HONDA

SHOP MANUAL



CBR600FM

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Important Safety Notice

⚠WARNING **Indicates a strong possibility of severe personal injury or death if instructions are not followed.**

CAUTION: **Indicates a possibility of equipment damage if instructions are not followed.**

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains *some* warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda, might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.

Type Codes

- Throughout this addendum, the following abbreviations are used to identify individual model.
- The asterisk (*) indicates that this addendum is applicable for the corresponding area type.

Code	Available	Area Type
ED	*	Europian direct sales
E	*	U. K.
F	*	France
G (GI/GII)	*	Germany (Full power/Limited power)
U	*	Australia
SA		South Africa
ND		North Europe
SW	*	Switzerland
SD	*	Sweden
FI	*	Finland
N		Norway
IT	*	Italy
B		Belgium
H		Netherland
AR	*	Austria
D (DK, DM)		General export (km/h, mph)
SP	*	Spain

Introduction

This service manual describes the service procedures of the CBR600F.
This Model Specific Manual includes every service procedure that is of a specific nature to this particular model. Basic service procedures that are common to other Honda Motorcycle/Motor Scooter/ATV Common Service Manual. This Model Specific Service Manual should be used together with the Common Service Manual in order to provide complete service information on all aspects this motorcycle.

Performing the first scheduled maintenance is very important.
It compensates for the initial wear that occurs during the break-in period.

Section 1 and 3 apply to the whole motorcycle, section 2 illustrates procedures for removal/installation of components that may be required to perform service describe parts of the motorcycle, grouped according locations.

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

Most sections describe the service procedure through system illustration. Refer to the next page for details on how to use this manual.

If you don't know the source of the trouble, go to section 20 Troubleshooting.

ALL INFORMATION, ILLUSTRATION, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT INCURRING ANY OBRIGATION WHATEVER. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION. THIS MANUAL IS WRITTEN FOR PERSONS WHO HAVE ACQUIRED BASIC KNOWLEDGE OF MAINTENANCE ON HONDA MOTORCYCLES, MOTOR SCOOTERS OR ATVS.

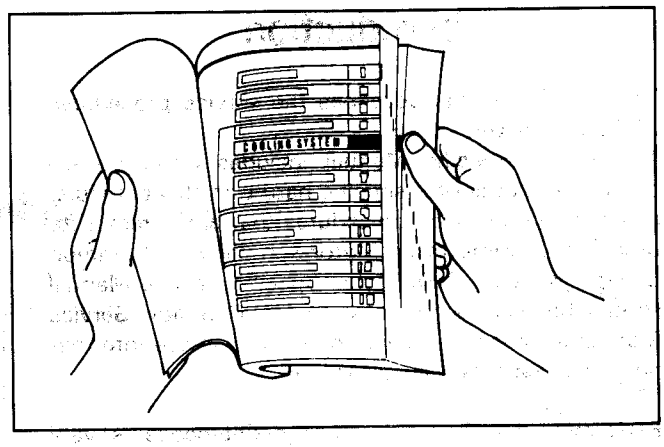
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SERVICE PUBLICATION OFFICE

Contents

	General Information	1
	Frame/Body Panels/Exhaust System	2
	Maintenance	3
Engine and Drive Train	Lubrication System	4
	Cooling System	5
	Fuel System	6
	Engine Removal/Installation	7
	Cylinder Head	8
	Clutch/Gearshift Linkage	9
	Crankcase/Cylinder/Piston	10
	Crankshaft/Transmission	11
Chassis	Front Wheel/Suspension/Steering	12
	Rear Wheel/Suspension	13
	Brake System	14
Electrical	Charging System/Alternator	15
	Ignition System	16
	Electric Starter/Starter Clutch	17
	Lights/Meters/Switches	18
	Wiring Diagram	19
	Troubleshooting	20

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How to Use This Manual

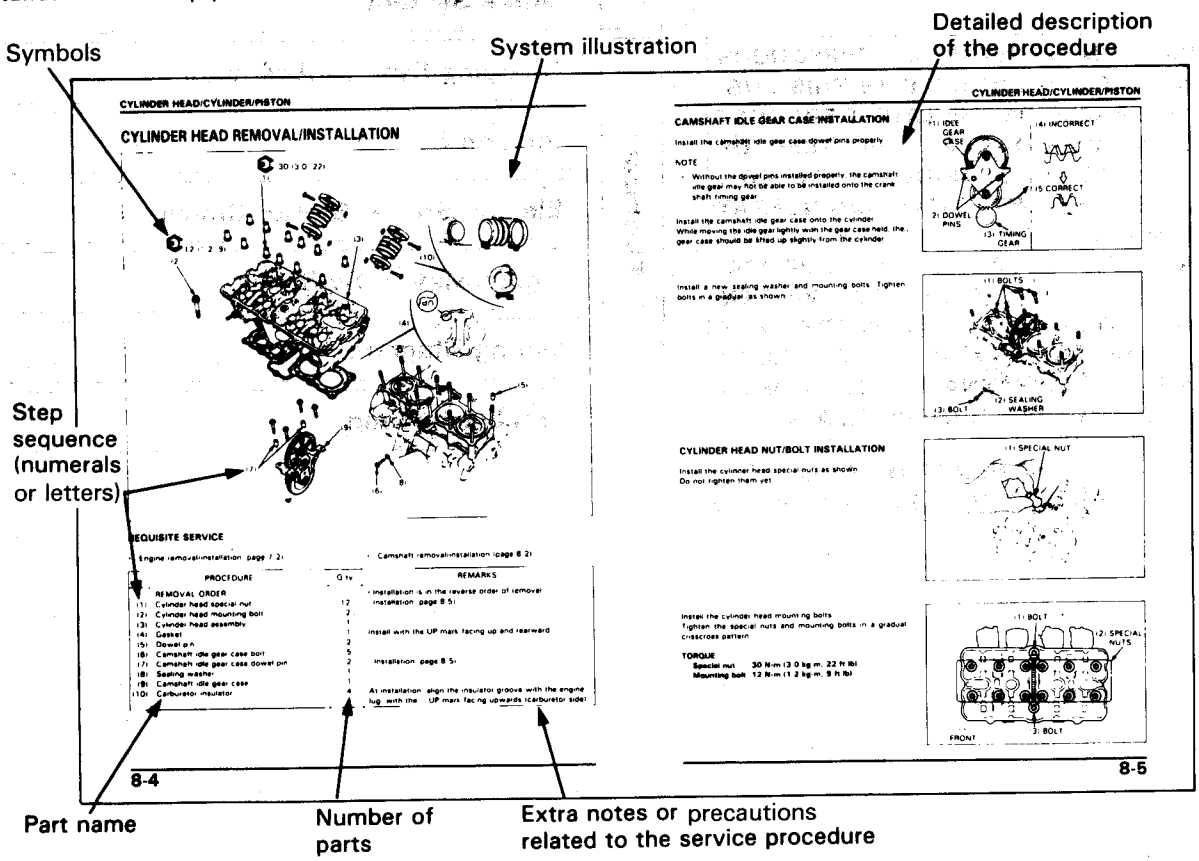


Finding The Information You Need

- This manual is divided into sections which cover each of the major components of the motorcycle.
  To quickly find the section you are interested in, the first page of each section is marked with a black tab that lines up with one of the thumb index tabs before this page.
  The first page of each section lists the table of contents within the section.
  Read the service information and troubleshooting related to the section before you begin working.
- An index of the entire book is provided in the last chapter to directly locate the information you need.

Understanding The Instructions

- The removal and installation of parts are for the most part illustrated by large and clear illustrations that should provide the reader with visual aid in understanding the major point for servicing.
- The system illustrations are augmented by callouts whose numbers or letters indicate the order in which the parts should be removed or installed.
- The sequence of steps represented numerically are differentiated from the ones represented alphabetically to notify the reader that they must perform these steps seperately.
  For example, if the steps prior and up to camshaft removal are performed with the engine installed, but the subsequent steps like cylinder head removal require engine removal, the callouts are grouped in numerical and alphabetical orders.
- The illustrations may contain symbols to indicate necessary service procedures and precautions that need to be taken.
  Refer to the next page for the meaning of each symbol mark.
- Also in the illustration is a chart that lists information such as the order in which the part is removed/installed, the name of the part, and some extra notes that may be needed.
- Step by step instructions are provided to supplement the illustrations when detailed explanation of the procedure is necessary or illustrations alone would not suffice.
- Service procedures required before or after the procedure described on that particular page, or inspection/adjustment procedures required following the installation of parts, are described under the title Requisite Service.
- Standard workshop procedures and knowledge covered in the Common Service Manual are abbreviated in this manual.



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 special tool.
	Use optional tool. Use the same procedure you use to order parts.
 10 (1.0, 7.2)	Torque specification 10 N·m (1.0 kg-m, 7.2 ft-lb).
	Use recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of 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). Example: Molykote® BR-2 plus manufactured by Dow Corning, U.S.A. Multi-purpose M-2 manufactured by Mitsubishi Oil Japan
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent). Example: Molykote® G-n Paste manufactured by Dow Corning, U.S.A. Honda Moly 60 (U.S.A. only) Rocol ASP manufactured by Rocol Limited, U.K. Rocol Paste manufactured by Sumico Lubricant, Japan
	Use silicone grease.
	Apply a locking agent. Use a middle strength locking agent unless otherwise specified.
	Apply sealant.
	Use brake fluid, DOT 4. Use the recommended brake fluid, unless otherwise specified.
	Use Fork or Suspension Fluid.

1. General Information

General Safety	1-1	Tools	1-17
Model Identification	1-3	Lubrication & Seal Points	1-18
Specifications	1-4	Cable & Harness Routing	1-20
Torque Values	1-14		

General Safety

Carbon Monoxide

If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area.

⚠ WARNING

- **The exhaust contains poisonous carbon monoxide gas that can 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.

Gasoline

Work in a well ventilated area. Keep cigarettes, flames or sparks away from the work area or where gasoline is stored.

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.**

Hot Components

⚠ WARNING

- **Engine and exhaust system parts become very hot and remain hot for some time after the engine is run. Wear insulated gloves or wait until the engine and exhaust system have cooled before handling these parts.**

Used Engine/Transmission Oil

⚠ WARNING

- **Used engine oil (or transmission oil in two-strokes) may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Althogh this is unlikely unless you handle used oil on a daily basis, it is still advisable to throughly wash your hands with soap and water as soon as possible after handling used oil.**
  KEEP OUT OF REACH OF CHILDREN

Brake Dust

Never use an air hose or dry brush to clean brake assemblies.

⚠ WARNING

- **Inhaled asbestos fibers have been found to cause respiratory disease and cancer.**

Brake Fluid

⚠ WARNING

- **Spilling fluid on painted, plastic or rubber parts will damage them. Place a clean shop towel over these parts whenever the system is serviced. KEEP OUT OF REACH OF CHILDREN.**

Coolant

Under some conditions, the ethylene glycol in engine coolant is combustible and its flame is not visible. If the ethylene glycol does ignite, you will not see any flame, but you can be burned.

⚠ WARNING

- **Avoid spilling engine coolant on the exhaust system or engine parts. They may be hot enough to cause the coolant to ignite and burn without visible flame.**
- **Coolant (ethylene glycol) can cause some skin irritation and is poisonous if swallowed. KEEP OUT OF REACH OF CHILDREN.**
- **Do not remove the radiator cap when the engine is hot. The coolant is under pressure and could scald you.**
- **Keep hands and clothing away from the cooling fan, as it starts automatically.**

If it contacts your skin, wash the affected areas immidiately with soap and water. If it contacts your eyes, flush them throughly with fresh water and get immediate medical attention. If it is swallowed, the victim must be forced to vomit then rinse mouth and throat with fresh water before obtaining medical attention. Because of these dangers, always store coolant in a safe place, away from the reach of children.

Nitrogen Pressure

For shock absorbers with a gas-filled reservoir.

⚠ WARNING

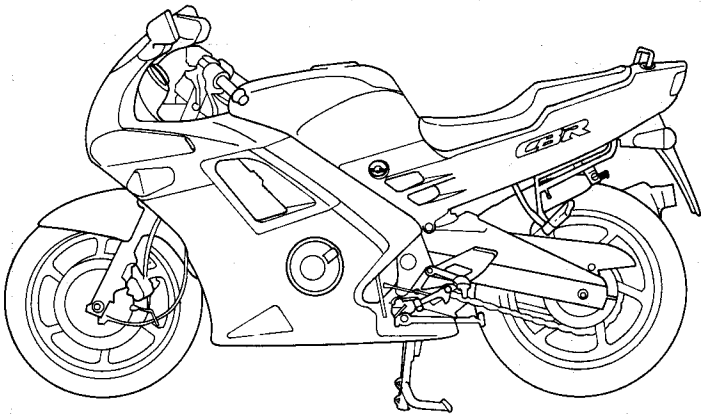
- **The shock absorber contains nitrogen under high pressure. Allowing fire or heat near the shock absorber could lead to an explosion that could result in serious injury.**
- **Failure to release the pressure from a shock absorber before disposing of it may lead to a possible explosion and serious injury if it is heated or pierced.**

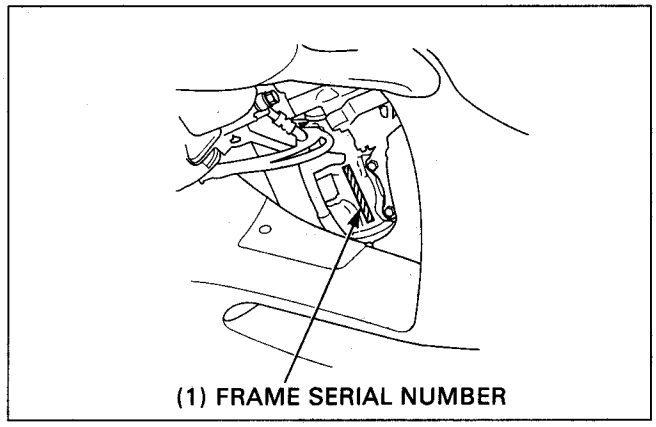
Battery Hydrogen Gas & Electrolyte

⚠ WARNING

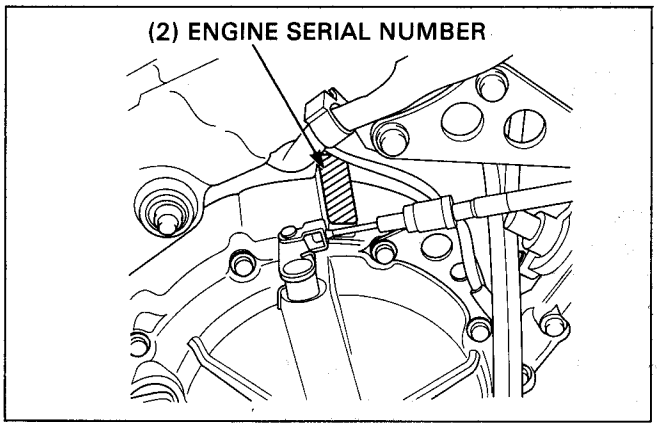
- **The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.**
- **The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.**
  - **-If electrolyte 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.**
- **Electrolyte is poisonous.**
  - **-If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegitable oil and call a physician. KEEP OUT OF REACH OF CHILDREN.**

Model Identification

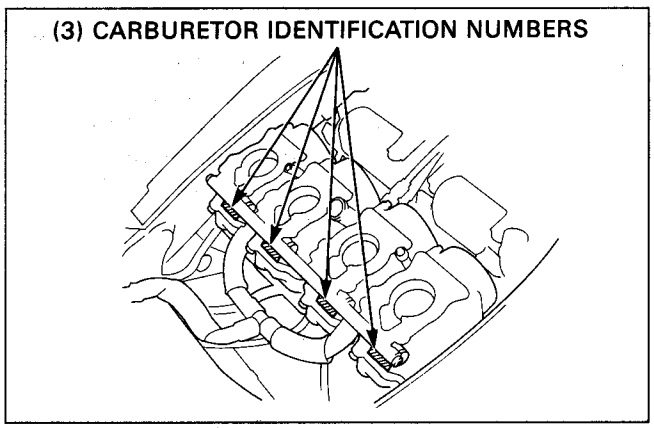




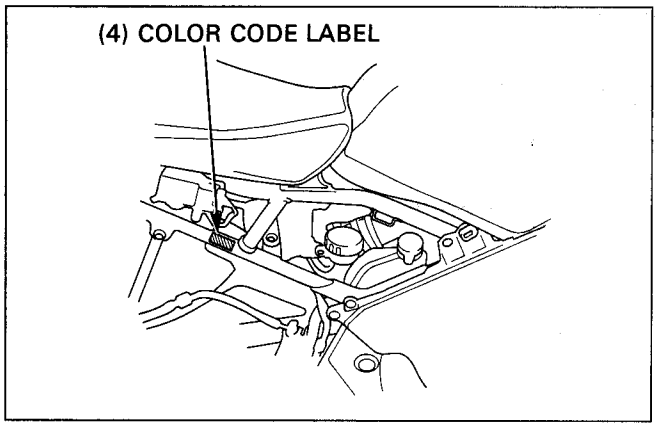
(1) FRAME SERIAL NUMBER
The frame serial number is stamped on the right side of the steering head.



(2) ENGINE SERIAL NUMBER
The engine serial number is stamped on the upper crankcase.



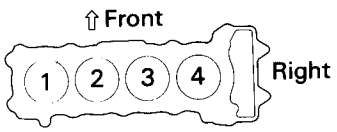
(3) CARBURETOR IDENTIFICATION NUMBER
The carburetor identification numbers are on the carburetor body intake sides.



(4) COLOR CODE LABEL
The color code label is attached on the frame under the right side cover. When ordering color-coded part, always specify its deginated color.

Specifications

General

Item		Specifications
Dimentions	Overall length	2,010 mm (79.1 in)
	GI, GII, GIII, SW, AR type	2,130 mm (83.9 in)
	Overall width	695 mm (27.4 in)
	Overall height	1,130 mm (44.5 in)
	Wheelbase	1,405 mm (55.3 in)
	Seat height	810 mm (31.9 in)
	Footpeg height	370 mm (14.6 in)
	Ground clearance	145 mm (5.7 in)
	Dry weight	185 kg (407.9 lb)
	Curb weight	205 kg (452 lb)
	Maximum weight capacity	190 kg (419 lb)
Frame	Frame type	Diamond
	Front suspension	Telescopic fork
	Front wheel travel	130 mm (5.1 in)
	Rear suspension	Swingarm
	Rear wheel travel	110 mm (4.3 in)
	Rear damper	Decarbon type
	Front tire size (Bridgestone)	120/60 VR17 V260
	(Michelin)	120/60 ZR17
	Rear tire size (Bridgestone)	160/60 VR17 V260
	(Michelin)	160/60 ZR17
	Tire brand (Bridgestone) FR/RR	CY16G/CY20B
	Tire brand (Dunlop) FR/RR	—
	Tire brand (Yokohama) FR/RR	—
	Tire brand(Michelin) FR/RR	A59X/M59X
	Front brake	Hydraulic disc brake (Double)
	Rear brake	Hydraulic disc brake
	Caster angle	25° 10′
	Trail length	94 mm (3.7 in)
	Fuel tank capacity	16.0 ℓ (4.23 US gal, 3.52 Imp gal)
	Fuel tank reserve capacity	3.0 ℓ (0.8 US gal,0.7 Imp gal)
Engine	Bore and stroke	65.0×45.2 mm (2.56×1.78 in)
	Displacement	599 cc (36.5 cu-in)
	Compression ratio	11.6 : 1
	Valve train	Overhead camshaft chain drive
	Intake valve open at (1mm lift)	15° BTDC
	Intake valve close at (1mm lift)	35° ABDC
	Exhaust valve open at (1mm lift)	38° BBDC
	Exhaust valve close at (1mm lift)	7° ATDC
	Librication system	Forced pressure and wet sump
	Oil pump type	Trochoid
	Cooling system	Liquid cooled
	Air filteration	Paper filter
	Crankshaft type	Unit type, 5 main journals
	Engine dry weight	60.7 kg (133.8 lb)
	SW, AR type	61.6 kg (135.8 lb)
	Firing order	1-2-4-3
	Cylinder arrengement	4 cylinders inline
		

General (cont'd)

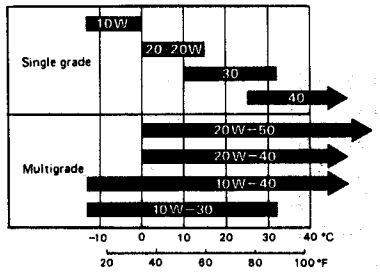
Item		Specifications
Carburetor	Carburetor type	Constant Velocity
	Throttle bore	34 mm (1.3 in)
Drive train	Clutch system	Wet multi-plate
	Clutch operation system	Cable operating
	Transmission	6-speed constant mesh
	Primary reduction	1.864 (82/44)
	Secondary reduction	—
	Third reduction	—
	Final reduction	2.867 (43/15)
	Gear ratio 1st	2.929 (41/14)
	Gear ratio 2nd	2.063 (33/16)
	Gear ratio 3rd	1.588 (27/17)
	Gear ratio 4th	1.368 (26/19)
	Gear ratio 5th	1.200 (24/20)
	Gear ratio 6th	1.087 (25/23)
	Gear ratio reverse	—
	Gear shift pattern	1-N-2-3-4-5-6
Electrical	Ignition system	Full transistor ignition
	Starting system	Starter motor
	Charging system	Triple phase out put alternator
	Regurator/rectifier type	SCR shorted/triple phase full-wave rectification
	Lighting system	Battery
	AC regulator type	—

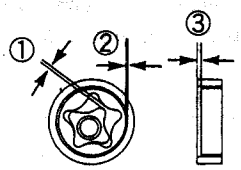
Unit : mm (in)

Lubrication

Item	Standard	Service Limit
Engine oil capacity at draining	3.2 ℓ (3.38 US qt,2.82 Imp qt)	———
at disassembly	4.0 ℓ (4.23 US qt,3.52 Imp qt)	———
at oil filter change	3.5 ℓ (3.70 US qt,3.08 Imp qt)	———
Recommended engine oil	Use Honda 4-stroke Oil or eqivalent API Service Classification : SE, SF or SG. Viscosity : SAE 10W-40 Other viscosity shown in the chart may be used when the average temperature in your riding area is within the indicated range.	———
Oil pressure at oil pressure switch	14.7 kPa (0.15 kg/cm², 2.1 psi)	———
Oil pump rotor tip clearance	0.15-0.22 (0.006-0.009)	0.20 (0.008)
body clearance	0.15-0.22 (0.006-0.009)	0.35 (0.014)
end clearance	0.02-0.07 (0.001-0.003)	0.10 (0.004)

OIL VISCOSITIES





Fuel System

Carburetor identification number	VP40A	———
SW type	VP43A	———
AR type	VP44A	———
Main jet	#135	———
(High altitude)	———	———
(2,3)	———	———
(1,4)	———	———
(Front)	———	———
(Rear)	———	———
Slow jet	#38	———
Jet needle clip position	———	———
Pilot screw initial opening	2-1/4 turns out	———
SW type	3 turns out	
AR type	2-5/8 turns out	
high altitude adjustment	———	———
final opening	1/2 turn out	———
Air screw initial opening	———	———
Air screw high altitude adjustment	———	———
Float level	13.7 (0.54)	———
Idle speed	1,200 ± 100 min^{-1} (rpm)	———
SW, AR type	1,400 ± 50 min^{-1} (rpm)	———
Trottle grip free play	2-6 mm	———
Accelerator pump clearance	———	———

Unit : mm (in)

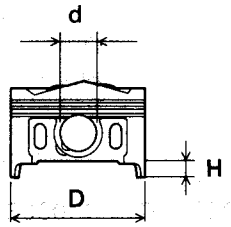
Cylinder Head

Item	Standard	Service Limit
Cylinder compression	1,261-1,287kPa (12.6-12.9 kg/cm², 179-183 psi)	———
Valve clearance at cold temperature (below 35° C/95° F) IN	0.13-0.19 (0.005-0.007)	———
EX	0.19-0.25 (0.007-0.010)	———
Cylinder head warpage	———	0.1 (0.04)
Cam lobe height① IN	36.140-36.380 (1.4228-1.4323)	36.11 (1.422)
EX	35.300-35.540 (1.3898-1.3992)	35.27 (1.389)
Camshaft runout ②	———	0.05 (0.002)
Camshaft oil clearance	0.020-0.062 (0.0008-0.0024)	0.1 (0.004)
Camshaft journal O.D. ③	23.959-23.980 (0.9433-0.9441)	24.955 (0.9825)
Camshaft holder I.D.	24.000-24.021 (0.9449-0.9457)	———
Valve stem O.D. IN	3.975-3.990 (0.1565-0.1571)	3.965 (0.1561)
EX	3.965-3.980 (0.1561-0.1567)	3.955 (0.1557)
Valve guide I.D. IN	4.000-4.012 (0.1575-0.1580)	4.04 (0.159)
EX	4.000-4.012 (0.1575-0.1580)	4.04 (0.159)
Stem-to-guide clearance IN	0.005-0.042 (0.0002-0.0017)	———
EX	0.015-0.052 (0.0006-0.0020)	———
Valve guide projection above cylinder head (h) IN	31.27-31.87 (1.2311-1.2547)	———
EX	31.31-31.91 (1.2327-1.2563)	———
Before guide installation : 1. Chill the valve guides in the freezer section of a refrigerator for about one hour. 2. Heat the cylinder head to 100-150° C (212-300° F).		
Valve seat width	0.9-1.1 (0.035-0.043)	1.5 (0.06)
Valve spring free length Inner	31.92 (1.257)	30.62 (1.206)
Outer	35.36 (1.392)	33.86 (1.333)
Inner IN	———	———
Inner EX	———	———
Outer IN	———	———
Outer EX	———	———
Rocker arm I.D. IN	———	———
EX	———	———
Rocker arm shaft O.D. IN	———	———
EX	———	———
Rocker arm-to-rocker arm shaft clearance	———	———
Valve lifter O.D.	25.978-25.993 (1.0228-1.0233)	25.968 (1.0224)
Valve lifter bore I.D.	26.010-26.026 (1.0240-1.0246)	26.040 (1.0252)
Hydraulic lash adjuster assist spring free length	———	———
Hydraulic lash adjuster compression stroke with kerosene	———	———

Unit : mm (in)

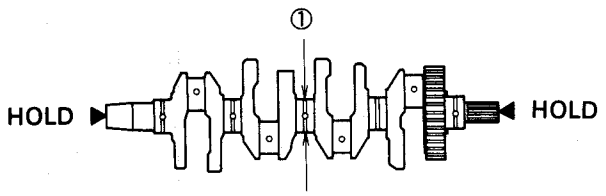
Cylinder/Piston

Item	Standard	Service Limit
Cylinder I.D.	65.000-65.015 (2.5591-2.5596)	65.10 (2.563)
out of round	———	0.10 (0.004)
taper	———	0.10 (0.004)
warpage	———	0.10 (0.004)
Piston mark direction	"IN" mark facing the intake side	———
Piston O.D. (D)	64.970-64.990 (2.5579-2.5587)	64.90 (2.555)
Piston O.D. measurement point (H)	11 (0.4) from the bottom	———
Piston pin hole I.D. (d)	17.002-17.008 (0.6694-0.6696)	17.02 (0.670)
Cylinder-to-piston clearance	0.010-0.045 (0.0004-0.0018)	———
Piston pin O.D.	16.993-17.000 (0.6690-0.6693)	16.98 (0.669)
Piston-to-piston pin clearance	0.002-0.015 (0.0001-0.0006)	———
Connecting rod-to-piston pin clearance	0.016-0.041 (0.0006-0.0016)	———
Top ring-to-ring groove clearance	0.025-0.060 (0.0010-0.0024)	0.08 (0.003)
Second ring-to-ring groove clearance	0.015-0.050 (0.0006-0.0020)	0.08 (0.003)
Top ring end gap	0.20-0.35 (0.008-0.014)	0.5 (0.02)
Second ring end gap	0.35-0.50 (0.014-0.020)	0.7 (0.03)
Oil ring (side rail) end gap	0.2-0.7 (0.01-0.03)	1.0 (0.04)
Top ring mark	"T" or "R"	———
Second ring mark	"T" or "RN"	———



Crankshaft

Connecting rod small end I.D.	17.016-17.034 (0.6699-0.6706)	17.04 (0.671)
Connecting rod big end side clearance	0.05-0.20 (0.002-0.008)	0.30 (0.012)
radial clearance	———	———
Crankshaft runout ①	———	0.05 (0.002)
Crankpin oil clearance	0.028-0.052 (0.0011-0.0020)	0.06 (0.002)
Crankpin bearing selection	See page 11-4.	———
Main journal oil clearance	0.023-0.047 (0.0009-0.0019)	0.05 (0.002)
Main journal bearing selection	See page 11-4.	———



Kickstarter

Kickstarter pinion gear I.D.	———	———
Kickstarter spindle O.D.	———	———
Countershaft O.D. at kickstarter idle gear	———	———
Kickstarter idle gear bushing O.D.	———	———
I.D.	———	———

Unit : mm (in)

Clutch System

Item	Standard	Service Limit
Clutch lever free play	10-20 (0.4-0.8)	———
Clutch outer I.D.	———	———
Clutch outer guide O.D.	34.975-34.991 (1.3770-1.3776)	34.965 (1.3766)
I.D.	21.994-22.007 (0.8659-0.8664)	22.017 (0.8668)
Mainshaft O.D. at clutch outer guide	21.980-21.993 (0.8654-0.8659)	21.95 (0.864)
Clutch spring free height	———	———
Clutch spring free length	48.9 (1.93)	47.5 (1.87)
Clutch disc thickness	2.92-3.08 (0.115-0.121)	2.60 (0.102)
Clutch disc thickness A	———	———
B	———	———
Clutch plate warpage	———	0.30 (0.012)
Centrifugal clutch drum I.D.	———	———
bushing O.D.	———	———
Centrifugal clutch center guide I.D.	———	———
O.D.	———	———
Centrifugal clutch center guide collar height	———	———
Centrifugal clutch weight lining thickness	———	———
Clutch lining thickness	———	———
Crankshaft O.D. at clutch center	———	———

Cooling System

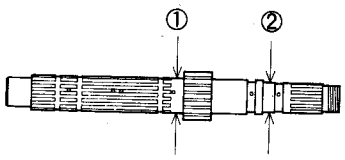
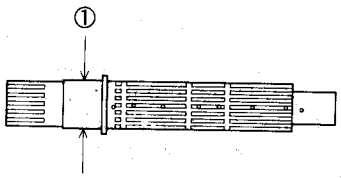
Coolant capacity (Radiator and engine)	2.4 ℓ (0.63 US gal, 0.53 Imp gal)	———
(Reserve tank)	0.35 ℓ (0.09 US gal, 0.08 Imp gal)	———
Radiator cap relief pressure	110-140 kPa (1.1-1.4 kg/cm², 15.6-19.9 psi)	———
Thermostat cap relief pressure	80-84° C (176-183F°)	———
Thermostat fully open	95° C (203F°)	———
Thermostat valve lift	8 (0.3) min	———

Drive Train

Final drive gear oil capacity at disassembly	———	———
at draining	———	———
Recommended final drive oil	———	———
Final drive gear backlash	———	———
Ring gear-to-stop pin clearance (A)	———	———
Stop pin shim	———	———
Ring gear spacer	———	———
Pinion spacer	———	———
Output gear backlash	———	———
Output gear I.D.	———	———
Output gear bushing O.D.	———	———
I.D.	———	———
Output drive shaft O.D.	———	———
Output gear damper spring free length	———	———
Output shaft adjustment shim	———	———
Countershaft drive shaft adjustment shim	———	———

Transmission

Unit : mm (in)

Item	Standard	Service Limit
Transmission gear I.D. M5, M6	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)
Transmission gear bushing O.D. M5, M6	27.959-27.980 (1.1007-1.1016)	27.94 (1.100)
C3, C4	30.950-30.975 (1.2185-1.2195)	30.93 (1.218)
C2	30.959-30.980 (1.2189-1.2197)	30.94 (1.218)
Transmission gear bushing I.D. M5	24.985-25.006 (0.9837-0.9845)	24.016 (0.9455)
C2	27.985-28.006 (1.1018-1.1026)	28.021 (1.1032)
Gear-to-bushing clearance at M5, M6 gear	0.020-0.062 (0.0008-0.0024)	———
C2, C3, C4 gear	0.020-0.070 (0.0008-0.0028)	———
Mainshaft O.D. at M5 gear bushing ①	24.967-24.980 (0.9830-0.9835)	24.960 (0.9827)
at clutch outer guide ②	21.980-21.993 (0.8654-0.8659)	21.95 (0.864)
		
Countershaft O.D. at C2 gear bushig ①	27.967-27.980 (1.0904-1.1016)	27.96 (1.101)
		
Gear bushing-to-shaft clearance at M5 gear	0.005-0.039 (0.0002-0.0015)	———
C2 gear	0.005-0.039 (0.0002-0.0015)	———
Shift fork claw thickness R	5.93-6.00 (0.233-0.236)	5.90 (0.232)
C	5.93-6.00 (0.233-0.236)	5.90 (0.232)
L	5.93-6.00 (0.233-0.236)	5.90 (0.232)
Shift fork I.D. R	12.000-12.021 (0.4724-0.4733)	12.030 (0.4736)
C	12.000-12.021 (0.4724-0.4733)	12.030 (0.4736)
L	12.000-12.021 (0.4724-0.4733)	12.030 (0.4736)
Shift fork shaft O.D. at R shift fork	11.957-11.968 (0.4707-0.4712)	11.95 (0.470)
C shift fork	11.957-11.968 (0.4707-0.4712)	11.95 (0.470)
L shift fork	11.957-11.968 (0.4707-0.4712)	11.95 (0.470)

Unit : mm (in)

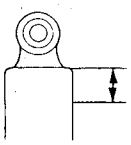
Wheels/Tires

Item	Standard	Service Limit
Minimum tire thread depth (FR)	———	1.5 (0.06)
(RR)	———	2.0 (0.08)
Cold tire pressure Up to 90 kg (200 lb) load (FR)	250 kPa (2.50 kg/cm², 36 psi)	———
Up to 90 kg (200 lb) load (RR)	290 kPa (2.90 kg/cm², 42 psi)	———
Up to maximum weight capacity (FR)	250 kPa (2.50 kg/cm², 36 psi)	———
Up to maximum weight capacity (RR)	290 kPa (2.90 kg/cm², 42 psi)	———
Rear and front axle runout	———	0.2 (0.01)
Front and rear wheel rim runout (Radial)	———	2.0 (0.08)
(Axial)	———	2.0 (0.08)
Front wheel hub-to-rim distance	———	———
Front wheel hub standard surface	———	———
Rear wheel hub-to-rim distance	———	———
Rear wheel hub standard surface	———	———
Wheel balance weight Front/Rear	———	60 g (0.13 lb)
Drive chain slack	15-25 (0.6-1.0)	———
Drive chain size/link (DID)	DID50V4/108	———
(RK)	RK50MFO/108	———

Front Suspension

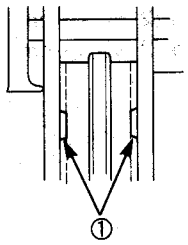
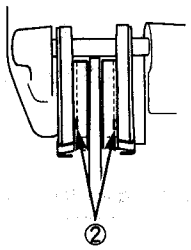
Fork spring free length	443.2 (17.45)	434.3 (17.10)
Fork spring free length (A)	———	———
(B)	———	———
Fork spring direction	With tightly wound coil facing down	———
Fork tube runout	———	0.20 (0.01)
Recommended fork oil	Fork fluid	———
Fork oil level	118 (4.65)	———
Fork oil level (R)	———	———
(L)	———	———
Fork oil capacity	508 cc (17.1 US oz, 17.9 Imp oz)	———
Fork oil capacity (R)	———	———
(L)	———	———
Fork air pressure	———	———
Steering bearing preload	0.10-0.15 kg-m (0.73-1.09 ft-lb)	———

Rear Suspension

Shock absorber spring free length	139.2 (5.48)	136.4 (5.37)
Shock absorber spring free length (A)	———	———
(B)	———	———
Damper gas pressure	10 kg/cm² (980 kPa)	———
Damper compression gas	Nitrogen	———
Damper rod compressed force at (0.4 in) 10 mm compressed	15.4 kg(111.39 ft-lb)	———
Damper drilling point	10 (0.4) mm from the top surface	———
 10 mm (0.4 in)		
Shock absorber spring installed length (Standard)	———	———
(Adjustable range)	———	———
Shock absorber spring direction	Tightly wound coil facing upward	———
Recommended shock absorber oil	———	———
Shock absorber oil capacity	———	———
air pressure	———	———

Unit : mm (in)

Brakes

Item	Standard	Service Limit
Front brake fluid	DOT 4	———
brake lever free play	———	———
brake pad wear indicator	To the groove ①	———
 ①		
brake disc thickness	4.8-5.2 (0.19-0.20)	4.0 (0.20)
brake disc runout	———	0.30 (0.012)
master cylinder I.D.	12.700-12.743 (0.5000-0.5017)	12.76 (0.502)
master piston O.D.	12.657-12.684 (0.4983-0.4994)	12.65 (0.498)
caliper cylinder I.D.	25.400-25.450 (1.0000-1.0020)	25.46 (1.002)
caliper cylinder I.D. (Upper)	———	———
(Lower)	———	———
caliper piston O.D.	25.335-25.368 (0.9974-0.9987)	25.33 (0.997)
caliper piston O.D. (Upper)	———	———
(Lower)	———	———
brake drum I.D.	———	———
brake lining thickness	———	———
Rear brake fluid	DOT 4	———
brake pedal height	———	———
brake pedal free play	To the groove ②	———
brake pad wear indicator	———	———
 ②		
brake disc thickness	4.8-5.2 (0.19-0.20)	4.0 (0.20)
brake disc runout	———	0.30 (0.012)
master cylinder I.D.	12.700-12.743 (0.5000-0.5017)	12.76 (0.502)
master piston O.D.	12.657-12.684 (0.4983-0.4994)	12.65 (0.498)
caliper cylinder I.D.	38.180-38.230 (1.5031-1.5051)	38.24 (1.506)
caliper piston O.D.	38.098-38.148 (1.4999-1.5019)	38.09 (1.500)
brake drum I.D.	———	———
brake lining thickness	———	———

Battery/Charging System

Alternator chaging coil resistance (At 20° C/68° F)	0.1-1.0Ω	———
Regulator regurated voltage/amperage	13.0-15.5V/1A MAX at 5,000 rpm	———
Battery capacity	12V-8AH	———
Battery specific gravity (Fully charging)	———	———
(Needs charging)	———	———
Battery charging rate (Normal)	0.9A (5-10 hours)	———
(Quick)	4.0A (1 hour)	———
Battery voltage (Fully charged at 20° C/68° F)	Over 13.0V	———
(Needs charging at 20° C/68° F)	Below 12.3V	———
Alternator lighting coil resistance (At 20° C/68° F)	———	———
AC regulator regulated voltage (with analogue type)	———	———
(with digital type)	———	———

Unit : mm (in)

Ignition System

Item		Standard	Service Limit
Spark plug (Standard NGK)		CR9EX9	———
(Standard ND)		U27FER9	———
(For cold climate/below 5° C/41° F NGK)		———	———
(For cold climate/below 5° C/41° F ND)		———	———
(For extended high speed riding NGK)		———	———
(For extended high speed riding ND)		———	———
Spark plug gap		0.8-0.9 (0.03-0.04)	———
Ignition timing "F" mark	Except SW type	15° BTDC/1,200 ± 100 min^{-1}(rpm)	———
	SW type	5° BTDC/1,400 ± 50 min^{-1}(rpm)	———
Advance start		———	———
stop		———	———
Full advance		42° BTDC/5,500 ± 100 min^{-1}(rpm)	———
Alternator exciter coil resistance (At 20° C/68° F)		0.1-1.0Ω	———
Ignition coil resistance (Primary at 20° C/68° F)		2.5-3.1Ω	———
(Secondary with plug cap)		21-25kΩ	———
(Secondary without plug cap)		11-15kΩ	———
Pulse generator resistance (At 20° C/68° F)		460-580Ω	———

Starting System

Starter driven gear O.D.	51.699-51.718 (2.0354-2.0361)	51.684 (2.0348)
Starter clutch outer I.D.	———	———
Starter motor brush spring tension	———	———
brush length	12.0-13.0 (0.47-0.51)	4.5 (0.18)

Lights/Meters/Switches

Main fuse	30A	———
Fuse	10A×3+15A×1	———
Headlight (high/low beam)	12V 60/55W	———
Tail/brakelight	12V 21/5W×2	———
Position light	12V 4W	———
Front turn signal light	12V 21W×2	———
Rear turn signal light	12V 21W×2	———
Instrument light	12V 1.7W×4	———
Oil pressure warning indicator	12V 3.4W	———
Side stand indicator	12V 1.7W	———
Low fuel indicator	———	———
Coolant temperature indicator	———	———
Oil temperature indicator	———	———
High beam indicator	12V 3.4W	———
Turn signal indicator	12V 3.4W×2	———
Neutral indicator	12V 3.4W	———
Reverse indicator	———	———
Overdrive indicator	———	———
Oil temperature sensor resistance (At 20° C/68° F)	———	———
Fuel unit resistance (At full level)	———	———
(At low level)	———	———
Fuel pump flow capacity (Min./minute)	———	———
Coolant temperature sensor resistance (At 80°C/176°F)	45-60Ω	———
(At 120° C/248° F)	10-20Ω	———
Fan motor switch Starts to close (ON)	98-102 C (208-216°F)	———
Stop to open (OFF)	93-97°C (199-207°F)	———

Torque Values

Standard

Fastners type	Torque N · m (kg-m, ft-lb)	Fastners type	Torque N · m (kg-m, ft-l)
5mm hex bolt and nut	5 (0.5, 3.5)	5mm screw	4 (0.4, 3)
6mm bolt and nut	10 (1.0, 7)	6mm screw	9 (0.9, 7)
8mm bolt and nut	22 (2.2, 16)	6mm flange bolt (8mm head)	9 (0.9, 7)
10mm hex bolt and nut	35 (3.5, 25)	6mm flange bolt (10mm head)	12 (1.2, 9)
12mm hex bolt and nut	55 (5.5, 40)	and nut	
		8mm flange bolt and nut	27 (2.7, 20)
		10mm flange bolt and nut	40 (4.0, 29)

- Torque specifications listed below are for important fasteners.
- All others sholud be tightened to standard torque values listed above.

NOTES : 1. Apply sealant to the threads.
2. Apply a locking agent to the threads.
3. Apply molybdenum disulfide oil to the threads and seating surface.
4. Left hand threads.
5. Stake.
6. Apply oil to the threads and seating surface.
7. Apply clean engine oil to the O-ring.
8. Torque wrench scale reading using a special tool.
9. Apply grease to the threads and seating surface.
10. UBS bolt.
11. Do not apply molybdenum disulfide oil to the threads and seating surface.

Engine

Item	Q'ty	Thread dia. (mm)	Torque N · m (kg-m, ft-lb)	Remarks
Lubrication System :				
Oil drain bolt	1	12	38 (3.8, 27)	
Oil filter cartridge	1	20	10 (1.0, 7)	
Oil filter boss	1	20	18 (1.8, 13)	
Oil pump driven sprocket bolt	1	6	15 (1.5, 11)	NOTE 2
Special bolt	1	—	50 (5.0, 36)	
Cooling System :				
Thermosensor	1	—	10 (1.0, 7)	NOTE 1
Fanmotor switch	1	—	10 (1.0, 7)	NOTE 1
Fuel System :				
Fuel valve joint bolt	2	10	25 (2.5, 18)	
Cylinder Head :				
Cylinder head bolt	10	9	48 (4.8, 35)	NOTE 3
Spark plug	4	10	12 (1.2, 9)	
Cylinder head cover bolt	6	6	10 (1.0, 7)	
Camshaft holder bolt	20	6	12 (1.2, 9)	
Cylinder head cover breather plate bolt	2	6	12 (1.2, 9)	NOTE 2
Cylinder head stud bolt	8	8	26 (2.6, 19)	
Cam sprocket bolt	4	7	20 (2.0, 14)	NOTE 2
Cylinder head sealing bolt	2	18	33 (3.3, 24)	NOTE 1
Clutch/Gearshift Linkage :				
Clutch center lock nut	1	20	85 (8.5, 61)	NOTE 5
Gearshift spindle return spring pin	1	8	23 (2.3, 17)	NOTE 2
Shift drum center bolt	1	8	23 (2.3, 17)	NOTE 2
Right crankcase cover bolt	10	6	12 (1.2, 9)	

Engine (cont'd)

Item	Q'ty	Thread dia. (mm)	Torque N · m (kg-m, ft-lb)	Remarks
Crankcase/Cylinder/Piston :				
Upper crankcase bolt	7	6	12 (1.2, 9)	
Lower crankcase bolt	14	6	12 (1.2, 9)	
	10	8	24 (2.4, 17)	
	1	10	40 (4.0, 29)	
Connecting rod bearing cap nut	8	7	26 (2.6, 19)	NOTE 6, 11
Neutral switch	1	10	12 (1.2, 9)	NOTE 1
Oil pressure switch	1	—	12 (1.2, 9)	NOTE 1
Sealing bolt	1	20	30 (3.0, 22)	NOTE 1
	1	14	25 (2.5, 18)	NOTE 1
Charging System/Alternator :				
Flywheel bolt	1	10	105 (10.5, 76)	
Starter clutch bolt	1	6	16 (1.6, 12)	NOTE 2
Stator bolt	4	6	12 (1.2, 9)	NOTE 2
Ignition System :				
Pulse generator rotor cover cap	1	45	18 (1.8, 13)	NOTE 3
Pulse generator rotor cover bolt	8	6	12 (1.2, 9)	
Pulse generator rotor bolt	1	10	60 (6.0, 43)	

Frame

Item	Q'ty	Thread dia. (mm)	Torque N · m (kg-m, ft-lb)	Remarks
Frame/Body Panels/Exhaust System :				
Exhaust pipe joint nut	6	7	20 (2.0, 14)	
Exhaust pipe band bolt	2	8	21 (2.1, 15)	
Side stand pivot bolt	1	10	10 (1.0, 7)	
Side stand pivot lock nut	1	10	30 (3.0, 22)	
Side stand bracket bolt	2	10	55 (5.5, 40)	
Engine Mount :				
Front engine hanger nut	2	10	65 (6.5, 47)	
Engine hanger adjust bolt	1	20	15 (1.5, 11)	
Engine hanger lock nut	1	20	65 (6.5, 47)	
Drive sprocket bolt	1	10	55 (5.5, 40)	
Gearshift pedal pinch bolt (pedal side)	1	8	27 (2.7, 20)	
(arm side)	1	6	16 (1.6, 12)	
Front Wheel/Suspension/Steering :				
Ignition switch bolt	2	8	25 (2.5, 18)	NOTE 2
Handlebar pinch bolt	2	8	27 (2.7, 20)	
Fork cap bolt	2	37	23 (2.3, 17)	
Fork socket bolt	2	8	23 (2.3, 17)	
Steering stem nut	1	24	105 (10.5, 76)	

Frame (cont'd)

Item	Q'ty	Thread dia. (mm)	Torque N · m (kg-m, ft-lb)	Remarks
Steering adjustment nut	1	24	25 (2.5, 18)	NOTE 6 See page 12-15.
Fork pinch bolt (upper)	2	8	23 (2.3, 17)	
(lower)	2	10	40 (4.0, 29)	
Front axle bolt	1	14	60 (6.0, 43)	
Front axle pinch bolt	4	8	22 (2.2, 16)	
Front brake disc bolt	12	8	43 (4.3, 31)	NOTE 2
Rear Wheel/Rear Suspension:				
Drive chain adjuster lock nut	2	6	22 (2.2, 16)	
Rear axle nut	1	18	95 (9.5, 69)	
Shock absorber mounting nut	2	10	45 (4.5, 33)	
Shock link nut (frame side)	1	10	45 (4.5, 33)	
Shock link nut (shock arm side)	1	10	45 (4.5, 33)	NOTE 9
Shock arm bolt	1	10	45 (4.5, 33)	NOTE 9
Swingarm pivot nut	1	14	110 (11.0, 80)	
Drive chain adjuster lock nut	2	8	22 (2.2, 16)	NOTE 2
Rear brake disc bolt	4	8	43 (4.3, 31)	NOTE 6
Driven sprocket nut	4	12	90 (9.0, 65)	
Brake System :				
Rear master cylinder mounting bolt	2	6	12 (1.2, 9)	
Rear brake master cylinder reservoir bolt	1	6	9 (0.9, 7)	NOTE 2
Front brake caliper bracket bolt	4	8	27 (2.7, 20)	
Brake hose bolt	6	10	35 (3.5, 25)	
Front master cylinder holder bolt	2	6	12 (1.2, 9)	
Brake lever pirot nut	1	6	6 (0.6, 4)	
Breeder screw	3	8	6 (0.6, 4.3)	
Brake pipe three way joint bolt	1	6	10 (1.0, 7)	
Brake pad pin	5	8	18 (1.8, 13)	
Brake pad pin plug	5	8	3 (0.3, 2.2)	NOTE 6
Brake pipe flare nut	2	10	17 (1.7, 12)	NOTE 2
Caliper bracket pin bolt	3	5	13 (1.3, 9)	NOTE 2
Front brake caliper pin bolt	2	8	23 (2.3, 17)	
Rear brake caliper bracket bolt	1	10	23 (2.3, 17)	
Rear brake caliper pin bolt	1	10	28 (2.8, 20)	

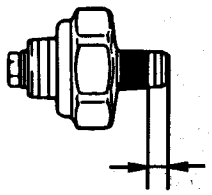
Tools

• The newly designed tools are indicated with * mark in the list.

Description	Tool Number	Applicability	Refer to Section(s)
Oil pressure gauge	07506-3000000		4
Oil pressure gauge attachment	07510-4220100		4
Oil filter wrench	07HAA-PJ70100		4
Float level gauge	07401-0010000		5
Pilot screw wrench	07908-4730001		5
Valve spring compressor	07757-0010000		8
Valve compressor attachment	07959-KM30101		8
*Tappet hole protector	07HMG-MR70002		8
Valve guide driver	07GMD-KT70100		8
*Valve guide reamer, 4 mm	07MMH-MV90100		8
Valve seat cutter 24.5 mm(EX 45°)	07780-0010100		8
Valve seat cutter 27.5 mm(IN 45°)	07780-0010200		8
Valve seat cutter 24 mm(EX 32°)	07780-0012500		8
*Valve seat cutter 27mm(IN 32°)	07780-0013300		8
Valve seat cutter 22 mm(EX 60°)	07780-0014202		8
Valve seat cutter 26 mm(IN 60°)	07780-0014502		8
Cutter holder, 4.0 mm	07781-0010500		8
Clutch center holder	07JMB-MN50300		9
Lock nut wrench, 17×27 mm	07716-0020300		9
Extension bar	07716-0020500		9, 12
Pilot, 12 mm	07746-0040200		9
Attachment, 32×35 mm	07746-0010100		9, 13
Attachment, 28×30 mm	07949-1870100		9, 13
Inner driver C	07746-0030100		11
Attachment, 25mm I.D.	07746-0030200		11
Bearing remover shaft	07746-0050100		12, 13
Bearing remover head, 20 mm	07746-0050600		12, 13
Attachment, 42×47 mm	07746-0010300		12, 13
Attachment, 52×55 mm	07746-0010400		12
Pilot, 15 mm	07746-0040300		12, 13
Pilot, 20 mm	07746-0040500		12, 13
Fork seal driver	07947-KA50100		12
Fork seal driver attachment	07947-KF00100		12
Lock nut wrench, 30×32 mm	07716-0020400		12
Steering stem socket	07916-3710100		12
Ball race remover	07953-MJ10000		12
-driver attachment	07953-MJ10100		12
-driver handle	07953-MJ10200		12
Ball race remover	07946-3710500		12
Driver attachment	07945-3330300		13
Pilot, 22 mm	07746-0041000		13
Attachment, 24 x 26mm	07746-0010700		13
Pilot, 17mm	07746-0040400		13
Oil seal driver attachment	07965-KE80200		13
Driver shaft	07946-MJ00100		13
Needle bearing remover	07GMD-KT70200		13
Pin driver	07GMD-KT80100		13
Snap ring pliers(IN)	07914-3230001		14
Bearing remover set	07936-KC10000		14
-bearing remover head, 15mm	07936-KC-10200		14
-bearing handle	07936-KC10100		14
-remover sliding weight	07741-0010201		14
Digital multitester(KOWA)	07411-0020000		15, 16, 17, 18
Peak votage adaptor	07HGJ-0020100		16
or Imrie dianostic tester	Model 625		15, 16, 17, 18
Analogue multitester(SANWA)	07308-0020001		15, 16, 17, 18
Analogue multitester(KOWA)	TH-5H		
Flywheel holder	07925-ME90000		15, 16
Rotor puller	07733-0020001		15
Flywheel holder	07725-0040000		15
Torx bit (T30)	07703-0010200		17
Torx bit (T40)	07703-0010100		18

Lubrication & Seal Points

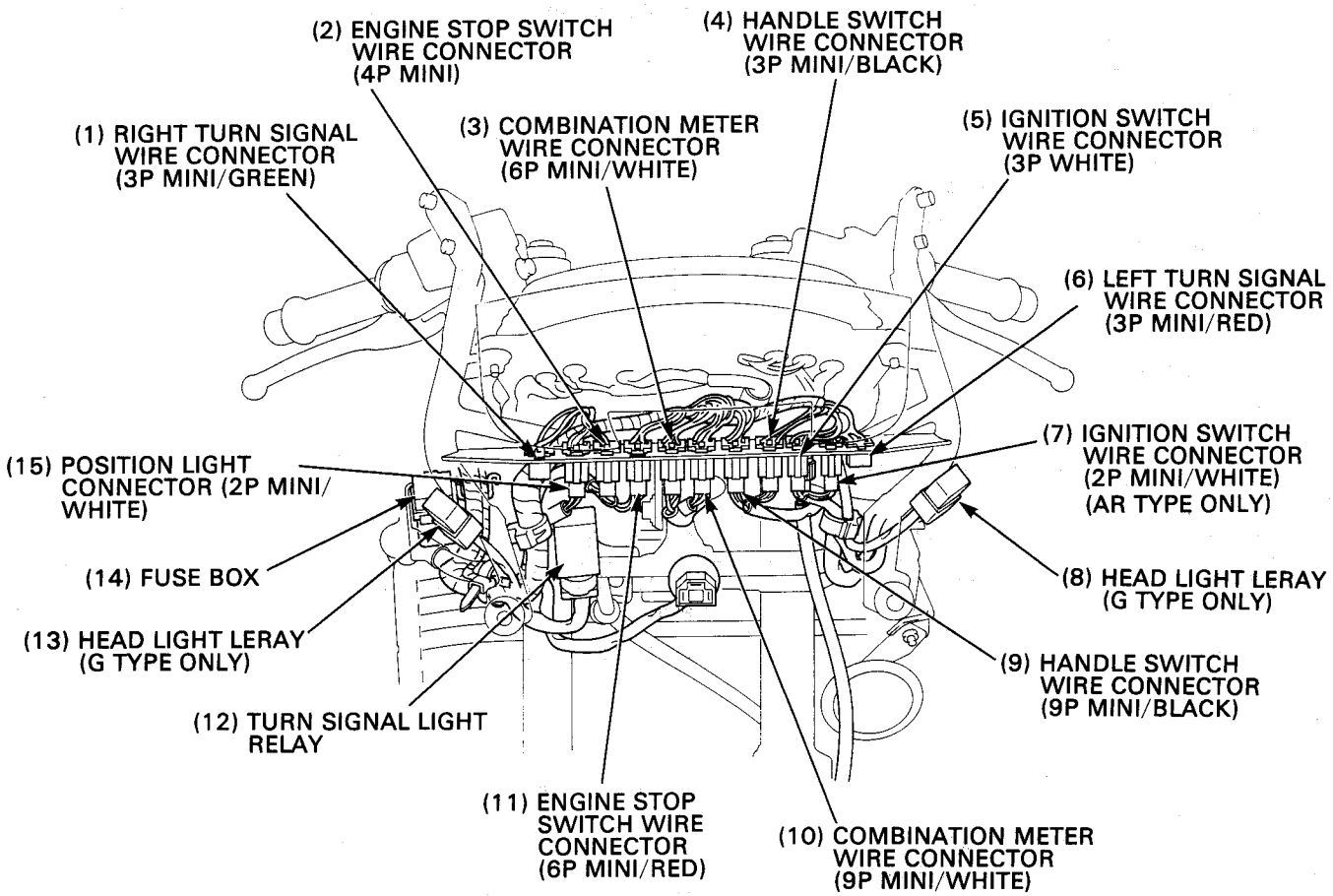
Engine

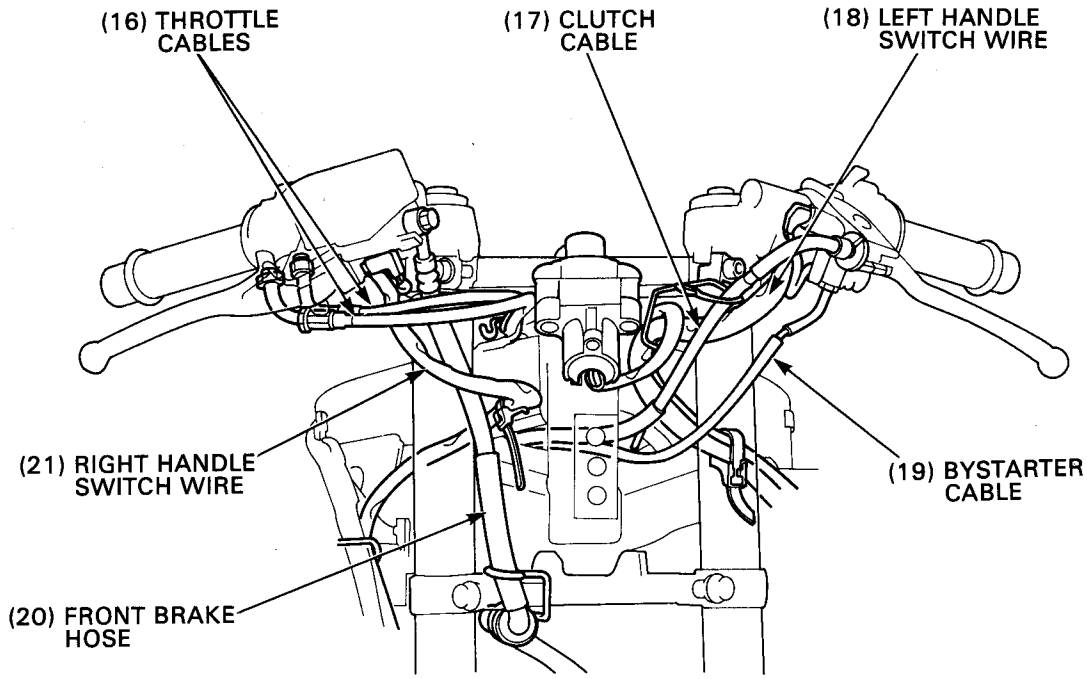
Location	Material	Remarks
Cylinder head semicircular cut-out Crankcase mating surface	Liquid sealant	Wipe the excess of sealant
Camshaft lobes/journals Valve lifter sliding surfaces Valve stem (valve guide sliding surface) Connecting rod small end inner surface Main journal bearings Connecting rod bearings M3/4. C5, C6 gear shift fork grooves	Molybdenum disulfide oil	
Oil pressure switch threads  Alternator grommet Pulse generator grommet Pulse generator rotor cover bolt threads (Marked by "△" mark) Thermosensor threads	Sealant	
Cylinder head cover breather plate bolt threads Cam sprocket bolt threads Oil pump driven sprocket bolt threads Shift drum bearing set plate bolt threads Starter clutch outer bolt threads Countershaft bearing set plate threads	Locking agent	Clean and apply to the threads
Cylinder head bolt threads and seating surface Clutch outer inner surface Starter clutch sliding surface Piston sliding surface, piston ring grooves, pin bore Piston pin surface Piston rings Lower crankcase bolt threads and seating surface (main journal tightening) Connecting rod cap nut threads and seating surface Cam chain tensioner collar sliding surface Cam chain tensioner and slipper surface Gear teeth and rotating surface Oil seal lip (without dust lip) O-rings Bearings	Engine oil	
Clutch lifter piece Oil seal lip (with dust lip)	Multipurpose grease	

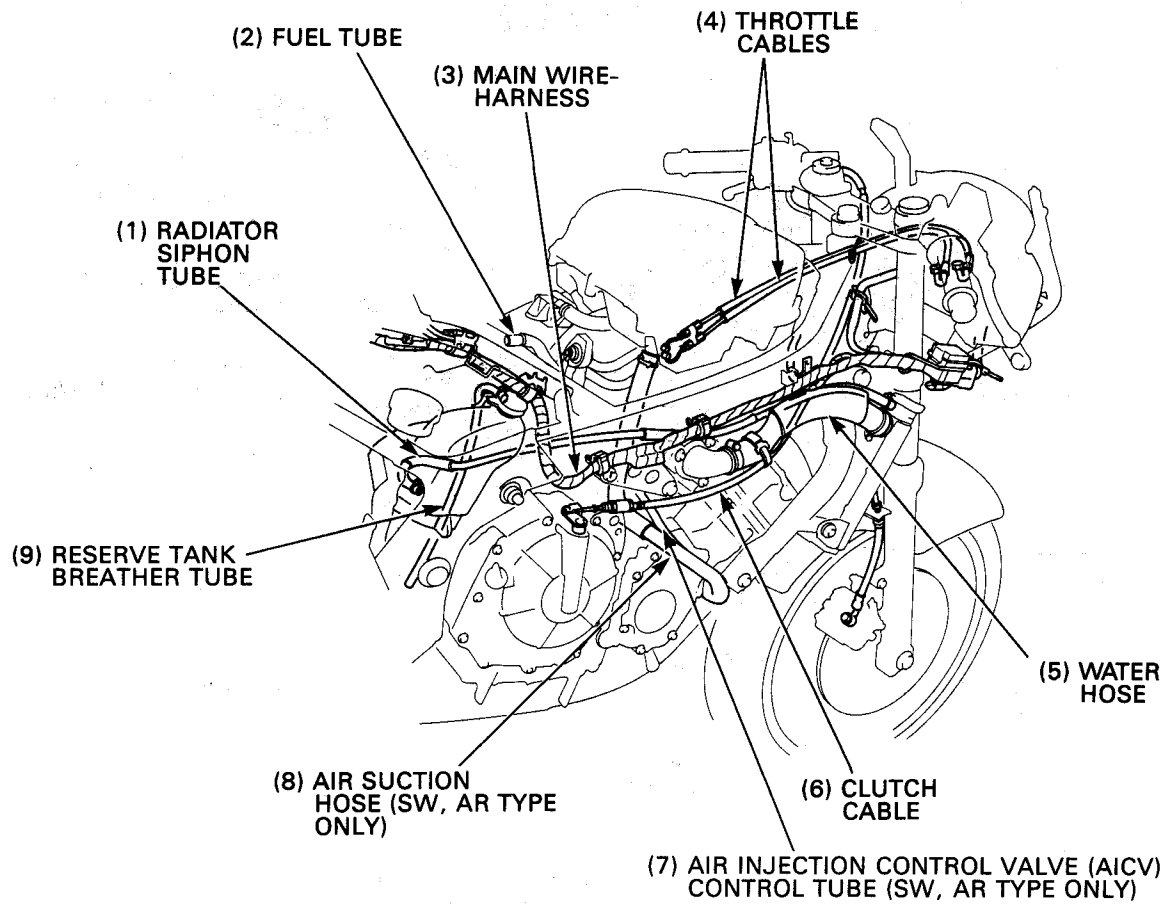
Frame

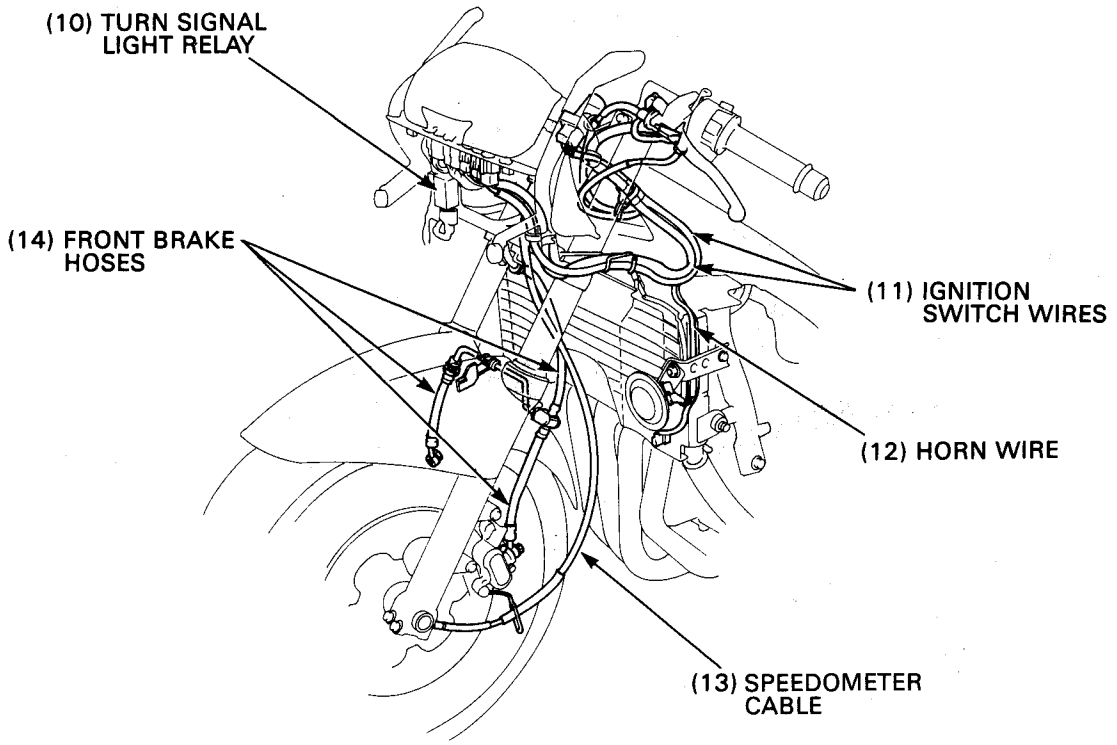
Location	Material	Remarks
Side stand pivot bolt sliding surface Main stand pivot bolt sliding surface Gearshift pedal pivot Brake pedal pivot Throttle grip sliding surface Wheel dust seal lips Swingarm pivot radial ball bearing Swingarm pivot distance collar outer surface Throttle cable end	Multipurpose grease	
Swingarm pivot dust seal lips Swingarm pivot needle bearing Shock arm pivot dust seal lips Shock arm pivot needle bearing Shock link pivot dust seal lips Shock link pivot needle bearing Rear shock absorber lower mount dust seal lips Rear shock absorber lower mount needle bearing	Molybdenum disulfide grease	
Driven sprocket nut threads and seating surface	Engine oil	
Handlebar grip rubber inner surface	Honda Bond A or an equivalent	
Brake reservoir Master piston/piston seals Caliper piston Caliper piston seals	DOT 4 brake fluid	
Brake caliper boots inside Master cylinder rubber boots inside Rear master cylinder push rod top Rear brake caliper pin bolt sliding surface	Silicone grease	
Fuel valve lever boss Caliper bracket/caliper pin bolt/socket bolt threads Caliper bracket bolt threads Ignition switch bolt threads Fork socket bolt threads Handlebar weight screw threads Drive chain slider screw threads	Locking agent	Clean and apply to the threads
Air cleaner case inlet tube joint	Sealant	

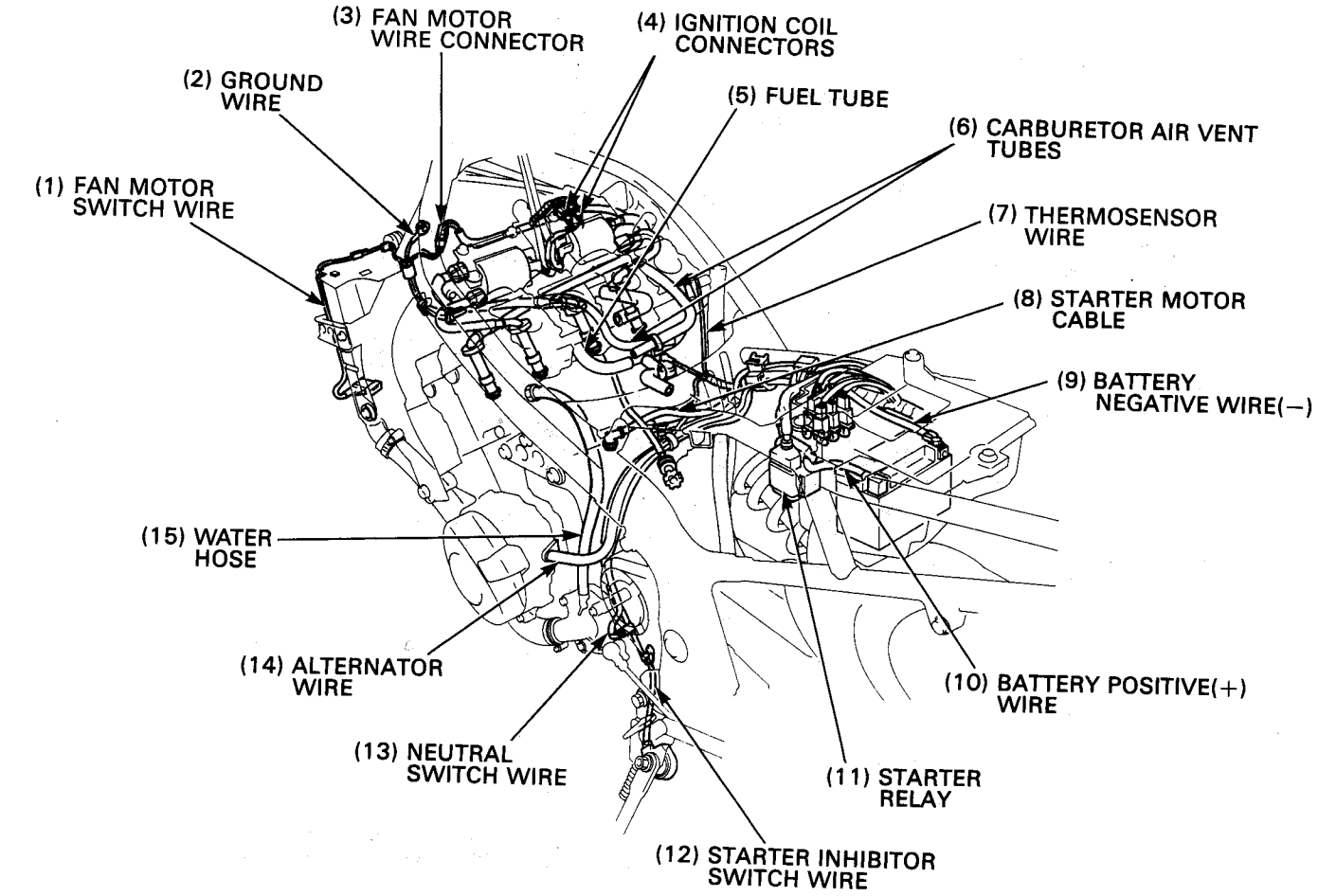
Wiring Diagram

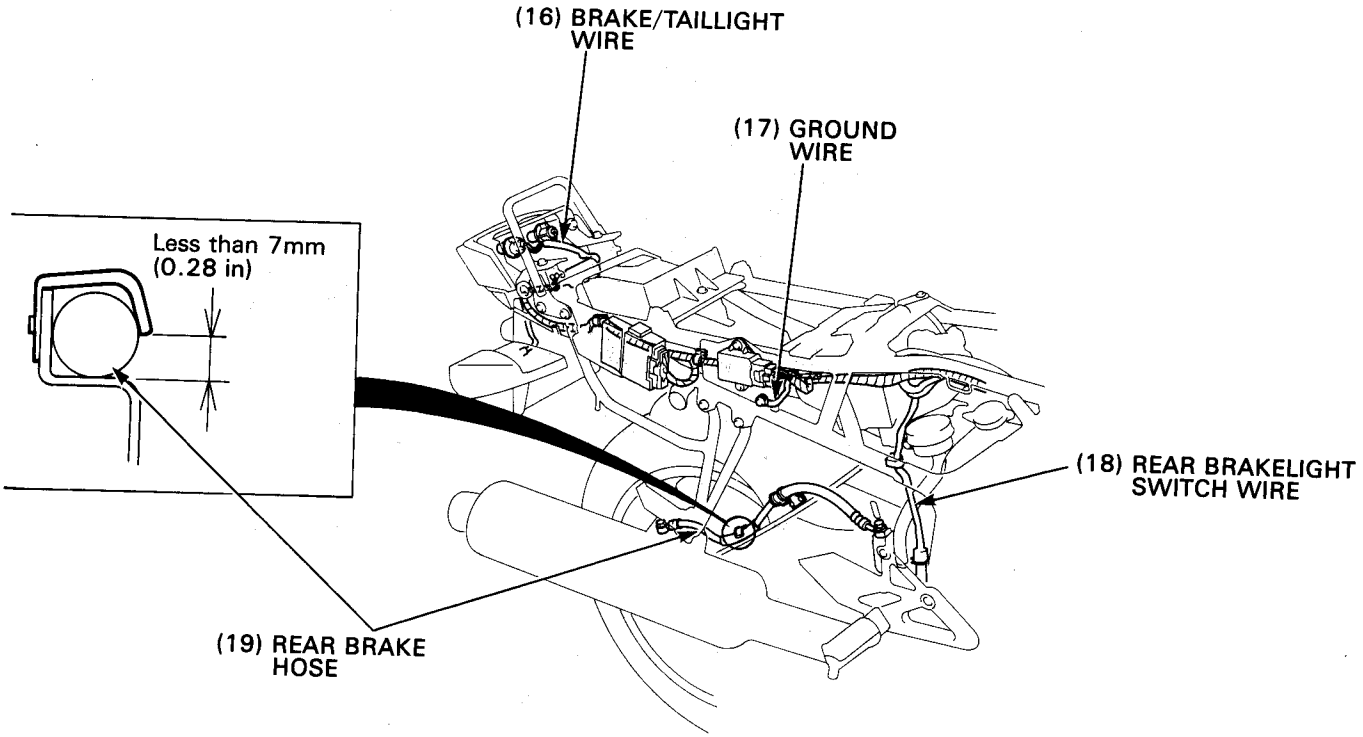





(2) FUEL TUBE
(4) THROTTLE CABLES
(3) MAIN WIRE-HARNESS
(1) RADIATOR SIPHON TUBE
(9) RESERVE TANK BREATHER TUBE
(5) WATER HOSE
(8) AIR SUCTION HOSE (SW, AR TYPE ONLY)
(6) CLUTCH CABLE
(7) AIR INJECTION CONTROL VALVE (AICV) CONTROL TUBE (SW, AR TYPE ONLY)


(10) TURN SIGNAL LIGHT RELAY
(14) FRONT BRAKE HOSES
(11) IGNITION SWITCH WIRES
(12) HORN WIRE
(13) SPEEDOMETER CABLE


(3) FAN MOTOR WIRE CONNECTOR
(4) IGNITION COIL CONNECTORS
(2) GROUND WIRE
(5) FUEL TUBE
(6) CARBURETOR AIR VENT TUBES
(1) FAN MOTOR SWITCH WIRE
(7) THERMOSENSOR WIRE
(8) STARTER MOTOR CABLE
(9) BATTERY NEGATIVE WIRE(−)
(15) WATER HOSE
(14) ALTERNATOR WIRE
(10) BATTERY POSITIVE(+) WIRE
(13) NEUTRAL SWITCH WIRE
(11) STARTER RELAY
(12) STARTER INHIBITOR SWITCH WIRE


(16) BRAKE/TAILLIGHT WIRE
(17) GROUND WIRE
Less than 7mm (0.28 in)
(18) REAR BRAKELIGHT SWITCH WIRE
(19) REAR BRAKE HOSE

2. Frame/Body Panels/Exhaust System

Service Information	2-1	Front Cowl Disassembly/Assembly	2-6
Troubleshooting	2-1	Rear Fender B Removal/Installation	2-7
Side Cover Removal/Installation	2-2	Tail Cowl Removal/Installation	2-7
Seat Removal/Installation	2-2	Rear Fender A Removal/Installation	2-8
Side Fairing Removal/Installation	2-3	Exhaust System Removal/Installation	2-10
Front Cowl Removal/Installation	2-4	Fuel Tank Removal/Installation	2-11

Service Information

⚠ WARNING

- **Gasoline is extremely flammable and explosive under certain condition.**
- **Serious burns may result if the exhaust system is not allowed to cool before components are removed or serviced.**

- Work in a well ventilated area. Smoking or allowing flames or sparks in the working area or where gasoline is stored can cause a fire or explosion.
- This section covers removal and installation of the frame body panels, fuel tank and exhaust system.
- Frame body panel installation is in the reverse order of removal, unless noted otherwise.
  When removing the cover, be careful not to damage any tab or groove of a cover.
- Always replace the exhaust pipe gaskets when removing the exhaust pipe from the engine.
- When installing the exhaust pipe, install all the fasteners loosely. Always tighten the exhaust clamps first, then tighten the mounting fasteners. If you tighten the mounting fasteners first, the exhaust pipe may not seat properly.
- Always inspect the exhaust system for leaks after installation.

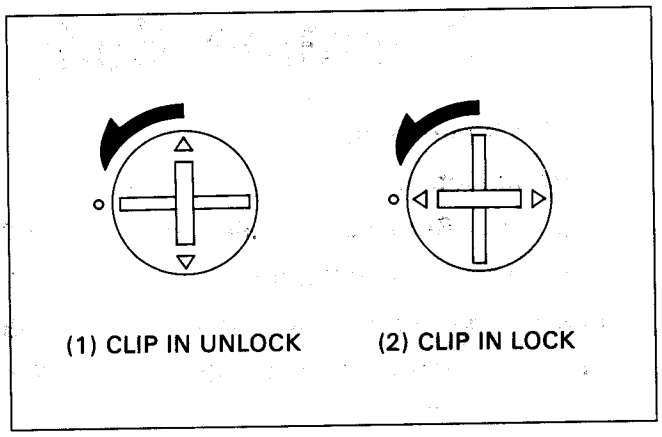
Troubleshooting

Excessive Exhaust Noise
- Broken exhaust system
- Exhaust gas leak

Poor Performance
- Deformed exhaust system
- Exhaust gas leak
- Cologged muffler

Side Cover Removal/Installation

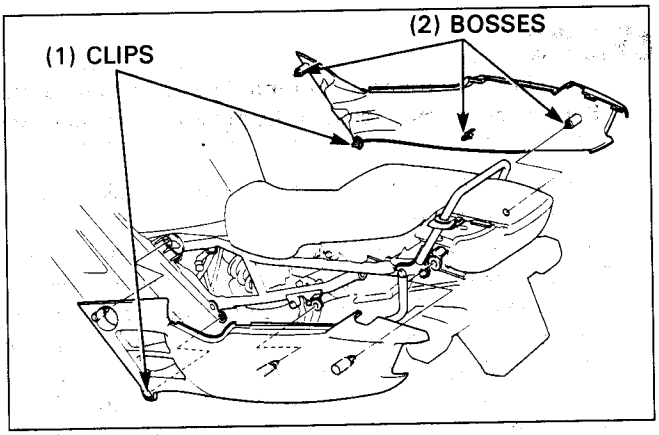
Unlock the clips by aligning the long slit with the punch mark.



Remove the side cover by releasing the bosses on the cover from the grommets.

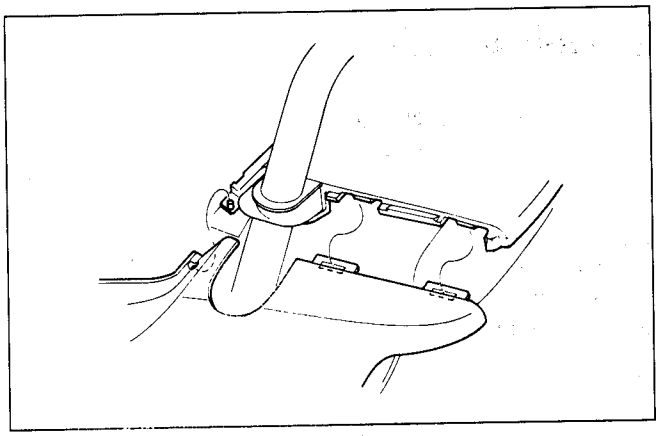
CAUTION

- **Be careful not to break the pins, tabs and slits of the side cover and tail cowl when removing the side cover.**



Install the side cover aligning its bosses with the grommets and engage the tabs with the slits, and pins with the holes securely as shown.

Lock the clip by aligning the "△" mark with the punch mark. Do the same on the other side.

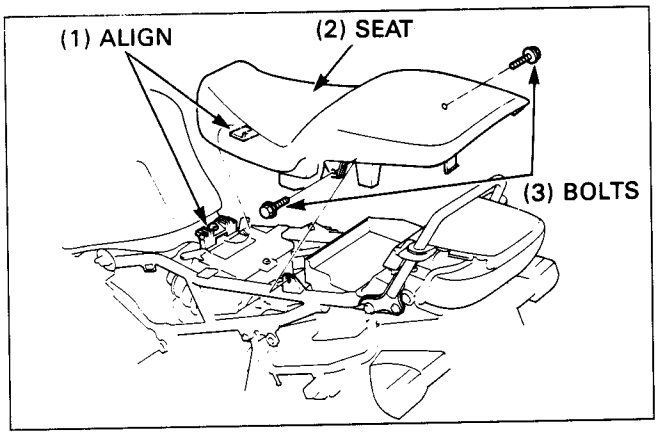


Seat Removal/Installation

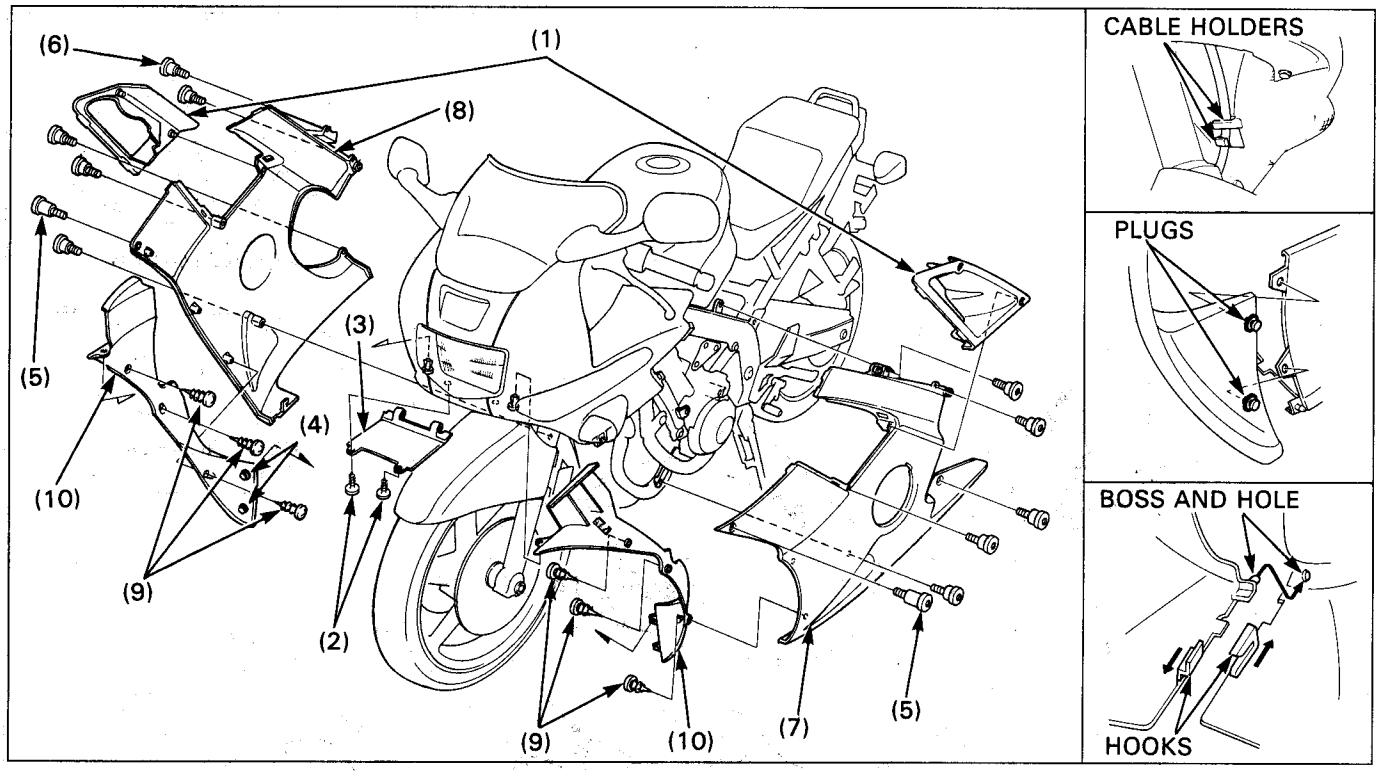
Remove the side covers.

Remove the seat by removing the bolts and sliding the seat back.

Install the seat in the reverse order of removal and install the side covers.



