Remove the starter driven gear [1] while turning the starter driven gear counterclockwise.

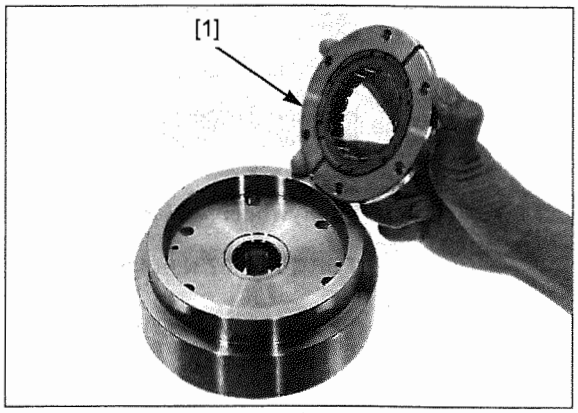


Hold the flywheel [1] using the special tool and remove the starter clutch socket bolt [2].

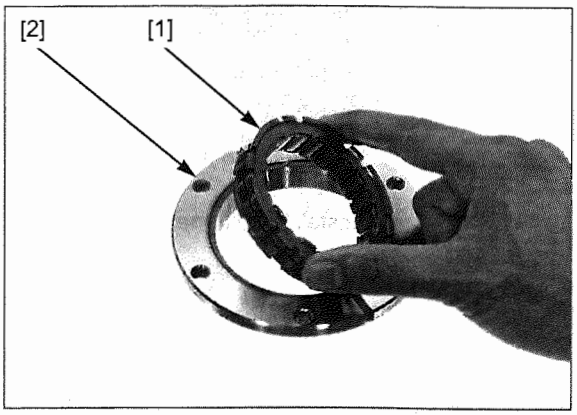
**TOOL:**
**[3] Flywheel holder 07725-0040001**




Remove the starter clutch assembly [1].




Remove the starter one-way clutch [1] from the starter clutch outer [2].




## INSPECTION

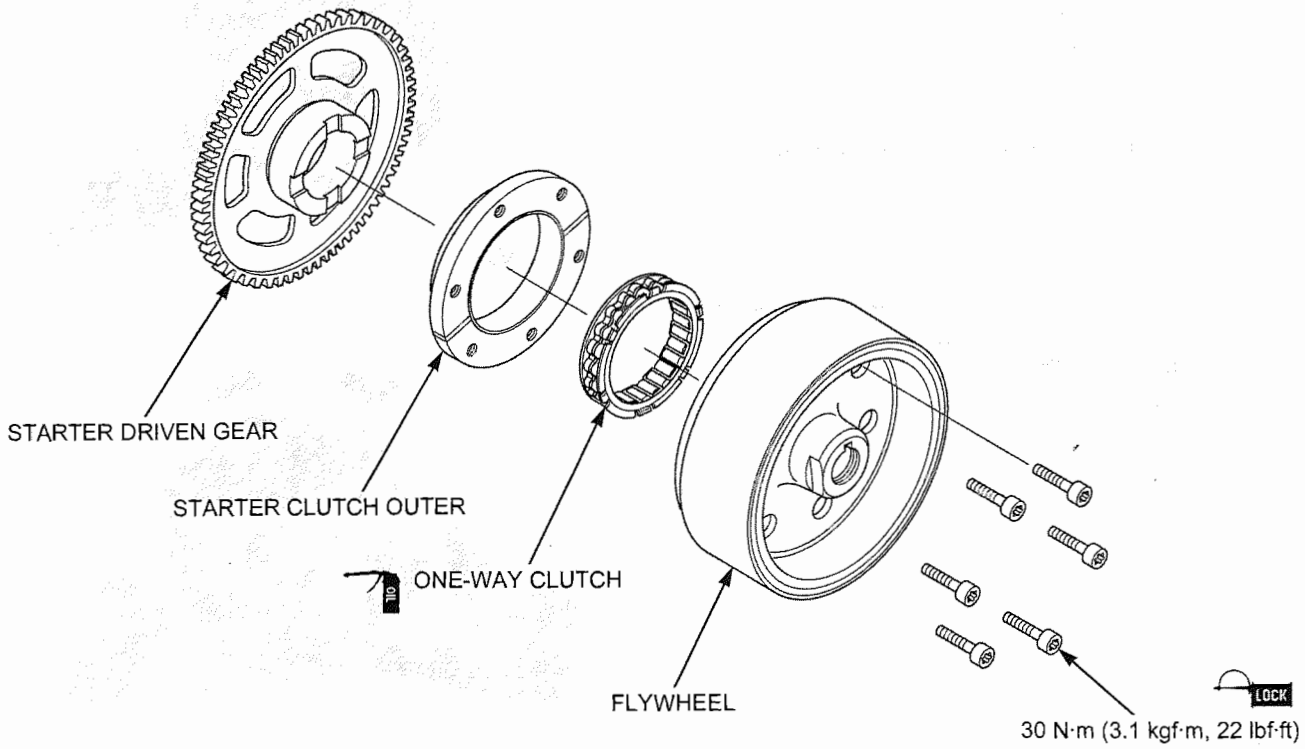
Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Starter driven gear
- Starter clutch outer
- Starter one-way clutch

Measure each part according to ALTERNATOR/ STARTER CLUTCH SPECIFICATIONS (page 1-8).

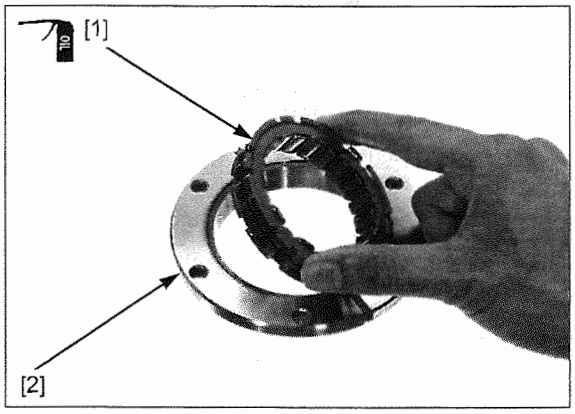
Replace any part if it is out of service limit.

## INSTALLATION

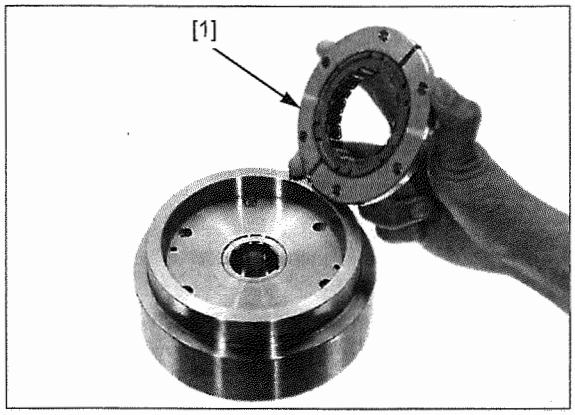



Apply engine oil to the starter one-way clutch [1] sliding surface.

Install the starter one-way clutch to the starter clutch outer [2].




Install the starter clutch assembly [1].



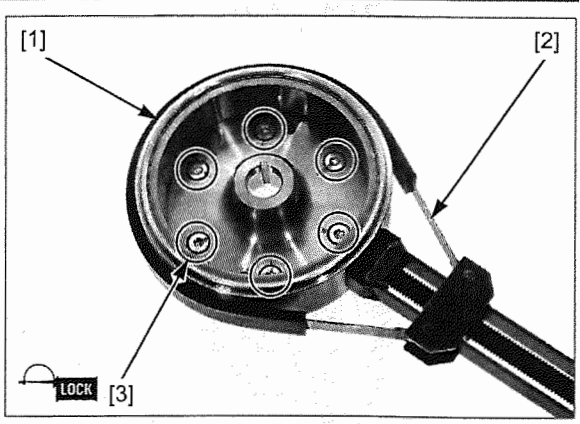
Hold the flywheel [1] using the special tool.

**TOOL:**
**[2] Flywheel holder 07725-0040001**

Apply locking agent to the starter clutch socket bolt threads (page 1-15).

Install and tighten the starter clutch socket bolt [3] to the specified torque.

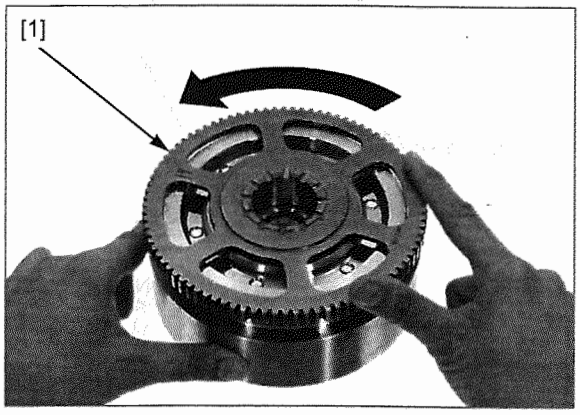
**TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)**




Install the starter driven gear [1] into the starter clutch outer while turning the starter driven gear counterclockwise.

Recheck the one-way clutch operation (page 13-6).

Install the flywheel (page 13-6).



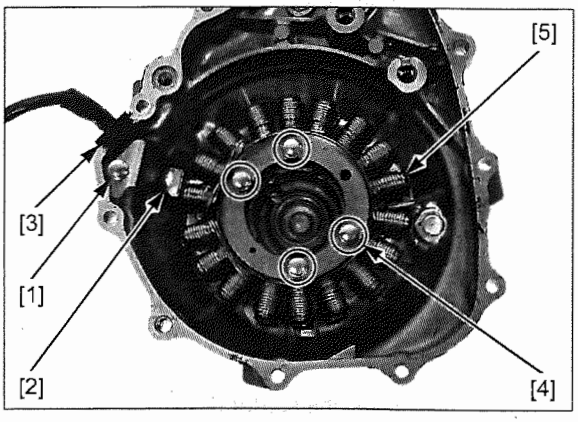

# STATOR

## REMOVAL

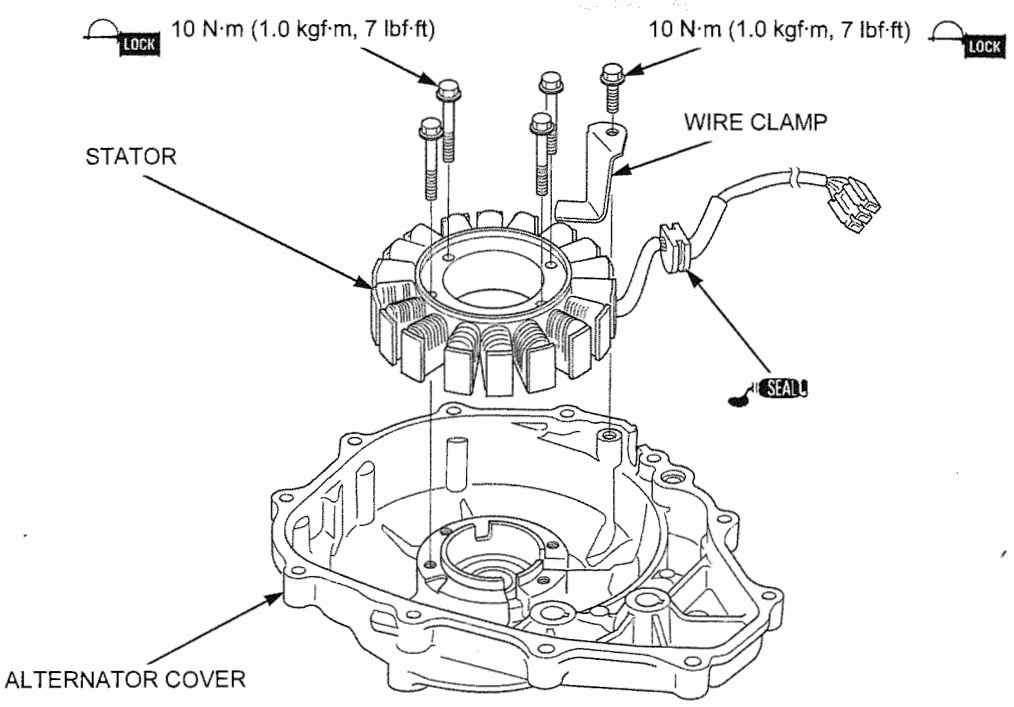
Remove the alternator cover (page 13-4).

Remove the alternator wire clamp bolt [1], wire clamp [2] and grommet [3] from the alternator cover.

Remove the alternator stator mounting bolts [4] and stator [5].



## INSTALLATION




Install the stator [1] to the alternator cover.

Apply locking agent to the alternator stator mounting bolt threads (page 1-15).

Tighten the alternator stator mounting bolts [2] to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the alternator wire grommet [3] sealing surface, then install it into the alternator cover groove securely.

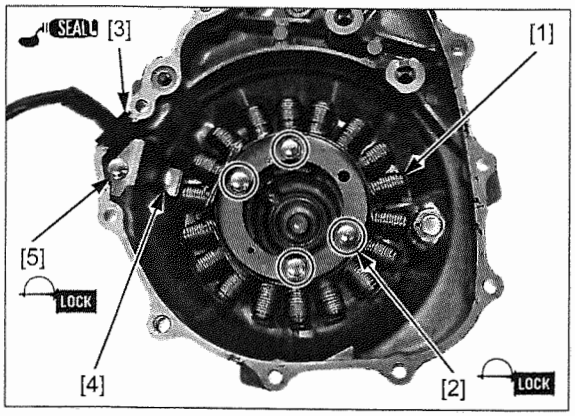
Apply locking agent to the alternator wire clamp bolt threads (page 1-15).

Install the wire clamp [4] and alternator wire clamp bolt [5].

Tighten the bolt to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Install the alternator cover (page 13-4).

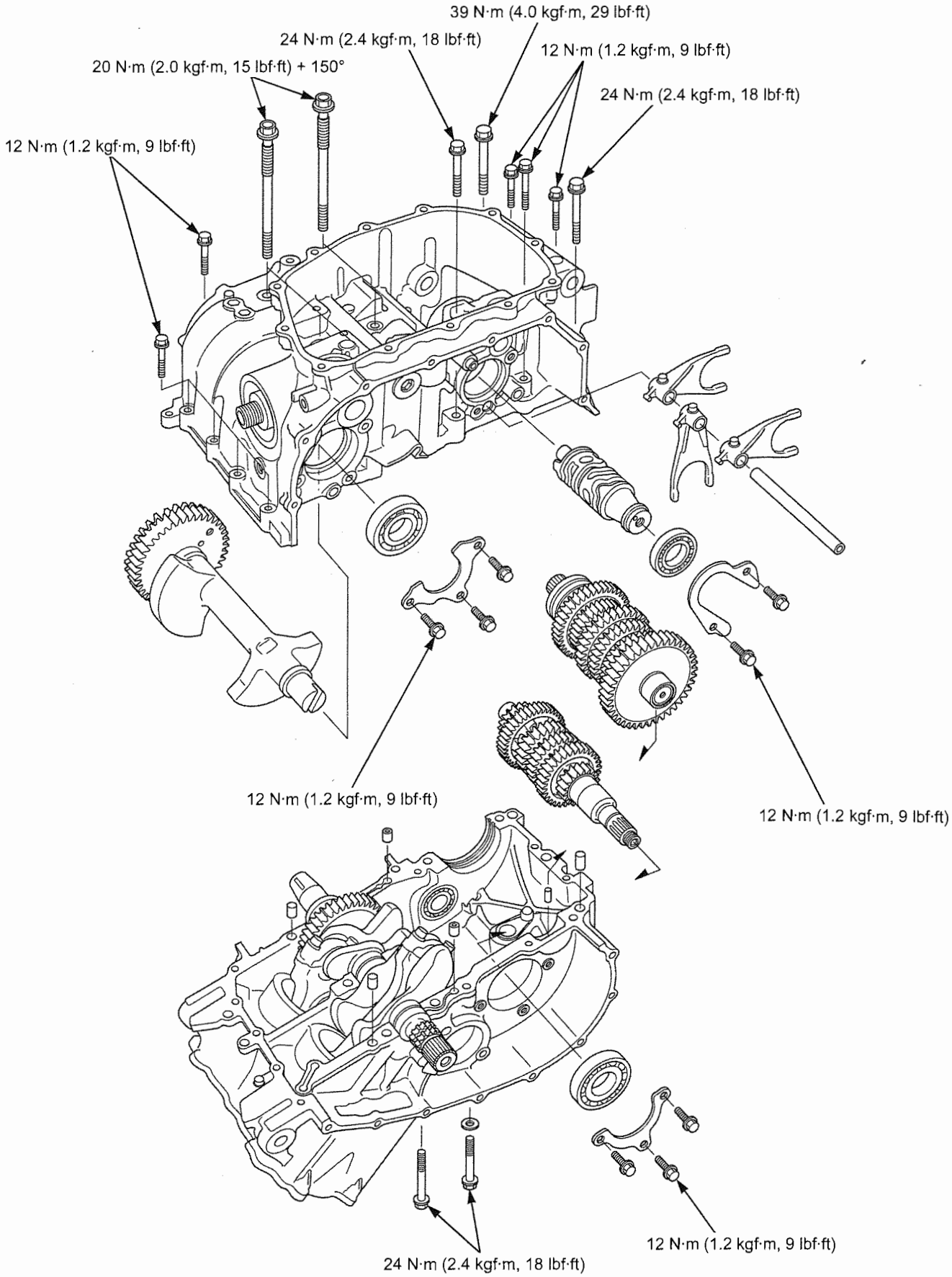


# MEMO

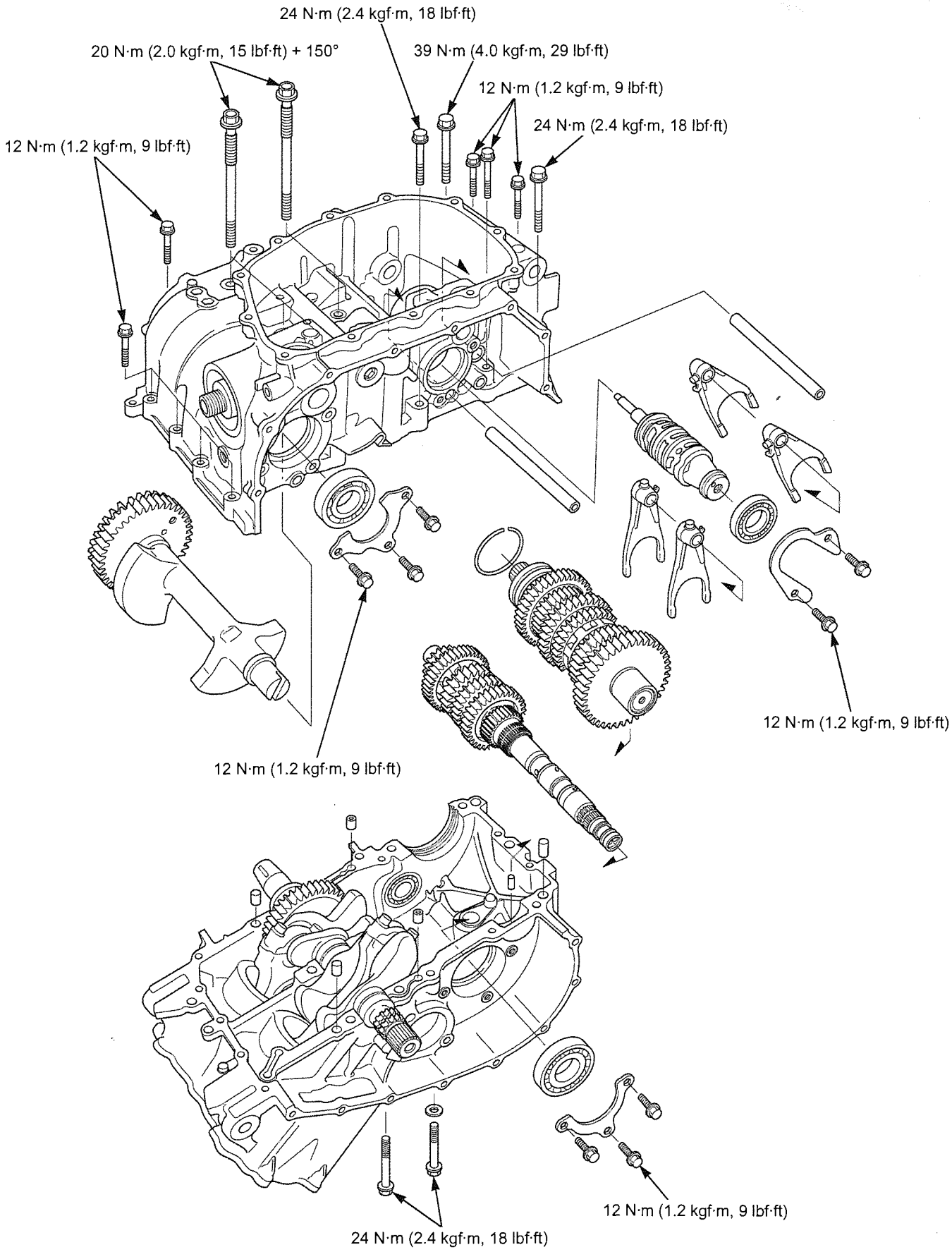
# 14. CRANKCASE/TRANSMISSION/BALANCER

# COMPONENT LOCATION

**CTX700/A/N/NA:**



**CTX700D/ND:**


24 N·m (2.4 kgf·m, 18 lbf·ft)
20 N·m (2.0 kgf·m, 15 lbf·ft) + 150°
39 N·m (4.0 kgf·m, 29 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
24 N·m (2.4 kgf·m, 18 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
24 N·m (2.4 kgf·m, 18 lbf·ft)

# SERVICE INFORMATION

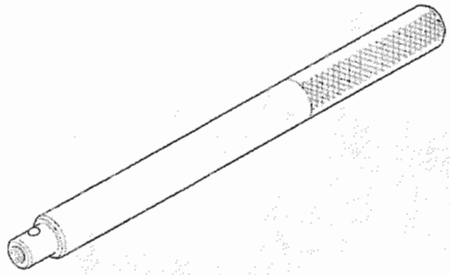
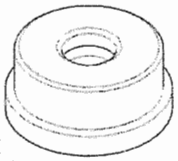
## GENERAL (CTX700/A/N/NA)

- The crankcase must be separated to service the following:
  - Transmission
  - Balancer
  - Crankshaft (page 15-5)
  - Piston/cylinder (page 15-14)
- The following components must be removed before separating the crankcase:
  - Engine (page 16-5)
  - Clutch (page 11-6)
  - Primary drive gear/CKP sensor rotor (page 11-11)
  - Gearshift linkage (page 11-13)
  - Flywheel (page 13-5)
  - Cylinder head (page 10-14)
  - Oil strainer (page 9-11)
  - Oil pump (page 9-7)
  - Engine oil filter (page 3-10)
  - Starter motor (page 6-8)
  - EOP switch (page 22-14)
  - VS sensor (page 22-12)
  - Neutral switch (page 22-20)
- Be careful not to damage the crankcase mating surfaces when servicing.
- Prior to assembling the crankcase halves, apply sealant to their mating surfaces. Wipe off excess sealant thoroughly.

## GENERAL (CTX700D/ND)

- The crankcase must be separated to service the following:
  - Transmission
  - Balancer
  - Crankshaft (page 15-5)
  - Piston/cylinder (page 15-14)
- The following components must be removed before separating the crankcase:
  - Engine (page 16-14)
  - Engine oil filter (page 3-10)
  - EOP switch (page 22-14)
  - Starter motor (page 6-8)
  - Cylinder head (page 10-14)
  - Flywheel (page 13-5)
  - Shift control motor/reduction gears (page 12-70)
  - Neutral switch (page 22-20)
  - Dual clutch (page 12-66)
  - Primary drive gear/CKP sensor rotor (page 12-69)
  - Gearshift linkage (page 12-73)
  - Oil pump (page 9-8)
  - Mainshaft sensors (page 12-76)
  - VS sensor (page 22-12)
  - EOT sensor (page 12-79)
  - Oil strainer (page 9-11)
- Be careful not to damage the crankcase mating surfaces when servicing.
- Prior to assembling the crankcase halves, apply sealant to their mating surfaces. Wipe off excess sealant thoroughly.

## TOOLS

| | | |
|---|---|---|
| Driver, 15 x 280L<br>07949-3710001 | Attachment, 42 x 47 mm<br>07746-0010300 | Pilot, 20 mm<br>07746-0040500 |
|  |  |  |

# TROUBLESHOOTING

**Hard to shift**

- Improper clutch operation
- Incorrect engine oil weight
- Bent shift fork
- Bent shift fork shaft
- Bent shift fork claw
- Damaged shift drum groove
- Bent gearshift spindle
  - CTX700/A/N/NA (page 11-13)
  - CTX700D/ND (page 12-73)

**Transmission jumps out of gear**

- Worn gear dogs
- Worn gear shifter groove
- Bent shift fork shaft
- Worn or bent shift forks
- Broken shift drum stopper arm
  - CTX700/A/N/NA (page 11-13)
  - CTX700D/ND (page 12-73)
- Broken shift drum stopper arm return spring
  - CTX700/A/N/NA (page 11-13)
  - CTX700D/ND (page 12-73)
- Broken gearshift spindle return spring
  - CTX700/A/N/NA (page 11-13)
  - CTX700D/ND (page 12-73)

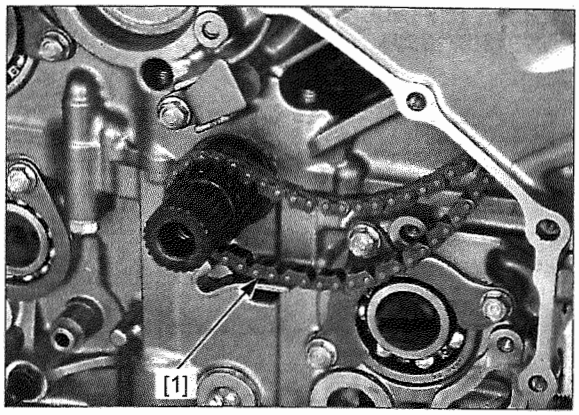
**Excessive engine noise**

- Worn or damaged transmission gear
- Worn or damaged transmission bearings

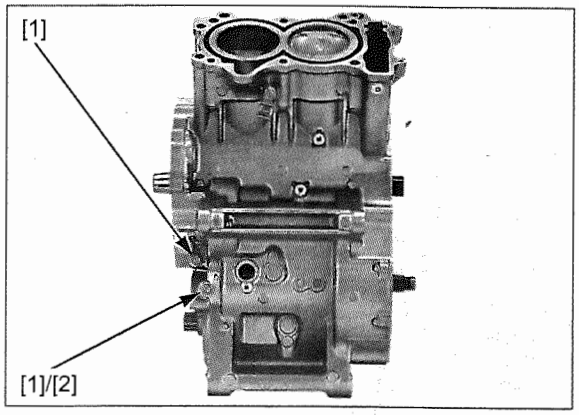
# CRANKCASE SEPARATION

For Service Information for removal of necessary parts before separating the crankcase (page 14-4).

Remove the cam chain [1] from the crankshaft.

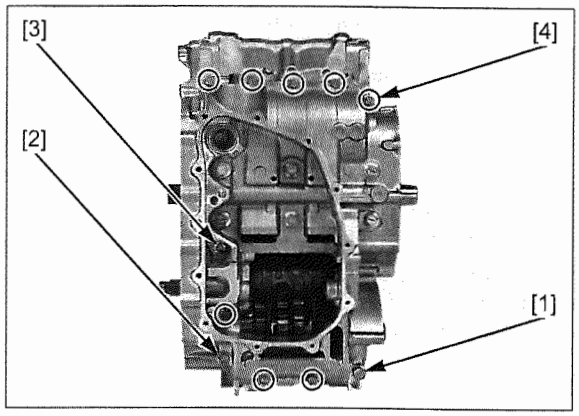



Remove the crankcase 8 mm bolts [1] and sealing washer [2].




Place the engine upside down.

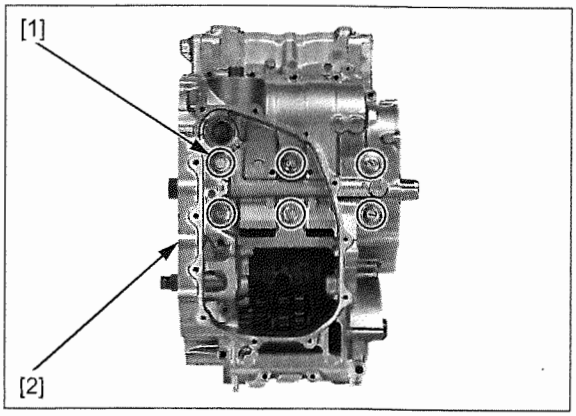
Loosen the crankcase 10 mm bolt [1], 8 mm bolts [2], 8 x 45 mm bolts [3] and 6 mm bolts [4] in a crisscross pattern in 2 or 3 steps, and remove the bolts.




Loosen the crankcase main journal bolt [1] in a crisscross pattern in 2 or 3 steps, and remove them.

Separate the lower crankcase [2] from the upper crankcase.

- Do not pry the crankcase halves with a screwdriver.

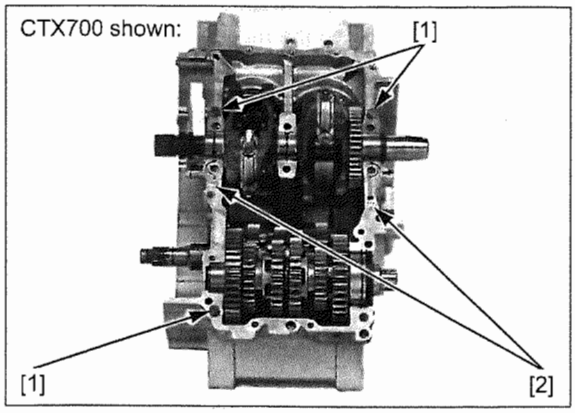


Remove the dowel pins [1] and oil orifices [2].

Clean any sealant off from the crankcase mating surface.

Clean the oil orifices in solvent thoroughly.

Check the oil orifices for clogs, and replace them if necessary.




# TRANSMISSION (CTX700/A/N/NA)

## REMOVAL/DISASSEMBLY

### MAINSHAFT/COUNTERSHAFT

Separate the crankcase halves (page 14-6).

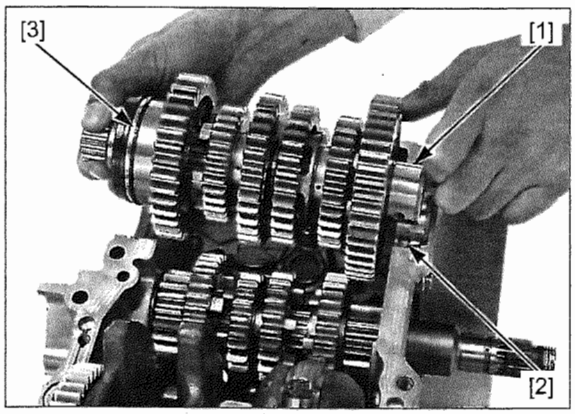
Remove the countershaft assembly [1].

Remove the dowel pin [2] and countershaft bearing set ring [3].

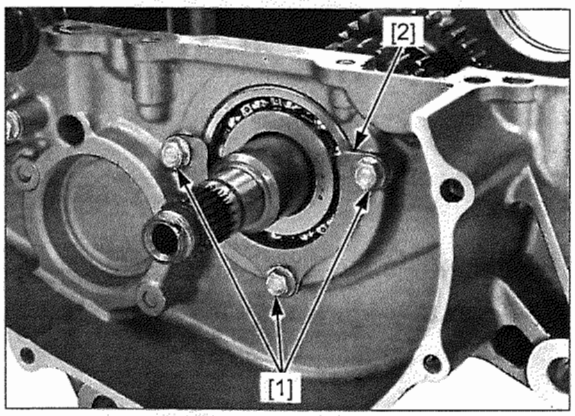
Disassemble the countershaft assembly.

Clean all disassembled parts in solvent thoroughly.

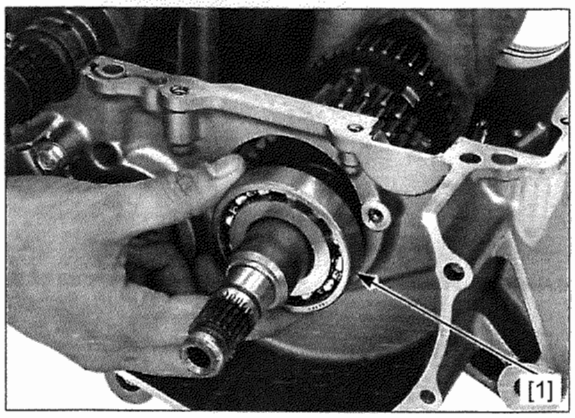
- Keep track of the disassembled parts (gears, bushings, washers, and snap rings) by sliding them onto a tool or a piece of wire.
- Do not expand the snap ring more than necessary for removal. To remove a snap ring, expand the snap ring and pull it off using the gear behind it.



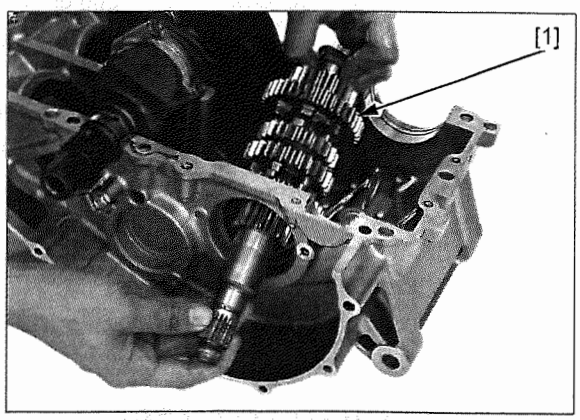

Remove the mainshaft bearing set plate bolts [1] and set plate [2].




Remove the right mainshaft bearing [1] from the upper crankcase.



Remove the mainshaft assembly [1].



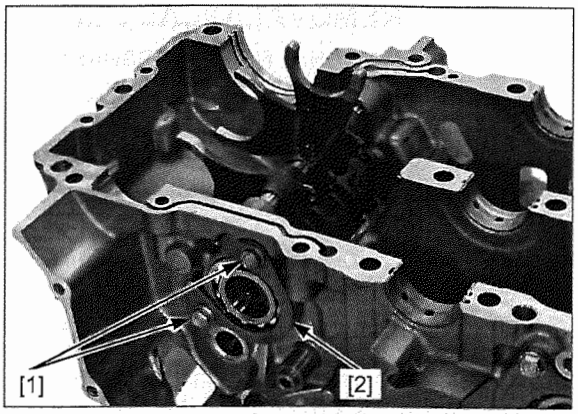

Disassemble the mainshaft assembly.

Clean all disassembled parts in solvent thoroughly.

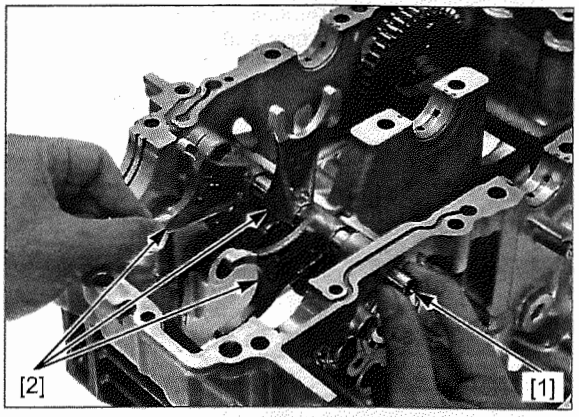
- Keep track of the disassembled parts (gears, bushings, washers, and snap rings) by sliding them onto a tool or a piece of wire.
- Do not expand the snap ring more than necessary for removal. To remove a snap ring, expand the snap ring and pull it off using the gear behind it.

**SHIFT DRUM/SHIFT FORK**

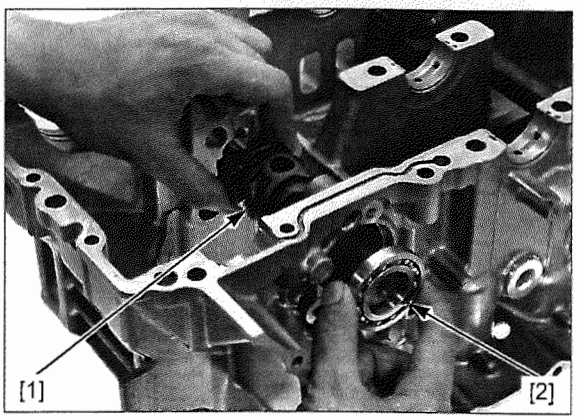
Remove the shift drum bearing set plate bolts [1] and set plate [2].




Remove the fork shaft [1] and shift forks [2].




Remove the shift drum [1] and shift drum bearing [2].



## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Transmission gears
- Transmission bushings
- Transmission bearings
- Shift drum/bearing
- Shift forks
- Shift fork shaft

Measure each part according to CRANKCASE/TRANSMISSION SPECIFICATIONS (page 1-9).

Replace any part if it is out of service limit.

## LEFT MAINSHAFT BEARING REPLACEMENT

Remove the following:

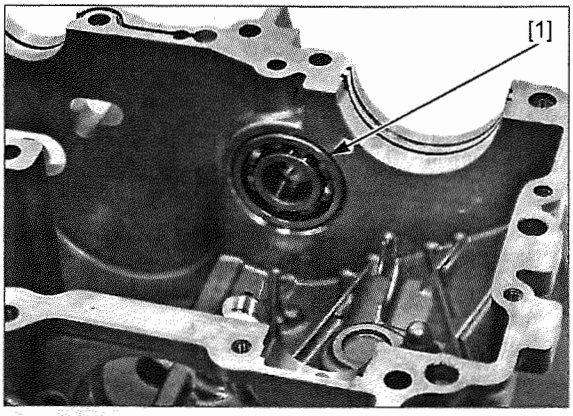
- Crankshaft (page 15-5)
- Piston (page 15-14)
- Countershaft/mainshaft (page 14-7)

To avoid burns, wear heavy gloves when handling the heated upper crankcase.

*Do not use a torch to heat the upper crankcase; it may cause warping.*

Heat the upper crankcase to 80°C (176°F) evenly using a heat gun.

Tap the upper crankcase lightly and remove the left mainshaft bearing [1].



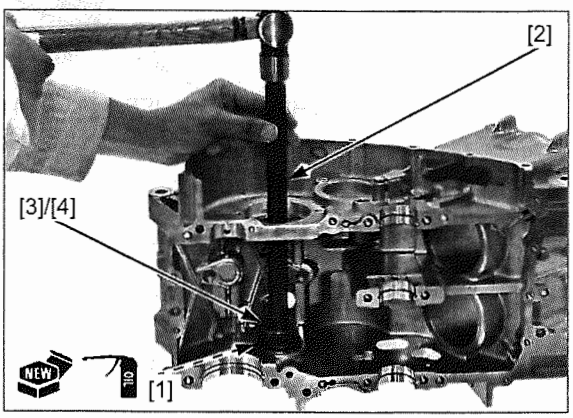

Apply engine oil to a new left mainshaft bearing [1].

*Drive in a new bearing squarely with the marking side facing toward the inside of the crankcase.*

Drive the left mainshaft bearing into the upper crankcase until it is fully seated using the special tools.

**TOOLS:**

| | |
|---|---|
| **[2] Driver, 15 x 280L** | **07949-3710001** |
| **[3] Attachment, 42 x 47 mm** | **07746-0010300** |
| **[4] Pilot, 20 mm** | **07746-0040500** |




Install the removed parts in the reverse order of removal.

## TRANSMISSION ASSEMBLY

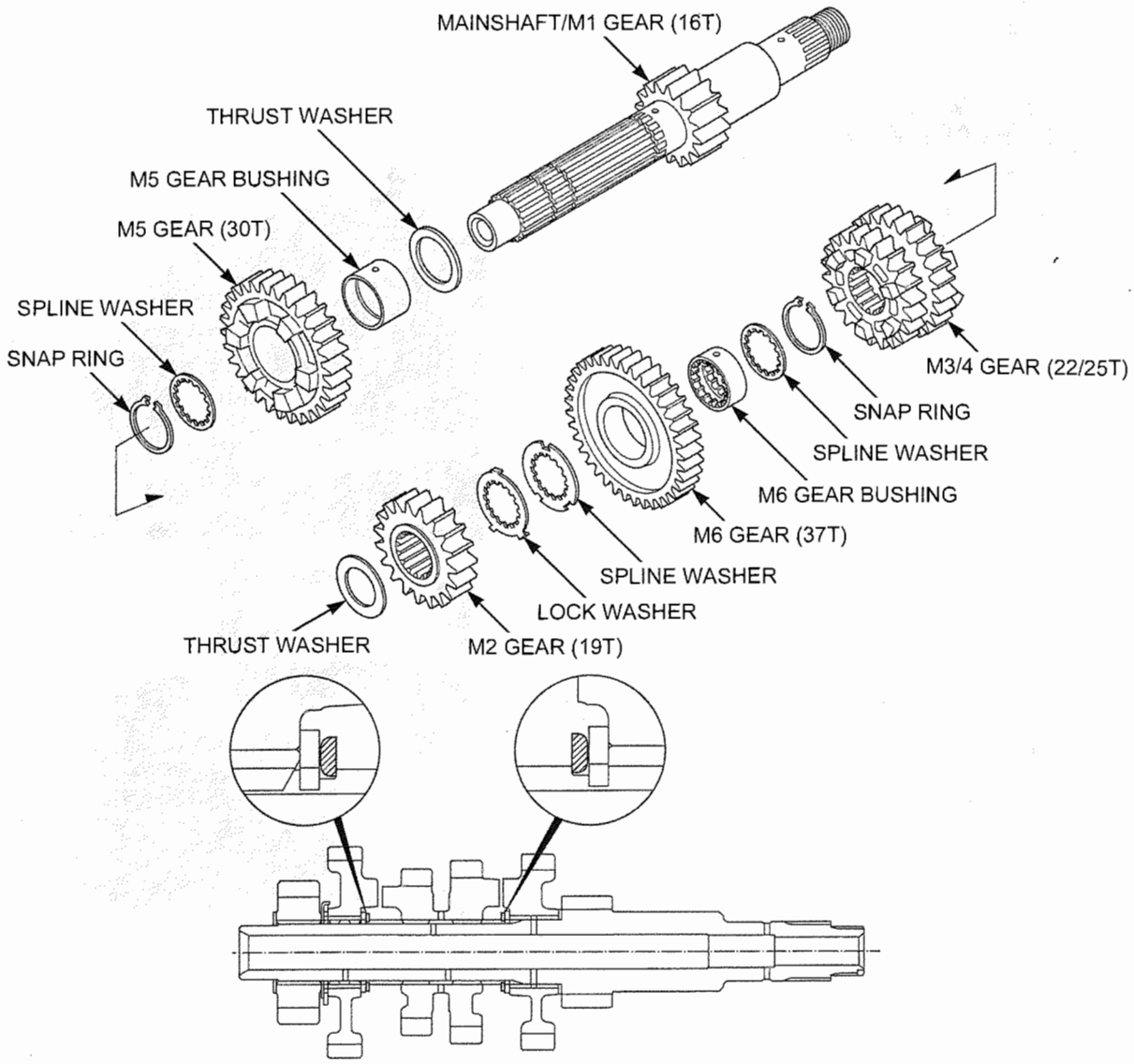
Clean all parts in solvent, and dry them thoroughly.

Apply engine oil to the gear teeth, rotating surface and bearing.

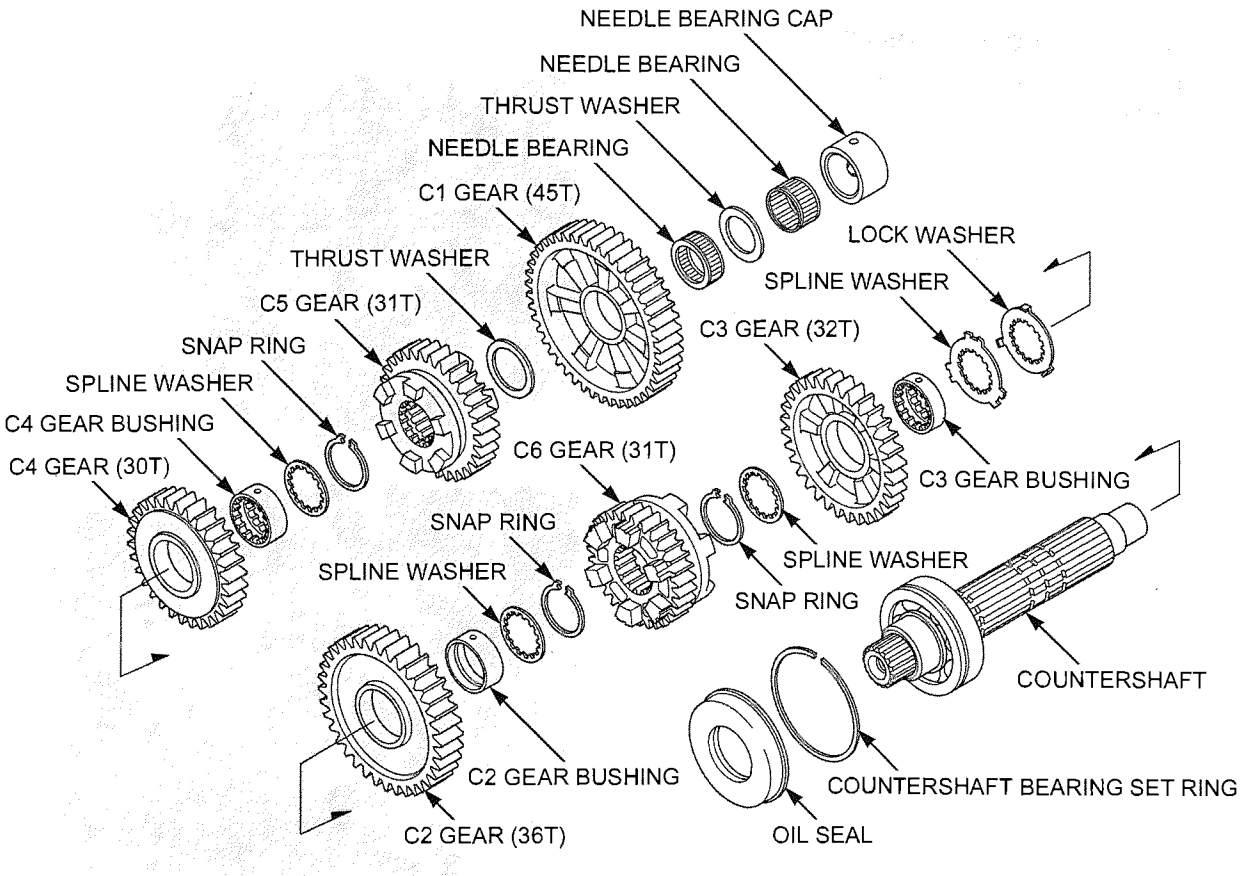
Apply molybdenum oil solution to the spline bushing outer surface, bushing inner and outer surface, shift fork grooves.

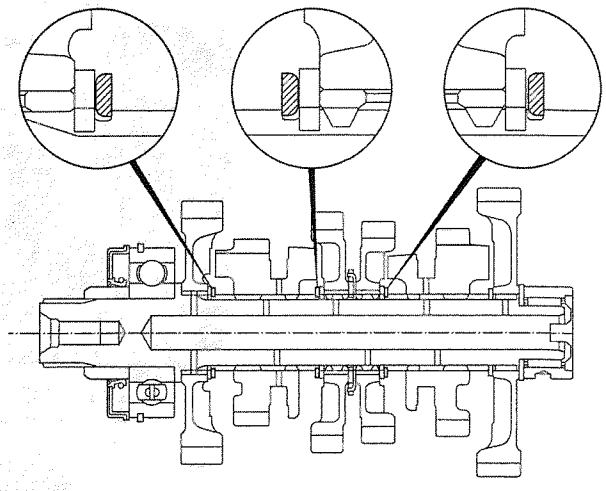
Assemble the mainshaft and countershaft.

**MAINSHAFT**



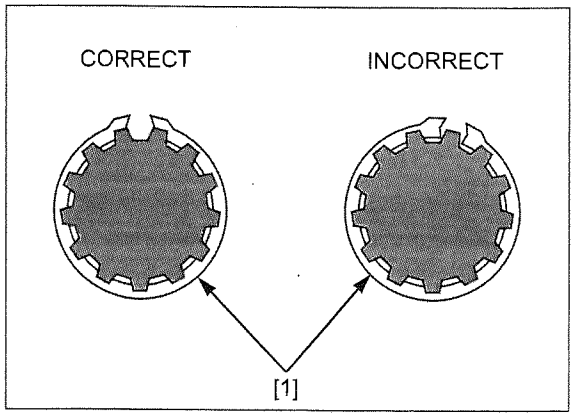
**COUNTERSHAFT**



Assemble the transmission gears and shafts.

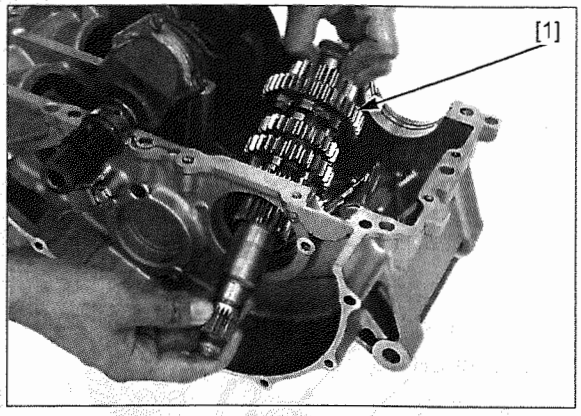
- Coat each gear with clean engine oil and check for smooth movement.
- Align the lock washer tabs with the spline washer grooves.
- Always install the thrust washers and snap rings with the chamfered (rolled) edge facing away from the thrust load.
- Install the snap rings [1] so that the end gap aligns with the groove of the splines.
- Make sure that the snap rings are fully seated in the shaft groove after installing them.



## INSTALLATION

### MAINSHAFT/COUNTERSHAFT

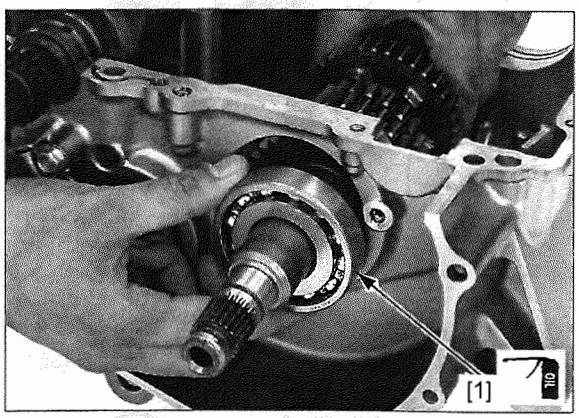
Install the mainshaft assembly [1] into the upper crankcase.




Apply engine oil to the right mainshaft bearing [1].

Install the right mainshaft bearing into the upper crankcase.

- Install the bearing into the crankcase with the marked side facing out.

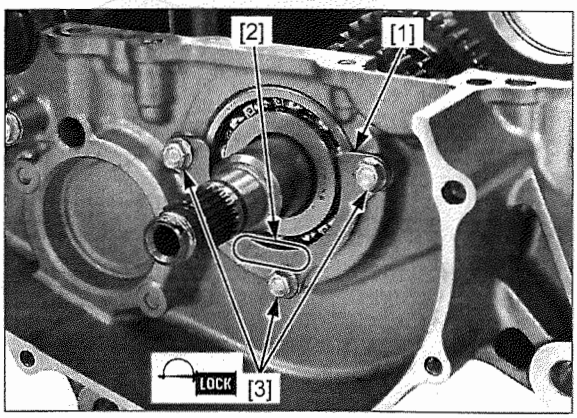



Apply locking agent to the mainshaft bearing set plate bolts threads (page 1-15).

Install the mainshaft bearing set plate [1] with its "OUT SIDE" mark [2] facing out.

Install and tighten the mainshaft bearing set plate bolts [3] to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**




Install the dowel pin [1] onto the upper crankcase hole.

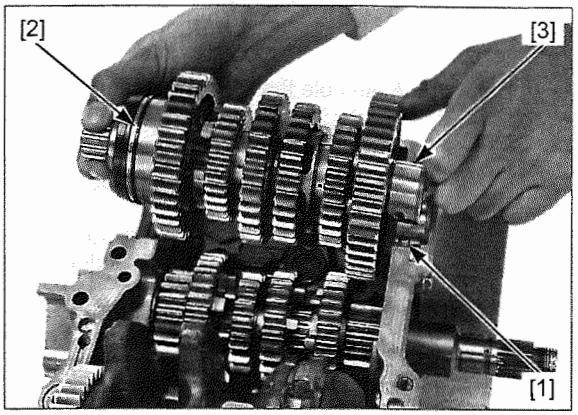
Install the countershaft bearing set ring [2] to the countershaft bearing groove.

Install the countershaft assembly [3].

- Align the needle bearing cap hole with the dowel pin.
- Align the set ring with the upper crankcase groove.

Install the shift drum/shift fork (page 14-13).

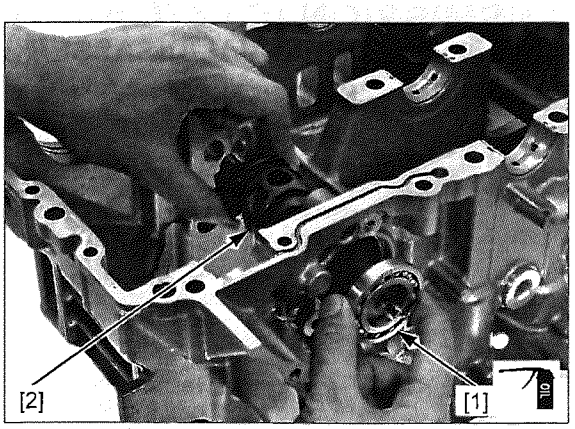
Assemble the crankcase (page 14-23).



### SHIFT DRUM/SHIFT FORK

Apply engine oil to the shift drum bearing [1].

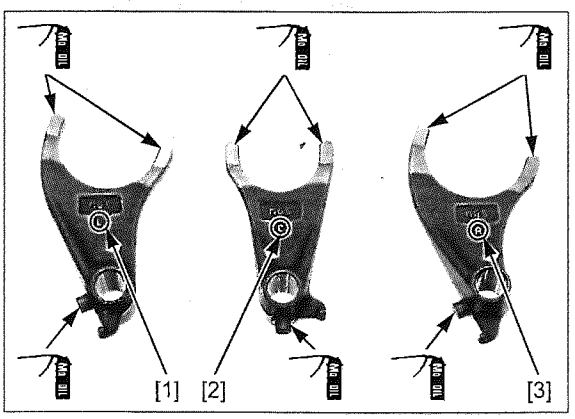
Install the shift drum [2] and shift drum bearing into the lower crankcase.




The shift forks have the following identification marks:

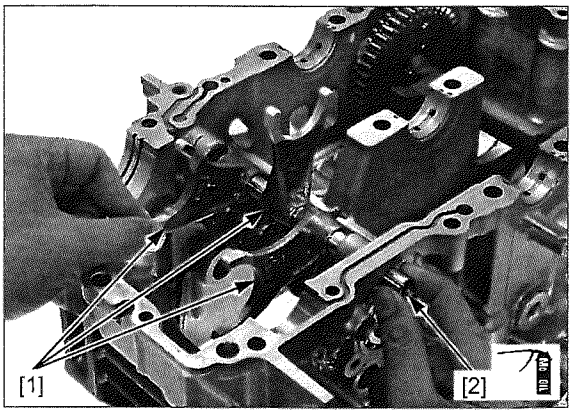
- "L" mark [1]: left shift fork
- "C" mark [2]: center shift fork
- "R" mark [3]: right shift fork

Apply molybdenum oil solution to the shift fork guide area and guide pin.




Apply molybdenum oil solution to the shift fork shaft outer surface.

Install the shift forks [1] into the shift drum guide grooves with the identification marks facing toward the right side of the engine and insert the fork shaft [2].




Apply locking agent to the shift drum bearing set plate bolt threads (page 1-15).

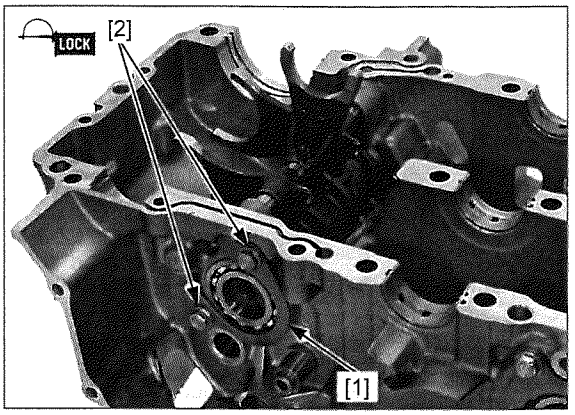
Install the set plate [1] and shift drum bearing set plate bolts [2].

Tighten the shift drum bearing set plate bolts to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Install the mainshaft/countershaft (page 14-12).

Assemble the crankcase (page 14-23).



# TRANSMISSION (CTX700D/ND)

## REMOVAL/DISASSEMBLY

### MAINSHAFT/COUNTERSHAFT

Separate the crankcase halves (page 14-6).

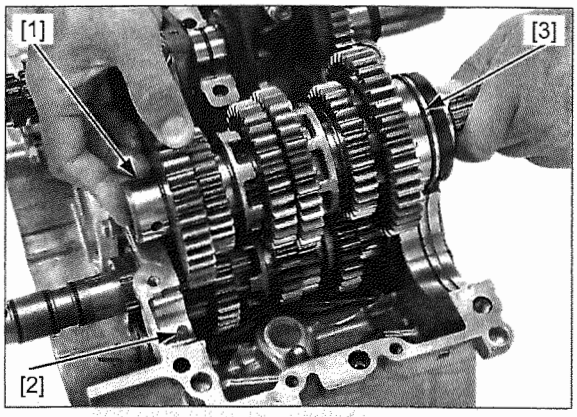
Remove the countershaft assembly [1].

Remove the dowel pin [2] and countershaft bearing set ring [3].

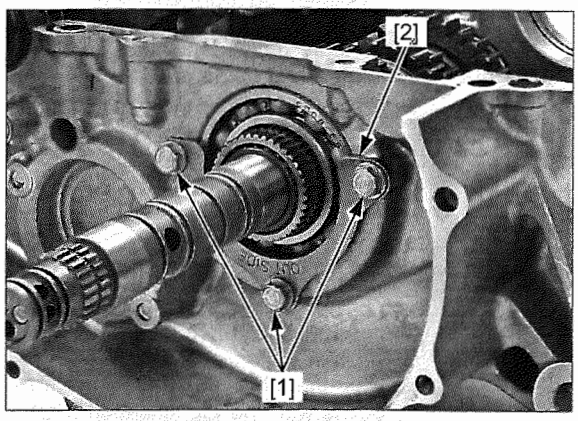
Disassemble the countershaft assembly.

Clean all disassembled parts in solvent thoroughly.

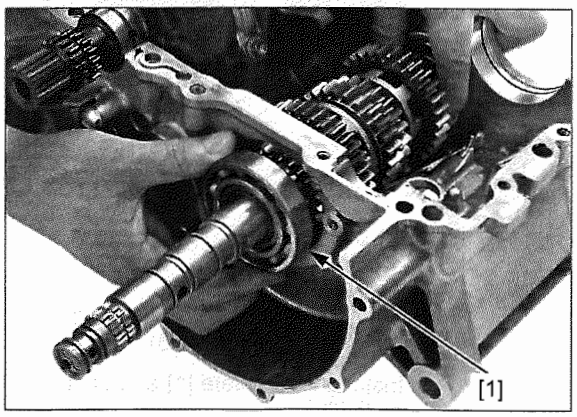
- Keep track of the disassembled parts (gears, bushings, washers, and snap rings) by sliding them onto a tool or a piece of wire.
- Do not expand the snap ring more than necessary for removal. To remove a snap ring, expand the snap ring and pull it off using the gear behind it.




Remove the mainshaft bearing set plate bolts [1] and set plate [2].




Remove the right mainshaft bearing [1] from the upper crankcase.

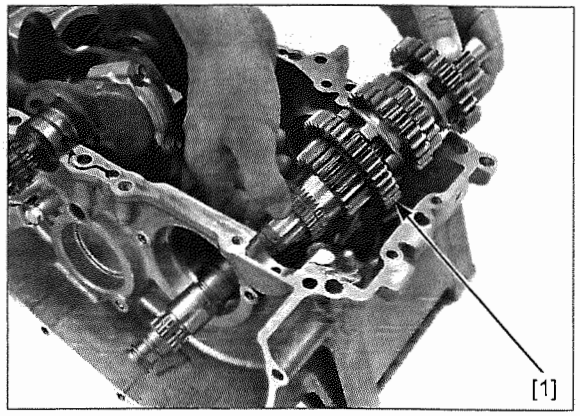



Remove the mainshaft assembly [1].

Disassemble the mainshaft assembly.

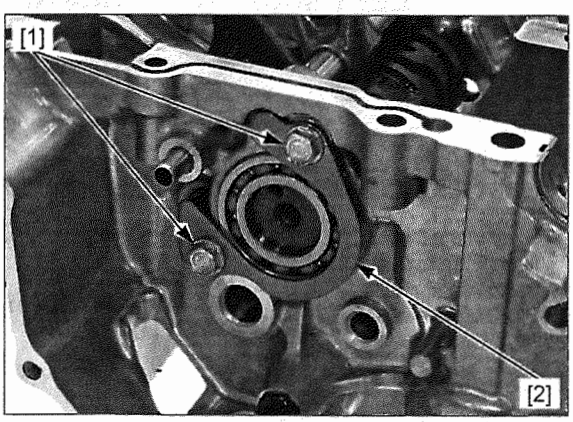
Clean all disassembled parts in solvent thoroughly.

- Keep track of the disassembled parts (gears, bushings, washers, and snap rings) by sliding them onto a tool or a piece of wire.
- Do not expand the snap ring more than necessary for removal. To remove a snap ring, expand the snap ring and pull it off using the gear behind it.

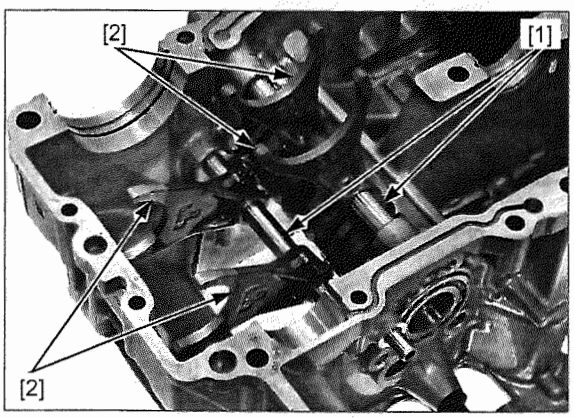


### SHIFT DRUM/SHIFT FORK

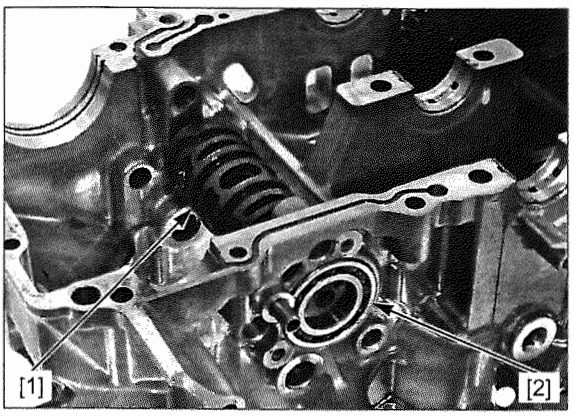
Remove the shift drum bearing set plate bolts [1] and set plate [2].




Remove the fork shafts [1] and shift forks [2].




Remove the shift drum [1] and shift drum bearing [2].




## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Transmission gears
- Transmission bushings
- Transmission bearings
- Shift drum/bearing
- Shift forks
- Shift fork shaft

Measure each part according to CRANKCASE/TRANSMISSION SPECIFICATIONS (page 1-9).

Replace any part if it is out of service limit.

## LEFT MAINSHAFT BEARING REPLACEMENT

Remove the following:

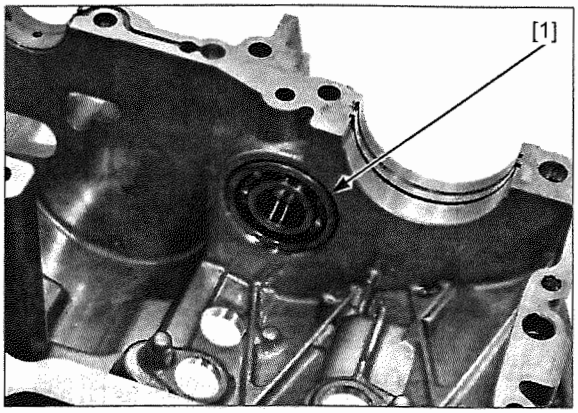
- Crankshaft (page 15-5)
- Pistons/connecting rods (page 15-14)

To avoid burns, wear heavy gloves when handling the heated upper crankcase.

*Do not use a torch to heat the upper crankcase; it may cause warping.*

Heat the upper crankcase to 80°C (176°F) evenly using a heat gun.

Tap the upper crankcase lightly and remove the left mainshaft bearing [1].



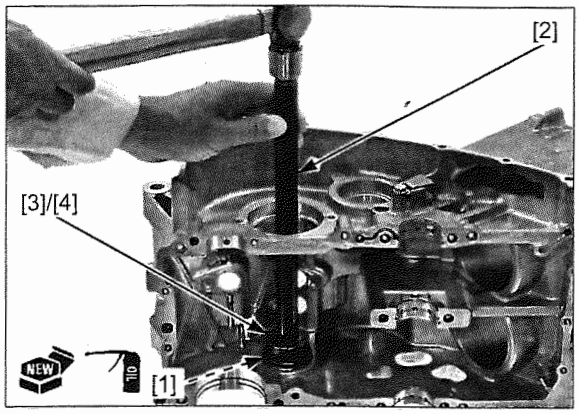

Apply engine oil to a new left mainshaft bearing [1].

*Drive in a new bearing squarely with the marking side facing toward the inside of the crankcase.*

Drive the left mainshaft bearing into the upper crankcase until it is fully seated using the special tools.

**TOOLS:**

| | |
|---|---|
| **[2] Driver, 15 x 280L** | **07949-3710001** |
| **[3] Attachment, 42 x 47 mm** | **07746-0010300** |
| **[4] Pilot, 20 mm** | **07746-0040500** |




Install the following:

- Pistons/connecting rods (page 15-18)
- Crankshaft (page 15-6)

## TRANSMISSION ASSEMBLY

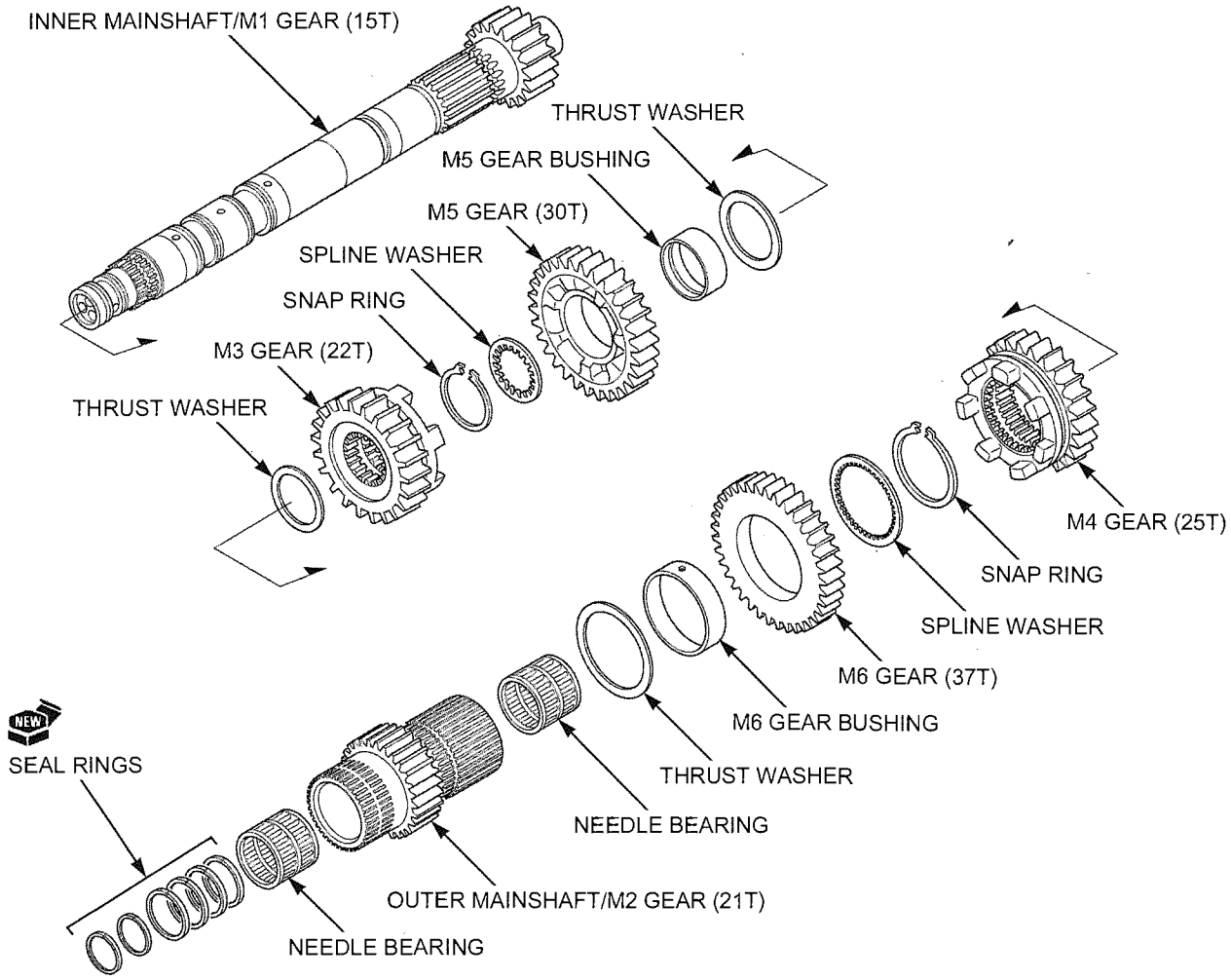
Clean all parts in solvent, and dry them thoroughly.

Apply engine oil to the gear teeth, rotating surface and bearing.

Apply molybdenum oil solution to the spline bushing outer surfaces, bushing inner and outer surfaces, and gear shifter grooves.

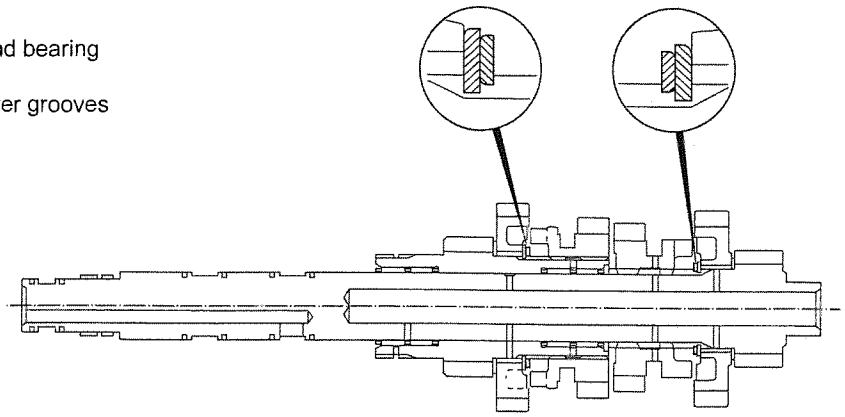
Assemble the mainshaft and countershaft.

**MAINSHAFT**

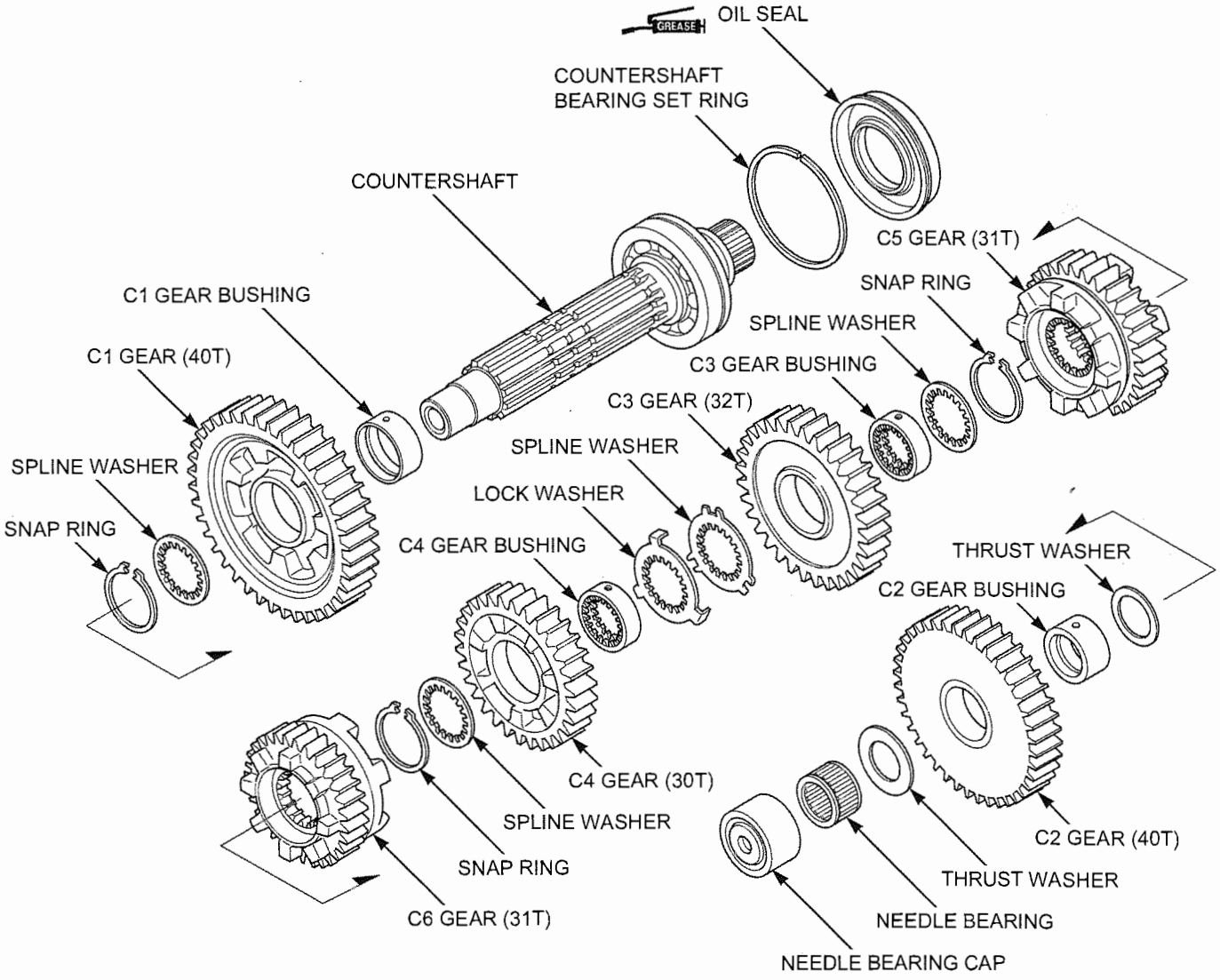



OIL : Gear teeth, rotating surfaces and bearing

MOS-OIL : Bushing surfaces and gear shifter grooves

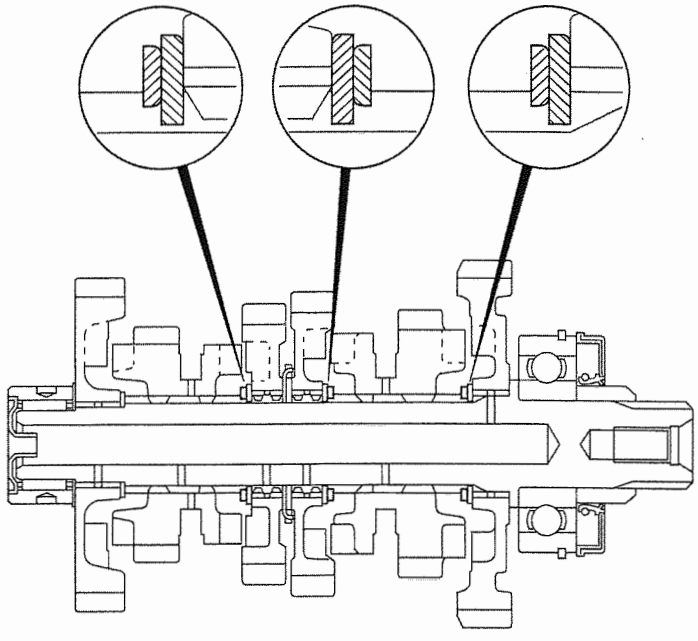


## COUNTERSHAFT



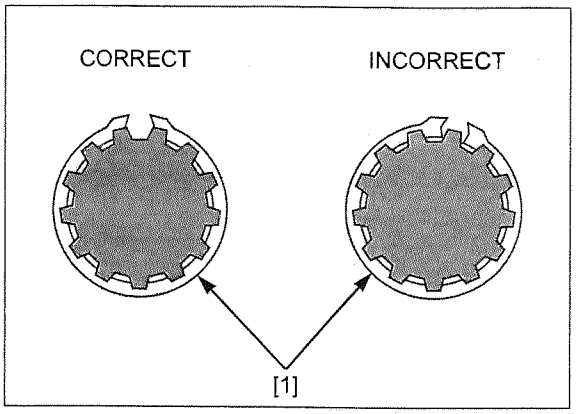

OIL : Gear teeth, rotating surfaces and bearing

OIL : Bushing surfaces and gear shifter grooves



NOTE:

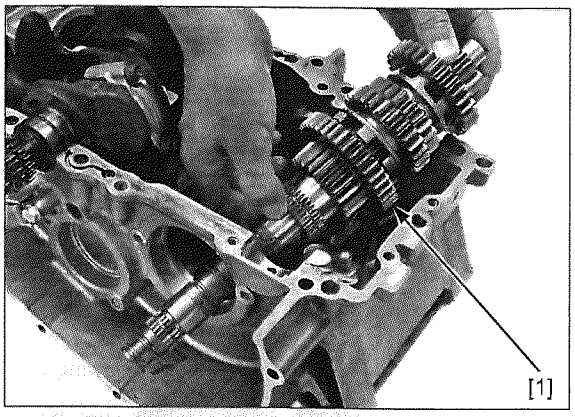
- Coat each gear with clean engine oil and check for smooth movement.
- Align the lock washer tabs with the spline washer grooves.
- Always install the thrust washers and snap rings with the chamfered (rolled) edge facing away from the thrust load.
- Install the snap rings [1] so that the end gap aligns with the groove of the splines.
- Make sure that the snap rings are fully seated in the shaft groove after installing them.




## INSTALLATION

### MAINSHAFT/COUNTERSHAFT

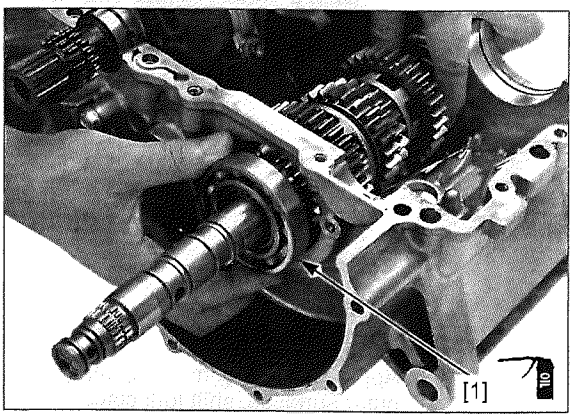
Install the mainshaft assembly [1] into the upper crankcase.




Apply engine oil to the right mainshaft bearing [1].

Install the right mainshaft bearing into the upper crankcase.

- Install the bearing into the crankcase with the marked side facing out.

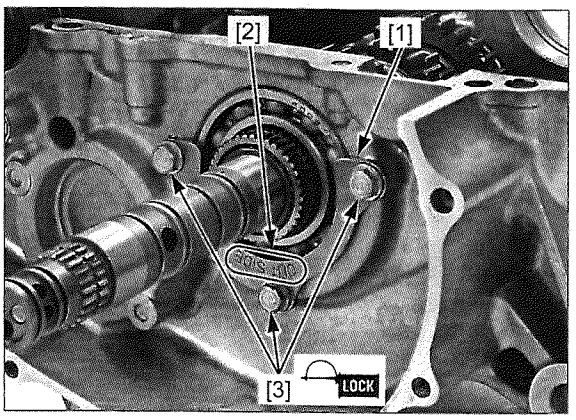



Apply locking agent to the mainshaft bearing set plate bolts threads (page 1-15).

Install the mainshaft bearing set plate [1] with its "OUT SIDE" mark [2] facing out.

Install and tighten the mainshaft bearing set plate bolts [3] to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**



Install the dowel pin [1] onto the upper crankcase hole.

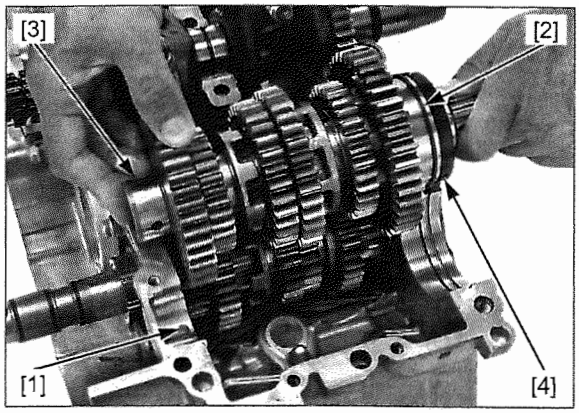
Install the countershaft bearing set ring [2] into the countershaft bearing groove.

Install the countershaft assembly [3].

- Align the needle bearing cap hole with the dowel pin.
- Align the set ring with the upper crankcase groove.
- Align the oil seal flange [4] with the upper crankcase groove.

Install the shift drum/shift fork (page 14-20).

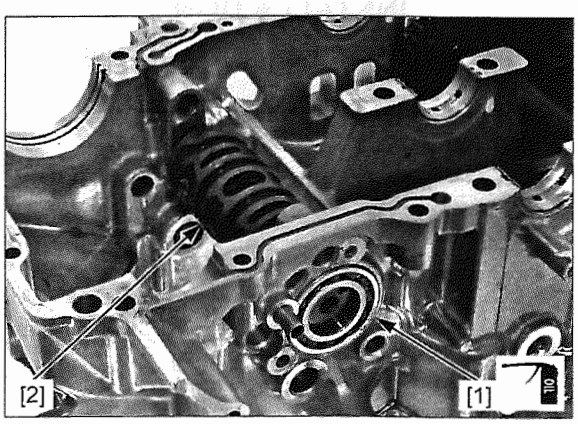
Assemble the crankcase (page 14-23).




**SHIFT DRUM/SHIFT FORK**

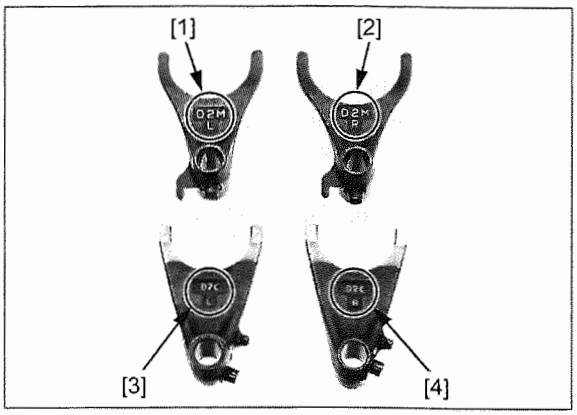
Apply engine oil to the shift drum bearing [1].

Install the shift drum [2] and shift drum bearing into the lower crankcase.




The shift forks have the following identification marks:

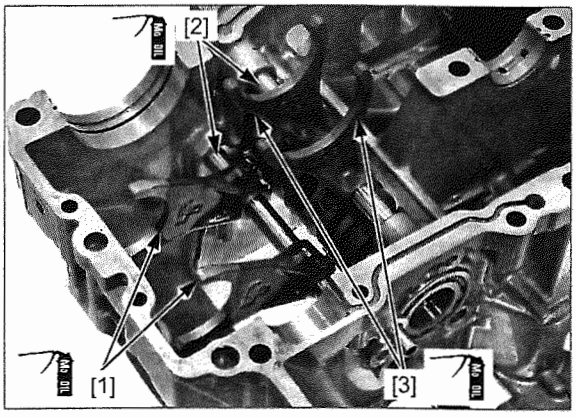
- "D2M L" mark [1]: Mainshaft left shift fork
- "D2M R" mark [2]: Mainshaft right shift fork
- "D2C L" mark [3]: Countershaft left shift fork
- "D2C R" mark [4]: Countershaft right shift fork




Apply molybdenum oil solution to the shift fork shaft outer surfaces, shift fork claws and guide pins.

Install the countershaft shift forks [1] into the shift drum outer guide grooves with the identification marks facing toward the right side of the engine and insert the shift fork shaft [2].

Install the mainshaft shift forks [3] into the shift drum inner guide grooves with the identification marks facing toward the right side of the engine and insert the shift fork shaft.



Apply locking agent to the shift drum bearing set plate bolt threads (page 1-15).

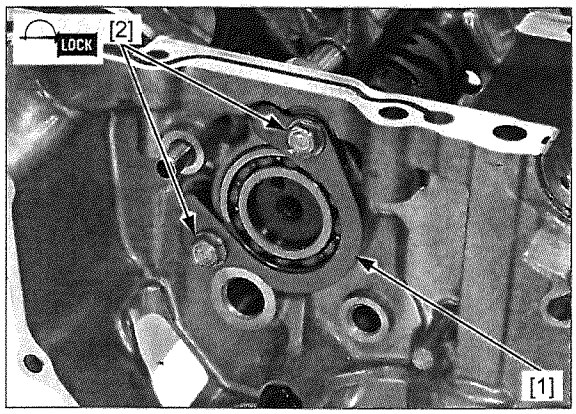
Install the shift drum bearing set plate [1] and bolts [2].

Tighten the bolts to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Install the mainshaft/countershaft (page 14-19).

Assemble the crankcase (page 14-23).

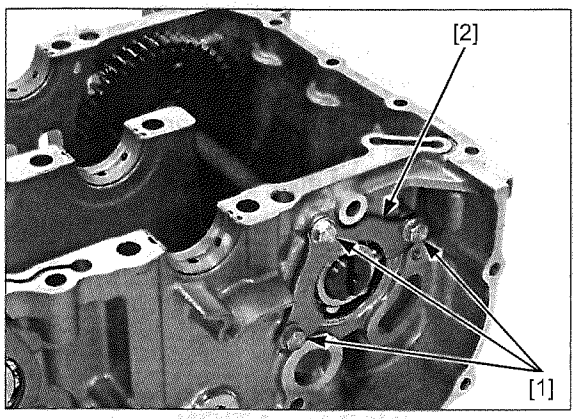



# BALANCER

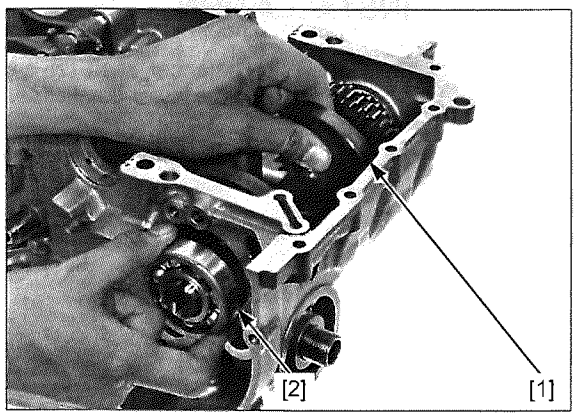
## REMOVAL

Separate the crankcase halves (page 14-6).

Remove the balancer shaft bearing set plate bolts [1] and set plate [2].




Remove the balancer shaft [1] and right balancer shaft bearing [2].




## INSPECTION

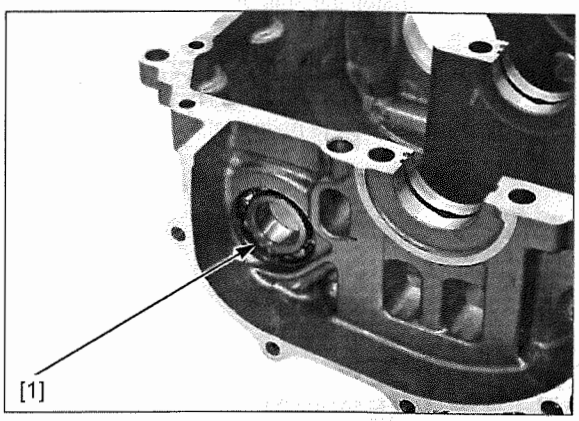
Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Balancer driven gear
- Balancer driven sub-gear
- Springs
- Balancer shaft
- Balancer shaft bearings

Replace if necessary.

## LEFT BALANCER SHAFT BEARING REPLACEMENT

Drive out the left balancer shaft bearing [1] from the lower crankcase.



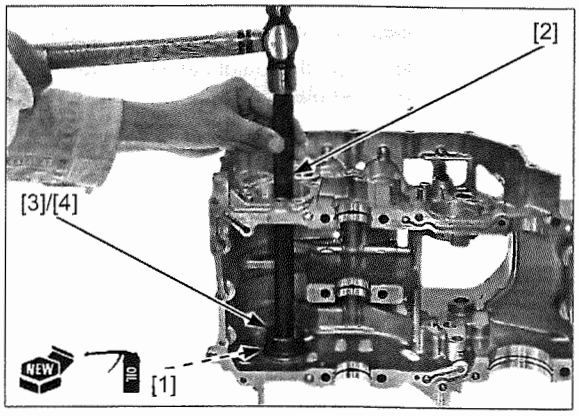

Apply engine oil to a new left balancer shaft bearing [1].

