YAMAHA 2007

YZ85W1
YZ85(W)
YZ85LW(W)

SERVICE MANUAL

5PA-28197-E0

EAS00000

YZ85W1/YZ85 (W)/YZ85LW (W)
SERVICE MANUAL

EAS00002

NOTICE

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles.
Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.
Yamaha Motor Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE:

Designs and specifications are subject to change without notice.

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IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING Failure to follow WARNING instructions could result in severe injury or death to the vehicle operator, a bystander or a person checking or repairing the vehicle.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the vehicle.

NOTE: A NOTE provides key information to make procedures easier or clearer.

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HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter.
Refer to “SYMBOLS”.

② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 (“PERIODIC CHECKS AND ADJUSTMENTS”), where the sub-section title(s) appears.

③ Sub-section titles appear in smaller print than the section title.

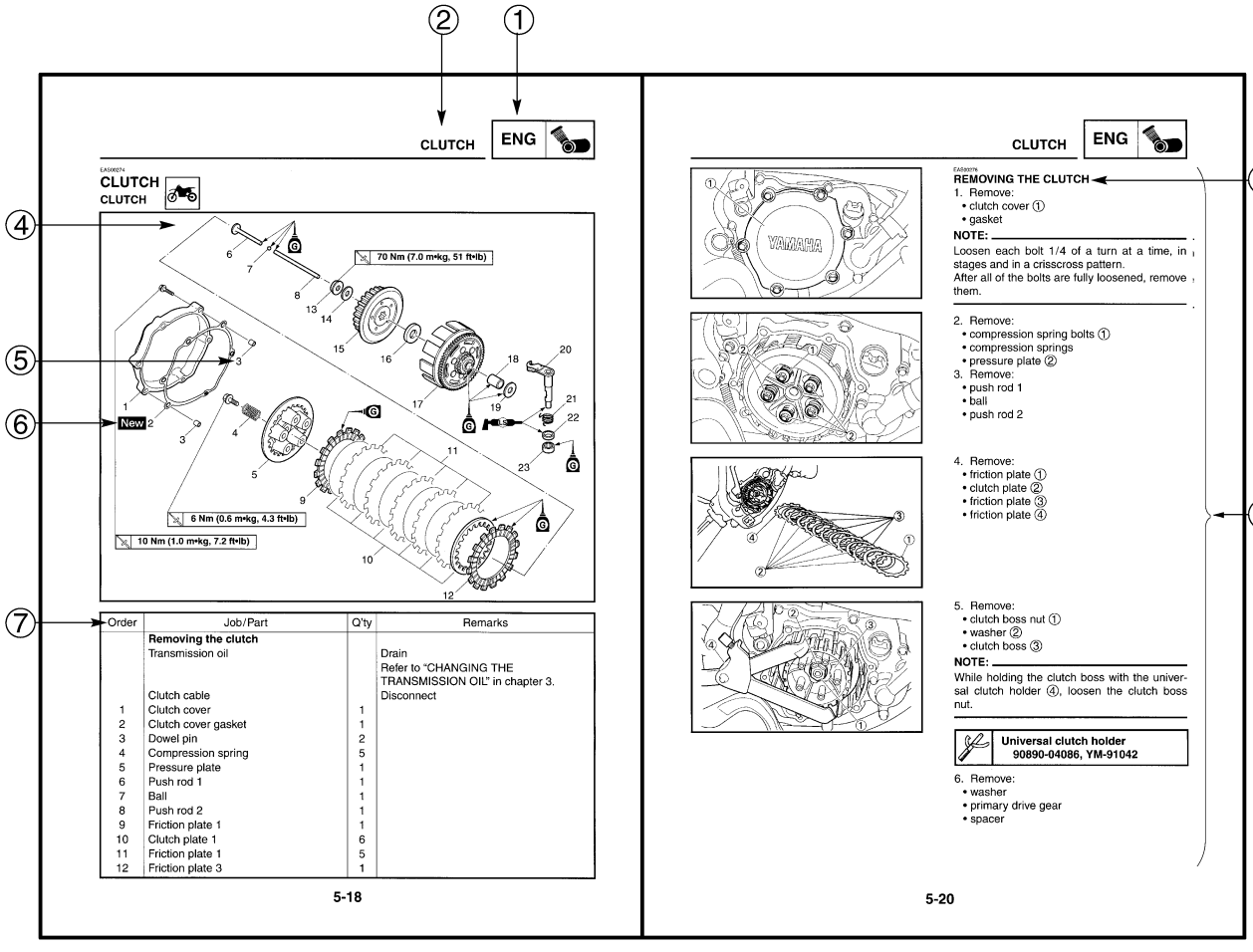
④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

⑥ Symbols indicate parts to be lubricated or replaced.
Refer to “SYMBOLS”.

⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.



Order	Job/Part	Q'ty	Remarks
	Removing the clutch		
	Transmission oil		Drain Refer to “CHANGING THE TRANSMISSION OIL” in chapter 3.
	Clutch cable		Disconnect
1	Clutch cover	1	
2	Clutch cover gasket	1	
3	Dowel pin	2	
4	Compression spring	5	
5	Pressure plate	1	
6	Push rod 1	1	
7	Ball	1	
8	Push rod 2	1	
9	Friction plate 1	1	
10	Clutch plate 1	6	
11	Friction plate 1	5	
12	Friction plate 3	1	

1. Remove:
   - clutch cover ①
   - gasket

NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern.
After all of the bolts are fully loosened, remove them.

2. Remove:
   - compression spring bolts ①
   - compression springs
   - pressure plate ②
3. Remove:
   - push rod 1
   - ball
   - push rod 2

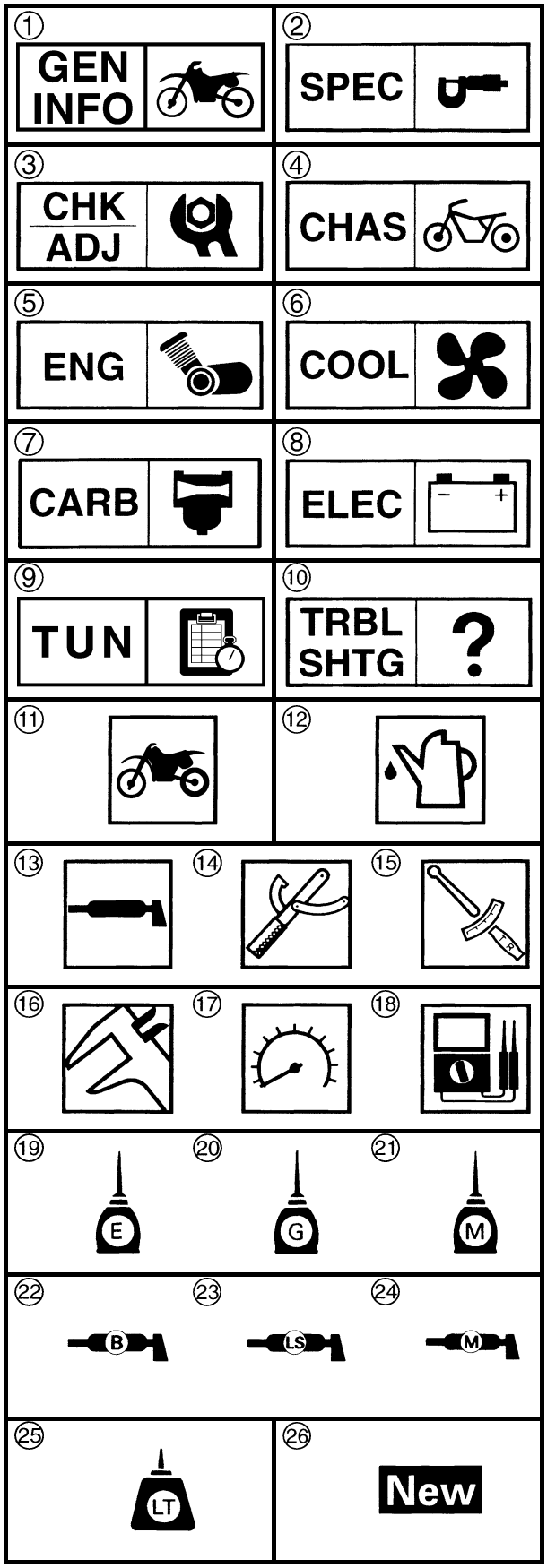
4. Remove:
   - friction plate ①
   - clutch plate ②
   - friction plate ③
   - friction plate ④

5. Remove:
   - clutch boss nut ①
   - washer ②
   - clutch boss ③

NOTE:
While holding the clutch boss with the universal clutch holder ④, loosen the clutch boss nut.

Universal clutch holder
90890-04086, YM-91042

6. Remove:
   - washer
   - primary drive gear
   - spacer



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SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑩ indicate the subject of each chapter.

① General information
② Specifications
③ Periodic checks and adjustments
④ Chassis
⑤ Engine
⑥ Cooling system
⑦ Carburetor(s)
⑧ Electrical system
⑨ Tuning
⑩ Troubleshooting

Symbols ⑪ to ⑱ indicate the following.

⑪ Serviceable with engine mounted
⑫ Filling fluid
⑬ Lubricant
⑭ Special tool
⑮ Tightening torque
⑯ Wear limit, clearance
⑰ Engine speed
⑱ Electrical data

Symbols ⑲ to ㉔ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑲ Engine oil
⑳ Gear oil
㉑ Molybdenum-disulfide oil
㉒ Wheel-bearing grease
㉓ Lithium-soap- based grease
㉔ Molybdenum-disulfide grease

Symbols ㉕ to ㉖ in the exploded diagrams indicate the following.

㉕ Apply locking agent (LOCTITE®)
㉖ Replace the part with a new one.

EAS00010

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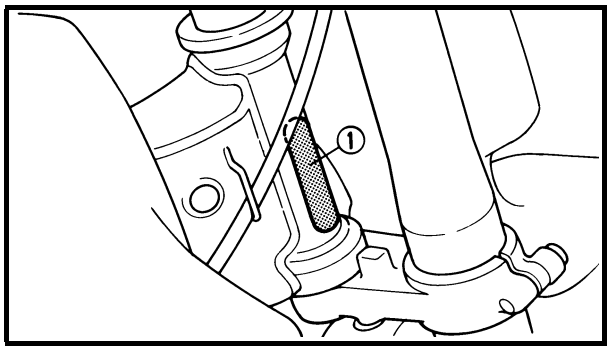
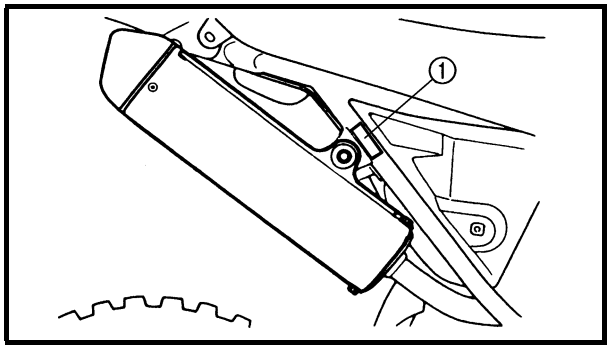
CHAPTER 1
GENERAL INFORMATION





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GENERAL INFORMATION

VEHICLE IDENTIFICATION

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VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the right side of the steering head pipe.

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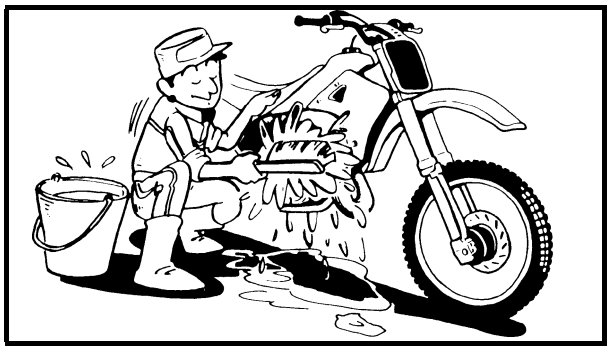
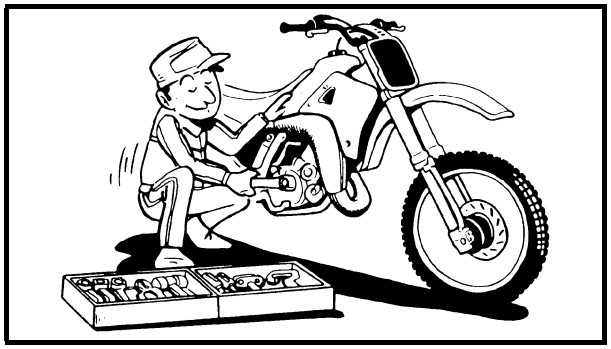
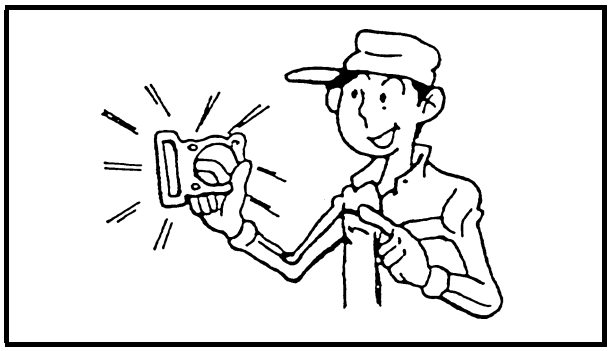
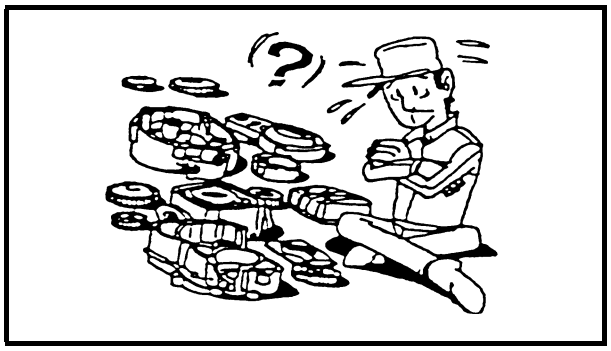
MODEL LABEL

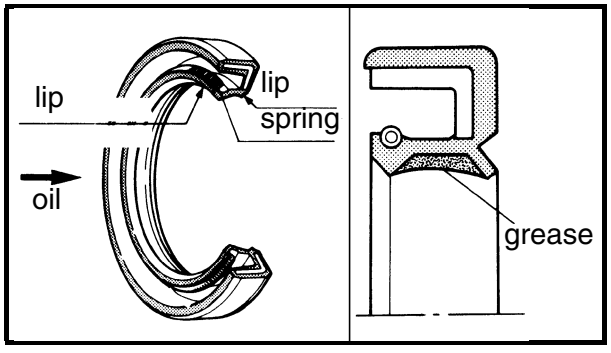
The model label ① is affixed to the frame. This information will be needed to order spare parts.











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IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.
2. Use only the proper tools and cleaning equipment.
   Refer to the “SPECIAL TOOLS”.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been “mated” through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.

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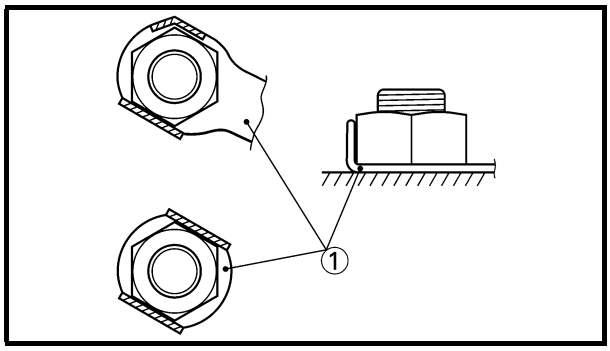
REPLACEMENT PARTS

Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

EAS00022

GASKETS, OIL SEALS AND O-RINGS

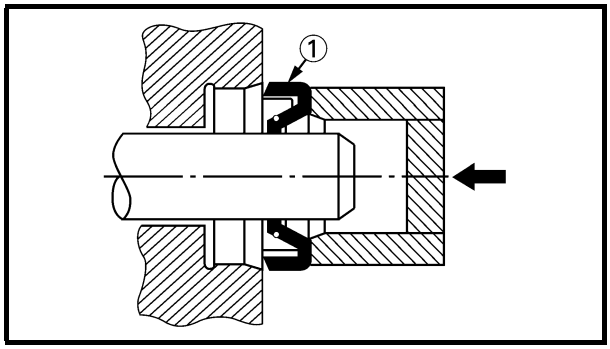
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.



EAS00023

LOCK WASHERS/PLATES AND COTTER PINS

After removal, replace all lock washers/plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.



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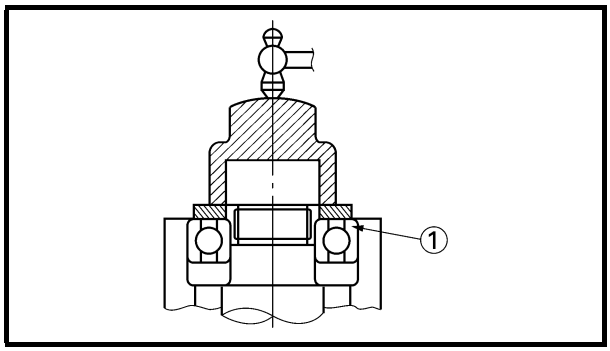
BEARINGS AND OIL SEALS

Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

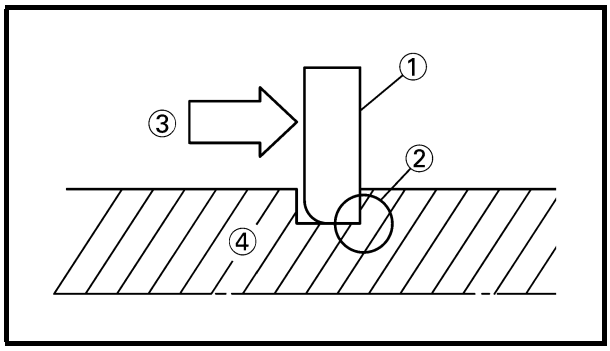
① Oil seal

CAUTION:

Do not spin the bearing with compressed air because this will damage the bearing surfaces.



① Bearing



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CIRCLIPS

Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft

FUEL AND ENGINE MIXING OIL

Mix oil with the gas at the ratio specified below. Always use fresh, name-brand gasoline, and mix the oil and gas the day of the race. Do not use premix that is more than a few hours old.

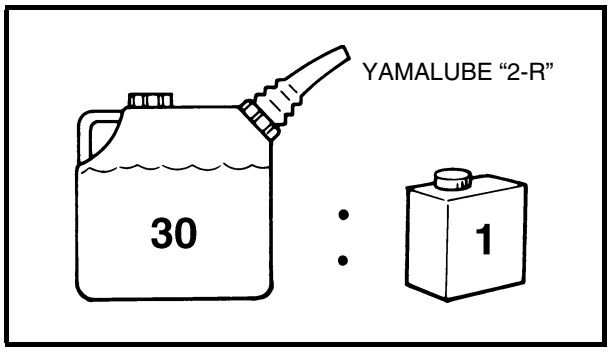
Recommended fuel
Premium unleaded gasoline only with a research octane number of 95 or higher.

NOTE:

If knocking or pinging occurs, use a different brand of gasoline or higher octane grade.

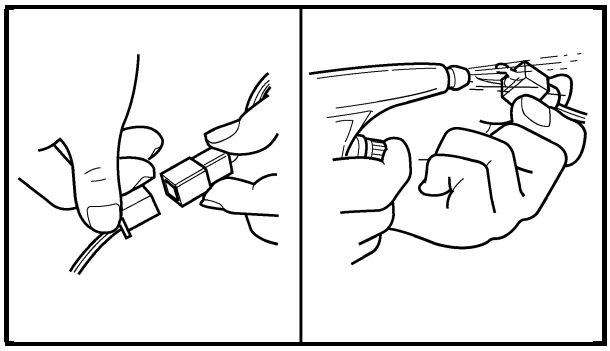
CAUTION:

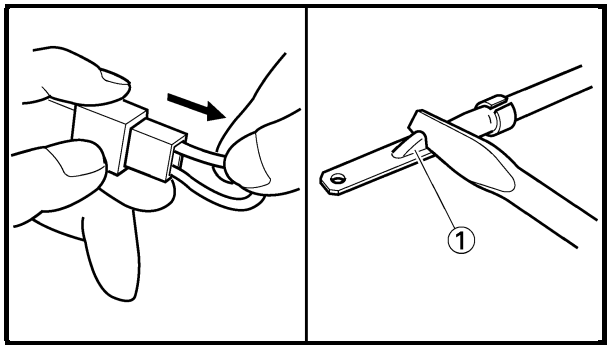
Never mix two types of oil in the same batch; clotting of the oil could result. If you wish to change oil types, be sure to drain the fuel tank and the carburetor float bowl of old premix prior to filling with the new type.



Fuel tank capacity
5.0 L (1.10 Imp gal, 1.32 US gal)

Mixing oil
Recommended oil
Yamalube "2-R"
(Yamalube racing 2-cycle oil)
Mixing ratio: 30 : 1
If unavailable, use an equivalent type of oil.





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CHECKING THE CONNECTIONS

Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:
   - lead
   - coupler
   - connector
2. Check:
   - lead
   - coupler
   - connector

   Moisture → Dry with an air blower.
   Rust/stains → Connect and disconnect several times.
3. Check:
   - all connections

   Loose connection → Connect properly.

NOTE:

If the pin ① on the terminal is flattened, bend it up.

4. Connect:
   - lead
   - coupler
   - connector

NOTE:

Make sure all connections are tight.

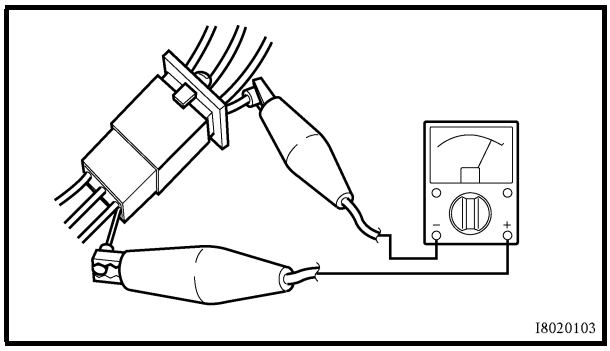
5. Check:
   - continuity

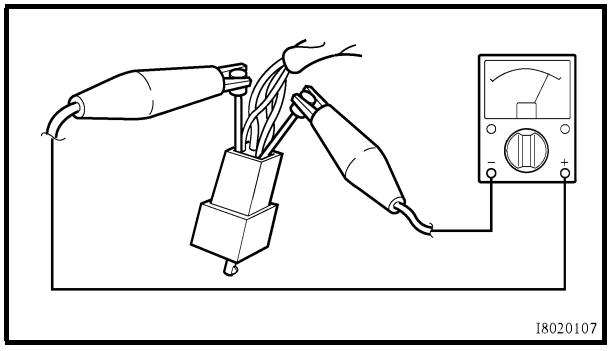
   (with the pocket tester)

	Pocket tester **90890-03112, YU-3112-C**

NOTE:

- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.





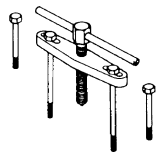
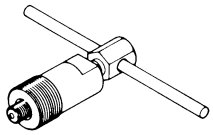
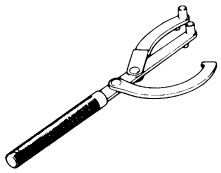
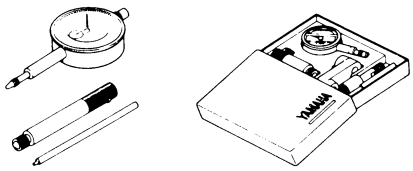
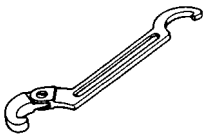
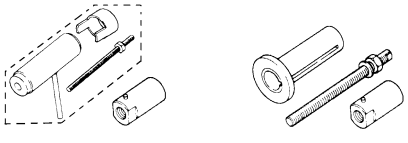
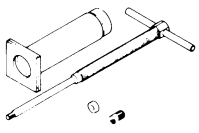
EAS00027

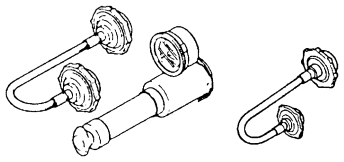
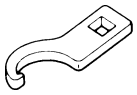
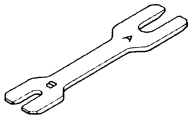
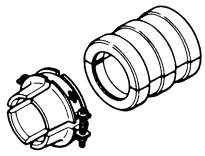
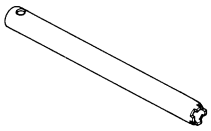
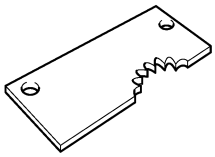
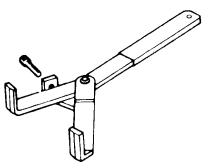
SPECIAL TOOLS

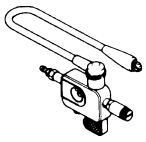
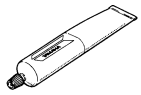
The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.
When placing an order, refer to the list provided below to avoid any mistakes.

NOTE:

- For U.S.A. and Canada, use part number starting with "YM-", "YU-", or "ACC-".
- For others, use part number starting with "90890-".

Tool No.	Tool name/Function	Illustration
90890-01135 YU-1135-A	Crankcase separating tool This tool is used to split the crankcase as well as remove the crankshaft from either case.	
90890-01189 YM-1189	Flywheel puller This tool is used to remove the flywheel magneto.	
90890-01235 YU-1235	Rotor holding tool This tool is used when loosening or tightening the flywheel magneto securing nut.	
Dial gauge set 90890-01252 Dial gauge and stand YU-3097 YU-1256	Dial gauge and stand Stand These tools are used to check each part for runout or bent.	
90890-01268	Ringnut wrench This tool is used to loosen and tighten the exhaust and steering ringnut.	
Crankshaft installing tool For EUR, OCE 90890-01274 90890-01275 90890-01277 For U.S.A, CAN YU-90050 YM-1277	Crankshaft installing tool Crankshaft installing pot Crankshaft installing bolt Adapter (M10) These tools are used to install the crankshaft.	
90890-01304 YU-1304	Piston pin puller set This tool is used to remove the piston pin.	

Tool No.	Tool name/Function	Illustration
Radiator cap tester 90890-01325 YU-24460-01 Radiator cap tester adapter 90890-01352 YU-33984	Radiator cap tester Radiator cap tester adapter These tools are used for checking the cooling system.	
90890-01403 YU-33975	Steering nut wrench This tool is used when tighten the steering ring nut to specification.	
90890-01434 YM-01434	Rod holder This tool is used to hold the fork spring.	
Rod puller 90890-01437 YM-01437 Rod puller attachment 90890-01436 YM-01436	Rod puller Rod puller attachment (M10) These tools are used to pull up the fork damper rod.	
90890-01442 YM-01442	Fork seal diver This tool is used when install the fork oil seal.	
90890-01454 YM-01454	Damper rod holder Use this tool to remove and install the damper rod.	
90890-01495 YM-01495	Drive gear holder This tool is used when removing or tightening the primary drive gear securing nut.	
90890-03112 YU-3112-C	Pocket tester Use this tool to inspect the coil resistance, output voltage and amperage.	
90890-04086 YM-91042	Universal clutch holder This tool is used to hold the clutch when removing or installing the clutch boss securing nut.	

Tool No.	Tool name/Function	Illustration
90890-06754 YM-34487	Dynamic spark tester Ignition checker This instrument is necessary for checking the ignition system components.	
90890-85505	Yamaha bond No.1215 (Three Bond No.1215®) This sealant (Bond) is used for crankcase mating surface, etc.	

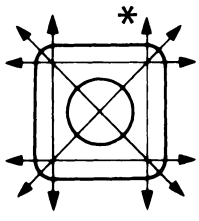
CHAPTER 2
SPECIFICATIONS

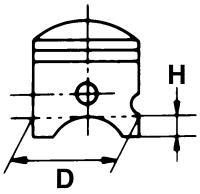
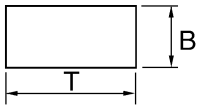
SPECIFICATIONS

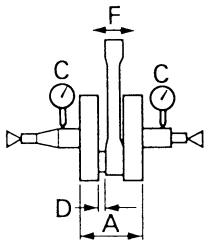
GENERAL SPECIFICATIONS

Item	Standard	Limit
Model code	YZ85 5PAG (EUR, CAN), 5PAH (AUS,NZL) YZ85LW 5SHG (EUR), 5SHH (AUS,NZL)	••• •••
Dimensions		
Overall length	1,818 mm (71.6 in) (YZ85) 1,903 mm (74.9 in) (YZ85LW)	••• •••
Overall width	758 mm (29.8 in)	•••
Overall height	1,161mm (45.7 in) (YZ85) 1,205 mm (47.4 in) (YZ85LW)	••• •••
Seat height	864 mm (34.0 in) (YZ85) 904 mm (35.6 in) (YZ85LW)	••• •••
Wheelbase	1,255 mm (49.4 in) (YZ85) 1,286 mm (50.6 in) (YZ85LW)	••• •••
Minimum ground clearance	351 mm (13.8 in) (YZ85) 393 mm (15.5 in) (YZ85LW)	••• •••
Dry weight		
Without oil and fuel	66 kg (145.5 lb) (YZ85) 69 kg (152.2 lb) (YZ85LW)	••• •••

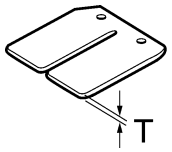
ENGINE SPECIFICATIONS

Item	Standard	Limit
Engine		
Engine type	Liquid cooled 2-stroke, gasoline	•••
Displacement	84.7 cm^3 (5.17 cu.in)	•••
Cylinder arrangement	Single cylinder, forward inclined	•••
Bore × stroke	47.5 × 47.8 mm (1.870 × 1.882 in)	•••
Compression ratio	8.2 : 1	•••
Fuel		
Recommended fuel	Premium unleaded gasoline only	•••
Fuel tank capacity		
Total	5.0L (1.09 Imp gal, 1.30 US gal)	•••
Lubrication system	Premix (30 : 1) (Yamalube 2-R)	•••
Transmission oil		
Recommended oil	Yamalube 4 (10W-30) or SAE 10W-30 API service SG type or higher JASO standard MA	•••
Periodic oil change	0.50 L (0.44 Imp qt, 0.53 US qt)	•••
Total amount	0.55 L (0.48 Imp qt, 0.58 US qt)	•••
Cooling system		
Coolant capacity (including all routes)	0.54 L (0.48 Imp qt, 0.57 US qt)	•••
Radiator capacity	0.32 L (0.28 Imp qt, 0.34 US qt)	•••
Radiator cap opening pressure	93 ~ 123 kPa (0.93 ~ 1.23 kg/cm^2, 13.2 ~ 17.5 psi)	•••
Radiator core		
Width	117.8 mm (4.64 in)	•••
Height	240.0 mm (9.45 in)	•••
Depth	32.0 mm (1.26 in)	•••
Water pump		
Water pump type	Single suction centrifugal pump	•••
Reduction ratio	25/18 (1.388)	•••
Starting system	Kickstarter	•••
Spark plug		
Model (manufacturer) × quantity	BR10EG (NGK) × 1	•••
Spark plug gap	0.5 ~ 0.6 mm (0.0197 ~ 0.0236 in)	•••
Cylinder head		
Volume	7.14 cm^3 (0.44 cu.in)	•••
Max. warpage 	•••	0.03 mm (0.0012 in)

Item	Standard	Limit
Cylinder		
Bore	47.500 ~ 47.514 mm (1.8701 ~ 1.8706 in)	47.6 mm (1.874 in)
Max. taper limit	•••	0.05 mm (0.0020 in)
Max. out-of-round	•••	0.01 mm (0.0004 in)
Piston		
Piston-to-cylinder clearance	0.040 ~ 0.045 mm (0.0016 ~ 0.0018 in)	0.1 mm (0.004 in)
Diameter D	47.457 ~ 47.472 mm (1.8684 ~ 1.8690 in)	0.1 mm (0.004 in)
		
Height H	20.0 mm (0.79 in)	•••
Piston pin bore (in the piston)		
Diameter	14.004 ~ 14.015 mm (0.5513 ~ 0.5518 in)	14.040 mm (0.5528 in)
Offset	1.0 mm (0.039 in)	•••
Offset direction	Exhaust side	•••
Piston pin		
Outside diameter	13.996 ~ 14.000 mm (0.5510 ~ 0.5512 in)	13.975 mm (0.5502 in)
Piston ring		
		
Ring type	Plain	•••
Dimensions (B × T)	0.8 × 2.0 mm (0.032 × 0.079 in)	•••
End gap (installed)	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)	0.8 mm (0.032 in)
Ring side clearance	0.030 ~ 0.065 mm (0.001 ~ 0.003 in)	0.1 mm (0.004 in)

Item	Standard	Limit
Crankshaft		
		
Crank width “A”	44.90 ~ 44.95 mm (1.768 ~ 1.770 in)	•••
Runout limit “C”	0.03 mm (0.0012 in)	0.05 mm (0.002 in) (YZ85) 0.08 mm (0.003 in) (YZ85LW)
Big end side clearance “D”	0.20 ~ 0.70 mm (0.008 ~ 0.028 in)	•••
Small end free play “F”	0.5 ~ 1.2 mm (0.020 ~ 0.047 in)	2.0 mm (0.08 in)
Clutch		
Clutch type	Wet, multiple disc	•••
Clutch release method	Inner push, cam push	•••
Clutch cable free play (at the end of the clutch lever)	10.0 ~ 15.0 mm (0.39 ~ 0.59 in)	•••
Friction plates		•••
Thickness	2.9 ~ 3.1 mm (0.114 ~ 0.122 in)	2.7 mm (0.106 in)
Plate quantity	7	•••
Clutch plates		
Thickness	1.8 ~ 2.2 mm (0.071 ~ 0.087 in)	•••
Plate quantity	6	•••
Max. warpage	•••	0.1 mm (0.004 in)
Clutch springs		
Free length	33.0 mm (1.30 in)	31.0 mm (1.22 in)
Spring quantity	5	•••
Clutch housing thrust clearance	0.10 ~ 0.35 mm (0.0039 ~ 0.0138 in)	•••
Clutch housing radial clearance	0.022 ~ 0.051 mm (0.0009 ~ 0.0020 in)	•••

Item	Standard	Limit
Transmission		
Transmission type	Constant mesh, 6-speed	•••
Primary reduction system	Spur gear	•••
Primary reduction ratio	65/18 (3.611)	•••
Secondary reduction system	Chain drive	•••
Secondary reduction ratio	47/14 (3.357) (YZ85 for EUR, CAN)	•••
	48/14 (3.428) (YZ85 for AUS, NZL)	•••
	52/14 (3.714) (YZ85LW)	•••
Operation	Left-foot operation	•••
Gear ratios		
1st gear	27/11 (2.454)	•••
2nd gear	32/17 (1.882)	•••
3rd gear	26/17 (1.529)	•••
4th gear	22/17 (1.294)	•••
5th gear	26/23 (1.130)	•••
6th gear	25/25 (1.000)	•••
Max. main axle runout		0.01 mm (0.004 in)
Max. drive axle runout		0.01 mm (0.004 in)
Shifting mechanism		
Shift mechanism type	Cam drum/Guide bar	•••
Guide bar bending limit	•••	0.05 mm (0.002 in)
Air filter type	Wet element	•••
Air filter oil glade	Form air filter oil or 2-stroke motor oil	•••
Carburetors		
Model (manufacturer)	PWK28 (KEIHIN)	•••
Throttle cable free play (at the flange of the throttle grip)	3.0 ~ 5.0 mm (0.118 ~ 0.197 in)	•••
ID mark	5PA1 00	•••
Main jet	#138	•••
Main air jet	#60	•••
Jet needle-clip position	NBKF-2	•••
Needle jet	ø2.6	•••
Cutaway	3.0	•••
Pilot jet	#45	•••
Bypass	ø0.8	•••
Pilot outlet	ø0.4	•••
Pilot screw turns out	2	•••
Valve seat size	ø2.6	•••
Starter jet	#62	•••
Float height	18 ~ 20 mm (0.71 ~ 0.79 in)	•••

Item	Standard	Limit
Reed valve		
		
Thickness “T”	0.42 mm (0.017 in)	•••
Valve stopper height	7.4 ~ 7.8 mm (0.291 ~ 0.307 in)	•••
Valve bending limit		0.2 mm (0.008 in)

CHASSIS SPECIFICATIONS

Item	Standard	Limit
Frame		
Frame type	Semi double cradle	•••
Material	Steel	•••
Caster angle	26.3° (YZ85)	•••
	26.9° (YZ85LW)	•••
Trail	88.0 mm (3.46 in) (YZ85)	•••
	105.5 mm (4.15 in) (YZ85LW)	•••
Front wheel		
Wheel type	Spoke wheel	•••
Rim		
Size	17 × 1.40 (YZ85)	•••
	19 × 1.40 (YZ85LW)	•••
Material	Aluminum	•••
Wheel travel	275 mm (10.83 in)	•••
Wheel runout		
Radial wheel runout limit	•••	2.0 mm (0.08 in)
Lateral wheel runout limit	•••	2.0 mm (0.08 in)
Rear wheel		
Wheel type	Spoke wheel	•••
Rim		
Size	14 × 1.60 (YZ85)	•••
	16 × 1.85 (YZ85LW)	•••
Material	Aluminum	•••
Wheel travel	282 mm (11.10 in) (YZ85)	•••
	287 mm (11.30 in) (YZ85LW)	•••
Wheel runout		
Radial wheel runout limit	•••	2.0 mm (0.08 in)
Lateral wheel runout limit	•••	2.0 mm (0.08 in)

Item	Standard	Limit
Front tire		
Tire type	Tube	•••
Size	70/100-17 40M (YZ85)	•••
	70/100-19 42M (YZ85LW)	•••
Model (manufacturer)	D739FA (DUNLOP) (YZ85 for EUR, CAN)	•••
	D756F (DUNLOP)(YZ85 for AUS, NZL)	•••
	D756F (DUNLOP) (YZ85LW)	•••
Tire pressure (cold)	100 kPa (1.0 kgf/cm^2, 1.0 bar, 14.2 psi)	•••
Rear tire		
Tire type	Tube	•••
Size	90/100-14 49M (YZ85)	•••
	90/100-16 52M (YZ85LW)	•••
Model (manufacturer)	D756 (DUNLOP)	•••
Tire pressure (cold)	100 kPa (1.0 kgf/cm^2, 1.0 bar, 14.2 psi)	•••
Front brakes		
Brake type	Single disc brake	•••
Operation	Right hand operation	•••
Recommended fluid	DOT 4	•••
Brake lever free play	0 mm (0.00 in)	•••
Brake discs		
Diameter × thickness	220 × 3 mm (8.66 × 0.12 in)	•••
Thickness limit	•••	2.5 mm (0.10 in)
Deflection limit	•••	0.15 mm (0.006 in)
Brake pad lining thickness	4.0 mm (0.16 in)	0.8 mm (0.03 in)
Master cylinder inside diameter	11.0 mm (0.433 in)	•••
Caliper cylinder inside diameter	22.2 mm (0.874 in) × 2	•••
Rear brake		
Brake type	Single disc brake	•••
Operation	Right foot operation	•••
Brake pedal position (vertical height above footrest top)	4.0 ~ 10.0 mm (0.16 ~ 0.39 in)	•••
Recommended fluid	DOT 4	•••
Brake pedal freeplay	0 mm (0.00 in)	•••
Brake discs		
Diameter × thickness	190 × 3 mm (7.48 × 0.12 in)	•••
Thickness limit	•••	2.5 mm (0.10 in)
Deflection limit	•••	0.15 mm (0.006 in)
Brake pad lining thickness	3.7 mm (0.15 in)	1.0 mm (0.04 in)
Master cylinder inside diameter	12.7 mm (0.500 in)	•••
Caliper cylinder inside diameter	27.0 mm (1.063 in)	•••

Item	Standard	Limit
Steering		
Steering bearing type	Taper roller bearing	•••
Lock to lock angle (left)	45°	•••
Lock to lock angle (right)	45°	•••
Front suspension		
Suspension type	Telescopic fork	•••
Front fork type	Coil spring/oil damper	•••
Front fork travel	275 mm (10.83 in)	•••
Spring		
Free length	430 mm (16.93 in)	425 mm (16.73 in)
Installed length	430 mm (16.93 in)	•••
Spring rate, STD (K1)	2.84 N/mm (0.29 kg/mm, 16.2 lb/in) (YZ85)	•••
	2.94 N/mm (0.30 kg/mm, 16.8 lb/in) (YZ85LW)	•••
Spring stroke (K1)	0 ~ 275 mm (0 ~ 10.82 in)	•••
Inner tube outer diameter	36 mm (1.42 in)	•••
Inner tube bending limit	•••	0.2 mm (0.008 in)
Optional spring available	Yes	•••
Fork oil		
Recommended oil	Suspension oil “01”	•••
Quantity (each front fork leg)	318 cm^3 (11.2 Imp oz, 10.8 US oz)	•••
Level (from the top of the outer tube, with the outer tube fully compressed, and without the fork spring)	90 mm (3.54 in)	•••
Rebound damping adjusting positions		
Minimum*	20	•••
Standard*	7	•••
Maximum*	1	•••
Compression damping adjusting positions		
Minimum*	20	•••
Standard*	10 (YZ85)	•••
	9 (YZ85LW)	•••
Maximum*	1	•••
*from the fully turned-in position		

Item	Standard	Limit
Rear suspension		
Suspension type	Swingarm (link type monocross suspension)	•••
Rear shock absorber assembly type	Coil spring/gas, oil damper	•••
Rear shock absorber assembly travel	102 mm (4.02 in)	•••
Spring		
Free length	220 mm (8.66 in)	•••
Installed length	215 mm (8.46 in) (YZ85)	•••
	212 mm (8.35 in) (YZ85LW for EUR)	•••
	207 mm (8.15 in) (YZ85LW for AUS, NZL)	•••
Spring rate, STD (K1)	49.0 N/mm (5.00 kg/mm, 280.0 lb/in) (YZ85)	•••
	47.0 N/mm (4.80 kg/mm, 268.2 lb/in) (YZ85LW for EUR)	•••
	51.0 N/mm (5.20 kg/mm, 291.1 lb/in) (YZ85LW for AUS, NZL)	•••
Spring stroke, STD (K1)	102 mm (4.02 in)	•••
Optional spring available	Yes	•••
Standard spring preload gas/air pressure	1,000 kPa (10.0 kg/cm^2, 142 psi)	•••
Rebound damping adjusting positions		
Minimum*	20	•••
Standard*	6 (YZ85)	•••
	12 (YZ85LW for EUR)	•••
	7 (YZ85LW for AUS, NZL)	•••
Maximum*	1	•••
Compression damping adjusting positions		
Minimum*	20	•••
Standard*	9 (YZ85)	•••
	12 (YZ85LW for EUR)	•••
	7 (YZ85LW for AUS, NZL)	•••
Maximum*	1	•••
*from the fully turned-in position		
Swingarm		
Free play (at the end of the swingarm)		
Radial	•••	1.0 mm (0.04 in)
Drive chain		
Model (manufacturer)	DID428DS (DAIDO)	•••
Link quantity	117 links + joint (YZ85)	•••
	123 links + joint (YZ85LW)	•••
Drive chain slack	35.0 ~ 45.0 mm (1.38 ~ 1.77 in)	•••
Maximum 15-link section	•••	194.3 mm (7.65 in)

ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
Ignition system		
Ignition system type	CDI	•••
Ignition timing (B.T.D.C.)	0.9 mm (0.035 in)	•••
Advancer type	Digital	•••
C.D.I.		
Magneto model (manufacturer)	5PA-01 (YAMAHA)	•••
Pickup coil resistance (color)	248 ~ 372 Ω at 20 °C (68 °F) (W/L-W/R)	•••
Charging coil 1 resistance (color)	720 ~ 1,080 Ω at 20 °C (68 °F) (G/W-B/R)	•••
Charging coil 2 resistance (color)	44 ~ 66 Ω at 20 °C (68 °F) (B-G/L)	•••
C.D.I. unit model (manufacturer)	5PA-01 (YAMAHA)	•••
Ignition coils		
Model (manufacturer)	2JN (YAMAHA)	•••
Minimum ignition spark gap	6 mm (0.24 in)	•••
Primary coil resistance	0.18 ~ 0.28 Ω at 20 °C (68 °F)	•••
Secondary coil resistance	6.3 ~ 9.5 kΩ at 20 °C (68 °F)	•••
Spark plug cap		
Material	Resin	•••
Resistance	5 kΩ	•••

EAS00028

CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.
Use this table to convert METRIC unit data to IMPERIAL unit data.
Ex.