Side Fairing Removal/Installation

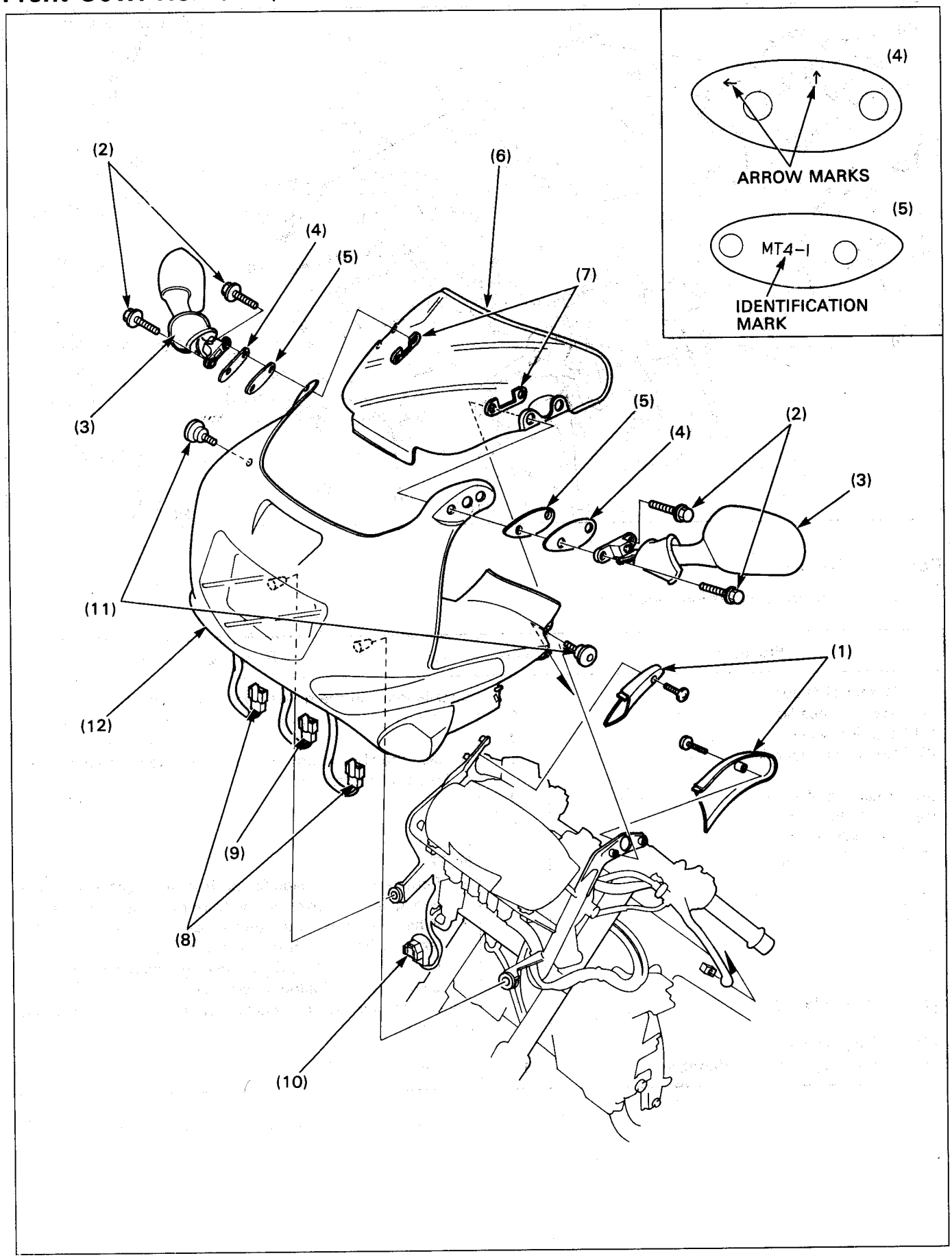


Requisite Service

- Side cover removal/installation(page 2-2)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Maintenance lid	2	
(2)	Tapping screw	2	
(3)	Headlight under lid	1	Release the claws from the front cowl stay. Be careful not to break off the claws.
(4)	Retaining plug	2	
(5)	Hex bolt(long)	2	
(6)	Hex bolt(short)	10	
(7)	Left side fairing	1	NOTE • Separrate the left side fairing from the right one by disengaging the hooks on the bottoms of the fairings. • When assembling the side fairings, align the boss on the left side fairing with the hole in the right one. • Left and right side fairings can be removed without removing the side fairing inner covers.
(8)	Right side fairing	1	Replace the speedometer cable from the cable holder on the inner cover.
(9)	Tapping screw	6	
(10)	Side fairing inner cover(right/left)	1/1	

Front Cowl Removal/Installation

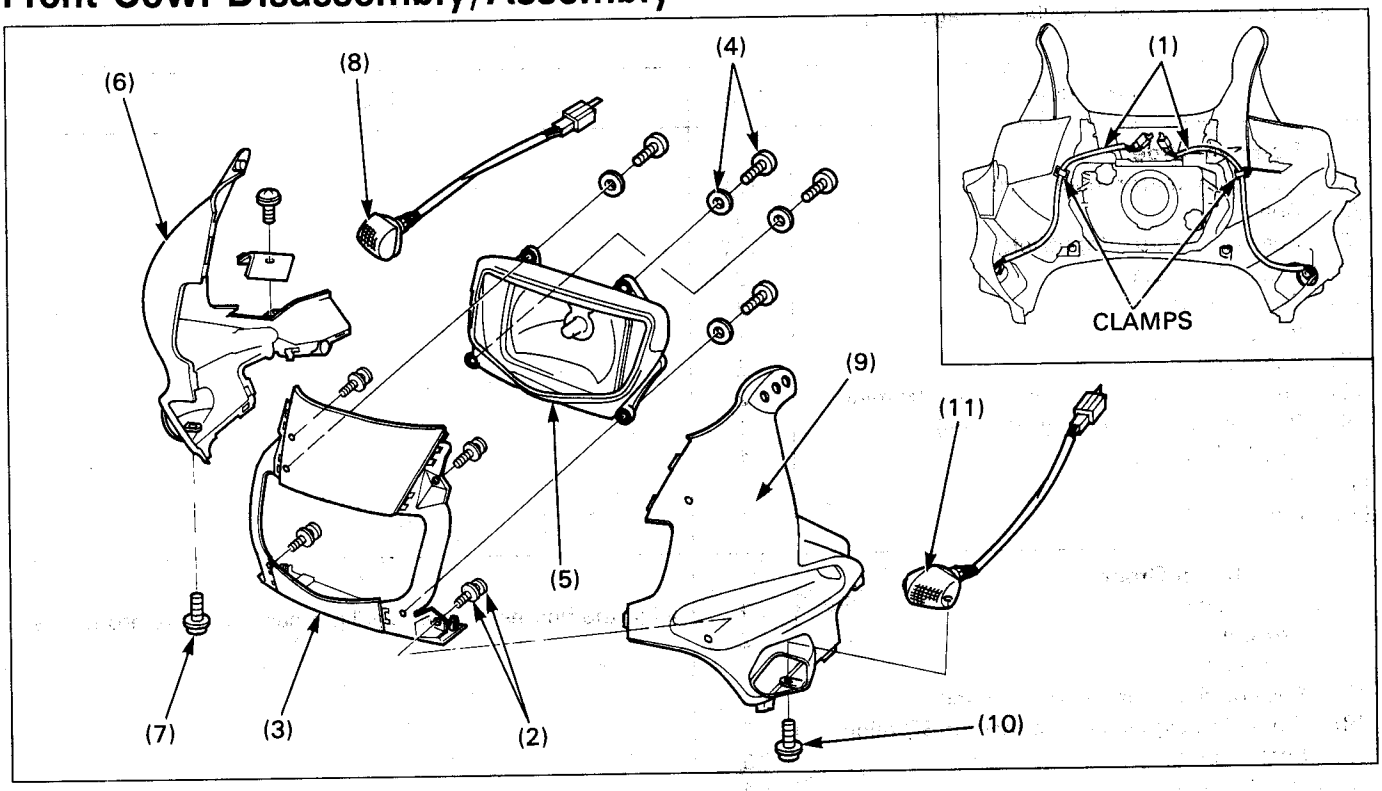


Requisite Service

- Side fairing removal/installation(page 2-3)

	Procedure	Q'ty	Remarks
	Removal Order		
(1)	Rear view mirror inner cover	1/1	
(2)	Bolt	4	
(3)	Rear view mirror (right/left)	1/1	
(4)	Seat rubber plate	2	
(5)	Seat rubber	2	
(6)	Wind screen	1	
(7)	Seat rubber	2	
(8)	Front turn signal light connector(3P mini)	2	
(9)	Position light connector(2P mini)	1	
(10)	Headlight socket	1	
(11)	Hex bolt	2	
(12)	Front cowl	1	
	Installation Order		
(12)	Front cowl	1	Align the bosses on the headlight case with the grommets.
(11)	Hex bolt	2	
(10)	Headlight socket	1	
(9)	Position light connector(2P mini)	1	
(8)	Front turn signal light connector(3P mini)	2	
(7)	Seat rubber	2	
(6)	Wind screen	1	
(5)	Seat rubber	2	Install the right seat rubber with the mark "MT4-R" facing in. Install the left seat rubber with the mark "MT4-L" facing in.
(4)	Seat rubber plate	2	Install the right plate with the marked side in and each arrow mark pointing forward and up. Install the left plate with the marked side out and each arrow mark pointing forward and up.
(3)	Rear view mirror(right/left)	1/1	
(2)	Bolt	4	
(1)	Rear view mirror inner cover	1/1	

Front Cowl Disassembly/Assembly



Requisite Service

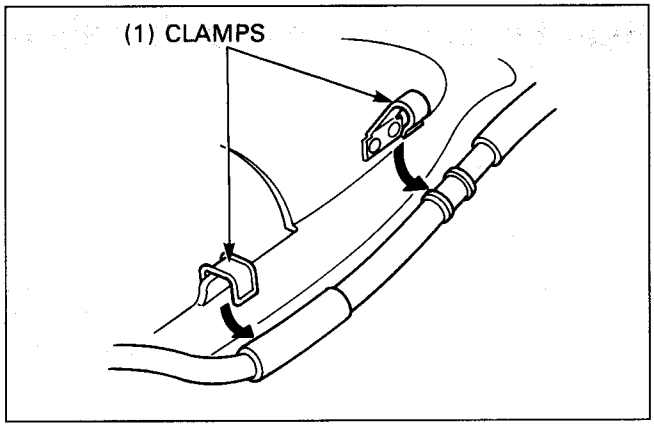
- Front cowl removal/installation(page 2-4)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Turn signal light wire	2	Release the wires from the carmps. After assembling the front cowl, route and clamp the wires properly.
(2)	Screw/washer	4/4	
(3)	Center front cowl	1	
(4)	-screw/washer	4/4	
(5)	-headlight assembly	1	
(6)	Right front cowl	1	
(7)	-screw	1	
(8)	-right turn signal light	1	
(9)	Left front cowl	1	
(10)	-screw	1	
(11)	-left turn signal light	1	

Rear Fender B Removal/Installation

Remove the screws and drive chain cover.

Release the brake hose from the clamps on the rear fender B.

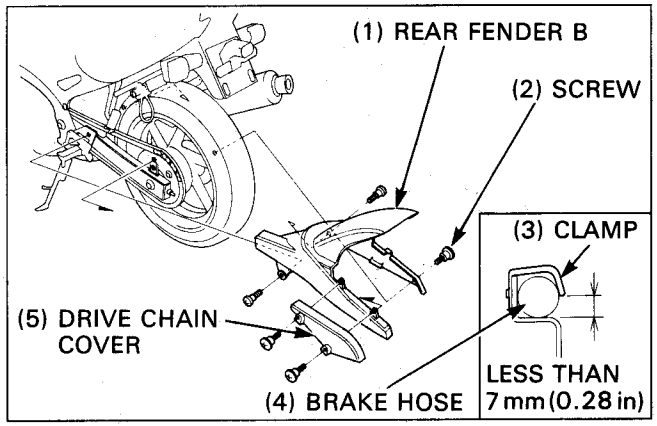


Remove the screws and remove the rear fender B.

Install the removed parts in the reverse order of removal.

NOTE

- After clamping the brake hose with rear clamp on the rear fender B, make sure the clamp opening is less than 7mm(0.28in).



Tail Cowl Removal/Installation

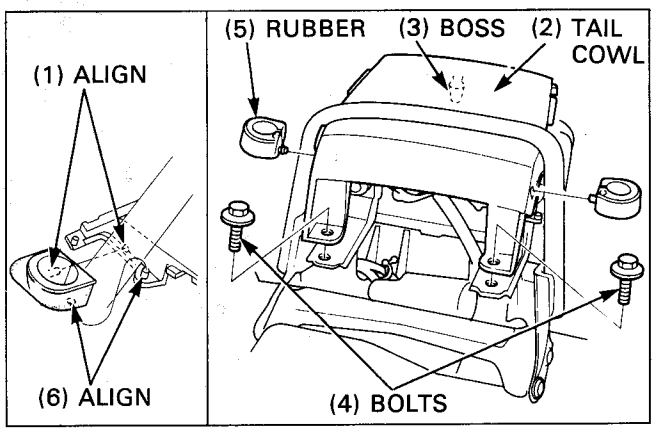
Remove the seat(page 2-2).

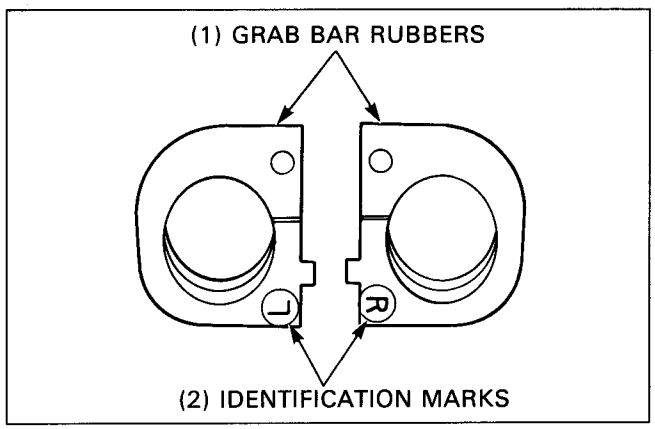
Remove the bolts and the tail cowl.

Install the tail cowl in the reverse order of removal.

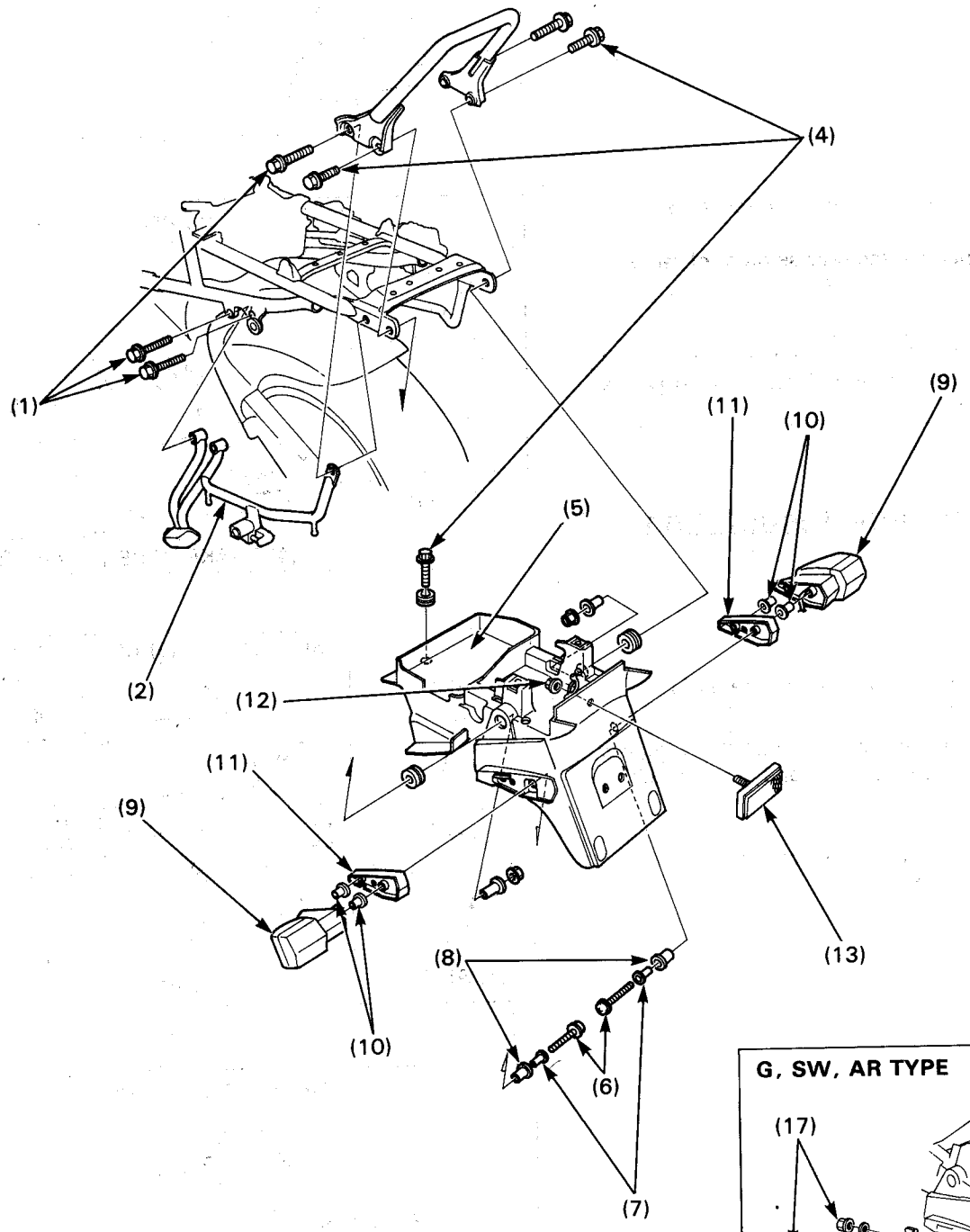
If you removed the grab bar rubbers, install them aligning the bosses and holes of the tail cowl and grab bar rubber each other.

Each grab bar rubber has the identification mark; "R" is for right side and "L" is for the left.





Rear Fender A Removal/Installtion

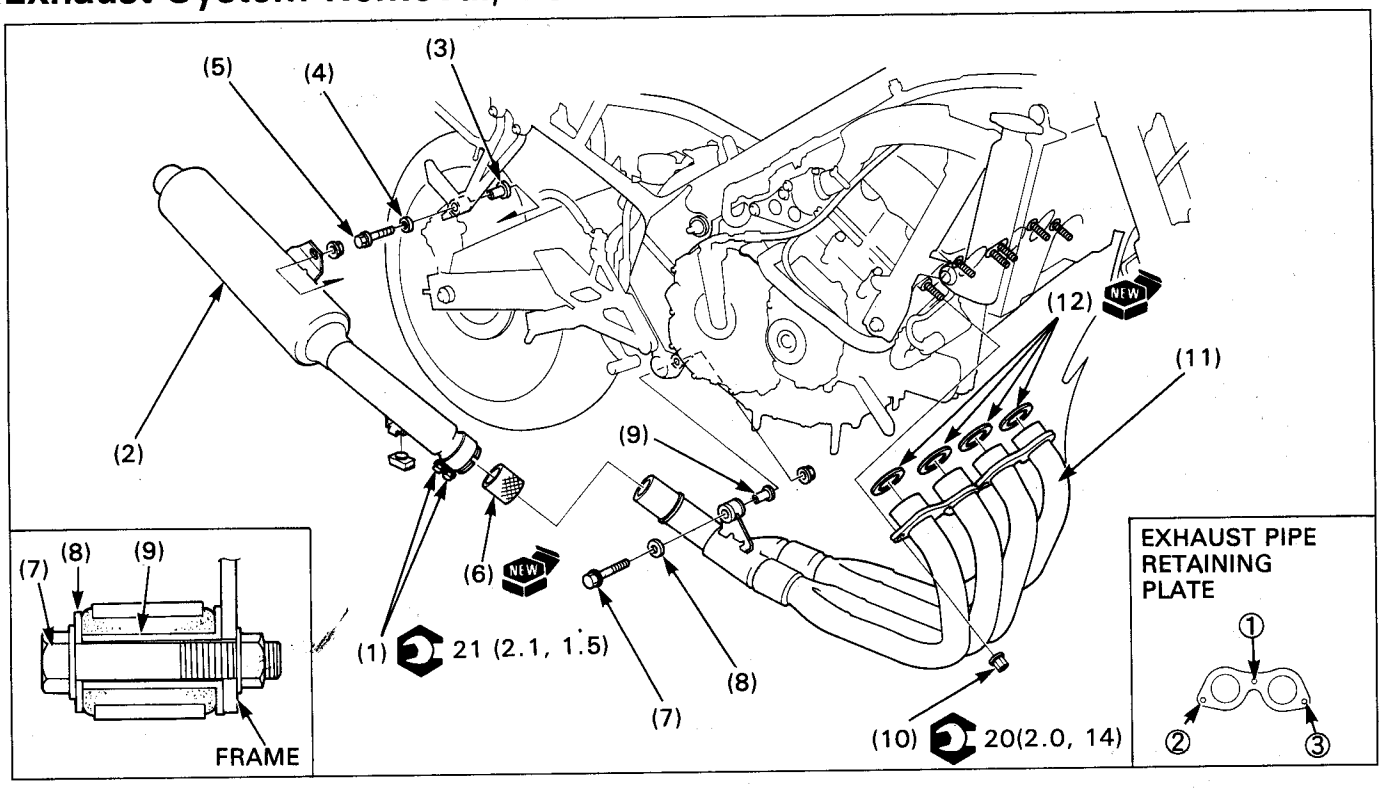


Requisite Service

- Seat removal/installation(page 2-2)
- Tail cowl removal/installation(page 2-7)

	Procedure	Q'ty	Remarks
	Removal Order		
(1)	Bolt	3	
(2)	Left pillion step stay	1	
(3)	Turn signal light wire connector	2	
(4)	Bolt	3	
(5)	Rear fender A	1	
(6)	-screw	4	
(7)	-flange collar	4	
(8)	-seat rubber	4	
(9)	-rear turn signal light (right/left)	1/1	
(10)	-flange collar	4	
(11)	-turn signal light base (right/left)	1/1	
(12)	-nut	1	
(13)	-reflector	1	
(14)	Screw/washer	2/2	G, SW, AR type
(15)	Collar	2	
(16)	Washer	2	
(17)	Nut	2	
(18)	Rear fender C	1	
	Installation Order		
(18)	Rear fender C	1	G, SW, AR type
(17)	Nut	2	
(16)	Washer	2	
(15)	Collar	2	
(14)	Screw/washer	2/2	
(13)	-retlector	1	
(12)	-nut	1	
(11)	-turn signal light base (right/left)	1/1	
(10)	-flange collar	4	
(9)	-rear turn signal light (right/left)	1/1	
(8)	-seat rubber	4	
(7)	-flange collar	4	
(6)	-screw	4	
(5)	Rear fender A	1	
(4)	Bolt	3	
(3)	Turn signal light wire connector	2	
(2)	Left pillion step stay	1	
(1)	Bolt	3	

Exhaust System Removal/Installation



⚠ WARNING

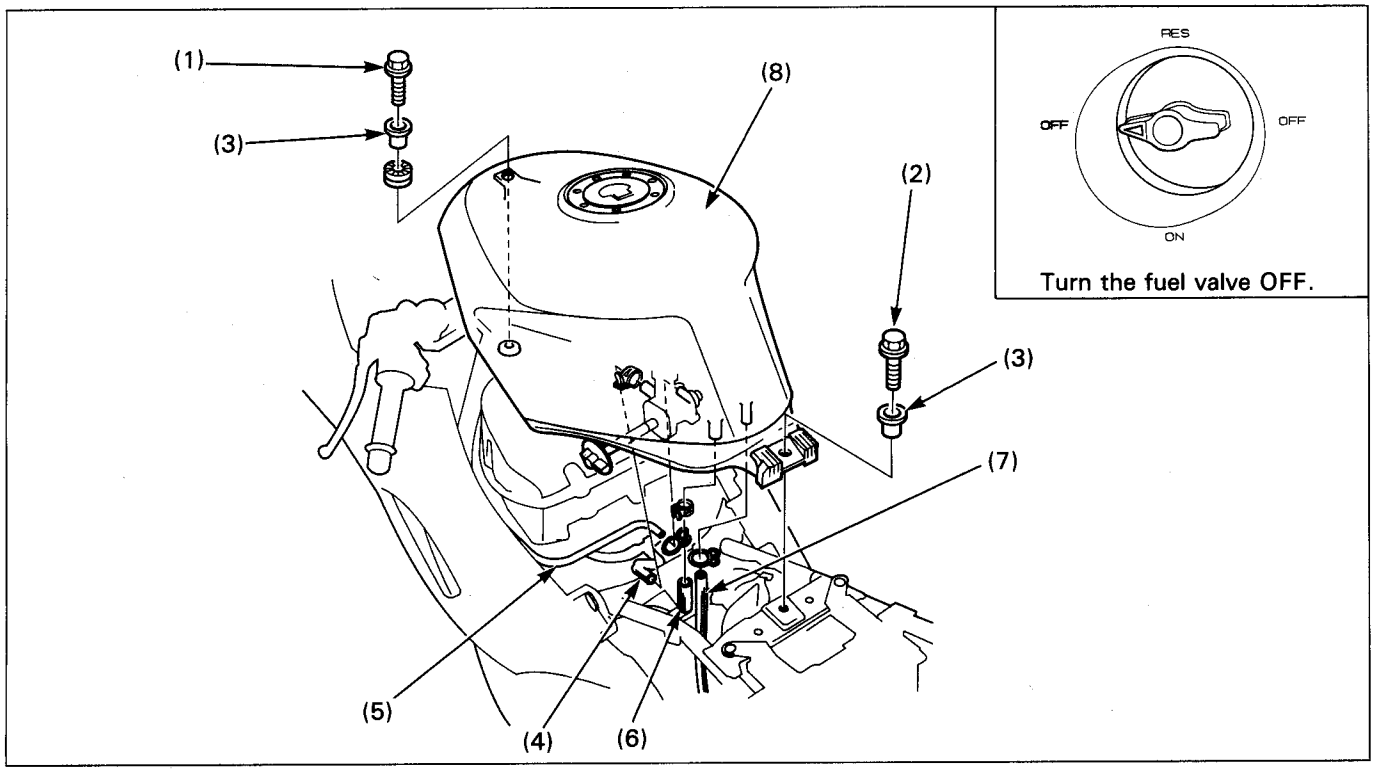
- **Do not service the exhaust system while it is hot.**

Requisite Service

- Side fairing removal/installation(page 2-3)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Muffler band bolt	2	Only loosen.
(2)	Muffler mounting bolt	1	
(3)	Flange collar	1	
(4)	Washer	1	
(5)	Muffler	1	
(6)	Muffler gasket	1	
(7)	Exhaust pipe mounting bolt	1	
(8)	Washer	1	
(9)	Flange collar	1	NOTE · Install the flange collar with the flange side facing the frame
(10)	Exhaust pipe	6	NOTE · Tighten the joint nuts in the order as shown.
(11)	Exhaust pipe	1	
(12)	Exhaust pipe gasket	4	

Fuel Tank Removal/Installation



⚠WARNING

- **Gasoline is extremely flammable and is explosive under certain condition.**

Requisite Service

- Seat removal/installation(page 2-2)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Fuel tank mounting bolt(6mm)	1	
(2)	Fuel tank mounting bolt(8mm)	1	
(3)	Flange collar	2	
(4)	Fuel tube	1	Before disconnecting, turn the fuel valve OFF.
(5)	Auto fuel valve vacuum tube	1	
(6)	Fuel tank drain tube	1	
(7)	Fuel tank vent tube	1	
(8)	Fuel tank	1	

3. Maintenance

Service Information	3-1	Spark Plug	3-5
Service Access Guide	3-2	Valve Clearance	3-5
Maintenance Schedule	3-4	Carburetor Synchronization	3-9
Air Cleaner	3-5	Side Stand	3-10

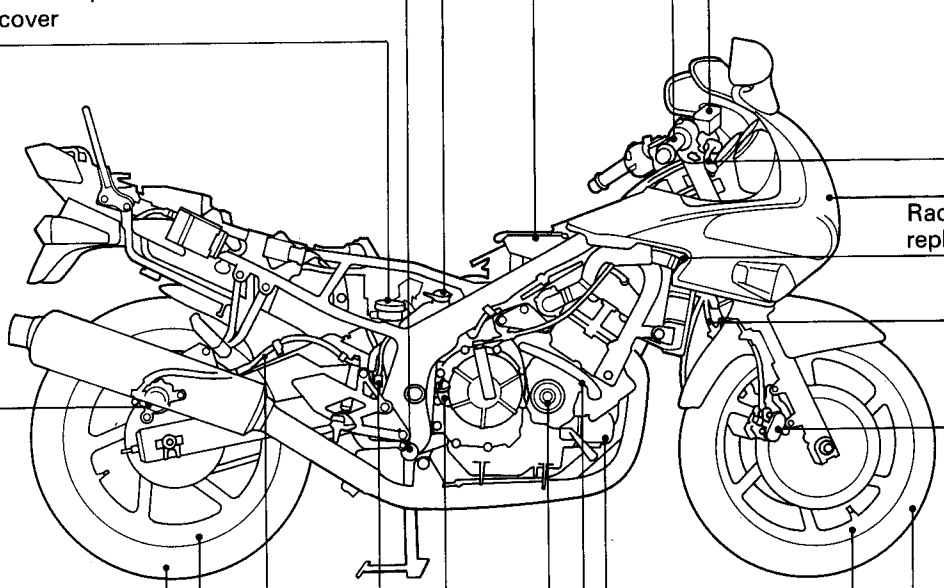
Service Information

- Refer to Common Service Manual tor service procedures on items not included in this manual.
- Refer to the specifications (Section 1) for maintenance service data.

Service Access Guide

- The following shows the locations of the parts that must be removed for the maintenance items listed below. Refer to the Common Service Manual for items not included in this manual.
- Refer to section 2(Frame/body panels/exhaust system), for the parts that must be removed for service.
  For example : AIR CLEANER(Contamination, clogging, replacement) : Parts
  - Side cover
  - Fuel tank

  ——— The parts must be removed for service.



Air Cleaner
(Contamination, clogging, replacement page 3-5)
• Fuel tank

Reserve Tank Cap (Coolant filling)
• Right side cover

Throttle Grip (Operation, free play)

Master Cylinder
(Level check, fluid replacement)

Brake Pedal (Air bubbles in system)

Brake Reservoir
(Level check, fluid replacement)
• Right side cover

Brake Lever
(Air bubbles in system)

Headlight (Aim)

Radiator Filler Cap (Collant replacement) • Front cowl

Brake Hose (Leakage, detorioration, damage)

Caliper
(Pad near)

Caliper
(Pad Wear)

Tire
(Wear, damage, pressure)

Tire (Wear, damage, pressure)

Oil Filter
(Replacement)
• Right side fairing

Wheel
(Damage, runout, corrosion)

Wheel (Damage, runout, corrosion)

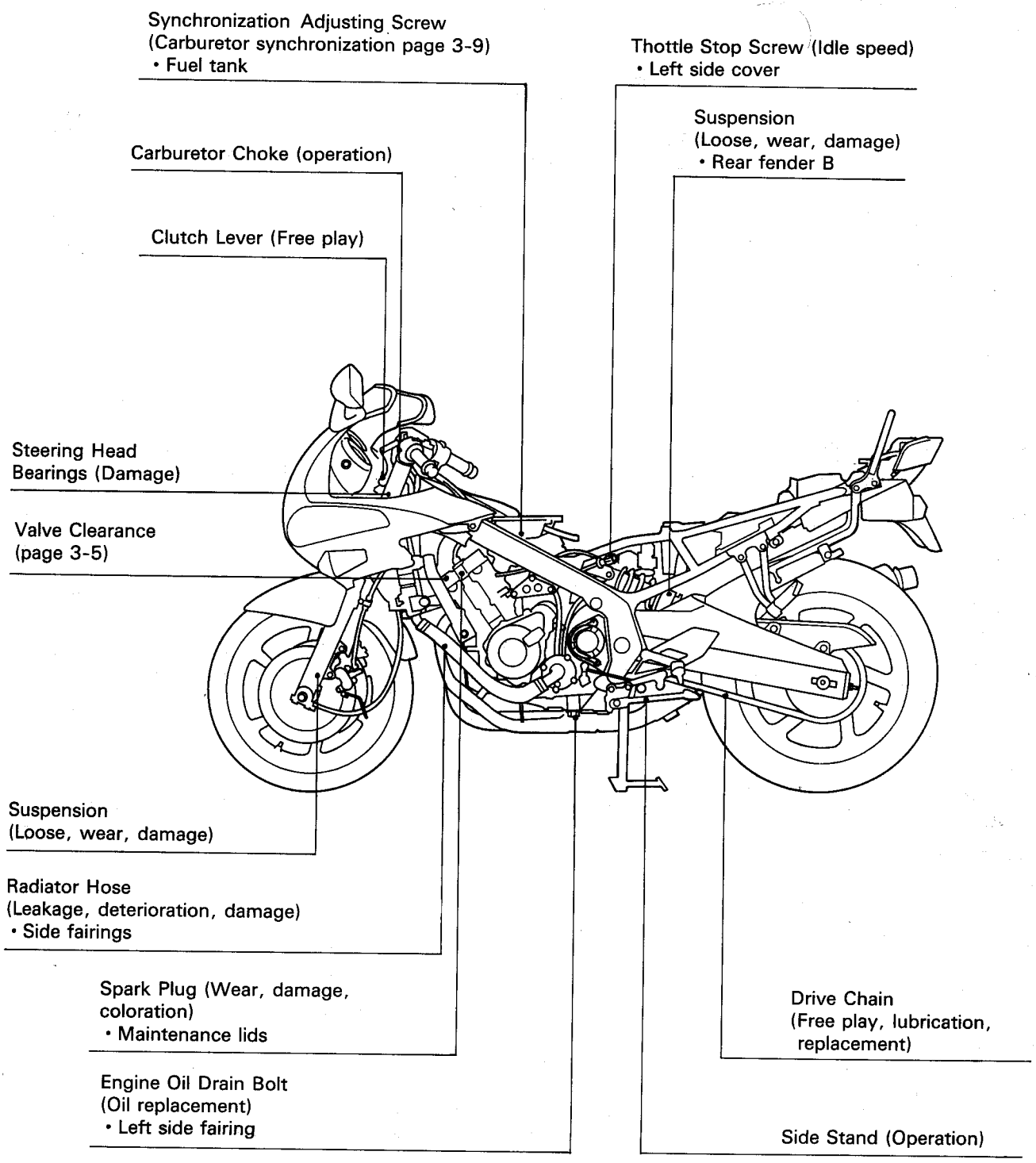
Secondary Air Supply System (SW,AR type)
(Air leaks, deterioration, damage)
• Right side fairing

Brake Hose
(Leakage, deterioration, damage)

Puls Generator Rotor Cover Cap
(Valve clearance page 3-5)
• Right side fairing

Brakelight Switch (Operation)

Oil Filler Cap/Level Gauge
(Level check, replacement)


Synchronization Adjusting Screw
(Carburetor synchronization page 3-9)
• Fuel tank
Thottle Stop Screw (Idle speed)
• Left side cover
Suspension
(Loose, wear, damage)
• Rear fender B
Carburetor Choke (operation)
Clutch Lever (Free play)
Steering Head
Bearings (Damage)
Valve Clearance
(page 3-5)
Suspension
(Loose, wear, damage)
Radiator Hose
(Leakage, deterioration, damage)
• Side fairings
Spark Plug (Wear, damage,
coloration)
• Maintenance lids
Drive Chain
(Free play, lubrication,
replacement)
Engine Oil Drain Bolt
(Oil replacement)
• Left side fairing
Side Stand (Operation)

Maintenance Schedule

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.
R : Replace, C : Clean, L : Lubricate, A : Adjust
The following items require some mechanical knowledge. Certain items (Particularly those marked * and * *) may require more technical information and tools. Consult their authorized Honda dealer.

	Item / Frequency	Whichever comes first ➡ / Note ⬇	Odometer Reading (Note 1)								Refer to page
			x 1,000 km	1	6	12	18	24	30	36	
			x 1,000 mi	0.6	4	8	12	16	20	24	
			Month		6	12	18	24	30	36	
*	Fuel Line					I		I		I	Note 5
*	Throttle Operation					I		I		I	Note 5
*	Carburetor Choke					I		I		I	Note 5
	Air Cleaner	Note 2					R			R	3-5
	Spark Plug					I		R		I	3-5
*	Valve Clearance			I				I			3-5
	Engine Oil			R		R		R		R	Note 5
	Engine Oil Filter			R		R		R		R	Note 5
*	Carburetor Synchronization					I		I		I	3-9
*	Carburetor Idle Speed			I	I	I	I	I	I	I	Note 5
	Radiator Coolant	Note 3				I		I		R	Note 5
*	Cooling System					I		I		I	Note 5
*	Secondary Air Supply System	Note 4				I		I		I	Note 5
	Drive Chain			Every 1,000 km (600 mi) I, L							Note 5
	Drive Chain Slider					I		I		I	Note 5
	Brake Fluid	Note 3			I	I	R	I	I	R	Note 5
	Brake Pad Wear				I	I	I	I	I	I	Note 5
	Brake System			I		I		I		I	Note 5
*	Brakelight Switch					I		I		I	Note 5
*	Headlight Aim					I		I		I	Note 5
	Clutch System			I	I	I	I	I	I	I	Note 5
	Side Stand					I		I		I	3-10
*	Suspension					I		I		I	Note 5
*	Nuts, Bolts, Fasteners			I		I		I		I	Note 5
**	Wheels/Tires					I		I		I	Note 5
**	Steering Head Bearings			I		I		I		I	Note 5

* Should be serviced by an authorized Honda dealer, unless the owner has the proper tools and service deta and is mechanically qualified.

**In the interest of the safety, we recommended these items be serviced only by an authorized Honda 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. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.
4. Switzerland and Austria type only.
5. Refer to Common Service Manual.

Air Cleaner

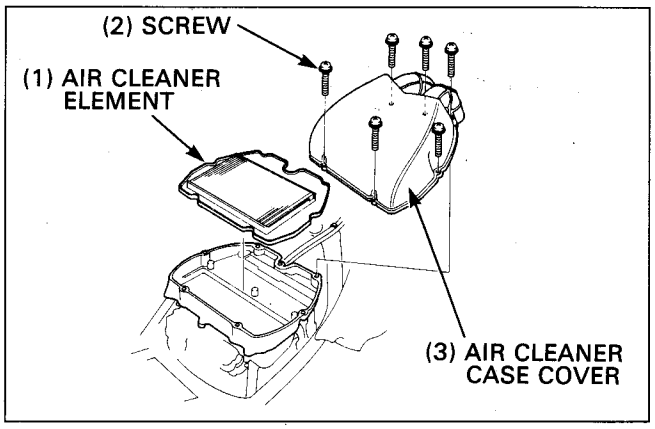
Remove the fuel tank (page 2-11).

Remove the seven screws, air cleaner case cover and air cleaner element.

Discard the air cleaner element in accordance with the maintenance schedule.
Also, replace the element any time it is excessively dirty or damaged.

Install the removed parts in the reverse order of removal.

Install the fuel tank (page 2-11).



Spark Plug

⚠ WARNING

- **Do not touch the exhaust pipe while it is hot.**

NOTE

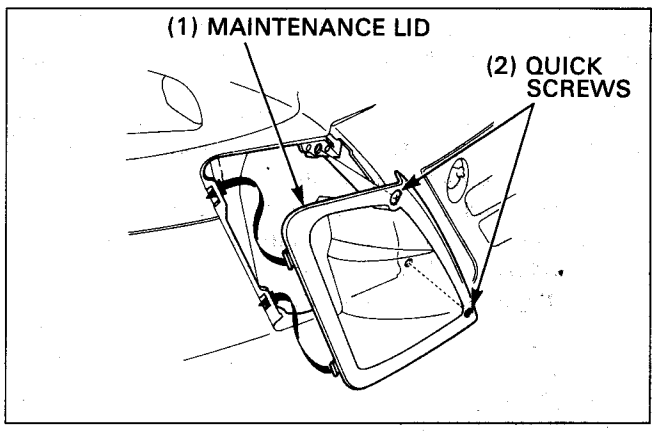
- For detailed instructions, refer to section 2 of the Common Service Manual.
- No.1 spark plug can be serviced from the right side and No.2, No.3 and No.4 spark plugs can be serviced from the left side.

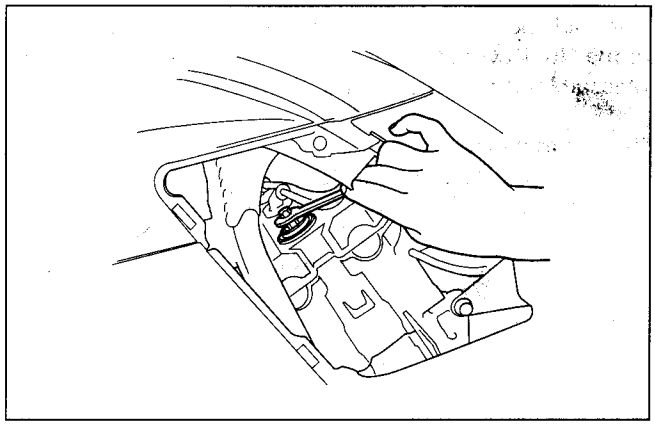
Remove the maintenace lids by turning the quick screws counterclockwise.
The spark plug is included in the tool kit.
Disconnect the spark plug caps and clean away dirt from around the spark plug bases.

Pull the wrench out of the cylinder head.
Remove the spark plug from the wrench.

Install the spark plug in the reverse order of removal.
Tighten the spark plug 1/2 turn with the spark plug wrench to compress the sealing washer. If the old plug is retightened, tighten it 1/8-1/4 turn to compress the sealing washer.

Install the maintenace lids and secure them by turning the quick screws clockwise.





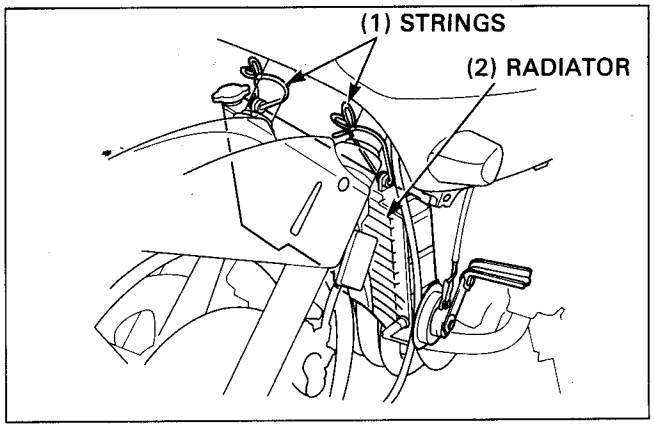
Valve Clearance

Inspection

NOTE

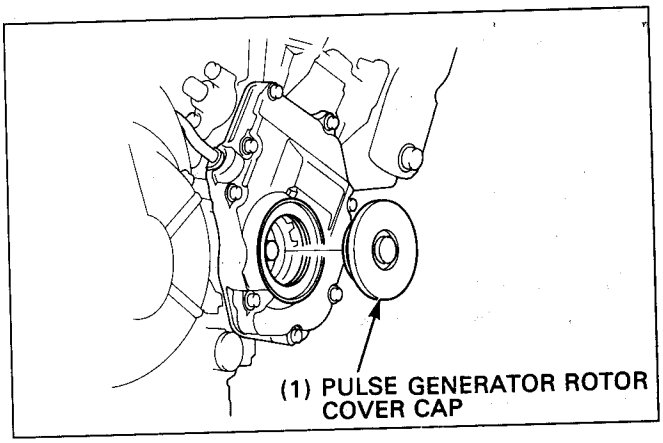
- Adjust the valve clearance while the engine is cold (below 35° C/95° F).

Remove the air cleaner base (page 6-3).
Remove the radiator mounting bolts and release the grommet on the radiator top from the boss on the frame.
Move the radiator forward and secure it to the fork pipe with pieces of string as shown.

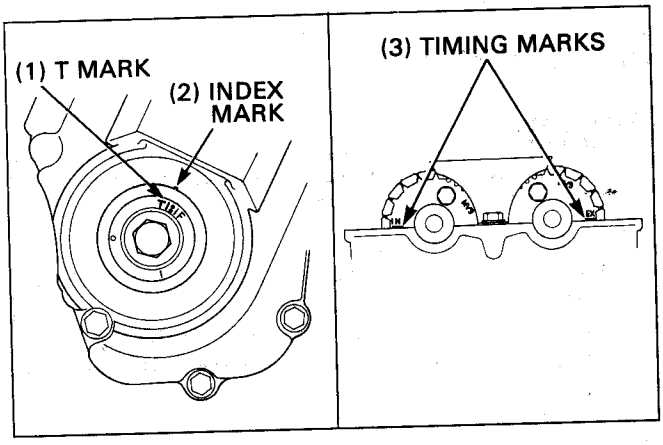


Remove the pulse generator rotor cover cap.

Remove the cylinder head cover (page 8-2)

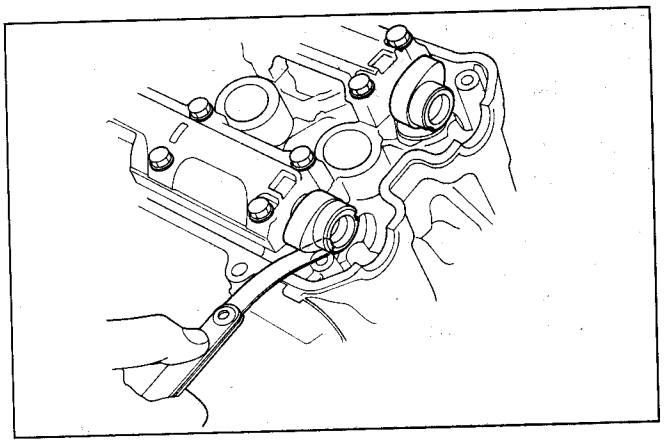


Align the T mark (notch mark) with the index mark on the pulse generator rotor cover by turning the crankshaft clockwise.
Make sure that the timing marks ("IN" and "EX") on the camshaft gears are aligned with the cylinder head upper surface facing opposite each other.
If the timing marks ("IN" and "EX") on the camshaft gears face each other, turn the crankshaft clockwise one full turn (360°) and realign the T mark (notch mark) with the index mark on the pulse generator rotor cover.

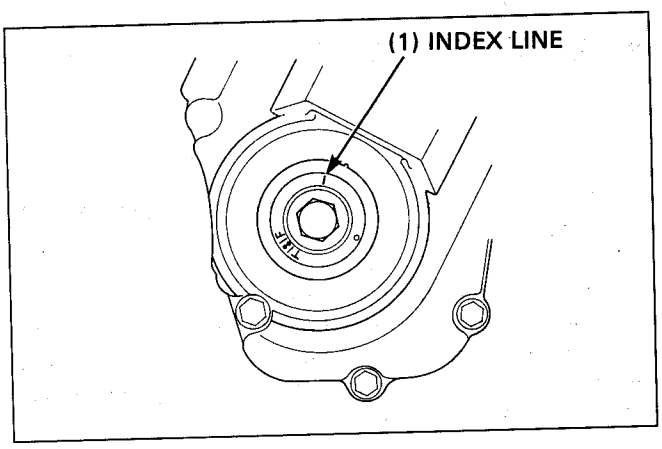


Insert a feeler gauge between the cam lobe and valve lifter at the No.1 cylinder.
Measure and record the valve clearance.

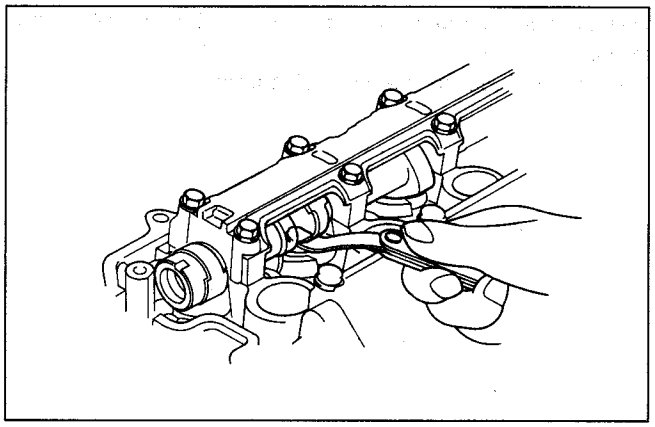
Valve Clearances :
IN :0.13-0.19 mm (0.005-0.007 in)
EX :0.19-0.25 mm (0.007-0.010 in)



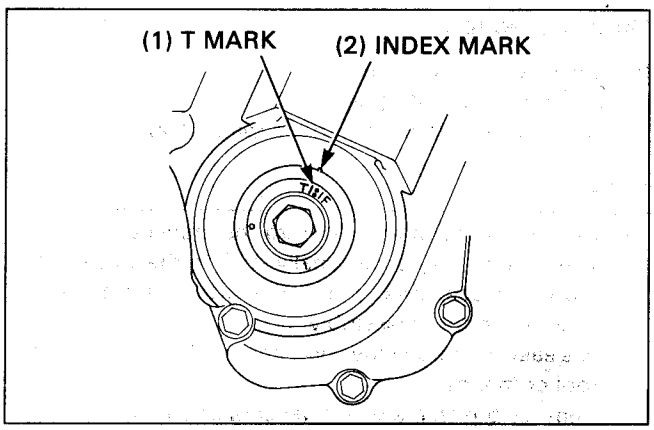
Turn the crankshaft clockwise 1/2 turn (180°) and make sure the index line on the pulse generator rotor facing top.



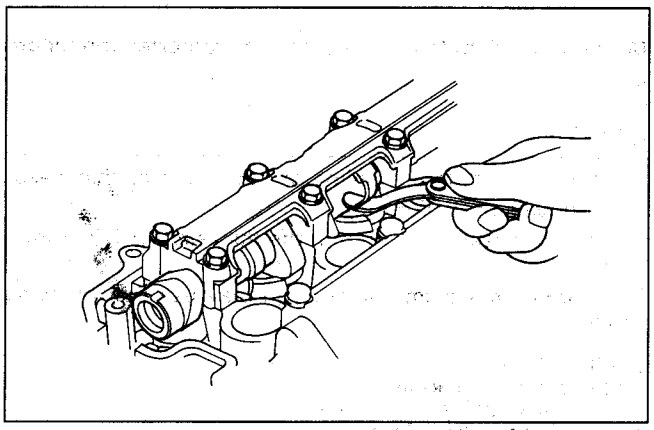
Insert a feeler gauge between the cam lode and valve lifter at the No.2 cylinder.
Measure and record the valve clearance.



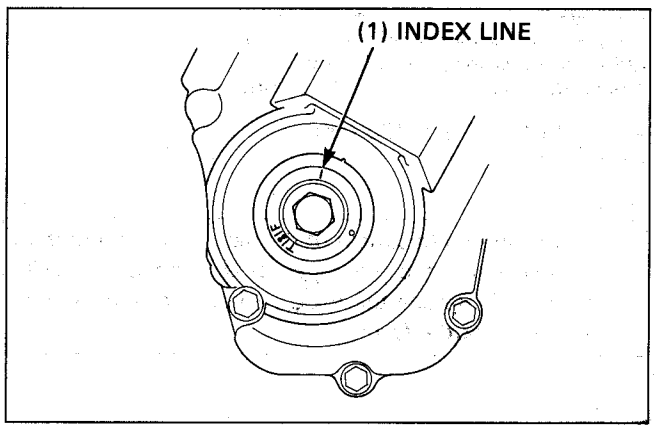
Turn the crankshaft clockwise 1/2 turn(180°) and make sure T mark(notch mark) on the pulse generator rotor aligns with the index mark on the pulse generator cover.



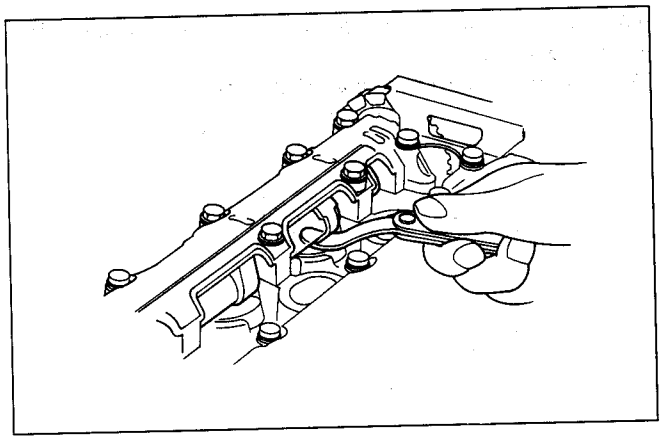
Insert a feeler gauge between the cam lobe and valve lifter at the No.4 cylinder.
Measure and record the valve clearance.



Turn the crankshaft clockwise 1/2 turn (180°) and make sure the index line on the pulse generator rotor facing top.

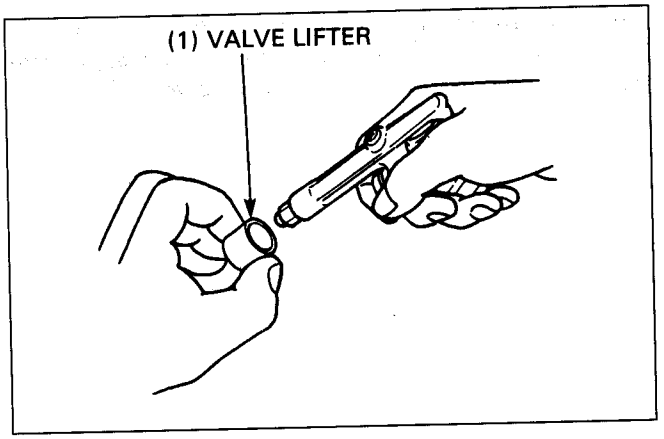


Insert a feeler gauge between the cam lobe and valve lifter at the No.3 cylinder.
Measure and record the valve clearance.



Shim Selection

If the clearance is not correct :
Remove the camshafts (page 8-2).
Remove the valve lifter and shims (page 8-2).

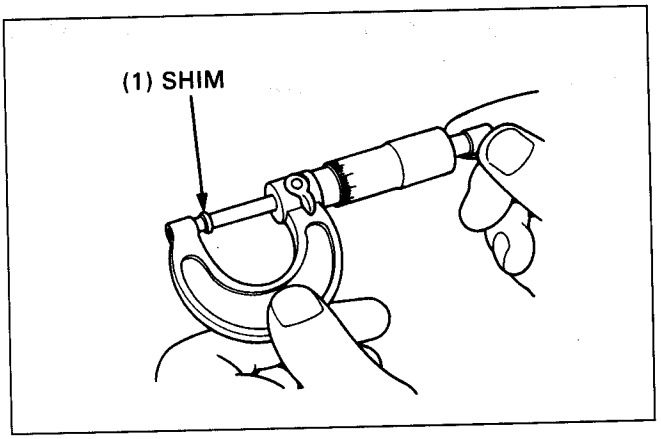


NOTE

- Do not allow shims to fall into the crankcase. The shim(s) may occasionally stick to the valve lifter.
- Mark the positions of all valve lifters and shims to ensure correct reassembly.
- It is easy to remove the valve lifter with a valve lapping tool or magnet.
- Remove the shims with tweezers or a magnet.

Clean the valve lifter with compressed air.

Measure the shim thickness with a micromerter and record it.



NOTE

- Sixty-five different shims are available in thickness intervals of 0.025 mm.
  The thinnest is 1.200 mm the thickest is 2.800 mm.

To confirm your shim choice, you may use the following formula :

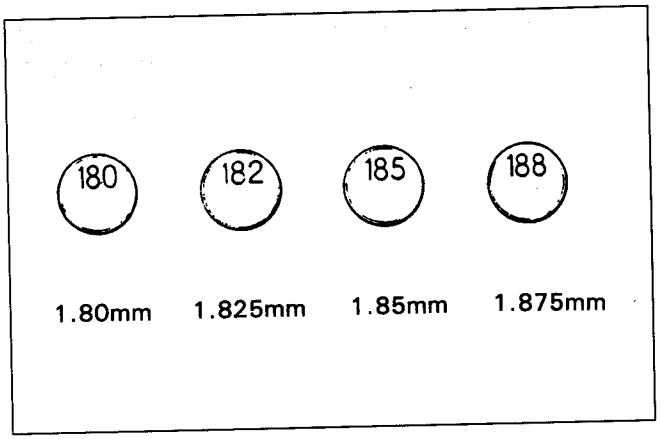
a= (b−c)+d
a : new shim thickness
b : recorded valve clearance
c : specified valve clearance
d : old shim thickness

example :
recorded valve clearance : 0.06 mm
old shim thickness : 1.875 mm
specified valve clearance : 0.16 mm

a= (0.06-0.16) +1.875 mm
a=1.775

NOTE

- If the required thickness of the new shim is more than 2.800 mm, the valve seat is probably heavily carboned. Reface the seat, recheck valve clearance and reselect the shim.

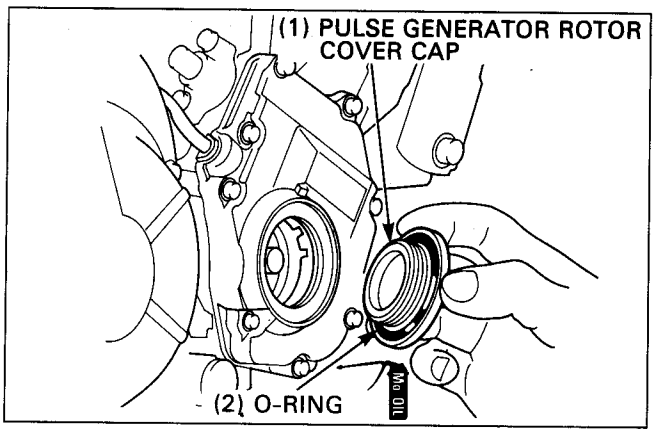


Check the O-ring for damage or deterioration. Replace it with a new one if necessary.

Apply molybdenum disulfide grease to the pulse generator cover cap threads and tighten it.

Torque : 18 N · m (1.8 kg-m, 13 ft-lb)

Install the following :
-cylinder head cover (page 8-2)
-air cleaner case base (page 6-3)
-radiator (page 5-5)

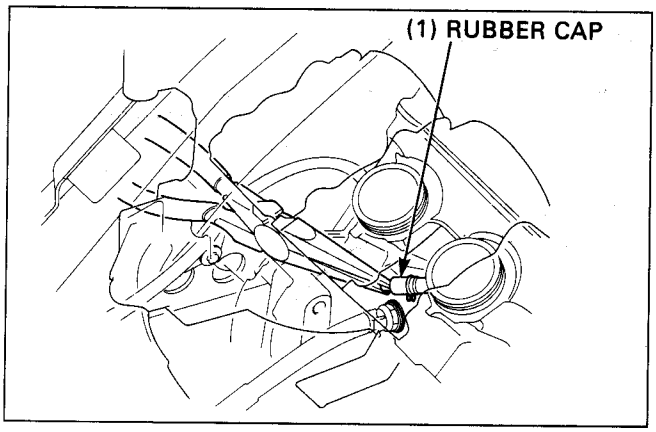


Carburetor Synchronization

NOTE

- Refer to section 2 of the Common Service Manual for carburetor synchronization procedure.
- Synchronize the carburetors with the engine at normal operating temperature and the transmission in neutral.

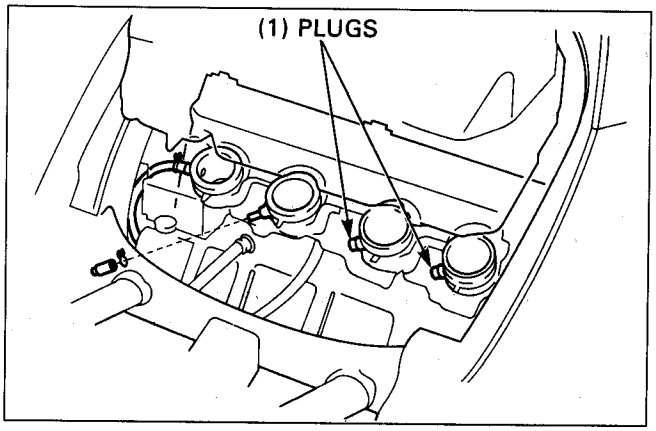
Remove the fuel tank (page 2-11).
Remove the rubber cap from the No.2 carburetor vacuum joint.



CAUTION

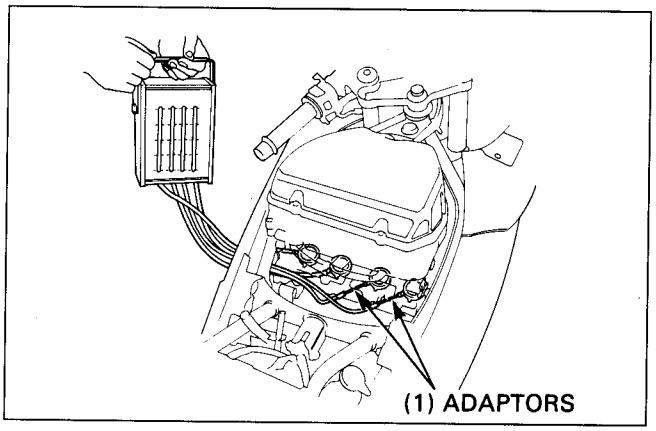
- **Remove the rubber cap by pinching the end of the cap. Do not pinch the cap body or it will be damaged.**

Remove the vacuum plugs from the No.3 and No.4 carburetor.

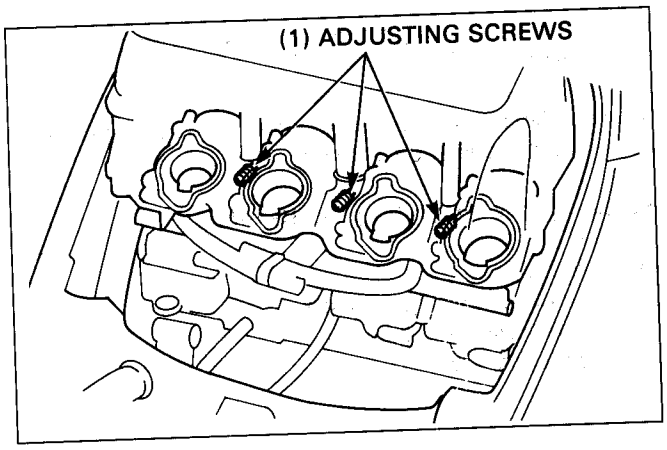


Screw the adaptors in the No.3 and No.4 carburetor vacuum holes.

Connect the vacuum tubes to the carburetor.

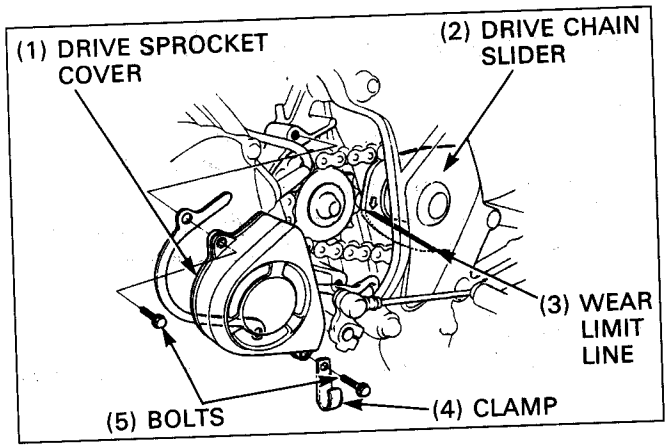


Synchronize the carburetors by turning the adjusting screws.



Drive Chain Slider

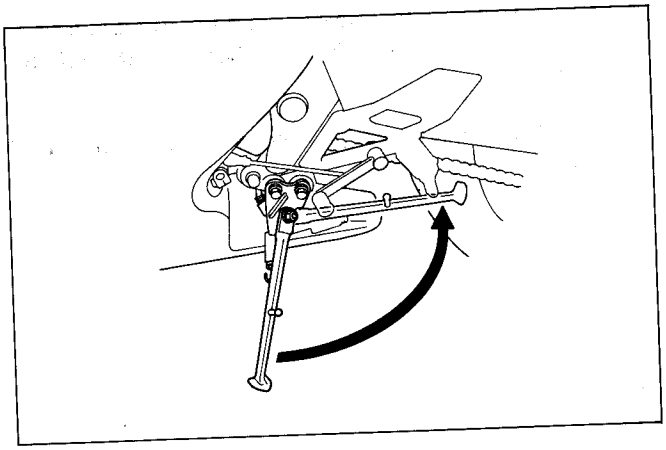
Remove the left side fairing (page 2-3).
Remove the bolts, clamp and drive sprocket cover.
Check the drive chain slider for wear.
The chain slider must be replaced if it is worn to the wear limit line.
Refer to page 13-12 for replacement.



Side Stand

Check the side stand ignition cut-out system:
—Place the motorcycle on its center stand and raise the side stand.
—Start the engine with the transmission in neutral, then shift the transmission into gear with the clutch lever squeezed.
—Move the side stand down fully.
—The engine should stop as the side stand is lowered.
If there is a problem with the system, check the side stand switch(Section 18).

Check the side stand switch mounting bolts for looseness.



4. Lubrication System

Service Information	4-1	Oil Pump Removal/Installation	4-4
Troubleshooting	4-1	Oil Pump Disassembly/Assembly	4-5
Lubrication System Diagram	4-2	Oil Cooler Removal/Installation	4-6
Oil Pan Removal/Installation	4-3	Oil Cooler Disassembly/Assembly	4-7

Service Information

⚠ WARNING

- **If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.**
- **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 throughly wash your hands with soap and water as soon as possible after handling used oil. KEEP OUT OF REACH OF CHILDREN.**

- The service procedures in this section can be performed with the engine in the frame.
- 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.
- Always lubricate the oil pump components with clean engine oil when assembling the oil pump.

Troubleshooting

Oil Level Low
- Oil consumption
- External Oil Leak
- Worn piston ring or incorrect piston ring installation
- Worn valve guide or seal
- Oil pump worn or damaged
- Oil leaks in the cooling system

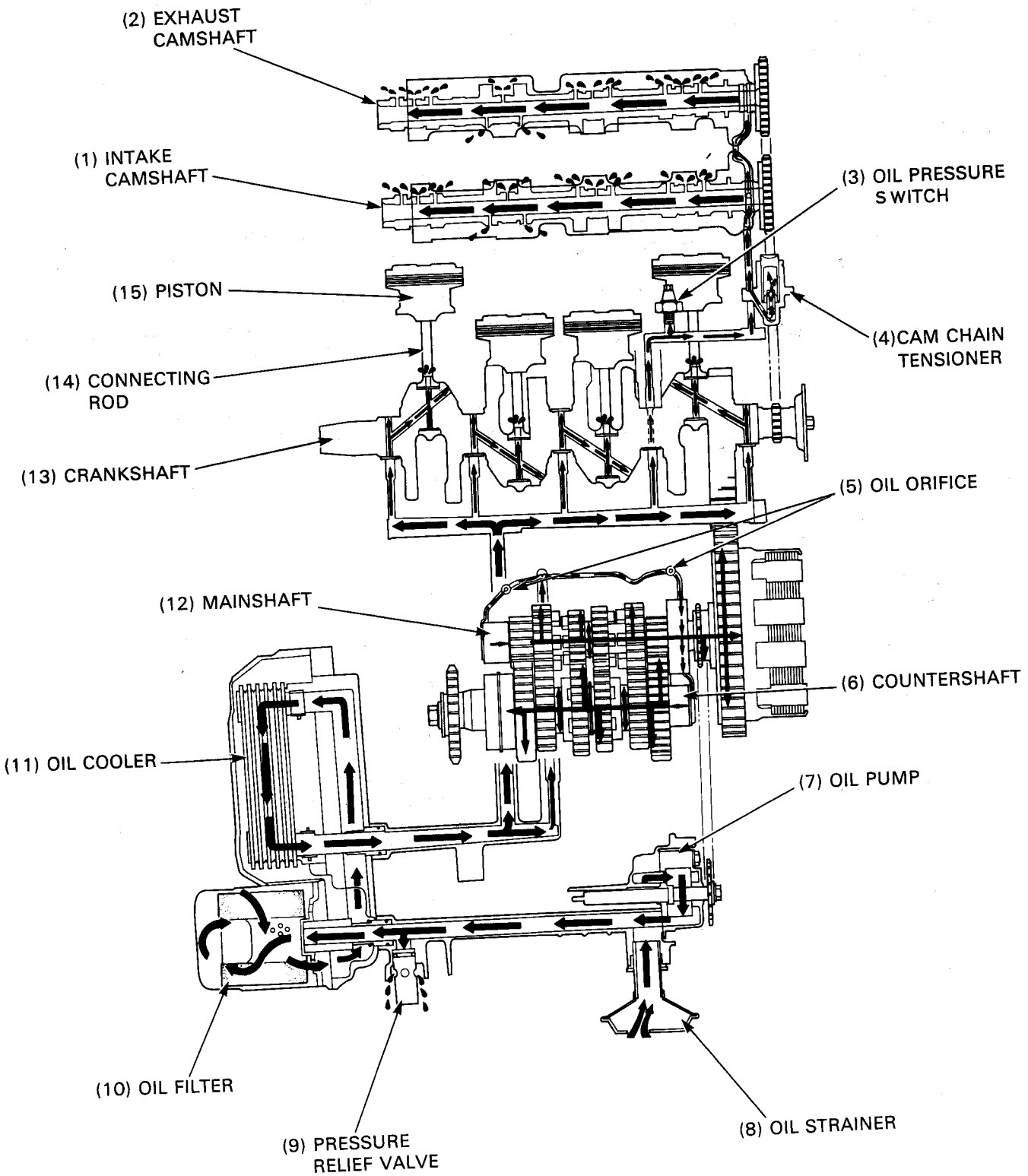
Low Or No Oil Pressure
- Clogged oil orifice
- Clogged oil passage
- Incorrect oil being used

No Oil Pressure
- Oil level too low
- Oil pump drive chain or drive sprocket broken
- Oil pump damaged (pump shaft)
- Internal oil leaks

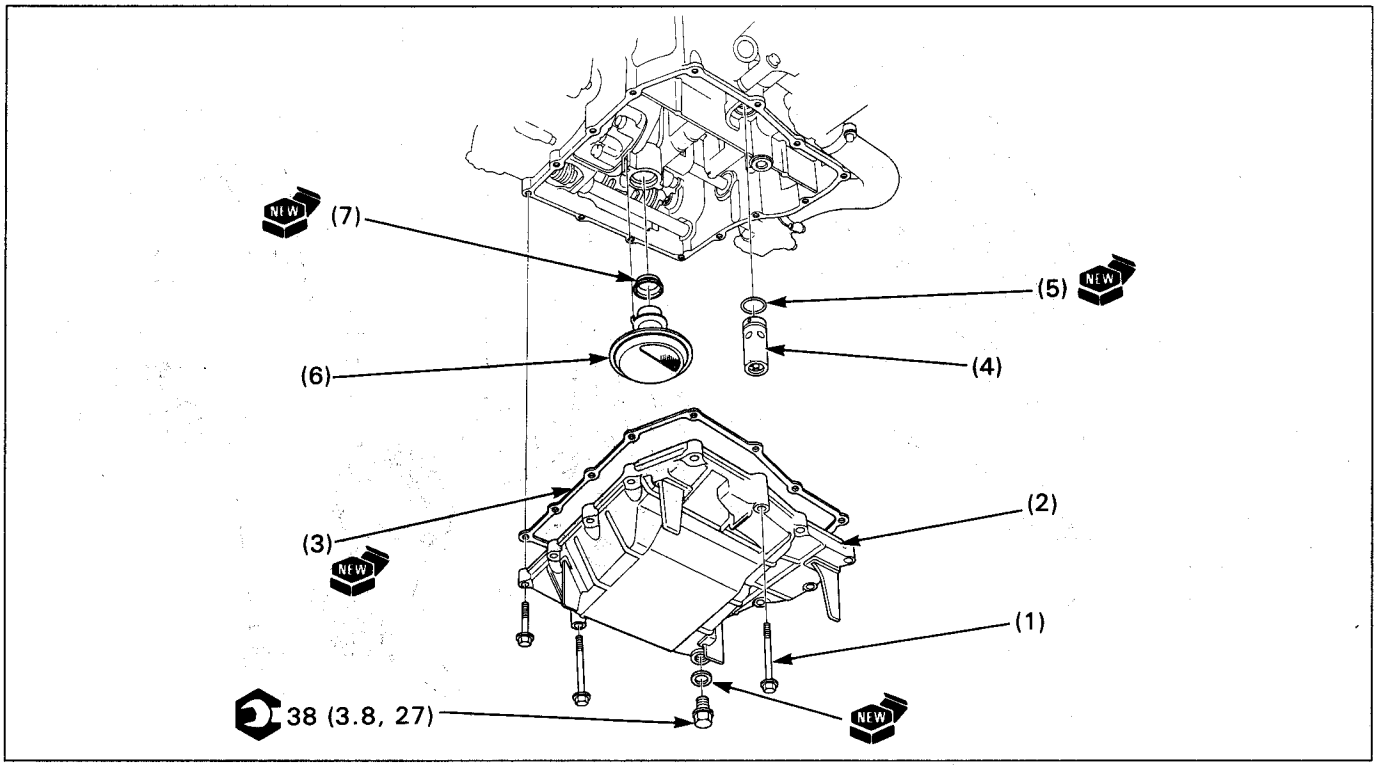
Low Oil Pressure
- Pressure relief valve stuck open
- Clogged oil filter
- Oil pump worn or damaged
- Internal oil leaks
- Incorrect oil being used
- Oil level too low

High Oil Pressure
- Pressure relief valve stuck closed and oil filter plugged
- Plugged oil filter, gallery, or metering orifice
- Incorrect oil being used

Lubrication System Diagram



Oil Pan Removal/Installation

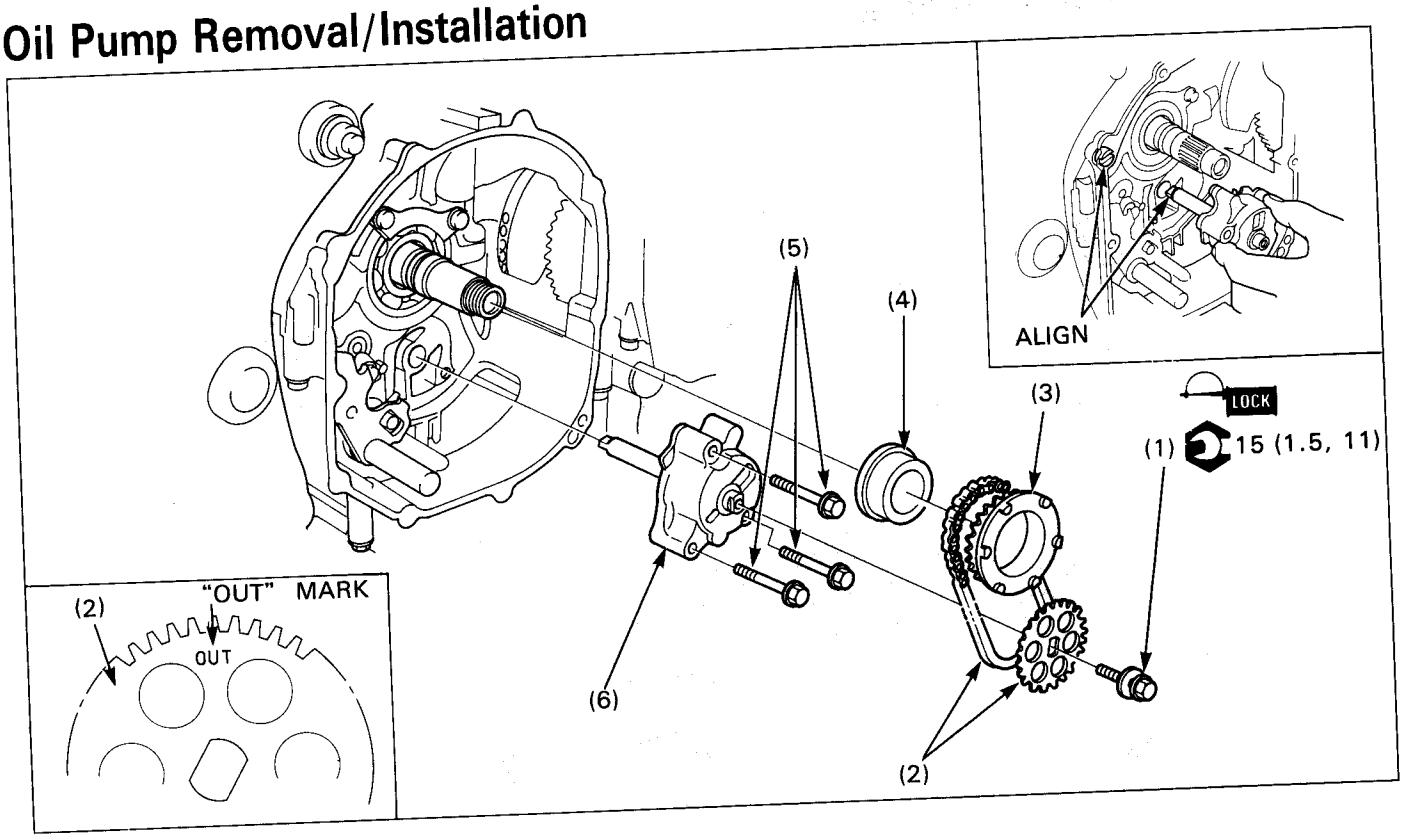


Requisite Service

- Exhaust pipe removal/installation(page 2-10)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Oil pan bolt	14	Tighten the bolts in a gradual, crisscross pattern.
(2)	Oil pan	1	Clean the liquid sealant residure off the maiting surfaces.
(3)	Gasket	1	
(4)	Pressure relief valve	1	
(5)	O-ling	1	
(6)	Oil strainer	1	
(7)	Oil strainer packing	1	Install the oil strainer packing in the lower crankcase with its flange side facing oil strainer.

Oil Pump Removal/Installation



NOTE

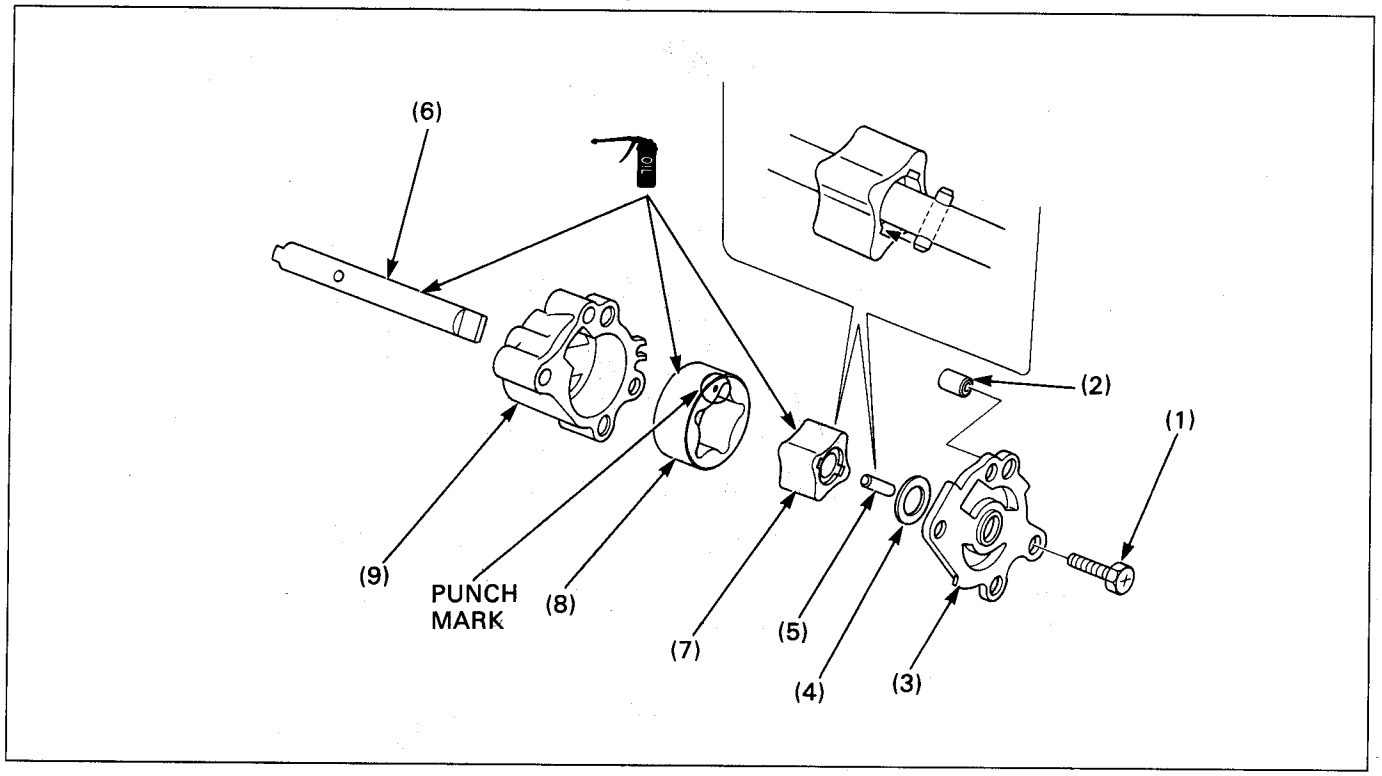
- Use care not to allow dust or dirt to enter the engine.
- After installation, check that there are no oil leaks and that oil pressure is correct.

Requisite Service

- Clutch removal(page 9-4)
- Clutch installation(page 9-12)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Oil pump driven sprocket bolt	1	
(2)	Oil pump driven sprocket/Oil pump drive chain	1/1	Install the oil pimp driven sprocket with the "OUT" mark facing out.
(3)	Oil pump drive sprocket	1	
(4)	Oil pump drive sprocket collar	1	
(5)	Oil pump mounting bolt	3	
(6)	Oil pump assembly	1	

Oil Pump Disassembly/Assembly



NOTE

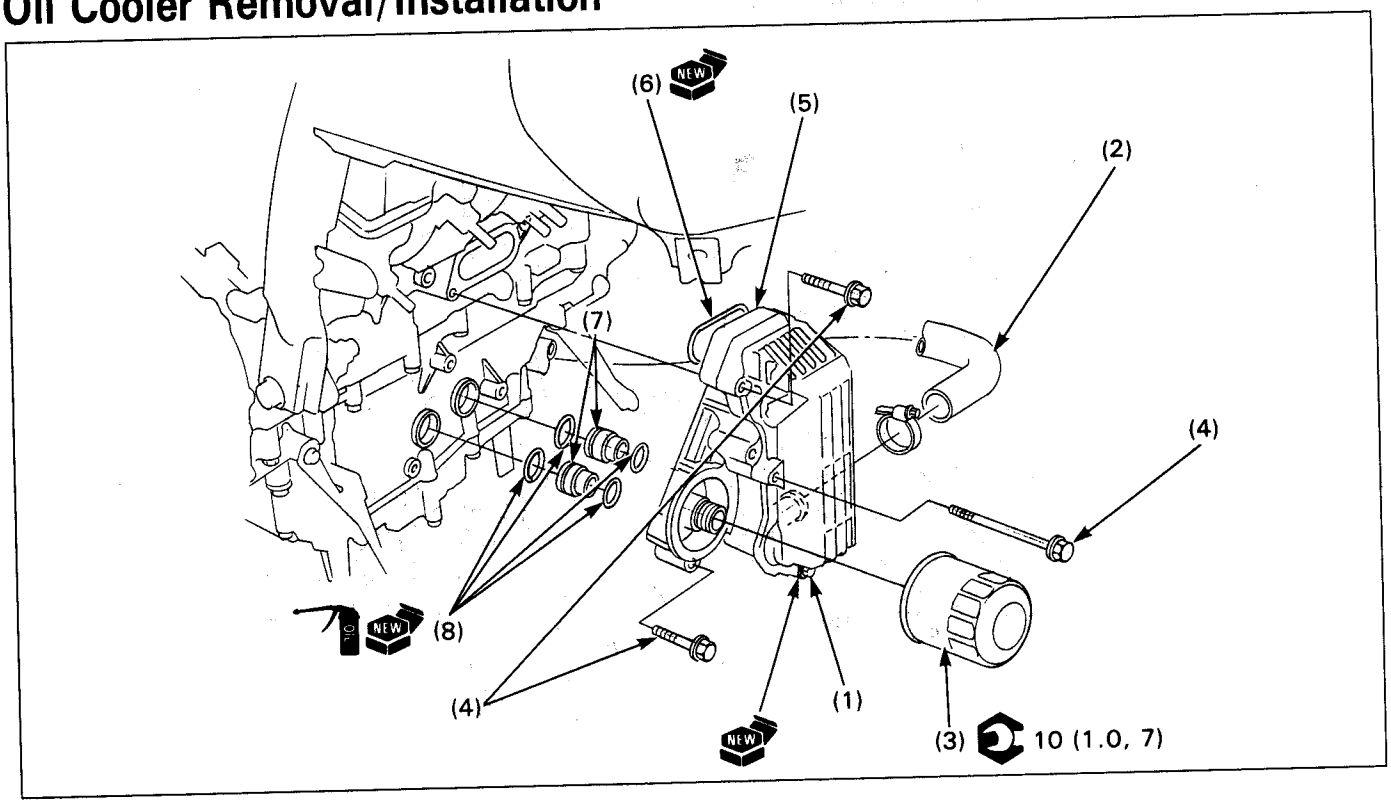
- If any portion of the oil pump is beyond the specified service limits, replace the oil pump as assembly.
- Before assembling, clean all the parts throughly with clean engine oil.
- Refer to section 4 of the Common Service Manual for inspection information.