*Drive in a new bearing squarely with the marking side facing toward the inside of the crankcase.*

Drive the left balancer shaft bearing into the lower crankcase until it is fully seated using the special tools.

**TOOLS:**

| | |
|---|---|
| **[2] Driver, 15 x 280L** | **07949-3710001** |
| **[3] Attachment, 42 x 47 mm** | **07746-0010300** |
| **[4] Pilot, 20 mm** | **07746-0040500** |

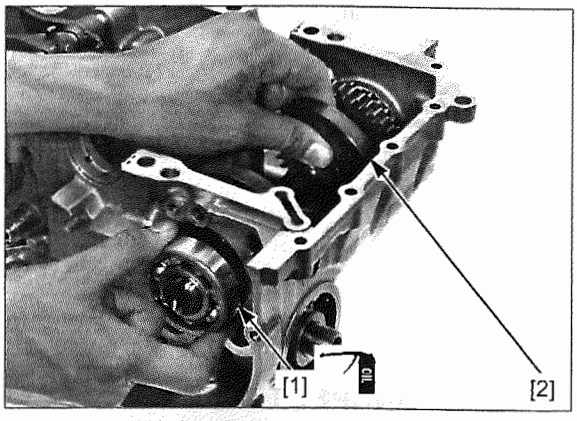



## INSTALLATION

Apply engine oil to the right balancer shaft bearing [1].

Install the balancer shaft [2] and right balancer shaft bearing into the lower crankcase.

- Install the bearing into the crankcase with the marked side facing out.

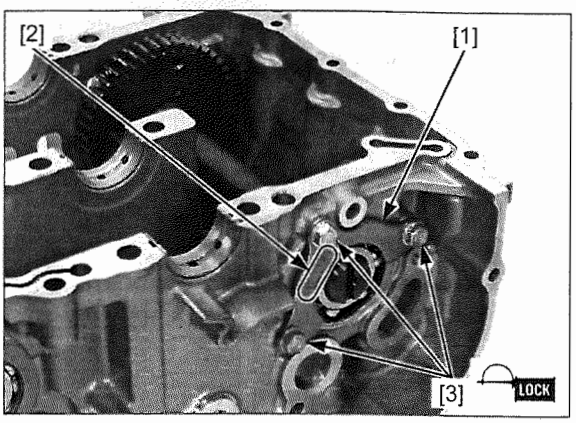



Apply locking agent to the balancer shaft bearing set plate bolts threads (page 1-15).

Install the balancer shaft bearing set plate [1] with its "OUT SIDE" mark [2] facing out.

Install and tighten the balancer shaft bearing set plate bolts [3] to the specified torque.

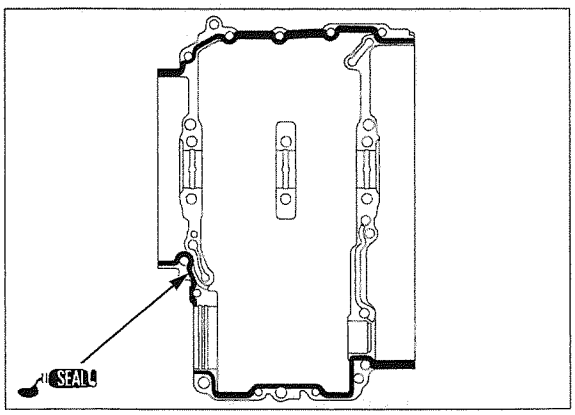
**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**



# CRANKCASE ASSEMBLY

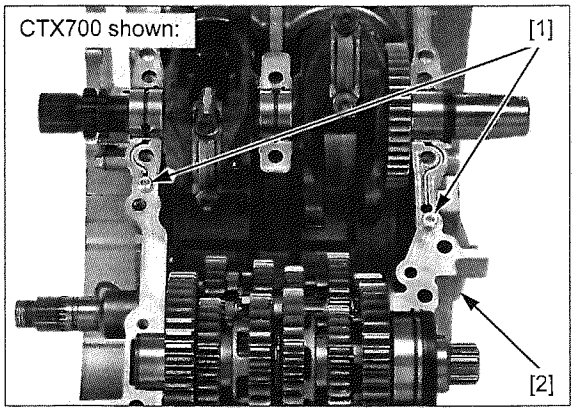
Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the crankcase mating surface as shown.

- Do not apply more liquid sealant than necessary.
- Do not apply liquid sealant to the crankcase main journal bolts area and the oil passage area as shown.

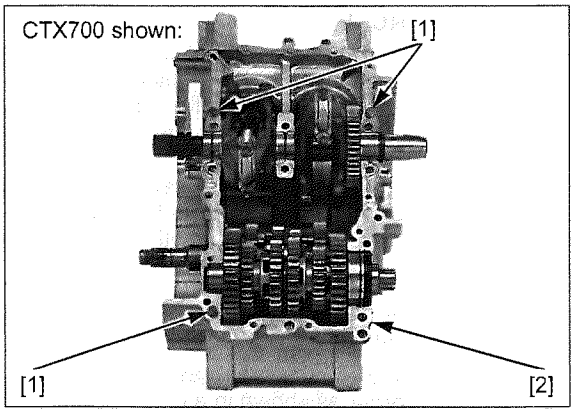



Install the oil orifices [1] onto the upper crankcase [2].

- Install the oil orifices with its narrow hole side facing upper crankcase.

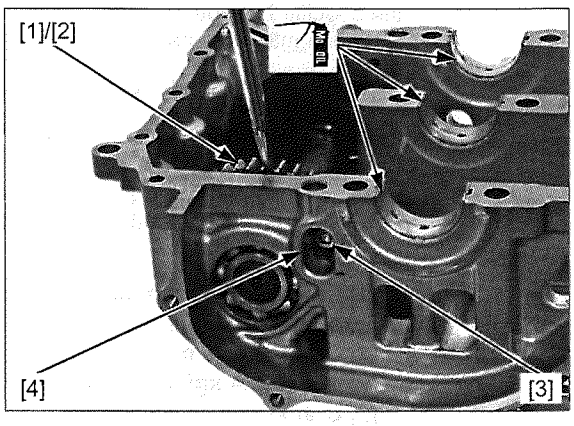



Install the dowel pins [1] onto the upper crankcase [2].

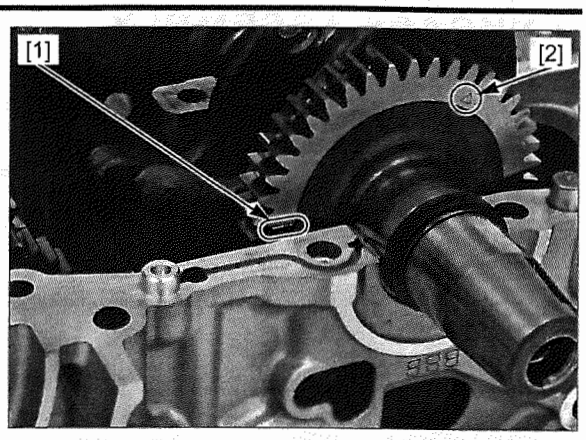



Align the balancer driven gear [1] and balancer driven sub gear [2] teeth then install a 6 x 14 mm socket bolt [3] to the balancer driven gear and balancer driven sub gear holes at the lower crankcase inspection hole [4].

Apply molybdenum oil solution to the main journal bearing sliding surfaces on the lower crankcase.



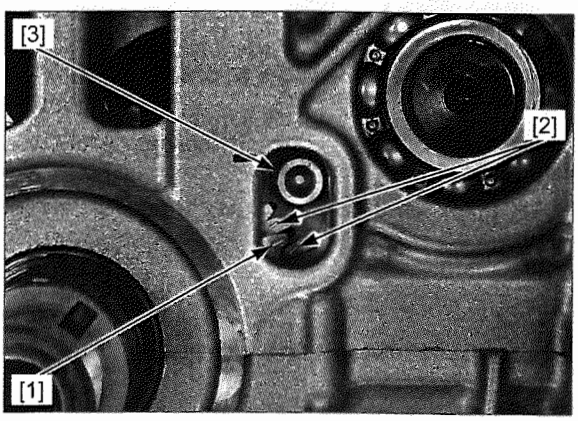
Align the index line [1] on balancer drive gear with upper crankcase top surface while the "△" mark [2] is facing in an upward direction.




Install the lower crankcase onto the upper crankcase.

Make sure that the index line [1] on the balancer drive gear is positioned between the index lines [2] on the balancer driven gear as shown.

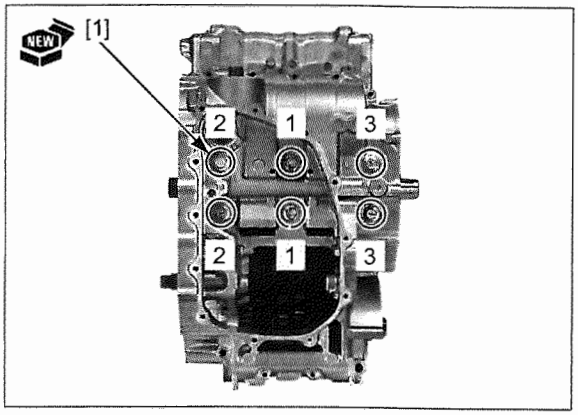
Remove the 6 x 14 mm socket bolt [3].




Install new crankcase main journal bolts [1].

NOTE:

- Tighten the crankcase main journal bolts using the Plastic Region Tightening Method.
- Do not reuse the crankcase main journal bolts, because the correct axial tension will not be obtained.
- The crankcase main journal bolts are pre-coated with an oil additive for axial tension stability. Do not remove the oil additive from the new crankcase main journal bolt surfaces.




Make sure the upper and lower crankcase are seated securely.

Tighten the crankcase main journal bolts in numerical order as shown in a crisscross pattern in 2 or 3 steps to the specified torque.
Further tighten the crankcase main journal bolts 150°.

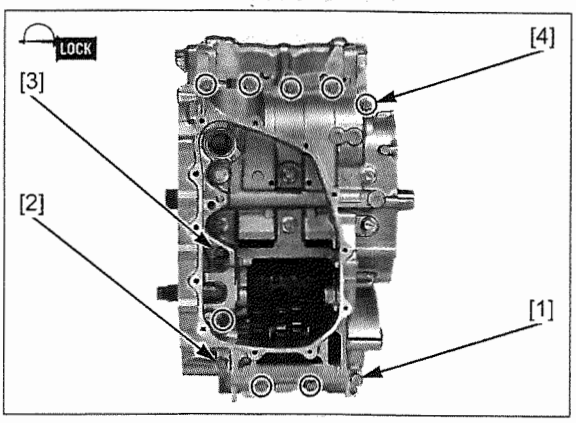
**TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft) + 150°**

Apply locking agent to the crankcase 8 x 45 mm bolt threads (page 1-15).

Install and tighten the crankcase bolts to the specified torque in a crisscross pattern in 2 or 3 steps.

**TORQUE:**

**[1] Crankcase 10 mm bolt:**
**39 N·m (4.0 kgf·m, 29 lbf·ft)**
**[2] Crankcase 8 mm bolt:**
**24 N·m (2.4 kgf·m, 18 lbf·ft)**
**[3] Crankcase 8 x 45 mm bolt:**
**24 N·m (2.4 kgf·m, 18 lbf·ft)**
**[4] Crankcase 6 mm bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**



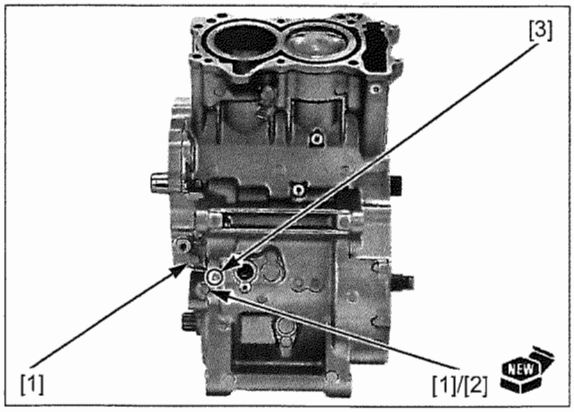
Place the engine with the lower side down.

Install the crankcase 8 mm bolts [1] and a new sealing washer [2].

- The sealing washer location is indicated on the upper crankcase by the "△" mark [3].

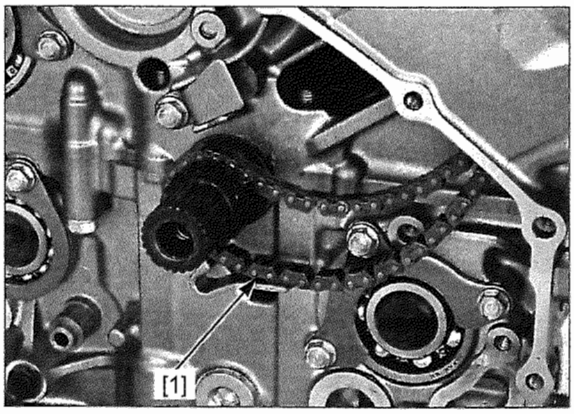
Tighten the crankcase 8 mm bolts to the specified torque.

**TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)**




Install the cam chain [1] to the crankshaft.

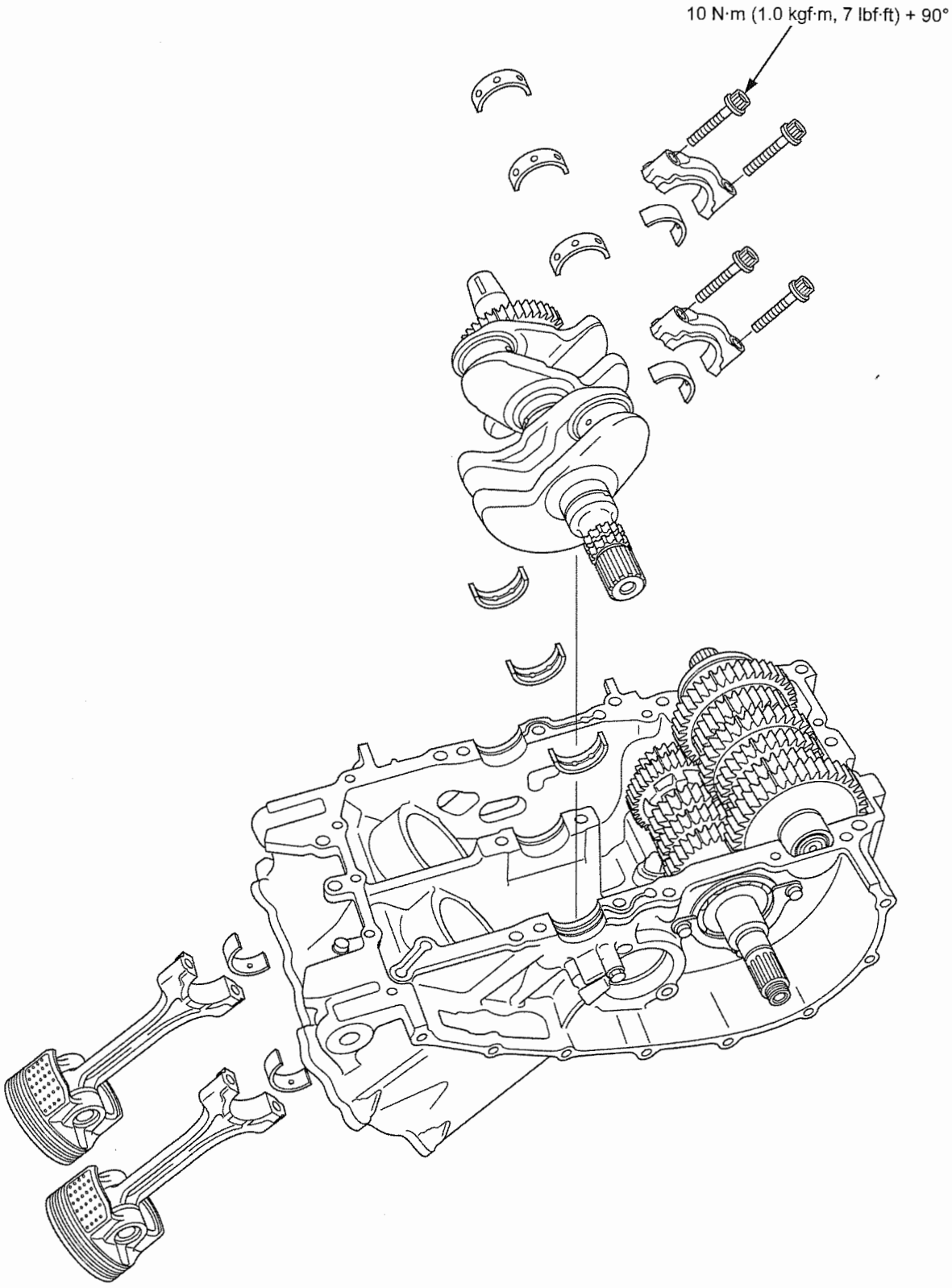
Install the removed parts in the reverse order of removal (page 14-4).



# MEMO

# 15. CRANKSHAFT/PISTON/CYLINDER

# COMPONENT LOCATION



# SERVICE INFORMATION

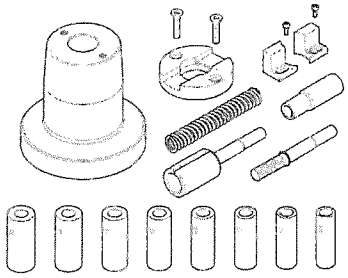
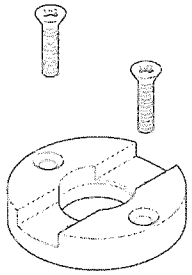
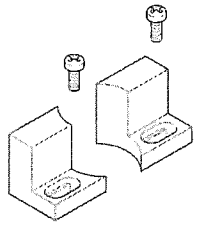
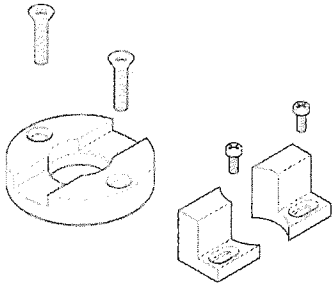
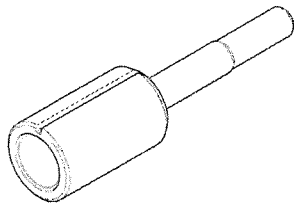
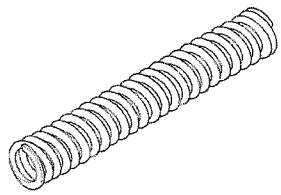
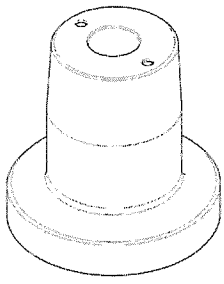
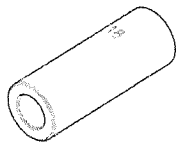
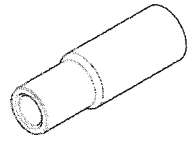
## GENERAL

**NOTICE**

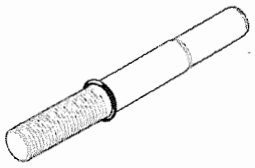
*This motorcycle's engine uses cracking connecting rods. Be sure to install each part in its original position, as noted during removal. Do not reuse connecting rods and bearing caps that have been improperly installed, because their mating surfaces will be damaged.*

- The crankcase must be separated to service the following:
  - Crankshaft (page 15-5)
  - Piston/cylinder (page 15-14)
- Mark and store the connecting rods, bearing caps and bearing inserts to be sure of their correct locations for reassembly.
- The crankpin and main journal bearing inserts are select fit and are identified by color codes. Select replacement bearings from the code tables. After selecting new bearings, recheck the oil clearance with plastigauge. Incorrect oil clearance can cause major engine damage.
- Clean the oil passages in the upper crankcase with compressed air before installing the pistons.

## TOOLS

| | | |
|---|---|---|
| Piston pin tool set<br>07PAF-0010000<br>  <br>(Not available in U.S.A.) | Piston base head<br>07PAF-0010400<br>  | Piston base head insert<br>07PAF-0010500<br>  |
| Piston base head/insert (U.S.A. only)<br>07TGF-001000A<br>  | Piston pin pilot<br>07PAF-0010300<br>  | Piston base spring<br>07973-6570600<br>  |
| Piston base<br>07973-6570500<br>  | Pilot collar, 18 mm<br>07PAF-0010640<br>  | Insert pin<br>07PAF-0010700<br>  |

Insert adjuster
07PAF-0010800



# TROUBLESHOOTING

**Cylinder compression is too low, hard to starting or poor performance at low speed**
- Leaking cylinder head gasket
- Worn, stuck or broken piston ring
- Worn or damaged cylinder and piston

**Cylinder compression too high, overheating or knocking**
- Excessive carbon built-up on piston head or combustion chamber

**Excessive smoke**
- Worn cylinder, piston or piston ring
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

**Abnormal noise**
- Worn piston pin or piston pin hole
- Worn connecting rod small end
- Worn cylinder, piston or piston rings
- Worn main journal bearings
- Worn crankpin bearings

**Engine vibration**
- Excessive crankshaft runout

# CRANKSHAFT

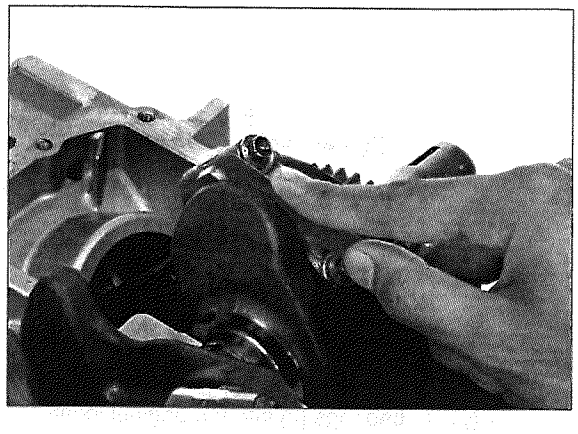
Separate the crankcase halves (page 14-6).

## SIDE CLEARANCE INSPECTION

Measure the connecting rod side clearance.

**SERVICE LIMIT: 0.45 mm (0.018 in)**

If the clearance exceeds the service limit, replace the connecting rod.
Recheck and if still out of limit, replace the crankshaft.



## REMOVAL

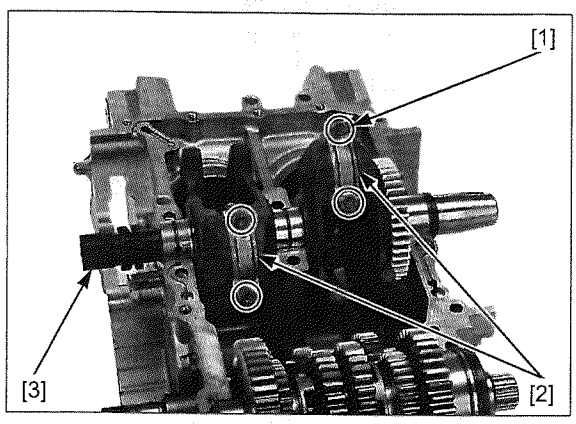
**NOTICE**

*Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.*

Mark the bearing caps and bearings as you remove them to indicate the correct cylinder for reassembly.

Remove the crankpin bearing cap bolts [1] and bearing caps [2].

Remove the crankshaft [3].

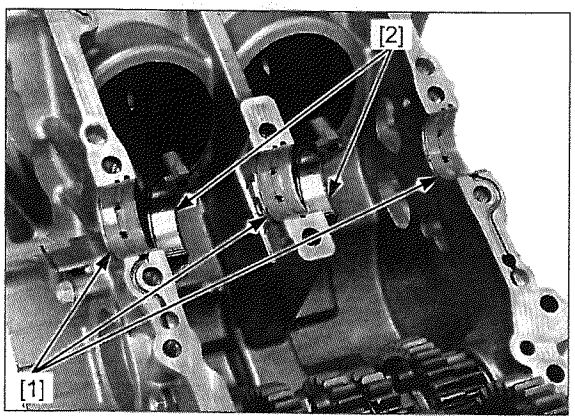



**NOTICE**

*Before removal, position all the pistons at TDC (Top Dead Center) to prevent damaging the crankpin with the connecting rod.*

Remove the main journal bearings [1] from both crankcase halves.

Remove the crankpin bearings [2] from the connecting rods and bearing caps.




**NOTICE**

*Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.*

## INSPECTION

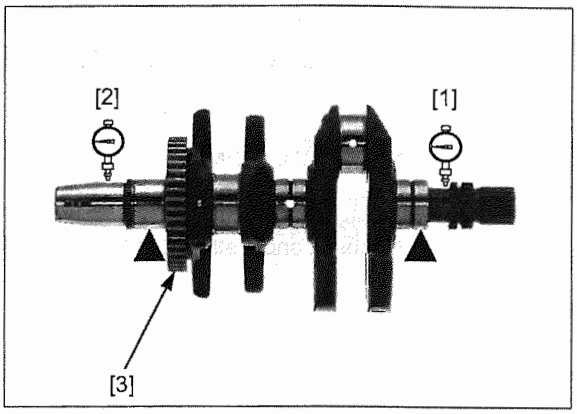
Support the crankshaft on both end journals.

Set a dial gauge on the crankshaft.

Rotate the crankshaft two revolutions (720°) and read the runout.

**SERVICE LIMITS:**
**[1] Right side: 0.03 mm (0.001 in)**
**[2] Left side: 0.03 mm (0.001 in)**

Check the balancer drive gear [3] teeth for abnormal wear or damage.




## INSTALLATION

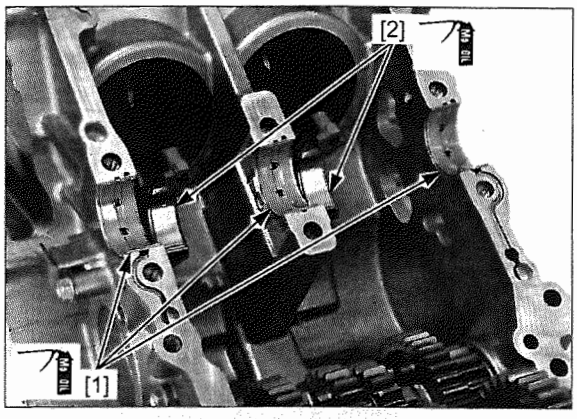
*The bearing tabs should be aligned with the grooves in the crankcase.*

Install the main journal bearings [1] and crankpin bearings [2] into the original locations.

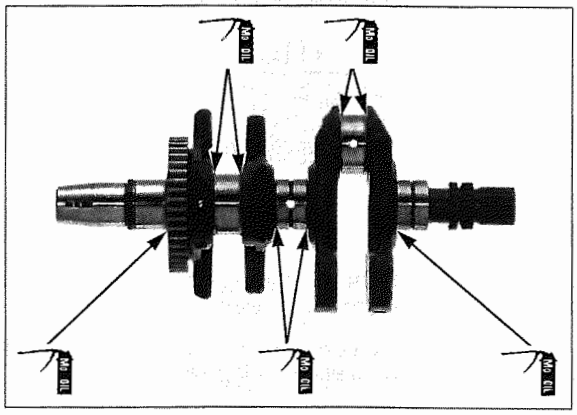
**NOTICE**

*Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.*

Apply molybdenum oil solution to the main journal bearing sliding surfaces on the upper crankcase and crankpin bearing sliding surfaces on the connecting rods.

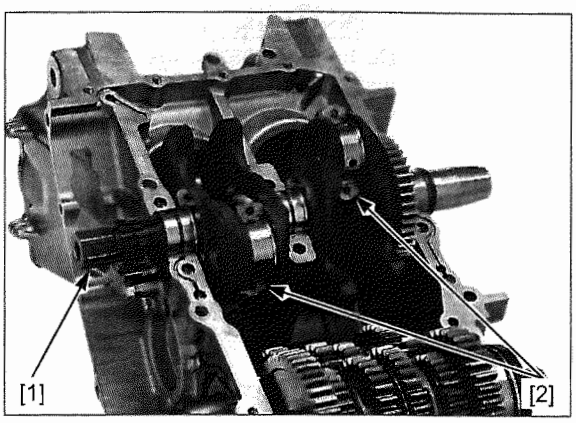



Apply molybdenum oil solution to the thrust surfaces of the crankshaft as shown.

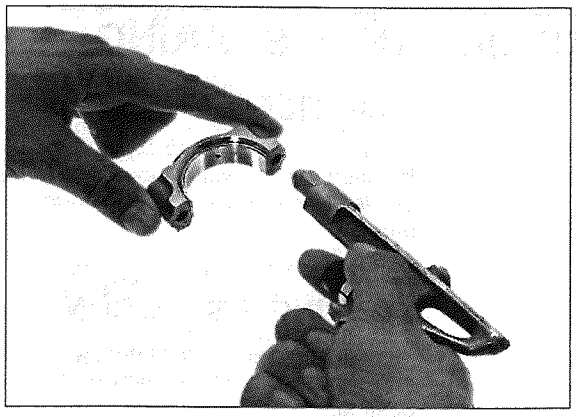


Install the crankshaft [1] onto the upper crankcase.

Set the connecting rods [2] to the crankpins.



Clean the mating surface of the connecting rods and crankpin bearing caps with cleaning solvent and blow them with compressed air.



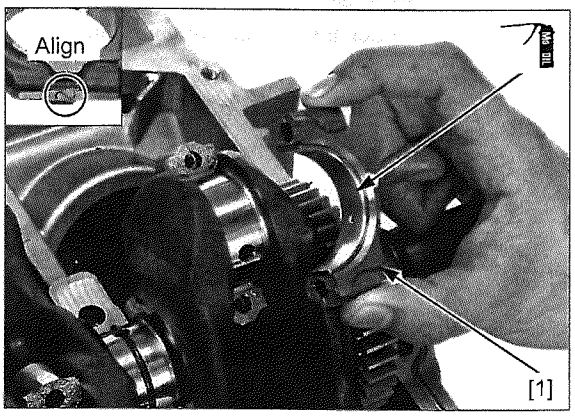
Apply molybdenum oil solution to the crankpin bearing sliding surfaces on the crankpin bearing caps [1].

Install the crankpin bearing caps.

**NOTICE**

*Be sure to install each part in its original position, as noted during removal. Do not reuse connecting rods and bearing caps that have been improperly installed, because their mating surfaces will be damaged.*

- Align the I.D. code number on the connecting rods.



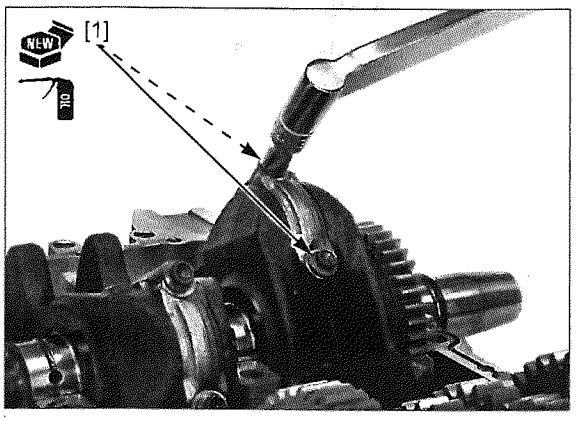

*The crankpin bearing cap bolts cannot be reused. Once the bolts have been loosened replace them with new ones.*

Apply engine oil to new crankpin bearing cap bolt threads and seating surfaces.

Install and tighten new crankpin bearing cap bolts [1] to the specified torque in 2 or 3 steps alternately.
Further tighten the bolts 90°.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft) + 90°**

Assemble the crankcase halves (page 14-23).



# MAIN JOURNAL BEARING

**NOTICE**

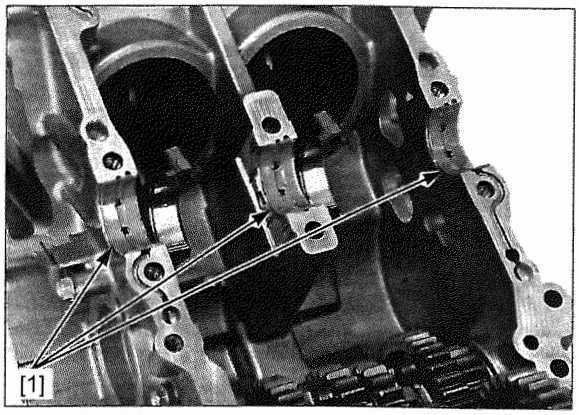
*Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.*

Remove the crankshaft (page 15-5).

## BEARING INSPECTION

Inspect the main journal bearing inserts [1] on the upper and lower crankcase halves for unusual wear or peeling.

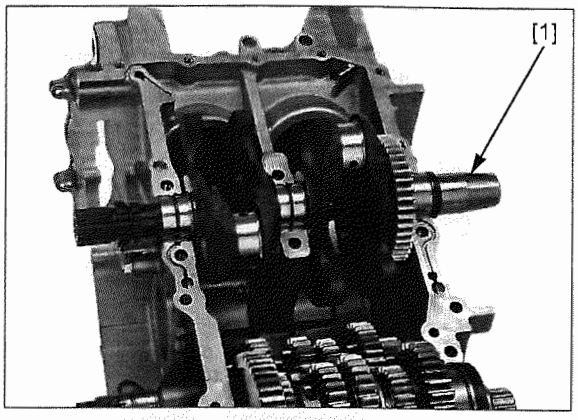
Check the bearing tabs for damage.




## OIL CLEARANCE INSPECTION

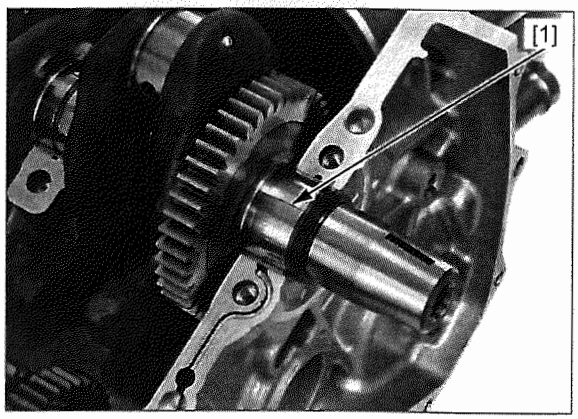
Clean off any oil from the bearing inserts and main journals.

Install the crankshaft [1] onto the upper crankcase.



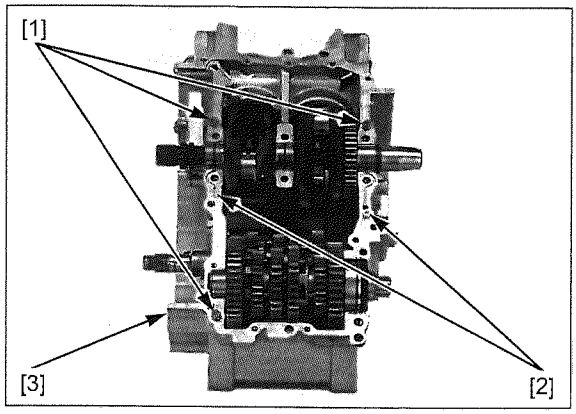

Put a strip of plastigauge [1] lengthwise on each main journal avoiding the oil hole.

- Do not rotate the crankshaft during inspection.



Install the dowel pins [1] and oil orifices [2] onto the upper crankcase [3].

- Install the oil orifices with its narrow hole side facing upper crankcase.




Install the lower crankcase [1] onto the upper crankcase.

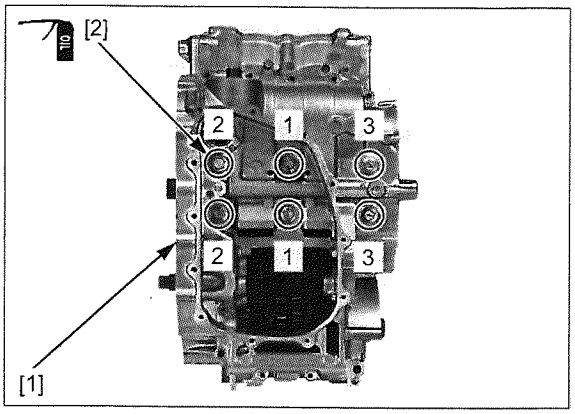
Apply engine oil to the crankcase main journal bolt (reuse) threads and seating surfaces.

Install the crankcase main journal bolts [2].

Make sure the upper and lower crankcase are seated securely.

Tighten the crankcase main journal bolts in numerical order as shown in a crisscross pattern in 2 or 3 steps to the specified torque.
Further tighten the crankcase main journal bolts 120°.

**TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft) + 120°**

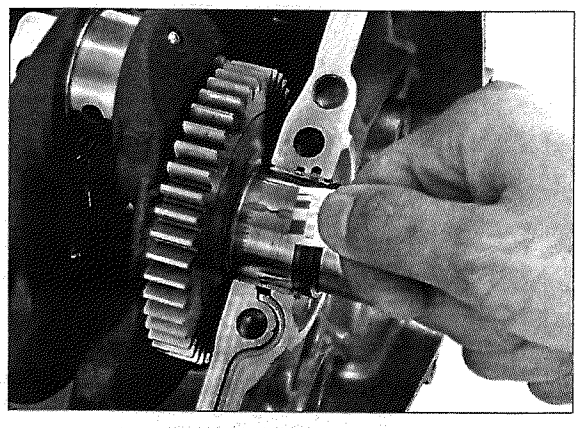



Remove the crankcase main journal bolt and lower crankcase.

Measure the compressed plastigauge at its widest point on each main journal to determine the oil clearance.

**SERVICE LIMIT: 0.05 mm (0.002 in)**

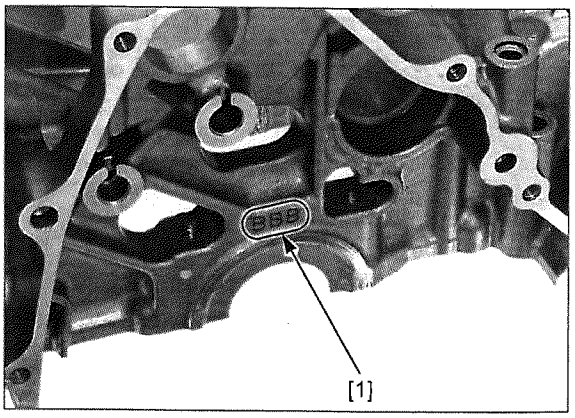
If the oil clearance exceeds the service limit, select a replacement bearing.



## BEARING SELECTION

*Letters (A, B or C) on the left side of upper crankcase are bearing support I.D. codes from left to right.*

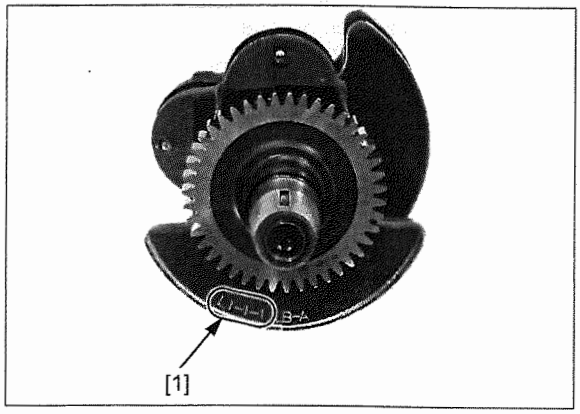
Record the crankcase bearing support I.D. code letters [1] from left side of the upper crankcase as shown.



*Numbers (1, 2 or 3) on the crank weight are main journal O.D. codes from left to right.*

If you are replacing the crankshaft, record the corresponding main journal O.D. code numbers [1] from the crank weight.

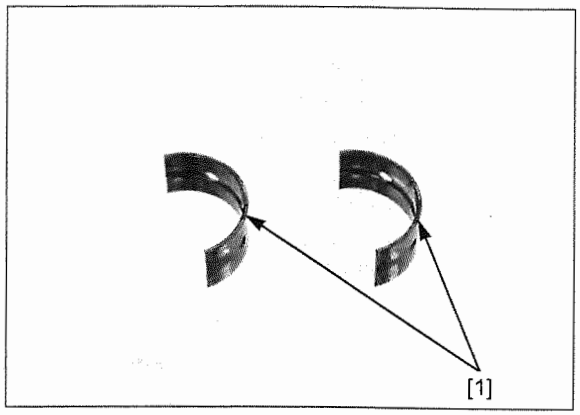
If you are reusing the crankshaft, measure the crankpin O.D. with a micrometer.




Cross-reference the main journal and bearing support codes to determine the replacement bearing color code [1].

**MAIN JOURNAL BEARING THICKNESS:**

**A: Blue: Thickest**
**B: Black:**
**C: Brown:** ↕
**D: Green:**
**E: Yellow: Thinnest**




**MAIN JOURNAL BEARING SELECTION TABLE:**

| | | | BEARING SUPPORT I.D. CODE | | |
|---|---|---|---|---|---|
| | | | A | B | C |
| | | | 37.000 – 37.006 mm (1.4567 – 1.4569 in) | 37.006 – 37.012 mm (1.4569 – 1.4572 in) | 37.012 – 37.018 mm (1.4572 – 1.4574 in) |
| MAIN JOURNAL O.D. CODE | 1 | 34.010 – 34.016 mm (1.3390 – 1.3392 in) | E (Yellow) | D (Green) | C (Brown) |
| | 2 | 34.004 – 34.010 mm (1.3387 – 1.3390 in) | D (Green) | C (Brown) | B (Black) |
| | 3 | 33.998 – 34.004 mm (1.3385 – 1.3387 in) | C (Brown) | B (Black) | A (Blue) |

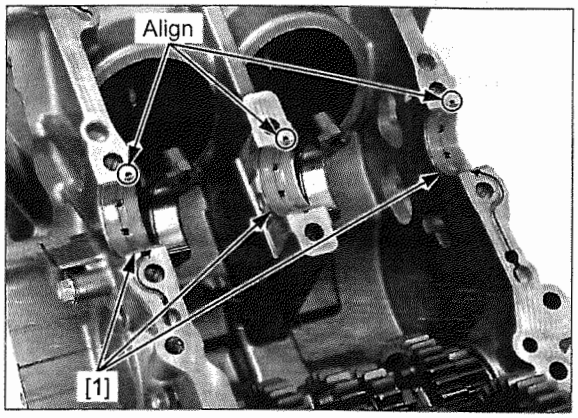
**NOTICE**

*After selecting new bearings, recheck the clearance with a plastigauge. Incorrect clearance can cause severe engine damage.*

## BEARING INSTALLATION

Clean the bearing outer surfaces and crankcase bearing supports.

Install the main journal bearing inserts [1] onto the crankcase bearing supports, aligning each tab with each groove.



# CRANKPIN BEARING

**NOTICE**

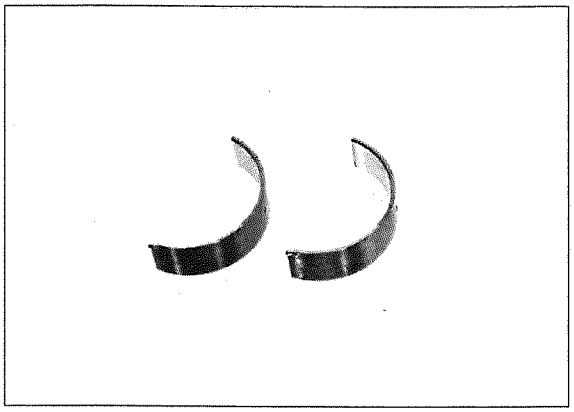
*Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.*

Remove the crankshaft (page 15-5).

## BEARING INSPECTION

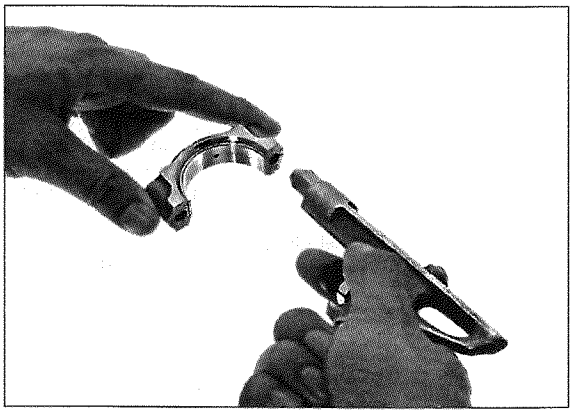
Check the bearing inserts for unusual wear or peeling.

Check the bearing tabs for damage.



## OIL CLEARANCE INSPECTION

Clean the mating surface of the connecting rod and crankpin bearing cap with cleaning solvent and blow them with compressed air.



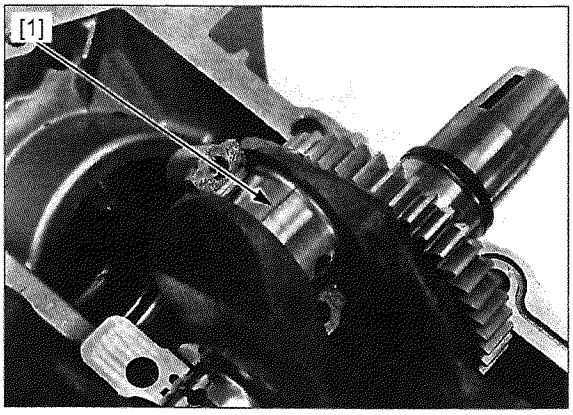
Clean off any oil from the bearing inserts and crankpins.

Carefully install the crankshaft onto the upper crankcase.

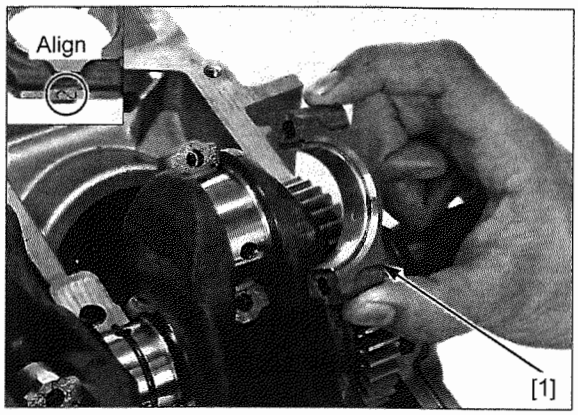
Set the connecting rods onto the crankpins.

Put a strip of plastigauge [1] lengthwise on each crankpin avoiding the oil hole.

- Do not rotate the crankshaft during inspection.



Install the crankpin bearing caps [1].




**NOTICE**

*Be sure to install each part in its original position, as noted during removal. Do not reuse connecting rods and bearing caps that have been improperly installed, because their mating surfaces will be damaged.*

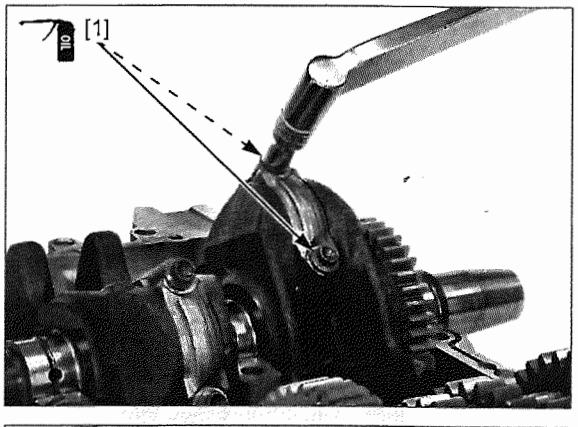
- Align the I.D. code number on the connecting rods.

*Use the removed crankpin bearing cap bolts when checking the oil clearance.*

Apply engine oil to the crankpin bearing cap bolt (reuse) threads and seating surfaces.

Install and tighten the crankpin bearing cap bolts [1] to the specified torque in 2 or 3 steps alternately.
Further tighten the bolts 90°.

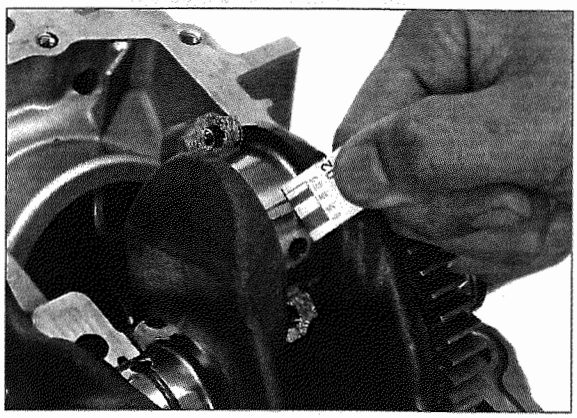
**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft) + 90°**




Remove the bearing caps and measure the compressed plastigauge at its widest point on the crankpin to determine the oil clearance.

**SERVICE LIMIT: 0.05 mm (0.002 in)**

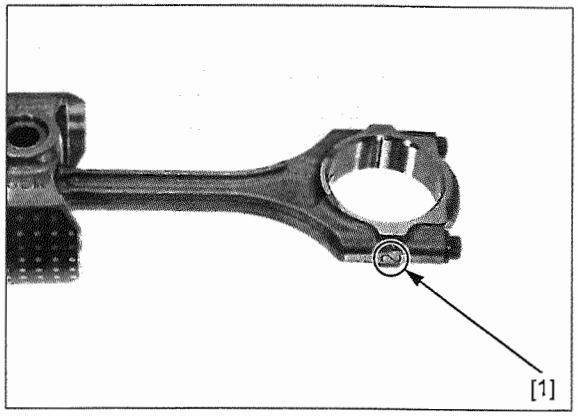
If the oil clearance exceeds the service limit, select the correct replacement bearings.



## BEARING SELECTION

*Numbers (1, 2, 3 or 4) on the connecting rods are the connecting rod I.D. codes.*

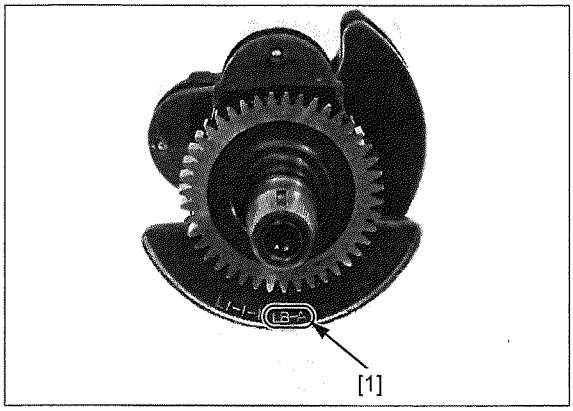
Record the connecting rod I.D. code number [1] or measure the I.D. with the crankpin bearing cap installed without bearing inserts.



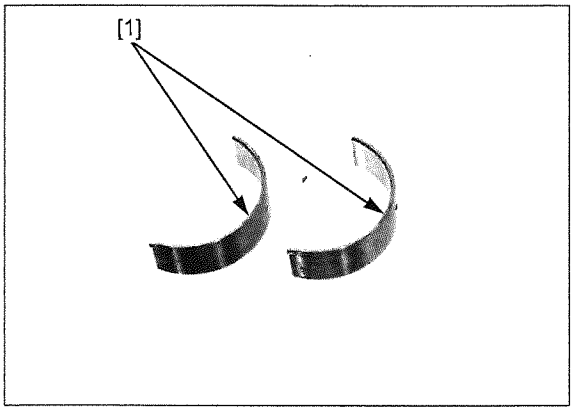
*Letters (A, B, C or D) on the crank weight are the crankpin O.D. codes from left to right.*

If you are replacing the crankshaft, record the corresponding crankpin O.D. code letter [1].

If you are reusing the crankshaft, measure the crankpin O.D. with a micrometer.




Cross-reference the connecting rod and crankpin codes to determine the replacement bearing color code [1].




**CRANKPIN BEARING THICKNESS:**

**B: Black: Thickest**
**C: Brown:**
**D: Green:**
**E: Yellow:** ↕
**F: Pink:**
**G: Red:**
**H: White: Thinnest**

**CRANKPIN BEARING SELECTION TABLE:**

| | | | CONNECTING ROD I.D. CODE | | | |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 |
| | | | 43.000 – 43.006 mm (1.6929 – 1.6931 in) | 43.006 – 43.012 mm (1.6931 – 1.6934 in) | 43.012 – 43.018 mm (1.6934 – 1.6936 in) | 43.018 – 43.024 mm (1.6936 – 1.6939 in) |
| CRANKPIN O.D. CODE | A | 39.994 – 40.000 mm (1.5746 – 1.5748 in) | H (White) | G (Red) | F (Pink) | E (Yellow) |
| | B | 39.988 – 39.994 mm (1.5743 – 1.5746 in) | G (Red) | F (Pink) | E (Yellow) | D (Green) |
| | C | 39.982 – 39.988 mm (1.5741 – 1.5743 in) | F (Pink) | E (Yellow) | D (Green) | C (Brown) |
| | D | 39.976 – 39.982 mm (1.5739 – 1.5741 in) | E (Yellow) | D (Green) | C (Brown) | B (Black) |

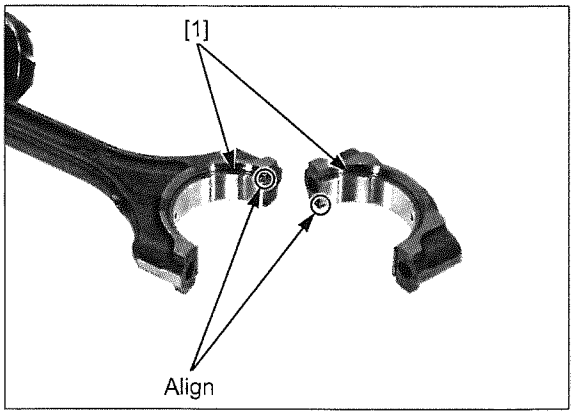
**NOTICE**

*After selecting new bearings, recheck the clearance with a plastigauge. Incorrect clearance can cause severe engine damage.*

## BEARING INSTALLATION

Clean the bearing outer surfaces, crankpin bearing cap and connecting rod.

Install the crankpin bearings [1] onto the bearing cap and connecting rod, aligning each tab with each groove.



# PISTON/CYLINDER

## PISTON/CONNECTING ROD REMOVAL

**NOTICE**

- *Before piston removal, place a clean shop towel around the connecting rod to prevent damaging the cylinder sleeve.*
- *Do not try to remove the piston/connecting rod assembly from bottom of the cylinder; the assembly will get stuck in the gap between the cylinder liner and the upper crankcase.*
- *Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.*

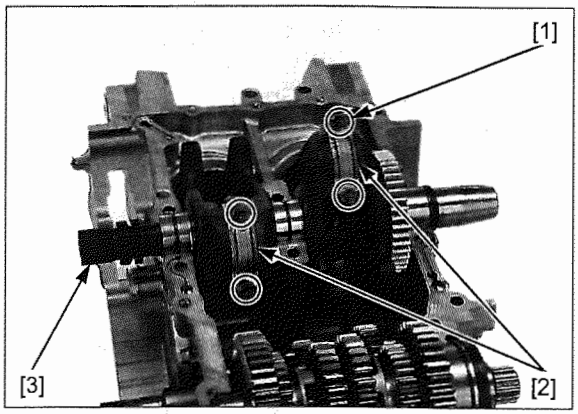
Mark the bearing caps and bearings as you remove them to indicate the correct cylinder for reassembly.

Remove the crankpin bearing cap bolts [1] and bearing caps [2].

Remove the crankshaft [3].

Remove the countershaft.

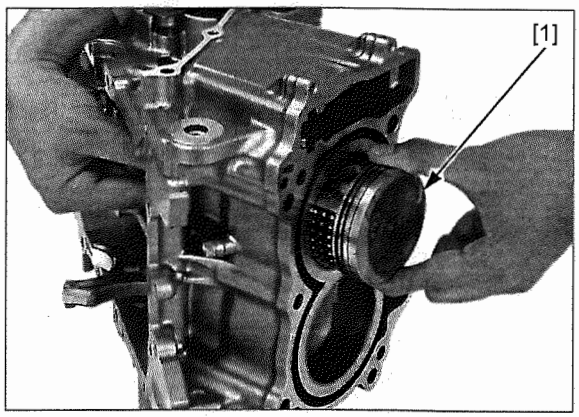
– CTX700/A/N/NA (page 14-7)
– CTX700D/ND (page 14-14)




Remove the piston/connecting rod assembly [1] from the top of the cylinder.

**NOTICE**

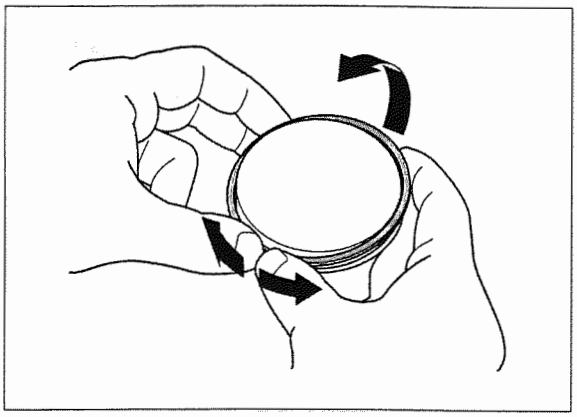
*Do not try to remove the connecting rod/piston assembly from the bottom of the cylinder; the assembly will be locked when the oil ring expands in the gap between the cylinder liner and the upper crankcase.*




## PISTON RING REMOVAL

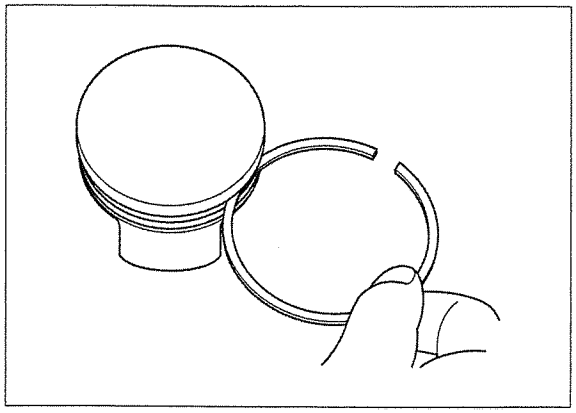
*Be careful not to damage the piston ring by spreading the ends too far.*

Spread each piston ring ends and remove them by lifting up at a point opposite the gap.



*Never use a wire brush; it will scratch the groove.*

Clean carbon deposits from the piston ring grooves with a ring that will be discarded.



## PISTON REMOVAL

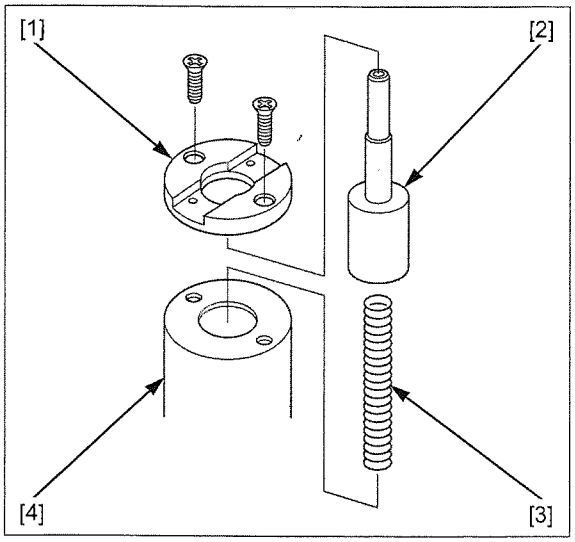
Assemble the special tools as shown.

**TOOLS:**

| | |
|---|---|
| **Piston pin tool set** | **07PAF-0010000** |
| **– [1] Piston base head** | **07PAF-0010400** |
| **– [2] Piston pin pilot** | **07PAF-0010300** |
| **– [3] Piston base spring** | **07973-6570600** |
| **– [4] Piston base** | **07973-6570500** |

**U.S.A. TOOLS:**

| | |
|---|---|
| **[1] Piston base head/insert** | **07TGF-001000A** |
| **[2] Piston pin pilot** | **07PAF-0010300** |
| **[3] Piston base spring** | **07973-6570600** |
| **[4] Piston base** | **07973-6570500** |




Temporarily install the pilot collar [1] to the piston pin pilot, and adjust the piston base head inserts [2] as shown, then tighten the screws [3].

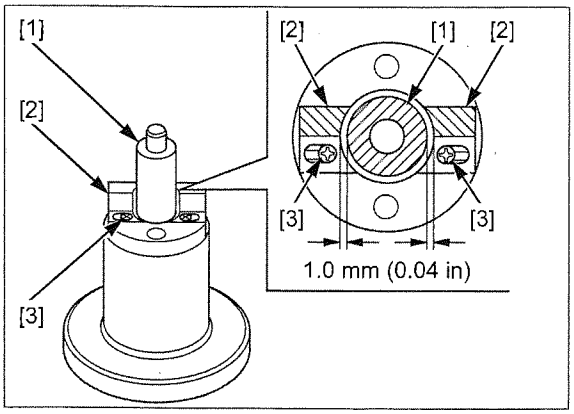
**TOOLS:**

| | |
|---|---|
| **Piston pin tool set** | **07PAF-0010000** |
| **– [1] Pilot collar, 18 mm** | **07PAF-0010640** |
| **– [2]/[3] Piston base head insert** | **07PAF-0010500** |

**U.S.A. TOOLS:**

| | |
|---|---|
| **[1] Pilot collar, 18 mm** | **07PAF-0010640** |
| **[2]/[3] Piston base head/insert** | **07TGF-001000A** |

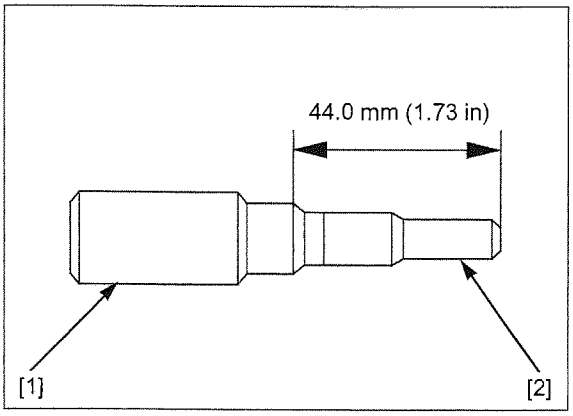
Remove the pilot collar.




Assemble and adjust the length of the insert pin [1] and insert adjuster [2] to 44.0 mm (1.73 in).

**TOOLS:**

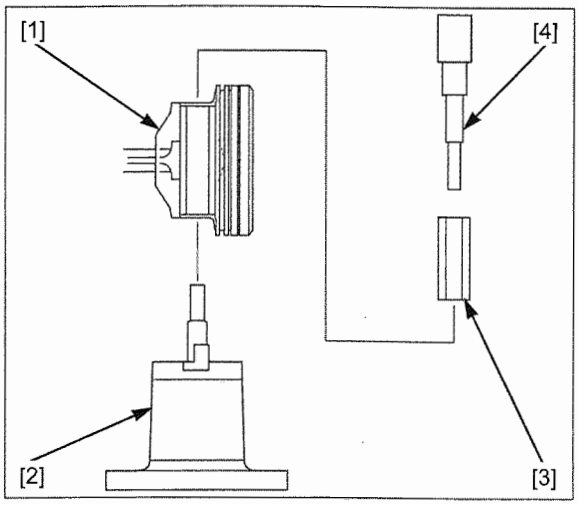
| | |
|---|---|
| **[1] Insert pin** | **07PAF-0010700** |
| **[2] Insert adjuster** | **07PAF-0010800** |



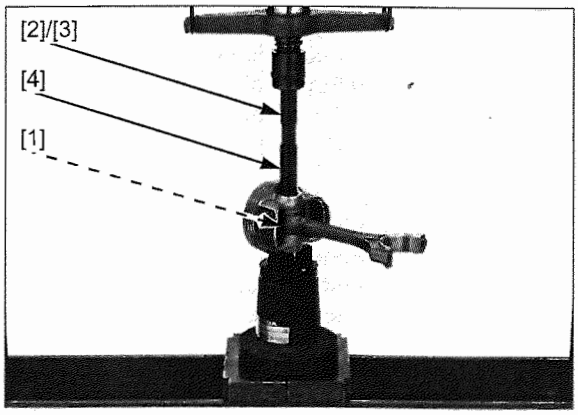
Place the piston assembly [1] on the special tools [2].

- Be sure to position the piston flat area against the piston base head inserts as shown.

Place the pilot collar [3] and insert pin/insert adjuster [4] on the piston assembly.




Press the piston pin [1] out with the insert pin [2], insert adjuster [3], pilot collar [4] and a hydraulic press.




## INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

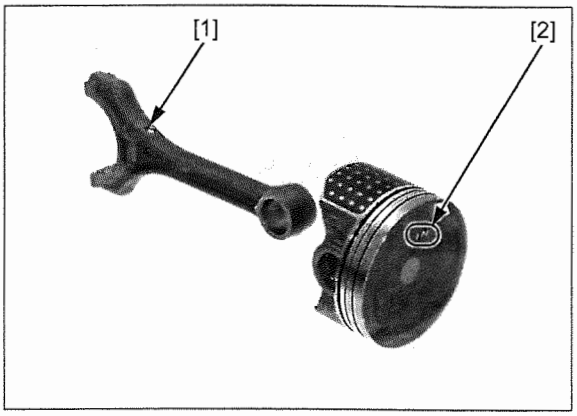
- Cylinder
- Piston
- Piston rings
- Piston pin
- Connecting rod small end

Measure each part and calculate the clearance according to CRANKSHAFT/PISTON/CYLINDER SPECIFICATIONS (page 1-10).

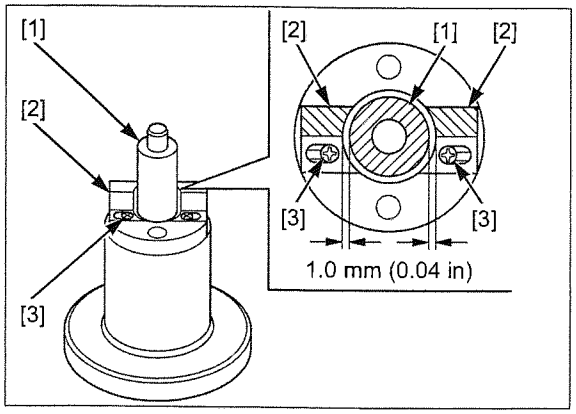
Replace any part if it is out of service limit.

## PISTON INSTALLATION

Face the connecting rod oil jet [1] to the piston "IN" mark [2] side.



Temporarily install the pilot collar [1] to the piston pin pilot, and adjust the piston base head inserts [2] as shown, then tighten the screws [3].




**TOOLS:**

| | |
|---|---|
| **Piston pin tool set** | **07PAF-0010000** |
| **– [1] Pilot collar, 18 mm** | **07PAF-0010640** |
| **– [2]/[3] Piston base head insert** | **07PAF-0010500** |

**U.S.A. TOOLS:**

| | |
|---|---|
| **[1] Pilot collar, 18 mm** | **07PAF-0010640** |
| **[2]/[3] Piston base head/insert** | **07TGF-001000A** |

Remove the pilot collar.

Apply engine oil to the piston pin outer surface.

Adjust the length of the insert pin [1] and insert adjuster [2] to 44.0 mm (1.73 in).

**TOOLS:**

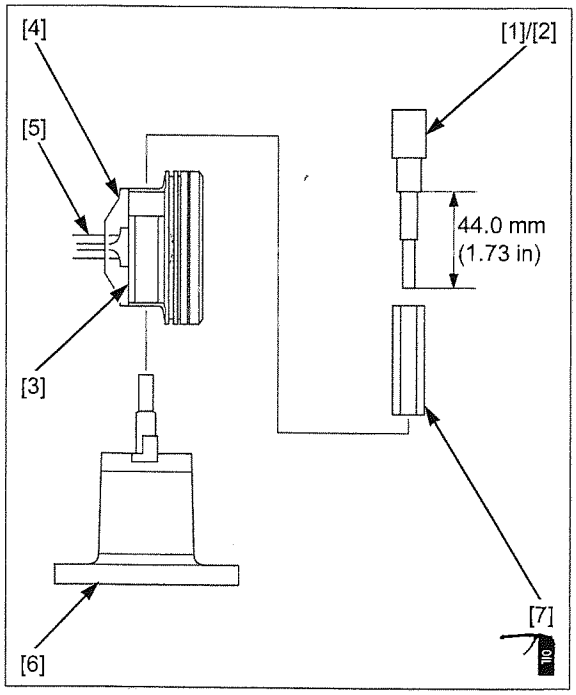
| | |
|---|---|
| **[1] Insert pin** | **07PAF-0010700** |
| **[2] Insert adjuster** | **07PAF-0010800** |

Insert the pilot collar [3] into the piston [4] and connecting rod [5].

**TOOL:**

| | |
|---|---|
| **[3] Pilot collar, 18 mm** | **07PAF-0010640** |

Place the piston, connecting rod and pilot collar on the special tools [6].




**TOOLS:**

| | |
|---|---|
| **Piston pin tool set** | **07PAF-0010000** |
| **– Piston base head insert** | **07PAF-0010500** |
| **– Piston base head** | **07PAF-0010400** |
| **– Piston pin pilot** | **07PAF-0010300** |
| **– Piston base spring** | **07973-6570600** |
| **– Piston base** | **07973-6570500** |

**U.S.A. TOOLS:**

| | |
|---|---|
| **Piston base head/insert** | **07TGF-001000A** |
| **Piston pin pilot** | **07PAF-0010300** |
| **Piston base spring** | **07973-6570600** |
| **Piston base** | **07973-6570500** |

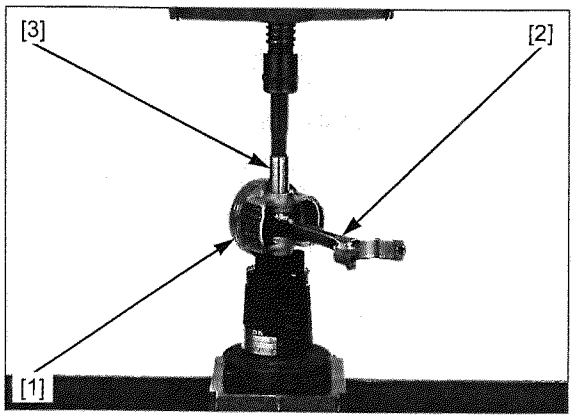
NOTE:

Be sure to position the piston flat area against the piston base head inserts as shown.

Place the piston pin [7], insert pin/insert adjuster on the pilot collar.

Place the piston [1], connecting rod [2], piston pin [3] and special tools on the hydraulic press.

Press the piston pin until special tools fully seated.



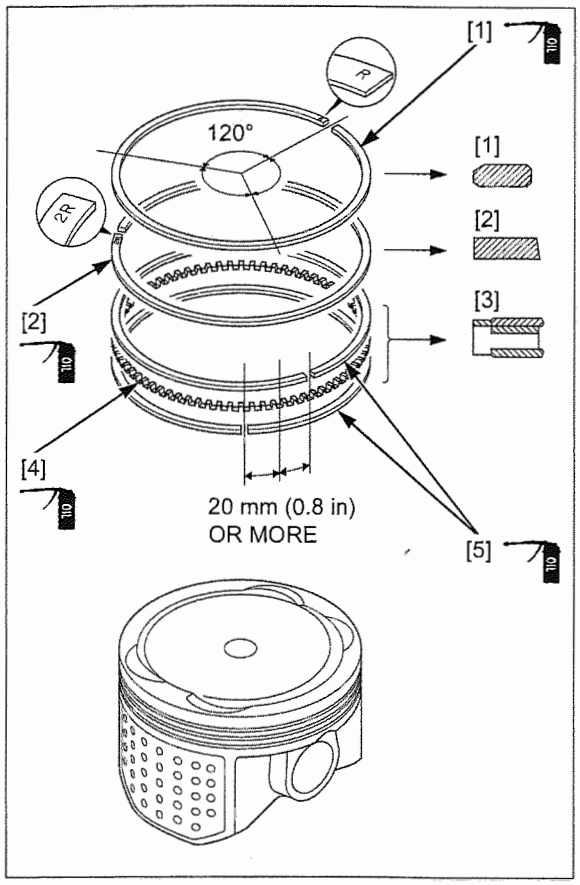
## PISTON RING INSTALLATION

Clean the piston ring grooves thoroughly and install the piston rings.

- Apply engine oil to the piston ring sliding surface.
- Avoid piston and piston ring damage during installation.
- Install the piston rings with the marked side facing up.
  - "R" mark: top ring [1]
  - "2R" mark: second ring [2]
- To install the oil ring [3], install the spacer [4] first, then install the side rails [5].

Stagger the piston ring end gaps 120° apart from each other.
Stagger the side rail end gaps as shown.

After installation, the rings should rotate freely in the ring groove.




## PISTON/CONNECTING ROD INSTALLATION

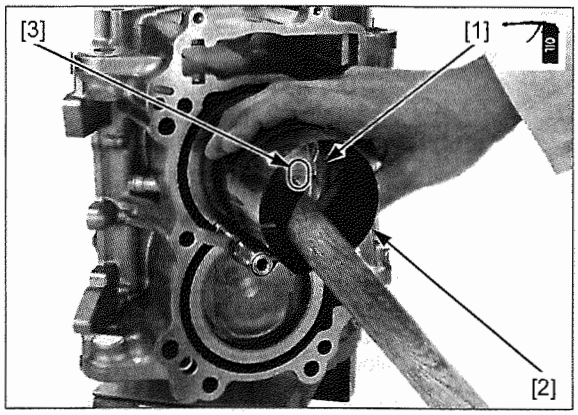
Apply engine oil to the piston and cylinder sliding surface.

*Install the piston/ connecting rod assembly with the "IN" mark [3] facing the intake side.*

Install the piston/connecting rod assemblies [1] into the cylinders using a commercially available piston ring compressor tool [2].
When reusing the connecting rods, they must be installed in their original locations.

**NOTICE**

- *While installing the piston, be careful not to damage the top surface of the cylinder, especially around the cylinder bore.*
- *Be careful not to damage the cylinder sleeve with the connecting rod.*




*Make sure the piston ring compressor tool sits flush on the top surface of the cylinder.*

Use the handle of a plastic hammer or equivalent tool to tap the piston into the cylinder.

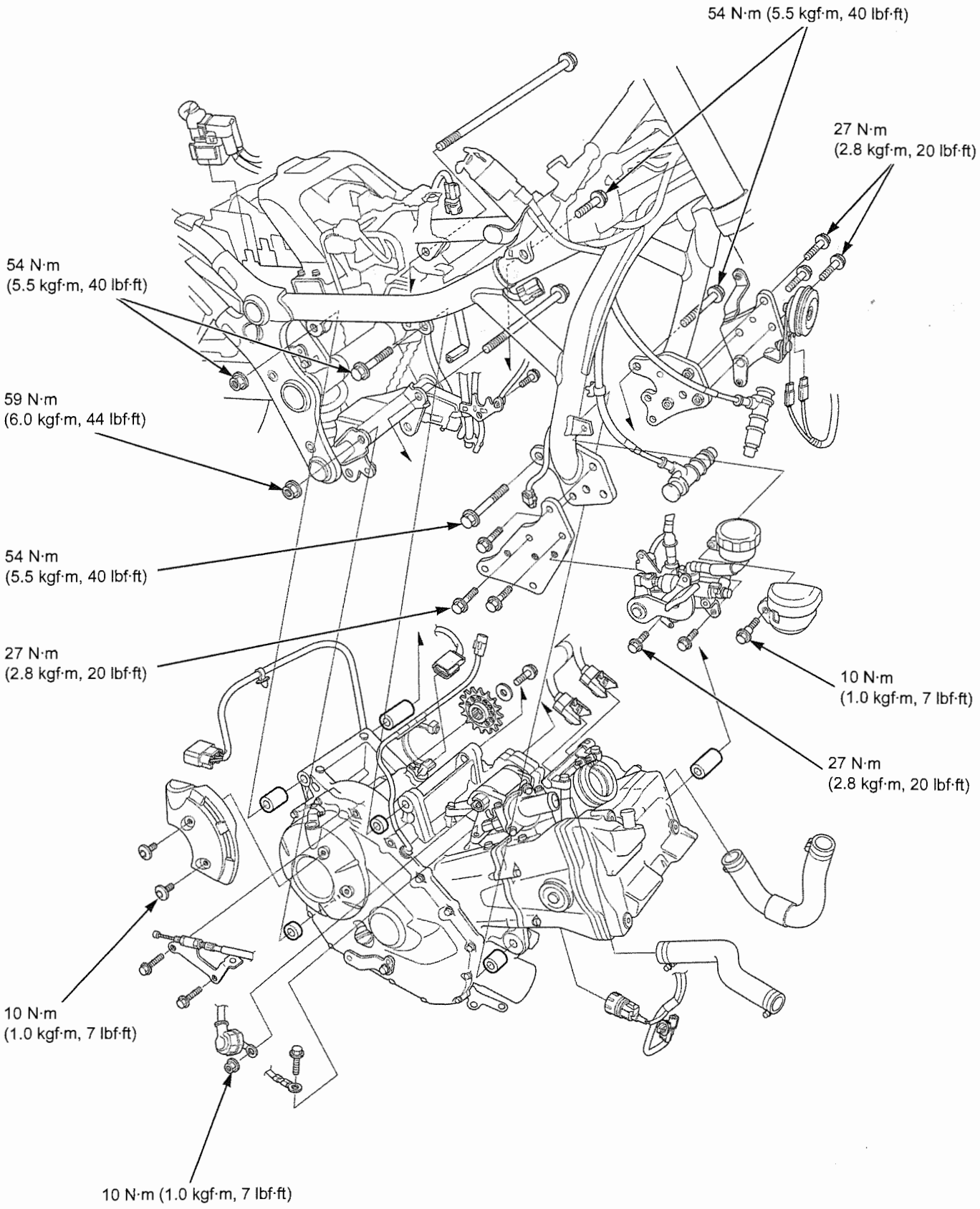
Install the following:

- Countershaft
  - CTX700/A/N/NA (page 14-12)
  - CTX700D/ND (page 14-19)
- Crankshaft (page 15-6)

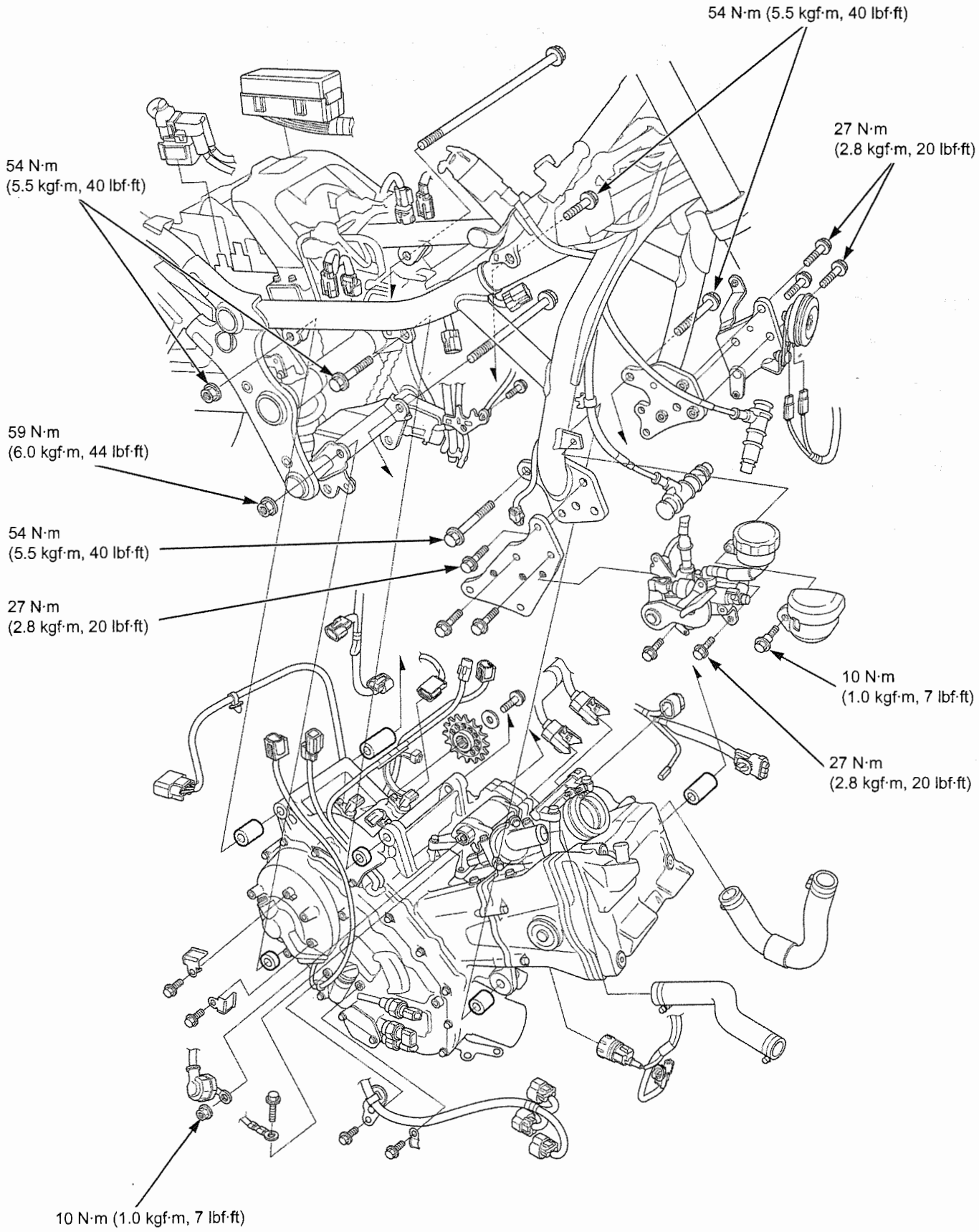
# 16. ENGINE REMOVAL/INSTALLATION

# COMPONENT LOCATION

**CTX700/A/N/NA:**



**CTX700D/ND:**


54 N·m (5.5 kgf·m, 40 lbf·ft)
27 N·m
(2.8 kgf·m, 20 lbf·ft)
54 N·m
(5.5 kgf·m, 40 lbf·ft)
59 N·m
(6.0 kgf·m, 44 lbf·ft)
54 N·m
(5.5 kgf·m, 40 lbf·ft)
27 N·m
(2.8 kgf·m, 20 lbf·ft)
10 N·m
(1.0 kgf·m, 7 lbf·ft)
27 N·m
(2.8 kgf·m, 20 lbf·ft)
10 N·m (1.0 kgf·m, 7 lbf·ft)

# SERVICE INFORMATION

## GENERAL

- A hoist or equivalent is required to support the motorcycle when removing and installing the engine.
- When removing/installing the engine, tape the frame around the engine beforehand for frame protection.
- When installing the engine, be sure to tighten the engine mounting fasteners to the specified torque in the specified sequence. If you mistake the torque or sequence, loosen all mounting fasteners, then tighten them again to the specified torque in the correct sequence.
- The following components can be serviced with the engine installed in the frame.
  - Starter motor (page 6-8)
  - Throttle body (page 7-14)
  - Water pump (page 8-9)
  - Oil pump (CTX700/A/N/NA) (page 9-7)
  - Oil pump (CTX700D/ND) (page 9-8)
  - Rocker arm (page 10-7)
  - Clutch (CTX700/A/N/NA) (page 11-6)
  - Gearshift linkage (CTX700/A/N/NA) (page 11-13)
  - Primary drive gear/CKP sensor rotor (CTX700/A/N/NA) (page 11-11)
  - Dual clutch (CTX700D/ND) (page 12-66)
  - Gearshift linkage (CTX700D/ND) (page 12-73)
  - Primary drive gear/CKP sensor rotor (CTX700D/ND) (page 12-69)
  - CKP sensor (page 5-9)
  - Flywheel (page 13-5)
  - Stator (page 13-10)
- The following components require engine removal for service.
  - Camshaft (page 10-12)
  - Cylinder head/valves (page 10-14)
  - Transmission (CTX700/A/N/NA) (page 14-7)
  - Transmission (CTX700D/ND) (page 14-14)
  - Balancer (page 14-21)
  - Crankshaft (page 15-5)
  - Piston/cylinder (page 15-14)

# ENGINE REMOVAL (CTX700/A/N/NA)

Drain the engine oil (page 3-10).

Drain the coolant (page 8-4).

Fully slacken the drive chain (page 3-13).

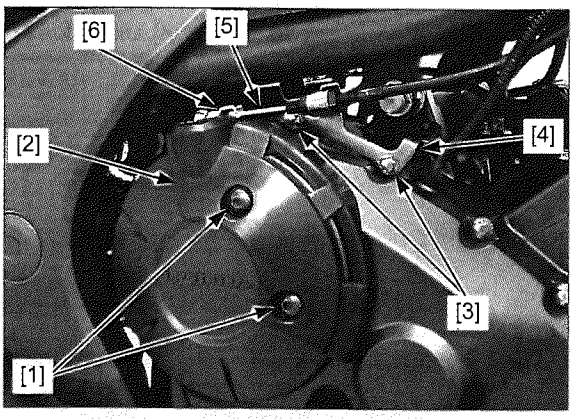
Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector side (page 7-4).

Remove the following:

- Main steps (page 2-14)
- Left crankcase rear cover (page 2-16)
- Exhaust pipe/muffler (page 2-19)
- Swingarm pivot covers (page 2-17)
- Radiator (page 8-7)
- Radiator reserve tank (page 8-11)
- Fuel tank (page 7-7)
- Throttle body (page 7-14)

Remove the two socket bolts [1] and right engine side cover [2].

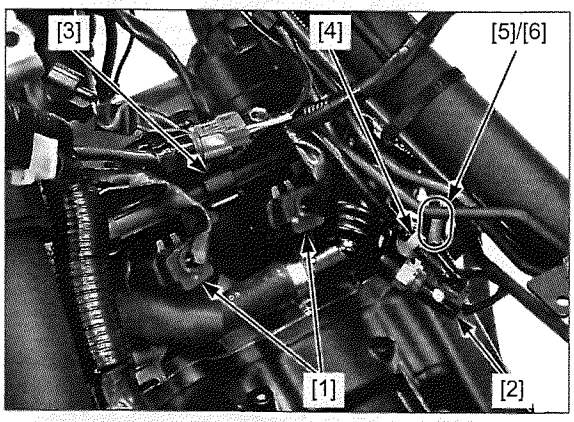
Remove the bolts [3] and clutch cable guide [4], then disconnect the clutch cable [5] from the clutch lifter arm [6].



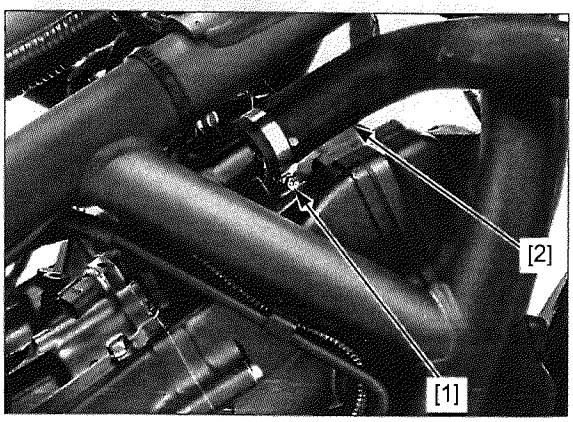

Disconnect the fuel injector 2P (Gray) connectors [1] and ECT sensor 2P (Black) connector [2].

*CTX700A/NA only:* Release the clip [3] from the fuel rail.

Release the wire band boss [4] and main wire harness [5] from the wire clamp [6].



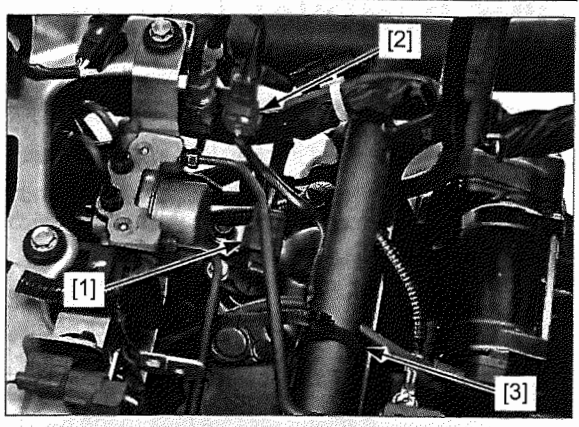

Loosen the band screw [1] and disconnect the water hose [2] from the thermostat cover.



Disconnect the VS sensor 3P (Black) connector [1].

Release the CKP sensor 2P (Red) connector [2] from the stay and disconnect it.

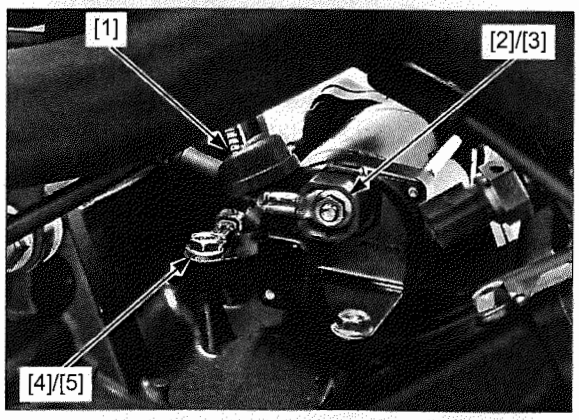
Release the wire band [3] from the frame pipe.




Release the rubber cap [1].

Remove the starter motor terminal nut [2] and starter motor cable [3].

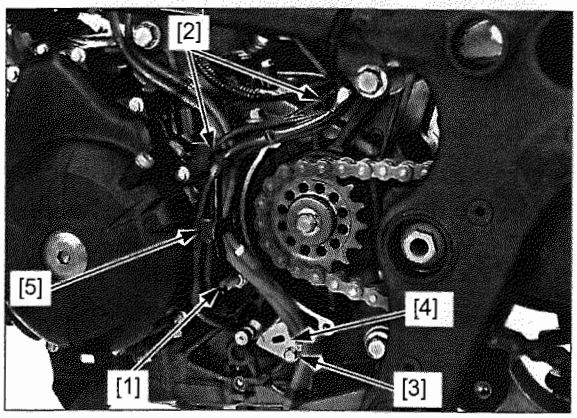
Remove the bolt [4] and ground cable [5].