METRIC		MULTIPLIER		IMPERIAL
** mm	×	0.03937	=	** in
2 mm	×	0.03937	=	0.08 in

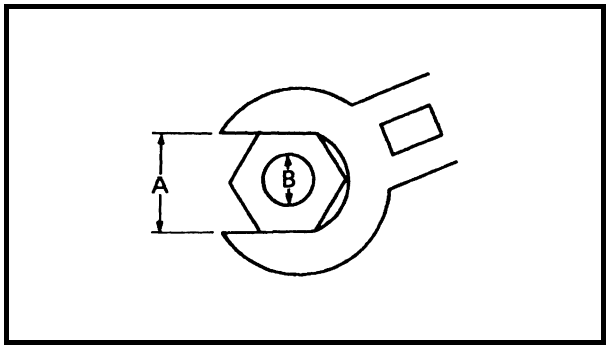
CONVERSION TABLE

METRIC TO IMPERIAL			
	Metric unit	Multiplier	Imperial unit
Tightening torque	m•kg m•kg cm•kg cm•kg	7.233 86.794 0.0723 0.8679	ft•lb in•lb ft•lb in•lb
Weight	kg g	2.205 0.03527	lb oz
Speed	km/hr	0.6214	mph
Distance	km m m cm mm	0.6214 3.281 1.094 0.3937 0.03937	mi ft yd in in
Volume/ Capacity	cc (cm^3) cc (cm^3) lt (liter) lt (liter)	0.03527 0.06102 0.8799 0.2199	oz (IMP liq.) cu•in qt (IMP liq.) gal (IMP liq.)
Misc.	kg/mm kg/cm^2 Centigrade (°C)	55.997 14.2234 9/5 + 32	lb/in psi (lb/in^2) Fahrenheit (°F)

EAS00030

GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.



A: Distance between flats
B: Outside thread diameter

A (nut)	B (bolt)	General tightening torques		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

TIGHTENING TORQUES

ENGINE TIGHTENING TORQUES

Item	Fastener	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Spark plug	—	M14	1	20	2.0	14	
Cylinder head	Nut	M8	4	30	3.0	22	
	Stud bolt	M8	4	13	1.3	9.4	
Cylinder	Nut	M8	4	28	2.8	20	
	Studbolt	M8	4	13	1.3	9.4	
Water pump impeller	—	M8	1	14	1.4	10	
Coolant drain bolt	Bolt	M6	1	10	1.0	7.2	
Water pump housing	Bolt	M6	2	10	1.0	7.2	
Radiator hose clamp	Clamp	M6	4	1	0.1	0.7	
Air filter element	Bolt	M6	1	2	0.2	1.4	
Carburetor joint	Bolt	M6	4	8	0.8	5.8	
Reed valve	Screw	M3	4	1	0.1	0.7	LT
Exhaust pipe	Bolt	M6	2	12	1.2	8.7	
Exhaust pipe stay	Bolt	M6	1	12	1.2	8.7	
Silencer	Bolt	M6	1	12	1.2	8.7	
Fiber (silencer)	Bolt	M6	2	12	1.2	8.7	
Crankcase	Screw	M6	11	8	0.8	5.8	
Left crankcase cover	Screw	M6	4	5	0.5	3.6	
Right crankcase cover	Bolt	M6	4	10	1.0	7.2	
Right crankcase cover	Bolt	M6	1	10	1.0	7.2	
Clutch cover	Bolt	M6	6	10	1.0	7.2	
Transmission oil drain bolt	Bolt	M8	1	10	1.0	7.2	
Kickstarter crank	Bolt	M6	1	10	1.0	7.2	
Primary drive gear	Nut	M12	1	79	7.9	57	
Clutch boss	Nut	M12	1	70	7.0	51	
Clutch spring	Bolt	M5	5	6	0.6	4.3	
Drive sprocket	Nut	M16	1	60	6.0	43	
Crankcase bearing stopper	Screw	M6	2	8	0.8	5.8	LT
Crankcase oil seal holder	Bolt	M8	1	20	2.0	14	LT
Shift pedal	Bolt	M6	1	10	1.0	7.2	
Stator assembly	Screw	M6	2	8	0.8	5.8	
Rotor	Nut	M10	1	33	3.3	24	

CHASSIS TIGHTENING TORQUES

Item	Fastener	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Upper bracket and outer tube	Bolt	M8	2	22	2.2	16	
Lower bracket and outer tube	Bolt	M8	4	20	2.0	14	
Upper bracket and steering stem	Nut	M22	1	125	12.5	90	
Handlebar holder and upper bracket	Bolt	M8	4	27	2.7	20	
Steering stem and steering ring nut	Nut	M25	1	See NOTE.			
Front fork and cap bolt	Bolt	M40	2	28	2.8	20	
Front fork and base valve	—	M22	2	55	5.5	40	LT
Cap bolt and damper rod	Nut	M10	2	15	1.5	11	
Front fork bleed screw and cap bolt	Bolt	M5	2	1	0.1	0.7	
Front fork and front fork protector	Bolt	M6	6	7	0.7	5.1	
Front fork and brake hose guide	Screw	M5	1	4	0.4	2.9	LT
Front fork and brake hose holder	Bolt	M6	1	10	1.0	7.2	
Throttle grip cap	Screw	M5	2	4	0.4	2.9	
Throttle cable cap	Screw	M4	2	1	0.1	0.7	
Front brake master cylinder	Bolt	M6	2	9	0.9	6.5	
Brake lever mounting bolt	Bolt	M6	1	6	0.6	4.3	
Brake lever mounting nut	Nut	M6	1	6	0.6	4.3	
Brake lever position locknut	Nut	M6	1	5	0.5	3.6	
Clutch lever holder	Bolt	M5	2	4	0.4	2.9	
Front brake master cylinder cap	Screw	M4	2	2	0.2	1.4	
Front brake hose union bolt	Bolt	M10	2	26	2.6	19	
Front fork and brake caliper bracket	Bolt	M8	2	30	3.0	22	
Brake caliper support bolt	Bolt	M8	1	23	2.3	17	
Front brake caliper and bleed screw	Bolt	M7	1	6	0.6	4.3	
Rear brake caliper and brake caliper bracket	Bolt	M8	2	23	2.3	17	
Rear brake caliper and pad pin	Bolt	M10	2	18	1.8	13	
Rear brake caliper and bleed screw	Screw	M8	1	6	0.6	4.3	
Front wheel axle and axle nut	Nut	M12	1	70	7.0	51	
Front brake disc	Bolt	M6	3	12	1.2	8.7	LT
Rear brake disc	Bolt	M6	4	12	1.2	8.7	LT
Rear brake master cylinder	Bolt	M6	2	10	1.0	7.2	
Rear brake reservoir tank	Bolt	M6	1	10	1.0	7.2	
Rear brake hose union bolt	Bolt	M10	2	26	2.6	19	
Rear wheel axle and axle nut	Nut	M14	1	90	9.0	65	
Nipple (spoke)	—	—	64	3	0.3	2.2	
Rear wheel sprocket	Nut	M8	4	42	4.2	30	
Rear brake caliper protector	Bolt	M6	1	10	1.0	7.2	
Drive chain puller adjust locknut	Nut	M8	2	16	1.6	12	
Engine and frame (front)	Nut	M10	1	69	6.9	50	
Engine and frame (lower)	Nut	M10	1	69	6.9	50	
Pivot shaft and nut	Nut	M12	1	63	6.3	46	
Relay arm and frame	Nut	M10	1	54	5.4	39	

TIGHTENING TORQUES

Item	Fastener	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Relay arm and connecting rod	Nut	M12	1	53	5.3	38	
Connecting rod and swingarm	Nut	M12	1	53	5.3	38	
Rear shock absorber and frame	Nut	M10	1	36	3.6	26	M
Rear shock absorber and relay arm	Bolt	M10	1	36	3.6	26	M
Rear frame (upper)	Bolt	M8	1	26	2.6	19	
Rear frame (lower)	Bolt	M8	2	16	1.6	12	
Swingarm and brake hose holder	Screw	M5	4	1	0.1	0.7	
Drive chain support	Nut	M8	2	16	1.6	12	
Drive chain support cover	Nut	M6	1	7	0.7	5.1	
Drive chain guide and swingarm	Bolt	M6	2	10	1.0	7.2	
Fuel tank	Bolt	M6	2	7	0.7	5.1	
Fuel cock	Screw	M6	2	4	0.4	2.9	
Fuel tank bracket and fuel tank	Bolt	M6	4	7	0.7	5.1	
Seat set bracket and fuel tank	Screw	M6	1	7	0.7	5.1	
Air scoop	Bolt	M6	3	4	0.4	2.9	
Front fender	Bolt	M6	4	7	0.7	5.1	
Rear fender	Bolt	M6	4	7	0.7	5.1	
Flap guard	Bolt	M6	2	7	0.7	5.1	
Side cover	Bolt	M6	2	7	0.7	5.1	
Seat	Bolt	M6	2	7	0.7	5.1	
Number plate	Bolt	M6	1	7	0.7	5.1	
Ignition coil	Bolt	M6	2	7	0.7	5.1	

NOTE:

1. First, tighten the steering nut approximately 38 Nm (3.8 m•kg, 27 ft•lb) by using the steering nut wrench, then loosen the steering nut one turn.
2. Retighten the steering nut 4 Nm (0.4 m•kg, 2.9 ft•lb).

EAS00031

LUBRICATION POINTS AND LUBRICANT TYPES

ENGINE

Lubrication point	Lubricant
Oil seal lips	LS
O-rings	LS
Bearings	E
Crankshaft pins	E
Piston surfaces	E
Piston pins	E
Water pump impeller shaft	LS
Kick shaft	G
Kick shaft stopper	LS
Kick idle gear inner surface	G
Primary driven gear	G
Push rod and push lever (upper)	G
Push lever (lower)	LS
Transmission wheel gears inner surface	M
Transmission pinion gears	G
Shift forks and shift fork guide bers	G
Shift shaft	G
Shift dram	G
Crankcase mating surface	Yamaha bond No.1215

EAS00032

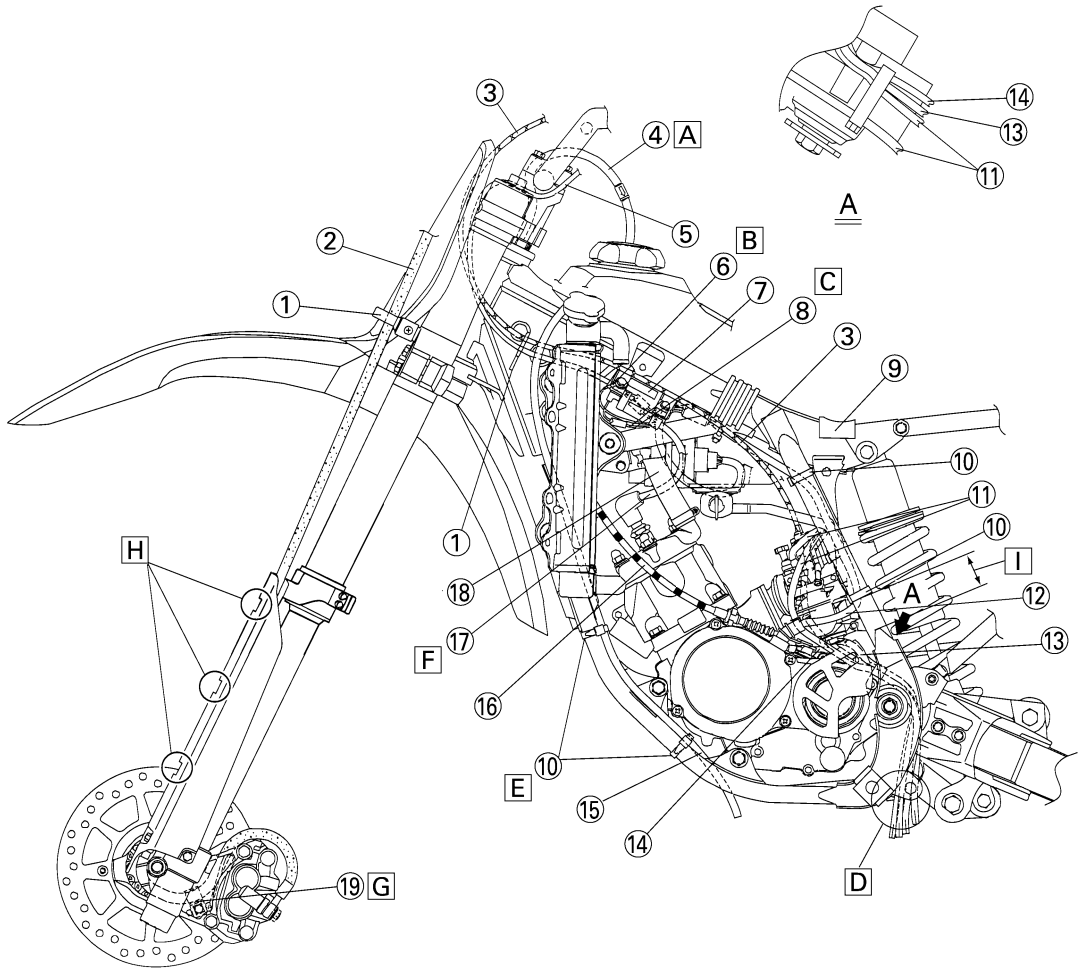
CHASSIS

Lubrication point	Lubricant
Steeling bearings and bearing race (upper and lower)	LS
Brake lever pivoting point and metal-to-metal moving parts	LS
Clutch lever pivoting point and metal-to-metal moving parts	LS
Throttle tube guide inner surface	LS
Rear brake pedal	LS
Swing arm bearing and bushing inner surface	M
Swingarm oil seal , dust seal and bushing	M
Pivot shaft	M
Reray arm oil seal, bearing, bushing, collar and bolt surface	M
Connecting rod oil seal, bearing, bushing and bolt surface	M
Front wheel oil seal (left and right)	LS
Front wheel axle shaft	LS
Front wheel collar	LS
Rear wheel oil seal (left and right)	LS
Rear wheel axle shaft	LS
Rear wheel collar	LS

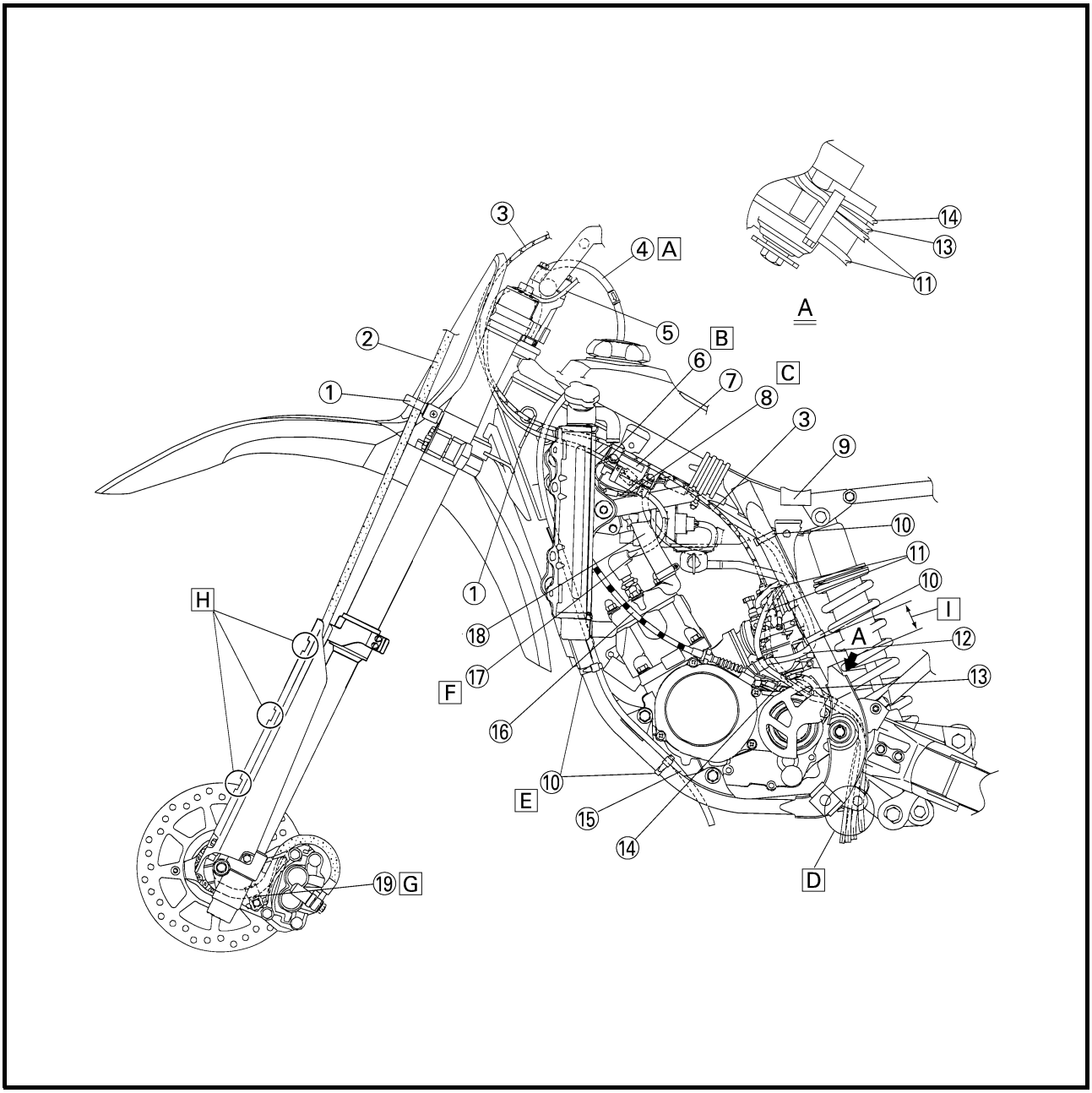
EAS00035

CABLE ROUTING

① Cable guide
② Brake hose
③ Throttle cable
④ Fuel tank breather hose
⑤ Engine stop switch lead
⑥ Ground lead
⑦ Ignition coil
⑧ Primary coil lead (orange color)
⑨ Damper
⑩ Clamp
⑪ Air vent hoses
⑫ CDI magneto lead
⑬ Carburetor overflow hose
⑭ Transmission oil breather hose
⑮ Radiator breather hose
⑯ Clutch cable
⑰ Spark plug lead
⑱ Radiator hose
⑲ Brake hose holder

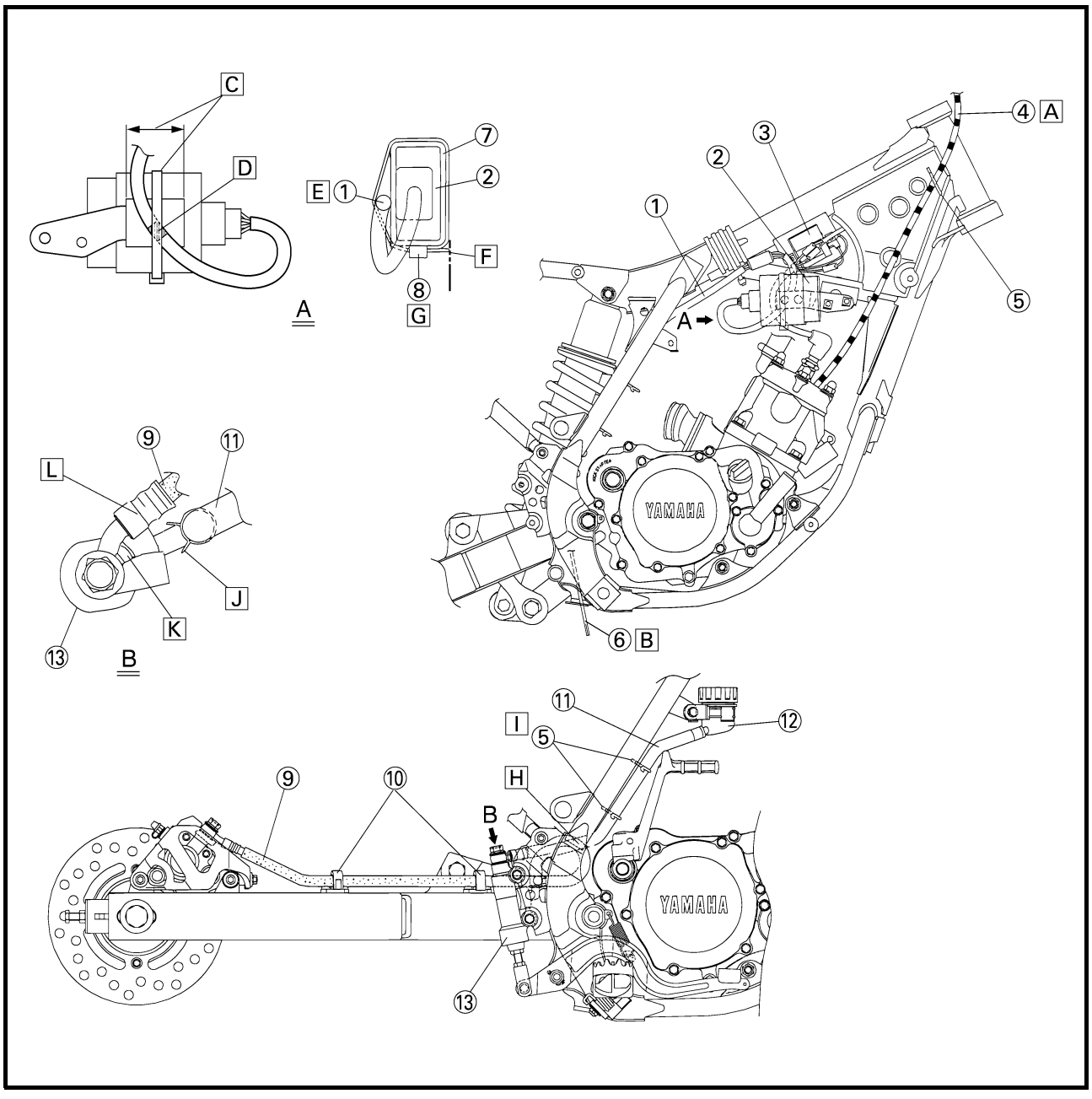


A Pass the fuel tank breather hose between the handlebar and tension bar, then insert its end into the hole of the steering stem.
B Fasten the ground lead together with the ignition coil.
C Insert the primary coil lead (orange color) in the ignition coil.
D Pass the transmission oil breather hose through the wire holder located at the right side of the vehicle. Route the air vent hose and carburetor overflow hose from the left side of the vehicle.
E Do not flatten out the radiator breather hose.
F Securely install the spark plug cap to the spark plug. Route the spark plug lead by the inner side of the vehicle than the radiator hose and throttle cable.
G Clamp the brake hose with the brake hose holder.
H Fit the brake hose into the guides of the protector.
I 40 mm (1.57 in)

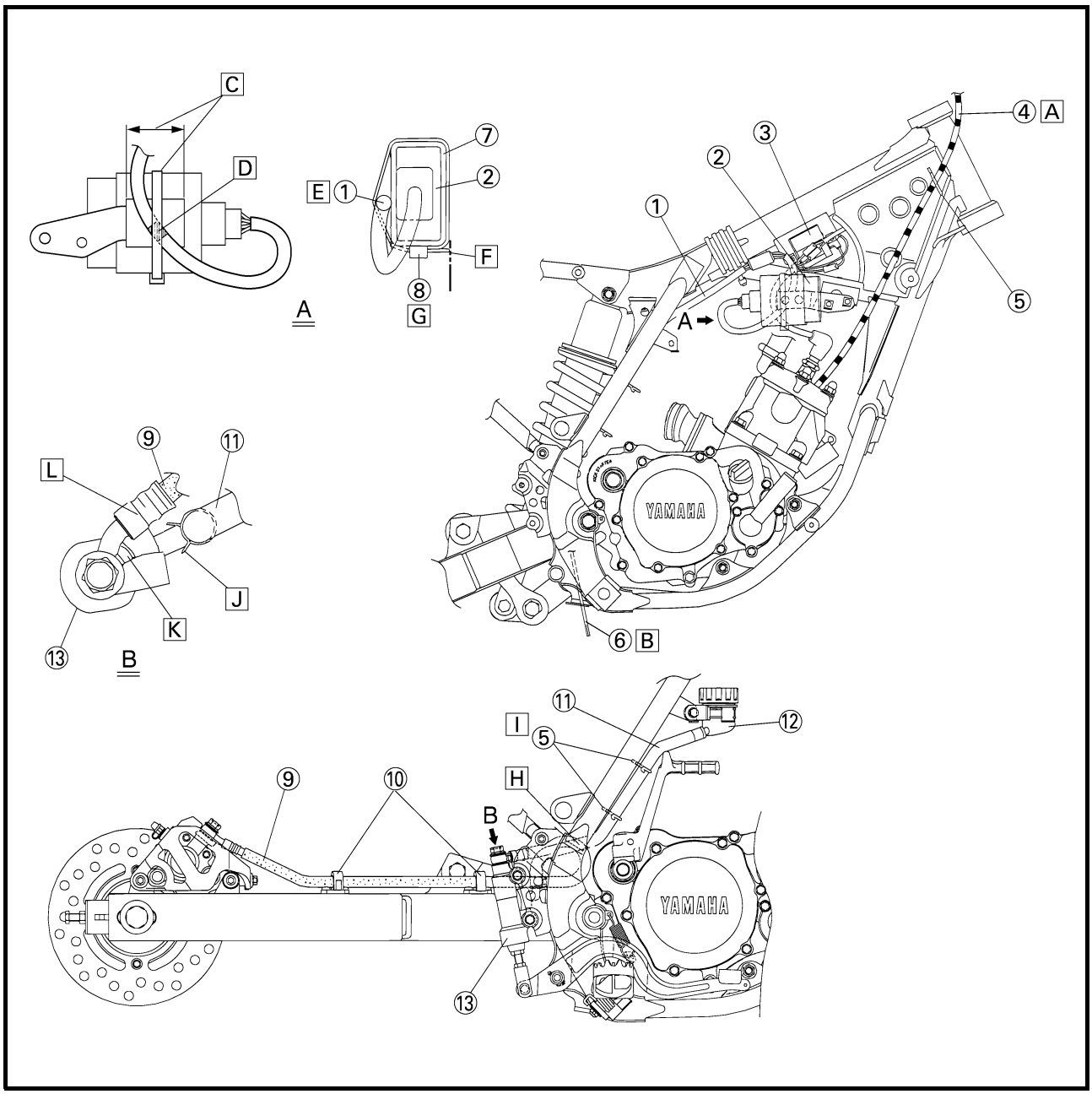


① Sub-wire harness
② CDI unit
③ Ignition coil
④ Clutch cable
⑤ Cable guide
⑥ Transmission oil breather hose
⑦ CDI unit band
⑧ Clamp
⑨ Brake hose
⑩ Brake hose holder
⑪ Brake fluid reservoir hose
⑫ Reservoir tank
⑬ Brake master cylinder

A Route the clutch cable in front of the throttle cable.
B Pass the transmission oil breather hose through the hose guide.
C Clamp it between these parts.
D Clamp it using the white PVC tape as a guide.
E Pass the sub-wire harness on the left side of the CDI unit.
F Cut the tip of the clamp near the position of chain double-dashed line.
G Tighten the sub-wire harness to the CDI unit. Position the lock section under the CDI unit.
H Route the reservoir tank hose by the outer side of the vehicle than the brake hose.
I Pass the brake fluid reservoir hose through the cable guides.

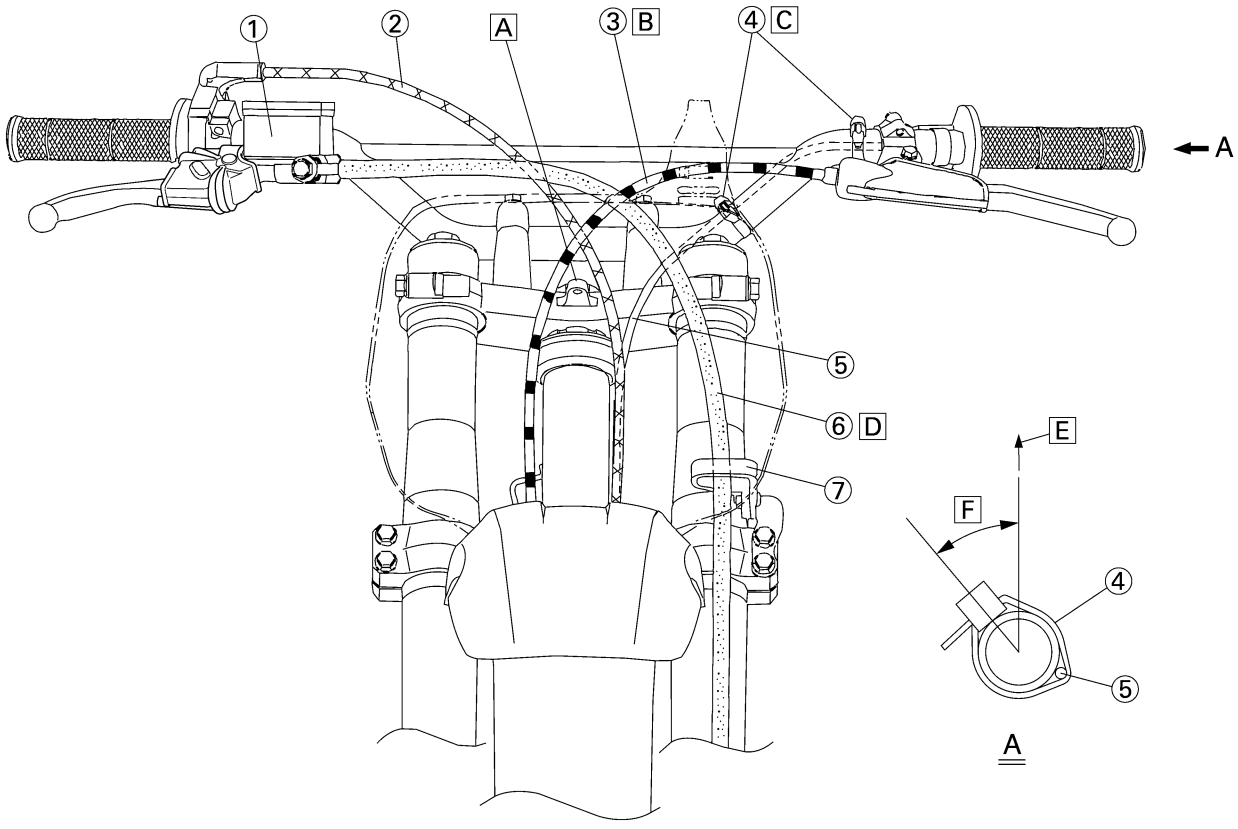


[J] Install the clip pointing the clamp section to the rear side.
[K] Touch the brake pipe to the stopper.
[L] When installing the brake hose, install it so that the bend section of the brake hose attachment is pointed in the direction as shown in the illustration.



① Master cylinder
② Throttle cable
③ Clutch cable
④ Clamp
⑤ Engine stop switch lead
⑥ Brake hose
⑦ Cable guide

[A] This is the number plate attaching section. The clutch cable and throttle cable shall be routed crossways above the number plate attaching section. At this time, make sure to route the clutch cable to the front side of the throttle cable.
[B] Route the clutch cable in front of the throttle cable.
[C] Fasten the engine stop switch lead to the handlebar with the plastic band.
[D] Pass the brake hose in front of the number plate.
[E] Vertical direction
[F] 40° ± 10°



CHAPTER 3
PERIODIC CHECKS AND ADJUSTMENTS

EAS00036

PERIODIC CHECKS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

EAS00037

PERIODIC MAINTENANCE AND LUBRICATION INTERVALS

NOTE:

- From the seventh race, repeat the maintenance intervals starting from “Every race”.
- Items marked with an asterisk should be performed by a Yamaha dealer as they require special tools, data and technical skills.

NO.		ITEM	ROUTINE	After break-in	Every race	Every third race	Every fifth race	As required
1	*	**Piston**	• Check piston for carbon deposits and cracks or damage. • Clean.	√	√			
			• Replace.				√	√
2	*	**Piston rings**	• Check piston ring end gap and rings for damage.	√	√			
			• Replace.			√		√
3	*	**Piston pin and small end bearing**	• Check piston pin and small end bearing for damage.		√			
			• Replace.					√
4	*	**Cylinder head**	• Check cylinder head for carbon deposits. • Clean.	√	√			
			• Check cylinder head gasket for damage. • Tighten cylinder head bolts if necessary.	√	√			
			• Replace cylinder head gasket.					√
5	*	**Cylinder**	• Check cylinder for score marks or wear. • Clean.	√	√			
			• Replace.					√
6	*	**Clutch**	• Check clutch housing, friction plates, clutch plates and clutch springs for wear or damage. • Adjust.	√	√			
			• Replace.					√
7	*	**Transmission**	• Change the transmission oil.	√			√	
			• Check transmission for damage.					√
			• Replace bearings.					√
8	*	**Shift forks, guide bars, shift cam**	• Check all parts for wear and damage. • Replace if necessary.					√
9	*	**Rotor nut (flywheel magneto)**	• Tighten.	√			√	
10	*	**Kickstarter system**	• Check idle gear for damage. • Replace if necessary.					√
11	*	**Exhaust system**	• Check exhaust pipe and muffler for carbon deposits.	√	√			
			• Clean.				√	
12	*	**Crankshaft**	• Check crankshaft for carbon deposits and damage.				√	√
			• Clean.				√	√
13	*	**Carburetor**	• Check carburetor settings and for obstructions.	√	√			
			• Adjust and clean.	√	√			
14		**Spark plug**	• Check condition. • Clean and regap.	√	√			
			• Replace.					√
15		**Drive chain**	• Check chain slack, alignment and condition. • Adjust and thoroughly lubricate chain with Yamaha chain and cable lube or equivalent.	√	√			
			• Replace.					√

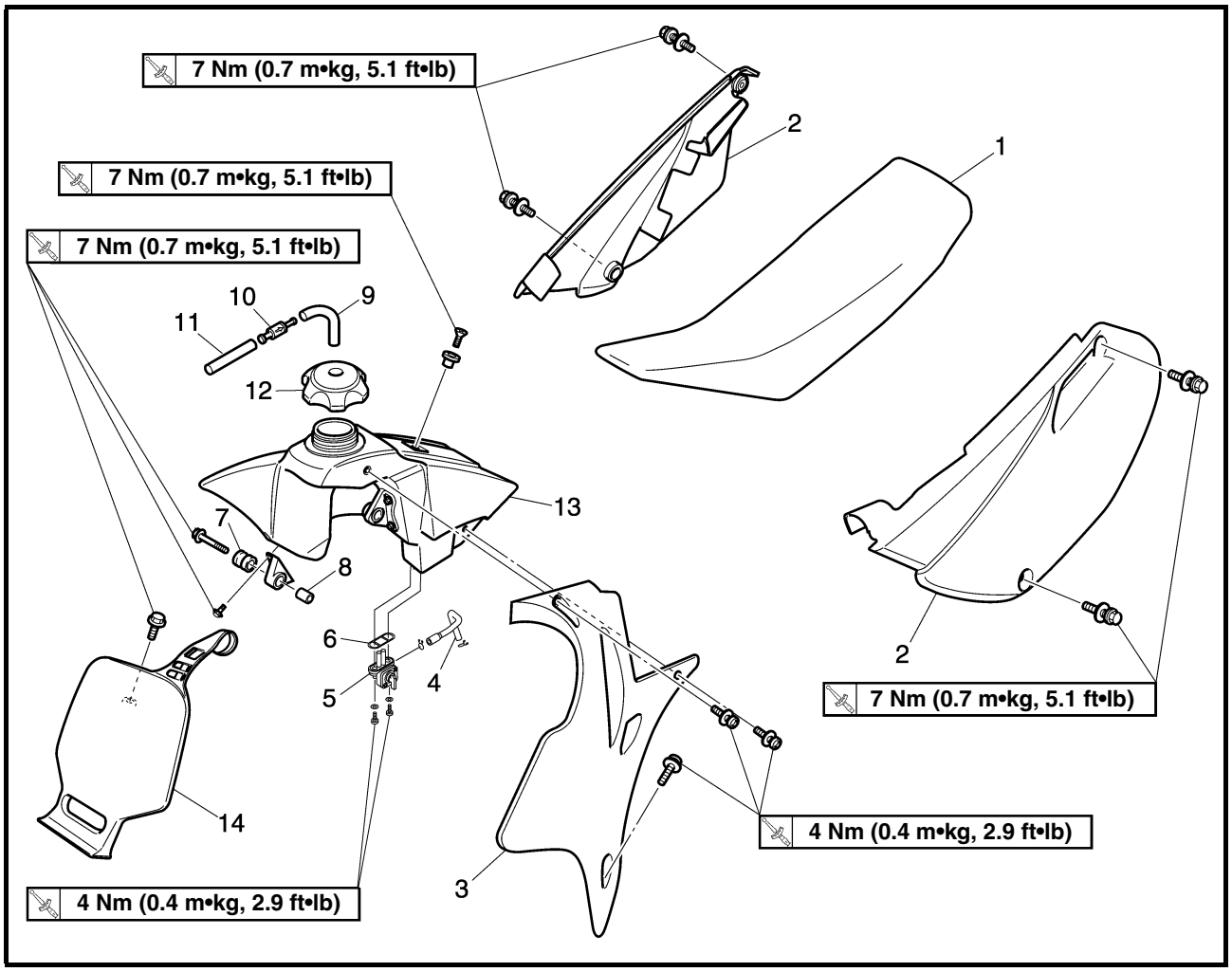
NO.		ITEM	ROUTINE	After break-in	Every race	Every third race	Every fifth race	As required
16	*	Cooling system	• Check coolant level and for leakage.	√	√			
			• Check hoses for cracks or damage.		√			
			• Check radiator cap spring operation.					√
			• Change coolant.	Every 2 years				√
17	*	Chassis fasteners	• Check all chassis fitting and fasteners. • Correct or tighten if necessary.	√	√			
18	*	Air filter element	• Clean.	√	√			
			• Replace.					√
19	*	Frame	• Clean and check for damage.	√	√			
20	*	Fuel line	• Clean and check for leakage.	√		√		
21	*	Brakes	• Adjust lever position and pedal height. • Lubricate pivot points. • Check brake disk surface. • Check fluid level and for leakage. • Tighten brake disk bolts, caliper bolts, master cylinder bolts and union bolts.	√	√			
			• Replace brake pads.					√
			• Replace brake fluid.	Every year				√
22	*	Front fork	• Check operation and for oil leakage. • Adjust if necessary. • Clean dust seal and lubricate with lithium-soap-based grease.	√	√			
			• Replace fork oil.	√			√	
			• Replace oil seals.					√
23	*	Shock absorber assembly	• Check operation and adjust. • Tighten if necessary.	√	√			
			• Lubricate with molybdenum disulfide grease.			√		√ (After washing the vehicle or riding in the rain)
24	*	Drive chain roller and support guide	• Check for wear or damage. • Replace if necessary.					√
25	*	Rear suspension	• Check operation and tighten if necessary.	√	√			
			• Lubricate with molybdenum disulfide grease.	√	√			
26	*	Steering head	• Check operation, free play, and tighten if necessary.	√	√			
			• Clean and lubricate with lithium-soap-based grease.				√	
			• Replace bearings.					√
27	*	Tires and wheels	• Check tire air pressure, wheel runout, spokes for looseness, and tires for wear.	√	√			
			• Tighten sprocket bolts if necessary.	√	√			
			• Check wheel bearings for looseness.			√		
			• Lubricate wheel bearings with lithium-soap-based grease.			√		
			• Replace wheel bearings.					√
28	*	Moving parts and cables	• Lubricate.	√	√			
29	*	Throttle grip housing and cable	• Check operation and free play. • Adjust the throttle cable free play if necessary. • Lubricate the throttle grip housing and cable.	√	√			

NOTE:

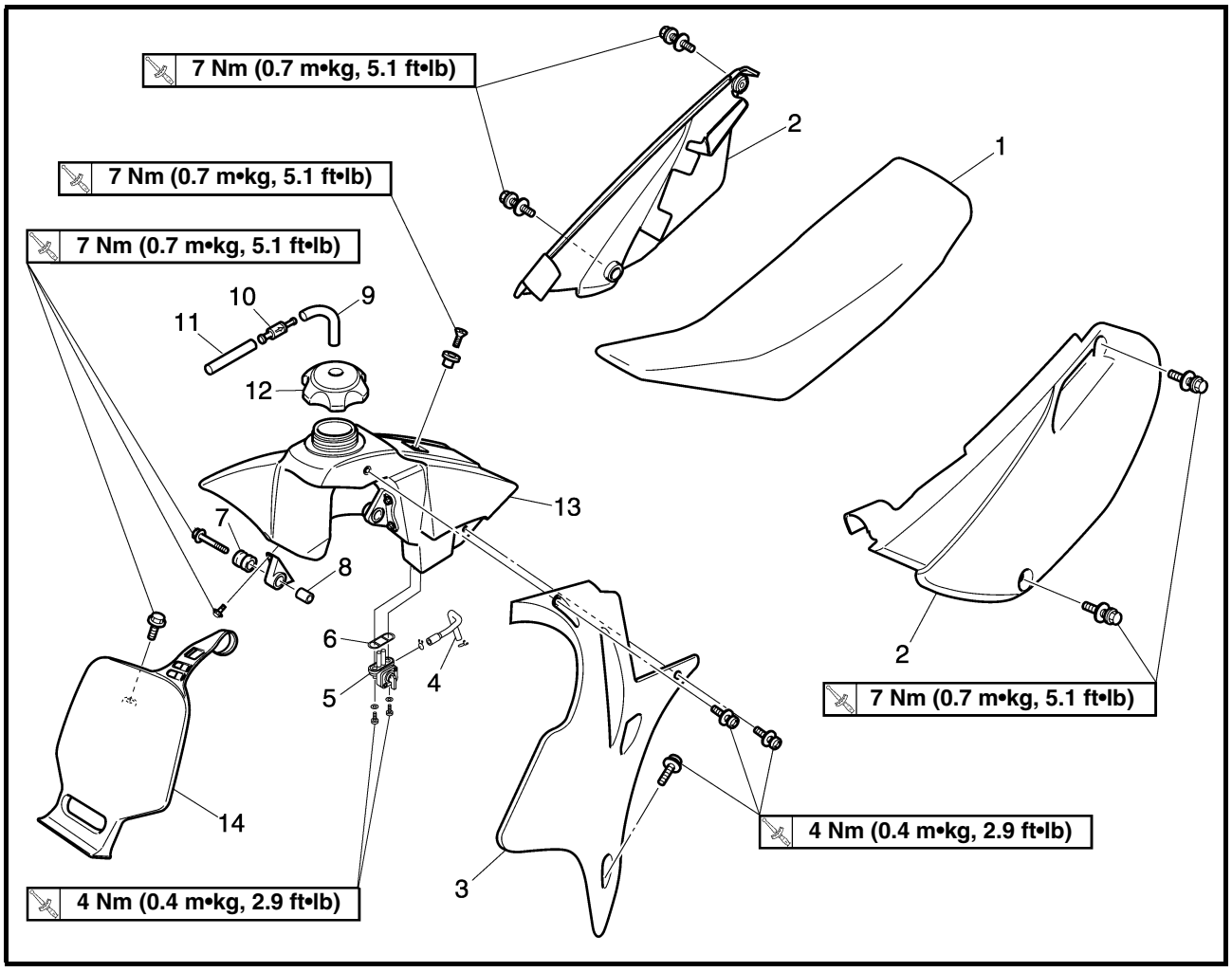
- Hydraulic brake service
  - Regularly check and, if necessary, correct the brake fluid level.
  - Every two years replace the internal components of the brake master cylinders and calipers, and change the brake fluid.
  - Replace the brake hoses every four years and if cracked or damaged.