Requisite Service

- Oil pump removal/installation(page 4-4)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Oil pump cover bolt.	1	
(2)	Dowel pin	1	
(3)	Oil pump cover	1	
(4)	Thrust washer	1	
(5)	Drive pin	1	Install the drive pin into the hole in the pump shaft and align the pin with the groove in the inner rotor.
(6)	Oil pump shaft	1	
(7)	Inner rotor	1	
(8)	Outer rotor	1	Install the outer rotor with the punch mark facing the oil pump cover.
(9)	Oil pump body	1	

Oil Cooler Removal/Installation

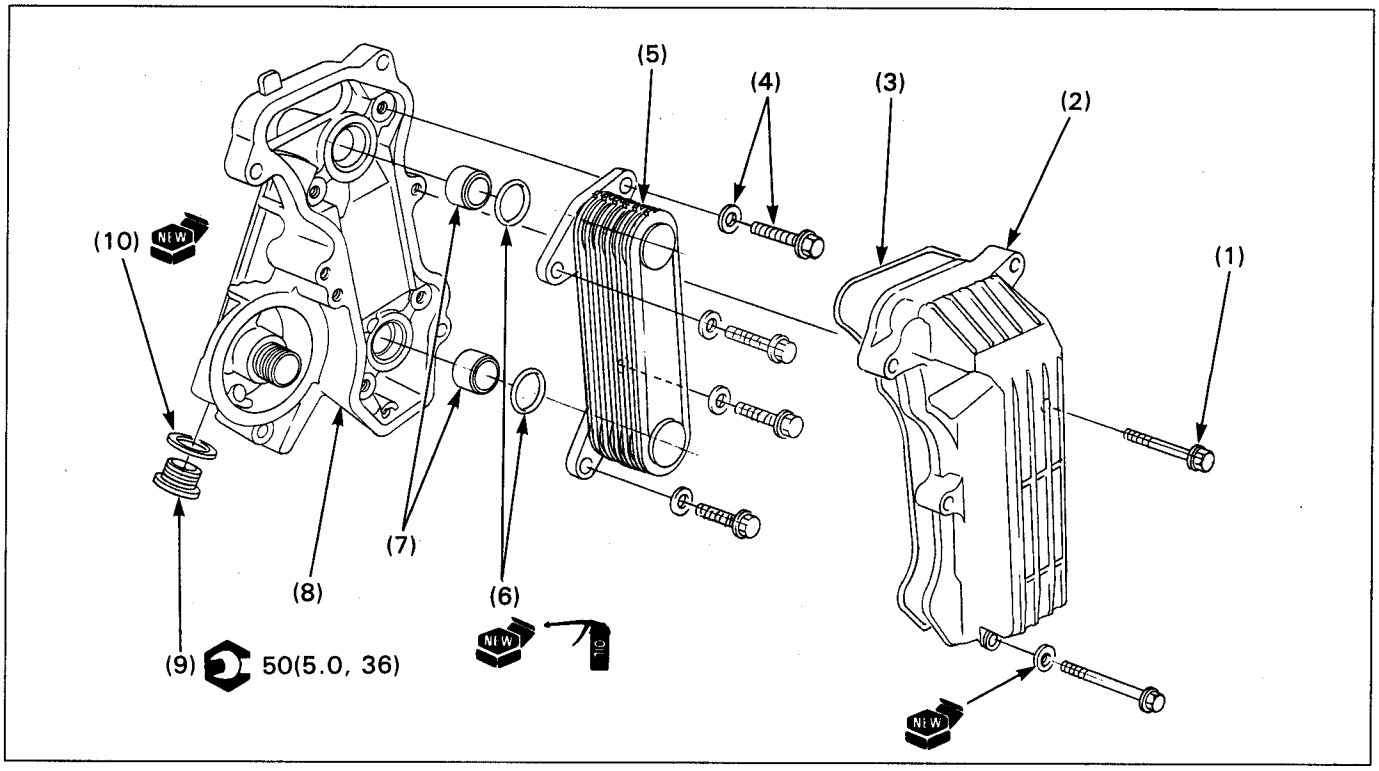


Requisite Service

- Side fairing removal/installation(page 2-3)
- Engine oil draining/filling
- Coolant draining/filling(page 5-3)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Drain bolt/Sealing washer	1/1	
(2)	Water hose	1	
(3)	Oil filter element	1	
(4)	Oil cooler mounting bolt	4	
(5)	Oil cooler assembly	1	
(6)	O-ring	1	
(7)	Joint collar	2	
(8)	O-ring	4	

Oil Cooler Disassembly/Assembly



Requisite Service

- Oil cooler removal/installation(page 4-6)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Oil coolar case bolt	1	
(2)	Oil coolar case	1	
(3)	O-ring	1	NOTE • Once the oil coolar case O-ring is removed, always replace it with a new one and install it securely into the groove in the oil coolar case.
(4)	Bolt/Washer	4/4	
(5)	Oil coolar	1	
(6)	O-ring	2	
(7)	Joint collar	2	
(8)	Oil coolar base	1	
(9)	Special bolt	1	Do not remove the special bolt without necessity.
(10)	Sealing washer	1	

5. Cooling System

Service Information	5-1	Radiator Removal/Installation	5-5
Troubleshooting	5-1	Radiator Disassembly/Assembly	5-6
System Flow Pattern	5-2	Water Pump Disassembly/Assembly	5-7
Coolant Draining	5-3	Reserve Tank Removal/Installation	5-8
Thermostat Removal/Installation	5-4		

Service Information

⚠WARNING

- **Wait until the engine is cool before slowly removing the radiator cap. Removing the cap while the engine is hot and the coolant is under pressure may cause serious scalding.**
- **Radiator coolant is toxic. Keep it away from eyes, mouth, skin and clothes.**
  -If any coolant gets in your eyes, rinse them with water and consult a doctor immediately.
  -If any coolant allowed, induce vomiting, gargle and consult a physician immediately.
  -If any coolant gets in your skin or clothes, rinse throughly with plenty of water.
- **KEEP OUT OF REACH OF CHILDREN.**

- Add coolant at the reserve tank. Do not remove the radiator cap except to refill or drain the system.
- All cooling system service can be done with the engine in the frame.
- For fan motor switch and thermo sensor inspections, refer to section 25 of the Common Service Manual ; for the switch and sensor locations, see page 18-2 of this manual.

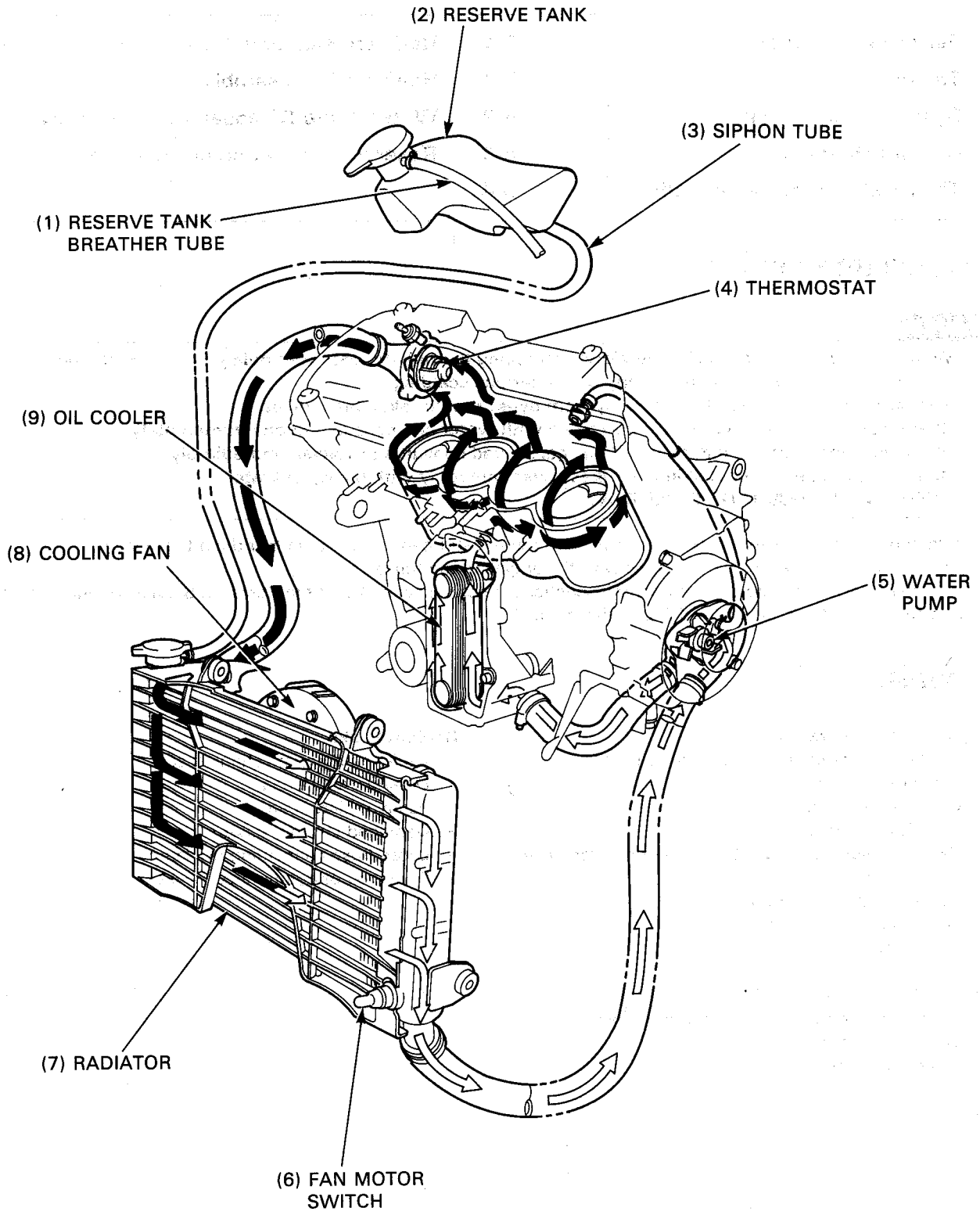
Troubleshooting

Engine Temperature Too High
- Faulty temperature gauge or thermo sensor
- Thermostat stuck closed
- Faulty radiator cap
- Insufficient coolant
- Passages blocked in radiator, hoses or water jacket
- Air in system
- Faulty cooling fan motor
- Faulty fan motor switch
- Faulty water pump

Engine Temperature Too Low
- Faulty temperature gauge or thermo sensor
- Thermostat stuck open
- Faulty fan motor switch

Coolant Leaks
- Faulty oil pump mechanical seal
- Deteriorated O-ring
- Faulty radiator cap
- Damaged cylinder gasket
- Loose hose connection or clamp
- Damaged or deteriorated hoses

System Flow Pattern



Coolant Draining

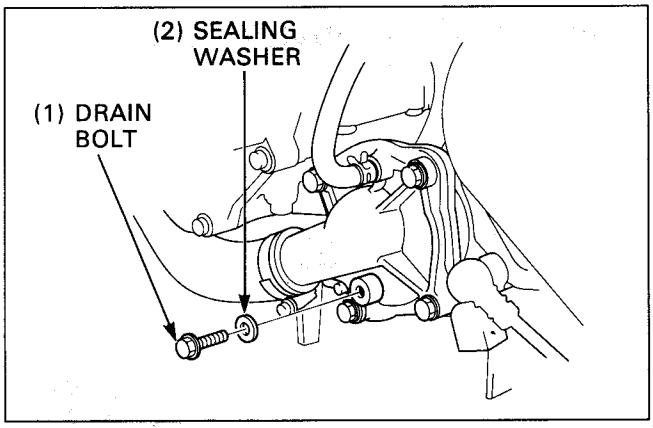
⚠WARNING

- **Wait until the engine is cool before servicing the cooling system. Removing the radiator cap while the engine is hot and the coolant is under pressure may serious scalding.**

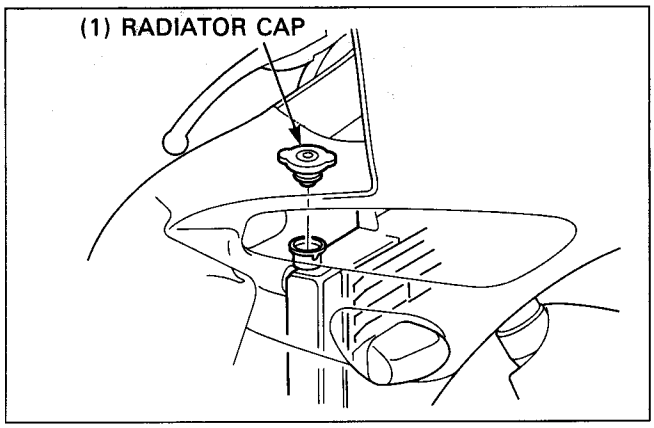
NOTE

- For coolant replacement, refer to section 5 of the Common Service Manual.

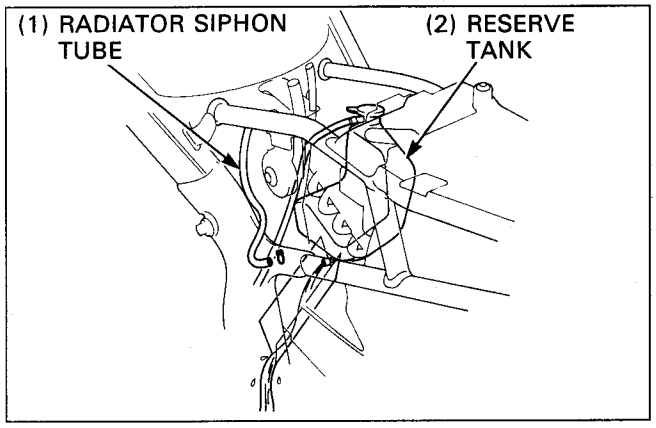
Remove the left side fairing(page 2-3).
Remove the water pump drain bolt and sealing washer.



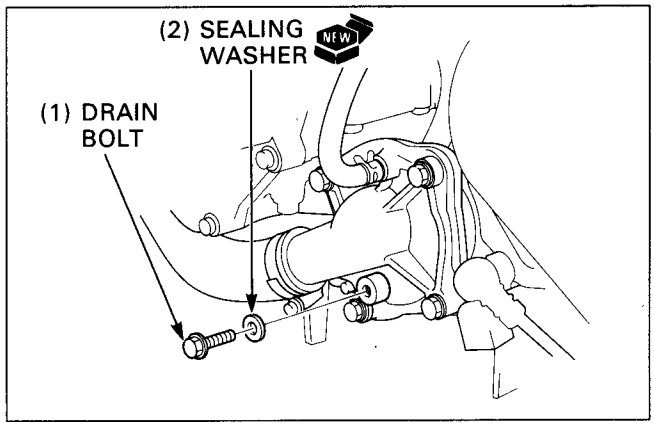
Remove the radiator cap and drain the coolant.



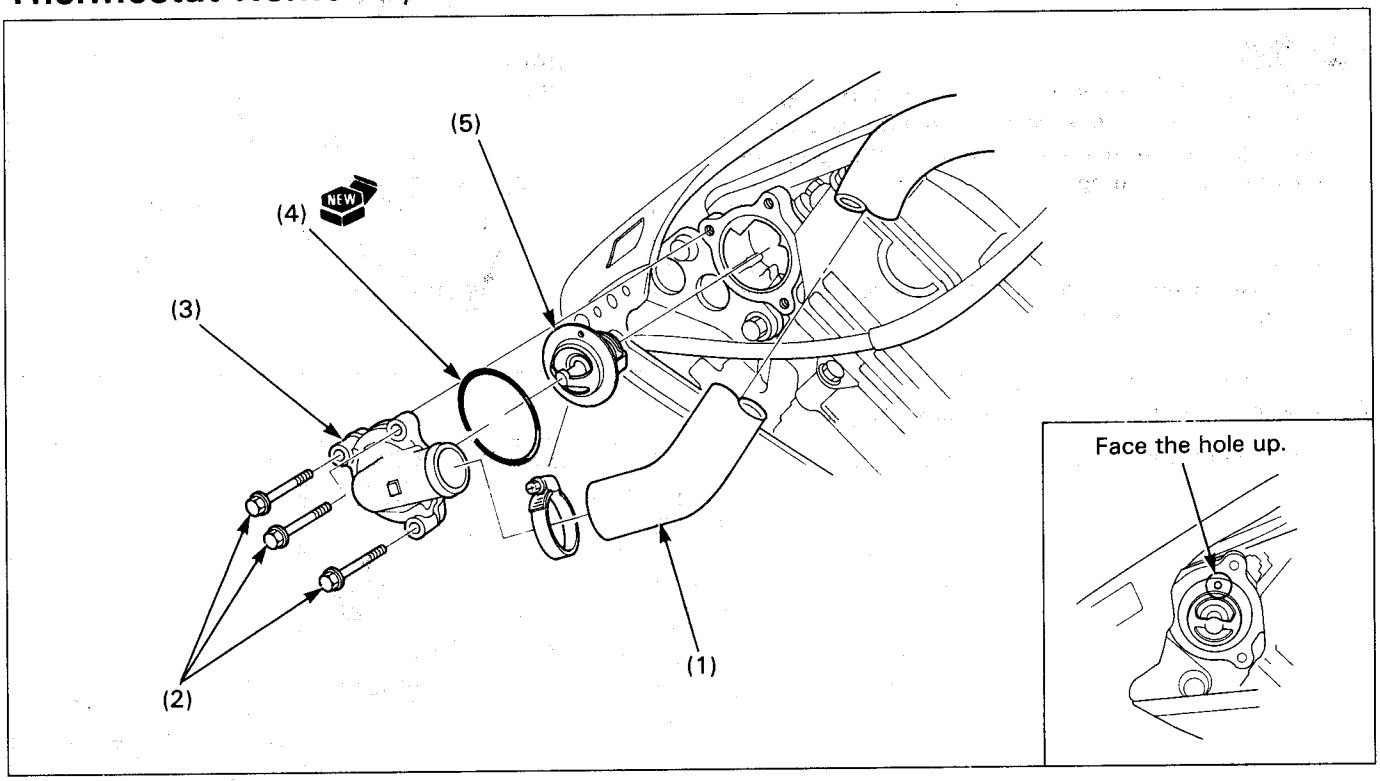
Place a suitable tray under the siphon tube joint of the reserve tank and disconnect the siphon tube from the reserve tank.
Drain the coolant from the reserve tank.



Install the water pump drain bolt with a new sealing washer, and connect the siphon tube to the reserve tank.



Thermostat Removal/Installation

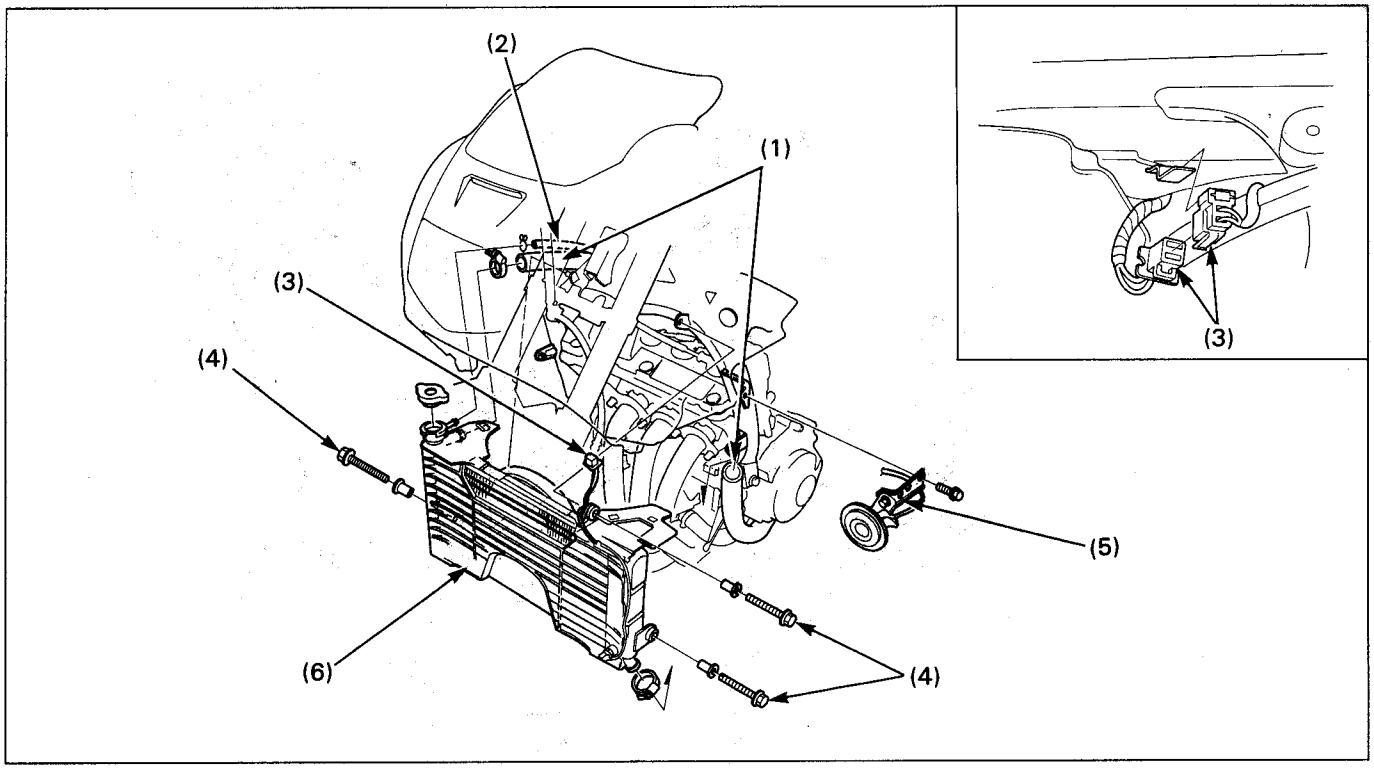


Requisite Service

- Coolant draining(page 5-3)
- Right maintenance lid removal/installation(page 2-3)
- Coolant refill(section 5 of the Common Service Manual)

	Procedure	Q'ty	Remarks
	Removal order		Installation is in the reverse order of removal.
(1)	Water hose	1	
(2)	Thermostat housing cover bolt	3	
(3)	Thermostat housing cover	1	
(4)	O-ring	1	
(5)	Thermostat	1	NOTE • Install the thermostat supporting the motorcycle on the side stand. • Install the thermostat with its hole facing up and fit it properly in the housing.

Radiator Removal/Installation

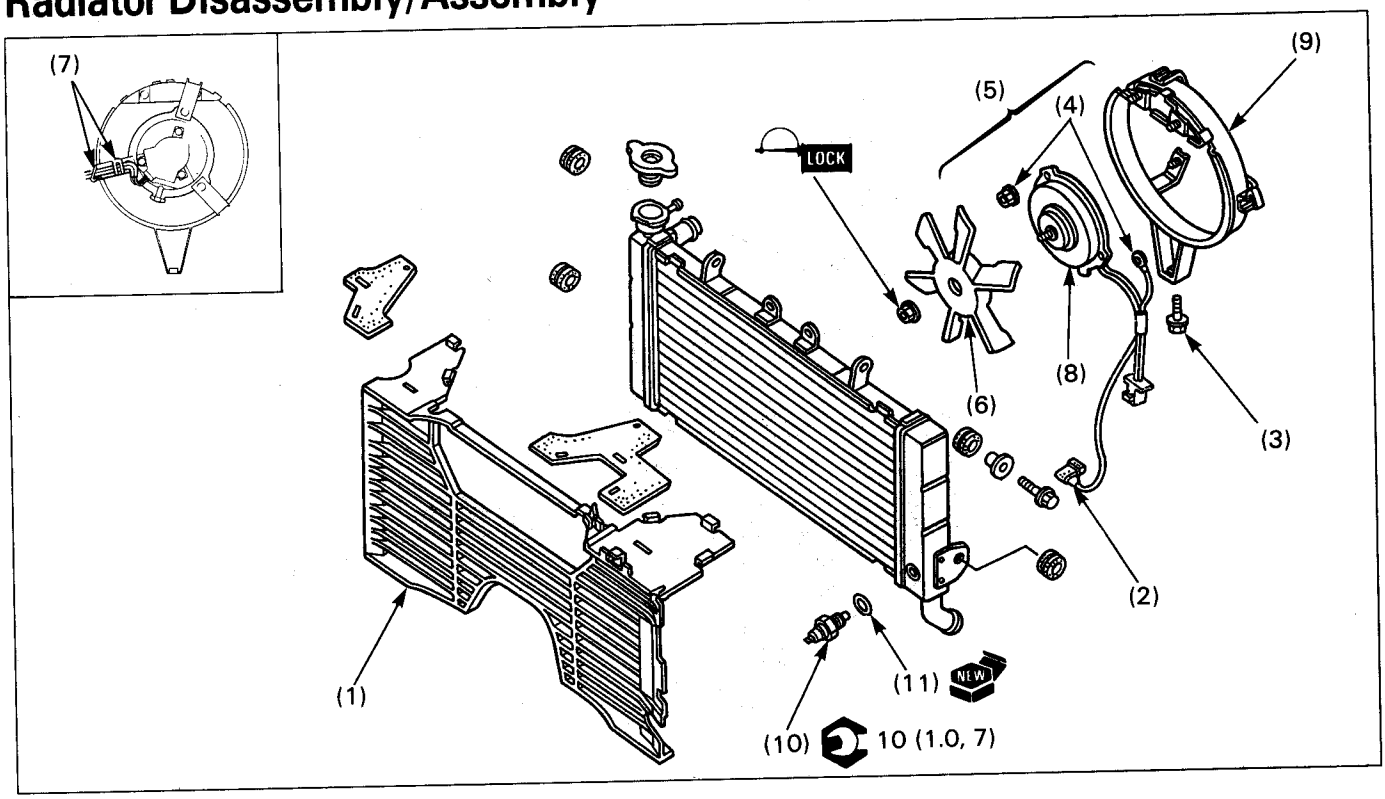


Requisite Service

- Side fairing removal/installation(page 2-3)
- Air cleaner case removal/installation(page 6-3)
- Coolant draining(page 5-3)
- Coolant refill(section 5 of the Common Service Manual)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Radiator hose	2	
(2)	Radiator siphon tube	1	
(3)	Fan motor connector	1	
(4)	Radiator mounting bolt	3	
(5)	Horn stay	1	
(6)	Radiator assembly	1	**CAUTION** • **During removal and installation, be cereful not to damage the radiator fins.** When installing, align the grommet on the top of the radiator assembly with the boss on the frame.

Radiator Disassembly/Assembly

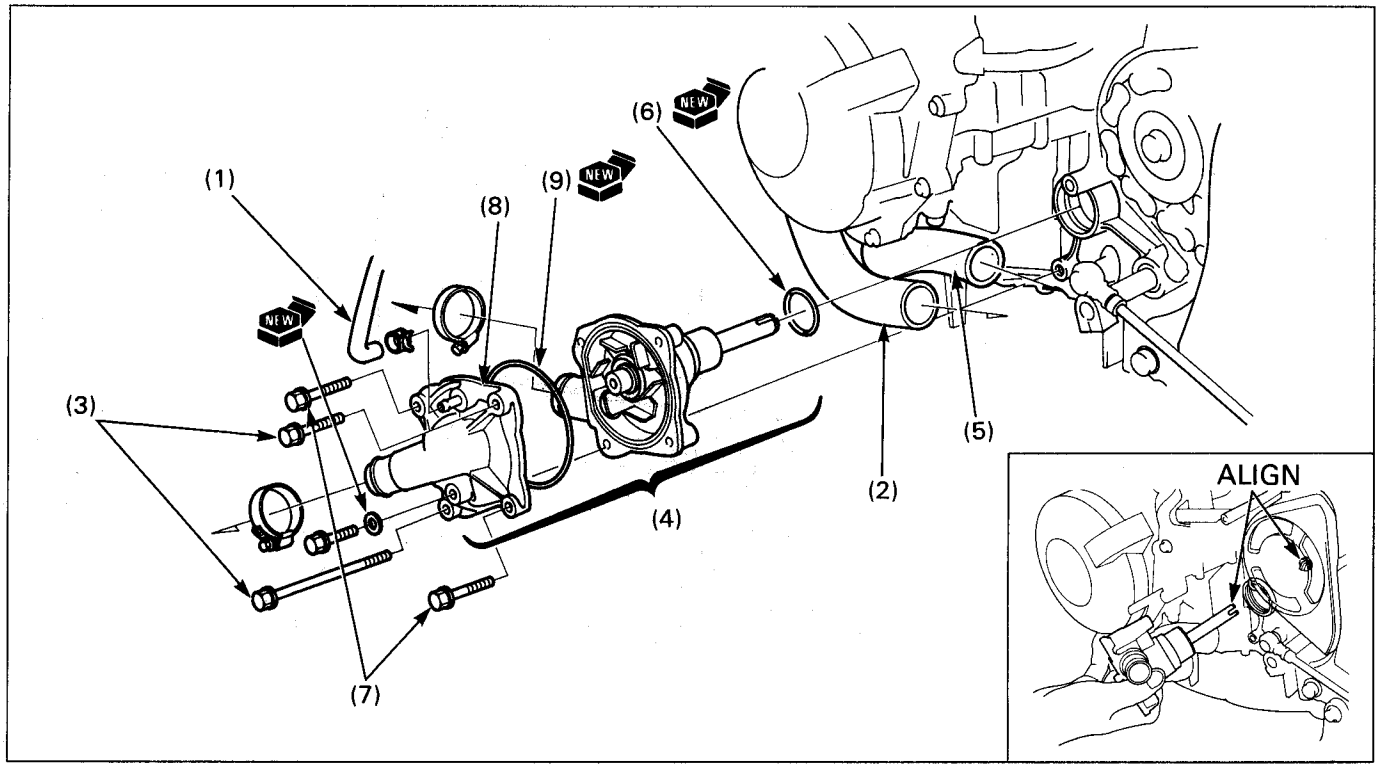


Requisite Service

- Radiator removal/installation (page 5-5)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Radiator grille	1	Remove the radiator grille by releasing the four tangs on the radiator from the slit in the grille.
(2)	Fan motor switch connector	1	
(3)	Fan motor mounting bolt	1	
(4)	Fan motor mounting nut/terminal	2/1	
(5)	Fan motor assembly	1	
(6)	Cooling fan	1	When installing, align the fan groove with the motor shaft.
(7)	Clamp	2	Release the fan motor wire.
(8)	Fan motor	1	
(9)	Fan motor shroud	1	
(10)	Fan motor switch	1	**CAUTION** • **Do not overtighten the fan motor switch, or the radiator may be damaged.**
(11)	O-ring	1	

Water Pump Disassembly/Assembly

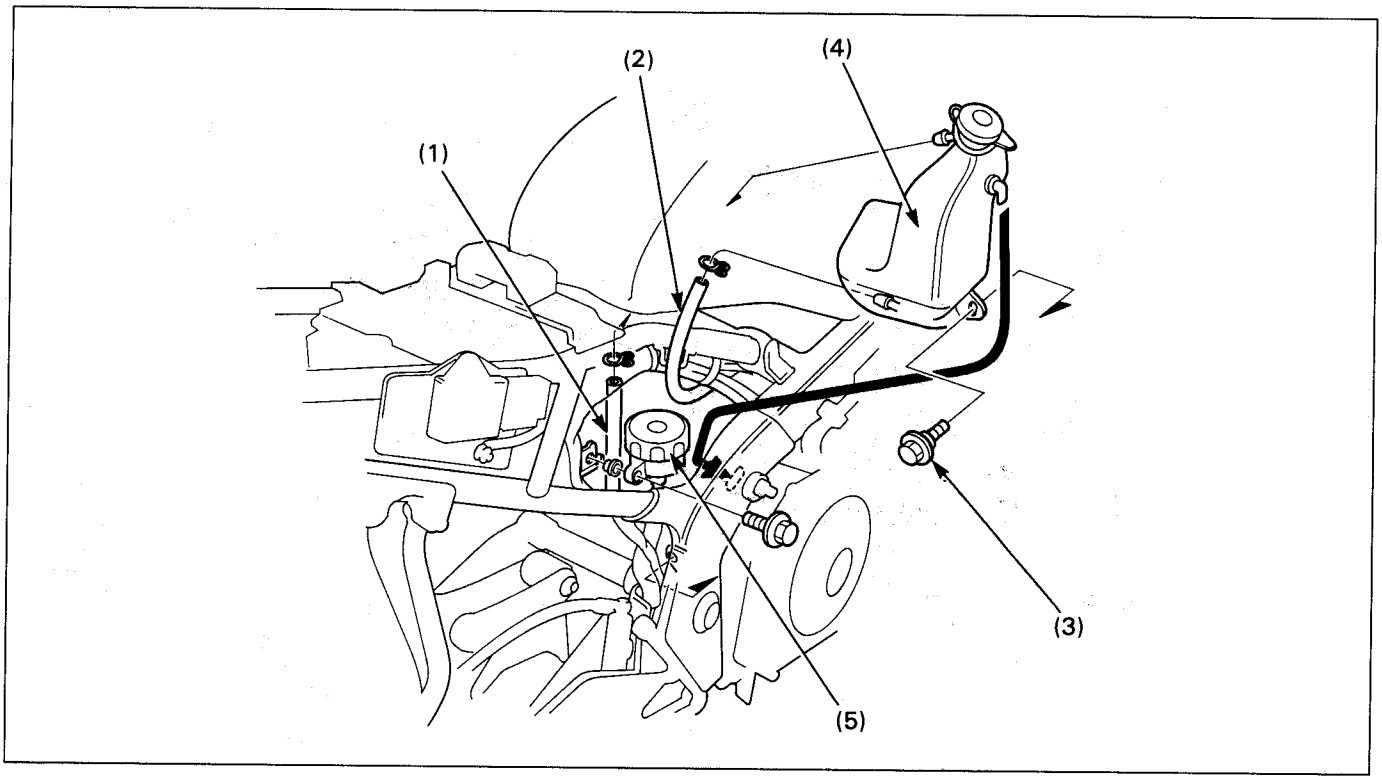


Requisite Service

- Side fairing removal/installation (page 2-3)
- Coolant draining (page 5-3)
- Coolant refill (section 5 of the Common Service Manual)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Water hose (to cylinder head)	1	
(2)	Water hose (to radiator)	1	
(3)	Water pump mounting bolt	2	NOTE • If you plan to disassembly the water pump, loosen the water pump cover bolts before loosening the mounting bolts.
(4)	Water pump assembly	1	When installing, align the cut-out of the water pump shaft with the end of the oil pump shaft.
(5)	Water hose (to oil cooler)	1	
(6)	O-ring	1	
(7)	Water pump cover bolt	2	
(8)	Water pump cover	1	
(9)	O-ring	1	

Reverse Tank Removal/Installation



Requisite Service

- Coolant draining(page 5-3)
- Shock absorber removal/installation(page 13-4)
- Right side cover removal/installation(page 2-2)
- Coolant refill(section 5 of the Common Service Manual)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Siphon tube	1	
(2)	Reverse tank breather tube	1	
(3)	Reverse tank mounting bolt	1	
(4)	Rear master cylinder reservoir	1	
(5)	Reverse tank	1	NOTE • Release the hook on the reverse tank from the oval hole in the frame by swing the tank rearward.

6. Fuel System

Service Information	6-1	Carburetor Disassembly/Assembly	6-8
Troubleshooting	6-2	Carburetor Combination	6-10
Air Cleaner Case Removal/Installation	6-3	Air Injection Control Valve Removal/ Installation (SW, AR Type Only)	6-12
Carburetor Removal/Installation	6-4	Pilot Screw Adjustment (SW Type Only)	6-13
Carburetor Separation	6-6		

Service Information

⚠WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.**
- **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.**

- Work in a well ventilated area. Smoking or allowing flames in the work or where gasoline is stored can cause a fire or explosion.

CAUTION

- **Be sure to remove the diaphragms before cleaning air and fuel passages with compressed air. The diaphragms might be damaged.**

- Refer to section 2 for fuel tank removal and installation.
- When disassembling the fuel system components, note the locations of the O-rings. Replace them with new ones on reassembly.
- Before disassembling the carburetor, place an approved fuel container under the carburetor drain bolt, loosen the bolt and drain the carburetor.
- After removing the carburetor, wrap the intake port of the engine with a shop towel or cover it with a piece of tape to prevent any foreign material from dropping into the engine.

NOTE

- If the vehicle is to be stored for more than one month, drain the float bowls. Fuel left in the float bowls may cause clogged jets resulting in hard starting or poor driveability.

Toroubleshooting

Engine Won't Start
- Too much fuel getting to the engine
  -Air cleaner element clogged
  -Flooded carburetors
- Intake air leak
- Fuel contaminated/deteriorated
- Slow circuit or bystarter circuit clogged
- No fuel to carburetors
  -Fuel strainer clogged
  -Fuel tube clogged
  -Float valve stuck
  -Float level misadjusted
  -Fuel tank breather tube clogged

Lean Mixture
- Fuel jets clogged
- Float valve faulty
- Float level too low
- Fuel line restricted
- Carburetor air vent hole (or tube) clogged
- Intake air leak
- Throttle valve faulty
- Vacuum piston faulty

Rich Mixture
- Bystarter valve in ON position
- Float valve faulty
- Float level too low
- Air jets clogged
- Air cleaner element contaminated
- Flooded carburetors

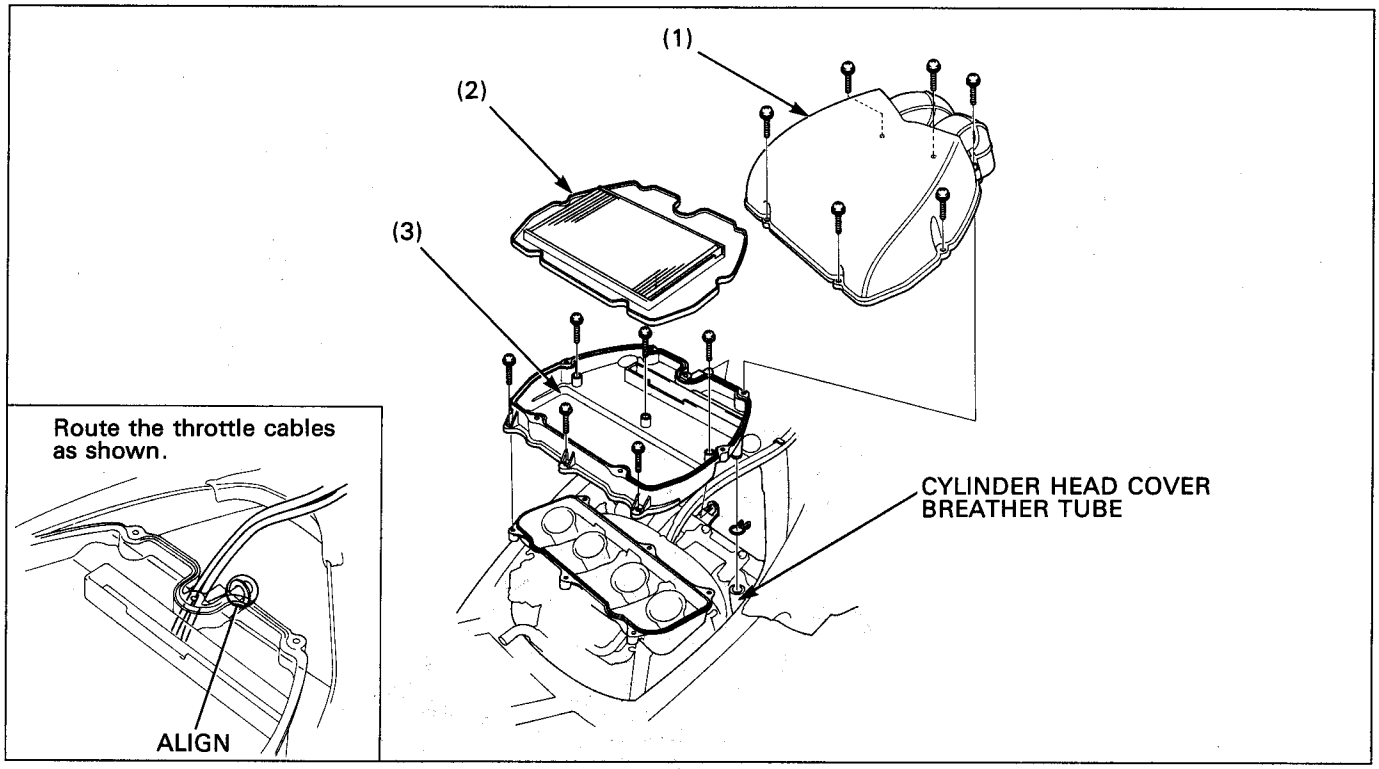
Engine Stalls, Hard To Start, Rough Idling
- Fuel line restricted
- Ignition malfunction
- Fuel mixture too lean/rich
- Fuel contaminated/deteriorated
- Intake air leak
- Idle speed misadjusted
- Float level misadjusted
- Fuel tank breather hole clogged
- Pilot screw misadjusted
- Slow circuit or bystarter circuit clogged

Afterfiring When Engine Braking Is Used
- Lean mixture in slow circuit.
- Emission control system malfunction (SW, AR type only)
  -secondary air supply system faulty
  -loose, disconnected or deteriorated hoses of the emission control system

Backfiring Or Misfiring During Acceleration
- Ignition system faulty
- Fuel mixture too lean

Poor Performance (Driveability) And Poor Fuel Economy
- Fuel system clogged
- Ignition malfunction
- Emission control system malfunction (SW, AR type only)
  -secondary air supply system faulty
  -loose, disconnected or deteriorated hoses of the emission control system

Air Cleaner Case Removal/Installation

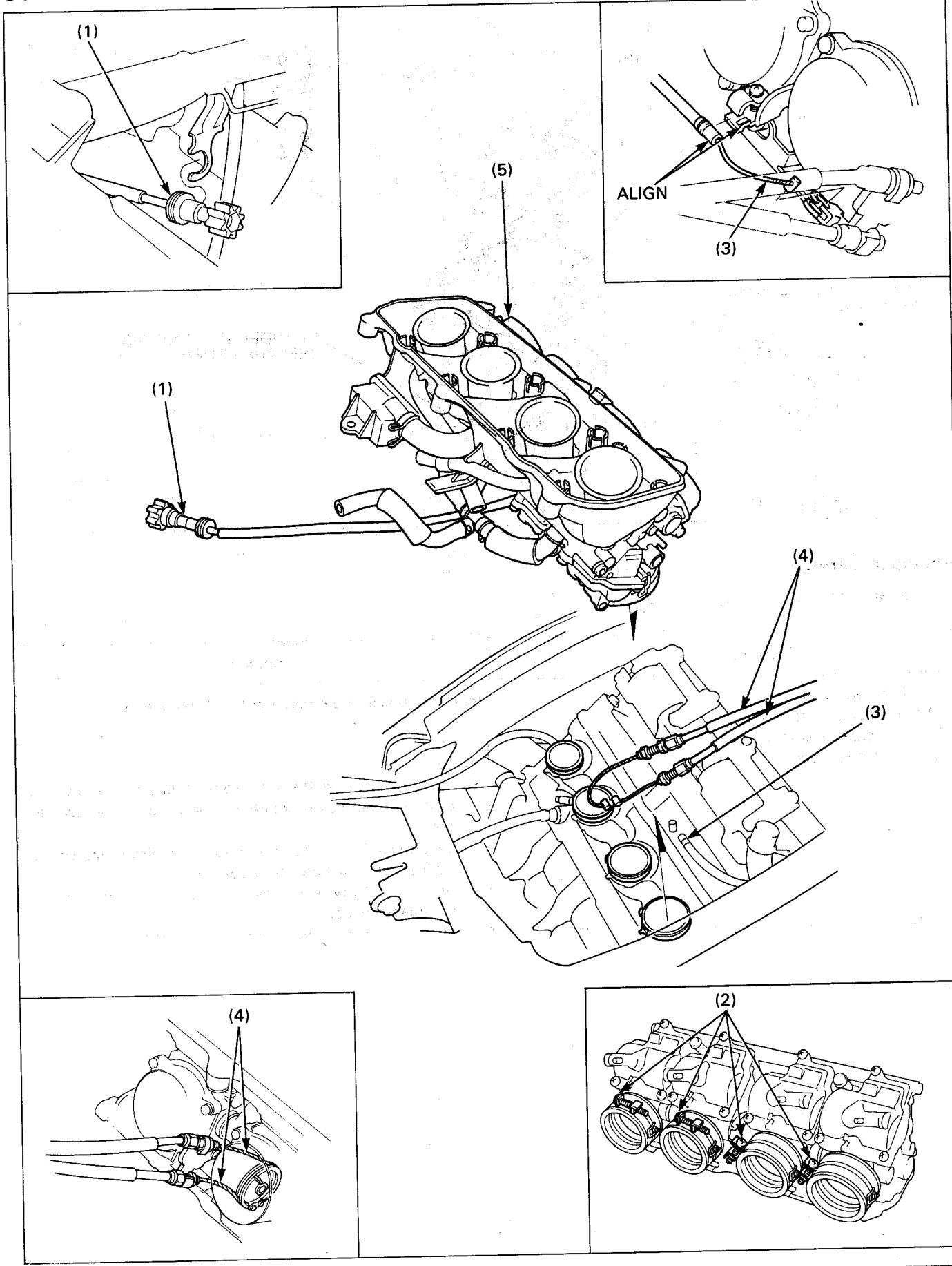


Requisite Service

- Fuel tank removal/installation(page 2-11)

Procedure		Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal
(1)	Air cleaner case cover	1	
(2)	Air cleaner element	1	
(3)	Air cleaner base	1	NOTE • Before removing the air cleaner base, disconnect the cylinder head cover breather tube from the air cleaner base. • When installing, align the boss on the front end of the air cleaner base with the hook on the frame. • Route the throttle cables through the cut-out in the air cleaner base.

Carburetor Removal/Installation



⚠ WARNING

- **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 where gasoline is stored can cause a fire or explosion.

NOTE

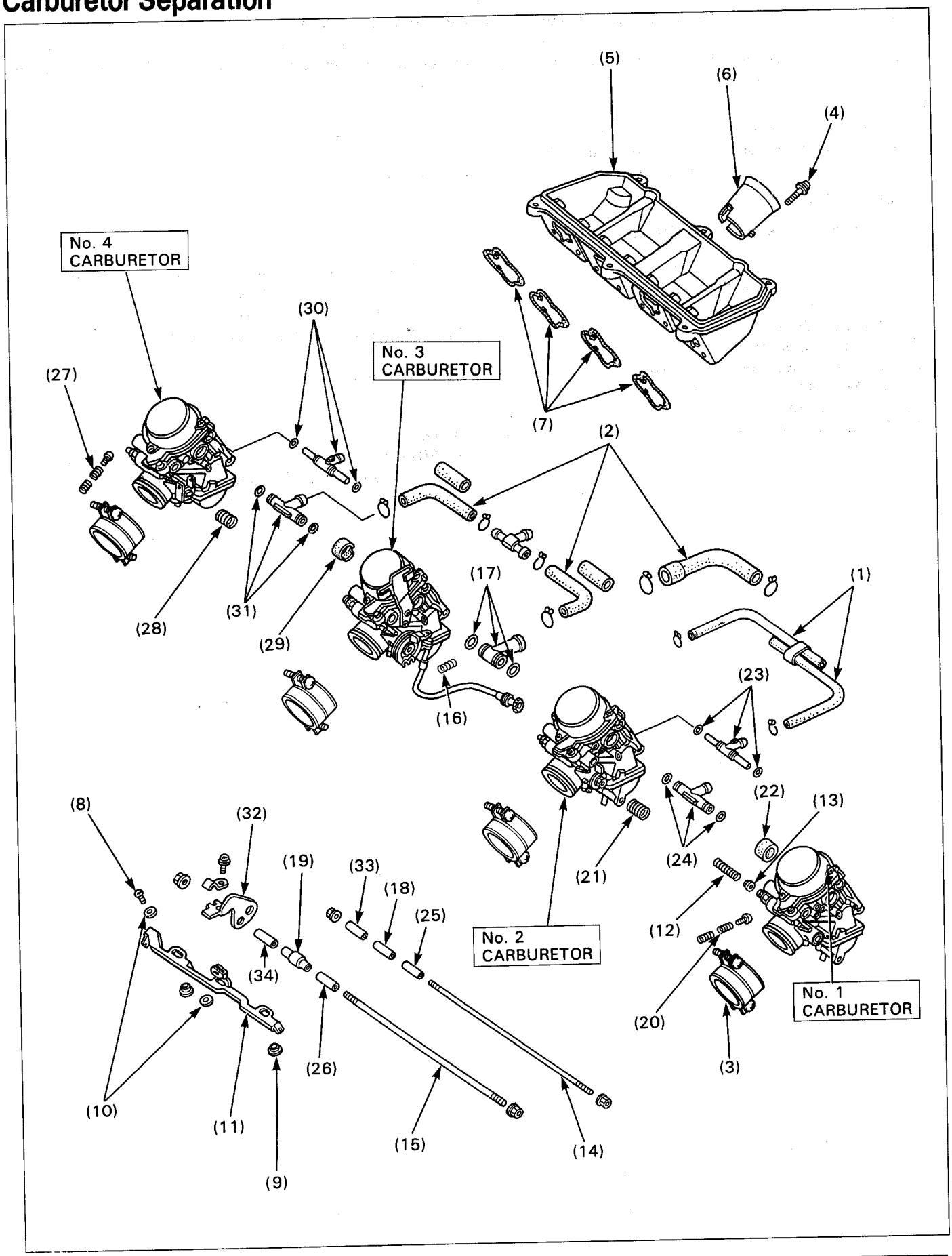
- Route each tube correctly reffering page 1-20.

Requisite Service

- Air cleaner case removal/installation(page 6-3)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Throttle stop screw	1	
(2)	Carburetor insulator band screw	4	Only loosening.
(3)	Choke cable	1	
(4)	Throttle cable	2	
(5)	Carburetor assembly	1	NOTE • After removing the carburetor assembly, do not place it up side down or air funnel might be deformed.

Carburetor Separation

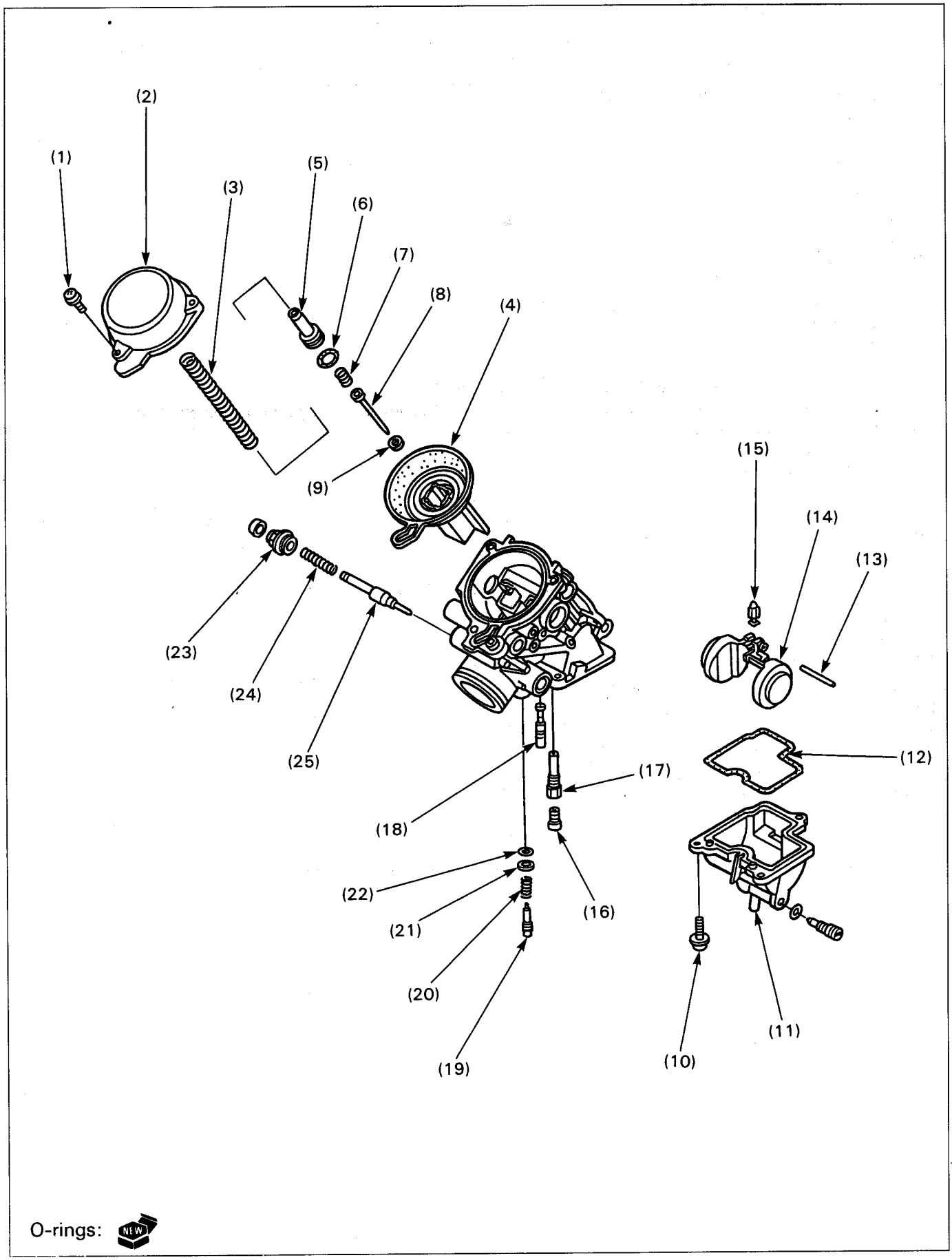


Requisite Service

- Carburetor removal (page 6-5).

	Procedure	Q'ty	Remarks
	Separate No3./No.4 carb. from No1./No.2 carb.		
(1)	Carburetor breather tube	2	
(2)	Carburetor fuel tube	3	
(3)	Carburetor insulator	4	
(4)	Screws	16	
(5)	Air cleaner base	1	
(6)	Air funnel	4	
(7)	O-ring	4	
(8)	Bystarter arm screw	2	
(9)	Plastic collar	2	
(10)	Plastic washer	2	
(11)	Bystarter arm	1	
(12)	Thrust spring	1	
(13)	Spring seat	1	
(14)	Carburetor connecting bolt/nut (5mm)	1/2	NOTE
(15)	Carburetor connecting bolt/nut (6mm)	1/2	• Loosen each nut gradually and alternately.
(16)	No3. carb. synchronization spring	1	
(17)	Air joint pipe (3-way)/O-ring	1/2	
(18)	Dowel pin (5mm bolt)	1	
(19)	Collared dowel pin (6mm bolt)	1	
	Separate No1. carb. from No.2 carb.		
(20)	No1. carb. synchronization spring	1	
(21)	Thrust spring	1	
(22)	Air joint pipe (rubber)	1	
(23)	Air vent pipe (3-way)/O-ring	1/2	
(24)	Fuel joint pipe (3-way)/O-ring	1/2	
(25)	Dowel pin (5mm bolt)	1	
(26)	Dowel pin (6mm bolt)	1	
	Separate No3. carb. from No. 4 carb.		
(27)	No4. carb. synchronization spring	1	
(28)	Thrust spring	1	
(29)	Air joint pipe (rubber)	1	
(30)	Air vent pipe (3-way)/O-ring	1/2	
(31)	Fuel joint pipe (3-way)/O-ring	1/2	
(32)	Bystarter cable holder	1	
(33)	Dowel pin (5mm bolt)	1	
(34)	Dowel pin (6mm bolt)	1	

Carburetor Disassembly/Assembly



NOTE

- Vacuum chambers, float chambers and jets can be serviced without separating the carbretor.
- Keep the carburetor parts separate from the other carburetor's to install the parts to the original positions.

Requisite Service

- Carburetor separation (page 6-6)
- Carburetor combination (page 6-10)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
	Vacuum chamber disassembly		
(1)	Vacuum chamber cover screws	3	
(2)	Vacuum chamber cover	1	
(3)	Diaphragm spring	1	When installing, be careful not to bend the spring.
(4)	Diaphragm/Vacuum piston	1	When installing, align the tab of the diaphragm with the cut out in the carburetor body.
(5)	Jet needle holder	1	
(6)	O-ring	1	
(7)	Jet needle holder spring	1	
(8)	Jet needle	1	
(9)	Washer	1	
	Float chamber disassembly		
(10)	Float chamber cover screws	3	
(11)	Float chamber	1	
(12)	O-ring	1	
(13)	Float pin	1	
(14)	Float	1	
(15)	Float valve	1	
(16)	Main jet	1	
(17)	Needle jet holder	1	
(18)	Slow jet	1	
(19)	Pilot screw	1	Refer to page 1-6 for number of turning out.
(20)	Spring	1	
(21)	Washer	1	
(22)	O-ring	1	
	Bystarter valve disassembly		
(23)	Valve nut	1	
(24)	Spring	1	
(25)	Bystarter valve	1	

Jet Needle Holder Removal/Installation

Remove the vacuum piston.
Screw a proper 4 mm threads screw in the jet needle holder as shown and pull out the jet needle holder with a pliers.

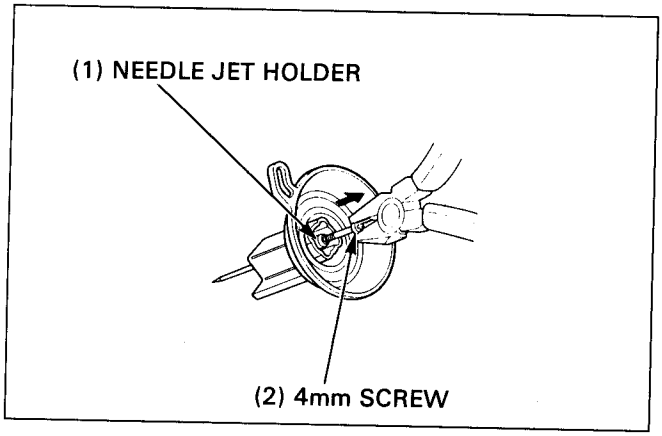
NOTE

- Be careful not damage the diaphragm.
- Do not remove the jet needle holder by pushing in the jet needle.

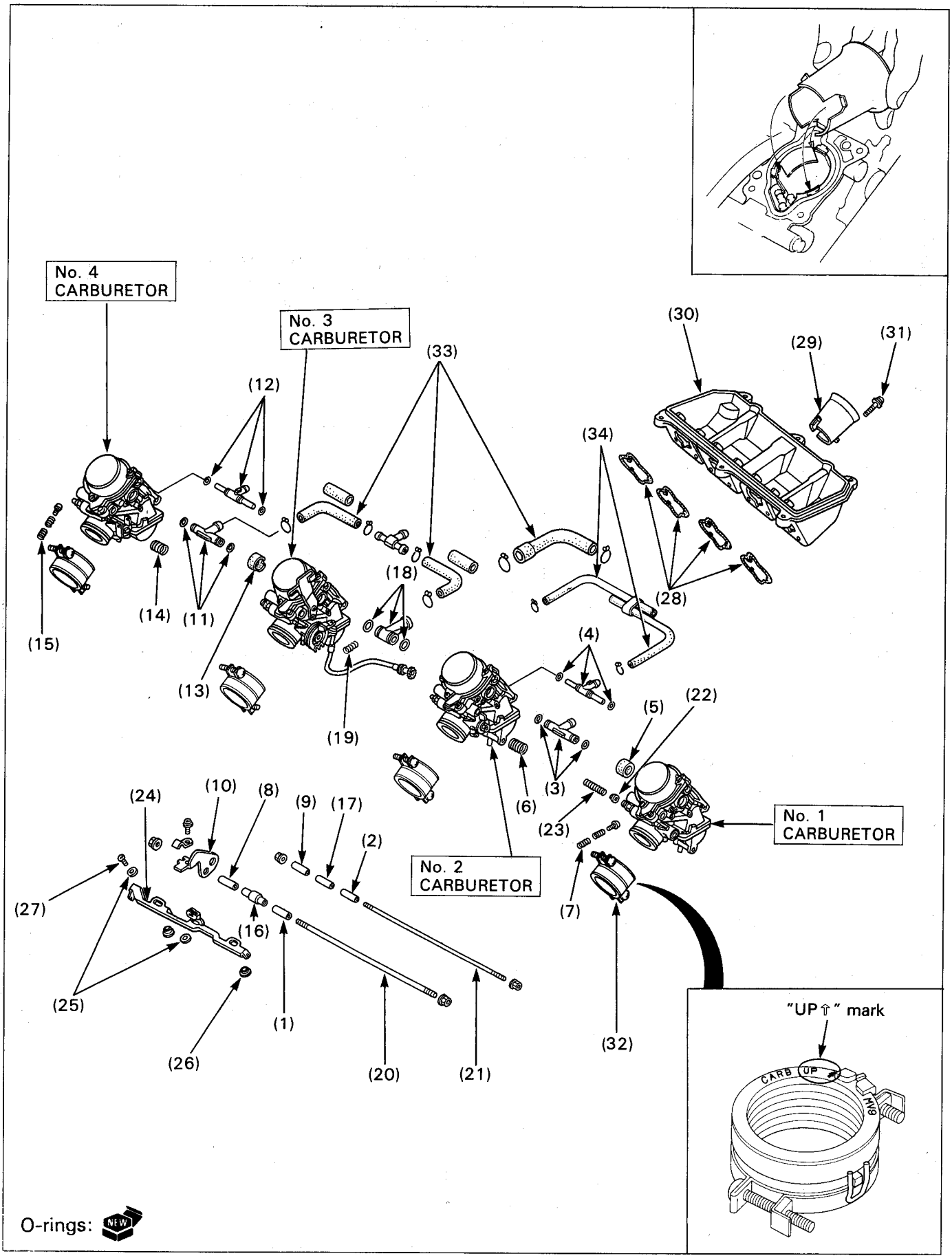
Install the jet needle holder in the reverse order of removal.

NOTE

- Push the jet needle holder in until the O-ring on the holder seats completely in the groove in the vacuum piston.



Carburetor Combination

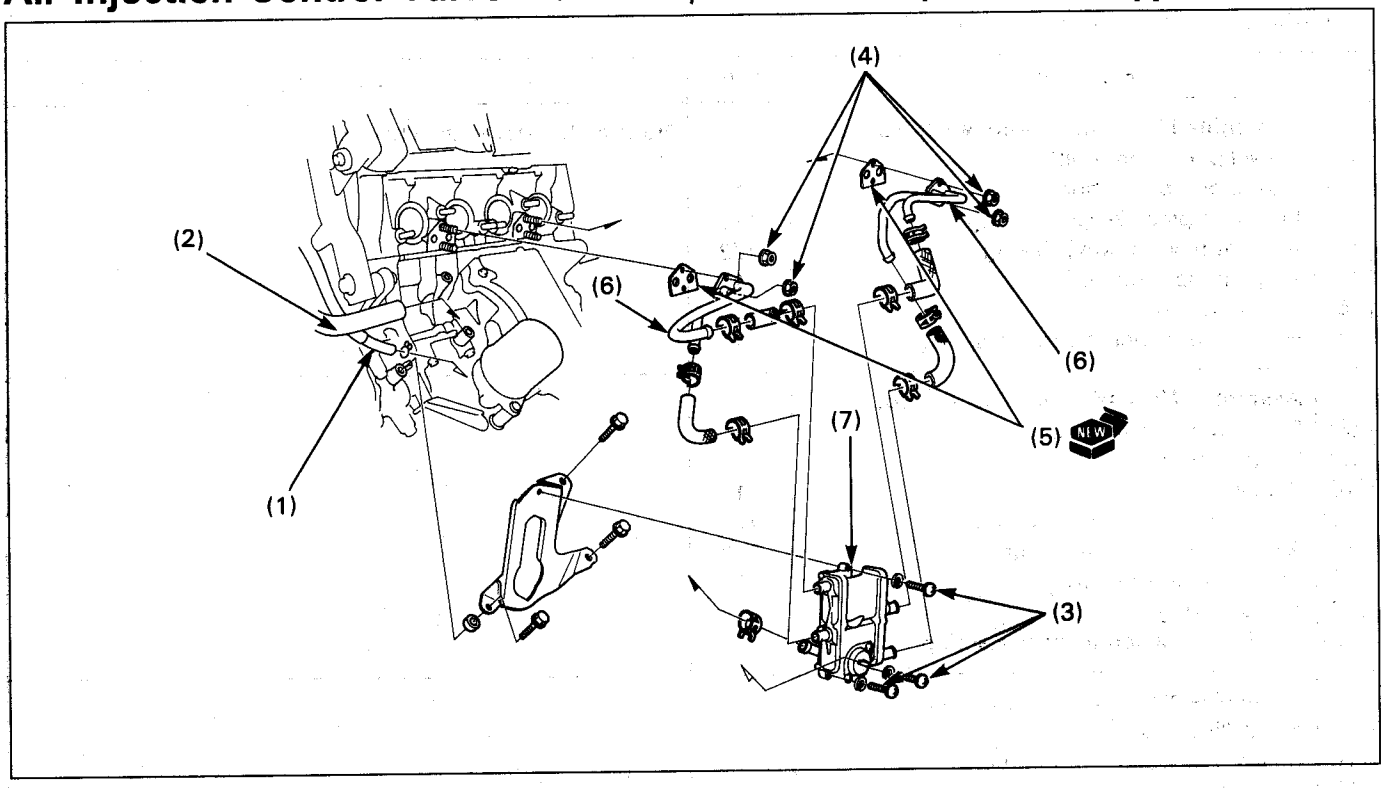


Requisite Service

- Carburetor installation (page 6-5)

	Procedure	Q'ty	Remarks
	Assemble No.1 carb. with No.2 carb..		No.2 carburetor is the base carburetor.
(1)	Dowel pin (6 mm bolt)	1	
(2)	Dowel pin (5 mm bolt)	1	
(3)	Fuel joint pipe (3-way)/O-ring	1/2	
(4)	Air vent pipe (3-way)/O-ring	1/2	
(5)	Air joint pipe (rubber)	1	
(6)	Thrust spring	1	
(7)	No1. carb. synchronization spring	1	
	Assemble No.carb. with No.4 carb..		
(8)	Dowel pin (6 mm bolt)	1	
(9)	Dowel pin (5 mm bolt)	1	
(10)	Bystarter cable holder	1	
(11)	Fuel joint pipe (3-way)/O-ring	1/2	
(12)	Air vent pipe (3-way)/O-ring	1/2	
(13)	Air joint pipe (rubber)	1	
(14)	Thrust spring	1	
(15)	No.3 carb. synchronization spring	1	
	Assemble No.1/No.2 carb. with No.3/No.4 carb..		
(16)	Collared dowel pin (6 mm bolt)	1	
(17)	Dowel pin (5 mm bolt)	1	
(18)	Air joint pipe (3-way)/O-ring	1/2	
(19)	No.3 carb.synchronization spring	1	
(20)	Carburetor connecting bolt/nut (6 mm)	1/2	NOTE
(21)	Carburetor connecting bolt/nut (5 mm)	1/2	• Tighten each nut gradually and alternately.
(22)	Spring seat	1	
(23)	Thrust spring	1	
(24)	Bystarter arm	1	
(25)	Plastic washer	2	
(26)	Plastic collar	2	
(27)	Bystarter arm screw	2	
(28)	O-ring	4	NOTE • Align the tang of the O-ring with the cut out in the carburetor.
(29)	Air funnel	4	NOTE • Align the cut out in the end of the funnel with the groove in the carburetor.
(30)	Air cleaner base	1	
(31)	Screws	16	
(32)	Carburetor insulator	4	Align the insulator groove with the carburetor lug with the "UP⇧" mark facing carburetor.
(33)	Carburetor fuel tube	1	
(34)	Carburetor breather tube	2	

Air Injection Control Valve Removal/Installation(SW, AR Type Only)



Requisite Service

- Side fairing removal/installation(page 2-3)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Air Injection Control Valve (AICV) control tube	1	
(2)	Air suction hose	1	
(3)	Screw/Spring washer	3/3	
(4)	Air inlet pipe joint nut	4	
(5)	Gasket	2	
(6)	Air joint pipe	2	
(7)	Air Injection Control Valve (AICV) assembly	1	

Pilot Screw Adjustment (SW Type Only)

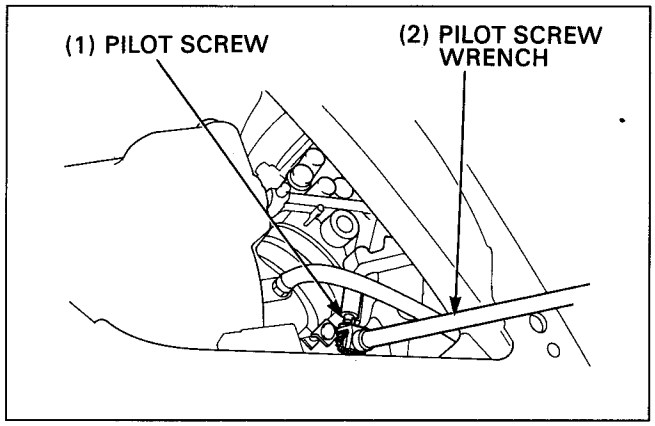
Idle Drop Procedure

⚠ WARNING

- **If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.**

NOTE

- Make sure the carburetor synchronization is within specification before pilot screw adjustment (see page 1-6).
- The pilot screws are factory pre-set and no adjustment is necessary unless the pilot screws are replaced.
- Use a tachometer with graduations of 50 min^{-1} (rpm) change.



1. Turn each pilot screw clockwise until it seats lightly, then back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.

Initial Opening : 3 turns out

CAUTION

- **Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.**

2. Warm up the engine to operating temperature. Stop and go riding for 10 minutes is sufficient.
3. Attach a tachometer according to its manufacturer's instructions.
4. Adjust the idle speed to the specified rpm with the throttle stop screw.

Idle Speed : 1,400±50 min^{-1} (rpm)

5. Turn all pilot screws 1/2 turn counterclockwise from the initial setting.

S TOOL

Pilot screw wrench 07908-4730001

6. If the engine speed increases by 50 min^{-1} (rpm) of more, turn all pilot screws out by successive 1/2 turn increments until engine speed does not increase.
7. Adjust the idle speed with the throttle stop screw.
8. Turn the No.2 carburetor pilot screw in until the engine speed drops 50 min^{-1} (rpm).
9. Then turn the No.2 carburetor pilot screw counterclockwise 1/2 turn from the position obtained in step 9.
   Adjust the idle speed with the throttle stop screw.
10. Perform steps 8, 9 and 10 for the No.1, 3 and 4
11. carburetor pilot screws.

7. Engine Removal/Installation

Service Information	7-2	Engine Removal/Installation	7-2

Service Information

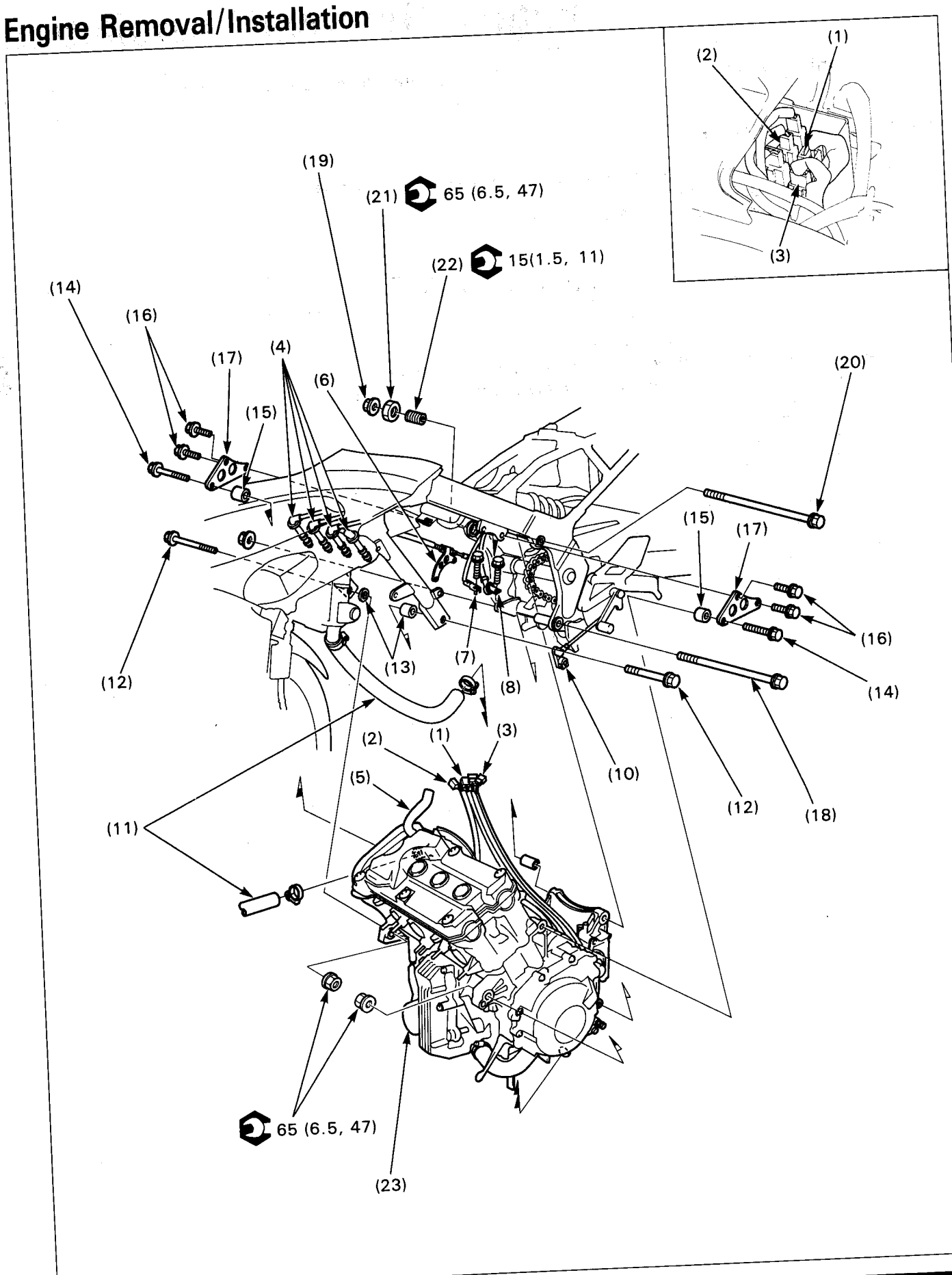
- A floor jack or other support is requiered to support and maneuver the engine.
  Engine dry weight 60.7kg(133.8lb)
  SW, AR type: 61.6 kg (135.8 lb)

CAUTION

- **Do not jack up the motorcycle using the oil filter or oil cooler.**

- Parts requiring engin removal for servicing:
  - Crankcase, cylinder, piston (Section 10)
  - Crankshaft, transmission (not including the shift drum and shift forks) (Section 11)
- The following components can be serviced with the engine installed in the frame.
  - Water pump (Section 5)
  - Carburetor (Section 6)
  - Camshaft (Section 8)
  - Cylinder head (Section 8)
  - Clutch (Section 9)
  - Gear shift linkage (Section 9)
  - Shift drum and shift forks (Section 9)
  - Oil pump (Section 4)
  - Alternator (Section 15)
  - Pulse generator (Section 16)

Engine Removal/Installation



CAUTION

- **Do not jack up the motorcycle using the oil filter or the oil cooler**

NOTE

- A floor jack or other adjustable support is required to support and maneuver the engine. The jack height must be continually adjusted to relieve stress for ease of bolt removal.
- Turn the igniton switch OFF and disconnect the battery ground cable.

Requisite Service

- Side fairing removal (page 2-3)
- Exhaust system removal/installation (page 2-10)

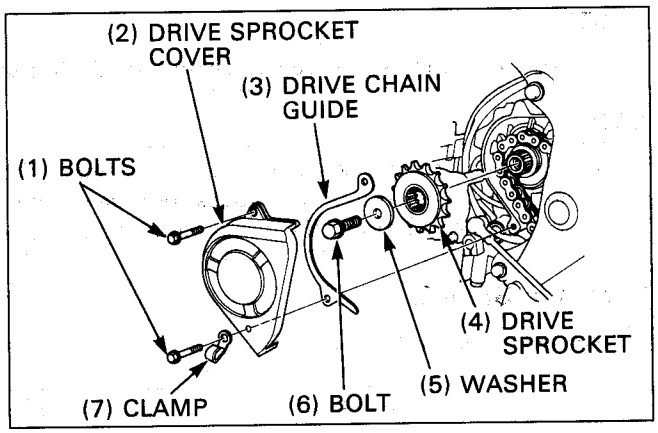
	Procedure	Q'ty	Remarks
	Removal Other		Installation is in the reverse order of removal.
(1)	Alternator connector (3P)	1	
(2)	Pulse generator connector (2P mini)	1	
(3)	3P mini connector (oil pressure switch wire/ neutral swich wire/thermo sensor wire)	1	
(4)	Spark plug cap	4	
(5)	Cylinder head cover breather tube	1	
(6)	Clutch cable holder	1	
(7)	Starter motor ground wire	1	
(8)	Starter motor wire	1	
(9)	Drive sprocket	1	Refer to page 7-4 for removal and installation.
(10)	Gearshift pedal link	1	Install the link with the punch marks on the link and gear-shift spindle.
(11)	Water hose	2	Disconnect the water hoses at the engine side.
(12)	Front engine hanger bolt	2	
(13)	Collar (long/short)	1/1	Install the long one to the left hanger arm and the short one to the right.
(14)	Engine hanger plate bolt (10mm)	2	
(15)	Collar	2	
(16)	Engine hanger plate bolt (8mm)	4	
(17)	Engine hanger plate	2	
(18)	Rear lower engine hanger bolt	1	
(19)	Rear upper engine hanger nut	1	
(20)	Rear upper engine hanger bolt	1	
(21)	Engine hanger adjusting bolt lock nut	1	Refer to page 7-4 for installation.
(22)	Engine hanger adjusring bolt	1	
(23)	Engine assembly	1	NOTE • When setting the engine on the floor, set it carefully not to break the long lims on the oil pang.

Drive Sprocket Removal/Installation

Remove the following:
- drive sprocket cover bolts
- clamp
- drive sprocket cover
- drive chain guide
- drive sprocket bolt
- washer
- drive sprocket

Install the removed parts in the reverse order of removal.

Torque:
Drive sprocket bolt: 55N·m(5.5kg-m, 40ft-lb)



Engine Hanger Adjusting Bolt/Lock Nut Installation

Install the engine henger adjsting bolt so that its edge does not come out of the frame inner surface.

Install the rear upper engine hanger bolt through the frame, engine, collar and the adjusting bolt.

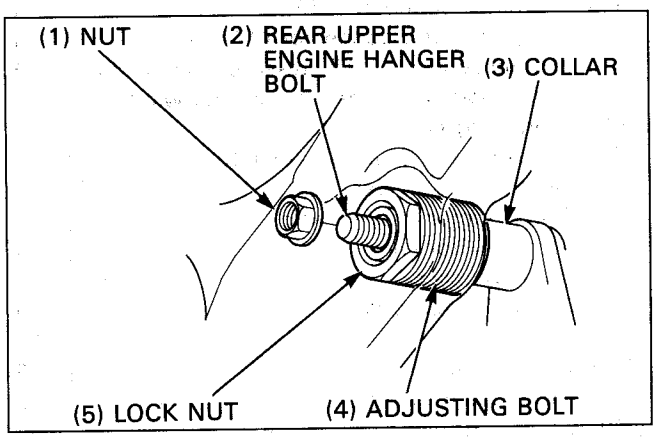
Push the rear upper engine hanger bolt so that you can tighten the adjusting bolt with a hexiagonal wrench.

Torque: 15N·m(1.5kg-m, 11ft-lb)

Tighten the lock nut while holding the adjusting bolt with a hexiagonal wrench.

Torgue: 65N·m(6.5kg-m, 47ft-lb)

Push the rear upper engine hanger bolt fully and tighten the nut.



8. Cylinder Head

Service Information	8-1	Cylinder Head Removal/Installation	8-7
Troubleshooting	8-1	Cylinder Head Disassembly/Assembly	8-8
Camshaft Removal/Installation	8-2		

Service Information

- This section covers service procedures for the cylinder head, valves, camshaft and cylinder. Cylinder head removal/installation can be performed with the engine in the frame.
- When disassembling, mark and store the disassembled parts to ensure they are reinstalled in their original locations.
- Clean all disassembled parts with clean solvent and dry them by blowing them off compressed air before
- inspection.
  Pour clean engine oil into the oil pockets in the cylinder head during assembly to lubricate the camshaft lobes.

Troubleshooting

- Engine top end problems usually affect engine performance. These can be diagnosed by a compression or leak-down test, or by tracing noises to the top-end with a sounding rod or stethoscope.

Compression Too Low, Hard Starting Or Poor Performance At Low Speed

- Valves
  - —Incorrect valve adjustment
  - —Burned or bent valves
  - —Incorrect valve timing
  - —Broken valve spring
  - —Weak valve spring
- Cylinder head
  - —Leaking or damaged head gasket
  - —Warped or cracked cylinder head
  - —Loose spark plug

Compression Too High

- Excessive carbon built-up in cylinder head or on top of piston

Excessive Smoke

- Worn valve stem or valve guide
- Damaged stem seal

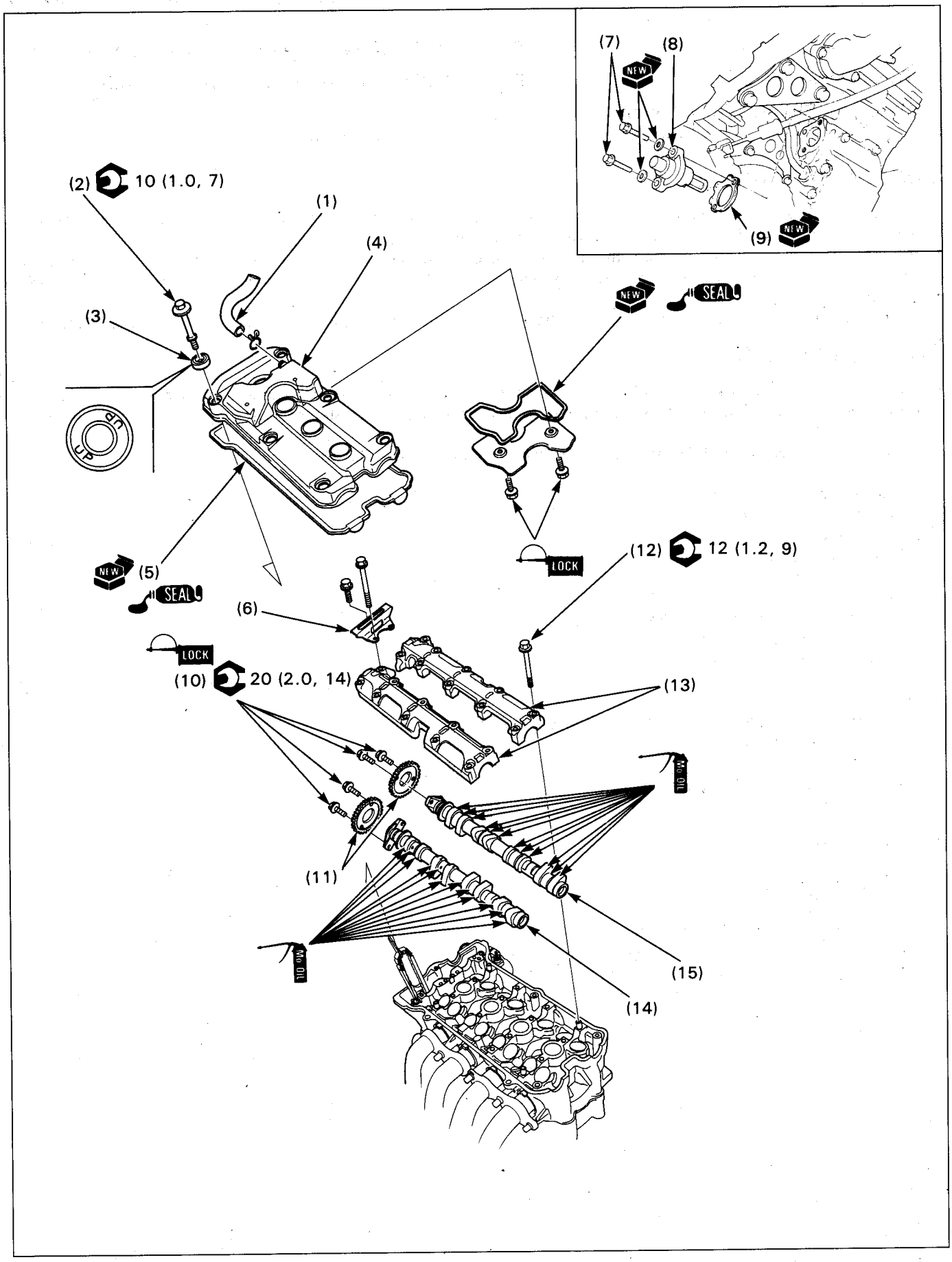
Excessive Noise

- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn camshaft
- Loose, worn or damaged cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth

Rough Idle

- Low cylinder compression
- Intake air leak

Camshaft Removal/Installation



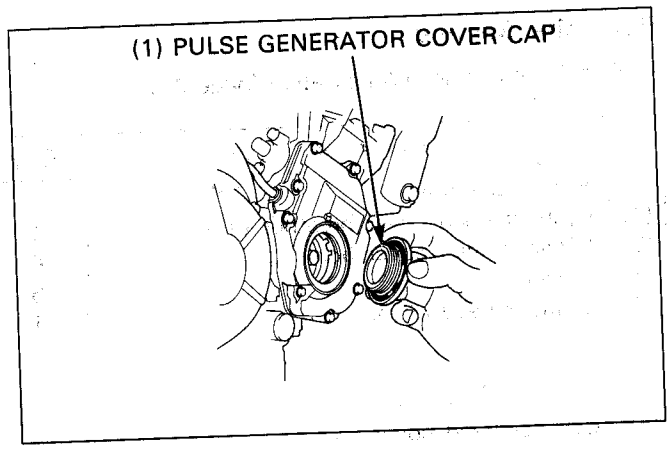
Requisite Service

- Side fairing removal/installation (page 2-3)
- Swing the radiator forward (page 3-5)

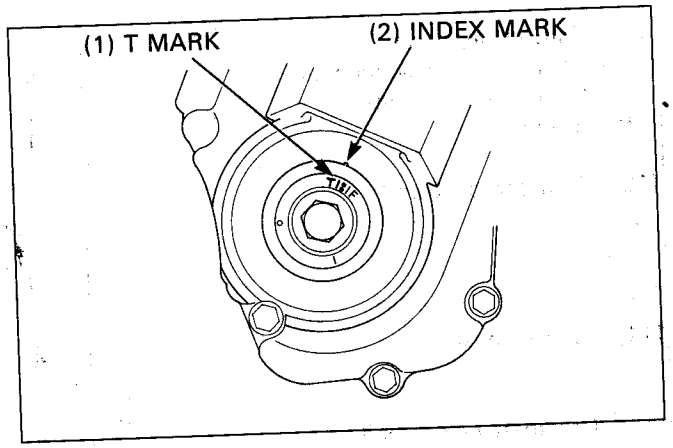
	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Cylinder head cover breather tube	1	
(2)	Cylinder head cover bolt	6	
(3)	Washer	6	Install the washers with the "UP" mark facing up.
(4)	Cylinder head cover	1	NOTE • Before installing, mark sure that the cylinder head cover packing is completely seated on the cylinder head cover.
(5)	Cylinder head cover packing	1	NOTE • Apply Three Bond 1521 or equivalent to the cylinder head cover and install the gasket onto the cover.
(6)	Cam chain cover	1	
(7)	Cam chain tensioner bolt	2	
(8)	Cam chain tensioner	1	Refer to page 8-6 for installation.
(9)	Gasket	1	NOTE • Install the gasket with the slit facing out.
(10)	Cam sprocket bolt	4	NOTE • Be careful not to fall the bolts into the crankcase. • After removing the bolts, clean the locking agent off the threads of the bolts and the bolt holes in the cam sprockets.
(11)	Cam sprocket	2	NOTE • After removing the cam chain from the sprockets, suspend the cam chain with a piece of wire.
(12)	Camshaft holder bolt	20	**CAUTION** • **From the outside to the inside, loosen the bolts in a crisscross pattern in several steps or camshaft holder might be broken.**
(13)	Camshaft holder	2	Refer to page 8-4 for installtion.
(14)	Exhaust (EX) camshaft	1	
(15)	Intake (IN) camshaft	1	

Camshaft Installation

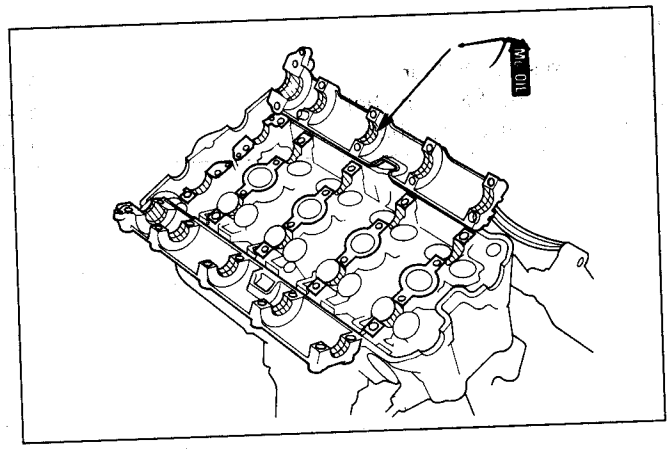
Remove the pulse generator rotor cover cap.