Disconnect the neutral switch connector [1].

Remove the wire bands [2], bolt [3] and setting plate [4].

Release the all wires and hoses from the guide [5].



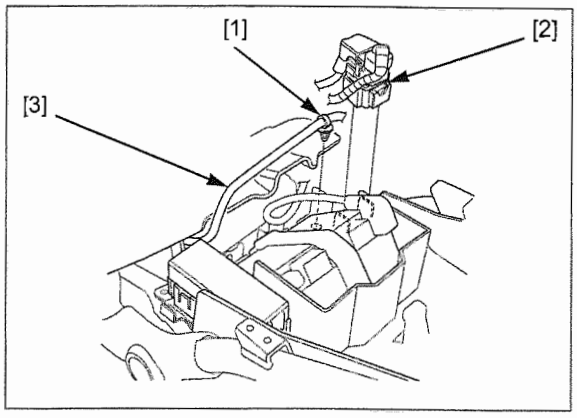

Disconnect the following:

- Battery negative (–) cable (page 21-5)
- Alternator 3P (Gray) connector (page 21-7)

Release the wire band boss [1].

Release the starter relay switch [2] from the battery box as shown.

Pull out the alternator wire harness [3] from the frame.

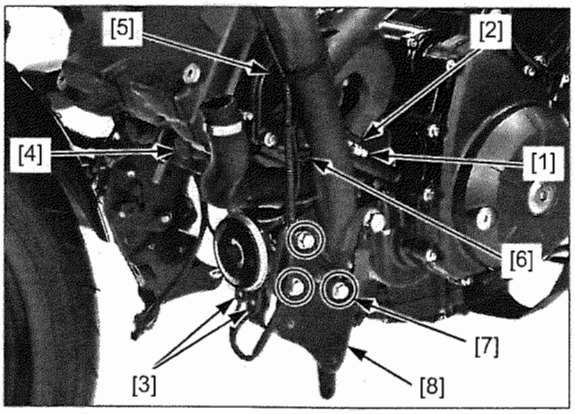


Loosen the band screw [1] and disconnect the water hose [2] from the water pump.

Disconnect the horn wire connectors [3] and spark plug cap [4].

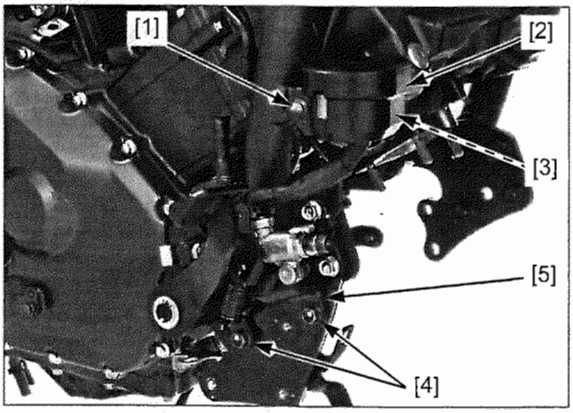
Remove the wire band [5] and release the spark plug wire clamp [6] from the frame.

Remove the bolts [7] and left main step base plate assembly [8].

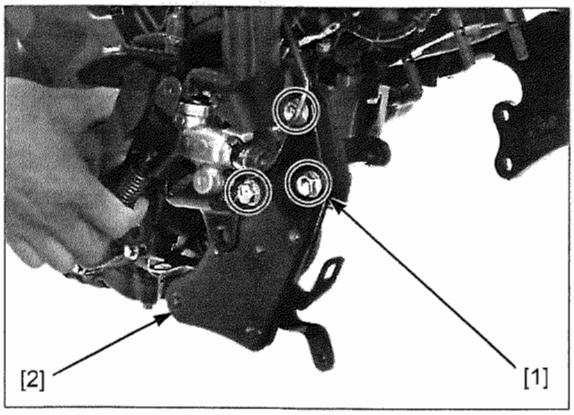



Remove the bolt [1], reservoir cover [2] and rear master cylinder reservoir [3].

Remove the bolts [4] and rear brake bracket assembly [5] from the frame.



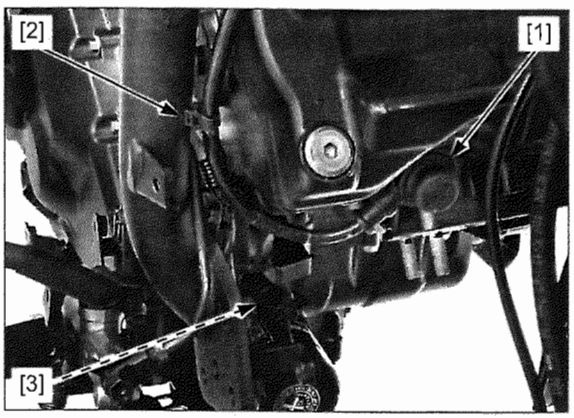

Remove the bolts [1] and right main step base plate assembly [2].



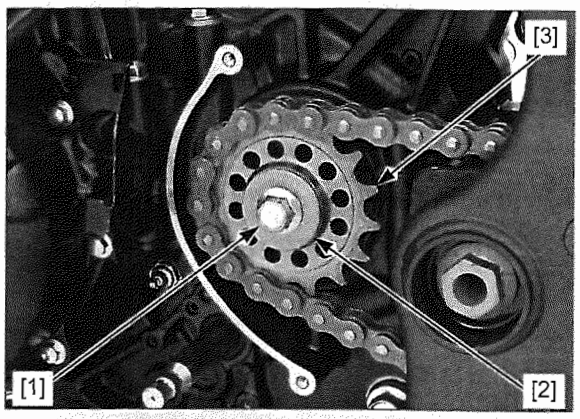

Disconnect the spark plug cap [1].

Release the spark plug wire clamp [2] from the frame.

Disconnect the EOP switch 1P (Gray) connector [3].



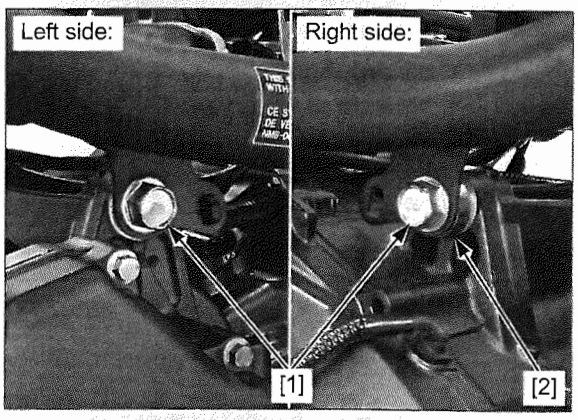
Remove the drive sprocket bolt [1], washer [2] and drive sprocket [3].



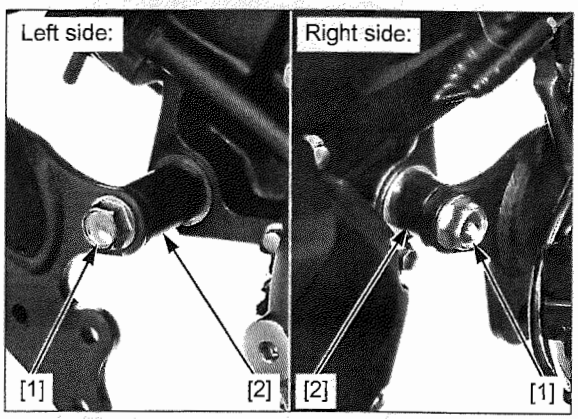

*The jack height must be continually adjusted to relieve stress for ease of bolt removal.*

Support the engine using a jack or other adjustable support to ease of engine hanger bolts removal.

Remove the upper engine hanger bolts [1] and collar [2].



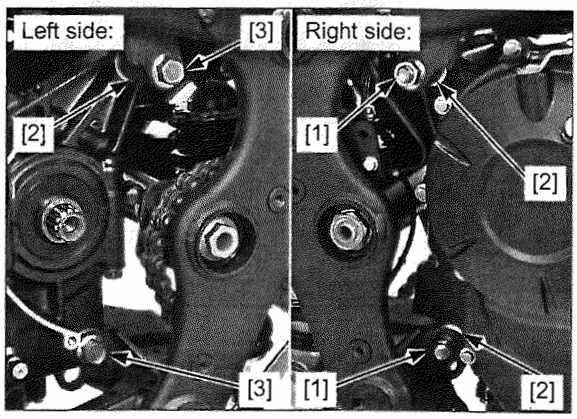

Remove the front lower hanger bolts [1] and collars [2].




Remove the rear engine hanger nuts [1], collars [2] and bolts [3].

Carefully maneuver the engine and remove it out of the frame to the right.

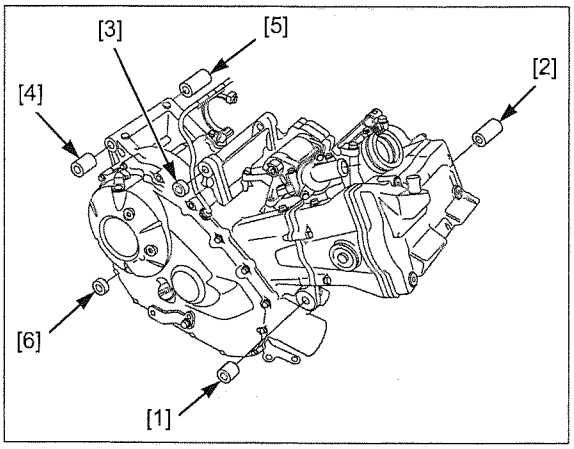
- During engine removal, hold the engine securely and be careful not to damage the frame and engine.



# ENGINE INSTALLATION (CTX700/A/N/NA)

NOTE:

- All the engine mounting bolts and nuts loosely install, then tighten the bolts and nuts to the specified torque in the specified sequence.
- Note the direction of the engine hanger bolts.
- Note the install position of the collars.
  - Front lower right side: 20 mm collar [1]
  - Front lower left side: 41 mm collar [2]
  - Upper right side: 10 mm collar [3]
  - Rear upper side: 37 mm collar (right side) [4] and 47 mm collar (left side) [5]
  - Rear lower side: 10 mm collar (right side) [6]
- Place the jack or other adjustable support under the engine.
- The jack height must be continually adjusted to relieve stress for ease bolt installation.
- Carefully align the mounting points with the jack to prevent damage to engine, frame, water hose, wires and cables.

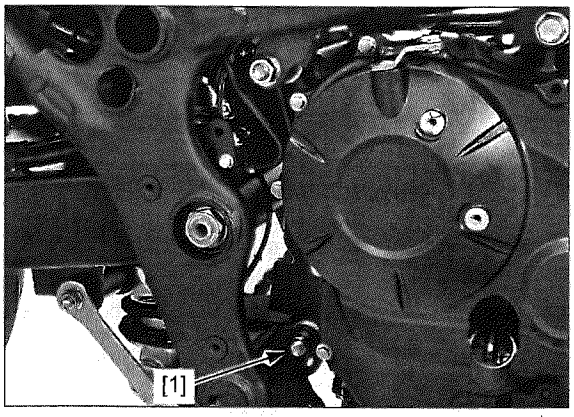



*During engine installation, hold the engine securely and be careful not to damage the frame and engine.*

Place the engine in the frame, then loosely install all the bolts, nuts and collars.

Tighten the rear lower engine hanger nut [1] to the specified torque.

**TORQUE: 59 N·m (6.0 kgf·m, 44 lbf·ft)**

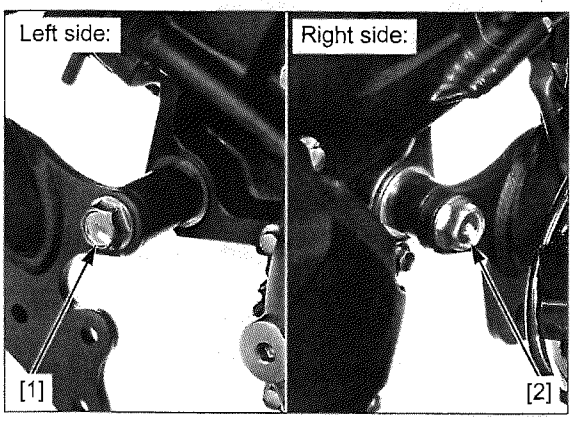



Tighten the left front lower engine hanger bolt [1] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**

Tighten the right front lower engine hanger bolt [2] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**

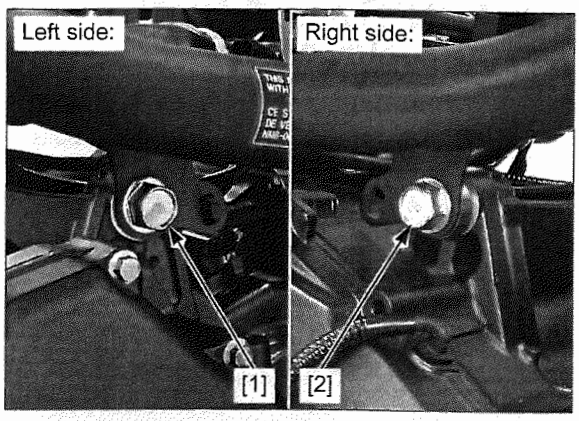


Tighten the left upper engine hanger bolt [1] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**

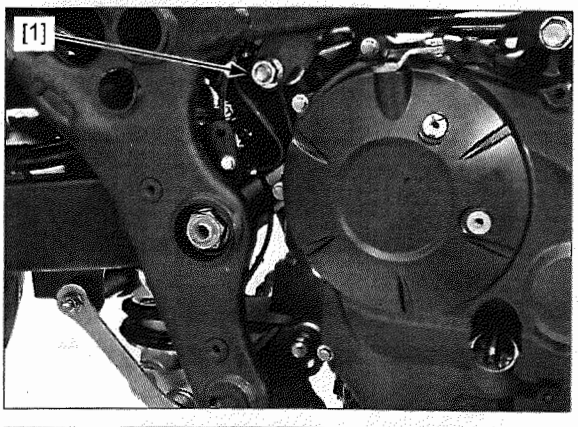
Tighten the right upper engine hanger bolt [2] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**




Tighten the rear upper engine hanger nut [1] to the specified torque.

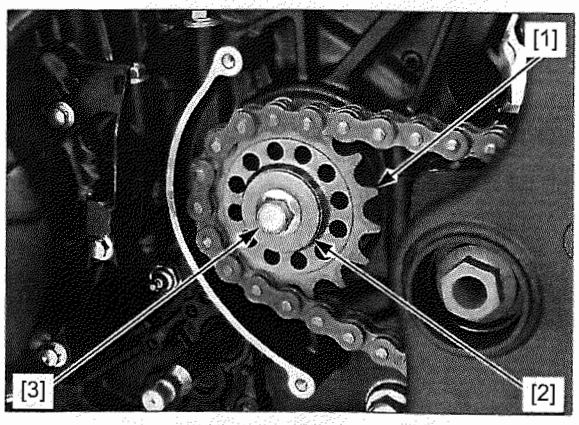
**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**




Install the drive sprocket [1], washer [2] and drive sprocket bolt [3].

Tighten the drive sprocket bolt to the specified torque.

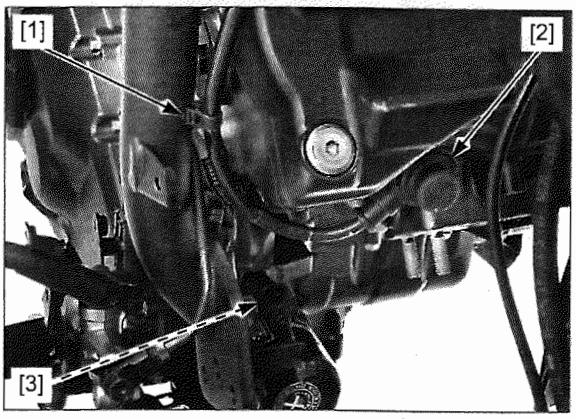
**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**




Secure the spark plug wire clamp [1] to the tab of the frame.

Connect the spark plug cap [2].

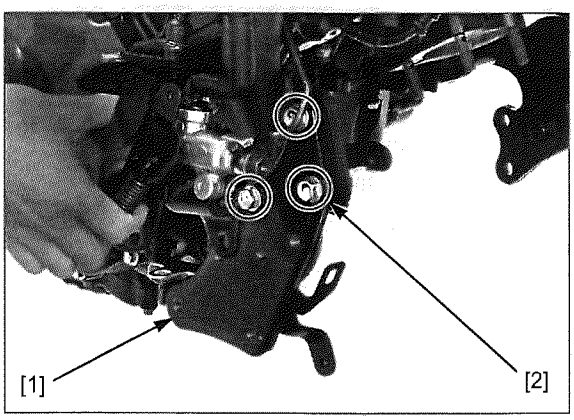
Connect the EOP switch 1P (Gray) connector [3].



Set the right main step base plate assembly [1], then install the bolts [2].

Tighten the bolts to the specified torque.

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**




Set the rear brake bracket assembly [1] and install the bolts [2].

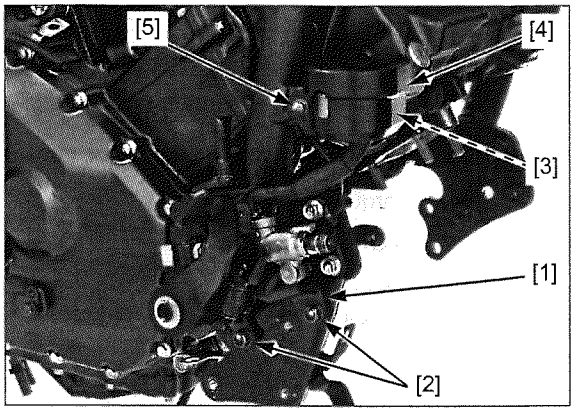
Tighten the bolts to the specified torque.

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

Install the rear master cylinder reservoir [3], reservoir cover [4] and bolt [5].

Tighten the bolts to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**




Set the left main step base plate assembly [1] and install and tighten the bolts [2] to the specified torque.

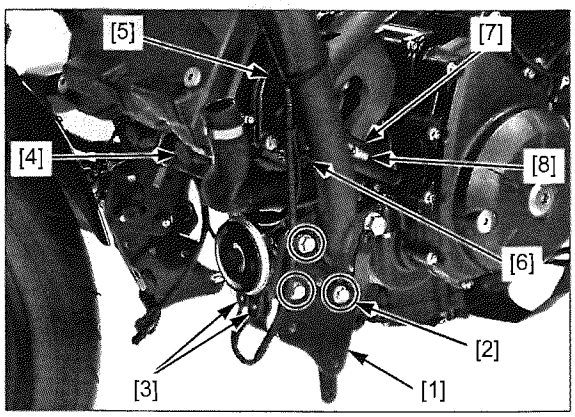
**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

Connect the horn wire connectors [3] and spark plug cap [4].

Install the wire band [5] and secure the spark plug wire clamp [6] to the tab of the frame.

Connect the water hose [7] to the water pump.

Tighten the water hose band screw [8] to the specified range (page 8-8).

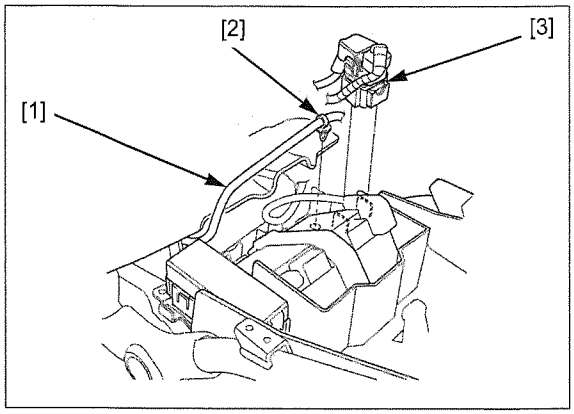



Route the alternator wire harness [1] into the frame and install the wire band boss [2].

Install the starter relay switch [3] to the battery box.

Connect the following:

- Battery negative (–) cable (page 21-5)
- Alternator 3P (Gray) connector (page 21-7)



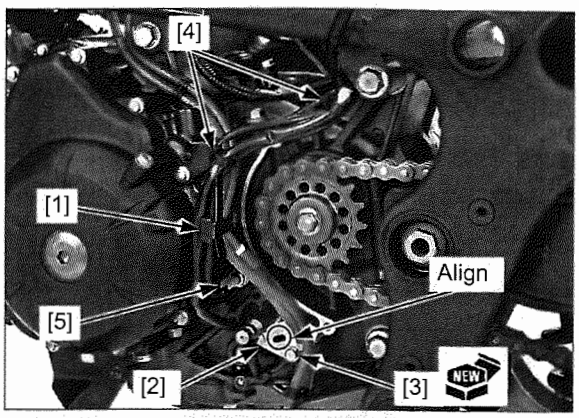
Secure the all wires and hoses into the guide [1].

Install the setting plate [2] by aligning the hole with the crankcase boss.

Install and tighten a new bolt [3].

Install the wire bands [4].

Connect the neutral switch connector [5].

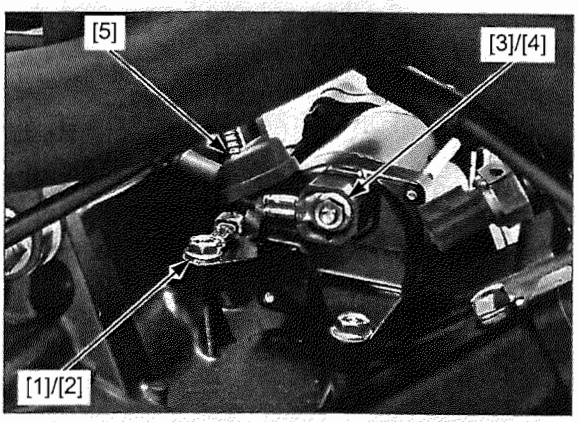



Install the ground cable [1] and starter motor mounting bolt [2].
Tighten the mounting bolt securely.

Install the starter motor cable [3] and starter motor terminal nut [4].
Tighten the starter motor terminal nut to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

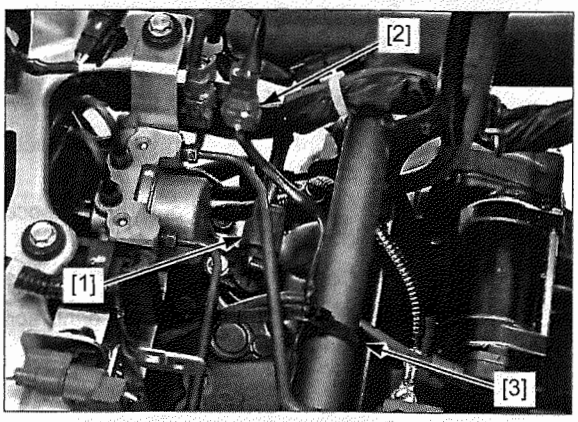
Reposition the rubber cap [5] properly on the starter motor terminal.




Connect the VS sensor 3P (Black) connector [1].

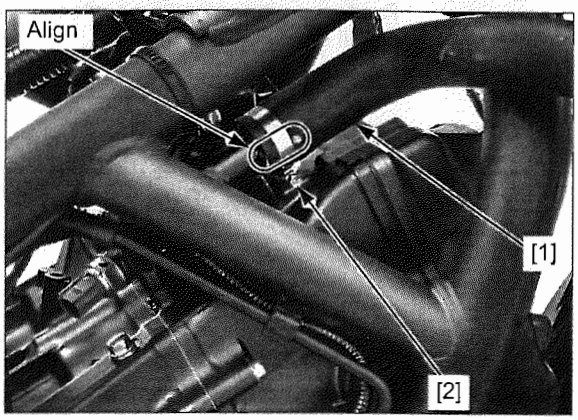
Connect the CKP sensor 2P (Red) connector [2] and secure it to the stay.

Secure the wire band [3] to the frame pipe.




Connect the water hose [1] to the thermostat cover by aligning the paint mark with cover tab.

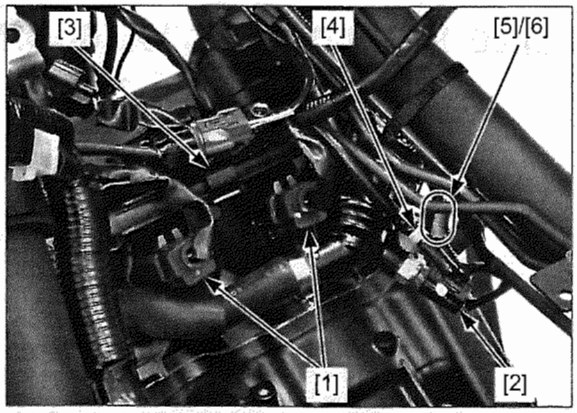
Tighten the water hose band screw [2] to the specified range (page 8-8).



Connect the fuel injector 2P (Gray) connectors [1] and ECT sensor 2P (Black) connector [2].

*CTX700A/NA only:* Install the clip [3] to the fuel rail.

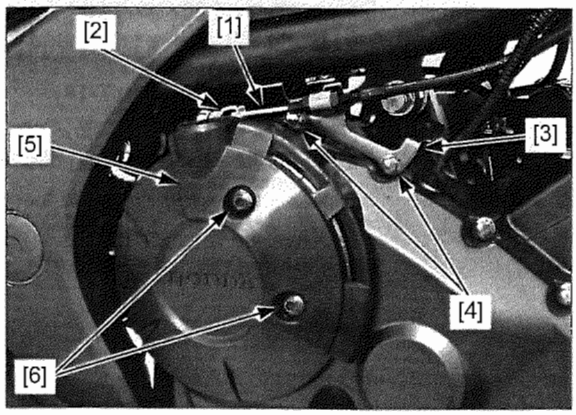
Install the wire band boss [4] and main wire harness [5] to the wire clamp [6].




Connect the clutch cable [1] to the clutch lifter arm [2].

Install clutch cable guide [3] and bolts [4].
Tighten the bolts securely.
Install the right engine side cover [5] and socket bolts [6].

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**




Install the following:

- Throttle body (page 7-16)
- Fuel tank (page 7-7)
- Radiator reserve tank (page 8-11)
- Radiator (page 8-7)
- Swingarm pivot covers (page 2-17)
- Exhaust pipe/muffler (page 2-19)
- Left crankcase rear cover (page 2-16)
- Main steps (page 2-14)

Inspect the following:

- Throttle grip freeplay (page 3-4)
- Clutch lever freeplay (page 3-20)

Adjust the drive chain slack (page 3-13).

Fill the engine with the recommended engine oil (page 3-9).

Connect the quick connect fitting to the fuel injector side (page 7-5).

Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).

Check the exhaust system and cooling system for leaks.

# ENGINE REMOVAL (CTX700D/ND)

Drain the engine oil (page 3-10).

Drain the coolant (page 8-4).

Fully slacken the drive chain (page 3-13).

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector side (page 7-4).

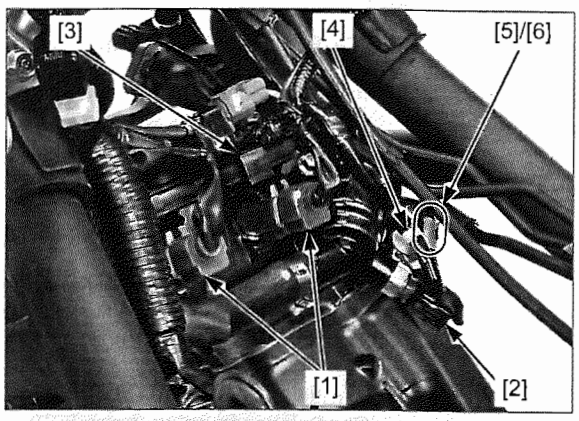
Remove the following:

- Main steps (page 2-14)
- Left crankcase rear cover (page 2-16)
- Right engine side cover (page 12-57)
- Exhaust pipe/muffler (page 2-19)
- Swingarm pivot covers (page 2-17)
- Radiator (page 8-7)
- Radiator reserve tank (page 8-11)
- Fuel tank (page 7-7)
- Throttle body (page 7-14)

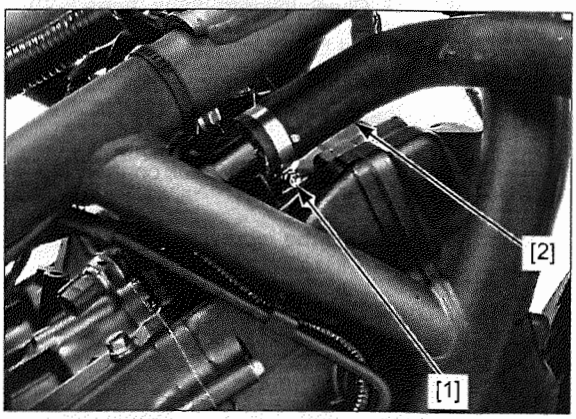
Disconnect the fuel injector 2P (Gray) connectors [1] and ECT sensor 2P (Black) connector [2].

Release the clip [3] from the fuel rail.

Release the wire band boss [4] and main wire harness [5] from the wire clamp [6].



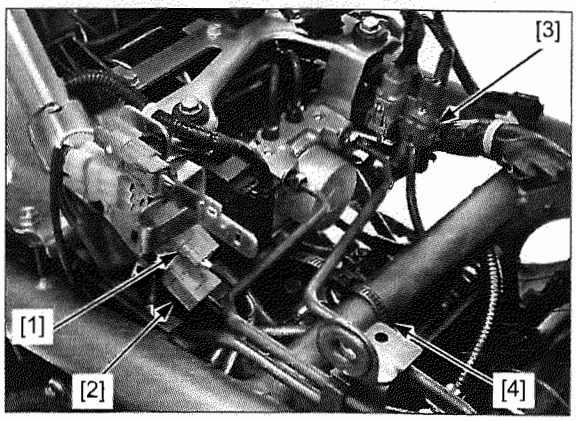

Loosen the band screw [1] and disconnect the water hose [2] from the thermostat cover.




Release the following connectors from the each stays and disconnect them.

- Linear solenoid valve 4P (Green) connector [1]
- Shift spindle angle sensor 3P (Gray) connector [2]
- CKP sensor 2P (Red) connector [3]

Release the wire band [4] from the frame pipe.

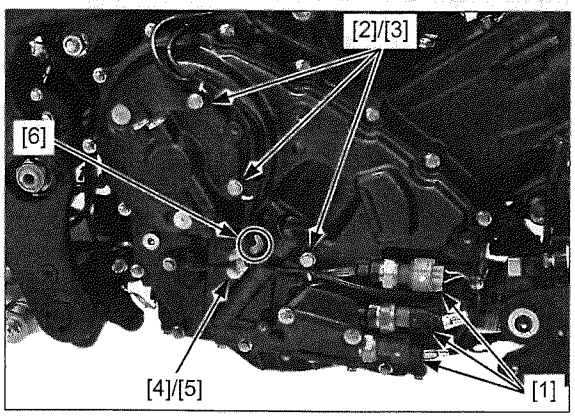


Disconnect the clutch EOP sensor 3P connectors [1].

Remove the bolts [2] and clamps [3].

Remove the bolt [4] and clip stay [5].

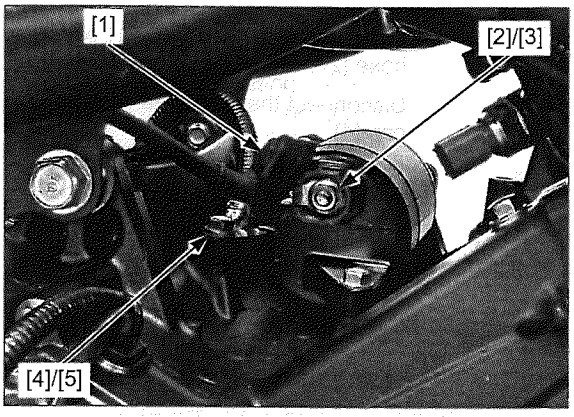
Remove the main wire harness clip [6] from the clip stay.




Release the rubber cap [1].

Remove the starter motor terminal nut [2] and starter motor cable [3].

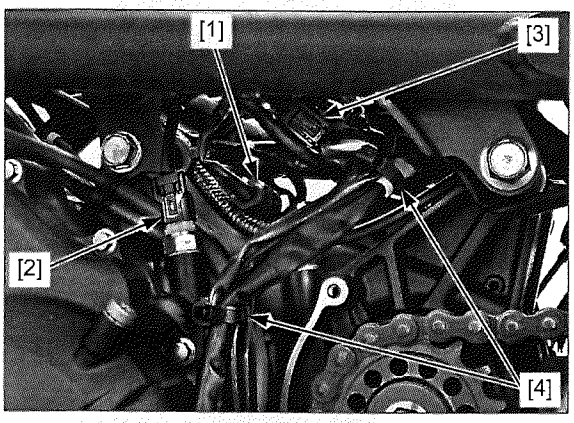
Remove the bolt [4] and ground cable [5].




Disconnect the VS sensor 3P (Black) connector [1] and EOT sensor 2P (Black) connector [2].

Release the TR sensor 3P (Black) connector [3] from the stay and disconnect it.

Remove the wire bands [4]

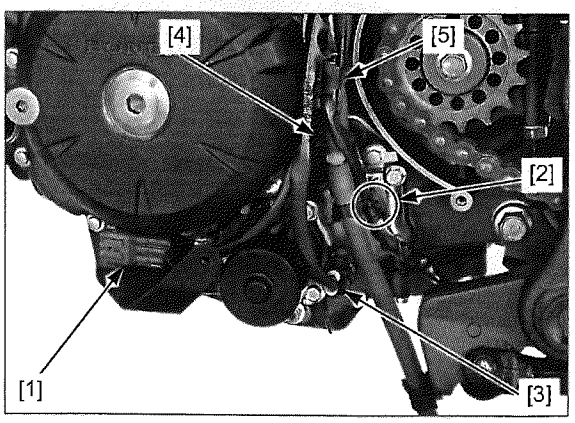



Release the shift pedal angle sensor 3P (Blue) connector (Optional) [1] from the stay.

Remove the sidestand switch wire clamp [2] from the stay.

Disconnect the shift control motor 2P (Black) connector [3] and neutral switch connector [4].

Release the all wires and hoses from the guide [5].



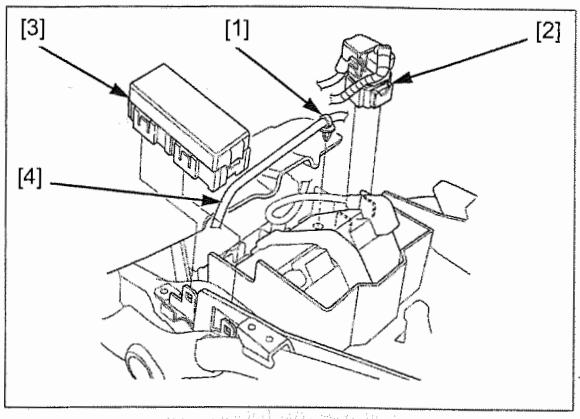
Disconnect the following:

- Battery negative (–) cable (page 21-5)
- Alternator 3P (Gray) connector (page 21-7)

Release the wire band boss [1].

Release the starter relay switch [2] and fuse box [3] from the battery box as shown.

Pull out the alternator wire harness [4] from the frame.

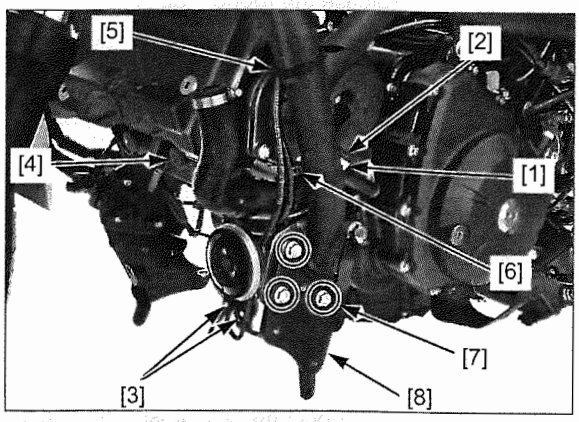



Loosen the band screw [1] and disconnect the water hose [2] from the water pump.

Disconnect the horn wire connectors [3] and spark plug cap [4].

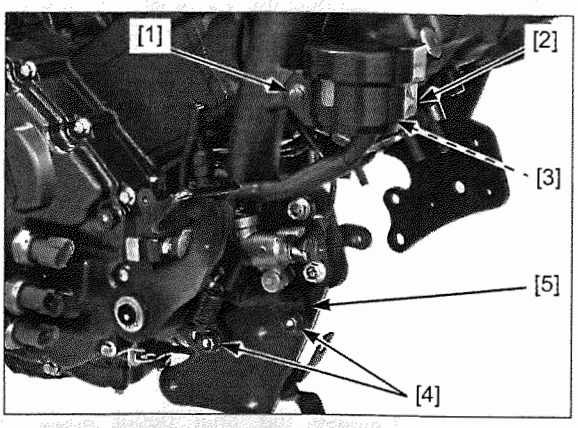
Remove the wire band [5] and release the spark plug wire clamp [6] from the frame.

Remove the bolts [7] and left main step base plate assembly [8].

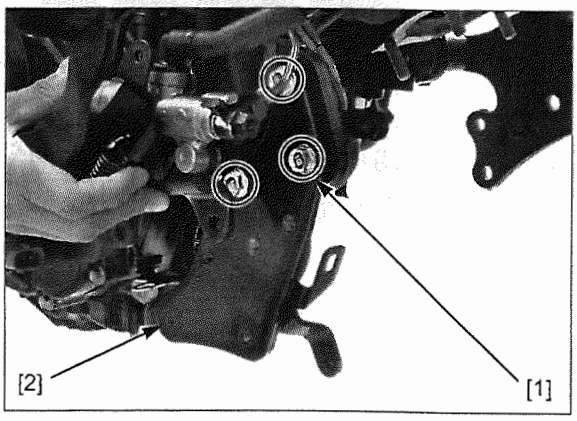



Remove the bolt [1], reservoir cover [2] and rear master cylinder reservoir [3].

Remove the bolts [4] and rear brake bracket assembly [5] from the frame.



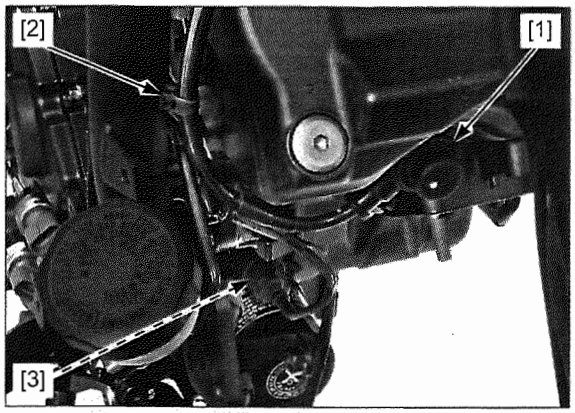

Remove the bolts [1] and right main step base plate assembly [2].



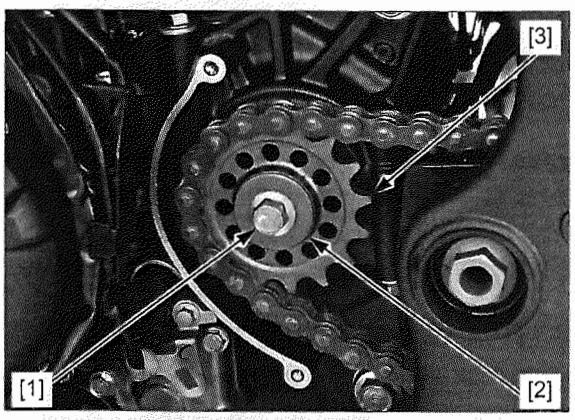
Disconnect the spark plug cap [1].

Release the spark plug wire clamp [2] from the frame.

Disconnect the EOP switch 1P (Gray) connector [3].



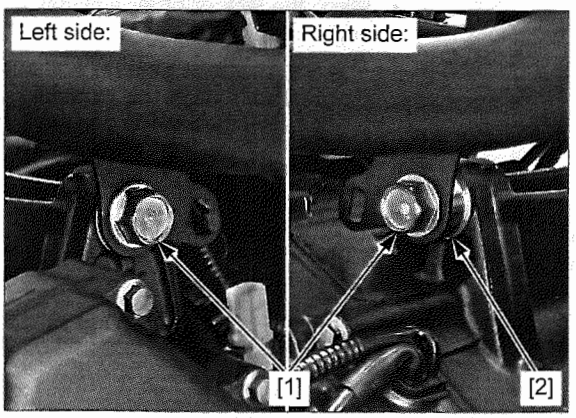

Remove the drive sprocket bolt [1], washer [2] and drive sprocket [3].



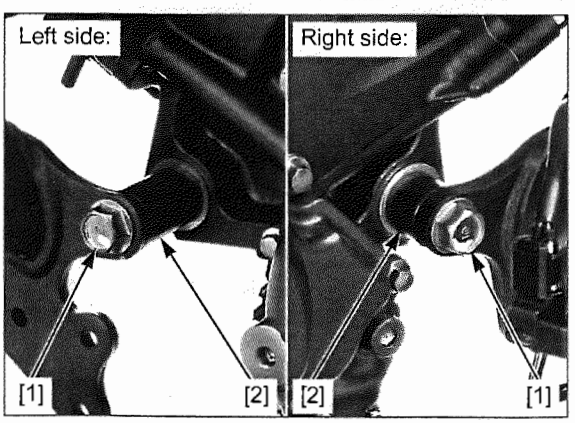

*The jack height must be continually adjusted to relieve stress for ease of bolt removal.*

Support the engine using a jack or other adjustable support to ease of engine hanger bolts removal.

Remove the upper engine hanger bolts [1] and collar [2].



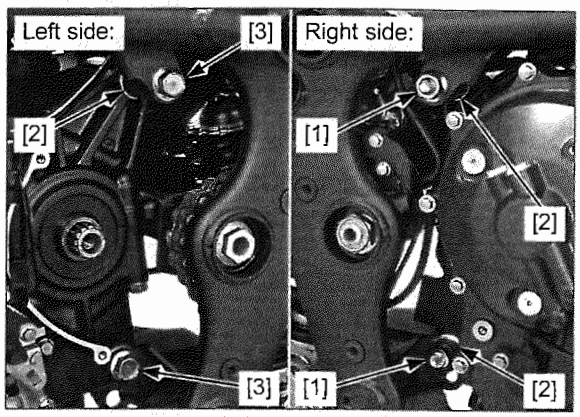

Remove the front lower hanger bolts [1] and collars [2].



Remove the rear engine hanger nuts [1], collars [2] and bolts [3].

Carefully maneuver the engine and remove it out of the frame to the right.

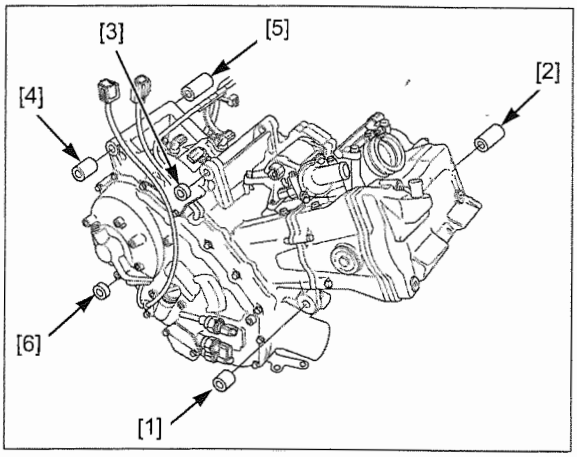
- During engine removal, hold the engine securely and be careful not to damage the frame and engine.




# ENGINE INSTALLATION (CTX700D/ND)

NOTE:

- All the engine mounting bolts and nuts loosely install, then tighten the bolts and nuts to the specified torque in the specified sequence.
- Note the direction of the engine hanger bolts.
- Note the install position of the collars.
  - Front lower right side: 20 mm collar [1]
  - Front lower left side: 41 mm collar [2]
  - Upper right side: 10 mm collar [3]
  - Rear upper side: 37 mm collar (right side) [4] and 47 mm collar (left side) [5]
  - Rear lower side: 10 mm collar (right side) [6]
- Place the jack or other adjustable support under the engine.
- The jack height must be continually adjusted to relieve stress for ease bolt installation.
- Carefully align the mounting points with the jack to prevent damage to engine, frame, water hose, wires and cables.

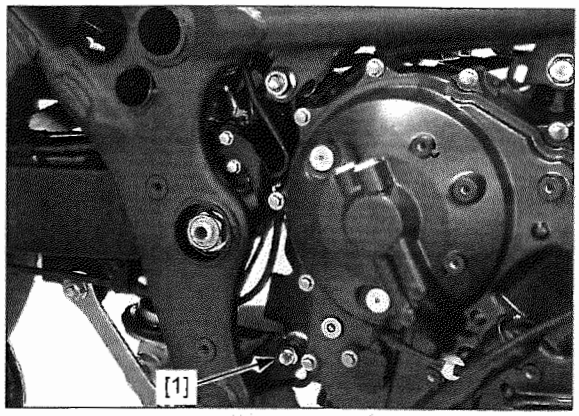



*During engine installation, hold the engine securely and be careful not to damage the frame and engine.*

Place the engine in the frame, then loosely install all the bolts, nuts and collars.

Tighten the rear lower engine hanger nut [1] to the specified torque.

**TORQUE: 59 N·m (6.0 kgf·m, 44 lbf·ft)**

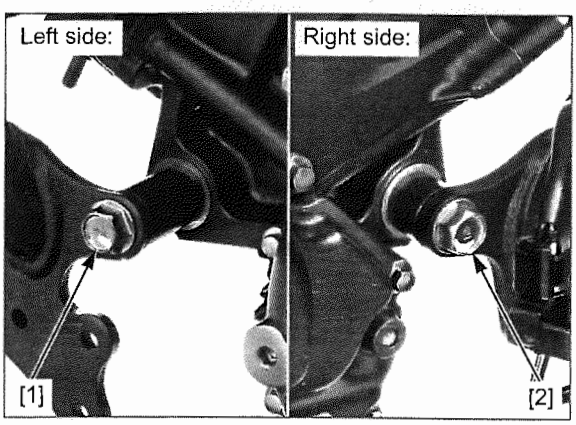



Tighten the left front lower engine hanger bolt [1] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**

Tighten the right front lower engine hanger bolt [2] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**

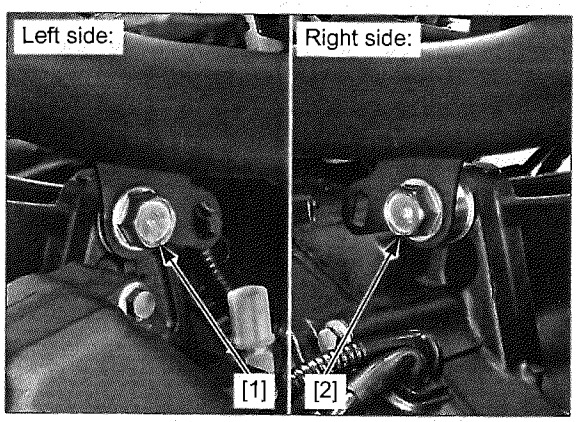


Tighten the left upper engine hanger bolt [1] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**

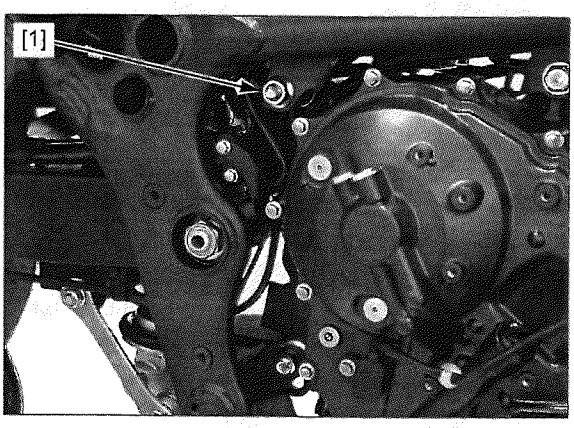
Tighten the right upper engine hanger bolt [2] to the specified torque.

**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**




Tighten the rear upper engine hanger nut [1] to the specified torque.

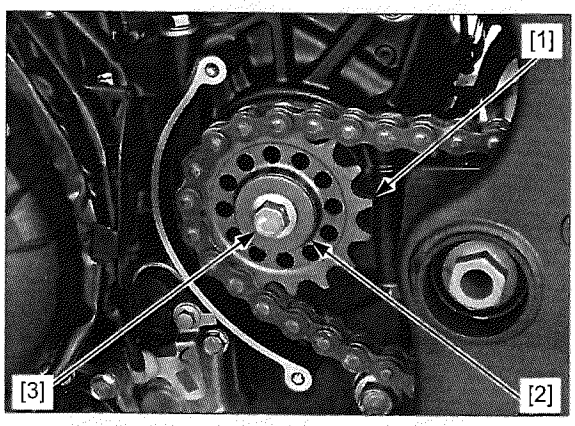
**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**




Install the drive sprocket [1], washer [2] and drive sprocket bolt [3].

Tighten the drive sprocket bolt to the specified torque.

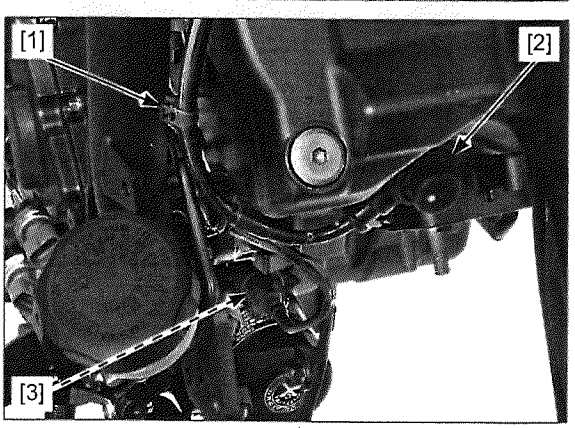
**TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)**




Secure the spark plug wire clamp [1] to the frame.

Connect the spark plug cap [2].

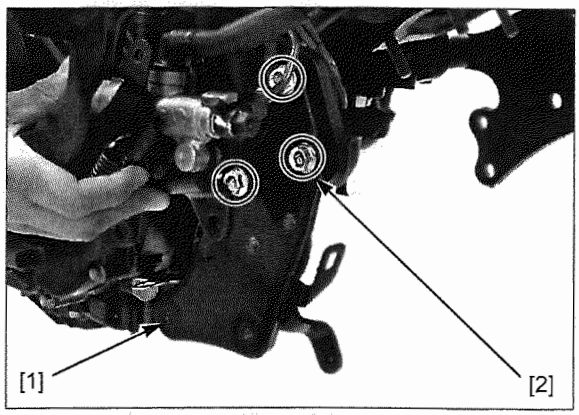
Connect the EOP switch 1P (Gray) connector [3].



Set the right main step base plate assembly [1], then install the bolts [2].

Tighten the bolts to the specified torque.

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**




Set the rear brake bracket assembly [1] and install the bolts [2].

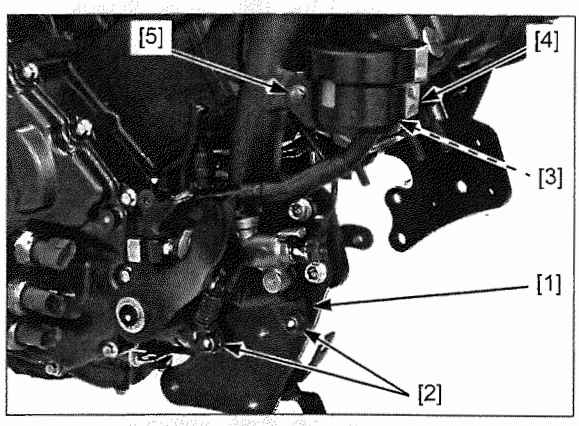
Tighten the bolts to the specified torque.

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

Install the rear master cylinder reservoir [3], reservoir cover [4] and bolt [5].

Tighten the bolts to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**




Set the left main step base plate assembly [1] and install and tighten the bolts [2] to the specified torque.

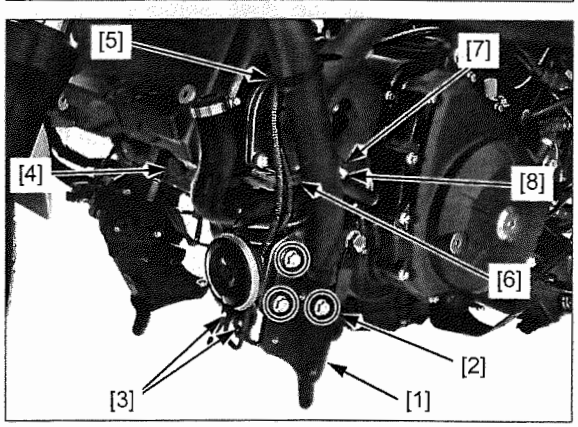
**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

Connect the horn wire connectors [3] and spark plug cap [4].

Install the wire band [5] and secure the spark plug wire clamp [6] to the tab of the frame.

Connect the water hose [7] to the water pump.

Tighten the water hose band screw [8] to the specified range (page 8-8).

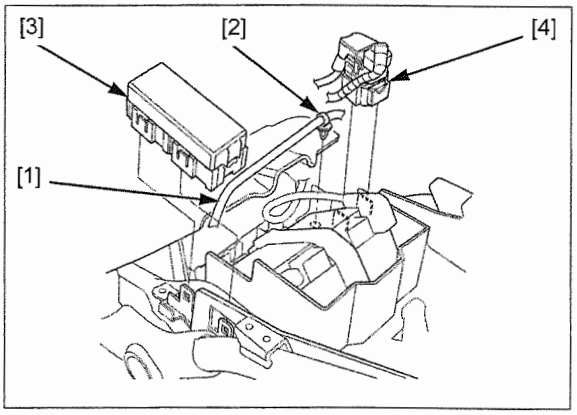



Route the alternator wire harness [1] into the frame and install the wire band boss [2].

Install the fuse box [3] and starter relay switch [4] to the battery box.

Connect the following:

- Battery negative (–) cable (page 21-5)
- Alternator 3P (Gray) connector (page 21-7)

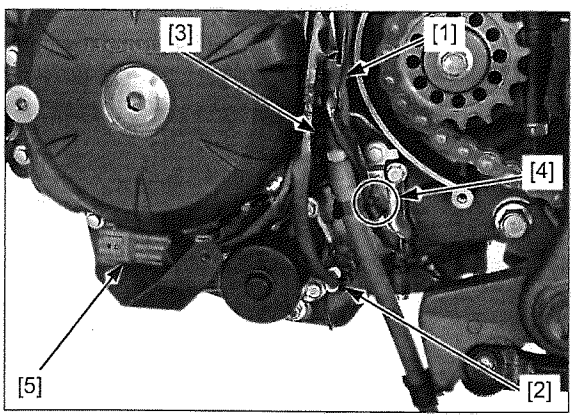


Secure the all wires and hoses into the guide [1].

Connect the shift control motor 2P (Black) connector [2] and neutral switch connector [3].

Secure the sidestand switch wire clamp [4] to the stay.

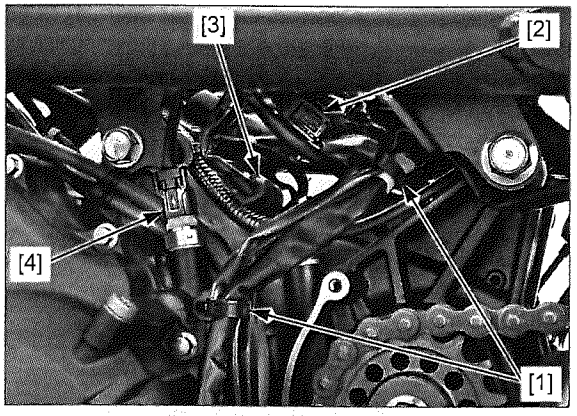
Secure the shift pedal angle sensor 3P (Blue) connector (Optional) [5] to the stay.




Install the wire bands [1]

Connect the TR sensor 3P (Black) connector [2] and secure it to the stay.

Connect the VS sensor 3P (Black) connector [3] and EOT sensor 2P (Black) connector [4].

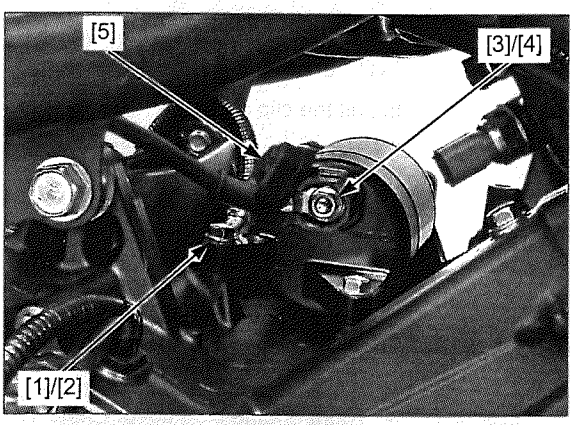



Install the ground cable [1] and starter motor mounting bolt [2].
Tighten the mounting bolt securely.

Install the starter motor cable [3] and starter motor terminal nut [4].
Tighten the starter motor terminal nut to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Reposition the rubber cap [5] properly on the starter motor terminal.

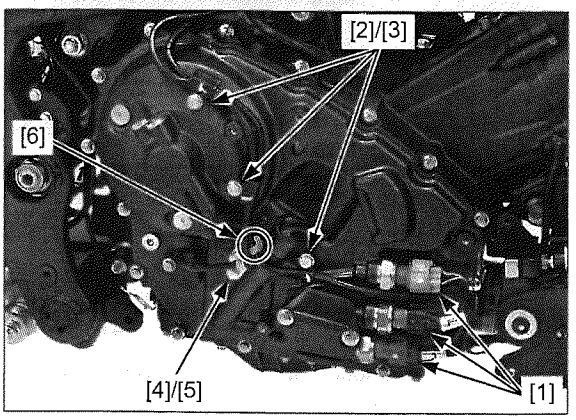



Connect the clutch EOP sensor 3P connectors [1].

Install the bolts [2] and clamps [3].

Install the bolt [4] and clip stay [5].

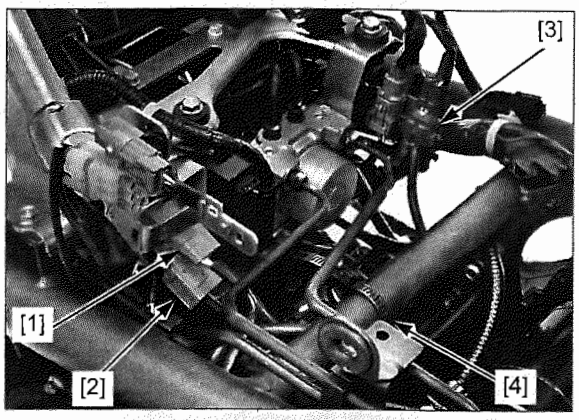
Secure the main wire harness clip [6] to the clip stay.



Connect the following connectors and secure them to the each stays.

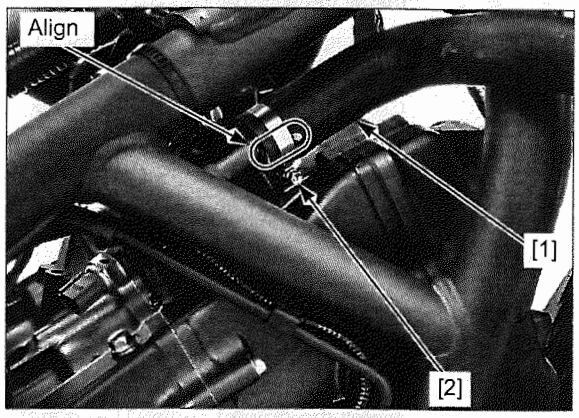
- Linear solenoid valve 4P (Green) connector [1]
- Shift spindle angle sensor 3P (Gray) connector [2]
- CKP sensor 2P (Red) connector [3]

Install the wire band [4] to the frame pipe.




Connect the water hose [1] to the thermostat cover by aligning the paint mark with cover tab.

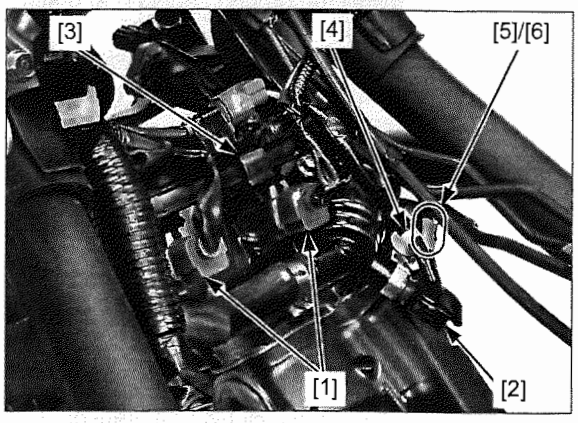
Tighten the water hose band screw [2] to the specified range (page 8-8).




Connect the fuel injector 2P (Gray) connectors [1] and ECT sensor 2P (Black) connector [2].

Install the clip [3] to the fuel rail.

Secure the wire band boss [4] and main wire harness [5] to the wire clamp [6].




Install the following:

- Throttle body (page 7-16)
- Fuel tank (page 7-7)
- Radiator reserve tank (page 8-11)
- Radiator (page 8-7)
- Swingarm pivot covers (page 2-17)
- Exhaust pipe/muffler (page 2-19)
- Right engine side cover (page 12-57)
- Left crankcase rear cover (page 2-16)
- Main steps (page 2-14)

Inspect the throttle grip freeplay (page 3-4).

Adjust the drive chain slack (page 3-13).

Fill the engine with the recommended engine oil (page 3-9).

Connect the quick connect fitting to the fuel injector side (page 7-5).

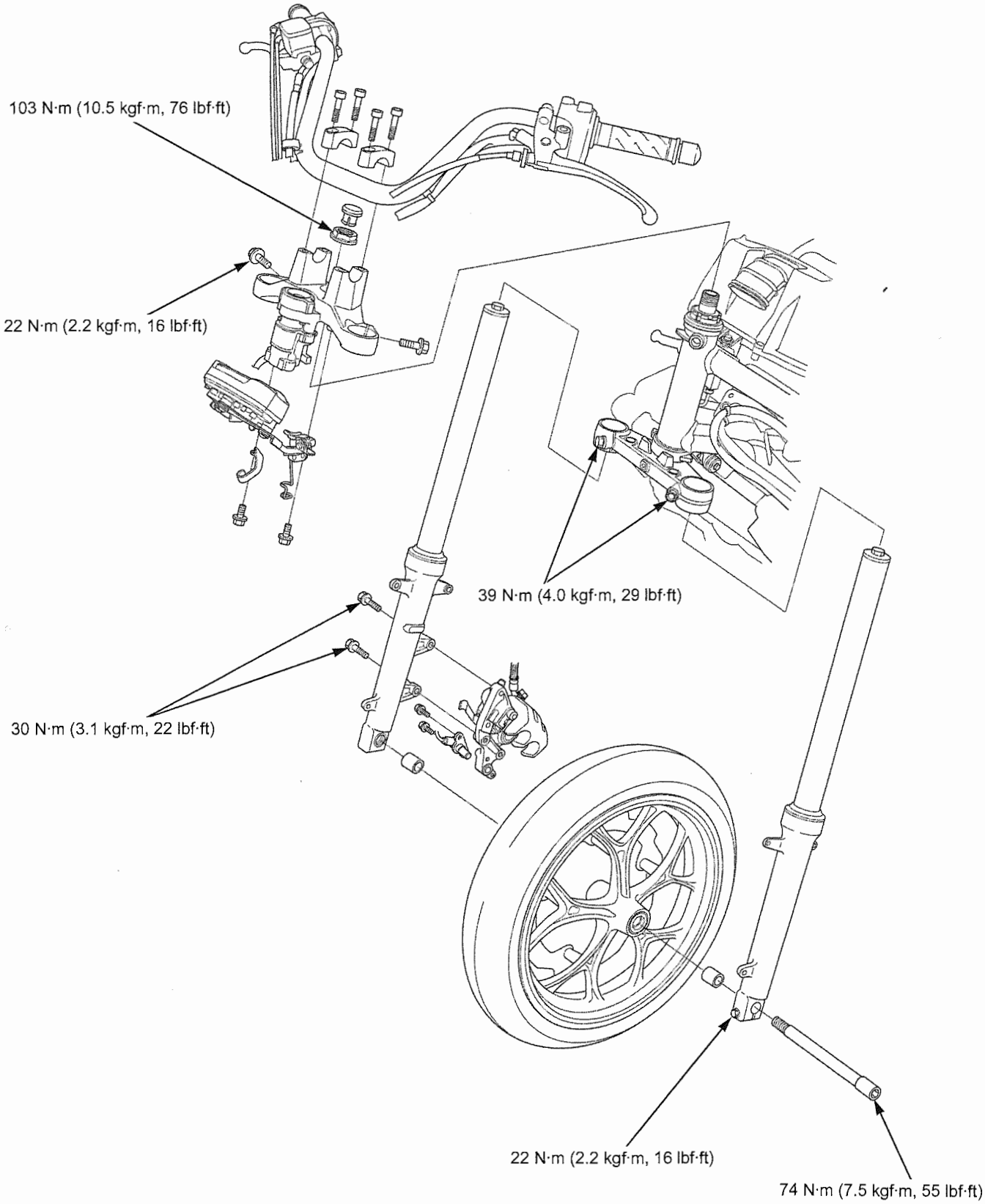
Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).

Check the exhaust system and cooling system for leaks.

# 17. FRONT WHEEL/SUSPENSION/STEERING

# COMPONENT LOCATION

CTX700NA shown:

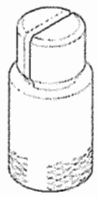
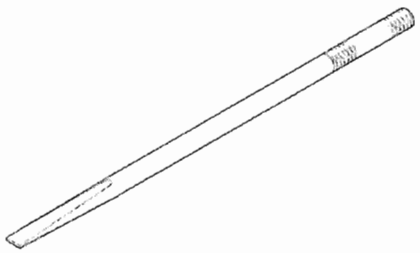
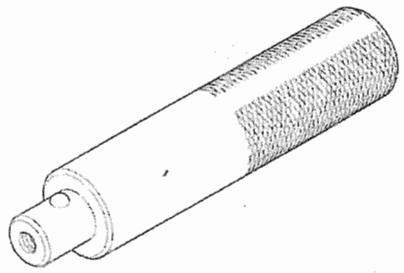
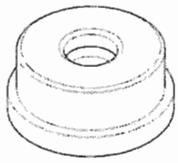
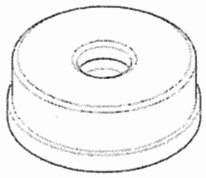
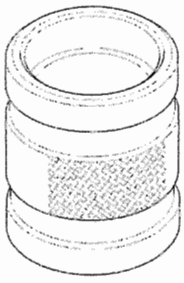
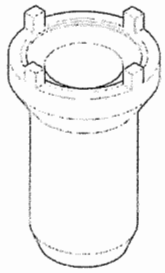
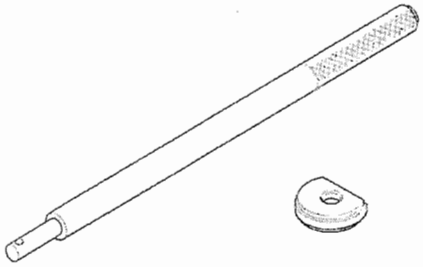
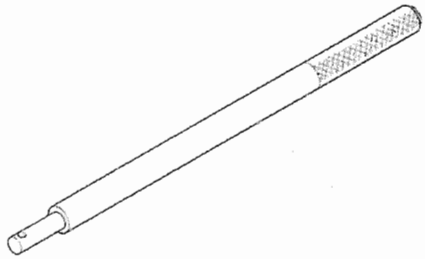


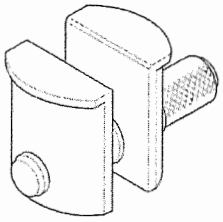
# SERVICE INFORMATION

## GENERAL

- When servicing the front wheel, fork or steering stem, support the motorcycle using a safety stand or hoist.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Do not operate the brake lever and pedal after removing the caliper and front wheel.
- After the front wheel installation, check the brake operation by applying the brake lever.
- Use only tires marked "TUBELESS" and tubeless valves on rim marked "TUBELESS TIRE APPLICABLE".
- For brake system information (page 19-5).

## TOOLS

| | | |
|---|---|---|
| Bearing remover head, 20 mm<br>07746-0050600<br>  | Bearing remover shaft<br>07GGD-0010100<br>  | Driver<br>07749-0010000<br>  |
| Attachment, 42 x 47 mm<br>07746-0010300<br>  | Attachment, 52 x 55 mm<br>07746-0010400<br>  | Pilot, 20 mm<br>07746-0040500<br>  |
| Fork seal driver<br>07947-KA50100<br>  | Fork seal driver attachment<br>07947-KF00100<br>  | Steering stem socket<br>07916-3710101<br>  |
| Ball race remover set<br>07953-MJ10000<br>  <br>(Not available in U.S.A.) | Remover attachment<br>07953-MJ10100<br>  <br>07953-MJ1000B (U.S.A. only) with commercially available tool | Remover handle<br>07953-MJ10200<br>  <br>(Not available in U.S.A.) |

| | |
|---|---|
| Bearing remover<br>07946-3710500<br>  | Attachment, 30 mm I.D.<br>07746-0030300<br>  |

# TROUBLESHOOTING

**Hard steering**
- Steering stem adjusting nut too tight
- Damaged steering head bearings
- Insufficient tire pressure
- Faulty tire

**Steers to one side or does not track straight**
- Bent fork pipe
- Bent axle
- Worn wheel bearing
- Unequal fork fluid quantity in each fork pipe
- Faulty steering head bearing
- Bent frame
- Faulty wheel bearing
- Weak front fork
- Loose steering stem adjusting nut

**Front wheel wobbling**
- Bent rim
- Worm wheel bearing
- Faulty tire
- Insufficient tire pressure
- Axle not tightened properly
- Unbalanced tire and wheel

**Wheel hard to turn**
- Faulty wheel bearing
- Bent axle
- Brake drag

**Soft suspension**
- Weak fork spring
- Insufficient fork fluid
- Insufficient tire pressure
- Incorrect fork fluid viscosity

**Stiff suspension**
- Incorrect fork fluid viscosity
- Bent fork pipe
- Clogged fork fluid passage
- Damaged fork pipe and/or fork slider
- Fork pipe binds
- High tire pressure

**Front suspension noisy**
- Insufficient fork fluid
- Loose fork fasteners
- Bent fork pipe

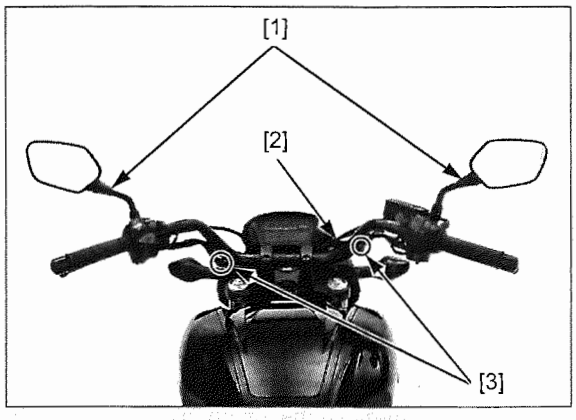
# HANDLEBAR

## REMOVAL (CTX700/A/N/NA)

Remove the handlebar weights (page 17-13).

Remove the rearview mirrors [1].

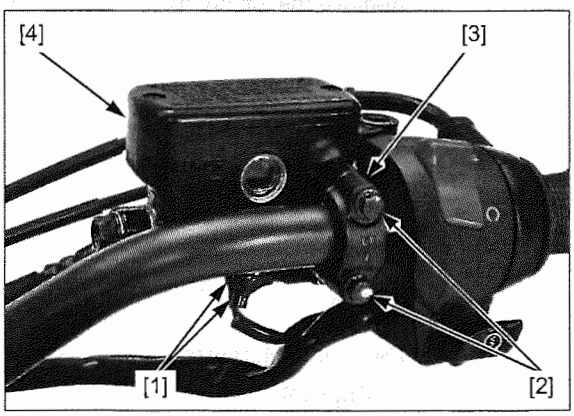
Release the wire band [2] and two wire clamps [3] from the handlebar.




Disconnect the brake light switch connectors [1].

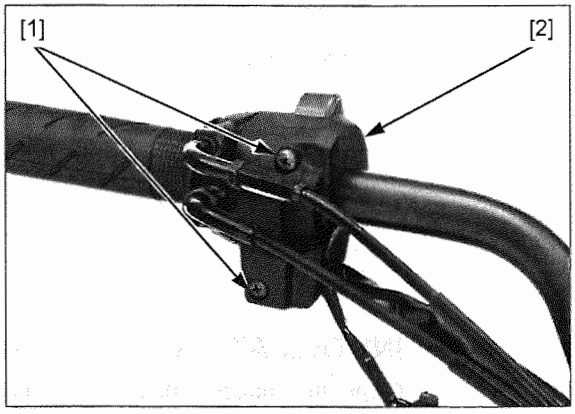
Remove the bolts [2], holder [3] and master cylinder [4].

- Keep the brake master cylinder upright to prevent air from entering the hydraulic system.




Remove the screws [1].

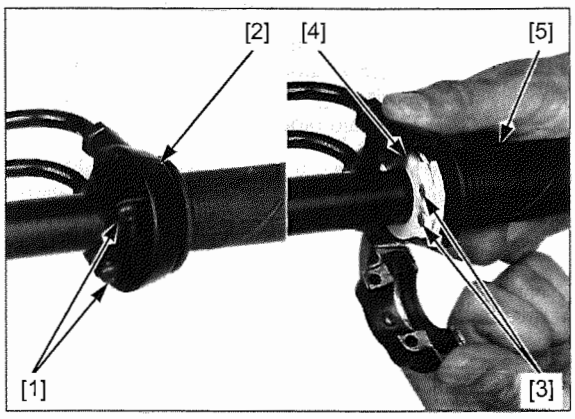
Separate the right handlebar switch housing [2].




Remove the screws [1].

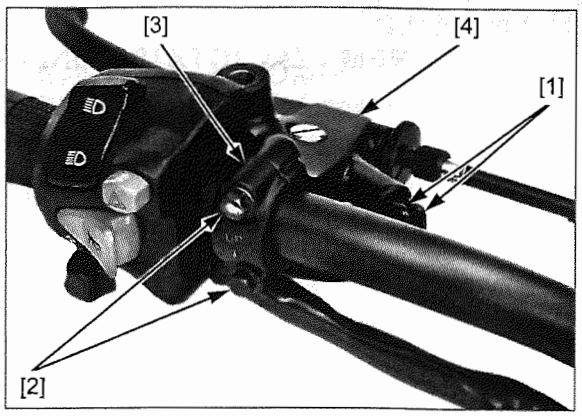
Separate the throttle housing [2].

Disconnect the throttle cables [3] from the throttle pipe [4], then remove the throttle pipe [5].



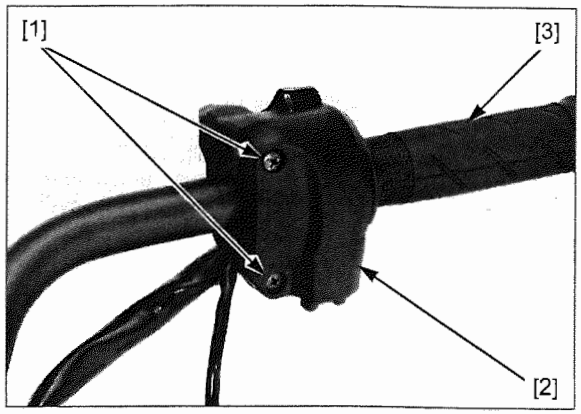
Disconnect the clutch switch connectors [1].

Remove the bolts [2], holder [3] and clutch lever bracket [4].



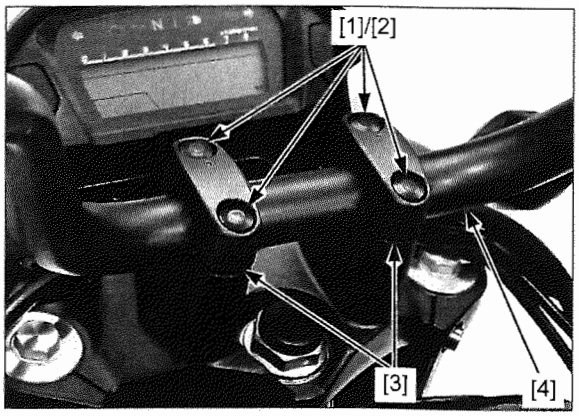

Remove the screws [1] and separate the left handlebar switch housing [2].

Remove the left handlebar grip rubber [3].




Remove the following:

- Caps [1]
- Bolts [2]
- Holders [3]
- Handlebar [4]



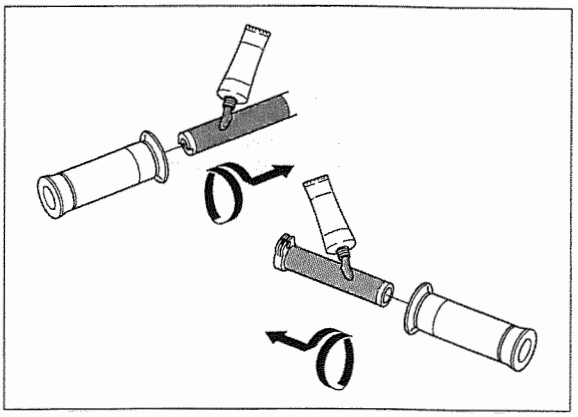

## INSTALLATION (CTX700/A/N/NA)

Clean the inside surface of the handlebar grip and outside surface of the handlebar and throttle pipe.

Apply Honda bond A or Pro Honda Handgrip Cement (U.S.A. only) or equivalent to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe.

*Allow the adhesive to dry for 1 hour before using.*

Wait 3 – 5 minutes and install the grip.
Rotate the grips for even application of the adhesive.



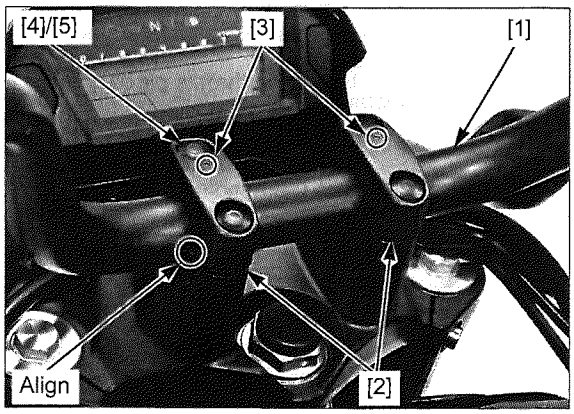
Install the handlebar [1] onto the top bridge by aligning the punch marks with the top bridge top surface.

Hold the handlebar and install the holders [2] with its punch marks [3] facing forward.

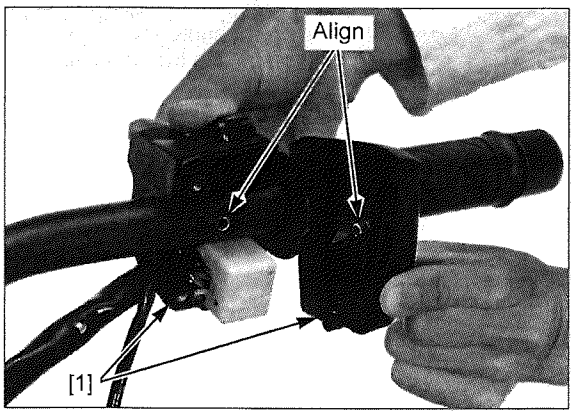
Install the handlebar holder bolts [4].

Tighten the upper bolts first, then the lower bolts to the specified torque.

Install the caps [5]

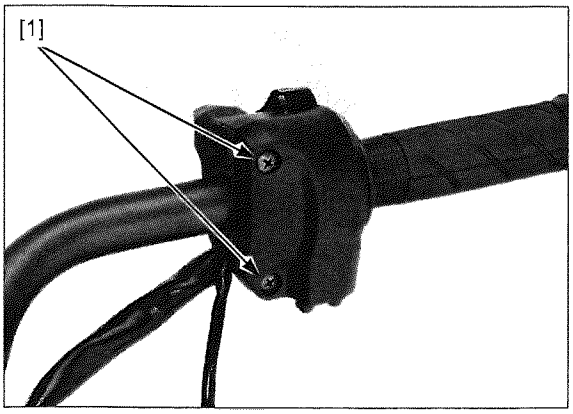



Install the left handlebar switch housing [1] by aligning the locating pin with the handlebar hole.




Install the screws [1] and tighten the upper screw first, then tighten the lower screw to the specified torque.

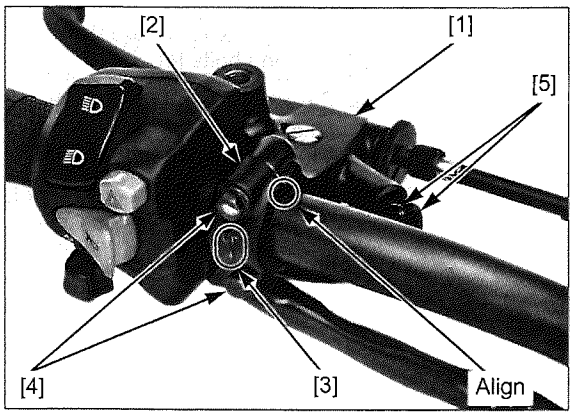
**TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)**




Install the clutch lever bracket [1], holder [2] ("UP" mark [3] facing up) and bolts [4].

Align the end of the clutch lever bracket with the punch mark on the handlebar, and tighten the upper bolt first, then the lower bolt.

Connect the clutch switch connectors [5].



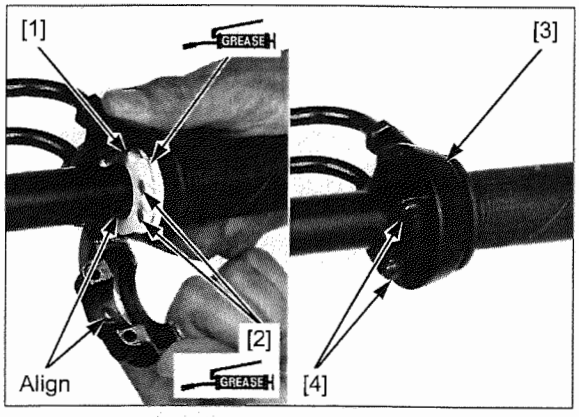
Apply grease to the throttle cable end and throttle pipe flange groove.

Install the throttle pipe [1] to the handlebar.

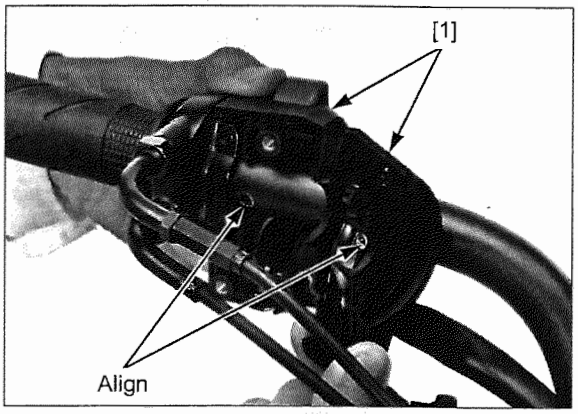
Connect the throttle cable [2] end to the throttle pipe.

Install the throttle housing [3] by aligning locating pin with the handlebar hole.

Install and tighten the screws [4] securely.

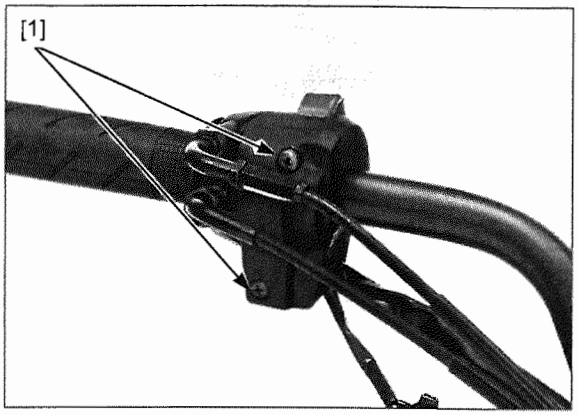



Install the right handlebar switch housing [1] by aligning the locating pin with the handlebar hole.




Install the screws [1] and tighten the upper screw first, then tighten the lower screw to the specified torque.

**TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)**

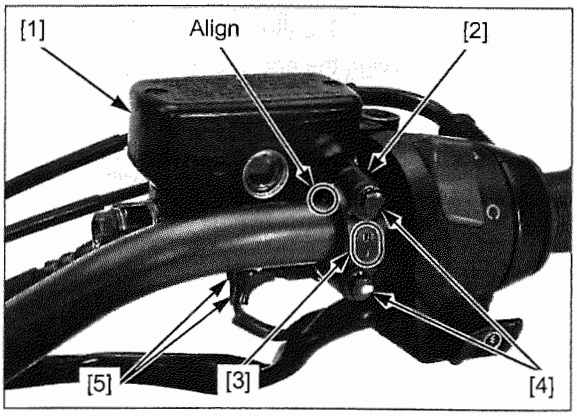



Install the master cylinder [1], holder [2] ("UP" mark [3] facing up) and bolts [4].

Align the end of the master cylinder with the punch mark on the handlebar and tighten the upper bolt first, then the lower bolt to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Connect the brake light switch connectors [5].



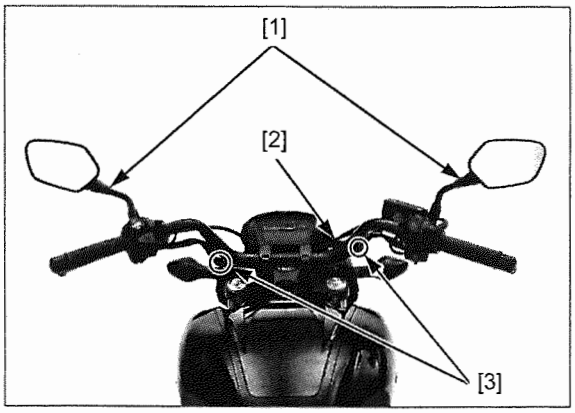
Install the rearview mirrors [1].

Secure the wire band [2] and install the two wire clamps [3] to the handlebar.

Install the handlebar weights (page 17-13).

Adjust the following:

- Clutch lever freeplay (page 3-20)
- Throttle grip freeplay (page 3-4)

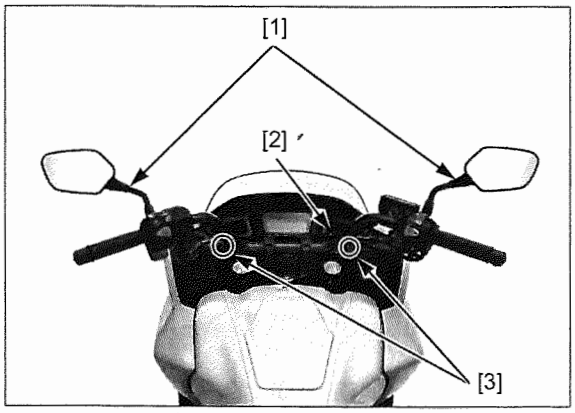



## REMOVAL (CTX700D/ND)

Remove the handlebar weights (page 17-13).

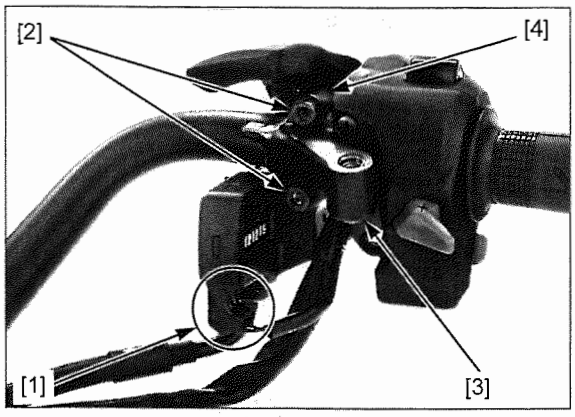
Remove the rearview mirrors [1].

Release the wire band [2] and two wire clamps [3] from the handlebar.



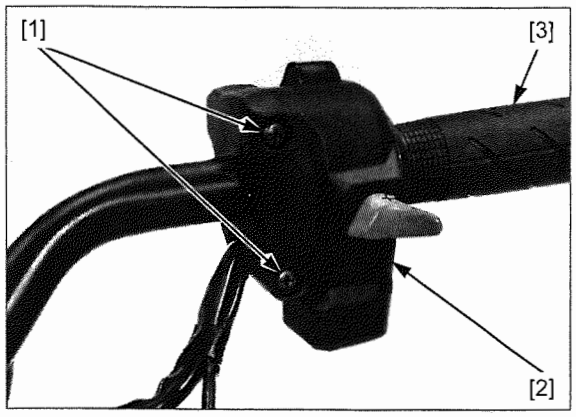

Disconnect the parking brake switch connectors [1].

Remove the socket bolts [2], holder [3] and parking brake lever bracket [4].




Remove the screws [1] and separate the left handlebar switch housing [2].

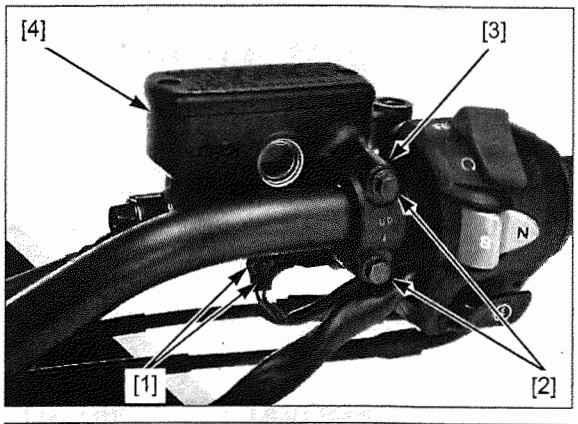
Remove the left handlebar grip rubber [3].



Disconnect the brake light switch connectors [1].