EAS00042

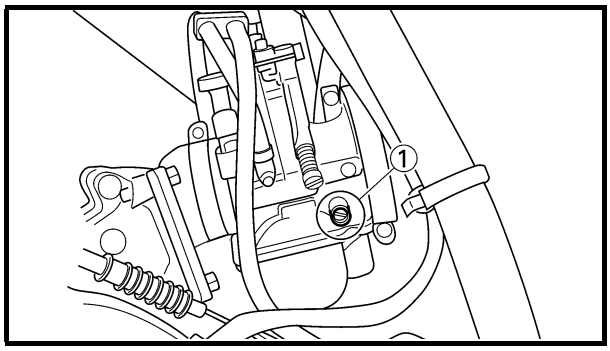
SEAT, SIDE COVERS AND FUEL TANK



Order	Job/Part	Q'ty	Remarks
	Removing the seat, side covers and fuel tank		Remove the parts in the order listed.
1	Seat	1	
2	Side covers (left and right)	2	
3	Air scoop	1	
4	Fuel pipe	1	Disconnect.
5	Fuel cock	1	
6	O-ring	1	
7	Grommet	2	
8	Collar	2	
9	Hose	1	Disconnect.
10	Joint pipe	1	
11	Hose	1	Disconnect.
12	Fuel tank cap	1	
13	Fuel tank	1	



Order	Job/Part	Q'ty	Remarks
14	Number plate	1	For installation, reverse the removal procedure.



ENGINE

ADJUSTING THE PILOT AIR SCREW

1. Adjust:
   • pilot air screw ①

NOTE:

To optimize the fuel flow at a smaller throttle opening, each vehicles pilot air screw has been individually set at the factory. Before adjusting the pilot air screw, turn it in fully and count the number of turns. Record this number as the factory-set number of turns out.

a. Turn in the pilot air screw until it is lightly seated.
b. Turn out the pilot air screw by the specified number of turns.

	Pilot air screw setting **2 turns out**

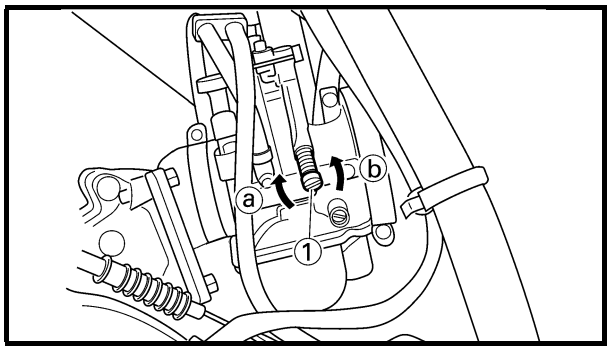
EAS00054

ADJUSTING THE ENGINE IDLING SPEED

NOTE:

Prior to adjusting the engine idling speed, the air filter element should be clean, and the engine should have adequate compression.

1. Start the engine and let it warm up for several minutes.
2. Adjust:
   • engine idling speed



a. Turn the throttle stop screw ① in direction ⓐ or ⓑ until the engine runs at the lowest possible speed.

Direction ⓐ	**Engine idling speed is increased.**
Direction ⓑ	**Engine idling speed is decreased.**

3. Adjust:
   • throttle cable free play
   Refer to “ADJUSTING THE THROTTLE CABLE FREE PLAY”.

	Throttle cable free play **(at the flange of the throttle grip)** **3.0 ~ 5.0 mm (0.12 ~ 0.20 in)**

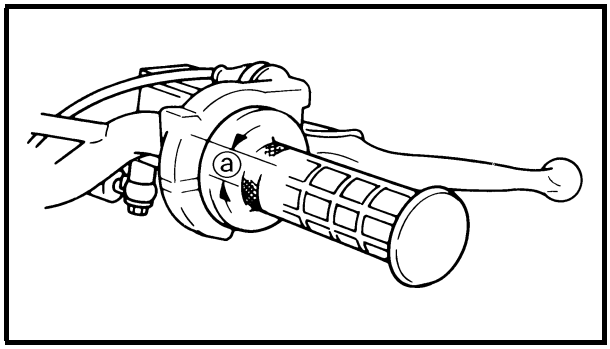
EAS00058

ADJUSTING THE THROTTLE CABLE FREE PLAY

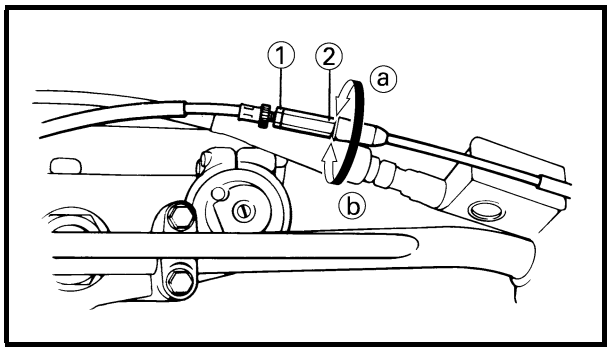
NOTE:

Prior to adjusting the throttle cable free play, the engine idling speed should be adjusted.

1. Check:
   • throttle cable free play ⓐ
   Out of specification → Adjust.



Throttle cable free play
(at the flange of the throttle grip)
3.0 ~ 5.0 mm (0.12 ~ 0.20 in)



2. Adjust:
   • throttle cable free play

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Handlebar side

a. Loosen the locknut ①.
b. Turn the adjusting nut ② in direction ⓐ or ⓑ until the specified throttle cable free play is obtained.

Direction ⓐ	**Throttle cable free play is increased.**
Direction ⓑ	**Throttle cable free play is decreased.**

c. Tighten the locknut.

⚠ WARNING

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right or left to ensure that this does not cause the engine idling speed to change.

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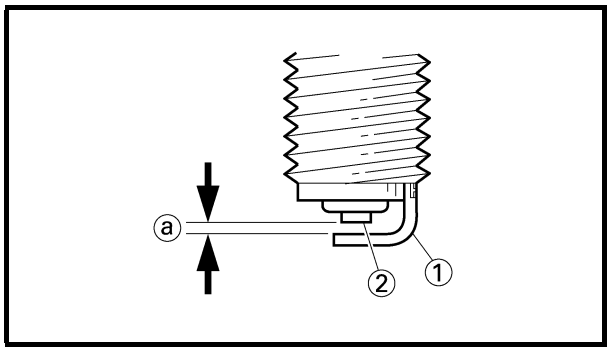
EAS00060

CHECKING THE SPARK PLUG

1. Disconnect:
   • spark plug cap
2. Remove:
   • spark plug

CAUTION:

Before removing the spark plug, blow away any dirt accumulated in the spark plug well with compressed air to prevent it from falling into the cylinder.



3. Check:
   • spark plug type
   Incorrect → Change.

	Spark plug type (manufacturer) **BR10EG (NGK)**

4. Check:
   • electrode ①
   Damage/wear → Replace the spark plug.
   • insulator ②
   Abnormal color → Replace the spark plug.
   Normal color is medium-to-light tan.
5. Clean:
   • spark plug
   (with a spark plug cleaner or wire brush)
6. Measure:
   • spark plug gap ⓐ
   (with a wire thickness gauge)
   Out of specification → Regap.

	Spark plug gap **0.5 ~ 0.6 mm (0.0197 ~ 0.0236 in)**

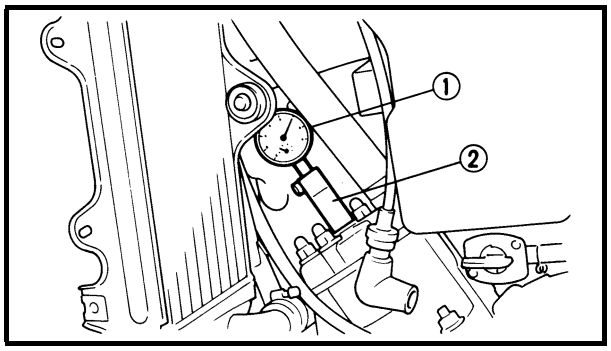
7. Install:
   • spark plug

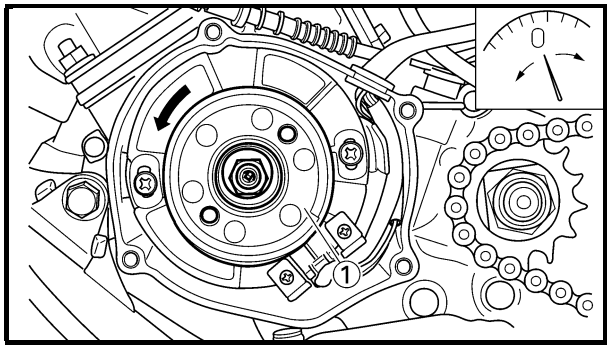
	Spark plug **20 Nm (2.0 m•kg, 14 ft•lb)**

NOTE:

Before installing the spark plug, clean the spark plug and gasket surface.

8. Connect:
   • spark plug cap





EAS00062

CHECKING THE IGNITION TIMING

1. Remove:
   - air scoop
   - spark plug
   - left crankcase cover
2. Attach:
   - dial gauge ①
   - dial gauge stand ②

Dial gauge and stand
90890-01252, YU-3097
Stand
YU-1256

3. Adjust:
   - top dead center (TDC)

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a. Rotate the rotor ① until the piston reaches top dead center (TDC). When this happens, the needle on the dial gauge will stop and reverse directions even though the rotor is being turned in the same direction.
b. Set the dial gauge to zero at TDC.
c. From TDC, rotate the rotor clockwise until the dial gauge indicates that the piston in at a specified distance from TDC.

Ignition timing (B.T.D.C.)
0.9 mm (0.035 in)

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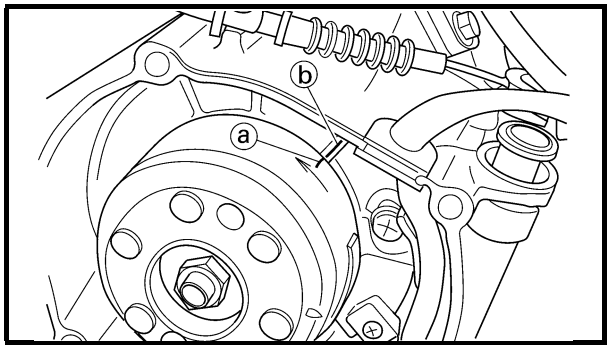
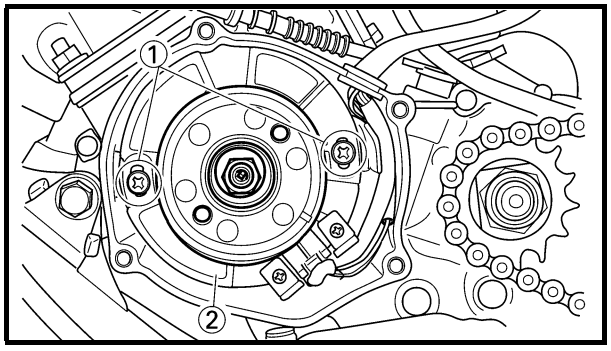
4. Check:
   - ignition timing
     Punch mark ⓐ on rotor should be aligned with punch mark ⓑ on stator.
     Not aligned → Adjust.





5. Adjust:
   - ignition timing

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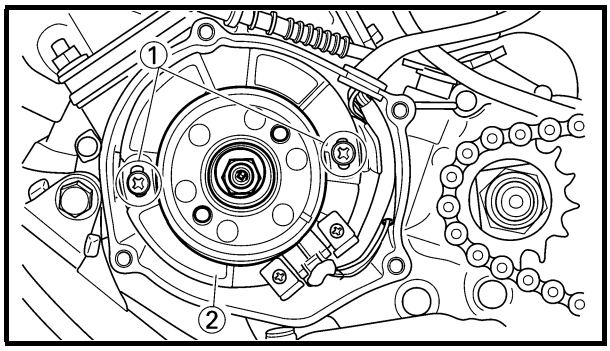
a. Loosen the screws (stator) ①.
b. Align the punch mark on the rotor with punch mark on stator ② by moving the stator.
c. Tighten the screws (stator).



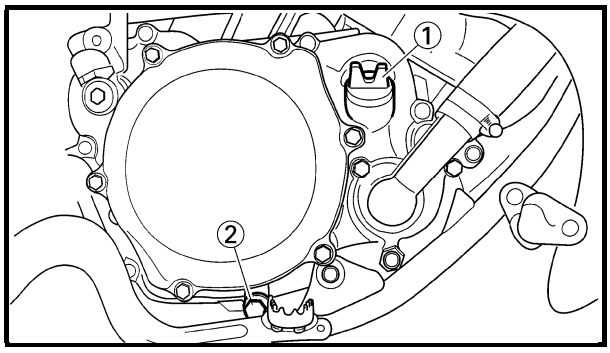
Screw (stator)
8 Nm (0.8 m•kg, 5.8 ft•lb)

6. Check:
   • ignition timing
   Re-check the ignition timing.

EAS00074

CHANGING THE TRANSMISSION OIL

1. Start the engine, warm it up for several minutes, and then turn it off.
2. Place the vehicle on a level place and hold it on upright position by placing the suitable stand under the engine.
3. Place a container under the transmission oil drain bolt.
4. Remove:
   • transmission oil filler cap ①
   • transmission drain bolt ②



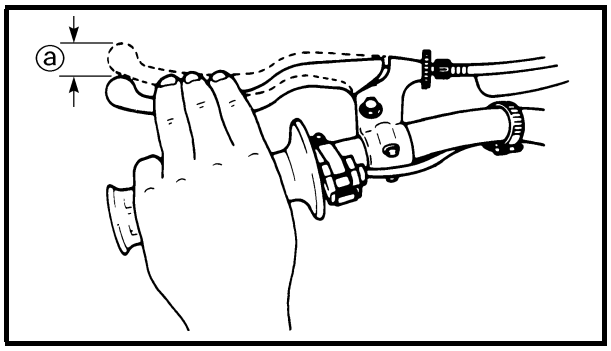
5. Drain:
   • transmission oil
   (completely from the crankcase)
6. Install:
   • transmission oil drain bolt gasket New
   • transmission oil drain bolt
   (along with the new gasket)

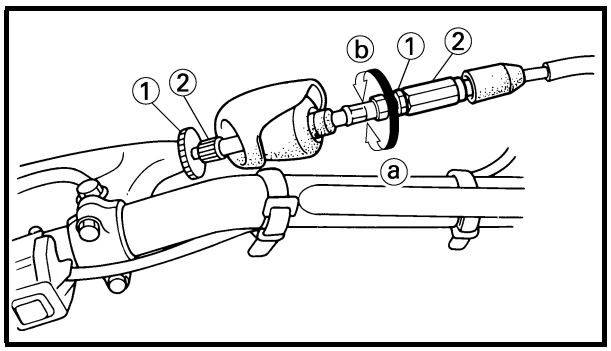
10 Nm (1.0 m•kg, 7.2 ft•lb)

7. Fill:
   • transmission oil
   (with the specified amount of the recommended transmission oil)

Quantity
Total amount
0.5 L (0.44 Imp qt, 0.53 US qt)

8. Install:
   • transmission oil filler cap
9. Start the engine, warm it up for several minutes, and then turn it off.
10. Check:
    • oil leakage





EAS00081

ADJUSTING THE CLUTCH CABLE FREE PLAY

1. Check:
   • clutch cable free play ⓐ
   Out of specification → Adjust.

Clutch cable free play
(at the end of the clutch lever)
10.0 ~ 15.0 mm (0.39 ~ 0.59 in)

2. Adjust:
   • clutch cable free play

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a. Loosen the locknut ①.
b. Turn the adjusting nut ② in direction ⓐ or ⓑ until the specified clutch cable free play is obtained.

Direction ⓐ	**Clutch cable free play is increased.**
Direction ⓑ	**Clutch cable free play is decreased.**

c. Tighten the locknut.

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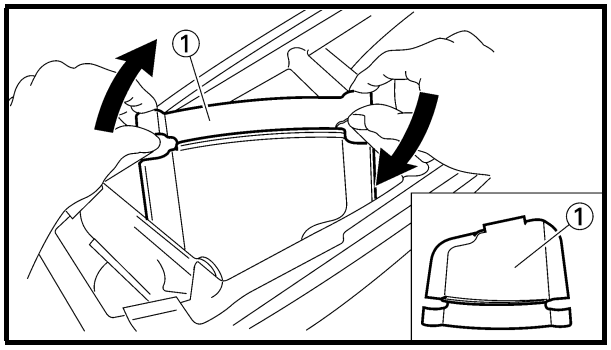

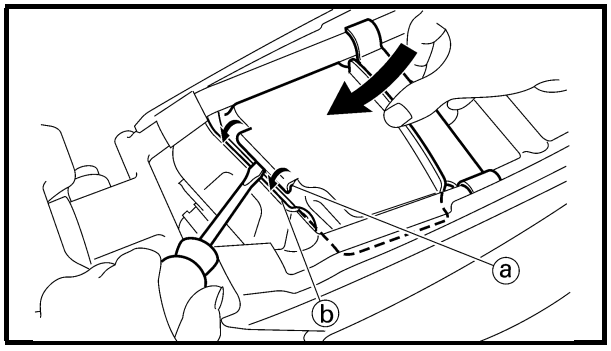

EAS00090

CLEANING THE AIR FILTER ELEMENT

1. Remove:
   • seat
   • side covers (left and right)
   Refer to “SEAT, SIDE COVERS AND FUEL TANK”.
2. Remove:
   • air filter case cover ①

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a. Set the air filter case cover as shown, and install it to the seat rail of the rear frame while rotating air filter case cover in the direction of the arrow.
b. Using a conventional screwdriver, hold up the front of the air filter case cover.
   Then engage the groove ⓐ in the cover over the air filter case edge ⓑ.

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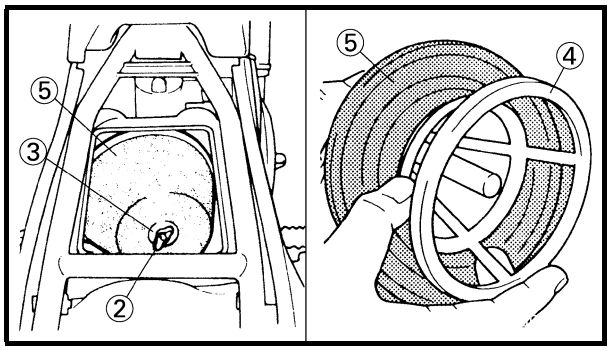
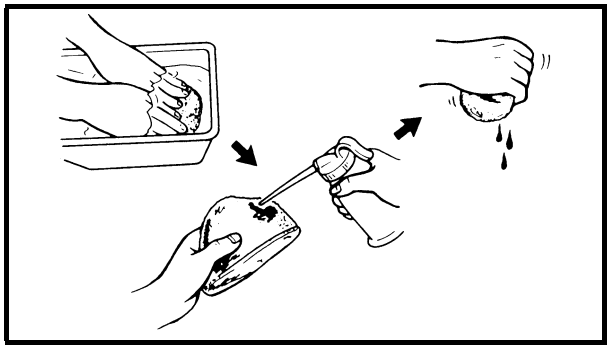




- fitting bolt ②
- washer ③
- air filter guide ④
- air filter element ⑤

CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.

3. Clean:
   - air filter element
     (with solvent)

NOTE:

After cleaning, remove the remaining solvent by squeezing the element.

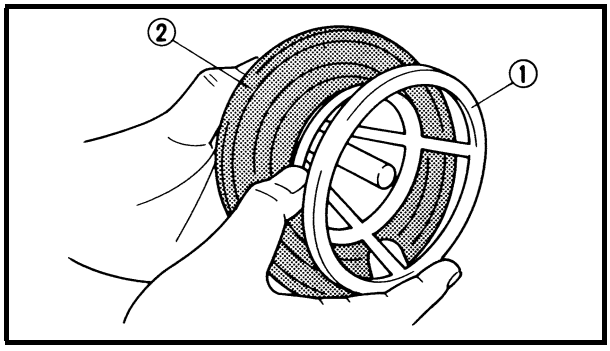
CAUTION:

- **Do not twist the element when squeezing the element.**
- **Leaving too much of solvent in the element may result in poor starting.**

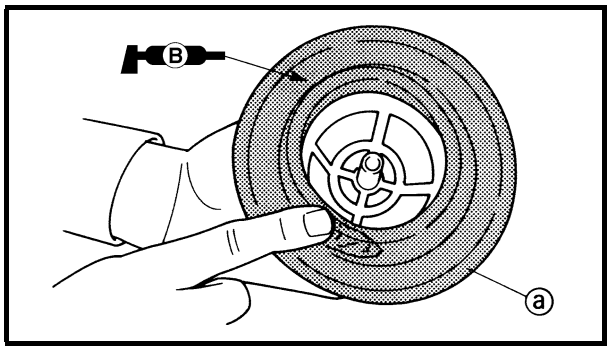
4. Check:
   - air filter element
     Damage → Replace.
5. Apply:
   - foam-air-filter oil or equivalent oil
     To the element.

NOTE:

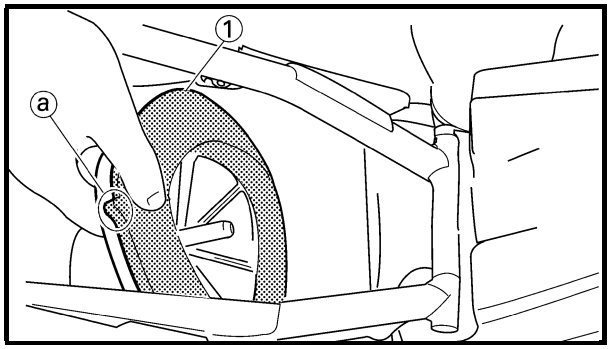
Squeeze out the excess oil. Element should be wet but not dripping.



6. Install:
   - air filter guide ①
   - air filter element ②



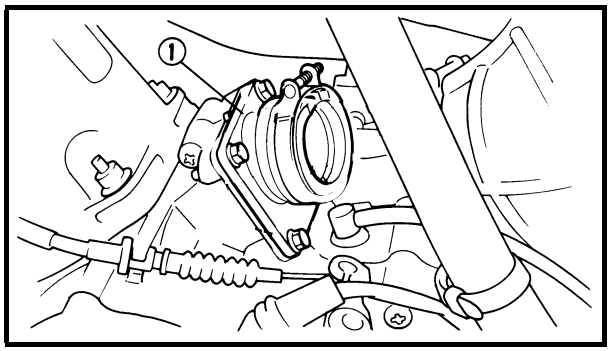
7. Apply:
   • lithium-soap-base grease
   On the matching surface ⓐ on air filter element.



8. Install:
   • air filter element ①
   • washer
   • fitting bolt — 2 Nm (0.2 m•kg, 1.4 ft•lb)

NOTE:

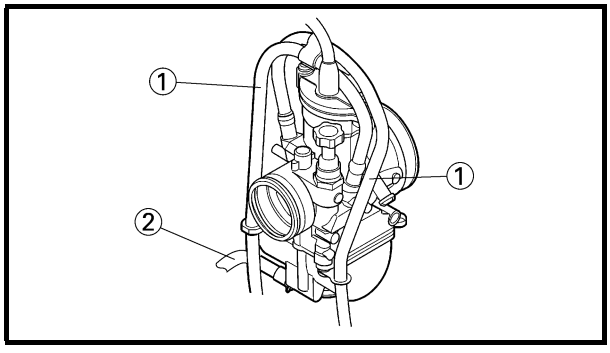
- Install the air filter element with its projection ⓐ facing upward.
- Make sure the air filter element is properly installed in the air filter case.



EAS00094

CHECKING THE CARBURETOR JOINT

1. Remove:
   • carburetor
   Refer to “CARBURETOR” in chapter 7.
2. Check:
   • carburetor joint ①
   Cracks/damage → Replace.
   Refer to “CARBURETOR” in chapter 7.
3. Install:
   • carburetor joint
   • carburetor

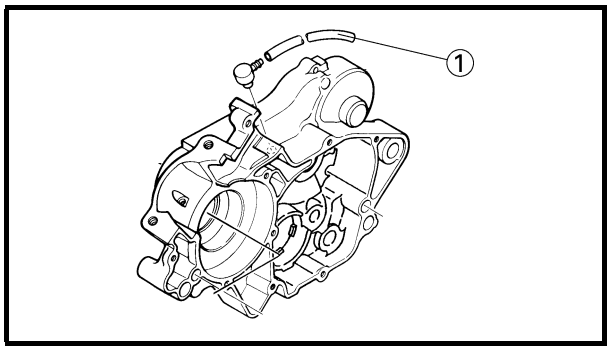


EAS00096

CHECKING THE HOSES

The following procedure applies to all of the fuel and vacuum hoses.

1. Check:
   • fuel hose
   • carburetor breather hose ①
   • over flow hose ②
   Cracks/damage → Replace.
   Loose connection → Connect properly.



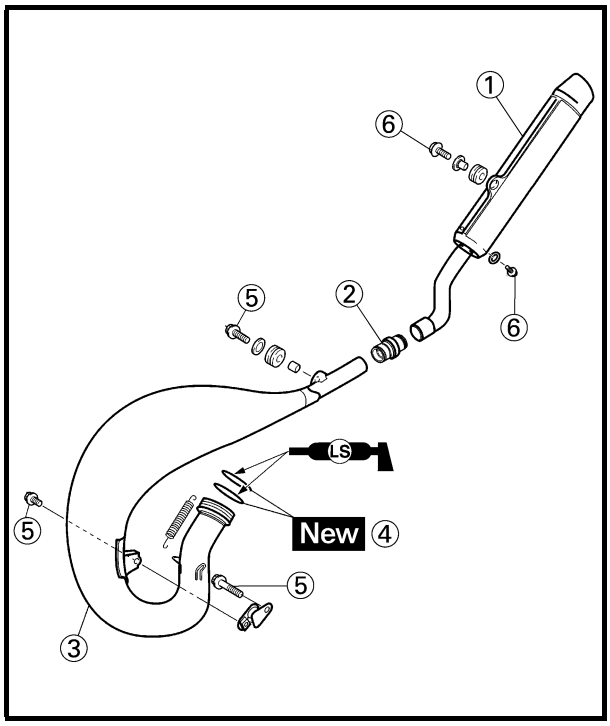
EAS00098

CHECKING THE CRANKCASE BREATHER HOSE

1. Check:
   - crankcase breather hose ①
     Cracks/damage → Replace.
     Loose connection → Connect properly.

CAUTION:

Make sure the crankcase breather hose is routed correctly.



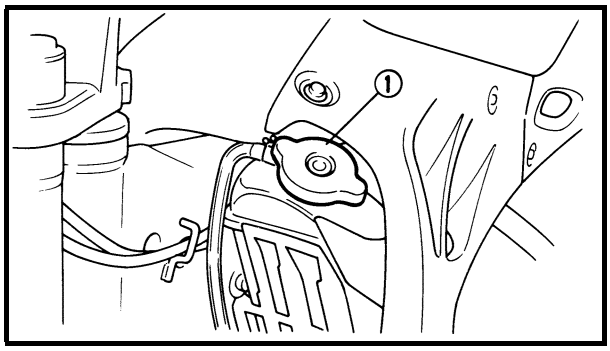
EAS00100

CHECKING THE EXHAUST SYSTEM

The following procedure applies to all of the exhaust pipes, mufflers and gaskets.

1. Remove:
   - seat
   - side cover (right)
     Refer to "SEAT, SIDE COVERS AND FUEL TANK".
2. Remove:
   - silencer ①
   - exhaust joint ②
   - exhaust pipe ③
   - gasket ④
3. Check:
   - silencer ①
   - exhaust joint ②
   - exhaust pipe ③
     Cracks/damage → Replace.
4. Install:
   - gasket ④ New
   - exhaust pipe ③
   - exhaust joint ②
   - silencer ①

Exhaust pipe bolt ⑤
12 Nm (1.2 m•kg, 8.7 ft•lb)
Silencer bolt ⑥
12 Nm (1.2 m•kg, 8.7 ft•lb)



EAS00102

CHECKING THE COOLANT LEVEL

1. Stand the vehicle on a level surface.

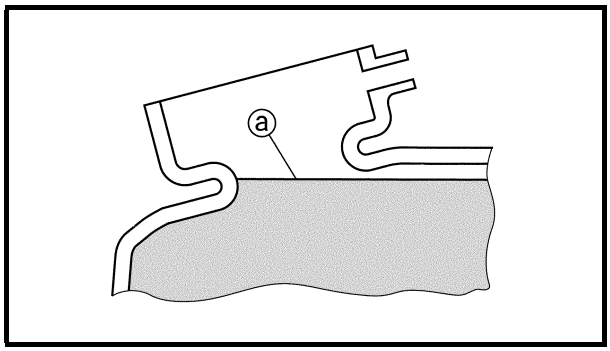
NOTE:

- Place the vehicle on a suitable stand.
- Make sure the vehicle is upright.

2. Remove:
   - radiator cap ①

CAUTION:

A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:
Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the radiator cap and turn it counterclockwise to remove.



3. Check:
   - coolant level
     Coolant level ⓐ low → Add coolant.

CAUTION:

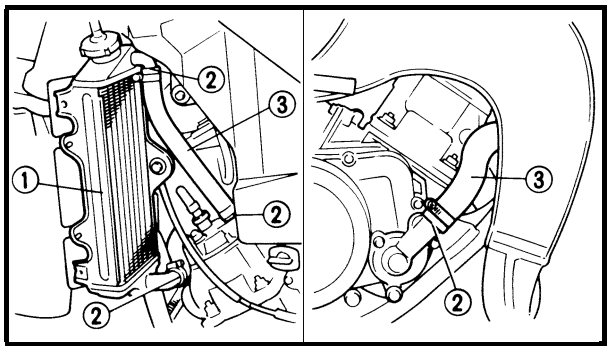
- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check:
   - coolant level

NOTE:

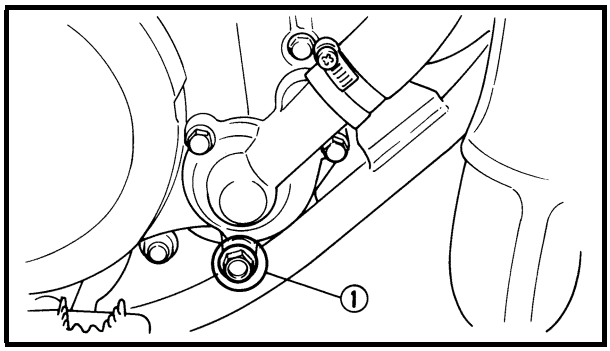
Before checking the coolant level, wait a few minutes until it settles.

6. Install:
   - radiator cap



EAS00104
CHECKING THE COOLING SYSTEM

1. Remove:
   • air scoop
   Refer to “SEAT, SIDE COVERS AND FUEL TANK”.
2. Check:
   • radiator ①
   • radiator hose joint ②
   • radiator hose ③
   Cracks/damage → Replace.
   Refer to “COOLING SYSTEM” in chapter 6.
3. Install:
   • air scoop



EAS00105
CHANGING THE COOLANT

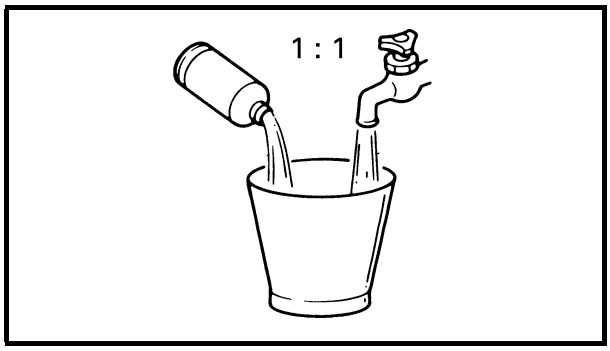
1. Remove:
   • coolant drain bolt ①
2. Remove:
   • radiator cap

⚠ WARNING

A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:
Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the radiator cap and turn it counterclockwise to remove.

3. Drain:
   • coolant
4. Install:
   • copper washer New
   • coolant drain bolt

	Coolant drain bolt **10 Nm (1.0 m•Kg, 7.2 ft•lb)**



5. Fill:
   • coolant
   (with the specified amount of the recommended coolant)

Recommended antifreeze
High-quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines
Mixing ratio
1:1 (antifreeze:water)
Quantity
Total amount
0.54 L (0.48 Imp qt, 0.57 US qt)

Handling notes for coolant
Coolant is potentially harmful and should be handled with special care.

⚠ WARNING

- **If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.**
- **If coolant splashes on your clothes, quickly wash it away with water and then with soap and water.**
- **If coolant is swallowed, induce vomiting and get immediate medical attention.**

CAUTION:

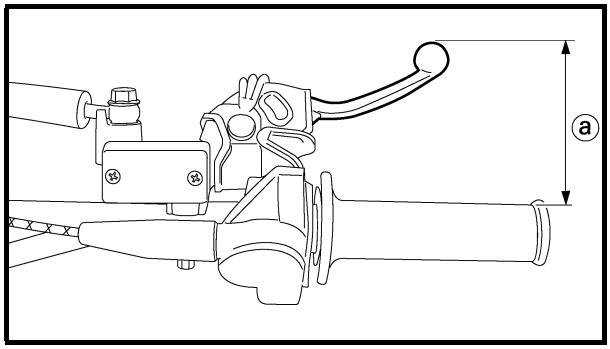
- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**
- **If coolant comes into contact with painted surfaces, immediately wash them with water.**
- **Do not mix different types of antifreeze.**

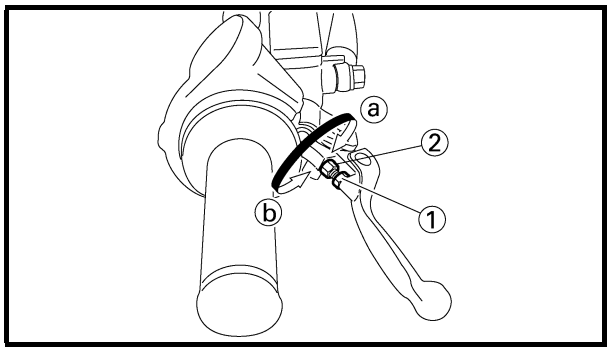
6. Install:
   • radiator cap
7. Start the engine, warm it up for several minutes, and then stop it.

8. Check:
   • coolant level
   Refer to “CHECKING THE COOLANT LEVEL”.

NOTE:

Before checking the coolant level, wait a few minutes until the coolant has settled.





EAS00106

CHASSIS

ADJUSTING THE FRONT BRAKE

1. Adjust:
   • brake lever position
   (distance ⓐ from the throttle grip to the brake lever)

Standard brake lever position
95 mm (3.74 in)
Extent of adjustment
76 ~ 97 mm (2.99 ~ 3.82 in)

a. Loosen the locknut ①.
b. Turn the adjusting bolt ② in direction ⓐ or ⓑ until the brake lever is in the desired position.

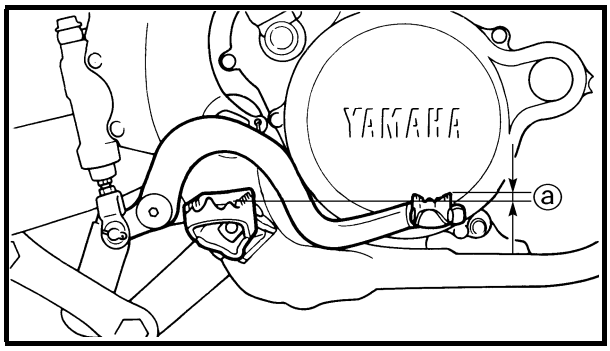
Direction ⓐ	**Brake lever distance is increased.**
Direction ⓑ	**Brake lever distance is decreased.**

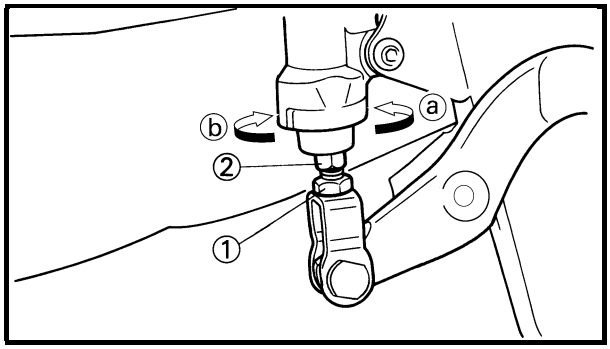
c. Tighten the locknut.