Align the T mark (notch mark) with the index mark on the pulse generator rotor cover by turning the crankshaft clockwise.



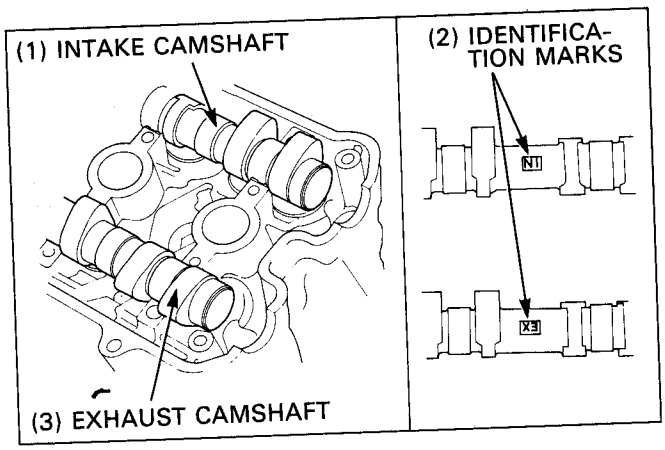
Apply molybdenum disulfide oil to the camshaft journals of the cylinder head and camshaft holders.



Install the camshafts onto the cylinder head with their cam lobes at the No. 1 cylinder facing up as shown.

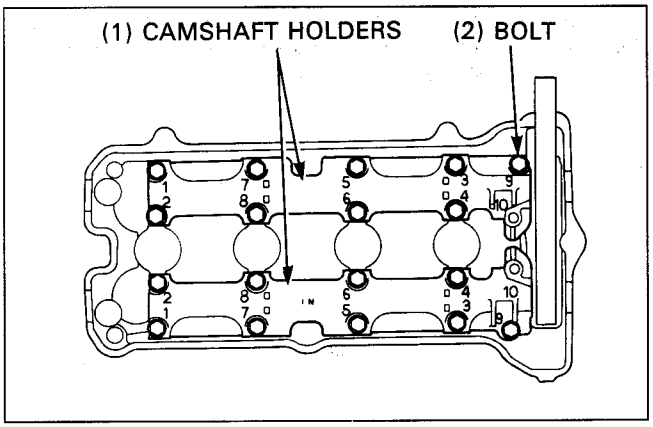
NOTE

- Install the each camshaft to the correct side. Each camshaft has the identification mark; "IN" is for the intake side and "EX" is for the exhaust side.



Install the camshaft holders onto the camshafts.

Install the longer bolts into the onter bolt holes and the shorter ones into the inner, and tighen the camshaft holder bolts in the numerical order casted on the camshaft holders.

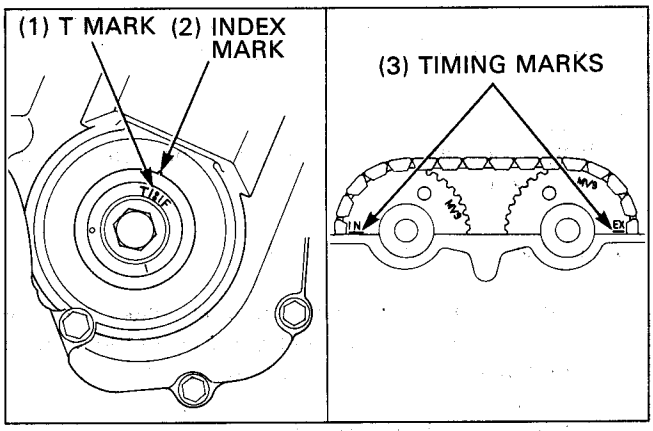


CAUTION

- **Do not tighten the camshaft holder bolts at this time. Tightening the camshaft holder bolts on only one-side might cause a camshaft holder to break.**

Make sure that the T mark (notch mark) aligns with the index mark on the pulse generator rotor cover.

Install the cam chain over the cam sprockets.
Install the cam sprockets onto the cam shaft flange with the timing marks on the cam sprockets aligning with the cylinder head upper surface facing opposite each other.

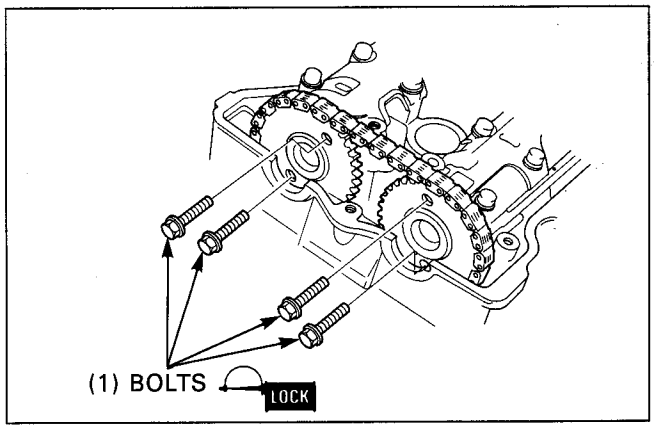


Before tightening the bolts, clean the locking agent off the threads of the bolts and the bolt holes in the cam sprockets.

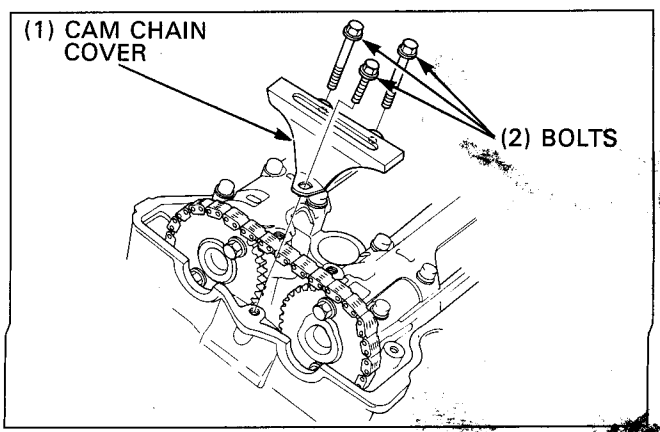
Apply a locking agent to the threads of the cam sprocket bolts and tighten the two bolts loosely.
Turn the crankshaft clockwise 1/2 turn (180°) and tighen the other two bolts to the specified torque.

Torque:20N·m(2.0kg-m, 14ft-lb)

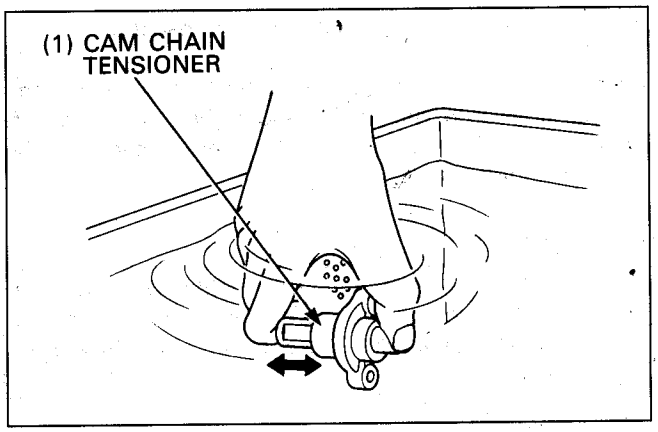
Turn the crankshaft clockwise 1/2 turn (180°) and tighen the other two bolts to the specified torque.



Install the cam chain cover and secure it with the bolts.



Submerge the cam chain tensioner in the clean engine oil. Fill up the cam chain tensioner with engine oil by pumping it until air bubbles stop coming out.



Install a new gasket, cam chain tensioner and new sealing washers, and tighten the bolts gradually.

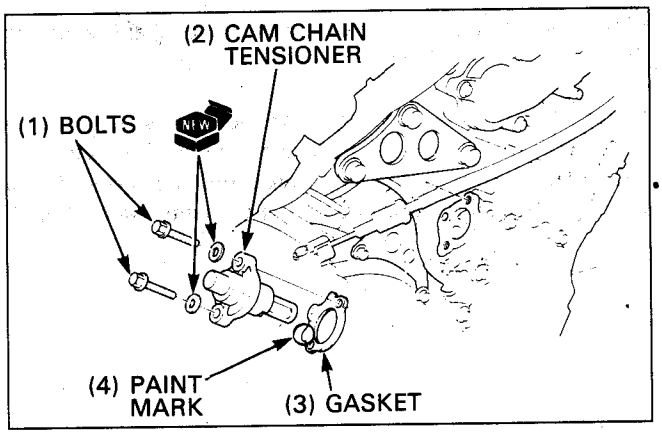
NOTE

- Install the gasket with the paint mark positioned as shown.

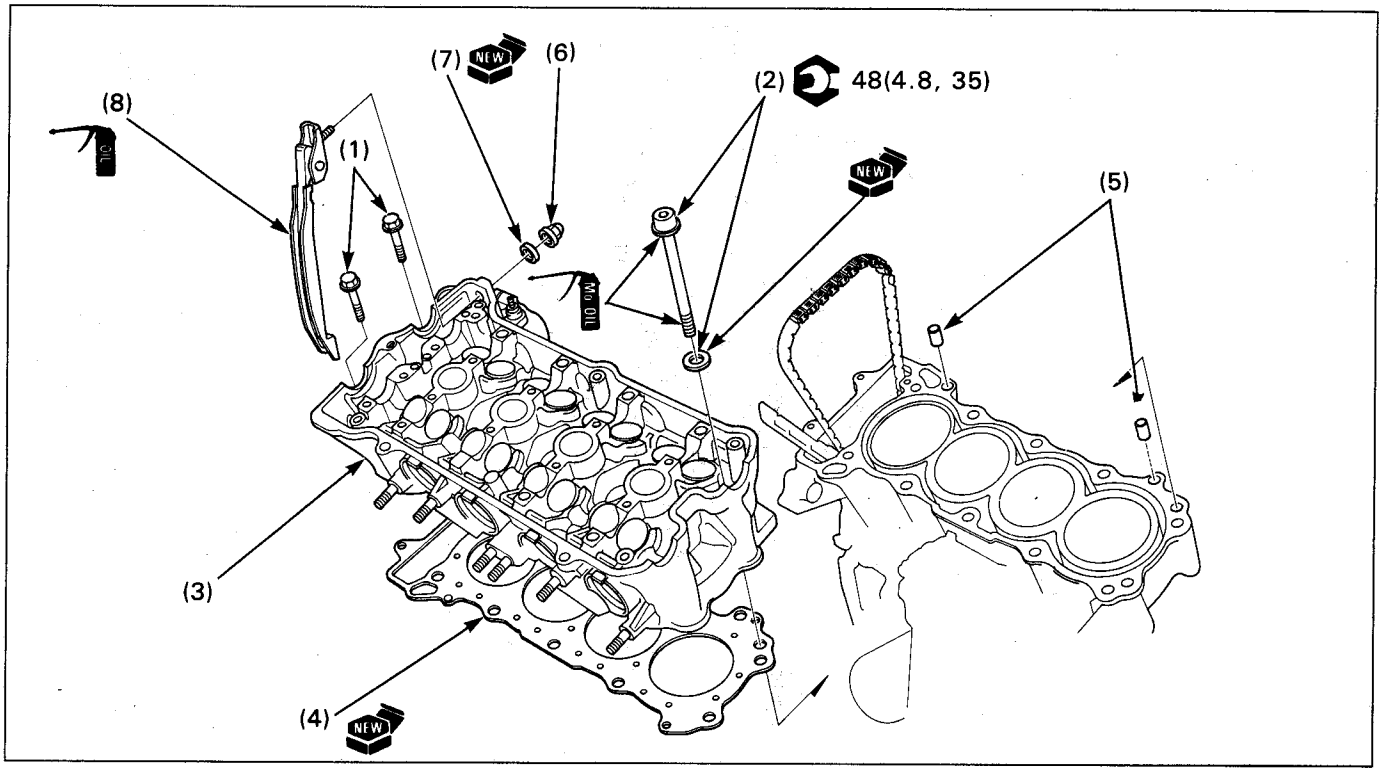
Torque: 10N·m(1.0kg-m, 7ft-lb)

After installing the cam chain tensioner, make sure the timing marks on the cam sprockets align with the cylinder head upper surface facing opposite each other.

Install the cylinder head cover (page 8-3)



Cylinder Head Removal/Installation

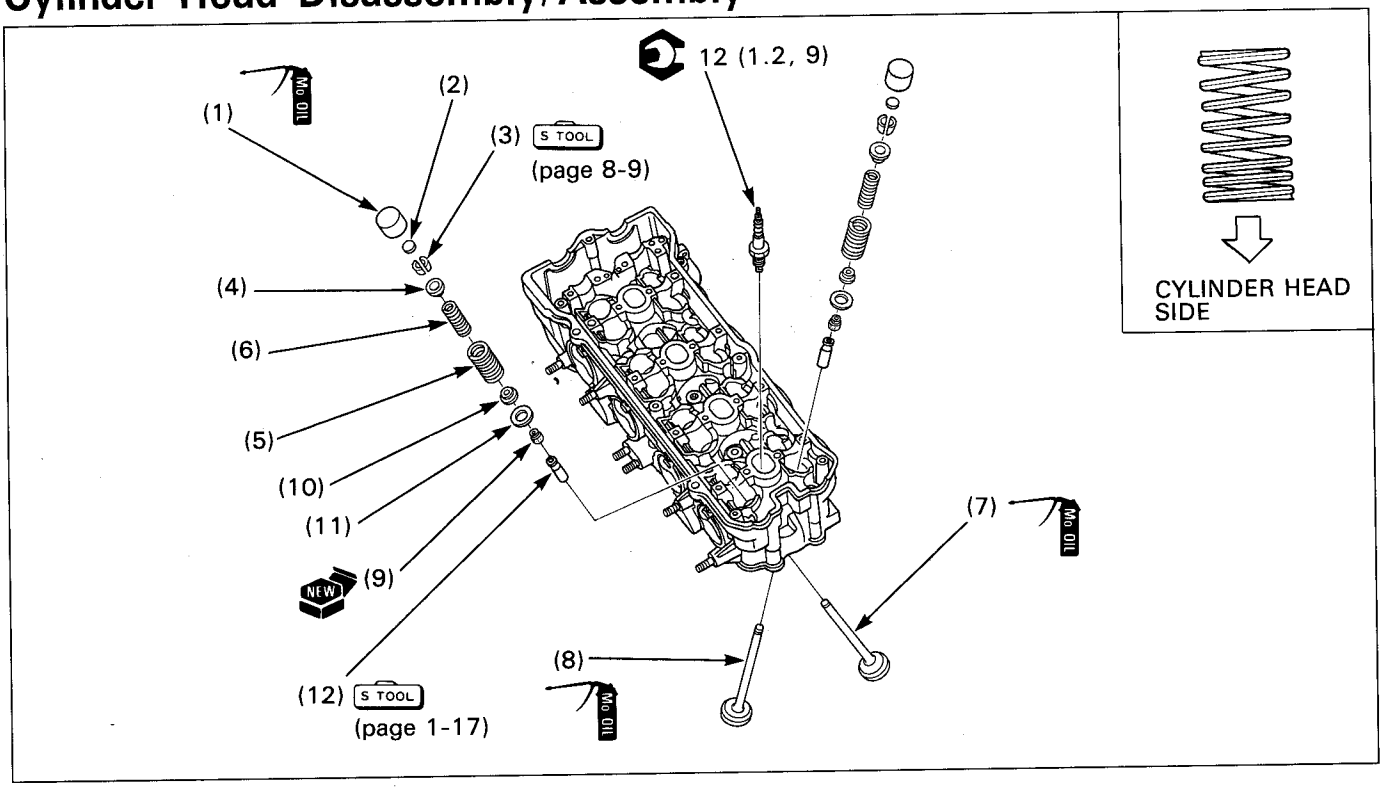


Requisite Service

- Exhaust system removal/installation(page 2-10)
- Camshaft removal/installation (page 8-2)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Cylinder head bolt (6mm)	2	
(2)	Cylinder head bolt (9mm)/Sealing washer	10/10	From the outside to the inside, loosen the bolts in a crisscross pattern in several steps.
(3)	Cylinder head assembly	1	Suspend the cam chain with a piece of wire to prevent the chain from falling into the crankcase.
(4)	Gasket	1	
(5)	Dowel pin	2	
(6)	Cap nut	1	
(7)	Sealing washer	1	
(8)	Cam chain tensioner slider	1	

Cylinder Head Disassembly/Assembly



NOTE

- Store the valve components in the same order they were installed so they can be reinstalled in their or original locations.
- Refer to section 9 of the Common Service Manual for valve guide inspection/replacement.

Requisite Service

- Cylinder head removal/installation (page 8-7)

Procedure		Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Valve lifter	16	NOTE • Remove the valve lifters using a hand lapping tool. Do not damage the cylinder head-valve lifter sliding surfaces.
(2)	Valve shim	16	NOTE • Do not allow shims to fall into the crankcase.
(3)	Valve cotter	32	Refer to page 8-9 for removal/installation.
(4)	Retainer	16	
(5)	Outer valve spring	16	Install the valve springs with the narrow pitch end facing down.
(6)	Inner valve spring	16	
(7)	Intake valve	8	
(8)	Exhaust valve	8	
(9)	Stem seal	16	
(10)	Inner spring seat	16	
(11)	Outer spring seat	16	
(12)	Valve guide	16	

Valve Cotters Removal/Installation

Remove the valve lifters and shims.

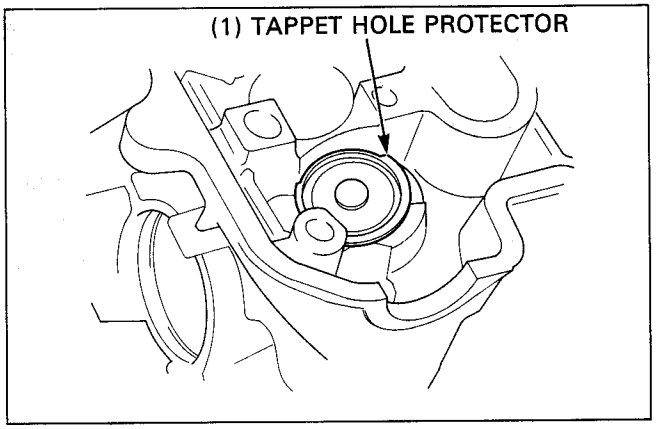
NOTE

- Do not allow shims to fall into the crankcase. The shim(s) may occasionally stick to the valve lifter.
- Mark the positions of all valve lifters and shims to ensure correct reassembly.
- It is easy to remove the valve lifter with a valve lapping tool or magnet.
- Remove the shims with tweezers or a magnet.

Install the tappet hole protector into the valve lifter sliding surface.

S TOOL

Tappet hole protector 07HMG-MR70002



Install the valve spring compressor onto the valve and compress the valve spring.

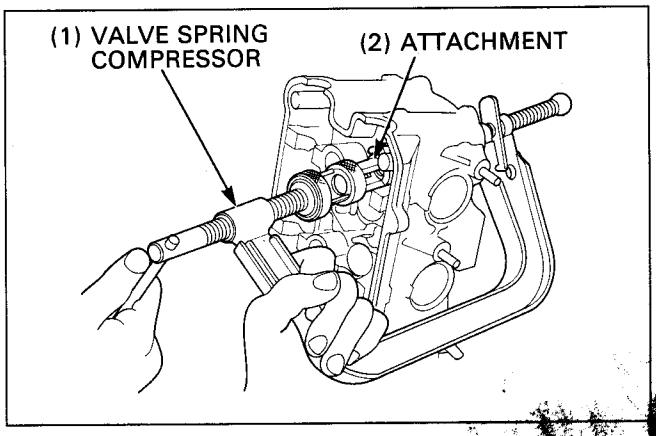
CAUTION

- **Do not compress the valve springs more than necessary to remove the valve cotters or the valve springs might be fatigue.**

Remove (or install) the valve cotters.

S TOOL

Valve spring compressor attachment 07959-KM30101
Valve spring compressor 07757-0010000



9. Clutch/Gearshift Linkage

Service Information	9-1	Gearshift Linkage Removal/Installation	9-8
Troubleshooting	9-1	Shift Drum/Shift Forks Removal/ Installation	9-10
Right Crankcase Cover Removal/ Installation	9-2	Clutch Installation	9-12
Clutch Removal	9-4		

Service Information

- This section covers removal and installation of the right crankcase cover, clutch, gearshift linkage, shift drum and shift forks. These services can be performed with the engine in the frame.

Troubleshooting

Clutch Lever Too Hard To Pull In
- Damaged, kinked or dirty clutch cable
- Damaged clutch lifter mechanism
- Fauly clutch lifter bearing
- Clutch lifter rod installed inproperly

Clutch Will Not Disengage Or Vehicle Creeps With Clutch Disengaged
- Too much clutch lever free play
- Warped clutch plate
- Loose clutch lock nut
- Oil level too high, improper oil viscosity or oil additive used
- Damaged cluch lifter mechanism
- Clutch lifter rod installed inproperly

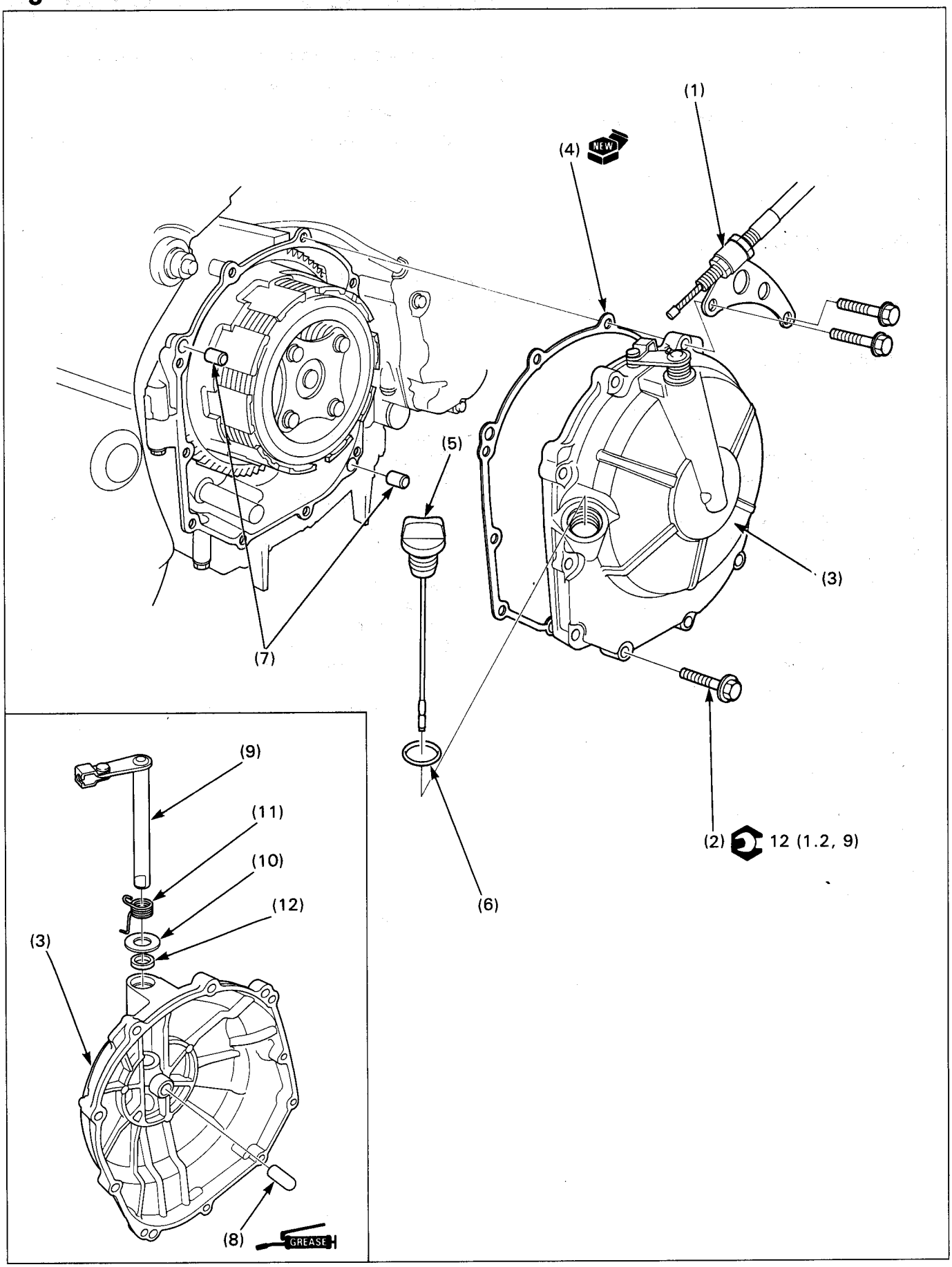
Clutch Slips
- Clutch lifter slipping
- Worn clutch discs
- Weak clutch springs
- No clutch lever free play
- Additive in engine oil

Clutch Operation Feels Rough
- Rough outer drum slots

Hard To Shift
- Misadjusted clutch cable
- Improper oil viscosity
- Bent gearshift spindle
- Bent shift forks
- Bent shift fork shaft
- Bent fork claw
- Damaged shift drum cam grooves

Jumps Out Of Gear
- Damaged stopper arm
- Stopper arm spring fatigue
- Damaged shifter cam
- Damaged or bent shift fork
- Bent shift fork shaft
- Worn gear engagement dogs or slots

Right Crankcase Cover Removal/Installation

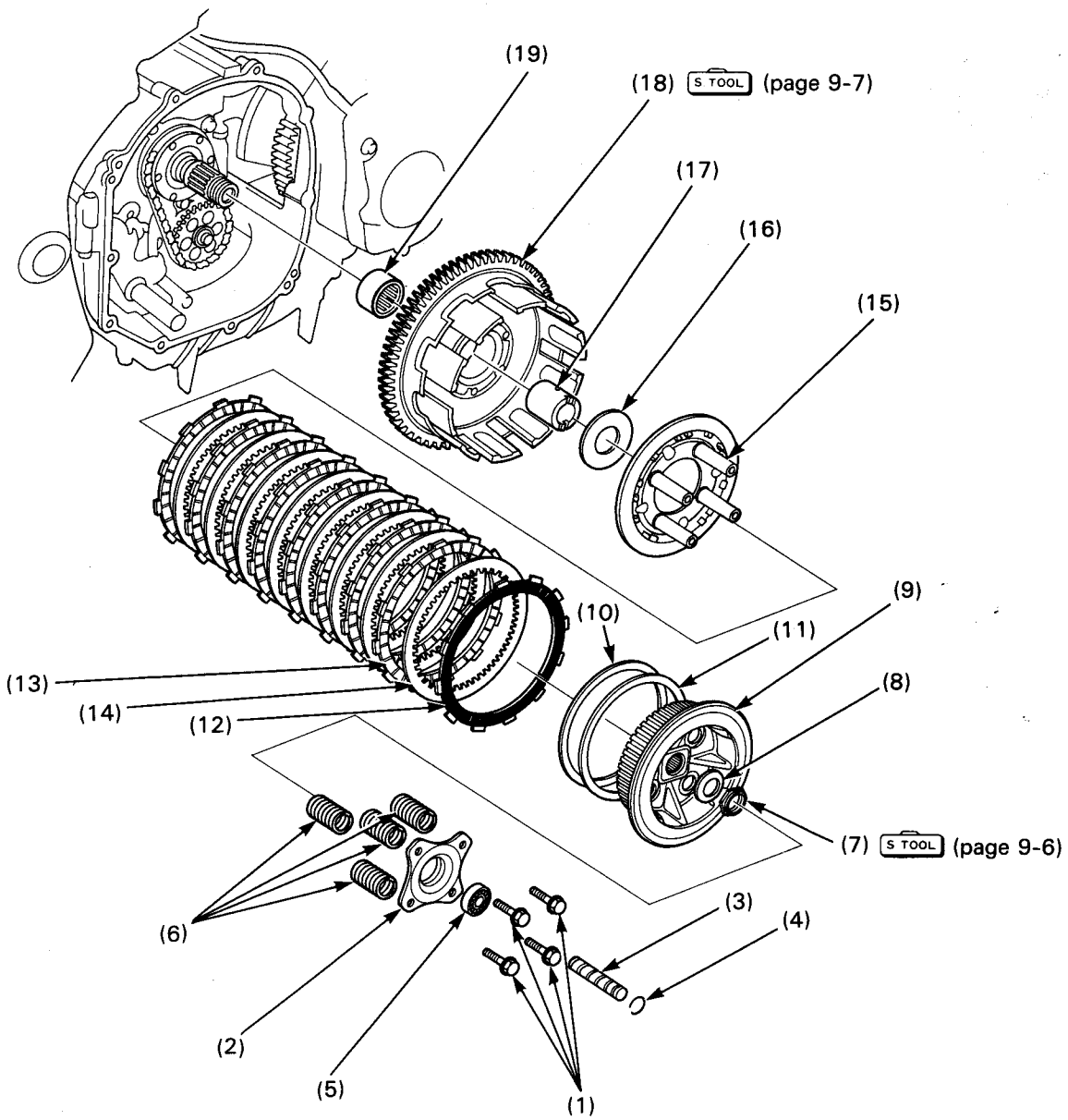


Requisite Service

- Side fairing removal/installation (page 2-3)
- Engine oil draining (drain bolt iocation:3-3, draining procedure: section 2 of the Common Service Manual)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Clutch cable holder	1	
(2)	Right crankcase cover bolt	8	Loose the bolts in a crisscross pattern in several steps.
(3)	Right crankcase cover	1	
(4)	Gasket	1	
(5)	Oil filler cap/dip stick	1	
(6)	O-ring	1	
(7)	Dowel pin	2	
(8)	Clutch lifter piece	1	
(9)	Clutch lifter arm	1	
(10)	Washer	1	
(11)	Return spring	1	
(12)	Oil seal	1	

Clutch Removal



Requisite Service

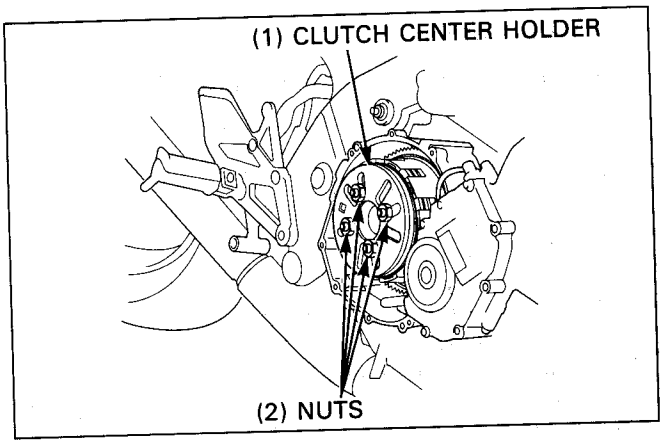
- Right crankcnase cover removal (page 9-2)

	Procedure	Q'ty	Remarks
(1)	Clutch lifter plate bolt	4	
(2)	Clutch lifter plate	1	
(3)	Clutch lifter rod	1	
(4)	Stopper ring	1	
(5)	Radial ball bearing (16001)	1	
(6)	Clutch spring	1	
(7)	Clutch center lock nut	1	Refer to page 9-6 for removal.
(8)	Cone washer	1	
(9)	Clutch center	1	
(10)	Judder spring	1	
(11)	Spring seat	1	
(12)	Clutch disc (larger I.D.)	1	
(13)	Clutch disc (smaller I.D.)	8	
(14)	Clutch plate	8	
(15)	Clutch pressure plate	1	
(16)	Thrust washer	1	
(17)	Clutch outer guide	1	Refer to page 9-6 for removal.
(18)	Clutch outer	1	
(19)	Needle bearing	1	Refer to page 9-7 for replacement.

Clutch Center Lock Nut Removal

Unstake the clutch center lock nut.
Set the clutch center holder to the perssure plate and loosely install the nuts.

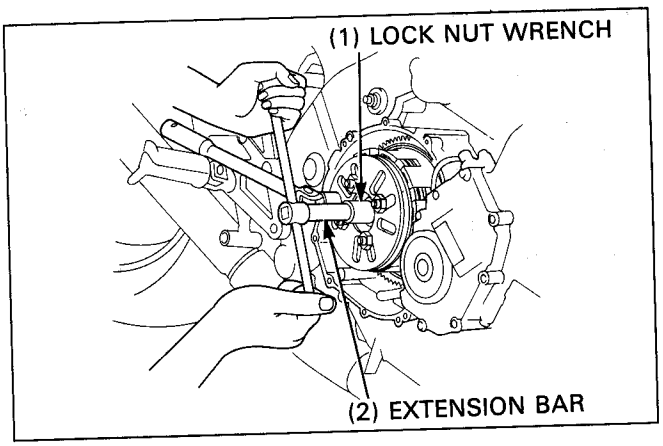
S TOOL
Clutch center holder **07JMB-MN50300**



Temporarily remove the tool and tighten the nuts, then reinstall the clutch center holder onto the bosses of the pressure plate.
Use at least two clutch lifter plate bolts to secure the tool onto the pressure plate.

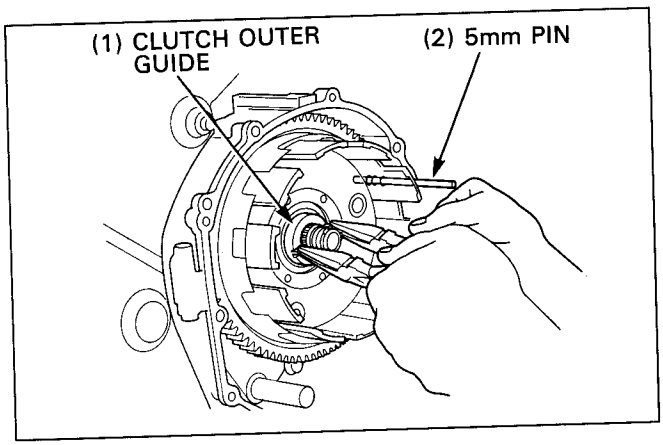
Remove the clutch center lock unt.

S TOOL
Lock nut wrench, 17×27mm **07716-0020300**
Extension bar **07716-0020500**

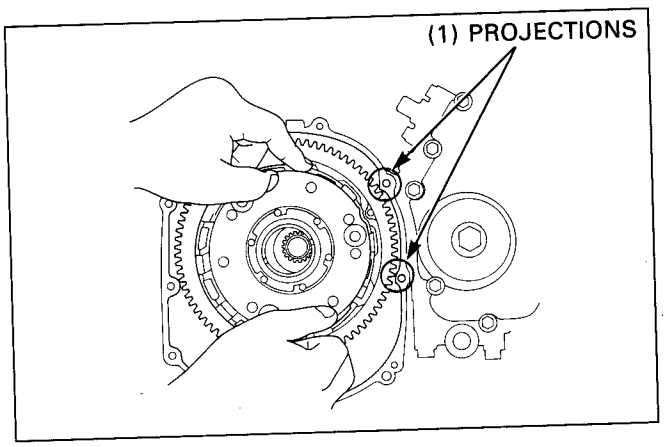


Clutch Outer Removal

Insert the 5mm pin into the holes in the primary driven gears to align the gear teeth.
Pull the clutch outer guide out by pinching the ribs on the clutch outer guide.



Align the projections of the crankcase with between the teeth of the primary driven gears and remove the clutch outer from the mainshaft.

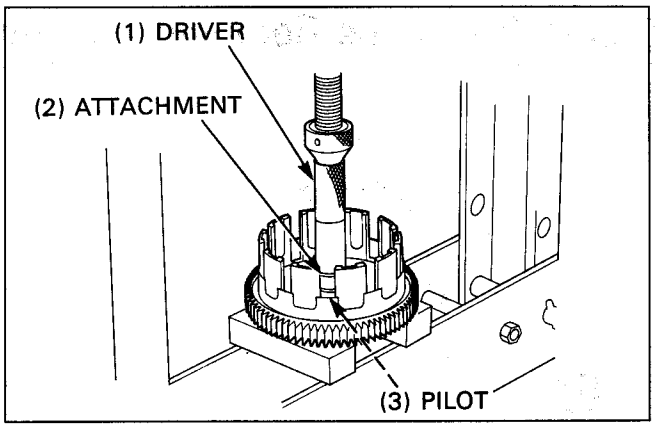


Clutch Outer Needle Bearing Replacement

Press the needle bearing out of the clutch outer.

S TOOL

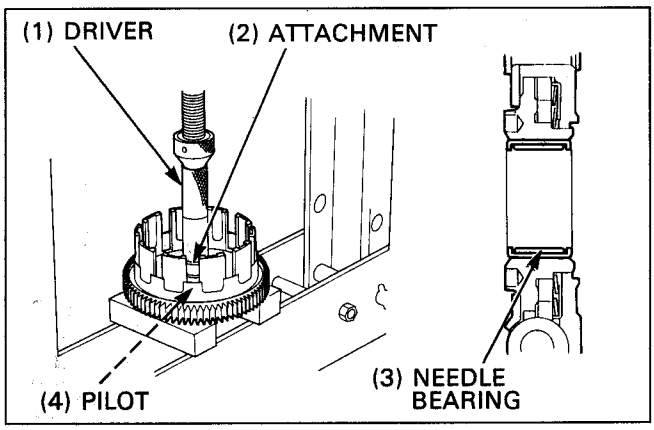
Driver	**07749-0010000**
Attachment, 32×35mm	**07746-0010100**
Pilot, 30mm	**07746-0040700**



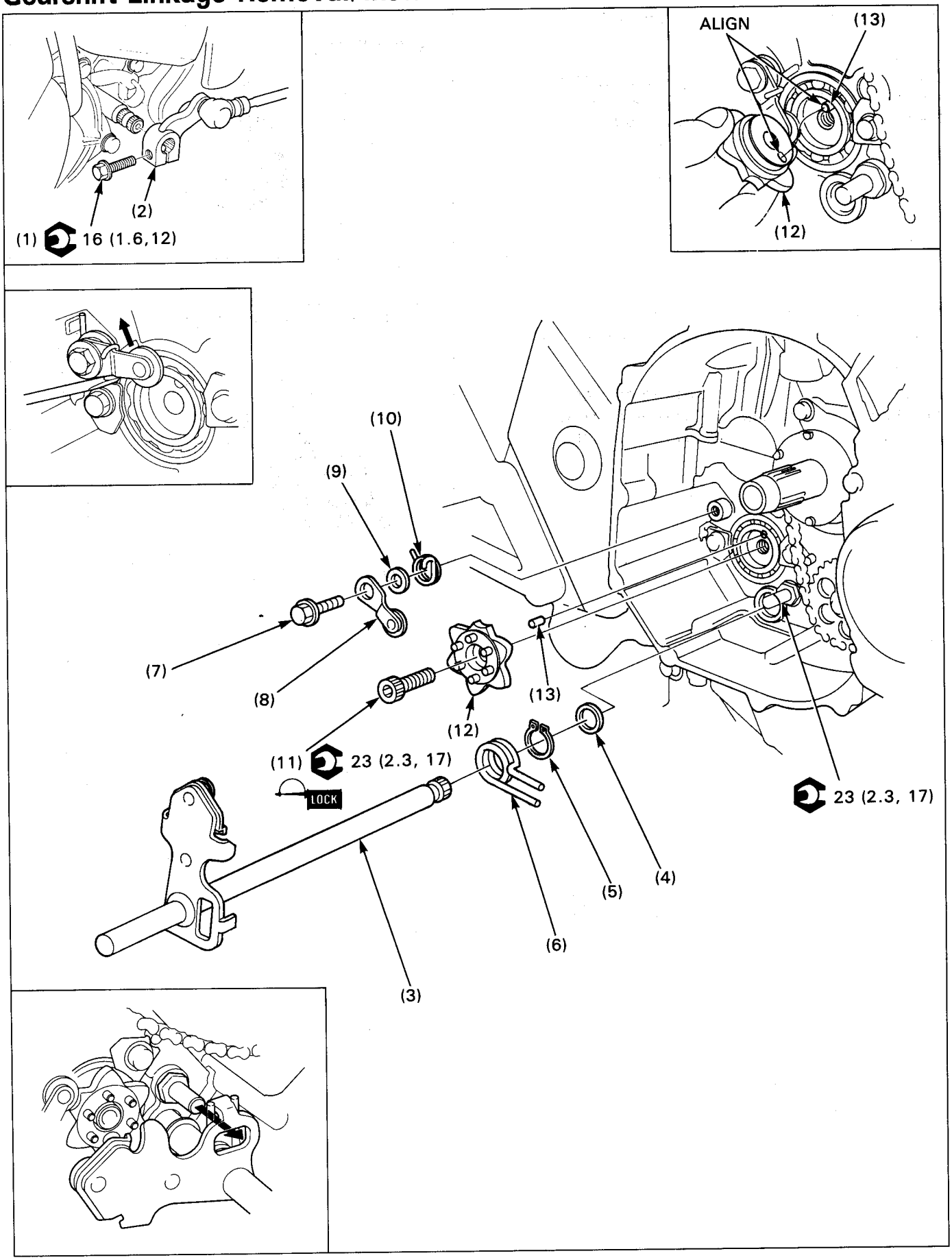
Press a new needle bearing into the clutch outer so that the edges of the needle bearing and clutch outer are flush.

S TOOL

Driver	**07749-0010000**
Attachment, 32×35mm	**07746-0010100**
Pilot, 30mm	**07746-0040700**



Gearshift Linkage Removal/Installation



NOTE

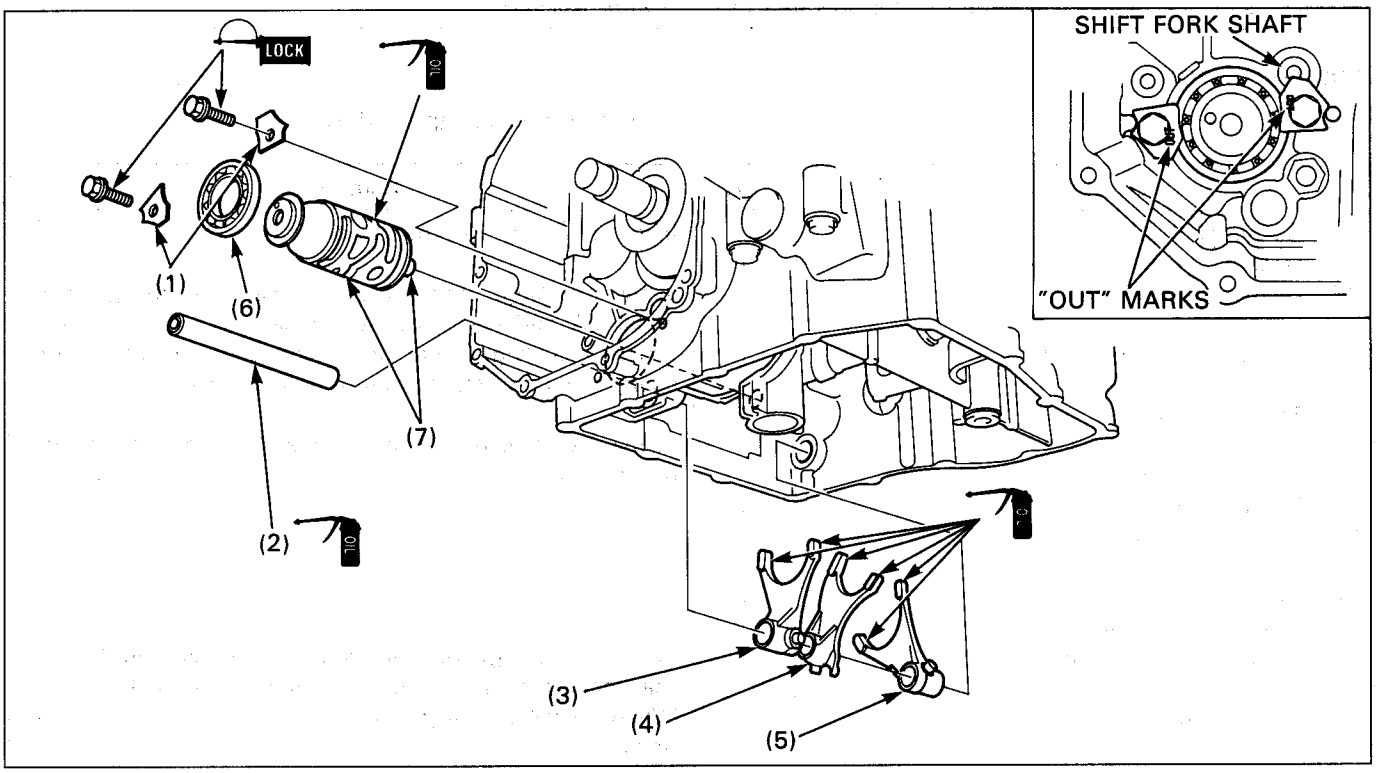
- Make sure the gearshift linkage can be operated properly after assembly.

Requisite Service

- Clutch removal (page 9-4)
- Clutch installation (page 9-12)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Gearshift pedai pinch bolt	1	
(2)	Gearshift pedal link	1	When installing, align the punch marks on the gearshift pedal link and the gearshift spindle.
(3)	Gearshift spindle assembly	1	When installing, align the gear shift spindle return spring pin between the return spring ends.
(4)	Thrust washer	1	
(5)	Snap ring	1	Install the sanp ring with the chamfered side facing the return spring.
(6)	Return spring	1	
(7)	Stopper arm bolt	1	
(8)	Stopper arm	1	
(9)	Washer	1	
(10)	Stopper arm spring	1	
(11)	Shifter cam center bolt	1	When loosening, be careful not to break the bolt so that locking agent is applied to the bolt threads.
(12)	Shifter cam	1	When installing, align the hole in the cam with the dowel pin.
(13)	Down pin	1	

Shift Drum/Shift Forks Removal/Installation



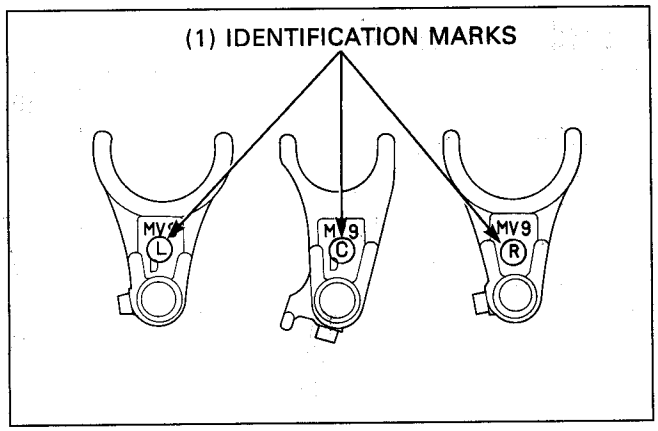
Requisite Service

- Gearshift linkage removal/installation (page 9-8)
- Oil pan removal (page 4-3)

Procedure		Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Shift drum bearing set plate	2	NOTE • Install the set plates with the "OUT" mark facing out. • install one set plate so that it comes over the shift fork shaft bore to retain the shaft.
(2)	Shift fork shaft	1	
(3)	Right shift fork	1	Refer to page 9-11 for installation.
(4)	Center shift fork	1	
(5)	Left shift fork	1	
(6)	Shift drum bearing	1	
(7)	Shift drum	1	

Shift Fork Installation

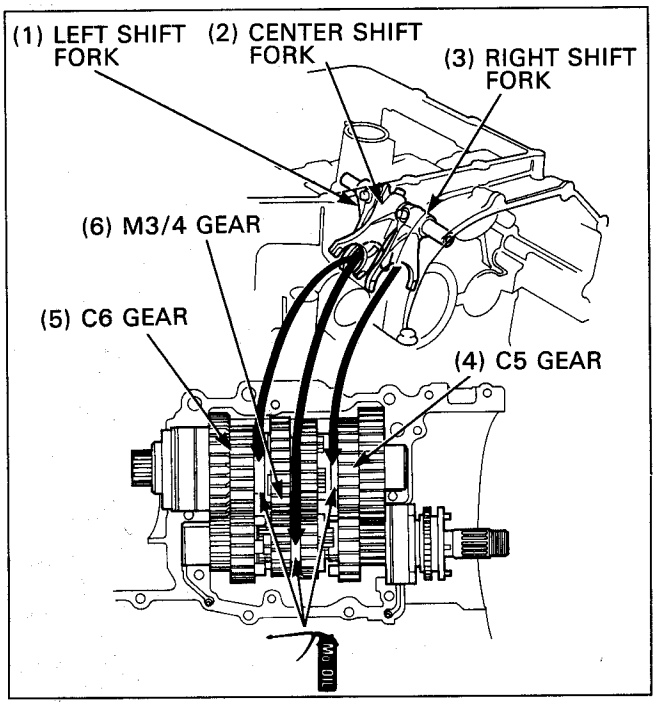
Each shift fork has the identification mark; "R" is for the right shift fork, "L" is for the left shift fork and "C" is for the center shift fork.



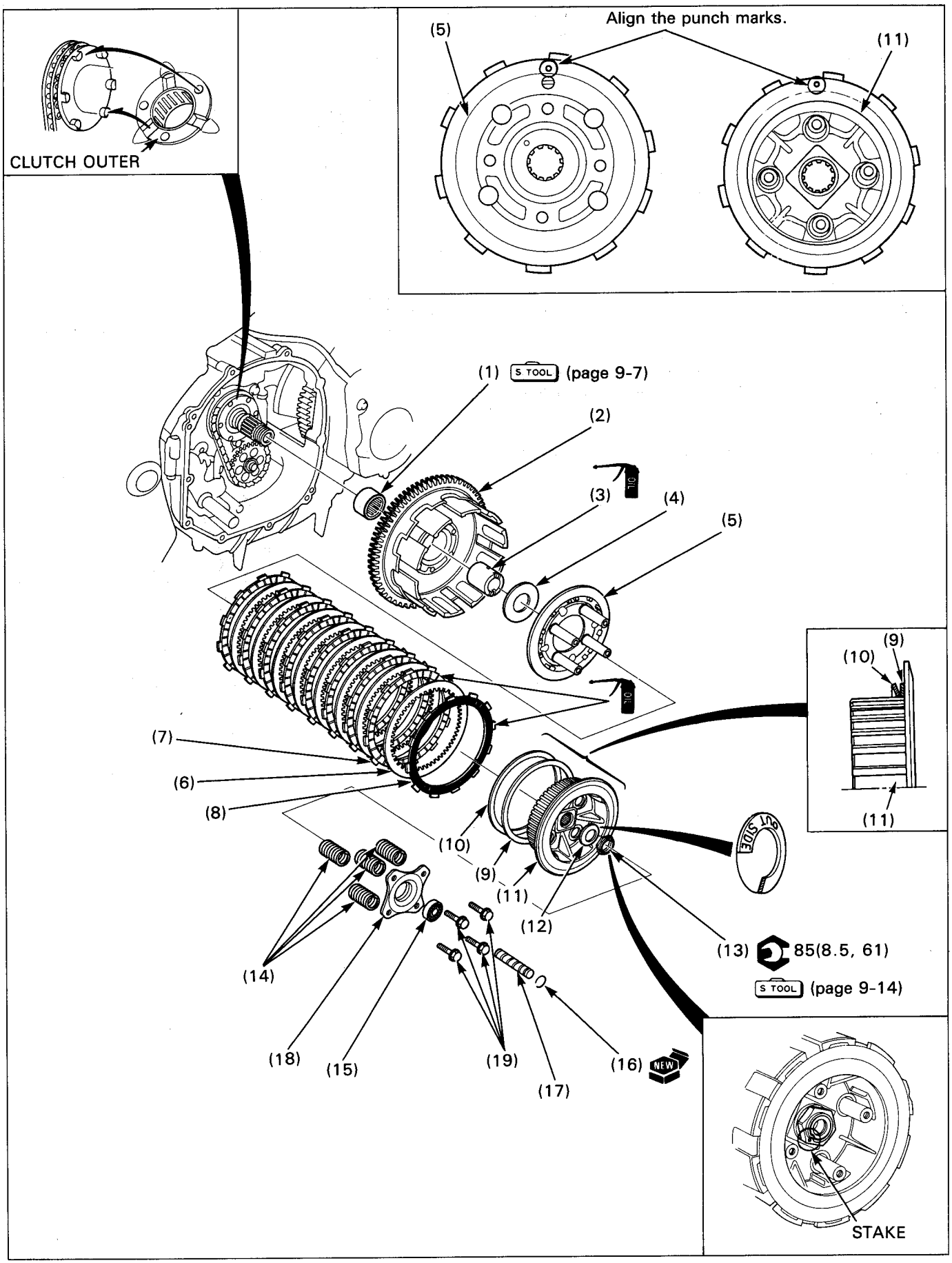
Apply molybdemun desulfide oil to the M3/4, C5 and C6 gear shift fork grooves.

Install the shift forks aligning the shift drum pins with the shift drum grooves with the identification marks facing engine right side.

Apply clean engine oil to the shift fork shaft and install it through the shift forks.



Clutch Installation



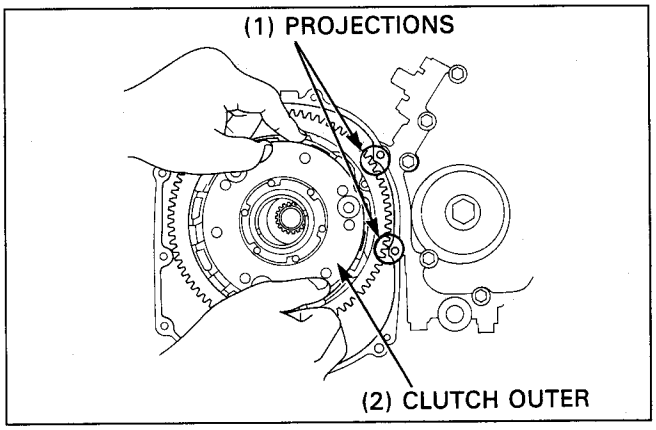
Requisite Service

- Right crankcnase cover installation (page 9-2)

	Procedure	Q'ty	Remarks
(1)	Needle bearing	1	Refer to page 9-6 for replacement.
(2)	Clutch outer	1	Refer to page 9-14 for installation.
(3)	Ciutch outer guide	1	
(4)	Thrust washer	1	
(5)	Clctch pressure plate	1	NOTE • Align the punch marks on the clutch center and clutch pressure plate.
(6)	Clutch plate	8	
(7)	Clutch disc(small I.D.)	8	
(8)	Clutch disc(large I.D.)	1	
(9)	Spring seat	1	
(10)	Judder spring	1	
(11)	Clutch center	1	
(12)	Cone washer	1	NOTE • Install the cone washer with the "OUT SIDE" mark facing out.
(13)	Clutch center lock nut	1	Refer to page 9-14 for installation.
(14)	Clutch spring	4	
(15)	Radial ball bearing (16001)	1	
(16)	Stopper ring	1	
(17)	Clutch lifter rod	1	Refer to page 9-15 for installation.
(18)	Clutch lifter plate	1	
(19)	Clutch lifter plate bolt	4	

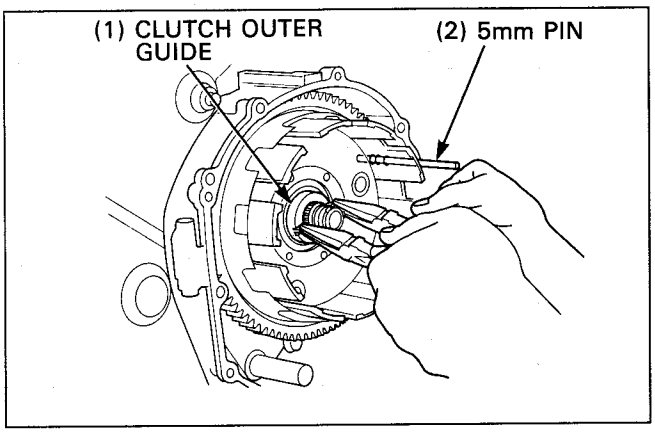
Clutch Outer Installation

Install the clutch outer onto the mainshaft by aligning the projections of the crankcase with between the teeth of the primary driven gears.



Install the clutch outer guide with the lib side facing out. Install the clutch outer properly, aligning the clutch outer holes with the oil pump drive sprocket bosses by rotating the oil pump driven sprocket while holding the clutch outer and pushing in on it lightly.

After installing the clutch outer guide, remove the 5mm pin from the primary driven gears.



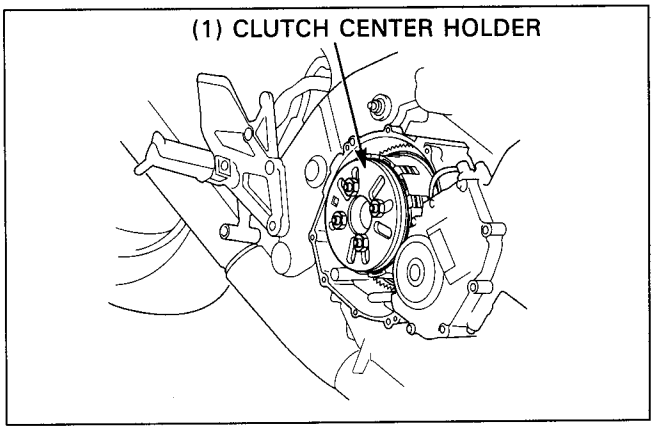
Clutch Center Lock Nut Installation

Set the clutch center holder to the pressure plate and loosely install the nuts.

S TOOL

Clutch center holder 07JMB-MN50300

Temporarily remove the tool and tighten the nuts, then reinstall the clutch center holder onto the bosses of the pressure plate.
Use at least two clutch lifter plate bolts to secure the tool onto the pressure plate.



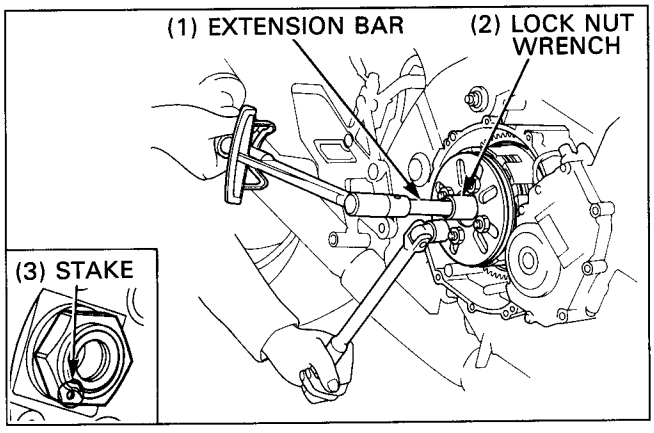
Tighten the clutch center lock nut while holding the pressure plate with a clutch center holder.

S TOOL

Lock nut wrench, 17×27mm 07716-0020300
Extension bar 07716-0020500

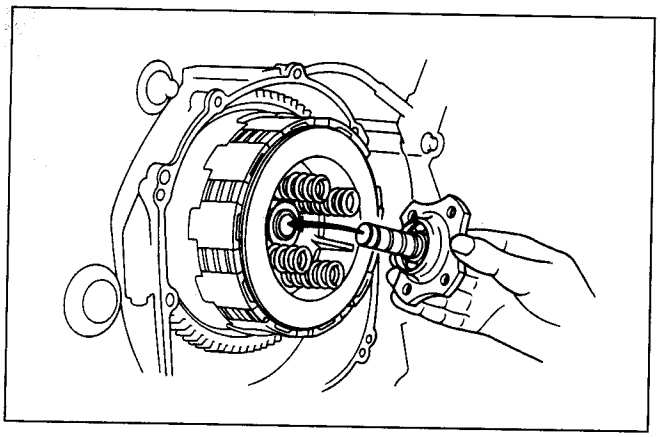
Torque: 85N·m (8.5kg-m, 61ft-lb)

Stake the lock nut as shown.



Clutch Lifter Rod Installation

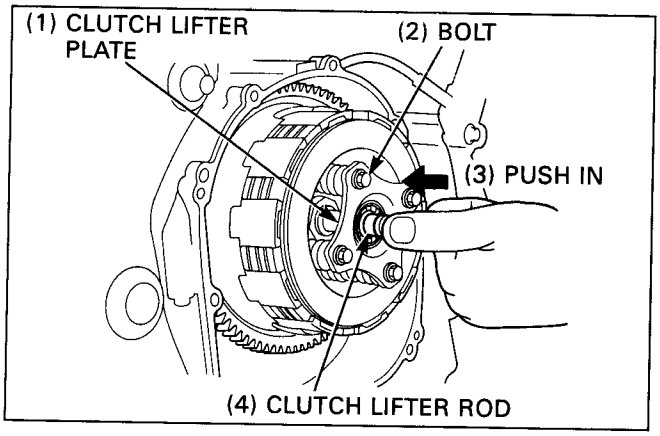
Assemble the clutch lifter rod, stopper ring and clutch lifter plate, and install the assembly to the clutch pressure plate.



Secure the lifter plate by tightening the bolts in crisscross pattern in several steps.

NOTE

- If the clutch lifler rod comes out while tightening the clutch lifter plate bolts, push the rod all the way in to prevent the rod from being excentric.



10. Crankcase/Cylinder/Piston

Service Information	10-1	Piston/Connecting Rod Removal/ Installation	10-4
Troubleshooting	10-1	Crankcase Assembly	10-6
Crankcase Separation	10-2		

Service Information

- The crankcase must be separated to repair the piston or connecting rod.
- Remove the following parts before separating the crankcase.
  - —Engine (section 7)
  - —Water pump (section 6)
  - —Cylinder head (section 8)
  - —Clutch and gearshift linkage (section 9)
  - —Flywheel (section 15)
  - —Pulse generator rotor cover (section 15)
  - —Starter motor and starter clutch (section 17)
- Take care not to damage the cylinder walls and pistons.
- Store the piston components in the same order they were installed so they can be reinstalled in the original locations.
- Before assembling the crankcase halves, apply a sealant to their mating surfaces, Wipe off excess sealant throughly.
- Mark and store the connecting rod bearings to be sure of their correct locations for necessary. If the connecting rod bearings are improperly installed they will block the oil holes, causing insufficient lubrication and eventual engine seizure.

Troubleshooting

Rough Idle
- Low cylinder compression

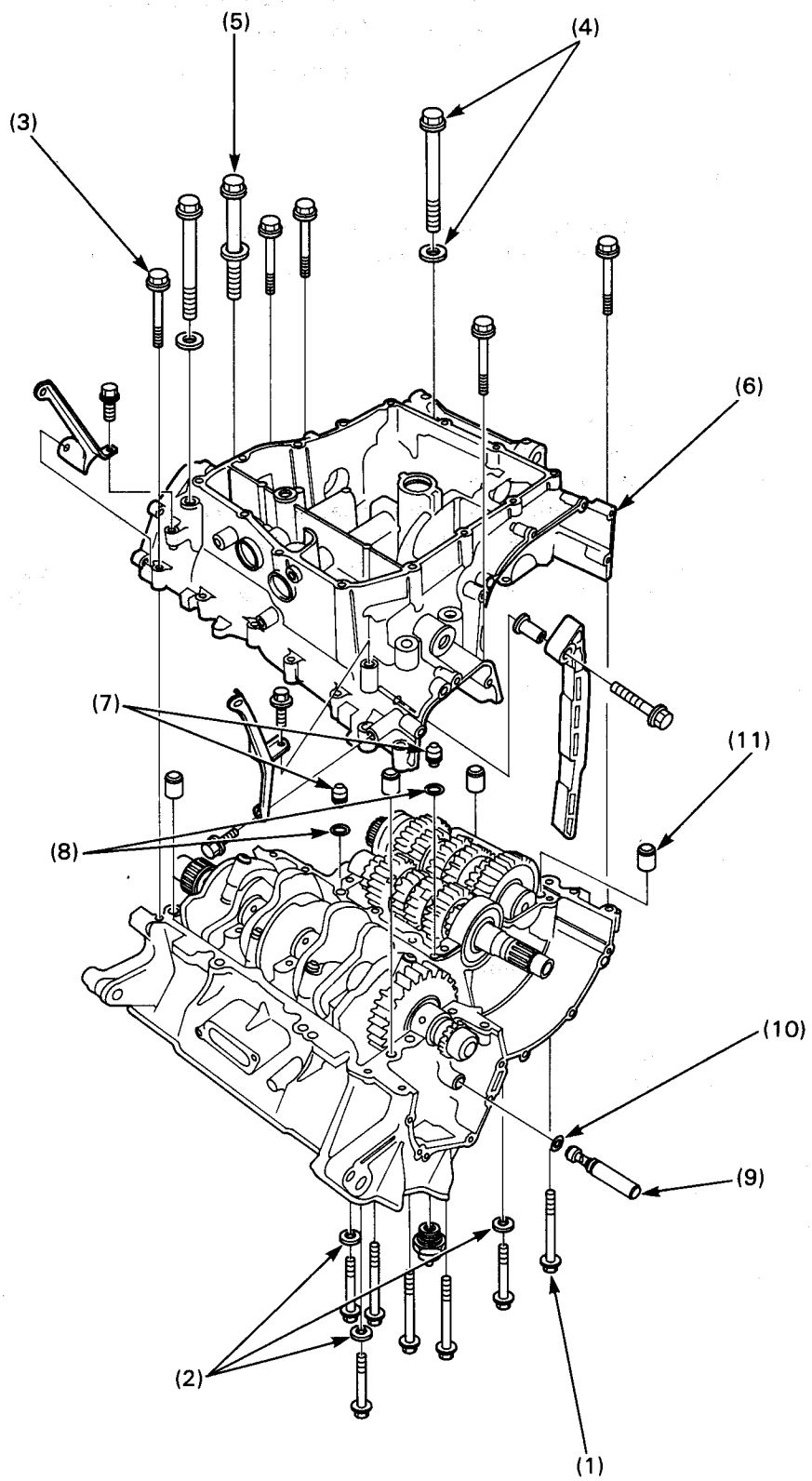
Low Compression
- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston

Compression Too High
- Excessive carbon build-up on piston top or combustion chamber

Excessive Smoke
- Worn cylinder piston or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

Abnormal Noise (Piston)
- Worn piston pin or piston pin hole
- Worn connecting rod bearings
- Bent connecting rod
- Worn crankshaft main bearings

Crankcase Separation

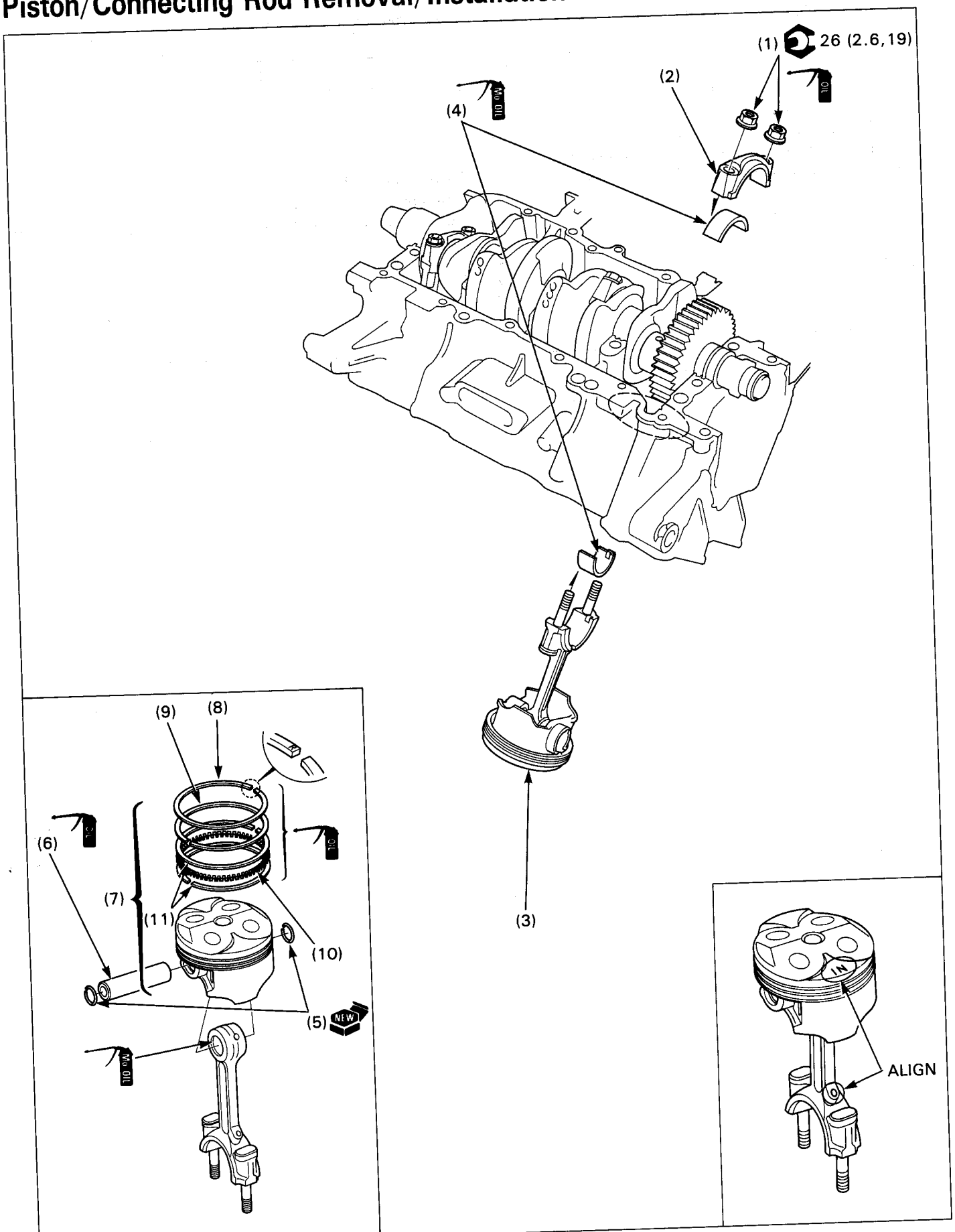


NOTE

- Refer to page 10-1 for the parts that is necessary to be removed for crankcase separation.

	Procedure	Q'ty	Remarks
(1)	Upper carankcase bolt (6 mm)	7	
(2)	Sealing waser	3	
(3)	Lower crankcase bolt(6 mm)	14	
(4)	Lower crankcase bolt(10mm)/sealing washer	1/1	
(5)	Lower crankcase bolt(8 mm)/sealing washer	10/10	From the outside to inside, loosen the bolts in a crisscross pattern in several steps.
(6)	Lower crankcase	1	Clean the liquid sealant residue off the crankcase mating surfaces.
(7)	Oil oriffice(short)	2	
(8)	O-ring	2	
(9)	Oil oriffice(long)	1	
(10)	O-ring	1	
(11)	Dowel pin	3	

Piston/Connecting Rod Removal/Installation



NOTE

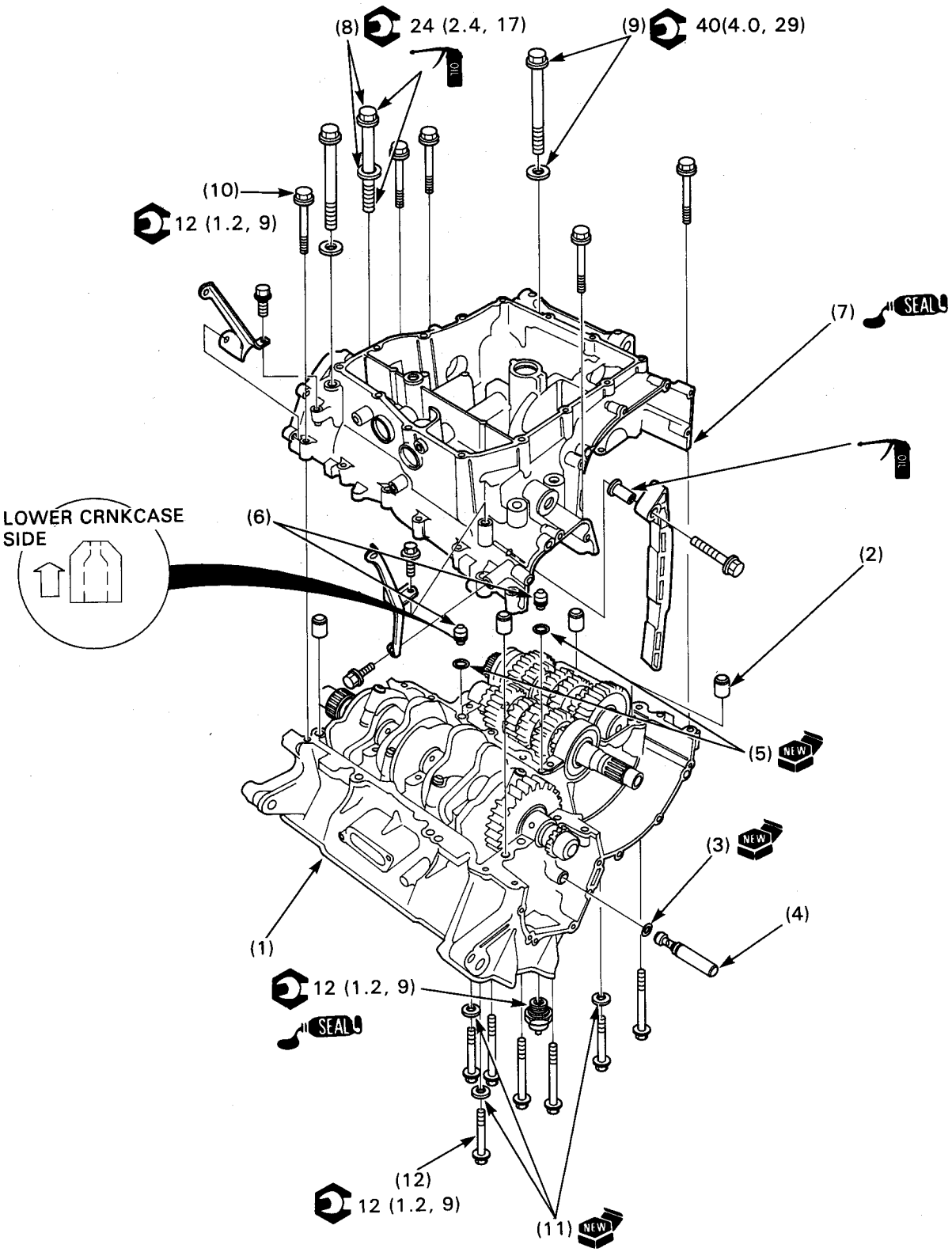
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original lacations.
- Determine the replacement bearing color code according to the connecting rod bearing selection table(page 11-5).
- At installation, apply molybdenum solution to the connecting rod bearing surface.

Requisite Service

- Crankcase separation(page 10-2)
- Crankcase assemlby(page 10-6)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Connecting rod bearing cap nut	8	NOTE • Before tightening, apply engine oil to the threads and seating surface of the nut. • Tighten the nuts gradually and alternately.
(2)	Connecting rod bearing cap	4	When installing the bearing cap, be careful not to reverse the bearing cap.
(3)	Connecting rod/piston assembly	4	**CAUTION** • **Do not try to remove the connecting rod/piston assembly from the bottom of the cylinder ; the assembly will be locked so that the oil ring expands in the gap between the cylinder liner and the upper crankcase.** Install the connecting rod/piston assembly with the oil hole in the connecting rod facing intake side.
(4)	Connecting rod bearing	8	When installing, align the oil holes in the bearing and the connecting rod, and the bearing tabs with the grooves in the connecting rod and bearing cap.
(5)	Piston pin clip	8	
(6)	Piston pin	4	
(7)	Piston assembly	4	Install the piston on the connecting rod with the "IN"mark on the piston head facing the oil hole side(intake side).
(8)	Top ring	4	Install the piston rings with the mark("T"or"R")facing up.
(9)	Second ring	4	Install the piston rings with the mark("T"or"RN")facing up.
(10)	Spacer	4	
(11)	Oil ring	8	

Crankcase Assembly



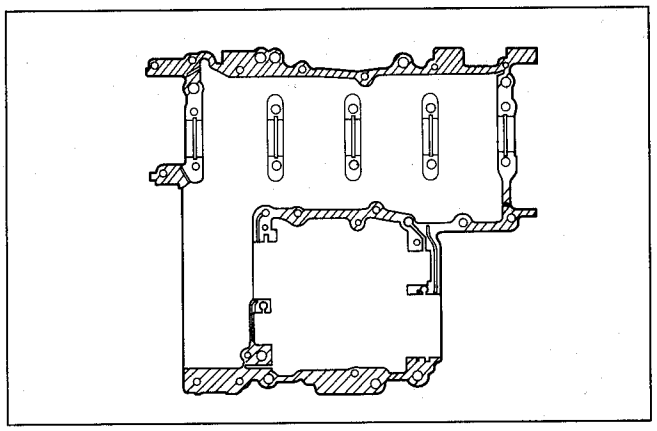
NOTE

- Refer to page 10-1 for the parts that is necessaly to be installed after crankcase assembly.
- Refer to page 10-8 for crankcase bolt location.

	Procedure	Q'ty	Remarks
(1)	Upper crankcase	1	**CAUTION** • **Do not apply sealant around the oil passage area and main bearing journal area. Refer to the illustration on poge 10-8 for applying area.**
(2)	Dowel pin	3	
(3)	O-ring	1	
(4)	Oil oriffice(long)	1	
(5)	O-ring	2	
(6)	Oil oriffice(short)	2	**CAUTION** • **Install the oil oriffice with the smaller diameter side facing the lower crankcase.**
(7)	Lower crankcase	1	
(8)	Lower crankcase bolt(8 mm)/sealing washer	10/10	From the inside to outside, tighten the bolts in a crisscross pattern in several steps.
(9)	Lower crankcase bolt(10mm)/sealing washer	1/1	
(10)	Lower crankcase bolt(6 mm)	14	
(11)	Sealing washer	3	Install the sealing washer to the bolt indicated by the "△" mark. Refer to page 10-8.
(12)	Upper crankcase bolt(6 mm)	7	

Liquid Sealant Application

Apply a light but through coating of sealant to the crankcase mating surface except to the main bearing journal bolt (8mm lower crankcase bolt)areas and the oil passage areas as shown.



Crankcase Bolt Location

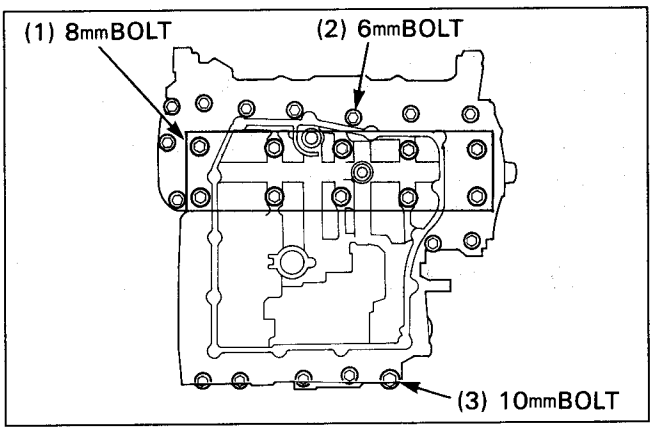
From the inside to outside, tighten the lower crankcase bolts (8 mm)crisscross pattern in several steps.

Torque :
Crankcase bolt(8 mm) : 24 N · m (2.4kg-m, 17ft-lb)

Install the remaining crankcase bolts and sealing washers as shown.

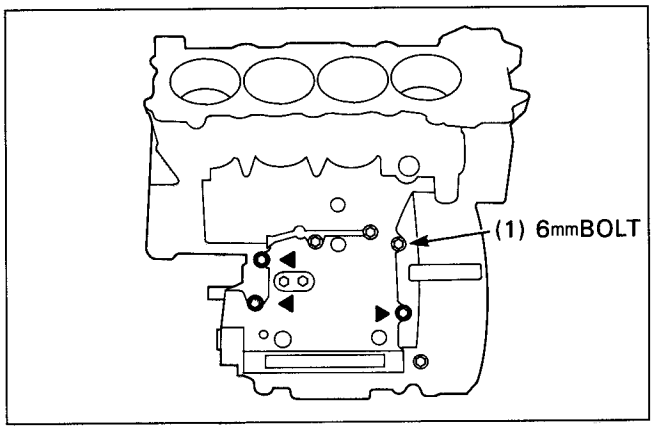
NOTE

- Install the sealing washers to the bolt holes indicated by the "△"marks.



Tighten all the crankcase bolts in gradual, crisscross pattern, beginning with the larger diameter bolts first as shown.

Torque :
6 mm bolt : 12 N·m (1.2kg-m, 9 ft-lb)
10 mm bolt : 40 N·m (4.0 kg-m, 29 ft-lb)



11. Crankshaft/Transmission

Service Information	11-1	Transmission Removal/Installation	11-6
Troubleshooting	11-1	Mainshaft Disassembly/Assembly	11-8
Crankshaft Removal/Installation	11-2	Countershaft Disassembly/Assembly	11-10
Crankshaft Bearing Replacement	11-4		

Service Information

- The crankcase must be separated to repair transmission or crankshaft.
- At crankshaft removal and installation, do not damage the crankshaft main journal bearings.
- All braring inserts are select fitted and are identified by color code. Select replacement bearings from the code tables.
- After installing new bearings, recheck them with plastigauge to verify clearance.
- Apply molybudenum disulfide oil to the main journals and crankpins during assembly.

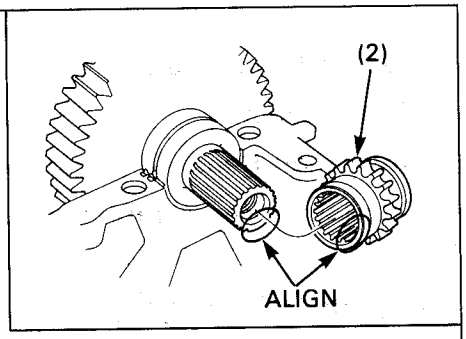
Troubleshooting

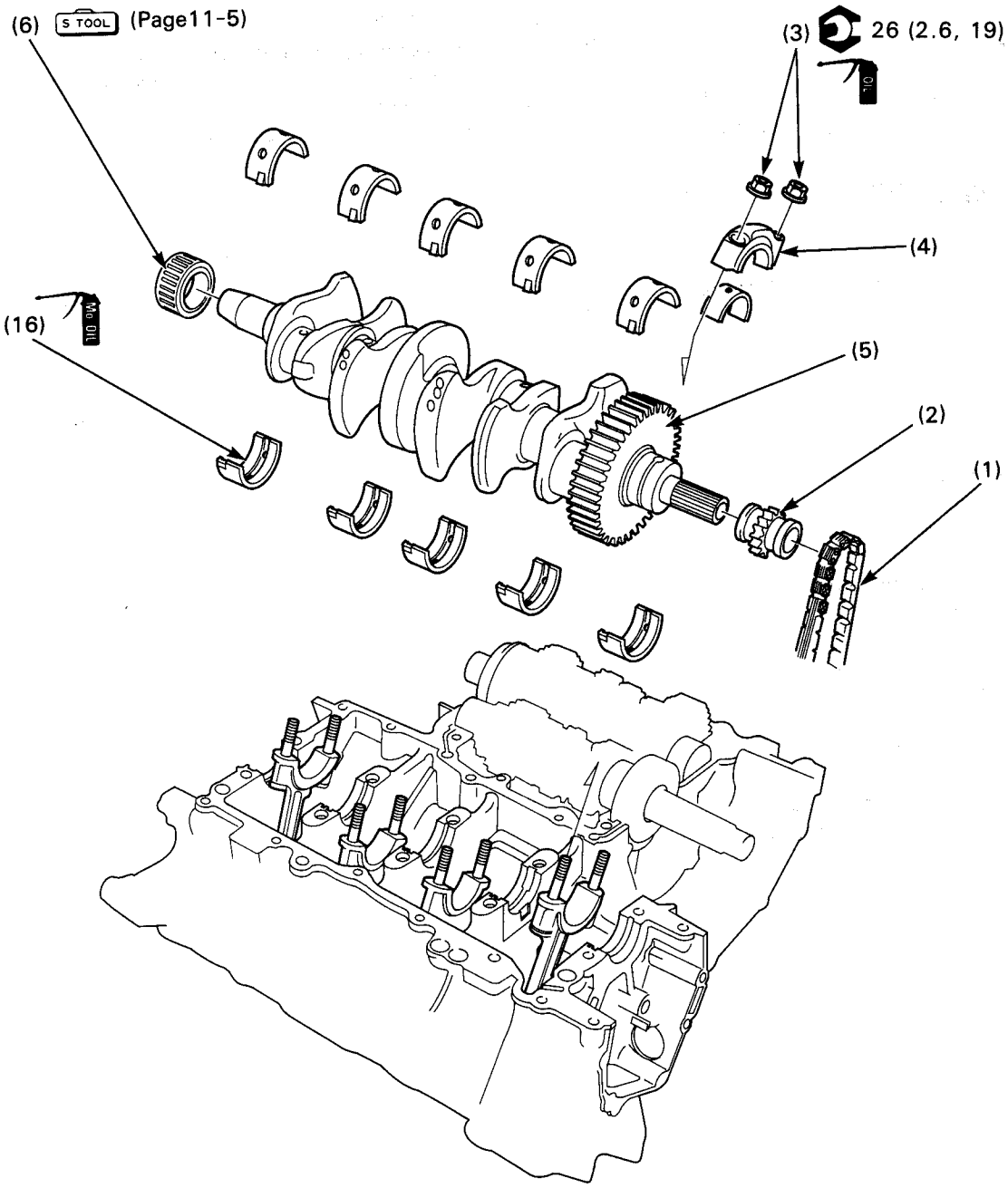
Crankshaft Noisy
- Worn crankshaft main journal bearings
- Worn connecting rod bearings
- Bent connecting rod

Hard To Shift
- Improper clutch adjustment
- Incorrect engine oil viscosity
- Improper clutch operation
- Bent shift forks
- Bent shift fork shaft
- Bent shift fork claw
- Damaged shift drum cam grooves
- Bent shift spindle

Transmission Jump Out Of Slots
- Worn gear engagement dogs or slots
- Bent shift fork shaft
- Damaged shift drum stopper arm
- Damaged or bent shift fork
- Broken shift linkage return spring
- Damaged shift drum cam grooves

Crankshaft Removal/Installation





NOTE

- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original lacations.
- *Determine the replacement bearing color code according* to the main journal bearing selection table(page 11-4).
- At installation, apply molybdenum solution to the main journal bearing surface.