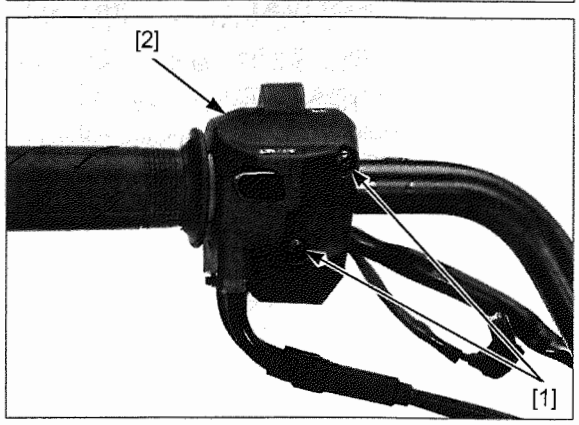
Remove the bolts [2], holder [3] and master cylinder [4].

- Keep the brake master cylinder upright to prevent air from entering the hydraulic system.

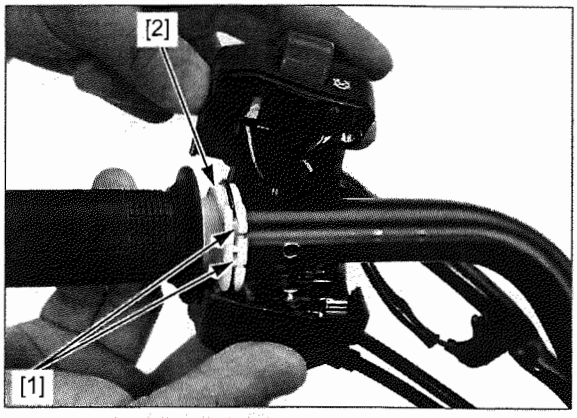



Remove the screws [1].

Separate the right handlebar switch housing [2].

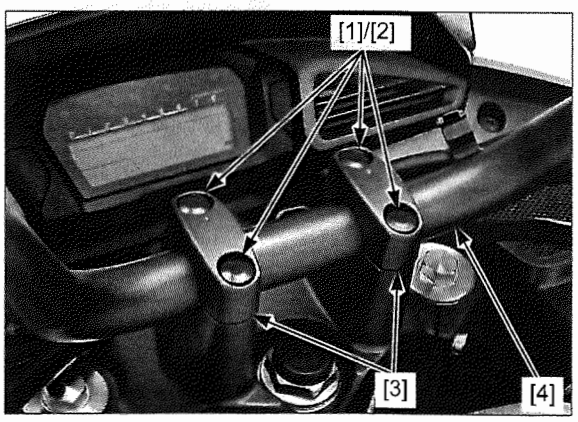



Disconnect the throttle cables [1] from the throttle pipe [2], then remove the throttle pipe.




Remove the following:

- Caps [1]
- Bolts [2]
- Holders [3]
- Handlebar [4]



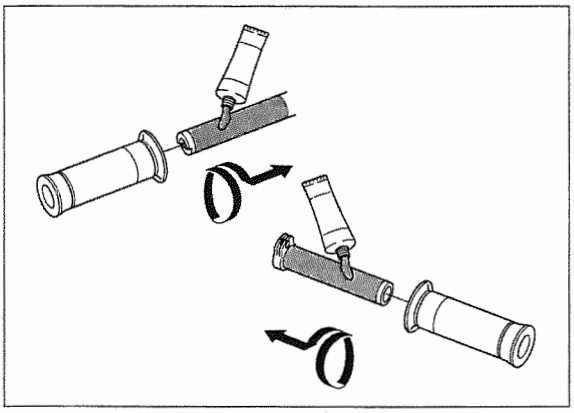
## INSTALLATION (CTX700D/ND)

Clean the inside surface of the handlebar grip and outside surface of the handlebar and throttle pipe.

Apply Honda bond A or Pro Honda Handgrip Cement (U.S.A. only) or equivalent to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe.

*Allow the adhesive to dry for 1 hour before using.*

Wait 3 – 5 minutes and install the grip.
Rotate the grips for even application of the adhesive.



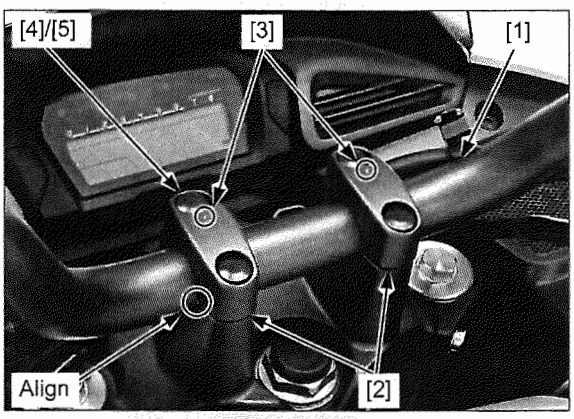
Install the handlebar [1] onto the top bridge by aligning the punch marks with the top bridge top surface.

Hold the handlebar and install the holders [2] with its punch marks [3] facing forward.

Install the handlebar holder bolts [4].

Tighten the upper bolts first, then the lower bolts to the specified torque.

Install the caps [5]



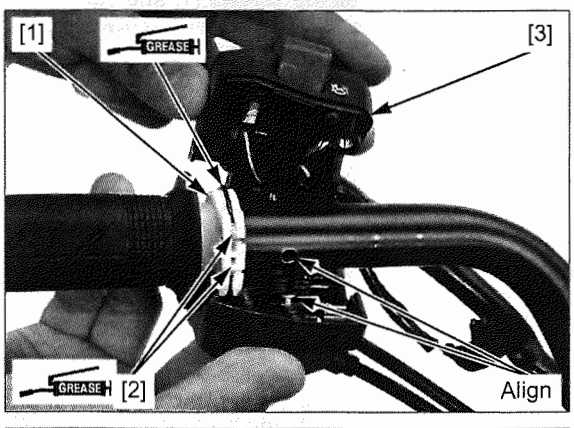

Apply grease to the throttle cable end and throttle pipe flange groove.

Install the throttle pipe [1] to the handlebar.

Connect the throttle cable [2] end to the throttle pipe.

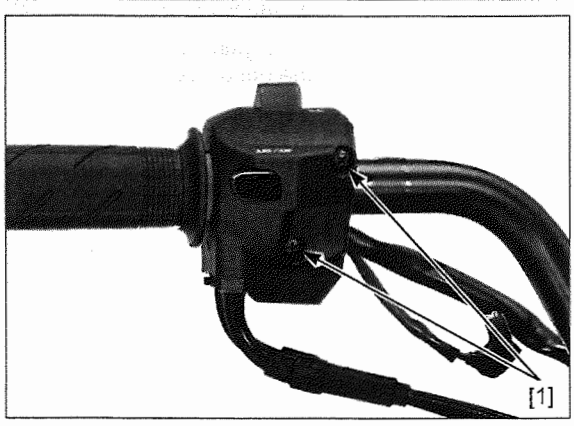
Install the right handlebar switch housing [3].

- Align the switch housing locating pin with the handlebar hole.




Install the screws [1] and tighten the upper screw first, then tighten the lower screw to the specified torque.

**TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)**

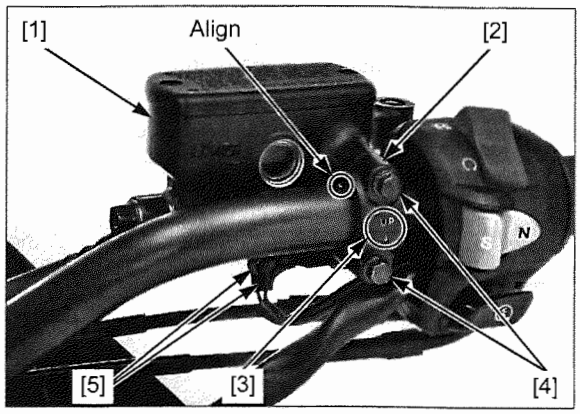


Install the master cylinder [1], holder [2] ("UP" mark [3] facing up) and bolts [4].

Align the end of the master cylinder with the punch mark on the handlebar and tighten the upper bolt first, then the lower bolt to the specified torque.

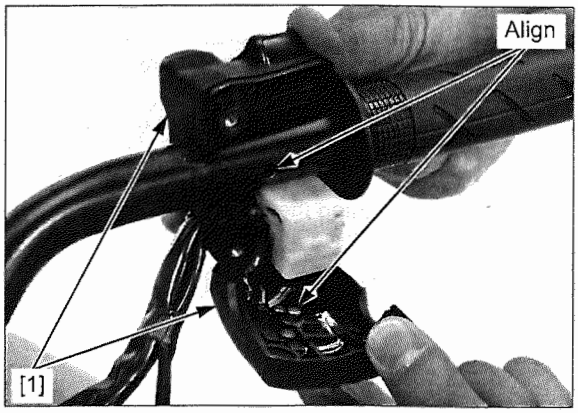
**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Connect the brake light switch connectors [5].



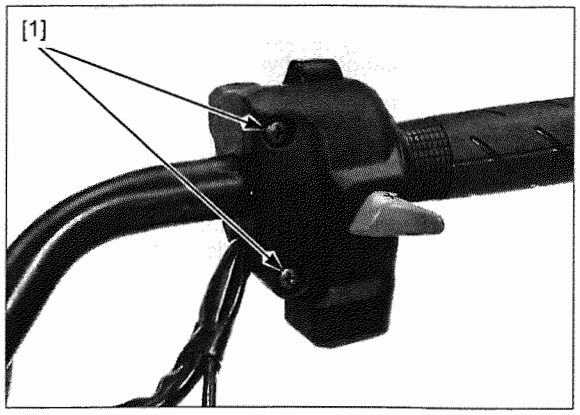

Install the left handlebar switch housing [1].

- Align the switch housing locating pin with the handlebar hole.



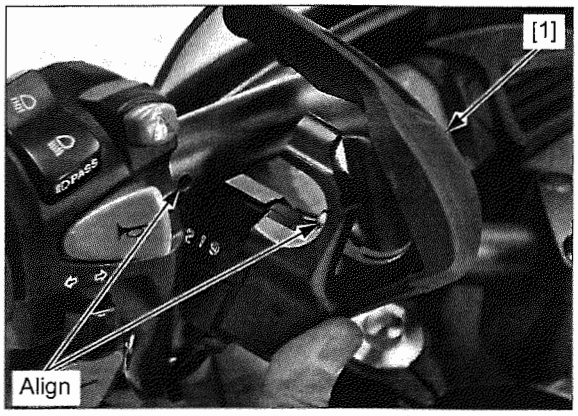

Install the screws [1] and tighten the upper screw first, then tighten the lower screw to the specified torque.

**TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)**




Install the parking brake lever bracket [1].

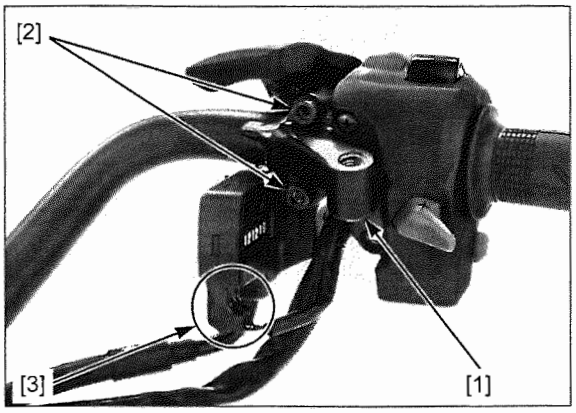
- Align the parking brake lever bracket locating pin with the handlebar hole.



Install the holder [1] and socket bolts [2].

Tighten the socket bolts securely.

Connect the parking brake switch connectors [3].



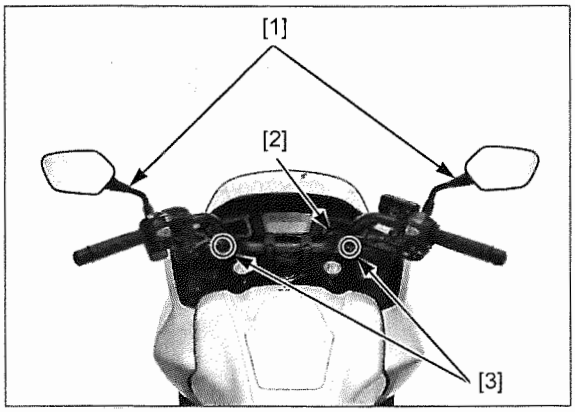

Install the rearview mirrors [1].

Secure the wire band [2] and install the two wire clamps [3] to the handlebar.

Install the handlebar weight (page 17-13).

Adjust the throttle grip freeplay (page 3-4).

Check the parking brake lock operation (page 3-18).




## HANDLEBAR WEIGHT

### HANDLEBAR WEIGHT REMOVAL/INSTALLATION

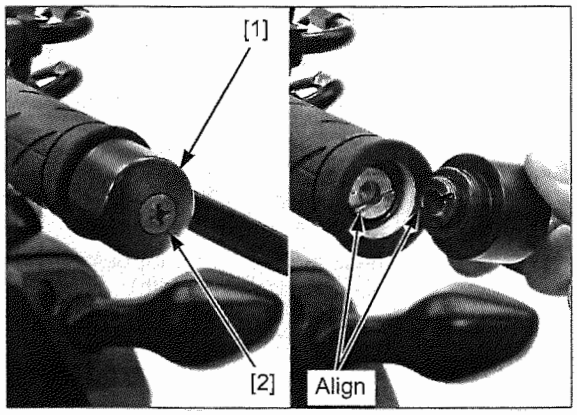
Hold the handlebar weight [1] and remove the handlebar weight mounting screw [2], then remove both handlebar weights.

Install the handlebar weight to both handlebars aligning each cutout.

Hold the handlebar weight.

Install and tighten a new handlebar weight mounting screw to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**




### INNER WEIGHT REPLACEMENT

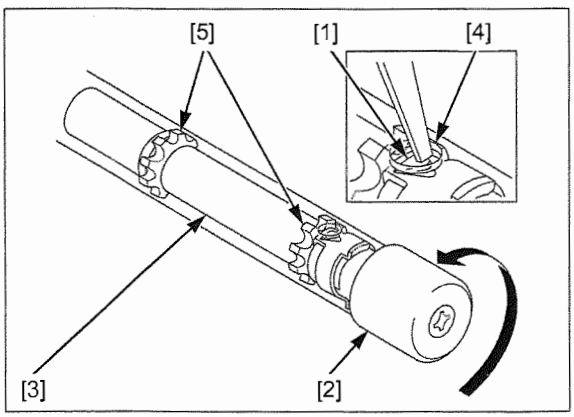
Remove the throttle pipe or grip rubber from the handlebar.

- CTX700/A/N/NA (page 17-5)
- CTX700D/ND (page 17-9)

Straighten the retainer ring tab [1] by the screwdriver or punch.

*Apply lubricant spray through the tab locking hole [4] to the rubber cushions [5] for easy removal.*

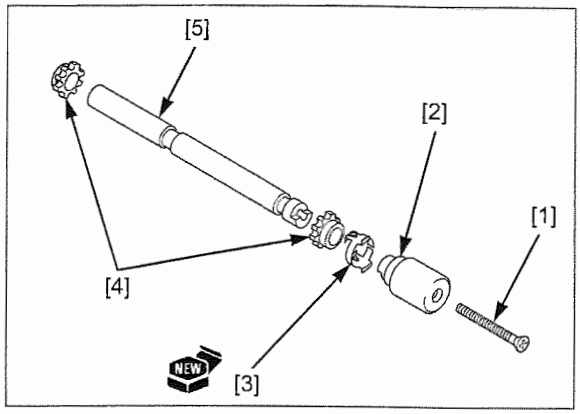
Temporarily install the handlebar weight [2] and screw, then remove the inner weight assembly [3] by turning the handlebar weight.



Remove the screw [1], handlebar weight [2], retainer ring [3] and rubber cushions [4] from the inner weight [5].

Install the rubber cushions and new retainer ring onto the inner weight.

Install the handlebar weight to the inner weight align with each cut-outs of the inner weight and handlebar weight.
Install and tighten the handlebar weight screw.

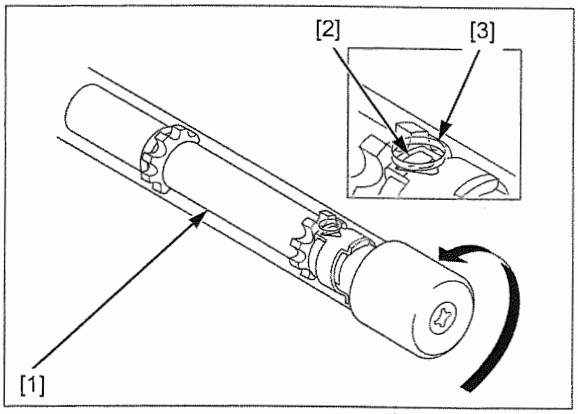



Install the inner weight assembly [1] into the handlebar. Turn the inner weight and hook the weight retainer tab [2] with the tab locking hole [3] in the handlebar.

Remove the screw and handlebar weight.

Install the throttle pipe and grip rubber to the handlebar.

- CTX700/A/N/NA (page 17-6)
- CTX700D/ND (page 17-11)




# FRONT WHEEL

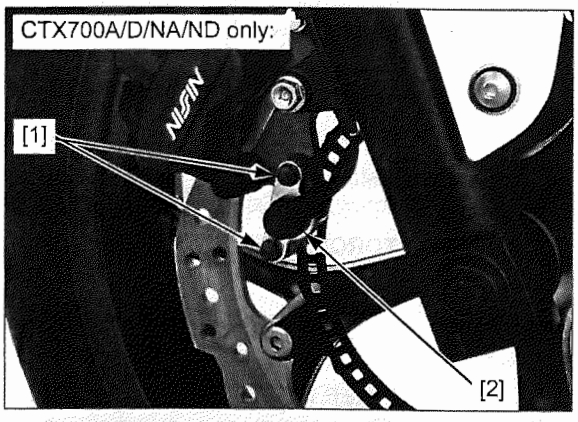
## REMOVAL

Remove the brake pads (page 19-9).

*CTX700A/D/NA/ND only:* Remove the bolts [1] and front wheel speed sensor [2] from the caliper bracket.

Check that there is no iron or other magnetic deposits between the pulser ring and front wheel speed sensor. Remove any deposits.

Check the sensor tip for deformation or damage (e.g., chipped pulser ring teeth).
Replace the front wheel speed sensor if necessary (page 20-21).

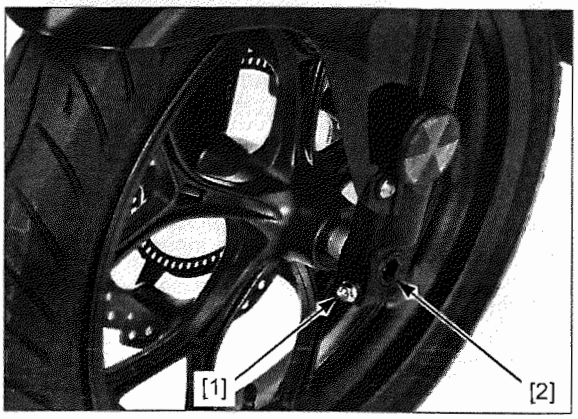



Loosen the front axle pinch bolt [1] and front axle [2].

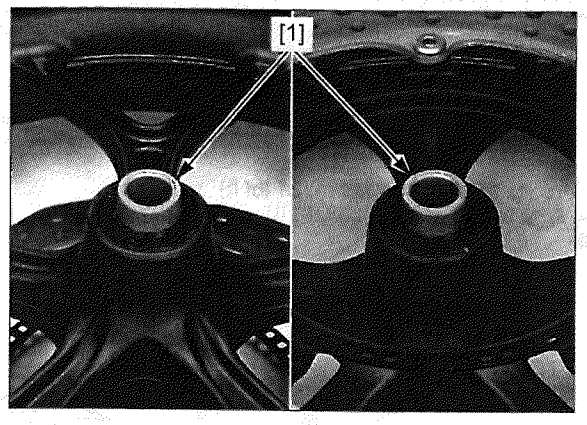
Support the motorcycle using a safety stand or hoist, raise the front wheel off the ground.

Remove the front axle and front wheel.

- Do not operate the brake lever after removing the front wheel.



Remove the side collars [1].




## INSPECTION

Turn the inner race of each bearing with your finger.
The bearings should turn smoothly and quietly.
Also check that the outer race fits tightly in the wheel hub.

Inspect the following parts for damage, abnormal wear, deformation and bend.

- Front axle
- Spoke
- Wheel rim

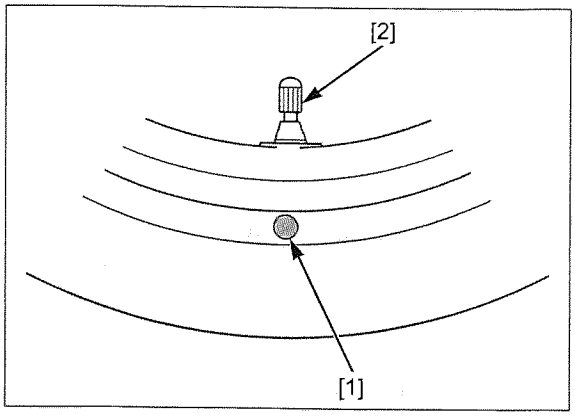
Measure each part according to FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

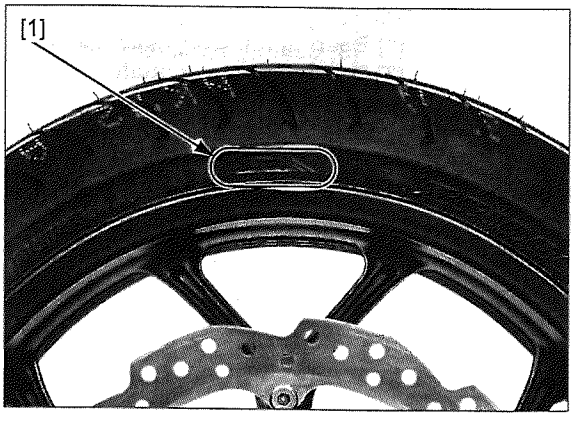
### WHEEL BALANCE

NOTE:

- Carefully check balance before installing the wheel.
- The wheel balance must be checked when the tire is remounted.
- For optimum balance, the tire balance mark [1] (light mass point: a paint dot on the side wall) must be located next to the valve stem [2]. Remount the tire if necessary.




Note the rotating direction marks [1] on the tire, and upon tire installation, always fit the tire so the marks face the same direction.



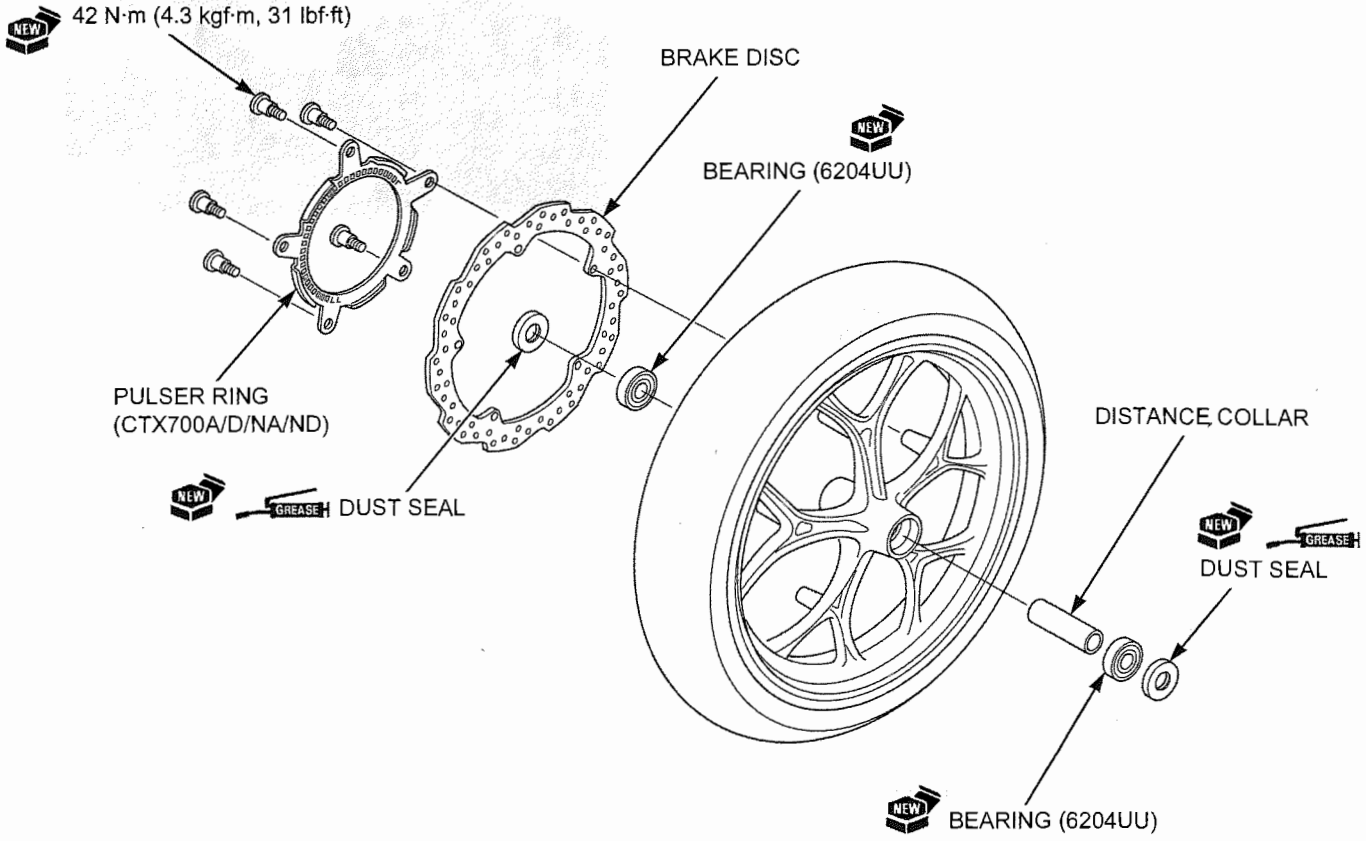

Mount the wheel, tire and brake disc assembly on an inspection stand.
Spin the wheel, allow it to stop, and mark the lowest (heaviest) part of the wheel with chalk.
Do this 2 or 3 times to verify the heaviest area.
If the wheel is balanced, it will not stop consistently in the same position.

To balance the wheel, install a new balance weight on the lightest side of the rim, on the side opposite the chalk marks. Add just enough weight so the wheel will no longer stop in the same position when it is spun.
Do not add more than 60 g (2.1 oz) to the wheel.

## DISASSEMBLY/ASSEMBLY

Disassemble and assemble the front wheel as following illustration.

- Install the front wheel dust seal until it is flush with the wheel hub surface.
- Install the front brake disc with the "⇨" marked side facing out.



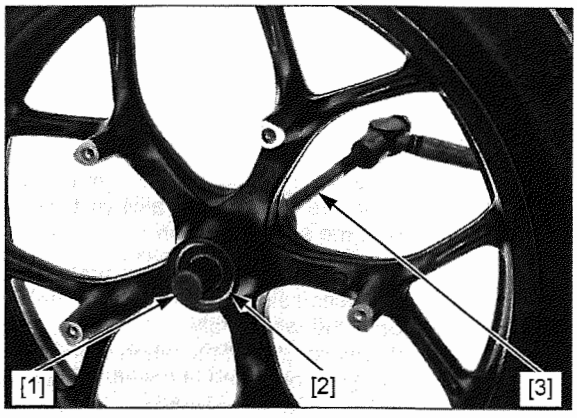

### WHEEL BEARING REPLACEMENT

Install the bearing remover head [1] into the bearing [2]. From the opposite side, install the bearing remover shaft [3] and drive out the bearing from the wheel hub.

Remove the distance collar and drive out the other bearing.

**TOOLS:**

**[1] Bearing remover head, 20 mm 07746-0050600**
**[3] Bearing remover shaft 07GGD-0010100**



*Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.*

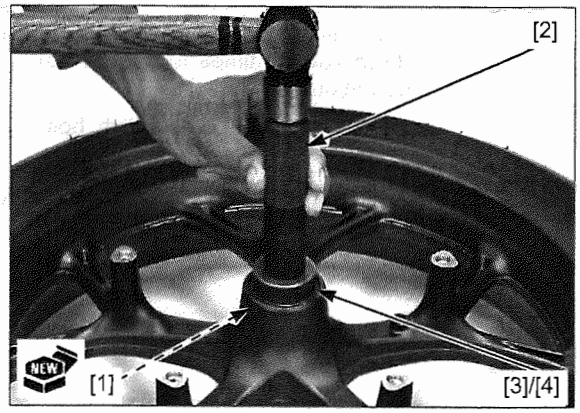
Drive in a new right side bearing [1] squarely with its marked side facing up until it is fully seated.

Install the distance collar.

Drive in a new left side bearing squarely with its marked side facing up until it is seated on the distance collar.

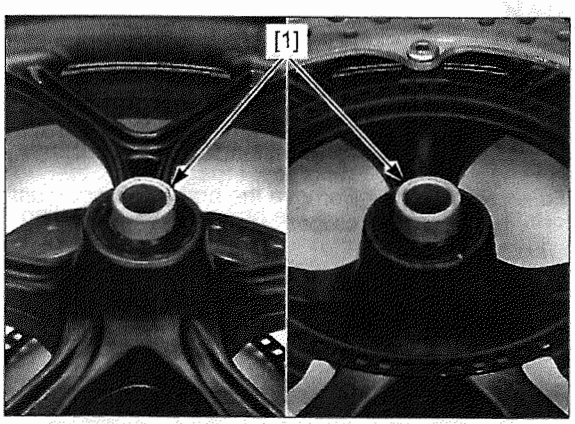
**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 42 x 47 mm** | **07746-0010300** |
| **[4] Pilot, 20 mm** | **07746-0040500** |




## INSTALLATION

Install the side collars [1].



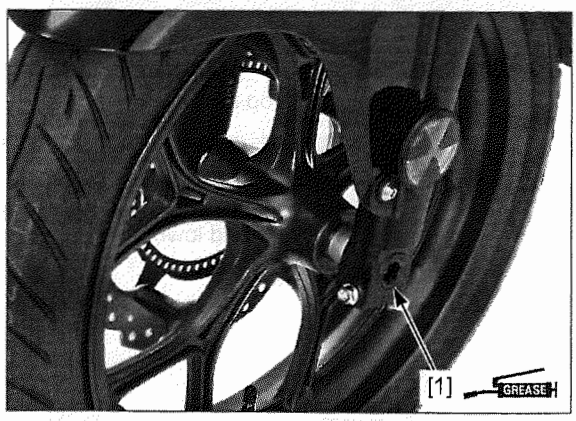

Install the front wheel between the fork legs.

Apply a thin coat of grease to the front axle sliding surface.

Install the front axle [1] from left side.

Tighten the front axle to the specified torque.

**TORQUE: 74 N·m (7.5 kgf·m, 55 lbf·ft)**

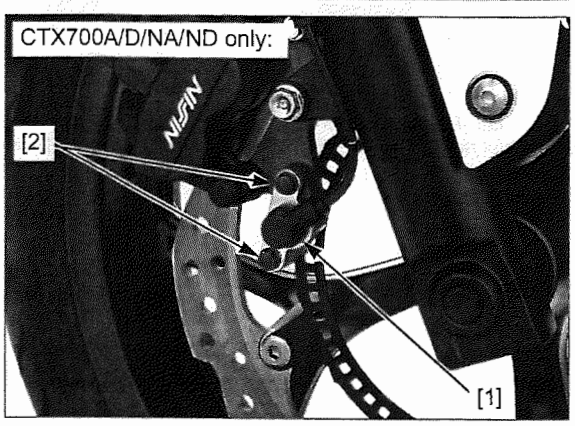



*CTX700A/D/NA/ND only:*

Install the front wheel speed sensor [1] and bolts [2]. Tighten the bolts securely.

Check the air gap between the front wheel speed sensor and pulser ring (page 20-20).

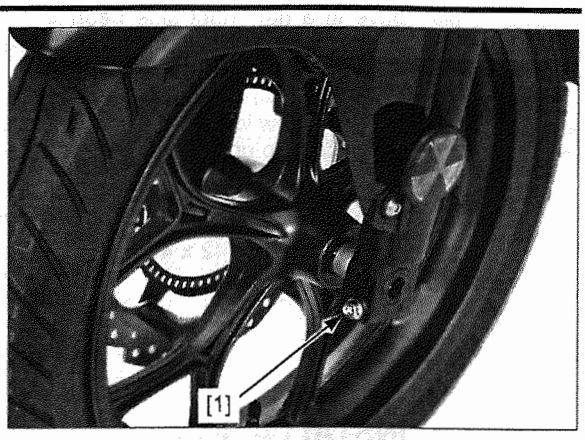
Install the brake pads (page 19-9).



With the front brake applied, pump the forks up and down several times to seat the axle and check brake operation.

Tighten the front axle pinch bolt [1] to the specified torque.

**TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)**




# FORK

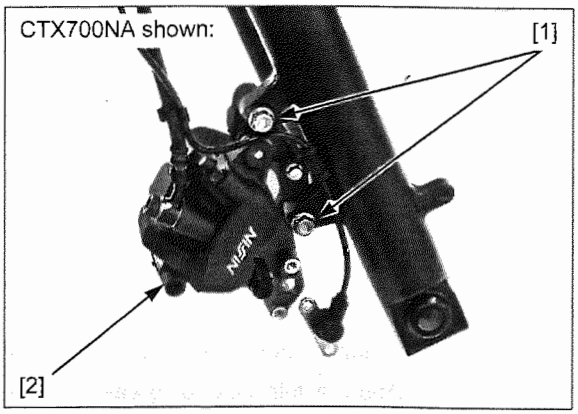
## REMOVAL

Remove the following:

- Front wheel (page 17-14)
- Front fender (page 2-10)

*Do not suspend the brake caliper/ bracket assembly from the brake hose. Do not twist the brake hose.*

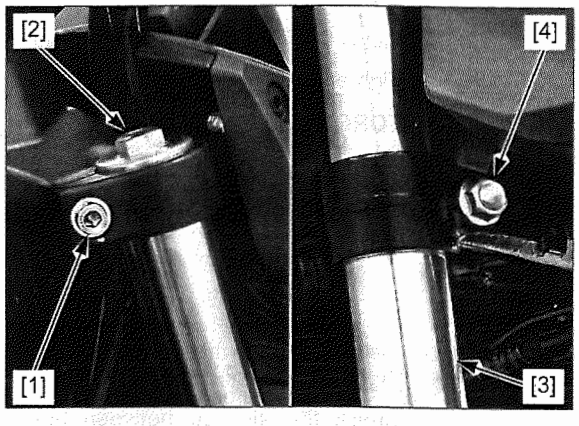
Remove the brake caliper mounting bolts [1] and brake caliper/bracket assembly [2].




Loosen the top bridge pinch bolts [1].

When the fork is ready to be disassembled, loosen the fork cap [2].

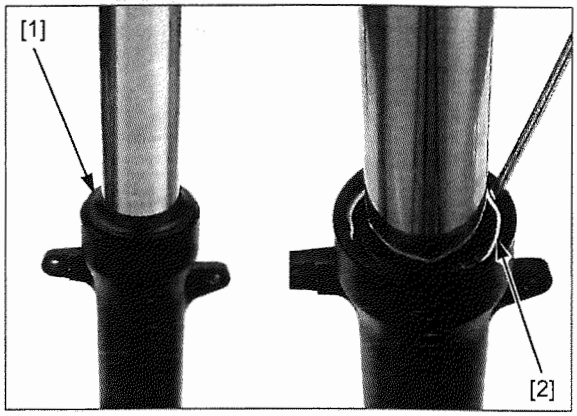
Hold the fork legs [3] and loosen the bottom bridge pinch bolts [4] and lower the fork legs, then remove it.




## DISASSEMBLY

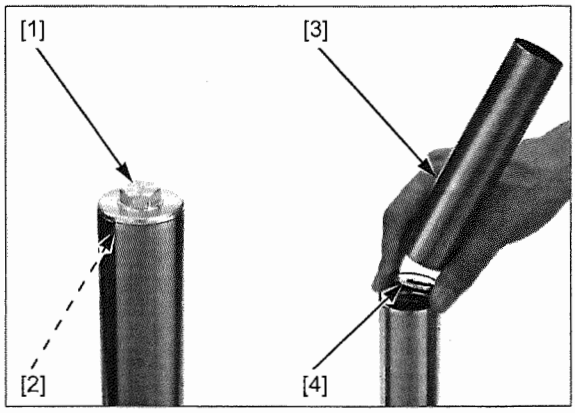
*Be careful not to scratch the fork pipe.*

Remove the dust seal [1] and stopper ring [2].



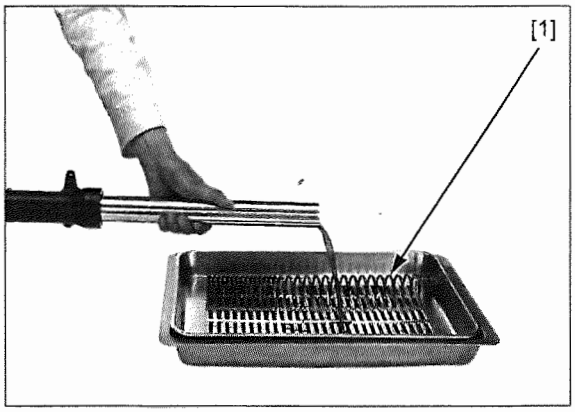
Remove the following:

- Fork cap [1]
- O-ring [2]
- Spring collar [3]
- Spring seat [4]




Remove the fork spring [1].

Drain the fork fluid by pumping the fork pipe several times.

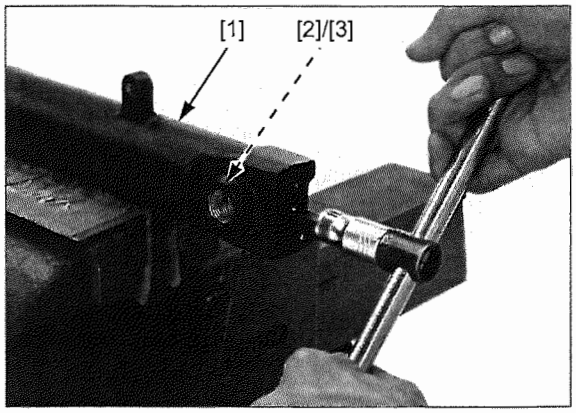



*Do not over-tighten the vise on the fork slider.*

Set the fork slider [1] in a vise with a piece of wood or soft jaws to avoid damage.

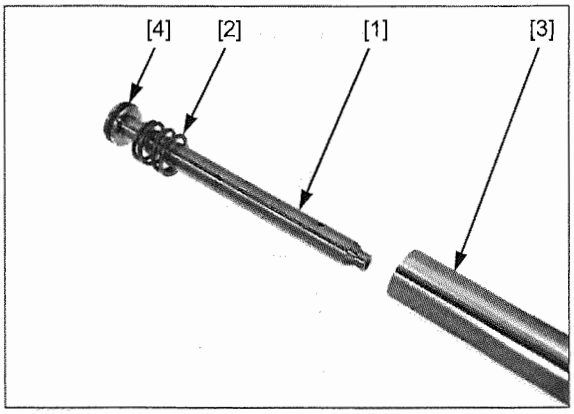
*If the fork piston turns with the socket bolt, temporarily install the fork spring, spring seat, spring collar and fork cap.*

Remove the fork socket bolt [2] and sealing washer [3].

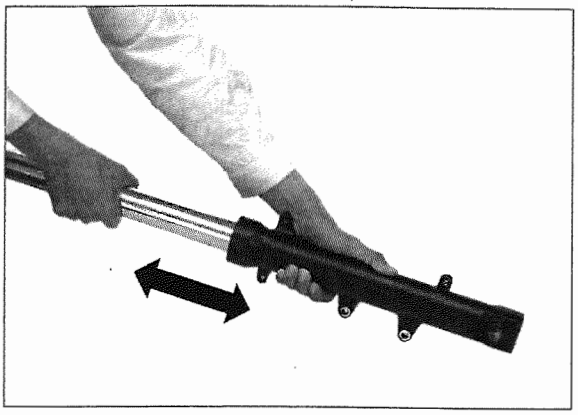



*Do not remove the fork piston ring [4], unless it is necessary to replace with a new one.*

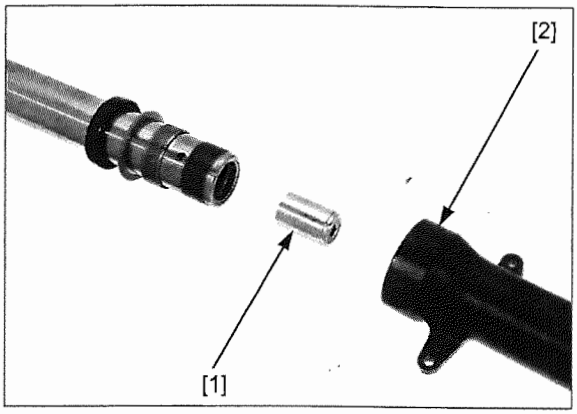
Remove the fork piston [1] and rebound spring [2] from the fork pipe [3].



Using quick successive motions, pull the fork pipe out of the fork slider.



Remove the oil lock piece [1] from the fork slider [2].

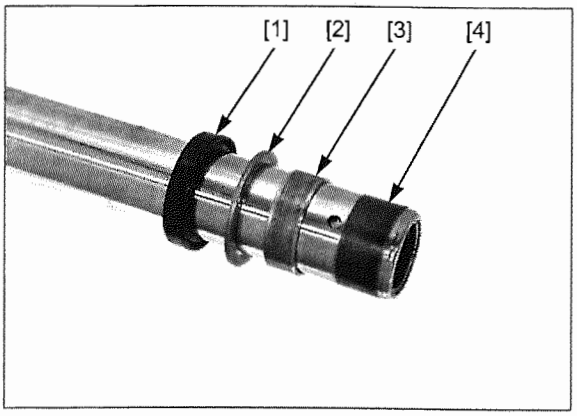



Remove the following:

- Oil seal [1]
- Back-up ring [2]
- Guide bushing [3]

*Do not remove the fork tube bushing, unless it is necessary to replace with a new one.*

Carefully remove the slider bushing [4] by prying the bushing gap with a screwdriver until the bushing can be pulled off by hand.




## INSPECTION

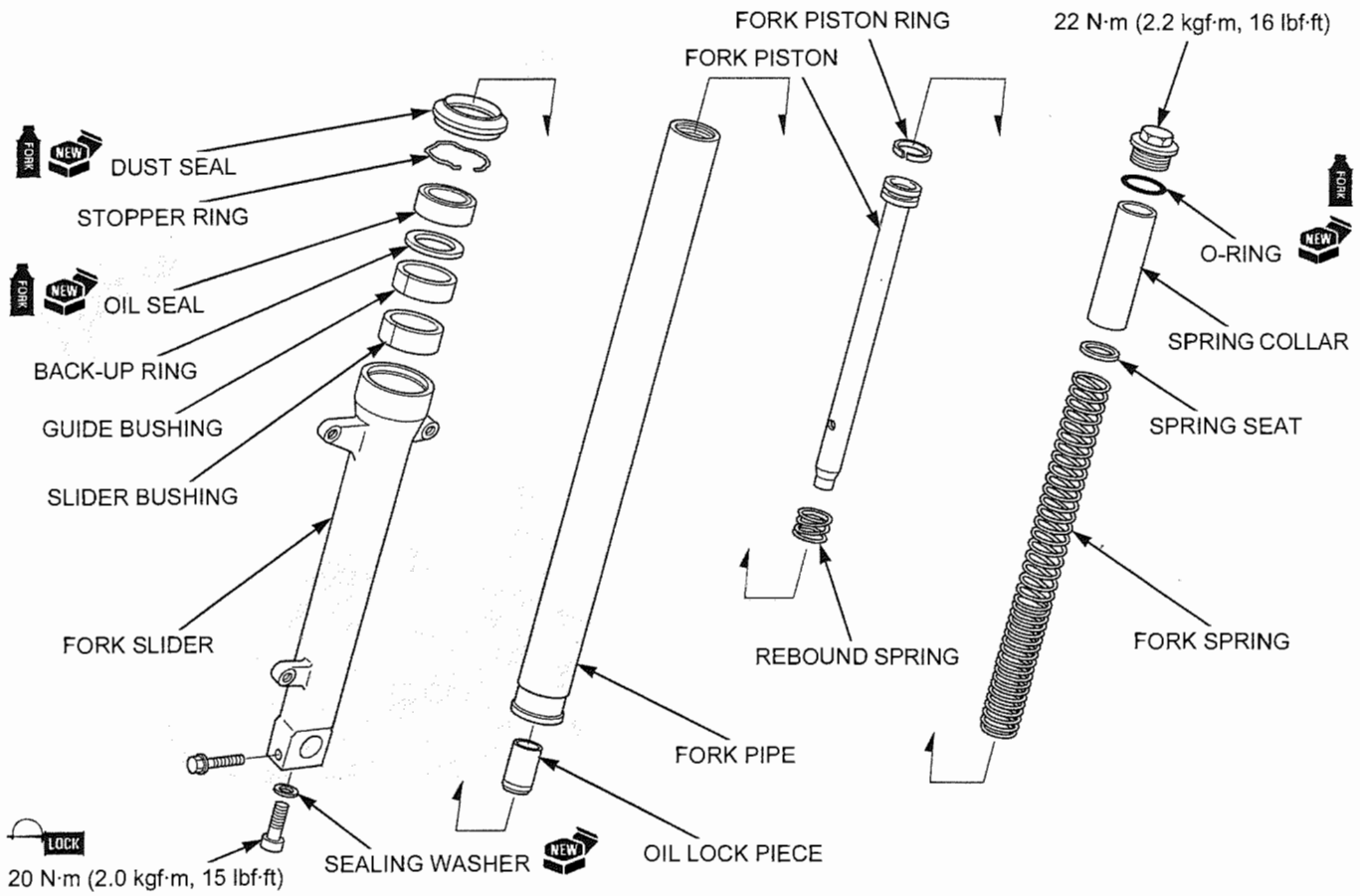
Inspect the following parts for damage, abnormal wear, bend, deformation, scoring and teflon coating wear.

- Fork tube
- Fork slider
- Fork spring
- Rebound spring
- Piston ring
- Fork piston
- Oil lock piece
- Guide bushing
- Back-up ring

Measure each part according to FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

## ASSEMBLY



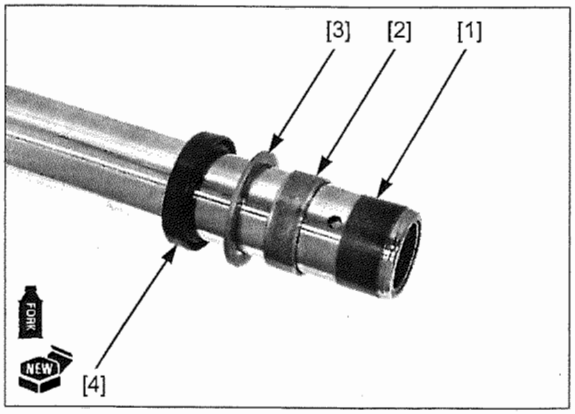

*Do not open the bushing slit more than necessary.*

Install the slider bushing [1] being careful not to damage the coating of the bushing, if it has been removed.

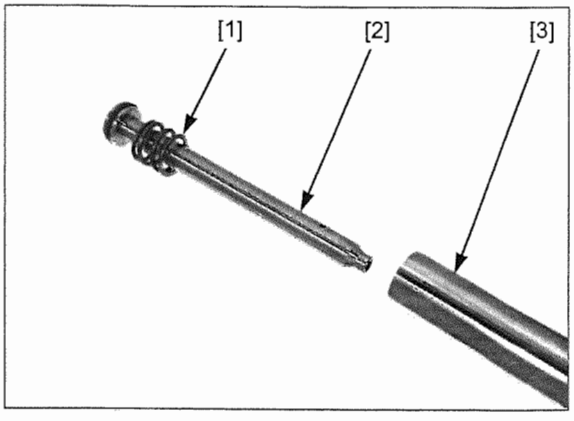
Remove the burrs from the bushing mating surface, being careful not to peel off the coating.

*Install the oil seal with its marked side facing up.*

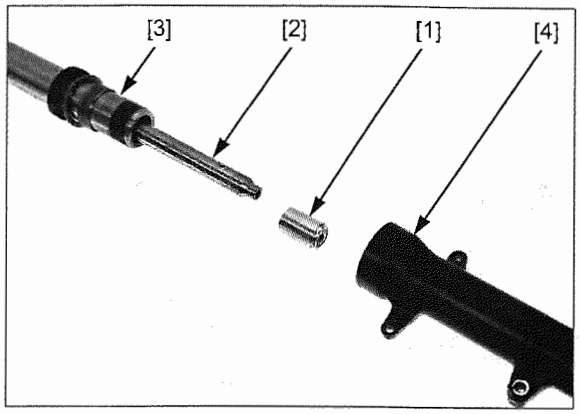
Apply fork fluid to a new oil seal lips.
Install the guide bushing [2], back-up ring [3] and oil seal [4] onto the fork pipe.




Install the rebound spring [1] to the fork piston [2] and install them into the fork pipe [3].



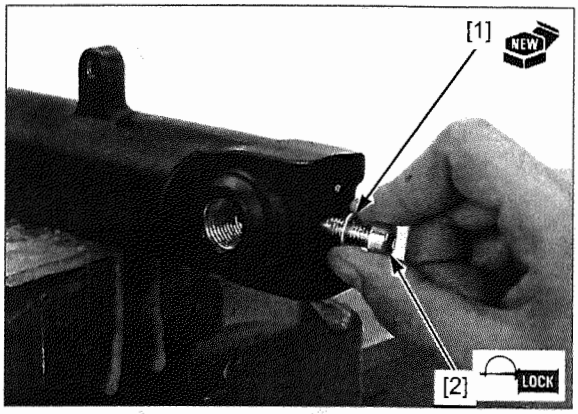
Install the oil lock piece [1] onto the fork piston [2] end.
Install the fork pipe [3] into the fork slider [4].




*Do not over-tighten the vise on the fork slider.*

Set the fork slider in a vise with a piece of wood or soft jaws to avoid damage.

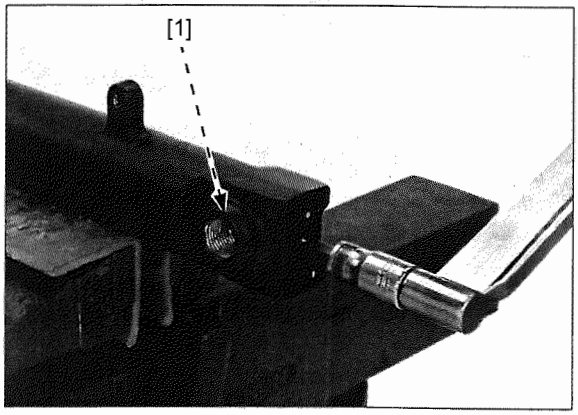
Install a new sealing washer [1] to the fork socket bolt [2].
Apply locking agent to the fork socket bolt threads and install it.




*If the fork piston turns with the socket bolt, temporarily install the fork spring, spring seat, spring collar and fork cap.*

Tighten the fork socket bolt [1] to the specified torque.

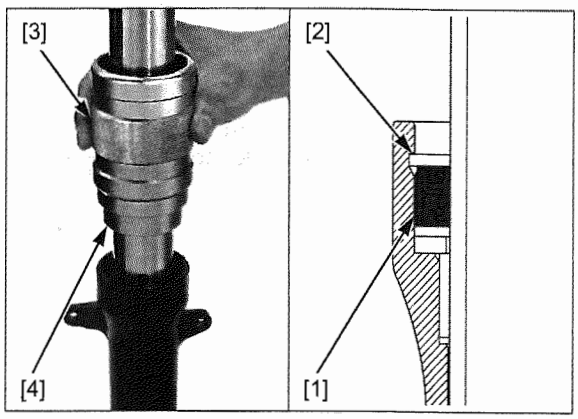
**TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)**




Drive the oil seal [1] until the stopper ring groove [2] is visible using the special tools.

**TOOLS:**

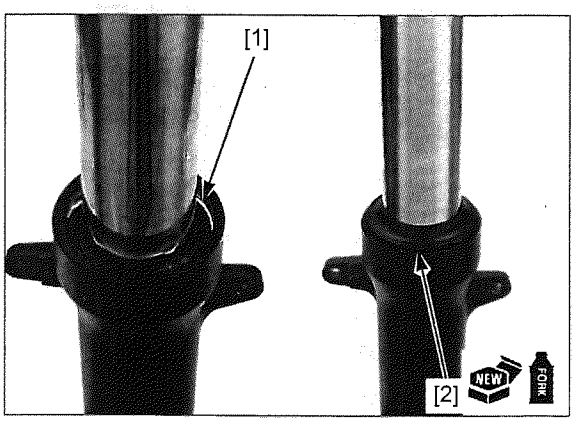
| | |
|---|---|
| **[3] Fork seal driver** | **07947-KA50100** |
| **[4] Fork seal driver attachment** | **07947-KF00100** |



Install the stopper ring [1] into the groove of the fork slider securely.

Apply fork fluid to a new dust seal lips.

Install the dust seal [2].




Pour the specified amount of recommended fork fluid into the fork pipe.

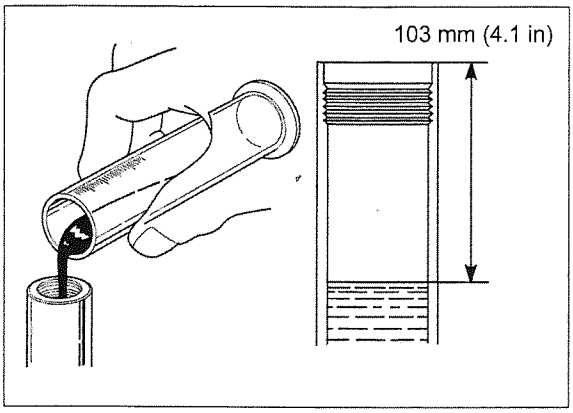
**RECOMMENDED FORK FLUID:**
**Pro Honda Suspension Fluid SS-47 (10W)**

**FORK FLUID CAPACITY:**
**518 ± 2.5 cm³ (17.5 ± 0.08 US oz, 18.2 ± 0.09 Imp oz)**

Slowly pump the fork pipe several times to remove any trapped air from the lower portion of the fork pipe.

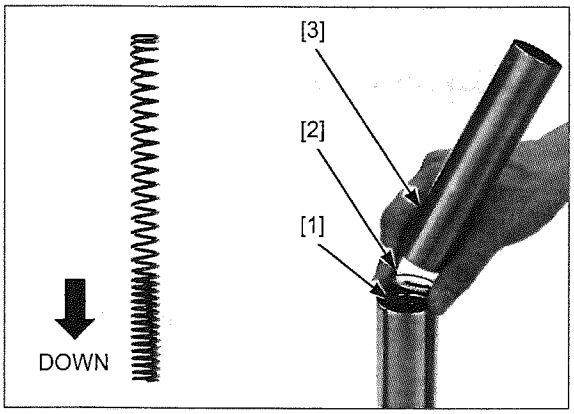
Compress the fork pipe fully and measure the fluid level from the top of the fork pipe.

**FLUID LEVEL: 103 mm (4.1 in)**




Pull the fork pipe up and install the fork spring [1] with the tightly wound coil side facing down.

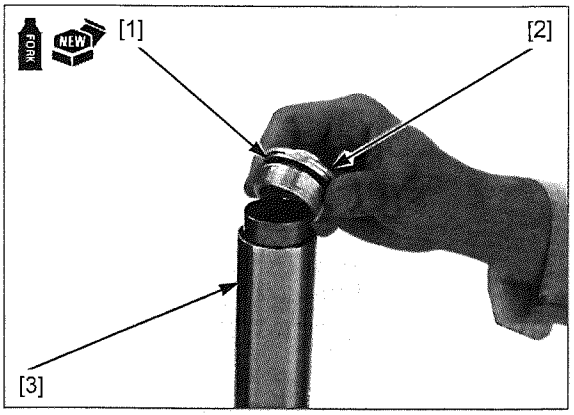
Install the spring seat [2] and spring collar [3].




Apply fork fluid to a new O-ring [1] and install it onto the fork cap [2].

*Tighten the fork cap after installing the fork pipe into the fork bridges.*

Loosely install the fork cap by pushing it to the fork pipe [3].



## INSTALLATION

Install the fork leg through the bottom bridge and top bridge while aligning top surface of fork pipe with the top surface of top bridge.

Tighten the bottom bridge pinch bolts [1] to the specified torque.

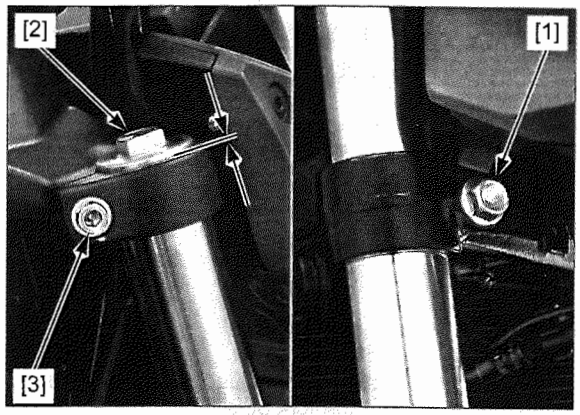
**TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)**

If the fork cap [2] is loosened, tighten the fork cap to the specified torque.

**TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)**

Tighten the top bridge pinch bolts [3] to the specified torque.

**TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)**

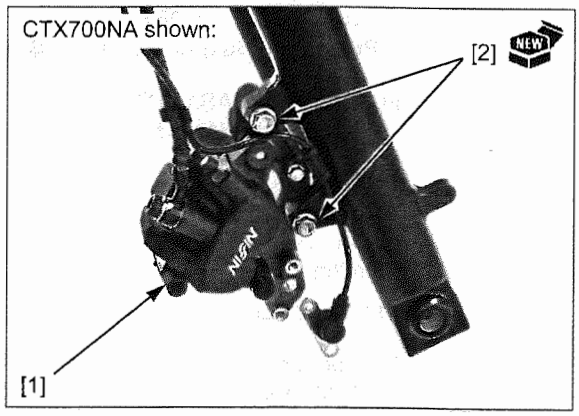



Install the front brake caliper/bracket assembly [1] and tighten new brake caliper mounting bolts [2] to the specified torque.

**TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)**

Install the following:

- Front fender (page 2-10)
- Front wheel (page 17-17)




# STEERING STEM

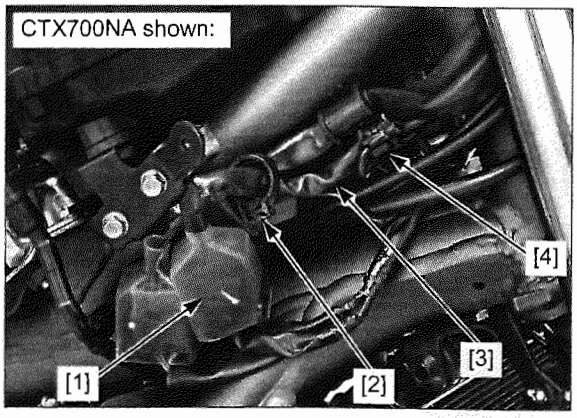
## REMOVAL

Remove the following:

- Handlebar
  - CTX700/AN/NA (page 17-5)
  - CTX700D/ND (page 17-9)
- Center shelter (page 2-12)
- Headlight assembly (page 2-8) (CTX700N/NA/ND)

Disconnect the ignition switch 2P (Brown) connector [1].

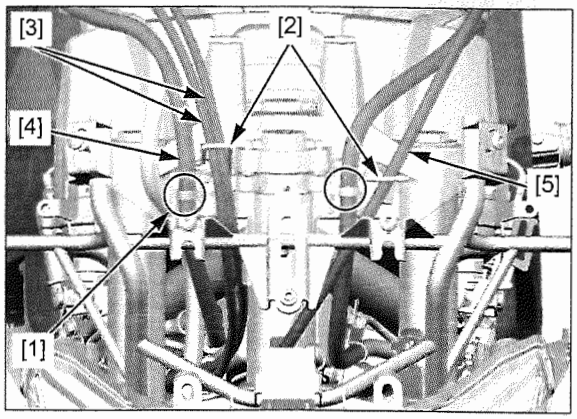
Remove the wire band [2] and release the wire harness [3] from the clamp [4].




*CTX700A/D:* Release the two wire band bosses [1].

Release the following from the wire guides [2]:

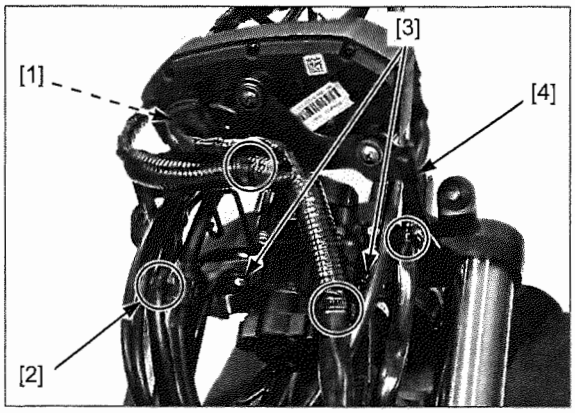
- Throttle cables [3]
- Front brake hose [4]
- Clutch cable (CTX700A)/parking brake cable (CTX700D) [5]



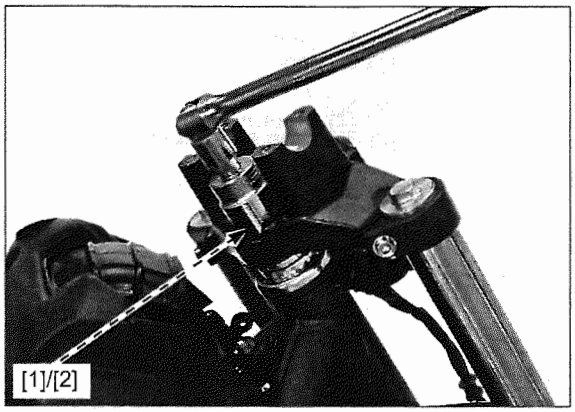
*CTX700N/NA/ND:* Disconnect the combination meter 16P (Gray) connector [1].

Remove the four wire band bosses [2].

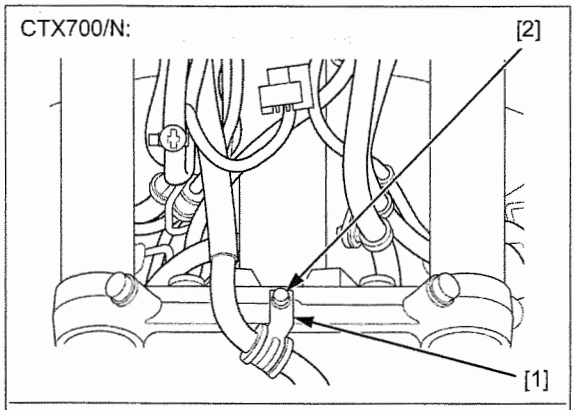
Remove the two bolts [3] and combination meter stay assembly [4].

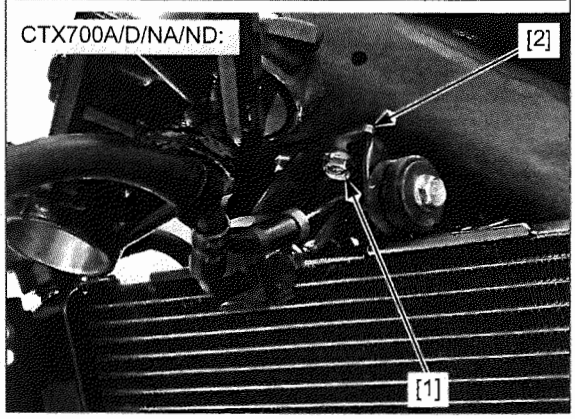



Remove the cap [1] and steering stem nut [2].



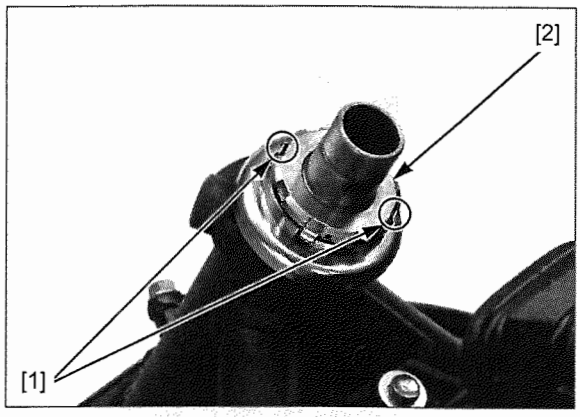

Remove the bolt [1] and brake hose guide [2].



Straighten the lock washer tabs [1].

Remove the steering stem adjusting lock nut [2] and lock washer.

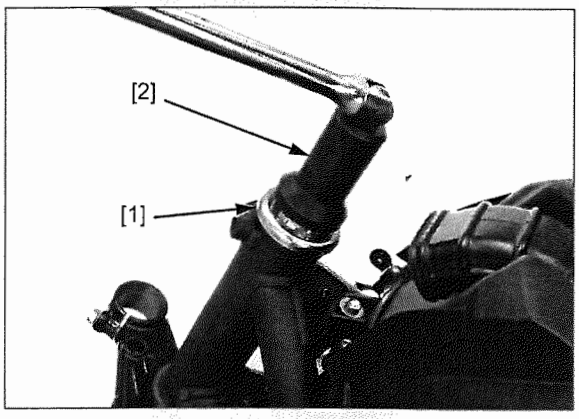



Loosen the steering stem adjusting nut [1] using a special tool.

**TOOL:**

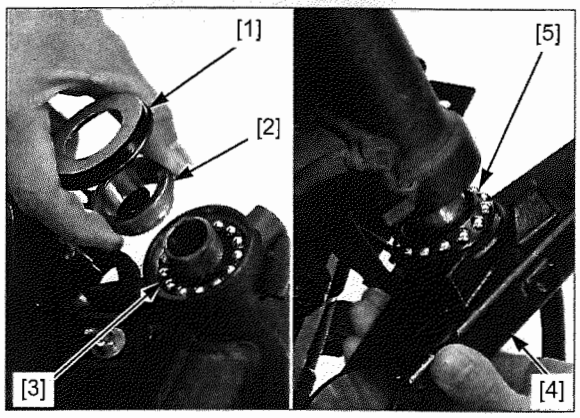
| | |
|---|---|
| **[2] Steering stem socket** | **07916-3710101** |

Hold the steering stem and remove the steering stem adjusting nut.




Remove the following:

- Dust seal [1]
- Upper bearing inner race [2]
- Upper steering head bearing [3]
- Steering stem [4]
- Lower steering head bearing [5]




## BEARING REPLACEMENT

*Replace the bearing, outer and inner races as a set.*

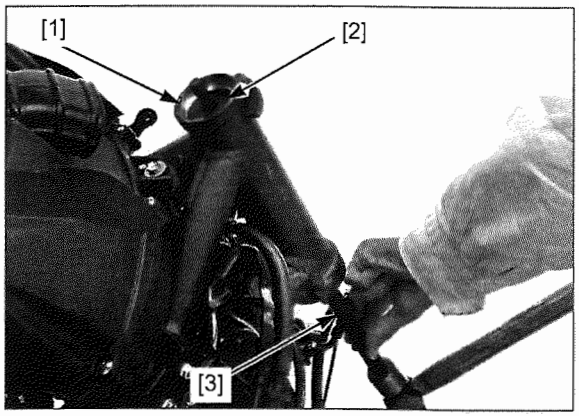
Remove the upper outer race [1] using a special tool.

**TOOLS:**

| | |
|---|---|
| **Ball race remover set** | **07953-MJ10000** |
| **[2] Remover attachment** | **07953-MJ10100** |
| **[3] Remover handle** | **07953-MJ10200** |

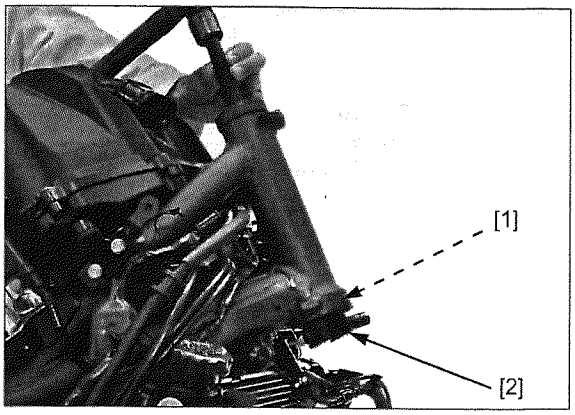
**U.S.A, TOOLS:**

| | |
|---|---|
| **Ball race remover attachment** | **07953-MJ10000 with commercially available tool** |



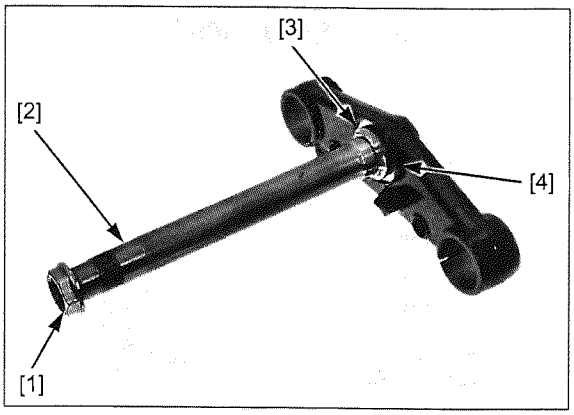
Remove the lower bearing outer race [1] using the special tool and suitable shaft.

**TOOL:**
**[2] Bearing remover** **07946-3710500**




Temporarily install the steering stem nut [1] onto the steering stem [2] to prevent the threads from being damaged when removing the lower inner race [3] from the steering stem.

Remove the lower inner race with a chisel or equivalent tools, being careful not to damage the steering stem. Remove the steering head bearing dust seal [4].

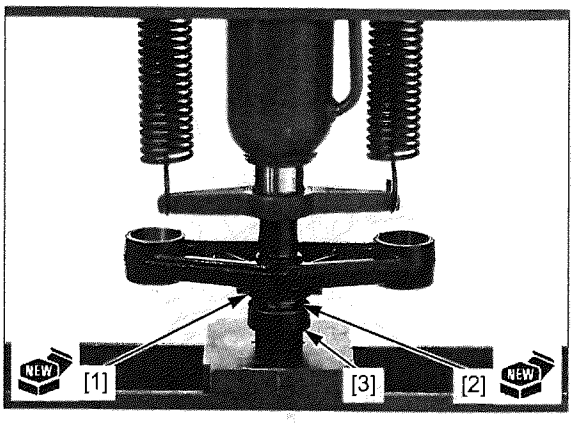



Apply specified grease to a new steering head bearing dust seal lips (page 1-19).

Install the steering head bearing dust seal [1] to the steering stem.

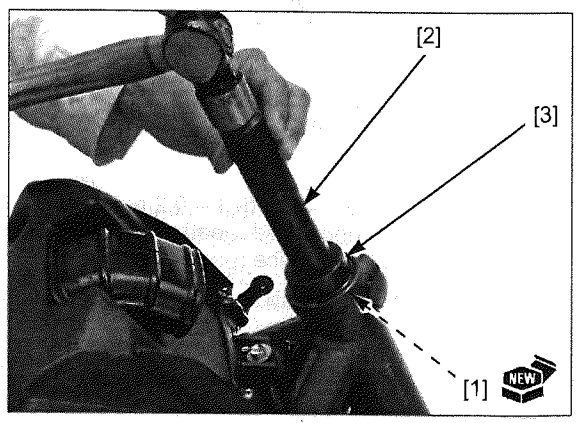
Install a new lower inner race [2] using a hydraulic press and special tool.

**TOOL:**
**[3] Attachment, 30 mm I.D.** **07746-0030300**




Drive in a new upper outer race [1] using the special tools.

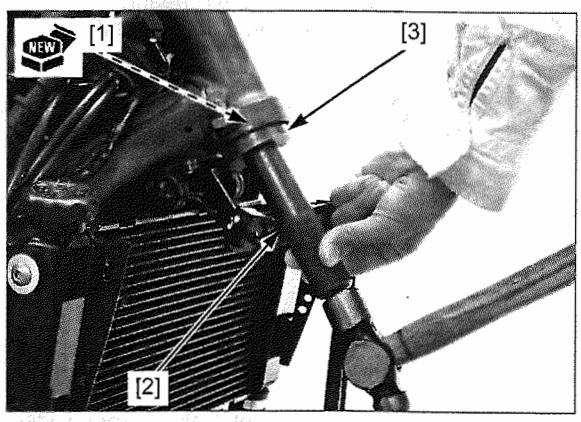
**TOOLS:**
**[2] Driver** **07749-0010000**
**[3] Attachment, 42 x 47 mm** **07746-0010300**



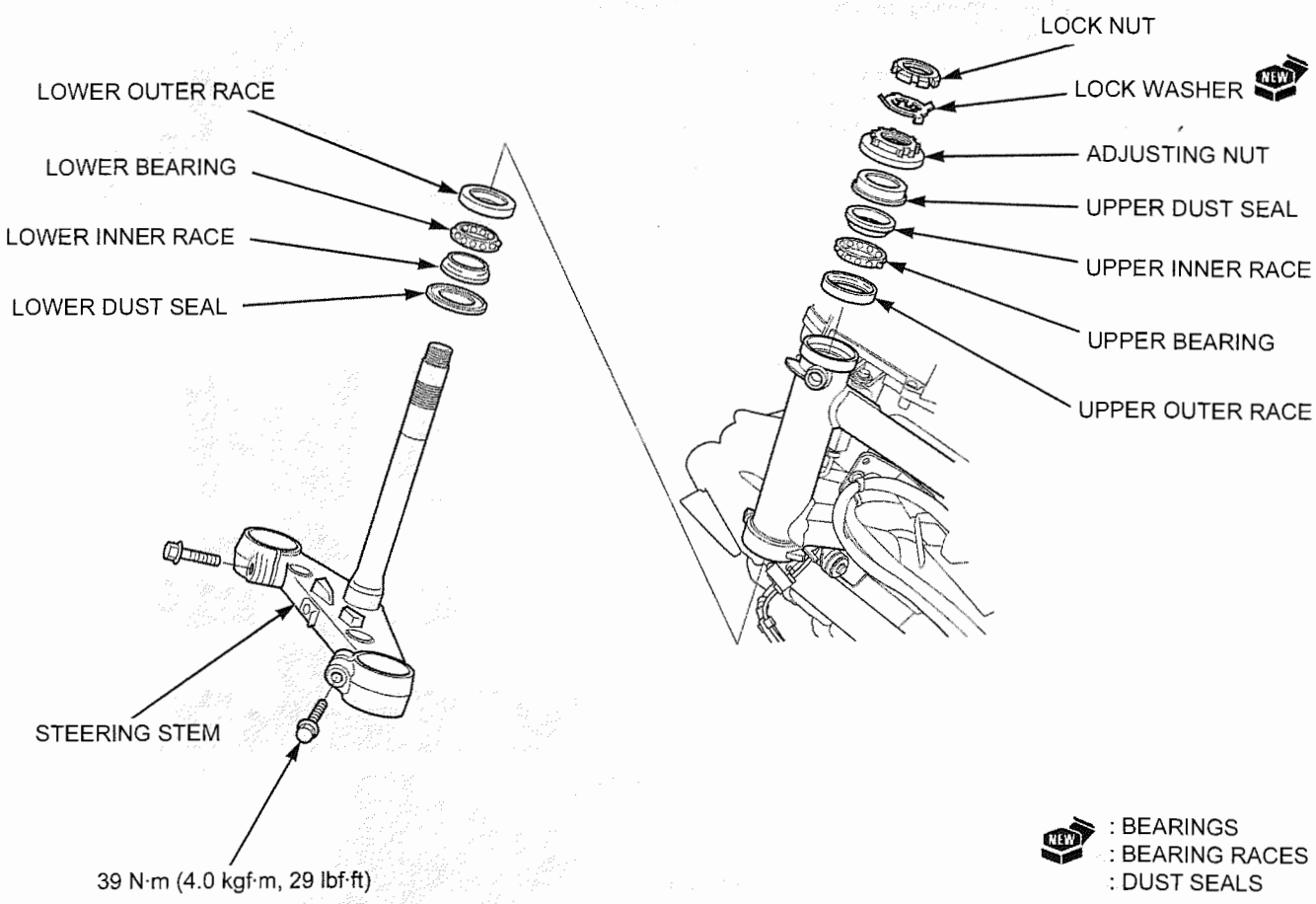
Drive in a new lower outer race [1] using the special tools.

**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 52 x 55 mm** | **07746-0010400** |




## INSTALLATION



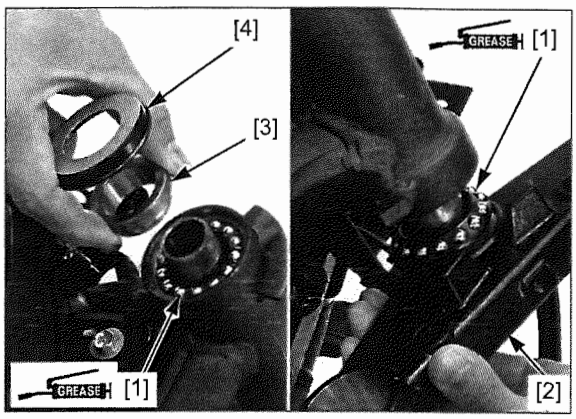

NEW : BEARINGS
: BEARING RACES
: DUST SEALS

Apply 3 – 5 g (0.1 – 0.2 oz) of specified grease to each steering head bearing inner races and outer races sliding surface (page 1-19).

Apply specified grease to a new steering head bearing dust seal lips (page 1-19).

Install the bearings [1] in the lower inner race and upper outer race.

Install the steering stem [2], upper inner race [3] and dust seal [4].

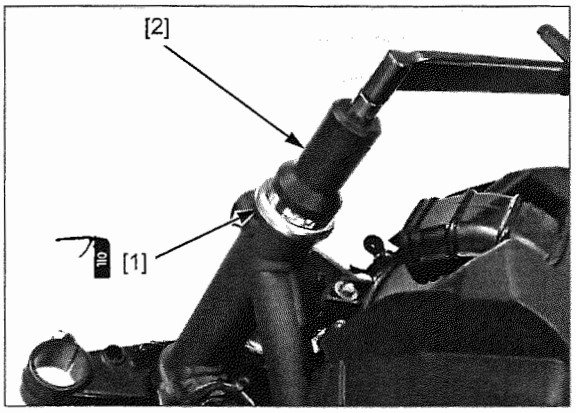


Apply engine oil to the steering stem adjusting nut [1] threads.

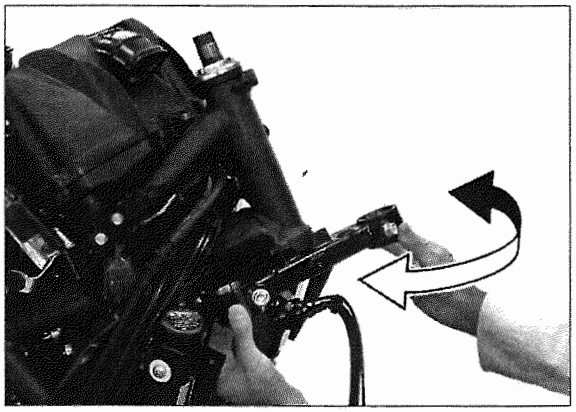
Install and tighten the steering stem adjusting nut to the specified torque using a special tool.

**TOOL:**
**[2] Steering stem socket 07916-3710101**

**TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)**



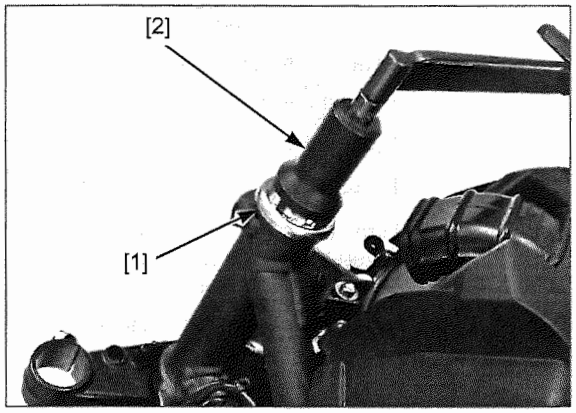

Move the steering stem left and right, lock-to-lock five times to seat the bearings.



Retighten the adjusting nut [1] to the specified torque using a special tool.

**TOOL:**
**[2] Steering stem socket 07916-3710101**

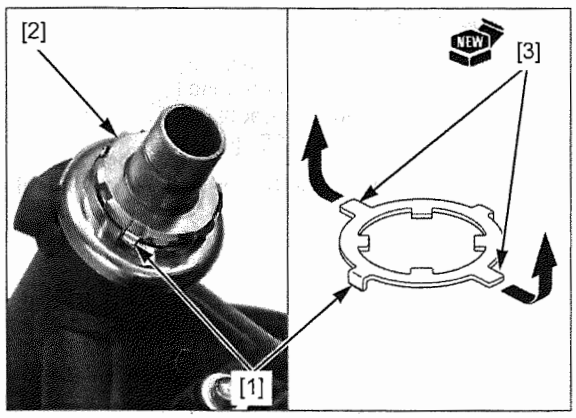
**TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)**




Install a new lock washer [1], aligning its short bent tabs with the grooves in the steering stem adjusting nut.

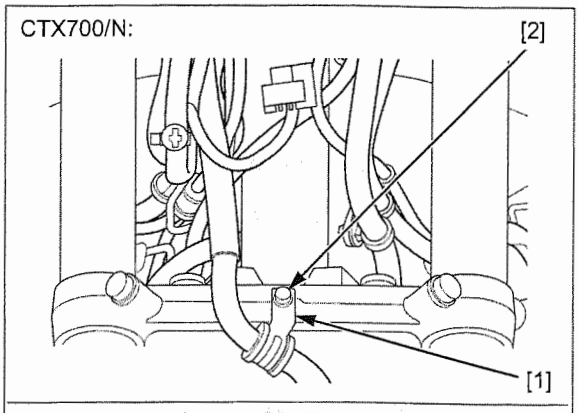
Install the lock nut [2] until it contacts with the lock washer.

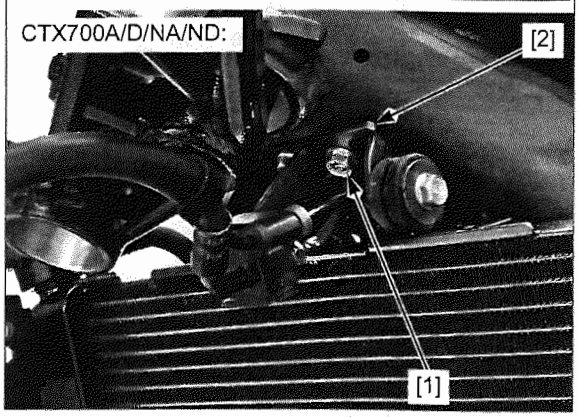
Further tighten the lock nut, within 90°, to align its grooves with the tabs of the lock washer.
Bend up the long lock washer tabs [3] into the grooves of the lock nut.



Install the brake hose guide [1] and bolt [2].

Tighten the bolt securely.




Install the top bridge [1].

Install the steering stem nut [2], but do not tighten it yet.

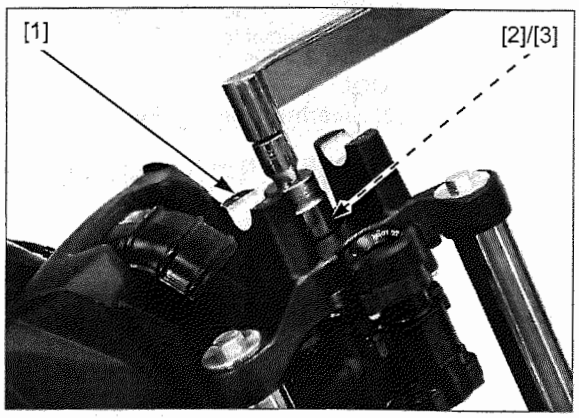
Install the fork legs (page 17-24).

Tighten the steering stem nut to the specified torque.

**TORQUE: 103 N·m (10.5 kgf·m, 76 lbf·ft)**

Turn the steering stem left and right, lock-to-lock several times to make sure the steering stem moves smoothly without play or binding.

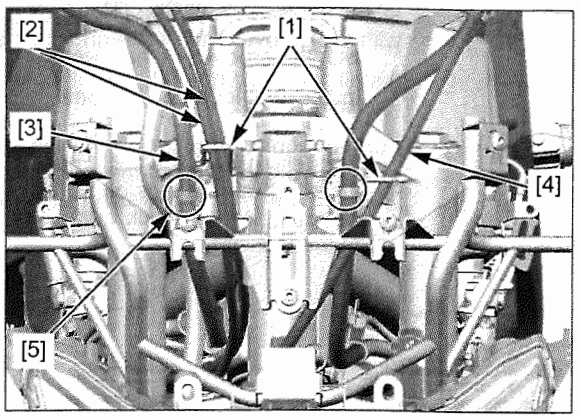
Install the cap [3] to the steering stem nut.




*CTX700/A/D:* Route the following to the wire guides [1]:

- Throttle cables [2]
- Front brake hose [3]
- Clutch cable (CTX700/A)/parking brake cable (CTX700D) [4]

Secure the two wire band bosses [5].

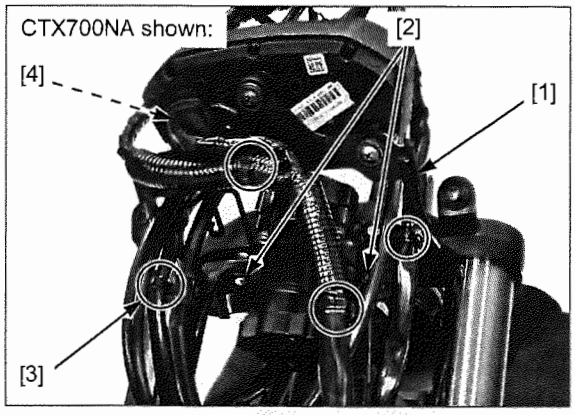


*CTX700N/NA/ND:* Install the combination meter stay assembly [1] by routing the wires, cable and hose into the stay (page 1-21).

Install and tighten the bolts [2].

Secure the wire band bosses [3].

Connect the combination meter 16P (Gray) connector [4].

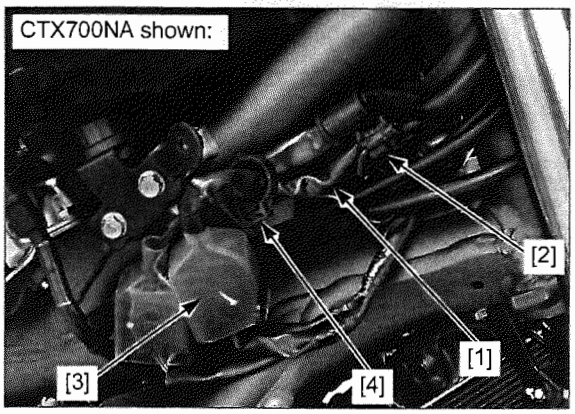



Install the wire harness [1] to the clamp [2].

Connect the ignition switch 2P (Brown) connector [3] and install the wire band [4].