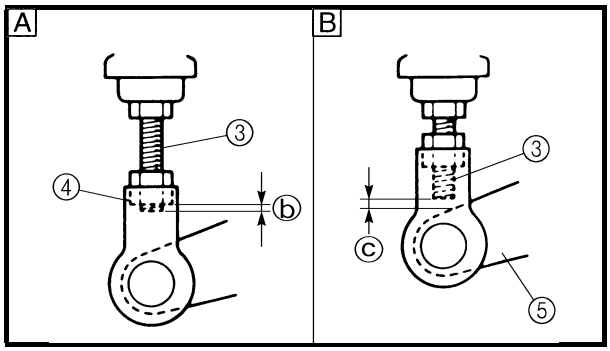
Locknut
5 Nm (0.5 m•kg, 3.6 ft•lb)

CAUTION:

After adjusting the brake lever position, make sure there is no brake drag.







EAS00111

ADJUSTING THE REAR BRAKE

1. Check:
   • brake pedal height ⓐ
   Out of specification → Adjust.

	Brake pedal height **4.0 ~ 10.0 mm (0.16 ~ 0.39 in)**

2. Adjust:
   • brake pedal height

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a. Loosen the locknut ①.
b. Turn the adjusting nut ② in direction ⓐ or ⓑ until the specified brake pedal position is obtained.

Direction ⓐ	**Brake pedal is raised.**
Direction ⓑ	**Brake pedal is lowered.**

⚠ WARNING

Adjust the pedal height between the maximum Ⓐ and the minimum Ⓑ as shown. (In this adjustment, the bolt ③ end ⓑ should protrude out of the lower adjusting nut ④ but not be less than 2.0 mm (0.08 in) ⓒ away from the brake pedal ⑤).

c. Tighten the locknut ① to specification.

	Locknut **17 Nm (1.7 m•kg, 12 ft•lb)**

CAUTION:

After adjusting the brake pedal position, make sure there is no brake drag.

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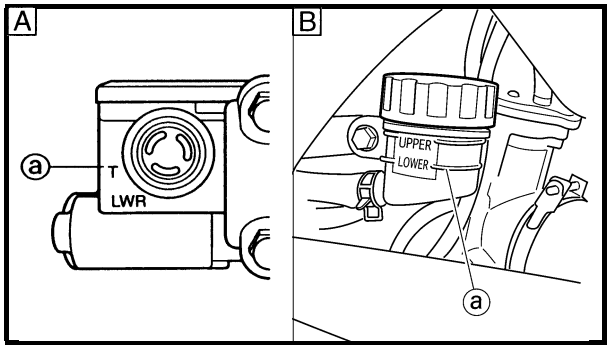


EAS00115

CHECKING THE BRAKE FLUID LEVEL

1. Stand the vehicle on a level surface.

NOTE:

- Place the vehicle on a suitable stand.
- Make sure the vehicle is upright.

2. Check:
   - brake fluid level
     Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.

Recommended brake fluid
DOT 4

A Front brake
B Rear brake

⚠ WARNING

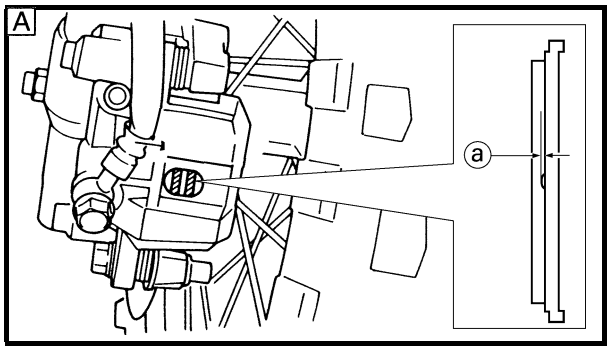
- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

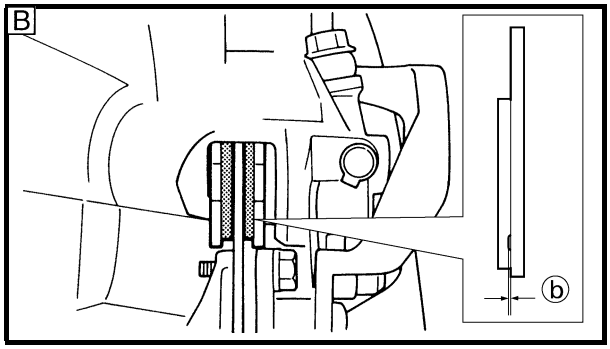
CAUTION:

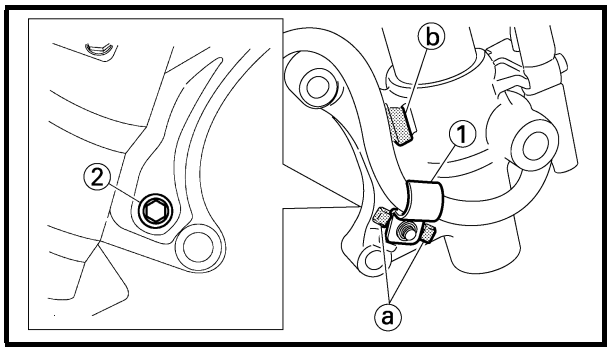
Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

NOTE:

In order to ensure a correct reading of the brake fluid level, make sure the top of the brake fluid reservoir is horizontal.







EAS00118

CHECKING THE FRONT AND REAR BRAKE PADS

The following procedure applies to all of the brake pads.

1. Check:
   - front brake pad
   - rear brake pad

   Wear indicators ⓐ or ⓑ almost touch the brake disc → Replace the brake pads as a set.

   Refer to "REPLACING THE FRONT BRAKE PADS" and "REPLACING THE REAR BRAKE PADS" in chapter 4.

Brake pad wear limit
ⓐ 0.8 mm (0.032 in)
ⓑ 1.0 mm (0.039 in)

A Front brake
B Rear brake

EAS00131

CHECKING THE FRONT AND REAR BRAKE HOSES

The following procedure applies to all of the brake hoses and brake hose clamps.

1. Check:
   - brake hose

   Cracks/damage/wear → Replace.
2. Check:
   - brake hose holder ①

   Loose → Tighten the holder bolt ②.

NOTE:

- Align the brake hose holder with the projection ⓐ on the front fork and clamp the brake hose.
- Pass the brake hose behind the rib ⓑ on the front fork.

3. Hold the vehicle upright and apply the brake several times.
4. Check:
   - brake hose

   Brake fluid leakage → Replace the damaged hose.

   Refer to "FRONT AND REAR BRAKES" in chapter 4.

EAS00135

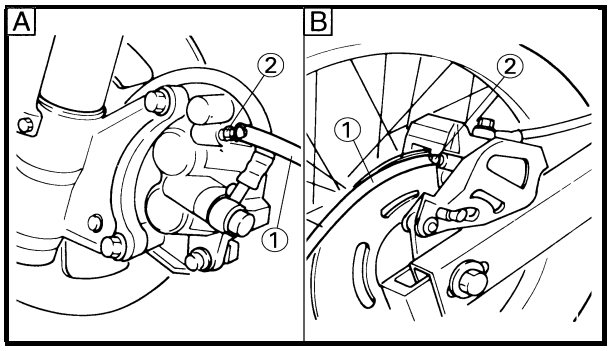
BLEEDING THE HYDRAULIC BRAKE SYSTEM

⚠ WARNING

Bleed the hydraulic brake system whenever:
- **the system is disassembled.**
- **a brake hose is loosened, disconnected or replaced.**
- **the brake fluid level is very low.**
- **brake operation is faulty.**

NOTE:
- Be careful not to spill any brake fluid or allow the brake fluid reservoir to overflow.
- When bleeding the hydraulic brake system, make sure there is always enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the hydraulic brake system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

1. Bleed:
   - hydraulic brake system



a. Fill the brake fluid reservoir to the proper level with the recommended brake fluid.
b. Install the brake fluid reservoir diaphragm.
c. Connect a clear plastic hose ① tightly to the bleed screw ②.

A Front
B Rear

d. Place the other end of the hose into a container.
e. Slowly apply the brake several times.
f. Fully pull the brake lever or fully press down the brake pedal and hold it in position.
g. Loosen the bleed screw.

NOTE:

Loosening the bleed screw will release the pressure and cause the brake lever to contact the throttle grip or the brake pedal to fully extend.

h. Tighten the bleed screw and then release the brake lever or brake pedal.

i. Repeat steps (e) to (h) until all of the air bubbles have disappeared from the brake fluid in the plastic hose.
j. Tighten the bleed screw to specification.

	Bleed screw **6 Nm (0.6 m•kg, 4.3 ft•lb)**

k. Fill the brake fluid reservoir to the proper level with the recommended brake fluid. Refer to "CHECKING THE BRAKE FLUID LEVEL".

⚠ WARNING

After bleeding the hydraulic brake system, check the brake operation.

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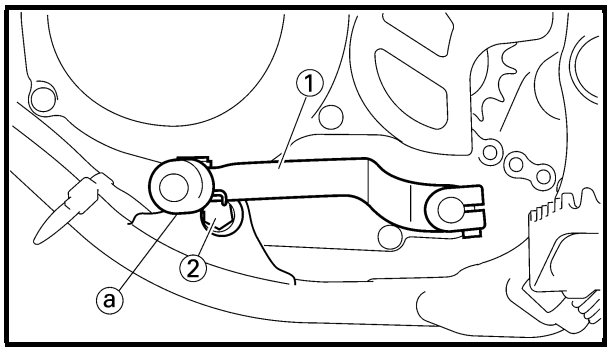

EAS00137

ADJUSTING THE SHIFT PEDAL

1. Adjust:
   • shift pedal ①

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a. Install the shift pedal with the bottom of the pedal outer diameter ⓐ as close to the center of the engine mounting bolt ② as possible.

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EAS00138

ADJUSTING THE DRIVE CHAIN SLACK

NOTE:

The drive chain slack must be checked at the tightest point on the chain.

CAUTION:

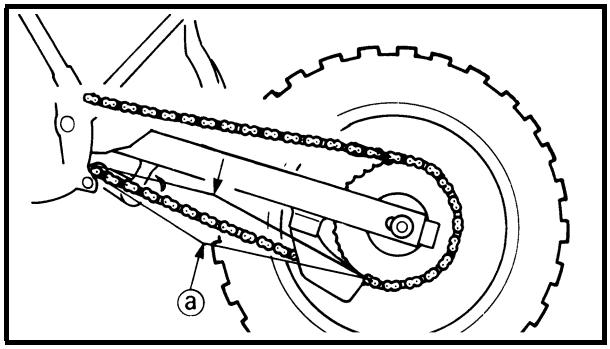
A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.

1. Elevate the rear wheel by placing the suitable stand under the engine.

⚠ WARNING

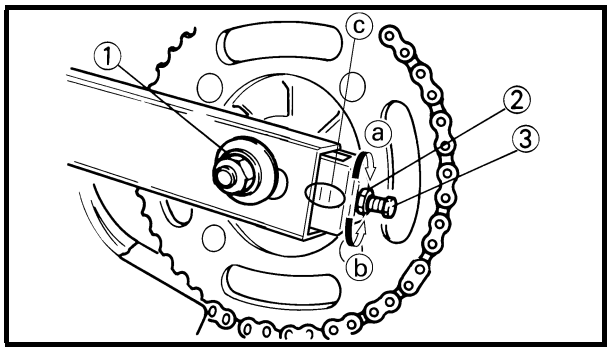
Securely support the vehicle so that there is no danger of it falling over.

2. Move the rear wheel several times and find the tightest position of drive chain.



3. Check:
   • drive chain slack ⓐ
   Out of specification → Adjust.

	Drive chain slack **35.0 ~ 45.0 mm (1.38 ~ 1.77 in)**



4. Adjust:
   • drive chain slack

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a. Loosen wheel axle nut ① and both locknuts ②.
b. Turn both adjusting nuts ③ in direction ⓐ or ⓑ until the specified drive chain slack is obtained.

Direction ⓐ	**Drive chain is tightened.**
Direction ⓑ	**Drive chain is loosened.**

NOTE:

- To maintain the proper wheel alignment, adjust both sides evenly.
- Turn each adjuster exactly the same amount to maintain correct axle alignment.
  (There are marks ⓒ on each side of chain puller alignment.)

c. Tighten the wheel axle nut to specification.

	Wheel axle nut **90 Nm (9.0 m•kg, 65 ft•lb)**

d. Tighten the locknuts to specification.

	Locknut **16 Nm (1.6 m•kg, 11 ft•lb)**

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EAS00143

LUBRICATING THE DRIVE CHAIN

The drive chain consists of many interacting parts. If the drive chain is not maintained properly, it will wear out quickly. Therefore, the drive chain should be serviced, especially when the vehicle is used in dusty areas.

Use only kerosene to clean the drive chain. Wipe the drive chain dry and thoroughly lubricate it with engine oil or chain lubricant that is suitable for non-O-ring chains.

Recommended lubricant
Engine oil or chain lubricant suitable for non-O-ring chains

EAS00147

CHECKING AND ADJUSTING THE STEERING HEAD

1. Stand the vehicle on a level surface.

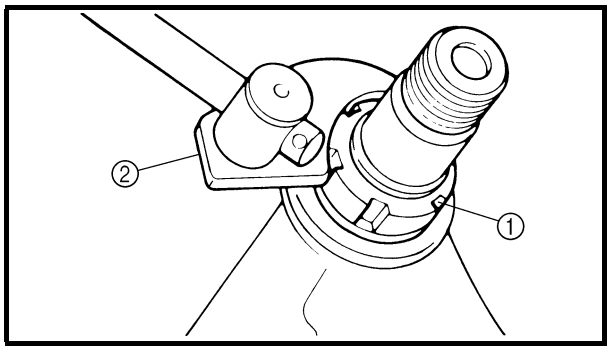
⚠ WARNING

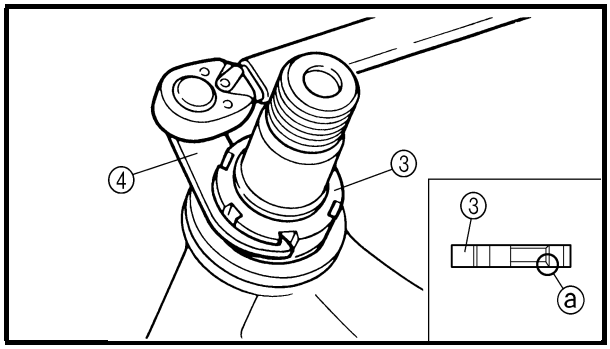
Securely support the vehicle so that there is no danger of it falling over.

NOTE:

Place the vehicle on a suitable stand so that the front wheel is elevated.

2. Check:
   - steering head
     Grasp the bottom of the front fork legs and gently rock the front fork.
     Binding/looseness → Adjust the steering head.
3. Remove:
   - handlebar
   - upper bracket
     Refer to “HANDLEBAR” and “STEERING HEAD” in chapter 4.
4. Adjust:
   - steering head





a. Remove the steering ring nut ① using the steering nut wrench ②.
b. Tighten the steering ring nut ③ with a steering nut wrench ④.

NOTE:

- Set the torque wrench at a right angle to the steering nut wrench.
- Install the steering ring nut with its larger chamfered side ⓐ downward.

Steering nut wrench
90890-01403, YU-33975

Steering ring nut
(initial tightening torque)
38 Nm (3.8 m•kg, 27 ft•lb)

c. Loosen the steering ring nut ① one turn and then tighten it to specification with a steering nut wrench.

⚠ WARNING

Do not overtighten the ring nut.

Steering ring nut
(final tightening torque)
4 Nm (0.4 m•kg, 2.9 ft•lb)

d. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings.
Refer to "STEERING HEAD" in chapter 4.

5. Install:
   - upper bracket
   - handlebar

   Refer to "HANDLEBAR" and "STEERING HEAD" in chapter 4.

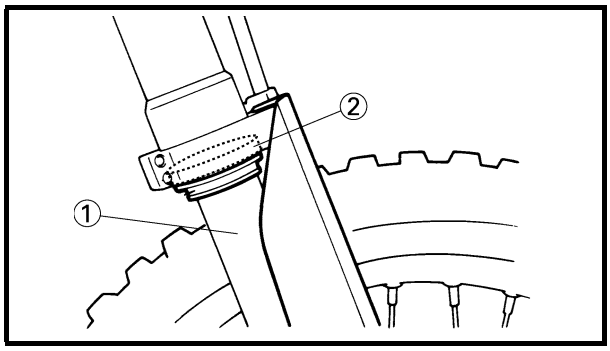
EAS00149

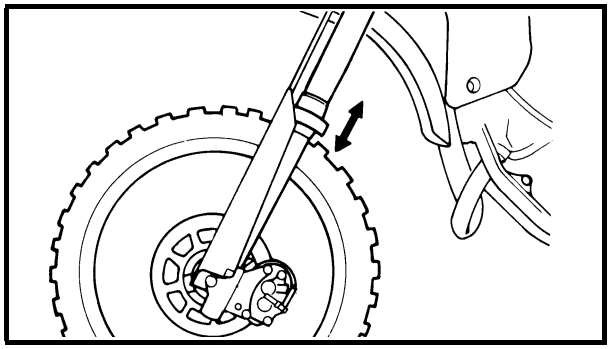
CHECKING THE FRONT FORK

1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.





2. Check:
   • inner tube ①
   Damage/scratches → Replace.
   • oil seal ②
   Oil leakage → Replace.
3. Hold the vehicle upright and apply the front brake.
4. Check:
   • front fork operation
   Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
   Rough movement → Repair.
   Refer to “FRONT FORK” in chapter 4.

EAS00155
ADJUSTING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

⚠ WARNING

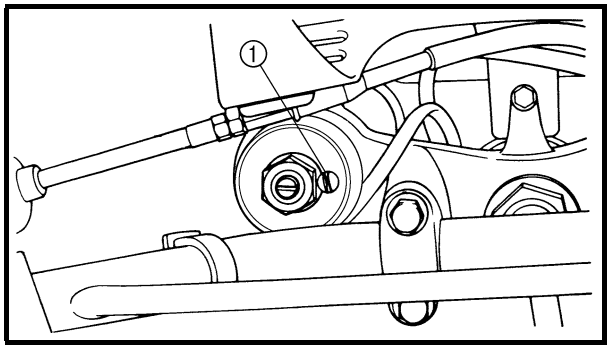
- **Always adjust both front fork legs evenly. Uneven adjustment can result in poor handling and loss of stability.**
- **Securely support the vehicle so that there is no danger of it falling over.**

Front fork internal pressure bleeding

NOTE:

If the front fork initial movement feels stiff during a run, bleed the front fork internal pressure.

1. Elevate the front wheel by placing a suitable stand under the engine.

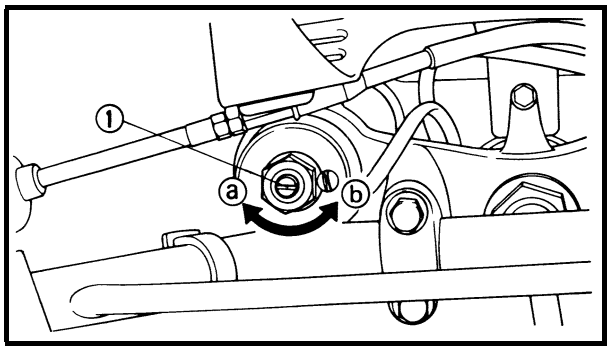


2. Remove the air bleed screw ① and release the internal pressure from the front fork.
3. Install:
   • air bleed screw **1 Nm (0.1 m•kg, 0.7 ft•lb)**

Rebound damping

CAUTION:

Never go beyond the maximum or minimum adjustment positions.



1. Adjust:
   • rebound damping

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a. Turn the adjusting screw ① in direction ⓐ or ⓑ.

Direction ⓐ	**Rebound damping is increased (suspension is harder).**
Direction ⓑ	**Rebound damping is decreased (suspension is softer).**

Adjusting positions
Minimum: 20 clicks in direction ⓑ*
Standard: 7 clicks in direction ⓑ*
Maximum: 1 clicks in direction ⓑ*
*** with the adjusting screw fully turned-in direction ⓐ**

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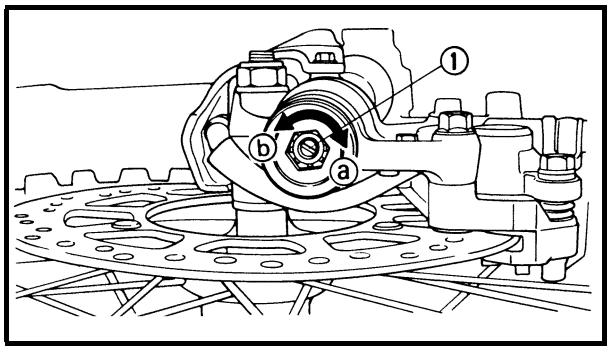
Compression damping

CAUTION:

Never go beyond the maximum or minimum adjustment positions.



1. Adjust:
   • compression damping

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a. Turn the adjusting screw ① in direction ⓐ or ⓑ.

Direction ⓐ	**Compression damping is increased (suspension is harder).**
Direction ⓑ	**Compression damping is decreased (suspension is softer).**

Adjusting positions
Minimum: 20 clicks in direction ⓑ*
Standard (YZ85): 10 clicks in direction ⓑ*
Standard (YZ85LW): 9 clicks in direction ⓑ*
Maximum: 1 clicks in direction ⓑ*
*** with the adjusting screw fully turned-in direction ⓐ**

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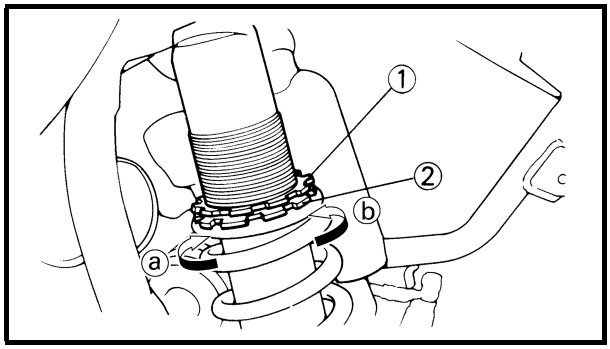
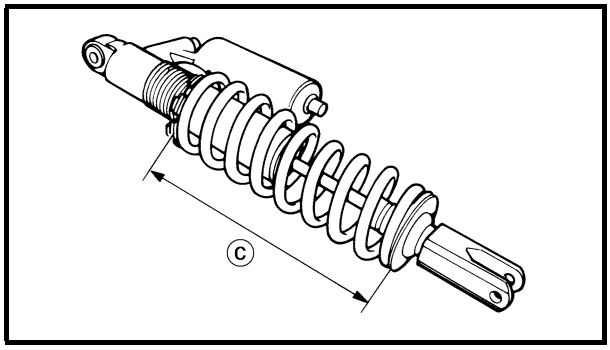




EAS00159

ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLY

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

Spring preload

CAUTION:

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   • spring preload

a. Loosen the locknut ① with a ring nut wrench.

	Ring nut wrench **90890-01268**

NOTE:

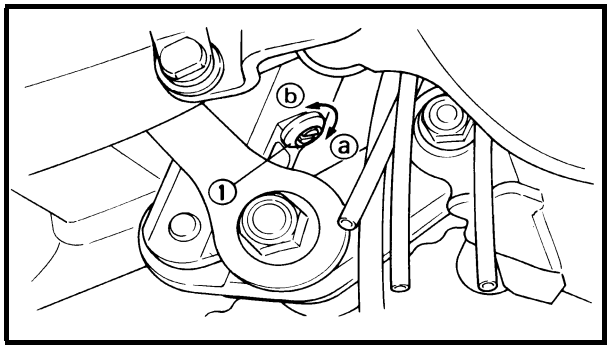
- Be sure to remove all dirt and mud from around the locknut and adjuster before adjustment.
- The length of the spring (installed) changes 1.5 mm (0.06 in) per turn of the adjuster.

b. Turn the adjusting nut ② in direction ⓐ or ⓑ.

Direction ⓐ	**Spring preload is increased (suspension is harder).**
Direction ⓑ	**Spring preload is decreased (suspension is softer).**

Adjusting length ⓒ
Standard (YZ85): 215 mm (8.46 in)
Standard (YZ85LW):
207 mm (8.15 in) (for AUS, NZL)
212 mm (8.35 in) (for EUR)

c. Tighten the locknut.



Rebound damping

CAUTION:

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   • rebound damping

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a. Turn the adjusting screw ① in direction ⓐ or ⓑ.

Direction ⓐ	**Rebound damping is increased (suspension is harder).**
Direction ⓑ	**Rebound damping is decreased (suspension is softer).**

Adjusting positions
Minimum: 20 clicks in direction ⓑ*
Standard (YZ85): 6 clicks in direction ⓑ*
Standard (YZ85LW): 12 clicks in direction ⓑ* (for EUR)
Standard (YZ85LW): 7 clicks in direction ⓑ* (for AUS, NZL)
Maximum: 1 clicks in direction ⓑ*
*** with the adjusting knob fully turned-in direction ⓐ**

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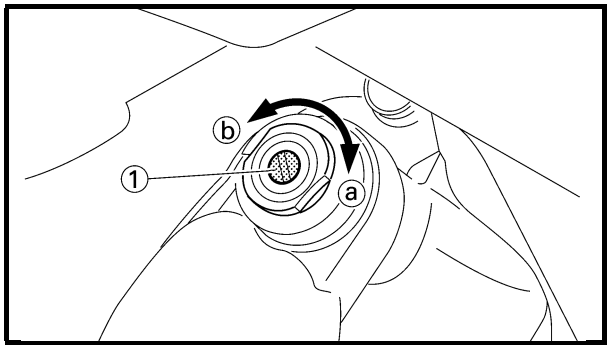


Compression damping

CAUTION:

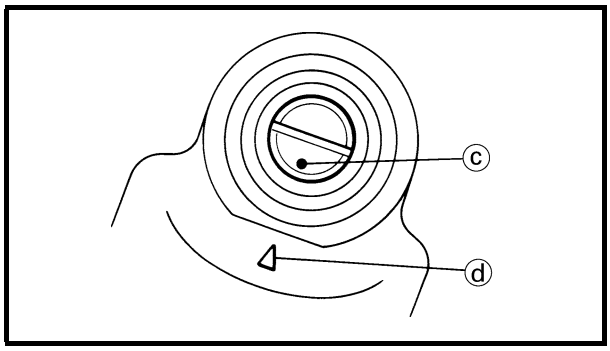
Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   • compression damping

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Turn the adjusting screw ① in direction ⓐ or ⓑ.

Direction ⓐ	**Compression damping is increased (suspension is harder).**
Direction ⓑ	**Compression damping is decreased (suspension is softer).**



NOTE:

This is the position which is back by the specific number of clicks from the fully turned-in position. (Which align the punch mark ⓒ on the adjuster with the punch mark ⓓ on the bracket.)

Adjusting positions
Minimum: 20 clicks in direction ⓑ*
Standard (YZ85): 9 clicks in direction ⓑ*
Standard (YZ85LW): 12 clicks in direction ⓑ* (for EUR)
Standard (YZ85LW): 7 clicks in direction ⓑ* (for AUS, NZL)
Maximum: 1 clicks in direction ⓑ*
*** with the adjusting knob fully turned-in direction ⓐ**

EAS00164

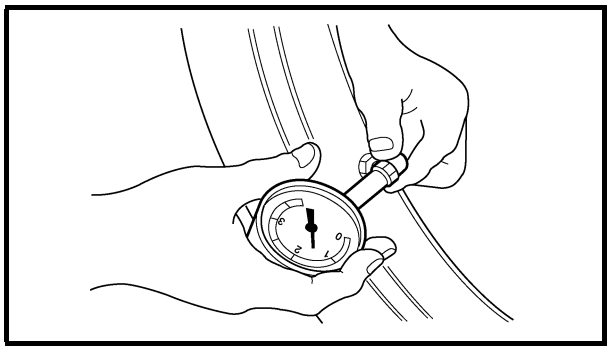
CHECKING THE TIRES

The following procedure applies to both of the tires.

1. Check:
   • tire pressure
   Out of specification → Regulate.

⚠ WARNING

- **The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.**
- **The tire pressure and the suspension must be adjusted according to the total weight (including rider) and the anticipated riding speed.**



Standard tire pressure:
100 kpa (1.0 kgf/cm^2, 15 psi)

⚠ WARNING

It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.

2. Check:
   • tire surfaces
   Damage/wear → Replace the tire.

⚠ WARNING

• Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.
• When using tube tires, be sure to install the correct tube.
• Always replace a new tube tire and a new tube as a set.
• To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.
• Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.
• After extensive tests, the tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this vehicle.

Front tire
YZ85:

Manufacturer	Size	Model
DUNLOP	70/100-17 40M	D739FA (EUR, CAN) D756F (AUS, NZL)

YZ85LW:

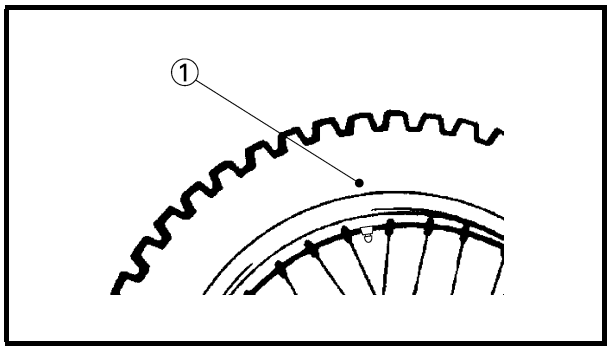
Manufacturer	Size	Model
DUNLOP	70/100-19 42M	D756F

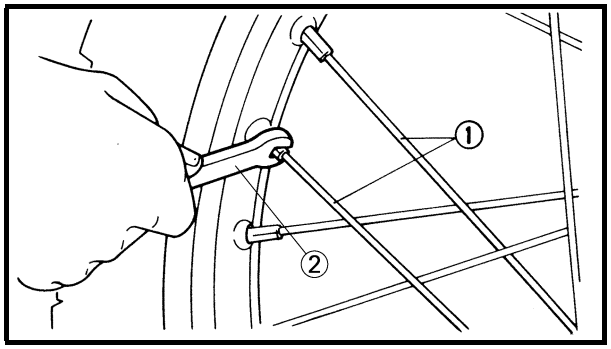
Rear tire
YZ85:

Manufacturer	Size	Model
DUNLOP	90/100-14 49M	D756

YZ85LW:

Manufacturer	Size	Model
DUNLOP	90/100-16 52M	D756





⚠ WARNING

New tires have a relatively low grip on the road surface until they have been slightly worn.

NOTE:

Align the mark ① with the valve installation point.

EAS00169

CHECKING AND TIGHTENING THE SPOKES

The following procedure applies to all of the spokes.

1. Check:
   - spoke ①
     Bends/damage → Replace.
     Loose → Tighten.
     Tap the spokes with a screwdriver.

NOTE:

A tight spoke will emit a clear, ringing tone; a loose spoke will sound flat.

2. Tighten:
   - spoke (with a spoke wrench ②)

3 Nm (0.3 m•kg, 2.2 ft•lb)

NOTE:

Be sure to tighten the spokes before and after break-in. After a practice or a race check spokes for looseness.

EAS00171

LUBRICATING THE LEVERS AND PEDALS

Lubricate the pivoting point and metal-to-metal moving parts of the levers and pedals.

Recommended lubricant
Lithium-soap-based grease

EAS00174

LUBRICATING THE REAR SUSPENSION

Lubricate the pivoting point and metal-to-metal moving parts of the rear suspension.

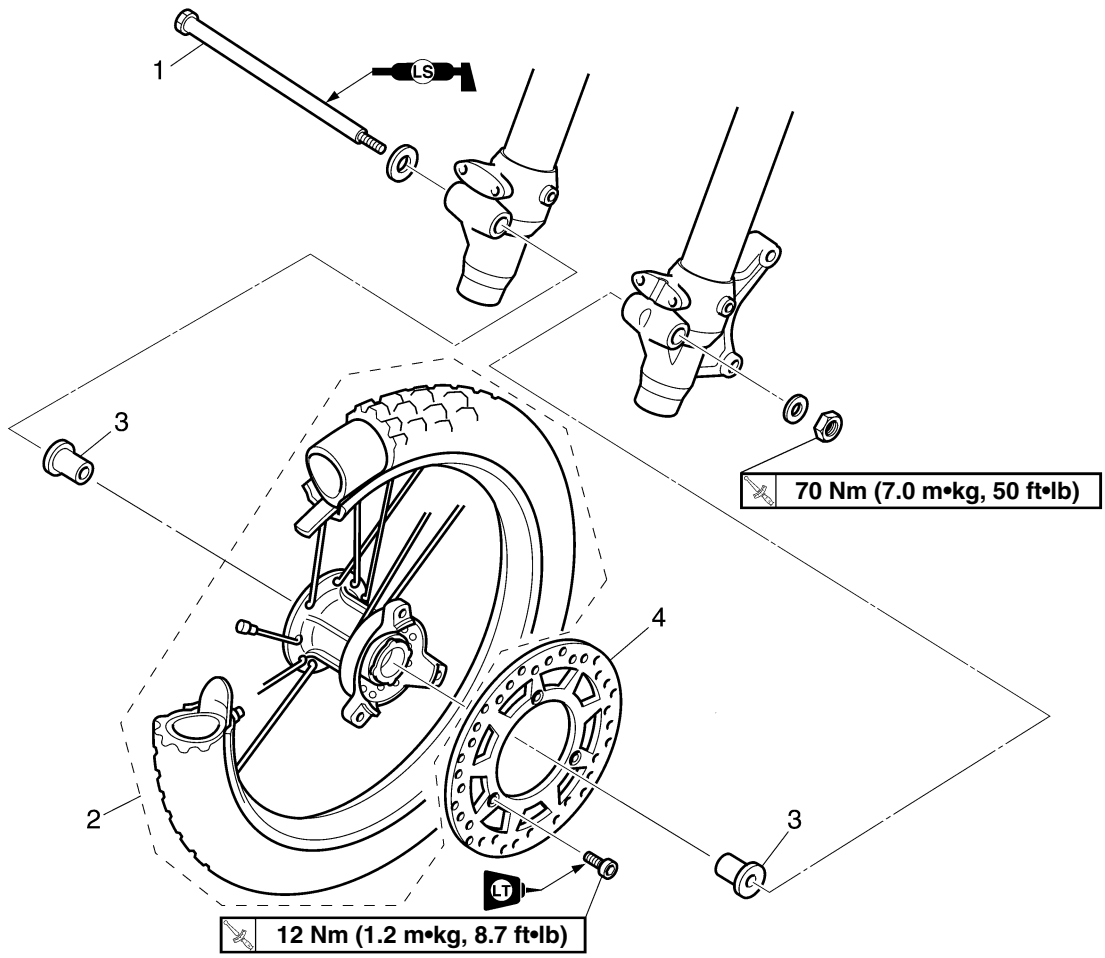
Recommended lubricant
Molybdenum disulfide grease

CHAPTER 4
CHASSIS

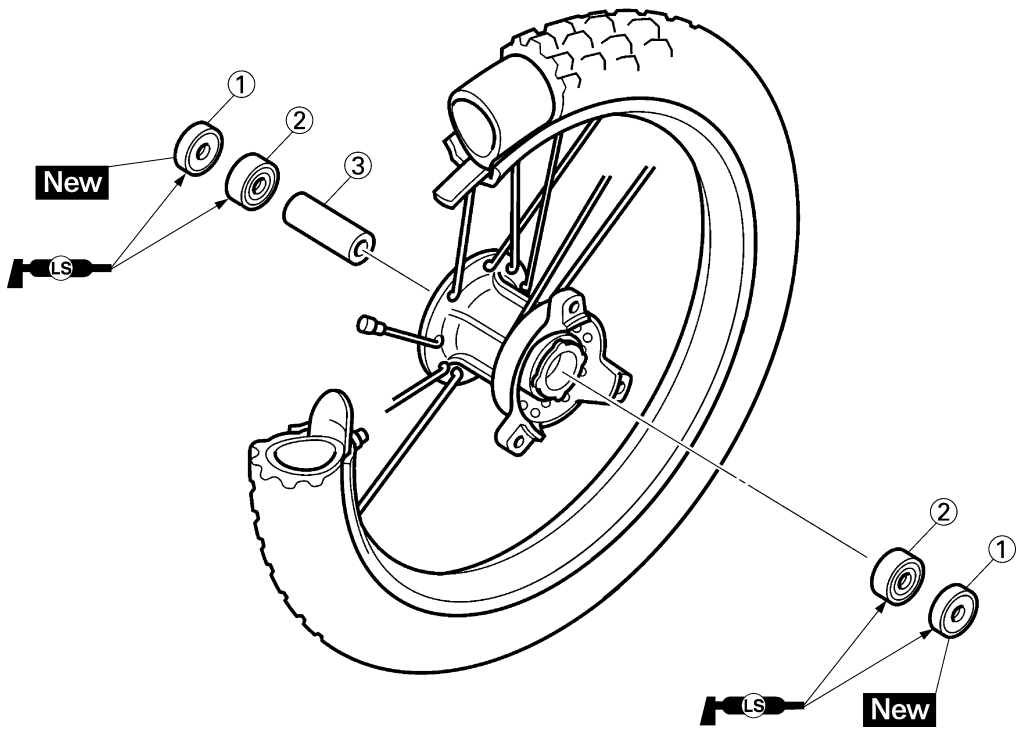
EAS00512

CHASSIS

FRONT WHEEL AND BRAKE DISC



Order	Job/Part	Q'ty	Remarks
	Removing the front wheel and brake disc		Remove the parts in the order listed. **NOTE:** Place the vehicle on a suitable stand so that the front wheel is elevated.
1	Front wheel axle	1	
2	Front wheel	1	
3	Collar	2	
4	Front brake disc	1	
			For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the front wheel		Disassemble the parts in the order listed.
①	Oil seal	2	
②	Wheel bearing	2	
③	Collar	1	
			For assembly, reverse the disassembly procedure.

EAS00519
REMOVING THE FRONT WHEEL
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:

Place the vehicle on a suitable stand so that the front wheel is elevated.

2. Remove:
   • front brake caliper

NOTE:

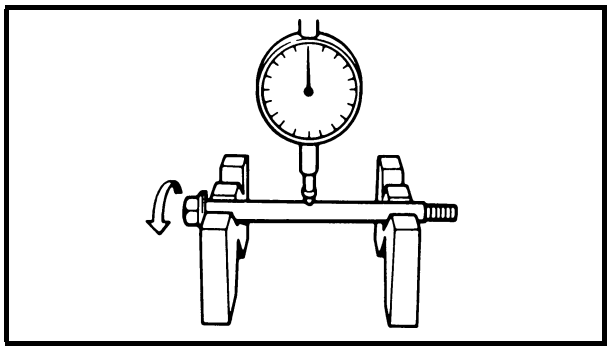
Do not apply the brake lever when removing the brake caliper.

3. Elevate:
   • front wheel

NOTE:

Place the vehicle on a suitable stand so that the front wheel is elevated.

4. Remove:
   • front wheel axle nut
   • front wheel axle
   • front wheel
   • collar



EAS00526
CHECKING THE FRONT WHEEL
1. Check:
   • wheel axle
   Roll the wheel axle on a flat surface.
   Bends → Replace.

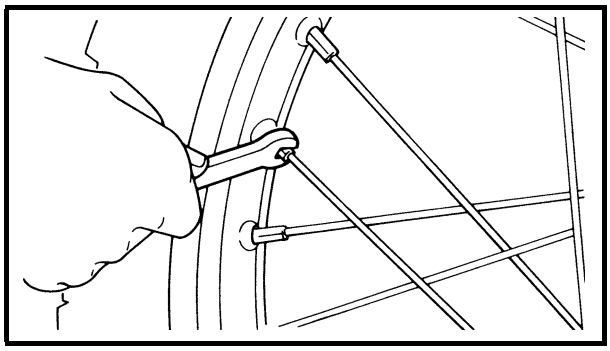
	Wheel axle bending limit **0.5 mm (0.020 in)**

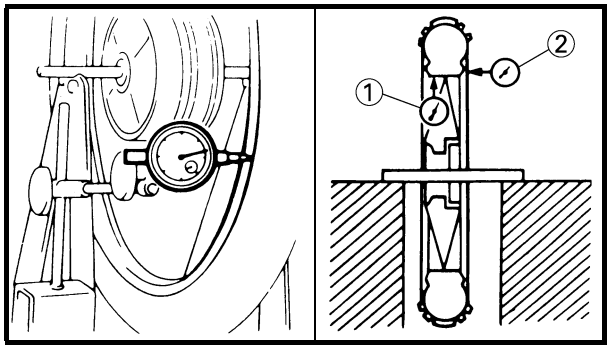
NOTE:

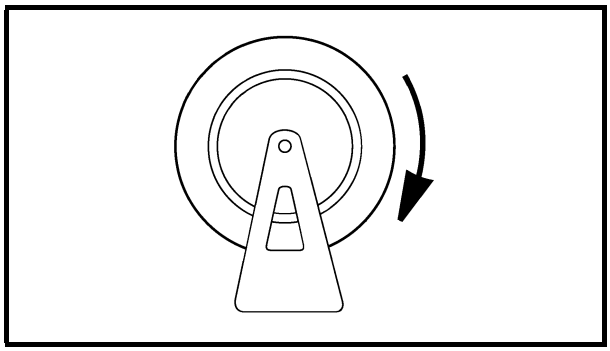
The bending value is shown by one half of the dial gauge reading.