Requisite Service

- Crankcase separation(page 10-2)
- Crankcase assembly(page 10-6)

	Procedure	Q'ty	Remarks
	Removal Order		
(1)	Cam chain	1	
(2)	Cam sprocket	1	
(3)	Connecting rod bearing cap nut	8	
(4)	Connecting rod bearing cap	4	
(5)	Crankshaft	1	
(6)	Starter clutch needle bearing	1	Refer to page 11-5 for removal.
(7)	Crankshaft main journal bearing	16	
	Installatoin Order		
(7)	Crankshaft main journal bearing	16	
(6)	Starter clutch needle bearing	1	Refer to page 11-5 for installation.
(5)	Crankshaft	1	Before installing the crankshaft, position all the pistons at Top Dead Center (TDC)to prevent the crankshaft main journals from beeing damaged with the connecting rod bolts.
(4)	Connecting rod bearing cap	4	When installing the bearing cap, be careful not to reverse the bearing cap.
(3)	Connecting rod bearing cap nut	8	NOTE • Before tightening, apply engine oil to the threads and seating surface of the nut. • Tighten the nuts gradually and alternately.
(2)	Cam sprocket	1	Install the cam sprocket aligning the extra wide teeth of the crankshaft and sprocket.
(1)	Cam chain	1	

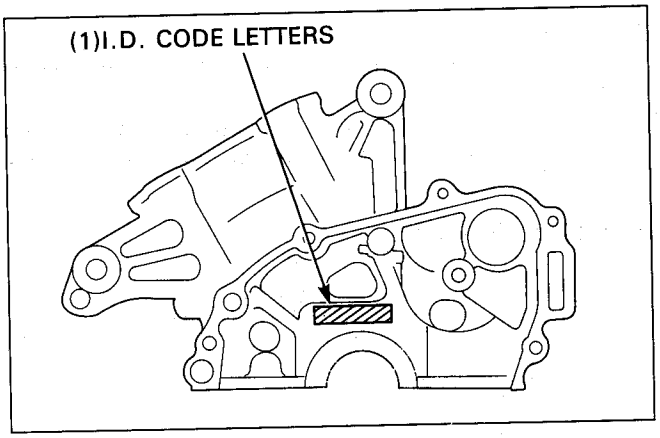
Crankshaft Bearing Replacement

Main Journal Bearing Selection

Record the crankcase I.D. code letters stamped on the left side of the upper crankcase.

NOTE

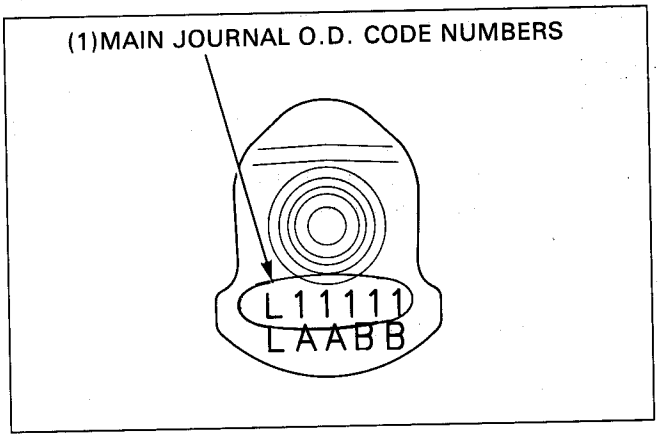
- Letters (A, B or C)on the upper crankcase are the codes for the main journal I.D.s from the left side.



Record the corresponding main journal O.D. code numbers from the crank weight.

NOTE

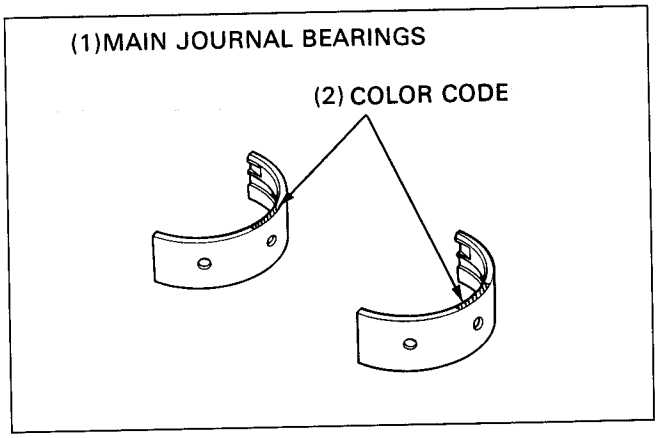
- Numbers (1 or 2)on the crank weight are the codes for the main journal O.D.s from the left.



Cross reference the case and journal codes to determine the replacement bearing color code.

Main journal O.D. code \ Crankcase I.D. code		A	B	C
		36.000-36.008 mm (1.4173-1.4176 in)	36.008-36.016 mm (1.4176-1.4180 in)	36.016-36.024mm (1.4180-1.4183 in)
1	32.992-33.000 mm (1.2989-1.2992 in)	D (Pink)	C (Yellow)	B (Green)
2	32.984-32.992 (1.2986-1.2989 in)	C (Yellow)	B (Green)	A (Brown)

A : Brown : 1.492-1.496 mm (0.0587-0.0589 in)
B : Green : 1.488-1.492 mm (0.0586-0.0587 in)
C : Yellow : 1.484-1.488 mm (0.0584-0.0586 in)
D : Pink : 1.480-1.484 mm (0.0583-0.0584 in)

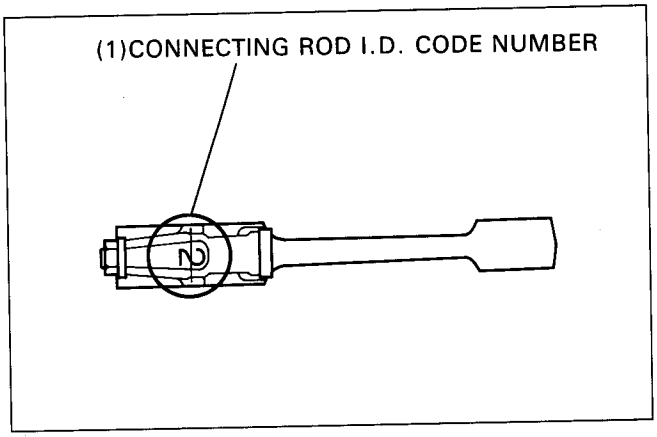


Connecting Rod Bearing Selection

Record the connecting rod I.D. code numbers on the rods.

NOTE

- Numbers (1 or 2)on the connecting rods are the codes for the connecting rod I.D.s.



Record the crankpin O.D. code letters from the crank weight.

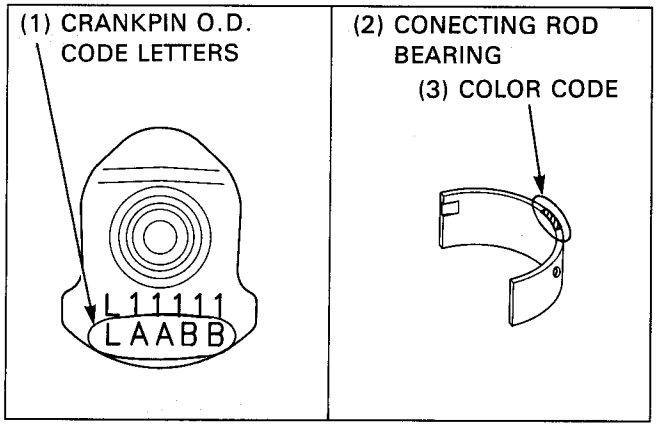
NOTE

- Letters (A or B) on the crank weight are the codes for the crankpin O.D.s from the left side.

Cross reference the crankpin and rod codes to determine the replacement bearing color code.

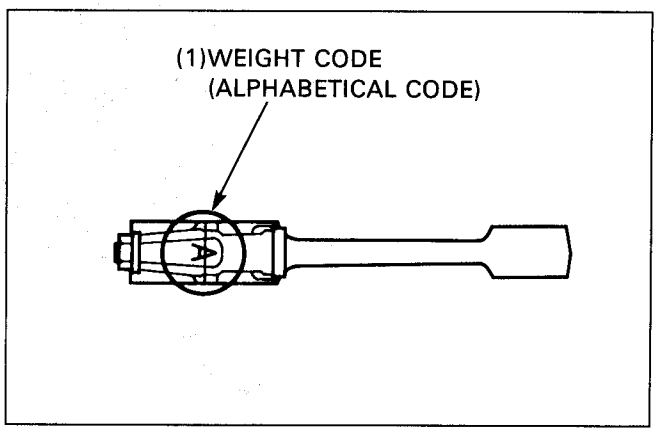
Crankpin O.D. code \ Connecting rod I.D. code		1	2
		36.000-36.008 mm (1.4173-1.4176 in)	36.008-36.016 mm (1.4176-1.4180 in)
1	32.992-33.000 mm (1.2989-1.2992 in)	C (Yellow)	B (Green)
2	32.984-32.992 mm (1.2986-1.2989 in)	B (Green)	A (Brown)

A : Brown : 1.494-1.498 mm (0.0588-0.0590 in)
B : Green : 1.490-1.494 mm (0.0587-0.0588 in)
C : Yellow : 1.486-1.490 mm (0.0585-0.0587 in)



Connecting Rod Selection

The weight code stamped on the connecting rod is an alphabetical code.



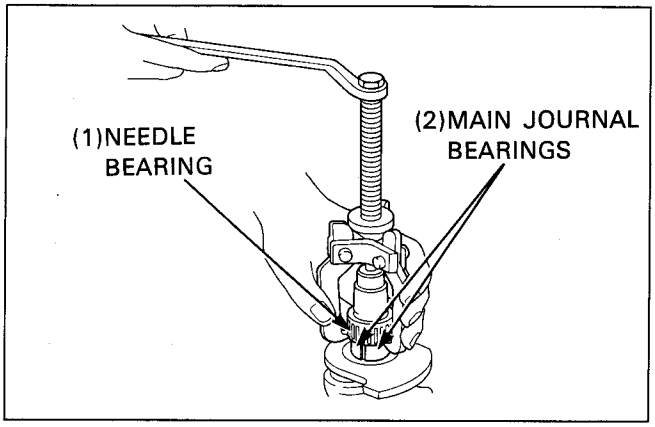
Be sure to use the connecting rods having the same weight code in an engine.

CAUTION

- **If a connecting rod having the different weight code is to be used, be sure that the difference in weight (code) is held within a single weight rank.**

Starter Clutch Needle Bearing Replacement

Remove the needle bearing with a universal bearing puller commercially available.



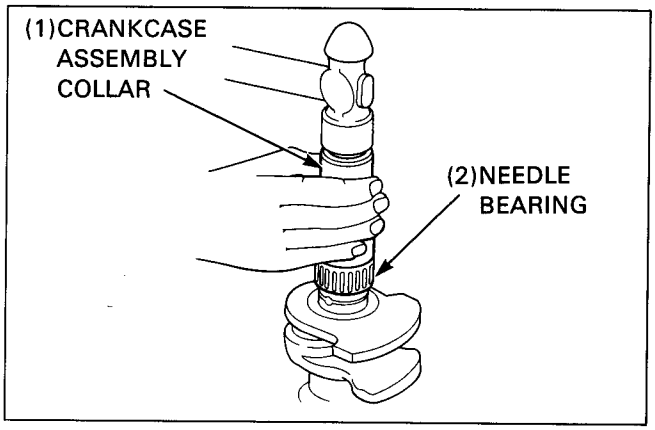
CAUTION

- **To protect the crankshaft main joural from the bearing puller claws, cover the mainshaft journal properly ; worn main journal bearings are usable as protectors.**

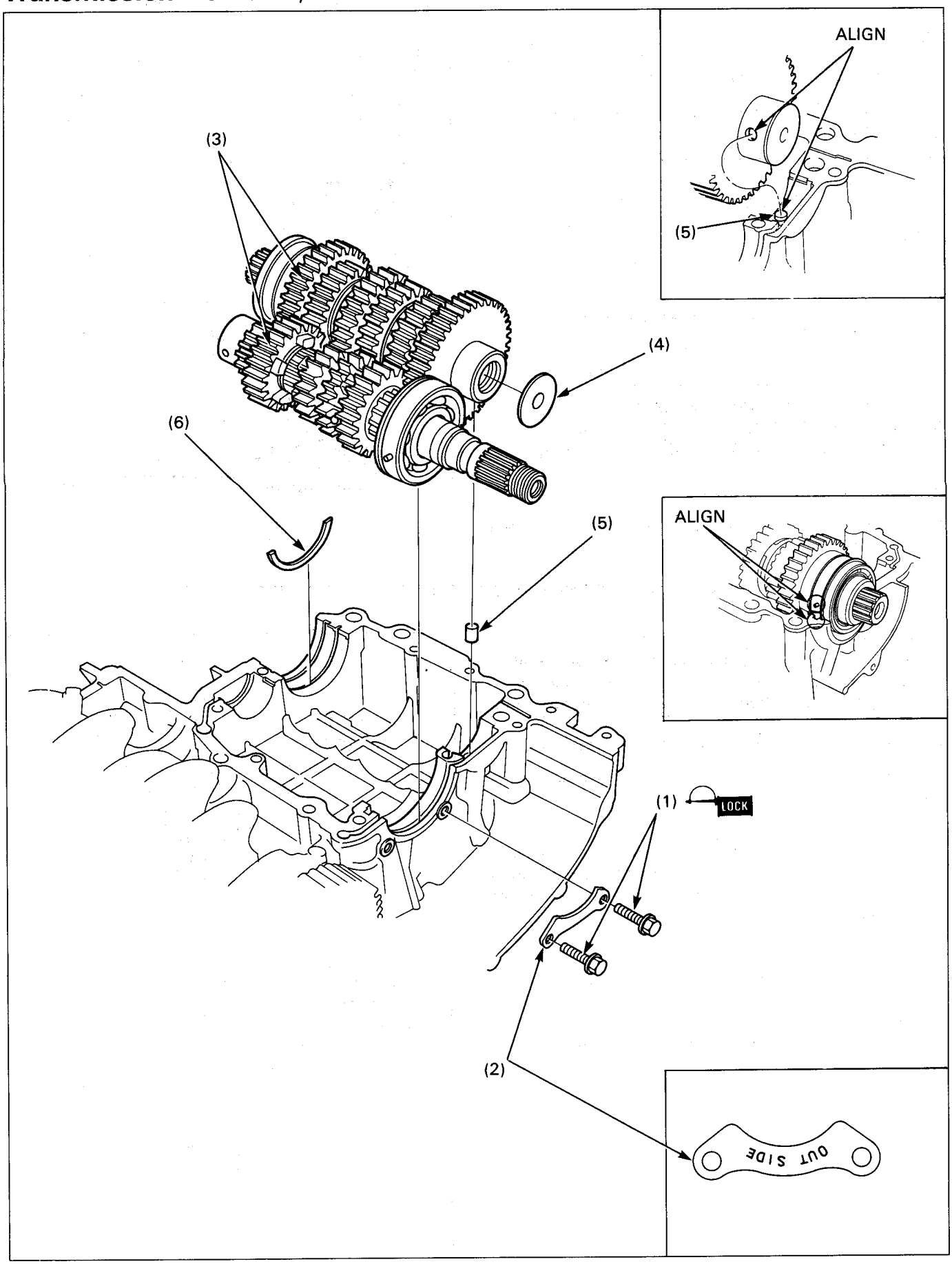
Drive a new needle bearing onto the crankshaft.

S TOOL

Crankcase assembly collar 07964-MB00200



Transmission Removal/Installation

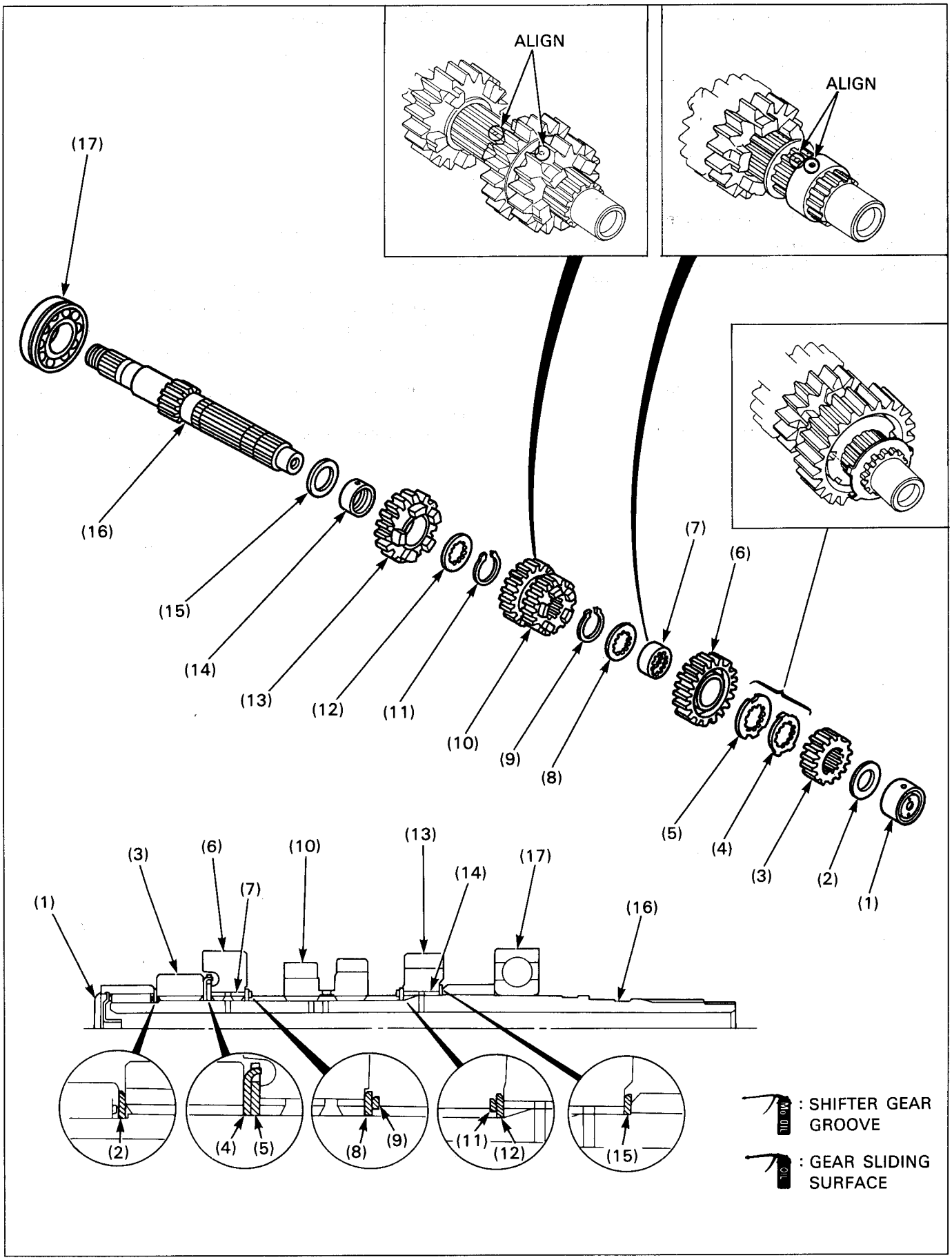


Requisite Service

- Crankcase separation(page 10-2)
- Crankcase assembly(page 10-6)

	Procedure	Q'ty	Remarks
	Romoval Order		
(1)	Countershaft bearing set plate bolt	2	
(2)	Countershaft bearing set plate	1	
(3)	Mainshaft/Countershaft assembly	1/1	
(4)	Countershaft end plate	1	
(5)	Dowel pin	1	
(6)	Countershaft bearing set plate	1	
	Installation Order		
(3)	Mainshaft/Countershaft assembly	1/1	NOTE • Align the hole in the countershaft needle bearing case with the pin in the upper crankcase. • Align the groove in the countershaft bearing with the set plate, and pin on the bearing with the groove in the crankcase.
(2)	Countershaft bearing set plate	1	Install the bearing set plate with the "OUT SIDE" mark facing out.
(1)	Countershaft bearing set plate bolt	2	When installing, apply a locking agent to the threads of the bolts.

Mainshaft Disassembly/Assembly



NOTE

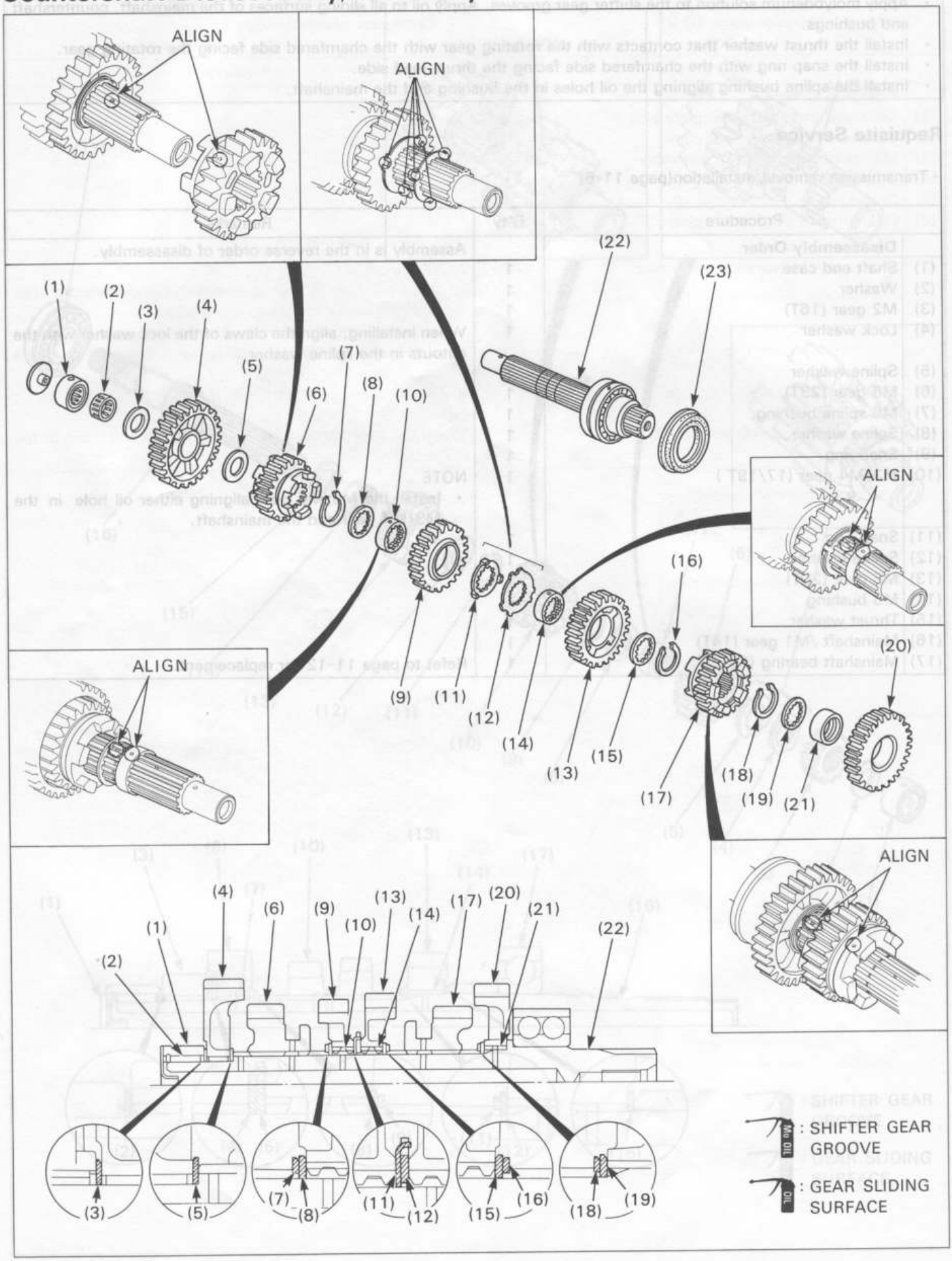
- Apply molybdenum solution to the shifter gear grooves. Apply oil to all sliding surfaces of the mainshaft, countershaft and bushings.
- Install the thrust washer that contacts with the rotating gear with the chamfered side facing the rotating gear.
- Install the snap ring with the chamfered side facing the thrust load side.
- Install the spline bushing aligning the oil holes in the bushing and the mainshaft.

Requisite Service

- Transmission removal/installation(page 11-6)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Shaft end case	1	
(2)	Washer	1	
(3)	M2 gear (16T)	1	
(4)	Lock washer	1	When installing, align the claws of the lock washer with the cutouts in the spline washer.
(5)	Spline washer	1	
(6)	M6 gear (23T)	1	
(7)	M6 spline bushing	1	
(8)	Spline washer	1	
(9)	Snap ring	1	
(10)	M3/M4 gear (17/19T)	1	NOTE • Install the M3/M4 gear aligning either oil hole in the M3/M4 gear and the mainshaft.
(11)	Snap ring	1	
(12)	Spline washer	1	
(13)	M5 gear (20T)	1	
(14)	M5 bushing	1	
(15)	Thrust washer	1	
(16)	Mainshaft /M1 gear (14T)	1	
(17)	Mainshaft bearing (6305)	1	Refet to page 11-12 for replacement.

Countershaft Disassembly/Assembly



NOTE

- Apply molybdenum solution to the shifter gear grooves. Apply oil to all sliding surfaces of the mainshaft, countershaft and bushings.
- Install the thrust washer that contacts with the rotating gear with the chamfered side facing the rotating gear.
- Install the snap ring with the chamfered side facing the thrust load side.
- Install the spline bushing aligning the oil holes in the bushing and the countershaft.

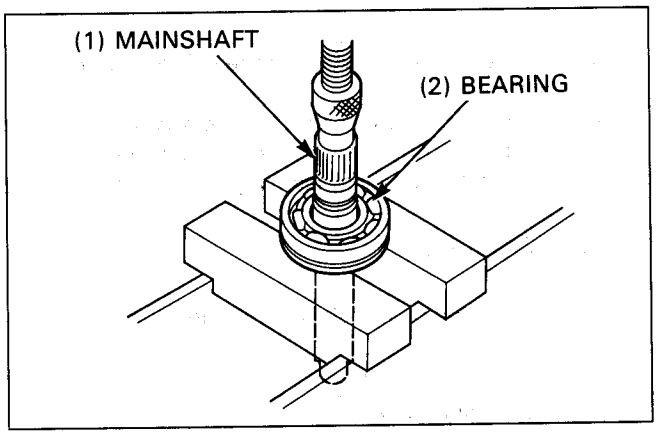
Requisite Service

- Transmission removal/installation(page 11-6)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Needle bearing case	1	
(2)	Needle bearing	1	
(3)	Thrust washer	1	
(4)	C1 gear (41T)	1	
(5)	Thrust washer	1	
(6)	C5 gear (24T)	1	NOTE • Install the C5 gear aligning either oil hole in the C5 gear and the countershaft.
(7)	Snap ring	1	
(8)	Spline washer	1	
(9)	C3 gear (27T)	1	
(10)	C3 gear spline bushing		NOTE • Install the C3 gear aligning either oil hole in the C3 gear and the countershaft.
(11)	Lock washer	1	When installing, align the claws of the lock washer with the cutouts in the spline washer.
(12)	Spline washer	1	
(13)	C4 gear (26T)	1	
(14)	C4 gear bushing	1	
(15)	Spline washer	1	
(16)	Snap ring	1	
(17)	C6 gear (25T)	1	NOTE • Install the C6 gear aligning either oil hole in the C6 gear and the countershaft.
(18)	Snap ring	1	
(19)	Spline washer	1	
(20)	C2 gear(33T)	1	
(21)	C2 gear bushing	1	
(22)	Countershaft	1	
(23)	Countershaft oil seal	1	

Mainshaft Bearing Replacement

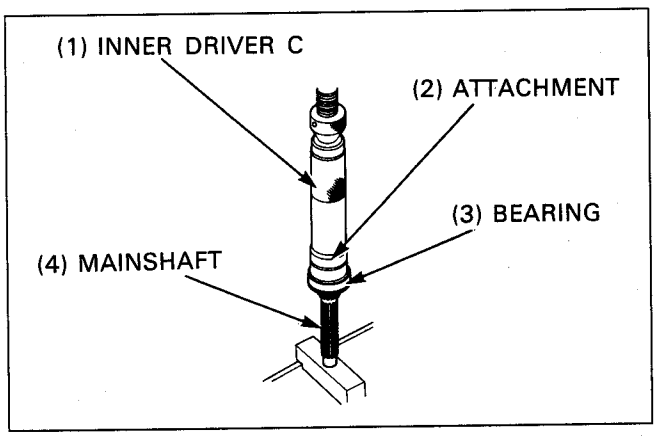
Remove the mainshaft bearing by pressing the mainshaft.



Install a new radial ball bearing onto the mainshaft.

S TOOL

Inner driver C	**07746-0030100**
Attachment, 25㎜ I.D.	**07746-0030200**



12. Front Wheel/Suspension/Steering

Service Information	12-1	Front Wheel Disassembly/Assembly	12-6
Troubleshooting	12-1	Fork Removal/Installation	12-8
Right Handlebar Removal/Installation	12-2	Fork Disassembly	12-10
Left Handlebar Removal/Installation	12-3	Fork Assembly	12-12
Front Wheel Removal/Installation	12-4	Steering Stem Removal/Installation	12-14

Service Information

⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**

- Raise the front wheel off the ground by suspending the frame with a sling.
- Refer to section 14 for brake system information.
- Refer to section 16 of the Common Service Manual for tire removal/installation.
- Use only tires marked "TUBELESS"and tubeless valves on rims marked"TUBELESS TIRE APPLICABLE".

Troubleshooting

Hard Steering
- Faulty steering head bearings
- Damaged steering head bearings
- Insufficient tire pressure
- Steering head bearing adjustment nut too tight

Steers To One Side Or Dose Not Track Straight
- Unevenly adjusted right and left shock absorbers
- Bent fork
- Bent fork axle : wheel installed incorrectly
- Faulty steering head bearings
- Bent frame
- Worn front wheel bearings
- Worn swingarm pivot bearing

Front Wheel Wobbling
- Bent rim
- Worn front wheel bearings
- Faulty tire
- Unbalanced tire and wheel

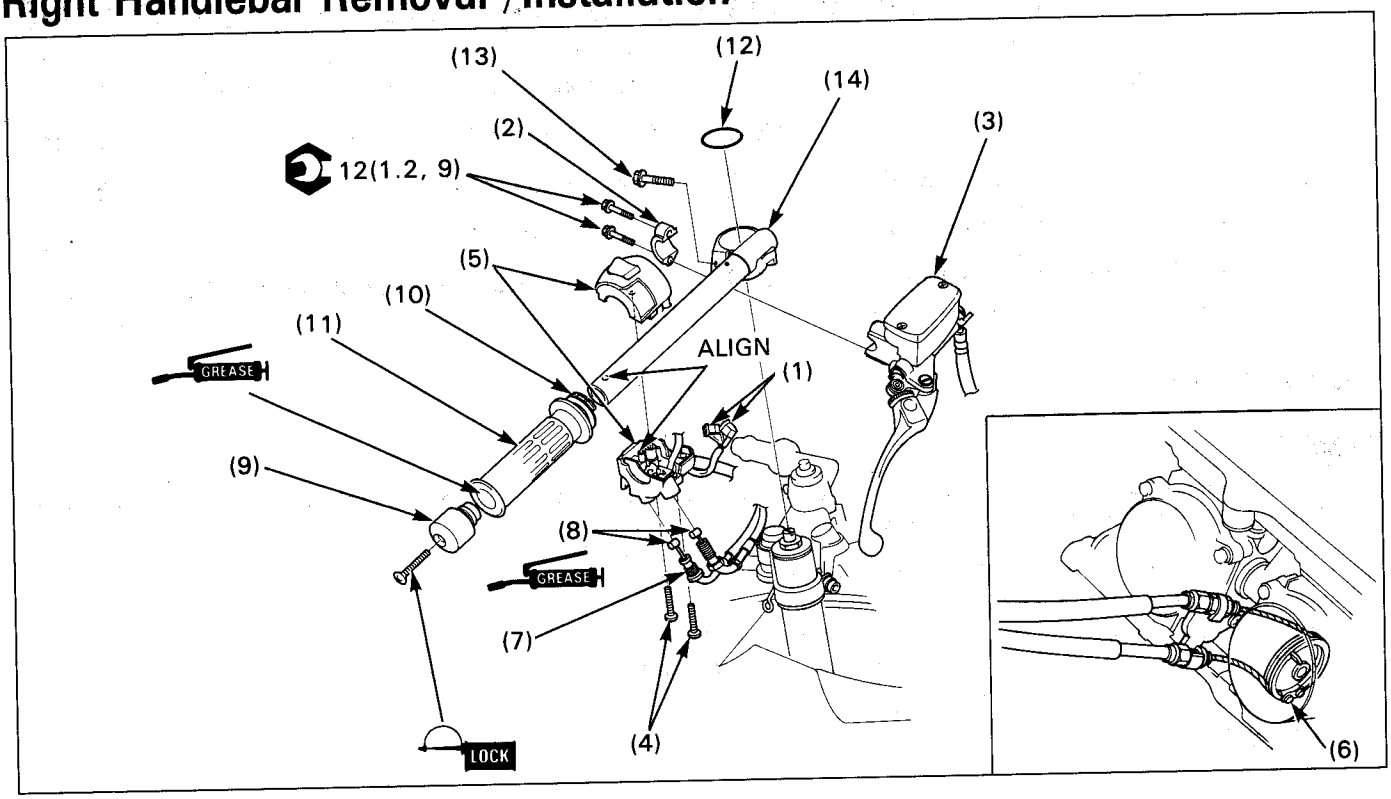
Wheel Turns Hard
- Faulty wheel bearing
- Brake drag
- Bent front axle

Soft Suspension
- Weak fork spring
- Insufficient fluid in fork
- Low fluid level in fork
- Low tire pressure

Hard Suspension
- Incorrect fluid weight
- Bent fork tubes
- Collogged fork fluid passage
- High tire pressure

Front Suspension Noise
- Insufficient fluid in fork
- Loose fork fasteners

Right Handlebar Removal /Installation



⚠ WARNING

- **Contaminants in the system may cause a reduction or loss of braking ability.**

CAUTION

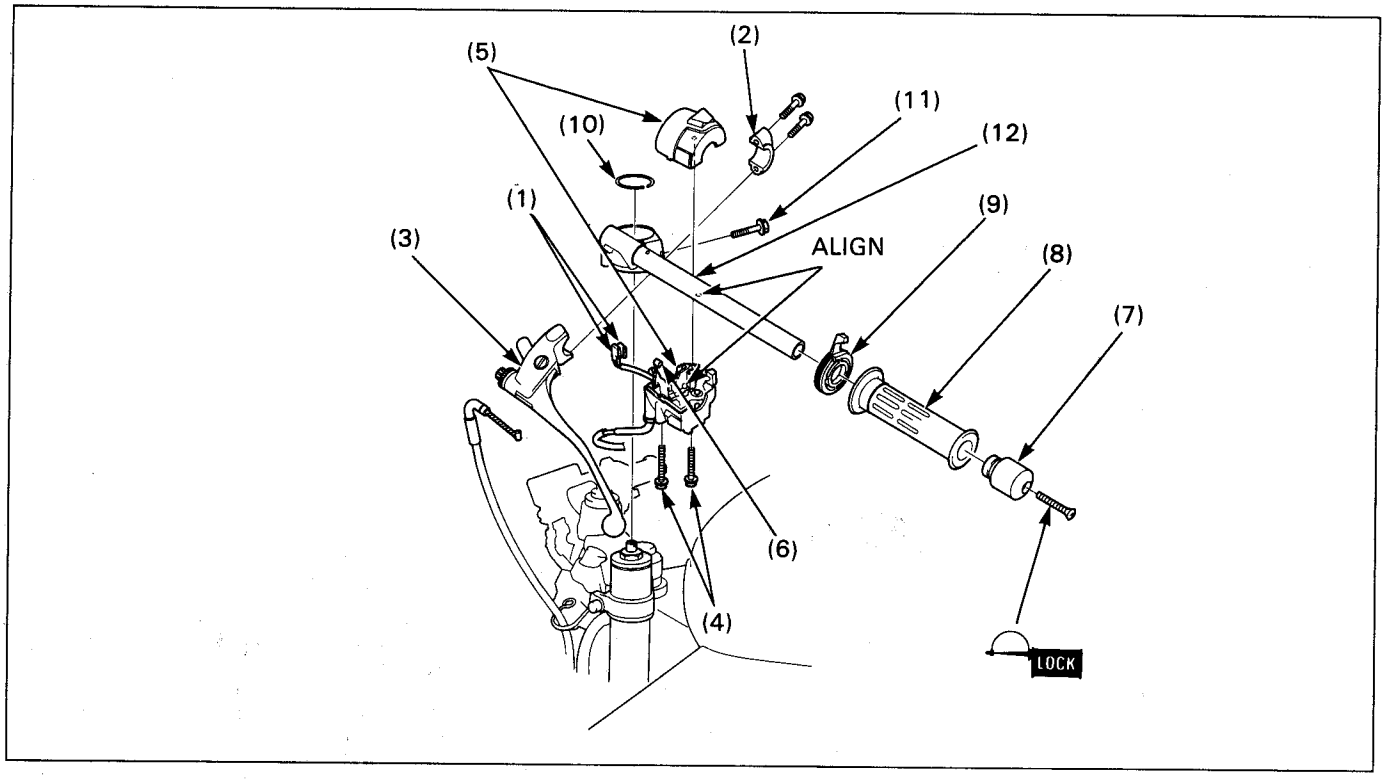
- **Spilled brake fluid will damage painted, plastic or rubber parts.**

Requisite Service

- Air cleaner case removal/installation(page6-3)
- Throttle grip free play adjustment(Refer to section 2 of the Common Service Manual.)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Front brakelight switch connector	2	
(2)	Master cylinder holder	1	Align the holder mating surface with the punch mark on the handlebar and install the holder with the "UP"mark upward.
(3)	Master cylinder assembly	1	
(4)	Right handlebar switch housing screw	2	Tighten the front screw first then the rear one.
(5)	Right handlebar switch housing	1	Align the tang of the housing with the hole in the handlebar.
(6)	Throttle cable end(carburetor side)	1	
(7)	Throttle cable nut	1	
(8)	Throttle cable end(throttle pipe side)	2	Don't bend the cables too much.
(9)	Handlebar weight	1	Align its boss with the inner weight.
(10)	Throttle pipe	1	
(11)	Throttle grip	1	Apply Honda Bond A or an equivalent to the inside surface of the grip.
(12)	Stopper ring	1	
(13)	Handlebar pinch bolt	1	Tighten the pinch bolt while pushing the handlebar forward.
(14)	Right handlebar	1	Align the handlebar boss with the top bridge slot.

Left Handlebar Removal/Installation

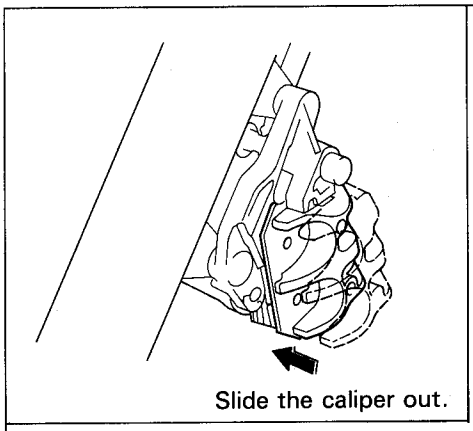


CAUTION

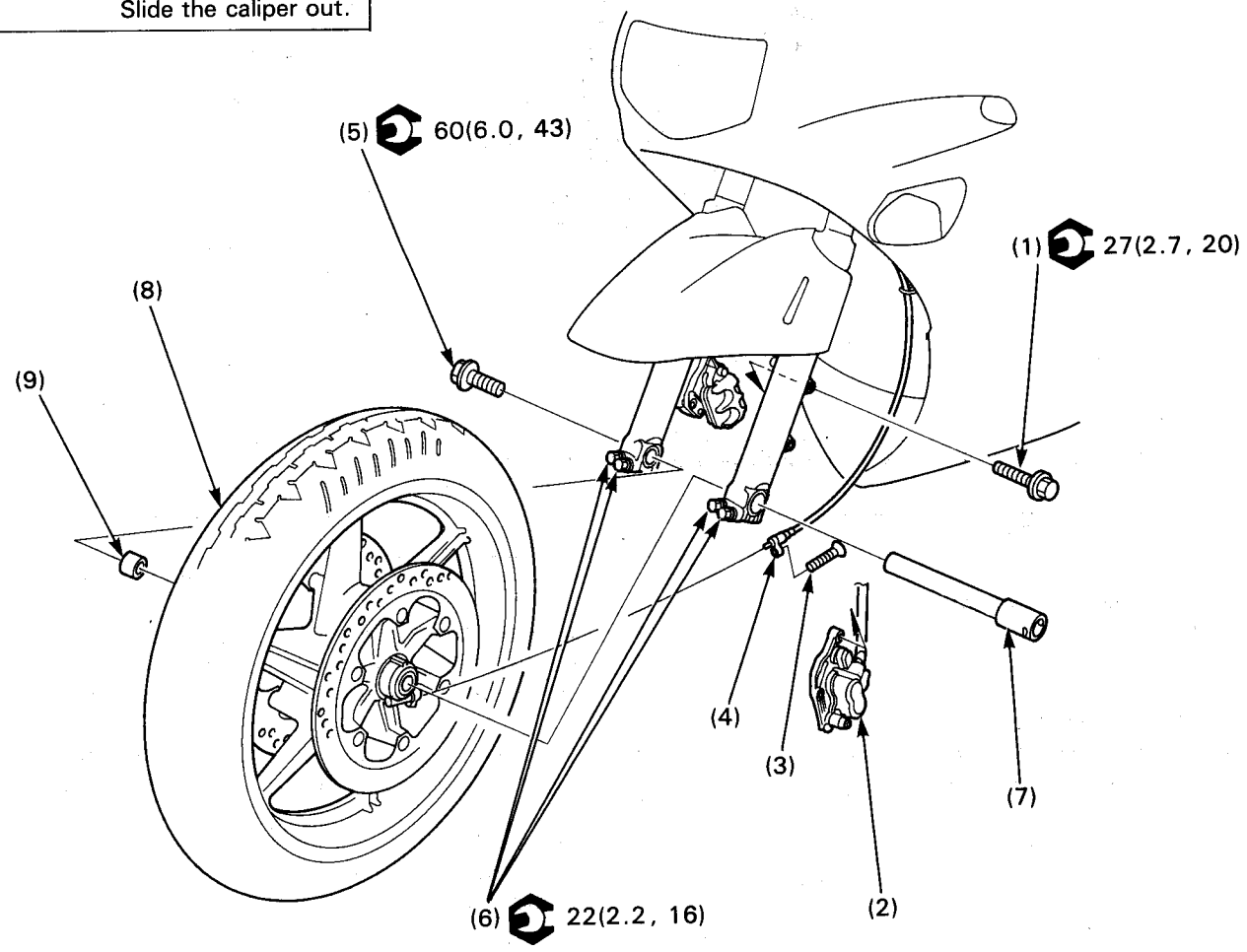
- **Spilled brake fluid will damage painted, plastic or rubber parts.**

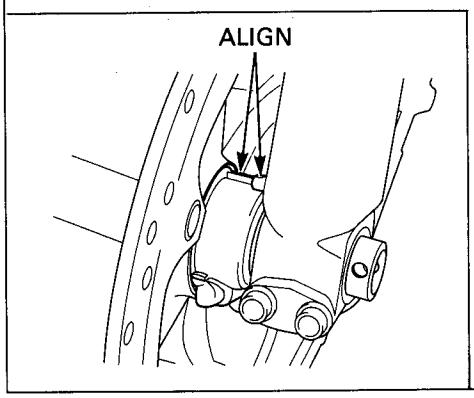
	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Clutch switch connector	2	
(2)	Clutch lever holder	1	Align the holder mating surface with the punch mark on the handlebar and face the holder with the "UP"mark upward. Tighten the upper bolt first then the lower bolt.
(3)	Clutch lever assembly	1	
(4)	Let handlebar switch housing screw	2	Tighten the front screw first then the rear one.
(5)	Left handlebar switch housing	1	Align the boss of the housing with the hole in the handlebar.
(6)	Choke cable	1	
(7)	Handlebar weight	1	Align its boss with the inner weight.
(8)	Handle grip	1	Apply Honda Bond A or an equivalent to the inside surface of the grip.
(9)	Choke lever	1	
(10)	Stopper ring	1	
(11)	Handlebar pinch bolt	1	Tighten the pinch bolt while pushing the handledar forward.
(12)	Left handlebar	1	Align the handlebar boss with the top bridge slot.

Front Wheel Removal/Installation



Slide the caliper out.





⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**

CAUTION

- **Do not suspend the brake caliper from the brake hose. Do not twist the brake hose.**

NOTE

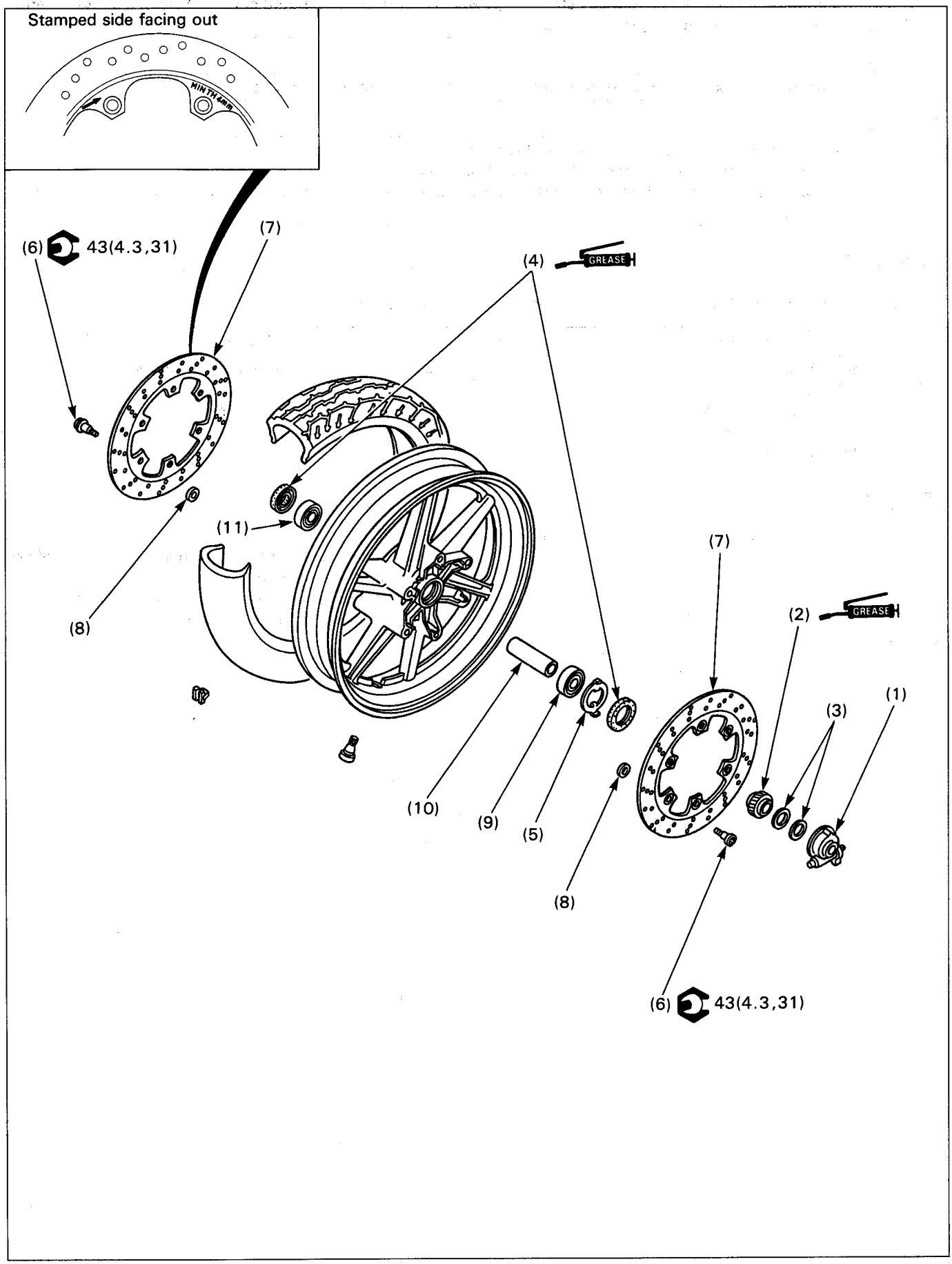
- Do not apply the brake lever after the front wheel is removed.
- Apply thin coat clean grease to the front axle before installation.
- Check the clearance between the brake disc and caliper bracket on each side installation. The clearance should be at least 0.7 mm (0.03 in).

Requisite Service

- Raise the front wheel off the ground by suspending the frame with a sling.

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Caliper blacket bolt	2	
(2)	Left brake caliper assembly	1	
(3)	Speedometer cable screw	1	
(4)	Speedometer cable	1	
(5)	Front axle bolt	1	
(6)	Front axle pinch bolt	4	
(7)	Front axle	1	
(8)	Front wheel assembly	1	NOTE • When installing or removing, slide the right brake caliper out so that the wheel rim clears. • When installing, align the stopper on the speedometer gear box with the tab on the left fork slider.
(9)	Right side collar	1	

Front Wheel Disassembly/Assembly



⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**

NOTE

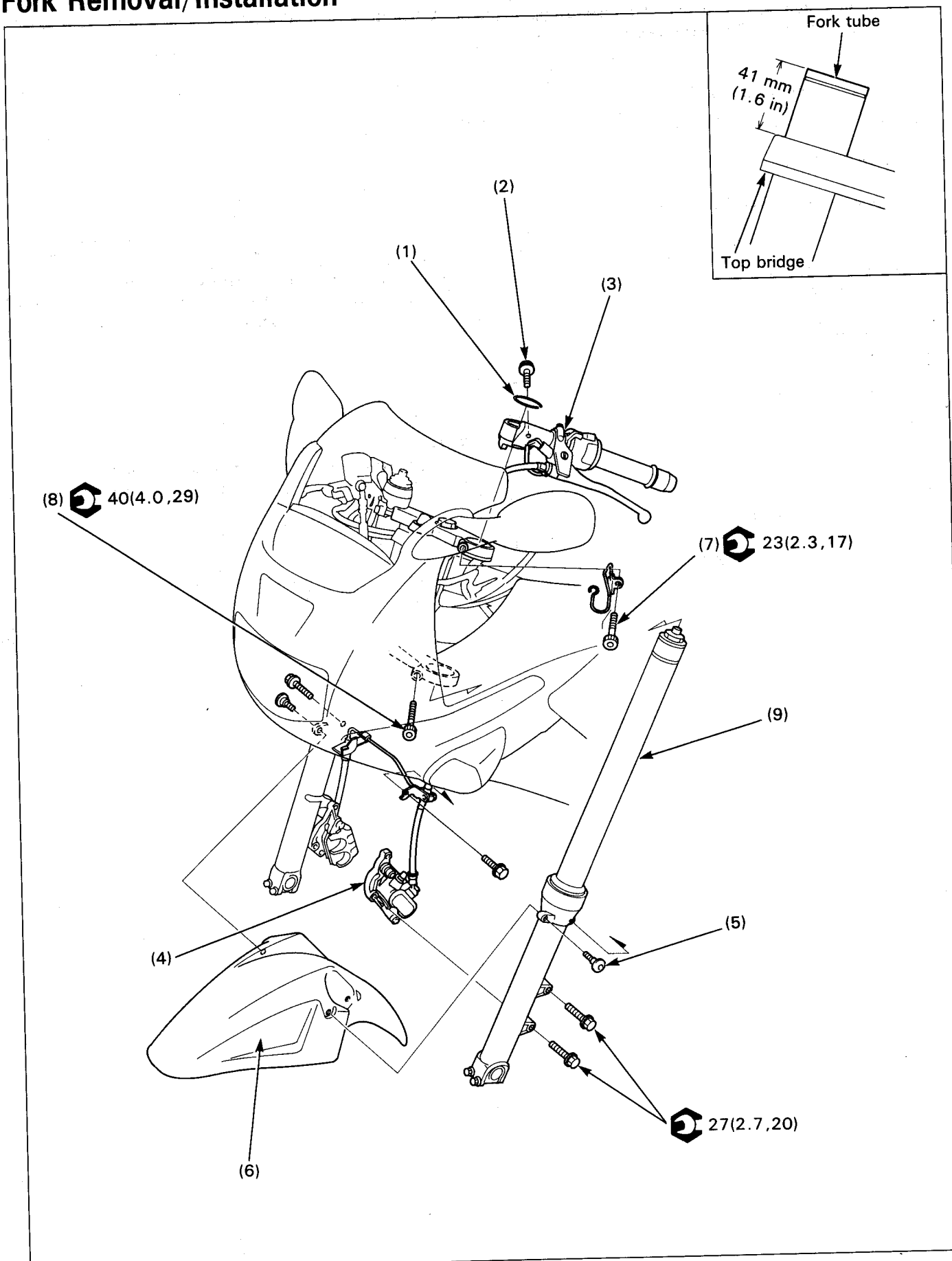
- Replace the wheel bearings in pairs.
- Do not add more than 60 grams to the wheel balance weight.

Requisite Service

- Front wheel removal/installation(page 12-4)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Speedometer gear box	1	When installing, engage the tabs of the speedometer gear with the tangs of the retainer.
(2)	Speedometer gear	1	
(3)	Washer	2	
(4)	Dust seal	2	
(5)	Speedometer gear retainer	1	
(6)	Brake disc bolt	12	
(7)	Brake disc	2	NOTE • Install each brake disc to its original location. • Install each brake disc with the stamped side facing out.
(8)	Shim	12	
(9)	Left wheel bearing(6004)	1	
(10)	Distance collar	1	
(11)	Right wheel bearing (6004)	1	

Fork Removal/Installation



NOTE

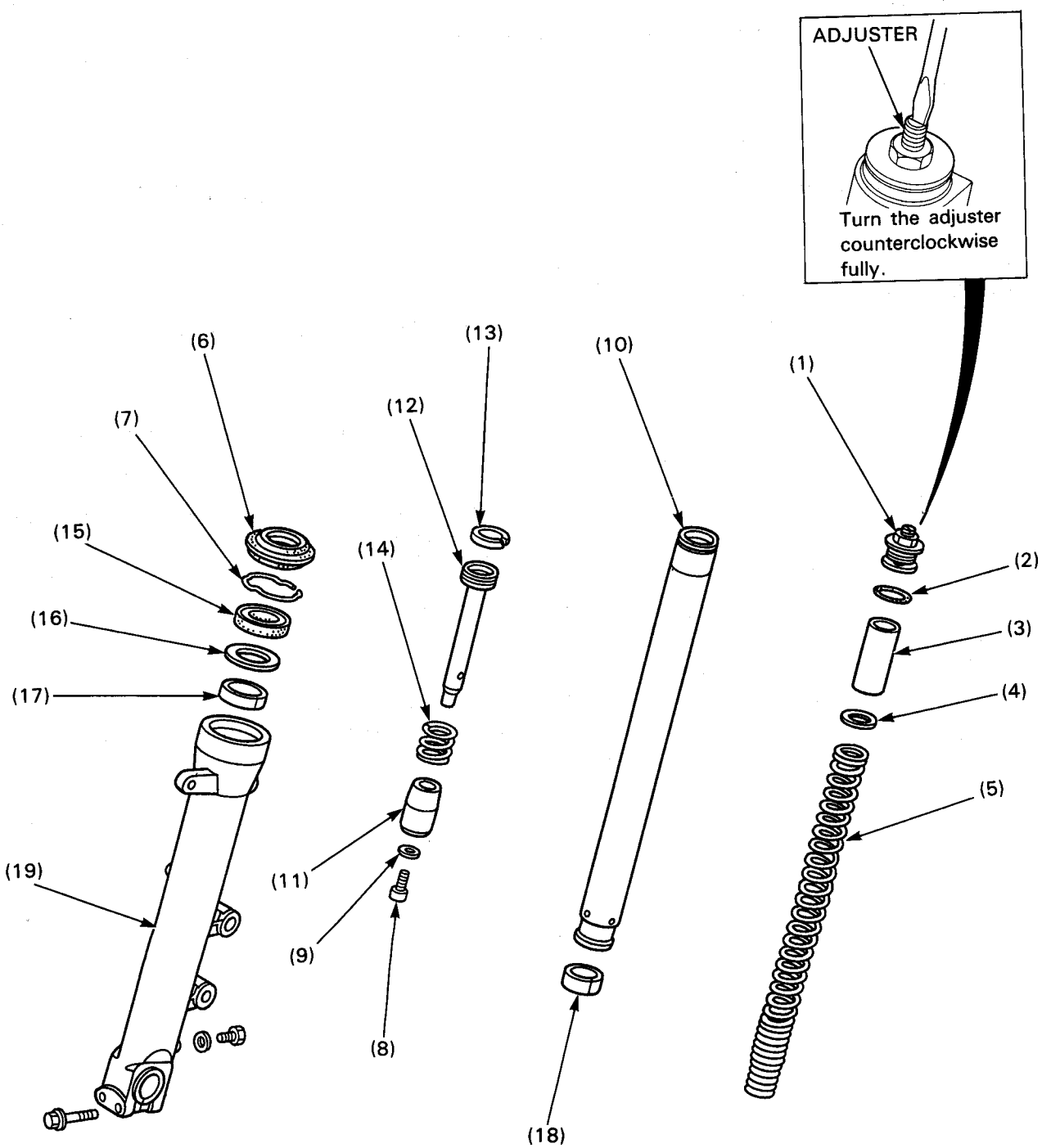
- Do not depress the brake lever when the calipers are removed, or it will be difficult to refit the disc between the brake pads.
- If you plan to disassemble the forks legs, loosen the top bridge bolts first then the fork cap bolts but do not remove them at this time.
- Suspend the right and left handlebars properly so that the cables and wires are not bent tightly.

Requisite Service

- Front wheel removal (page 12-4)

	Procedure	Q'ty	Remarks
	Removal Order		
(1)	Stopper ring	2	
(2)	Handlebar pinch bolt	2	
(3)	Right/Left handlebar assembly	1/1	
(4)	Front brake caliper assembly	2	Be careful not to damage the brake pipe.
(5)	Socket bolt	2	
(6)	Front fender	1	
(7)	Top bridge pinch bolt	2	
(8)	Bottom bridge pinch bolt	2	Be sure to hold the fork leg while loosening the bolts.
(9)	Fork leg assembly	2	
	Installation Order		
(9)	Fork leg assembly	2	Install the fork leg assembly so that the distance between the fork pipe upper edge and upper surface of the fork top bridge is 41 mm (1.6 in).
(8)	Bottom bridge pinch bolt	2	
(7)	Top bridge pinch bolt	2	
(6)	Front fender	1	
(5)	Socket bolt	2	
(4)	Front brake caliper assembly	2	
(3)	Right/Left handlebar assembly	2	Align the handlebar boss with the top bidge slot.
(2)	Handlebar pinch bolt	2	Tighten the pinch bolt while pushing the handlebar forward.
(1)	Stopper ring	2	

Fork Disassembly



⚠ WARNING

- **The fork tube cap is under spring pressure. Use care when removing it and wear eye and face protection.**

NOTE

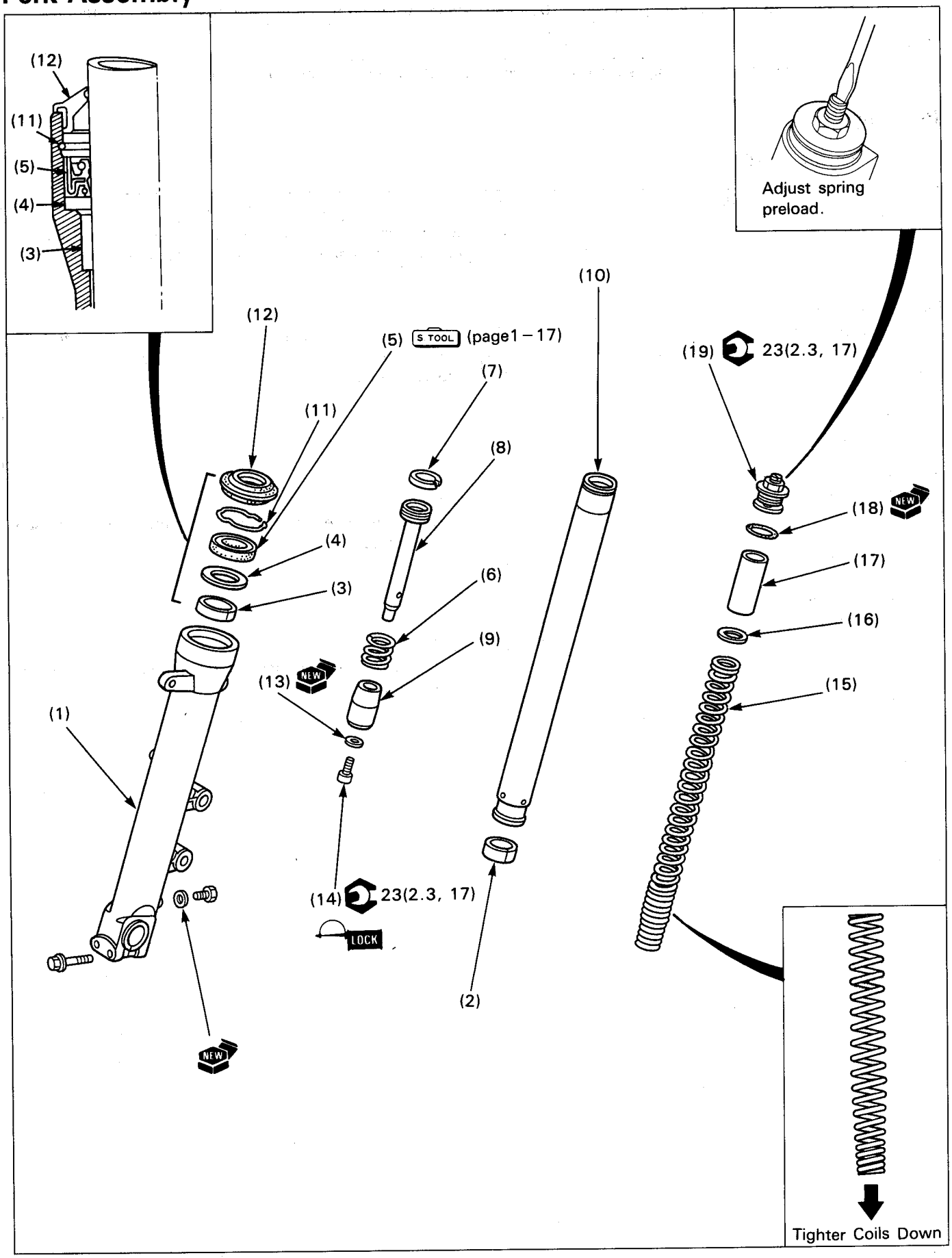
- Temporarily install the fork spring, spring seat, spacer and fork tube cap to loosen the socket bolt.

Requisite Service

- Fork removal/installation(page 12-8)

	Procedure	Q'ty	Remarks
(1)	Fork tube cap	1	Before removing the fork tube cap, turn the preload adjuster counterclockwise fully to lessen spring pressure.
(2)	O-ring	1	
(3)	Spacer	1	
(4)	Spring seat	1	
(5)	Fork spring	1	After removing the spring, pour out any remaining fork oil.
(6)	Dust seal	1	When removing, be careful not damage the fork tube sliding surface.
(7)	Stopper ring	1	
(8)	Fork socket bolt	1	
(9)	Sealing washer	1	
(10)	Fork tube	1	
(11)	Oil lock piece	1	
(12)	Fork piston	1	
(13)	Fork piston ring	1	NOTE • Do not remove the fork piston ring unless it is necessary to replace.
(14)	Rebound spring	1	
(15)	Oil seal	1	
(16)	Back up ring	1	
(17)	Slider bushing	1	
(18)	Fork tube bushing	1	NOTE • Do not remove the fork piston ring unless it is necessary to replace.
(19)	Fork slider	1	

Fork Assembly



NOTE

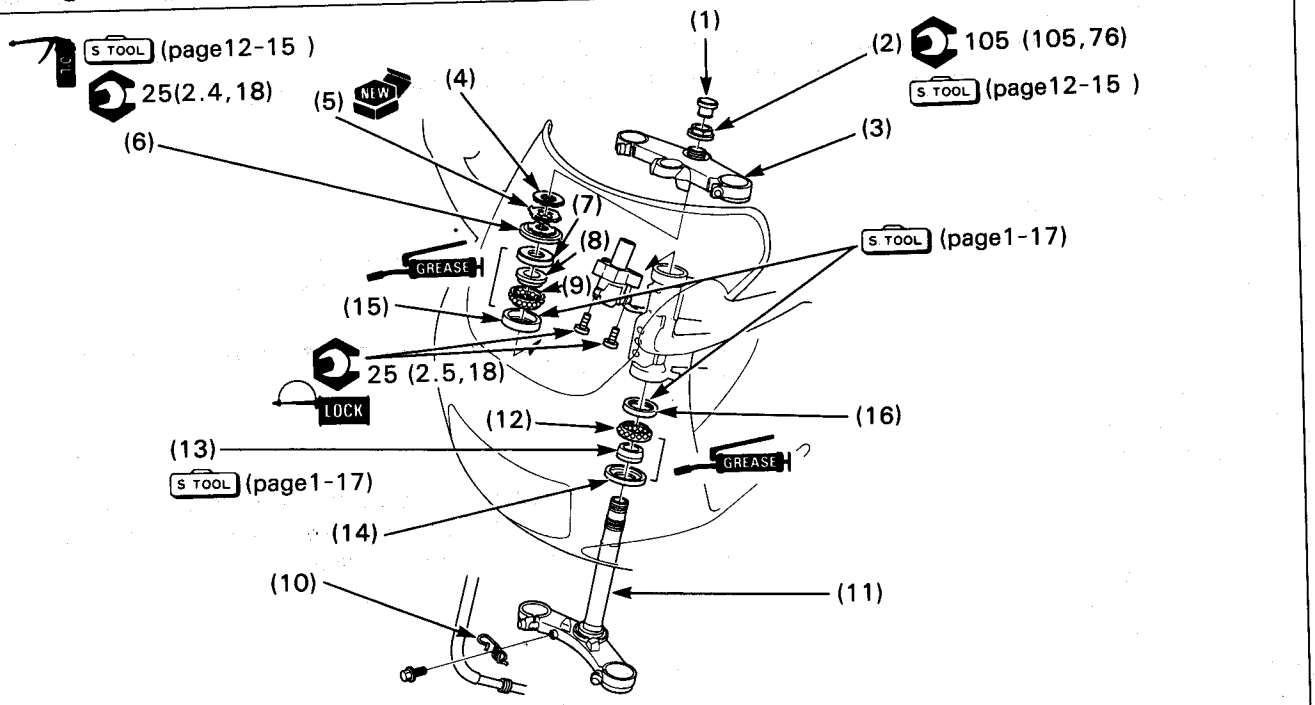
- After assembling the fork legs, install each fork leg onto the steering stem first, then torque the fork tube cap and torque the top bridge pinch bolt.
- Install the back up ring with the chamfered surface side facing down.
- Coat a new oil seal with the recommended fork oil and install with seal mark facing up.

Requisite Service

- Fork installation (page 12-8)

Procedure		Q'ty	Remarks
(1)	Fork slider	1	
(2)	Fork tube bushing	1	Replace with a new one if it was removed from the fork tube.
(3)	Slider bushing	1	
(4)	Back up ring	1	
(5)	Oil seal	1	NOTE • Install the oil seal with the marked side facing out. • Wrap the fork tube top end with vinyl tape to prevent the oil seal lip from damaging.
(6)	Rebound spring	1	
(7)	Fork piston ring	1	
(8)	Fork piston	1	
(9)	Oil lock piece	1	
(10)	Fork tube	1	Drive the oil seal into the fork slider with the Fork seal driver (07947-KA50100) and Attachment (07947-KF00100) until the oil seal seats completely.
(11)	Stopper ring	1	When installing, be careful not to damage the fork tube sliding surface.
(12)	Dust seal	1	
(13)	Sealing washer	1	
(14)	Fork socket bolt	1	NOTE • Afert tightening, compress fork tube fully and pour the specified amount of fork fluid (page 1-11)into the fork tube.
(15)	Fork spring	1	NOTE • Wipe oil off the spring throughly using a clean lint free cloth and install with tightly wound coil facing down.
(16)	Spring seat	1	
(17)	Spacer	1	
(18)	O-ring	1	
(19)	Frok tube cap	1	NOTE • Before installing, make sure the preload adjuster is turned counterclockwise fully. After installing, adjust fork spring preload.

Steering Stem Removal/Installation



NOTE

- Replace each bearing and bearing race as a set.
- Do not reuse the lock washer.

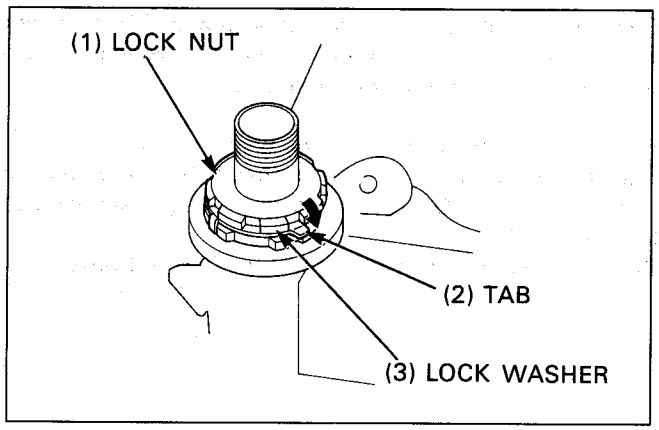
Requisite Service

- Fork removal/installation(page 12-8)
- Ignition switch removal/installation (page 18-8)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Steering stem nut cap	1	
(2)	Steering stem nut	1	
(3)	Fork top bridge	1	
(4)	Lock nut	1	Before removing, bend straight the tabs of the lock washer.
(5)	Lock washer	1	
(6)	Steering adjustment nut	1	Refer to page 12-15 for installation. Hold the steering stem during removing the adjustment nut.
(7)	Dust seal	1	
(8)	Upper inner race	1	
(9)	Ball bearing	1	
(10)	Brake hose clamp	1	
(11)	Steering stem	1	
(12)	Ball bearing	1	
(13)	Lower inner race	1	
(14)	Dust seal	1	
(15)	Upper outer race	1	
(16)	Lower outter race	1	

Bearing Adjustment Nut Removal/Installation

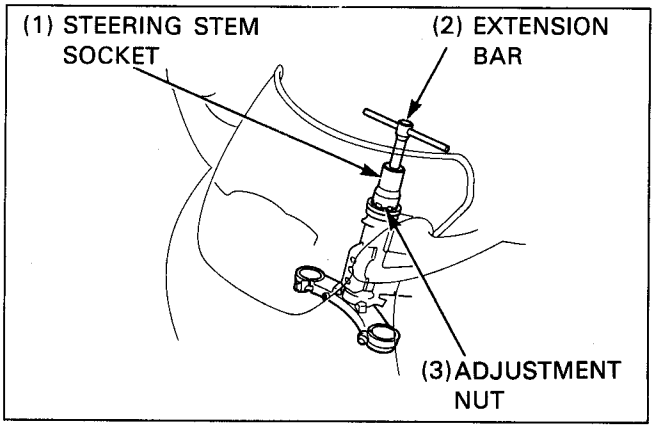
Bend straight the tabs of the lock washer and remove the lock nut and lock washer.



Remove the steering adjustment nut.

S TOOL

Steering stem socket	**07916-3710100**
Extension bar	**07716-0020500**

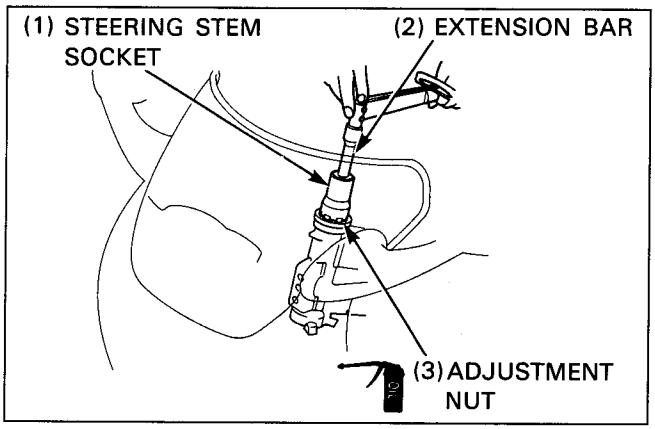


Apply clean engine oil to the steering adjustment nut threads and tighten the adjudtment nut to the specified torque.

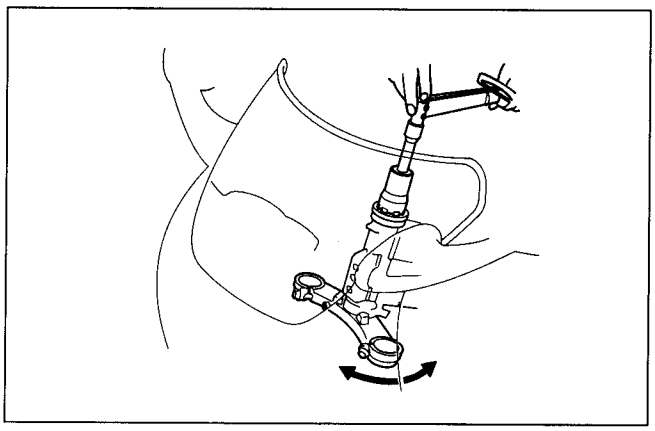
S TOOL

Steering stem socket	**07916-3710100**
Extension bar	**07716-0020500**

Torque: 25 N · m (2.5kg-m, 18 ft-lb)

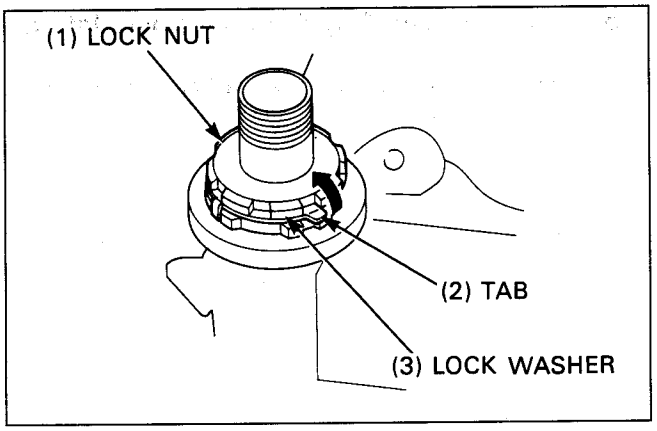


Turn the steering stem lock to lock at least five times then retighten the steering adjustment nut to the specified torque.



Bend down the opposite tabs of a new lock washer and install it onto the steering adjustment nut aligning the tabs with the grooves in the adjustment nut.

Finger tighten the lock nut all the way.
Hold the adjustment nut and further tighten the lock nut within 1/4 turn (90°) enough to align its grooves with the lock washer tabs.
Bend the lock washer tabs up into the lock nut grooves.



13. Rear Wheel/Suspension

Service Information	13-1	Suspension Linkage Removal/ Installation	13-7
Troubleshooting	13-1	Suspension Linkage Disassembly/ Assembly	13-8
Rear Wheel Removal/Installation	13-2	Swingarm Removal/Installation	13-10
Rear Wheel Disassembly/Assembly	13-3	Swingarm Disassembly/Assembly	13-12
Shock Absorber Removal/Installation	13-4		
Shock Absorber Disassembly/ Assembly	13-5		

Service Information

- Refer to the section 14 for brake system information.
- Tubeless tire removal, repair and remounting procedures are covered in the section 16 of the Common Serveice Manual.

Troubleshooting

Rear Wheel Wobbling
- Bent rim
- Worn rear wheel bearings
- Faulty tire
- Unbalanced tire and wheel
- Low tire pressure
- Faulty swingarm pivot bearing(s)

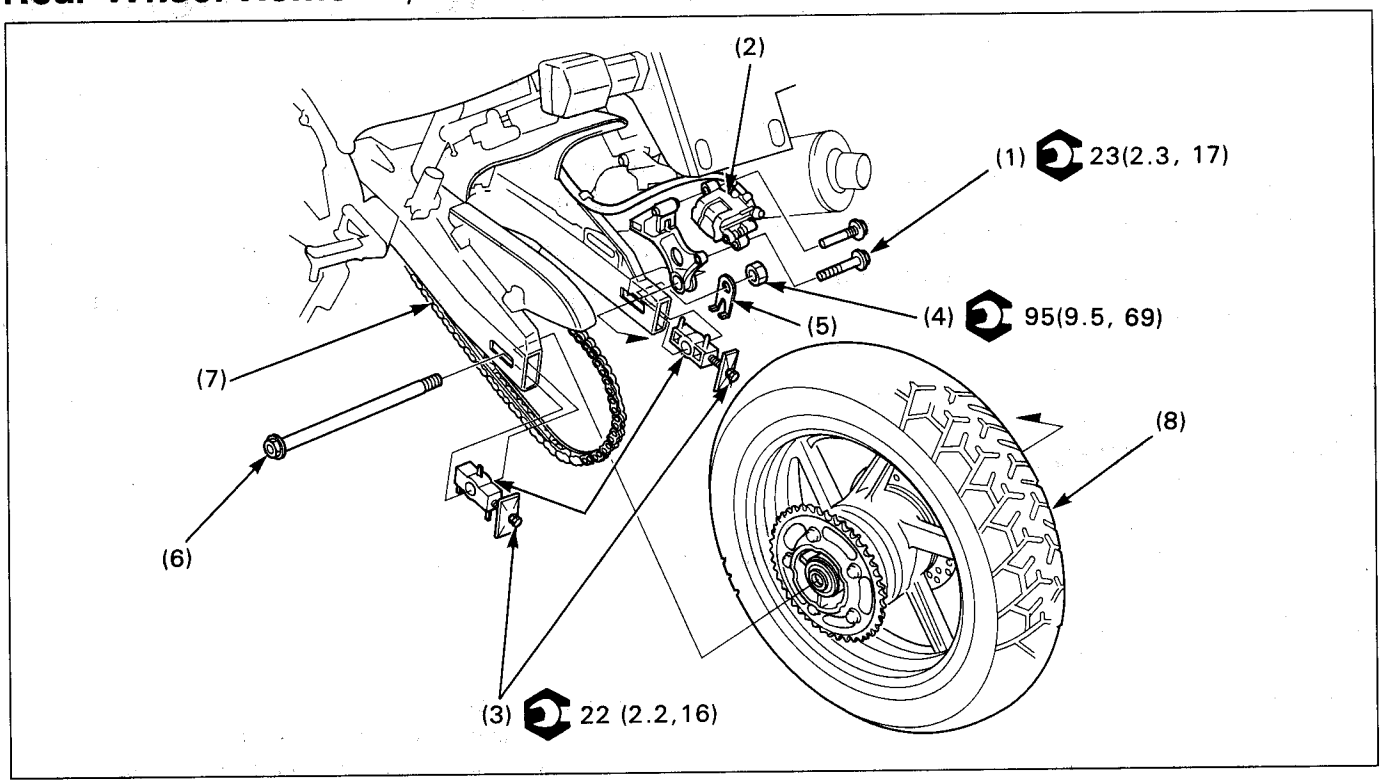
Wheel Turns Hard
- Faulty wheel bearing(s)
- Brake drag (Section 14)
- Bent rear axle

Soft Suspension
- Weak shock absorber spring
- Incorrect suspension adjustment
- Oil leakage from damper unit
- Low tire pressure

Hard Suspension
- Damaged shock absorber mount bushing
- Damaged shock absorber lower joint bearing
- Incorrect suspension adjustment
- Bent damper rod
- Damaged swingarm pivot bearing
- High tire pressure

Suspension Noise
- Shock absorber binding
- Loose fasteners

Rear Wheel Removal/Installation



⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**

CAUTION

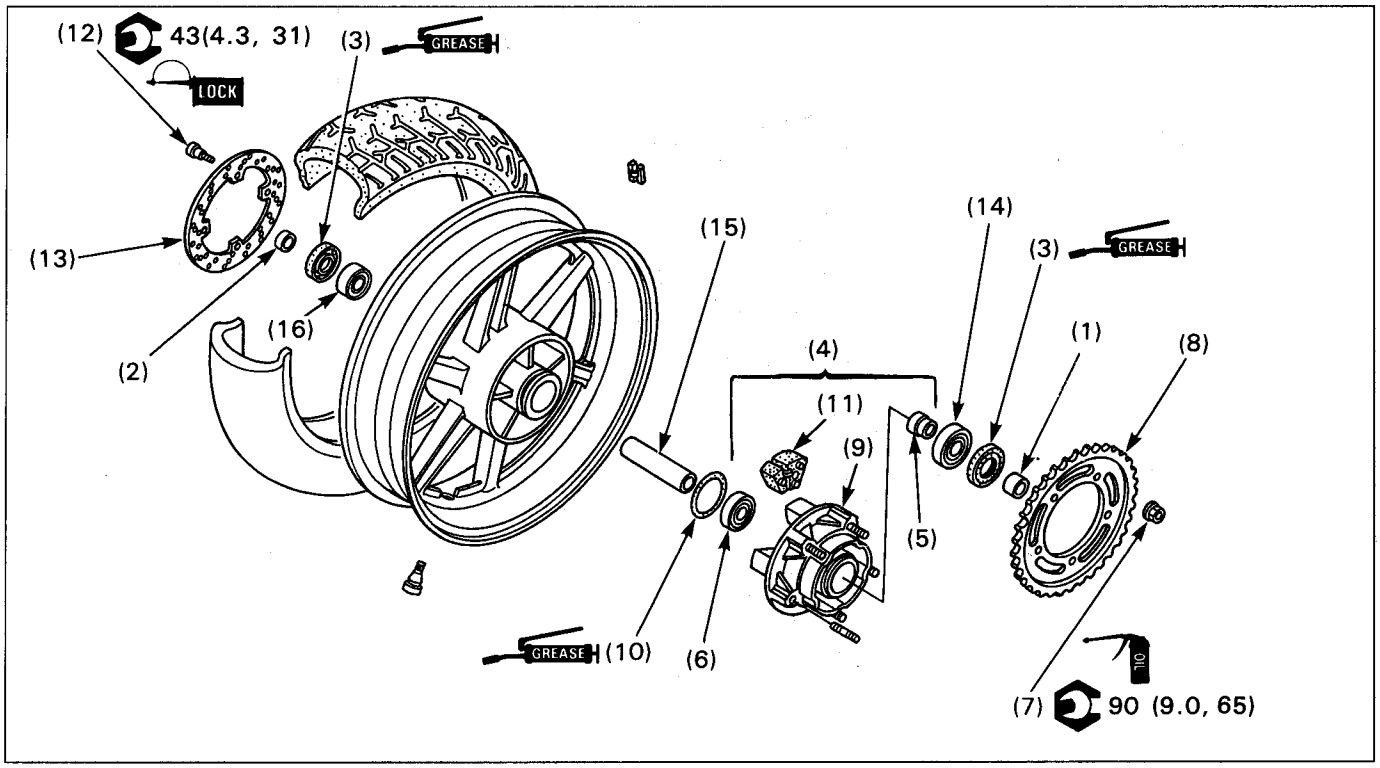
- **Do not suspend the brake caliper from the brake hose. Do not twist the brake hose.**

NOTE

- Put the motorcycle on its center stand.
- Do not depress the brake pedal when the caliper is removed, or it will be difficult to refit the disc between the brake hose.
- Adjust the drive chain slack after installing the wheel.

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Rear caliper bracket bolt	1	
(2)	Rear brake caliper assembly	1	Release the brake hose from the clamp on the rear fender B and pivot the brake caliper upward.
(3)	Lock nut/Drive chain adjusting nut	2/2	Loosen them all the way and push the wheel forward all the way.
(4)	Rear axle nut	1	
(5)	Washer	1	
(6)	Rear axle shaft	1	
(7)	Drive chain	1	
(8)	Rear wheel assembly	1	
(9)	Drive chain adjuster	1	Install the drive chain adjusters with the graduated side facing out.

Rear Wheel Disassembly/Assembly



⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**

NOTE

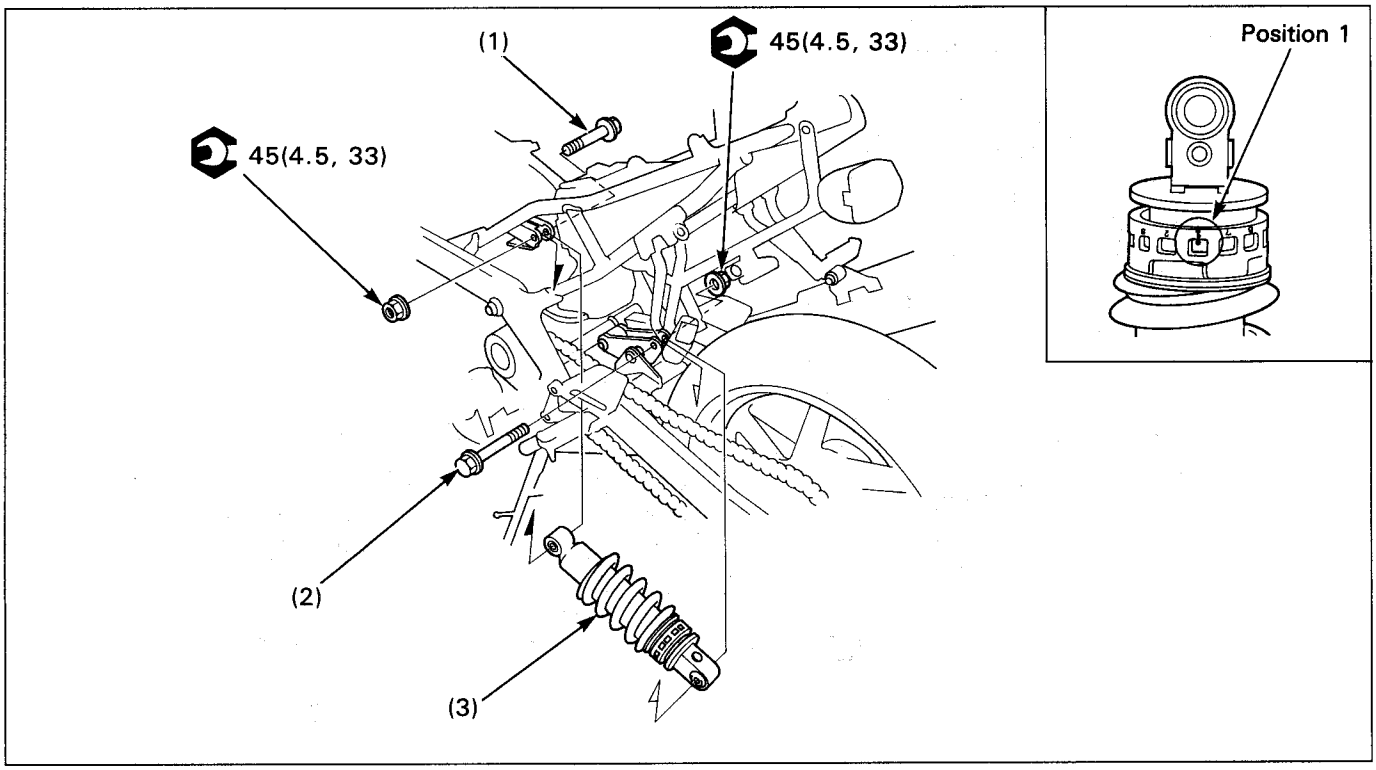
- Replace the wheel bearings in pairs.
- Do not add more than 60 grams to the wheel balance weight.