Install the following:

- Handlebar
  - CTX700/A/N/NA (page 17-5)
  - CTX700D/ND (page 17-9)
- Center shelter (page 2-12)
- Headlight assembly (page 2-8) (CTX700N/NA/ND)

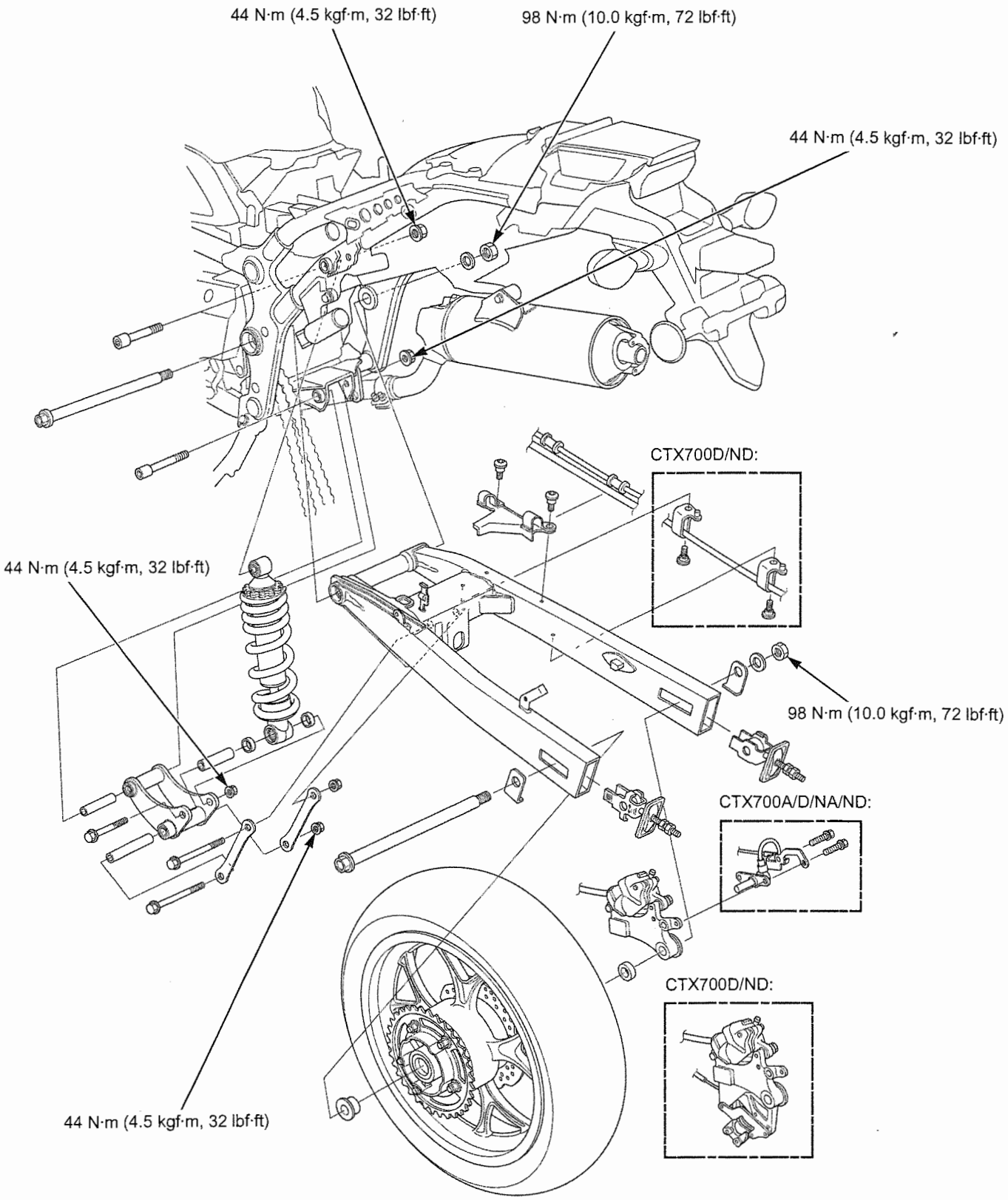


# MEMO

# 18. REAR WHEEL/SUSPENSION

# COMPONENT LOCATION

CTX700NA shown:

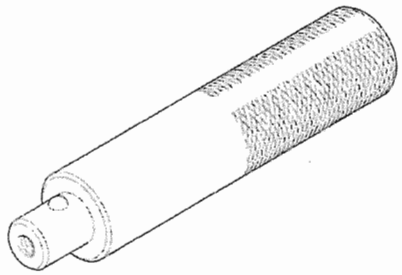
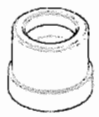
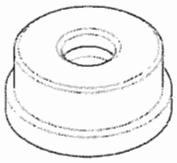
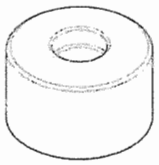
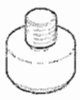
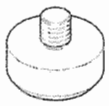
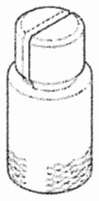
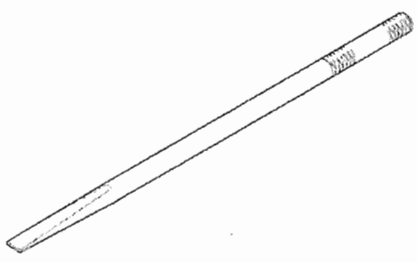


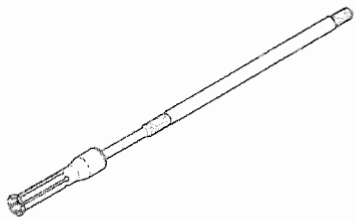
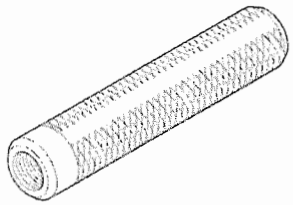
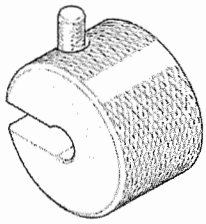
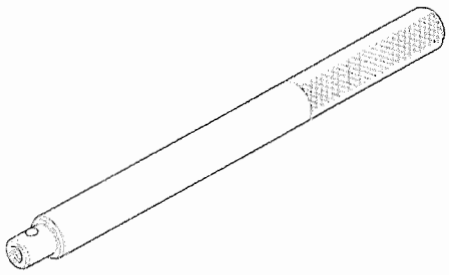
# SERVICE INFORMATION

## GENERAL

- When servicing the rear wheel and suspension, support the motorcycle using a safety stand or hoist.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- After the rear wheel installation, check the brake operation by applying the brake pedal.
- Use only tires marked "TUBELESS" and tubeless valves on rim marked "TUBELESS TIRE APPLICABLE".
- Use Honda Genuine replacement bolts and nuts for all suspension pivot and mounting point.
- For brake system information (page 19-5).

## TOOLS

| | | |
|---|---|---|
| Driver<br>07749-0010000<br>  | Attachment, 22 x 24 mm<br>07746-0010800<br>  | Attachment, 28 x 30 mm<br>07946-1870100<br>  |
| Attachment, 42 x 47 mm<br>07746-0010300<br>  | Attachment, 37 mm<br>07ZMD-MBW0200<br>  | Pilot, 17 mm<br>07746-0040400<br>  |
| Pilot, 20 mm<br>07746-0040500<br>  | Pilot, 28 mm<br>07746-0041100<br>  | Pilot, 30 mm<br>07746-0040700<br>  |
| Pilot, 32 mm<br>07MAD-PR90200<br>  | Bearing remover head, 20 mm<br>07746-0050600<br>  | Bearing remover shaft<br>07GGD-0010100<br>  |

| | | |
|---|---|---|
| Bearing remover set, 17 mm<br>07936-3710300<br>  | Remover handle<br>07936-3710100<br>  | Remover weight<br>07741-0010201<br>  <br>or 07936-371020A (U.S.A. only) |
| Driver, 15 x 280L<br>07949-3710001<br>  | | |

# TROUBLESHOOTING

**Steers to one side or does not track straight**
- Drive chain adjusters not adjusted equally
- Bent axle
- Bent frame
- Worn swingarm pivot components

**Rear wheel wobbling**
- Bent rim
- Worn wheel bearing
- Worn driven flange bearing
- Faulty tire
- Bent frame or swingarm
- Axle not tightened properly
- Unbalanced tire and wheel
- Insufficient tire pressure

**Wheel hard to turn**
- Brake drag
- Faulty wheel bearing
- Faulty driven flange bearing
- Bent axle
- Drive chain too tight (page 3-13)

**Soft suspension**
- Weak shock absorber spring
- Oil leakage from damper unit
- Insufficient tire pressure

**Stiff suspension**
- Bent shock absorber damper rod
- Damaged suspension or swingarm pivot bearing
- Bent swingarm pivot or frame

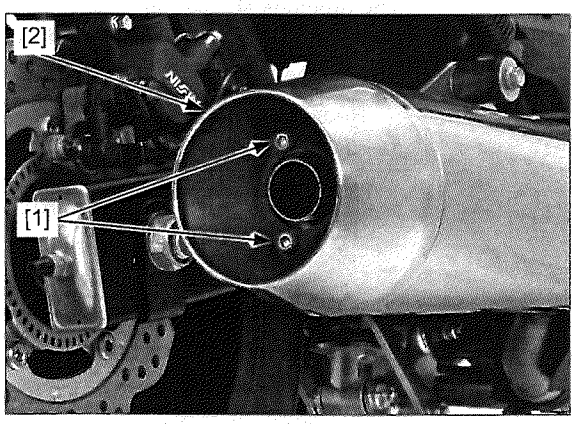
**Rear suspension noisy**
- Loose suspension fasteners
- Faulty shock absorber

# REAR WHEEL

## REMOVAL

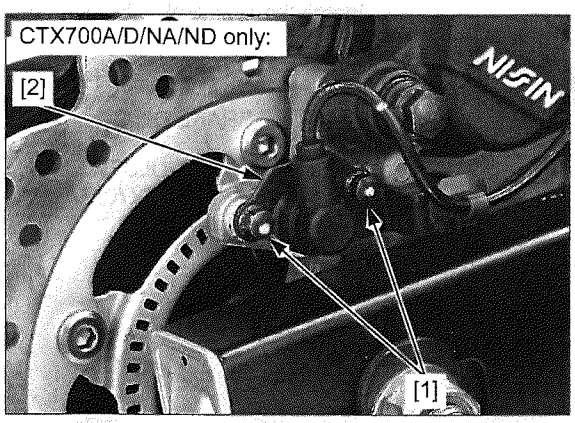
Remove the two socket bolts [1] and muffler end cover [2].

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.




*CTX700A/D/NA/ND only:*

Remove the bolts [1] and rear wheel speed sensor [2].



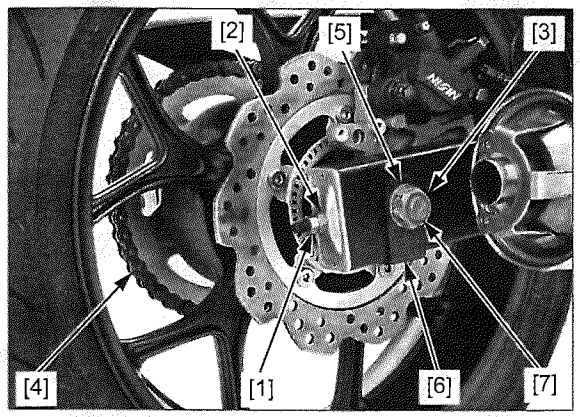

Loosen the lock nut [1], drive chain adjusting nut [2] and axle nut [3].

Push the rear wheel forward.
Derail the drive chain [4] from the driven sprocket.

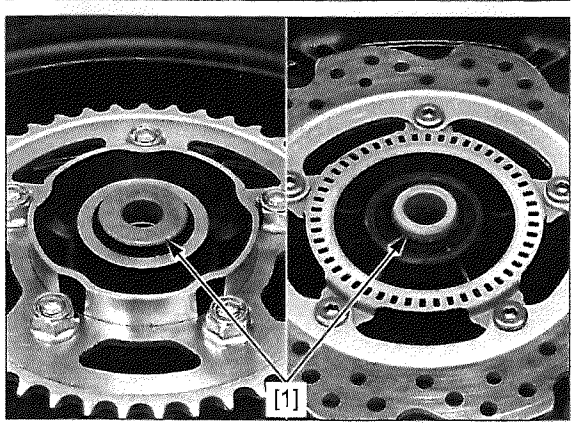
Remove the axle nut, washer [5] and adjusting plate [6].

*Do not operate the brake pedal after removing the rear wheel.*

Remove the axle [7], adjusting plate and rear wheel.




Remove the side collars [1].



## INSPECTION

Turn the inner race of each bearing with your finger.
The bearings should turn smoothly and quietly.
Also check that the outer race fits tightly in the wheel hub.

Inspect the following parts for damage, abnormal wear, deformation and bend.

- Rear axle
- Spoke
- Wheel rim

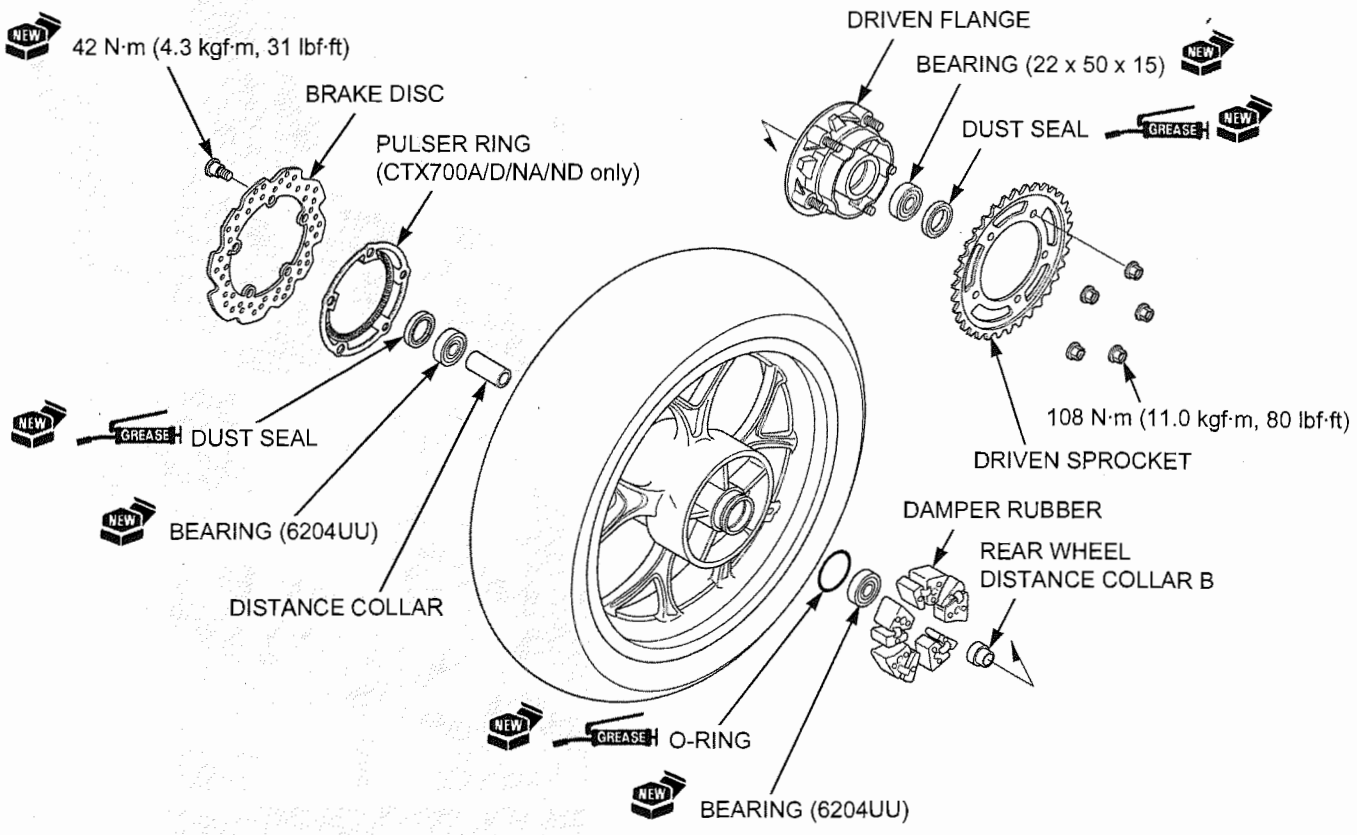
Measure each part according to REAR WHEEL/SUSPENSION SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

## DISASSEMBLY/ASSEMBLY

Disassemble and assemble the rear wheel as following illustration.

- For wheel balance service (page 17-15)
- Install the rear wheel dust seal until it is flush with the wheel hub surface.
- Install the rear brake disc with the "⇨" marked side facing out.

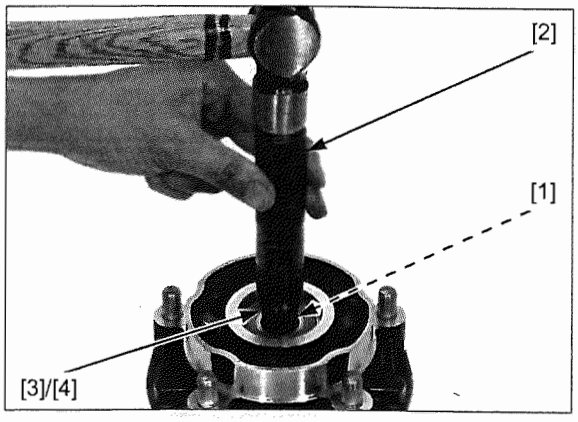



### DISASSEMBLY

Drive out the rear wheel distance collar B [1].

**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 22 x 24 mm** | **07746-0010800** |
| **[4] Pilot, 20 mm** | **07746-0040500** |

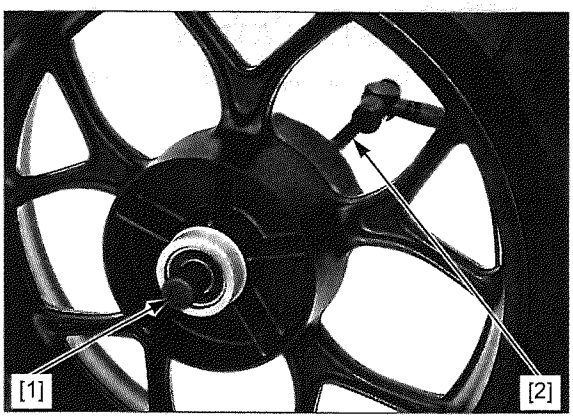


Install the bearing remover head [1] into the bearing. From the opposite side, install the bearing remover shaft [2] and drive out the bearing from the wheel hub.

**TOOLS:**

| | |
|---|---|
| **[1] Bearing remover head, 20 mm** | **07746-0050600** |
| **[2] Bearing remover shaft** | **07GGD-0010100** |

Remove the distance collar and drive out the other bearing.




## ASSEMBLY

*Never install the old bearing, once the bearing has been removed, the bearing must be replaced with new ones.*

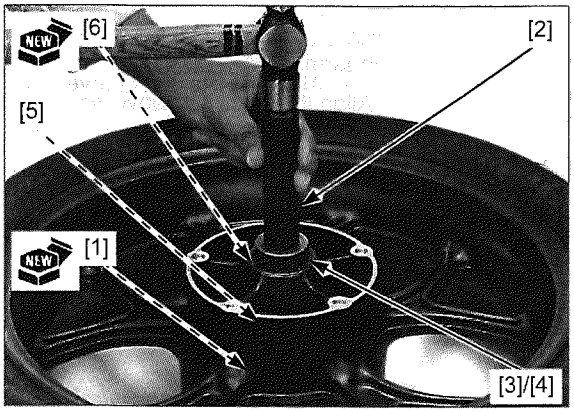
Drive in a new right side bearing [1] squarely until it is fully seated.

**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 42 x 47 mm** | **07746-0010300** |
| **[4] Pilot, 20 mm** | **07746-0040500** |

Install the distance collar [5].

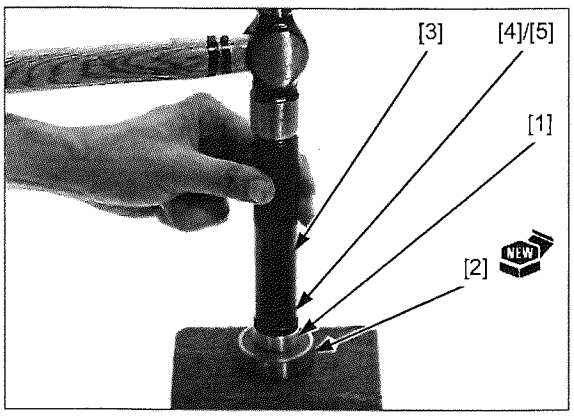
Drive in a new left side bearing [6] squarely until it is seated on the distance collar.




Drive the rear wheel distance collar B [1] to a new driven flange bearing [2].

**TOOLS:**

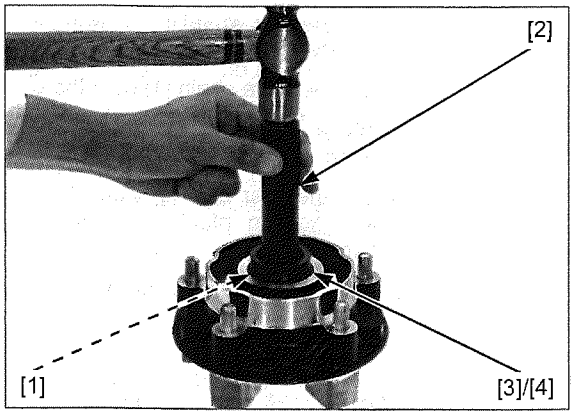
| | |
|---|---|
| **[3] Driver** | **07749-0010000** |
| **[4] Attachment, 28 x 30 mm** | **07946-1870100** |
| **[5] Pilot, 20 mm** | **07746-0040500** |




Drive in the driven flange bearing/collar [1] squarely with its collar side facing down until it is fully seated.

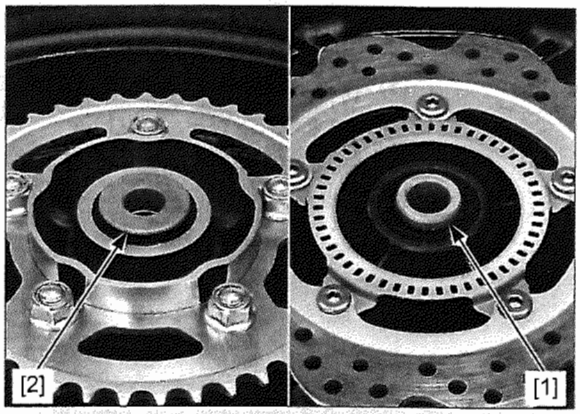
**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 42 x 47 mm** | **07746-0010300** |
| **[4] Pilot, 20 mm** | **07746-0040500** |



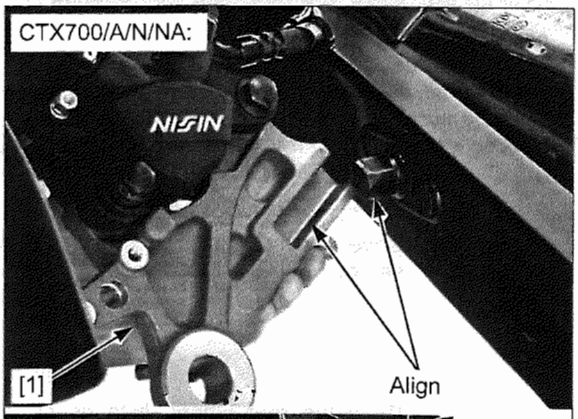
## INSTALLATION

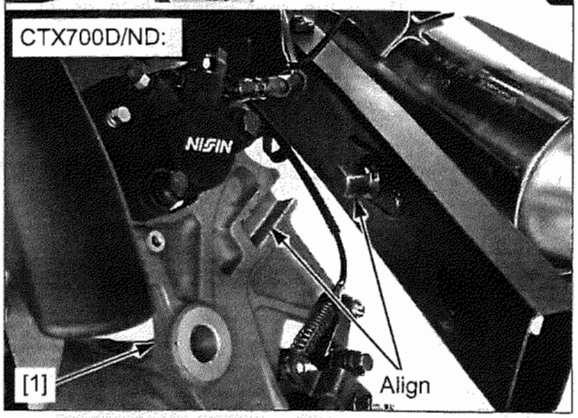
Install the right side collar [1] and left side collar [2].




Install the brake caliper/bracket assembly [1] to the swingarm.

- Align the bracket groove with swingarm tab.




*Be careful not to damage the brake pads.*

Install the rear wheel in the swingarm aligning the brake disc between the brake pads.

Install the drive chain [1] over the driven sprocket.

Apply a thin coat of grease to the rear axle outer surface.

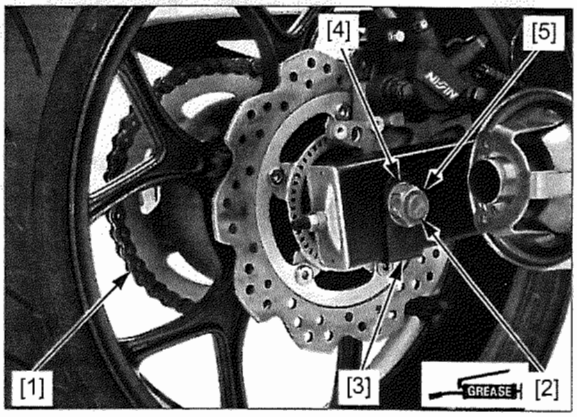
Install the rear axle [2] from the left side through the axle adjusting plate [3], swingarm, rear wheel and collars.

Install the adjusting plate, washer [4] and rear axle nut [5].

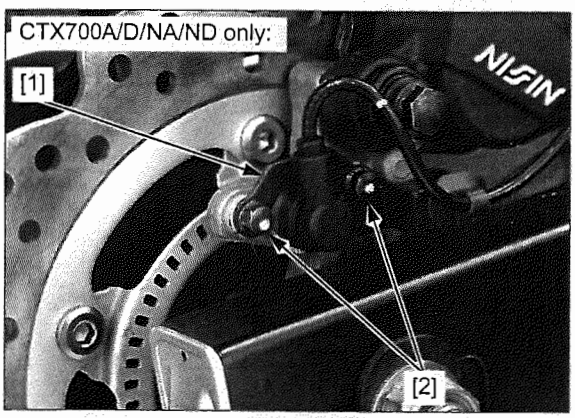
Tighten the rear axle nut to the specified torque.

**TORQUE: 98 N·m (10.0 kgf·m, 72 lbf·ft)**

Adjust the drive chain slack (page 3-13).



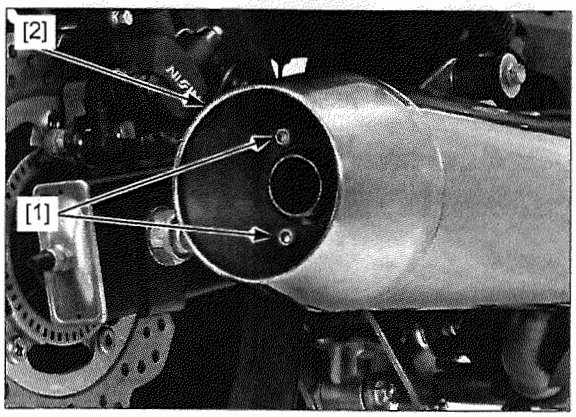
*CTX700A/D/NA/ND only:* Install the rear wheel speed sensor [1] and bolts [2]. Tighten the bolts securely.




Install the muffler end cover [1] and two socket bolts [2].

Tighten the socket bolts to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**




*CTX700A/D/NA/ND only:* Check the air gap between the rear wheel speed sensor and pulser ring (page 20-20).

*CTX700D/ND only:* Check the parking brake lock operation (page 3-18).

# SHOCK LINKAGE

## REMOVAL/INSTALLATION

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Remove the following:

- Shock link bolt [1] and nut [2]
- Shock absorber lower mounting bolt [3] and nut [4]
- Shock arm bolt [5] and nut [6]
- Shock linkage assembly [7]

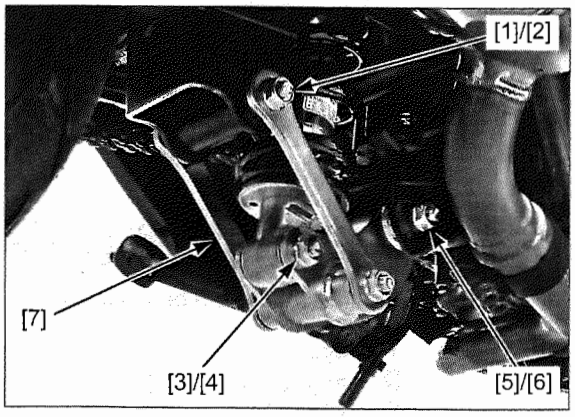
Installation is in the reverse order of removal.

**TORQUE:**

**Shock absorber mounting nut:**
**44 N·m (4.5 kgf·m, 32 lbf·ft)**

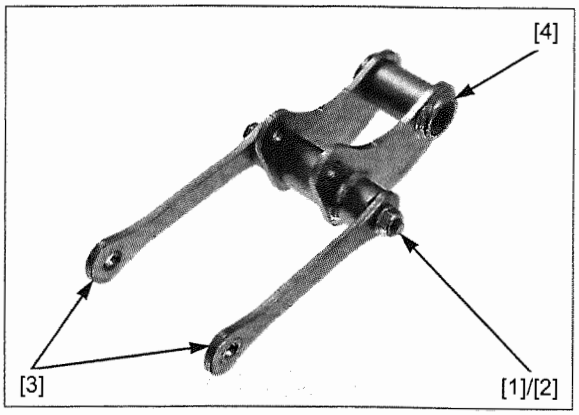
**Shock arm nut:**
**44 N·m (4.5 kgf·m, 32 lbf·ft)**

**Shock link nut:**
**44 N·m (4.5 kgf·m, 32 lbf·ft)**



## DISASSEMBLY/INSPECTION/ASSEMBLY

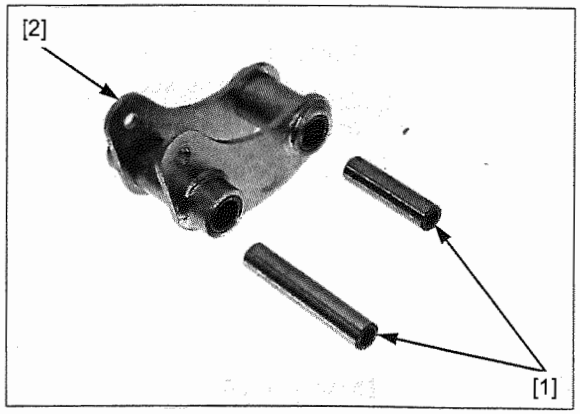
Remove the shock link bolt [1], nut [2] and shock links [3] from the shock arm [4].




Remove the collars [1] from the shock arm [2].

Assembly is in the reverse order of disassembly.

**TORQUE:**
**Shock link nut: 44 N·m (4.5 kgf·m, 32 lbf·ft)**




## INSPECTION

Inspect the following parts for damage, abnormal wear, deformation and crack.

- Shock arm plates
- Shock link
- Pivot collars
- Needle bearings

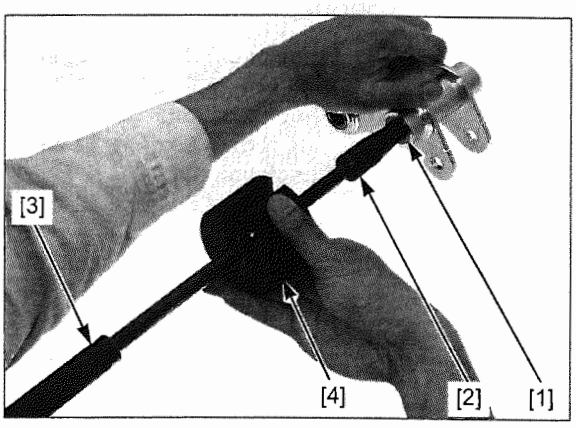
Replace if necessary.

## BEARING REPLACEMENT

Remove the needle bearings [1] using the special tools.

**TOOLS:**

| | |
|---|---|
| **[2] Bearing remover set, 17 mm** | **07936-3710300** |
| **[3] Remover handle** | **07936-3710100** |
| **[4] Remover weight** | **07741-0010201 or 07936-371020A (U.S.A. only)** |



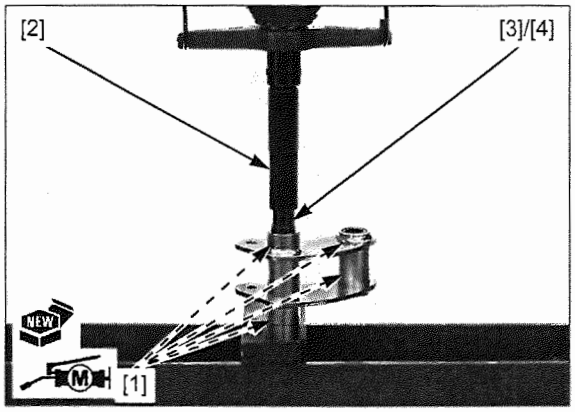
*Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.*

Apply molybdenum disulfide grease to new needle bearings rotating area.

Install the needle bearings [1] with the marked and dust seal side facing out until it is flush with the shock arm surface using a hydraulic press and special tools as shown.

**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 22 x 24 mm** | **07746-0010800** |
| **[4] Pilot, 17 mm** | **07746-0040400** |




# SHOCK ABSORBER

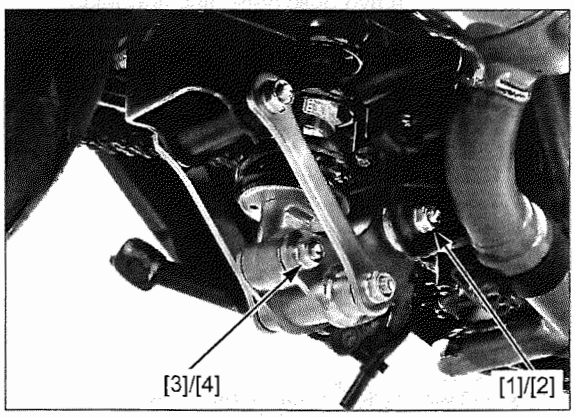
## REMOVAL/INSTALLATION

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Remove the right swingarm pivot cover (page 2-17).

Remove the shock arm bolt [1] and nut [2].

Remove the shock absorber lower mounting bolt [3] and nut [4].




Remove the shock absorber upper mounting nut [1].

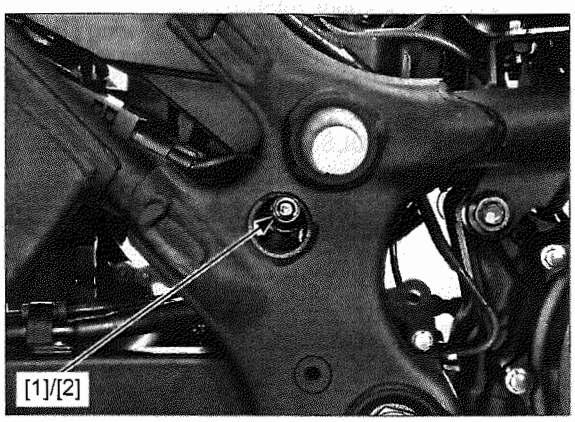
Remove the shock absorber upper mounting socket bolt [2] and shock absorber.

Installation is in the reverse order of removal.

**TORQUE:**

**Shock absorber mounting nut:**
**44 N·m (4.5 kgf·m, 32 lbf·ft)**

**Shock arm nut:**
**44 N·m (4.5 kgf·m, 32 lbf·ft)**



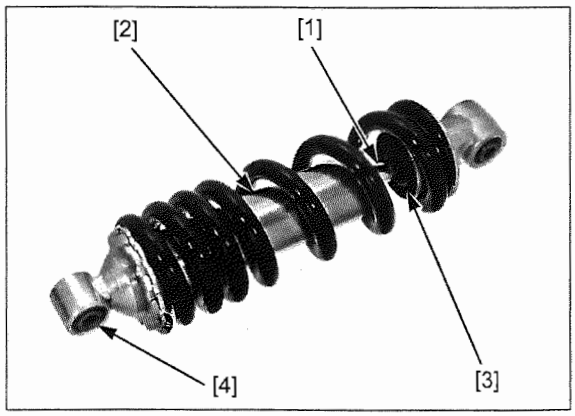

## INSPECTION

Visually inspect the shock absorber for wear or damage.

Check the following:

- Damper rod [1] for bend or damage
- Damper unit [2] for deformation or oil leaks
- Rubber bumper [3] for wear or damage
- Bushing [4] for wear or damage

Replace the shock absorber as an assembly if necessary.



Remove the collar [1] and dust seals [2].

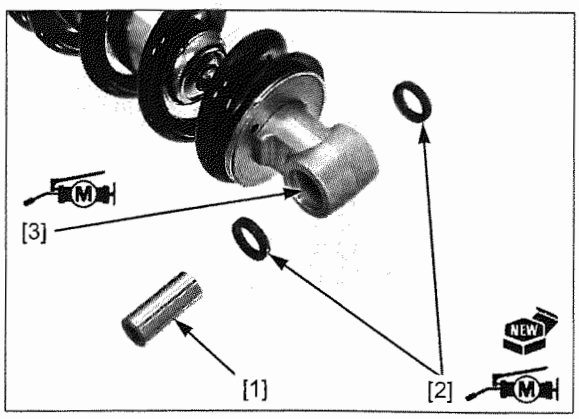
Check the needle bearings [3] for damage or loose fit, replace it if necessary (page 18-12).

Check the collar for wear or damage, replace it if necessary.

Apply molybdenum disulfide grease to the needle bearings rotating area and new dust seal lips.

Install the dust seals until it is flush with the shock absorber surface.

Install the collar.

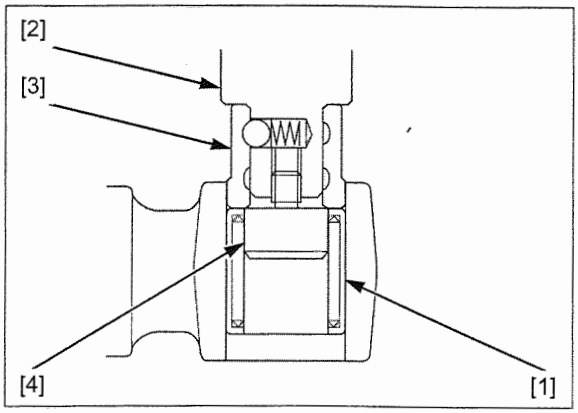



## BEARING REPLACEMENT

Drive the needle bearing [1] out of the lower pivot using a hydraulic press and special tool.

**TOOLS:**

| | |
|---|---|
| **[2] Driver 15 x 280L** | **07949-3710001** |
| **[3] Attachment, 22 x 24 mm** | **07746-0010800** |
| **[4] Pilot, 17 mm** | **07746-0040400** |



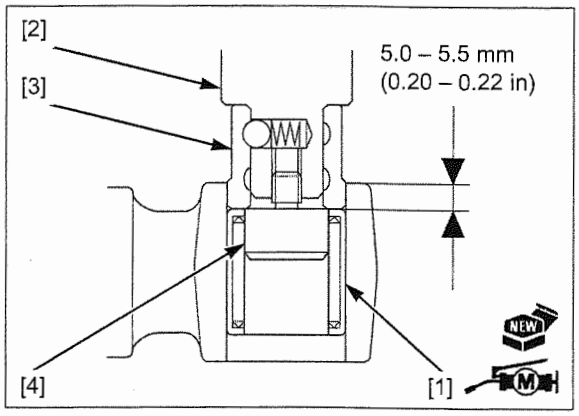

*Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.*

Apply molybdenum disulfide grease to new needle bearings rotating area.

Install the needle bearing [1] into the lower pivot to the specified range using a hydraulic press and special tools as shown.

**TOOLS:**

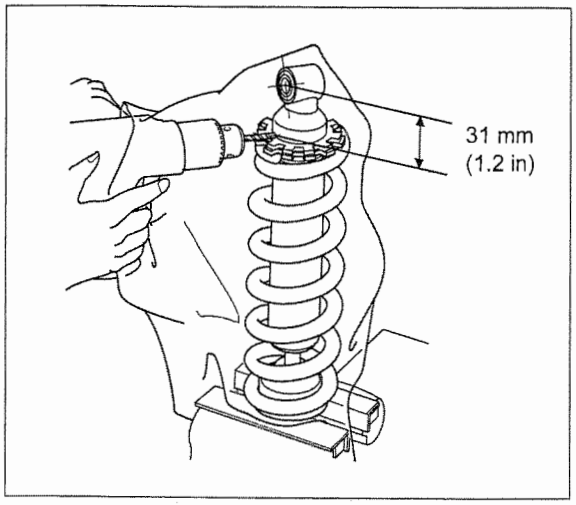
| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 22 x 24 mm** | **07746-0010800** |
| **[4] Pilot, 17 mm** | **07746-0040400** |



## SHOCK ABSORBER DISPOSAL PROCEDURE

Center punch the shock absorber to mark the drilling point.

Wrap the shock absorber inside a plastic bag.
Support the shock absorber in a vise as shown.
Through the open end of the bag, insert a drill motor with a sharp 2 – 3 mm (5/64 – 1/8 in) drill bit.




**NOTICE**

- *Do not use a dull drill bit which could cause a build-up of excessive heat and pressure inside the damper, leading to an explosion and severe injury.*
- *The shock absorber contains nitrogen gas and oil under high pressure. Do not drill any further down the damper case than the measurement given above, or you may drill into the oil chamber. Then high pressure oil may cause serious injury.*
- *Always wear eye protection to avoid getting metal shavings in your eyes when the gas pressure is released. The plastic bag is only intended to shield you from the escaping gas.*

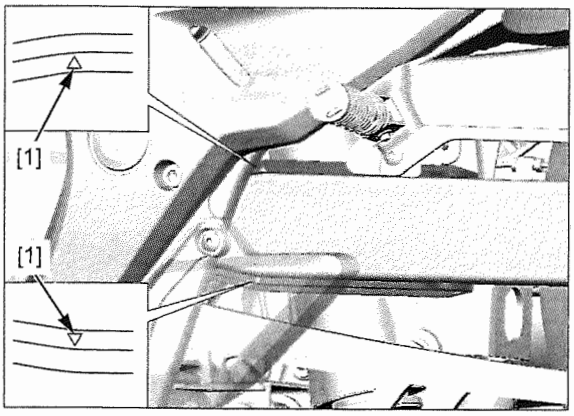
Hold the bag around the drill motor and briefly run the drill motor inside the bag; this will inflate the bag with air from the motor and help keep the bag from getting caught in the bit when you start.

# SWINGARM

## DRIVE CHAIN SLIDER INSPECTION

Check the drive chain slider for wear or damage.

The drive chain slider must be replaced if it is worn to the wear indicator [1] (page 18-14).

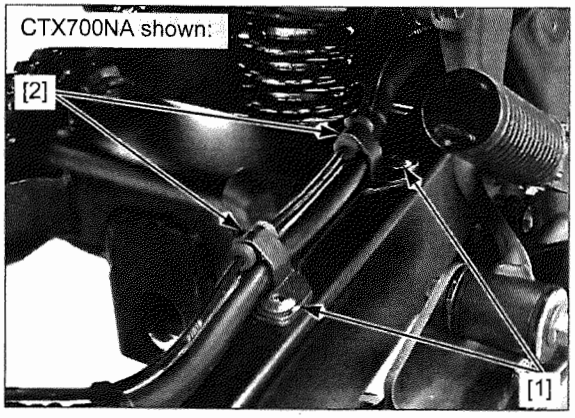



## REMOVAL

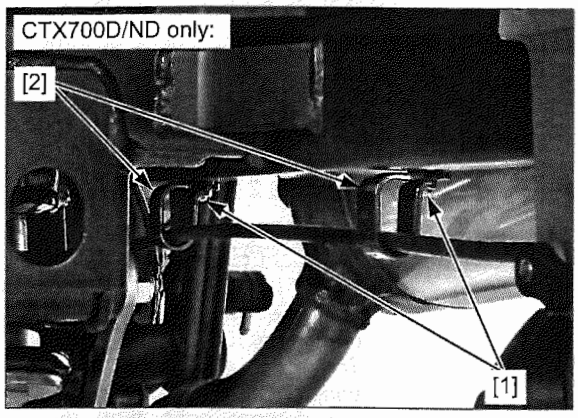
Remove the following:

- Swingarm pivot covers (page 2-17)
- Chain cover (page 2-18)
- Rear wheel (page 18-5)

Remove the two socket bolts [1] and brake hose guides [2].

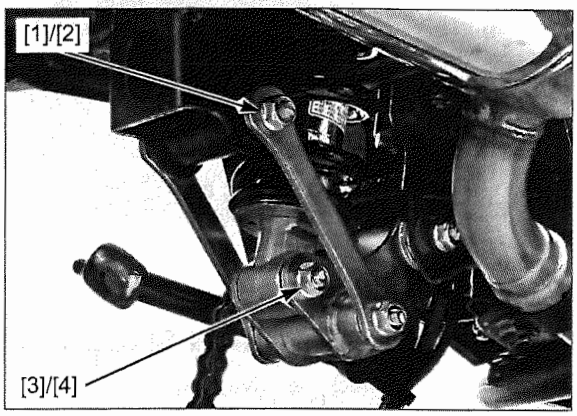


*CTX700D/ND only:* Remove the screws [1] and parking brake cable guides [2].

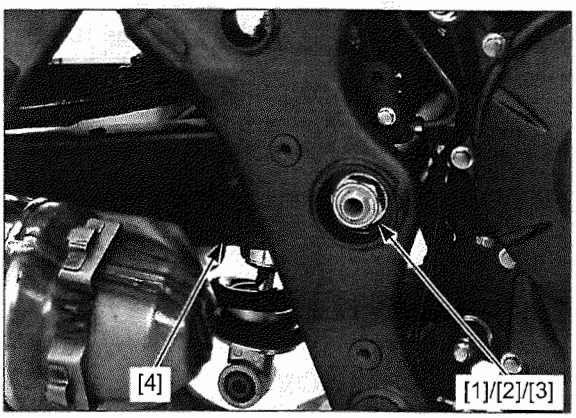



Remove the shock link bolt [1] and nut [2].

Remove the shock absorber lower mounting bolt [3] and nut [4].



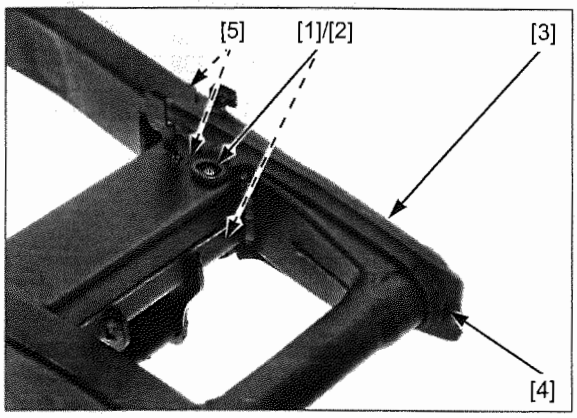

Remove the swingarm pivot nut [1], washer [2], pivot bolt [3] and swingarm [4].




## DISASSEMBLY/INSPECTION

Remove the drive chain slider mounting screws [1] and washers [2].

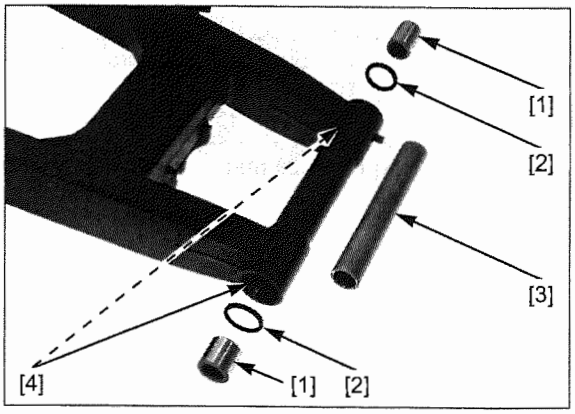
Remove the drive chain slider [3] by releasing the slider slit [4] from the swingarm tab and slider tabs [5] from the swingarm holes.



Remove the pivot collars [1], dust seals [2] and distance collar [3] from the swingarm pivot.

Check the collar for wear, damage or fatigue.

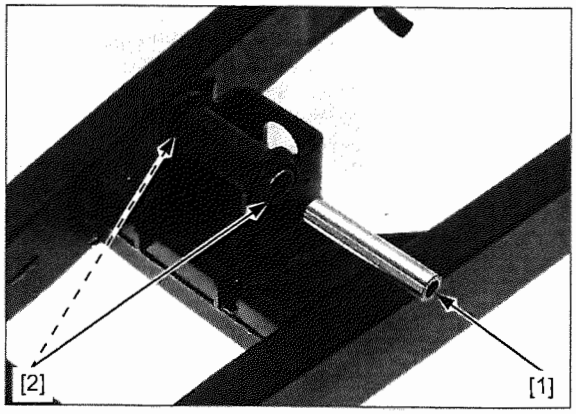
Check the needle bearings [4] for damage or loose fit, replace it if necessary (page 18-15).




Remove the collar [1] form the shock absorber bracket.

Check the collar for wear, damage or fatigue.

Check the needle bearings [2] for damage or loose fit, replace it if necessary (page 18-15).




## INSPECTION

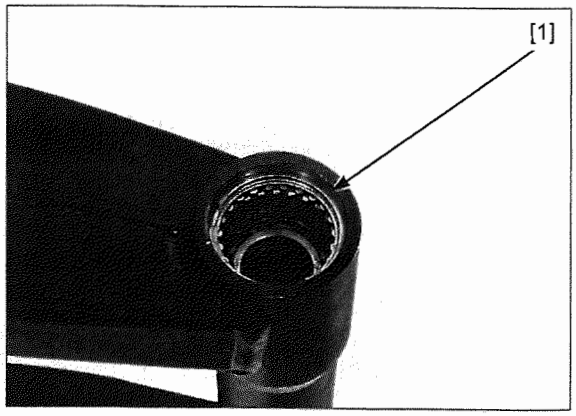
Inspect the following parts for damage, abnormal wear and deformation.

- Swingarm
- Pivot collars
- Bearings
- Drive chain slider (page 18-13)

Replace if necessary.

## PIVOT BEARING REPLACEMENT

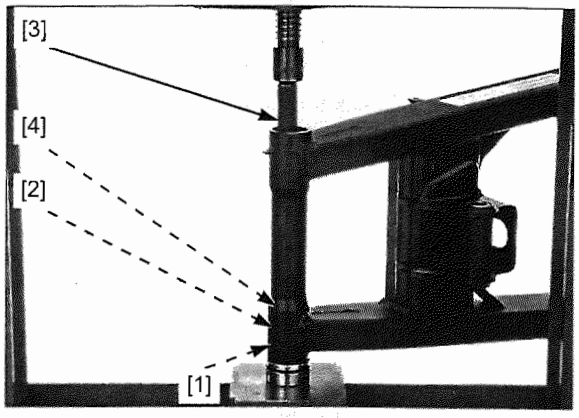
Remove the snap ring [1] from the right pivot.



Drive the needle bearing [1] and ball bearing [2] out of the right pivot using a hydraulic press and special tool.

**TOOLS:**

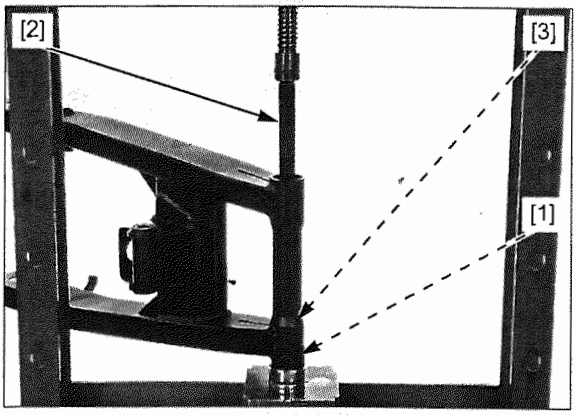
| | |
|---|---|
| **[3] Driver, 15 x 280L** | **07949-3710001** |
| **[4] Pilot, 28 mm** | **07746-0041100** |




Drive the needle bearing [1] out of the left pivot using a hydraulic press and special tool.

**TOOLS:**

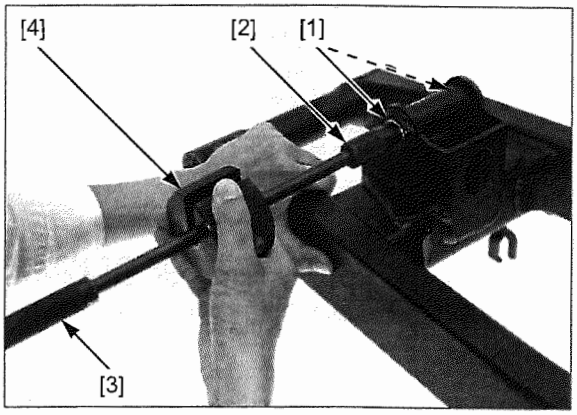
| | |
|---|---|
| **[2] Driver, 15 x 280L** | **07949-3710001** |
| **[3] Pilot, 32 mm** | **07MAD-PR90200** |




Remove the needle bearings [1] out of the shock absorber bracket using the special tools.

**TOOLS:**

| | |
|---|---|
| **[2] Bearing remover set, 17 mm** | **07936-3710300** |
| **[3] Remover handle** | **07936-3710100** |
| **[4] Remover weight** | **07741-0010201 or 07936-371020A (U.S.A. only)** |

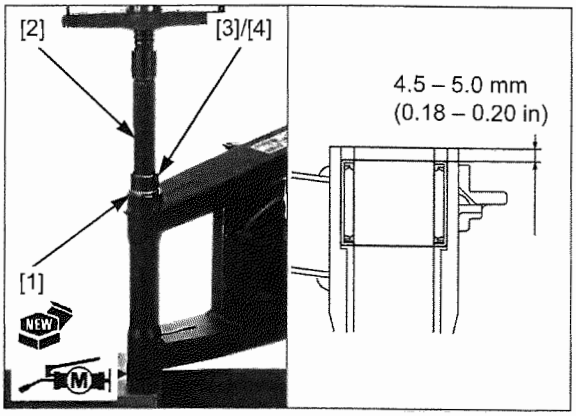



Apply molybdenum disulfide grease to a new needle bearing rotating area.

Install the needle bearing [1] into the left pivot with the marked side facing up to the specified range using a hydraulic press and special tools as shown.

**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 37 mm** | **07ZMD-MBW0200** |
| **[4] Pilot, 28 mm** | **07746-0041100** |

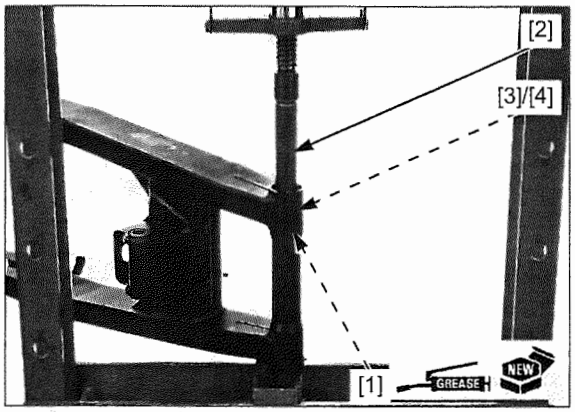


Apply grease to a new ball bearing rotating area.

Install the ball bearing [1] into the right pivot with the marked side facing out until it is fully seated using a hydraulic press and special tools as shown.

**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 37 mm** | **07ZMD-MBW0200** |
| **[4] Pilot, 20 mm** | **07746-0040500** |

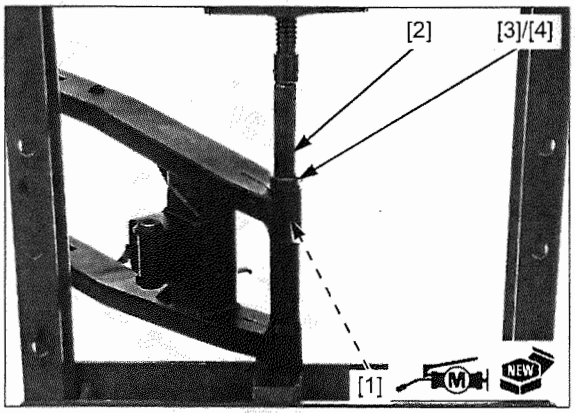



Apply molybdenum disulfide grease to a new needle bearing rotating area.

Install the needle bearing [1] into the right pivot with the marked side facing out until it is fully seated using a hydraulic press and special tools as shown.

**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 37 mm** | **07ZMD-MBW0200** |
| **[4] Pilot, 30 mm** | **07746-0040700** |

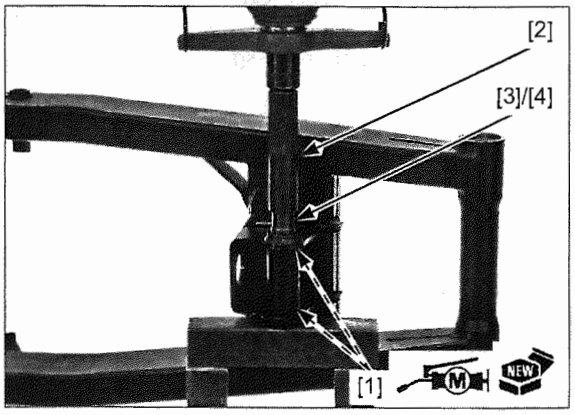



Apply molybdenum disulfide grease to a new needle bearing rotating area.

Install the needle bearings [1] into the shock absorber bracket with the marked side facing out until it is flush with the bracket surface using a hydraulic press and special tools as shown.

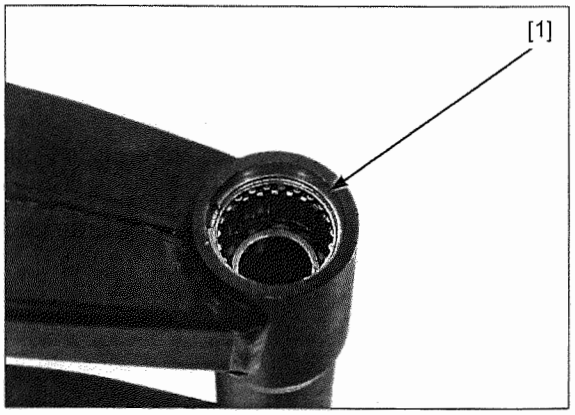
**TOOLS:**

| | |
|---|---|
| **[2] Driver** | **07749-0010000** |
| **[3] Attachment, 22 x 24 mm** | **07746-0010800** |
| **[4] Pilot, 17 mm** | **07746-0040400** |

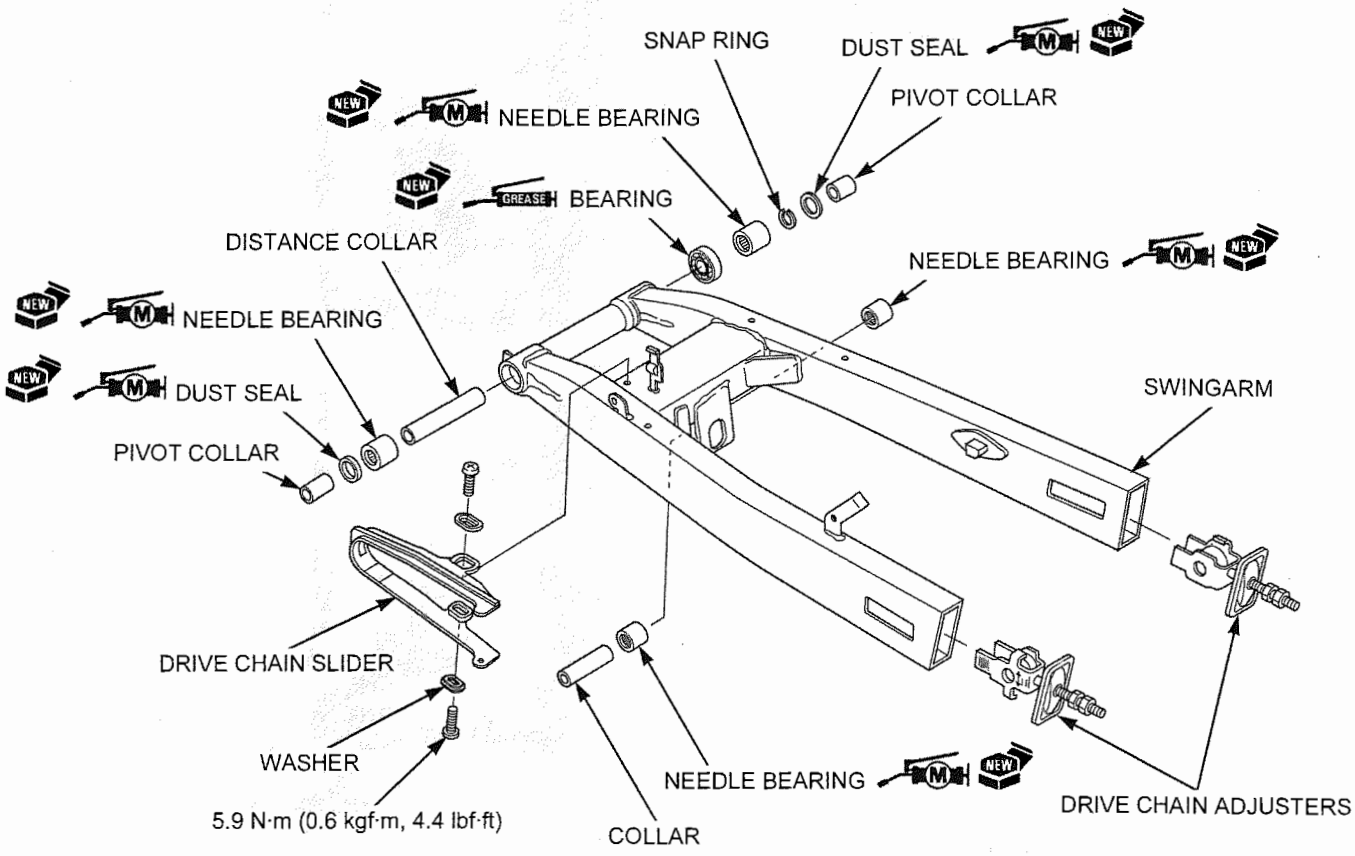



Install the snap ring [1] into the right pivot groove securely.

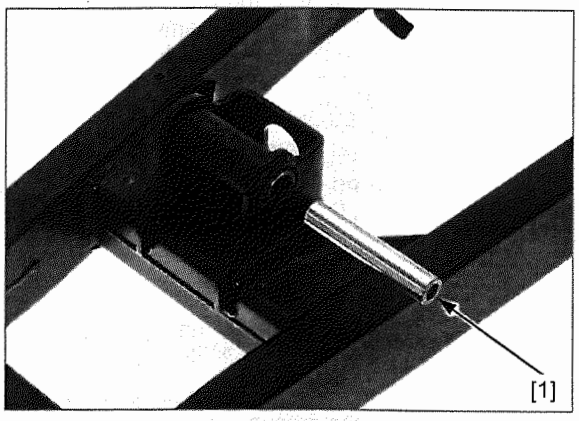
- Do not reuse the snap ring which could easily spin in the groove.
- Make sure that the snap ring is firmly seated in the groove.



## ASSEMBLY




Install the collar [1] to the shock absorber bracket.



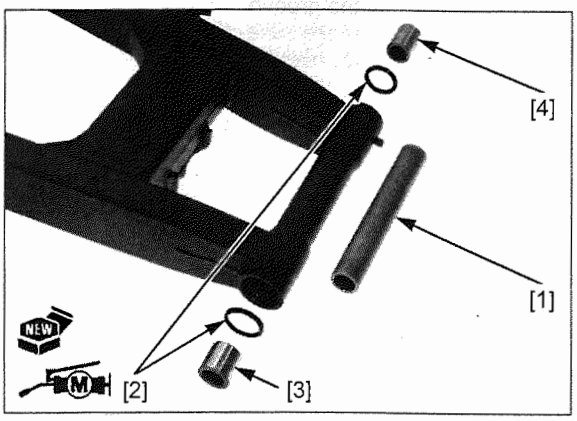

Apply molybdenum disulfide grease to new dust seal lips.

Install the distance collar [1] and dust seals [2] to the swingarm pivot.

- Install the dust seal flush with the pivot surface.

Install the wide pivot collar [3] to the swingarm right pivot.

Install the narrow pivot collar [4] to the swingarm left pivot.



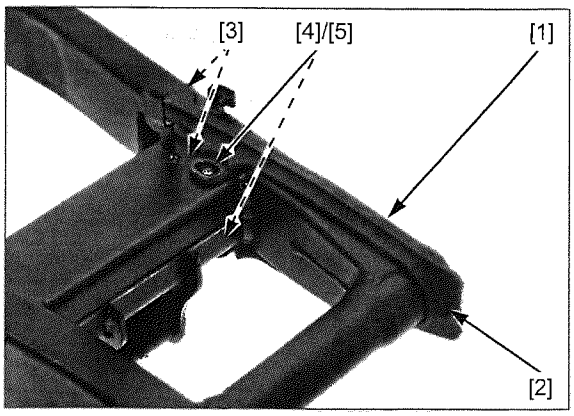
Install the drive chain slider [1].

- Align the drive chain slider slit [2] from the swingarm tab.
- Align the drive chain slider tabs [3] from the swingarm holes.

Install the washers [4] and drive chain slider mounting screws [5].

Tighten the drive chain slider mounting screws to the specified torque.

**TORQUE: 5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)**

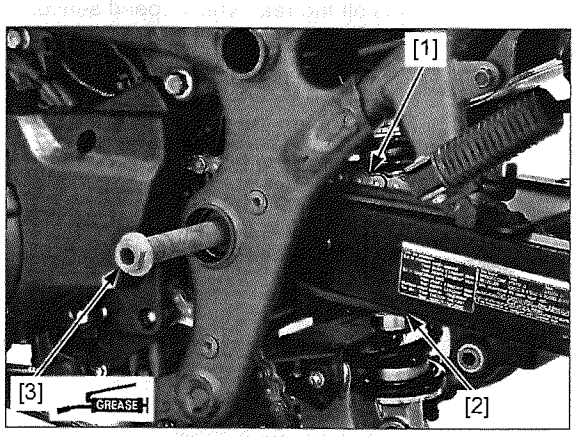



## INSTALLATION

Apply a thin coat of grease to the swingarm pivot bolt sliding surface.

Set the drive chain [1] onto the swingarm [2] and install the swingarm to the frame.

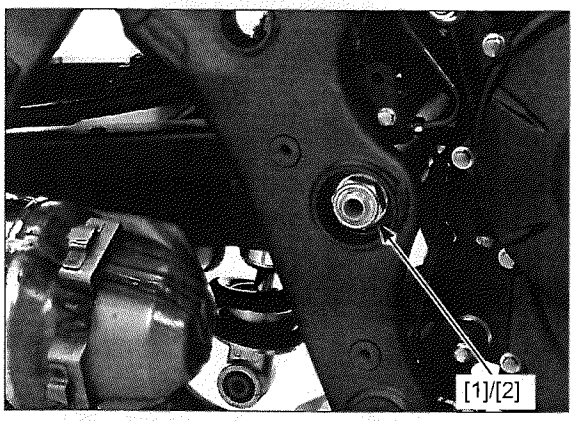
Install the swingarm pivot bolt [3] from the left side.




Install the washer [1] and swingarm pivot nut [2].

Tighten the swingarm pivot nut to the specified torque.

**TORQUE: 98 N·m (10.0 kgf·m, 72 lbf·ft)**




Set the shock arm [1] and install the shock absorber lower mounting bolt [2].

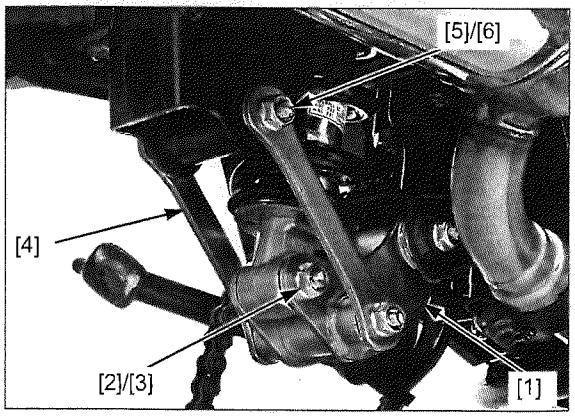
Install and tighten the shock absorber lower mounting nut [3] to the specified torque.

**TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)**

Set the shock links [4] and install the shock link bolt [5].

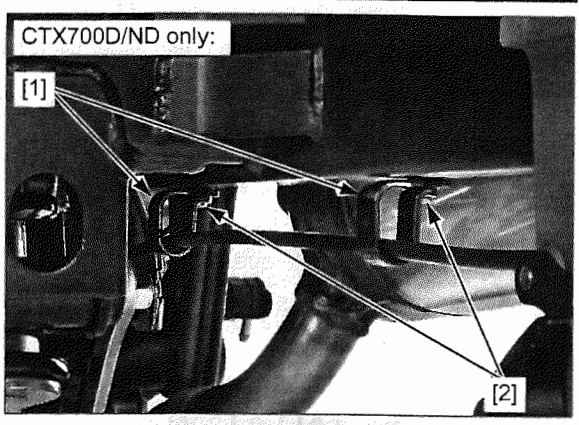
Install and tighten the shock link nut [6] to the specified torque.

**TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)**



*CTX700D/ND only:* Install the parking brake cable guides [1] and screws [2].

Tighten the screws securely.



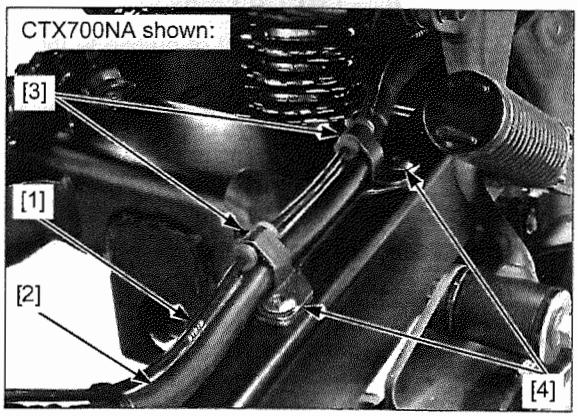

Install the rear wheel speed sensor wire [1] (CTX700A/D/NA/ND only) and brake hose [2] to the brake hose guides [3].

Install the brake hose guide and socket bolts [4].

Tighten the socket bolts securely.

Install the following:

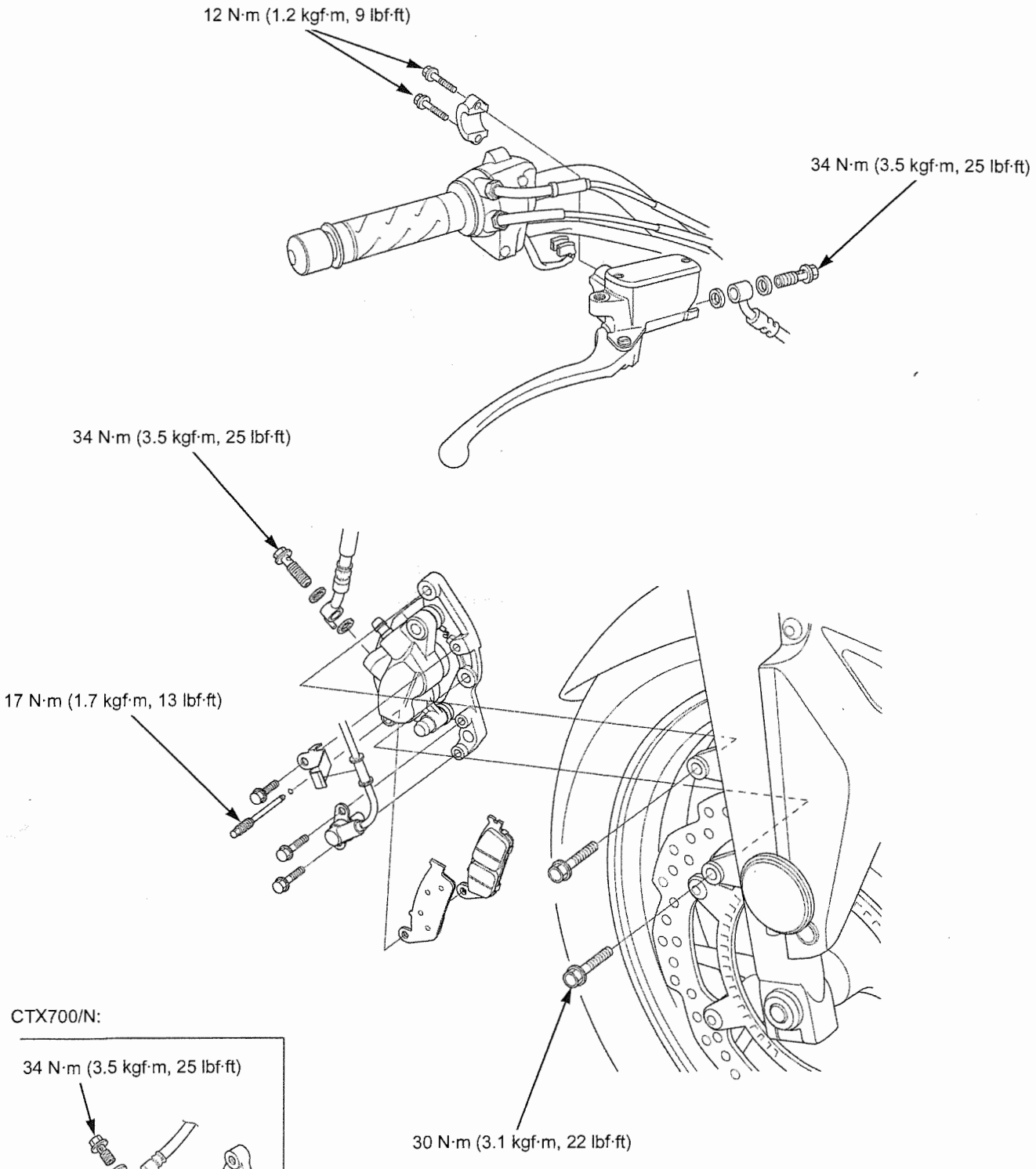
- Rear wheel (page 18-8)
- Chain cover (page 2-18)
- Swingarm pivot covers (page 2-17)



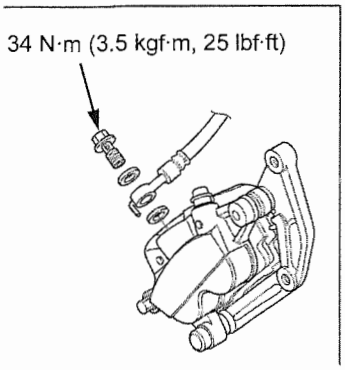
# 19. HYDRAULIC BRAKE

# COMPONENT LOCATION

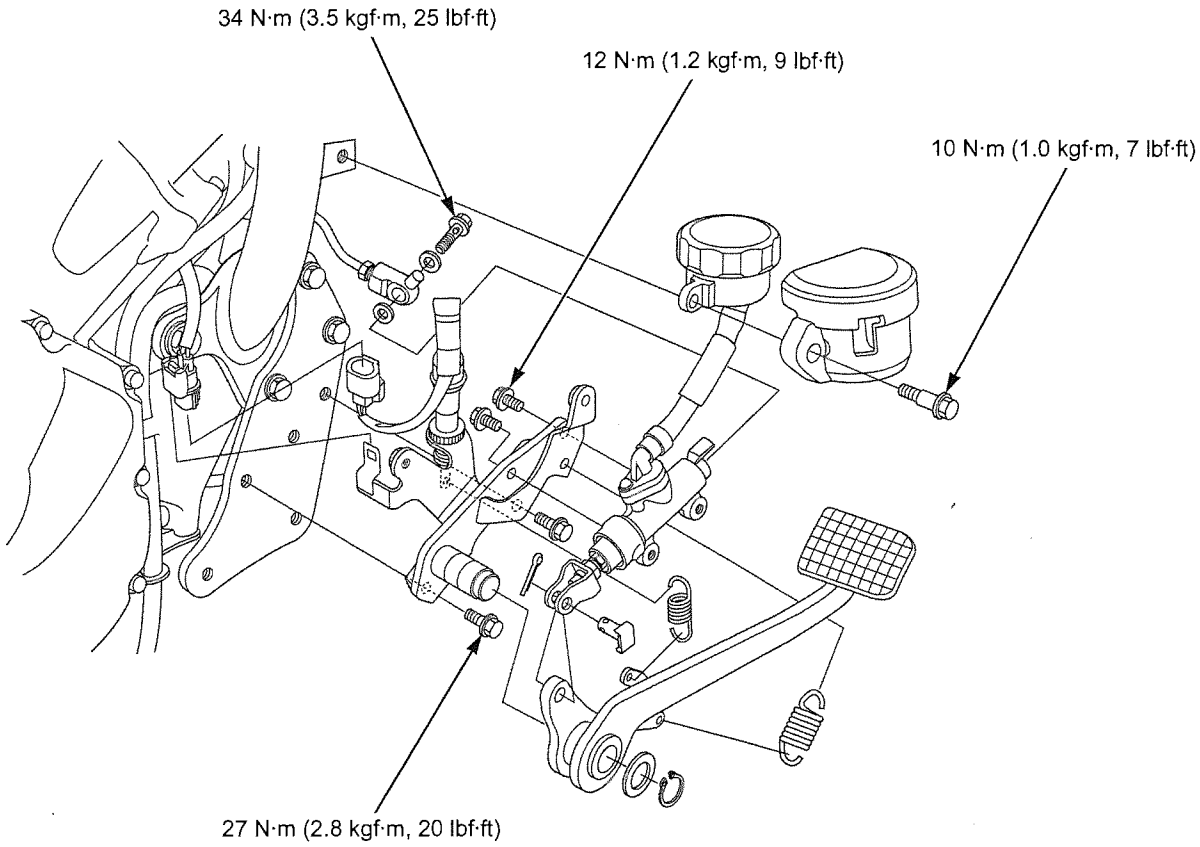
CTX700NA shown:

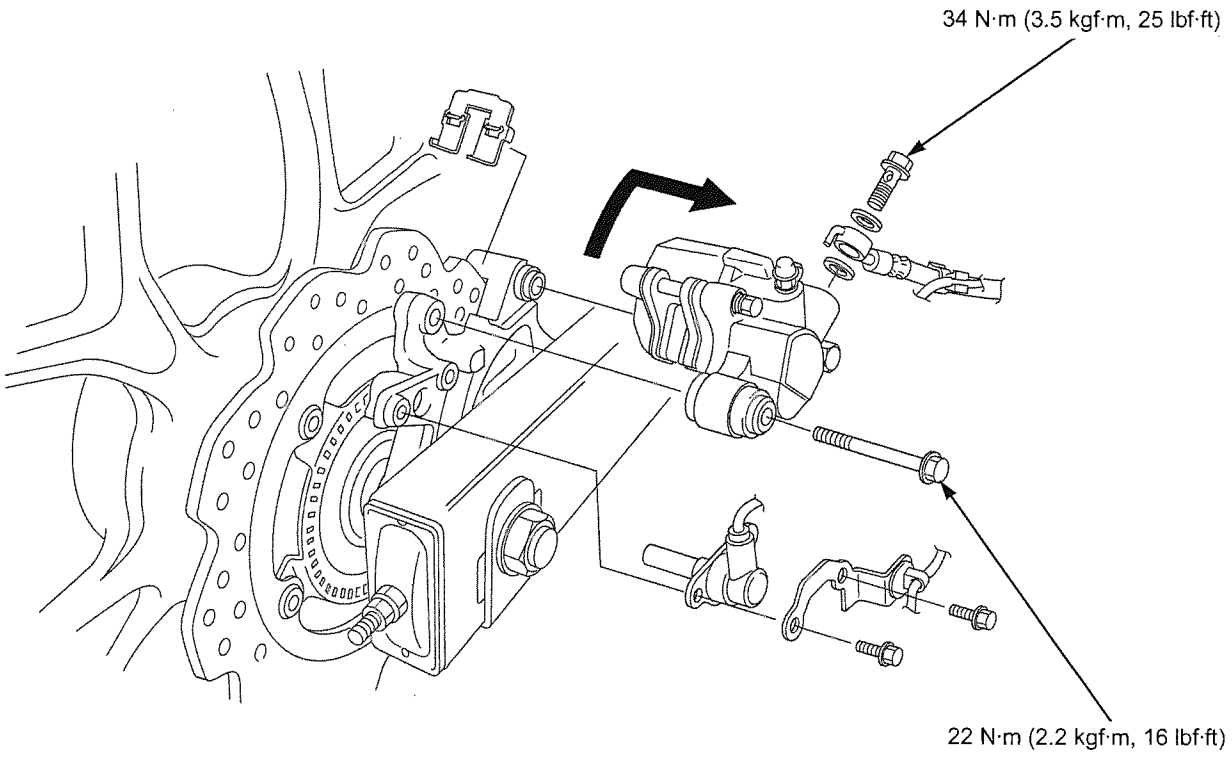



CTX700/N:

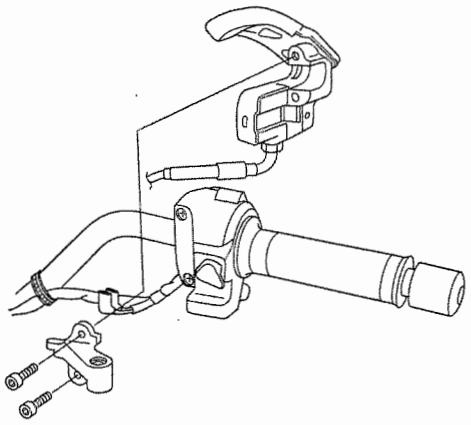


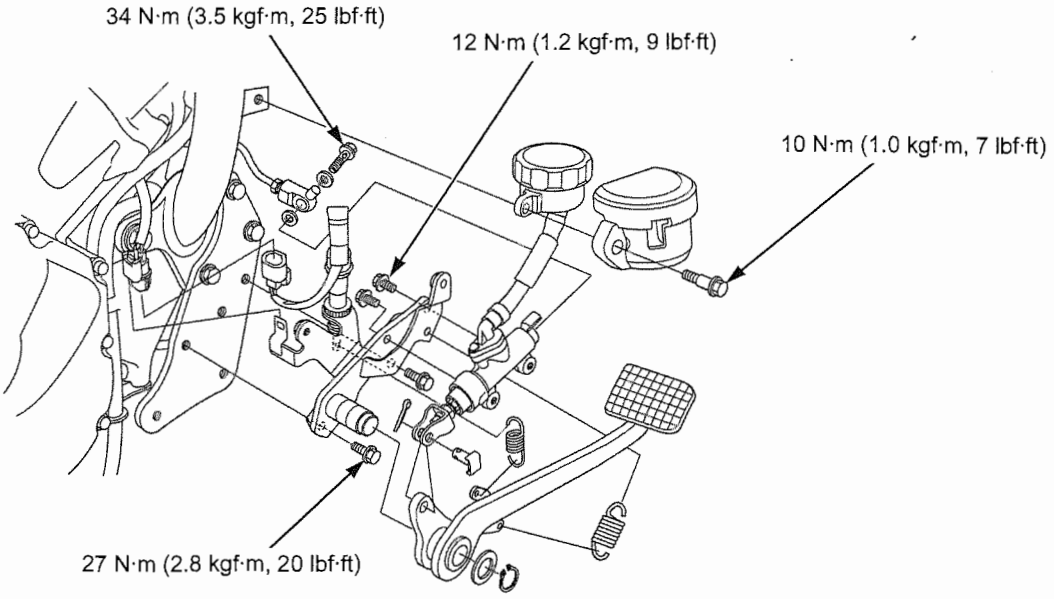
**CTX700/A/N/NA:**

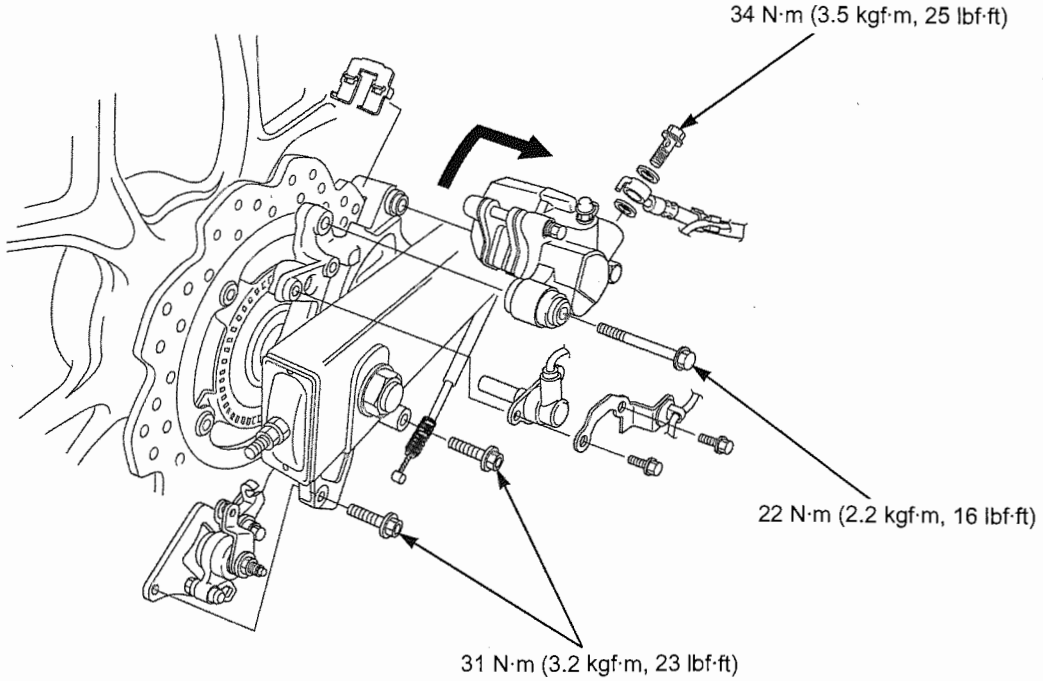

34 N·m (3.5 kgf·m, 25 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
10 N·m (1.0 kgf·m, 7 lbf·ft)
27 N·m (2.8 kgf·m, 20 lbf·ft)


34 N·m (3.5 kgf·m, 25 lbf·ft)
22 N·m (2.2 kgf·m, 16 lbf·ft)

**CTX700D/ND:**




34 N·m (3.5 kgf·m, 25 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
10 N·m (1.0 kgf·m, 7 lbf·ft)
27 N·m (2.8 kgf·m, 20 lbf·ft)


34 N·m (3.5 kgf·m, 25 lbf·ft)
22 N·m (2.2 kgf·m, 16 lbf·ft)
31 N·m (3.2 kgf·m, 23 lbf·ft)

# SERVICE INFORMATION

## GENERAL

**⚠CAUTION**

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

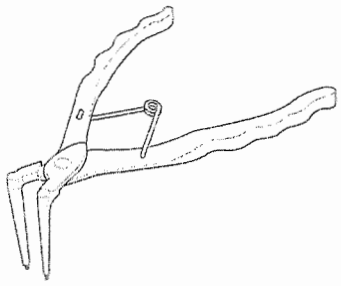
**NOTICE**

*Spilling brake fluid will severely damage instrument lenses and painted surface. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cover; make sure the front reservoir is horizontal first.*

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Check the brake system by applying the brake lever or pedal after the air bleeding.
- Never allow contaminates (dirt, water, etc.) to get into an open reservoir.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid, they may not be compatible.
- Always check brake operation before riding the motorcycle.
- This section covers service of the conventional brake components of the brake system. For Anti-lock Brake System (ABS) service (page 20-4).

## TOOL

Snap ring pliers
07914-SA50001



# TROUBLESHOOTING

**Brake lever/pedal soft or spongy**
- Air in hydraulic system
- Leaking hydraulic system
- Contaminated brake pad/disc
- Worn caliper piston seal
- Worn master cylinder piston cups
- Worn brake pad/disc
- Contaminated caliper
- Contaminated master cylinder
- Caliper not sliding properly
- Low brake fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master cylinder piston
- Bent brake lever/pedal

**Brake lever/pedal hard**
- Clogged/restricted hydraulic system
- Sticking/worn caliper piston
- Caliper not sliding properly
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever/pedal

**Brake drags**
- Contaminated brake pad/disc
- Misaligned wheel
- Badly worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly
- Clogged/restricted hydraulic system
- Sticking/worn caliper piston
- Clogged master cylinder port
- Sticking master cylinder piston

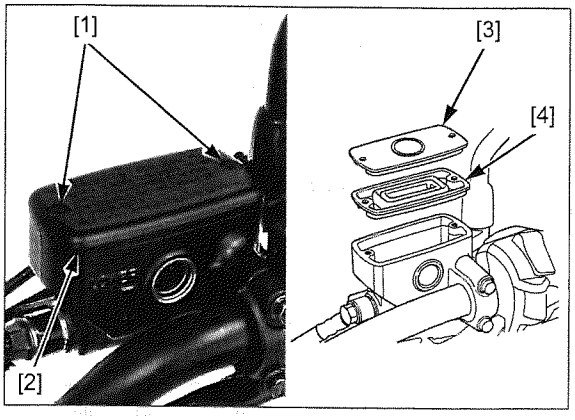
# BRAKE FLUID REPLACEMENT/AIR BLEEDING

## BRAKE FLUID DRAINING

*Front brake:* Turn the handlebar until the reservoir is parallel to the ground.

Remove the following:

- Screws [1]
- Reservoir cover [2]
- Set plate [3]
- Diaphragm [4]

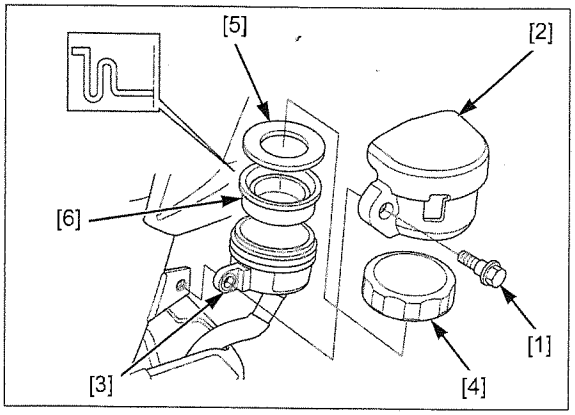



*Rear brake:* Support the motorcycle in an upright position.

Remove the bolt [1], reservoir cover [2] and rear master cylinder reservoir [3].

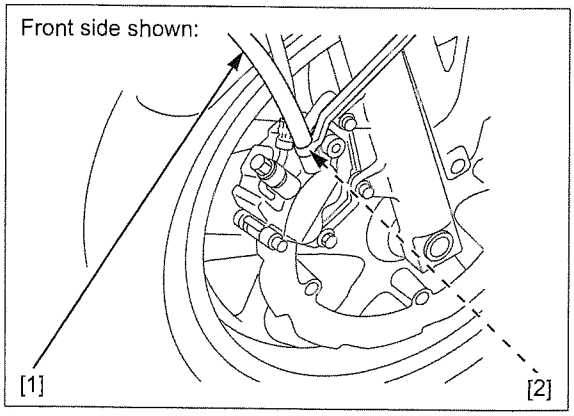
Temporarily install the reservoir and mounting bolt to the stay.

Remove the cover cap [4], set plate [5] and diaphragm [6].




Connect a bleed hose [1] to the caliper bleed valve [2].

Loosen the bleed valve and pump the brake lever/pedal until no more fluid flows out of the bleed valve.




## BRAKE FLUID FILLING/AIR BLEEDING

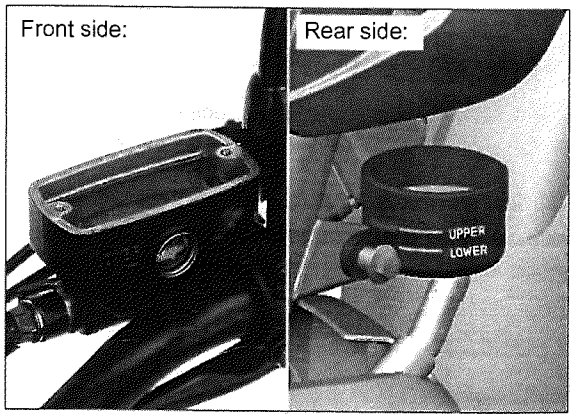
*Do not mix different types of fluid; they are not compatible.*

Fill the reservoir with DOT 4 brake fluid from a sealed container.