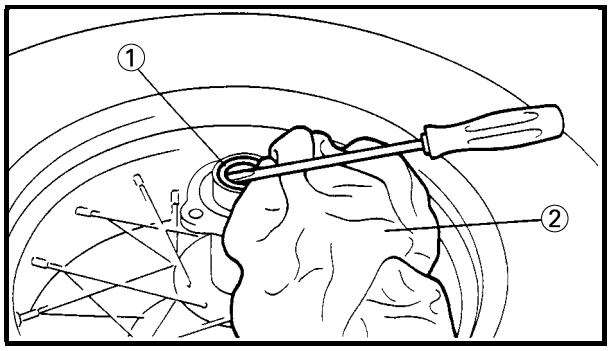
⚠ WARNING

Do not attempt to straighten a bent wheel axle.









2. Check:
   • tire
   • front wheel
   Damage/wear → Replace.
   Refer to "CHECKING THE TIRES" and "CHECKING THE WHEELS" in chapter 3.
3. Check:
   • spokes
   Refer to "CHECKING AND TIGHTENING THE SPOKES" in chapter 3.

NOTE:

After tightening the spokes, measure the front wheel runout.

4. Measure:
   • front wheel radial runout ①
   • front wheel lateral runout ②
   Over the specified limits → Replace.

Front wheel radial runout limit
2.0 mm (0.08 in)
Front wheel lateral runout limit
2.0 mm (0.08 in)

5. Check:
   • collars
   Damage/wear → Replace.
6. Check:
   • wheel bearings
   Front wheel turns roughly or is loose → Replace the wheel bearings.
   • oil seals
   Damage/wear → Replace.
7. Replace:
   • wheel bearings New
   • oil seals New

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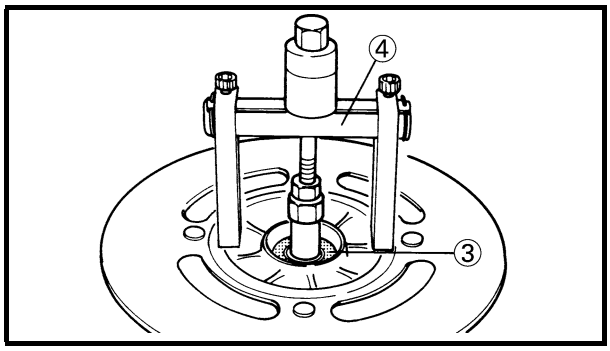
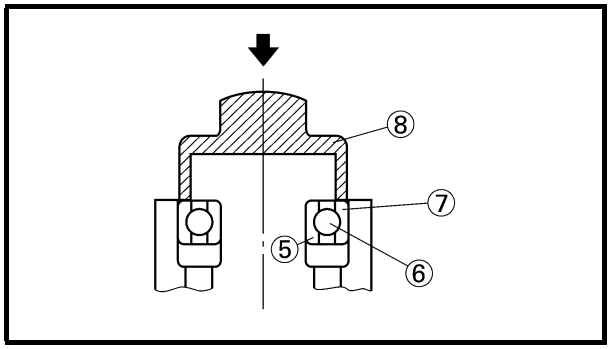
a. Clean the outside of the front wheel hub.
b. Remove the oil seals ① with a flat-head screwdriver.

NOTE:

To prevent damaging the wheel, place a rag ② between the screwdriver and the wheel surface.





c. Remove the wheel bearings ③ with a general bearing puller ④.
d. Install the new wheel bearings and oil seals in the reverse order of disassembly.

CAUTION:

Do not contact the wheel bearing inner race ⑤ or balls ⑥. Contact should be made only with the outer race ⑦.

NOTE:

Use a socket ⑧ that matches the diameter of the wheel bearing outer race and oil seal.

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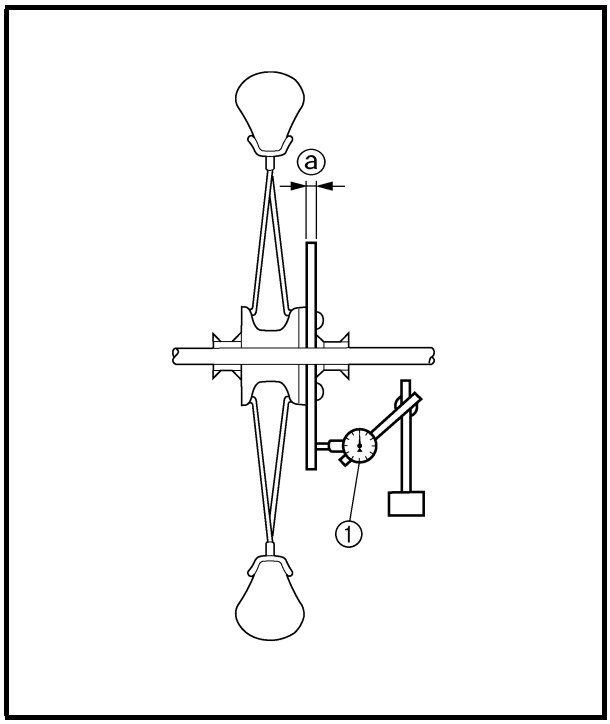

EAS00531
CHECKING THE BRAKE DISCS
The following procedure applies to all of the brake discs.
1. Check:
   • brake discs
   Damage/galling → Replace.
2. Measure:
   • brake disc deflection ①
   Out of specification → Correct the brake disc deflection or replace the brake disc.

Brake disc deflection limit (maximum)
Front: 0.15 mm (0.006 in)
Rear: 0.15 mm (0.006 in)

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a. Place the vehicle on a suitable stand so that the wheel is elevated.
b. Before measuring the front brake disc deflection, turn the handlebar to the left or right to ensure that the front wheel is stationary.
c. Remove the brake caliper.
d. Hold the dial gauge at a right angle against the brake disc surface.
e. Measure the deflection 1.5 mm (0.06 in) below the edge of the brake disc.

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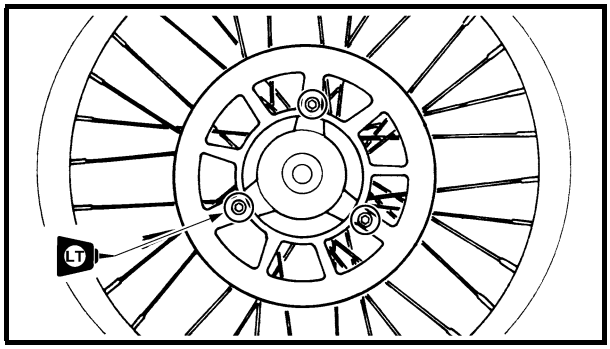
3. Measure:
   • brake disc thickness ⓐ
   Measure the brake disc thickness at a few different locations.
   Out of specification → Replace.

Brake disc thickness limit (minimum)
Front: 2.5 mm (0.10 in)
Rear: 2.5 mm (0.10 in)



4. Adjust:
   • brake disc deflection

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a. Remove the brake disc.
b. Rotate the brake disc by one bolt hole.
c. Install the brake disc.

NOTE:
Tighten the brake disc bolts in stages and in a crisscross pattern.

Brake disc bolt
12 Nm (1.2 m•kg, 8.7 ft•lb)
LOCTITE®

d. Measure the brake disc deflection.
e. If out of specification, repeat the adjustment steps until the brake disc deflection is within specification.
f. If the brake disc deflection cannot be brought within specification, replace the brake disc.

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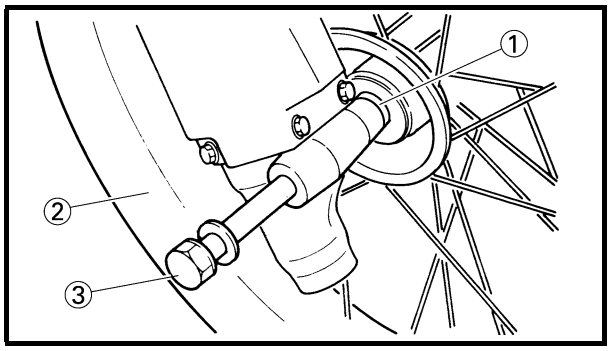
EAS00546
INSTALLING THE FRONT WHEEL

1. Lubricate:
   • front wheel axle
   • oil seal lips

Recommended lubricant
Lithium-soap-based grease



2. Install:
   • collar ①
   • front wheel ②
   • front wheel axle ③

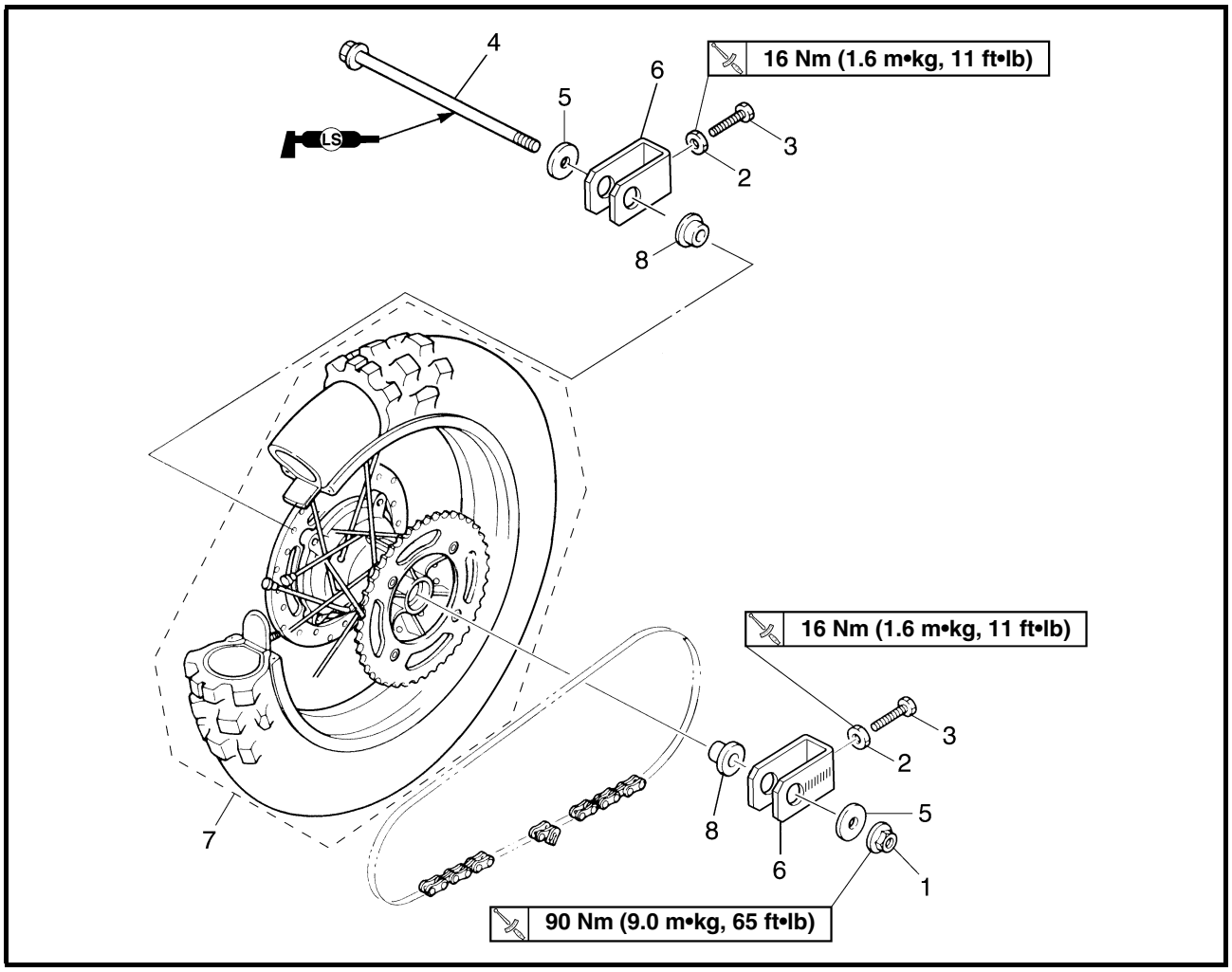
NOTE:
Install the brake disc between the brake pads correctly.

3. Tighten:
   • front wheel axle **70 Nm (7.0 m•kg, 51 ft•lb)**

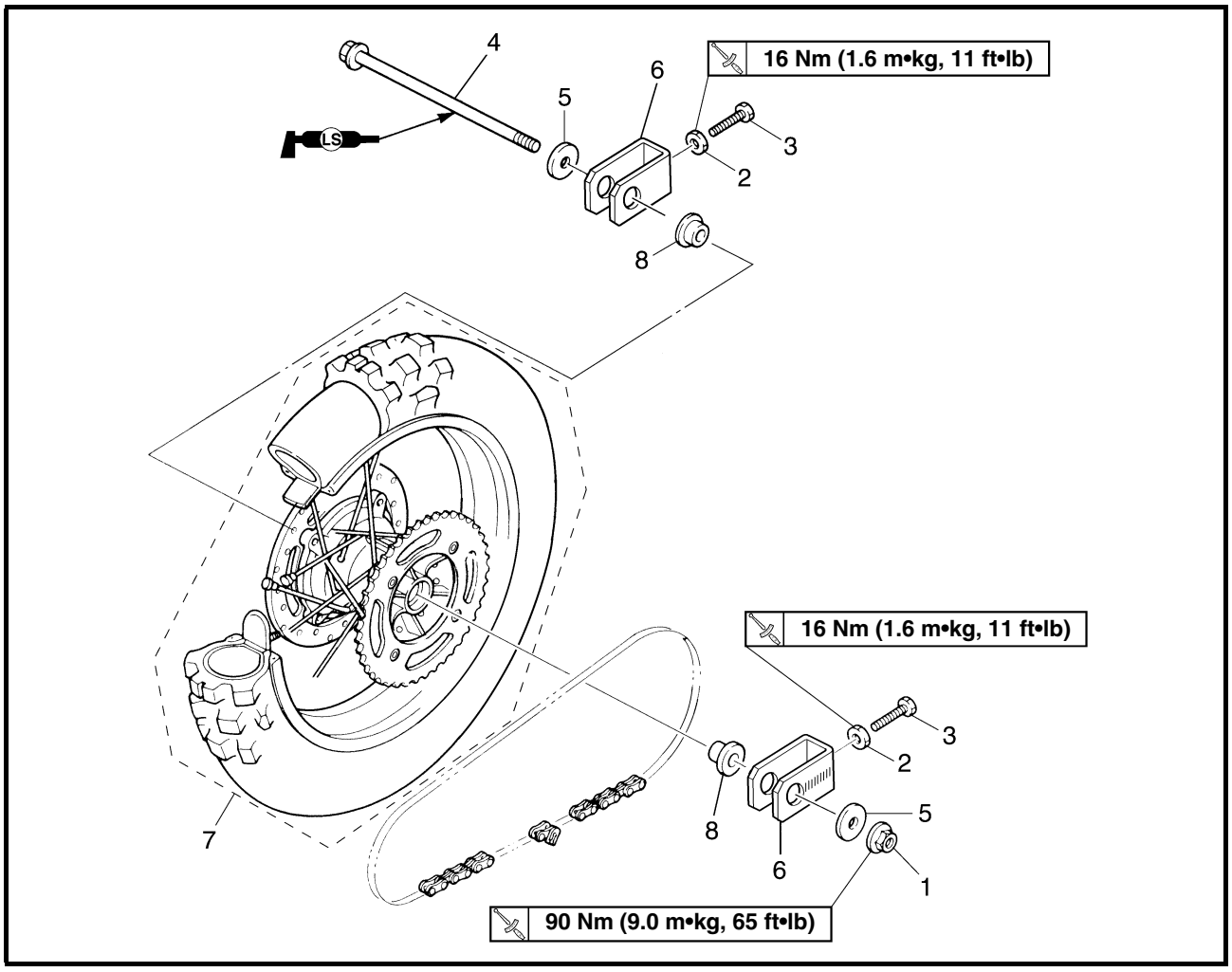
AS00551

REAR WHEEL AND BRAKE DISC

REAR WHEEL



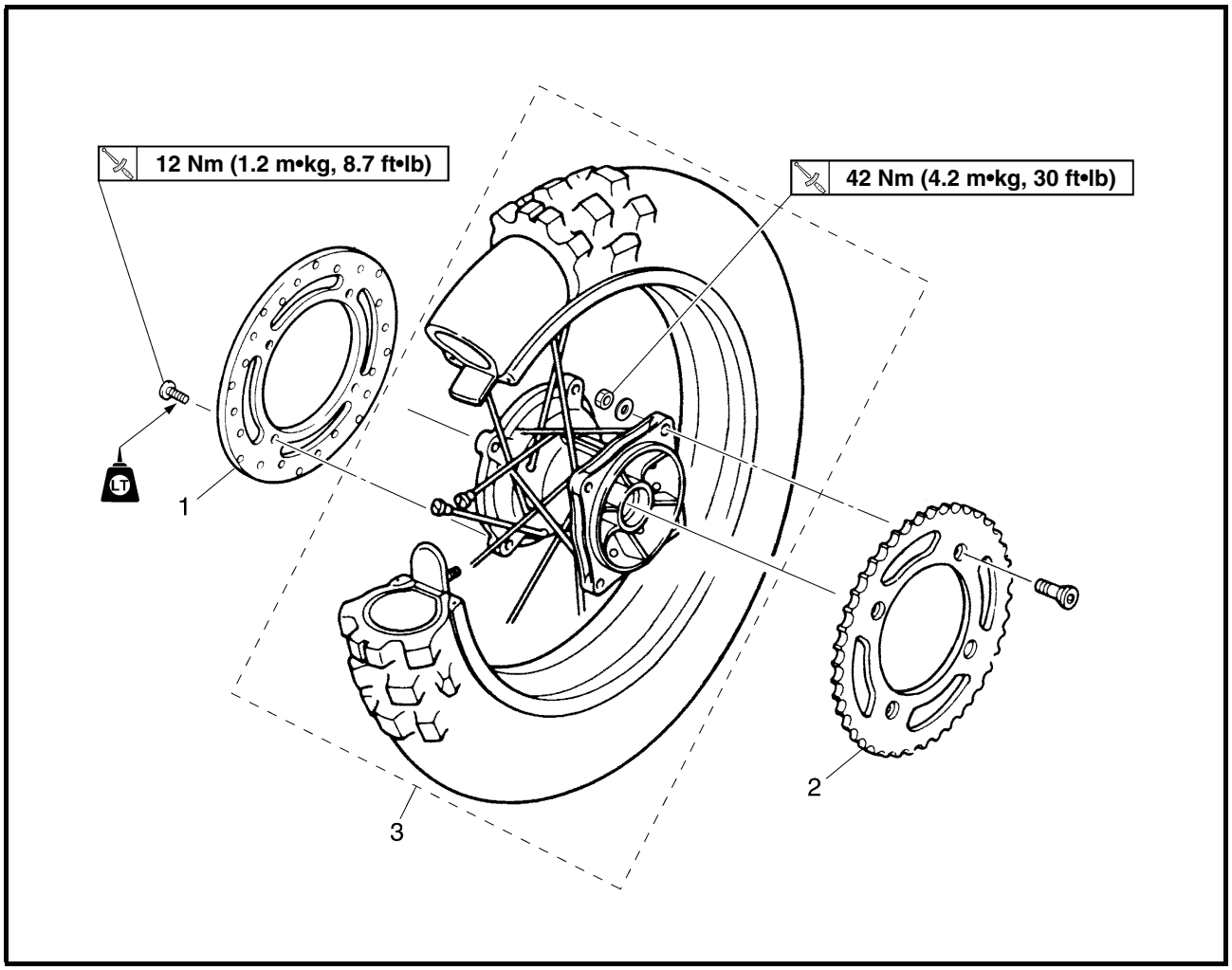
Order	Job/Part	Q'ty	Remarks
	Removing the rear wheel		Remove the parts in the order listed. **NOTE:** Place the vehicle on a suitable stand so that the rear wheel is elevated.
	Rear brake caliper		Remove Refer to "REMOVING THE REAR BRAK PADS".
1	Rear wheel axle nut	1	
2	Locknut	2	Loosen.
3	Adjusting bolt	2	Loosen.
4	Rear wheel axle	1	
5	Washer	2	
6	Drive chain puller	2	
7	Rear wheel	1	



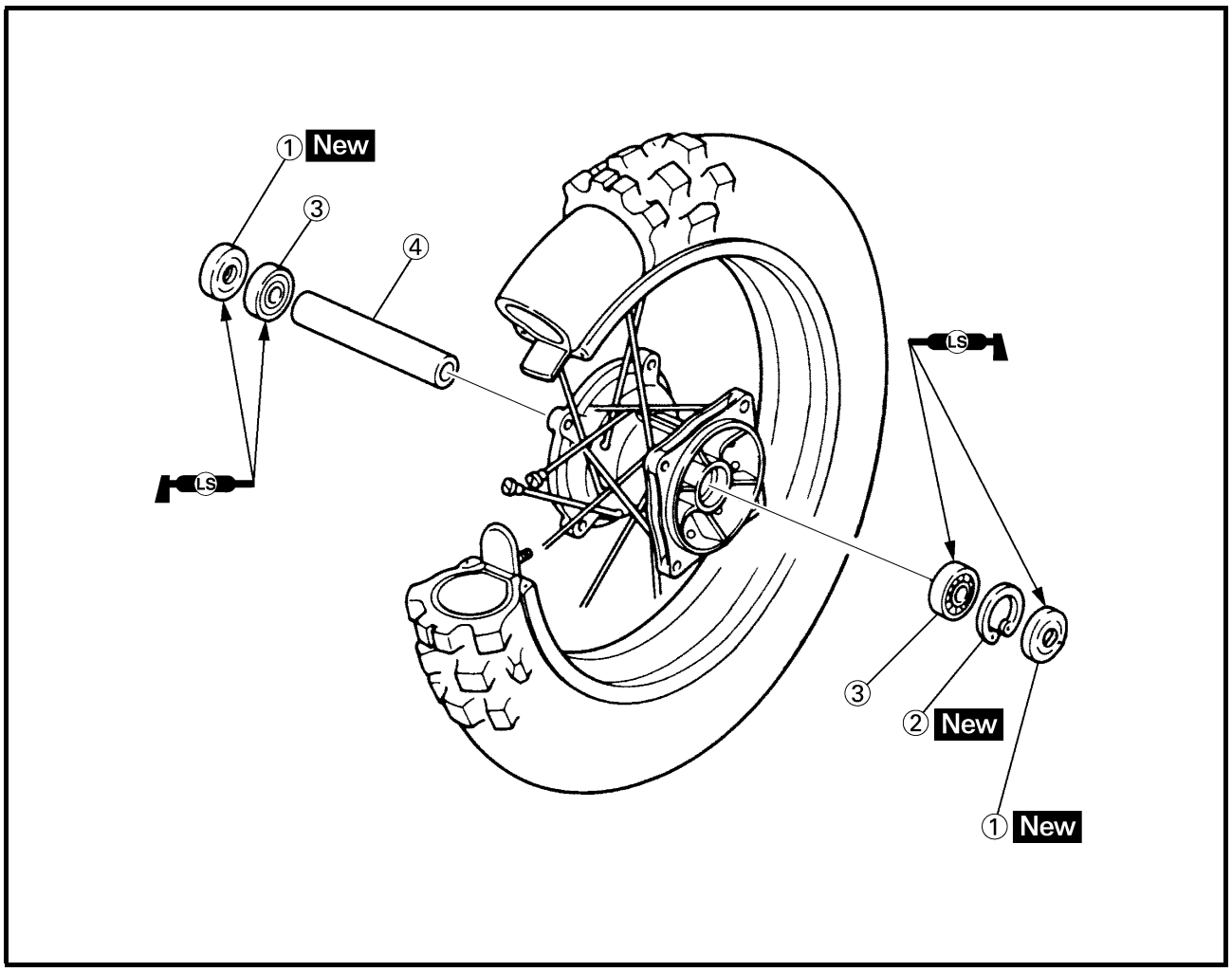
Order	Job/Part	Q'ty	Remarks
8	Collar	2	For installation, reverse the removal procedure.

EAS00560

REAR BRAKE DISC AND REAR WHEEL SPROCKET



Order	Job/Part	Q'ty	Remarks
	Removing the rear brake disc and rear wheel sprocket		Remove the parts in the order listed.
1	Rear brake disc	1	
2	Rear wheel sprocket	1	
3	Rear wheel	1	
			For installation, reverse the disassembly procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the rear wheel		Disassemble the parts in the order listed.
①	Oil seal	2	
②	Circlip	1	
③	Bearing	2	
④	Collar	1	
			For assembly, reverse the disassembly procedure.

EAS00561

REMOVING THE REAR WHEEL

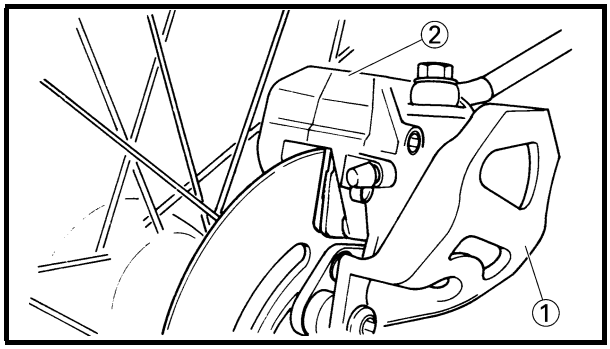
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:

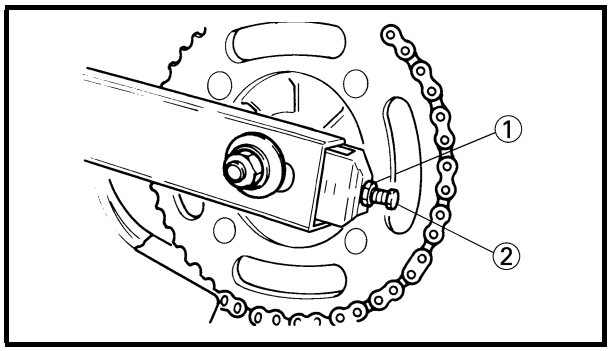
Place the vehicle on a suitable stand so that the rear wheel is elevated.



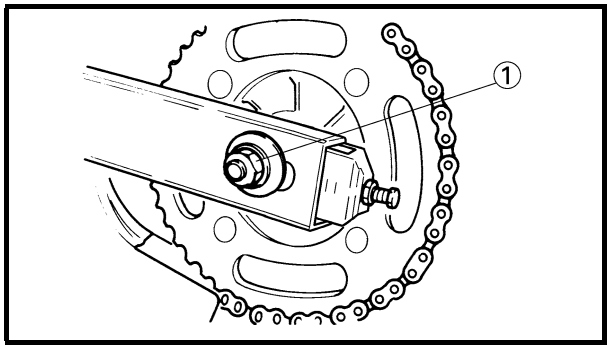
2. Remove:
   - protector ①
   - brake caliper ②

NOTE:

Do not depress the brake pedal when removing the brake caliper.



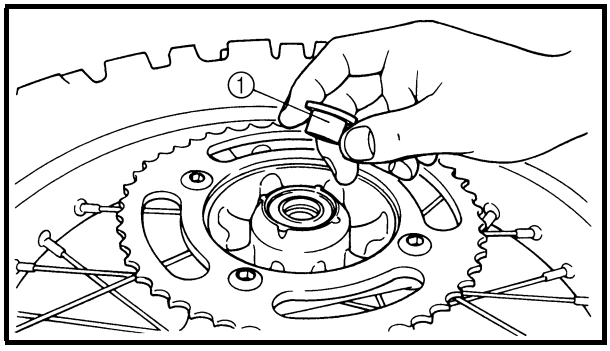
3. Loosen:
   - locknut ①
   - adjusting bolt ②



4. Remove:
   - wheel axle nut ①
   - wheel axle
   - rear wheel

NOTE:

Push the rear wheel forward and remove the drive chain from the rear wheel sprocket.



5. Remove:
   - left collar ①
   - right collar

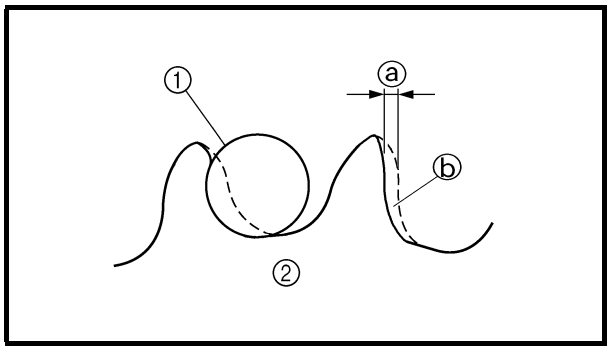
EAS00566
CHECKING THE REAR WHEEL
1. Check:
   - rear wheel axle
   - rear wheel
   - wheel bearings
   - oil seals

   Refer to "CHECKING THE FRONT WHEEL".
2. Check:
   - tire
   - rear wheel

   Damage/wear → Replace.
   Refer to "CHECKING THE TIRES" and "CHECKING THE WHEELS" in chapter 3.
3. Check:
   - spokes

   Refer to "CHECKING THE FRONT WHEEL".
4. Measure:
   - radial wheel runout
   - lateral wheel runout

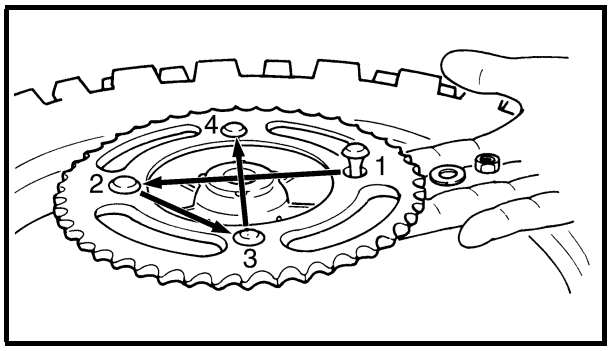
   Refer to "CHECKING THE FRONT WHEEL".



EAS00568
CHECKING AND REPLACING THE REAR WHEEL SPROCKET
1. Check:
   - rear wheel sprocket

   More than 1/4 tooth ⓐ wear → Replace the rear wheel sprocket and drive chain as set.
   Bent teeth → Replace the rear wheel sprocket and drive chain as a set.

ⓑ Correct
① Drive chain roller
② Rear wheel sprocket



2. Replace:
   • rear wheel sprocket

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a. Remove the self-locking nuts and the rear wheel sprocket.
b. Clean the rear wheel drive hub with a clean cloth, especially the surfaces that contact the sprocket.
c. Install the new rear wheel sprocket.

	Rear wheel sprocket self-locking nut **42 Nm (4.2 m•kg, 30 ft•lb)**

NOTE:

Tighten the self-locking nuts in stages and in a crisscross pattern.

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EAS00572

INSTALLING THE REAR WHEEL

1. Lubricate:
   • rear wheel axle
   • wheel bearings
   • oil seal lips

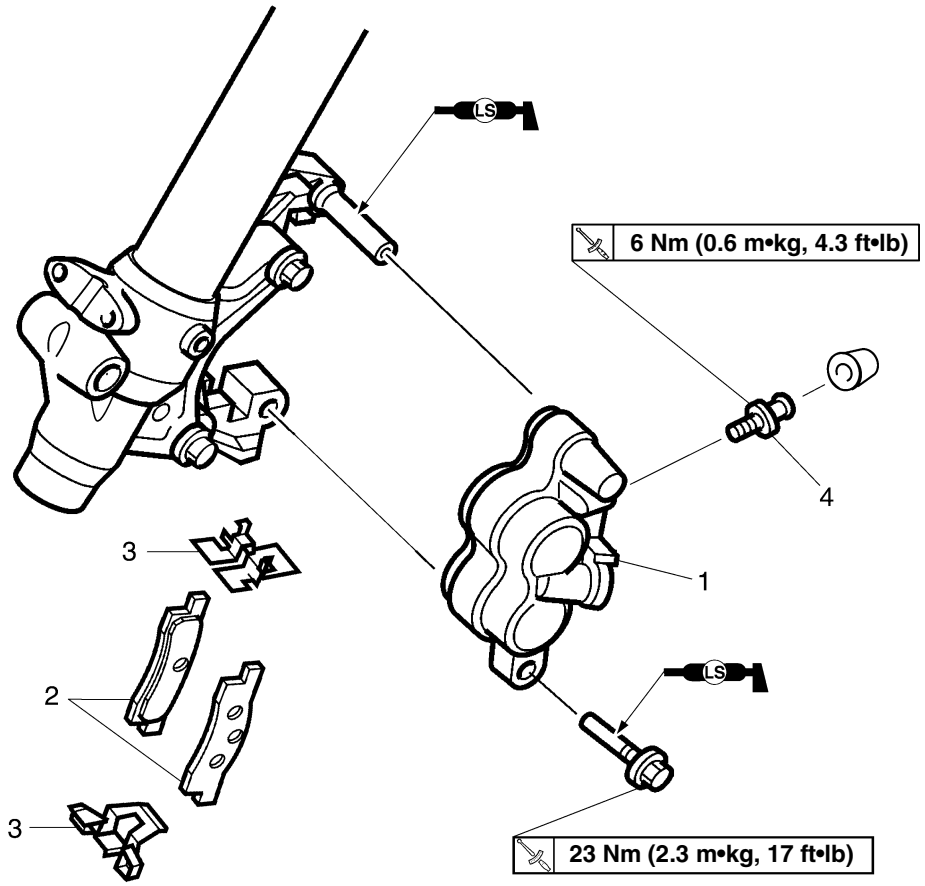
	Recommended lubricant **Lithium-soap-based grease**

2. Tighten:
   • rear wheel axle nut
   90 Nm (9.0 m•kg, 65 ft•lb)
   • brake caliper bolts (side)
   23 Nm (2.3 m•kg, 17 ft•lb)
   (front)
   10 Nm (1.0 m•kg, 7.2 ft•lb)

EAS00577

FRONT AND REAR BRAKES

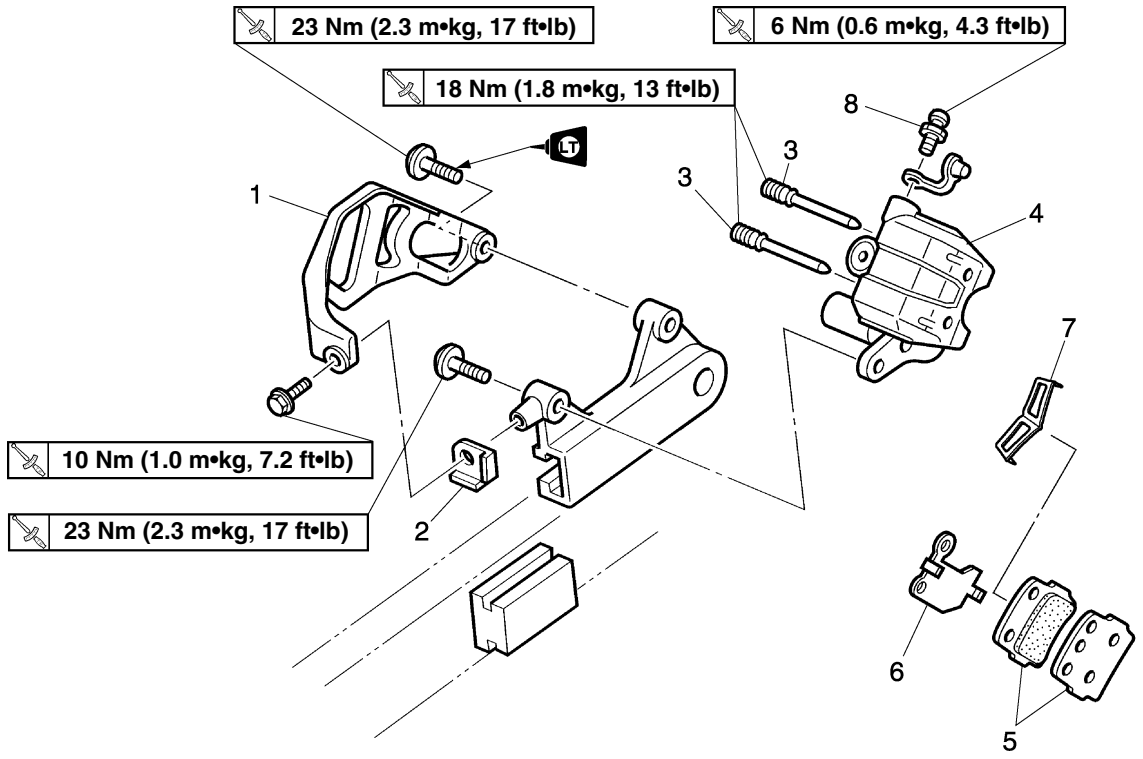
FRONT BRAKE PADS



Order	Job/Part	Q'ty	Remarks
	Removing the front brake pads		Remove the parts in the order listed.
1	Brake caliper	1	
2	Brake pad	2	
3	Brake pad support	2	
4	Bleed screw	1	
			For installation, reverse the removal procedure.

EAS00578

REAR BRAKE PADS



Order	Job/Part	Q'ty	Remarks
	Removing the rear brake pads		Remove the parts in the order listed.
1	Protector	1	
2	Spacer	1	
3	Brake pad pin	2	
4	Rear brake caliper	1	
5	Brake pad	2	
6	Brake pad shim	1	
7	Brake pad spring	1	
8	Bleed screw	1	
			For installation, reverse the removal procedure.

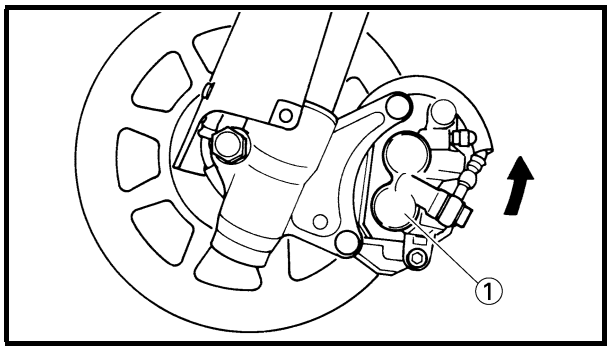
EAS00579

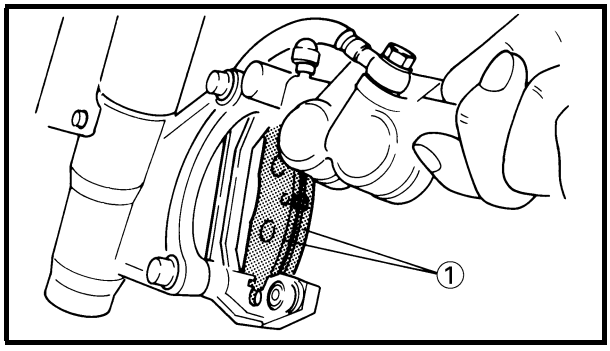
CAUTION:

Disc brake components rarely require disassembly.
Therefore, always follow these preventive measures:

⚠ WARNING

- **Never disassemble brake components unless absolutely necessary.**
- **If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.**
- **Never use solvents on internal brake components.**
- **Use only clean or new brake fluid for cleaning brake components.**
- **Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**
- **Avoid brake fluid coming into contact with the eyes as it can cause serious injury.**
- **FIRST AID FOR BRAKE FLUID ENTERING THE EYES:**
- **Flush with water for 15 minutes and get immediate medical attention.**





EAS00581

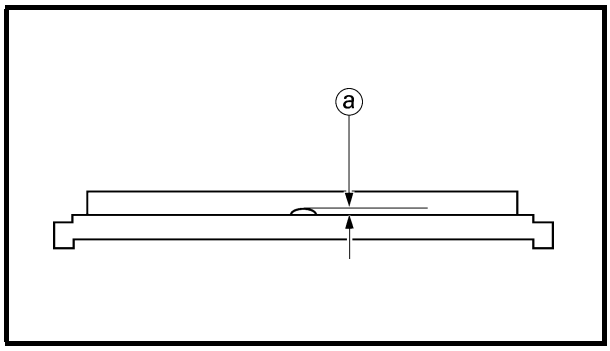
REPLACING THE FRONT BRAKE PADS

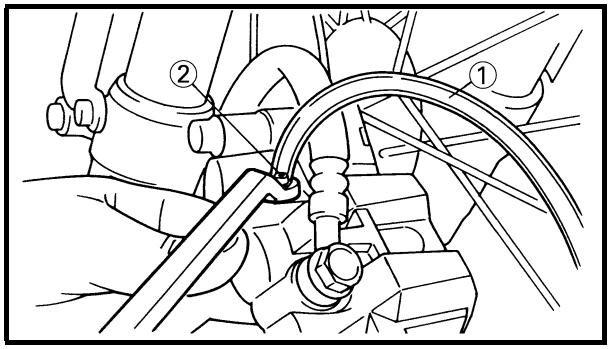
NOTE:

When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Remove:
   - brake caliper ①

2. Remove:
   - brake pads ①





3. Measure:
   • brake pad wear limit ⓐ
   Out of specification → Replace the brake pads as a set.

	Brake pad wear limit **0.8 mm (0.03 in)**

4. Install:
   • brake pads

NOTE:

Always install new brake pads and a new brake pad spring as a set.

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a. Connect a clear plastic hose ① tightly to the bleed screw ②. Put the other end of the hose into an open container.
b. Loosen the bleed screw and push the brake caliper pistons into the brake caliper with your finger.
c. Tighten the bleed screw.

	Bleed screw **6 Nm (0.6 m•kg, 4.3 ft•lb)**

d. Install new brake pads and a new brake pad support.