Requisite Service

- Rear wheel removal/installation(page 13-2)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Left side collar	1	
(2)	Right side collar	1	
(3)	Dust seal	2	
(4)	Driven flange assembly	1	
(5)	-Driven flange collar	1	
(6)	-Driven flange bearing (62/22)	1	
(7)	-Driven sprocket nut	4	
(8)	-Driven sprocket	1	Install the driven sprocket with the stamped side facing out.
(9)	-Driven flange	1	
(10)	O-ring	1	
(11)	Rear wheel dumper	5	
(12)	Brake disc bolt	4	
(13)	Brake disc	1	Install the brake disc with the stamped side facing out.
(14)	Left wheel bearing (6204UU)	1	
(15)	Distance collar	1	
(16)	Right wheel bearing (6204UU)	1	

Shock Absorber Removal/Installation



NOTE

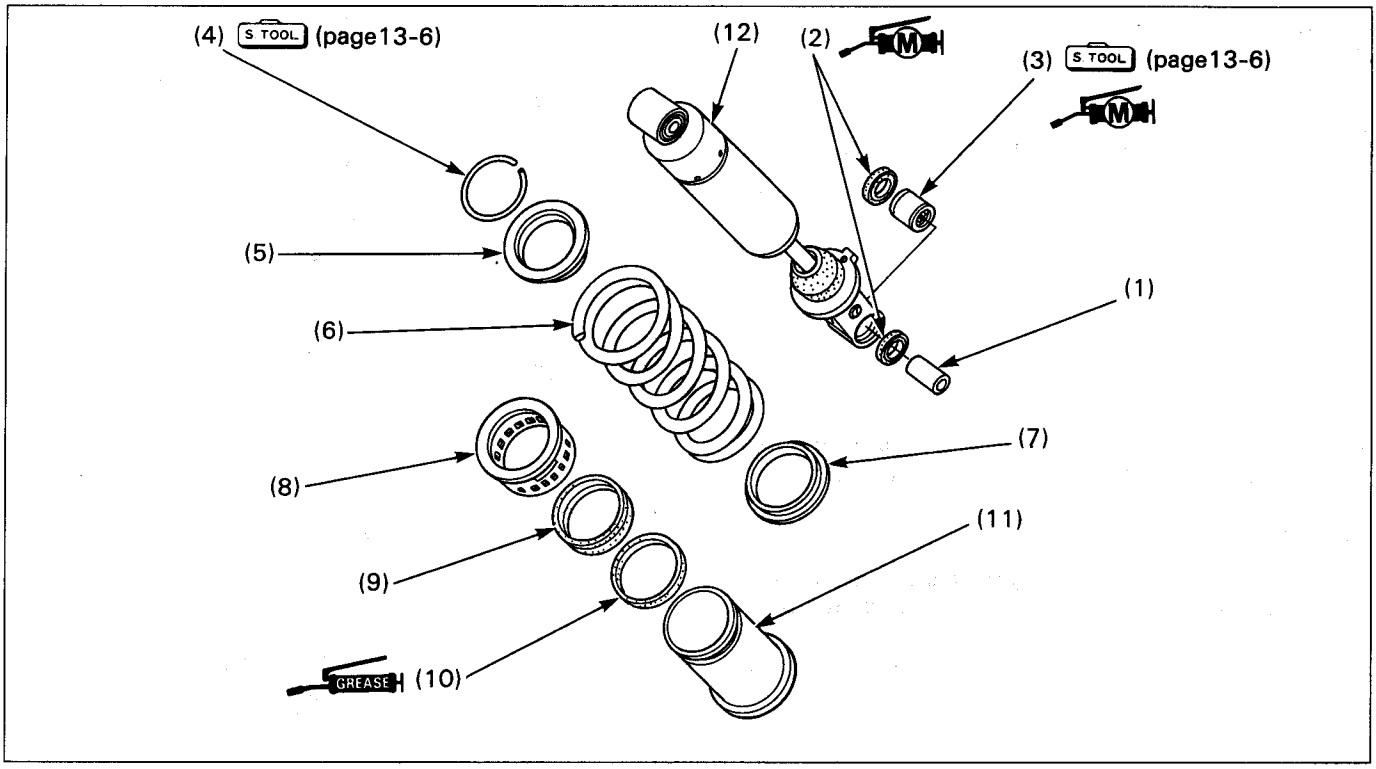
- Put the motorcycle on its center stand.
- If you plan to disassemble the shock absorber, adjust the shock absorber to position 1 (for lightest loads) before removing the shock absorber from the frame.

Requisite Service

- Side cover removal/installation(page 2-2)
- Rear fender B removal/installation(page 2-7)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Shock absorber mounting bolt (upper)	1	Install the bolt from the right side.
(2)	Shock absorber mounting bolt (lower)	1	Install the bolt from the left side.
(3)	Shock absorber assembly	1	Install the shock absorber assembly with the rebound damping adjuster facing right side.

Shock Absorber Disassembly/Assembly



⚠WARNING

- **The shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the shock absorber.**
- **Before disposal of shock absorber, release the nitrogen.**
  (Step : section 19 of the Common Service Manual ; Drilling point : page 1-11)

Requisite Service

- Shock absorber removal/installation(page 13-4)

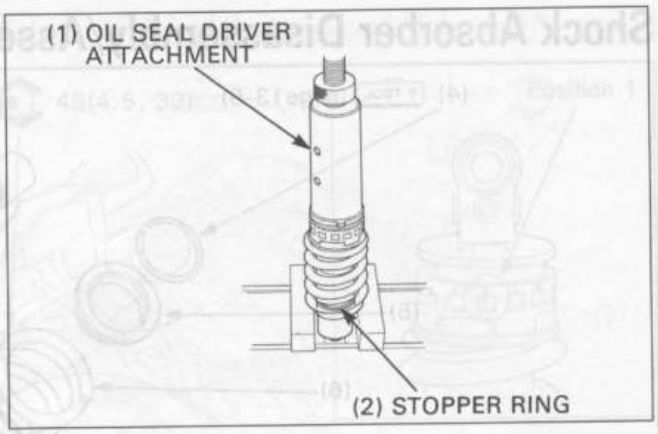
	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Lower mount collar	1	
(2)	Dust seal	1	
(3)	Needle bearing	1	Refer to page 13-6 for replacement.
(4)	Stopper ring	1	Refer to page 13-6 for removal and installation.
(5)	Upper spring seat	1	
(6)	Spring	1	
(7)	Lower spring seat	1	
(8)	Spring preload adjuster	1	
(9)	Dust seal	1	
(10)	Inner spring seat	1	
(11)	Spring guide	1	Install the spring guide aligning the cutout in the guide with the tab on the spring guide stopper.
(12)	Dumper unit assembly	1	

Stopper Ring Removal/Installation

Remove the stopper ring by compressing the shock absorber with a hydraulic press.

S TOOL

Oil seal driver attachment 07965-KE80200



Compress the shock absorber until the groove in the damper unit come out enough to install the stopper ring.

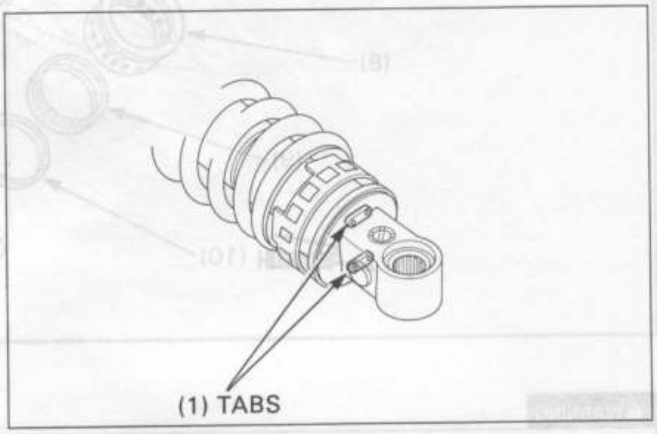
CAUTION

- **Do not compress the spring more than necessary to insall the stopper ring or the spring will fatigue.**

Install the stopper ring in the groove in the damper unit securely.

NOTE

- Before releasing the hydraulic press, make sure that the lower joint aligns between the tabs on the spring guide stopper.

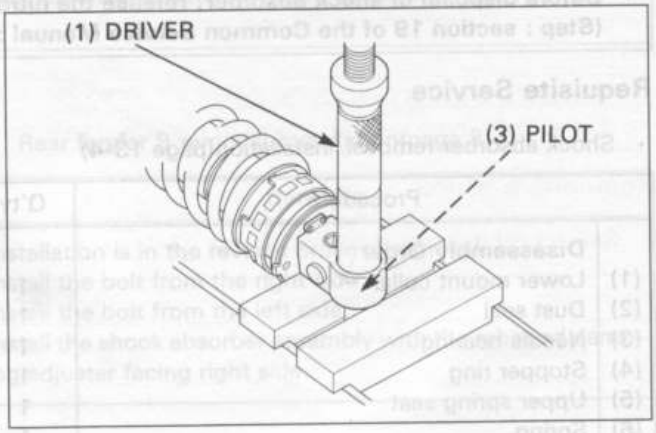


Lower Joint Needle Bearing Replacement

Remove the dust seals from the lower joint.
Hold the lower joint with the suitable tool.
Press the needle bearing out of the lower joint.

S TOOL

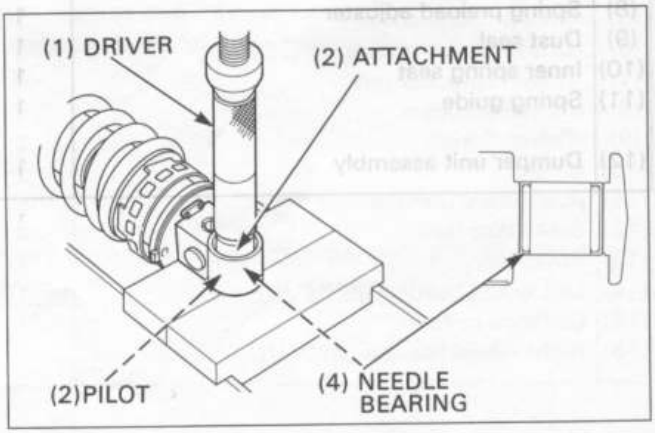
Pin driver	**07GMD-KT80100 or**
Driver	**07749-0010000**
Pilot, 22 mm	**07746-0041000**



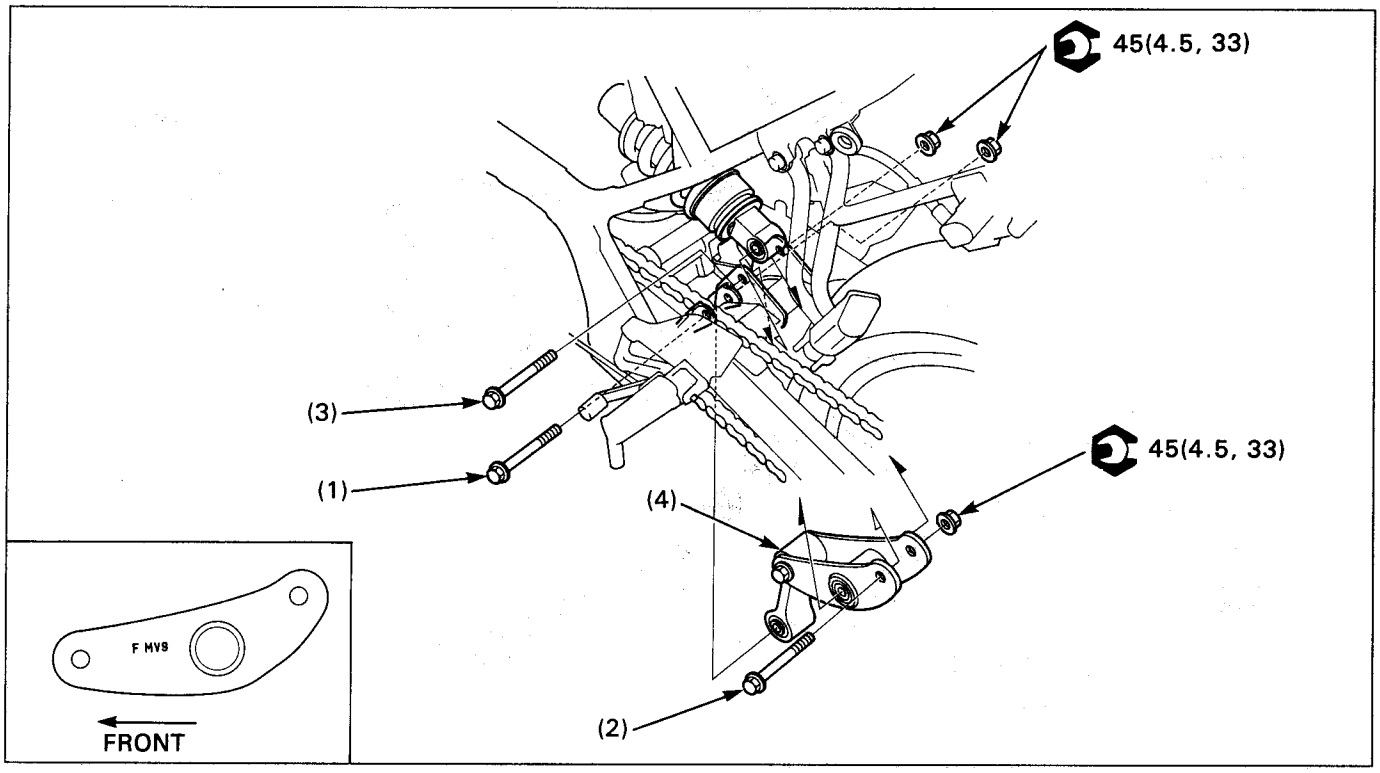
Pack a new needle bearing with molybdenum disulfide grease.
Press the bearing into the lower joint until the bearing surface is flush with the joint surface as shown.

S TOOL

Driver	**07749-0010000**
Attachment, 24×26 mm	**07746-0010700**
Pilot, 17 mm	**07746-0040400**



Suspension Linkage Removal/Installation



NOTE

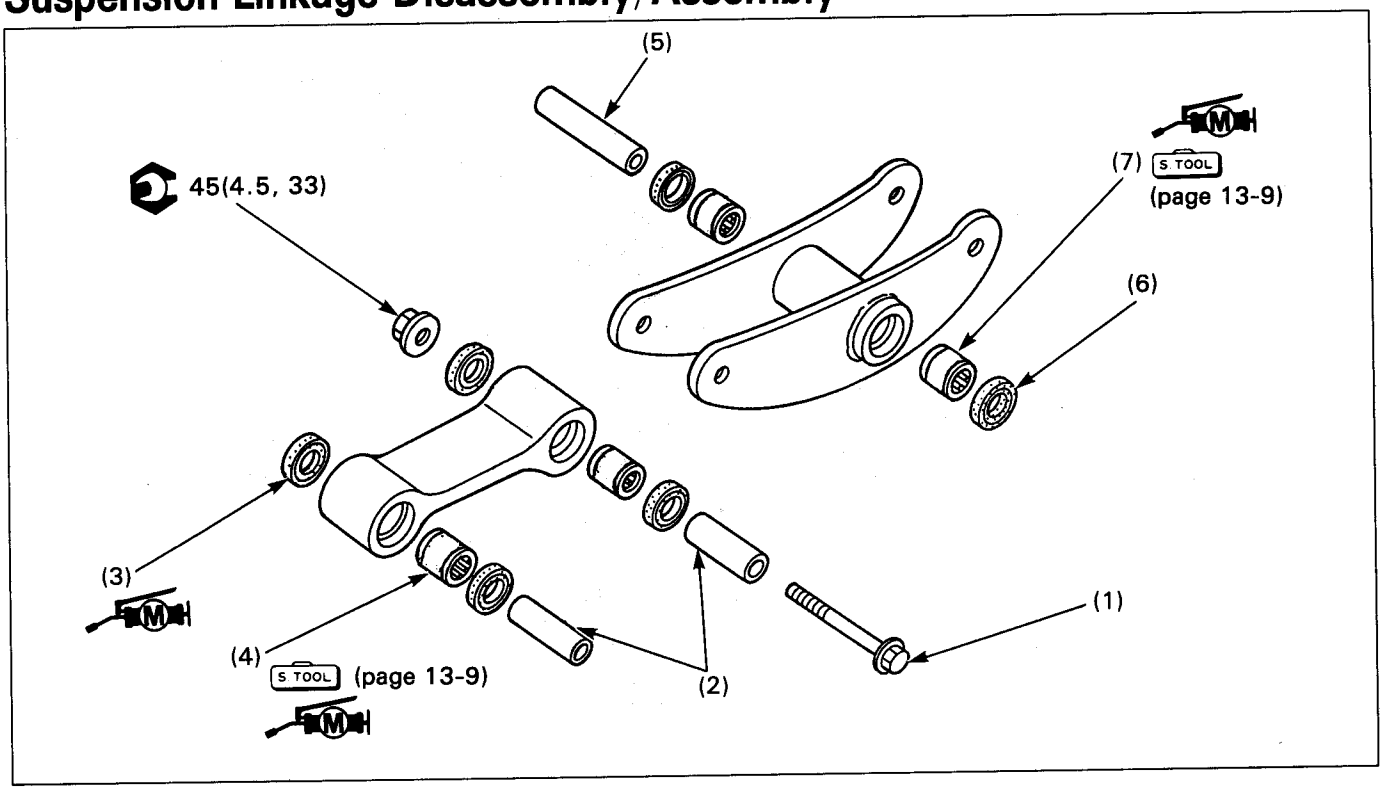
- Put the motorcycle on its center stand.

Requisite Service

- Rear fender B removal/installation(page 2-7)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Shock link bolt (shock arm side)	1	
(2)	Shock absorber mounting bolt (lower)	1	
(3)	Shock link bolt (frame side)	1	
(4)	Shock link/Shock arm	1	Install the shock link and shock arm with the mark "←F MV9" facing left side.

Suspension Linkage Disassembly/Assembly



NOTE

- Assemble the shock link and shock arm with the arrow mark "←F MV9" pointing forward.

Requisite Service

- Shock linkage removal/installation(page 13-7)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Shock arm bolt	1	
(2)	Shock link pivot collar	2	
(3)	Dust seal	4	
(4)	Shock link pivot needle bearing	2	Refer to page 13-9 for replacement.
(5)	Shock arm pivot collar	1	
(6)	Dust seal	2	
(7)	Shock arm pivot needle bearing	1	Refer to page 13-9 for replacement.

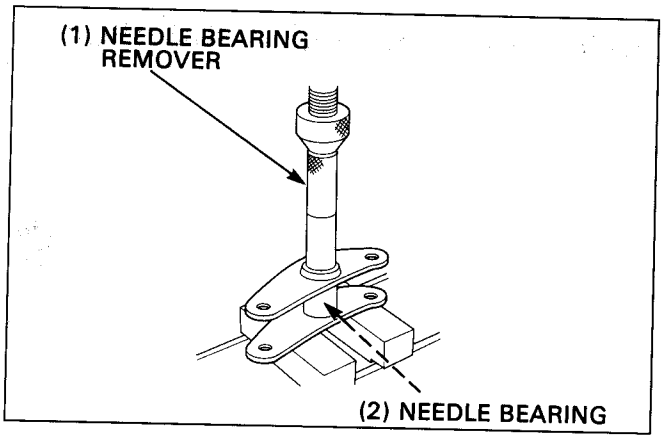
Suspension Linkage Pivot Needle Bearing Replacement

Shock Arm

Press the needle bearing out of the shock arm.

S TOOL

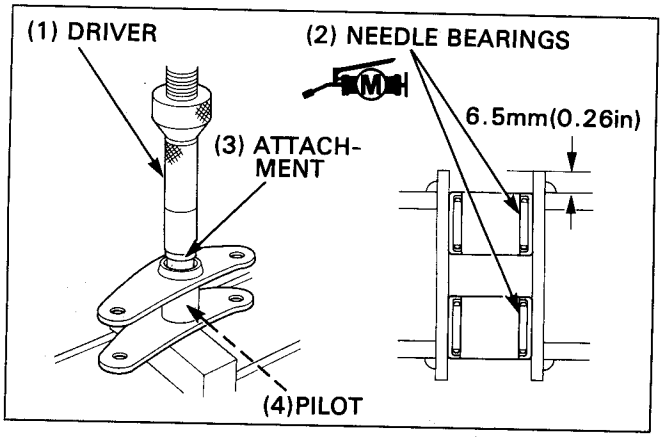
Pin driver	07GMD-KT80100 or
Driver	07749-0010000
Pilot, 22 mm	07746-0041000



Press a new needle bearing into the shock arm so that the needle bearing outer surface is lower 6.5 mm(0.26 in) from the end of the shock arm pivot.

S TOOL

Driver	07749-0010000
Attachment, 24×26 mm	07746-0010700
Pilot, 17 mm	07746-0040400



NOTE

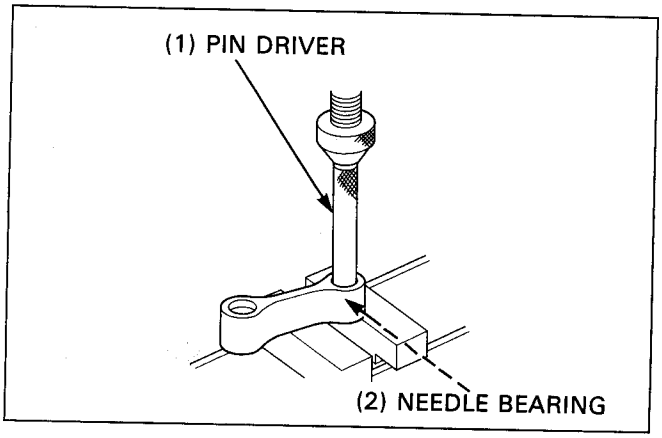
- Press the needle bearing with the stamped side facing out.

Shock Link

Press the needle bearing out of the shock link.

S TOOL

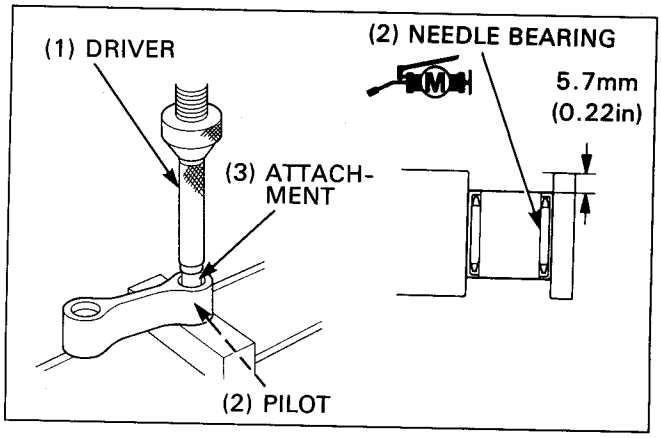
Pin driver	07GMD-KT80100 or
Driver	07749-0010000
Pilot, 22 mm	07746-0041000



Press a new needle bearing into the shock link to so that the needle bearing outer surface is lower 5.7 mm (0.22 in) from the end of the shock link pivot.

S TOOL

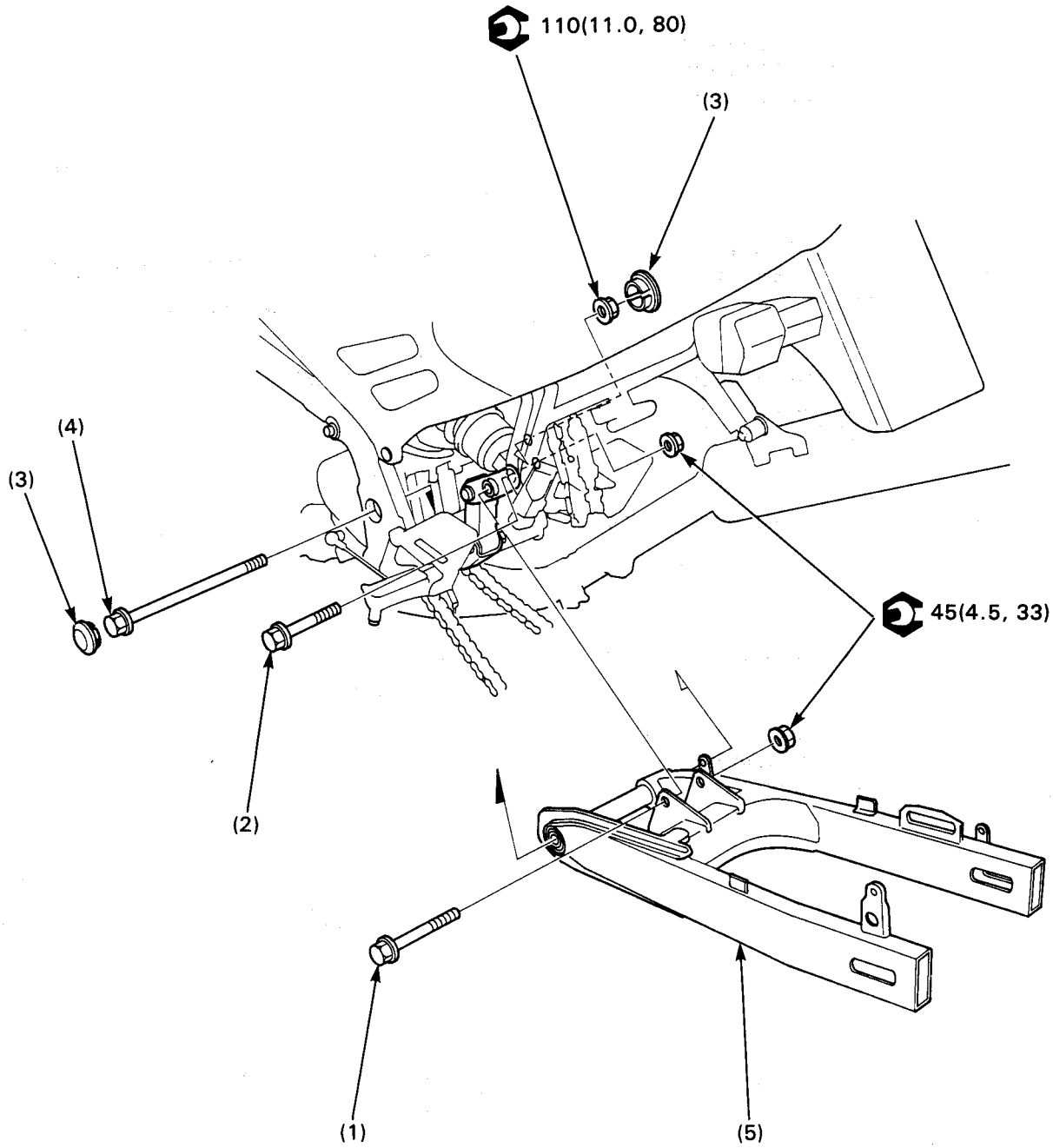
Driver	07749-0010000
Attachment, 24×26 mm	07746-0010700
Pilot, 17 mm	07746-0040400



NOTE

- Press the needle bearing with the stamped side facing out.

Swingarm Removal/Installation



CAUTION

- **Do not suspend the brake caliper from the brake hose. Do not twist the brake hose.**

NOTE

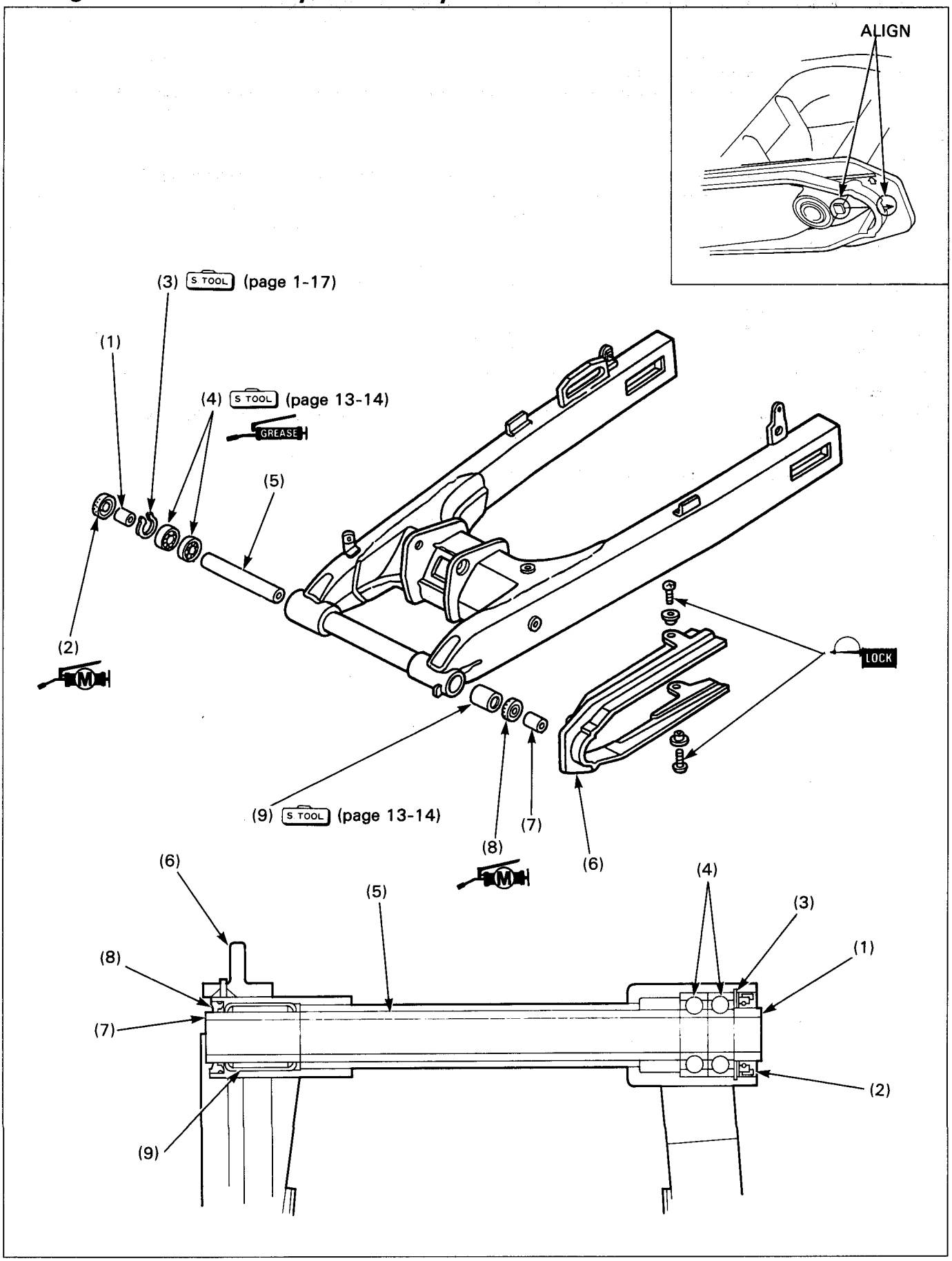
- Put the motorcycle on its center stand.
- Do not depress the brake pedal when the caliper is removed, or it will be difficult to refit the disc between the brake hose.

Requisite Service

- Rear wheel removal/installation(page 13-2)
- Rear fender B removal/installation(page 2-7)

	Procedure	Q'ty	Remarks
	Removal Order		
(1)	Shock arm bolt	1	
(2)	Shock absorber mounting bolt (lower)	1	
(3)	Swingarm pivot cap	2	
(4)	Swingarm pivot bolt	1	
(5)	Swingarm assembly	1	
	Installation Order		
(5)	Swingarm assembly	1	Before installing, pass the drive chain over the swingarm.
(4)	Swingarm pivot bolt	1	
(3)	Swingarm pivot cap	2	
(2)	Shock absorber mounting bolt (lower)	1	
(1)	Shock arm bolt	1	

Swingarm Disassembly/Assembly



Requisite Service

- Swingarm removal/installation (page 13-7)

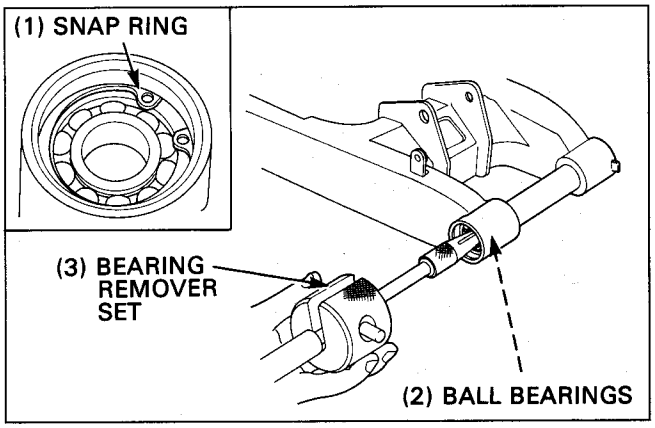
	Procedure	Q'ty	Remarks
	Disassembly Order		
(1)	Right pivot collar	1	
(2)	Dust seal(22×35×7)	1	
(3)	Snap ring	1	
(4)	Right pivot bearing(6202)	2	Refer to page 13-14 for removal.
(5)	Distance collar	1	
(6)	Drive chain slider	1	
(7)	Left pivot collar	1	
(8)	Dust seal(22×31×5)	1	
(9)	Left pivot bearing	1	Refer to page 13-14 for removal.
	Assembly Order		
(9)	Left pivot bearing	1	Refer to page 13-14 for installation.
(8)	Dust seal(22×31×5)	1	
(7)	Left pivot collar	1	
(6)	Drive chain slider	1	Align the slit in the chain slider with the tab on the swingarm.
(5)	Distance collar	1	
(4)	Right pivot bearing(6202)	2	Refer to page 13-14 for installation.
(3)	Snap ring	1	Install the snap ring with the chamfered side facing in.
(2)	Dust seal(22×35×7)	1	
(1)	Right pivot collar	1	

Swingarm Pivot Bearing Replacement

Remove the snap ring.
Remove the right pivot bearings (radial ball bearings) from the swigarm.

S TOOL

Bearing remover set	**07936-KC10000**
-Bearing remover head, 15mm	**07936-KC10200**
-Remover handle	**07936-KC10100**
-Remover sliding weight	**07741-0010201**



Press new radial ball bearings into the right swingarm pivot one at a time.

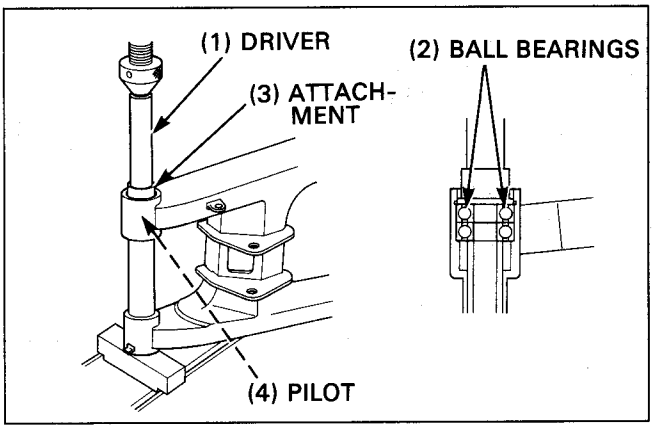
S TOOL

Driver	**07749-0010000**
Attachment, 32×35 mm	**07746-0010100**
Pilot, 15 mm	**07746-0040300**

NOTE

- Install the bearing with the stamped side facing out.

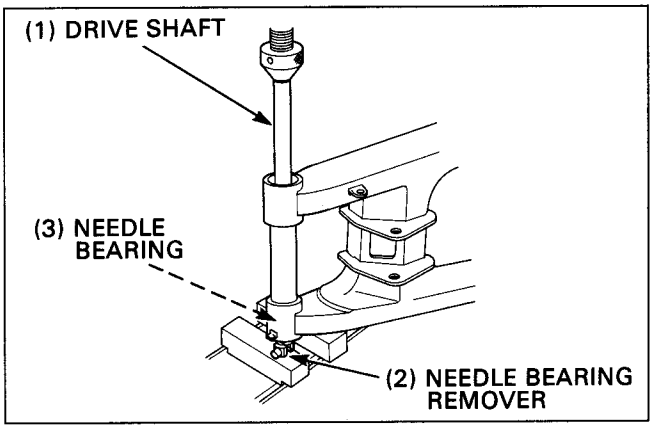
Install the snap ring with the chamfered side facing in.



Press the needle bearing out of the left swingarm pivot.

S TOOL

Needle bearing remover	**07GMD-KT70200**
Driver shaft	**07949-MJ00100**



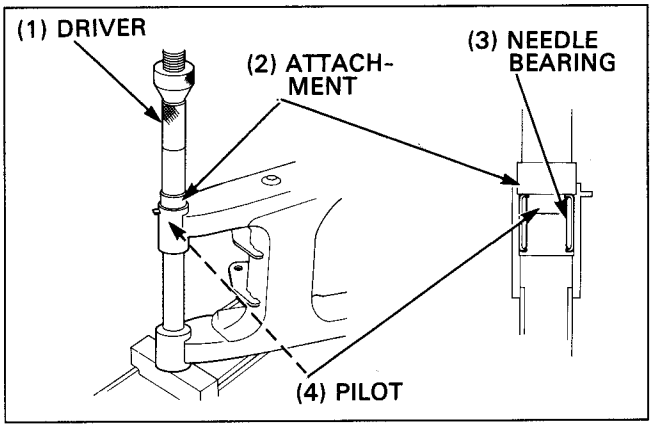
Press a new needle bearing with the stamped side facing out.

S TOOL

Driver	**07749-0010000**
Attachment, 28×30 mm	**07946-1870100**
Pilot, 22 mm	**07746-0041000**

NOTE

- The bearing surface should be flush with the pivot inside surface as shown.



14. Brake System

Service Information	14-1	Front Brake Caliper Disassembly/Assembly	14-6
Troubleshooting	14-1	Rear Master Cylinder Removal/Installation	14-8
Rear Brake Pad Replacement	14-2	Rear Master Cylinder Disassembly/ Assembly	14-10
Front Master Cylinder Removal/Installation	14-3	Rear Brake Caliper Removal/Installation	14-11
Front Master Cylinder Disassembly/Assembly	14-4	Rear Brake Caliper Disassembly/Assembly	14-12
Front Brake Caliper Removal/Installation	14-5		

Service Information

⚠ WARNING

- **A contaminated brake disc or pad reduces stopping ability.**
- **Mixing incompatible brake fluids will impair braking efficiency.**
- **Foreign materials can clog the system, causing a reduction or complete loss of braking ability.**
- **Always reinstall the brake pads in thier original positions to prevent loss of braking efficiency.**

Troubleshooting

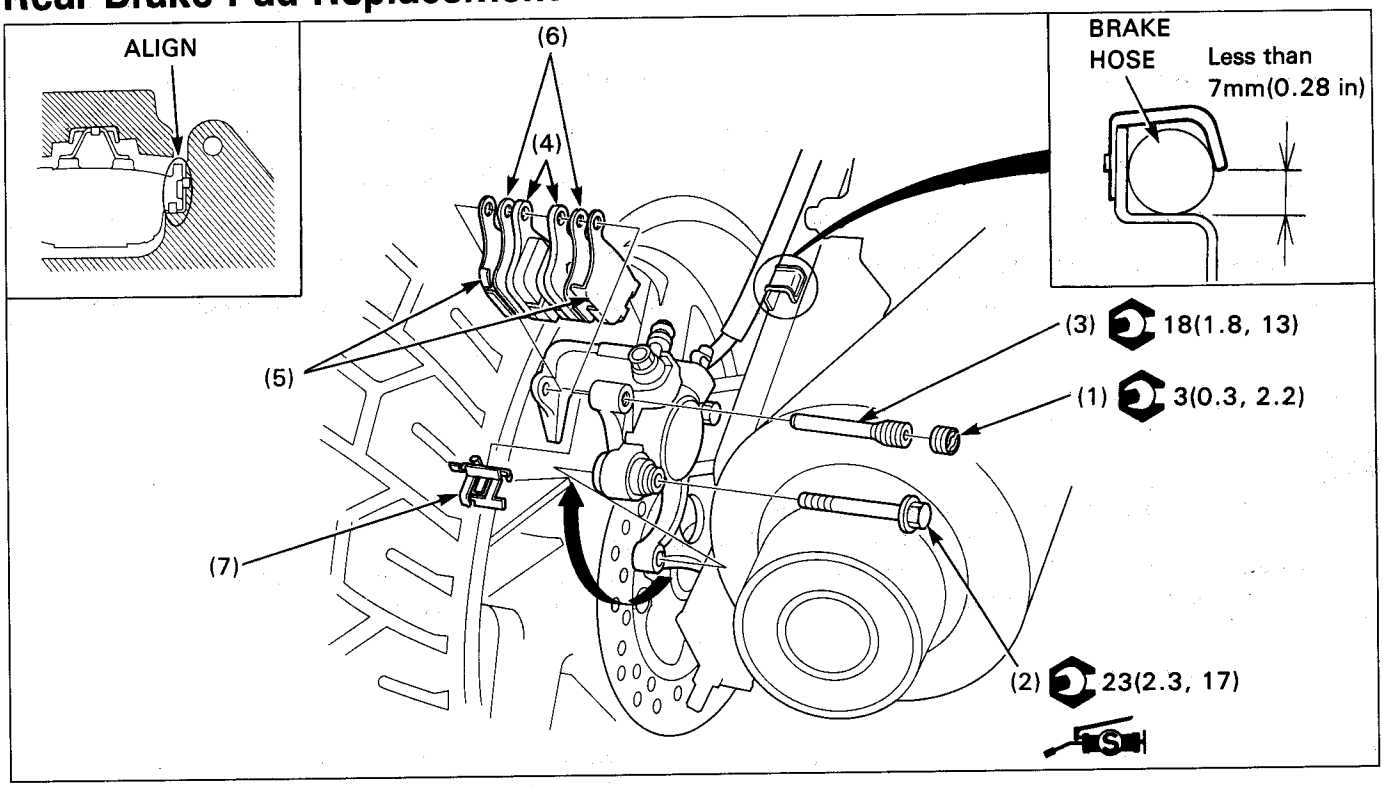
Brake Lever Soft Or Spongy
- Air bubbles in the hydraulic system
- Leaking hydrauric system
- Contaminated brake pad/disc
- Worn caliper piston seal
- Worn master cylinder piston seal
- Worn brake pad/disc
- Contaminated caliper
- Caliper not sliding properly
- Low flid level
- Cologged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master cylinder piston
- Contaminated master cylinder
- Bent brake lever

Brake Lever Hard
- Clogged/restricted brake system
- Sticking/worn caliper piston
- Caliper not sliding properly
- Cologged/restricted fluid passage
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever

Brake Grab Or Pull One Side
- Disc or wheel misaligned
- Contaminated brake pad/disc
- Clogged/restricted brake hose/joint(s)
- Warped/deformed brake disc
- Caliper not sliding properly

Brake Drag
- Contaminated brake pad/disc
- Disc or wheel misaligned
- Worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly

Rear Brake Pad Replacement



⚠ WARNING

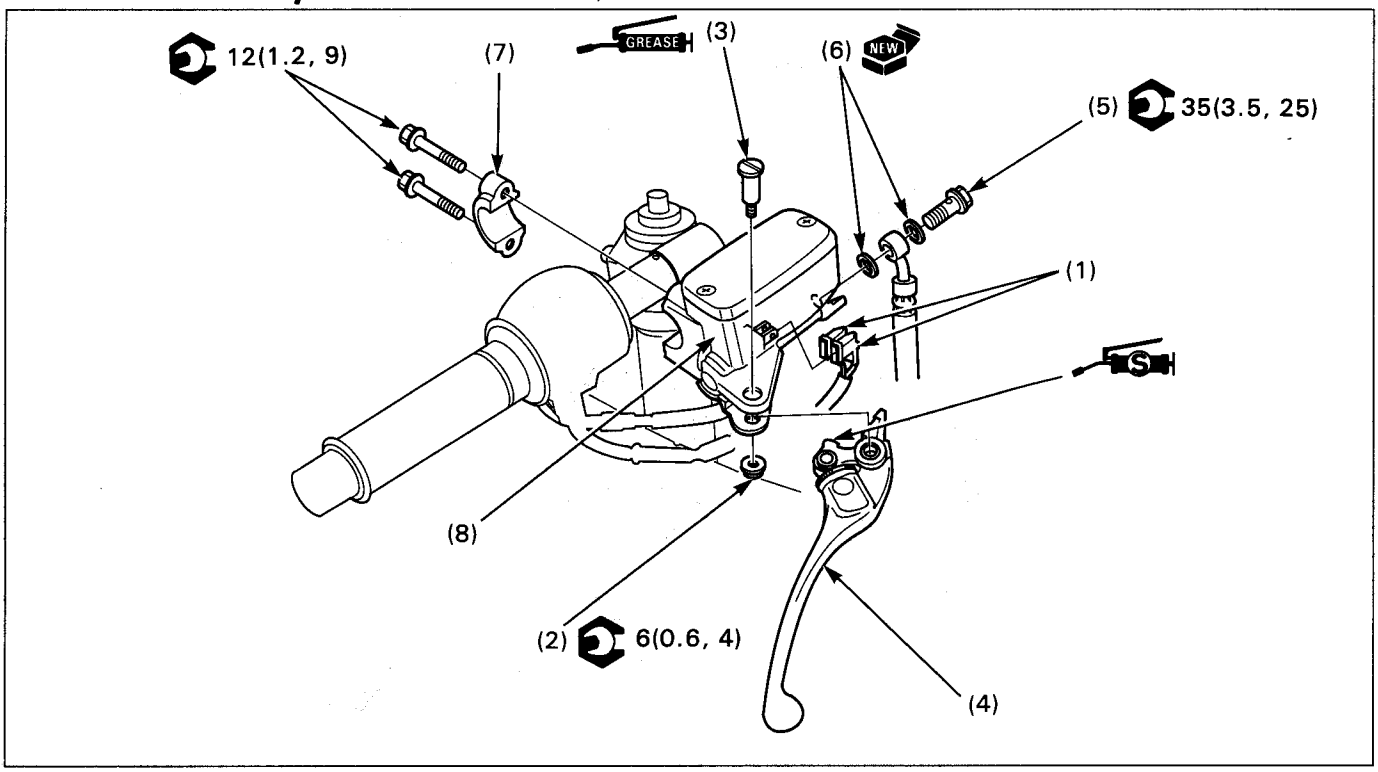
- **Do not get grease on the brake disc or stopping power will be reduced.**
- **Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**
- **Check the brake system by applying the brake after pad replacement.**

NOTE

- Operate the brake pedal to seat the caliper piston against the pads after the pad replacement.
- The brake pad replacement can be serviced without disconnecting the hydraulic system.
- Always replace the brake pads in pairs to assure even disc pressure.

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Pad pin plug	1	After removing the pad pin plug, loosen the pad pin.
(2)	Rear caliper bracket bolt	1	· After removing the bolt, release the brake hose from the clamp on the rear fender B and pivot the rear brake caliper assembly upward. · Clamp the brake hose so that the clamp opening is less than 7mm (0.28 in).
(3)	Pad pin	1	
(4)	Brake pad	2	Position the pad onto the pad retainer in the caliper as shown.
(5)	Brake pad shim	2	
(6)	Brake pad insulator	2	
(7)	Brake pad spring	1	

Front Master Cylinder Removal/Installation



⚠ WARNING

- **Check the brake system by applying the brake after air bleeding.**

CAUTION

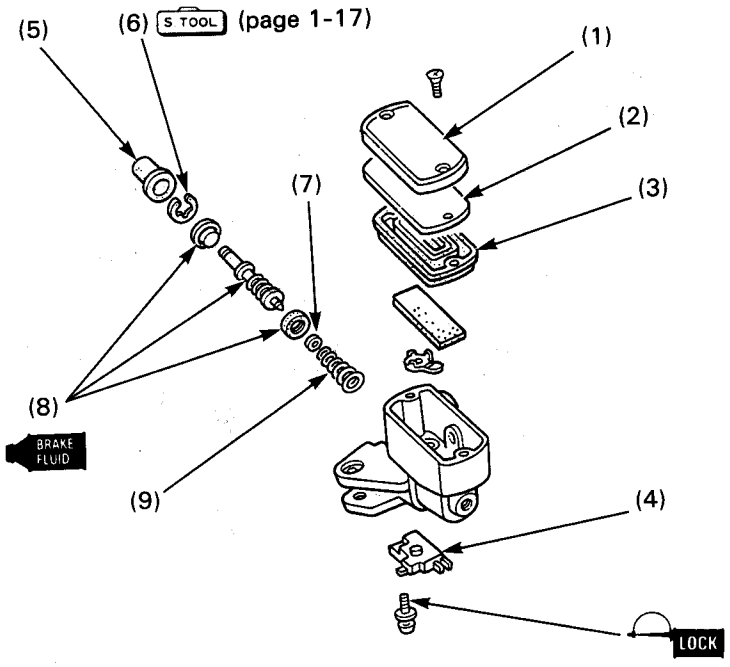
- **Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **When removing the oil hose bolt, cover the end of the brake hose to prevent contamination.**
- **Do not allow the foreign material to enter the system.**

NOTE

- Use only DOT 4 brake fluid from a sealed container.
- If you plan to disassemble the master cylinder, remove the brake lever.

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Brakelight switch connector	2	
(2)	Brake lever pivot nut	1	
(3)	Brake lever pivot bolt	1	
(4)	Brake lever	1	
(5)	Brake hose bolt	1	
(6)	Sealing washer	2	
(7)	Brake master cylinder holder	1	Align the holder mating surface with the punch mark on the handlebar and face the holder with the "UP" mark upward.
(8)	Front master cylinder assembly	1	

Front Master Cylinder Disassembly/Assembly



⚠ WARNING

- **Check the brake system by applying the brake after air bleeding.**

CAUTION

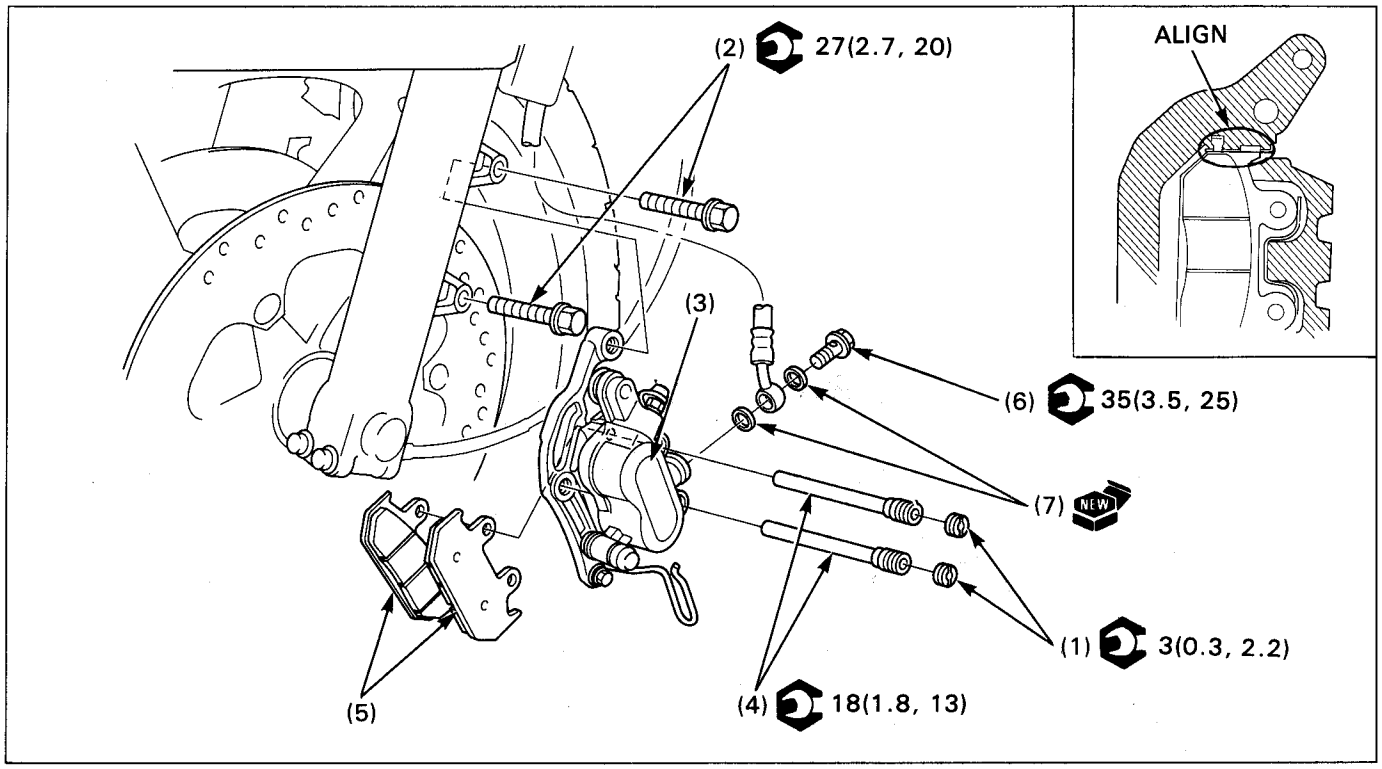
- **Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **Do not allow the lips of the cups to turn inside out and be certain the snap ring is firmly seated in the groove.**

NOTE

- The master cylinder piston, cups and spring must be installed as a set.

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Reservoir cover	1	
(2)	Diaphragm plate	1	
(3)	Diaphragm	1	
(4)	Front brakelight switch	1	
(5)	Rubber boot	1	
(6)	Snap ring	1	**CAUTION** • **Be certain the snap ring is fully seated in the groove.** • **Install the snap ring with the chamfered side facing the master piston.**
(7)	Stopper plate	1	
(8)	Master piston assembly	1	
(9)	Spring	1	Install the spring with the tapered side facing the master piston.

Front Brake Caliper Removal/Installation



⚠ WARNING

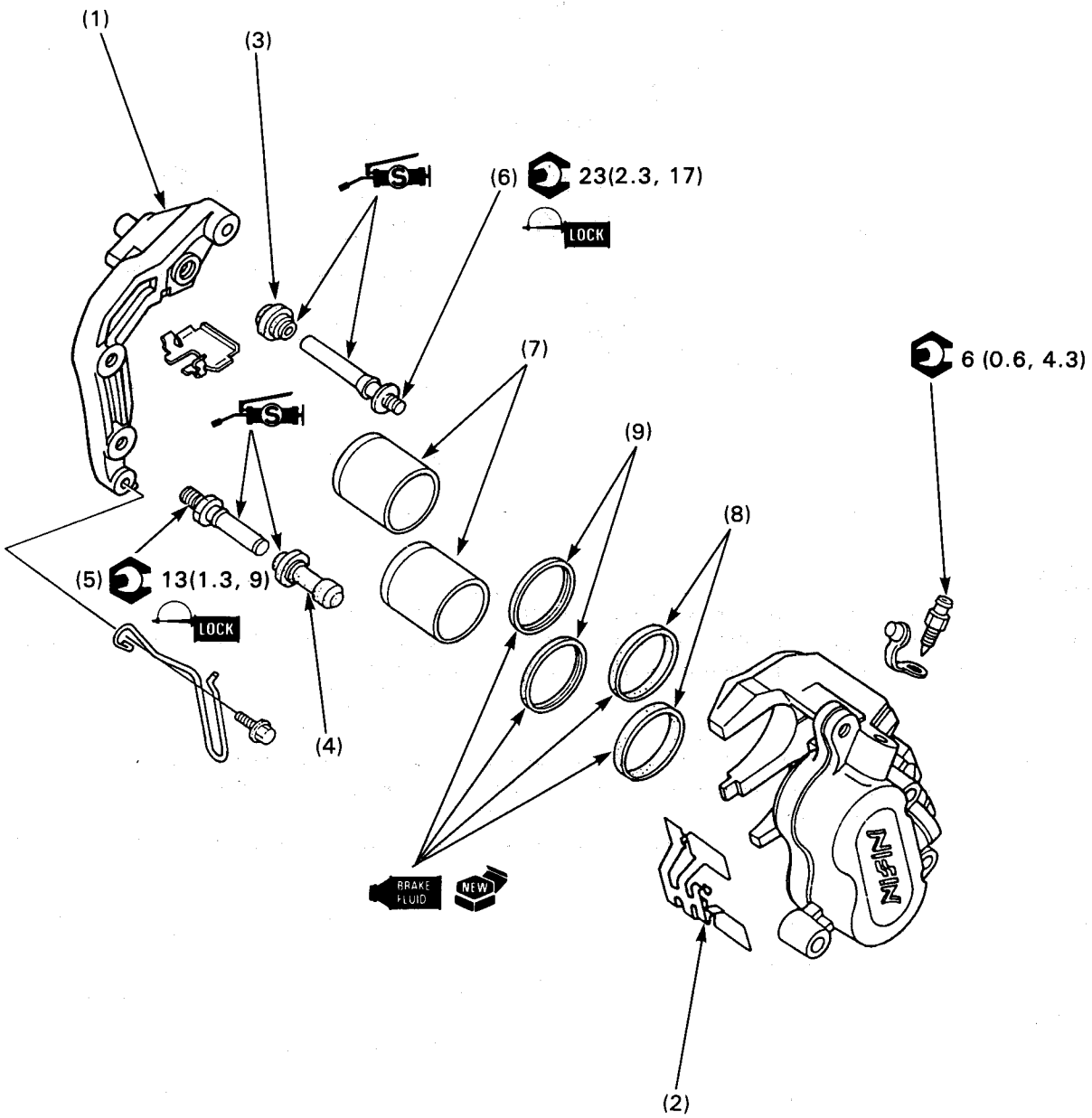
- **Do not get grease on the brake disc or stopping power will be reduced.**
- **Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**
- **Check the brake system by applying the brake after pad replacement.**

NOTE

- Operate the brake lever to seat the caliper pistons against the pads after the pad replacement.
- The brake pad replacement can be serviced without disconnecting the hydraulic system.
- Always replace the brake pads in pairs to assure even disc pressure.
- If you plan to remove the front brake caliper, loosen the brake hose bolt before removing the front brake caliper from the fork slider.

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
	Pad replacement		
(1)	Pad pin plug	2	After removing the pad pin plugs, loosen the pad pins.
(2)	Caliper bracket bolt	2	
(3)	Front brake caliper assembly	1	
(4)	Pad pin	2	Insert the pins during pushing the pads against the pad spring.
(5)	Brake pad	2	Position the pad onto the pad retainer in the caliper as shown.
	Front brake caliper removal		
(6)	Brake hose bolt	1	
(7)	Sealing washer	2	

Front Brake Caliper Disassembly/Assembly



CAUTION

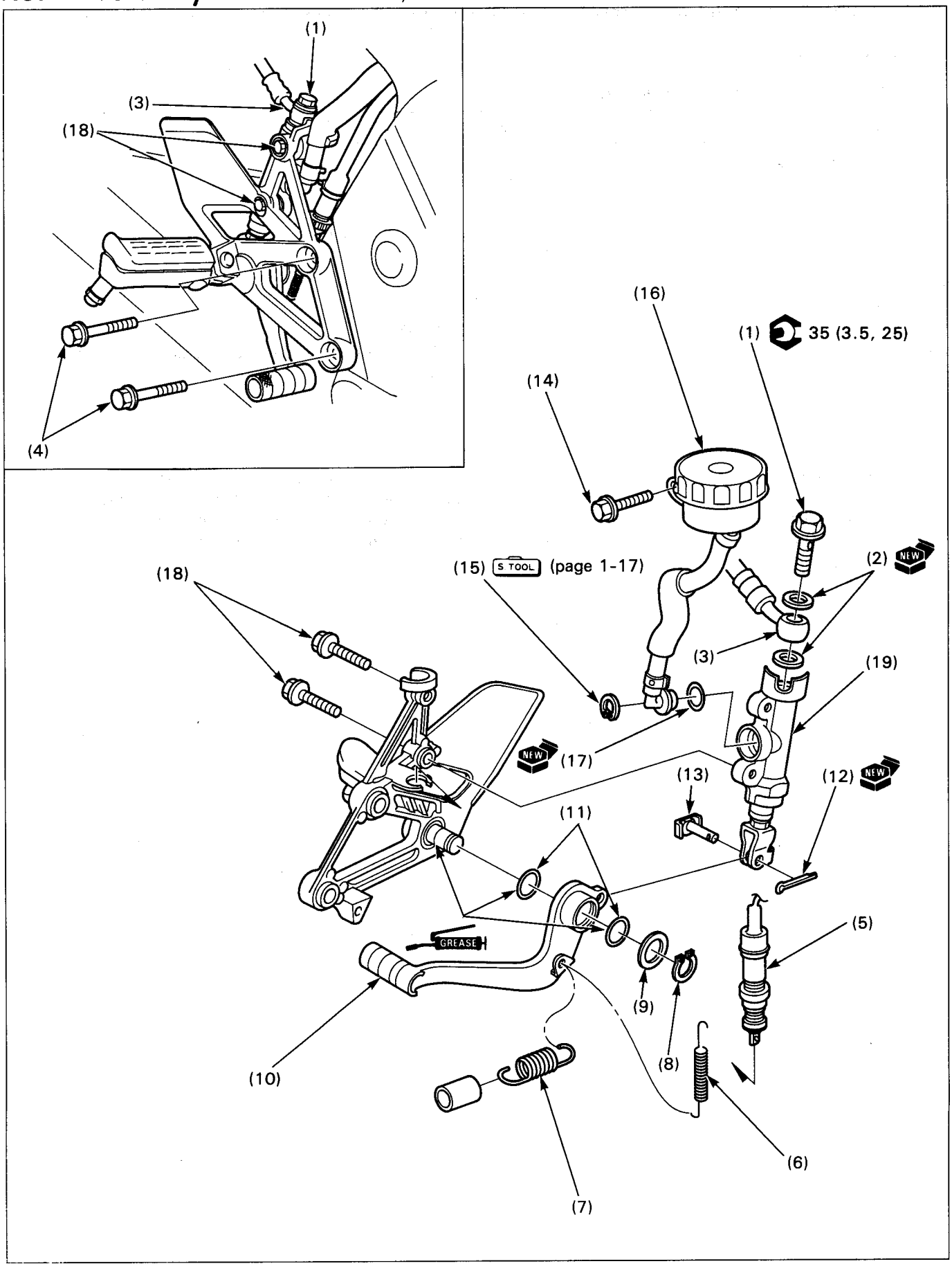
- **Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.**

Requisite Service

- Front brake caliper removal/installation(page 14-5)

	Procedure	Q'ty	Remarks
	Disassembly Order		
(1)	Caliper bracket	1	
(2)	Pad spring	1	
(3)	Bracket pin bolt boot	1	
(4)	Caliper pin bolt boot	1	
(5)	Bracket pin bolt	1	
(6)	Caliper pin bolt	1	
(7)	Caliper piston	2	
(8)	Dust seal	2	**CAUTION**
(9)	Piston seal	2	• **Be careful not to damage the piston sliding surface when removing the seals.**
	Assembly Order		
(9)	Piston seal	2	
(8)	Dust seal	2	
(7)	Caliper piston	2	Install them with the opening foward the pads.
(6)	Caliper pin bolt	1	Apply a locking agent to the threads and torque it. Apply
(5)	Bracket pin bolt	1	silicone grease to the sliding surface of the pin.
(4)	Caliper pin bolt boot	1	Install the boot into the bracket groove securely.
(3)	Bracket pin bolt boot	1	
(2)	Pad spring	1	
(1)	Caliper bracket	1	

Rear Master Cylinder Removal/Installation



⚠ WARNING

- **Check the brake system by applying the brake after air bleeding.**

CAUTION

- **Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **When removing the oil hose bolt, cover the end of the brake hose to prevent contamination.**
- **Do not allow the foreign material to enter the system.**

NOTE

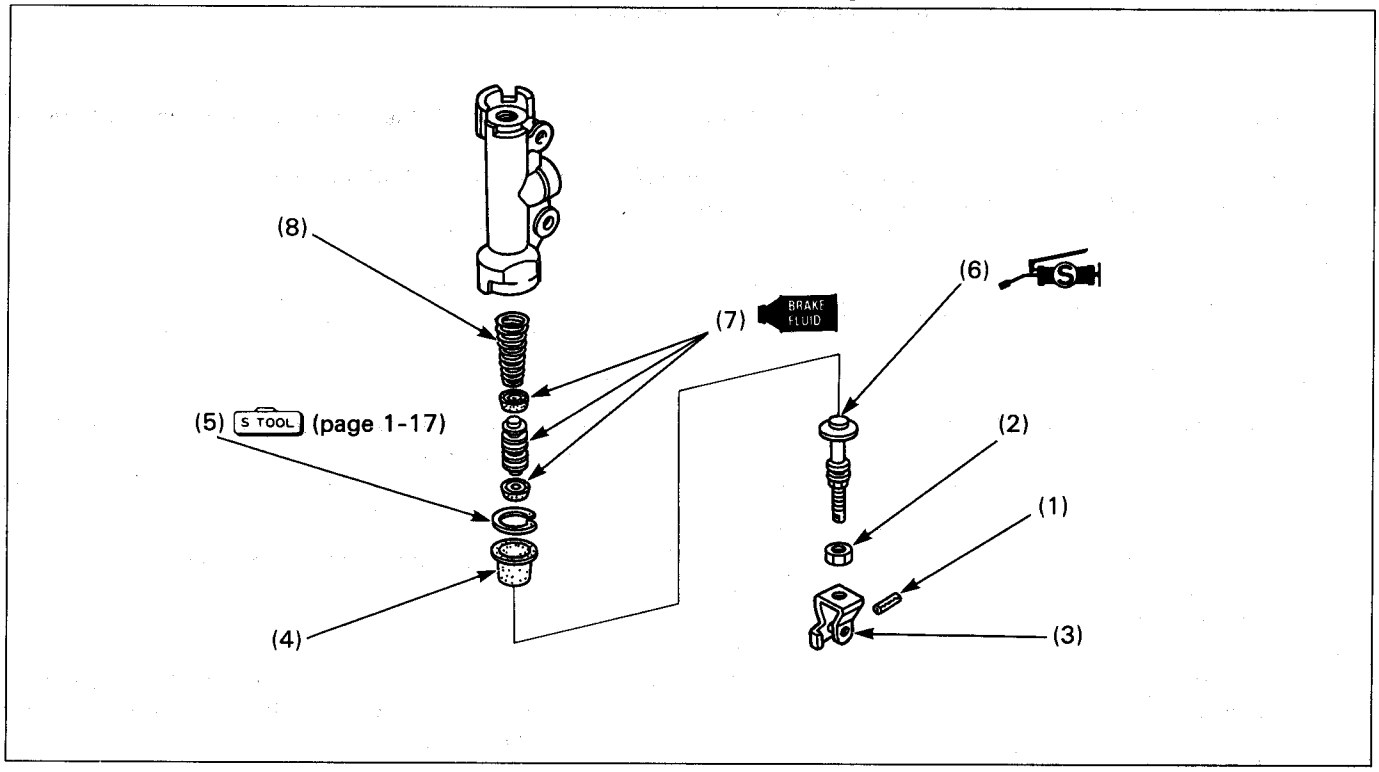
- Use only DOT 4 brake fluid from a sealed container.

Requisite Service

- Right side cover removal/installation(page 2-2)
- Brakelight switch adjustment(Refer to section 2 of the Common Service Manual.)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Brake hose bolt	1	
(2)	Sealing washer	2	
(3)	Brake hose	1	
(4)	Step holder bolt	2	Before removing, loosen the master cylinder mounting bolts.
(5)	Brakelight switch	1	Loosen the brakelight switch adjuster fully and disconnect the spring from the switch.
(6)	Brakelight switch spring	1	
(7)	Brake pedal return spring	1	
(8)	Snap ring	1	Install the snap ring with the chamfered side facing the brake pedal.
(9)	Washer	1	
(10)	Brake pedal	1	
(11)	Dust seal	2	
(12)	Cotter pin	1	
(13)	Joint pin	1	
(14)	Reservoir mounting bolt	1	
(15)	Snap ring	1	Install the snap ring with the chamfered side facing in.
(16)	Reservoir assembly	1	
(17)	O-ring	1	
(18)	Rear master cylinder mounting bolt	2	
(19)	Rear master cylinder assembly	1	

Rear Master Cylinder Disassembly/Assembly



⚠ WARNING

- **Check the brake system by applying the brake after air bleeding.**

CAUTION

- **Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **Do not allow the lips of the cups to turn inside out and be certain the snap ring is firmly seated in the groove.**

NOTE

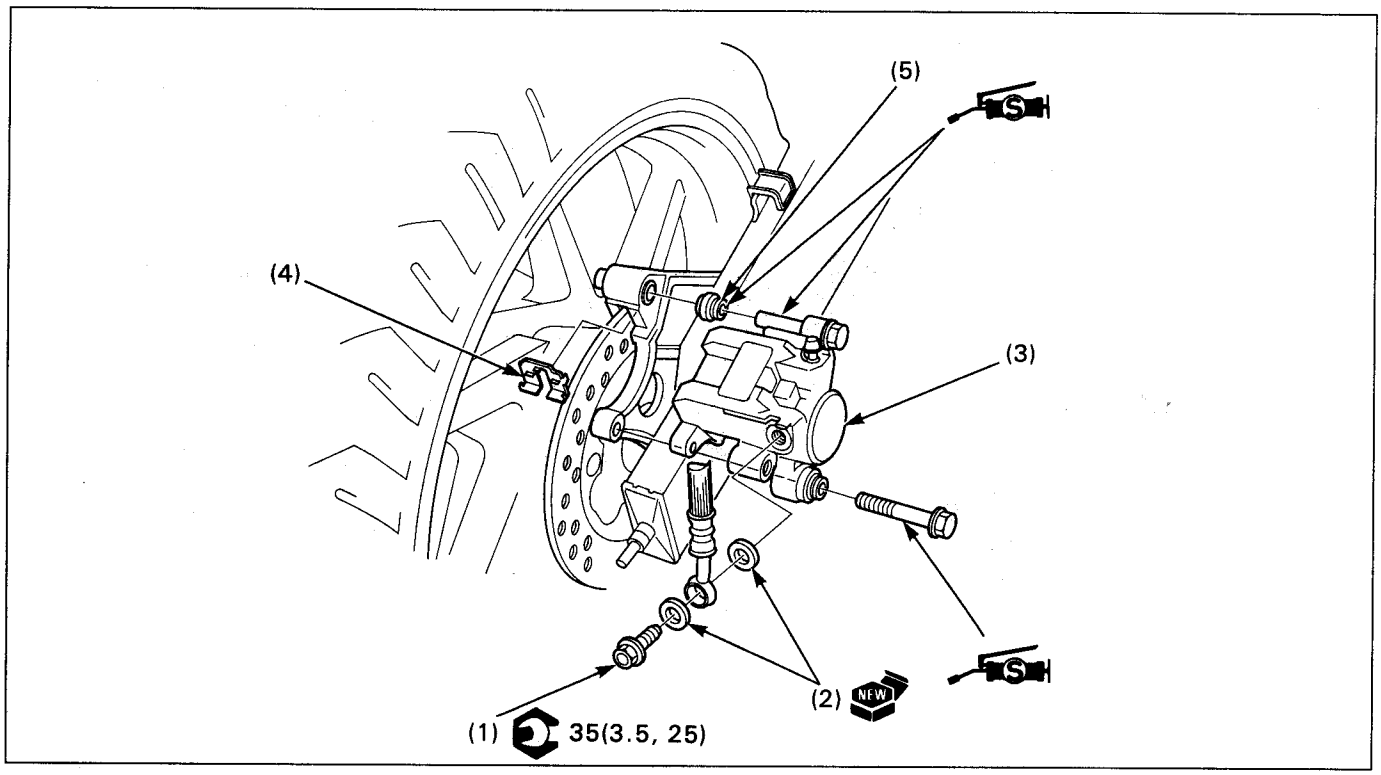
- The master cylinder piston, cups and spring must be installed as a set.

Requisite Service

- Rear master cylinder removal/installation(page 14-8)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Lock pin	1	
(2)	Lock nut	1	
(3)	Push rod joint	1	
(4)	Ruber boot	1	
(5)	Snap ring	1	**CAUTION** · **Be certain the snap ring is fully seated in the groove.** · **Install the snap ring with the chamfered side facing the master piston.**
(6)	Push rod	1	
(7)	Master piston assembly	1	
(8)	Spring	1	Install the spring with the tapered side facing the master piston.

Rear Brake Caliper Removal/Installation



⚠ WARNING

- **Do not get grease on the brake disc or stopping power will be reduced.**
- **Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.**
- **Check the brake system by applying the brake after pad replacement.**

NOTE

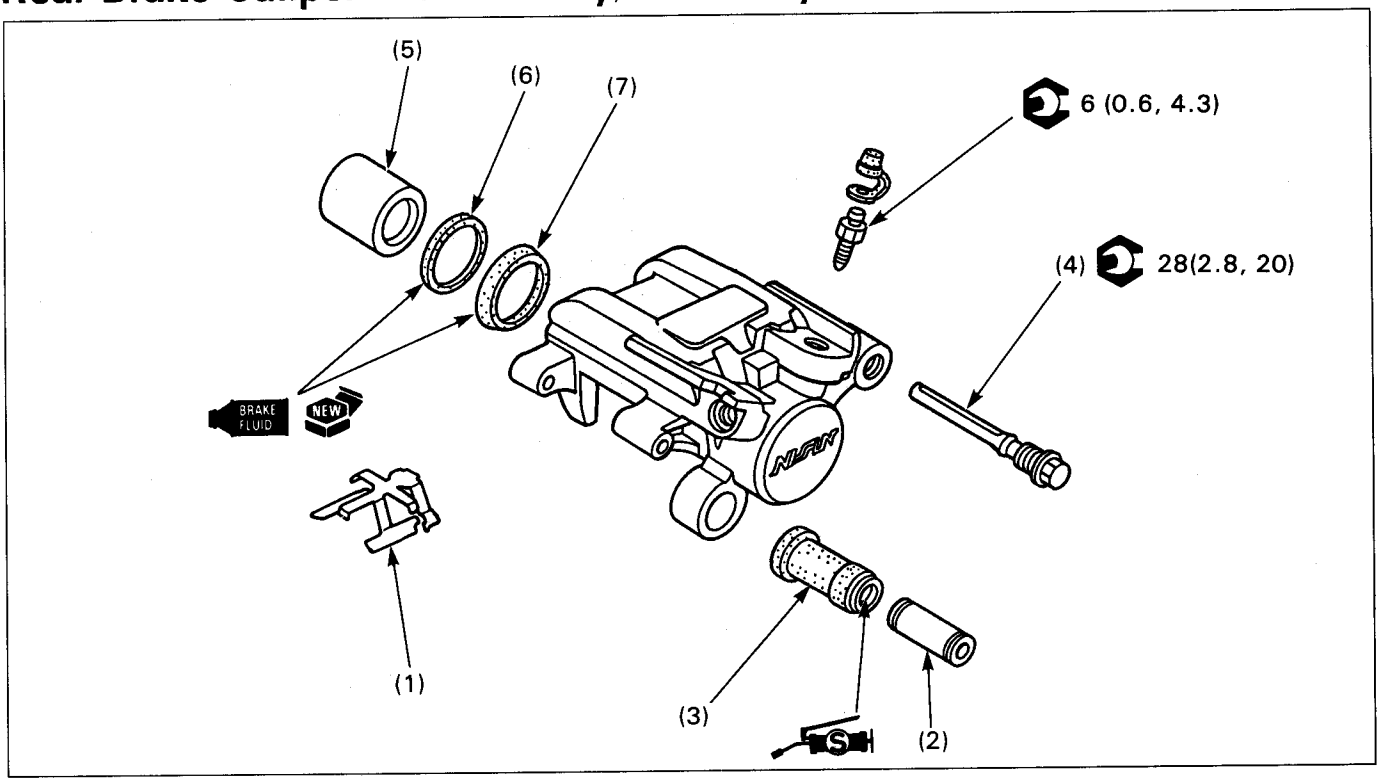
- The brake pad replacement can be serviced without disconnecting the hydraulic system.
- Always replace the brake pads in pairs to assure even disc pressure.

Requisite Service

- Rear brake pad removal/installation(page 14-2)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Brake hose bolt	1	
(2)	Sealing washer	2	
(3)	Rear brake caliper assembly	1	
(4)	Pad retainer	1	
(5)	Rubber boot	1	Install the boot into the bracket groove securely.

Rear Brake Caliper Disassembly/Assembly



CAUTION

- **Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.**

Requisite Service

- Rear brake caliper removal/installation(page 14-11)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Pad spring	1	
(2)	Pivot collar	1	
(3)	Pivot boot	1	
(4)	Caliper pin bolt	1	Apply a locking agent to the threads and torque it. Apply silicone grease to the sliding surface of the pin.
(5)	Caliper piston	1	Install the piston with the opening toward the pads.
(6)	Dust seal	1	**CAUTION**
(7)	Piston seal	1	- **Be careful not to damage the piston sliding surface when removing the seals.**

15. Charging System/Alternator

Service Information	15-1	Charging System Inspection	15-6
System Location	15-2	Regurator/Rectifier	15-7
Circuit Diagram	15-2	Alternator Removal/Installation	15-8
Troubleshooting	15-3	Flywheel Removal/Installation	15-9
Battery Removal/Installation	15-4	Charging Coil Inspection	15-11

Service Information

⚠ WARNING

- **The battery gives off explosive gasses ; keep sparks, flames, and cigarettes away. Provide adequate ventilation when charging or using the battery in an enclosed space.**
- **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 follow with milk of magnesia or vegitable oil and call a physician.**
- **KEEP OUT OF REACH OF CHILDREN.**

- Always turn off the ignition switch before disconnecting any electrical component.

CAUTION

- **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 place.
- For battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.

NOTE

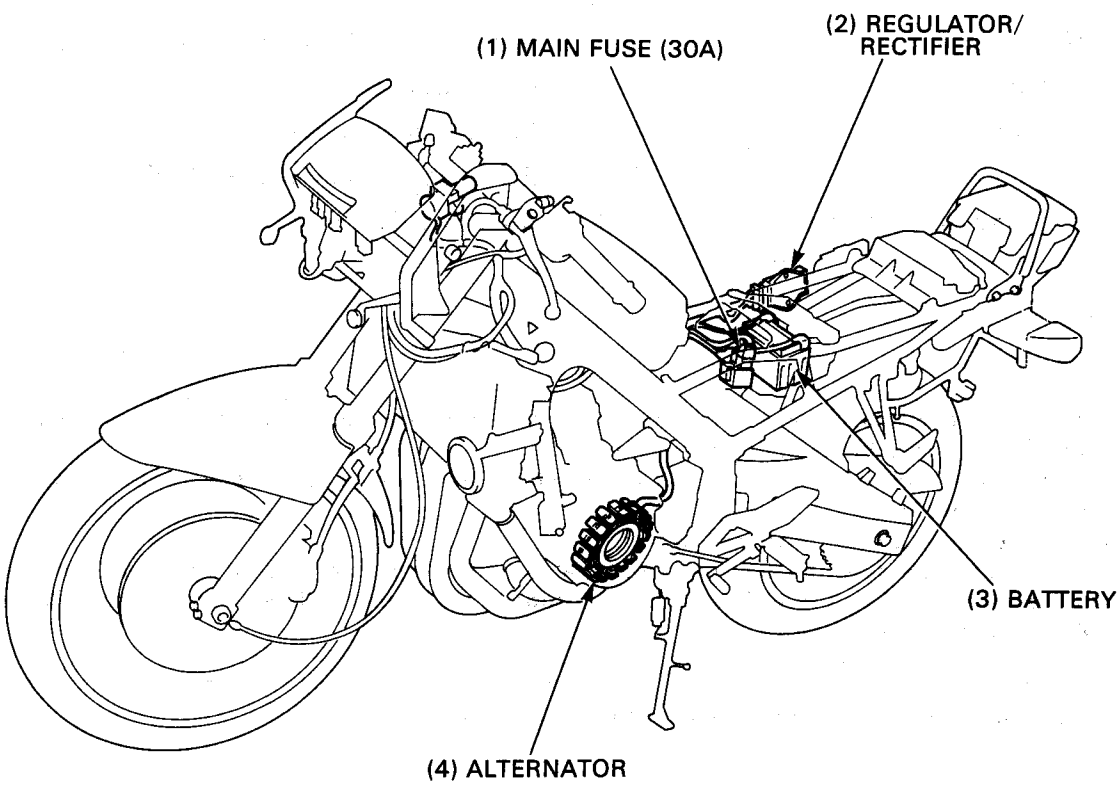
- The maintenance free battery must be replaced when it reaches the end of its service life.

CAUTION

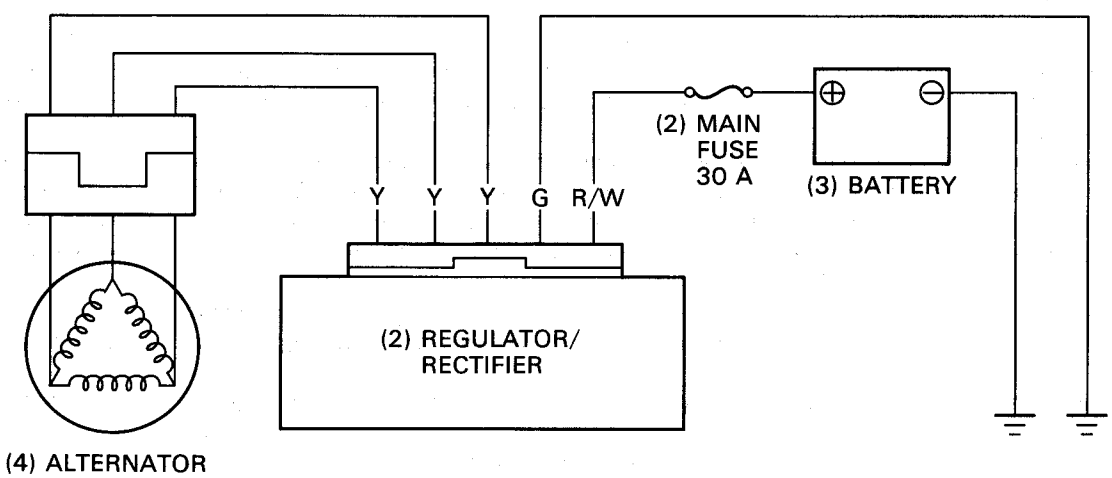
- **The battery caps should not be removed. Attempting to remove the sealing caps from the cells may damage the battery.**

- Battery can be damaged if overcharged or undercharged, or if left to discharge for long periods. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of battery deteriorates after 2-3 years.
- Battery voltage may recover after battery charging, but under heavy load, battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected to be the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharge symptom. If one of the battery cells 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 forming.
- Filling a new battery with electrolyte will produce some voltage, but in order to achieve its maximum performance, always charge the battery. Also, the battery life is lengthened when it is initial-charged.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 15-3).
- For battery testing/charging, refer to section 22 of the Common Service Manual.
- For charging system location, see page 15-2.