Connect a automatic refill system to the reservoir.

If an automatic refill system is not used, add fluid when the fluid level in the reservoir is low.

- Check the fluid level often while bleeding the brake to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.



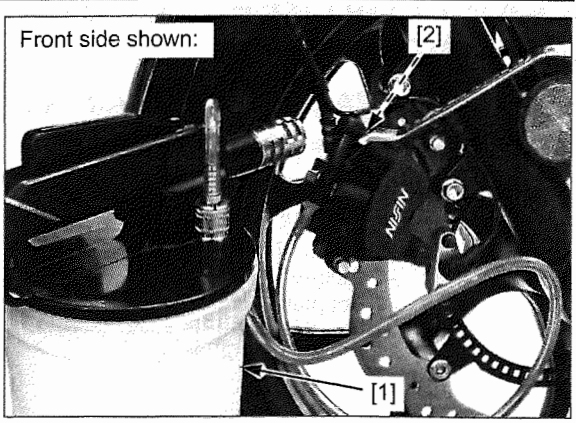
Connect a commercially available brake bleeder [1] to the bleed valve [2].
Operate the brake bleeder and loosen the bleed valve.

*If air enters the bleeder from around the bleed valve threads, seal the threads with teflon tape.*

Perform the bleeding procedure until the system is completely flushed/bled.
Close the bleed valve and operate the brake lever/pedal. If it still feels spongy, bleed the system again.

After bleeding the system completely, tighten the brake caliper bleed valve to the specified torque.

**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**




If the brake bleeder is not available, perform the following procedure.

Pump up the system pressure with the brake lever/pedal until the lever/pedal resistance is felt.

Connect a bleed hose [1] to the bleed valve [2].

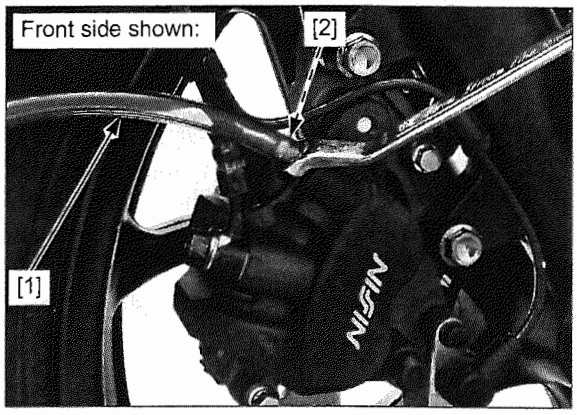
1. Squeeze the brake lever/pedal all the way and loosen the bleed valve 1/4 turn. Wait several seconds and then close the bleed valve.

NOTE:
- Do not release the brake lever/pedal until the bleed valve has been closed.

2. Release the brake lever/pedal slowly and wait several seconds after it reaches the end of its travel.
3. Repeat the steps 1 and 2 until there are no air bubbles in the bleed hose.

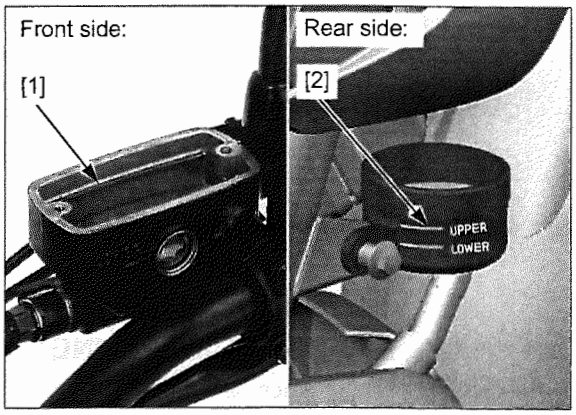
After bleeding the system completely, tighten the brake caliper bleed valve to the specified torque.

**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**




*Do not mix different types of fluid; they are not compatible.*

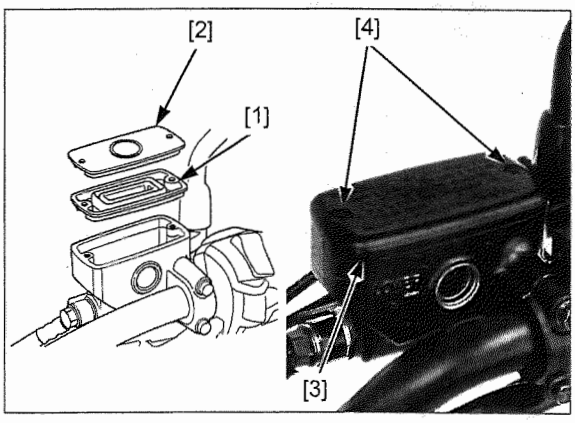
Fill the reservoir with DOT 4 brake fluid from a sealed container to the casting ledge [1] (Front side)/upper level line [2] (Rear side).




*Front brake:*

Install the diaphragm [1], set plate [2], reservoir cover [3] and reservoir cover screws [4], then tighten the screws to the specified torque.

**TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**

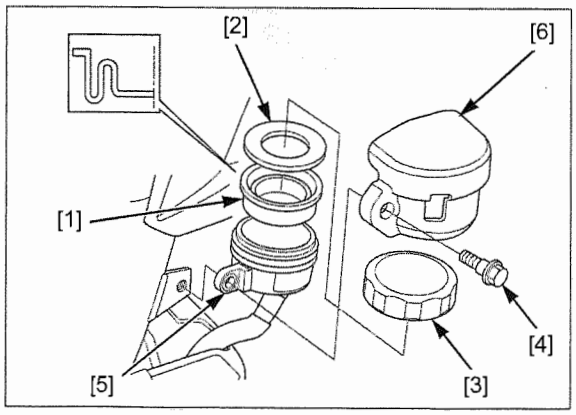


*Rear brake:* Install the diaphragm [1], set plate [2] and reservoir cap [3].

Remove the rear master cylinder reservoir mounting bolt [4] and reservoir [5] from the stay.

Set the reservoir cover [6] and reservoir to the stay, then install and tighten the mounting bolt to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**




# BRAKE PAD/DISC

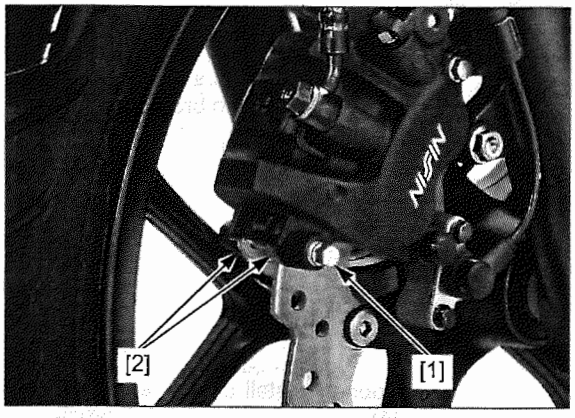
## FRONT BRAKE PAD REMOVAL/ INSTALLATION

NOTE:

- Always replace the brake pads in pairs to assure even disc pressure.
- Check the brake fluid level in the brake master cylinder reservoir as this operation causes the level to rise.

*Do not operate the brake lever after removing the brake pads.*

Remove the brake pad pin [1] and brake pads [2].




Install the brake pads [1] to the brake caliper so their ends seat against the retainer.

- Make sure that the retainer is installed to the caliper bracket.

Check that the brake pad pin stopper ring is in good condition, replace if necessary.

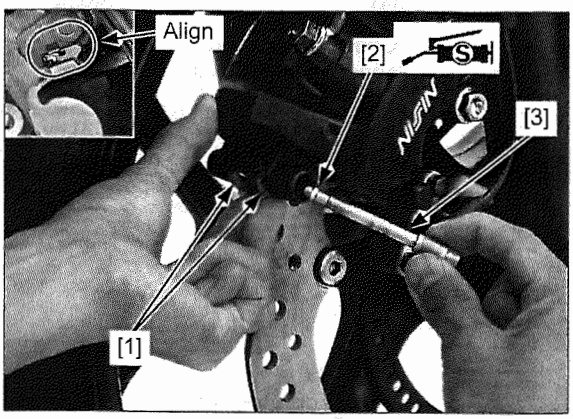
Apply silicone grease to the brake pad pin stopper ring [2] and install it to the brake pad pin [3] groove.

Install the brake pad pin by pushing the pads against the pad spring to align the brake pad pin holes in the pads and brake caliper.

Tighten the front brake pad pin to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**

Operate the brake lever to seat the caliper piston against the pads.

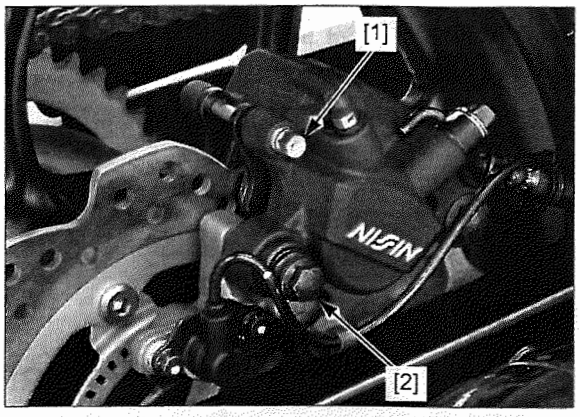


## REAR BRAKE PAD REMOVAL/ INSTALLATION

NOTE:

- Always replace the brake pads in pairs to assure even disc pressure.
- Check the brake fluid level in the brake master cylinder reservoir as this operation causes the level to rise.

Remove the brake pad pin [1] and rear brake caliper mounting bolt [2].



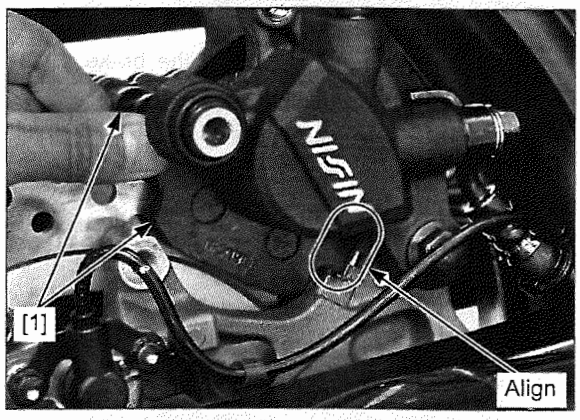

*Do not operate the brake pedal after removing the brake pads.*

Lift the caliper and remove the brake pads [1].

Install the brake pads to the brake caliper so their ends seat against the retainer.

- Make sure that the retainer and pad spring are installed to the brake caliper.

Lower the caliper.

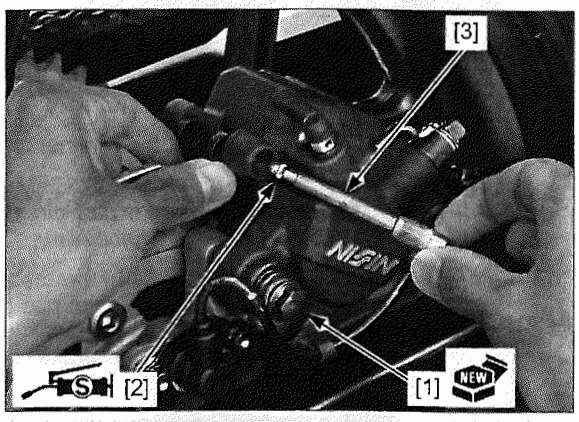



Loosely install a new rear brake caliper mounting bolt [1].

Check that the brake pad pin stopper ring [2] is in good condition, replace it if necessary.

Apply silicone grease to the brake pad pin stopper ring.

Install the brake pad pin [3] by pushing the pads against the pad spring to align the brake pad pin holes in the pads and brake caliper.



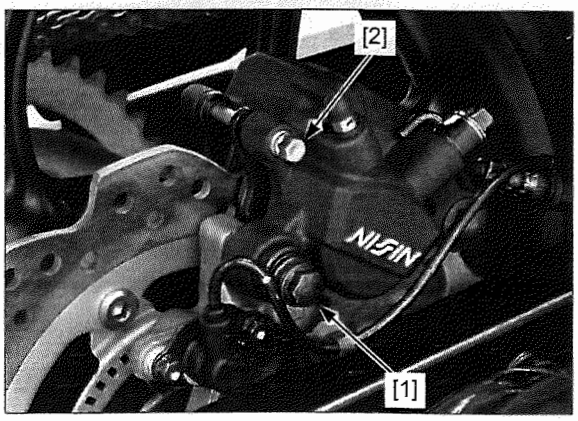

Tighten the rear brake caliper mounting bolt [1] to the specified torque.

**TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)**

Tighten the brake pad pin [2] to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**

Operate the brake pedal to seat the caliper pistons against the pads.



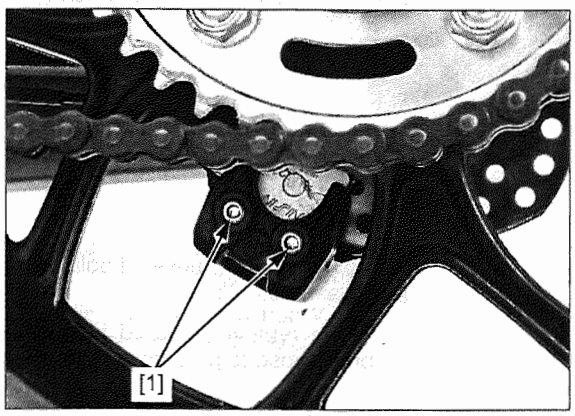
## BRAKE DISC INSPECTION

Visually inspect the brake discs for damage or crack.

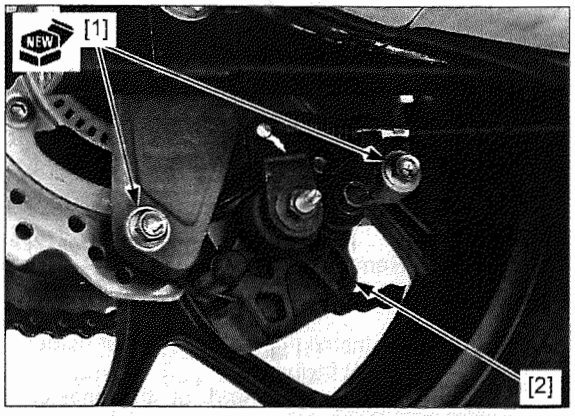
Measure the brake disc according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-11) and replace if necessary.

## PARKING BRAKE PAD REPLACEMENT (CTX700D/ND)

Loosen the parking brake pad pins [1].




Remove the brake caliper mounting bolt [1] and caliper [2] from the bracket.




Remove the parking brake pad pins [1] and pads [2].

Make sure the pad spring is installed in position.

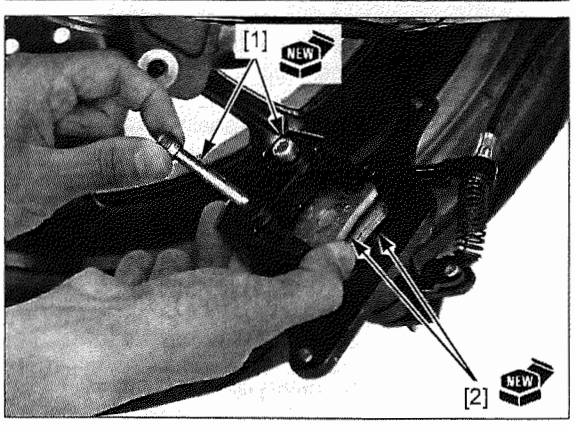
Install new parking brake pads and pad pins.

Install the parking brake caliper and new mounting bolts and tighten the bolt to the specified torque.

**TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)**

Tighten the parking brake pad pins to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**



# FRONT MASTER CYLINDER

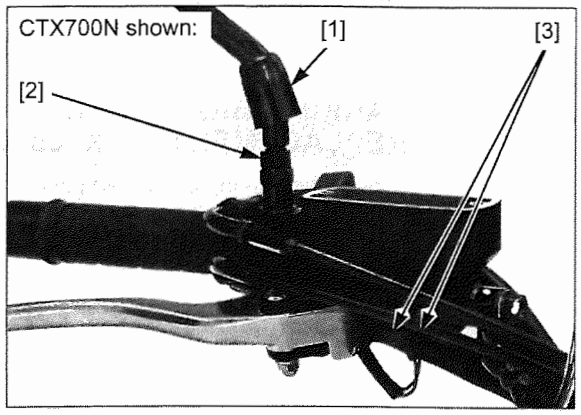
## REMOVAL/INSTALLATION

Drain the brake fluid from the hydraulic system (page 19-7).

Release the dust cover [1].

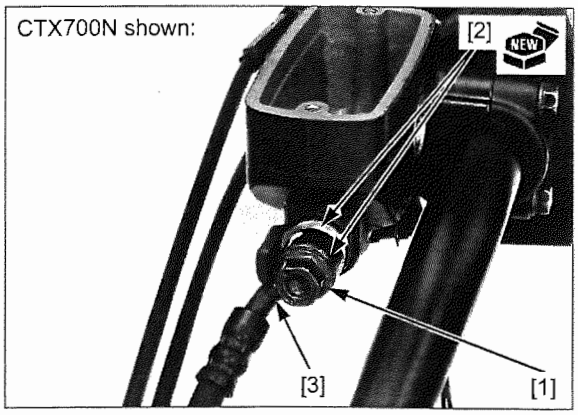
Loosen the lock nut [2] and remove the rearview mirror.

Disconnect the brake light switch connectors [3].




Remove the brake hose oil bolt [1], sealing washers [2] and brake hose [3].

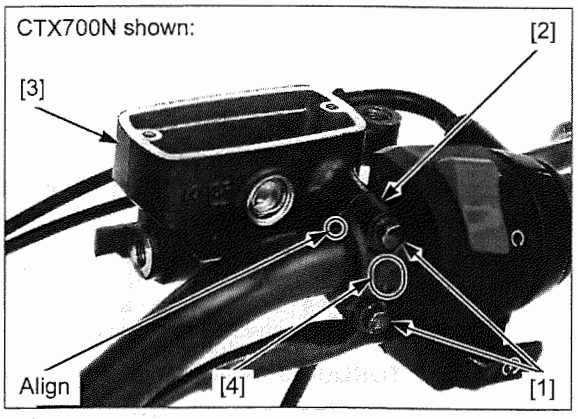
- When removing the oil bolt, cover the end of the brake hose to prevent contamination.




Remove the bolts [1], holder [2] and master cylinder [3].

Installation is in the reverse order of removal.

- Install the master cylinder holder with the "UP" mark [4] facing up.
- Align the end of the master cylinder with the handlebar punch mark.
- Tightening the front master cylinder holder bolts, upper bolt first, then the lower bolt to the specified torque.
- Replace the sealing washers with new ones.
- Install the brake hose eyelet joint against the master cylinder stopper.




**TORQUE:**

**Front master cylinder holder bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

**Brake hose oil bolt:**
**34 N·m (3.5 kgf·m, 25 lbf·ft)**

Fill the reservoir to the upper level and bleed the front brake system (page 19-7).

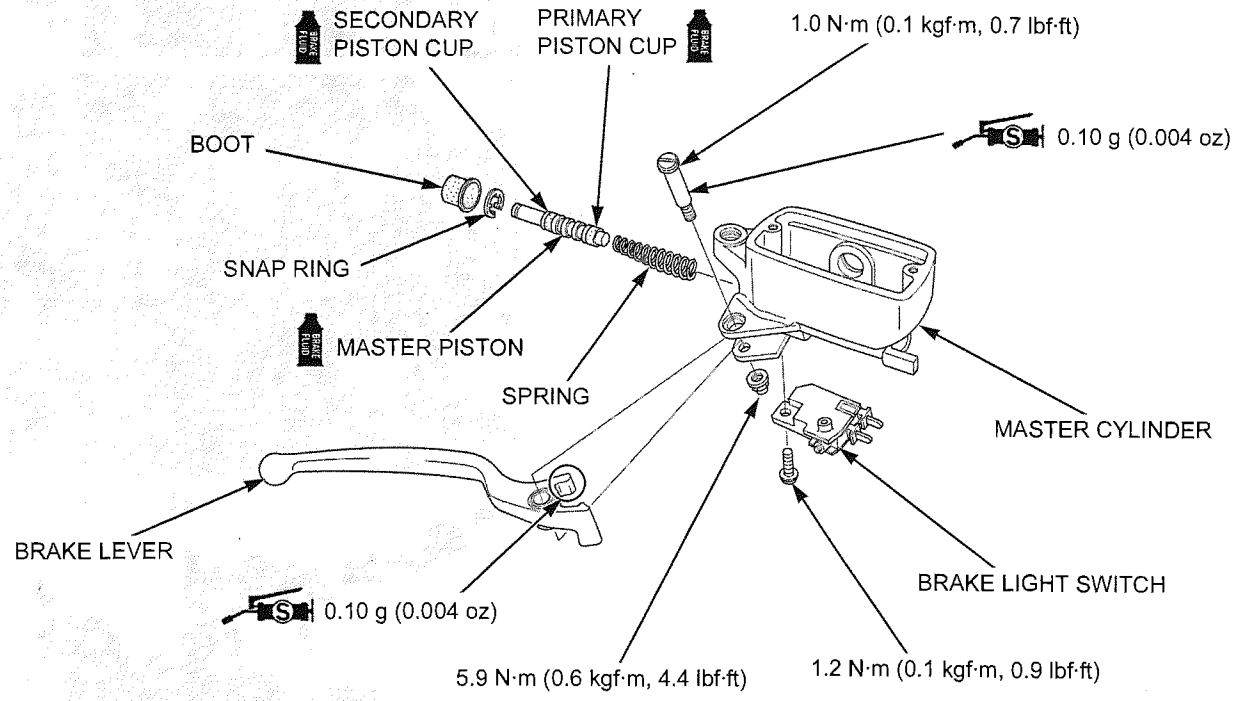
## DISASSEMBLY/ASSEMBLY

Disassemble and assemble the front master cylinder as following the illustration.

- When removing and installing the snap ring, use the special tool.

  **TOOL:**
  **Snap ring pliers** **07914-SA50001**

- Install the snap ring with the chamfered edge facing the thrust road side and be certain it is firmly seated in the groove. Do not reuse the snap ring which could easily spin in the groove.
- Replace the piston and cups as a set.
- Do not allow the piston cup lips to turn inside out.
- Align the switch boss with the master cylinder hole properly.




## INSPECTION

Inspect the following parts for scoring, scratches, deterioration and damage.

- Master cylinder
- Master piston
- Piston cups
- Spring
- Boot

Measure each part according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-11).

Replace any part if it is out of service limit.

# REAR MASTER CYLINDER

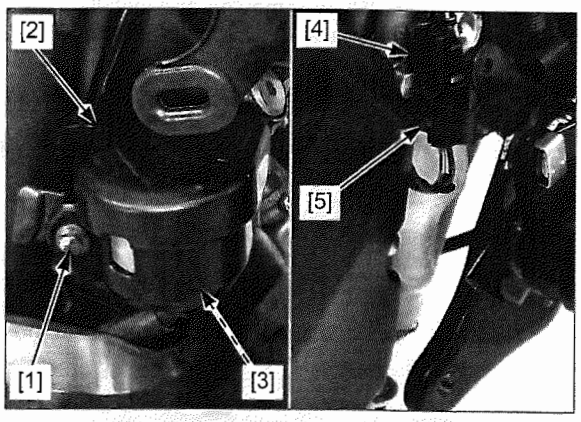
## REMOVAL/INSTALLATION

Drain the brake fluid from the hydraulic system (page 19-7).

Remove the right main step (page 2-14).

Remove the bolt [1], cover [2] and rear master cylinder reservoir [3].

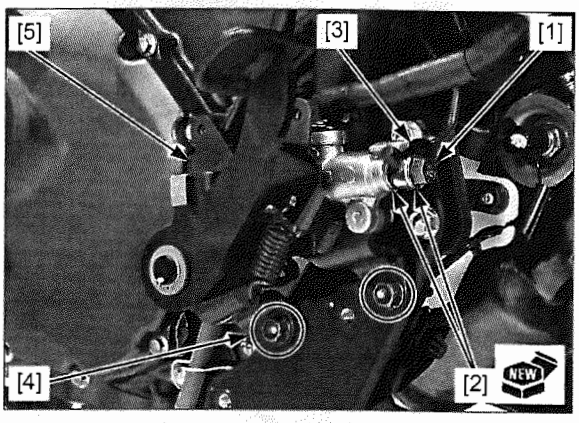
Release the rear brake light switch 2P (Black) connector [4] from the stay [5] and disconnect it.




Remove the brake hose oil bolt [1], sealing washers [2] and brake pipe [3].

- When removing the oil bolt, cover the end of the brake pipe to prevent contamination.

Remove the mounting bolts [4] and rear brake bracket assembly [5].

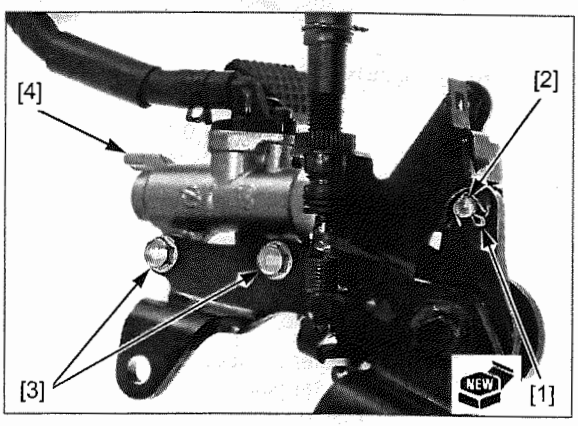



Remove and discard the cotter pin [1].
Remove the joint pin [2] and disconnect the push rod joint from the brake pedal.

Remove the master cylinder mounting bolts [3] and master cylinder [4] from the right step holder.

Installation is in the reverse order of removal.

- Replace the cotter pin and sealing washers with new ones.
- Install the brake hose eyelet joint against the master cylinder stopper.




**TORQUE:**

**Rear master cylinder mounting bolt:**
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

**Rear brake bracket mounting bolt:**
**27 N·m (2.8 kgf·m, 20 lbf·ft)**

**Brake hose oil bolt:**
**34 N·m (3.5 kgf·m, 25 lbf·ft)**

Fill the reservoir to the upper level and bleed the rear brake system (page 19-7).

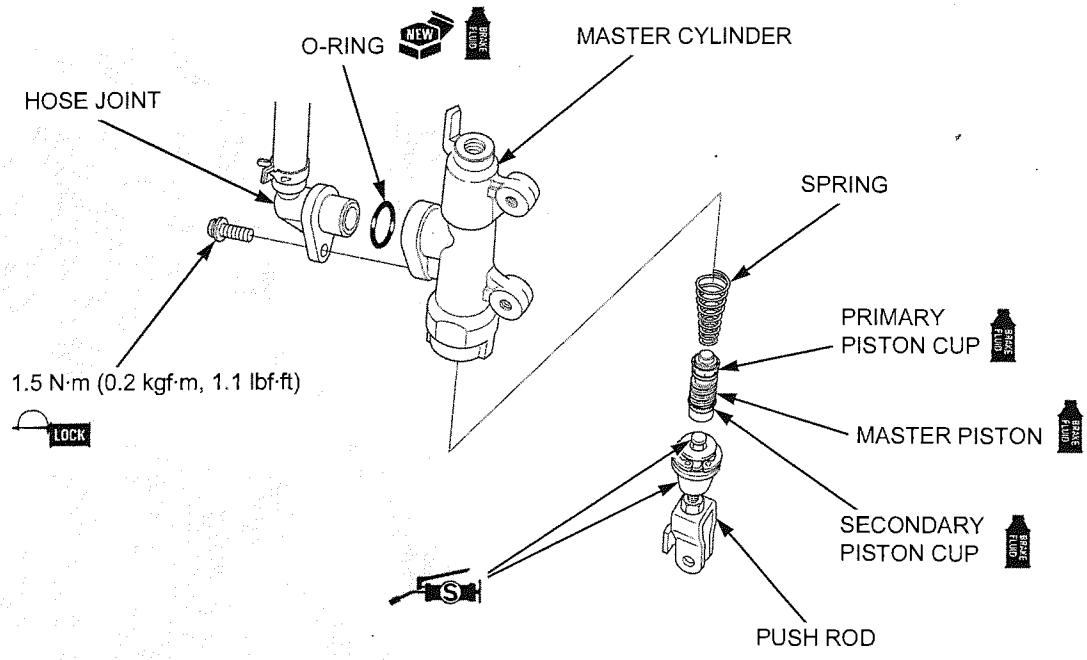
## DISASSEMBLY/ASSEMBLY

Disassemble and assemble the rear master cylinder as following the illustration.

- When removing and installing the snap ring, use the special tool.

  **TOOL:**
  **Snap ring pliers** **07914-SA50001**

- Install the snap ring with the chamfered edge facing the thrust road side and be certain it is firmly seated in the groove. Do not reuse the snap ring which could easily spin in the groove.
- Replace the piston, spring and cup as a set.
- Apply brake fluid to the master piston and cups.
- Do not allow the piston cup lips to turn inside out.

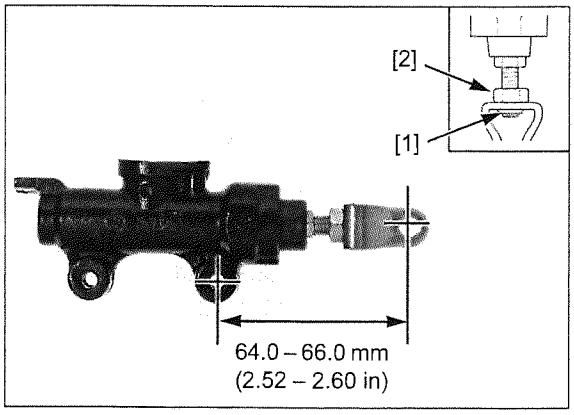



When the push rod has been disassembled, adjust the push rod length so that the distance from the center of the master cylinder lower mounting bolt hole to the center of the joint pin hole is standard length as shown.

If the length is adjusted to the longer position, make sure that the lower end of the push rod thread [1] is visible inside the joint.

After adjustment, tighten the joint nut [2] to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**



## INSPECTION

Check the following parts for scoring, scratches, deterioration or damage.

- Master cylinder
- Master piston
- Piston cups
- Spring
- Boot

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-11).

Replace any part if it is out of service limit.

# FRONT BRAKE CALIPER

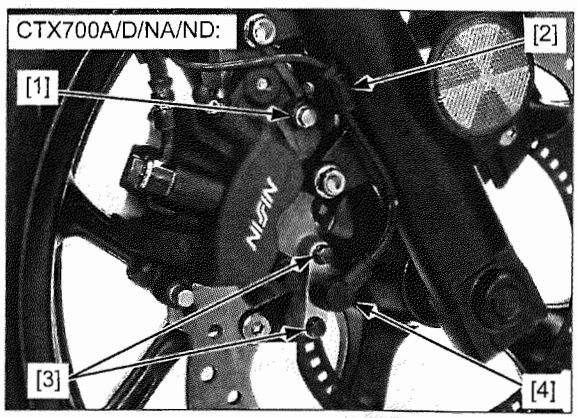
## REMOVAL/INSTALLATION

Drain the brake fluid from the front brake hydraulic system (page 19-7).

*CTX700A/D/NA/ND:*

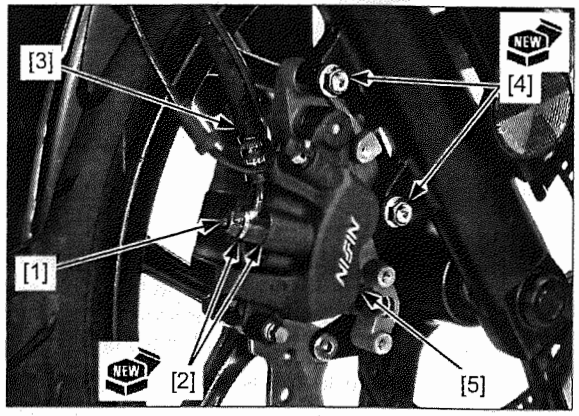
Remove the following:

- Bolt [1] and wire clamp [2]
- Two bolts [3] and front wheel speed sensor [4]




*When removing the oil bolt, cover the end of brake hose to prevent contamination.*

- Brake pads (page 19-9)
- Oil bolt [1]
- Sealing washers [2]
- Brake hose [3]
- Mounting bolts [4]
- Brake caliper [5]




Installation is in the reverse order of removal.

- Replace the brake caliper mounting bolts and sealing washers with new ones.
- Be sure to rest the eyelet stopper pin against the caliper body when tightening the oil bolt.
- Before installing the wheel speed sensor, wipe the sensor tip and mounting area to remove any foreign material (CTX700A/D/NA/ND only).

**TORQUE:**

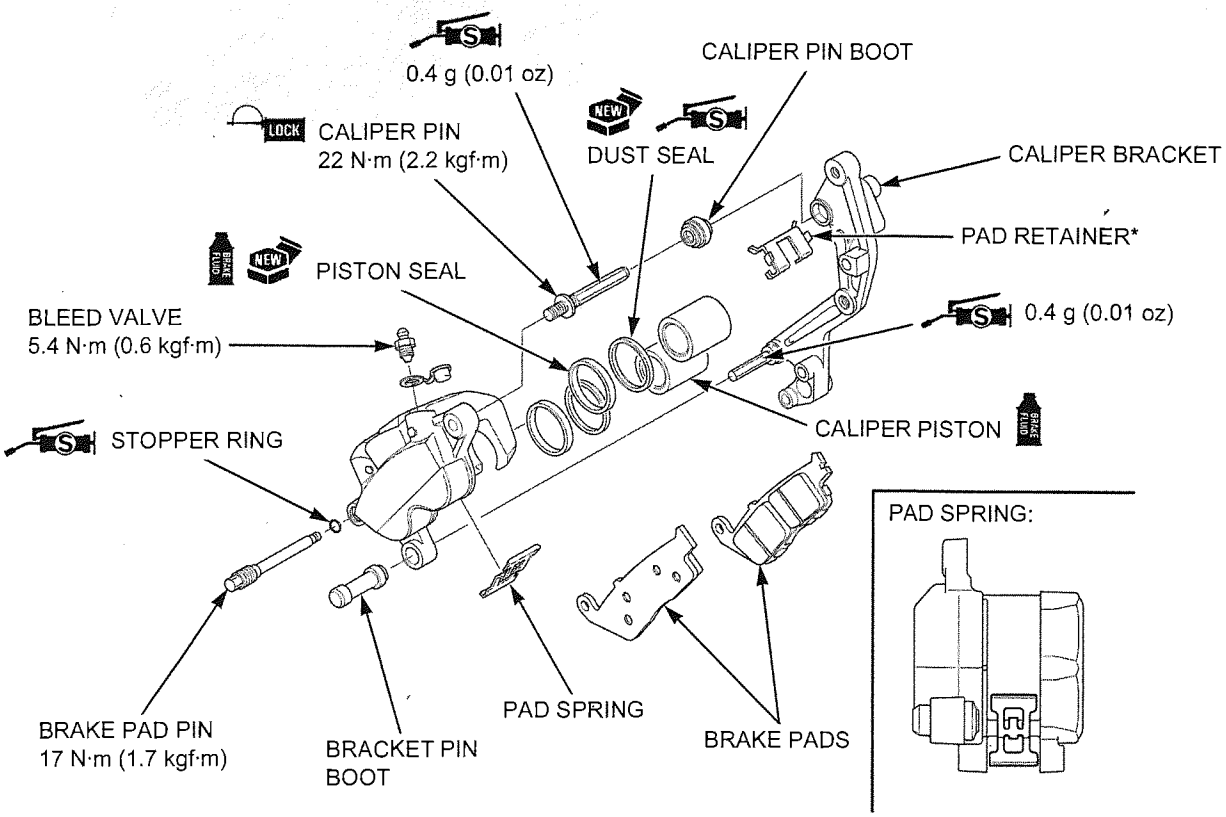
**Front brake caliper mounting bolt:**
**30 N·m (3.1 kgf·m, 22 lbf·ft)**

**Brake hose oil bolt:**
**34 N·m (3.5 kgf·m, 25 lbf·ft)**

## DISASSEMBLY/ASSEMBLY

Disassemble and assemble the front brake caliper as following illustration.

- Mark the pistons to ensure that they are reinstalled in their original locations.
- When removing the caliper pistons with compressed air, place a shop towel over the pistons to prevent damaging the pistons and caliper body. Do not use high pressure or bring the nozzle too close to the fluid inlet.
- Install the pistons with the opening toward the pads.




*Apply Honda Bond A or equivalent to the retainer seating surface.

## INSPECTION

Check the following parts for scoring, scratches, deterioration or damage.

- caliper cylinders
- caliper pistons

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-11).

Replace any part if it is out of service limit.

# REAR BRAKE CALIPER

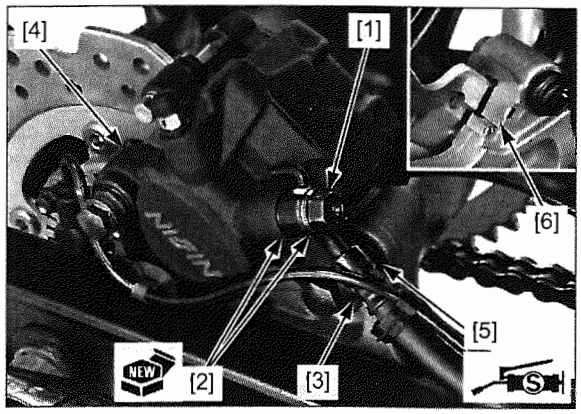
## REMOVAL/INSTALLATION

Drain the brake fluid from the rear brake hydraulic system (page 19-7).

Remove the following:

*When removing the oil bolt, cover the end of brake hose to prevent contamination.*

- Brake pads (page 19-10)
- Oil bolt [1]
- Sealing washers [2]
- Brake hose [3]
- Brake caliper [4]
- Caliper pin boot [5]




Installation is in the reverse order of removal.

- Replace the and sealing washers with new ones.
- If the pad retainer [6] was removed, apply Honda Bond A to the retainer seating surface.
- Apply 0.4 g of silicone grease to the sliding area of the caliper pin bolt.
- Be sure to rest the eyelet stopper pin against the caliper body when tightening the oil bolt.

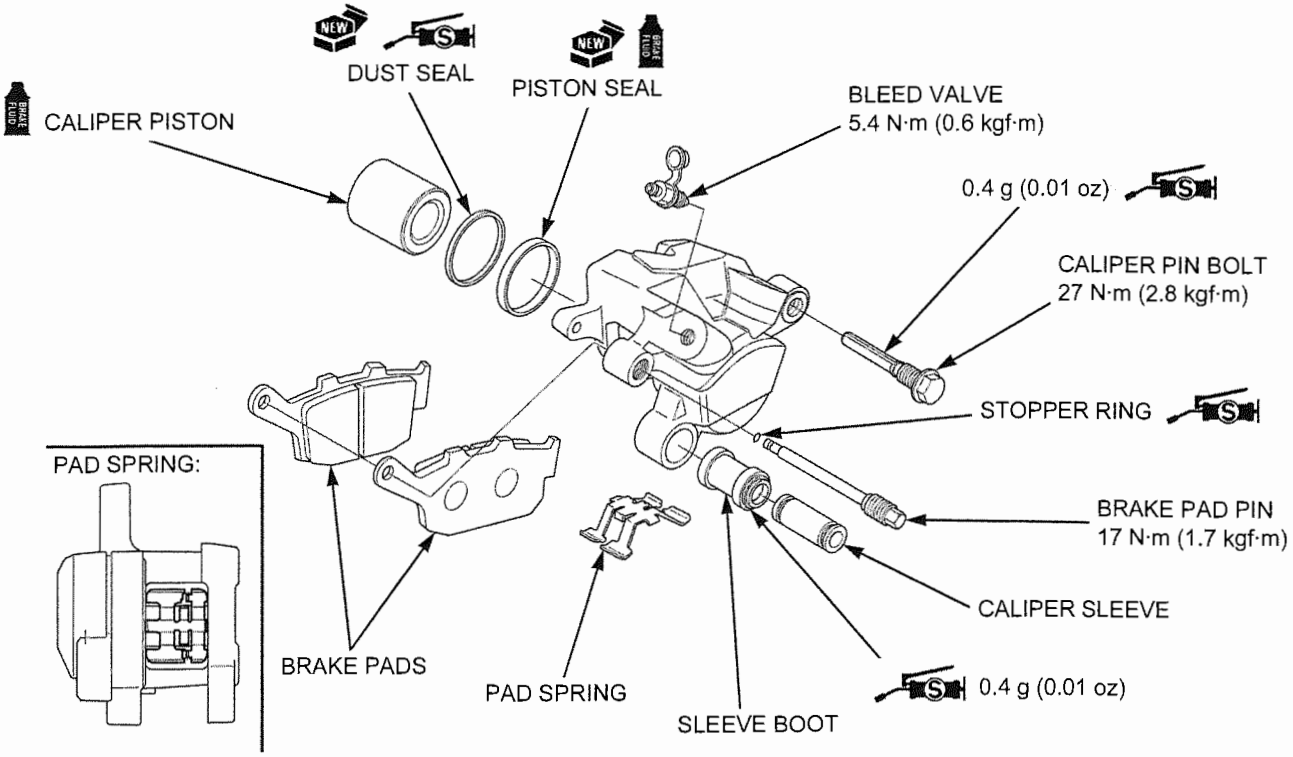
**TORQUE:**
**Brake hose oil bolt: 34 N·m (3.5 kgf·m)**

Fill and bleed the rear brake hydraulic system (page 19-7).

## DISASSEMBLY/ASSEMBLY

Disassemble and assemble the rear brake caliper as following illustration.

- When removing the caliper piston with compressed air, place a shop towel over the piston to prevent damaging the piston and caliper body. Do not use high pressure or bring the nozzle too close to the fluid inlet.
- Install the piston with the opening toward the pads.



### INSPECTION

Check the following parts for scoring, scratches, deterioration or damage.

- caliper cylinder
- caliper piston

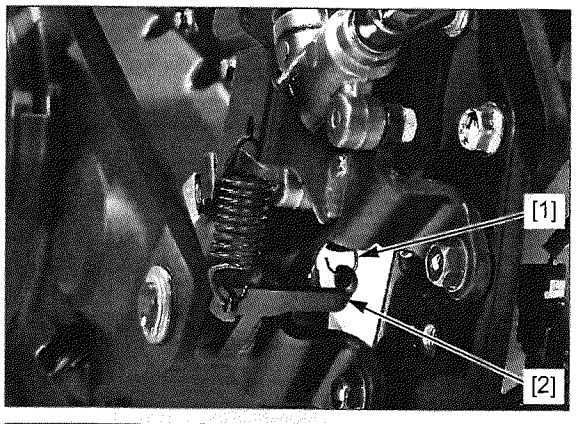
Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-11) and replace if necessary.

## BRAKE PEDAL

### REMOVAL/INSTALLATION

Remove the right main step (page 2-14).

Unhook the brake light switch spring [1] from the brake pedal [2].

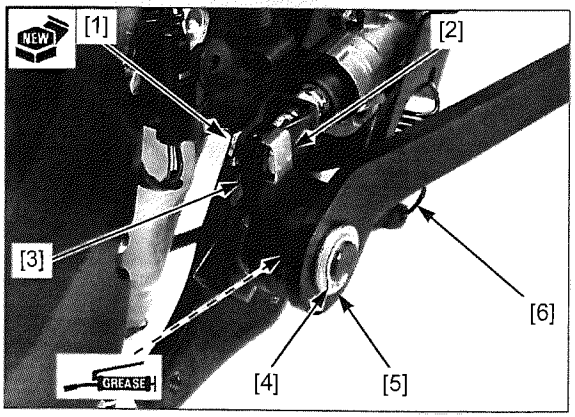



Remove and discard the cotter pin [1].
Remove the joint pin [2] and disconnect the push rod lower joint from the brake pedal [3].

Remove the snap ring [4], washer [5].
Remove the brake pedal by releasing the return spring [6].

Installation is in the reverse order of removal.

- Apply grease to the brake pedal pivot sliding area.
- Replace the cotter pins with new ones.




## PARKING BRAKE CALIPER (CTX700D/ND)

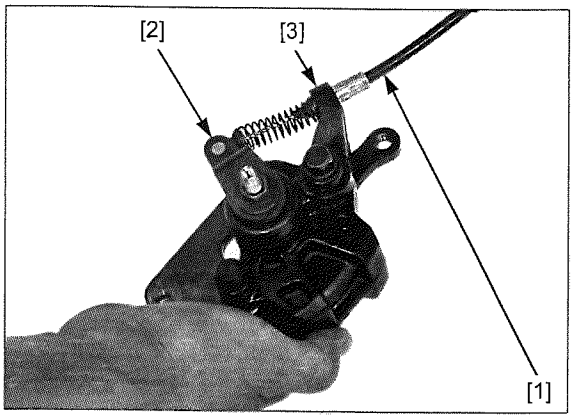
### REMOVAL/INSTALLATION

Remove the parking brake pads (page 19-11).

Disconnect the parking brake cable [1] from the brake arm [2] and remove it from cable stay [3] of the caliper body.

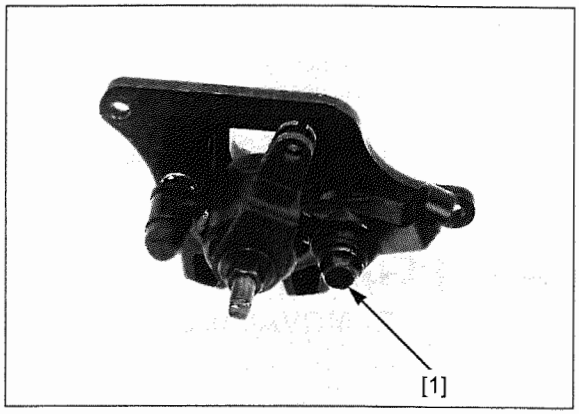
Installation is in the reverse order of removal.

Check the parking brake lock operation (page 3-18).



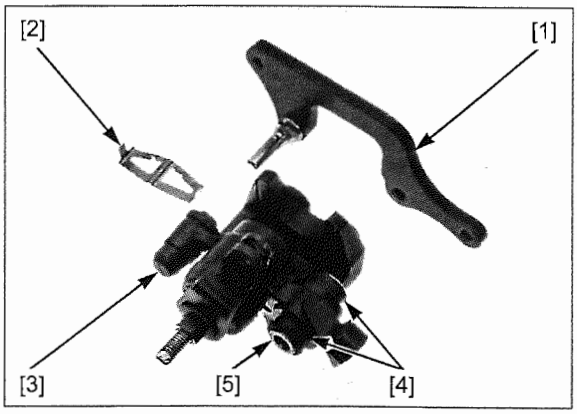
## DISASSEMBLY

Remove the caliper pin bolt [1].



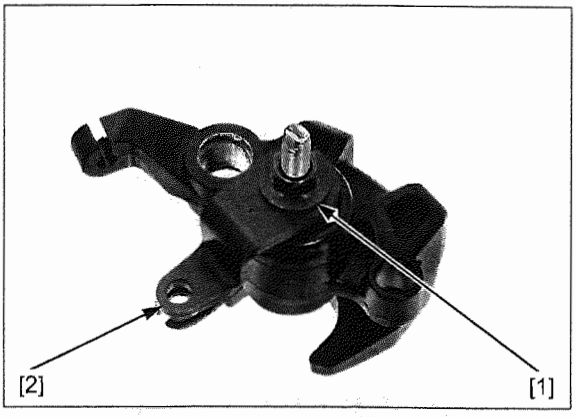

Remove the following:

- Caliper bracket [1]
- Pad spring [2]
- Bracket pin boot [3]
- Caliper pin boot [4]
- Sleeve [5]

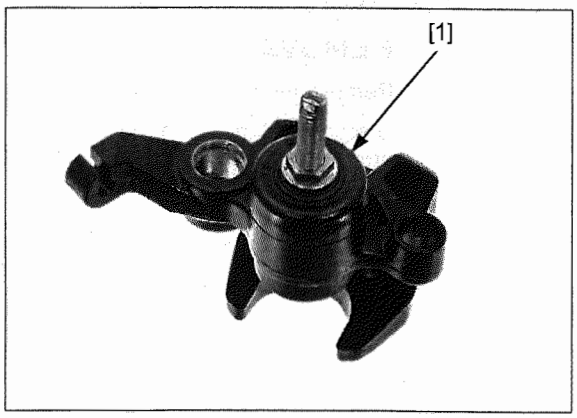



Remove the parking brake adjuster bolt lock nut [1] while holding the brake arm [2].

Remove the brake arm.



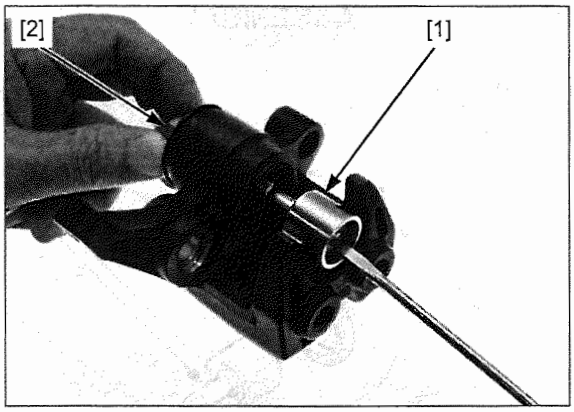

Remove the brake shaft boot [1].



Remove the adjuster bolt/piston [1] while holding the brake shaft [2].

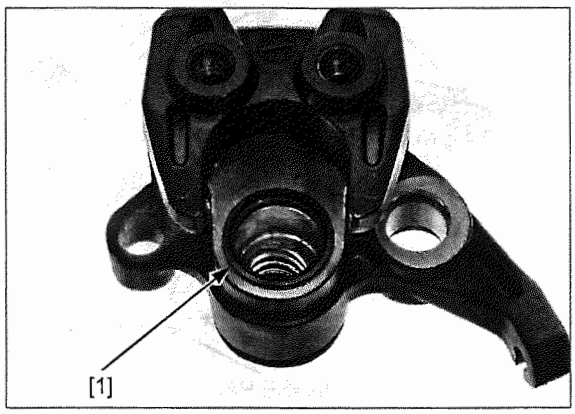
Remove the brake shaft.

- Do not disassemble the adjuster bolt/piston.




Remove the dust seal [1].

Clean the caliper cylinder and brake shaft sliding surface.



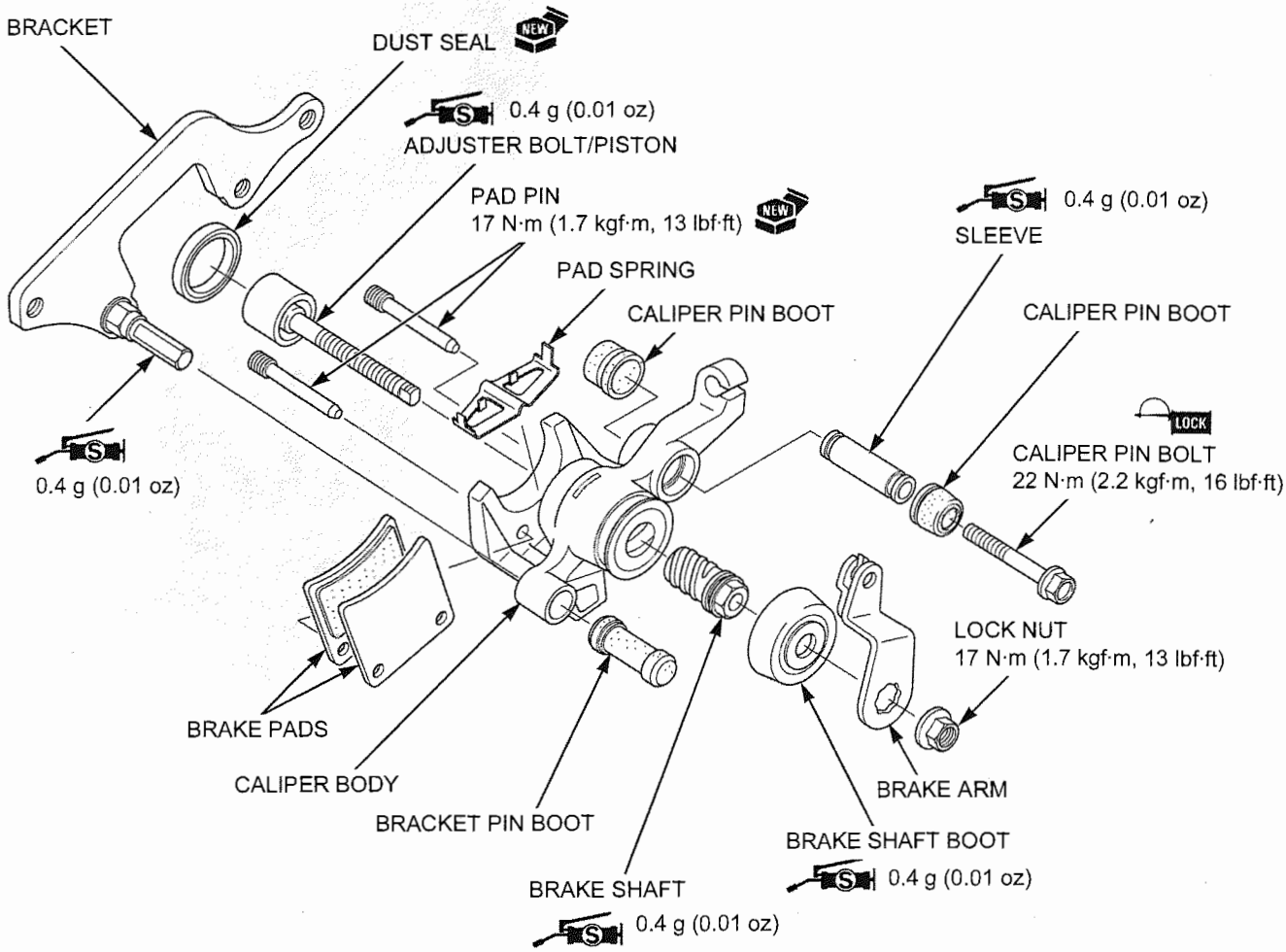

## INSPECTION

Inspect the following parts for scoring, scratches or damage.

- Caliper cylinder
- Caliper piston

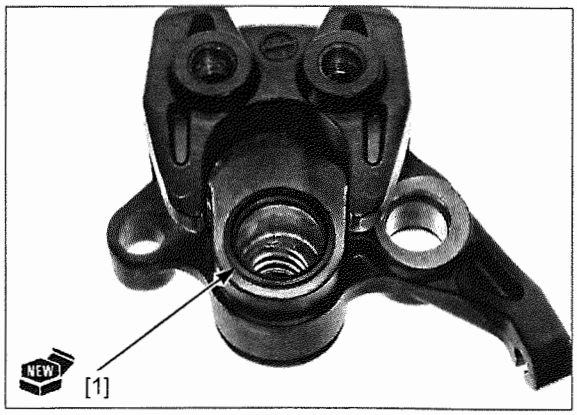
Replace if necessary.

## ASSEMBLY



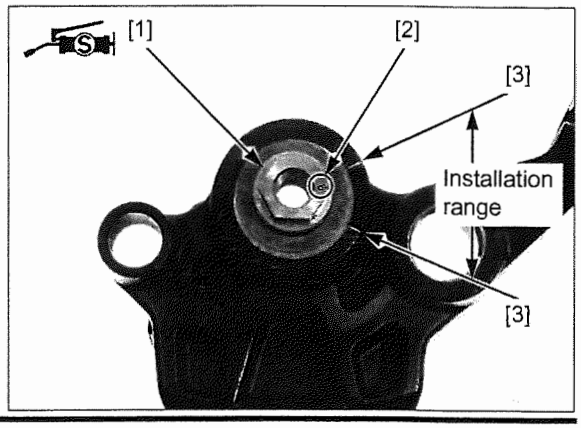

Install a new dust seal [1] into the seal groove in the caliper.

- Install the dust seal with its flat surface facing inside.



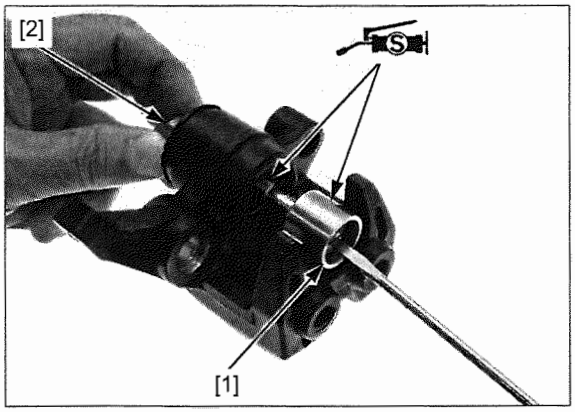

Apply 0.4 g (0.01 oz) minimum of silicone grease to the outer surface of the brake shaft [1].

Position the brake shaft so that the punch mark [2] is between the index lines [3] (installation range), and screw the shaft into the caliper.
Make sure that the punch mark is positioned between the index lines with the shaft fully installed.



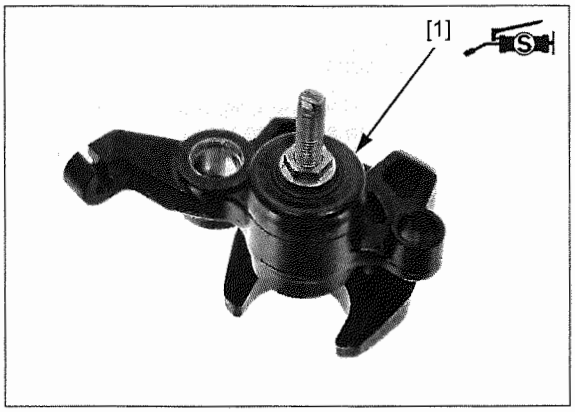
Apply 0.4 g (0.01 oz) minimum of silicone grease to the adjuster bolt threads and piston sliding surface.

Install the adjuster bolt/piston [1] while holding the brake shaft [2].

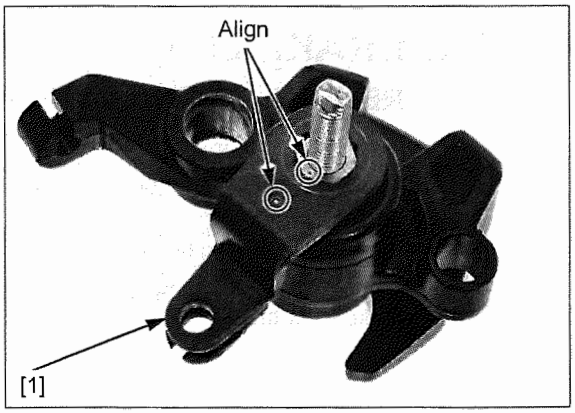



Apply 0.4 g (0.01 oz) minimum of silicone grease to the brake shaft boot lips.

Install the brake shaft boot [1] to the caliper groove.

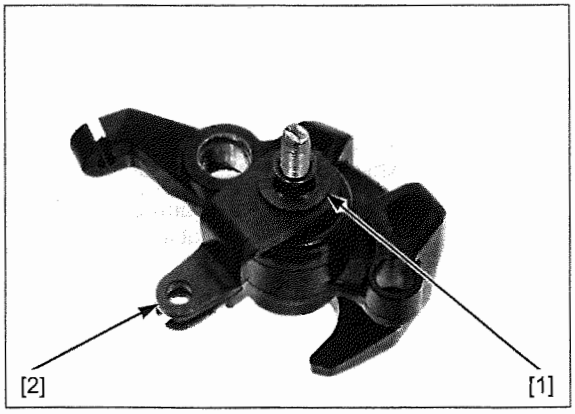



Install the brake arm [1] by aligning with the punch marks.




Install the lock nut [1] and tighten it to the specified torque while holding the brake arm [2].

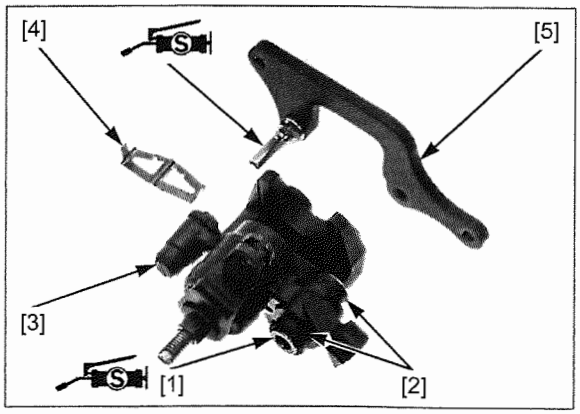
**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**



Apply 0.4 g (0.01 oz) minimum of silicone grease of silicone grease to the bracket pin and sleeve sliding surface.

Install the following:

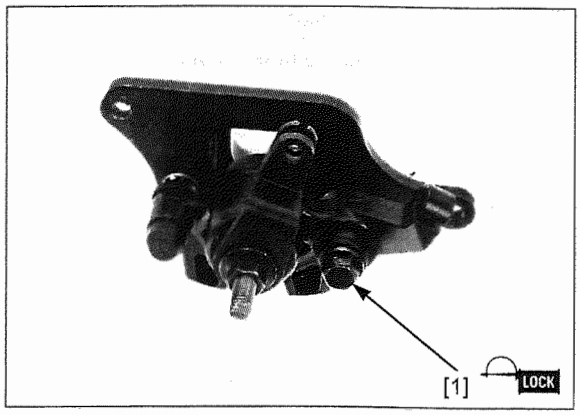
- Sleeve [1]
- Caliper pin boots [2]
- Bracket pin boot [3]
- Pad spring [4]
- Caliper bracket [5]




Apply locking agent to the parking brake caliper pin bolt threads.

Install the parking brake caliper pin bolt [1] and tighten it to the specified torque.

**TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)**




# PARKING BRAKE LEVER (CTX700D/ND)

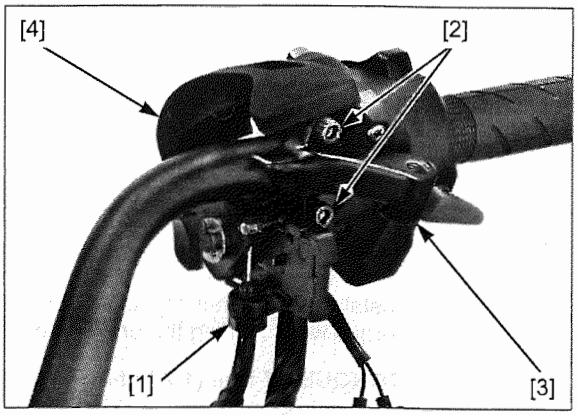
## REMOVAL/INSTALLATION

Remove the following:

- Left rearview mirror (page 17-9)
- Parking brake switch (page 22-17)

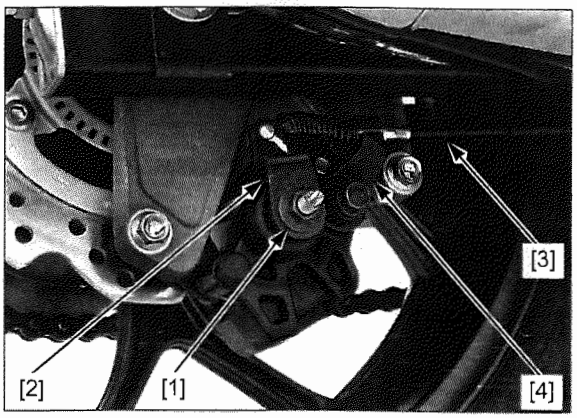
Loosen the parking brake cable mounting nut [1].

Remove the socket bolts [2], holder [3] and parking brake lever bracket [4].



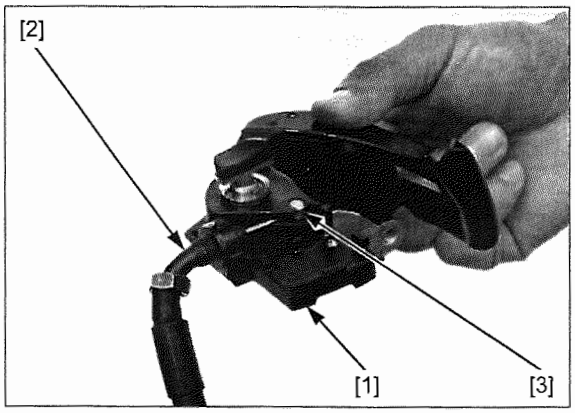

Remove the parking brake adjuster bolt lock nut [1] while holding the brake arm [2].

Remove the brake arm and release the parking brake cable [3] from the cable guide [4].



Turn the parking brake lever bracket [1] and remove the parking brake cable joint [2] from the bracket.

Disconnect the parking brake cable [3].

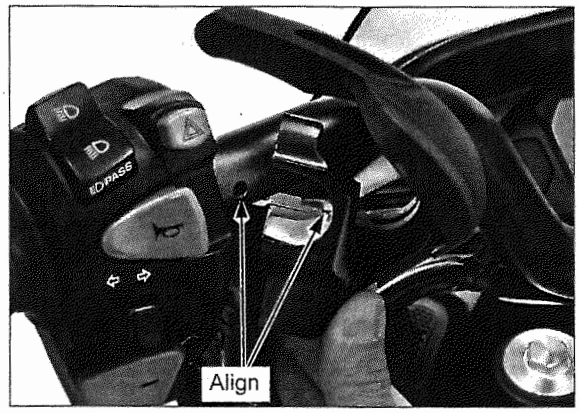



Installation is in the reverse order of removal.

- Align the parking brake lever bracket locating pin with the handlebar hole.

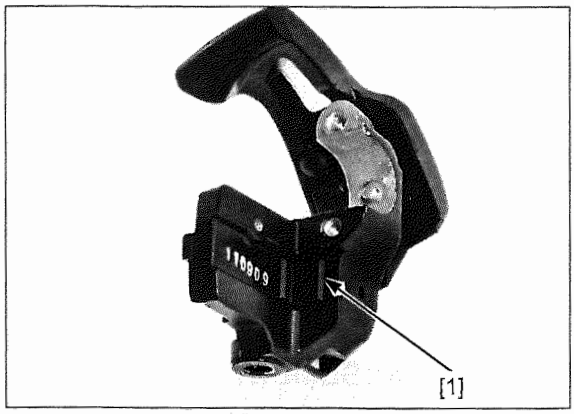
**TORQUE:**
**Parking brake adjuster bolt lock nut:**
**17 N·m (1.7 kgf·m, 13 lbf·ft)**
**Parking brake cable mounting nut:**
**10 N·m (1.0 kgf·m, 7 lbf·ft)**

Check the parking brake lock operation (page 3-18).

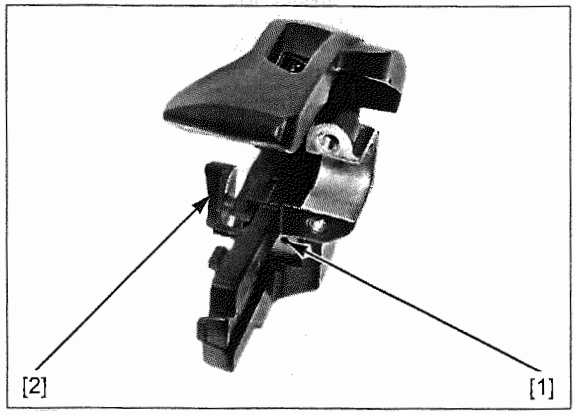



## DISASSEMBLY

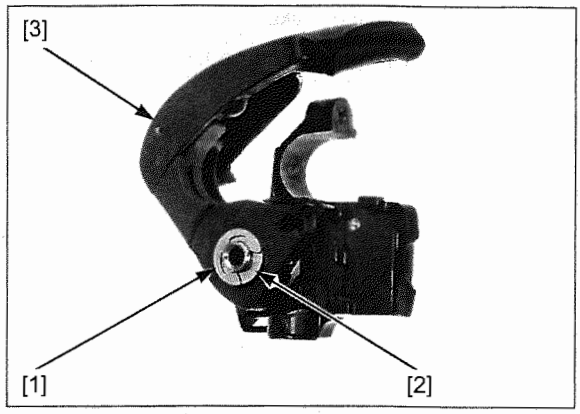
Remove the lower holder cap [1].



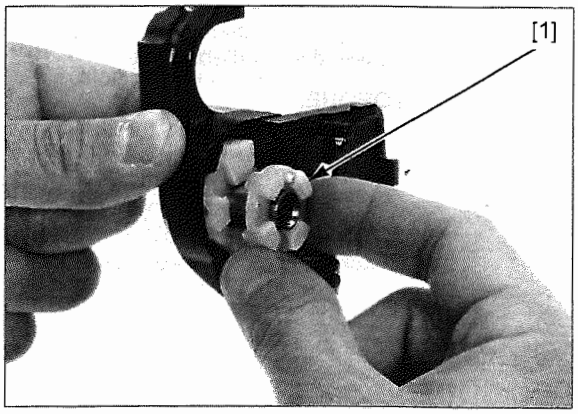

Remove the spring pin [1] and release shaft [2].



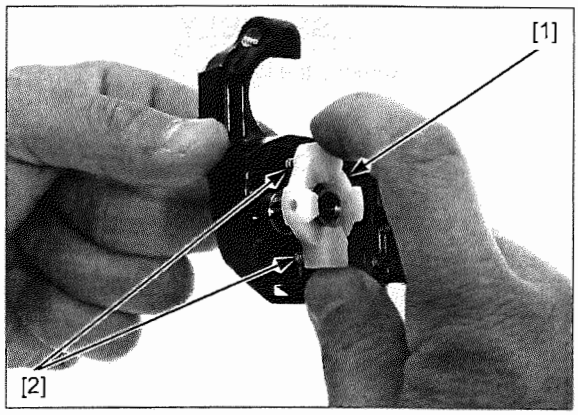
Remove the E-clip [1], washer [2] and parking brake lever [3].




Remove the ratchet B [1].



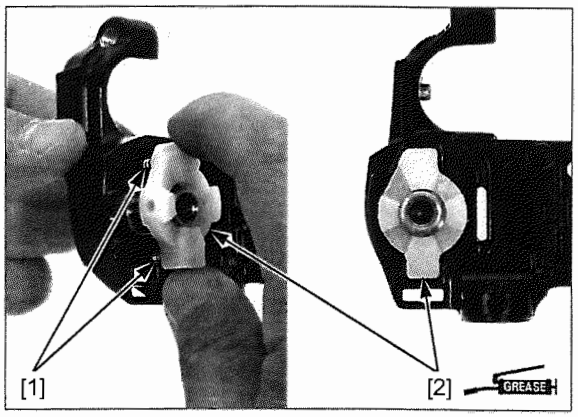

Remove the ratchet A [1] and springs [2].




## ASSEMBLY

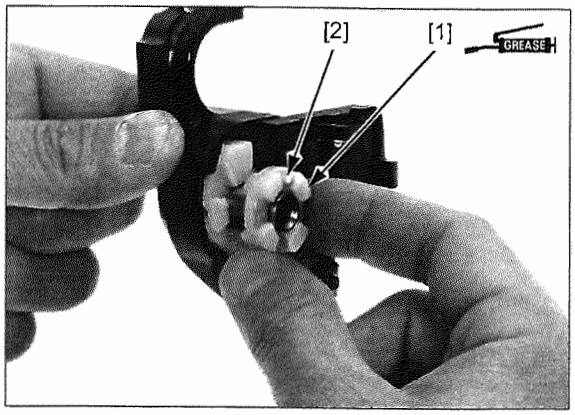
Apply grease to the ratchet A teeth and sliding surface.

Install the springs [1] and ratchet A [2].



Apply grease to the ratchet B teeth and sliding surface.

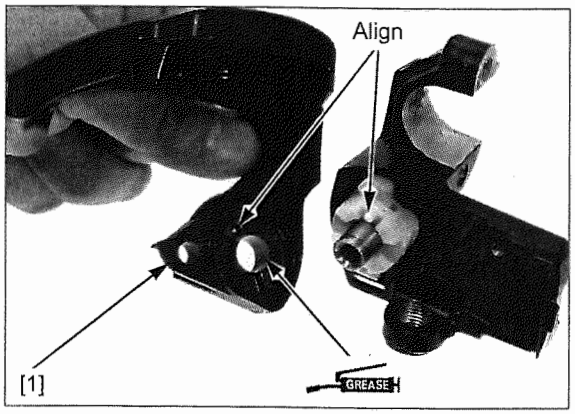
Install the ratchet B [1] with its tab [2] facing up.




Apply grease to the parking brake lever sliding surface.

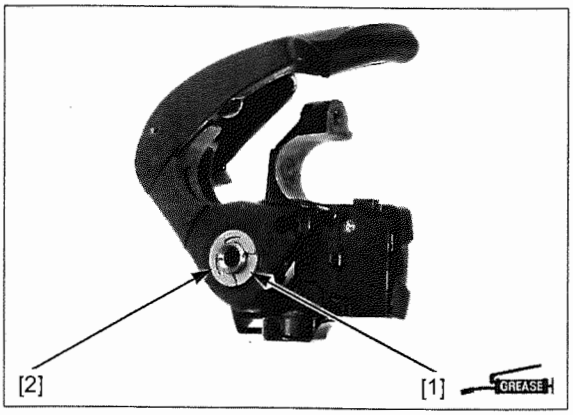
Install the parking brake lever [1].

- Align the parking brake lever hole with the ratchet B tab.

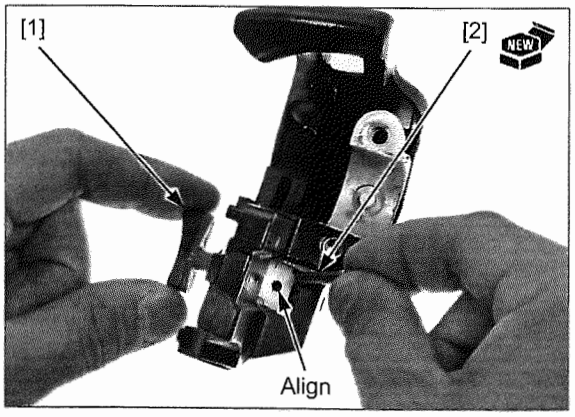



Apply grease to the washer sliding surface.

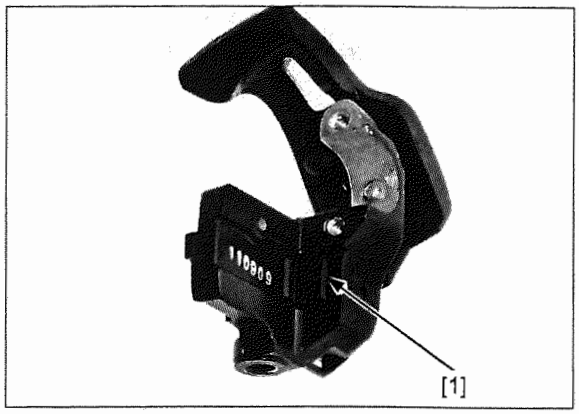
Install the washer [1] and E-clip [2].




Install the release shaft [1] and new spring pin [2] while aligning the hole of the release shaft, ratchet A and parking brake lever bracket.

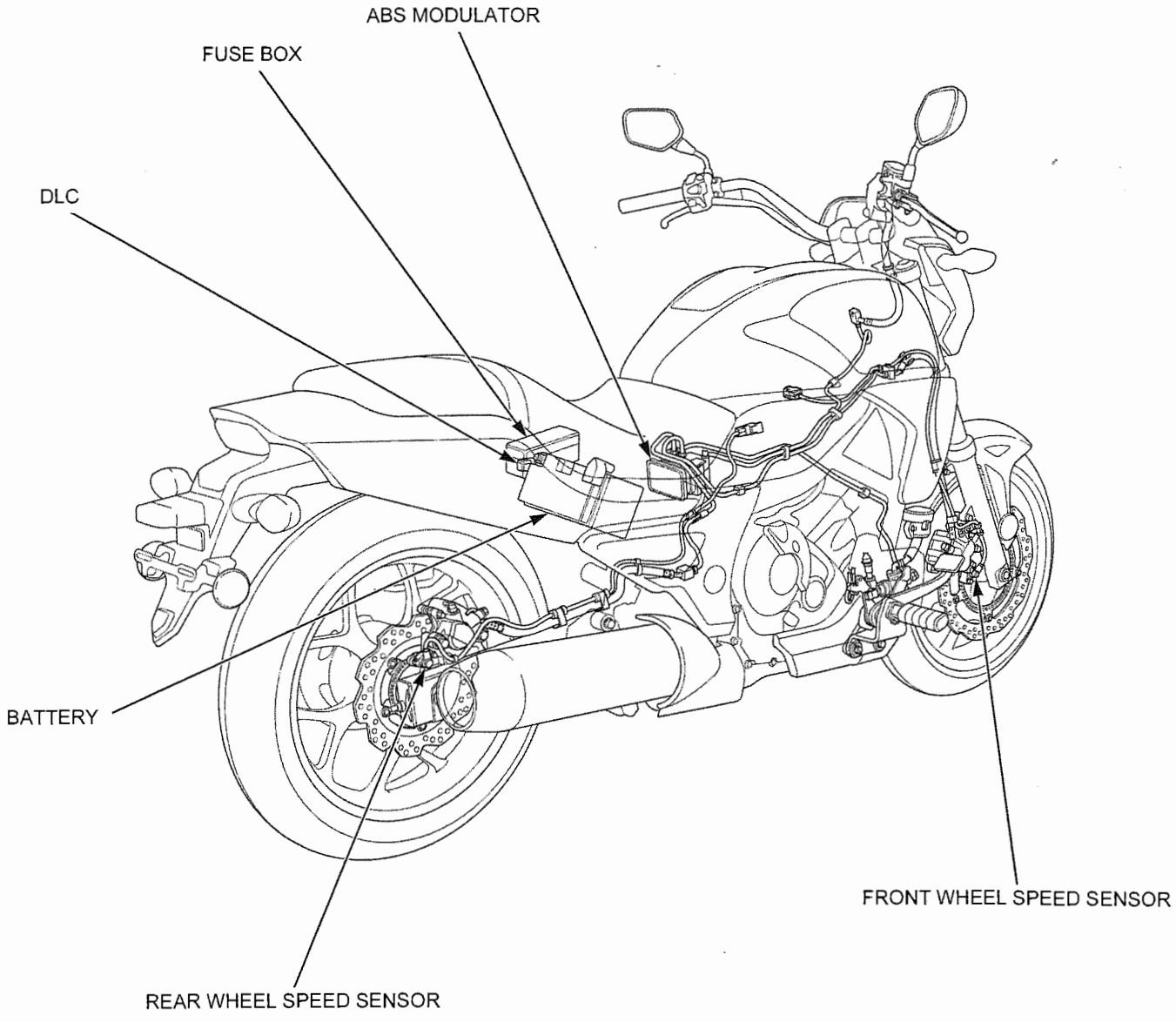


Install the lower holder cap [1].

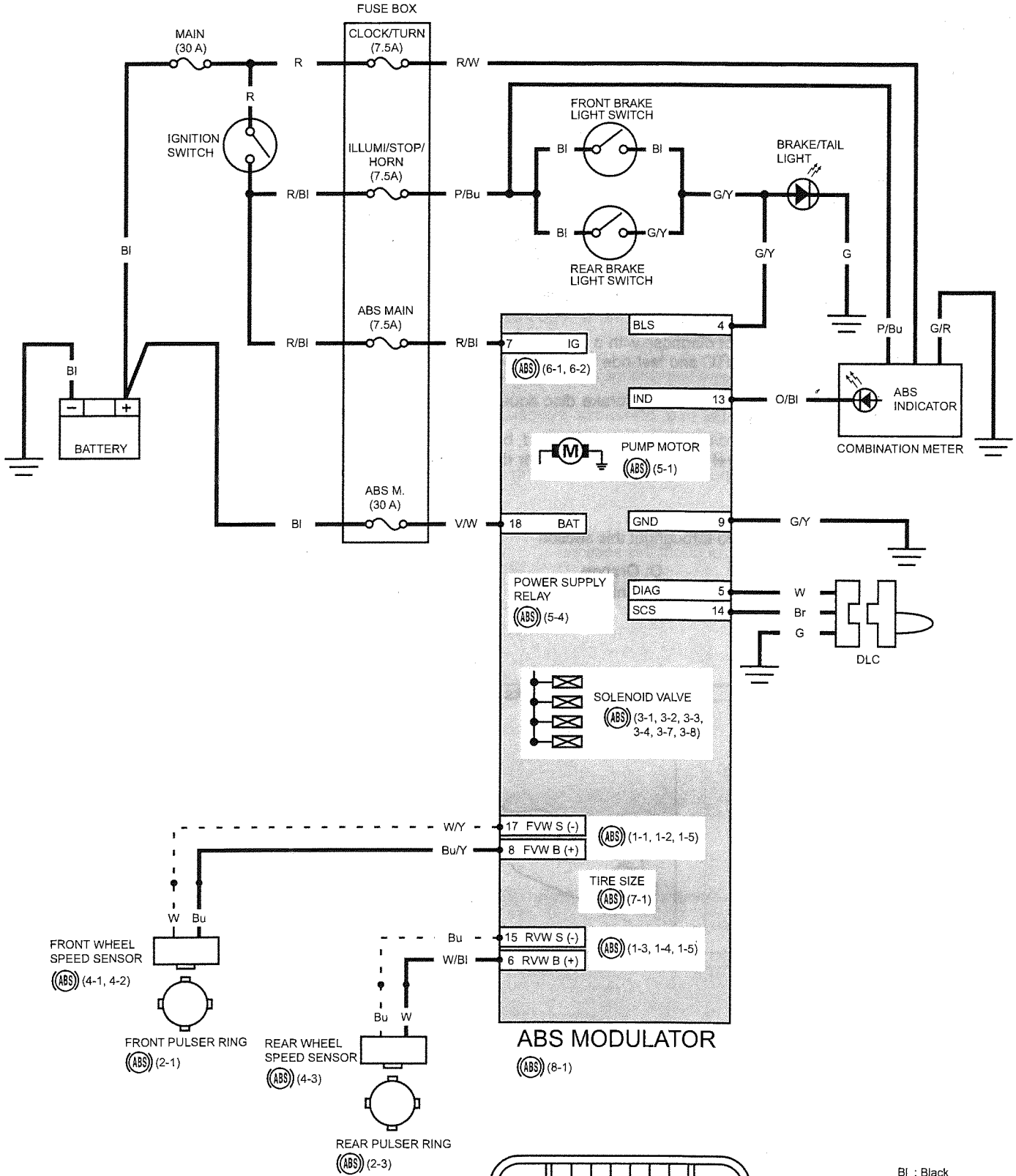


# 20. ANTI-LOCK BRAKE SYSTEM (ABS) (CTX700A/D/NA/ND)

# ABS SYSTEM LOCATION

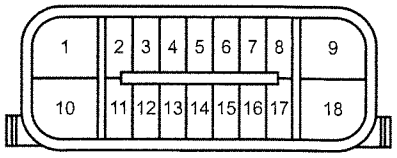


# ABS SYSTEM DIAGRAM




(ABS)( ) = ABS Problem code number

= Short terminals for reading ABS problem code




ABS MODULATOR 18P (Black) CONNECTOR (MODULATOR SIDE)

Bl : Black
Br : Brown
Bu : Blue
G : Green
O : Orange
P : Pink
R : Red
V : Violet
W : White
Y : Yellow

# SERVICE INFORMATION

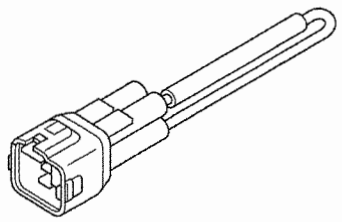
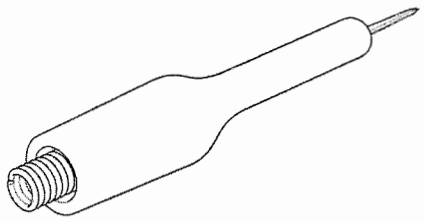
## GENERAL

**NOTICE**

- *The ABS modulator may be damaged if dropped. Also if a connector is disconnected when current is flowing, the excessive voltage may damage the control unit. Always turn off the ignition switch before servicing.*
- *Spilling brake fluid will severely damage plastic parts and painted surfaces. It is also harmful to some rubber parts.*
- The ABS control unit is integrated in the ABS modulator. Do not disassemble the ABS modulator. Replace the ABS modulator as an assembly when the it is faulty.
- The ABS control unit performs pre-start self-diagnosis to check whether the ABS functions normally until the vehicle speed reaches 10 km/h (6 mph). After pre-start self-diagnosis, the ABS control unit monitors the ABS functions and vehicle running condition constantly until the ignition switch is turned OFF (ordinary self-diagnosis).
- When the ABS control unit detects a problem, it stops the ABS function, switches back to the conventional brake operation, and turns on or blinks the ABS indicator. Take care during the test-ride.
- Read "ABS TROUBLESHOOTING INFORMATION" carefully, inspect and troubleshoot the ABS according to the diagnostic troubleshooting flow chart. Observe each step of the procedures one by one. Write down the DTC and probable faulty part before starting diagnosis and troubleshooting.
- Use a fully charged battery. Do not diagnose with a charger connected to the battery.
- After troubleshooting, erase the DTC and test-ride the motorcycle to check that the ABS indicator operates normally during pre-start self-diagnosis (page 20-5).
- Problems not caused by the faulty ABS (e.g. brake disc squeak, unevenly worn brake pad) cannot be detected by the ABS diagnosis system.
- When the wheel speed sensor and/or pulser ring is removed, be sure to check the air gap after installing them (page 20-20).
- Be careful not to damage the wheel speed sensor and pulser ring when removing and installing the wheel.
- For pulser ring service:
  – Front pulser ring (page 17-16)
  – Rear pulser ring (page 18-6)
- The following color codes are used throughout this section.

| | | | | |
|---|---|---|---|---|
| Bl: Black | Br: Brown | O: Orange | R: Red | Y: Yellow |
| Bu: Blue | G: Green | P: Pink | W: White | |

## TOOLS

| | |
|---|---|
| SCS service connector<br>070PZ-ZY30100 | Test probe, 2 packs<br>07ZAJ-RDJA110 |
|  |  |

# ABS TROUBLESHOOTING INFORMATION

## SYSTEM DESCRIPTION

### SUMMARY OF ABS PRE-START SELF-DIAGNOSIS SYSTEM

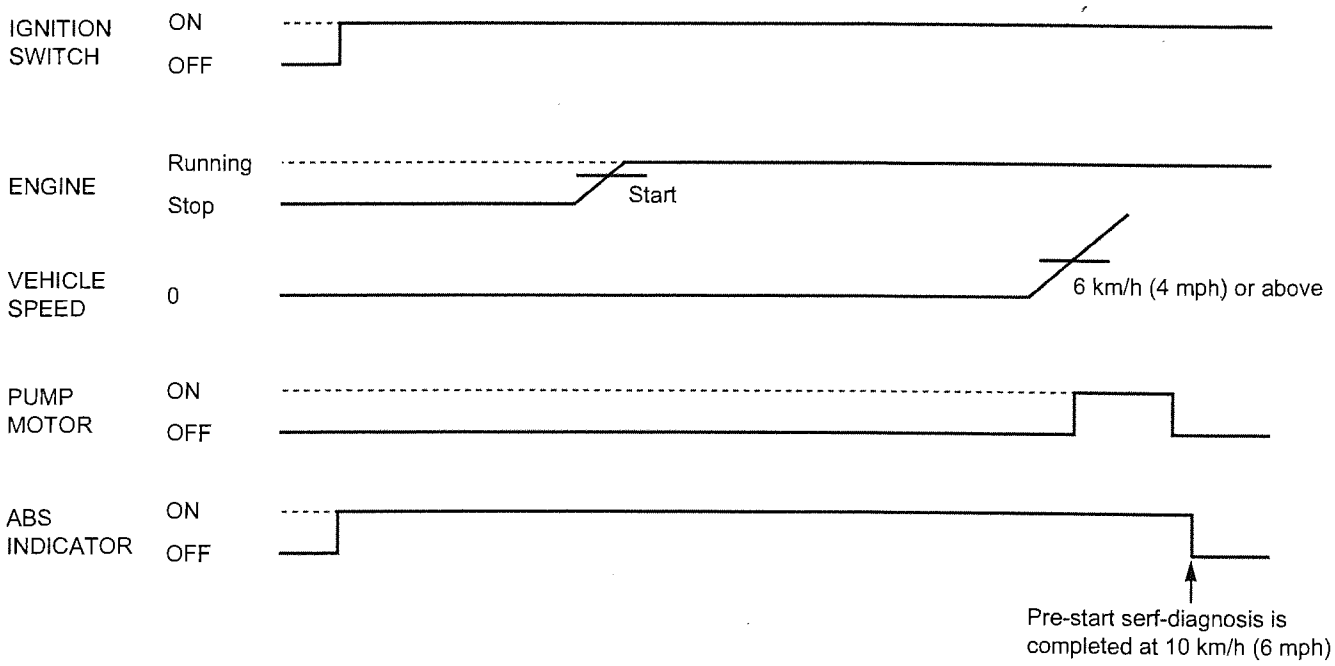
The ABS pre-start self-diagnosis system diagnoses the electrical system as well as the operating status of the modulator. When there is any abnormality, the problem and the associated part can be detected by reading the Diagnostic Trouble Code (DTC).

When the motorcycle is running, pulse signals generated at the front and rear wheel speed sensors are sent to the ABS control unit. When the vehicle speed reaches approximately 6 km/h (4 mph), the ABS control unit operates the pump motor to check it. When the vehicle speed reaches 10 km/h (6 mph), the ABS control unit turns off the ABS indicator if the system is normal and the pre-start self-diagnosis is completed.

If any problem is detected, the ABS indicator brinks or comes on and stays on to notify the rider of the problem.
The ordinary self-diagnosis is also made while the motorcycle is running after the pre-start diagnosis is completed. When the ABS indicator brinks or stays on, the cause of the problem can be identified by retrieving the DTC (page 20-6).