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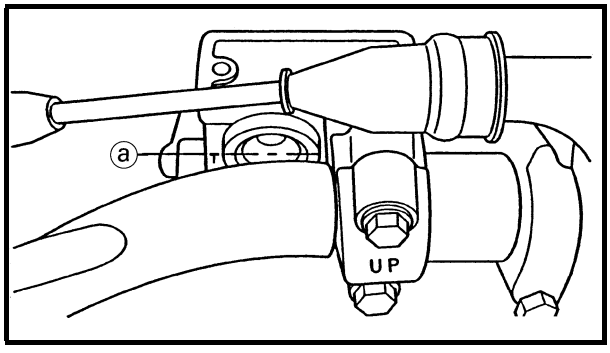
5. Lubricate:
   • brake pad bolts
   • brake caliper guide bar

	Recommended lubricant **Lithium-soap-based grease**

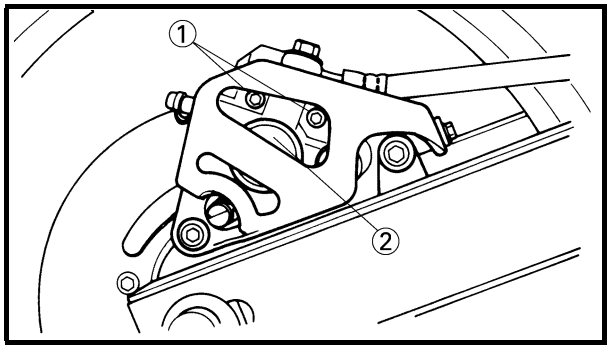
CAUTION:

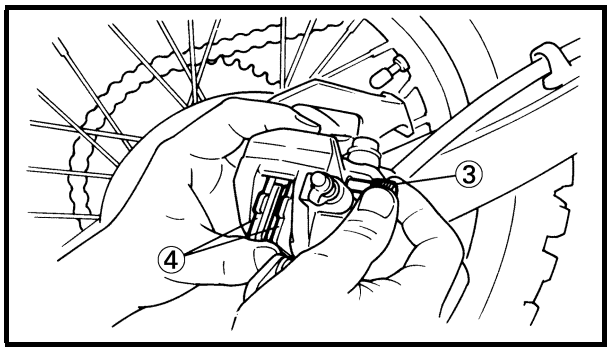
- **Do not allow grease to contact the brake pads.**
- **Remove any excess grease.**

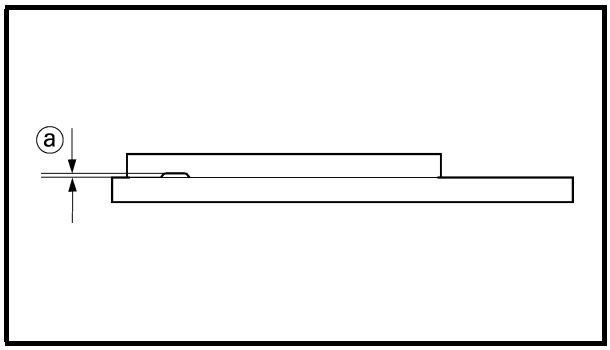
6. Install:
   • brake caliper — **23 Nm (2.3 m•kg, 17 ft•lb)**
7. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.



8. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.







EAS00583

REPLACING THE REAR BRAKE PADS

NOTE:

When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

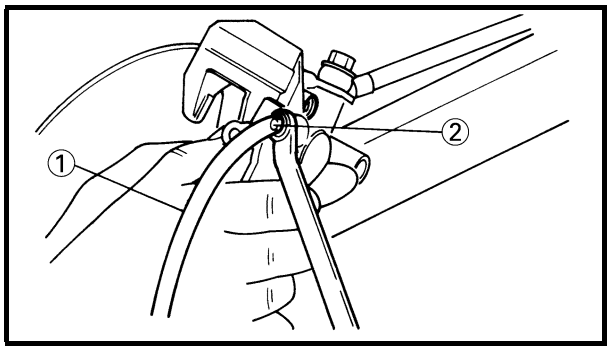
1. Loosen:
   • brake pad pins ①
2. Remove:
   • brake caliper ②
3. Remove:
   • brake pad pins ③
   • brake pads ④
   (along with the brake pad shims)
   • brake pad spring
4. Measure:
   • brake pad wear limit ⓐ
   Out of specification → Replace the brake pads as a set.

	Brake pad wear limit **1.0 mm (0.04 in)**

5. Install:
   • brake pad spring
   • brake pad shims
   (onto the brake pads)
   • brake pads
   • brake pad pins
   • brake caliper

NOTE:

Always install new brake pads, brake pad shims, and a brake pad spring as a set.



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a. Connect a clear plastic hose ① tightly to the bleed screw ②. Put the other end of the hose into an open container.
b. Loosen the bleed screw and push the brake caliper pistons into the brake caliper with your finger.
c. Tighten the bleed screw.

	Bleed screw **6 Nm (0.6 m•kg, 4.3 ft•lb)**

d. Install a new brake pad shim ③ onto each new brake pad ④.
e. Install the brake pad pins ⑤.

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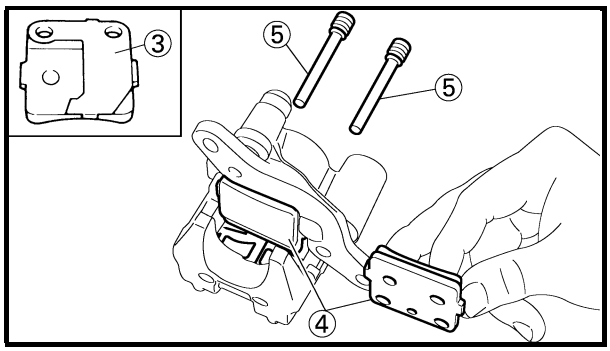
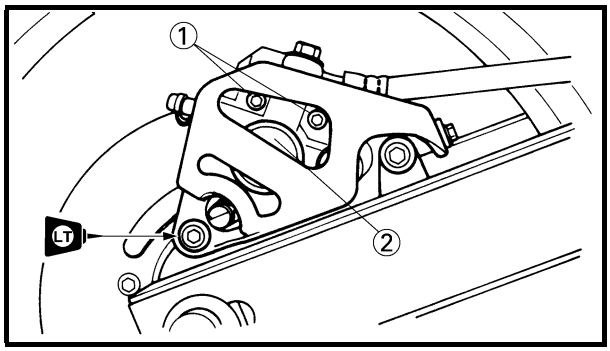
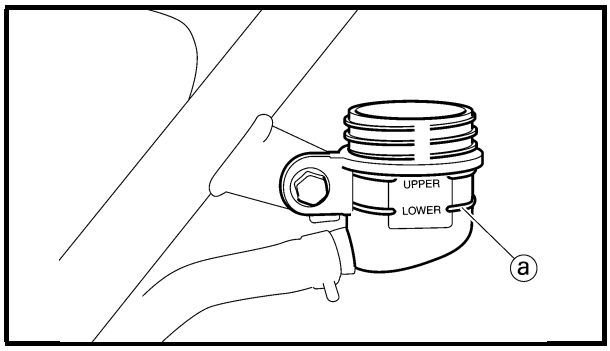




6. Tighten:
   - brake pad pins ①
     18 Nm (1.8 m•kg, 13 ft•lb)
   - brake caliper ② (front)
     23 Nm (2.3 m•kg, 17 ft•lb)
     (rear)
     23 Nm (2.3 m•kg, 17 ft•lb)
     LOCK TITE®

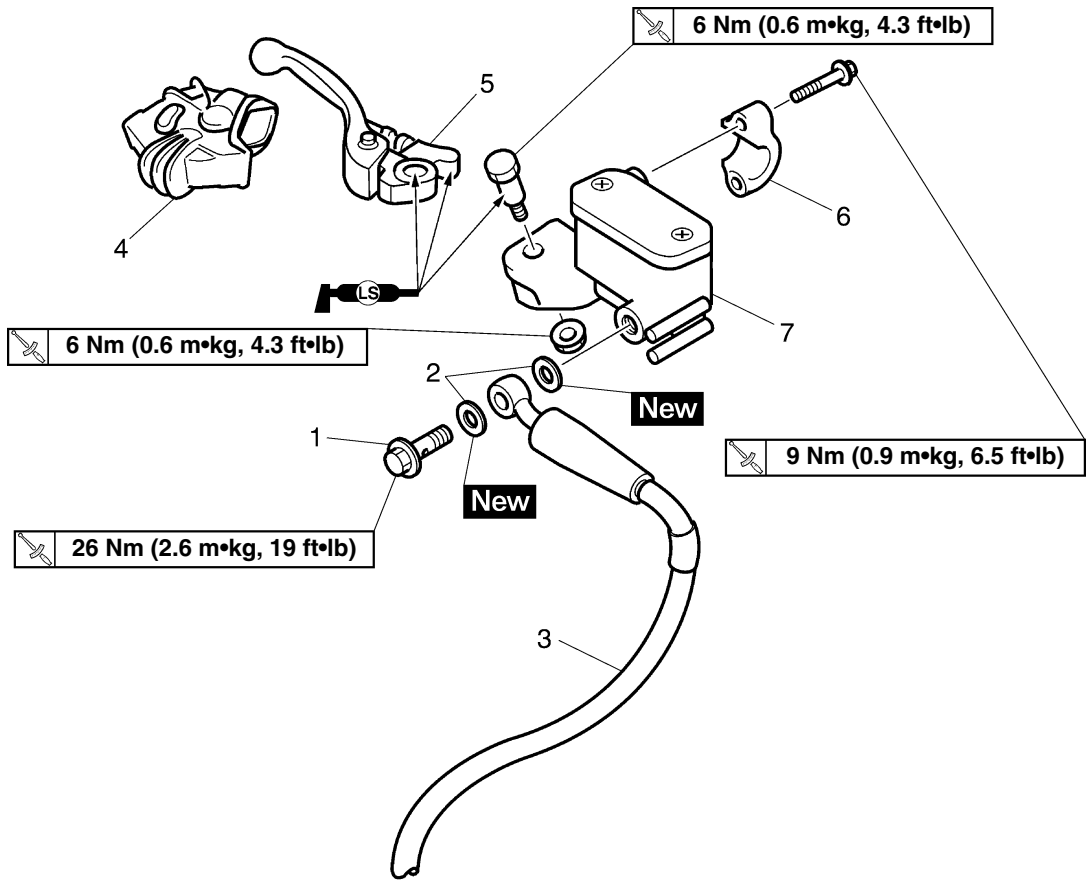


7. Check:
   - brake fluid level
     Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.

8. Check:
   - brake pedal operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

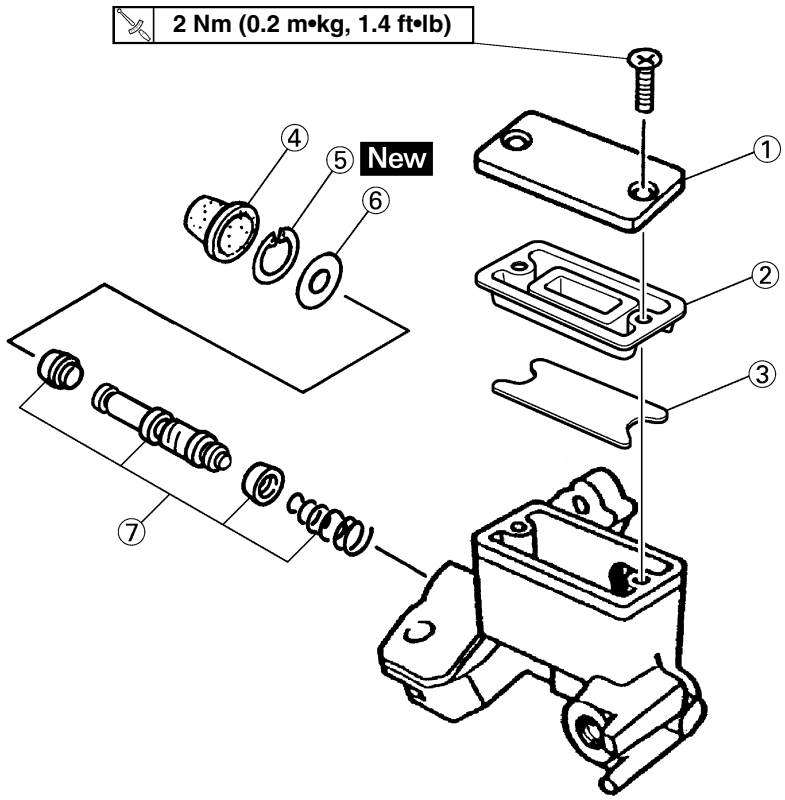
EAS00584

FRONT BRAKE MASTER CYLINDER



Order	Job/Part	Q'ty	Remarks
	Removing the front brake master cylinder		Remove the parts in the order listed.
	Brake fluid		Drain. Refer to "CHANGING THE BRAKE FLUID" in chapter 3.
1	Union bolt	1	
2	Copper washer	2	
3	Front brake hose	1	
4	Brake lever cover	1	
5	Brake lever	1	
6	Brake master cylinder holder	1	
7	Brake master cylinder	1	
			For installation, reverse the removal procedure.

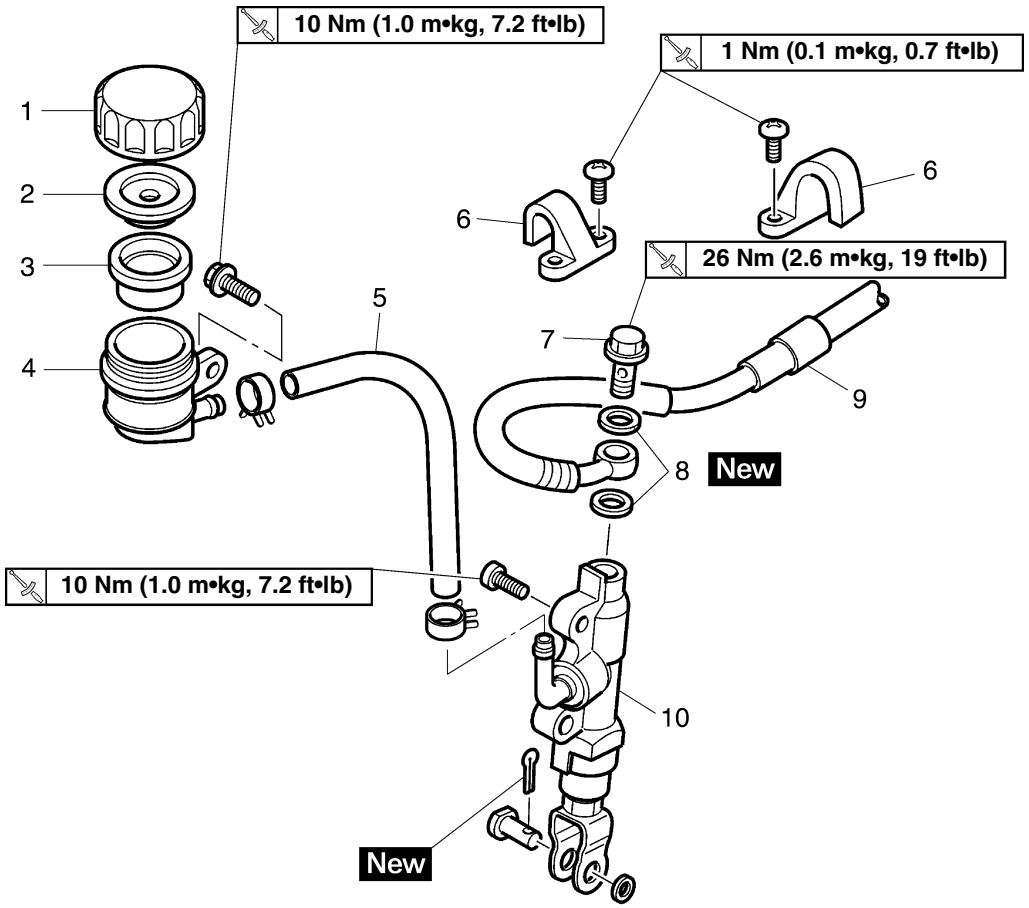
EAS00585



Order	Job/Part	Q'ty	Remarks
	Disassembling the rear brake master cylinder		Remove the parts in the order listed.
①	Brake master cylinder cap	1	
②	Brake master cylinder reservoir diaphragm	1	
③	Brake master cylinder reservoir float	1	
④	Brake master cylinder boot	1	
⑤	Circlip	1	
⑥	Washer	1	
⑦	Brake master cylinder kit	1	
			For assembly, reverse the disassembly procedure.

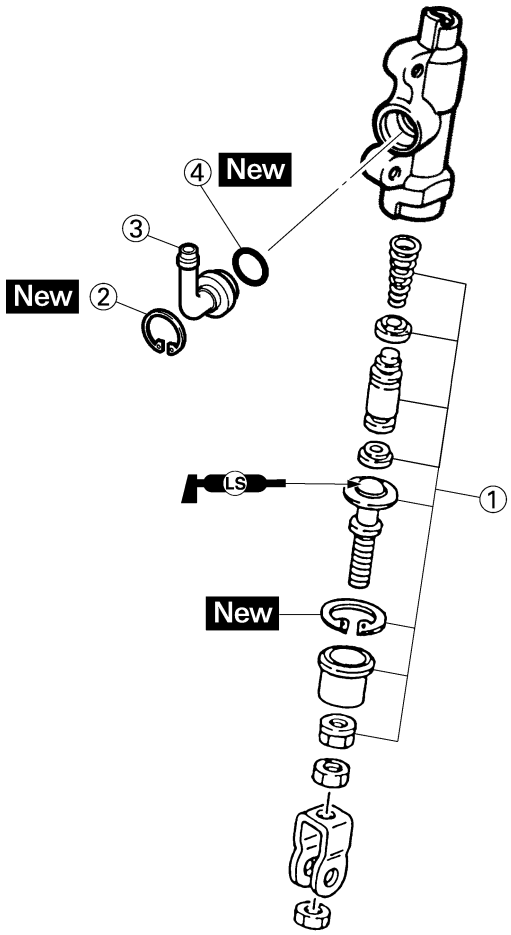
EAS00586

REAR BRAKE MASTER CYLINDER

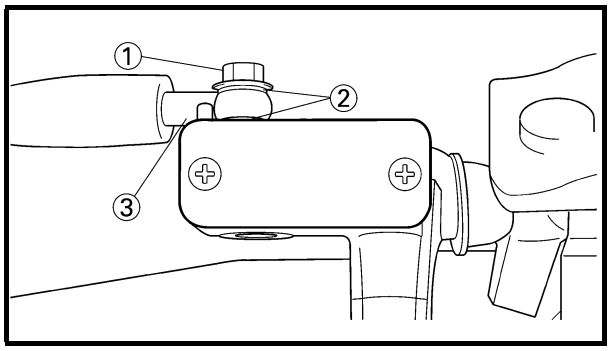


Order	Job/Part	Q'ty	Remarks
	Removing the rear brake master cylinder		Remove the parts in the order listed.
	Brake fluid		Drain. Refer to "CHANGING THE BRAKE FLUID" in chapter 3.
1	Brake fluid reservoir cap	1	
2	Brake fluid reservoir diaphragm holder	1	
3	Brake fluid reservoir diaphragm	1	
4	Brake fluid reservoir tank	1	
5	Brake fluid reservoir hose	1	
6	Hose holder	1	
7	Union bolt	1	
8	Copper washer	2	
9	Brake hose	1	
10	Brake master cylinder	1	
			For installation, reverse the removal procedure.

EAS00587



Order	Job/Part	Q'ty	Remarks
	Removing the rear brake master cylinder		Remove the parts in the order listed.
①	Brake master cylinder kit	1	
②	Circlip	1	
③	Brake master cylinder joint	1	
④	O-ling	1	
			For assembly, reverse the disassembly procedure.



EAS00588

DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER

NOTE:

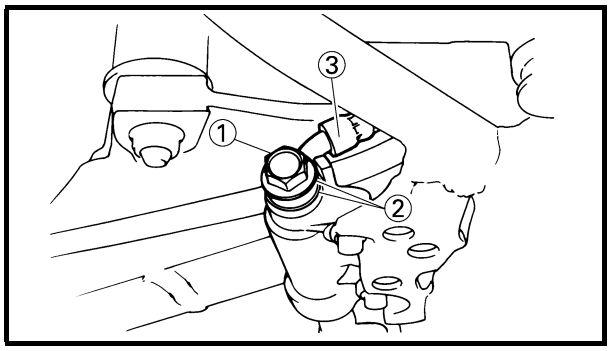
Before disassembling the front brake master cylinder, drain the brake fluid from the entire brake system.

1. Remove:
   - union bolt ①
   - copper washers ②
   - brake hose ③

NOTE:

To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

2. Remove:
   - brake master cylinder bracket
   - brake master cylinder
3. Remove:
   - brake master cylinder boot
   - circlip



EAS00589

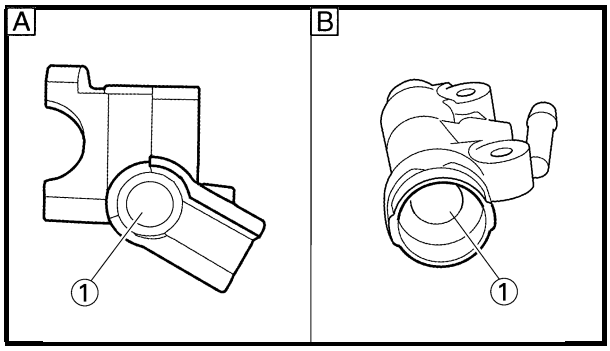
DISASSEMBLING THE REAR BRAKE MASTER CYLINDER

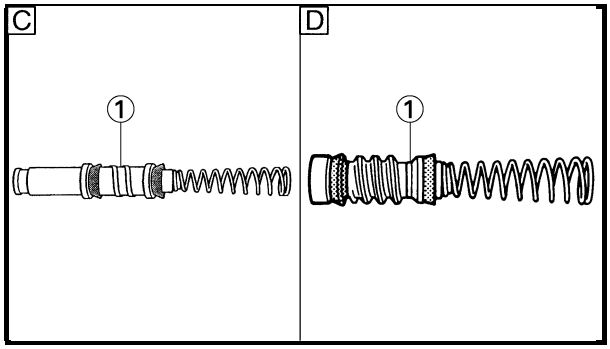
1. Remove:
   - union bolt ①
   - copper washers ②
   - brake hose ③

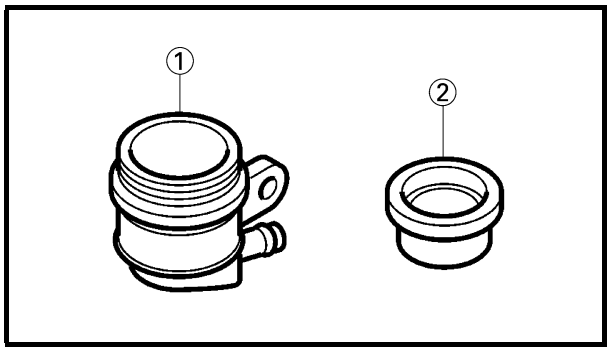
NOTE:

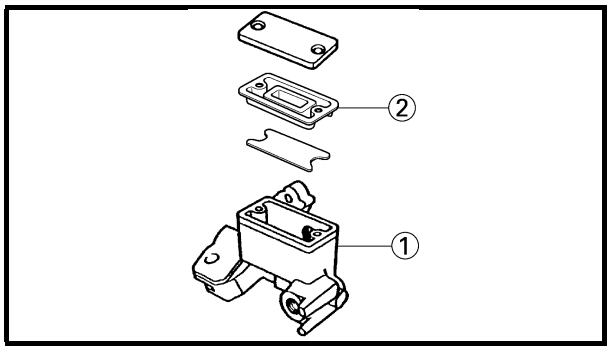
To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

2. Remove:
   - brake master cylinder
3. Remove:
   - circlip
   - brake master cylinder joint









EAS00592

CHECKING THE FRONT AND REAR BRAKE MASTER CYLINDERS

The following procedure applies to the both of the brake master cylinders.

1. Check:
   - brake master cylinder ①
     Damage/scratches/wear → Replace.
   - brake fluid delivery passages
     (brake master cylinder body)
     Obstruction → Blow out with compressed air.

A Front
B Rear

2. Check:
   - brake master cylinder kit ①
     Damage/scratches/wear → Replace.

C Front
D Rear

3. Check:
   - rear brake fluid reservoir ①
     Cracks/damage → Replace.
   - rear brake fluid reservoir diaphragm ②
     Cracks/damage → Replace.

4. Check:
   - front brake master cylinder reservoir ①
     Cracks/damage → Replace.
   - front brake master cylinder reservoir diaphragm ②
     Damage/wear → Replace.

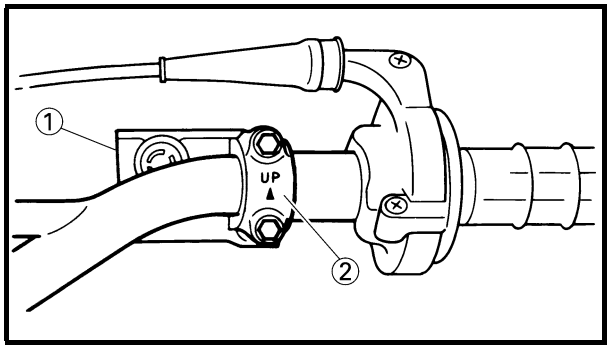
5. Check:
   - brake hoses
     Cracks/damage/wear → Replace.
     Refer to "CHECKING THE FRONT AND REAR BRAKE HOSES" in chapter 3.

EAS00598

ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER

⚠ WARNING

- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components.**



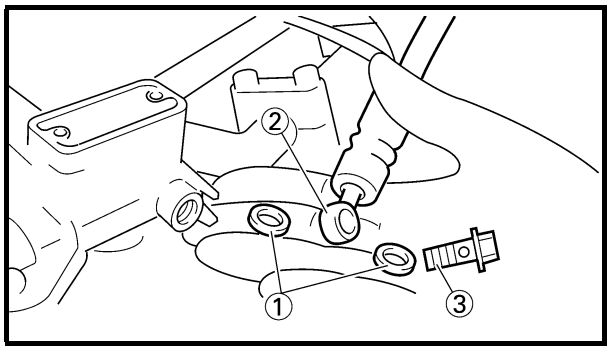
Recommended brake fluid
DOT 4

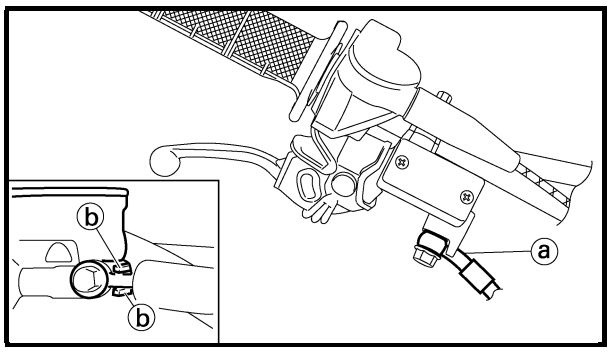
1. Install:
   - brake master cylinder ①

9 Nm (0.9 m•kg, 6.5 ft•lb)

NOTE:

- Install the brake master cylinder holder ② with the "UP" mark facing up.
- First, tighten the upper bolt, then the lower bolt.





2. Install:
   - copper washers ① New
   - brake hose ②
   - union bolt ③

26 Nm (2.6 m•kg, 19 ft•lb)

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

Install the brake hose so that its pipe portion ⓐ directs as shown and lightly touches the projection ⓑ on the brake master cylinder.

NOTE:

- While holding the brake hose, tighten the union bolt as shown.
- Turn the handlebar to the left and right to make sure the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.

3. Fill:
   - brake master cylinder reservoir
     (with the specified amount of the recommended brake fluid)

	Recommended brake fluid **DOT 4**

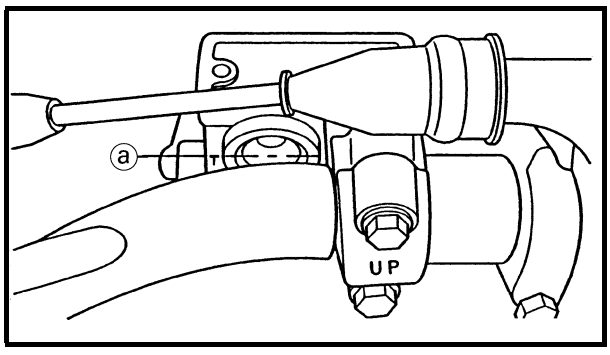
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

4. Bleed:
   - brake system
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
5. Check:
   - brake fluid level
     Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.

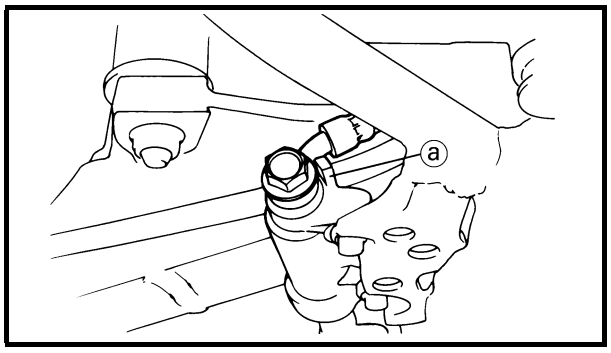


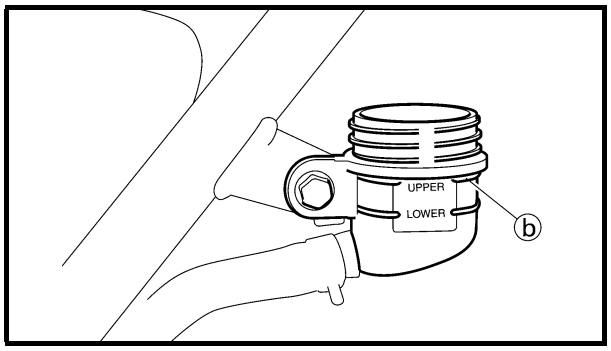
6. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EAS00608

ASSEMBLING THE REAR BRAKE MASTER CYLINDER

1. Install:
   • O-ling New
   • brake master cylinder joint
   • circlip New
   • brake master cylinder kit
2. Install:
   • copper washers New
   • brake hoses
   • union bolt **26 Nm (2.6 m•kg, 19 ft•lb)**





⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

When installing the brake hose onto the brake master cylinder, make sure the brake pipe touches the projection ⓐ as shown.

3. Fill:
   • brake fluid reservoir
   (to the maximum level mark ⓑ)

Recommended brake fluid
DOT 4

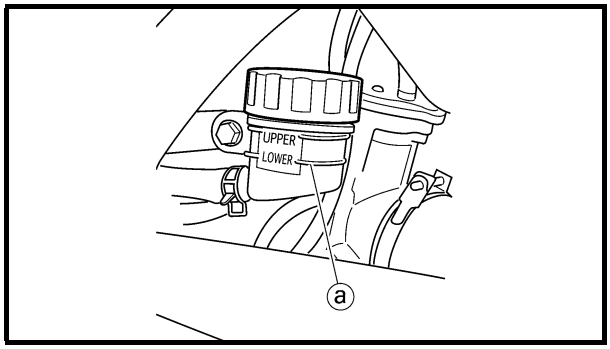
⚠ WARNING

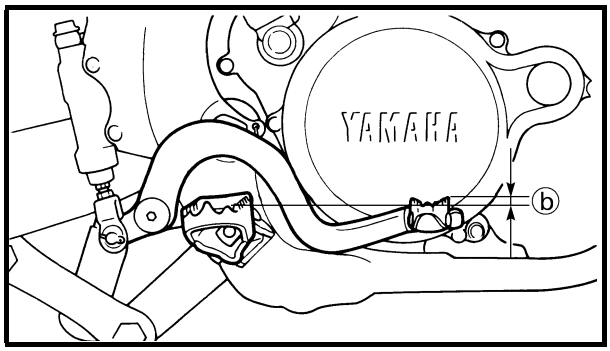
- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**

• When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.





4. Bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
5. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
6. Check:
   • brake pedal operation

⚠ WARNING

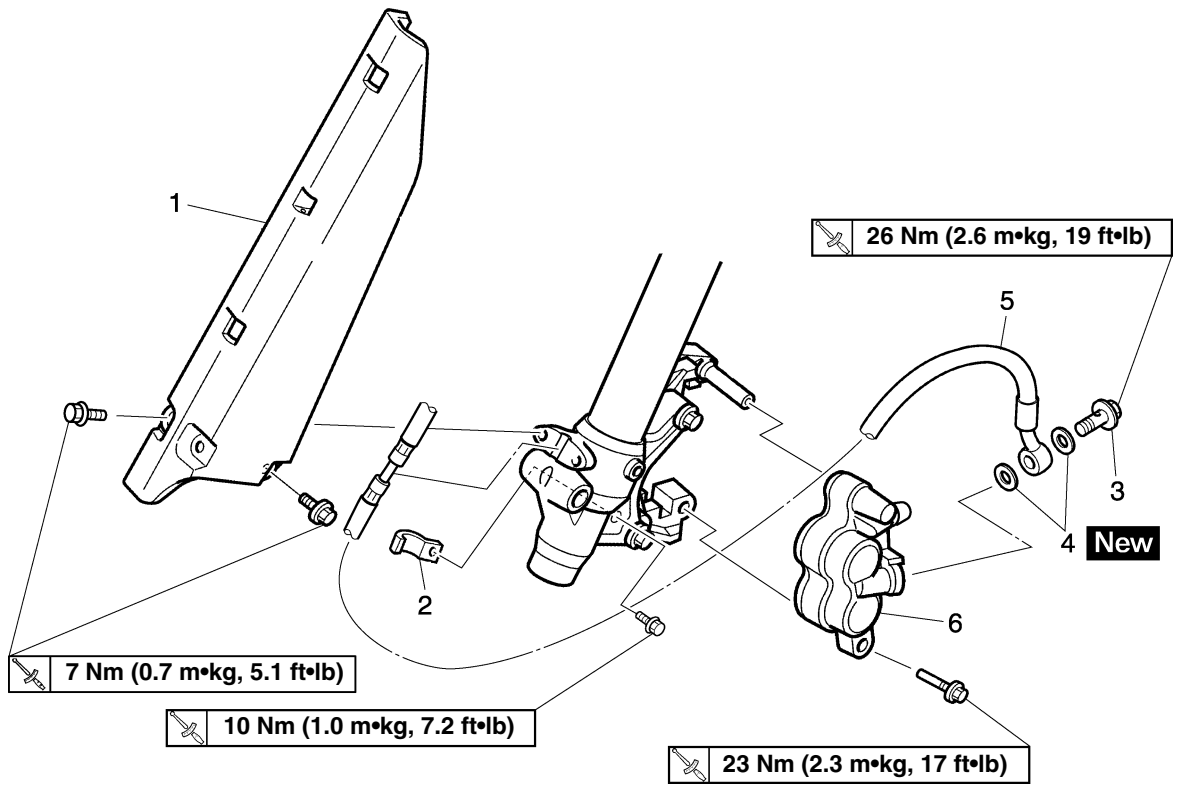
A soft or spongy feeling in the brake pedal can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance and could result in loss of control and possibly an accident. Therefore, check and, if necessary, bleed the brake system.

7. Adjust:
   • brake pedal position ⓑ
   Refer to "ADJUSTING THE REAR BRAKE" in chapter 3.

Brake pedal position (above the top of the rider footrest)
4.0 ~ 10.0 mm (0.16 ~ 0.39 in)

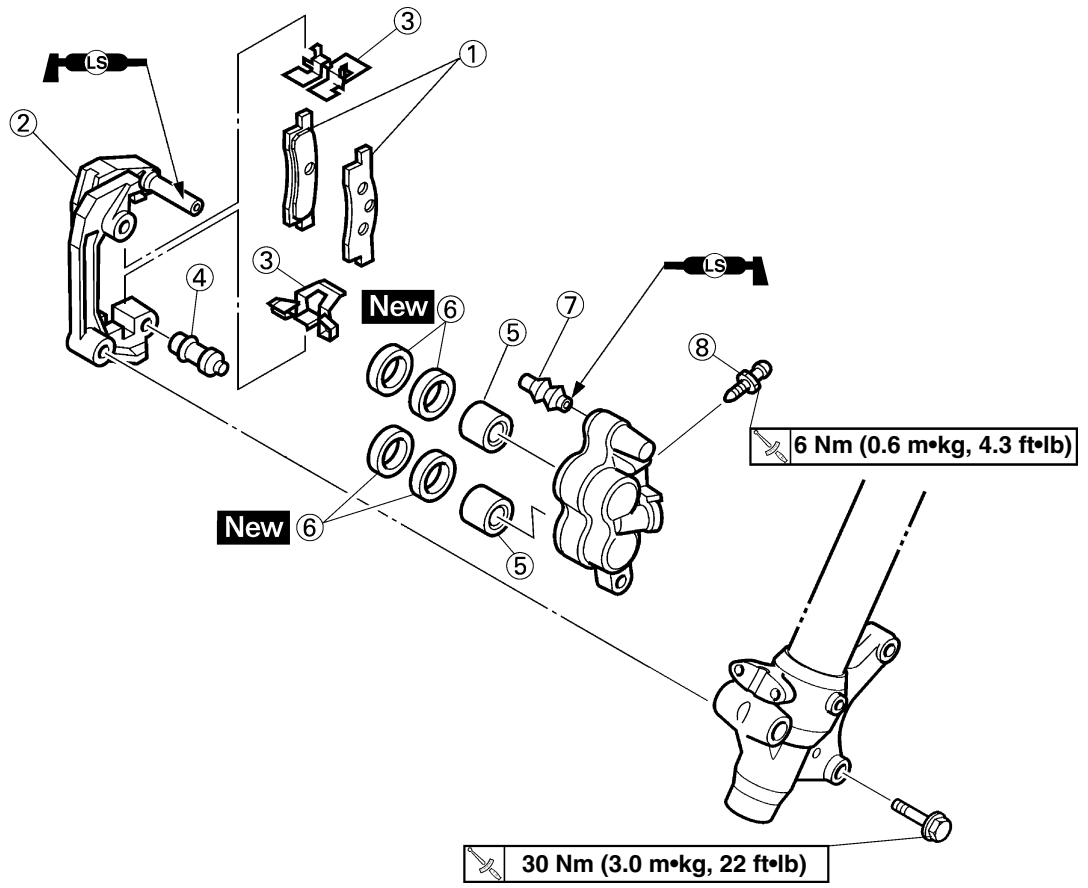
EAS00613

FRONT BRAKE CALIPER



Order	Job/Part	Q'ty	Remarks
	Removing the front brake caliper		Remove the parts in the order listed.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
1	Protector	1	
2	Brake hose holder	1	
3	Union bolt	1	
4	Copper washer	2	
5	Brake hose	1	
6	Brake caliper	1	
			For installation, reverse the removal procedure.

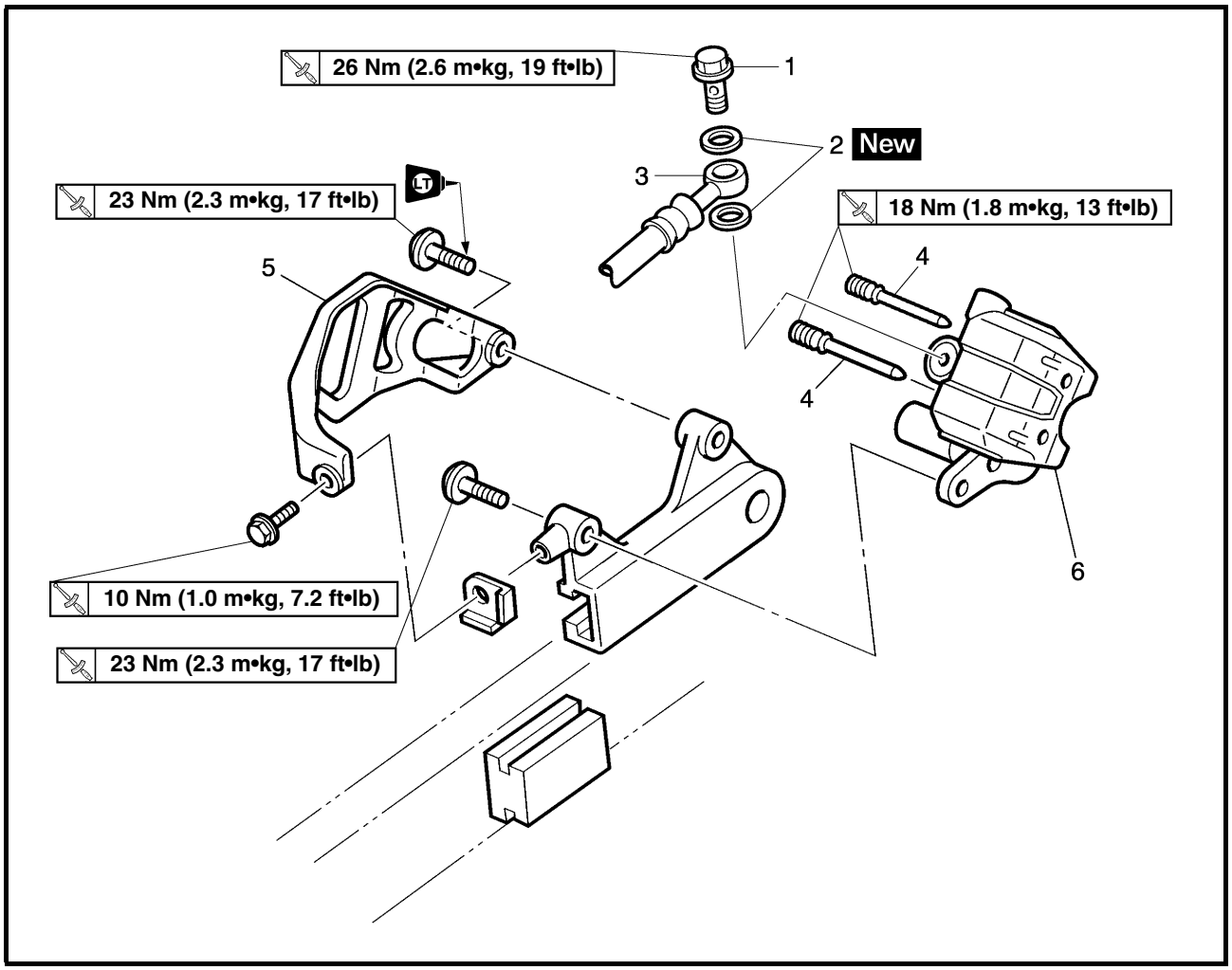
EAS00614



Order	Job/Part	Q'ty	Remarks
	Disassembling the front brake caliper		Remove the parts in the order listed.
①	Brake pad	2	
②	Brake caliper bracket	1	
③	Brake pad support	2	
④	Sleeve boot	1	
⑤	Brake caliper piston	2	
⑥	Brake caliper piston seal	4	
⑦	Pin boot	1	
⑧	Bleed screw	1	
			For assembly, reverse the disassembly procedure.