System Location



Circuit Diagram

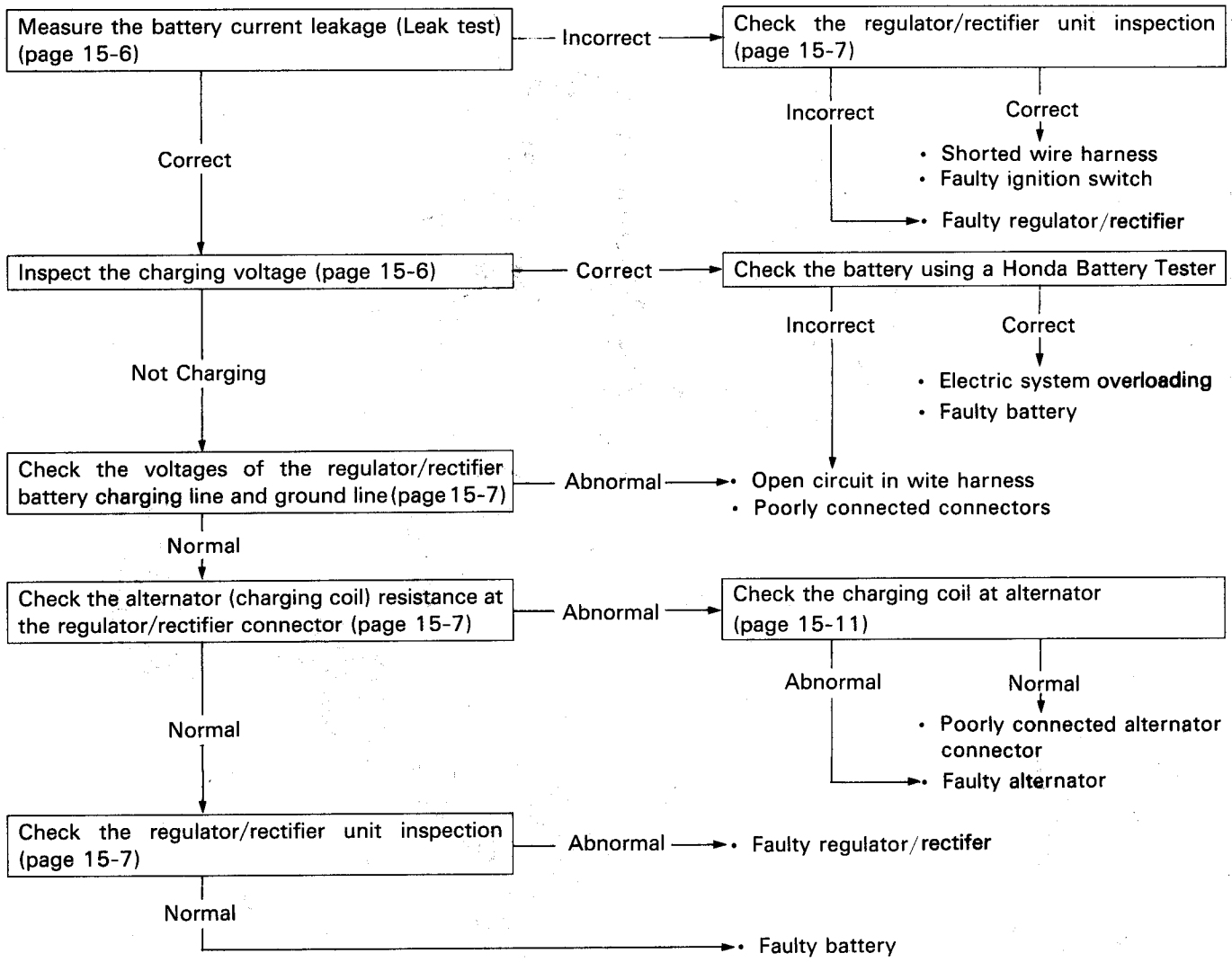


Troubleshooting

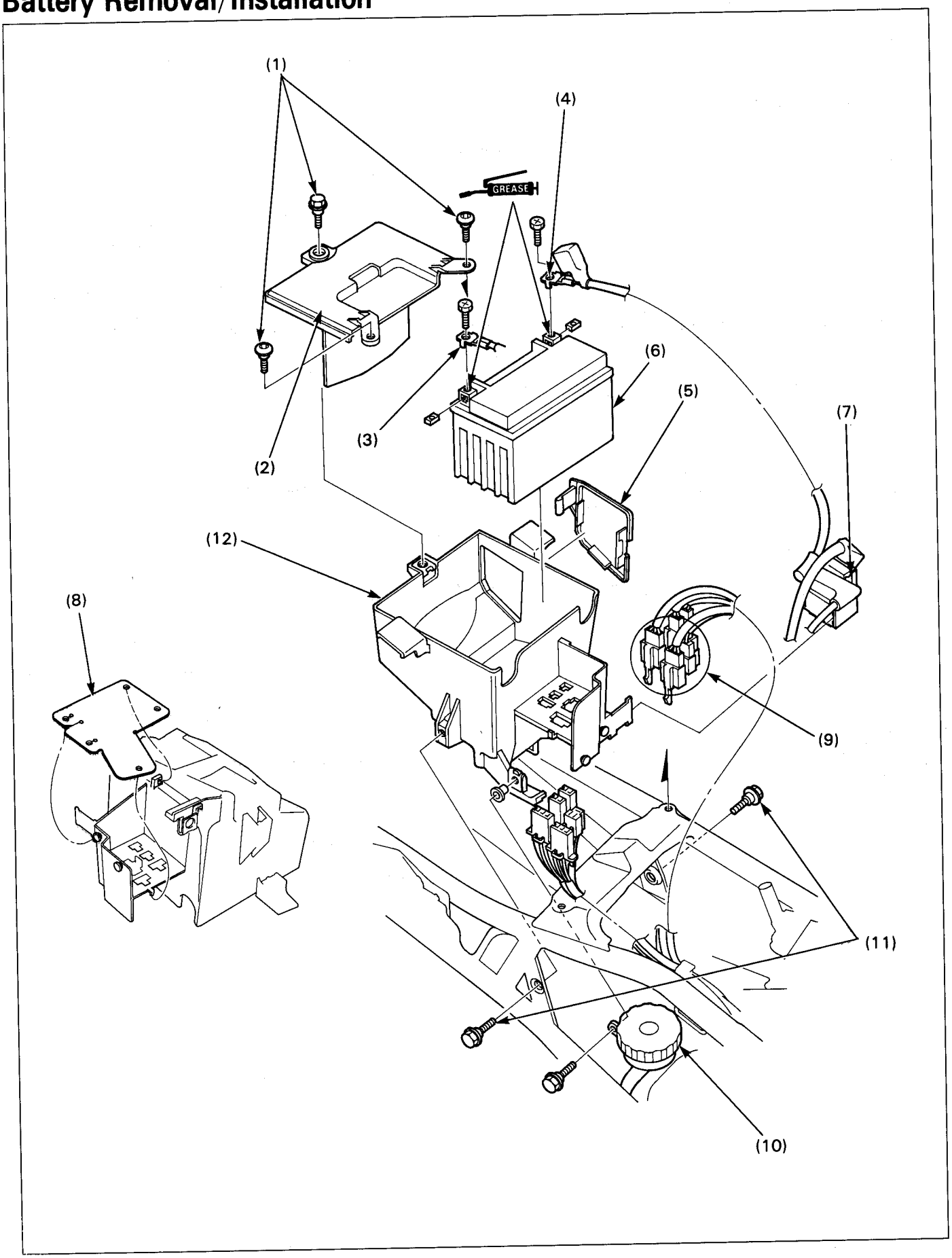
Battery overcharging

- Faulty regulator/rectifier

Battery undercharging



Battery Removal/Installation

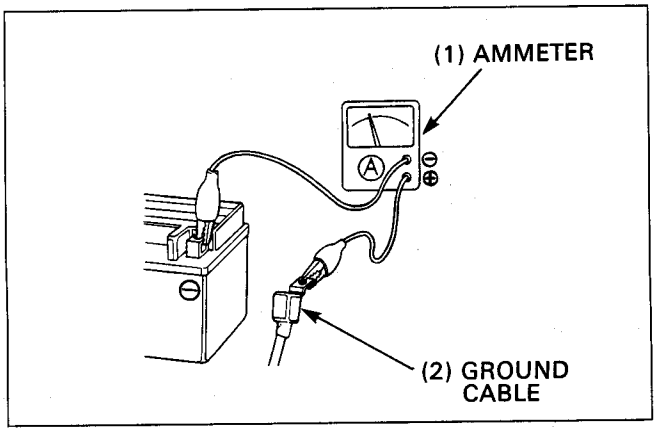


Requisite Service

- Side cover removal/installation (page 2-2)
- Seat removal/installation (page 2-2)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Flange bolt/Socket bolt	1/2	
(2)	Battery case cover	1	
(3)	Battery minus (−) cable	1	
(4)	Battery plus (+) cable	1	
(5)	Tool case lid	1	
(6)	Battery	1	
(7)	Starter relay switch	1	
(8)	Rubber cover	1	When installing the rubber cover, align the holes in the cover with the hooks on the battery case.
(9)	Connector	5	
(10)	Rear master cylinder reservoir	1	
(11)	Bolt	2	
(12)	Battery case	1	

Charging system Inspection



Leak Test

Turn off the ignition switch, and disconnect the ground (−) cable from the battery.

Connect the ammeter (+) probe to the ground cable and the ammeter (−) probe to the battery (−) terminal.

With the ignition switch off, measure the leakage current.

NOTE

- When measuring current using a tester, set a high range, and then bring the range down to an appropriate level. Current flow larger than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition on. A sudden surge of current may blow out the fuse in the tester.

Specified current leakage : 1.2 mA max.

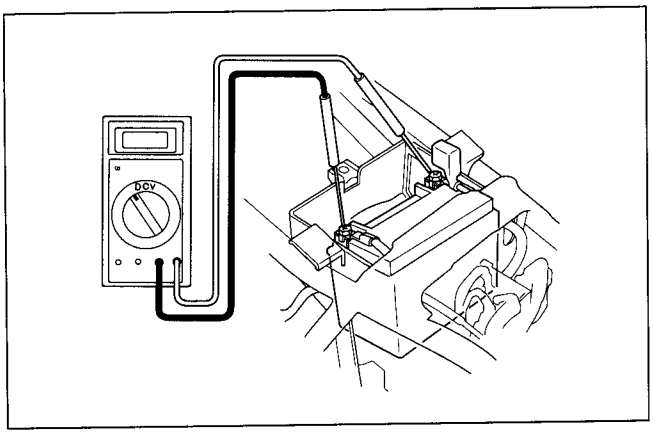
If current leakage exceeds the specified value, a shorted circuit is likely.
Locate the short by disconnecting connections one by one and measure the current.

Charging Voltage Inspection

NOTE

- Before performing this test, be sure that the battery is fully charged whose voltage between its terminals is greater than 12.8 V.

Start the engine and warm it up to operating temperature, then turn the ignition switch off.



Connect a multitester between the battery terminals.

S TOOL

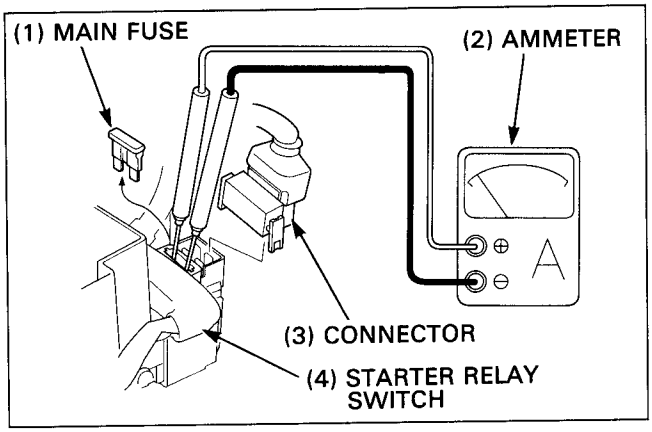
Digital multitester **07411-0020000**

Disconnect the starter relay switch connector and remove the main fuse (30 A). Reconnect the connector onto the relay switch.

Connect the ammeter as shown.

CAUTION

- **Be careful not to short any tester probes.**
- **Although the current could be measured when the ammeter is connected between the battery positive terminal and the positive cable, a sudden surge of current to the starter motor could damage the ammeter.**
- **Always turn the ignition off when conducting the test. Disconnecting the ammeter or wires when current is flowing may damage the ammeter.**



Start the engine and increase the engine speed gradually.

Regurated voltage : 13.0-15.5V/5,000 min^{-1}(rpm)
Charging current : 1A MAX/5,000 min^{-1}(rpm)

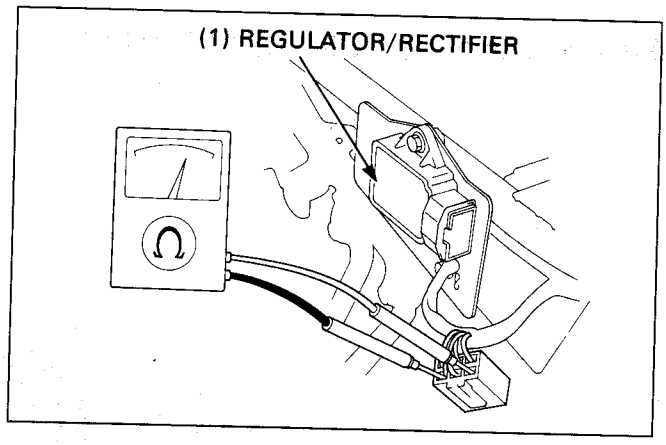
Regulator/Rectifier

Wire Harness Inspection

Remove the right side cover (page 2-2)

Disconnect the regurator/rectifier connector and measure the following between rectifier connector terminals of the wire harness side.

Item	Terminals	Specification
Battery charging line	Red/White (+) and ground (−)	Battery voltage should register.
Ground line	Green and ground	Continuity exist.
Charging coil line	Yellow and Yellow	0.1-1.0Ω (20° C/68° F)



Unit Inspection

Disconnect the regurator/rectifier connector and remove the bolts and regurator/rectifier.

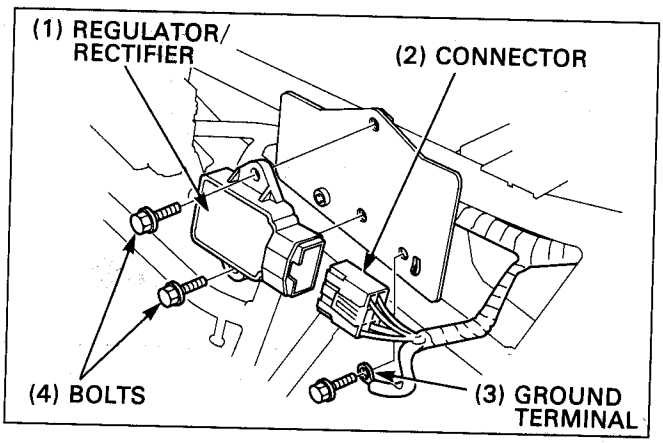
Inspect the regurator/rectifier unit by measuring the resistance between the terminals.

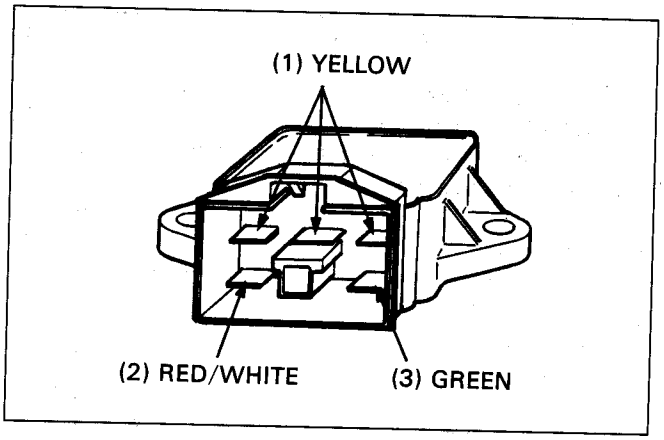
NOTE

- You'll get false readings if the probes touch your finger.
- Use the specified multitester. Using other equipment may not allow you to obtain the correct values. This is due to the characteristic of semiconductors, which have different resistance value depending on the applied voltage.
  Specific Multitester :
  -07411-0020000 (KOWA Digital type)
  -07308-0020001 (SANWA Analogue type)
  -TH-5H (KOWA Analogue type)
- Select the following range.
  SANWA tester: ×k Ω
  KOWA tester: ×100 Ω
- When using the KOWA multitester, remember that all readings should be mutiplied by 100.
- An old battery stored in the multitester could cause inaccurate readings. Check the battery if the multi-tester registers incorrectly.

Replace the regurator/rectifier unit if the resistance value between the terminals is abnormal.

Install the regurator/rectifier in the reverse order of removal.

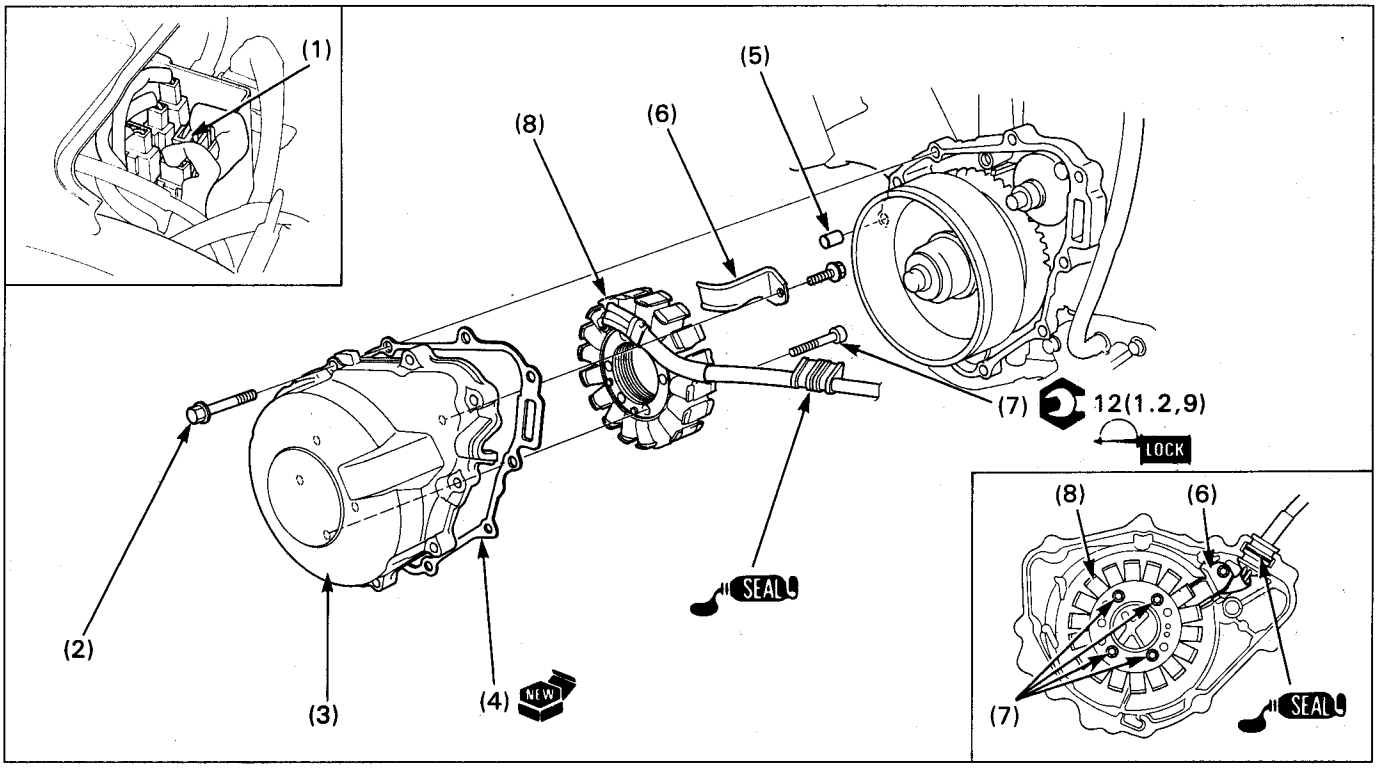




Unit:kΩ

+ / −	Red/ White	Yellow 1	Yellow 2	Yellow 3	Green
Red/White		∞	∞	∞	∞
Yellow 1	0.5-10		30-500	30-500	10-200
Yellow 2	0.5-10	30-500		30-500	10-200
Yellow 3	0.5-10	30-500	30-500		10-200
Green	1-20	0.5-10	0.5-10	0.5-10	

Alternator Removal/Installation

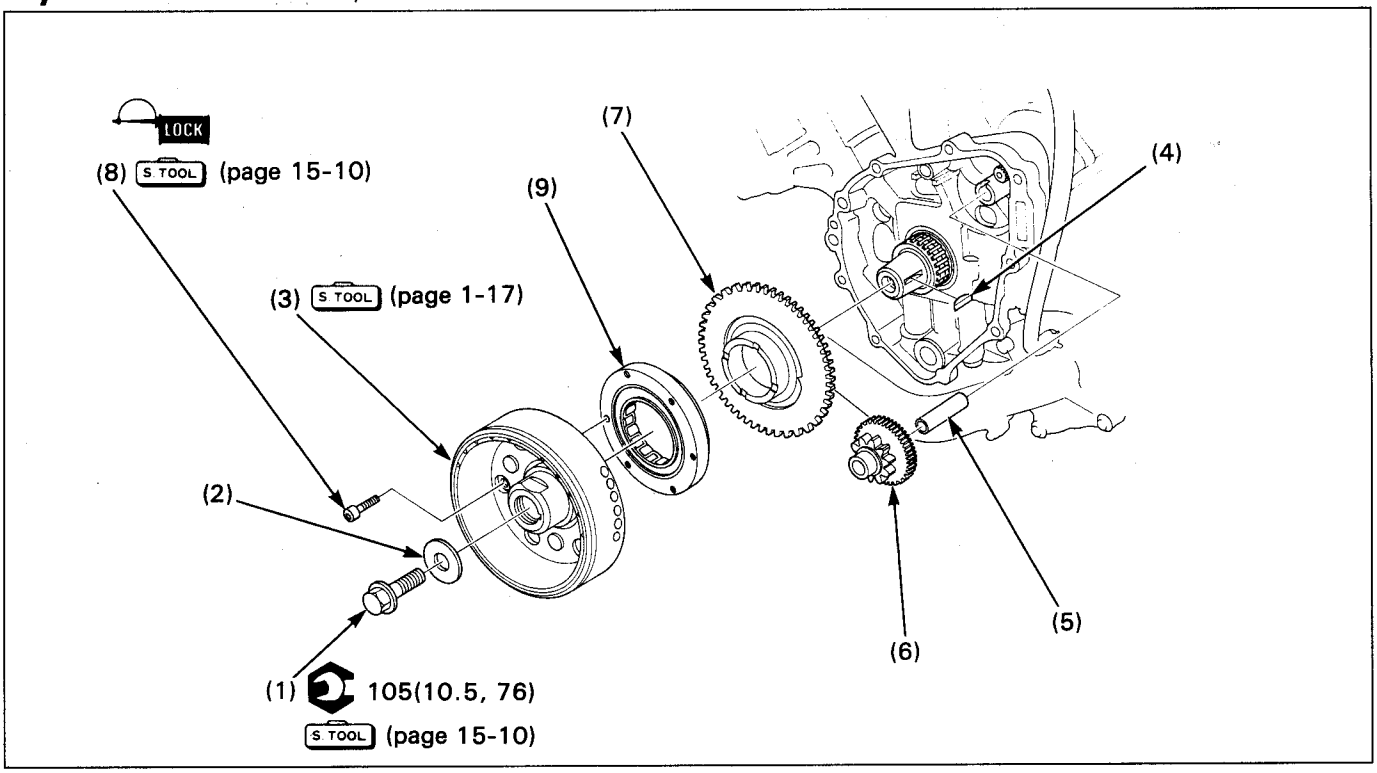


Requisite Service

- Fuel tank removal/installation (page 2-11)
- Right side fairing removal/installation (page 2-3)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Alternator connector	1	
(2)	Left crankcase cover bolt (long/short)	9/1	
(3)	Left crankcase cover	1	
(4)	Gasket	1	
(5)	Dowel pin	1	
(6)	Stator wire holder	1	
(7)	Stator bolt	4	
(8)	Stator	1	When installing, apply sealant to the grommet and install the grommet securely into the groove in the left crankcase cover.

Flywheel Removal/Installation



Requisite Service

- Left crankcase cover removal/installation (page 15-8)

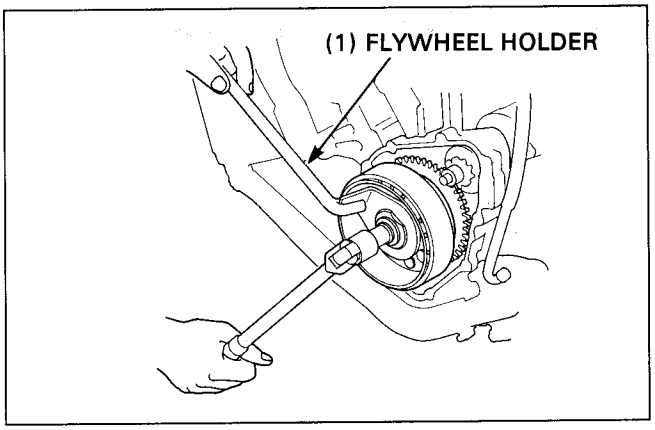
	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Flywheel bolt	1	Refer to page 15-10 for removal and installation.
(2)	Washer	1	
(3)	Flywheel	1	Before installing, wipe any oil off the mating surfaces of the crankshaft and flywheel.
(4)	Woodruf key	1	
(5)	Starter idle gear shaft	1	
(6)	Starter idle gear	1	
(7)	Starter driven gear	1	Remove and install the starter driven gear turning it counterclockwise.
(8)	Starter clutch bolt	6	Refer to page 15-10 for removal and installation.
(9)	Starter clutch	1	

Flywheel Bolt Removal/Installation

Loosen the flywheel bolt while holding the flywheel with a flywheel holder.

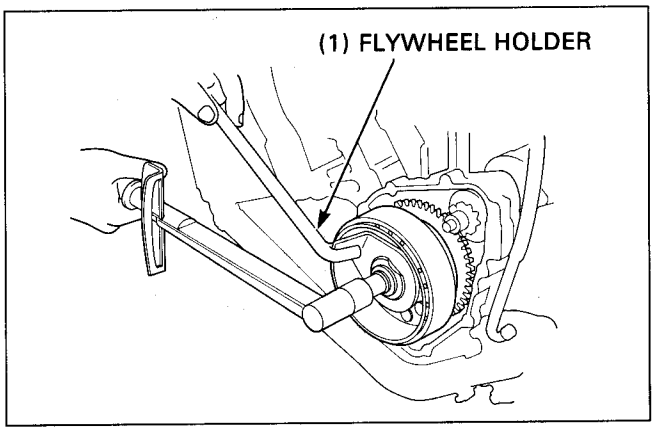
S TOOL

Flywheel holder **07925-ME90000**



Tighten the flywheel bolt while holding the flywheel with a flywheel holder.

Torque : 105 N · m (10.5 kg-m, 76 ft-lb)



Starter Clutch Bolt Removal/Installation

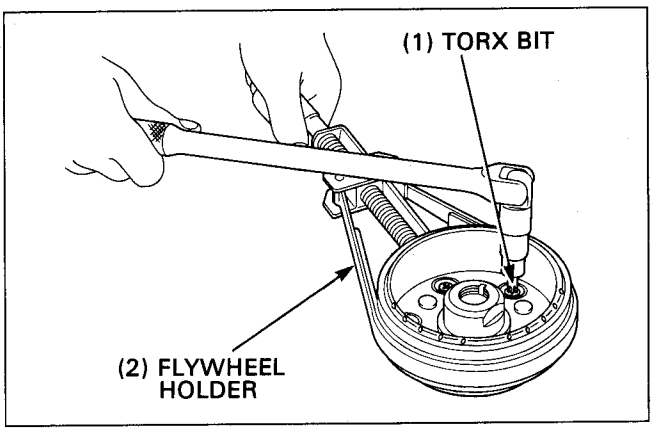
Remove the starter clutch bolts while holding the flywheel with a flywheel holder.

S TOOL

Flywheel holder **07725-0040000**
Torx bit (T30) **07703-0010200 or**
Equivalent commercially available

Remove the starter clutch.

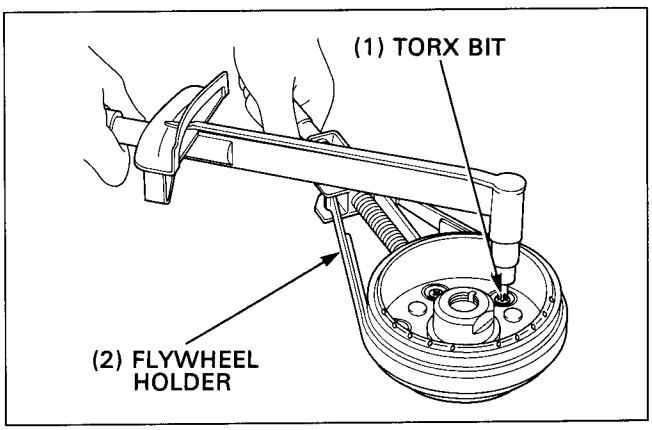
After removing the starter clutch bolts, clean the locking agent residue off the starter clutch bolts.



Apply a locking agent to the threads of the starter clutch bolts, and tighten them to the specified torque while holding the flywheel with a flywheel holder.

Torque : 16 N · m (1.6 kg-m, 12 ft-lb)

Install the starter driven gear to the flywheel, turning the starter driven gear counterclockwise.



Charging Coil Inspection

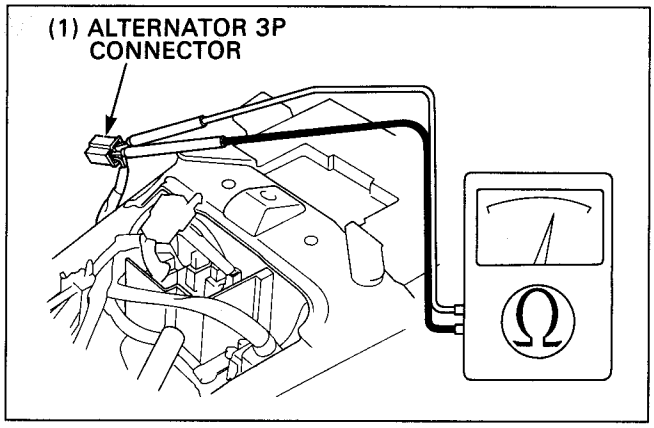
NOTE

- It is not necessary to remove the alternator from the engine.

Remove the seat (page 2-2).
Disconnect the alternator 3P connector and measure the resistance between the connector terminals (Yellow and Yellow).

Standard : 0.1-1.0 Ω (20° C/68° F)

Check for continuity between the Yellow wire terminal and ground.
There should be no continuity.



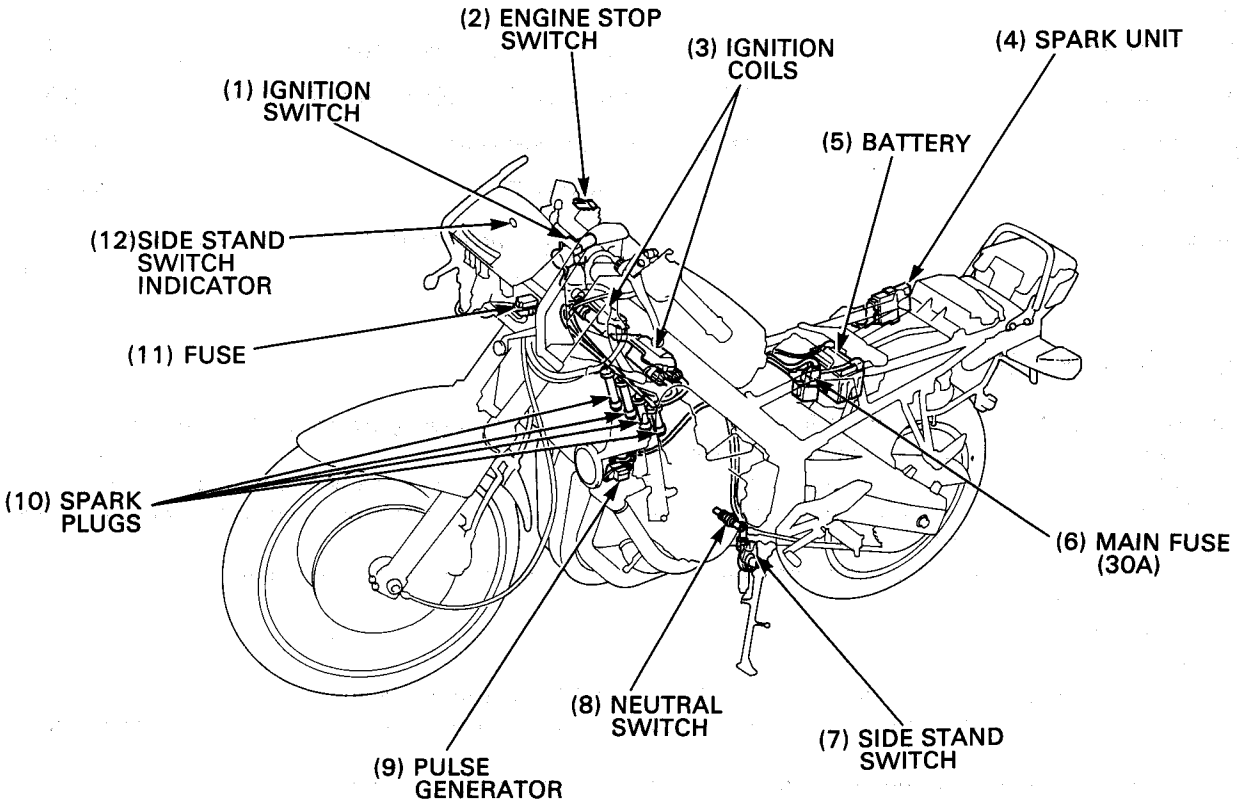
16. Ignition System

Service Information	16-1	Ignition Coil Inspection	16-7
System Location	16-2	Iginition Coil Removal/Installation	16-8
Circuit Diagram	16-2	Pulse Generator	16-9
Troubleshooting	16-3	Ignition Timing	16-9
Ignition System Inspection	16-5	Pulse Generator Rotor Cover Removal/ Installation	16-10

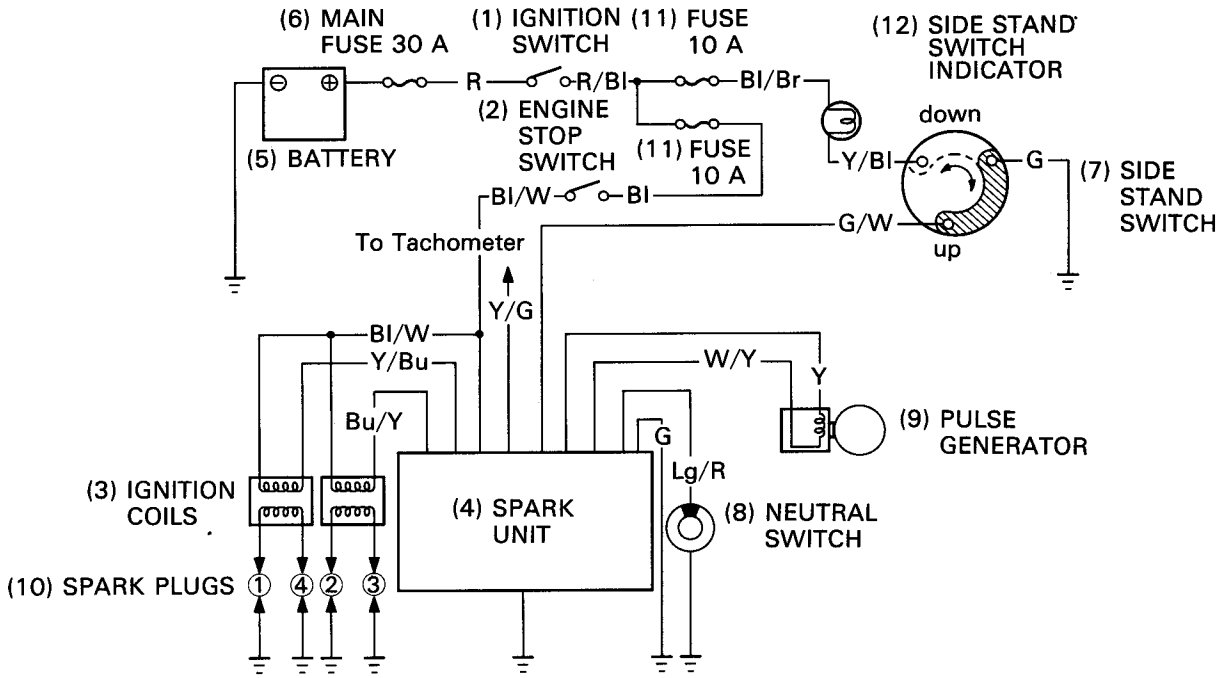
Service Information

- When checking the ignition system, always follow the steps in the troubleshooting flow chart (see page 16-3).
- Perform the spark test at each cylinder before troubleshooting.
- A loose connection is often the cause of the ignition problems. Check all connections before troubleshooting.
- Make sure battery is adequately charged. Using the starter motor with a weak battery results in a slower engine cranking speed as well as a weak spark at the plugs.
- This ignition system has the ignition cut-off side stand (switch). The system should operate whenever :
  -the side stand is retracted
  -the transmission is in neutral
  -both above conditions
- For side stand inhibitor system instructions, see page 16-4 "NOTE" of the troubleshooting.
- The transistorized ignition system use an electrically controlled ignition timing system. No adjustment can be made to the ignition timing.
- A rough diagnosis can be made by identifying the cylinder whose spark timing is incorrect.
- Use spark plugs of the correct heat range. Using spark plugs with an incorrect heat range can damage the engine.
- For the ignition switch, engine stop switch, neutral switch and side stand switch inspection, check for continuity on the continuity chart of the Wiring Diagram, section 19. Disconnect each connector behind the instruments (page 1-20) and check it.

System Location



Circuit Diagram



Troubleshooting

- Inspect the followings before diagnosing the system.
  -Faulty spark plugs
  -Loose spark plug caps or spark plug wire connections
  -Water got into the spark plug cap (leaking the ignition secondary voltage)
- Temporarily exchange the ignition coil with the other good one and perform the spark test. If there is spark, the exchanged ignition coil is faulty.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch ON and the engine stop switch at RUN.

No spark at all plugs

Unusual Conditions		Probable Cause (Check in numerical order)
Ignition coil primary voltage	No initial voltage with the ignition and engine stop switch ON. (Other electrical equipments are normal).	1. Faulty engine stop switch. 2. An open circuit in Bl/W wire between the ignition coil and engine stop switch. 3. Faulty ignition switch. 4. Loose primary terminal or an open circuit in primary coil. 5. Faulty spark unit : in case when the initial voltage is normal with the spark unit connector disconnected.
	Initial voltage is normal, but it drops down to 2-4 V while cranking the engine.	1. Incorrect peak voltage adaptor connections. 2. Undercharged battery. 3. No voltage between the Bl/W (+) and ground (−) at the spark unit connector or loose spark unit connection. 4. An open circuit or loose connection in G wire. 5. Open circuits or loose connections of the Y/Bu and Bu /Y wires between the ignition coils and spark unit. 6. Short circuit in ignition primary coil. 7. Faulty side stand switch or neutral switch. 8. An open circuit or loose connection in the wires of side stand switch and (or) neutral switch. side stand switch line : G/W wire. neutral switch line : Lg wire 9. Faulty spark unit (in case that the above 1-8 are normal).
	Initial voltage is normal, but no peak voltage while cranking the engine.	1. Incorrect peak voltage adaptor connections 2. Faulty peak voltage adaptor 3. Faulty spark unit (in case that the above 1,2 are normal).
	Initial voltage is normal, but peak voltage is lower than standard.	1. Using digital tester that impedance is below 10 M Ω/ DCV. 2. Engine speed is too slow (battery is undercharged). 3. System is normal if measured voltage is over the standard voltage at least once. 4. Faulty spark unit (in case that the above 1-3 are normal).
	Initial and peak voltage are normal, but does not spark.	1. Faulty spark plug or ignition coil secondary current is leaking. 2. Faulty ignition coils.
Pulse generator	Peak voltage is lower than standard	1. Using digital tester that impedance is below 10 M Ω/ DCV. 2. Engine speed is too slow (battery is undercharged). 3. System is normal if measured voltage is over the standard voltage at least once. 4. Faulty spark unit (in case that the above 1-3 are normal).
	No peak voltage	1. Faulty peak voltage adaptor. 2. Faulty pulse generator.

Engine starts, but the side stand switch does not function at all.

NOTE

The side stand switch should function as follows :
- When the transmission is shifted into a gear from neutral with the side stand down, the ignition shuts off and the engine will stop.
- When in neutral, the neutral switch line (a) of the spark unit is connected to ground via neutral switch. When the side stand is up, the side stand switch line (b) of the spark unit passes to ground via the side stand switch. The spark unit monitors lines (a) and (b), and provides spark only when one or both of those lines is connected to ground via the neutral switch or the side stand switch.

Check the side stand indicator for function.
- Normal → • Open circuit in Green/White wire
- Abnormal ↓

Check the side stand switch (page 18-9)
- Normal → • Loose or poor connected of related connections
  • Open circuit in Green/White wire
  • Burnt indicator bulb
- Abnormal ↓

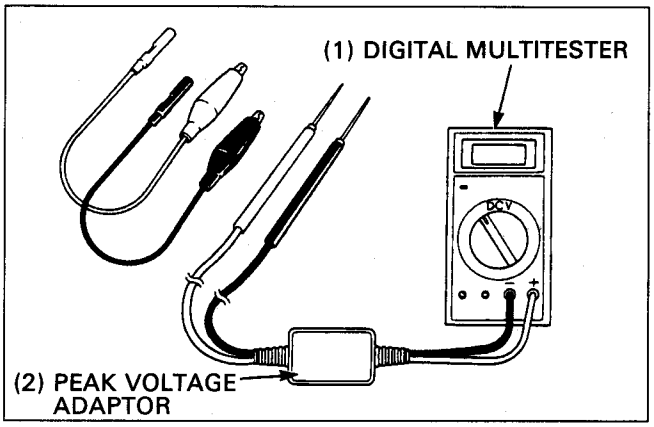
• Faulty side stand switch

Ignition System Inspection

NOTE

- If no spark at all plugs, check that all connections for loose or poor contact before measuring each peak voltage.
- Use genuine digital multitester or commercially available digital multitester (impedance 10 MΩ/DCV minimum).
- The display value differs depending upon the internal impedance of the multitester.
- If using Imrie diagnostic tester (model 625), follow the manufacture's instructions.

Connect the peak voltage adaptor to the digital multitester.



S TOOL

Imrie Diagnostic Tester (model 625) manufactured in Australia or Peak voltage adaptor **07HGJ-0020100**

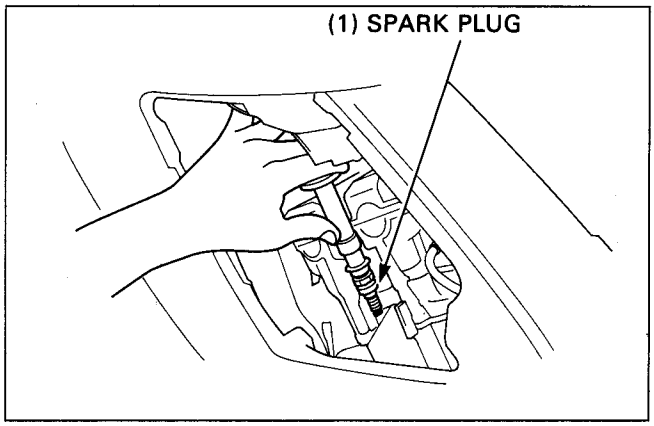
Kowa digital multitester **07411-0020000 or Commercially available digital multitester (impedance 10 MΩ/DCV minimum)**

Ignition Coil Primary Voltage

NOTE

- Check all system connections before this inspection. If the system is cisconnected, incorrect peak voltage might be measured.
- Check cylinder compression at each cylinder and spark plug and caps are installed correctly in all cylinders.
  If the peak voltage is measured with the cylinder compression being low, the measurement will be higher than the standard voltage.

Disconnect all spark plug caps from the spark plugs. And connect good known spark plugs on each spark plug cap, then ground them on the engine.



Connect the peak voltage adaptor on the ignition coil.

NOTE

- Do not disconnect the ignition coil primary wires.

Connecting points :
No. 1/4 coil : Y/Bu(+) and body ground(−)
No. 2/3 coil : Bu/Y(+) and body ground(−)

Measure the initial voltage when the ignition switch is "ON" and engine stop switch is "RUN".

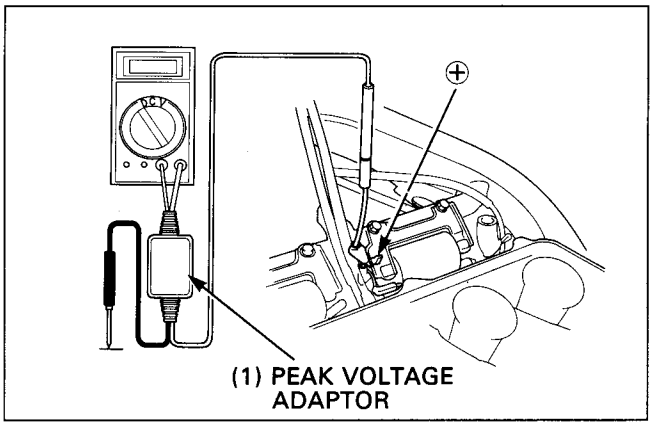
Battery voltage is applied: NORMAL
No voltage : Faulty power supply circuit : Check it refering to the troubleshooting.

Measure the ignition primary coil peak voltage while cranking the engine with the starter motor.

Peak voltage : 128 V minimum

⚠ WARNING

- **Avoid touching the tester probes while measuring the voltage to prevent electric shock.**

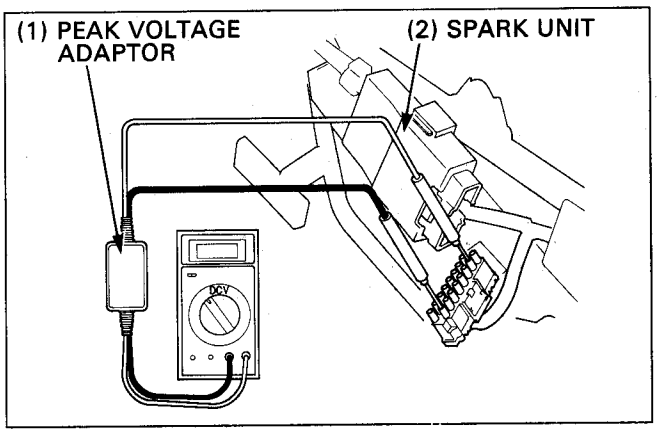


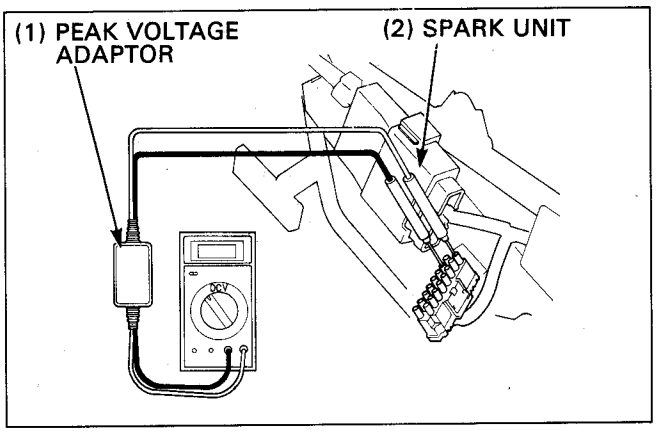
Check the ignition coil 2P mini connector(red) connectors for corrode or loose connection.
Disconnect the spark unit connection and connect the peak voltage adaptor on the harness side connector.
Measure the peak voltage at the spark unit connector and record it.

Connecting points :
No. 1/4 coil : Y/Bu(+) and Green(−)
No. 2/3 coil : Bu/Y(+) and Green(−)

Compair their values (at the ignition coil and at the spark unit connector).
At the ignition coil is normal, but at the spark unit connector is abnormal :
An open circuit or loose connection in Y/Bu or Bu/Y wires.

Both values are abnormal :
Spark unit is likely to be fault.
Check each items refering to the troubleshooting.





Pulse Generator Inspection

NOTE

- Measure the peak voltage with the cylinder compression is applied. Leave off spark plugs in the cylinder head.

Remove the seat (page 2-2).
Disconnect the spark unit connection.
Connect the peak voltage adaptor on the harness side connector.

Connecting points : Y(+) and W/Y(−)

Measure the pulse generator peak voltage while cranking the engine with the starter motor.

Peak voltage : 3.6 V minimum

⚠ WARNING

- **Avoid touching the tester probes while measuring the voltage to prevent electric shock.**

If the measurement is out of the specification, perform the following procedures:
Disconnect the pulse generator 2P mini connector(red).
Measure the peak voltage at the pulse generator side connector and record it.

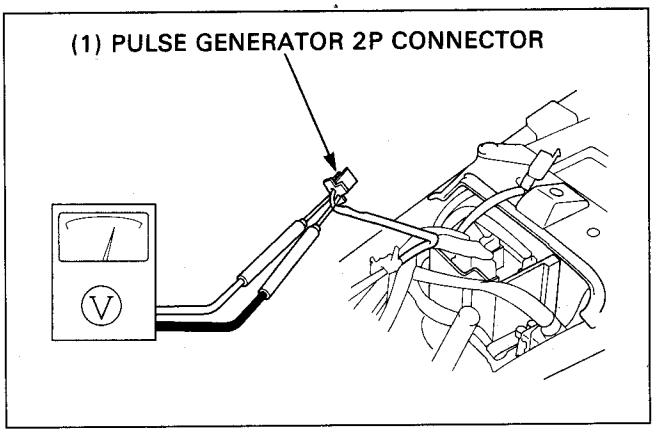
Connecting points : Y(+) and W/Y(−)

Compair their values (at the spark unit connector and at the pulse generator 2P mini connector (red)).
At the pulse generator is normal, but at the spark unit is abnormal :

- An open circuit in Y or W/Y wires.
- Loose connection in pulse generator side connector.

Both values are abnormal :

- Pulse generator is likely to be fault. Check each items refering to the troubleshooting.

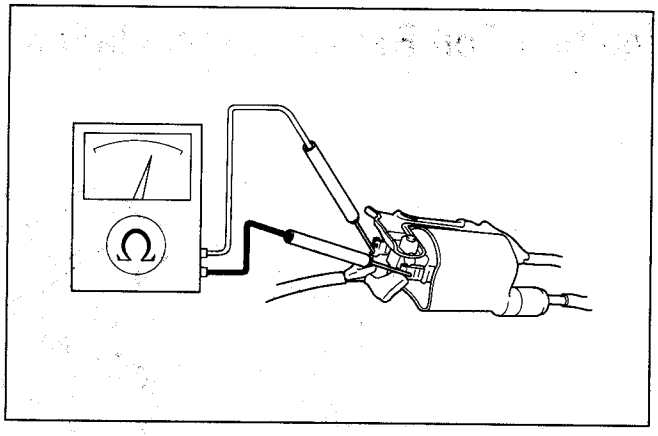


Ignition Coil Inspection

Remove the following :
-maintenance lid(page 2-3)
-air cleaner case(page 6-3)

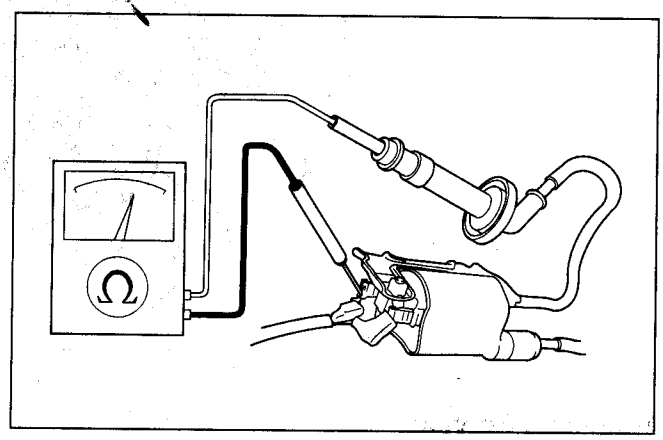
Measure each primary coil resistance at terminals.

Standard : 2.5-3.1Ω (20°C/68°F)



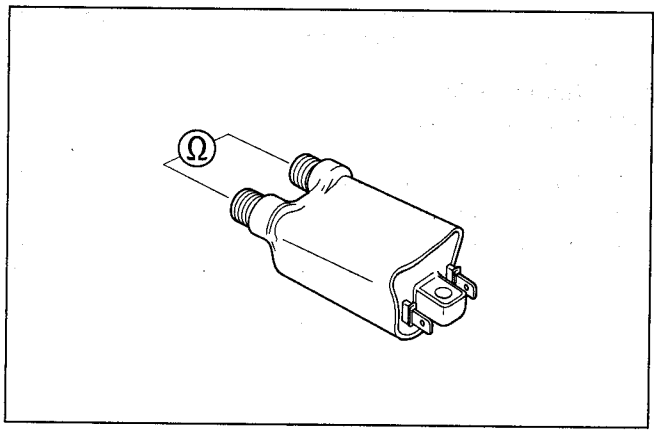
Disconnect the spark plug caps from the plugs and measure the secondary coil resistance with the spark plug caps in place.

Standard : 21-25kΩ (20°C/68°F)

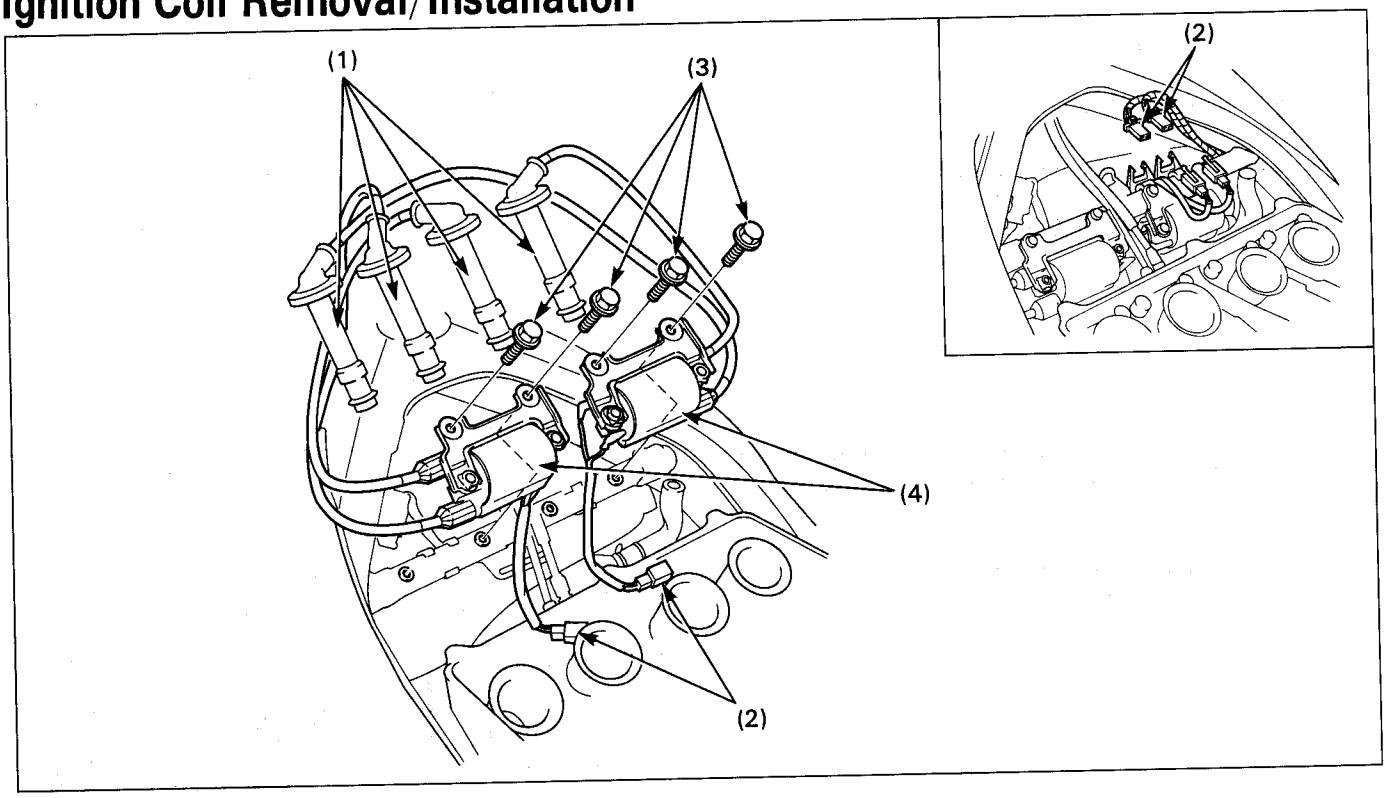


If the resistance is out of range, remove the spark wires from the ignition coil and measure the resistance as shown.

Standard : 11-15kΩ (20°C/68°F)



Ignition Coil Removal/Installation

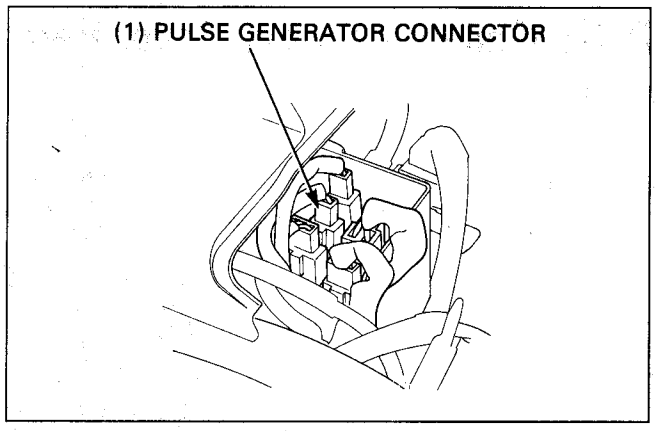


Requisite Service

- Maintenance lid removal/installation (page 2-3)
- Air cleaner case removal/installation (page 6-3)

Procedure		Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Spark plug cap	4	The cylinder numbers are printed on each high tension cord so install each spark plug cap on the correct cylinder.
(2)	Ignition coil connector	4	
(3)	Ignition coil mounting bolt	4	
(4)	Ignition coil	2	

Pulse Generator



Inspection

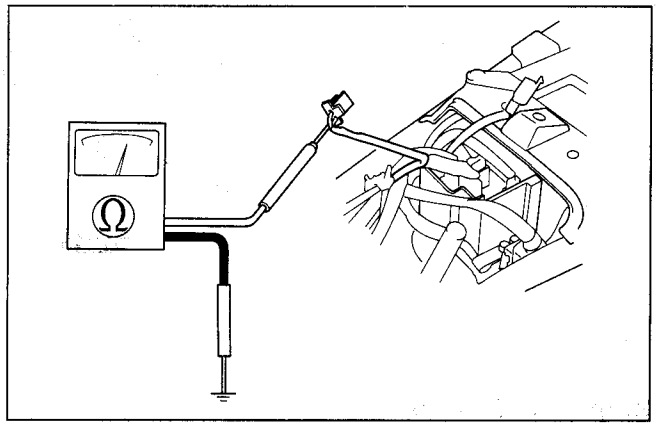
NOTE

- It is not necessary to remove the pulse generator from the engine.

Remove the fuel tank (page 2-11).

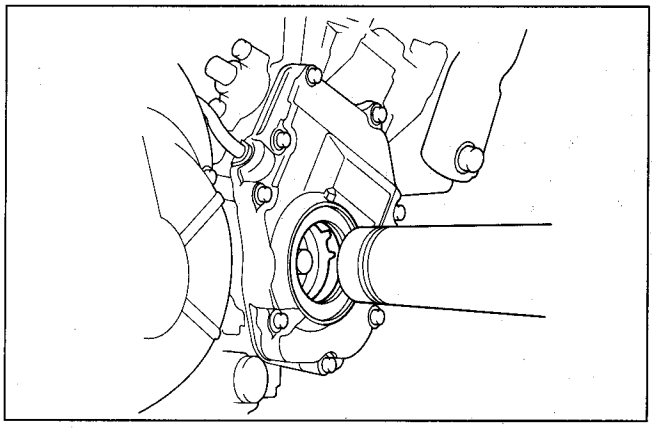
Disconnect the pulse generator 2P mini connector(red) and measure the resistance between White/Yellow-Yellow terminals.

Standard : 460-580Ω (20° C/68° F)



Refer to page 16-10 for pulse generator replacement.

Ignition Timing



Warm up the engine.
Stop the engine and connect a timing light to the spark plug wire.

NOTE

- Read the instructions for timing light for operating.

Remove the following :
-Right side fairing (page 2-3)
-Pulse generator rotor cover cap

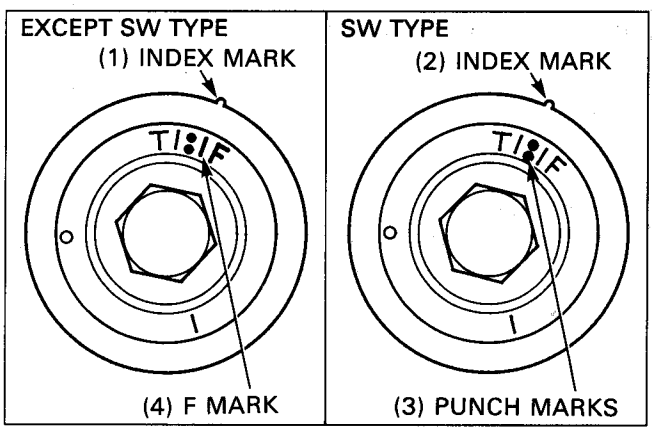
Start the engine and let it idle.

Except SW type :
The timing is correct if the F mark(notch mark) aligns with the index mark on the pulse generator rotor cover.

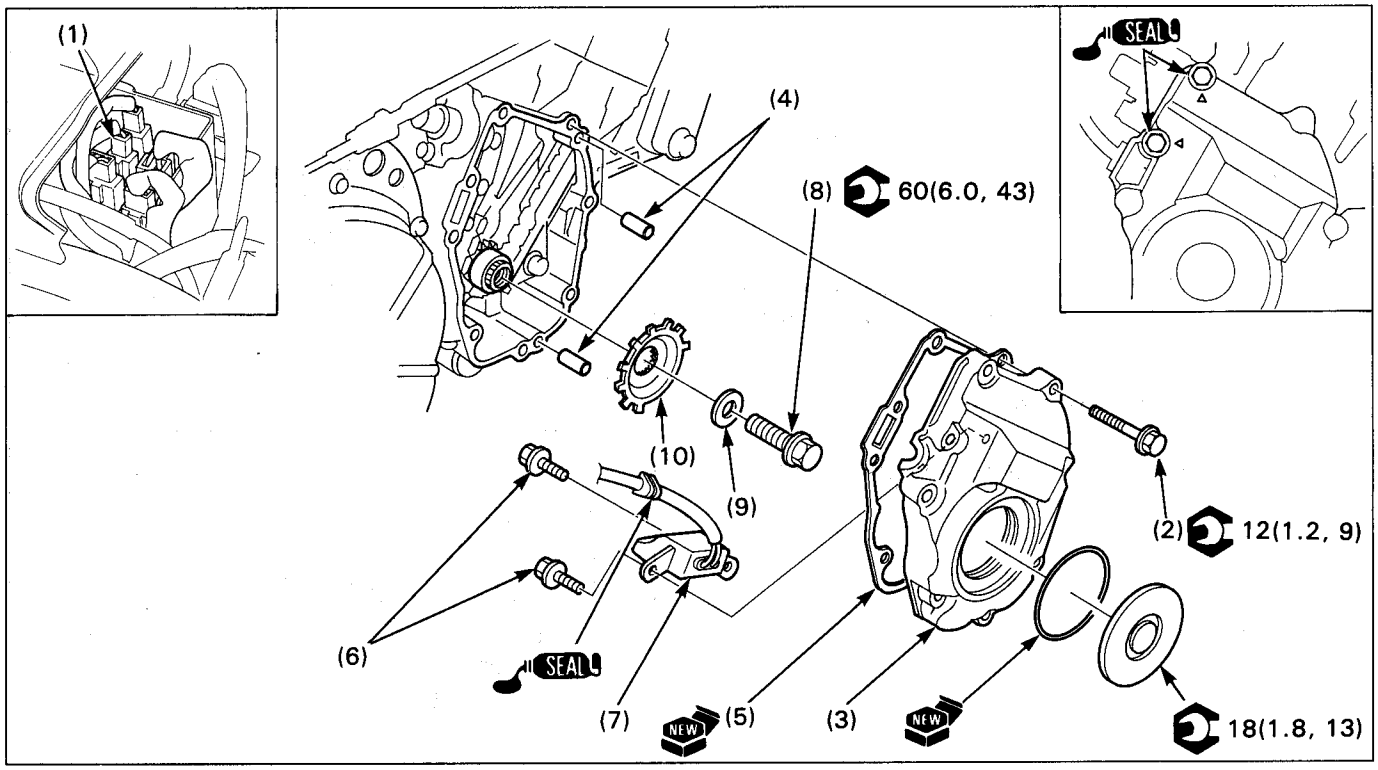
Increase the engine speed by rotating the throttle stop screw and make sure the F mark begins to move counterclockwise at approximately 1,600 min^{-1}(rpm)

SW type :
The timing is correct if the F mark(punch marks) aligns with the index mark on the pulse generator rotor cover.

Increase the engine speed by rotating the throttle stop screw and make sure the F mark begins to move counterclockwise at approximately 1,900 min^{-1}(rpm)



Pulse Generator Rotor Cover Removal/Installation



Requisite Service

- Fuel tank removal/installation(page 2-11)
- Left crankcase cover removal/installation(page 15-7) (This is necessary if you plan to remove the pulse generator rotor.)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Pulse generator connector	1	
(2)	Pulse generator rotor cover bolt	8	NOTE • Apply sealant to the threads of the bolts iadicated by "△" marks.
(3)	Pulse generator rotor cover	1	
(4)	Dowel pin	2	
(5)	Gasket	1	
(6)	Bolt	2	
(7)	Pulse generator	1	When installing, apply sealant to the grommet and intall the grommet securely into the groove in the pulse generator rotor cover.
(8)	Pulse generator rotor bolt	1	NOTE • Remove the left crankcase cover(page 15-7) and loosen the bolt while holding the flywheel with a flywheel wrench (No.07925-ME90000). • Be careful not to damage the rotor teeth during removal and installtion.
(9)	Washer	1	
(10)	Pulse generator rotor	1	

17. Electric Starter

Service Information	**17-1**	**Troubleshooting**	**17-3**
System Location	**17-2**	**Starter Motor Removal/Installation**	**17-5**
Circuit Diagram	**17-2**	**Starter Motor Disassembly/Assembly**	**17-6**

Service Information

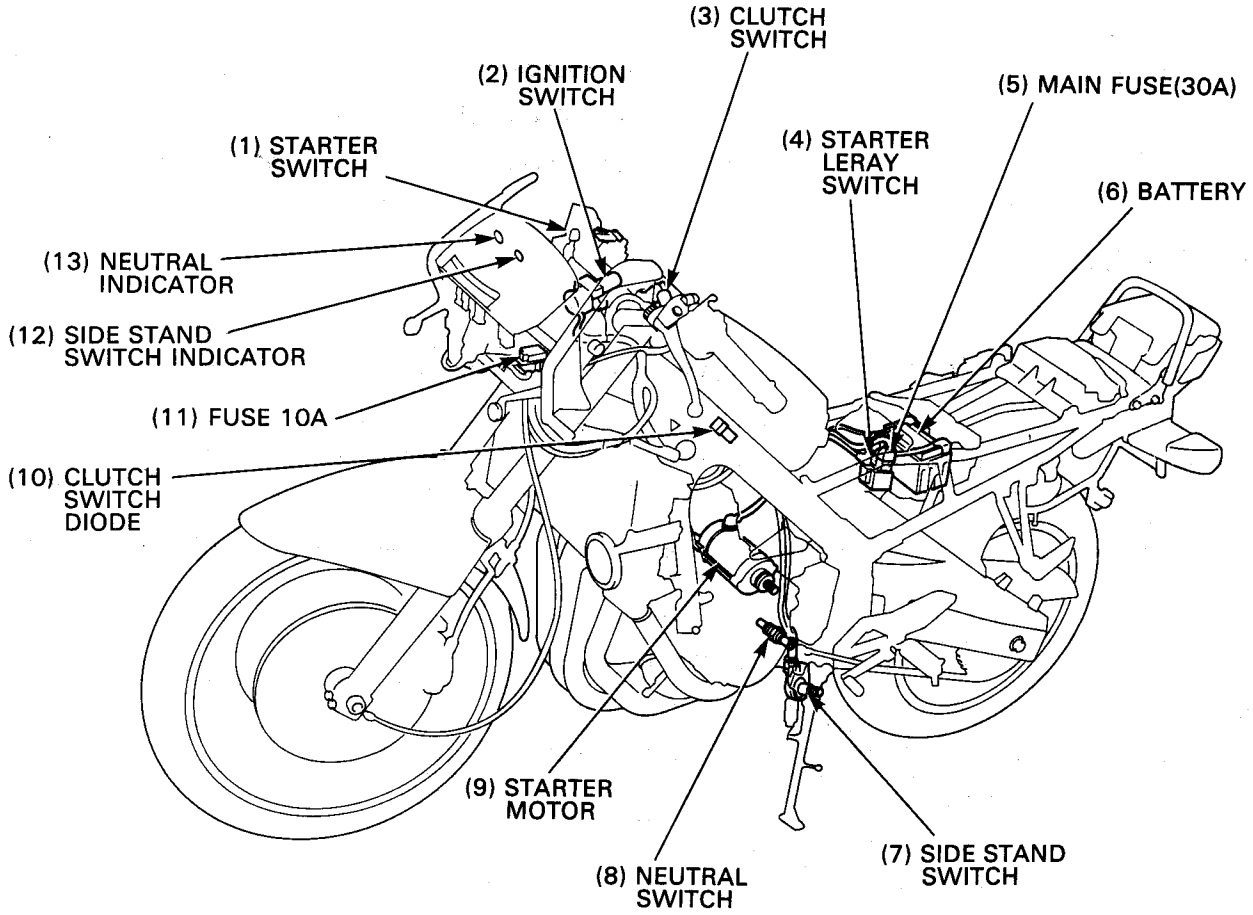
⚠ WARNING

- **Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.**

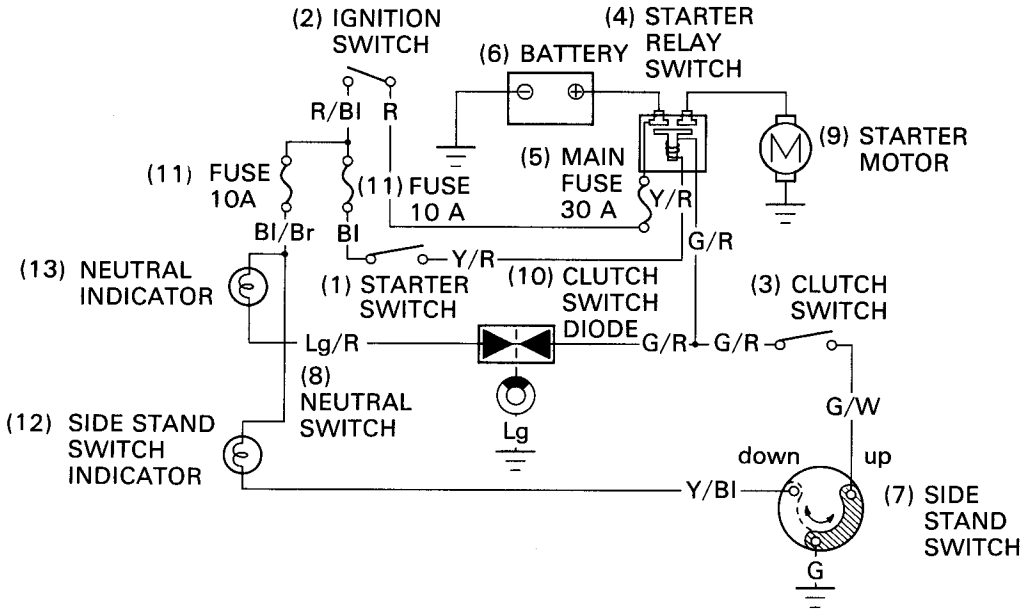
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- If the current is kept flowing throutgh the starter motor to turn it while the engine is not cranking over, the starter motor may be damaged.
- For the following component inspections, refer to the following pages; for the parts locations, see page 17-2 of this manual (System Location).

Clutch switch diode	Section 24 of the Common Service Manual
Starter motor	Section 24 of the Common Service Manual
Starter relay switch	Section 24 of the Common Service Manual ("A" circuit type)
Clutch switch	Section 25 of the Common Service Manual
Neutral switch	Section 25 of the Common Service Manual
Ignition switch	Check for continuity on the continuity chart of the Wiring Diagram, section 19. Disconnect the switch connector at the back of the instruments and check it.
Side stand switch	See page 18-9.

System Location



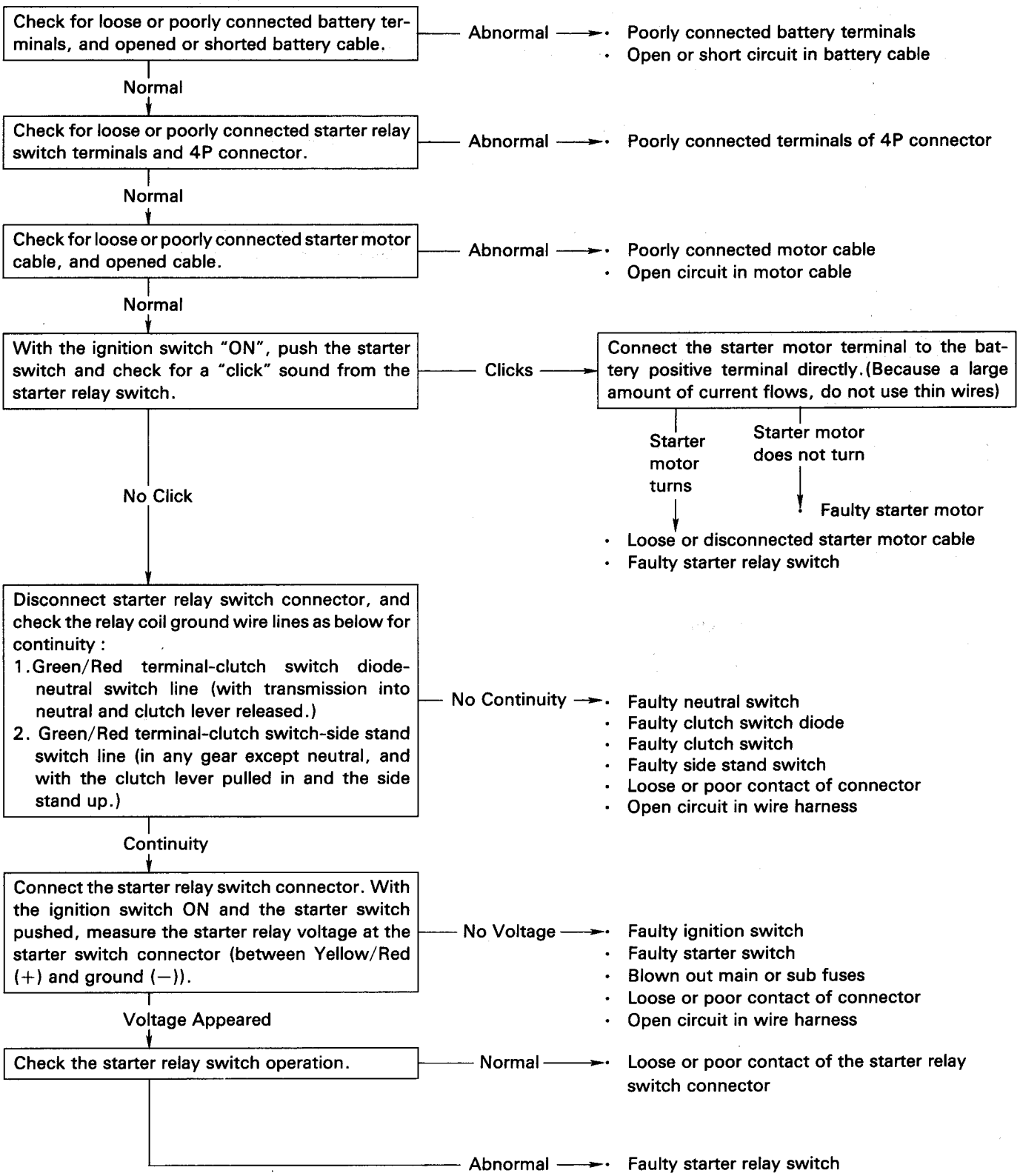
Circuit Diagram



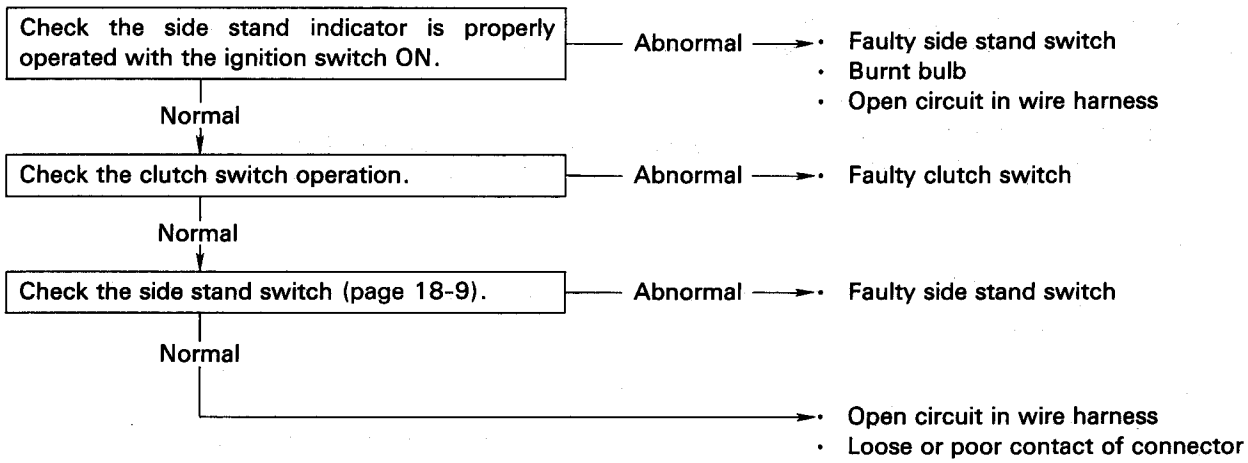
Troubleshooting

Starter motor will not turn

- Check for a blown out main or sub fuses before servicing.
- Make sure the battery is fully charged and in good condition.



The starter motor turns when the transmission is in neutral, but does not turn with the transmission in any position except neutral, with the side stand up and the clutch lever pulled in.



Starter motor turns slowly

- Low specific gravity in battery (or Dead battery)
- Poorly connected battery terminal cable
- Poorly connected starter motor cable
- Faulty starter motor
- Poorly connected battery ground cable

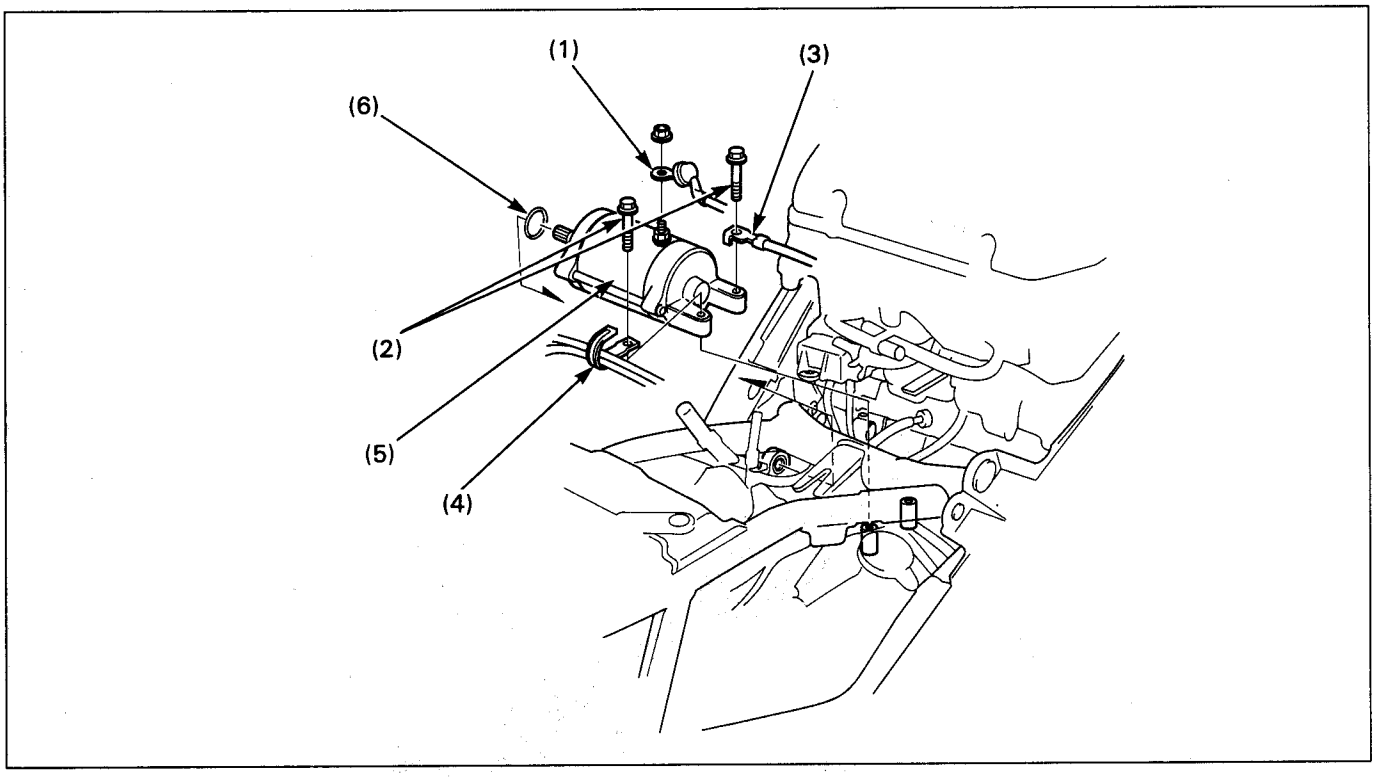
Starter motor turns, but engine does not turn

- Starter motor is running backwards
  -Case assembled improperly
  -Terminals connected improperly
- Faulty starter clutch
- Damaged or faulty starter pinion
- Damaged reduction gears

Starter relay switch "click", but engine does not turn over

- Crankshaft does not turn due to engine problems
- Excessive reduction gear friction

Starter Motor Removal/Installation



⚠ WARNING

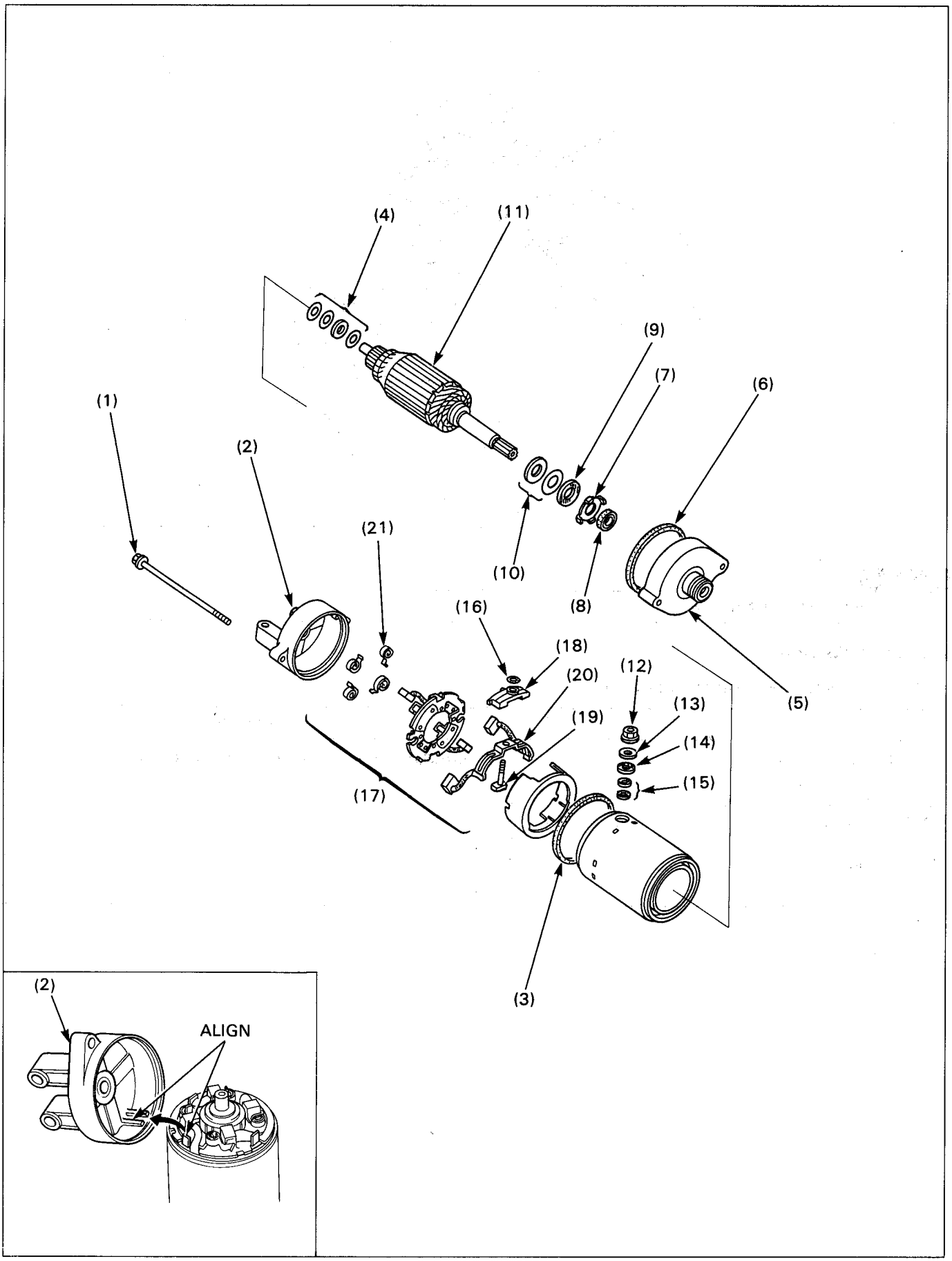
- **Turn the ignition switch OFF.**

Requisite Service

- Fuel tank removal/installation (page 2-11)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Starter motor cable	1	
(2)	Starter motor mounting bolt	2	
(3)	Ground cable	1	
(4)	Clamp	1	
(5)	Starter motor	1	
(6)	O-ring	1	

Starter Motor Disassembly/Assembly



Requisite Service

- Starter motor removal/installation (page 17-5)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Bolt	2	
(2)	Rear cover	1	Install the rear cover with the tab of the blush holder plate between the tabs on the inside of the rear cover.
(3)	O-ring	1	
(4)	Shim	—	Record and store the shims in the same order they were installed so they can be reinstalled in the original positions.
(5)	Front cover	1	
(6)	O-ring	1	
(7)	Lock washer	1	
(8)	Dust seal	1	
(9)	Insulated washer	1	
(10)	Shim	—	
(11)	Armature	1	
(12)	Terminal nut	1	
(13)	Washer	1	
(14)	Insulated washer (large)	1	
(15)	Insulated washer (small)	2	
(16)	O-ring	1	
(17)	Blush holder assembly	1	Install the blush holder assembly with its tab aligning with the groove in the motor case.
(18)	-terminal bolt supporter	1	Install the supporter with its tab facing the blush holder side.
(19)	-terminal bolt	1	
(20)	-motor blush	1	
(21)	-blush spring	4	

18. Lights/Meters/Switches

Service Information	18-1	Combination Meter Disassembly/Assembly	18-6
System Location	18-2	Tachometer Inspection	18-8
Headlight Bulb Replacement	18-3	Coolant Temperature Gauge Inspection	18-8
Combination Meter Bulb Replacement	18-4	Ignition Switch Removal/Installation	18-8
Combination Meter Removal/Installation	18-5	Side Stand Switch	18-9

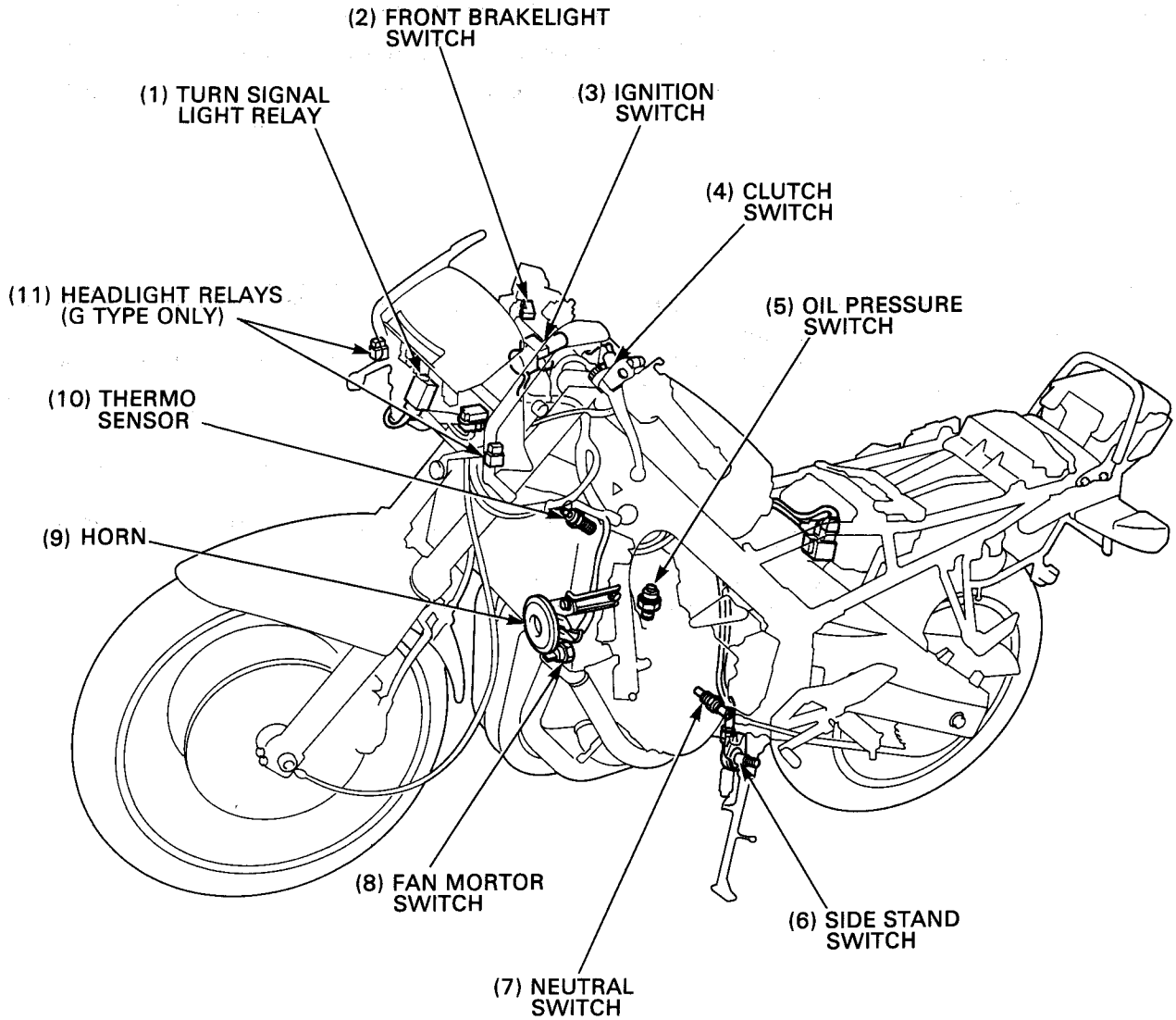
Service Information

⚠ WARNING

- **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.**
- **Use a flame and heated water/coolant mixture for the thermo sensor inspection. Keep all flammable materials away from the burner. Wear protectice clothing gloves and eye protection.**

- Note the following when replacing the halogen headlight bulb.
  -Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause it to break.
  -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 bulb.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- A continuity test can be made with the switches installed on the vehicle.