If the ABS indicator does not come on when the ignition switch is turned ON, or the ABS indicator stays on after the pre-start self-diagnosis is completed although the ABS is normal, the ABS indicator circuit may be faulty. Follow the troubleshooting (page 20-10).

Pre-start serf-diagnosis when the system is normal:



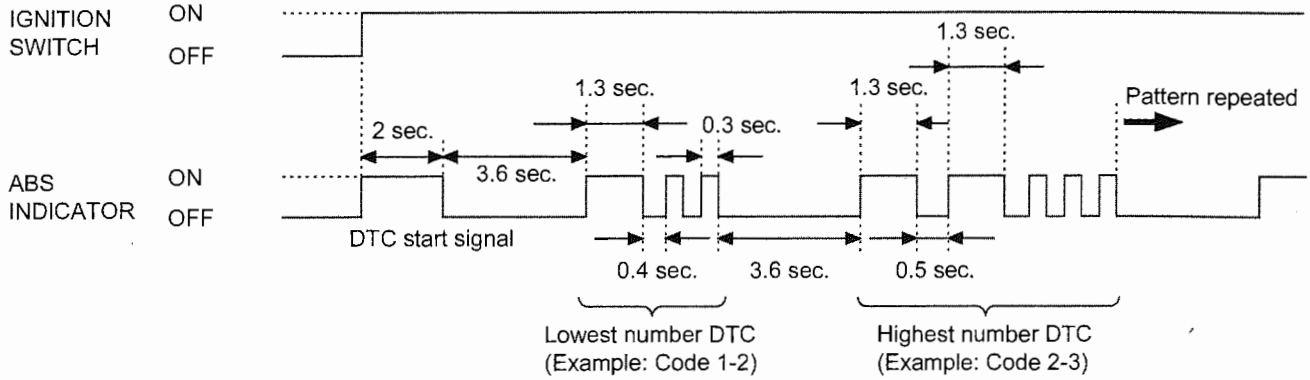

### PRE-START SELF-DIAGNOSIS PROCEDURE (Daily check)

1. Turn the ignition switch ON and engine stop switch "○".
2. Make sure the ABS indicator comes on.
3. Start the engine.
4. Ride the motorcycle and increase the vehicle speed to approximately 10 km/h (6 mph).
5. The ABS is normal if the ABS indicator goes off.

### DTC INDICATION PATTERN

NOTE:

- The ABS indicator indicates the DTC by blinking a specified number of times.
  The indicator has two types of blinking, a long blink and short blink. The long blink lasts for 1.3 seconds, the short blink lasts for 0.3 seconds. For example, when one long blink is followed by two short blinks, the DTC is 1-2 (one long blink = 1 blink, plus two short blinks = 2 blinks).
- When the ABS control unit stores some DTCs, the ABS indicator shows the DTCs in the order from the lowest number to highest number. For example, when the ABS indicator indicates code 1-2, then indicates code 2-3, two failures have occurred.




When the DTC is not stored:


## MCS INFORMATION

Refer to the PGM-FI system (page 4-8).

## DTC READOUT

NOTE:

- The DTC is not erased by turning the ignition switch to OFF while the DTC is being output. Note that turning the ignition switch ON again does not indicate the DTC. To show the DTC again, repeat the DTC readout procedures from the beginning.
- Be sure to record the indicated DTC.
- After diagnostic troubleshooting, erase the DTC and perform the pre-start self-diagnosis procedure to be sure that there is no problem in the ABS (page 20-5).
- Do not apply the brake during DTC readout.

Connect the MCS to the DLC (page 20-6).

Read the DTC, stored data and follow the DTC index (page 20-8).

- If the MCS is not available, perform the following.

**Reading DTC with the ABS indicator**

1. Turn the ignition switch OFF.

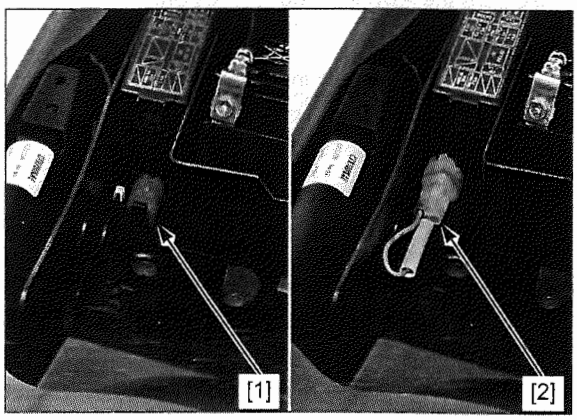
   Remove the seat (page 2-14).

   Remove the DLC [1] from the battery box.
   Remove the dummy connector from the DLC.

   Short the DLC terminals using a special tool.

   **Connection: Brown – Green**

   **TOOL:**
   **[2] SCS service connector 070PZ-ZY30100**




2. Turn the ignition switch ON and engine stop switch "○".

   The ABS indicator should come on for 2 seconds (start signal), then goes off for 3.6 seconds and starts DTC indication.

   The DTC is indicated by the number of the times of the ABS indicator blinking.

   If the DTC is not stored, the ABS indicator stays on.

## ERASING STORED DTC

NOTE:

- The stored DTC can not be erased by simply disconnecting the battery negative cable.

Connect the MCS to the DLC (page 20-6).

Erase the DTC with the MCS while the engine is stopped.

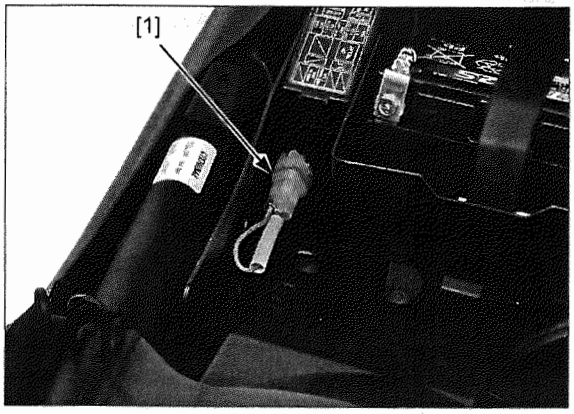
To erase the DTC without MCS, refer to the following procedure.

**How to erase the DTC without MCS**

1. Connect the SCS connector [1] to the DLC (page 20-6).
2. Turn the ignition switch ON and engine stop switch "○" while squeezing either brake lever. The ABS indicator should come on for 2 seconds and go off.
3. Release the brake lever immediately after the ABS indicator goes off. The ABS indicator should come on.
4. Squeeze the brake lever immediately after the ABS indicator comes on. The ABS indicator should go off.
5. Release the brake lever immediately after the ABS indicator goes off.

   When the DTC is erased, the ABS indicator blinks 2 times and stays on.

   If the ABS indicator does not blink 2 times, the self-diagnostic memory has not been erased, so try again.




## CIRCUIT INSPECTION

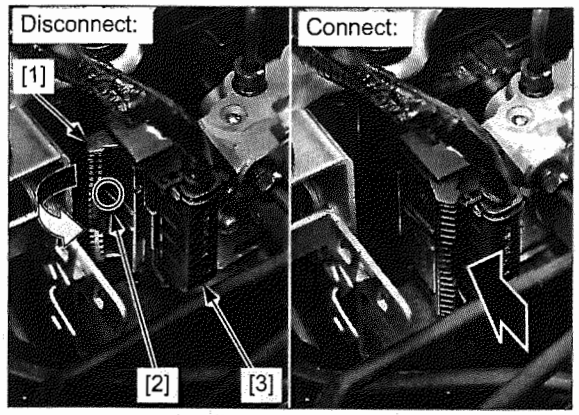
### INSPECTION AT ABS MODULATOR CONNECTOR

Remove the fuel tank (page 7-7).

Turn the ignition switch OFF.

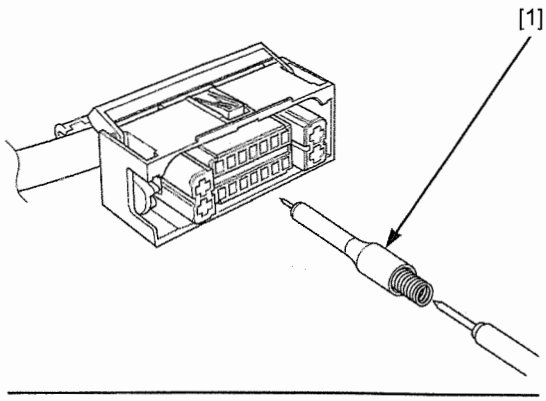
Disconnecting procedure:
Turn the lock lever [1] to this side while pressing the lock tab [2] to release it. Be sure the lock lever is turned all the way and disconnect the ABS modulator 18P (Black) connector [3].

Connecting procedure:
Be sure to seat the lock lever against the wire side of the connector fully. Connect the ABS modulator 18P (Black) connector by pressing it straight at the area as shown (arrow) until the lock tab clicks.
Make sure the connector is locked securely.

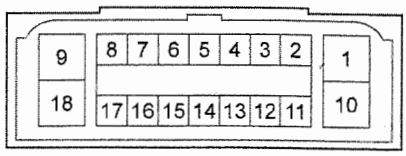


- Always clean around and keep any foreign material away from the connector before disconnecting it.
- A faulty ABS is often related to poorly connected or corroded connections. Check those connections before proceeding.
- In testing at ABS modulator 18P (Black) connector terminals (wire harness side; except No. 9 and No. 18 terminals), always use the test probe [1]. Insert the test probe into the connector terminal, then connect the digital multimeter probe to the test probe.

**TOOL:**
**[1] Test probe** **07ZAJ-RDJA110**




TERMINAL LAYOUT:




(Terminal side of the wire harness)

# DTC INDEX

NOTE:

- The ABS indicator might blink in the following cases. Correct the faulty part.
  - Incorrect tire pressure.
  - Tires not recommended for the motorcycle were installed (incorrect tire size).
  - Deformation of the wheel or tire.
- The ABS indicator might blink while riding under the following conditions. This is temporary failure. Be sure to erase the DTC (page 20-7). Then, test-ride the motorcycle above 30 km/h (19 mph) and check the DTC (page 20-6). Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.
  - The motorcycle has continuously run bumpy roads.
  - The front wheel leaves the ground for a long time when riding (wheelie).
  - Only either the front or rear wheel rotates.
  - The ABS operates continuously.
  - The ABS control unit has been disrupted by an extremely powerful radio wave (electromagnetic interference).

| DTC | Function failure | Detection | | Symptom/Fail-safe function | Refer to |
|---|---|---|---|---|---|
| | | A | B | | |
| – | ABS indicator malfunction<br>• ABS modulator voltage input line<br>• Indicator related wires<br>• Combination meter<br>• ABS modulator<br>• ABS MAIN fuse (7.5 A) | | | • ABS indicator never comes ON at all | 20-10 |
| | | | | • ABS indicator stays ON at all | 20-10 |
| 1-1 | Front wheel speed sensor circuit malfunction<br>• Wheel speed sensor or related wires | ○ | ○ | • Stops ABS operation | 20-12 |
| 1-2 | Front wheel speed sensor malfunction<br>• Wheel speed sensor, pulser ring or related wires<br>• Electromagnetic interference | | ○ | • Stops ABS operation | 20-12 |
| 1-3 | Rear wheel speed sensor circuit malfunction<br>• Wheel speed sensor or related wires | ○ | ○ | • Stops ABS operation | 20-14 |
| 1-4 | Rear wheel speed sensor malfunction<br>• Wheel speed sensor, pulser ring or related wires<br>• Electromagnetic interference | | ○ | • Stops ABS operation | 20-14 |

| DTC | Function failure | Detection | | Symptom/Fail-safe function | Refer to |
|---|---|---|---|---|---|
| | | A | B | | |
| 1-5 | Front or rear wheel speed sensor circuit malfunction (short circuit)<br>• Wheel speed sensor or related wires | O | O | • Stops ABS operation | 20-16 |
| 2-1 | Front pulser ring<br>• Pulser ring or related wires | | O | • Stops ABS operation | 20-12 |
| 2-3 | Rear pulser ring<br>• Pulser ring or related wires | | O | • Stops ABS operation | 20-14 |
| 3-1<br>3-2<br>3-3<br>3-4<br>3-7<br>3-8 | Solenoid valve malfunction (ABS modulator) | O | O | • Stops ABS operation | 20-17 |
| 4-1 | Front wheel lock<br>• Riding condition | | O | • Stops ABS operation | 20-12 |
| 4-2 | Front wheel lock (Wheelie)<br>• Riding condition | | O | | |
| 4-3 | Rear wheel lock<br>• Riding condition | | O | • Stops ABS operation | 20-14 |
| 5-1 | Pump motor lock<br>• Pump motor (ABS modulator) or related wires<br>• ABS M. fuse (30 A) | O | O | • Stops ABS operation | 20-18 |
| 5-4 | Power supply relay malfunction<br>• Power supply relay (ABS modulator) or related wires<br>• ABS M. fuse (30 A) | O | O | • Stops ABS operation | 20-18 |
| 6-1 | Power circuit under voltage<br>• Input voltage (too low)<br>• ABS MAIN fuse (7.5 A) | O | O | • Stops ABS operation | 20-19 |
| 6-2 | Power circuit over voltage<br>• Input voltage (too high) | O | O | • Stops ABS operation | |
| 7-1 | Tire malfunction<br>• Tire size | | O | • Stops ABS operation | 20-20 |
| 8-1 | ABS control unit<br>• ABS control unit malfunction (ABS modulator) | O | O | • Stops ABS operation | 20-20 |

(A) Pre-start self-diagnosis (page 20-5)

(B) Ordinary self-diagnosis: diagnoses while the motorcycle is running (after pre-start self-diagnosis)

# ABS INDICATOR CIRCUIT TROUBLESHOOTING

## ABS INDICATOR DOES NOT COME ON (when the ignition switch turned ON)

NOTE:

- Before starting this inspection, check the initial function of the combination meter (page 22-7).

**1. Indicator Operation Inspection**

Turn the ignition switch OFF.
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Turn the ignition switch ON and engine stop switch "○".
Check the ABS indicator.

***Does the ABS indicator come on?***

**YES** – Faulty ABS modulator

**NO** – GO TO STEP 2.

**2. Indicator Signal Line Short Circuit Inspection**

Turn the ignition switch OFF.
Check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

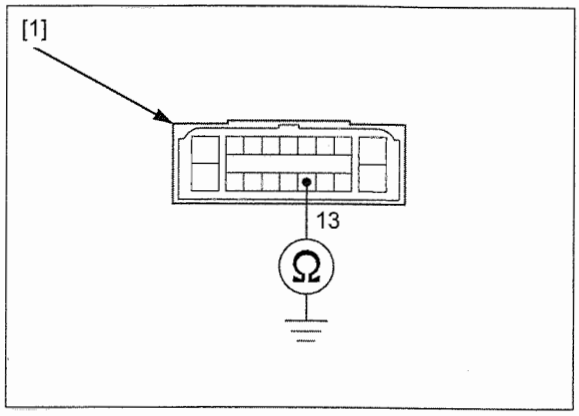
**TOOL:**
**Test probe** **07ZAJ-RDJA110**

**CONNECTION: 13 – Ground**

***Is there continuity?***

**YES** – Short circuit in the Orange/black wire

**NO** – Faulty combination meter




## ABS INDICATOR STAYS ON (Indicator does not go off when the motorcycle is running, but DTC is not stored)

**1. Service Check Line Short Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

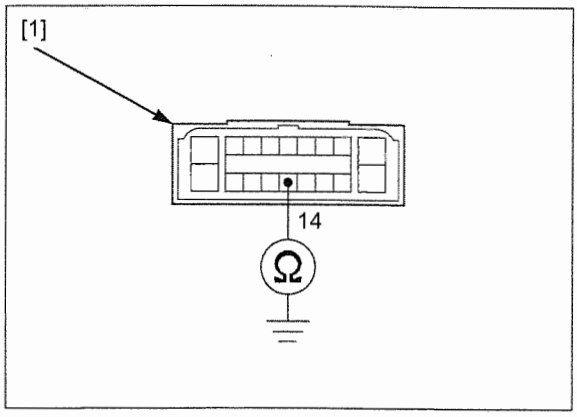
**TOOL:**
**Test probe** **07ZAJ-RDJA110**

**CONNECTION: 14 – Ground**

***Is there continuity?***

**YES** – Short circuit in the Brown wire

**NO** – GO TO STEP 2.



**2. Indicator Signal Line Open Circuit Inspection**

Short the wire harness side ABS modulator 18P (Black) connector [1] terminal to the ground with a jumper wire [2].

**TOOL:**
**Test probe** **07ZAJ-RDJA110**

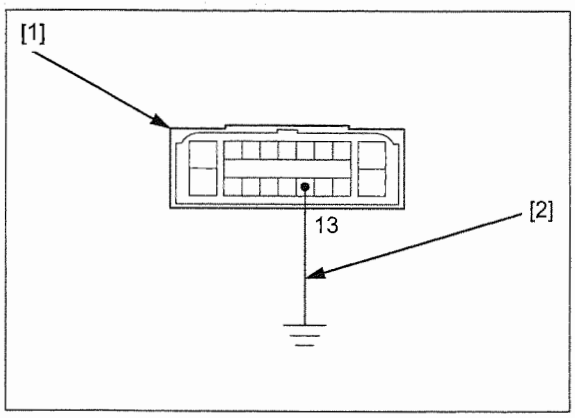
**CONNECTION: 13 – Ground**

Turn the ignition switch ON and engine stop switch "○".
Check the ABS indicator.

***Does it go off?***

**YES** – GO TO STEP 3.

**NO** – • Open circuit in the Orange/black wire
• Faulty combination meter (if the Orange/black wire is OK)




**3. Modulator Ground Line Open Circuit Inspection**

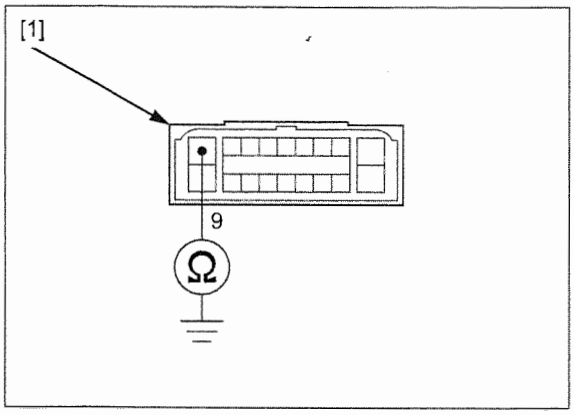
Turn the ignition switch OFF.
Check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

**CONNECTION: 9 – Ground**

***Is there continuity?***

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Green/yellow wire



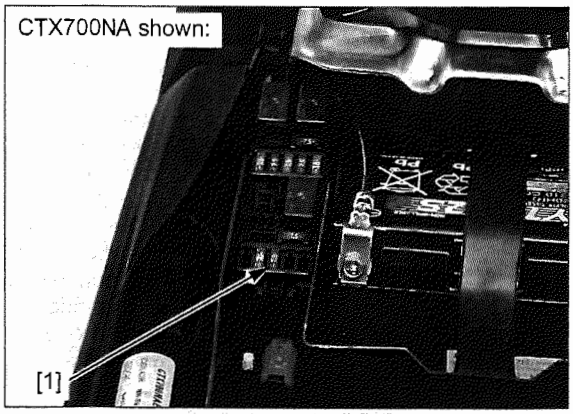

**4. Fuse Inspection**

Remove the seat (page 2-14).
Remove the fuse box cover and check the ABS MAIN fuse (7.5 A) [1] in the fuse box for blown.

***Is the fuse blown?***

**YES** – GO TO STEP 5.

**NO** – GO TO STEP 6.



5. **Power Input Line Short Circuit Inspection**

With the ABS MAIN fuse (7.5 A) removed, check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] and ground.

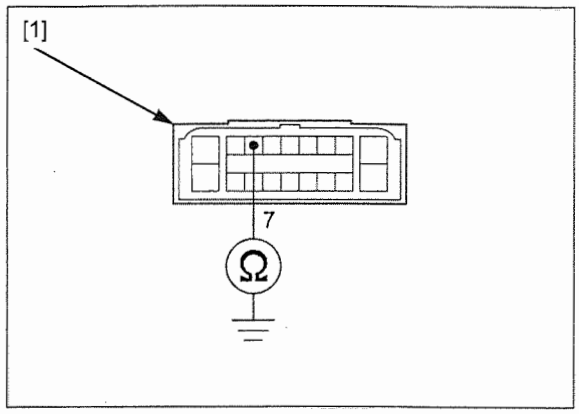
**TOOL:**
**Test probe** **07ZAJ-RDJA110**

**CONNECTION: 7 – Ground**

***Is there continuity?***

**YES** – Short circuit in Red/black wire

**NO** – Intermittent failure. Replace the ABS MAIN fuse (7.5 A) with a new one, and recheck.




6. **Power Input Line Open Circuit Inspection**

Install the ABS MAIN fuse (7.5 A).
Turn the ignition switch ON.
Measure the voltage between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

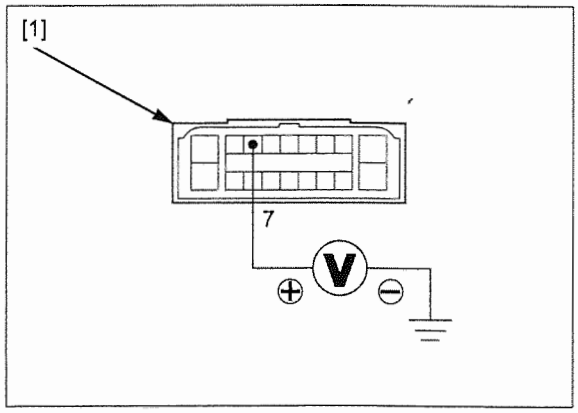
**TOOL:**
**Test probe** **07ZAJ-RDJA110**

**CONNECTION: 7 (+) – Ground (–)**

***Is there battery voltage?***

**YES** – Faulty ABS modulator

**NO** – Open circuit in Red/black wire




# ABS TROUBLESHOOTING

NOTE:
- Perform inspection with the ignition switch OFF, unless otherwise specified.
- All connector diagrams in the troubleshooting are viewed from the terminal side.
- Use a fully charged battery. Do not diagnose with a charger connected to the battery.
- When the ABS modulator assembly is detected to be faulty, recheck the wire harness and connector connections closely before replacing it.
- After diagnostic troubleshooting, erase the DTC (page 20-7) and test-ride the motorcycle to check that the ABS indicator operates normally during pre-start self-diagnosis (page 20-5).

## DTC 1-1, 1-2, 2-1, 4-1 or 4-2 (Front Wheel Speed Sensor Circuit/Front Wheel Speed Sensor/Front Pulser Ring/Front Wheel Lock)

NOTE:
- The ABS indicator might blink under unusual riding conditions (page 20-8). This is temporary failure. Erase the DTC (page 20-7) and test-ride the motorcycle above 30 km/h (19 mph) to check that the ABS indicator operates normally (page 20-5).
- If DTC 4-1 is indicated, check the front brake for drag.

1. **Speed Sensor Air Gap Inspection**

   Measure the air gap between the front wheel speed sensor and pulser ring (page 20-20).

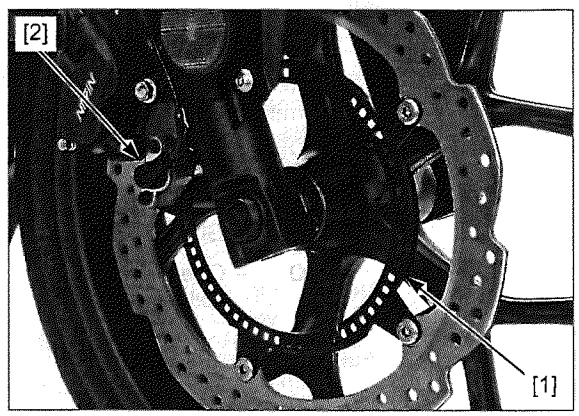
   ***Is the air gap correct?***

   **YES** – GO TO STEP 2.

   **NO** – Check each part for deformation and looseness and correct accordingly. Recheck the air gap.

2. **Speed Sensor Condition Inspection**

   Inspect the area around the front wheel speed sensor:
   Check that there is iron or other magnetic deposits between the pulser ring [1] and wheel speed sensor [2], and the pulser ring slots for obstructions.
   Check the installation condition of the pulser ring or wheel speed sensor for looseness.
   Check the pulser ring and sensor tip for deformation or damage.

   ***Are the sensor and pulser ring in good condition?***

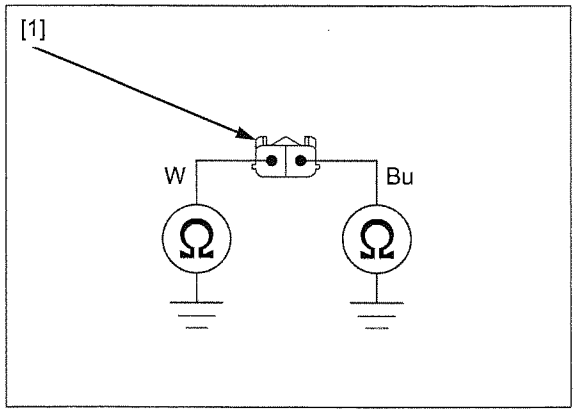
   **YES** – GO TO STEP 3.

   **NO** – Remove any deposits. Install properly or replace faulty part.

3. **Front Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)**

   Turn the ignition switch OFF.
   Disconnect the front wheel speed sensor 2P (Blue) connector (page 20-21).
   Check for continuity between each terminal of the sensor side front wheel speed sensor 2P (Blue) connector [1] and ground.

   **CONNECTION: White – Ground**
   **Blue – Ground**

   ***Is there continuity?***

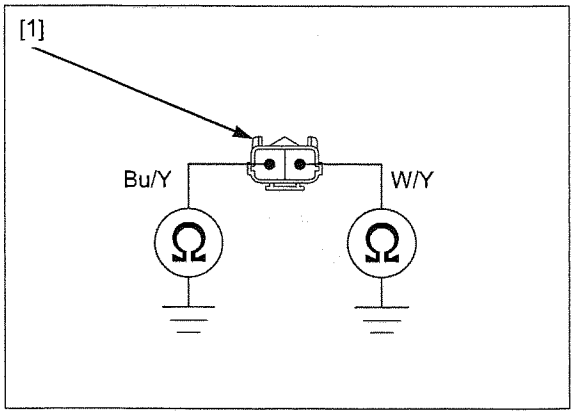
   **YES** – Faulty front wheel speed sensor

   **NO** – GO TO STEP 4.

4. **Front Wheel Speed Sensor Line Short Circuit Inspection**

   Disconnect the ABS modulator 18P (Black) connector (page 20-7).
   Check for continuity between each terminal of the wire harness side front wheel speed sensor 2P (Blue) connector [1] and ground.

   **CONNECTION: Blue/yellow – Ground**
   **White/yellow – Ground**

   ***Is there continuity?***

   **YES** – • Short circuit in the Blue/yellow wire
   • Short circuit in the White/yellow wire

   **NO** – GO TO STEP 5.

**5. Speed Sensor Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the following:

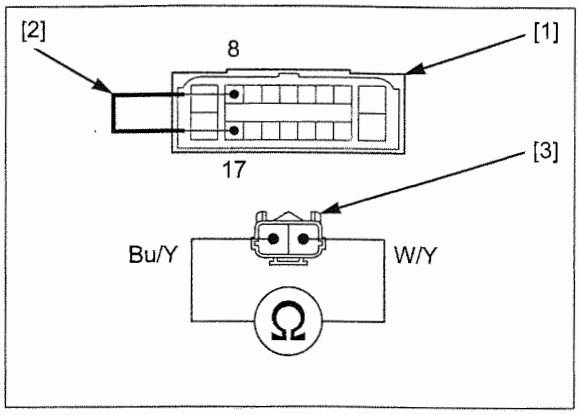
- ABS modulator 18P (Black) connector (page 20-7)
- Front wheel speed sensor 2P (Blue) connector (page 20-21)

Short the wire harness side ABS modulator 18P (Black) connector [1] terminals with a jumper wire [2].

**CONNECTION: 8 – 17**

Check for continuity between the wire harness side front wheel speed sensor 2P (Blue) connector [3] terminals.

**CONNECTION: Blue/yellow – White/yellow**




***Is there continuity?***

**YES** – GO TO STEP 6.

**NO** – Open circuit in the Blue/yellow or White/yellow wire

**6. Failure Reproduction with a New Speed Sensor**

Replace the front wheel speed sensor with a new one (page 20-21).
Connect the ABS modulator 18P (Black) and front wheel speed sensor 2P (Blue) connectors.
Erase the DTC (page 20-7).
Test-ride the motorcycle above 30 km/h (19 mph).
Recheck the DTC (page 20-6).

***Is the DTC 1-1, 1-2, 2-1, 4-1 or 4-2 indicated?***

**YES** – Faulty ABS modulator

**NO** – Faulty original wheel speed sensor

## DTC 1-3, 1-4, 2-3, or 4-3 (Rear Wheel Speed Sensor Circuit/Rear Wheel Speed Sensor/Rear Pulser Ring/Rear Wheel Lock)

NOTE:

- The ABS indicator might blink under unusual riding conditions (page 20-8). This is temporary failure. Erase the DTC (page 20-7) and test-ride the motorcycle above 30 km/h (19 mph) to check that the ABS indicator operates normally (page 20-5).
- If DTC 4-3 is indicated, check the rear brake for drag.

**1. Speed Sensor Air Gap Inspection**

Measure the air gap between the rear wheel speed sensor and pulser ring (page 20-20).

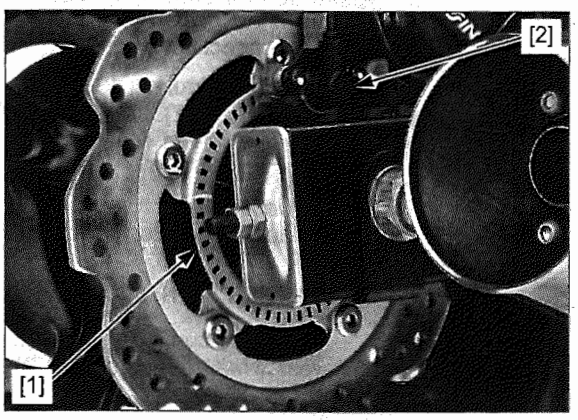
***Is the air gap correct?***

**YES** – GO TO STEP 2.

**NO** – Check each part for deformation and looseness and correct accordingly. Recheck the air gap.

2. **Speed Sensor Condition Inspection**

Inspect the area around the rear wheel speed sensor:
Check that there is iron or other magnetic deposits between the pulser ring [1] and wheel speed sensor [2], and the pulser ring slots for obstructions.
Check the installation condition of the pulser ring or wheel speed sensor for looseness.
Check the pulser ring and sensor tip for deformation or damage.




***Are the sensor and pulser ring in good condition?***

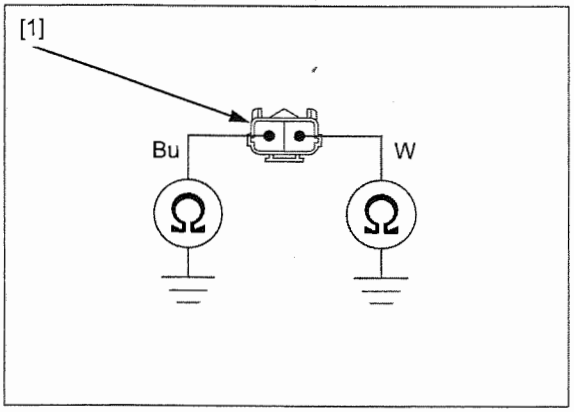
**YES** – GO TO STEP 3.

**NO** – Remove any deposits. Install properly or replace faulty part.

3. **Rear Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)**

Turn the ignition switch OFF.
Disconnect the rear wheel speed sensor 2P (Gray) connector (page 20-22).
Check for continuity between each terminal of the sensor side rear wheel speed sensor 2P (Gray) connector [1] and ground.

**CONNECTION: Blue – Ground**
**White – Ground**




***Is there continuity?***

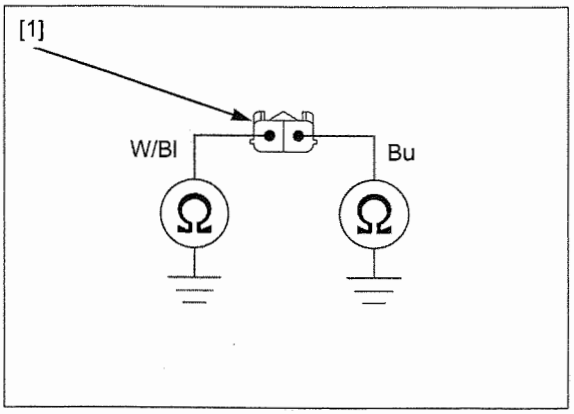
**YES** – Faulty rear wheel speed sensor

**NO** – GO TO STEP 4.

4. **Rear Wheel Speed Sensor Line Short Circuit Inspection**

Check for continuity between each terminal of the wire harness side rear wheel speed sensor 2P (Gray) connector [1] and ground.

**CONNECTION: White/black – Ground**
**Blue – Ground**




***Is there continuity?***

**YES** – • Short circuit in the White/black wire
• Short circuit in the Blue wire

**NO** – GO TO STEP 5.

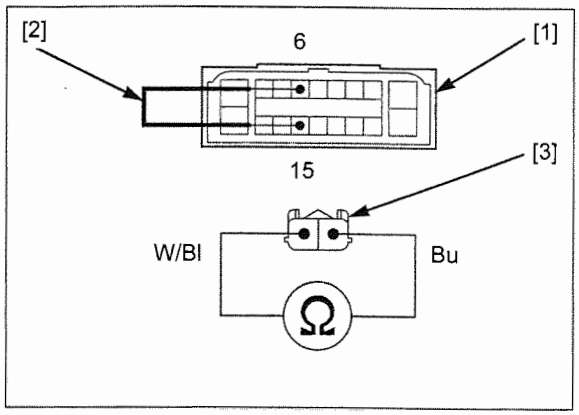
**5. Speed Sensor Line Open Circuit Inspection**

Turn the ignition switch OFF.
Disconnect the following:

- ABS modulator 18P (Black) connector (page 20-7)
- Rear wheel speed sensor 2P (Gray) connector (page 20-22)

Short the wire harness side ABS modulator 18P (Black) connector [1] terminals with a jumper wire [2].

**CONNECTION: 6 – 15**




Check for continuity between the wire harness side rear wheel speed sensor 2P (Gray) connector [3] terminals.

**CONNECTION: White/black – Blue**

***Is there continuity?***

**YES** – GO TO STEP 6.

**NO** – Open circuit in the White/black or Blue wire

**6. Failure Reproduction with a New Speed Sensor**

Replace the rear wheel speed sensor with a new one (page 20-22).
Connect the ABS modulator 18P (Black) and rear wheel speed sensor 2P (Gray) connectors.
Erase the DTC (page 20-7).
Test-ride the motorcycle above 30 km/h (19 mph).
Recheck the DTC (page 20-6).

***Is the DTC 1-3, 1-4, 2-3, or 4-3 indicated?***

**YES** – Faulty ABS modulator

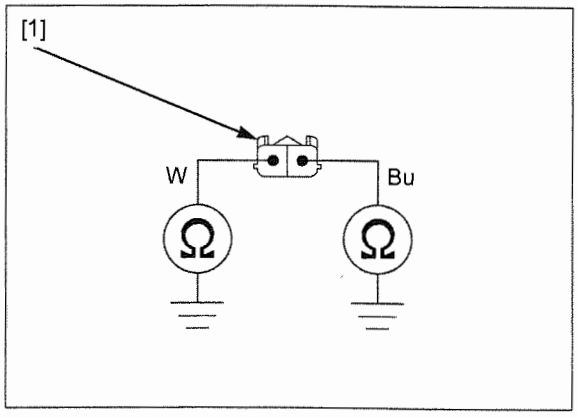
**NO** – Faulty original wheel speed sensor

## DTC 1-5 (Front or Rear Wheel Speed Sensor Circuit: Short)

**1. Front Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)**

Turn the ignition switch OFF.
Disconnect the front wheel speed sensor 2P (Blue) connector (page 20-21).
Check for continuity between each terminal of the sensor side front wheel speed sensor 2P (Blue) connector [1] and ground.

**CONNECTION: White – Ground**
**Blue – Ground**




***Is there continuity?***

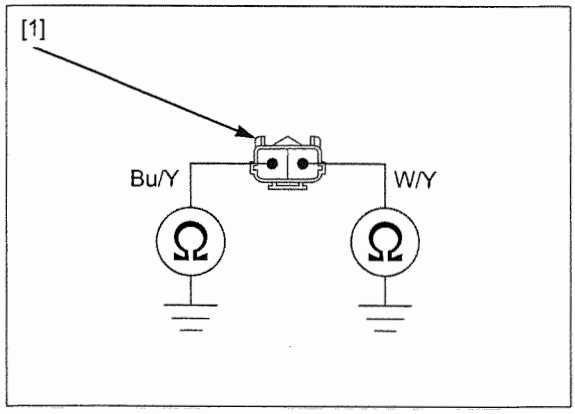
**YES** – Faulty front wheel speed sensor

**NO** – GO TO STEP 2.

2. **Front Wheel Speed Sensor Line Short Circuit Inspection**

Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Check for continuity between each terminal of the wire harness side front wheel speed sensor 2P (Blue) connector [1] and ground.

**CONNECTION: Blue/yellow – Ground**
**White/yellow – Ground**




***Is there continuity?***

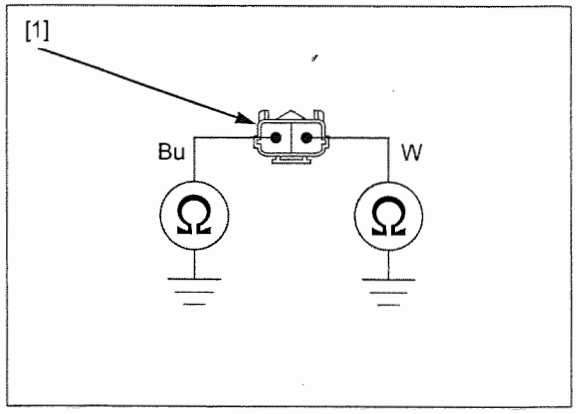
**YES** – • Short circuit in the Blue/yellow wire
• Short circuit in the White/yellow wire

**NO** – GO TO STEP 3.

3. **Rear Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)**

Turn the ignition switch OFF.
Disconnect the rear wheel speed sensor 2P (Gray) connector (page 20-22).
Check for continuity between each terminal of the sensor side rear wheel speed sensor 2P (Gray) connector [1] and ground.

**CONNECTION: Blue – Ground**
**White – Ground**




***Is there continuity?***

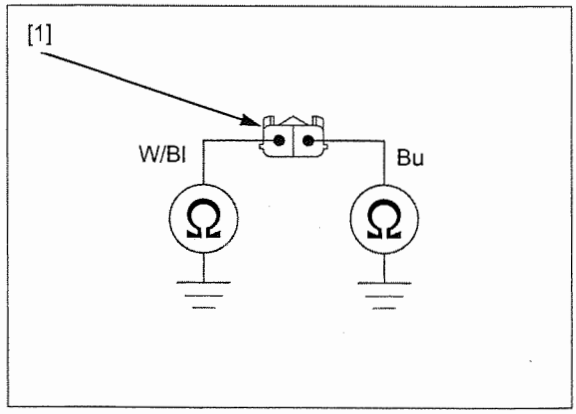
**YES** – Faulty rear wheel speed sensor

**NO** – GO TO STEP 4.

4. **Rear Wheel Speed Sensor Line Short Circuit Inspection**

Check for continuity between each terminal of the wire harness side rear wheel speed sensor 2P (Gray) connector [1] and ground.

**CONNECTION: White/black – Ground**
**Blue – Ground**




***Is there continuity?***

**YES** – • Short circuit in the White/black wire
• Short circuit in the Blue wire

**NO** – Faulty ABS modulator

## DTC 3-1, 3-2, 3-3, 3-4, 3-7 or 3-8 (Solenoid Valve)

1. **Failure Reproduction**

Erase the DTC (page 20-7).
Test-ride the motorcycle above 30 km/h (19 mph).
Recheck the DTC (page 20-6).

***Is the DTC 3-1, 3-2, 3-3, 3-4, 3-7 or 3-8 indicated?***

**YES** – Faulty ABS modulator

**NO** – Solenoid valve is normal (intermittent failure).

## DTC 5-1 or 5-4 (Pump Motor Lock/ Power Supply Relay)

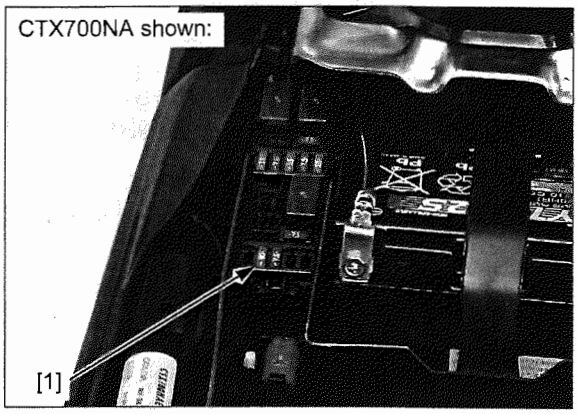
**1. Fuse Inspection**

Turn the ignition switch OFF.
Remove the seat (page 2-14).
Remove the fuse box cover and check the ABS M. fuse (30 A) [1] in the fuse box for blown.

***Is the fuse blown?***

**YES** – GO TO STEP 2.

**NO** – GO TO STEP 3.




**2. Motor Power Input Line Short Circuit Inspection**

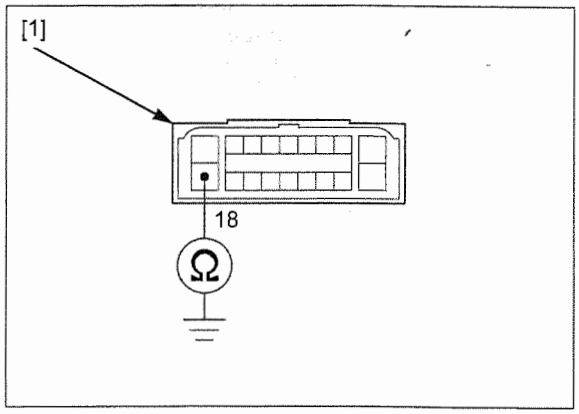
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
With the ABS M. fuse (30 A) removed, check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

**CONNECTION: 18 – Ground**

***Is there continuity?***

**YES** – Short circuit in the Violet/white wire between the fuse box and ABS modulator 18P (Black) connector

**NO** – Intermittent failure. Replace the ABS M. fuse (30 A) with a new one, and recheck.




**3. Motor Power Input Line Open Circuit Inspection**

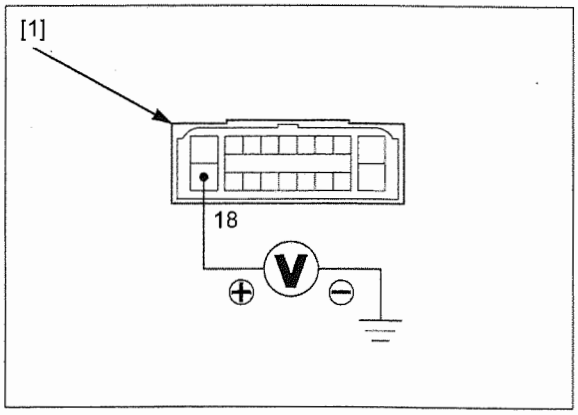
Install the ABS M. fuse (30 A).
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Measure the voltage between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

**CONNECTION: 18 (+) – Ground (–)**

***Is there battery voltage?***

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Black or Violet/white wire between the battery and ABS modulator 18P (Black) connector




**4. Failure Reproduction**

Turn the ignition switch OFF.
Connect the ABS modulator 18P (Black) connector.
Erase the DTC (page 20-7).
Test-ride the motorcycle above 30 km/h (19 mph).
Recheck the DTC (page 20-6).

***Is the DTC 5-1 or 5-4 indicated?***

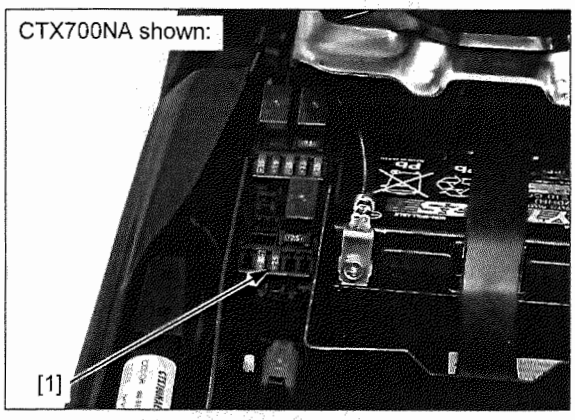
**YES** – Faulty ABS modulator

**NO** – Pump motor is normal (intermittent failure).

## DTC 6-1 or 6-2 (Power Circuit)

1. **Fuse Inspection**

Turn the ignition switch OFF.
Remove the seat (page 2-14).
Remove the fuse box cover and check the ABS MAIN fuse (7.5 A) [1] in the fuse box for blown.



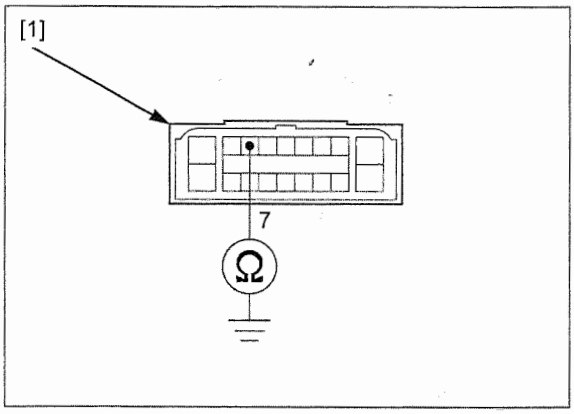

***Is the fuse blown?***

**YES** – GO TO STEP 2.

**NO** – GO TO STEP 3.

2. **Power Input Line Short Circuit Inspection**

Disconnect the ABS modulator 18P (Black) connector (page 20-7).
With the ABS MAIN fuse (7.5 A) removed, check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] and ground.




**TOOL:**
**Test probe** **07ZAJ-RDJA110**

**CONNECTION: 7 – Ground**

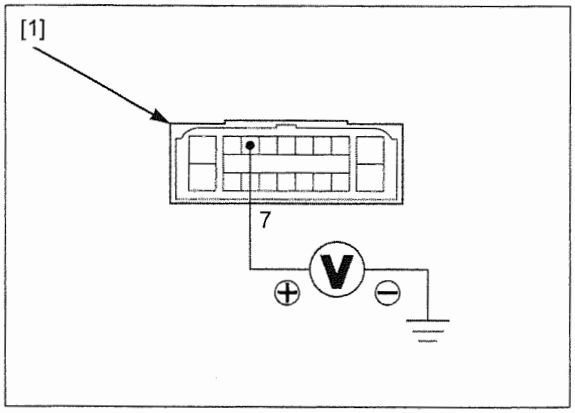
***Is there continuity?***

**YES** – Short circuit in Red/black wire

**NO** – Intermittent failure. Replace the ABS MAIN fuse (7.5 A) with a new one, and recheck.

3. **Power Input Line Open Circuit Inspection**

Install the ABS MAIN fuse (7.5 A).
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Turn the ignition switch ON and engine stop switch "○".
Measure the voltage between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.




**TOOL:**
**Test probe** **07ZAJ-RDJA110**

**CONNECTION: 7 (+) – Ground (–)**

***Is there battery voltage?***

**YES** – GO TO STEP 4.

**NO** – Open circuit in Red/black wire

4. **Failure Reproduction**

Turn the ignition switch OFF.
Connect the ABS modulator 18P (Black) connector.
Erase the DTC (page 20-7).
Test-ride the motorcycle above 30 km/h (19 mph).
Recheck the DTC (page 20-6).

***Is the DTC 6-1 or 6-2 indicated?***

**YES** – Faulty ABS modulator

**NO** – Power circuit is normal (intermittent failure)

## DTC 7-1 (Tire Size)

NOTE:

- Check the following and correct the faulty part.
  - Incorrect tire pressure.
  - Tires not recommended for the motorcycle were installed (incorrect tire size).
  - Deformation of the wheel or tire.

1. **Failure Reproduction**

   If the above items are normal, recheck the DTC:
   Erase the DTC (page 20-7).
   Test-ride the motorcycle above 30 km/h (19 mph).
   Recheck the DTC (page 20-6).

   ***Is the DTC 7-1 indicated?***

   **YES** – Faulty ABS modulator

   **NO** – Tire size is normal (intermittent failure)

## DTC 8-1 (ABS Control Unit)

1. **Failure Reproduction**

   Erase the DTC (page 20-7).
   Test-ride the motorcycle above 30 km/h (19 mph).
   Recheck the DTC (page 20-6).

   ***Is the DTC 8-1 indicated?***

   **YES** – Faulty ABS modulator

   **NO** – ABS control unit is normal (intermittent failure)

# WHEEL SPEED SENSOR

## AIR GAP INSPECTION

Support the motorcycle securely using a hoist or equivalent and raise the wheel off the ground.

Measure the clearance (air gap) between the sensor and pulser ring at several points by turning the wheel slowly.
It must be within specification.

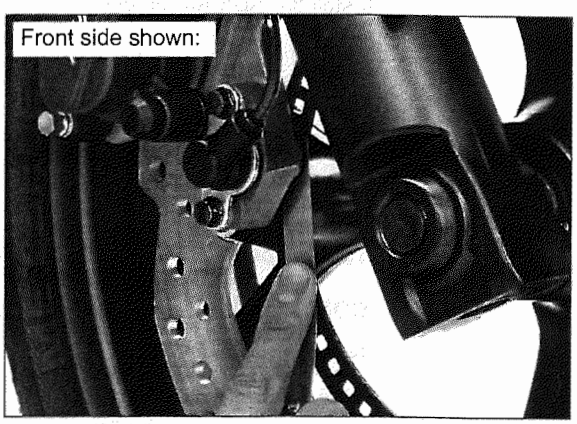
**STANDARD: 0.54 – 1.14 mm (0.021 – 0.045 in)**

The clearance (air gap) cannot be adjusted.
If it is not within specification, check each part for deformation, looseness or damage.

Check the wheel speed sensor for damage, and replace if necessary.

Check the pulse ring for deformation or damage, and replace if necessary.

– Front pulser ring (page 17-16)
– Rear pulser ring (page 18-6)



## WHEEL SPEED SENSOR REPLACEMENT

NOTE:

Refer to procedure for the pulser ring removal/ installation.

- Front pulser ring (page 17-16)
- Rear pulser ring (page 18-6)

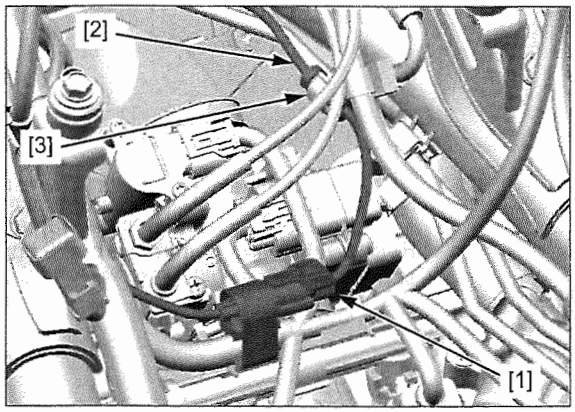
### FRONT WHEEL SPEED SENSOR REMOVAL/ INSTALLATION

Remove the fuel tank (page 7-7).

Pull down the radiator (page 8-7).

Disconnect the front wheel speed sensor 2P (Blue) connector [1].

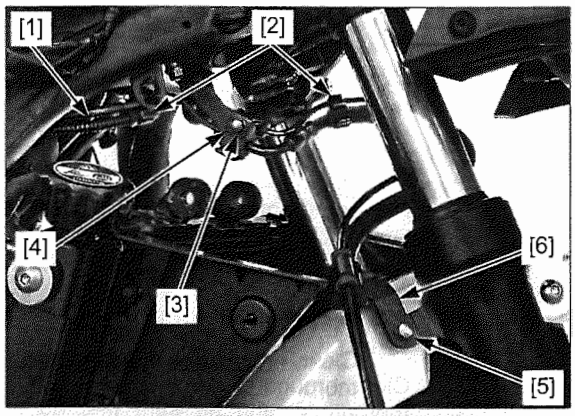
Release the sensor wire [2] from the clamp [3].




Release the sensor wire [1] from the clamps [2].

Remove the bolt [3] and wire clamp [4], then release the speed sensor wire.

Remove the bolt [5] and brake hose clamp [6], then release the speed sensor wire.




Release the sensor wire [1] from the clamp [2].

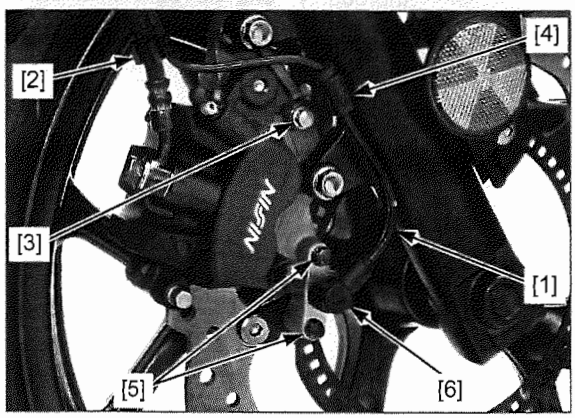
Remove the bolt [3] and front wheel speed sensor wire guide [4].

Remove the bolts [5] and front wheel speed sensor [6].

Clean around the mounting area of the caliper bracket thoroughly, and be sure that no foreign material is allowed to enter the mounting hole.

Installation is in the reverse order of removal.

- Make sure the radiator mounting rubber slits facing down.
- Align radiator lower stay slit with cylinder head tab.



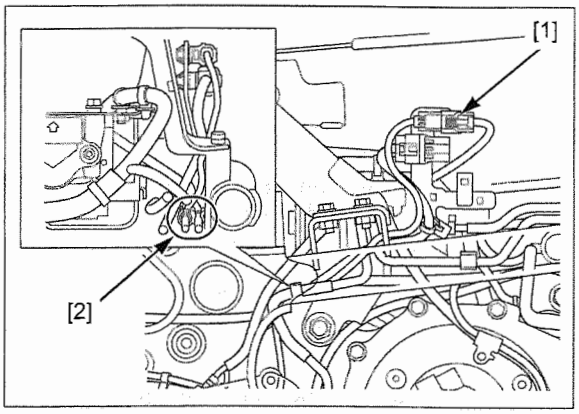
### REAR WHEEL SPEED SENSOR REMOVAL/ INSTALLATION

Remove the following:

- Right side shelter (page 2-11)
- Right swingarm pivot cover (page 2-17)

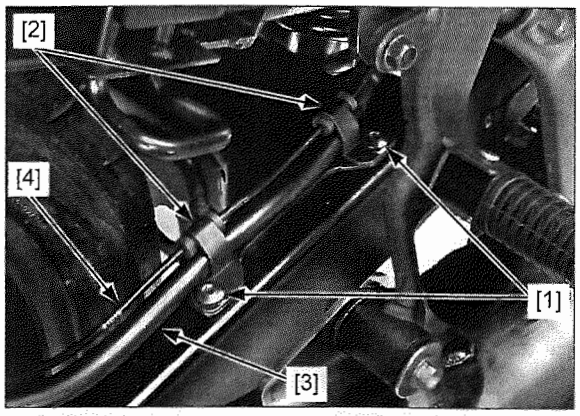
Release the rear wheel speed sensor 2P (Gray) connector [1] from the stay and disconnect it.

Release the clamp [2].




Remove the socket bolts [1] and brake hose guide [2].

Release the brake hose [3] and rear wheel speed sensor wire [4] from the brake hose guide.



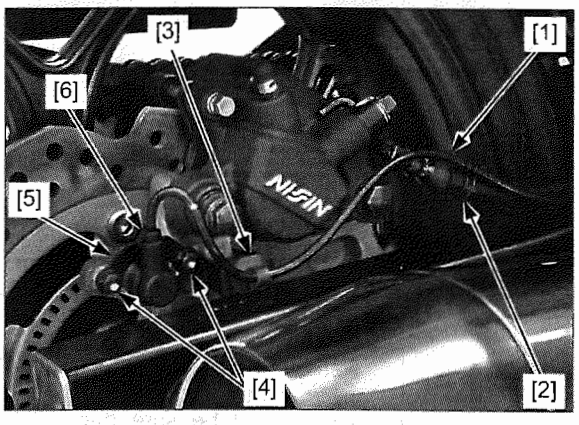

Release the rear wheel speed sensor wire [1] from the clamp [2].

Remove the wire band boss [3].

Remove the bolts [4] and stay [5], rear wheel speed sensor [6].

Clean around the mounting area of the caliper bracket thoroughly, and be sure that no foreign material is allowed to enter the mounting hole.

Installation is in the reverse order of removal.



# ABS MODULATOR

## REMOVAL/INSTALLATION

NOTE:

Be careful not to bend or damage the brake pipes during assembly or removal.

Remove the center cross plate (page 2-20).

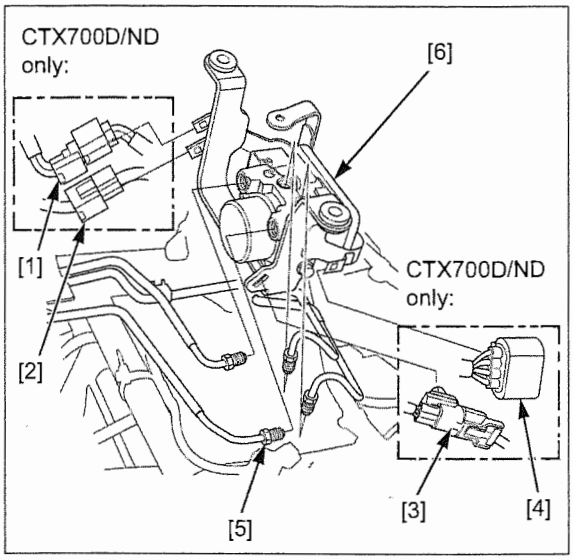
Release the following from the ABS modulator stay and disconnect them.

- Linear solenoid valve 4P (Green) connector [1]
- Shift spindle angle sensor 3P (Gray) connector [2]
- TR sensor 3P (Black) connector [3]
- Junction D [4]

Loosen the brake pipe joint nuts [5] and disconnect the brake pipes from the ABS modulator.

- Be careful not to bend or damage the brake pipes.

Remove the ABS modulator assembly [6].



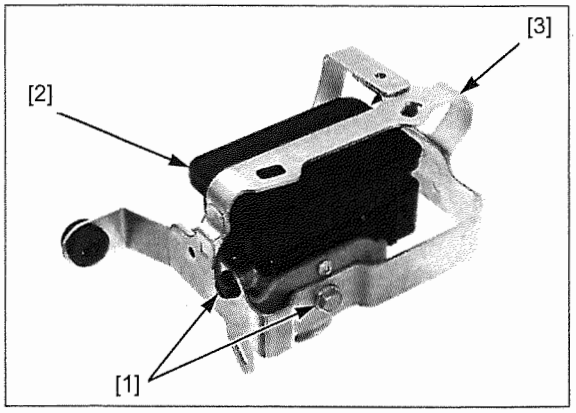

Remove the ABS modulator mounting bolts [1] and ABS modulator [2] from the ABS modulator stay [3].

Installation is in the reverse order of removal.

- Apply brake fluid to the joint nut threads.

**TORQUE:**

**Brake pipe joint nut: 14 N·m (1.4 kgf·m, 10 lbf·ft)**

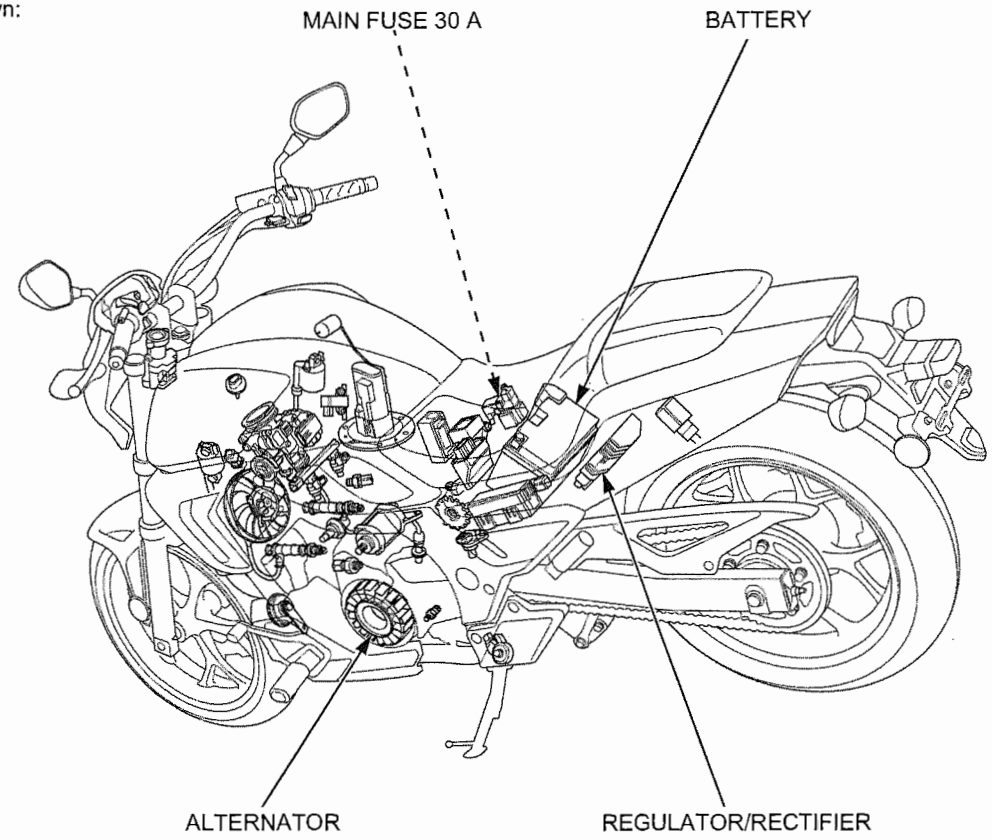


# MEMO

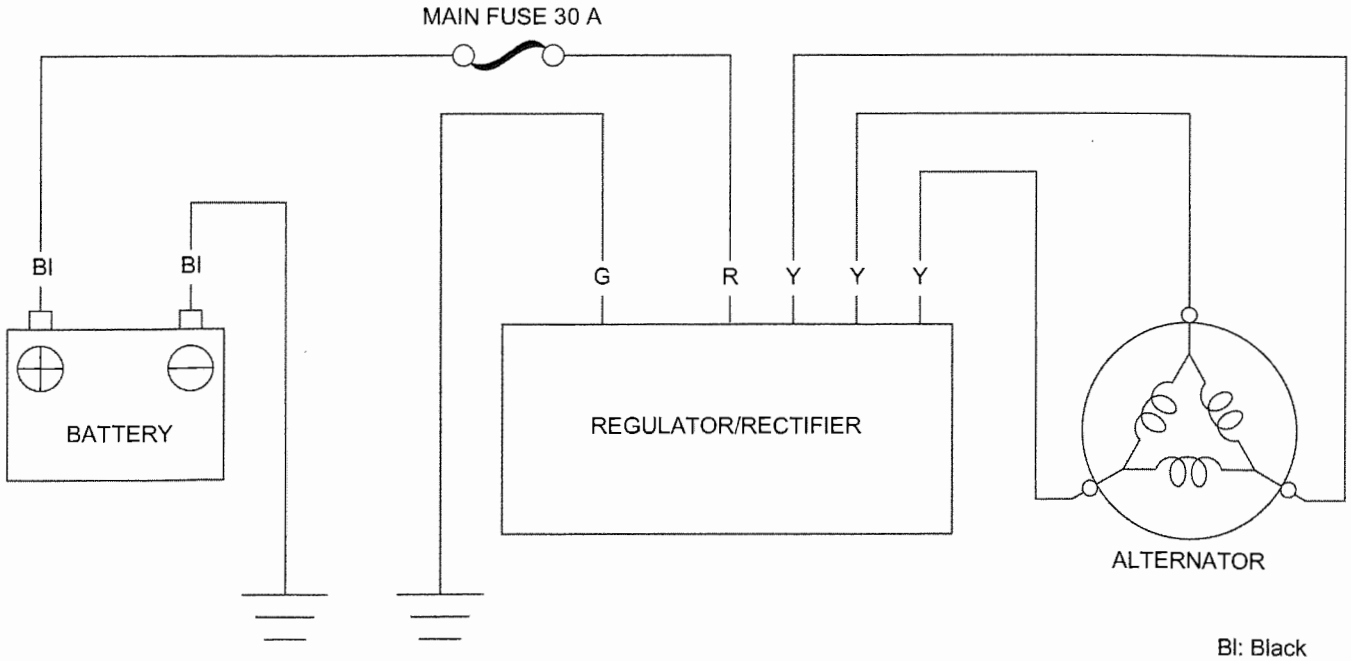
# 21. BATTERY/CHARGING SYSTEM

# SYSTEM LOCATION

CTX700NA shown:




# SYSTEM DIAGRAM




Bl: Black
G: Green
R: Red
Y: Yellow

# SERVICE INFORMATION

## GENERAL

**⚠WARNING**

- The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
  - If electrolyte gets on your skin, flush with water.
  - If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.
- Electrolyte is poisonous.
  - If swallowed, drink large quantities of water or milk and call your local Poison Control Center or call a physician immediately.

**NOTICE**

- *Always turn OFF the ignition switch before disconnecting any electrical component.*
- *Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.*

- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every two weeks or keep it connected to a battery tender.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.
- The maintenance free (MF) battery must be replaced when it reaches the end of its service life.
- The battery can be damaged if overcharged or undercharged, or if left to discharge for long period. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2 – 3 years.
- Battery voltage may recover after battery charging, but under heavy load, the battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected as the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharging symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from occurring.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 21-4).
- For alternator service (page 13-10).
- The following color codes are used throughout this section.

G = Green R = Red Y = Yellow

### BATTERY CHARGING

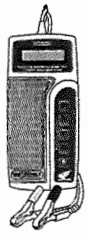
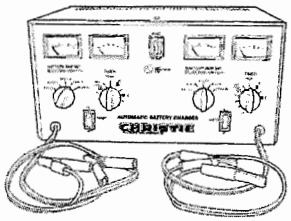
- Turn power ON/OFF at the charger, not at the battery terminal.
- For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.
- Quick charging should only be done in an emergency; slow charging is preferred.

### BATTERY TESTING

Refer to the battery tester's Operation Manual for the recommended battery testing procedure.
The recommended battery tester puts a "load" on the battery so the actual battery condition of the load can be measured.

**RECOMMENDED BATTERY TESTER: Micro 404XL (U.S.A. only), BM-210 or equivalent**

## TOOLS

| | |
|---|---|
| Battery tester<br>Micro 404XL (U.S.A. only)<br>  <br>or BM-210 or equivalent | Christie battery charger<br>MC1012/2T or OptiMate pro 4 (U.S.A. only)<br>  |

# TROUBLESHOOTING

**BATTERY IS DAMAGED OR WEAK**

**1. BATTERY TEST**

Remove the battery (page 21-5).

Check the battery condition using the recommended battery tester.

**RECOMMENDED BATTERY TESTER: Micro 404XL (U.S.A. only), BM-210 or equivalent**

***Is the battery good condition?***

**YES** – GO TO STEP 2.

**NO** – Faulty battery

**2. CURRENT LEAKAGE TEST**

Install the battery (page 21-5).

Check the battery current leakage test (page 21-6).

***Is the current leakage below 0.2 mA?***

**YES** – GO TO STEP 3.

**NO** – GO TO STEP 6.

**3. CHARGING VOLTAGE INSPECTION**

Measure and record the battery voltage using a digital multimeter (page 21-5).

Start the engine.

Measure the charging voltage (page 21-6).

Compare the measurement to result of the following calculation.

**STANDARD:**
**Measured BV < Measured CV < 15.5 V**
- **BV = Battery Voltage**
- **CV = Charging Voltage**

***Is the measured charging voltage within the standard voltage?***

**YES** – Faulty battery

**NO** – GO TO STEP 4.

**4. REGULATOR/RECTIFIER SYSTEM INSPECTION**

Check the voltage and resistance at the regulator/rectifier connector (page 21-7).

***Are the results of checked voltage and resistance correct?***

**YES** – GO TO STEP 5.

**NO** –
- Open circuit in related wire
- Loose or poor contacts of related terminal
- Shorted wire harness

**5. ALTERNATOR CHARGING COIL INSPECTION**

Check the alternator charging coil (page 21-8).

***Is the alternator charging coil resistance within 0.1 – 0.5 Ω (20°C/68°F)?***

**YES** – Faulty regulator/rectifier

**NO** – Faulty charging coil

**6. CURRENT LEAKAGE TEST WITHOUT REGULATOR/RECTIFIER CONNECTOR**

Disconnect the regulator/rectifier 3P (Black) connector and recheck the battery current leakage.

***Is the current leakage below 0.2 mA?***

**YES** – Faulty regulator/rectifier

**NO** –
- Shorted wire harness
- Faulty ignition switch

# BATTERY

## REMOVAL/INSTALLATION

*Always turn the ignition switch OFF before removing the battery.*

Remove the seat (page 2-14).

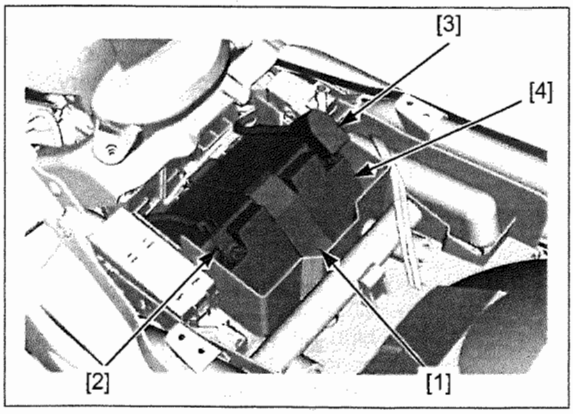
Remove the battery holder band [1].

Disconnect the battery negative (–) cable [2] first, then disconnect the battery positive (+) cable [3].

Remove the battery [4].

Installation is in the reverse order of removal.

- Connect the positive (+) cable first, then connect the negative (–) cable.
- For digital clock setting procedure (page 22-11).

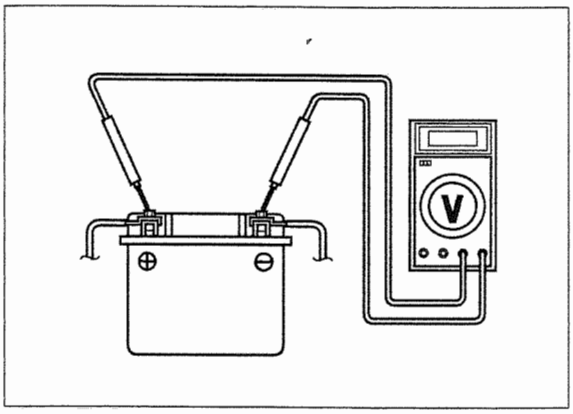



## VOLTAGE INSPECTION

Remove the seat (page 2-14).

Measure the battery voltage using a commercially available digital multimeter.

**VOLTAGE (20°C/68°F):**
**Fully charged: 13.0 – 13.2 V**
**Needs charging: Below 12.4 V**




## BATTERY TESTING

Remove the battery (page 21-5).

Refer to the instructions that are appropriate to the battery testing equipment available to you.

**TOOL:**

| | |
|---|---|
| **Battery tester** | **Micro 404XL (U.S.A. only), BM-210 or equivalent** |

## BATTERY CHARGING (U.S.A. only)

Remove the battery (page 21-5).

Refer to the instructions that are appropriate to the battery charging equipment available to you.

**TOOL:**

| | |
|---|---|
| **Christie battery charger** | **MC1012/2Tor OptiMate pro 4 (U.S.A. only)** |

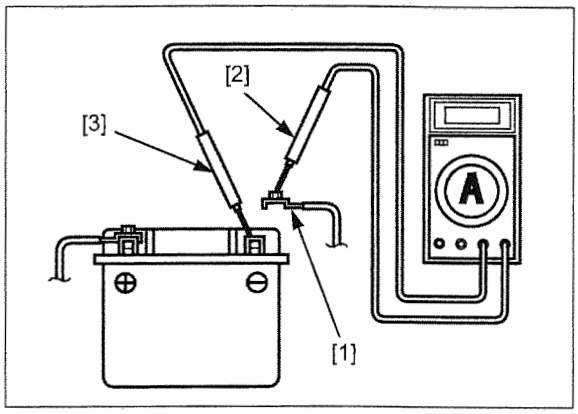
# CHARGING SYSTEM INSPECTION

## CURRENT LEAKAGE TEST

Remove the seat (page 2-14).

Turn the ignition switch OFF, disconnect the negative (–) cable [1] from the battery.

Connect the ammeter (+) probe [2] to the negative (–) cable and the ammeter (–) probe [3] to the battery (–) terminal.




With the ignition switch OFF, check for current leakage.

NOTE:

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow the fuse in the tester.
- While measuring current, do not turn the ignition switch ON. A sudden surge of current may blow the fuse in the tester.

**SPECIFIED CURRENT LEAKAGE: 0.2 mA maximum**

If current leakage exceeds the specified value, a shorted circuit is the probable cause.
Locate the short by disconnecting connections one by one and measuring the current.

## CHARGING VOLTAGE INSPECTION

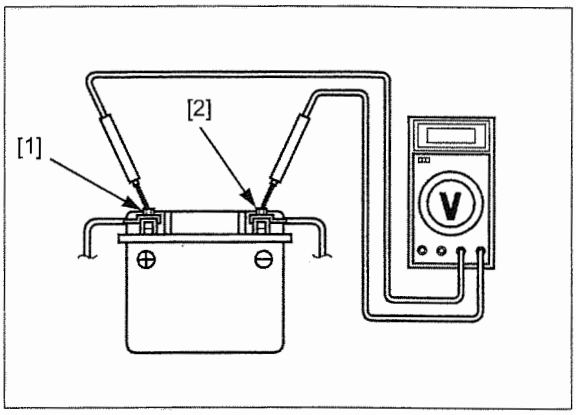
NOTE:

Make sure the battery is in good condition before performing this test.

Start the engine and warm it up to the operating temperature; then stop the engine.

Remove the seat (page 2-14).

Connect the multimeter between the positive terminal [1] and negative terminal [2] of the battery.




NOTE:

- To prevent a short, make absolutely certain which are the positive and negative terminals or cable.
- Do not disconnect the battery or any cable in the charging system without first switching off the ignition switch. Failure to follow this precaution can damage the tester or electrical components.

With the headlight on high beam, restart the engine.
Measure the voltage on the multimeter when the engine runs at 5,000 rpm.

**STANDARD:**

**Measured BV < Measured CV < 15.5 V**

- **BV = Battery Voltage (page 21-5)**
- **CV = Charging Voltage**

If the charging voltage reading is out of the specification, inspect the regulator/rectifier (page 21-7).

# REGULATOR/RECTIFIER

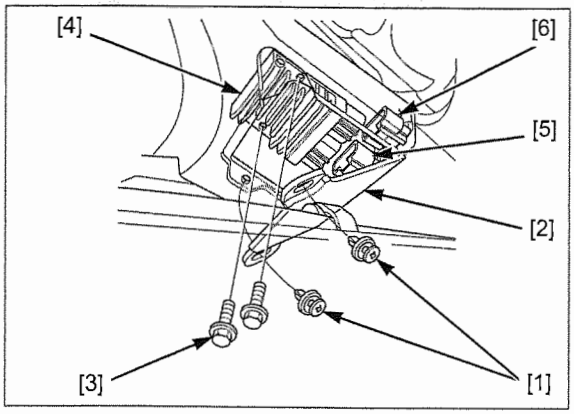
## REMOVAL/INSTALLATION

Remove the trim clip [1] and open the lid [2].

Remove the bolts [3] and regulator/rectifier [4].

Disconnect the alternator 3P (Gray) connector [5] and regulator/rectifier 3P (Black) connector [6].

Installation is in the reverse order of removal.




## SYSTEM INSPECTION

Check connectors for loose contact or corroded terminals.

Inspect the following items:

- Battery charging line (page 21-7)
- Ground line (page 21-7)
- Charging coil (page 21-8)

If all components of the charging system are normal and there are no loose connections at the regulator/rectifier connectors, replace the regulator/rectifier.

## BATTERY CHARGING LINE INSPECTION

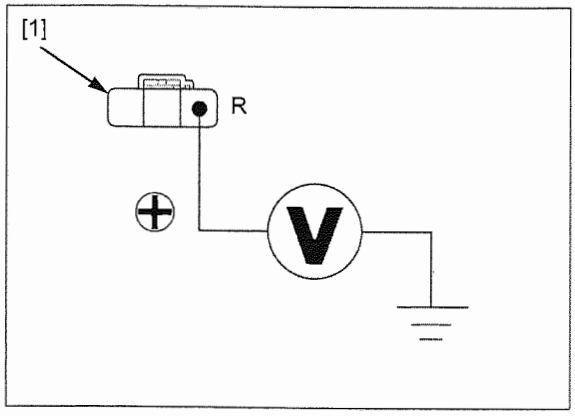
Turn the ignition switch OFF.

Disconnect the regulator/rectifier 3P (Black) connector [1] (page 21-7).

Measure the voltage between the regulator/rectifier 3P (Black) connector terminal at the wire side and ground.

**CONNECTION: Red (+) – Ground (–)**
**STANDARD: Battery voltage**

There should be battery voltage at all times.




## GROUND LINE INSPECTION

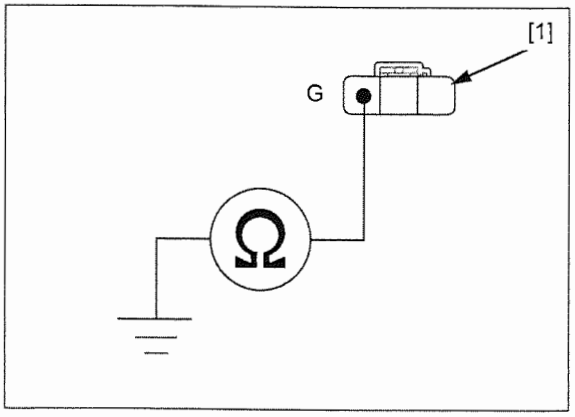
Turn the ignition switch OFF.

Disconnect the regulator/rectifier 3P (Black) connector [1] (page 21-7).

Check for continuity between the regulator/rectifier 3P (Black) connector at the wire side and ground.

**CONNECTION: Green – Ground**

There should be continuity at all times.



# ALTERNATOR CHARGING COIL

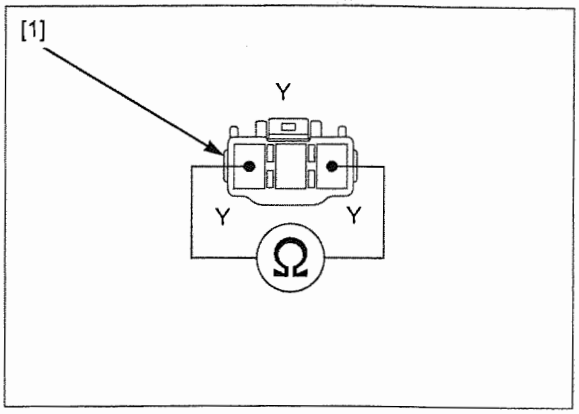
## CHARGING COIL INSPECTION

*It is not necessary to remove the stator coil to conduct this test.*

Disconnect the alternator 3P (Gray) connector [1] (page 21-7).

Measure the resistance between the alternator 3P (Black) connector terminals at the wire side.

**CONNECTION: Yellow – Yellow**
**STANDARD: 0.1 – 0.5 Ω (20°C/68°F)**

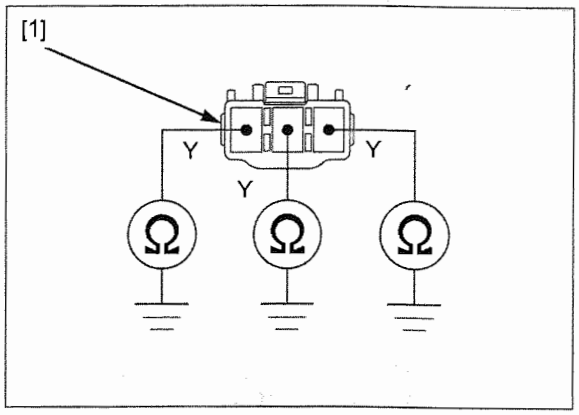



Check for continuity between the alternator 3P (Gray) connector [1] terminals at the wire side and ground.

**CONNECTION: Yellow – Ground**
**STANDARD: No continuity**

Replace the stator if the resistance is out of specification, or if any wire has continuity to ground.

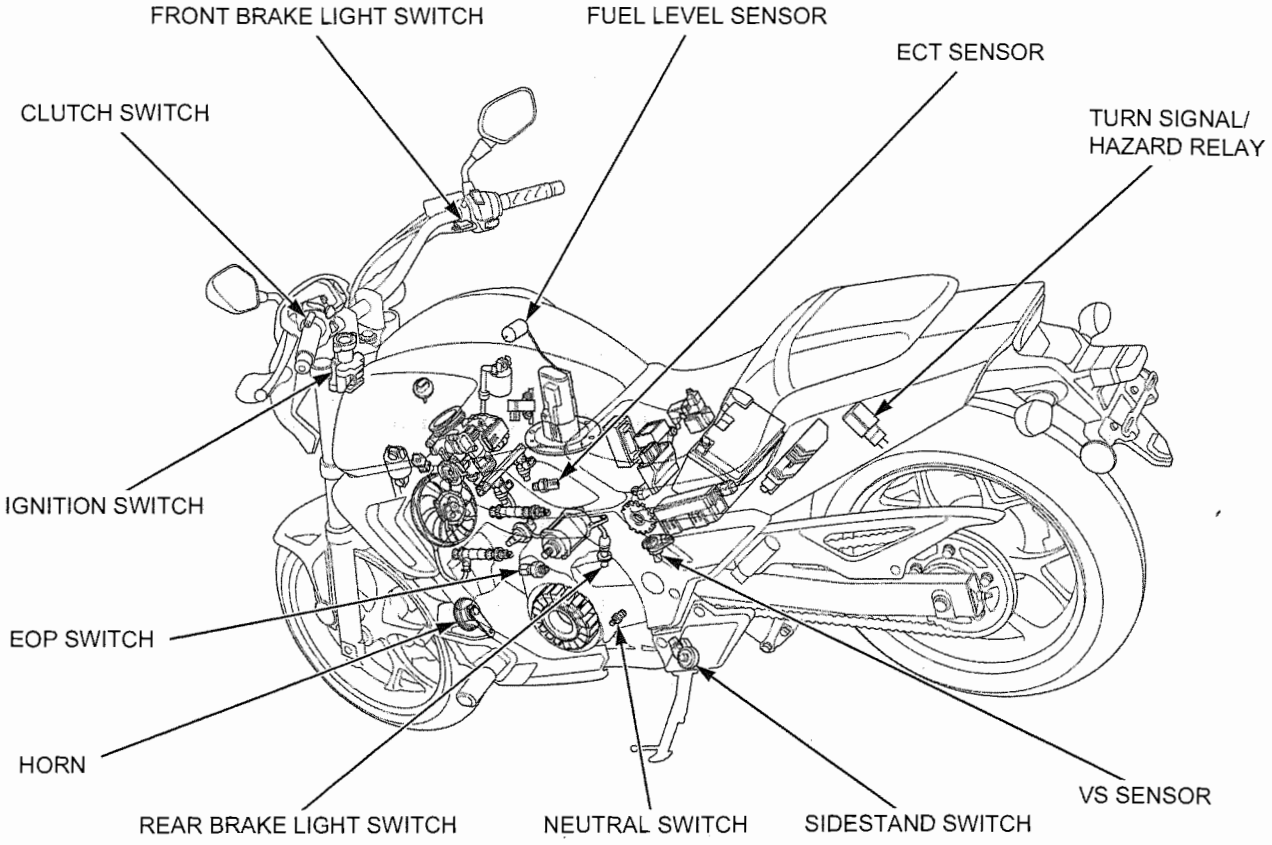
For alternator/starter replacement (page 13-10).



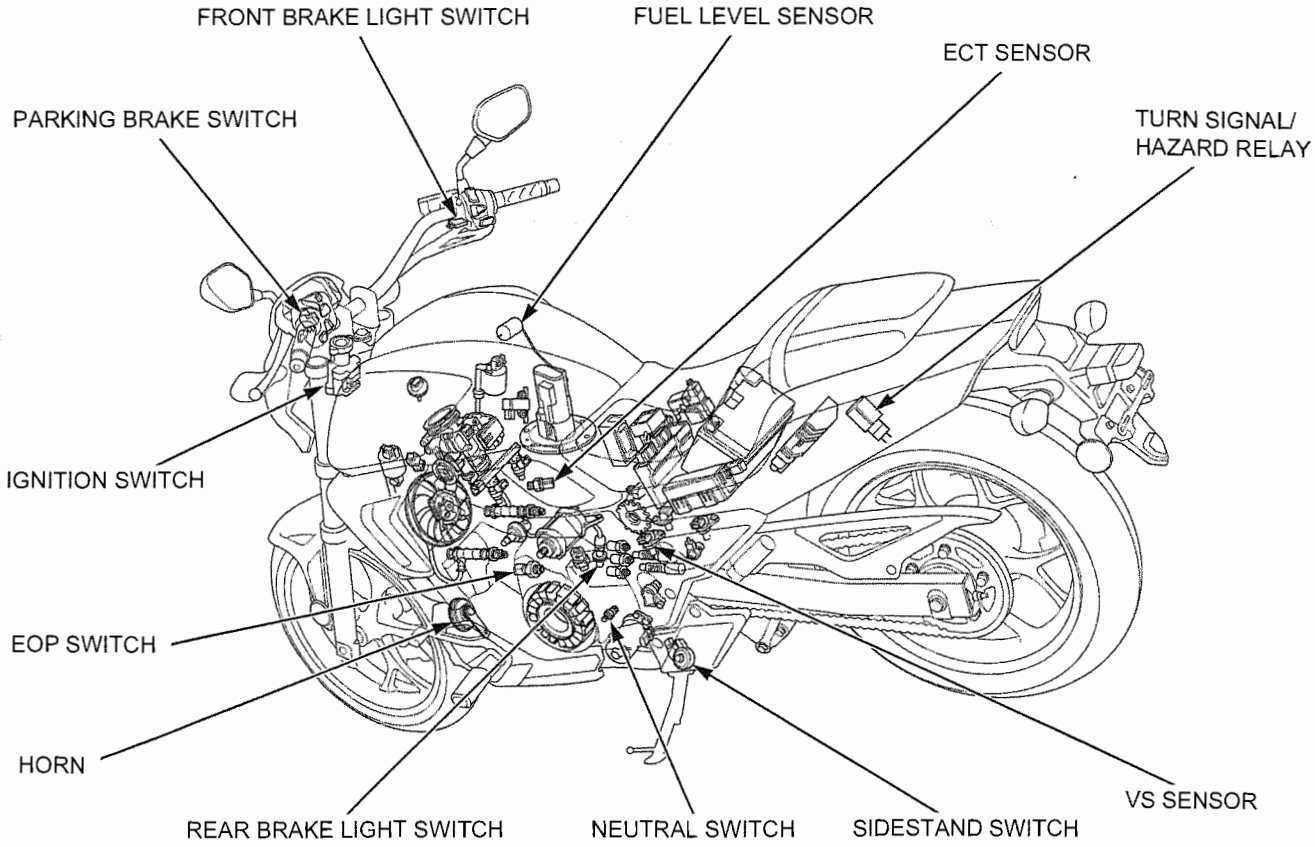
# 22. LIGHTS/METERS/SWITCHES

# SYSTEM LOCATION

**CTX700/A/N/NA:**




**CTX700D/ND:**



# SERVICE INFORMATION

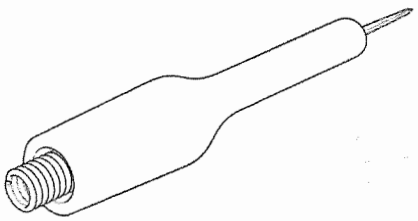
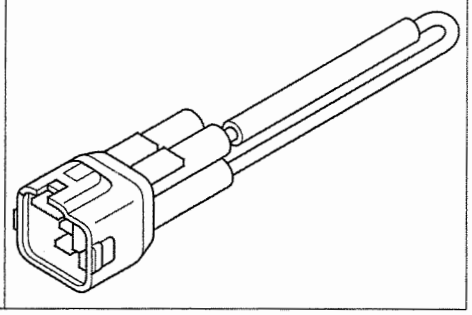
## GENERAL

**NOTICE**

- *Note the following when replacing the halogen headlight bulb.*
  - *Wear clean gloves while replacing the bulb. Do not put fingerprints on the headlight bulb, as they may create hot spots on the bulb and cause it to fail.*
  - *If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.*
- Be sure to install the dust cover after replacing the headlight bulb.
- A halogen headlight bulb becomes very hot while the headlight is ON, and remains hot for a while after it is turned OFF. Be sure to let it cool down before servicing.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- Use an electric heating element to heat the water/coolant mixture for the ECT sensor inspection. Keep flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.
- A continuity test can be made with the switches installed on the motorcycle.
- The following color codes are used throughout this section.

| | | | | |
|---|---|---|---|---|
| Bu = Blue | G = Green | P = Pink | V = Violet | Y = Yellow |
| Bl = Black | Gr = Gray | R = Red | W = White | |

## TOOLS

| | |
|---|---|
| Test probe, 2 packs<br>07ZAJ-RDJA110 | SCS service connector<br>070PZ-ZY30100 |
|  |  |

# HEADLIGHT

## BULB REMOVAL/INSTALLATION

**CTX700/A/D**

Remove the dust cover [1].