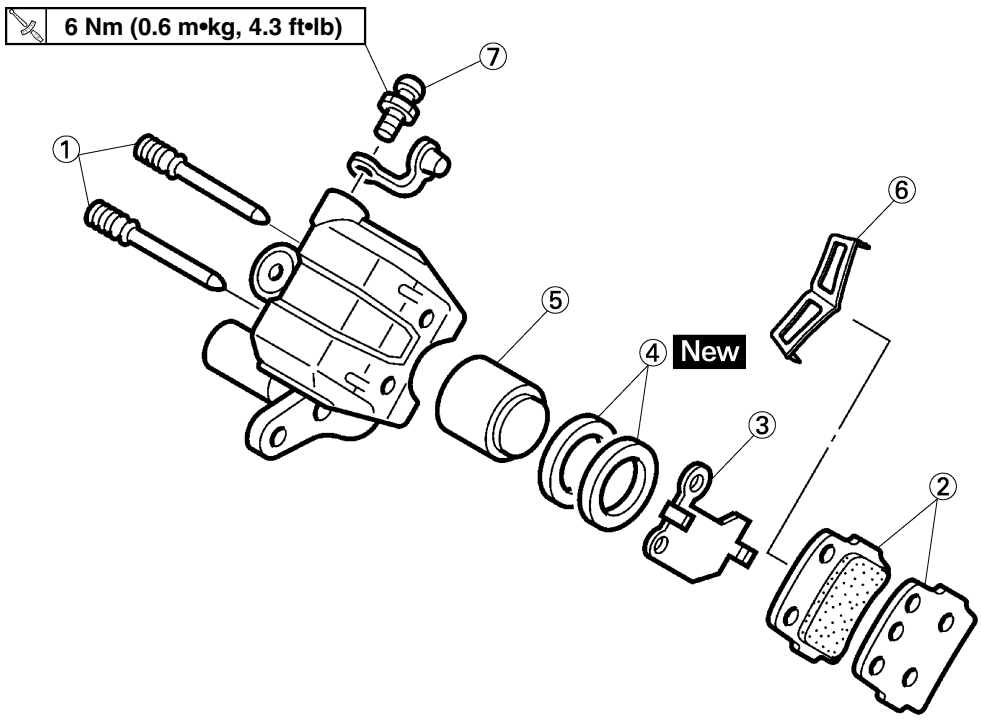
EAS00616

REAR BRAKE CALIPER



Order	Job/Part	Q'ty	Remarks
	Removing the rear brake caliper		Remove the parts in the order listed.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
1	Union bolt	1	
2	Copper washer	2	
3	Brake hose	1	
4	Brake pad pin	2	Loosen.
5	Protector	1	
6	Brake caliper	1	
			For installation, reverse the removal procedure.

EAS00617



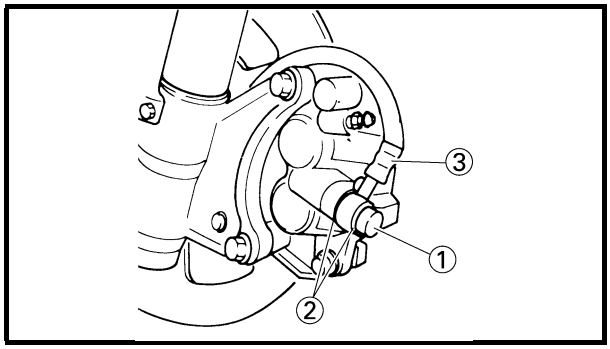
Order	Job/Part	Q'ty	Remarks
	Disassembling the rear brake caliper		Remove the parts in the order listed.
①	Brake pad pin	2	
②	Brake pad	2	
③	Brake pad shim	1	
④	Brake caliper seal	2	
⑤	Brake caliper piston	1	
⑥	Brake pad spring	1	
⑦	Bleed screw	1	
			For assembly, reverse the disassembly procedure.

EAS00619

DISASSEMBLING THE FRONT BRAKE CALIPER

NOTE:

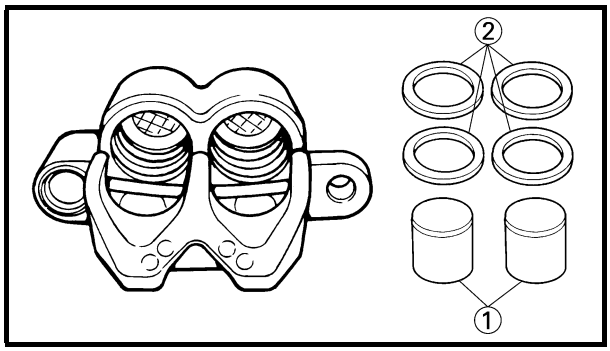
Before disassembling the brake caliper, drain the brake fluid from the entire brake system.



1. Remove:
   - union bolt ①
   - copper washers ② New
   - brake hose ③

NOTE:

Put the end of the brake hose into a container and pump out the brake fluid carefully.



2. Remove:
   - brake caliper pistons ①
   - brake caliper piston seals ② New

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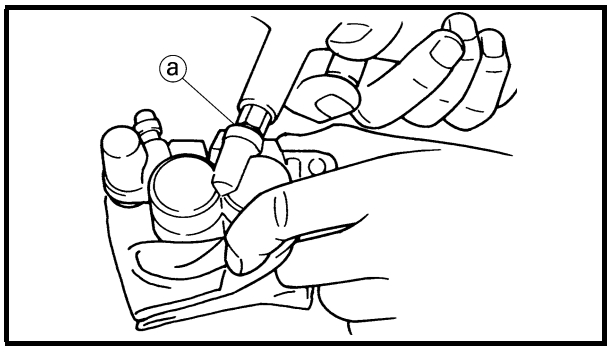
a. Blow compressed air into the brake hose joint opening ⓐ to force out the pistons from the brake caliper.

⚠ WARNING

- **Cover the brake caliper pistons with a rag. Be careful not to get injured when the pistons are expelled from the brake caliper.**
- **Never try to pry out the brake caliper pistons.**



b. Remove the brake caliper piston seals.

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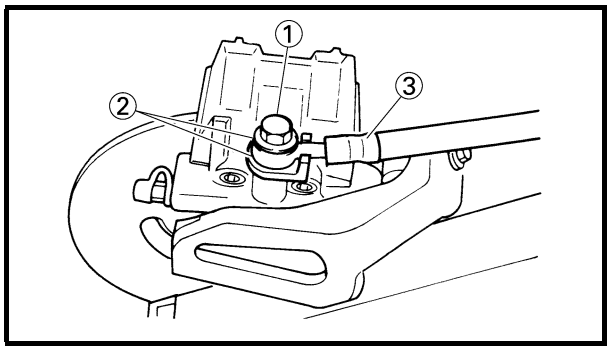
EAS00626

DISASSEMBLING THE REAR BRAKE CALIPER

NOTE:

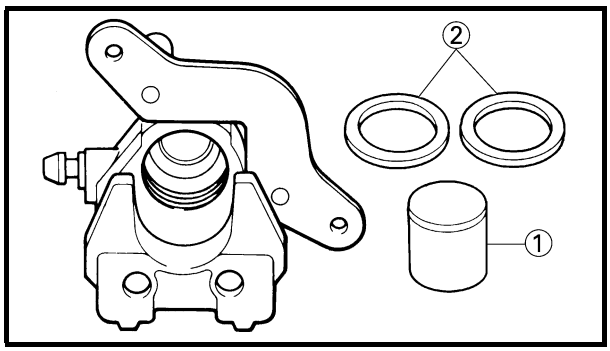
Before disassembling the brake caliper, drain the brake fluid from the entire brake system.



1. Remove:
   • union bolt ①
   • copper washers ② New
   • brake hose ③

NOTE:

Put the end of the brake hose into a container and pump out the brake fluid carefully.



2. Remove:
   • brake caliper piston ①
   • brake caliper piston seals ② New

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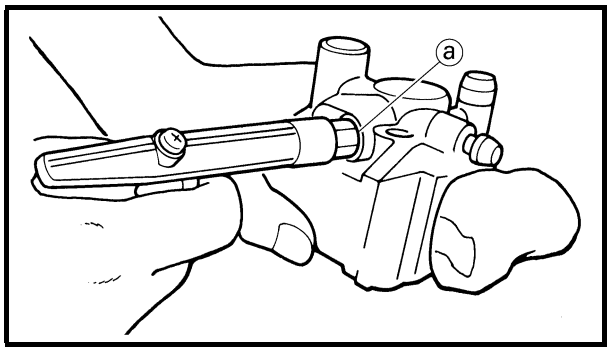
a. Blow compressed air into the brake hose joint opening ⓐ to force out the piston from the brake caliper.

⚠ WARNING

- **Cover the brake caliper piston with a rag. Be careful not to get injured when the piston is expelled from the brake caliper.**
- **Never try to pry out the brake caliper piston.**



b. Remove the brake caliper piston seals.

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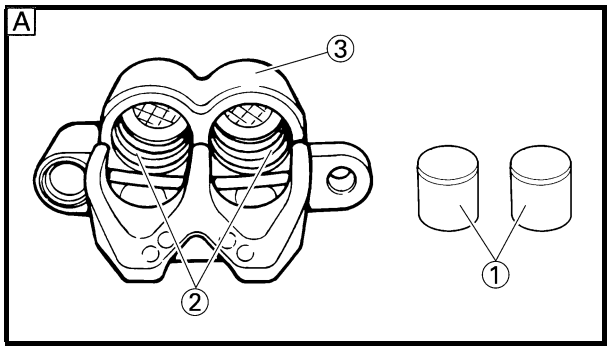
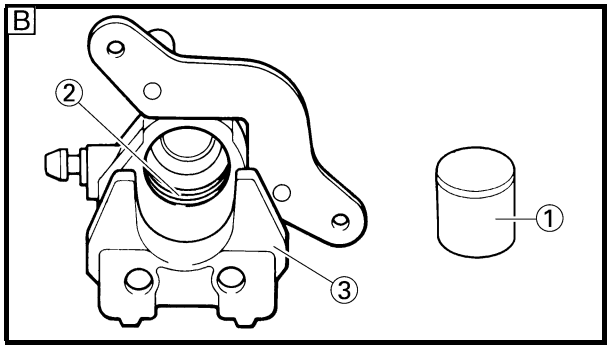
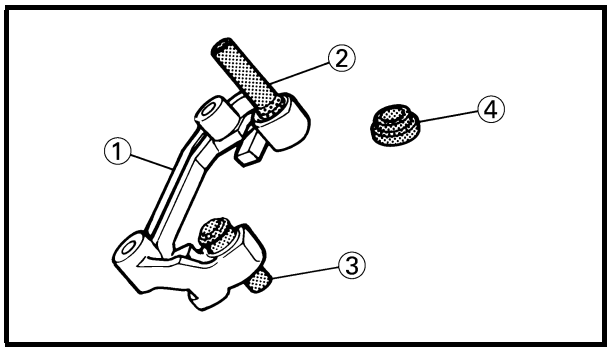
EAS00633

CHECKING THE FRONT AND REAR BRAKE CALIPERS

Recommended brake component replacement schedule	
Brake pads	**If necessary**
Piston seals	**Every two years**
Brake hoses	**Every four years**
Brake fluid	**Every two years and whenever the brake is disassembled**







1. Check:
   - brake caliper pistons ①
     Rust/scratches/wear → Replace the brake caliper pistons.
   - brake caliper cylinders ②
     Scratches/wear → Replace the brake caliper assembly.
   - brake caliper body ③
     Cracks/damage → Replace the brake caliper assembly.
   - brake fluid delivery passages (brake caliper body)
     Obstruction → Blow out with compressed air.

⚠ WARNING

Whenever a brake caliper is disassembled, replace the brake caliper piston seals.

A Front
B Rear

2. Check:
   - front brake caliper bracket ①
     Cracks/damage → Replace.
   - guide pin ②
     Rust/damage → Replace.
   - sleeve boot ③
     Crack/damage → Replace.
   - pin boot ④
     Wear/damage → Replace.

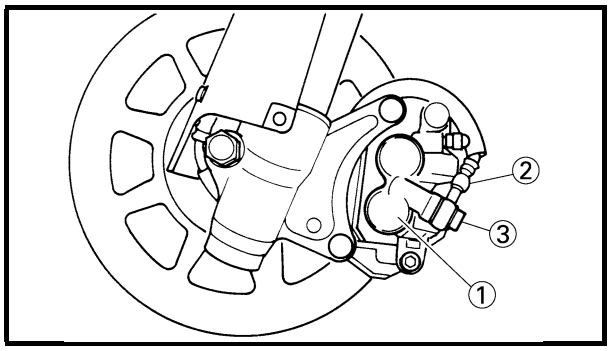
EAS00634

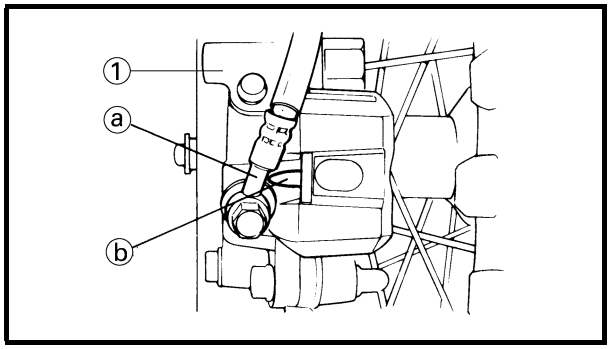
ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER

⚠ WARNING

- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components as they will cause the piston seals to swell and distort.**
- **Whenever a brake caliper is disassembled, replace the brake caliper piston seals.**

	Recommended brake fluid **DOT 4**





1. Install:
   - brake caliper bracket
     30 Nm (3.0 m•kg, 22 ft•lb)
   - brake pads
   - brake caliper ①
     23 Nm (2.3 m•kg, 17 ft•lb)
   - copper washers **New**
   - brake hose ②
   - union bolt ③ **26 Nm (2.6 m•kg, 19 ft•lb)**

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

When installing the brake hose onto the brake caliper ①, make sure the brake pipe ⓐ touches the projection ⓑ on the brake caliper.

2. Fill:
   - brake master cylinder reservoir
     (with the specified amount of the recommended brake fluid)

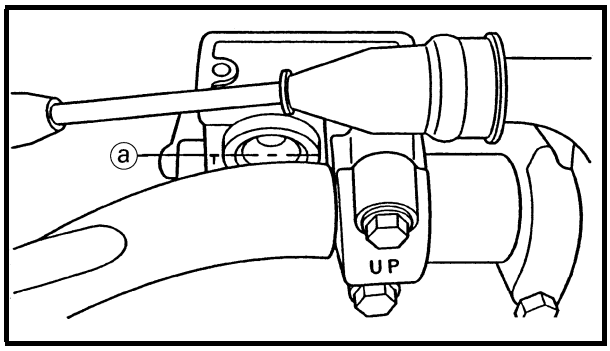
Recommended brake fluid
DOT 4

⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.



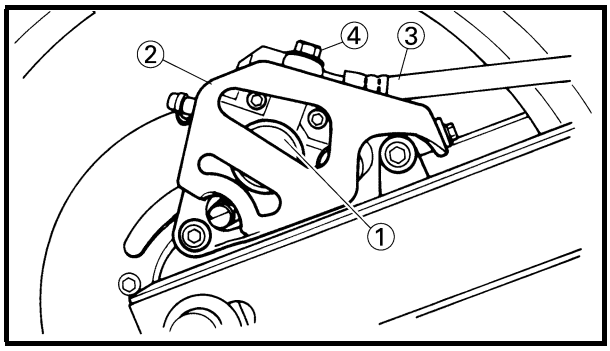
3. Bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
4. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
5. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EAS00642

ASSEMBLING AND INSTALLING THE REAR BRAKE CALIPER

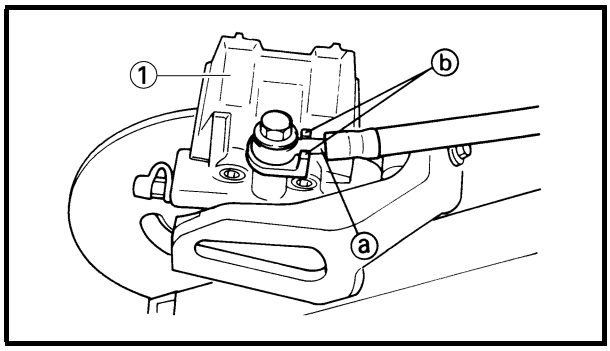
⚠ WARNING

- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components as they will cause the piston seals to swell and distort.**
- **Whenever a brake caliper is disassembled, replace the brake caliper piston seals.**



Recommended brake fluid
DOT 4

1. Install:
   • brake pad spring
   • brake pad shim
   • brake pad pins
2. Install:
   • brake caliper ① (front) **23 Nm (2.3 m•kg, 17 ft•lb)**
   (rear) **23 Nm (2.3 m•kg, 17 ft•lb)**
   LOCK TITE®
   • protector ② **10 Nm (1.0 m•kg, 7.2 ft•lb)**
   • copper washers **New**
   • brake hose ③
   • union bolt ④ **26 Nm (2.6 m•kg, 19 ft•lb)**



⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

When installing the brake hose onto the brake caliper ①, make sure the brake pipe ⓐ touches the projection ⓑ on the brake caliper.

3. Fill:
   • brake master cylinder reservoir
   (with the specified amount of the recommended brake fluid)

Recommended brake fluid
DOT 4

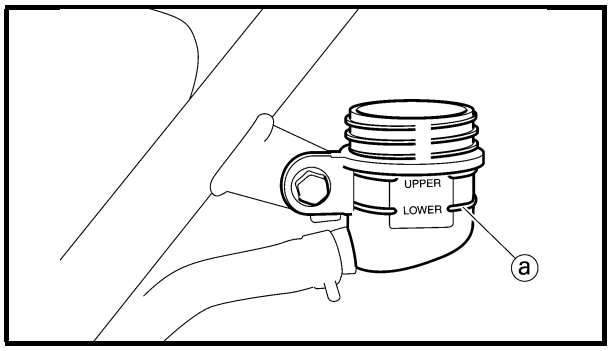
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

4. Bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

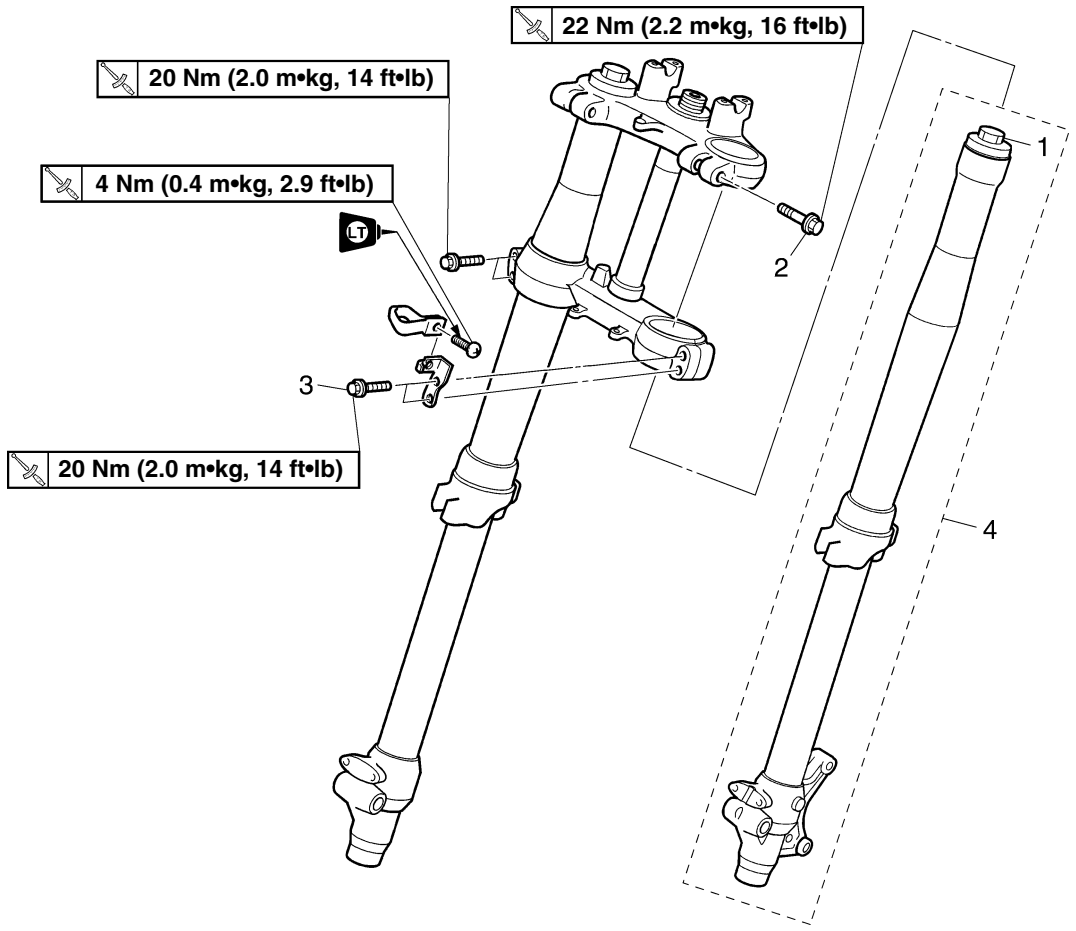


5. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
6. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EAS00646

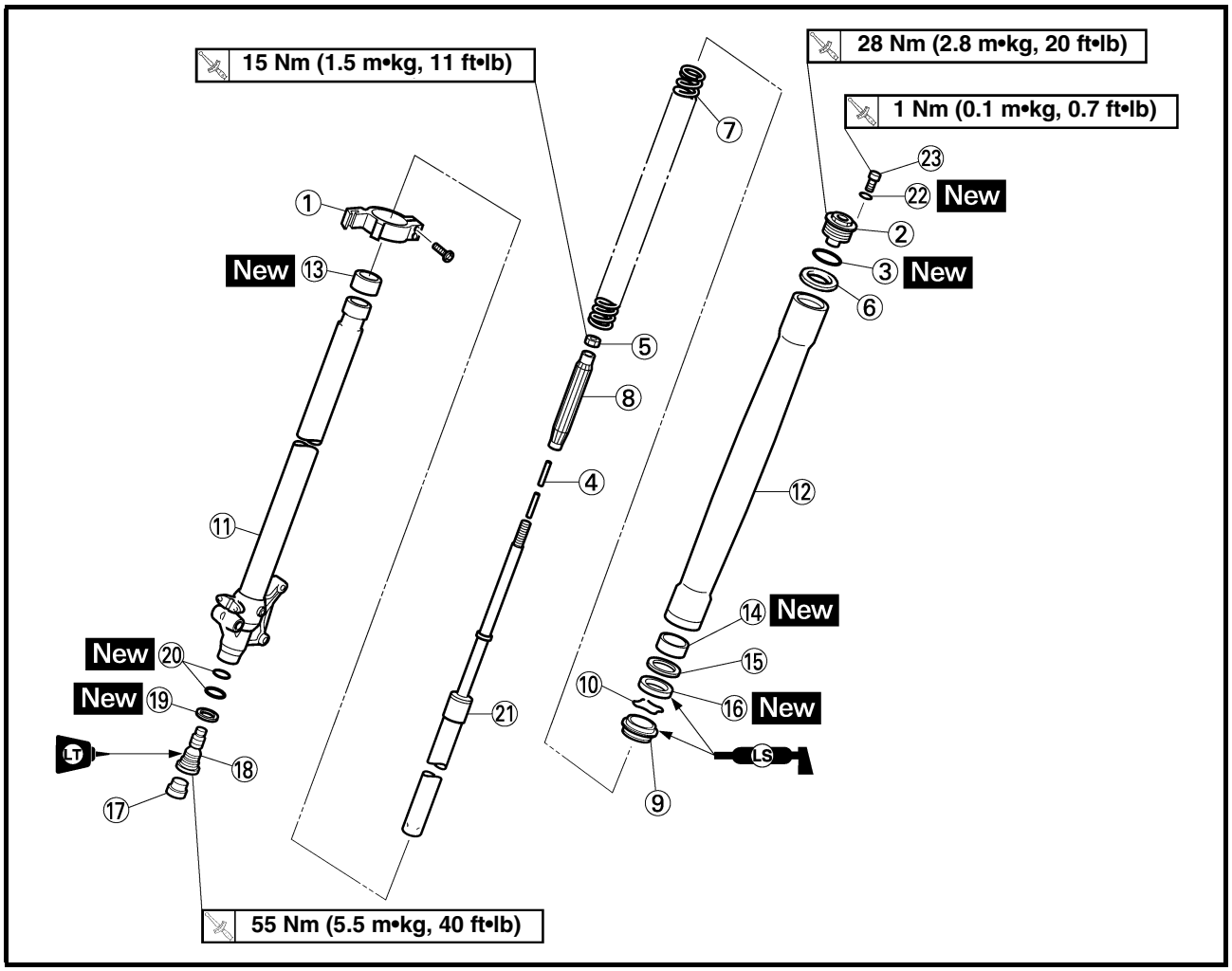
FRONT FORK

FRONT FORK LEGS

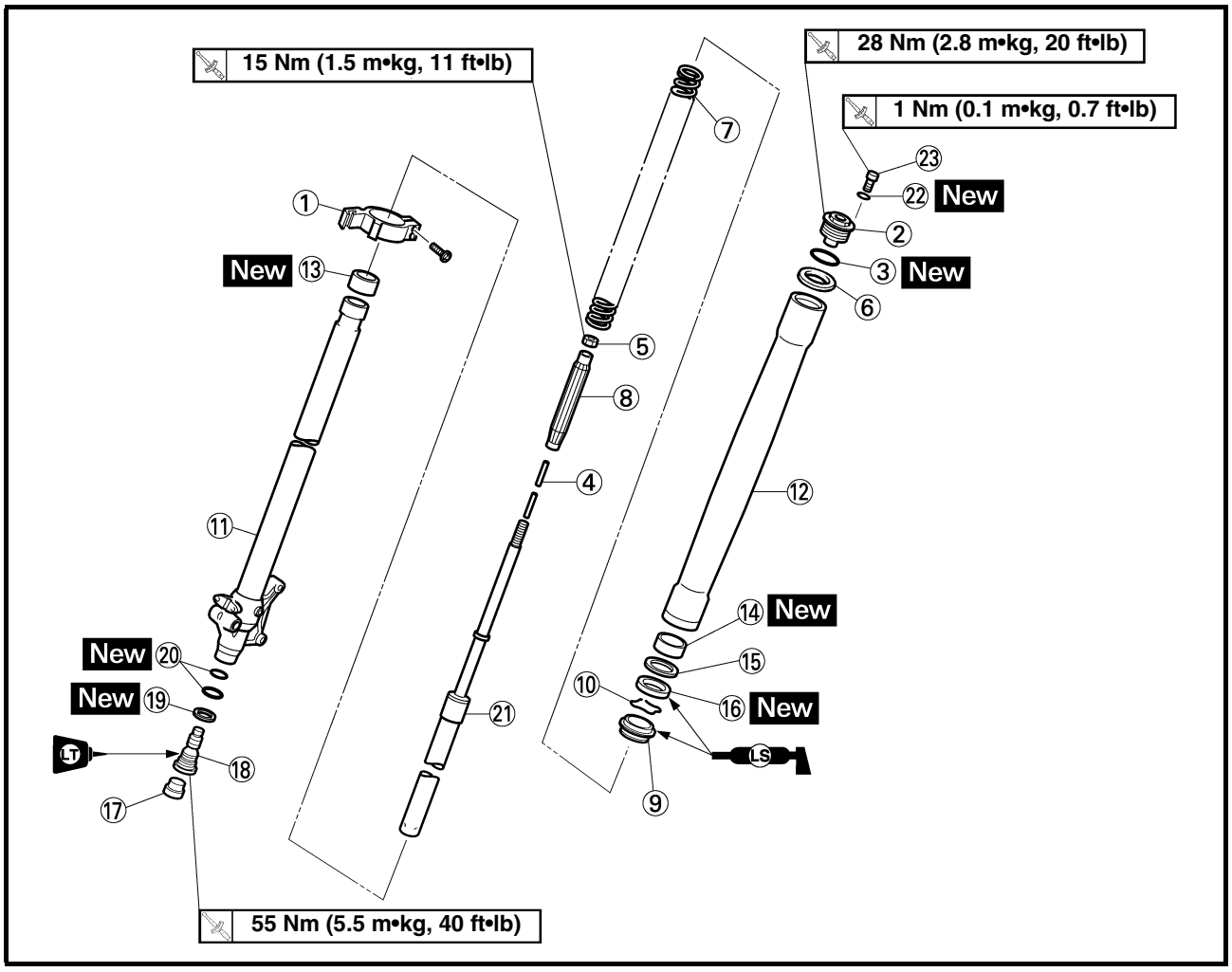


Order	Job/Part	Q'ty	Remarks
	Removing the front fork legs		Remove the parts in the order listed.
	Front wheel		Refer to "FRONT WHEEL AND BRAKE DISC".
	Protector		Refer to "FRONT AND REAR BRAKES".
	Front brake caliper		
	Number plate		Refer to "SEAT, SIDE COVERS AND FUEL TANK" in chapter 3.
1	Cap bolt	1	Loosen.
2	Upper bracket pinch bolt	1	Loosen.
3	Lower bracket pinch bolt	2	Loosen.
4	Front fork	1	For installation, reverse the removal procedure.

EAS00648



Order	Job/Part	Q'ty	Remarks
	Disassembling the front fork legs		Remove the parts in the order listed.
①	Guide protector	1	
②	Cap bolt	1	
③	O-ring	1	
④	Damper adjusting rod	1	
⑤	Nut	1	
⑥	Washer	1	
⑦	Fork spring	1	
⑧	Spring guide	1	
⑨	Dust seal	1	
⑩	Oil seal clip	1	
⑪	Inner tube	1	
⑫	Outer tube	1	
⑬	Piston metal	1	
⑭	Slide metal	1	
⑮	Oil seal washer	1	



Order	Job/Part	Q'ty	Remarks
⑯	Oil seal	1	
⑰	Plug	1	
⑱	Base valve	1	
⑲	Gasket	1	
⑳	O-ring	2	
㉑	Damper rod	1	
㉒	O-ring	1	
㉓	Air bleed screw	1	
			For assembly, reverse the disassembly procedure.

EAS00650

REMOVING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Stand the vehicle on a level surface.

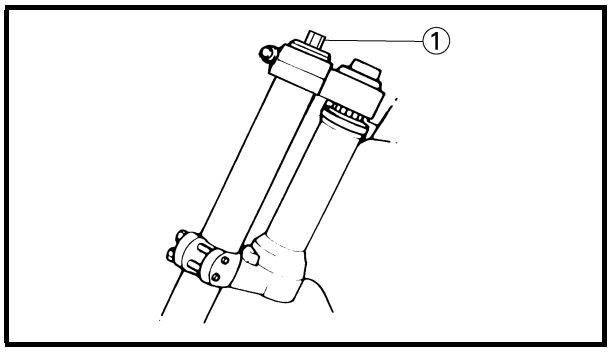
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

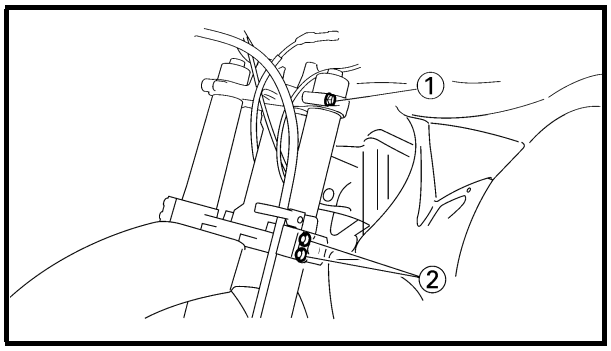
NOTE:

Place the vehicle on a suitable stand so that the front wheel is elevated.

2. Remove
   - front wheel
   - protector
   - front brake caliper
   - number plate



3. Loosen:
   - cap bolt ①

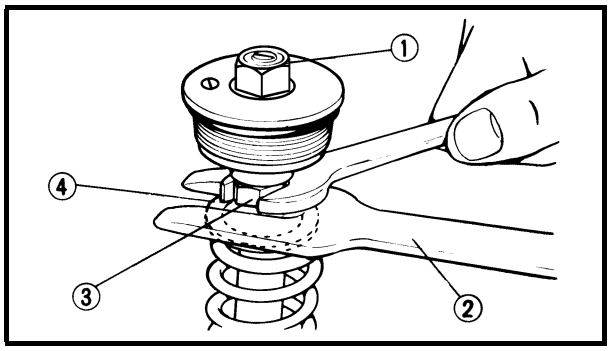


4. Loosen:
   - upper bracket pinch bolt ①
   - lower bracket pinch bolts ②

⚠ WARNING

Before loosening the upper and lower bracket pinch bolts, support the front fork leg.

5. Remove:
   - front fork leg



EAS00652
DISASSEMBLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Remove:
   - cap bolt ①
     (from the damper adjusting rod)

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a. Install the rod holder ② between the nut ③ and washer ④.

NOTE:

Use the side of the rod holder that is marked "A".

	Rod holder **90890-01434, YM-01434**

b. Loosen the nut.
c. Remove the cap bolt.

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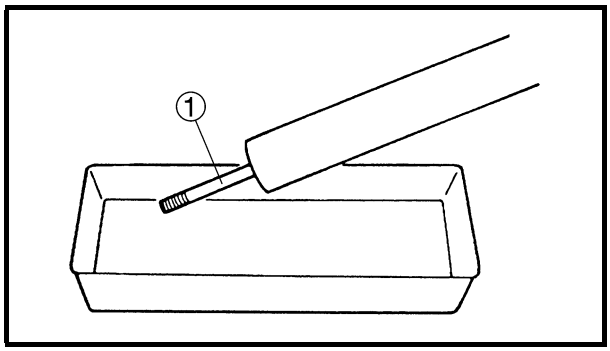
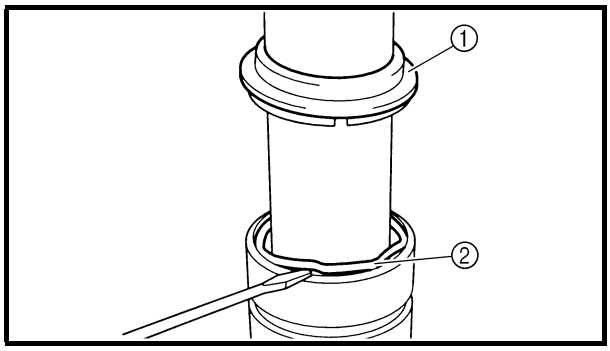


2. Remove:
   - nut
   - washer
   - fork spring
   - spring guide
3. Drain:
   - fork oil

NOTE:

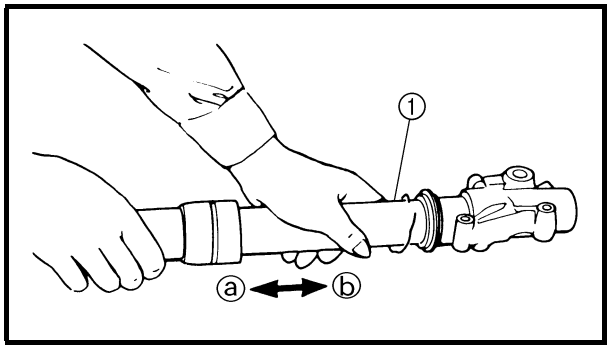
Stroke the damper rod ① several times while draining the fork oil.



4. Remove:
   - dust seal ①
   - oil seal clip ②
     (with a flat-head screwdriver)

CAUTION:

Do not scratch the inner tube.



5. Remove:
   - inner tube ①

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a. Push in slowly ⓐ the inner tube just before it bottoms out and then pull it back quickly ⓑ.
b. Repeat this step until the inner tube can be pulled out from the outer tube.

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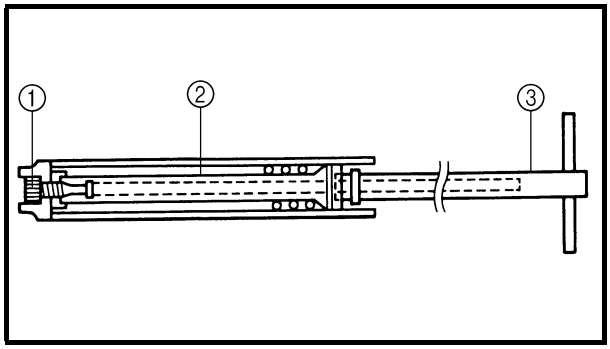
6. Remove:
   • slide metal
   • oil seal washer
   • oil seal
   • piston metal
   • oil seal clip
   • dust seal

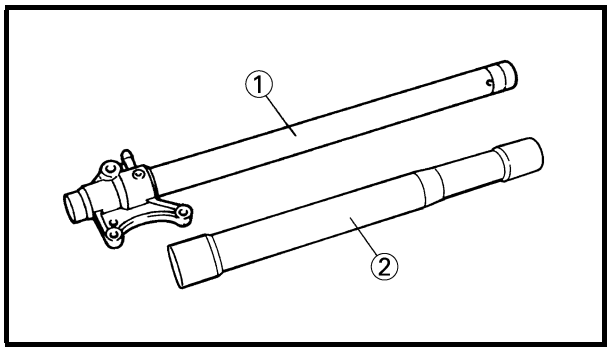


7. Remove:
   • base valve ①
   • damper rod ②

NOTE:

While holding the inner tube with the damper rod holder ③, loosen the base valve.

Damper rod holder
90890-01454, YM-01454



EAS00656

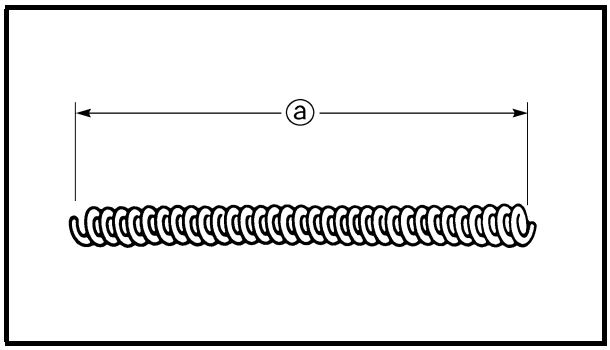
CHECKING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Check:
   • inner tube ①
   • outer tube ②
   Bends/damage/scratches → Replace.

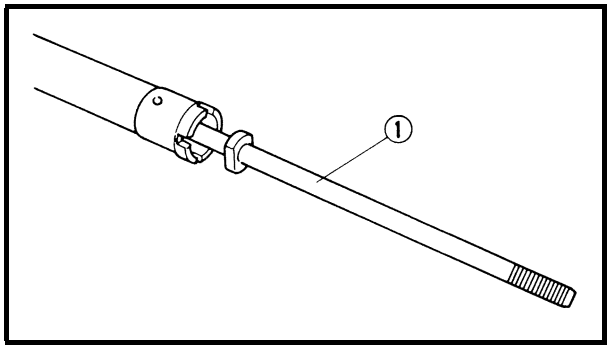
⚠ WARNING

Do not attempt to straighten a bent inner tube as this may dangerously weaken it.



2. Measure:
   • spring free length ⓐ
   Out of specification → Replace.

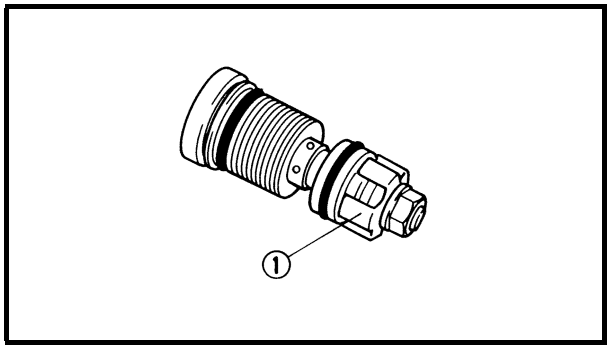
Spring free length
430 mm (16.9 in)
<Limit>: 425 mm (16.7 in)



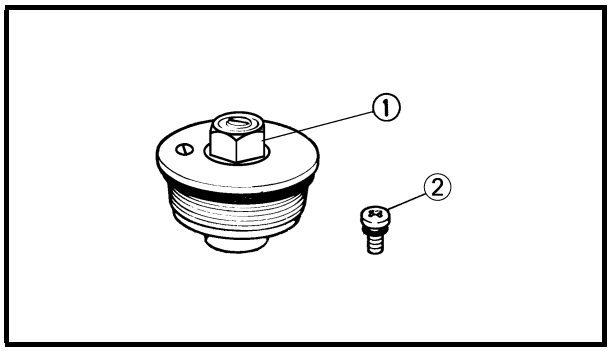
3. Check:
   • damper rod ①
   Bend/damage → Replace.
   Obstruction → Blow out all of the oil passages with compressed air.
   • damper rod adjusting rod
   Bend/damage → Replace.