System Location



Headlight Bulb Replacement

⚠ WARNING

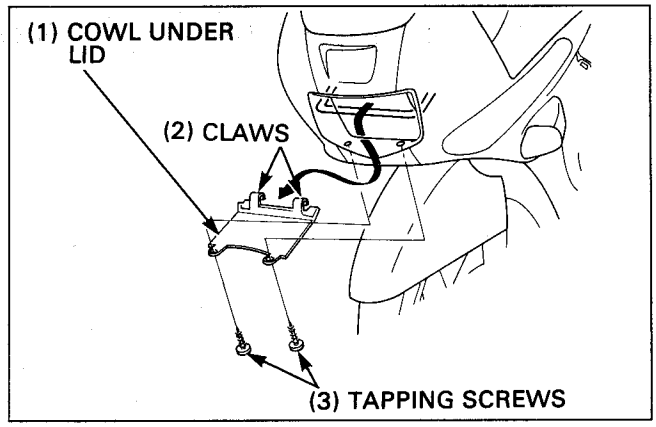
- **Halogen headlight bulb becomes very hot while the head light is ON, and remain hot for a while after it is turned OFF. Be sure to let it cool down before servicing.**

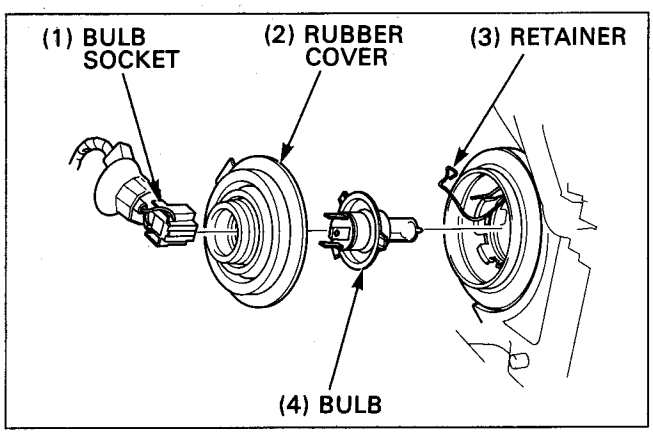
CAUTION

- **Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause it to break.**
- **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 bulb.**

Remove the tapping screws and release the claws of the cowl under lid from the front cowl stay.
Remove the front cowl under lid.

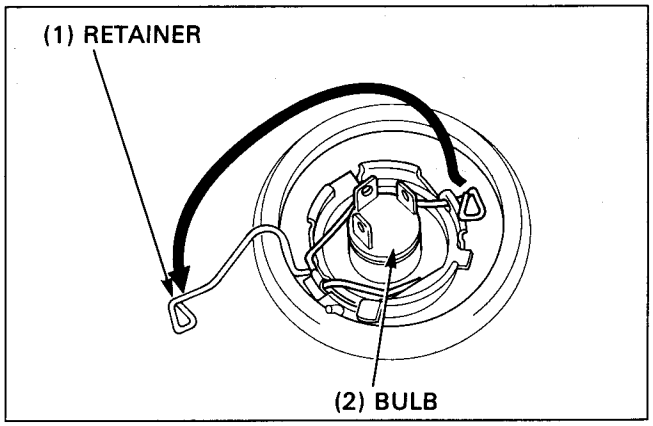
Disconnect the headlight bulb socket and remove the rubber cover.



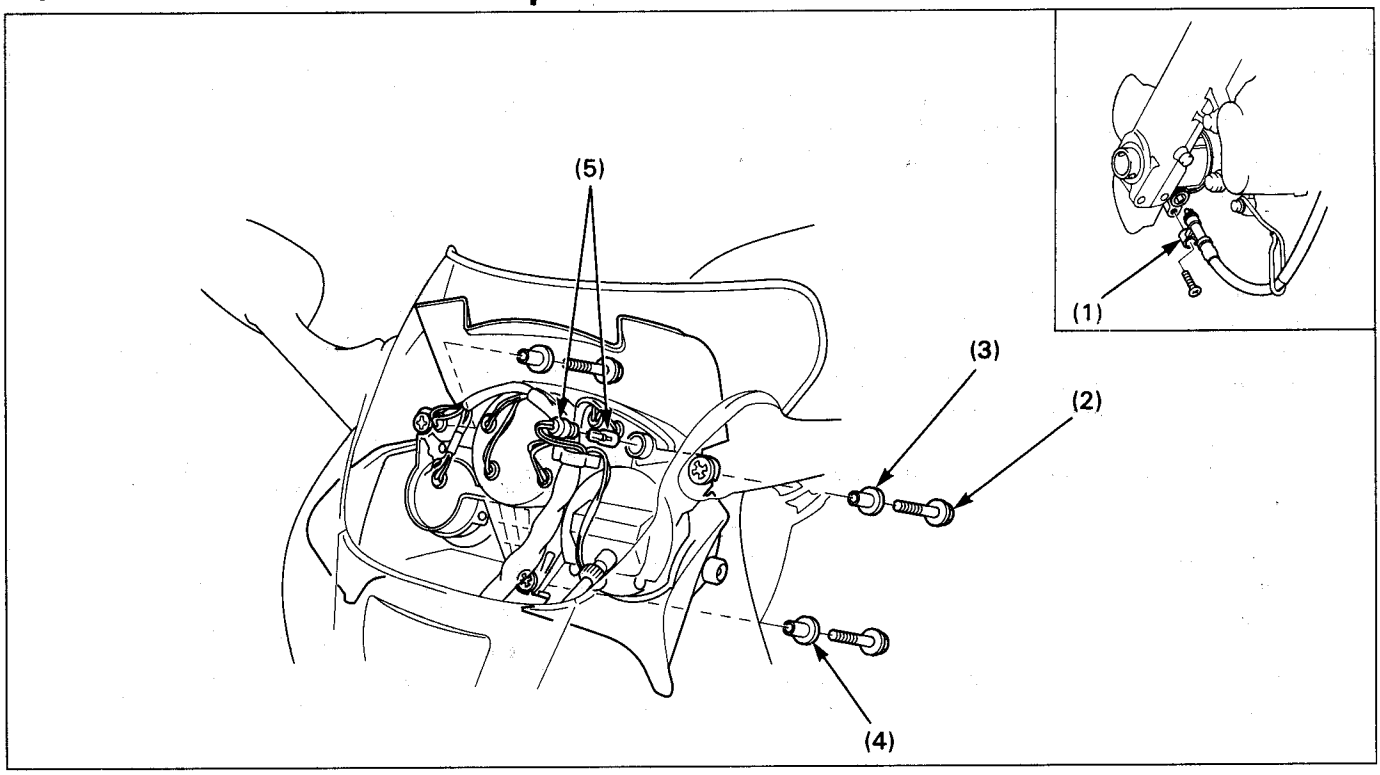


Release the bulb retainer and remove the headlight bulb.

Install a new bulb and the removed parts in the reverse order of removal.

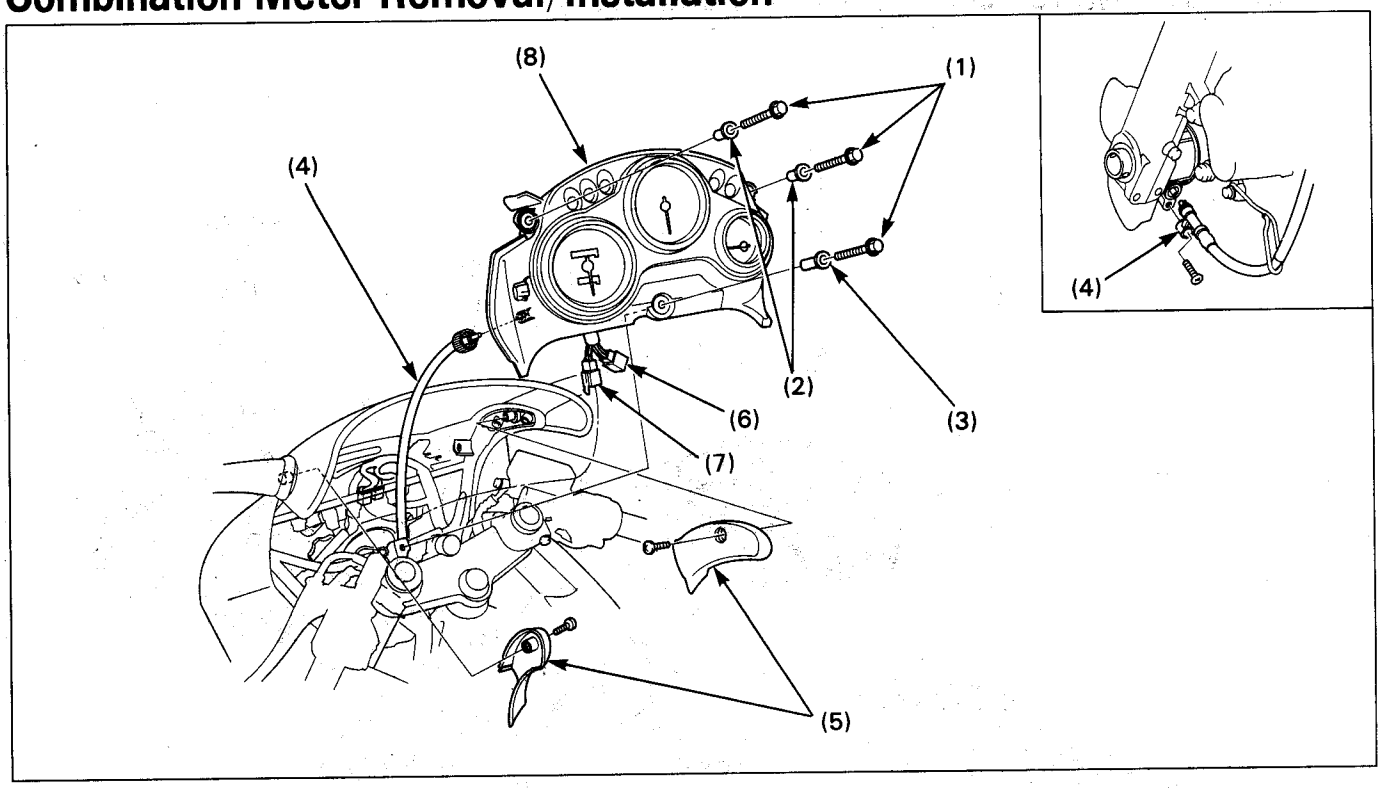


Combination Meter Bulb Replacement



	Procedure	Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Speedometer cable	1	Disconnect the cable at the speedometer gear box.
(2)	Meter mounting bolt	3	
(3)	Collar (short)	2	Raise the combination meter and pull over the rubber cover so that you can remove the bulb socket.
(4)	Collar (long)	1	
(5)	Bulb socket/Bulb	11/11	

Combination Meter Removal/Installation

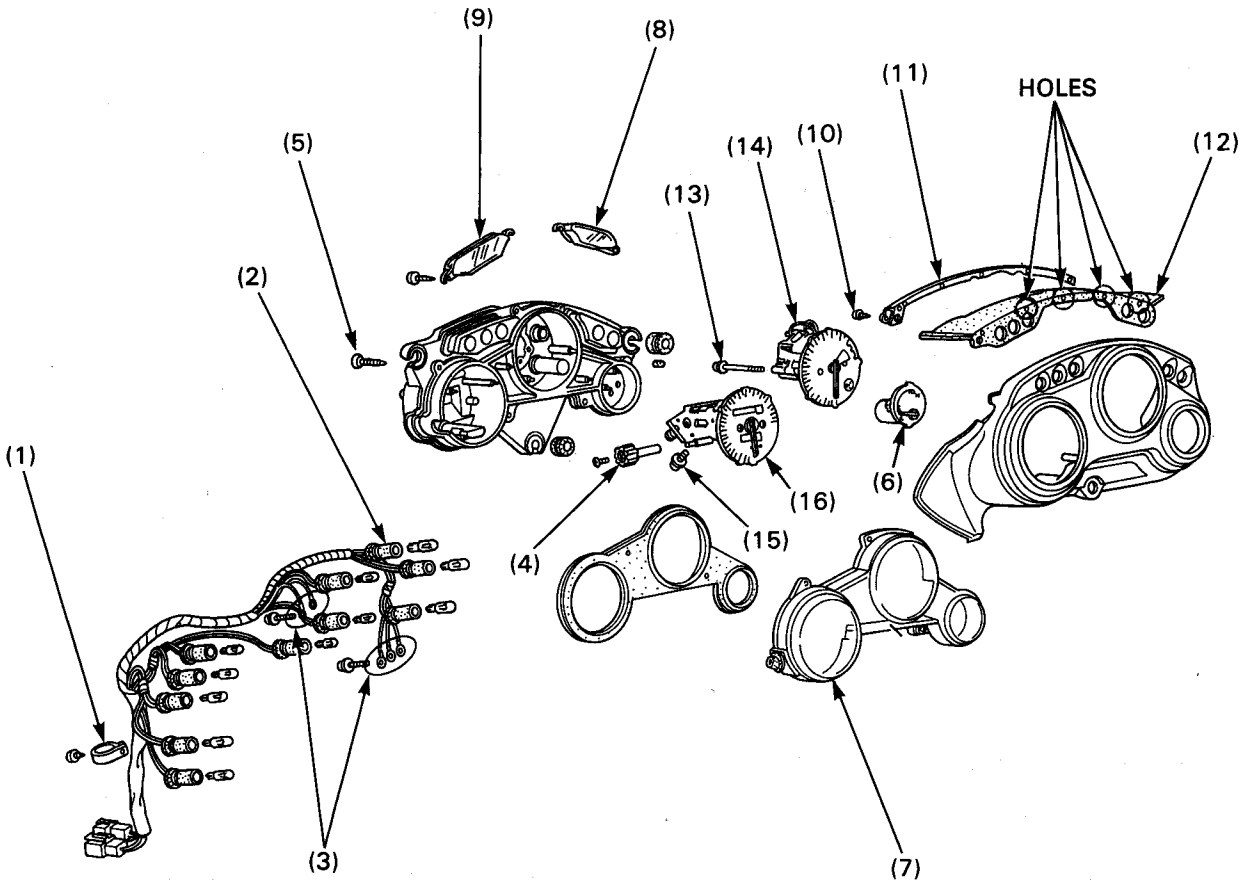


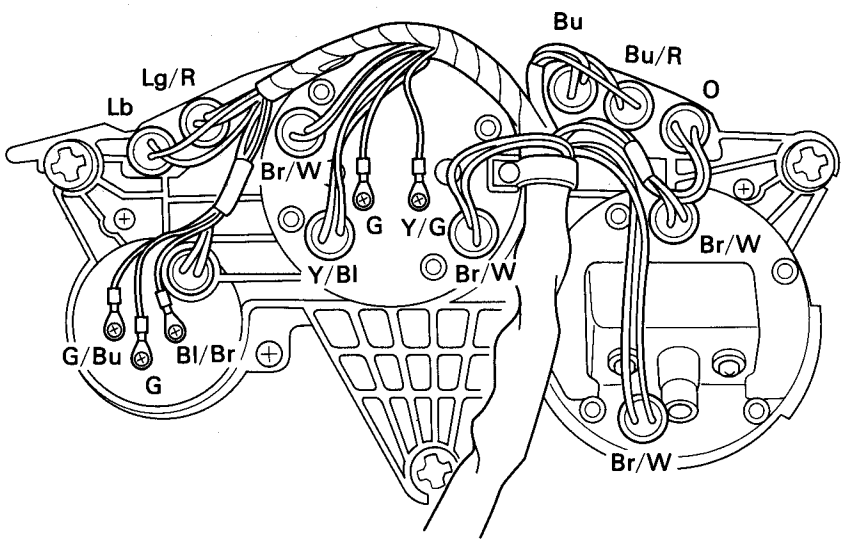
Requisite Service

- Wind screen removal/installation (page 2-4)

	Procedure	Q'ty	Remarks
	Removal Order		Installation is the reverse order of removal.
(1)	Meter mounting bolt	3	
(2)	Collar (short)	2	
(3)	Collar (long)	1	
(4)	Speedometer cable	1	Disconnect the speedometer cable at the speedometer gear box side, if necessary disconnect the cable from the meter afer detaching the meter from the front cowl stay.
(5)	Rear view mirror inner cover	2	
(6)	9P mini connector	1	
(7)	6P mini connector	1	
(8)	Meter assembly	1	

Combination Meter Disassembly/Assembly





Requisite Service

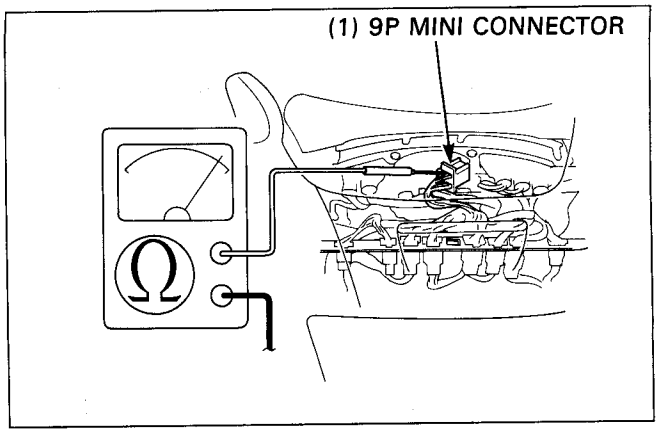
- Combination meter removal/installation (page 18-5)

	Procedure	Q'ty	Remarks
	Disassembly Order		Assembly is in the reverse order of disassembly.
(1)	Wire clamp	1	
(2)	Bulb socket	11	Install each bulb socket referring the wire color code stamped on the meter case.
(3)	Wire terminal	5	
(4)	Reset knob	1	
(5)	Meter cover screw	6	
(6)	Coolant temperature gauge	1	NOTE • Before assembling the meter case and meter cover, temporarily secure the coolant temerature gauge with the wire ternminal screws. • When securing the coolant temperature gauge with the wire terminals, tighten the terminal screws with the meter facing up.
(7)	Meter lens	1	
(8)	Indicator lens (Neutral/Turn signal)	1	
(9)	Indicator lens (High beam/Oil temperature/ Turn signal)	1	
(10)	Screw	3	
(11)	Rubber cover retainer	1	
(12)	Rubber cover	1	Align the four holes in the rubber cover with the pins on the meter cover.
(13)	Screw	2	
(14)	Tachometer	1	
(15)	Screw	2	
(16)	Speedometer	1	

Tachometer Inspection

Remove the right side cover (page 2-2) and disconnect the spark unit connector.
Check for continuity between the Yellow/Green wire terminals of the 9P mini connector and spark unit connector.
Continuity exists at all times.
If there is no continuity, replace the main wire harness.

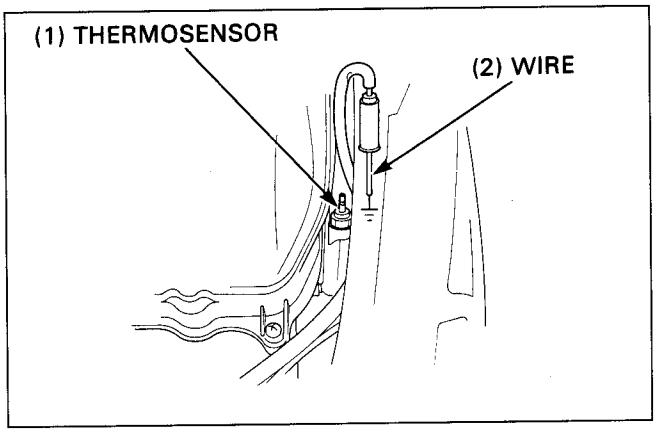
If all checks are O.K., replace the tachometer.



Coolant Temperature Gauge Inspection

Remove the fuel tank (page 2-11).

Disconnect the wire from the thermo sensor and short it to body ground.

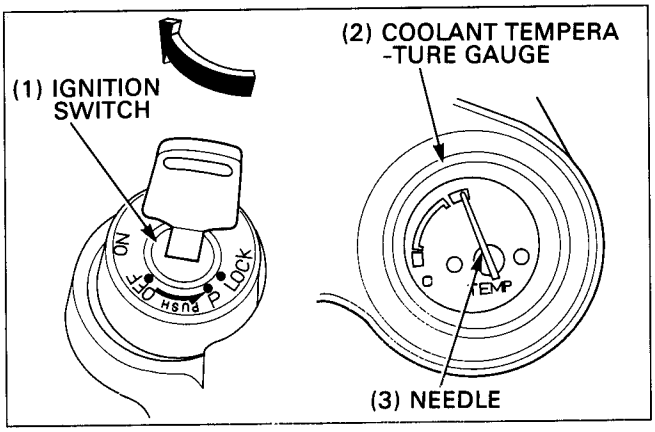


Turn the ignition switch ON. The coolant temperature gauge needle should move all the way to "H".

CAUTION

- **Do not leave the thermo sensor wire grounded for longer than a few seconds or the temperature gauge will be damaged.**

Replace the temperature gauge with a new one if necessary.



Ignition Switch Removal/Installation

Remove the wind screen (page 2-4).

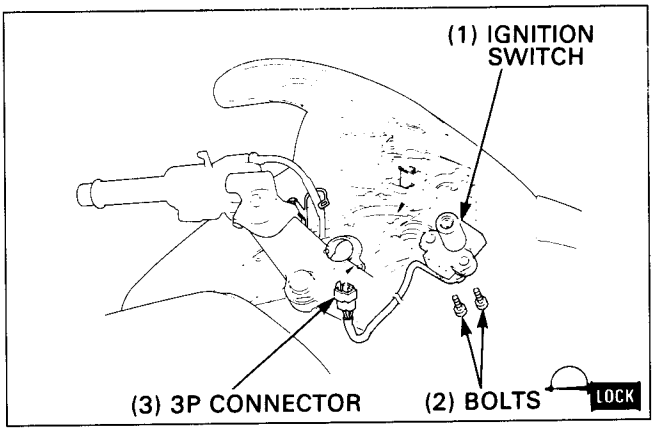
Disconnect the 3P mini connector behind the combination meter.
Release the ignition switch wire from the clamps.
Remove the bolts and ignition switch.

S TOOL

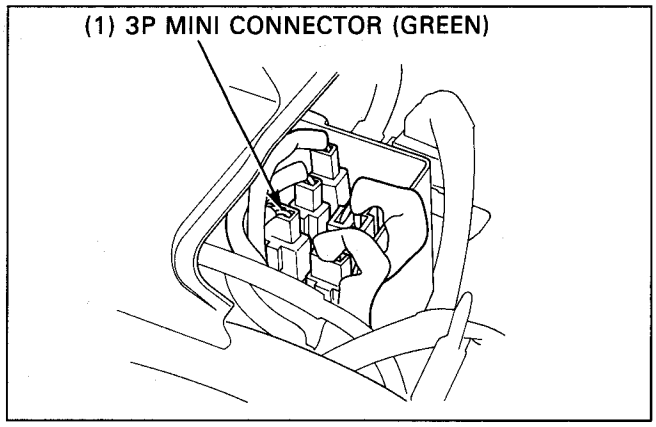
Torx bit (T40) 07703-0010100 or Eguivalent commercially available

Apply a locking agent to the bolt threads and install the ignition switch in the reverse order of removal.

Torque : 25 N · m (2.5 kg-m, 18 ft-lb)



Side Stand Switch

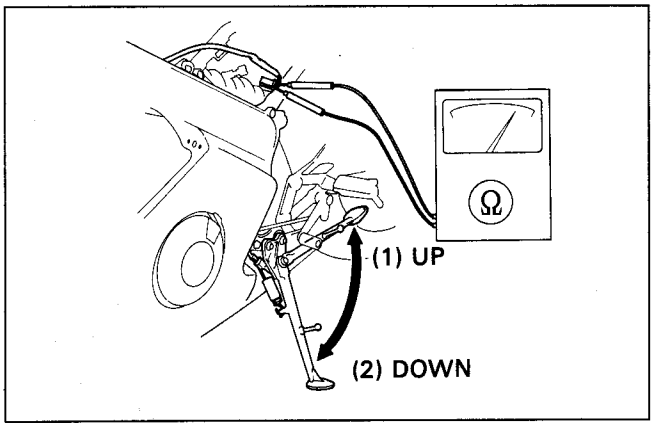


Inspection

Remove the fuel tank (page 2-11).
Disconnect the side stand switch 3P mini connector.

Check for continuity between each terminals as below.
There should be continuity between the ○—○ positions on the chart below.

	Green/White	Yellow/Black	Green
Side stand down		○——	——○
Side stand up	○——	——	——○



Removal/Installation

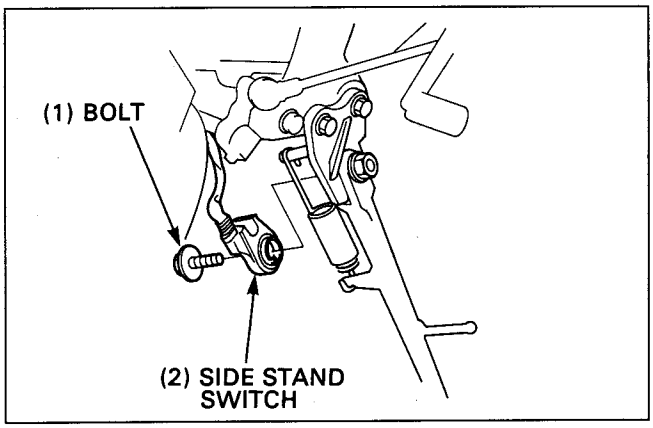
Remove the fuel tank (page 2-11).

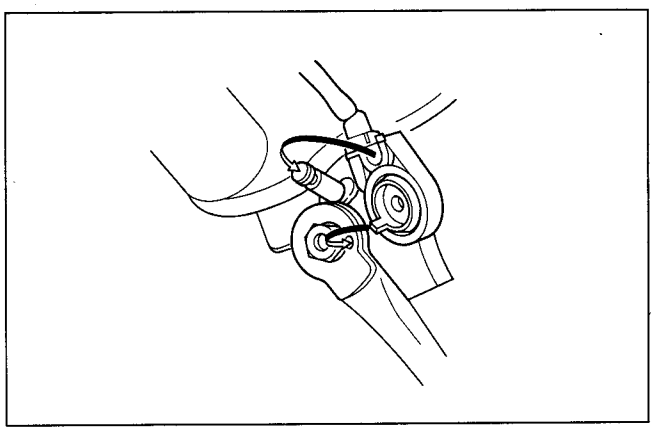
Disconnect the side stand switch 3P mini connector (Green) and remove the bolt and side stand switch.

Install the side stand switch aligning the pin on the switch with the hole in the side stand.
Secure the side stand switch with the bolt.

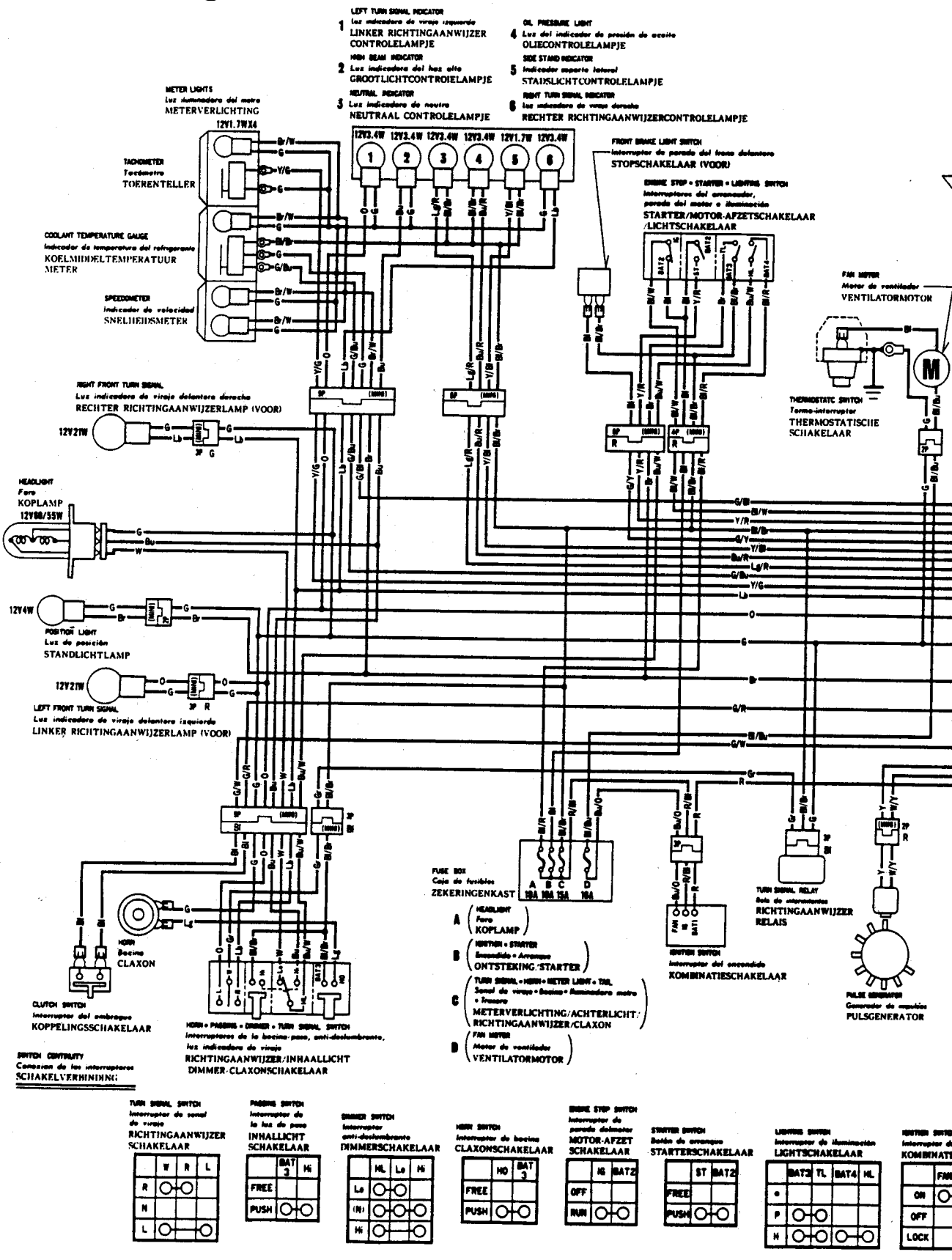
Torque : 10 N · m (1.0kg-m, 7 ft-lb)

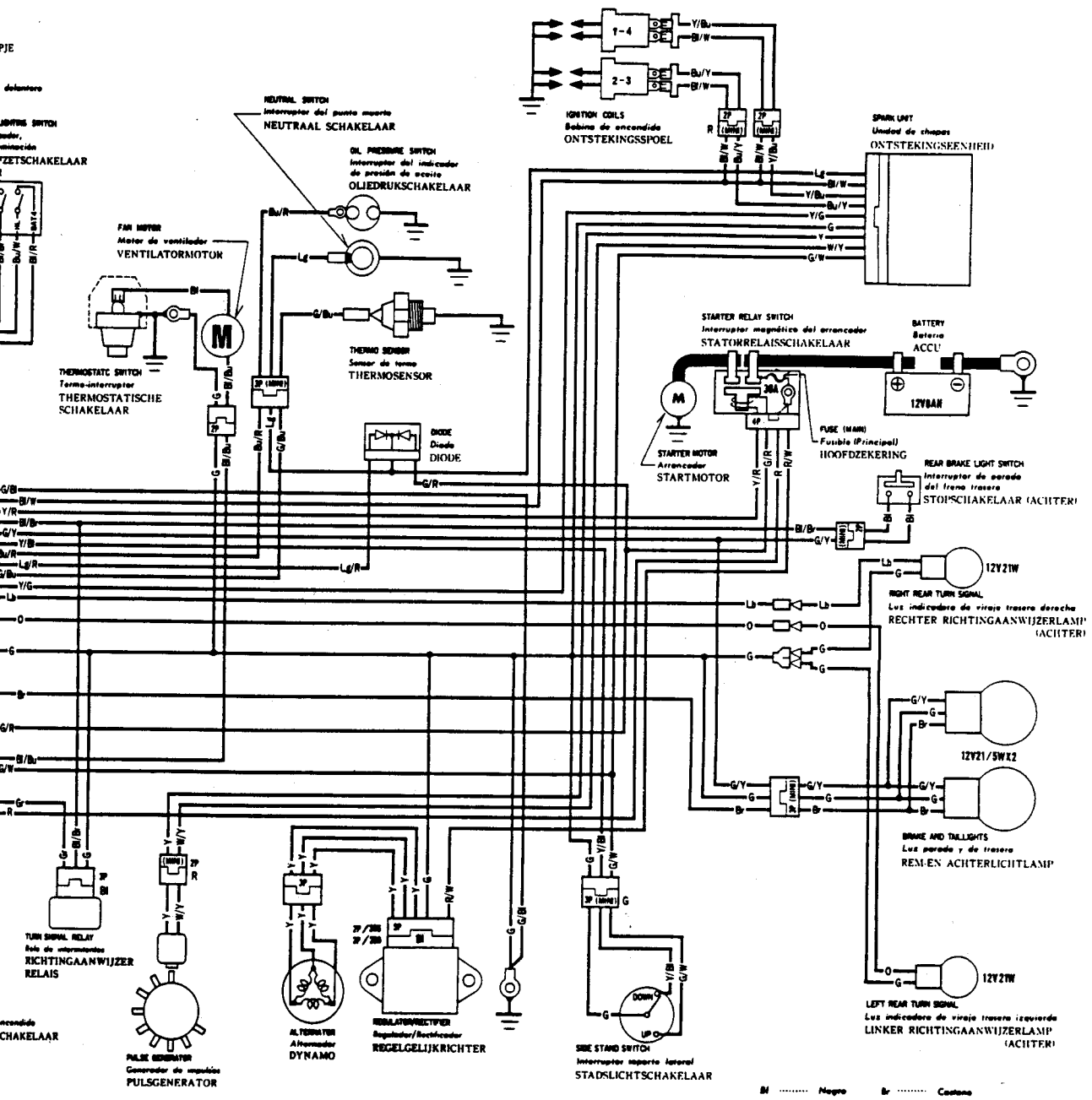
Install the removed parts in the reverse order of removal.





19. Wiring Diagrams (E, F, ED, SP, MX, SW TYPE)





B	BLACK	Br	BROWN	Bl	ZWART	Br	BRUIN
Y	YELLOW	O	ORANGE	Y	GEEL	O	ORANJE
Bu	BLUE	Lb	LIGHT BLUE	Bu	BLAUW	Lb	HEMELSBLAUW
G	GREEN	Lg	LIGHT GREEN	G	GROEN	Lg	LICHTGROEN
R	RED	P	PINK	R	ROOD	P	ROZE
W	WHITE	Gr	GRAY	W	WIT	Gr	GRIJS

B	Negro	Br	Castaño
Y	Amarillo	O	Anaranjado
Bu	Azul	Lb	Azul claro
G	Verde	Lg	Verde claro
R	Rojo	P	Rosado
W	Blanco	Gr	Gris

LIGHTS SWITCH
Interruptor de iluminación
LICHTSCHAKELAAR

	BAT3	TL	BAT4	HL
•				
P	○	○		
H	○	○	○	

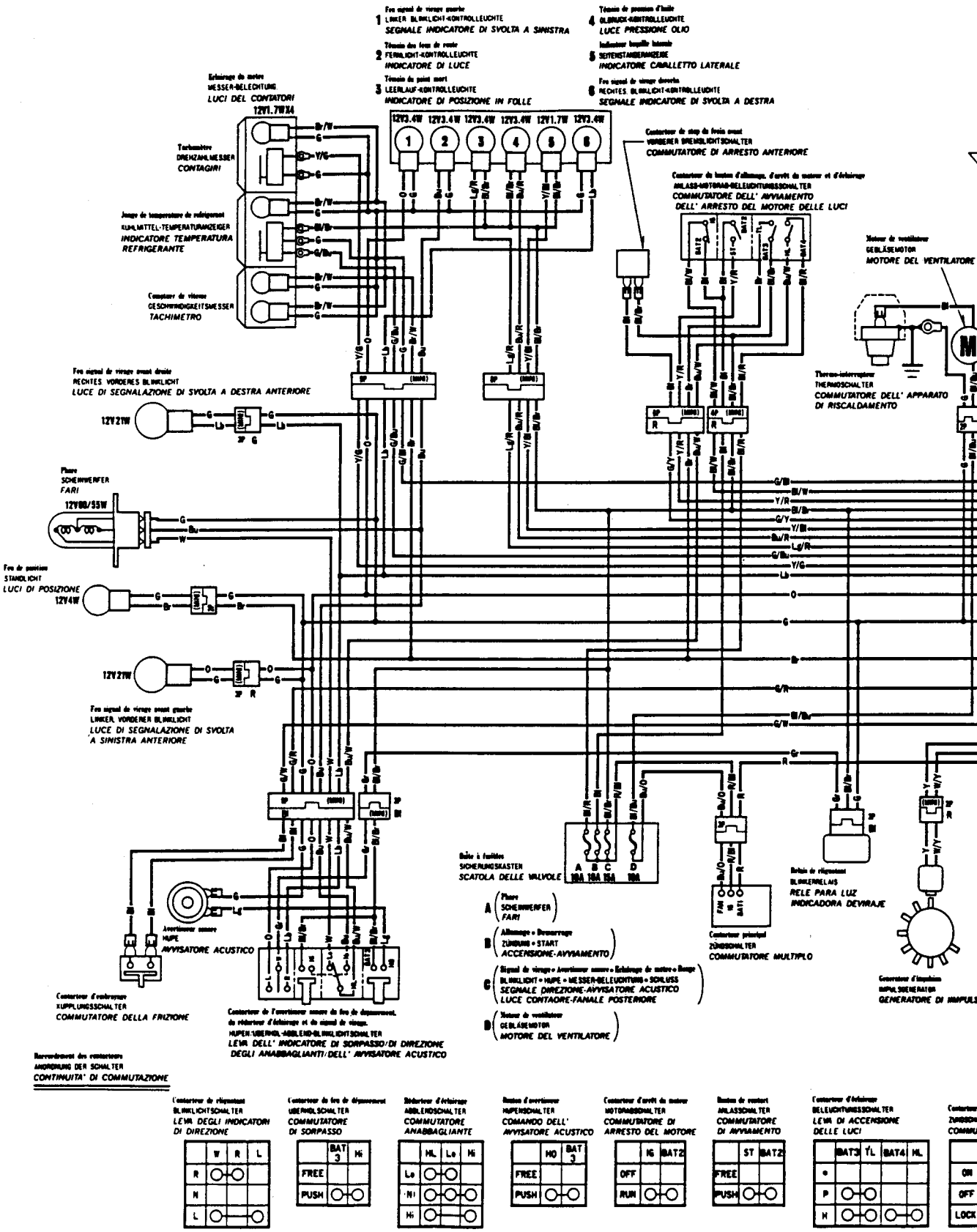
IGNITION SWITCH
Interruptor del encendido
KOMBINATIESCHAKELAAR

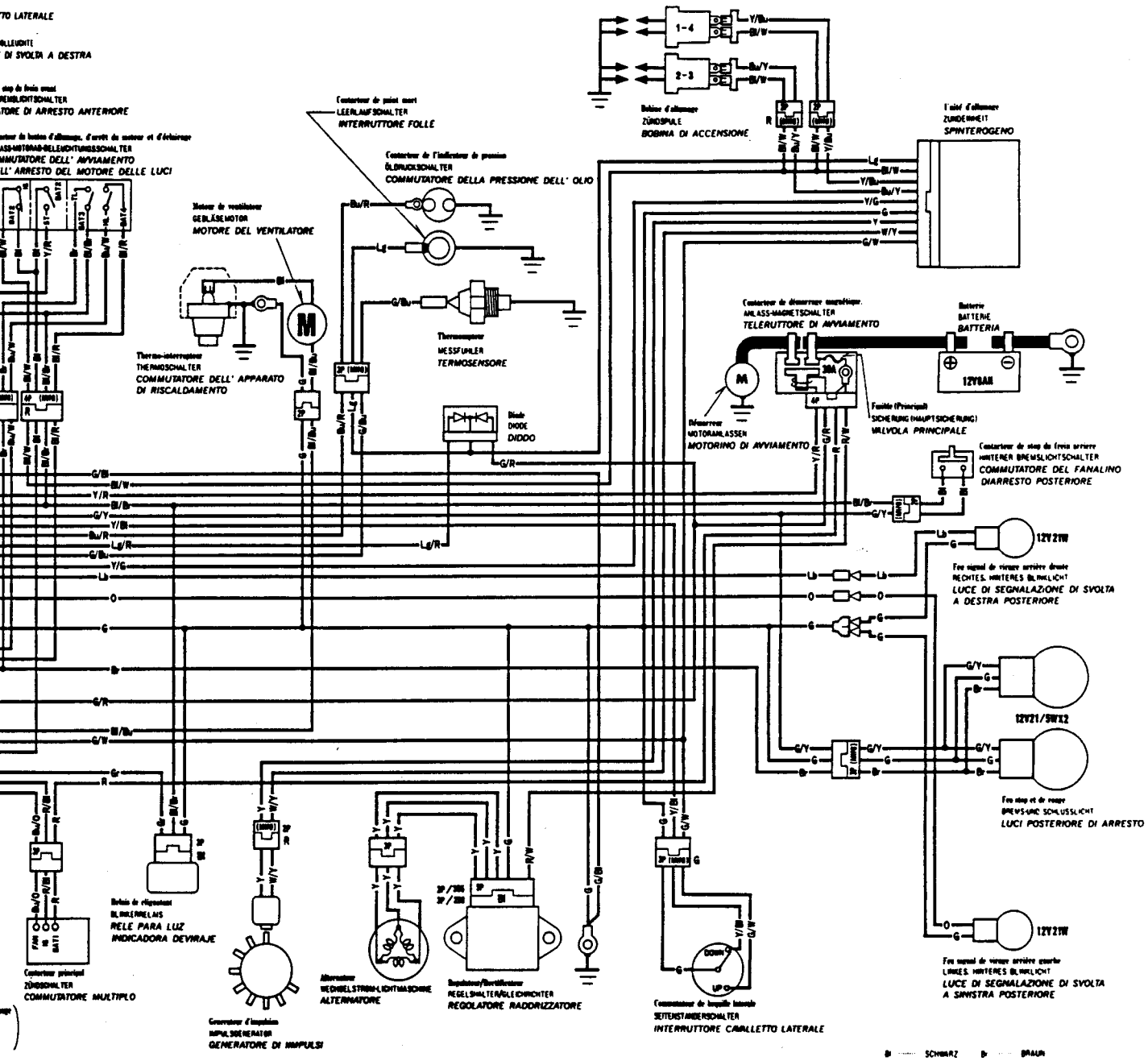
	FAN	IG	BAT1
ON	○	○	○
OFF			
LOCK			

0030Z- MV9 -6000

19

(E, F, ED, SP, MX, SW TYPE)





Bl	SCHWARZ	Br	BRAUN
Y	GELB	O	ORANGE
Bu	BLAU	Lb	HELLBLAU
G	GRUN	Lg	HELLGRUN
R	ROT	P	ROSA
W	WEIß	Gr	GRAU

Bl	NOIR	Br	BRUN	Bl	NERO
Y	JAUNE	O	ORANGE	Y	GIALLO
Bu	BLEU	Lb	BLEU CLAIR	Bu	BLU
G	VERT	Lg	VERT CLAIR	G	VERDE
R	ROUGE	P	ROSE	R	ROSSO
W	BLANC	Gr	GRIS	W	BIANCO

Br	MARRONE
O	ARANCIONE
Lb	AZZURRO
Lg	VERDE CHIARO
P	ROSA
Gr	GRIGIO

Contacteur de démarrage
ANLASSSCHALTER
COMMUTATORE DI AVVIAMENTO

	ST	BAT2
FREE		
PUSH	○	○

Contacteur d'éclairage
BELEUCHTUNGSSCHALTER
LEVA DI ACCENSIONE DELLE LUCI

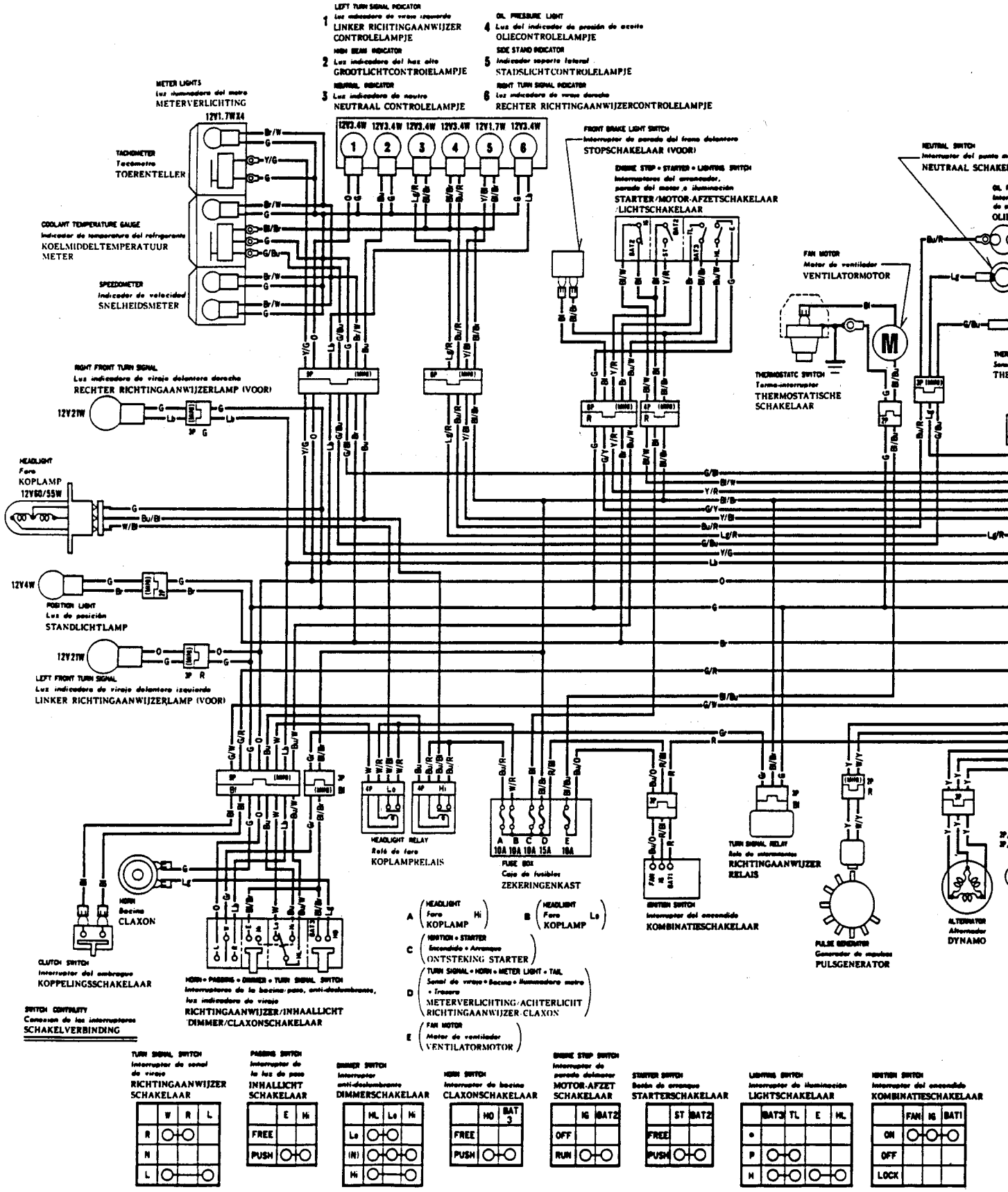
	BAT3	TL	BAT4	HL
•				
P	○			
H	○	○	○	

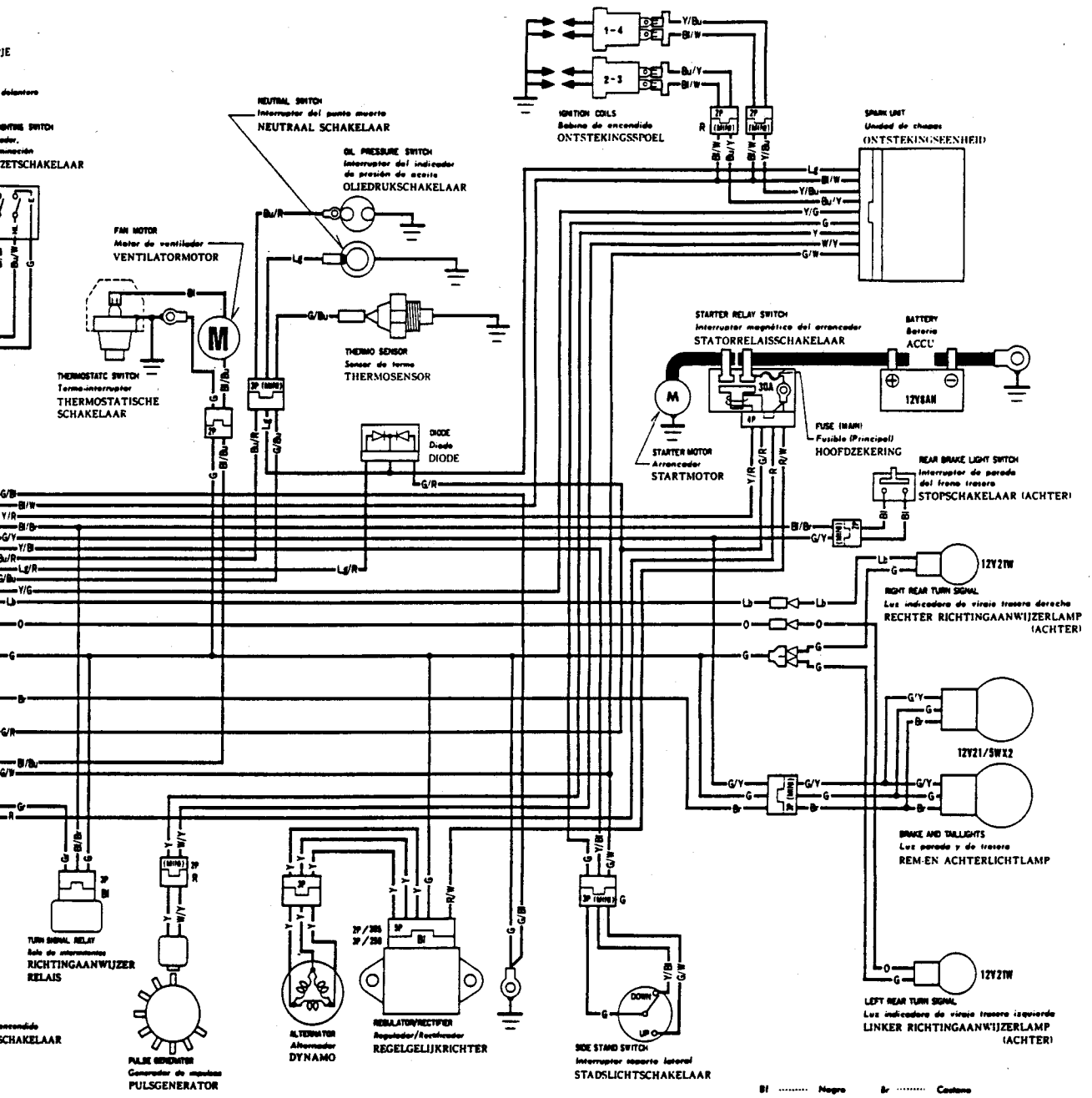
Contacteur principal
ZÜNDSCHALTER
COMMUTATORE MULTIPLO

	FAN	IG	BAT1
ON	○	○	○
OFF			
LOCK			

0030Z- MV9 -6000

(G I , G II , G III TYPE)





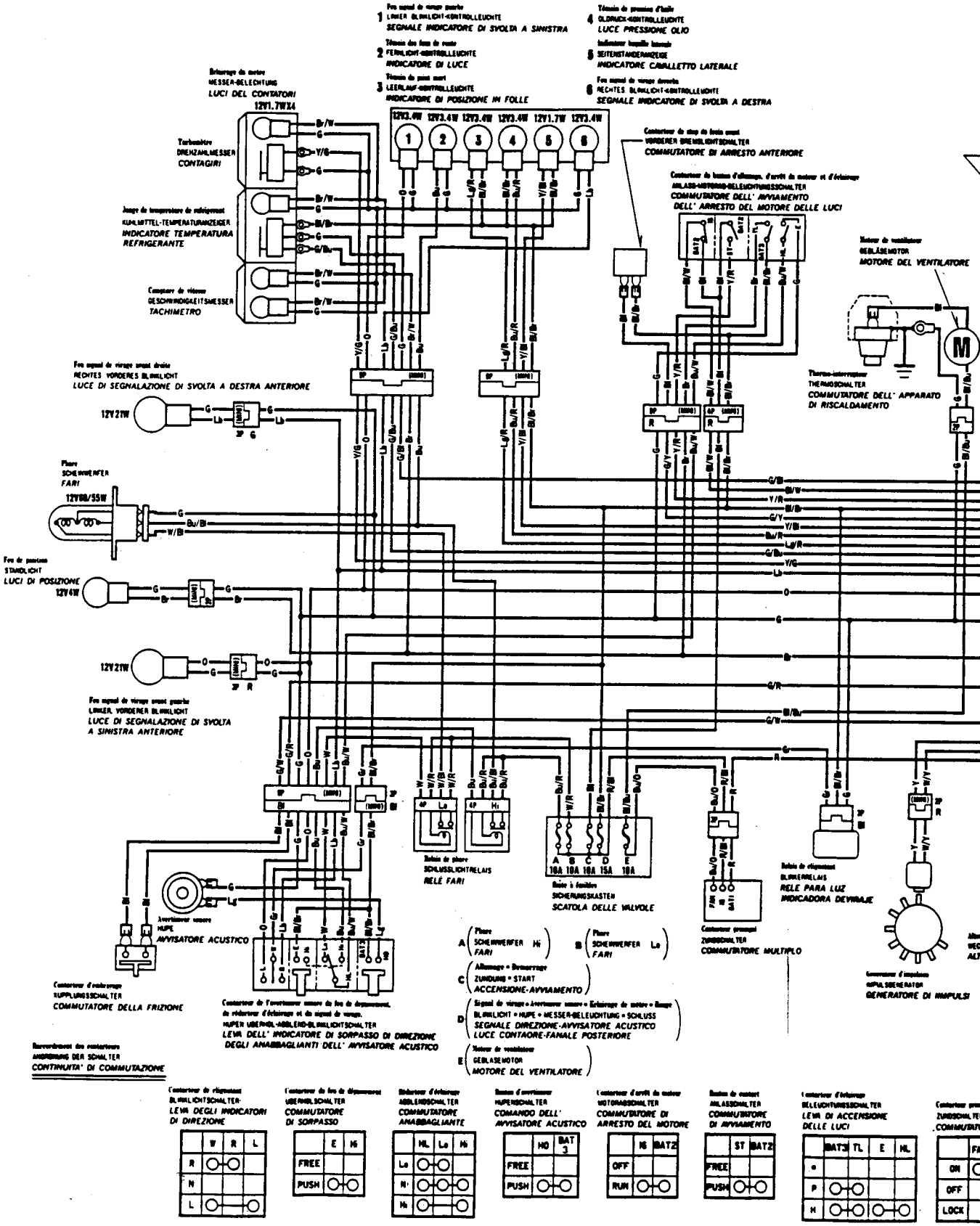
Bl	Negro	Br	Castaño
Y	Amarillo	O	Anaranjado
Bu	Azul	Lb	Azul claro
G	Verde	Lg	Verde claro
R	Rojo	P	Rosado
W	Blanco	Gr	Gris

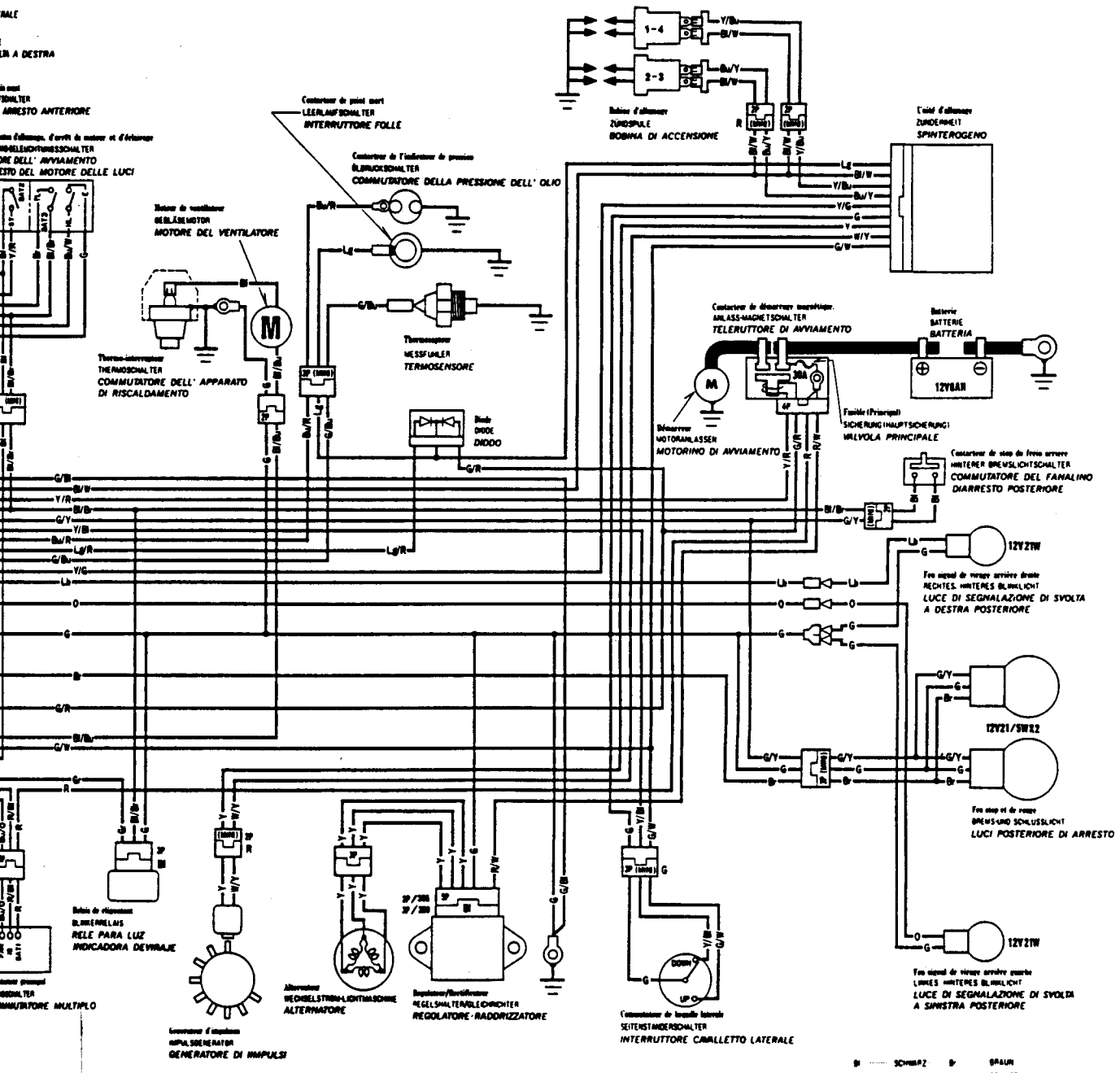
Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Bl	ZWART	Br	BRUIN
Y	GEEL	O	ORANJE
Bu	BLAUW	Lb	HEMELSBLAUW
G	GROEN	Lg	LICHTGROEN
R	ROOD	P	ROZE
W	WIT	Gr	GRIJS

0030Z- MV9 -6100

(GI, GII, GIII TYPE)





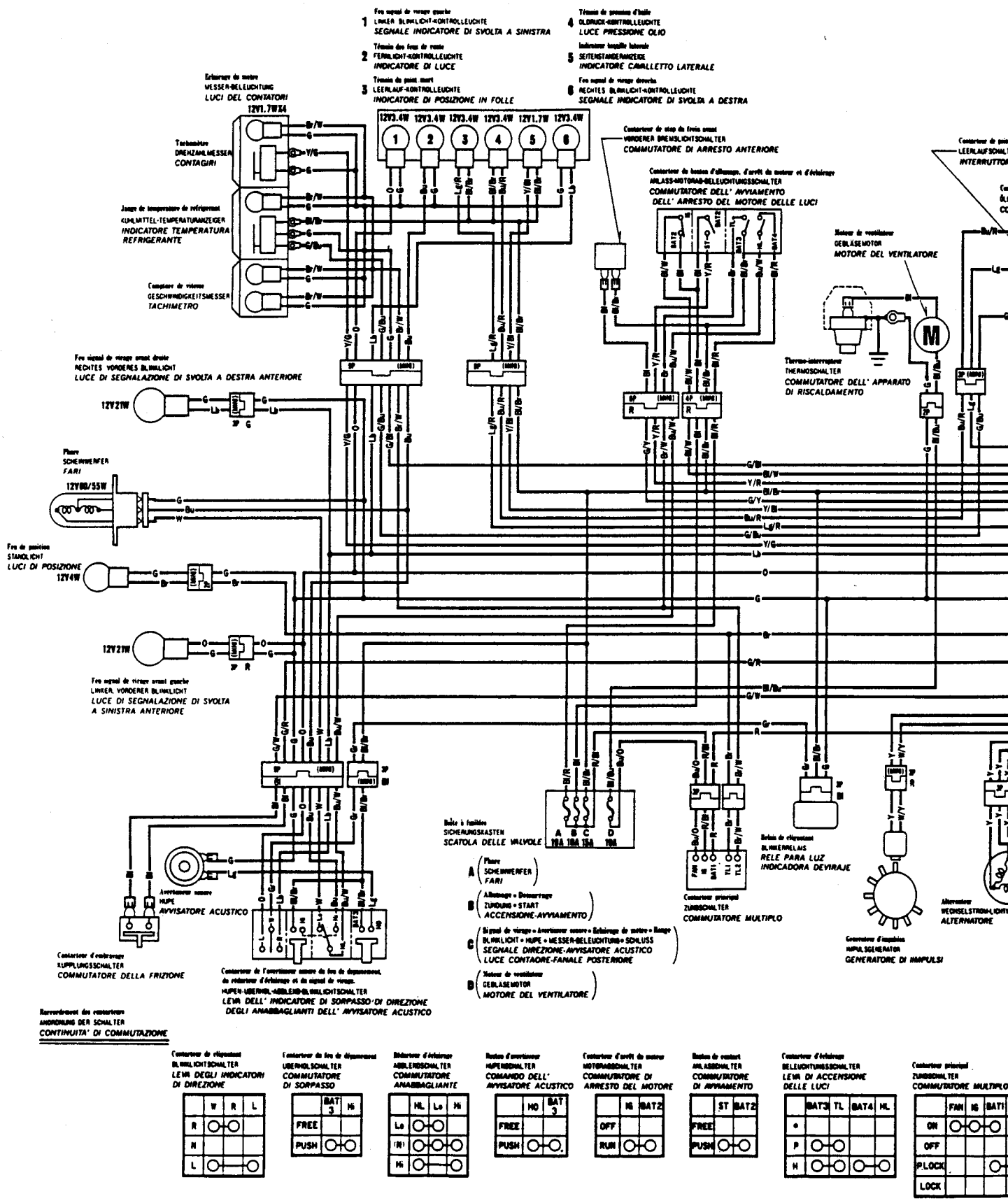
	BAT1	TL	E	HL
•				
P	○-○			
N	○-○		○-○	

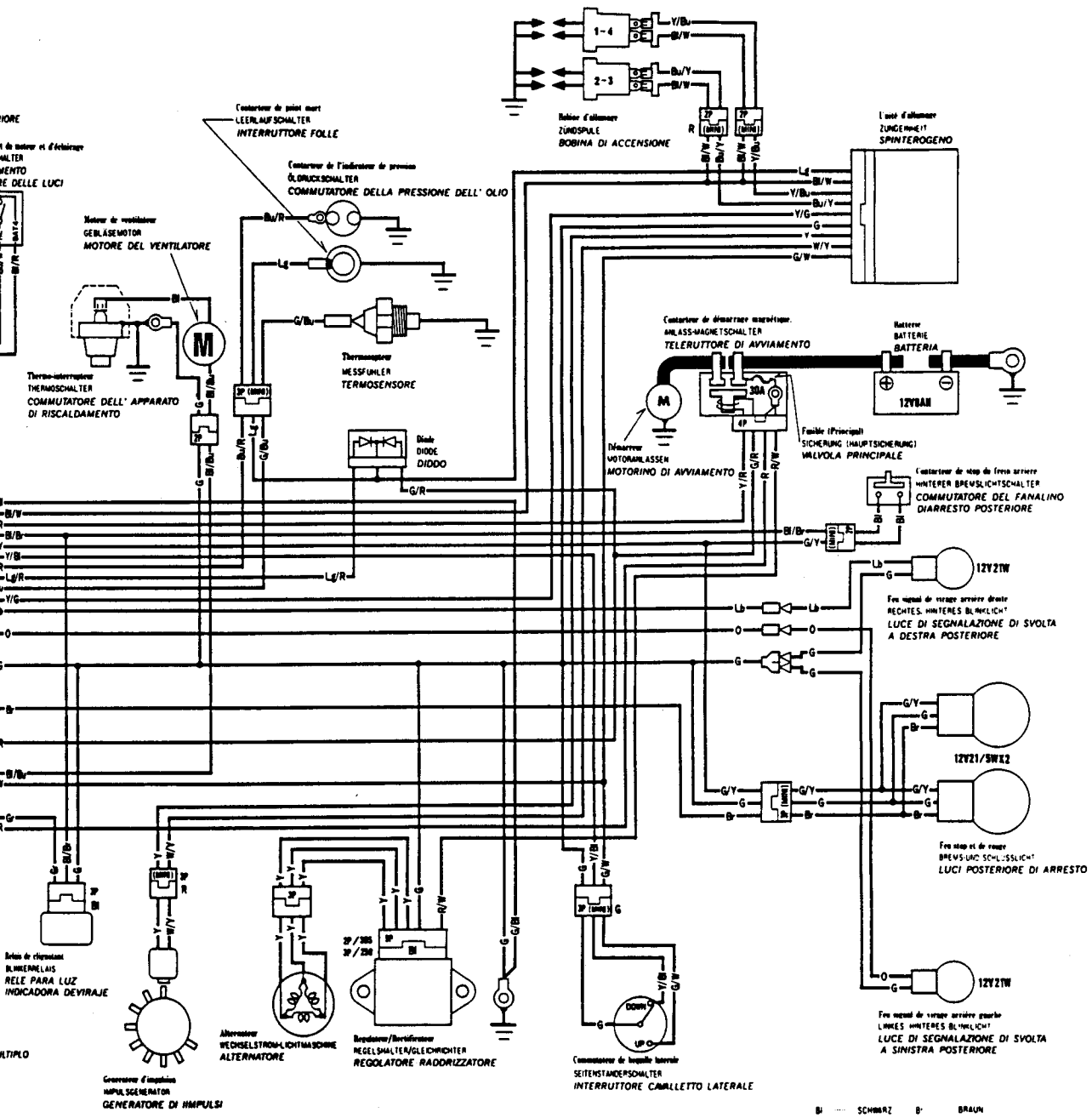
	FAN	IG	BAT1
ON	○	○	○
OFF			
LOCK			

	ST	BAT2
FREE		
PUSH	○	○

0030Z- MV9 -6100

(AR TYPE)


1 SEGNALE INDICATORE DI SVOLTA A SINISTRA
2 INDICATORE DI LUCE
3 INDICATORE DI POSIZIONE IN FOLLE
4 LUCE PRESSIONE OLIO
5 INDICATORE CAVALLETTO LATERALE
6 SEGNALE INDICATORE DI SVOLTA A DESTRA
LUCI DEL CONTATORI
12V1.7W X4
12V3.4W 12V3.4W 12V3.4W 12V3.4W 12V1.7W 12V3.4W
CONTAGIRI
INDICATORE TEMPERATURA REFRIGERANTE
TACHIMETRO
COMMUTATORE DI ARRESTO ANTERIORE
COMMUTATORE DELL' AVVIAMENTO DELL' ARRESTO DEL MOTORE DELLE LUCI
MOTORE DEL VENTILATORE
COMMUTATORE DELL' APPARATO DI RISCALDAMENTO
LUCE DI SEGNALAZIONE DI SVOLTA A DESTRA ANTERIORE
12V21W
FARI
12V60/55W
LUCI DI POSIZIONE
12V4W
LUCE DI SEGNALAZIONE DI SVOLTA A SINISTRA ANTERIORE
SCATOLA DELLE VALVOLE
A (FARI)
B (ACCENSIONE-AVVIAMENTO)
C (SEGNALE DIREZIONE-AVVISATORE ACUSTICO / LUCE CONTAORE-FANALE POSTERIORE)
D (MOTORE DEL VENTILATORE)
AVVISATORE ACUSTICO
COMMUTATORE MULTIPLO
RELE PARA LUZ INDICADORA DEVIRAJE
GENERATORE DI IMPULSI
COMMUTATORE DELLA FRIZIONE
LEVA DELL' INDICATORE DI SORPASSO DI DIREZIONE DEGLI ANABBAGLIANTI DELL' AVVISATORE ACUSTICO
CONTINUITA' DI COMMUTAZIONE
LEVA DEGLI INDICATORI DI DIREZIONE
COMMUTATORE DI SORPASSO
COMMUTATORE ANABBAGLIANTE
COMANDO DELL' AVVISATORE ACUSTICO
COMMUTATORE DI ARRESTO DEL MOTORE
COMMUTATORE DI AVVIAMENTO
LEVA DI ACCENSIONE DELLE LUCI
COMMUTATORE MULTIPLO
ON
OFF
P.LOCK
LOCK



Bl	SCHWARZ	Br	BRAUN
Y	GELB	O	ORANGE
Bu	BLAU	Lb	HELLBLAU
G	GRÜN	Lg	HELLGRÜN
R	ROT	P	ROSA
W	WEIß	Gr	GRAU

Bl	NOIR	Br	BRUN
Y	JAUNE	O	ORANGE
Bu	BLEU	Lb	BLEU CLAIR
G	VERT	Lg	VERT CLAIR
R	ROUGE	P	ROSE
W	BLANC	Gr	GRIS

Bl	NERO	Br	MARRONE
Y	GIALLO	O	ARANCIONE
Bu	BLU	Lb	AZZURRO
G	VERDE	Lg	VERDE CHIARO
R	ROSSO	P	ROSA
W	BIANCO	Gr	GRIGIO

Contacteur d'éclairage
BELEUCHTUNGSSCHALTER
LEVA DI ACCENSIONE DELLE LUCI

	BAT3	TL	BAT4	HL
•				
P	○	○		
H	○	○	○	○

Contacteur principal
ZÜNDSCHALTER
COMMUTATORE MULTIPLO

	FAN	IG	BAT1	TL1	TL2
ON	○	○	○	○	○
OFF					
PLOCK				○	○
LOCK					

0030Z- MV9 -7800

20. Troubleshooting

Engine Does Not Start or is Hard to Start	**20-1**	**Poor Performance at High Speeds**	**20-4**
Engine Lacks Power	**20-2**	**Poor Handling**	**20-4**
Poor Performance at Low And Idle Speeds	**20-3**		

Engine Does Not Start or is Hard to Start

1. Check fuel flow to carburetor — Not Reaching Carburetor →
   - No fuel in tank
   - Sticking float valve
   - Clogged float valve
   - Clogged fuel tank vent hole

   Reaching Carburetor ↓

2. Perform a spark test — Weak or No Spark → Go to page 16-3.

   Good spark ↓

3. Remove and inspect spark plug — Wet Plug →
   - Fuel-air mixture too rich
   - Carburetor flooded
   - Carburetor choke excessively closed
   - Cylinder flooded
   - Air cleaner dirty

   Spark jump ↓

4. Test cylinder compression — Low Compression →
   - Valve clearance too small
   - Valve stuck open
   - Worn cylinder and piston rings
   - Damaged cylinder head gasket
   - Seized valve
   - Improper valve timing
   - Improper valve and seat contact

   Compression normal ↓

5. Start by following normal procedure — Engine starts but stops →
   - Choke excessively closed
   - Carburetor pilot screw excessively closed
   - Air leaking past intake pipe
   - Improper ignition timing (Faulty spark unit or pulse generator)
   - Fuel contaminated

   Engine does not fire ↓

6. Start with choke applied

Engine Lacks Power

1. Raise wheels off ground and spin by hand — Wheel dose not spin freely →
   - Brake dragging
   - Worn or damaged wheel bearings
   - Drive chain too tight
   - Axle nut escessively tight

   Wheel spins freely ↓

2. Check tire pressure — Pressure Low →
   - Punctured tire
   - Faulty tire valve

   Pressure Normal ↓

3. Check clutch operation — Clutch Slips →
   - Faulty clutch lifter system
   - Worn clutch disc/plate
   - Warped clutch disc/plate
   - Weak clutch spring

   Normal ↓

4. Accelerate lightly — Engine speed does not increase →
   - Carburetor choke closed
   - Clogged air cleaner
   - Restricted fuel flow
   - Clogged muffler
   - Clogged fuel tank cap vent hole

   Engine speed increases ↓

5. Check ignition timing — Incorrect →
   - Faulty spark unit
   - Faulty pulse generator

   Correct ↓

6. Check valve clearance — Incorrect →
   - Improper valve adjustment
   - Worn valve seat

   Correct ↓

7. Test cylinder compression — Too Low →
   - Valve stuck open
   - Worn cylinder and piston rings
   - leaking head gasket
   - Improper valve timing
   - Seized valve
   - Improper valve and seat contact

   Normal ↓

8. Check carburetor for clogging — Clogged →
   - Carburetor not serviced frequently enough

   Not Clogged ↓

9. Remove the spark plug — Fouled or Discolored →
   - Plugs not serviced frequently enough
   - Use of plug with improper heat range

   Not Fouled or Discolored ↓

10. Remove oil level gauge and check oil level — Oil Level Incorrect →
    - Oil level too high
    - Oil level too low
    - Contaminated oil

    Correct ↓

11. Remove the cylinder head cover and inspect for lubrication/wear — Valve train not lubricated properly →
    - Clogged oil passage
    - Clogged oil control oriffice
    - Contaminated oil
    - Faulty oil pump

    Valve train lubricated properly ↓

12. Check if engine overheats — Overheated →
    - Coolant level low
    - Fan motor not working (faulty fan motor switch)
    - Thermostat stuck closed
    - Excessive carbon build-up on the piston head or combustion chamber
    - Use of improper quality fuel
    - Clutch slipping
    - Fuel-air mixture too lean

    Not Overheated ↓

13. Accelerate or run at high speed — Engine Knocks →
    - Worn piston and cylinder
    - Fuel-air mixture too lean
    - Use of improper quality fuel
    - Excessive carbon build-up on the piston head or combustion chamber
    - Ignition timing too advanced (Faulty spark unit or pulse generator)

Poor Performance at Low and Idle Speeds

1. Check ignition timing and valve clearance — Incorrect →
    - Improper valve clearance
    - Improper ignition timing (Faulty spark unit or pulse generator)

    Correct ↓

2. Check carburetor pilot screw adjustment — Incorrect →
    - Fuel-air mixture too lean
    - Fuel-air mixture too rich

    Correct ↓

3. Check if air is leaking past intake pipe — Leaking →
    - Deteriorated intake pipe O-ring
    - Loose carburetor
    - Damaged intake pipe

    Not Leaking ↓

4. Perform a spark test — Weak or Intermittent Spark →
    - Faulty, carbon or wet fouled spark plug
    - Go to page 16-3

Poor Performance at High Speeds

1. Check ignition timing and valve clearance — Incorrect →
   - Improper valve clearance
   - Faulty spark unit
   - Faulty pulse generator

   Correct ↓

2. Disconnect fuel tube at carburetor — Fuel flow restricted →
   - Lack of fuel in tank
   - Clogged fuel line
   - Clogged fuel tank cap vent hole
   - Clogged fuel valve
   - Clogged fuel strainer

   Fuel flows freely ↓

3. Remove the carburetor and check for clogged jet(s) — Clogged →
   - Clogged jets

   Not clogged ↓

4. Check valve timing — Incorrect →
   - Cam sprocket not installed properly

   Correct ↓

5. Check valve spring — Damaged →
   - Faulty valve spring

Poor Handling → Check tire pressure

1. If steering is heavy →
   - Bearing adjustment nut too tight
   - Damaged steering head bearing
   - Bent steering stem

2. If either wheel is wobbling →
   - Excessive wheel bearing play
   - Bent rim
   - Improperly installed wheel hub or wheel
   - Damaged swingarm pivot bearing
   - Distorted frame
   - Bent axle

3. If the vehicle pulls to one side →
   - Front brake caliper dragging one side
   - Front and rear wheels not aligned
   - Bent fork pipe(s)
   - Bent swingarm
   - Distorted frame

Index

Air Cleaner Case Removal/Installation 6-3
Air Cleaner 3-5
Air Injection Control Valve Removal/ Installation (SW,AR Type Only) 6-2
Alternator Removal/Installation 15-8
Battery Removal/Installation 15-4
Cable & Harness Routing 1-20
Camshaft Removal/ Installation 8-2
Carburetor Combination 6-10
Carburetor Disassembly/ Assembly 6-8
Carburetor Removal/ Installation 6-4
Carburetor Separation 6-6
Carburetor Synchronization 3-9
Charging Coil Inspection 15-11
Charging System Inspection 15-6
Circuit Diagram Charging System/ Alternator. 15-2
Circuit Diagram Electric Starter 17-2
Circuit Diagram Ignition System 16-2
Clutch Installation 9-12
Clutch Removal 9-4
Combination Meter Bulb Replacement 18-4
Combination Meter Disassembly/ Assembly 18-6
Combination Meter Removal/ Installation 18-5
Coolant Draining 5-3
Coolant Temperature Gauge Inspection 18-8
Countershaft Disassembly 11-10
Crankcase Assembly 10-6
Crankcase Separation 10-2
Crankshaft Bearing Replacement 11-4
Crankshaft Removal/ Installation 11-2
Cylinder Head Disassembly/ Assembly 8-8
Cylinder Head Removal/ Installation 8-7
Engine Removal/ Installation 7-2
Exhaust System Removal/ Installation 2-10
Flywheel Removal/Installation 15-9
Fork Assembly 12-12
Fork Disassembly 12-10
Fork Removal/ Installation 12-8
Front Brake Caliper Disassembly/ Assembly 14-6
Front Brake Caliper Removal/ Installation 14-5
Front Cowl Disassembly/ Assembly 2-6
Front Cowl Removal/ Installation 2-4
Front Master Cylinder Disassembly/ Assembly 14-4
Front Master Cylinder Removal/ Installation 14-3
Front Wheel Disassembly/Assembly 12-6
Front Wheel Removal/Installation 12-4
Fuel Tank Removal/ Installation 2-11
Gearshift Linkage Removal/ Installation 9-8
General Safety 1-1
Headlight Bulb Replacement 18-3
Ignition Coil Inspection 16-7
Ignition Coil Removal/ Installation 16-8
Ignition Switch Removal/ Installation 18-8
Ignition System Inspection 16-5
Ignition Timing 16-9
Left Handlebar Removal/ Installation 12-3
Lubrication & Seal Points 1-18
Lubrication System Diagram 4-2
Mainshaft Disassembly/ Assembly 11-8
Maintenance Schedule 3-4
Model Identification 1-3
Oil Cooler Disassembly/Assembly 4-7
Oil Cooler Removal/ Installation 4-6
Oil Pan Removal/ Installation 4-3
Oil Pump Disassembly/ Assembly 4-5
Oil Pump Removal/Installation 4-4
Pilot Screw Adjustment 6-13
Piston/ Connecting Rod Removal/ Installation. 10-4
Pulse Generator Rotor Cover Removal/ Installation 16-10
Pulse Generator 16-9
Radiator Disassembly/ Assembly 5-6
Radiator Removal/ Installation 5-5
Rear Brake Caliper Disassembly/ Assembly 14-12
Rear Brake Caliper Removal/ Installation 14-11
Rear Brake Pad Replacement 14-2
Rear Fender A Removal/ Installation 2-8
Rear Fender B Removal/ Installation 2-7
Rear Master Cylinder Disassembly/ Assembly. 14-10
Rear Master Cylinder Removal/ Installation 14-8
Rear Wheel Disassembly/Assembly 13-3
Rear Wheel/Removal/Installation 13-2
Regurator/ Rectifier 15-7
Reserve Tank Removal/ Installation 5-8
Right Crankcase Cover Removal/ Installation .. 9-2
Right Handlebar Removal/ Installation 12-2
Seat Removal/ Installation 2-2
Service Access Guide 3-2
Service Information Brake System 14-1
- Charging System/ Alternator 15-1
- Clutch/ Gearshift Linkage 9-1
- Cooling System 5-1
- Crankcase/ Cylinder/ Piston 10-1
- Crankshaft/ Transmission 11-1
- Cyinder Head 8-1
- Electric Starter 17-1
- Engine Removal/ Installation 7-1
- Frame/ Body Panels/ Exhaust System .. 2-1
- Front Wheel/ Suspension/ Steering 12-1
- Fuel System 6-1
- Ignition System 16-1
- Lights/ Meters/ Switches 18-1
- Lubrication System 4-1
- Maintenance 3-1
- Rear Wheel/ Suspension 3-1

Shift Drum/ Shift Forks Removal/ Installation .. 9-10
Shock Absorber Disassembly/ Assembly 13-5
Shock Absorber Removal/ Installation 13-4
Side Cover Removal/ Installation 2-2
Side Fairing Removal/ Installation 2-3
Side Stand 3-10
Side Stand Switch 18-9
Spark Plug 3-5
Specifications 1-4
Starter Motor Disassembly/ Assembly 17-6
Starter Motor Removal/ Installation 17-5
Steering Stem Removal/ Installation 12-14
Suspension Linkage Disassembly/ Assembly ... 13-8
Suspension Linkage Removal/ Installation 13-7
Swingarm Disassembly/ Assembly 13-12
Swingarm Removal/ Installation 13-10
System Flow Pattern 5-2
System Location Charging System/ Alternator 15-2
System Location Electric Starter 17-2

System Location Ignition System..... 16-2
System Location Lights/Meters/Switches..... 18-2
Tachometer Inspection..... 18-8
Tail Cowl Removal/Installiaton 2-7
Thermostart Removal/ Installation..... 5-4
Tools..... 1-17
Torque Values..... 1-14
Transmission Removal/ Installation..... 11-6
Troubleshooting Brake System..... 14-1
Charging System/ Alternator..... 15-3
Clutch/Gearshift Linkage 9-1
Cooling System..... 5-1
Crankcase/Cylinder/Piston..... 10-1
Crankshaft/ Transmission..... 11-1
Cyinder Head..... 8-1
Electric Starter..... 17-3
Engine Does Not Start or is Head to Start..... 20-1
Engine Lacks Power..... 20-2
Frame/ Body Panels/ Exhaust System.. 2-1
Front Wheel/ Suspension/ Steering..... 12-1
Fuel System..... 6-2
Ignition System..... 16-3
Lubrication System..... 4-1
Poor Handling..... 20-4
Poor Performance at High Speeds..... 20-4
Poor Performance at Low And Idle Speeds..... 20-3
Rear Wheel/ Suspension..... 13-1
Valve Clearance..... 3-5
Water Pump Disassembly/Assembly..... 5-7
Wiring Diagram..... 19-1



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