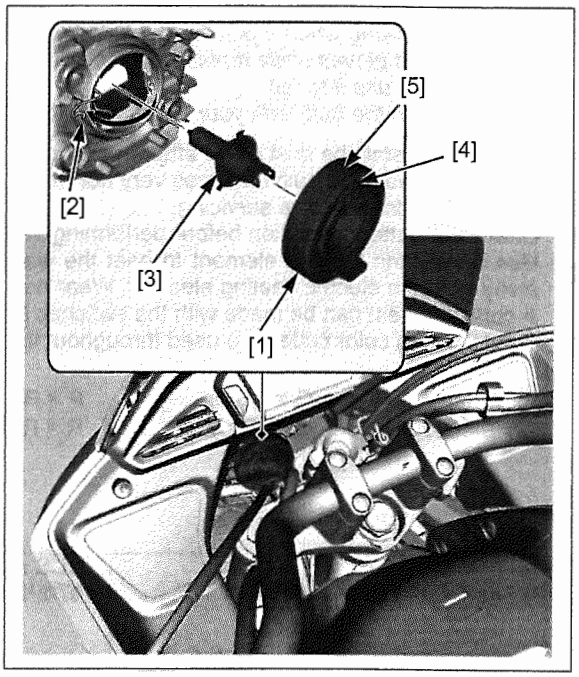
Unhook the bulb retainer [2] and remove the headlight bulb [3].

**NOTICE**

*Avoid touching halogen headlight bulb. Finger prints can create hot spots that cause a bulb to break.*

Installation is in the reverse order of removal.

- Install the dust cover with its "TOP" mark [4] and arrow mark [5] facing up.




**CTX700N/NA/ND**

Remove the headlight assembly (page 2-8).

Remove the dust cover [1].

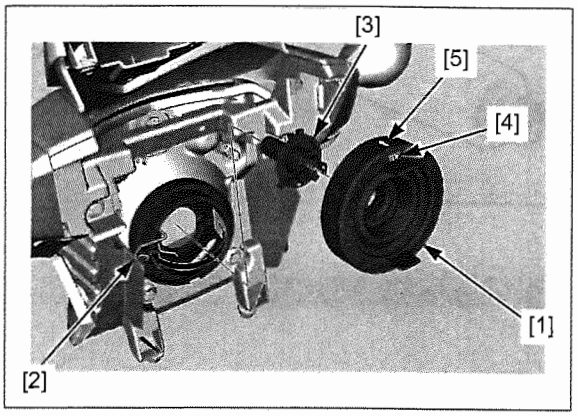
Unhook the bulb retainer [2] and remove the headlight bulb [3].

**NOTICE**

*Avoid touching halogen headlight bulb. Finger prints can create hot spots that cause a bulb to break.*

Installation is in the reverse order of removal.

- Install the dust cover with its "TOP" mark [4] and arrow mark [5] facing up.




# TURN SIGNAL LIGHT

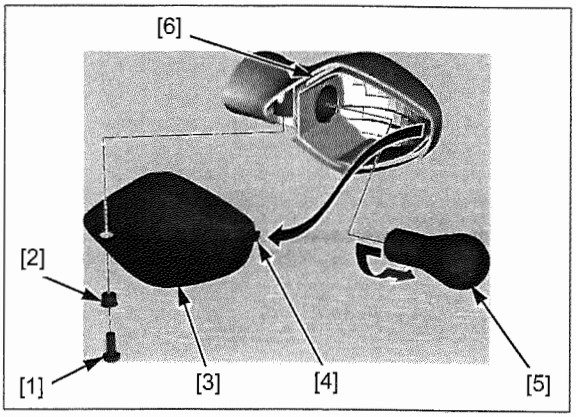
## BULB REMOVAL/INSTALLATION

Remove the screw [1], collar [2] and turn signal light lens [3] by releasing the tab [4].

While pushing in the bulb [5], turn it counterclockwise to remove it.

Check the packing [6] is installed in position and is in good condition, replace it with a new one if necessary.

Installation is in the reverse order of removal.



## FRONT TURN SIGNAL LIGHT UNIT REMOVAL/INSTALLATION

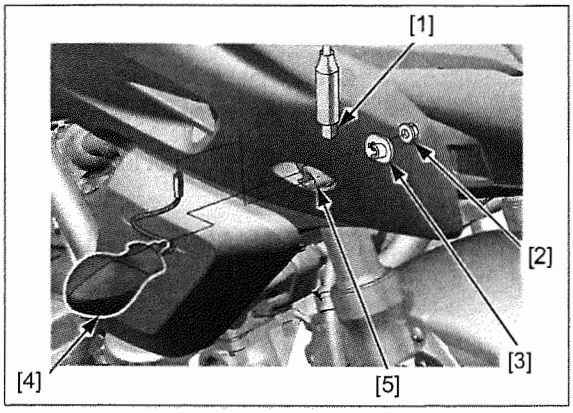
**CTX700/A/D**

Disconnect the front turn signal/position light 3P connector [1].

Remove the nut [2] and mounting plate [3].

Remove the turn signal light unit [4] by pulling out the wire from the hole of the mounting rubber [5].

Installation is in the reverse order of removal.




**CTX700N/NA/ND**

Remove the headlight side cover assembly (page 2-8).

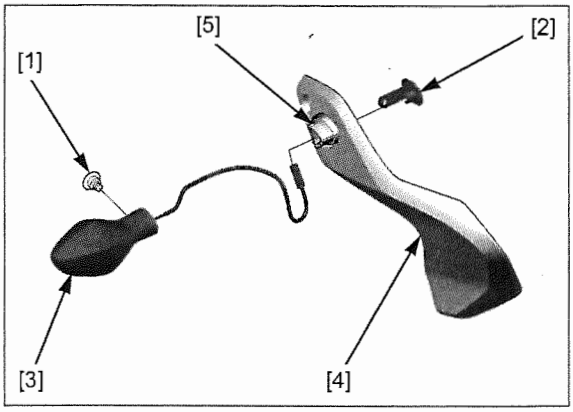
Remove the turn signal light special screw [1], mounting plate [2].

Remove the turn signal light unit [3] from the headlight side cover [4] by pulling out the wire from the hole of the mounting rubber [5].

Installation is in the reverse order of removal.

**TORQUE:**

**Turn signal light special screw:**
**1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**




## REAR TURN SIGNAL LIGHT UNIT REMOVAL/INSTALLATION

**REAR**

Remove the rear fender A (page 2-17).

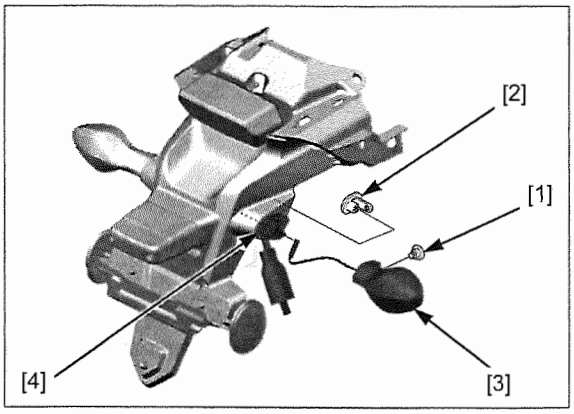
Remove the turn signal light special screw [1] and plate [2].

Remove the turn signal light unit [3] by pulling out the wire from the hole of the mounting rubber [4].

Installation is in the reverse order of removal.

**TORQUE:**

**Turn signal light special screw:**
**1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**



# BRAKE/TAIL LIGHT

## INSPECTION

Turn the ignition switch ON and engine stop switch "○".

Check the brake/tail light operation.

Check that LEDs in the brake/tail light light unit illuminate as shown with the lighting switch ON.

Check that LEDs in the brake/tail light unit illuminate with the front brake lever and/or rear brake pedal applied.

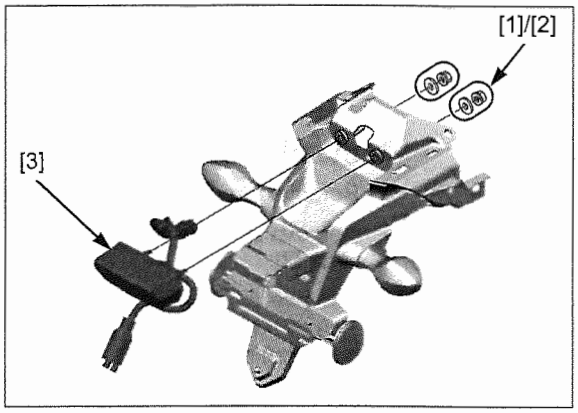
If any LED does not turn on, replace the rear combination light unit.

## REMOVAL/INSTALLATION

Remove the rear fender A (page 2-17).

Remove the two nuts [1] washers [2] and brake/tail light unit [3].

Installation is in the reverse order of removal.



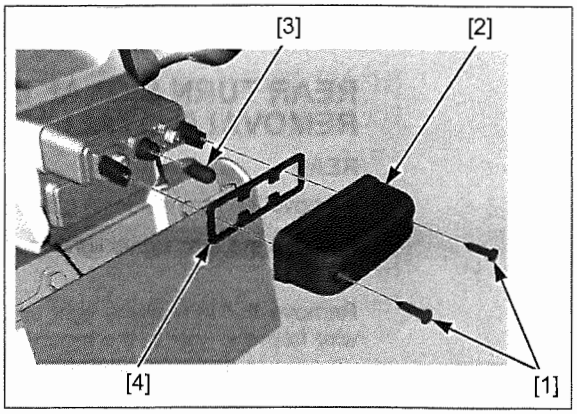

# LICENSE LIGHT

## BULB REMOVAL/INSTALLATION

Remove the two screws [1], lens [2] and bulb [3].

Check the packing [4] is in good condition, replace it with a new one if necessary.

Installation is in the reverse order of removal.




## REMOVAL/INSTALLATION

Remove the rear fender A (page 2-17).

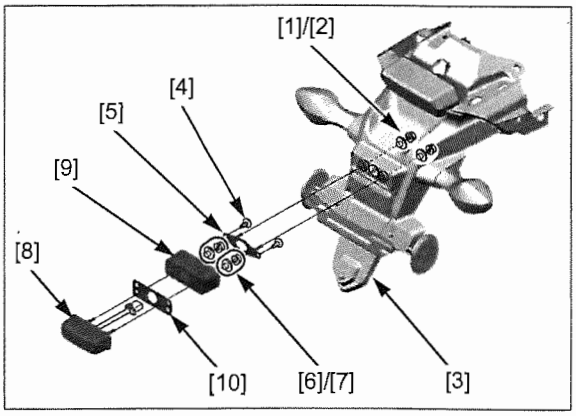
Remove the two nuts [1] collars [2] and license light unit assembly from the rear fender A [3].

Remove the two screws [4] and mounting stay [5].

Remove the two nuts [6], collars [7] and license light unit [8] from the bracket [9].

Replace the packing [10] if necessary.

Installation is in the reverse order of removal.



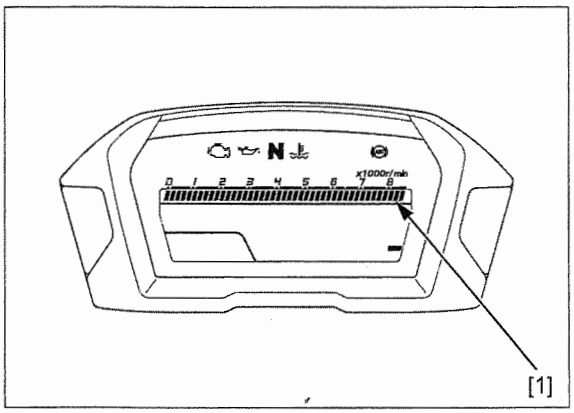
# COMBINATION METER

## SYSTEM INSPECTION

NOTE:

Check for loose or poor contact terminals at the combination meter 16P (Gray) connector.

Turn the ignition switch ON and engine stop switch "○", check that the tachometer segment [1] move to full scale and then tachometer segment go off.




If the tachometer segment does not show initial function, check the combination meter power input line (page 22-7).

If the power and ground lines are OK, replace the combination meter (page 22-7).

If the MIL and engine oil pressure indicator are stay on and tachometer, high coolant temperature indicator does not come on, inspect the following;

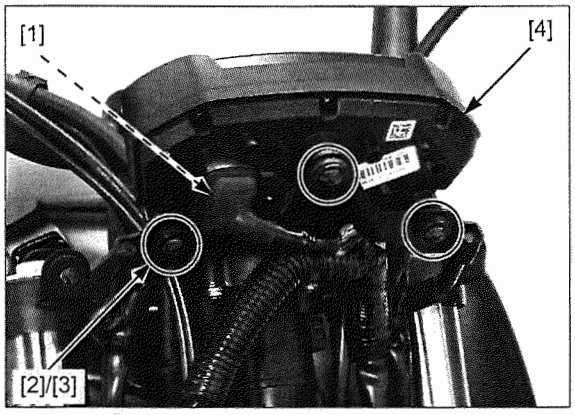
- DTC with the MCS (page 4-9)
- Serial communication line (page 22-8)

## REMOVAL/INSTALLATION

- For CTX700/A/D (page 2-6).

*CTX700N/NA/ND:* Remove the headlight assembly (page 2-8).

Pull off the dust cover and disconnect the combination meter 16P (Gray) connector [1].




Remove the screws [2], washer [3] and combination meter [4].

Installation is in the reverse order of removal.

**TORQUE:**

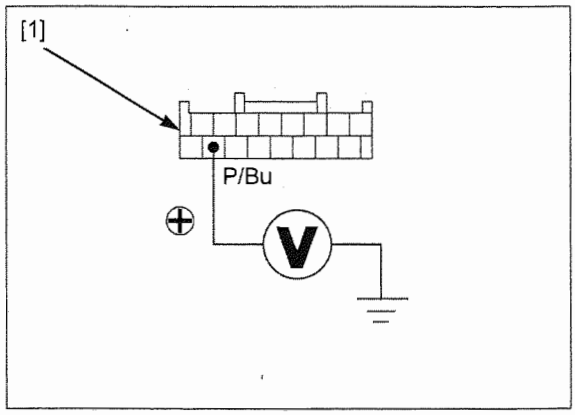
**Combination meter mounting screw:**
**1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)**

## POWER/GROUND LINE INSPECTION

### POWER INPUT LINE

Disconnect the combination meter 16P (Gray) connector .

- CTX700/A/D (page 2-6)
- CTX700N/NA/ND (page 22-7)




Measure the voltage at the combination meter 16P (Gray) connector [1] of the wire harness side and ground.

**CONNECTION: Pink/blue (+) – Ground (–)**
**STANDARD: Battery voltage**

There should be battery voltage with the ignition switch turned ON.

If there is no voltage, check the following:

- Open circuit in the Pink/blue wire
- Blown sub fuse 7.5 A (ILLUMI/STOP/HORN)

### BACK-UP VOLTAGE LINE

Disconnect the combination meter 16P (Gray) connector (page 22-7).

- CTX700/A/D (page 2-6)
- CTX700N/NA/ND (page 22-7)

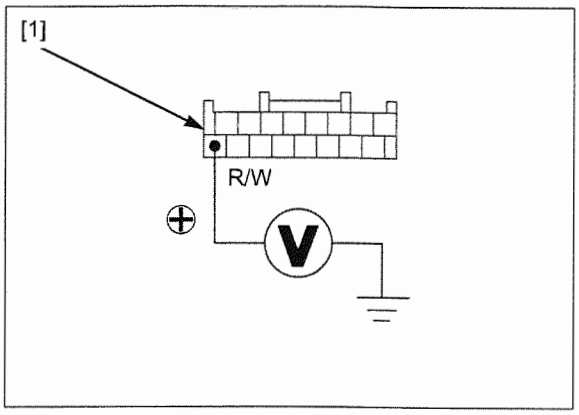
Measure the voltage at the combination meter 16P (Gray) connector [1] of the wire harness side and ground.

**CONNECTION: Red/white (+) – Ground (–)**
**STANDARD: Battery voltage**

There should be battery voltage at all times.

If there is no voltage, check the following:

- Open circuit in the Red/white wire
- Blown sub fuse 7.5 A (CLOCK/TURN)



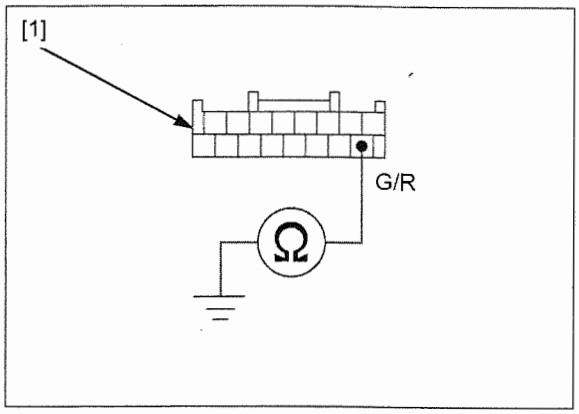

### GROUND LINE

Check for continuity at the combination meter 16P (Gray) connector [1] of the wire harness side and ground.

**CONNECTION: Green/red – Ground**

There should be continuity.

If there is no continuity, check for open circuit in Green/red wire.




## SERIAL COMMUNICATION LINE INSPECTION

NOTE:

- Check the following items before starting the inspection:
  - Check for loose or poor contact on the combination meter 16P (Gray) connector and ECM/PCM 33P connector, then recheck the DTC.
  - Inspect the sub fuse 7.5 A (ENG STOP)
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

Turn the ignition switch ON with the engine stop switch "○" and check the combination meter.

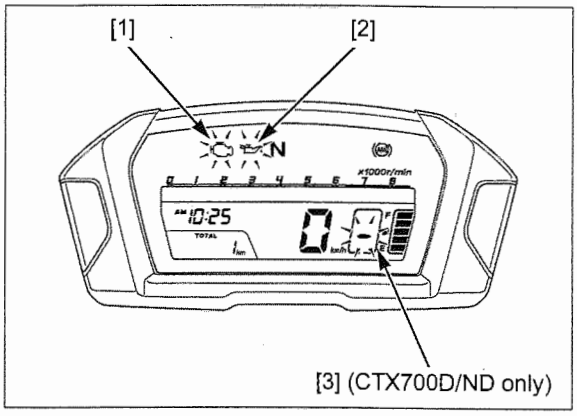
The serial communication line is abnormal if the combination meter shows following:

- MIL [1] and engine oil pressure indicator [2] stay on.
- Tachometer and high coolant temperature indicator do not come on.
- Shift indicator "–" [3] is blinking. (CTX700D/ND only)

NOTE:

- If the ignition switch is turned ON with the engine stop switch turned "⊠", the same condition will occur.

If the serial communication line is abnormal, check the following.

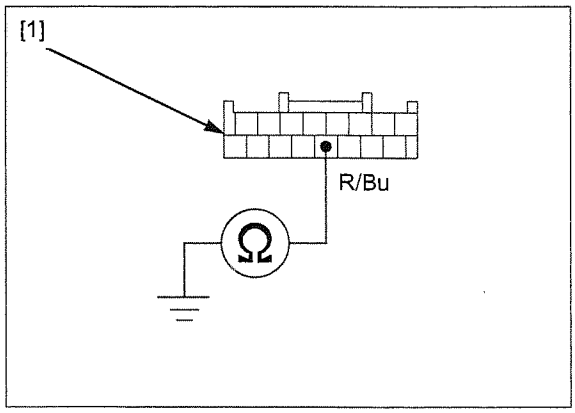


1. **Combination Meter Serial Line Short Circuit Inspection**

Turn the ignition switch OFF.

Disconnect the following:

- Combination meter 16P (Gray) connector
  - CTX700/A/D (page 2-6)
  - CTX700N/NA/ND (page 22-7)
- ECM 33P (Black) connector (CTX700/A/N/NA) (page 4-34)
- PCM 33P (Gray) connector (CTX700D/ND) (page 4-34)




Check for continuity between the combination meter 16P (Gray) connector [1] of the wire harness side and ground.

**Connection: Red/blue – Ground**

***Is there continuity?***

**YES** – Short circuit in Red/blue wire

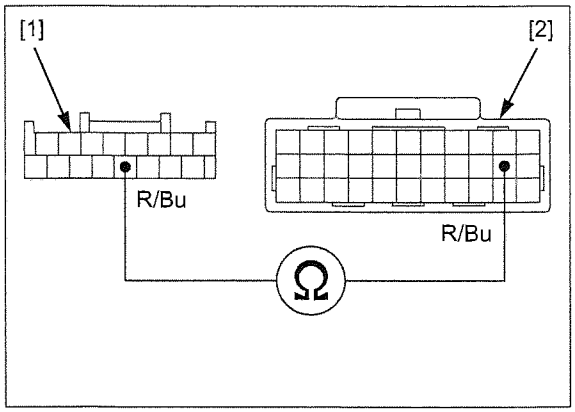
**NO** – GO TO STEP 2.

2. **Combination Meter Serial Line Open Circuit Inspection**

Check for continuity between the combination meter 16P (Gray) connector [1] and ECM/PCM 33P connector [2] of the wire harness side.

**Connection: Red/blue – Red/blue**

**TOOL:**
**Test probe, 2 packs** **07ZAJ-RDJA110**




***Is there continuity?***

**YES** – GO TO STEP 3.

**NO** – Open circuit in Red/blue wire

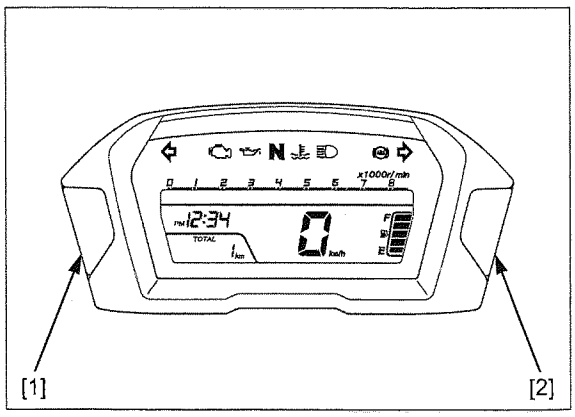
3. **Combination Meter Serial Line Output Voltage Inspection**

Connect the combination meter 16P (Gray) connector.

Turn the ignition switch ON and engine stop switch "○" while pushing and holding combination meter A button [1] and B button [2] over 10 seconds.

NOTE:

The combination meter enters the communication diagnostic mode.



Measure the voltage at the ECM/PCM 33P connector [1] of the wire harness side and ground.

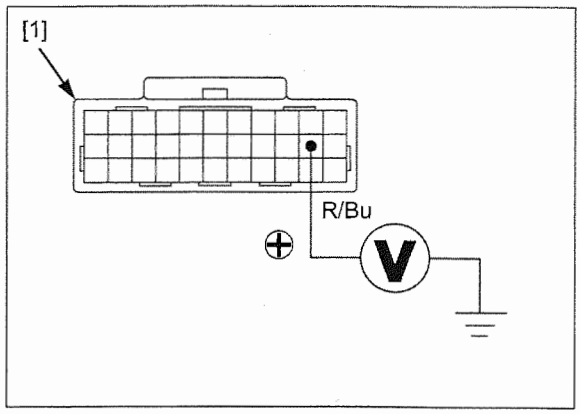
**Connection: Red/blue (+) – Ground (–)**
**Standard: 8 V or more (Every 5 seconds)**

**TOOL:**
**Test probe, 2 packs 07ZAJ-RDJA110**

***Does the standard voltage exist?***

**YES** – GO TO STEP 4.

**NO** – Replace the combination meter (page 22-7).




**4. ECM Serial Line Output Voltage Inspection**

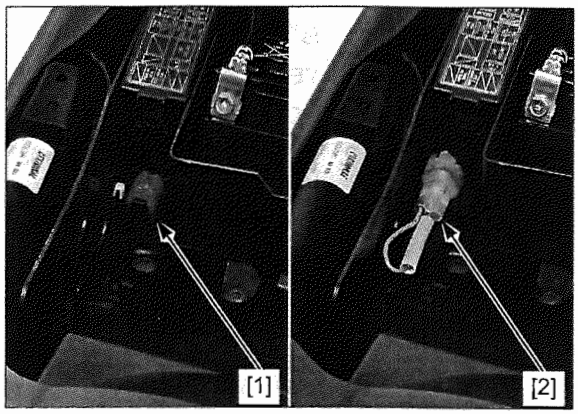
Turn the ignition switch OFF.

Remove the DLC [1] from the battery box.
Remove the dummy connector from the DLC.

Short the DLC terminals using a special tool.

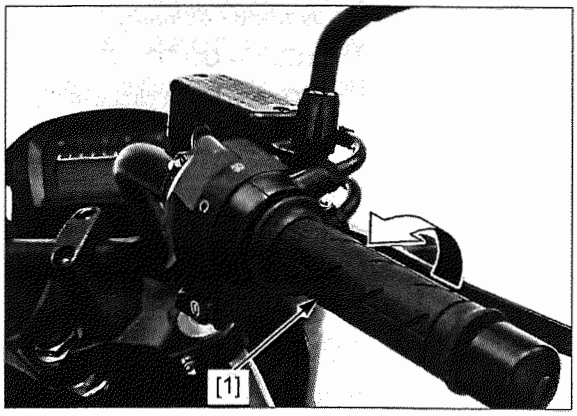
**Connection: Brown – Green**

**TOOL:**
**[2] SCS service connector 070PZ-ZY30100**




Rotate and hold the throttle grip [1] to the fully open position.
Turn the ignition switch ON while holding the throttle grip at the fully open position over 10 seconds.

NOTE:
The ECM/PCM enters the communication diagnostic mode.



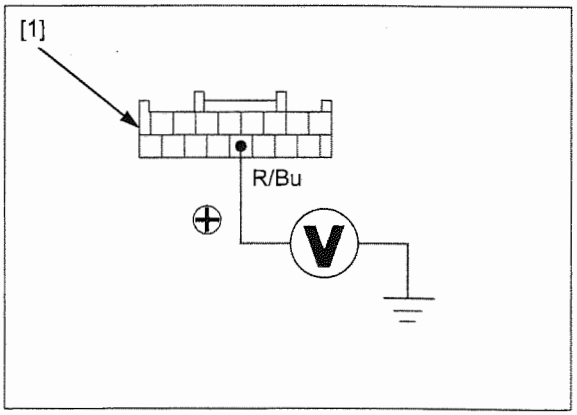

Measure the voltage at the combination meter 16P (Gray) connector [1] of the wire harness side and ground.

**Connection: Red/blue (+) – Ground (–)**
**Standard: 8 V or more (Every 5 seconds)**

***Does the standard voltage exist?***

**YES** – Inspect the combination meter (page 22-7).

**NO** – Replace the ECM/PCM with a known good one, and recheck.

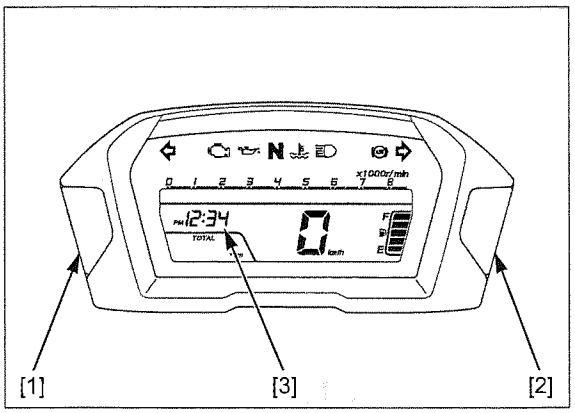


## COMBINATION METER DIGITAL CLOCK SET PROCEDURE

Turn the ignition switch ON and engine stop switch "○".

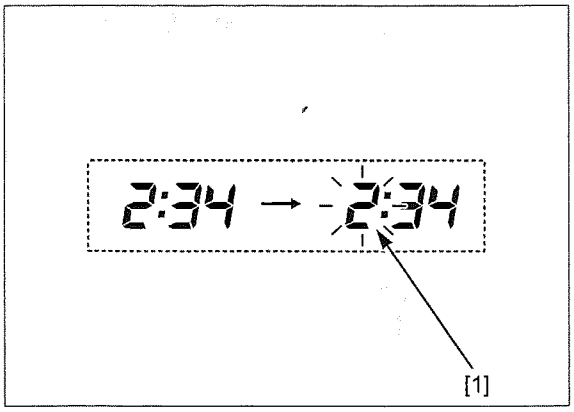
Push and hold both the combination meter A button [1] and B button [2] until the minute digits [3] indicate "1", "2" or "3".

NOTE:
The combination meter enter the back light setting mode.



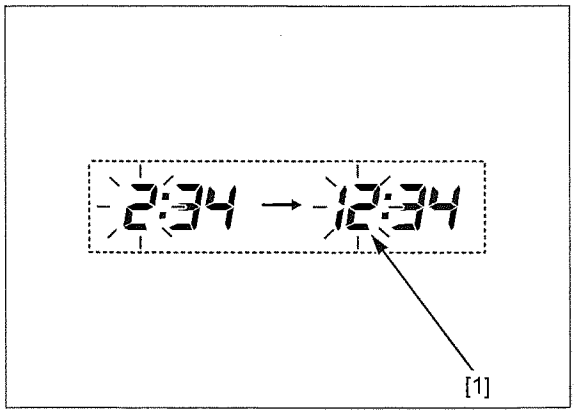

Push the A button, then hour digits [1] start blinking.

NOTE:
The combination meter enter the clock setting mode.

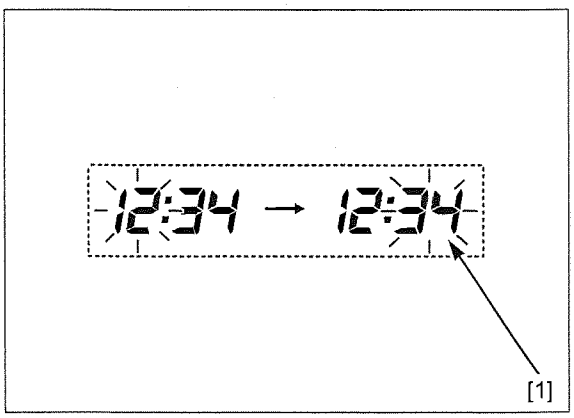



Push the B button until the desired hour [1] and AM/PM are displayed.

NOTE:
Push and hold to advance the hour fast.




Push the A button, then the minute digits [1] start blinking.



Push the B button until the desired minute [1] is displayed.

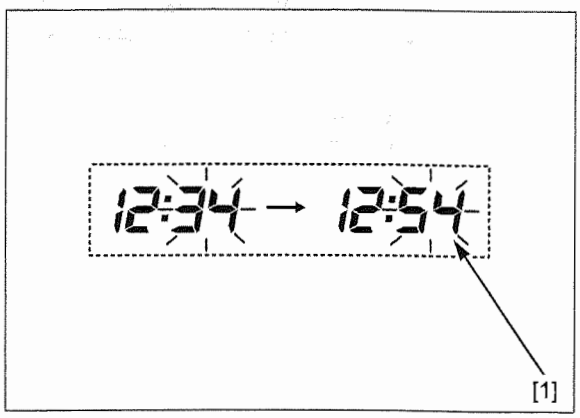
NOTE:
Push and hold to advance the minute fast.

Push the A button, then digital clock is set.

Push the A button and B button.

NOTE:
The combination meter return to the normal mode.

Turn the ignition switch OFF.




# SPEEDOMETER/VS SENSOR

## SYSTEM INSPECTION

If the speedometer does not operate, check the following:

- Combination meter system inspection (page 22-7)
- MIL blinking: If the MIL blinks 11, check the VS sensor system (page 4-10)

If the above items are OK, replace the combination meter (page 22-7).

## VS SENSOR REMOVAL/ INSTALLATION

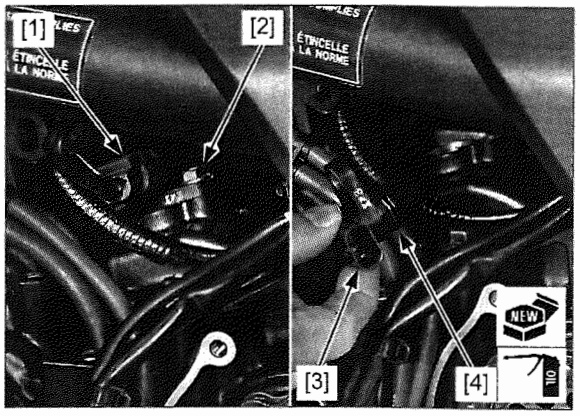
Disconnect the VS sensor 3P (Black) connector [1].

Remove the bolt [2] and VS sensor [3].

Remove the O-ring [4].

Installation is in the reverse order of removal.

- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.




# TACHOMETER

## SYSTEM INSPECTION

If the tachometer does not operate, check the following:

- Combination meter system inspection (page 22-7)
- Serial communication line (page 22-8)
- CKP sensor (page 5-7)

If the above items are OK, replace the combination meter (page 22-7).

# HIGH COOLANT TEMPERATURE INDICATOR/ECT SENSOR

## SYSTEM INSPECTION

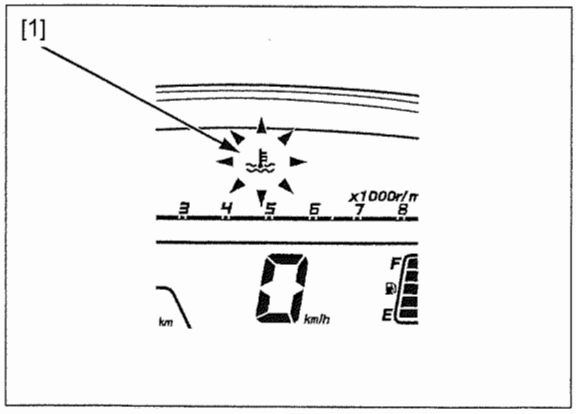
If the high coolant temperature indicator [1] does not operate properly, check the following:

- Combination meter system inspection (page 22-7)
- Serial communication line (page 22-8)
- MIL blinking: If the MIL blinks 7, check the ECT sensor system (page 4-10).
- ECT sensor (page 22-13)

If the above items are OK, replace the combination meter (page 22-7).

If the MIL and engine oil pressure indicator stay on, and tachometer, high coolant temperature indicator does not come on and shift indicator "–" (CTX700D/ND only) is blinking, inspect the following;

- DTC with the MCS (page 4-9)
- Serial communication line (page 22-8)

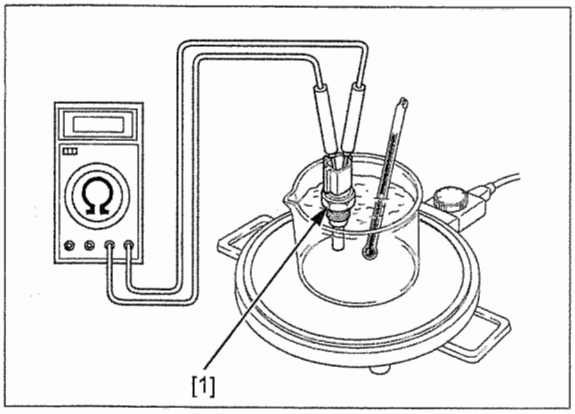



## ECT SENSOR UNIT INSPECTION

Remove the ECT sensor (page 4-33).

Suspend the ECT sensor [1] in a pan of coolant (50 – 50 mixture) on an electric heating element and measure the resistance through the sensor as the coolant heats up.

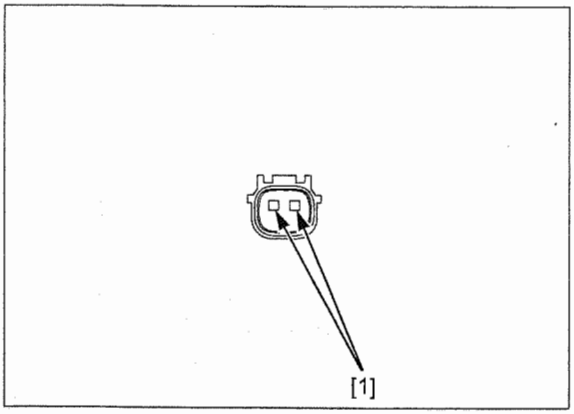
- Soak the ECT sensor in coolant up to its threads with at least 40 mm (1.6 in) from the bottom of the pan to the bottom of the sensor.
- Keep the temperature constant for 3 minutes before testing. A sudden change of temperature will result in incorrect readings. Do not let the thermometer or ECT sensor touch the pan.




Measure the resistance between the ECT sensor terminals [1].

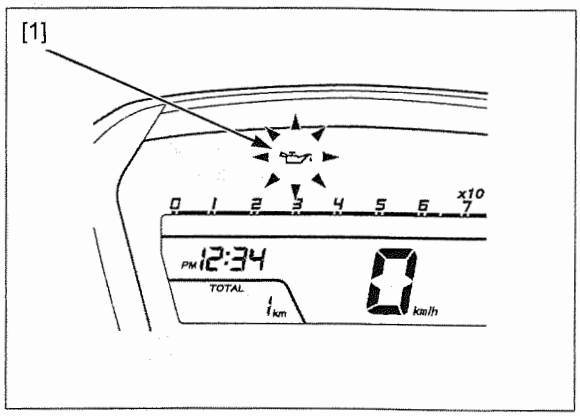
| Temperature | 40°C (104°F) | 100°C (212°F) |
|---|---|---|
| Resistance | 1.0 – 1.3 kΩ | 0.1 – 0.2 kΩ |

Replace the ECT sensor if it is out of specification.



# ENGINE OIL PRESSURE INDICATOR/ EOP SWITCH

## SYSTEM INSPECTION




The engine oil pressure indicator [1] comes on when the ignition switch is turned ON, then goes off when the engine starts.

If the engine oil pressure indicator does not come on with the ignition switch turned ON, check the combination meter system inspection (page 22-7).

The engine oil pressure indicator does not go out when the engine running, check the following:

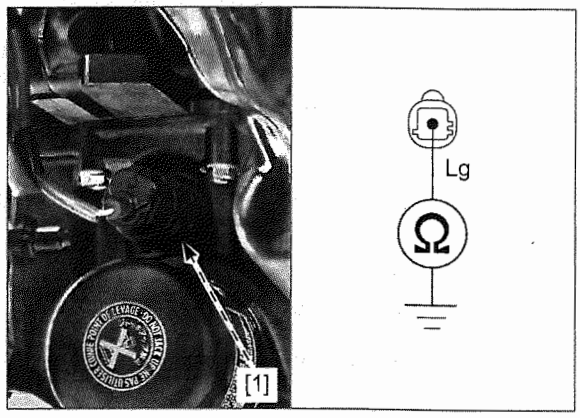
- Engine oil level (page 3-9)
- Serial communication line (page 22-8)
- MIL blinking: If the MIL blinks 87, check the EOP switch system (page 4-10)
- Engine oil pressure (page 9-6)
- EOP switch line (page 22-14)
- Replace the EOP switch, and recheck (page 22-14).

If the above items are OK, replace the combination meter (page 22-7).

If the MIL and engine oil pressure indicator stay on and tachometer, high coolant temperature indicator do not come on, inspect the following;

- DTC with the MCS (page 4-9)
- Serial communication line (page 22-8)

## EOP SWITCH LINE INSPECTION




Turn the ignition switch OFF.

Disconnect the EOP switch 1P (Gray) connector [1].

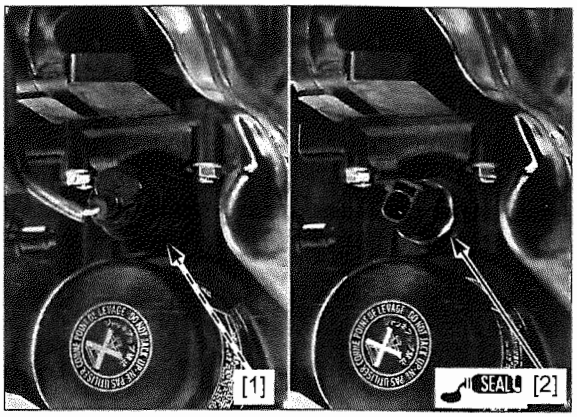
Check for continuity between the EOP switch connector terminal and ground.

**CONNECTION: Light green – Ground**

- If there is continuity, the Light green wire has a short circuit.
- If there is no continuity, replace the ECM/PCM with a known good one, and recheck.

NOTE:
If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 12-81) (CTX700D/ND).

## EOP SWITCH REMOVAL/ INSTALLATION




Remove the radiator reserve tank (page 8-11).

Disconnect the EOP switch 1P (Gray) connector [1].

Remove the EOP switch [2] from the crankcase.

Installation is in the reverse order of removal.

**TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)**

- Apply sealant to the EOP switch threads.

Check the engine oil level (page 3-9).

# FUEL LEVEL SENSOR

## FUEL LEVEL SENSOR INSPECTION

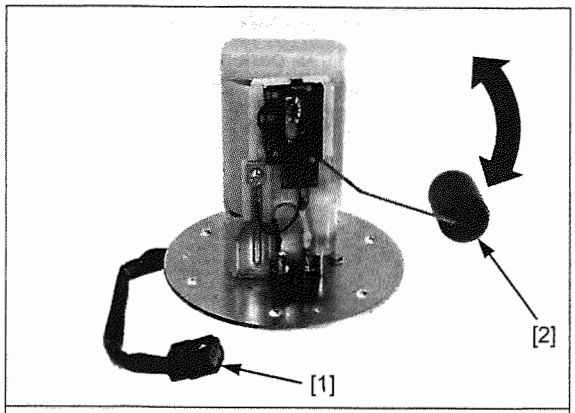
Remove the fuel pump unit (page 7-10).

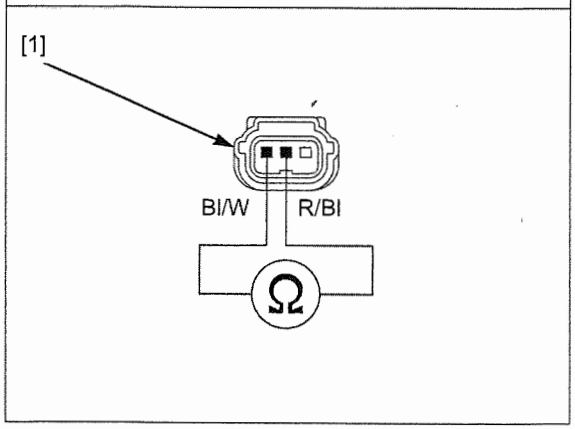
Connect the ohmmeter to the fuel pump unit 3P (Black) connector [1] terminals.

**CONNECTION: Red/black – Black/white**

Inspect the resistance of the float [2] at the top and bottom positions.

| | FULL | EMPTY |
|---|---|---|
| Resistance | 4 – 6 Ω | 80 – 83 Ω |




## FUEL METER INSPECTION

If the fuel meter blinks as shown [1] with ignition switch is ON, perform the inspection as follow:

Disconnect the combination meter 16P (Gray) connector.

- CTX700/A/D (page 2-6)
- CTX700N/NA/ND (page 22-7)

Disconnect the fuel pump unit 3P (Black) connector (page 7-10).

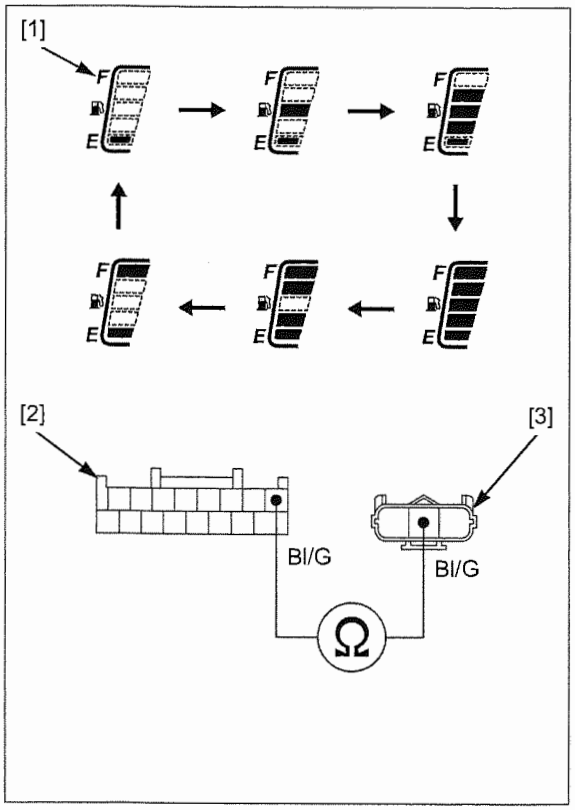
Check for continuity between the combination meter 16P (Gray) connector [2] and fuel pump unit 3P (Black) connector [3] of the wire harness side.

**CONNECTION: Black/green – Black/green**

If there is no continuity, check for open circuit in Black/green wire and loose contact of the wire harness connectors.

If the Black/green wire is OK, check the fuel level sensor (page 22-15).

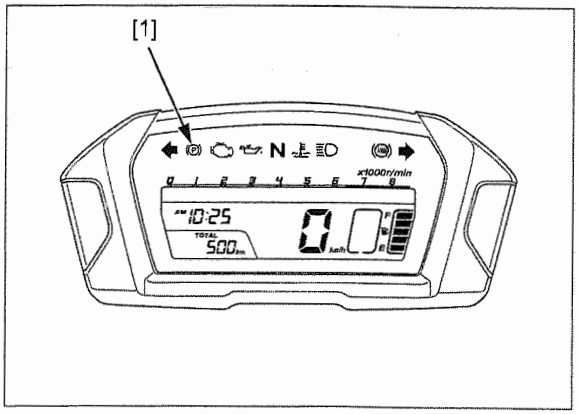
If the fuel level sensor is OK, replace the combination meter.



# PARKING BRAKE INDICATOR/SWITCH (CTX700D/ND)

## SYSTEM INSPECTION

If the parking brake indicator [1] does not operate properly, check the combination meter system inspection (page 22-7).




If the combination meter system inspection is OK, check the parking brake switch line as follows:

Turn the ignition switch OFF.

Disconnect the parking brake switch connectors [1].

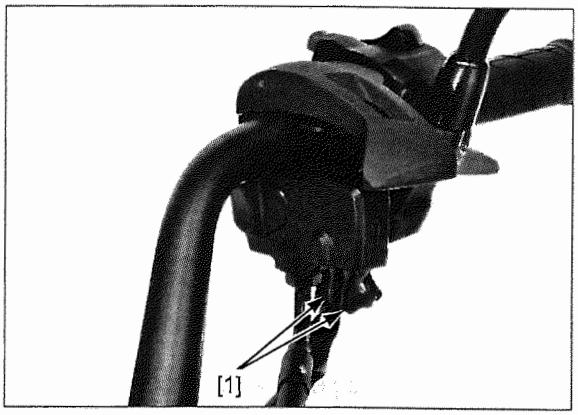
Connect the connector terminals with a jumper wire.

Turn the ignition switch ON and engine stop switch "○".

The parking brake indicator should come on.

If the indicator does not come on, check for open circuit in the Black, Brown and Green wires.

If the indicator comes on, check the parking brake switch (page 22-16).



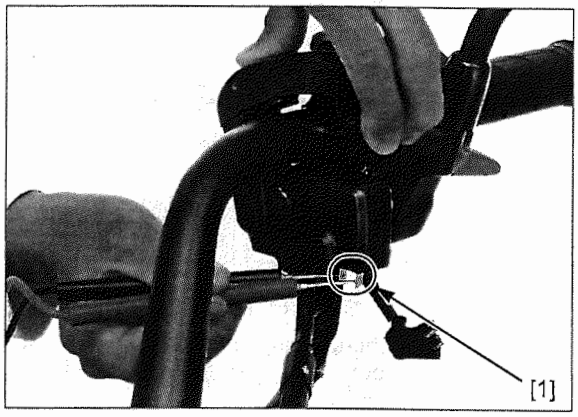

## PARKING BRAKE SWITCH INSPECTION

Disconnect the parking brake switch connectors.

Check for continuity between the parking brake switch terminals [1].

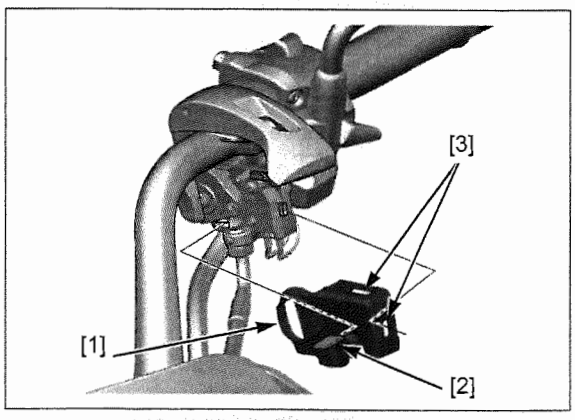
There should be continuity with the parking brake lever pulled, and no continuity with the lever released.

If the parking brake switch does not operate properly, replace the switch (page 22-17).



## PARKING BRAKE SWITCH REMOVAL/ INSTALLATION

Remove the parking brake lever holder cover [1] by releasing the tab [2] and slots [3].




Disconnect the parking brake switch connectors [1].

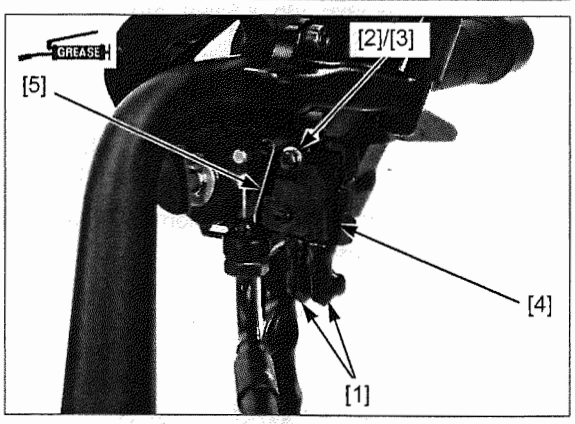
Remove the following:

- Parking brake switch screw [2]
- Washer [3]
- Parking brake switch [4]
- Switch spring [5]

Installation is in the reverse order of removal.

- Apply grease to the parking brake switch spring sliding surface.

**TORQUE:**
**Parking brake switch screw:**
**1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)**




# IGNITION SWITCH

## INSPECTION

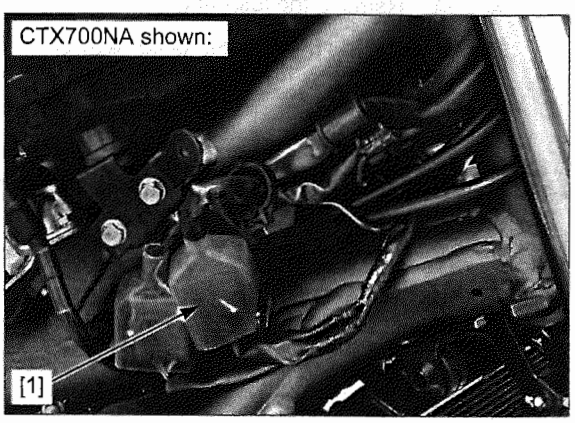
Remove the right side shelter (page 2-11).

Disconnect the ignition switch 2P (Brown) connector [1].

Check for continuity between the wire terminals of the ignition switch connector in each switch position.

Refer to the wiring diagram for the terminals and switch status:

- CTX700/A/N/NA (page 23-2)
- CTX700D/ND (page 23-3)



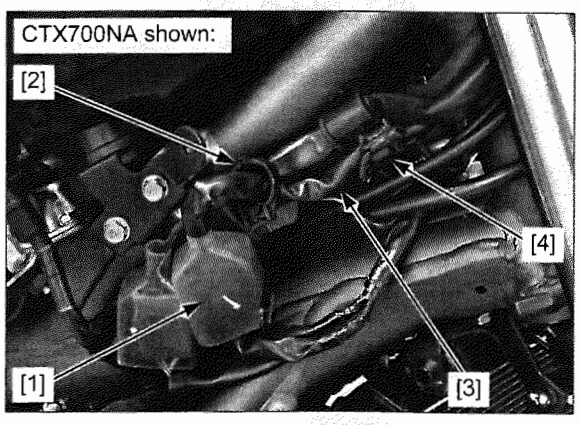
## REMOVAL/INSTALLATION

Remove the following:

- Center shelter (page 2-12)
- Headlight assembly (CTX700N/NA/ND) (page 2-8)

Disconnect the ignition switch 2P (Brown) connector [1].

Remove the wire band [2] and release the ignition switch wire [3] from the wire clamp [4].

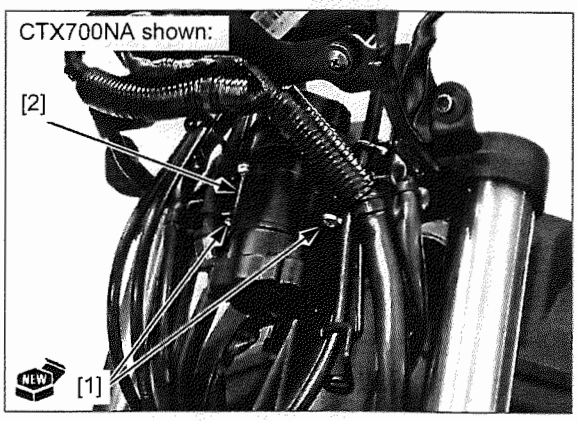



Remove the ignition switch mounting bolts [1] and ignition switch [2].

Installation is in the reverse order of removal.

**TORQUE:**
**Ignition switch mounting bolt:**
**25 N·m (2.5 kgf·m, 18 lbf·ft)**

- Replace the ignition switch mounting bolts with new ones.




# HANDLEBAR SWITCHES

## INSPECTION

*CTX700/A/N/NA:* Remove the following:

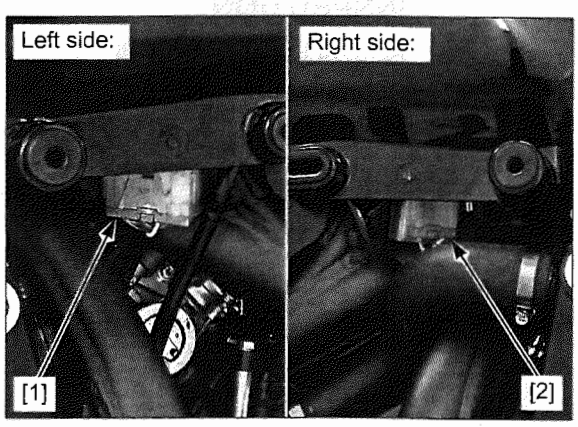
- Front side cowls (page 2-6) (CTX700/A)
- Radiator side covers (page 2-10) (CTX700N/NA)

Disconnect the following:

- Left handlebar switch 14P (Gray) connector [1]
- Right handlebar switch 8P (Blue) connector [2]

Check for continuity between the wire terminals of the handlebar switch connector in each switch position.

Refer to the wiring diagram for the terminals and switch status (page 23-2).



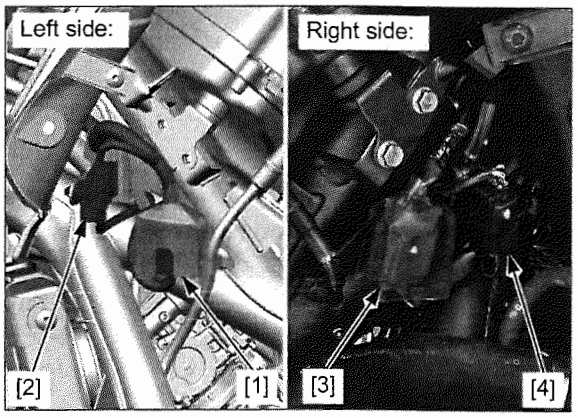

*CTX700D/ND:* Remove the side shelters (page 2-11).

Disconnect the following:

- Left handlebar switch 14P (Gray) connector [1]
- Left handlebar switch 6P (Black) connector [2]
- Right handlebar switch 8P (Blue) connector [3]
- Right handlebar switch 6P (Black) connector [4]

Check for continuity between the wire terminals of the handlebar switch connector in each switch position.

Refer to the wiring diagram for the terminals and switch status (page 23-3).

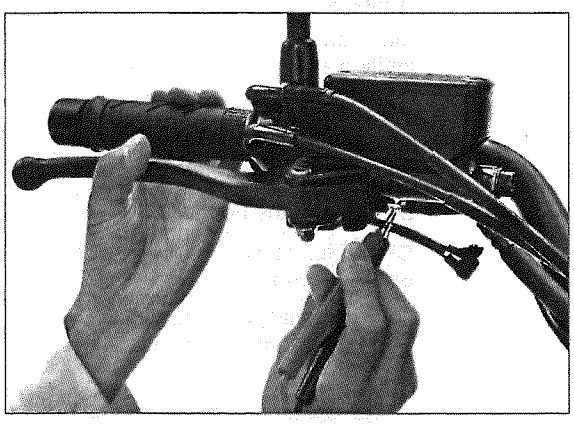


# BRAKE LIGHT SWITCH

## FRONT

Disconnect the front brake light switch connectors and check for continuity between the terminals.

There should be continuity with the brake lever applied, and there should be no continuity with the brake lever released.

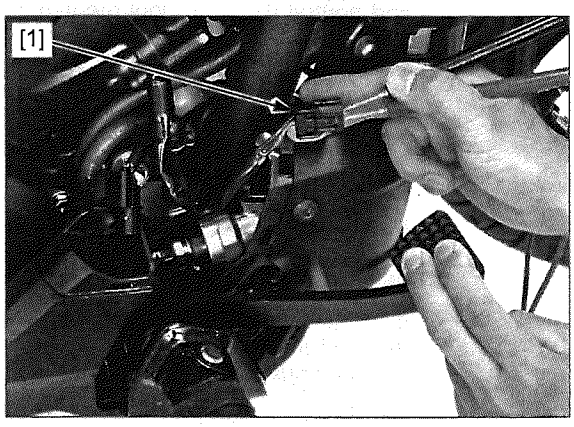


## REAR

Remove the under cowl lid (page 2-12).

Disconnect the rear brake light switch 2P (Black) connector [1] and check for continuity between the terminals.

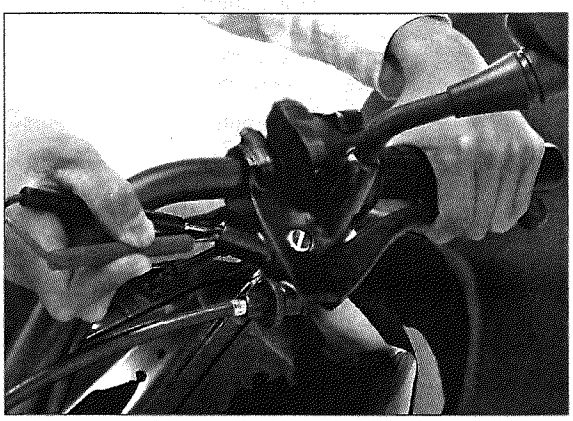
There should be continuity with the brake pedal applied, and there should be no continuity with the brake pedal released.




# CLUTCH SWITCH (CTX700/A/N/NA)

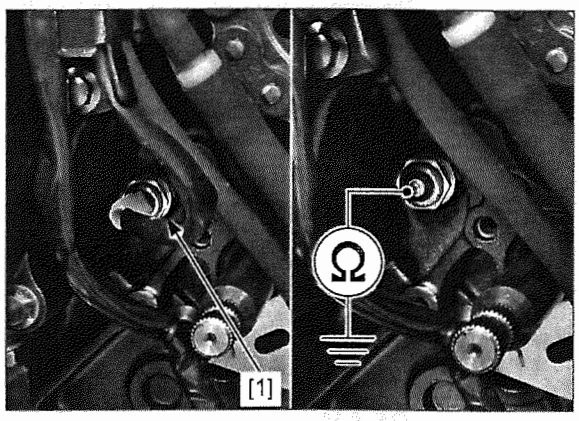
Disconnect the clutch switch connectors and check for continuity between the terminals.

There should be continuity with the clutch lever applied, and there should be no continuity with the clutch lever released.



# NEUTRAL SWITCH

## INSPECTION (CTX700/A/N/NA)




Make sure that the neutral indicator comes on with the ignition switch turned ON and transmission is in neutral.

If the neutral indicator does not come on, inspect as follows:

Remove the left crankcase rear cover (page 2-16).

Disconnect the neutral switch connector [1].

Check for continuity between the switch terminal and engine ground.

There should be continuity when the transmission is in neutral, and no continuity when the transmission is into gear.

If the continuity inspection is normal, open circuit in Light green wire between the neutral switch connector and neutral diode or Light green/red wire between the neutral diode and neutral indicator.

If the continuity inspection is abnormal, replace the neutral switch (page 22-20).

## INSPECTION (CTX700D/ND)

Make sure that the neutral indicator comes on when the ignition switch is turned ON and transmission is in neutral and goes off when the transmission is in gear.

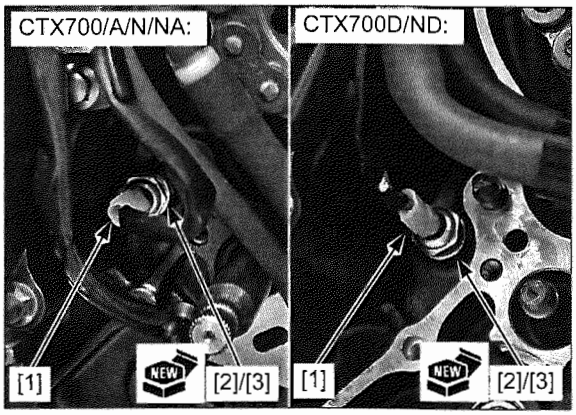
If the neutral indicator does not operate properly, check the shift indicator blinking with the ignition switch ON and the engine stop switch "○".

If DTC 52 is indicated with the shift indicator, check the neutral switch system (page 12-11).

If the shift indicator does not indicate any DTC and the neutral indicator does not light with the transmission in neutral, check for open circuit in the Light green wire between the combination meter and neutral switch.

If the Light green wire is OK, replace the combination meter (page 22-7).

## REMOVAL/INSTALLATION




Drain the engine oil (page 3-10).

Remove the following:

- Left crankcase rear cover (CTX700/A/N/NA) (page 2-16)
- Shift control motor/reduction gears (CTX700D/ND) (page 12-70)

Disconnect the neutral switch connector [1].

Remove the neutral switch [2] and sealing washer [3].

Install the neutral switch with a new sealing washer. Tighten the neutral switch to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Connect the neutral switch connector.

Install the removed parts in the reverse order of removal.

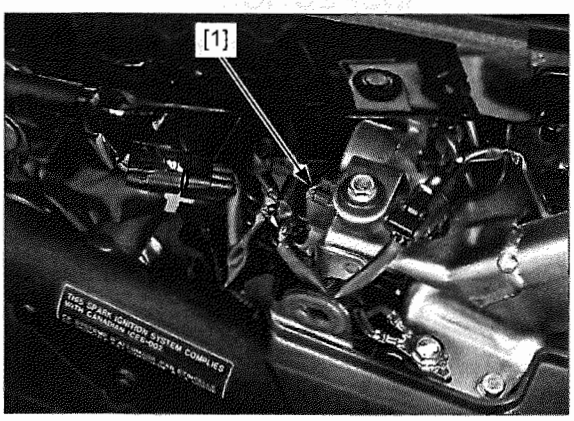
Fill the engine with the recommended engine oil (page 3-9).

# SIDESTAND SWITCH

## INSPECTION

Remove the left side shelter (page 2-11).

Release the sidestand switch 2P (Gray) connector [1] from the stay and disconnect it.




Check for continuity between the wire terminals of the sidestand switch 2P (Gray) connector switch side.

**CONNECTION: Green/white – Green**

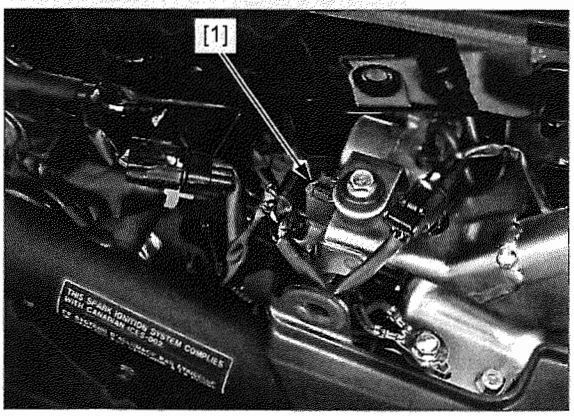
Continuity should exist only when the sidestand is up.

## REMOVAL/INSTALLATION

Remove the following:

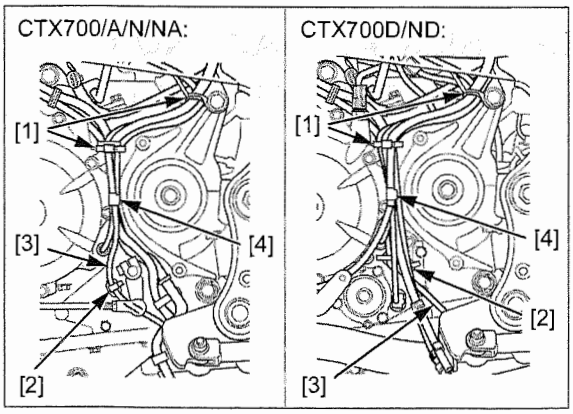
- Left side shelter (page 2-11)
- Left crankcase rear cover (page 2-16)

Release the sidestand switch 2P (Gray) connector [1] from the stay and disconnect it.




Remove the wire bands [1] and sidestand switch wire band boss [2].

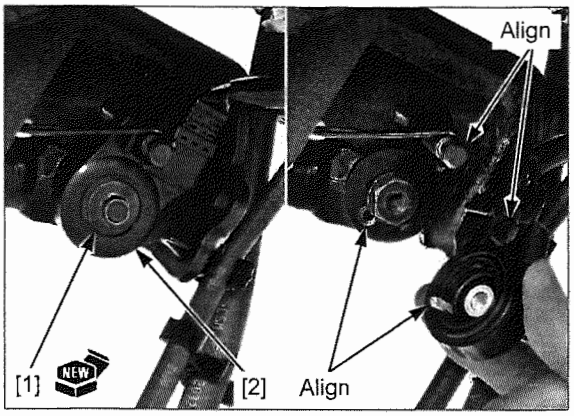
Release the sidestand switch wire [3] from the stays [4].




Remove the sidestand switch mounting bolt [1] and sidestand switch [2].

Installation is in the reverse order of removal.

- Replace the sidestand switch mounting bolt with a new one.
- Align the sidestand switch tab with the sidestand hole.
- Align the sidestand switch groove with the return spring holding pin.




**TORQUE:**
**Sidestand switch bolt: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

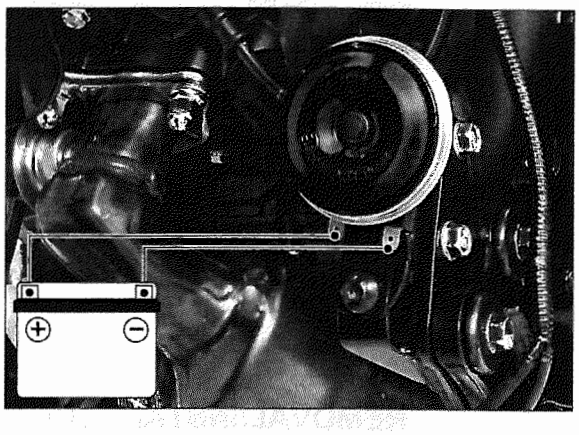
# HORN

## INSPECTION

Remove the under center cowl (page 2-13).

Disconnect the wire connectors.

Connect the 12 V battery to the horn terminal directly. The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.



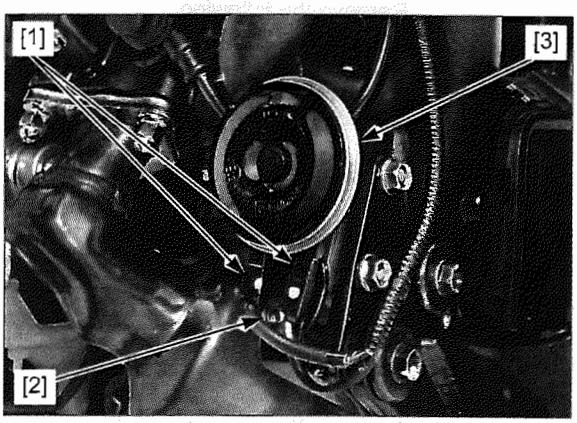
## REMOVAL/INSTALLATION

Remove the under center cowl (page 2-13).

Disconnect the wire connectors [1].

Remove the bolt [2] and horn [3].

Installation is in the reverse order of removal.




# TURN SIGNAL/HAZARD RELAY

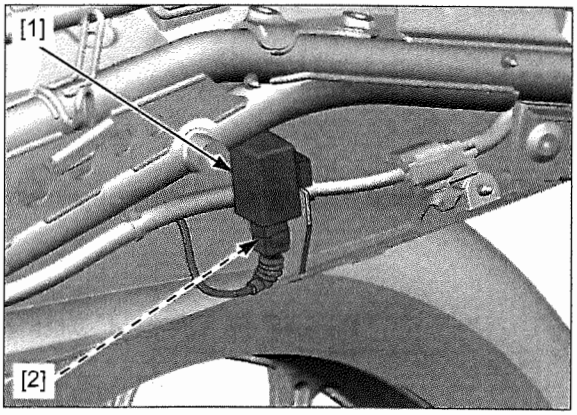
## SYSTEM INSPECTION

Remove the left rear side cowl (page 2-15).

Turn the ignition switch OFF.

Release the turn signal/hazard relay [1] from the rear fender B.
Disconnect the turn signal/hazard relay 4P connector [2].

Check the following at the wire harness side 4P connector.



1. **Battery Power Source Line Open Circuit Inspection**

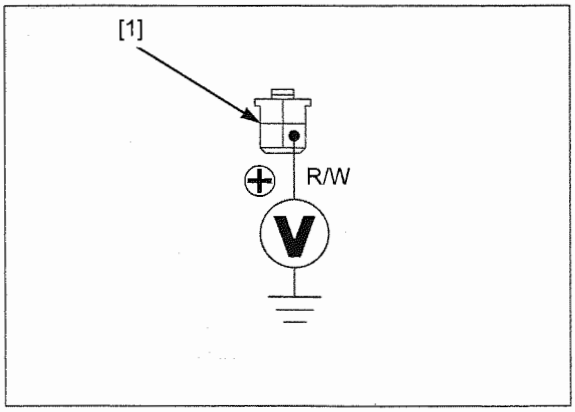
Measure the voltage between the 4P connector [1] terminal and ground.

**Connection: Red/white (+) – Ground (–)**

***Is there battery voltage?***

**YES** – GO TO STEP 2.

**NO** – • Open circuit in the Red/white wire
• Blown sub fuse 7.5 A (CLOCK/TURN)




2. **Ground Line Open Circuit Inspection**

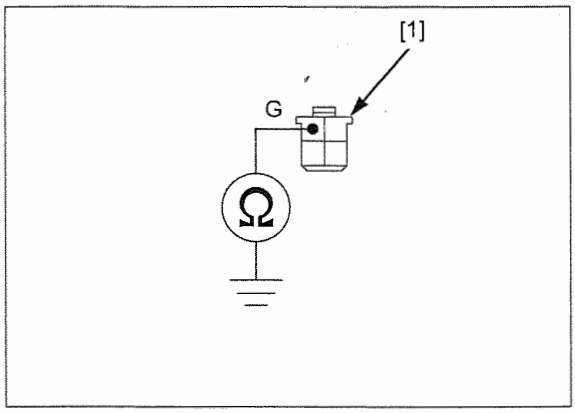
Check for continuity between the 4P connector [1] terminal and ground.

**Connection: Green – Ground**

***Is there continuity?***

**YES** – GO TO STEP 3.

**NO** – Open circuit in the Green wire




3. **Turn Signal/hazard Switch Line Open Circuit Inspection**

Connect the 4P connector [1] terminals with a jumper wire.

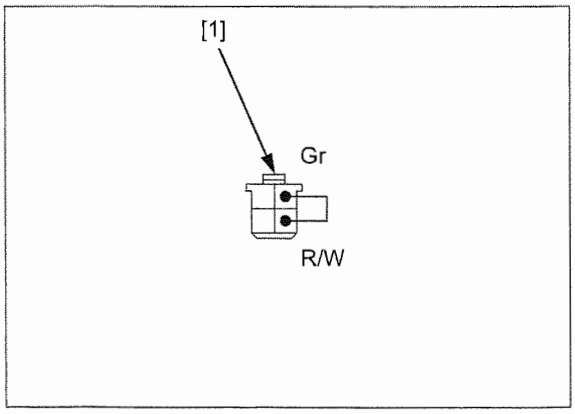
**Connection: Red/white – Gray**

Operate the turn signal switch or push the hazard switch.

***Do the turn signal light illuminate?***

**YES** – GO TO STEP 4.

**NO** – • Open circuit in the Gray wire
• Faulty turn signal switch or hazard switch (left handlebar switch)
• Faulty turn signal light circuits



**4. Ignition Switch Power Source Line Open Circuit Inspection**

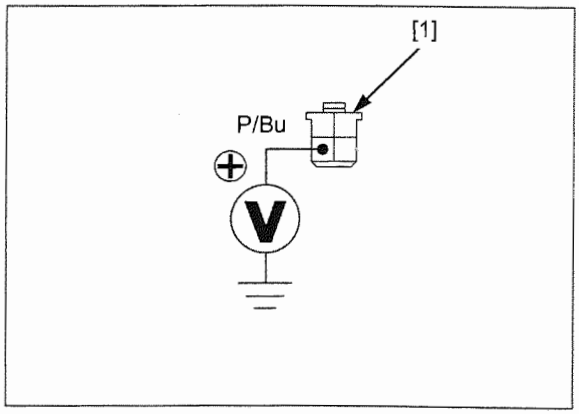
Turn the ignition switch ON and engine stop switch "○".
Measure the voltage between the 4P connector [1] terminal and ground.

**Connection: Pink/blue (+) – Ground (–)**

***Is there battery voltage?***

**YES** – System is normal, replace the turn signal/ hazard relay.

**NO** – • Open circuit in the Pink/blue wire
• Blown sub fuse 7.5 A (ILLUMI/STOP/ HORN)

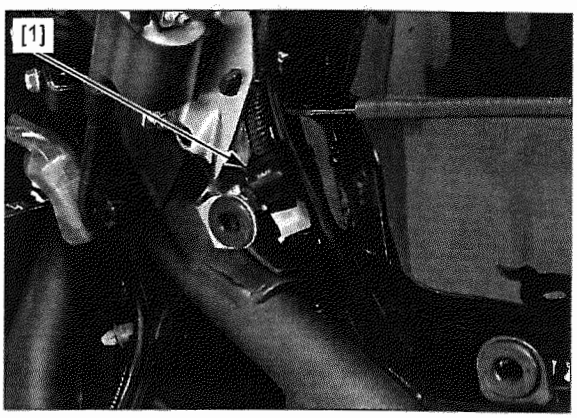



# HAZARD DIODE

## INSPECTION

Remove the left side shelter (page 2-11).

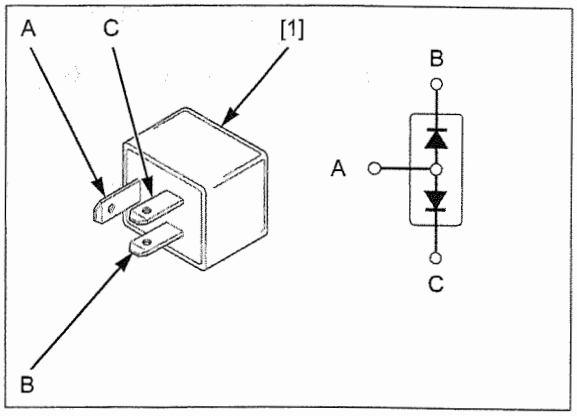
Remove the hazard diode [1].




Check for continuity between the diode [1] terminals.

When there is continuity, a small resistance value will register.

If there is continuity, in one direction, the diode is normal.

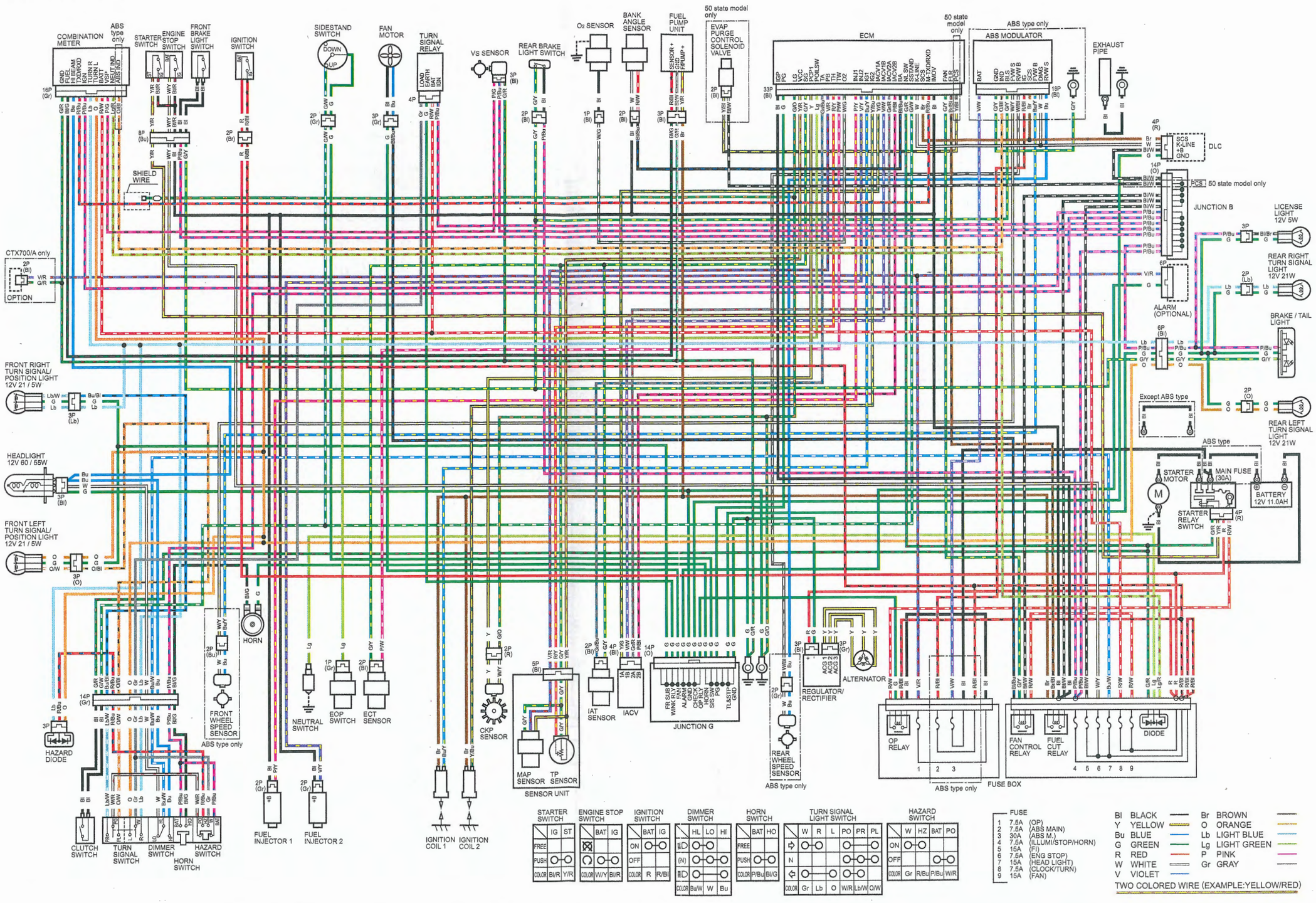


# 23. WIRING DIAGRAM

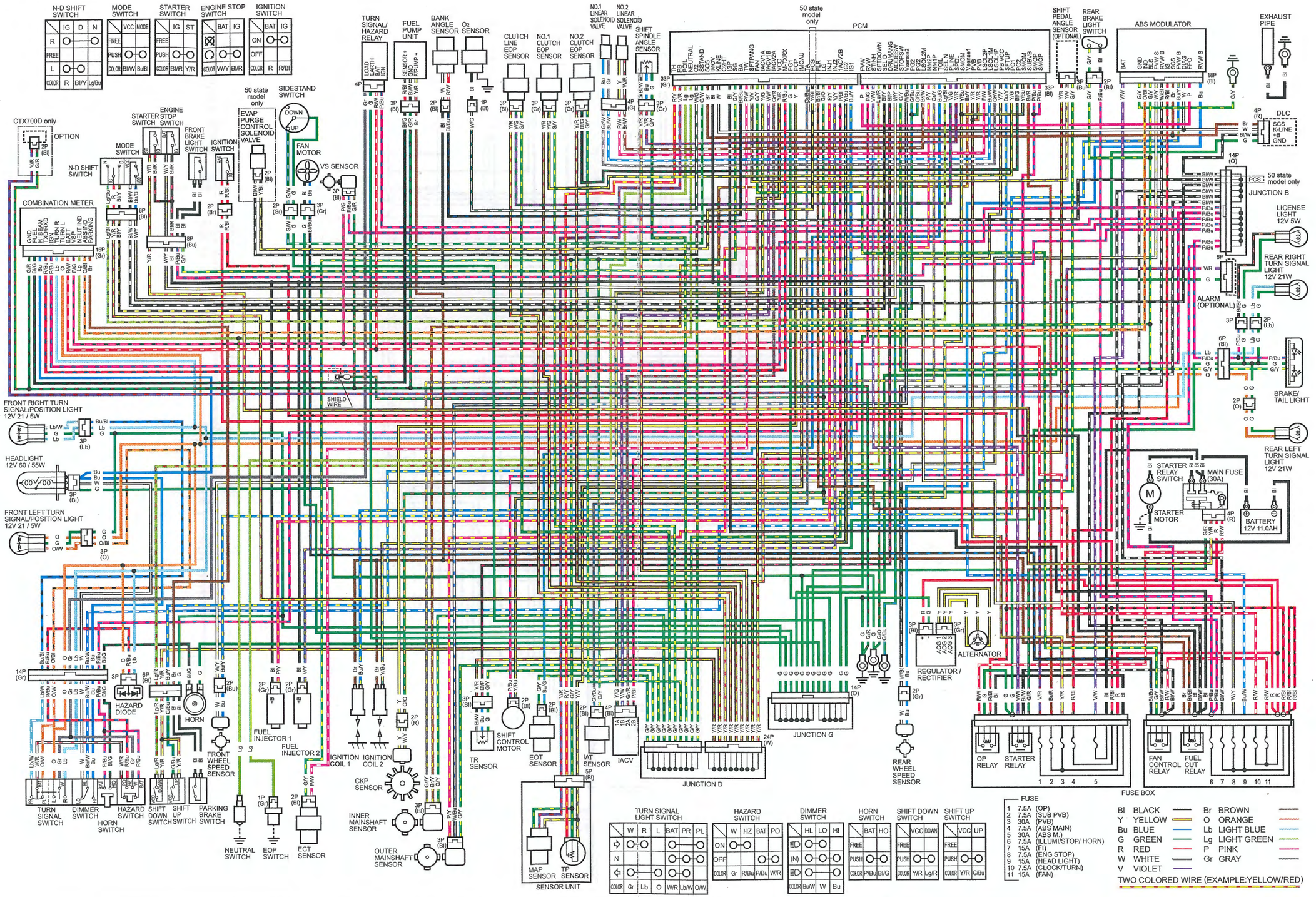
# MEMO

# MEMO

# CTX700/A/N/NA


COMBINATION METER
ABS type only
STARTER SWITCH
ENGINE STOP SWITCH
FRONT BRAKE LIGHT SWITCH
IGNITION SWITCH
SIDESTAND SWITCH
FAN MOTOR
TURN SIGNAL RELAY
VS SENSOR
REAR BRAKE LIGHT SWITCH
O2 SENSOR
BANK ANGLE SENSOR
FUEL PUMP UNIT
50 state model only
EVAP PURGE CONTROL SOLENOID VALVE
ECM
50 state model only
ABS type only
ABS MODULATOR
EXHAUST PIPE
SHIELD WIRE
CTX700/A only
OPTION
FRONT RIGHT TURN SIGNAL/ POSITION LIGHT 12V 21 / 5W
HEADLIGHT 12V 60 / 55W
FRONT LEFT TURN SIGNAL/ POSITION LIGHT 12V 21 / 5W
HORN
FRONT WHEEL SPEED SENSOR
ABS type only
NEUTRAL SWITCH
EOP SWITCH
ECT SENSOR
CKP SENSOR
IAT SENSOR
IACV
JUNCTION G
REGULATOR/ RECTIFIER
ALTERNATOR
REAR WHEEL SPEED SENSOR
ABS type only
HAZARD DIODE
CLUTCH SWITCH
TURN SIGNAL SWITCH
DIMMER SWITCH
HAZARD SWITCH
HORN SWITCH
FUEL INJECTOR 1
FUEL INJECTOR 2
IGNITION COIL 1
IGNITION COIL 2
MAP SENSOR
TP SENSOR
SENSOR UNIT
OP RELAY
FAN CONTROL RELAY
FUEL CUT RELAY
DIODE
FUSE BOX
ABS type only
DLC
SCS
K-LINE
GND
50 state model only
JUNCTION B
LICENSE LIGHT 12V 5W
REAR RIGHT TURN SIGNAL LIGHT 12V 21W
BRAKE / TAIL LIGHT
ALARM (OPTIONAL)
Except ABS type
REAR LEFT TURN SIGNAL LIGHT 12V 21W
ABS type
STARTER MOTOR
MAIN FUSE (30A)
BATTERY 12V 11.0AH
STARTER RELAY SWITCH
STARTER SWITCH
ENGINE STOP SWITCH
IGNITION SWITCH
DIMMER SWITCH
HORN SWITCH
TURN SIGNAL LIGHT SWITCH
HAZARD SWITCH
FUSE
1 7.5A (OP)
2 7.5A (ABS MAIN)
3 30A (ABS M.)
4 7.5A (ILLUMI/STOP/HORN)
5 15A (FI)
6 7.5A (ENG STOP)
7 15A (HEAD LIGHT)
8 7.5A (CLOCK/TURN)
9 15A (FAN)
Bl BLACK
Y YELLOW
Bu BLUE
G GREEN
R RED
W WHITE
V VIOLET
Br BROWN
O ORANGE
Lb LIGHT BLUE
Lg LIGHT GREEN
P PINK
Gr GRAY
TWO COLORED WIRE (EXAMPLE:YELLOW/RED)

# CTX700D/ND


N-D SHIFT SWITCH
MODE SWITCH
STARTER SWITCH
ENGINE STOP SWITCH
IGNITION SWITCH
TURN SIGNAL/ HAZARD RELAY
FUEL PUMP UNIT
BANK ANGLE SENSOR
O2 SENSOR
CLUTCH LINE EOP SENSOR
NO.1 CLUTCH EOP SENSOR
NO.2 CLUTCH EOP SENSOR
NO.1 LINEAR SOLENOID VALVE
NO.2 LINEAR SOLENOID VALVE
SHIFT SPINDLE ANGLE SENSOR
50 state model only
PCM
SHIFT PEDAL ANGLE SENSOR (OPTIONAL)
REAR BRAKE LIGHT SWITCH
ABS MODULATOR
EXHAUST PIPE
CTX700D only
OPTION
COMBINATION METER
FRONT BRAKE LIGHT SWITCH
EVAP PURGE CONTROL SOLENOID VALVE
SIDESTAND SWITCH
FAN MOTOR
VS SENSOR
DLC
SCS K-LINE +B GND
JUNCTION B
LICENSE LIGHT 12V 5W
REAR RIGHT TURN SIGNAL LIGHT 12V 21W
ALARM (OPTIONAL)
BRAKE/ TAIL LIGHT
REAR LEFT TURN SIGNAL LIGHT 12V 21W
FRONT RIGHT TURN SIGNAL/POSITION LIGHT 12V 21 / 5W
HEADLIGHT 12V 60 / 55W
FRONT LEFT TURN SIGNAL/POSITION LIGHT 12V 21 / 5W
SHIELD WIRE
STARTER RELAY SWITCH
MAIN FUSE (30A)
STARTER MOTOR
BATTERY 12V 11.0AH
HAZARD DIODE
HORN
FRONT WHEEL SPEED SENSOR
FUEL INJECTOR 1
FUEL INJECTOR 2
IGNITION COIL 1
IGNITION COIL 2
CKP SENSOR
INNER MAINSHAFT SENSOR
OUTER MAINSHAFT SENSOR
SHIFT CONTROL MOTOR
TR SENSOR
EOT SENSOR
IAT SENSOR
IACV
JUNCTION D
JUNCTION G
ALTERNATOR
REGULATOR / RECTIFIER
REAR WHEEL SPEED SENSOR
OP RELAY
STARTER RELAY
FAN CONTROL RELAY
FUEL CUT RELAY
FUSE BOX
TURN SIGNAL SWITCH
DIMMER SWITCH
HORN SWITCH
HAZARD SWITCH
SHIFT DOWN SWITCH
SHIFT UP SWITCH
PARKING BRAKE SWITCH
NEUTRAL SWITCH
EOP SWITCH
ECT SENSOR
MAP SENSOR
TP SENSOR
SENSOR UNIT
TURN SIGNAL LIGHT SWITCH
HAZARD SWITCH
DIMMER SWITCH
HORN SWITCH
SHIFT DOWN SWITCH
SHIFT UP SWITCH
FUSE
1 7.5A (OP)
2 7.5A (SUB PVB)
3 30A (PVB)
4 7.5A (ABS MAIN)
5 30A (ABS M.)
6 7.5A (ILLUMI/STOP/ HORN)
7 15A (FI)
8 7.5A (ENG STOP)
9 15A (HEAD LIGHT)
10 7.5A (CLOCK/TURN)
11 15A (FAN)
Bl BLACK
Y YELLOW
Bu BLUE
G GREEN
R RED
W WHITE
V VIOLET
Br BROWN
O ORANGE
Lb LIGHT BLUE
Lg LIGHT GREEN
P PINK
Gr GRAY
TWO COLORED WIRE (EXAMPLE:YELLOW/RED)

# MEMO

# INDEX

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# MEMO