CAUTION:

- **The front fork leg has a built-in damper adjusting rod and a very sophisticated internal construction, which are particularly sensitive to foreign material.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**



4. Check:
   - base valve assembly ①
     Damage/wear → Replace.



5. Check:
   - cap bolt ①
     Damage/wear → Replace.
   - air bleed screw ②
     Damage/wear → Replace.

EAS00661

ASSEMBLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

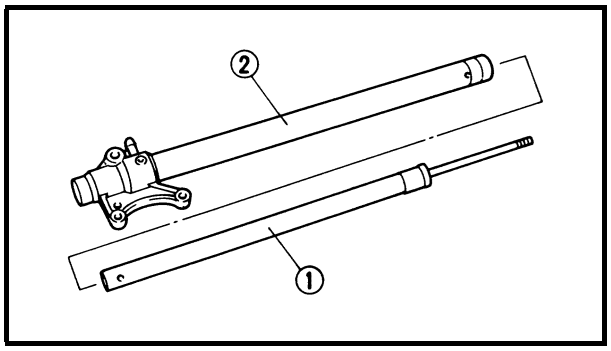
⚠ WARNING

- **Make sure the oil levels in both front fork legs are equal.**
- **Uneven oil levels can result in poor handling and a loss of stability.**

NOTE:

When assembling the front fork leg, be sure to replace the following parts:

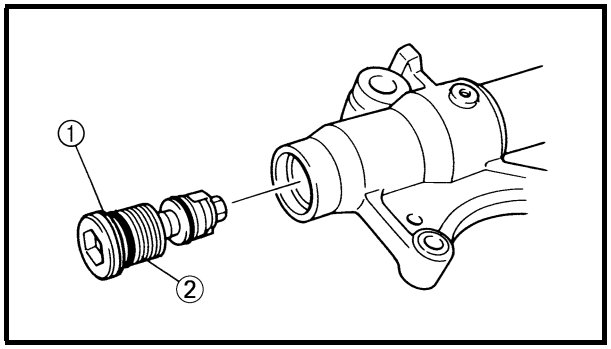
- outer tube and inner tube bushing
- oil seal
- dust seal
- Before assembling the front fork leg, make sure all of the components are clean.



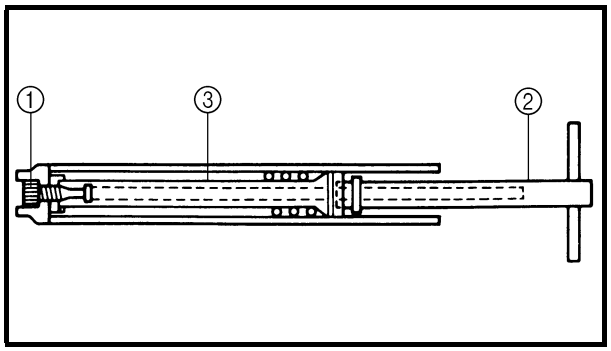
1. Install:
   • damper rod assembly ①
   • inner tube ②

CAUTION:

Allow the damper rod assembly to slide slowly down the inner tube until it protrudes from the bottom of the inner tube. Be careful not to damage the inner tube.



2. Install:
   • gasket ① New
   • base valve ②



3. Tighten:
   • base valve ① 55 Nm (5.5 m•kg, 40 ft•lb)
   LOCTITE®

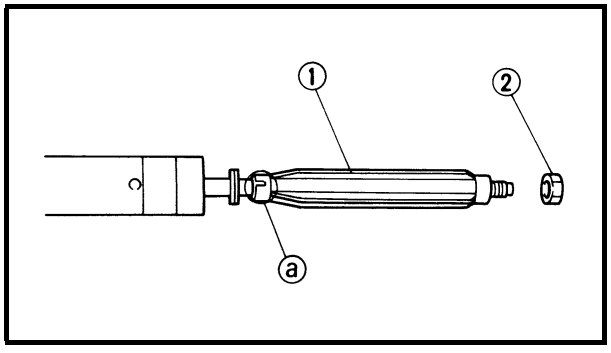
NOTE:

While holding the damper rod ③ with the damper rod holder ②, tighten the base valve.

Damper rod holder
90890-01454, YM-01454

4. Lubricate:
   • inner tube's outer surface

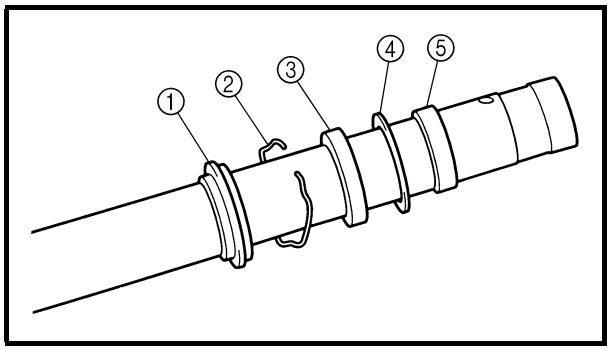
Recommended lubricant
Suspension oil "01"



5. Install:
   • spring guide ①
   • nut ②

NOTE:

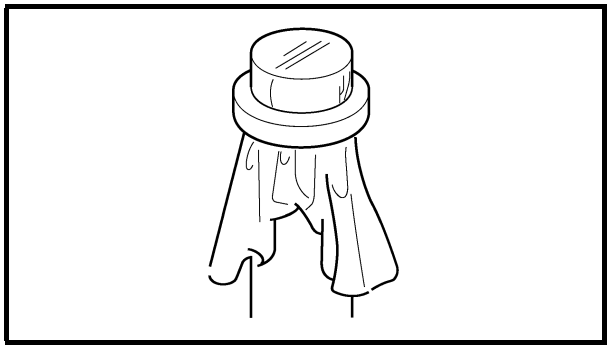
Install the spring guide with its cut ⓐ facing downward.



6. Install:
   - dust seal ①
   - oil seal clip ②
   - oil seal ③ New
   - oil seal washer ④
   - slide metal ⑤ New

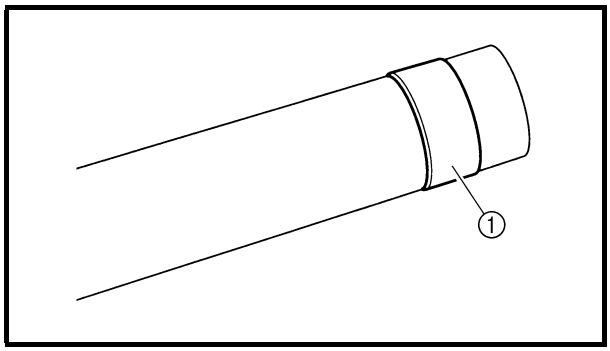
CAUTION:

Make sure the numbered side of the oil seal faces up.



NOTE:

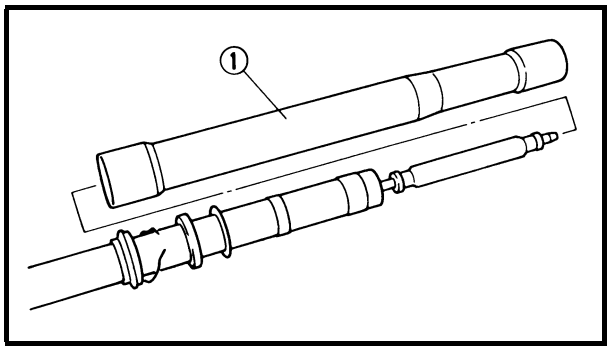
- Before installing the oil seal, lubricate its lips with lithium-soap-based grease.
- Lubricate the outer surface of the inner tube with fork oil.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag to protect the oil seal during installation.



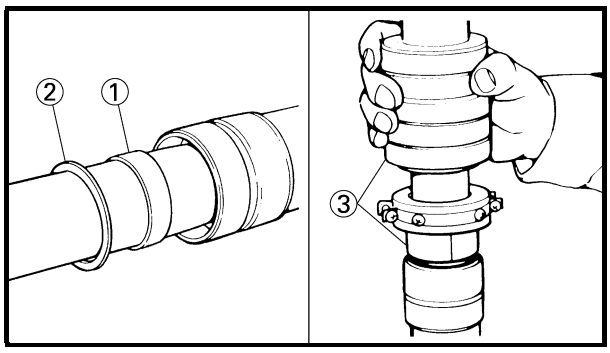
7. Install:
   - piston metal ① New

NOTE:

Install the piston metal on to the slot on inner tube.

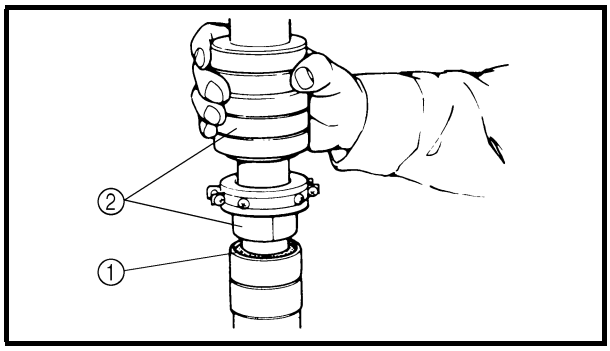


8. Install:
   - outer tube ①



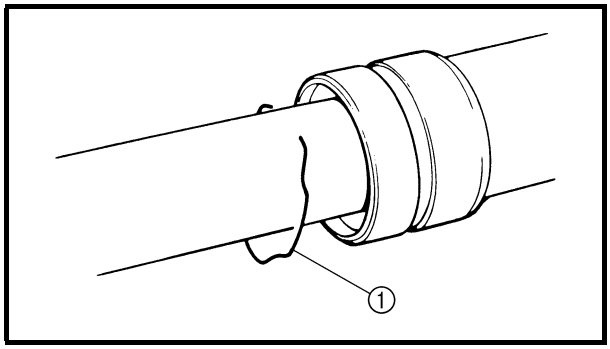
9. Install:
   - slide metal ① New
   - oil seal washer ②
     (with the fork seal driver ③)

	Fork seal driver **90890-01442, YM-01442**



10. Install:
- oil seal ① New
  (with the fork seal driver ②)

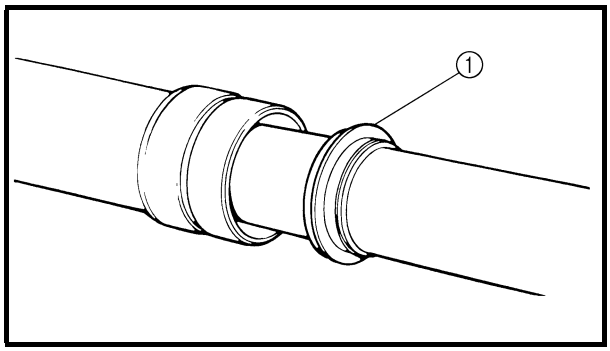
Fork seal driver
90890-01442, YM-01442



11. Install:
- oil seal clip ①

NOTE:

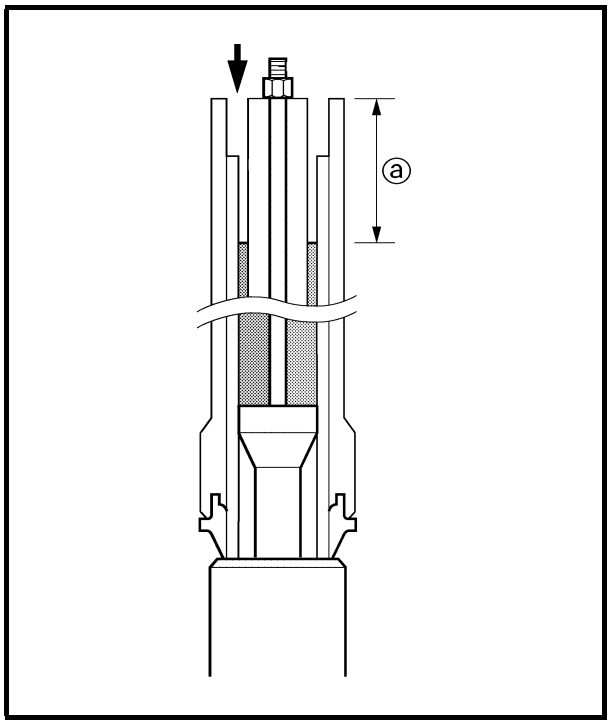
Adjust the oil seal clip so that it fits into the outer tube's groove.



12. Install:
- dust seal ①

13. Fill:
- front fork leg
  (with the specified amount of the recommended fork oil)

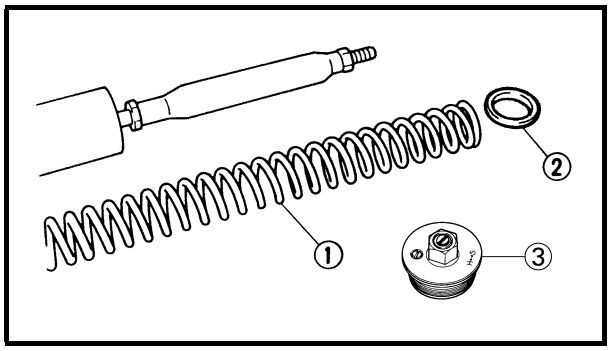
Quantity (each front fork leg)
0.32 L (0.28 Imp qt, 0.34 US qt)
Recommended oil
Suspension oil "01"



Front fork leg oil level ⓐ (from the top of the outer tube, with the outer tube fully compressed and without the fork spring)
Standard: 90 mm (3.54 in)
Extent of adjustment:
80 ~ 120 mm (3.15 ~ 4.72 in)

NOTE:

- While filling the front fork leg, keep it upright.
- After filling, slowly pump the front fork leg up and down to distribute the fork oil.

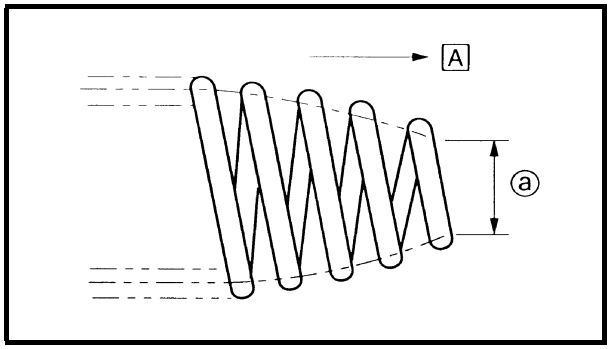


14. Install:
    - fork spring ①
    - washer ②
    - cap bolt ③

a. Install the fork spring, and washer.

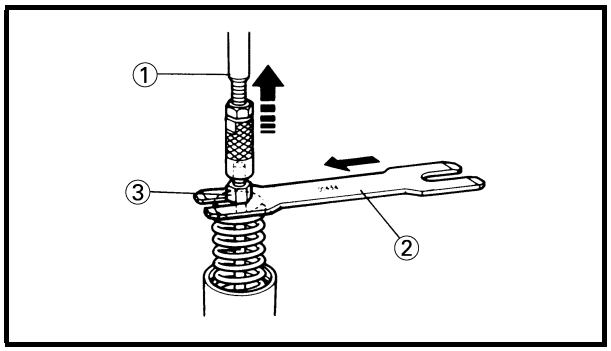
NOTE:

Install the spring with the smaller pitch ⓐ facing up [A].



b. Install the rod puller and rod puller attachment.

Rod puller
90890-01437, YM-01437
Rod puller attachment (M10)
90890-01436, YM-01436

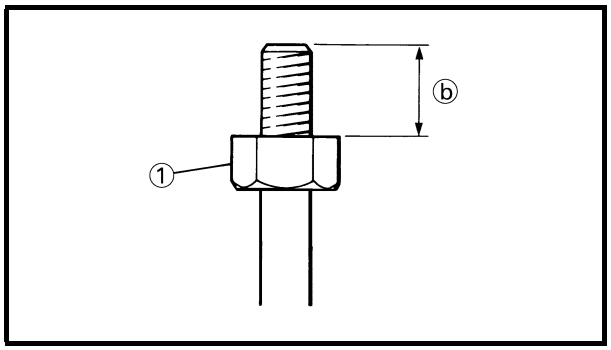


c. Pull up the rod puller ① and install the rod holder ② between the nut ③ and the washer.

NOTE:

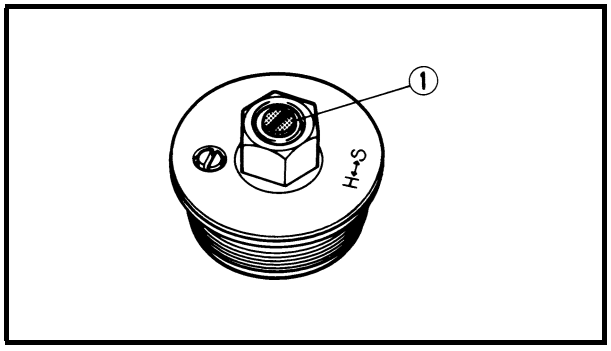
Use the side of the rod holder that is marked "A".

Rod holder
90890-01434, YM-01434



d. Remove the rod puller and adapter.
e. Install the nut ① and position it as specified ⓑ.

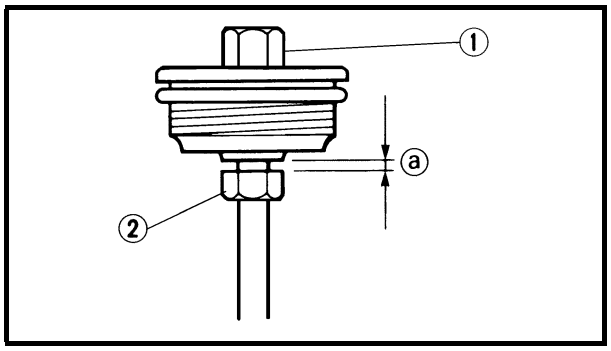
Distance ⓑ
18 mm (0.71 in)



f. Loosen the rebound damping force adjusting screw ① finger tight.

NOTE:

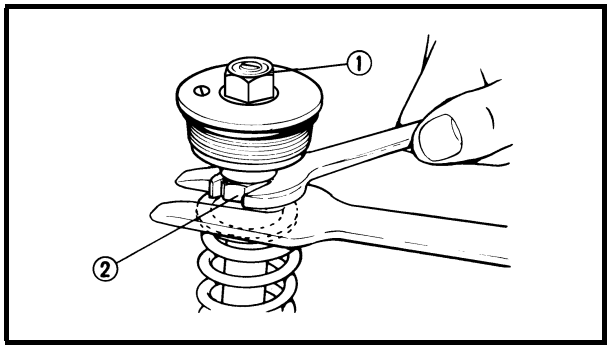
Record the set position of the adjuster (the amount of turning out the fully turned in position).



g. Fully tighten the cap bolt ① onto the damper rod by hand.

NOTE:

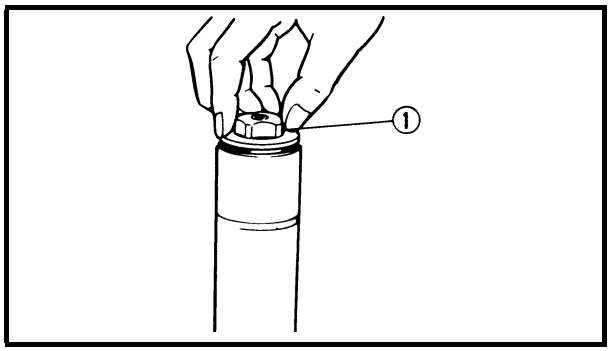
Make sure that there is a clearance ⓐ of 0 ~ 1 mm (0 ~ 0.04 in) between the front fork cap bolt and locknut ②.



h. Hold the cap bolt ① and tighten the nut ② to specification.

	Nut **15 Nm (1.5 m•kg, 11 ft•lb)**

i. Remove the rod holder.



j. Temporarily tighten the cap bolt ①.

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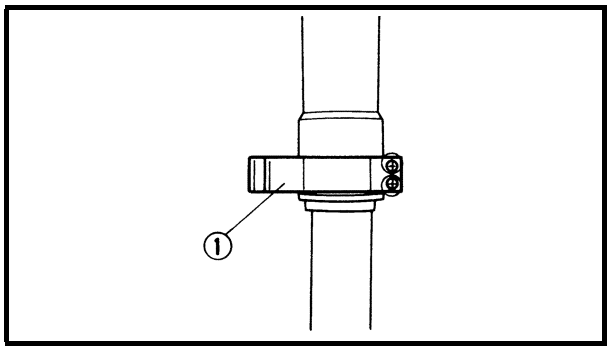
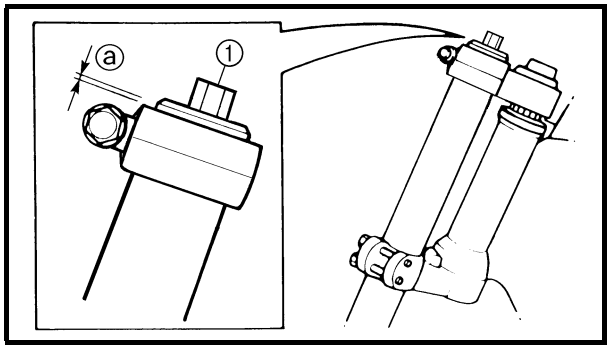
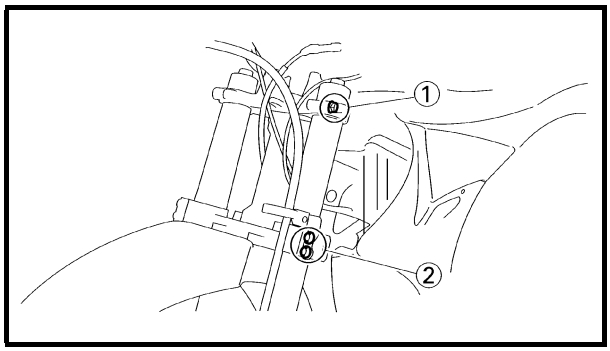


15. Install:
    • protector guide ①.





EAS00662
INSTALLING THE FRONT FORK LEGS
The following procedure applies to both of the front fork legs.
1. Install:
   • front fork leg
   Temporarily tighten the upper and lower bracket pinch bolts.

NOTE:
Make sure the inner fork tube is flush with the top of the handlebar holder.

2. Tighten:
   • cap bolt ① — **28 Nm (2.8 m•kg, 20 ft•lb)**
3. Adjust:
   • front fork top end ⓐ

Front fork top end (standard)
YZ85: 24 mm (0.94 in)
YZ85LW: 0 mm (0.00 in)

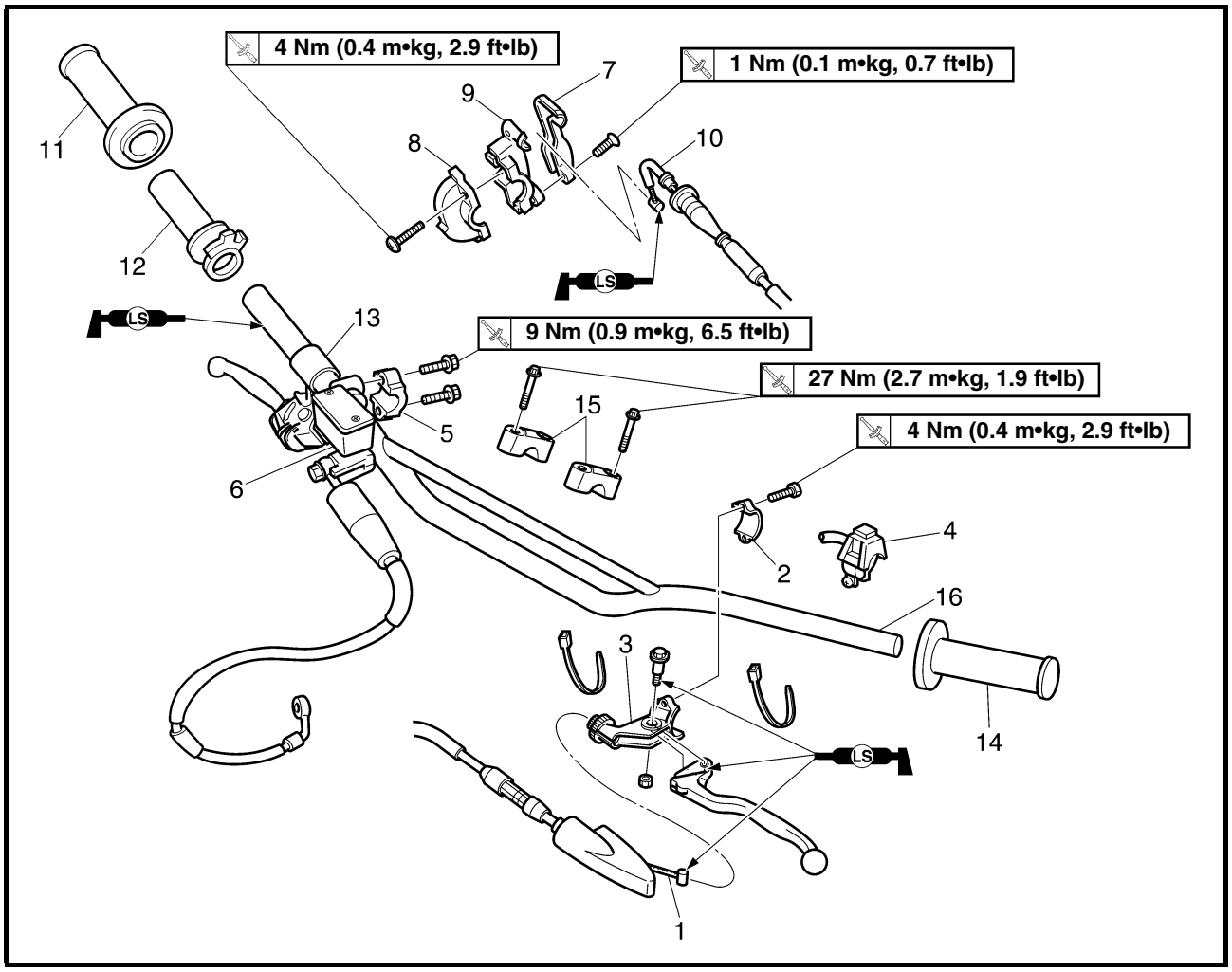
4. Tighten:
   • upper bracket pinch bolt ① — **22 Nm (2.2 m•kg, 16 ft•lb)**
   • lower bracket pinch bolt ② — **20 Nm (2.0 m•kg, 14 ft•lb)**

⚠ WARNING
Make sure the brake hoses are routed properly.

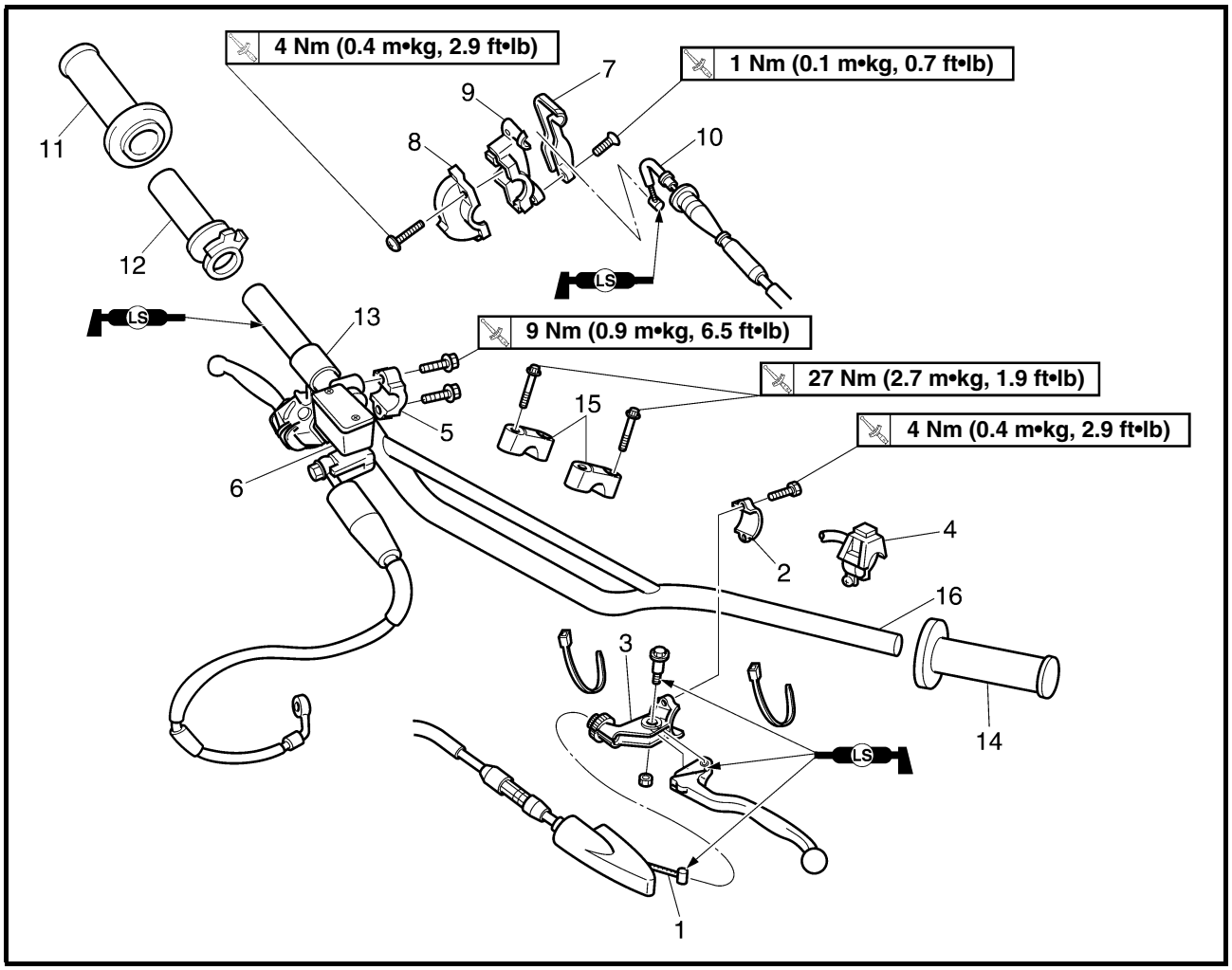
5. Install:
   • protector — **7 Nm (0.7 m•kg, 5.1 ft•lb)**
6. Adjust:
   • spring preload
   • rebound damping
   • compression damping
   Refer to “ADJUSTING THE FRONT FORK LEGS” in chapter 3.

EAS00664

HANDLEBAR



Order	Job/Part	Q'ty	Remarks
	Removing the handlebar		Remove the parts in the order listed.
	Number plate		Refer to "SEAT, SIDE COVERS AND FUEL TANK" in chapter 3.
1	Clutch cable	1	
2	Clutch lever holder	1	
3	Clutch lever	1	
4	Engine stop switch	1	
5	Brake master cylinder cap	1	
6	Brake master cylinder	1	
7	Throttle cable cap	1	
8	Grip cap (lower)	1	
9	Grip cap (upper)	1	
10	Throttle cable	1	
11	Right grip	1	
12	Tube guide	1	
13	Collar	1	

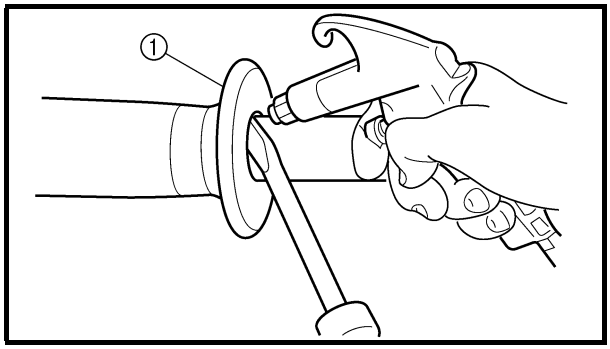


Order	Job/Part	Q'ty	Remarks
14	Left grip	1	
15	Handlebar upper holder	2	
16	Handlebar	1	
			For installation, reverse the removal procedure.

EAS00666
REMOVING THE HANDLEBAR
1. Stand the vehicle on a level surface.

⚠ WARNING

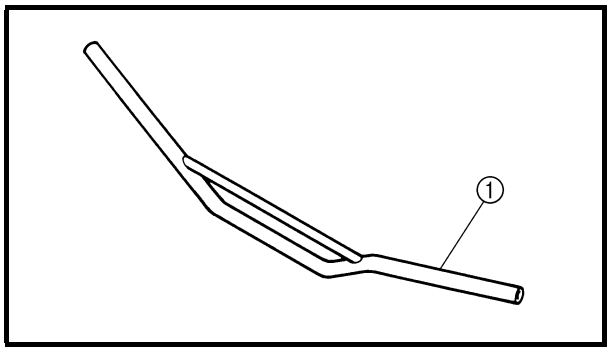
Securely support the vehicle so that there is no danger of it falling over.



2. Remove:
   • grip ①

NOTE:

Blow compressed air between the handlebar and the handlebar grip, and gradually push the grip off the handlebar.



EAS00668
CHECKING THE HANDLEBAR
1. Check:
   • handlebar ①
   Bends/cracks/damage → Replace.

⚠ WARNING

Do not attempt to straighten a bent handlebar as this may dangerously weaken it.

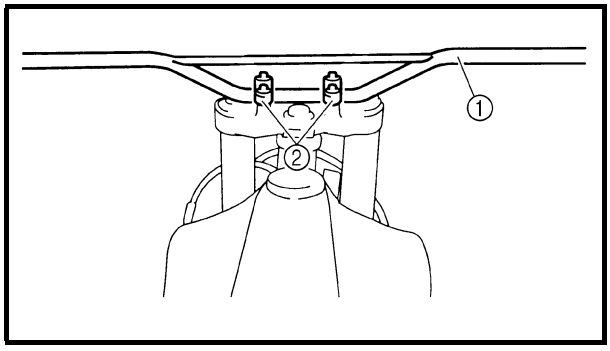
EAS00670
INSTALLING THE HANDLEBAR
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

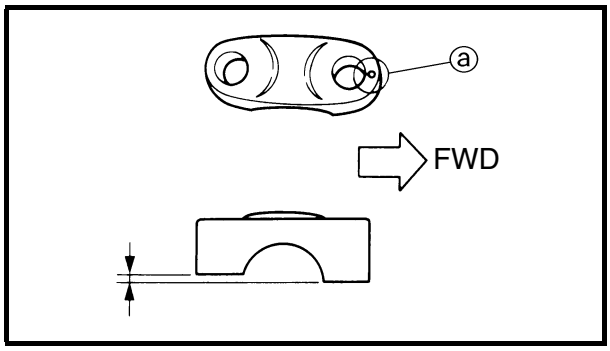
2. Install:
   • handlebar ①
   • handlebar upper holder ②

27 Nm (2.7 m•kg, 19 ft•lb)



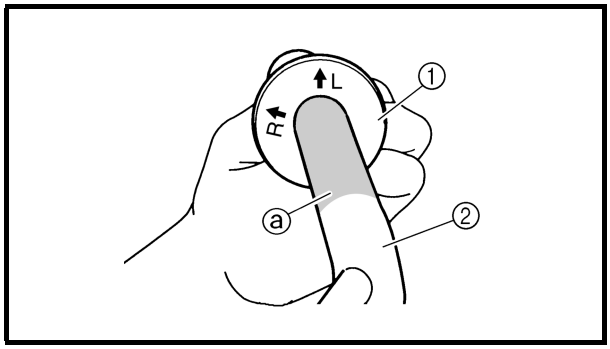
CAUTION:

- **First, tighten the bolts on the front side of the handlebar holder, and then on the rear side.**
- **Turn the handlebar all the way to the left and right. If there is any contact with the fuel tank, adjust the handlebar position.**



NOTE:

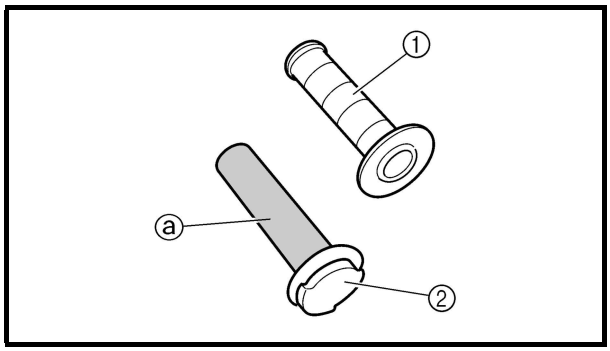
- The upper handlebar holders should be installed with the punched mark ⓐ forward.
- First tighten the bolts on the front side of the handlebar upper holder, and then tighten the bolts on the rear side.



3. Install:
   - left grip ①
   - apply the adhesive to the handlebar ②.

NOTE:

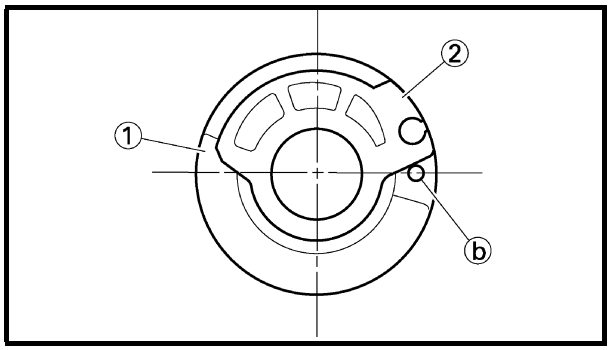
- Before applying the adhesive, wipe off grease or oil on the handlebar surface ⓐ with a lacquer thinner.
- Install the left grip to the handlebar so that the arrow mark (L) faces straight upward.

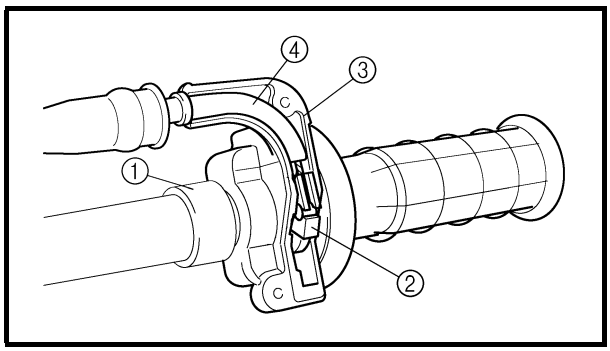


4. Install:
   - right grip ①
   - apply the adhesive on the tube guide ②.

NOTE:

- Before applying the adhesive, wipe off grease or oil on the tube guide surface ⓐ with a lacquer thinner.
- Locate the mating mark ⓑ on the grip as shown.

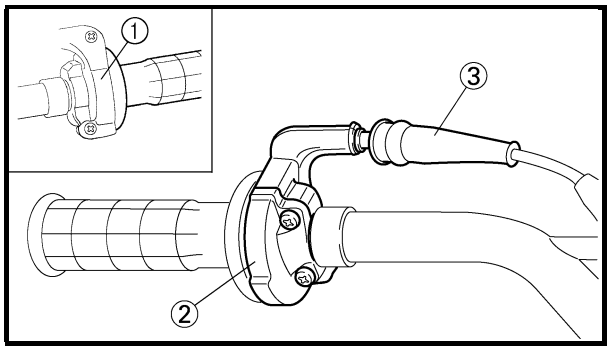




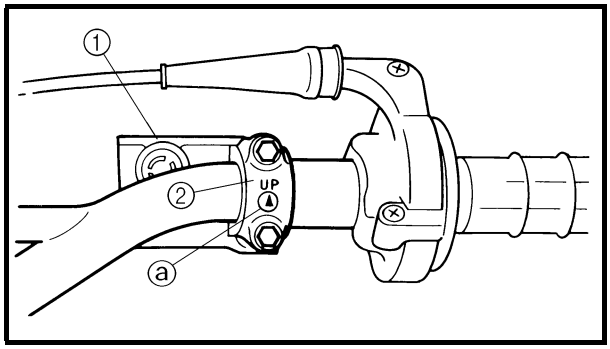
5. Install:
   - collar ①
   - tube guide ②
   - grip cap (upper) ③
   - throttle cable ④

NOTE:

Apply the lithium soap base grease on the throttle cable end and tube guide cable winding portion.



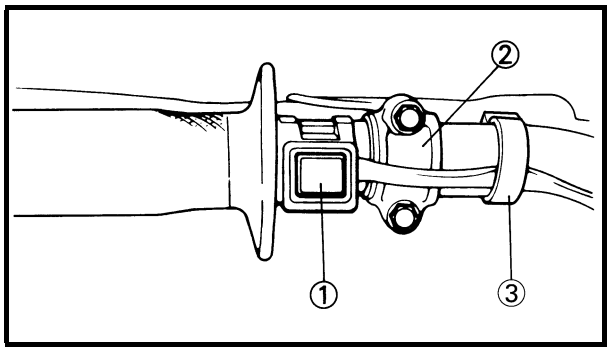
6. Install:
   • throttle cable cap ①
     1 Nm (0.1 m•kg, 0.7 ft•lb)
   • grip cap (lower) ②
     4 Nm (0.4 m•kg, 2.9 ft•lb)
   • cover (grip cap) ③
7. Adjust:
   • throttle cable free play
     Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.



8. Install:
   • brake master cylinder ①
   • brake master cylinder bracket ②
     9 Nm (0.9 m•kg, 6.5 ft•lb)

NOTE:

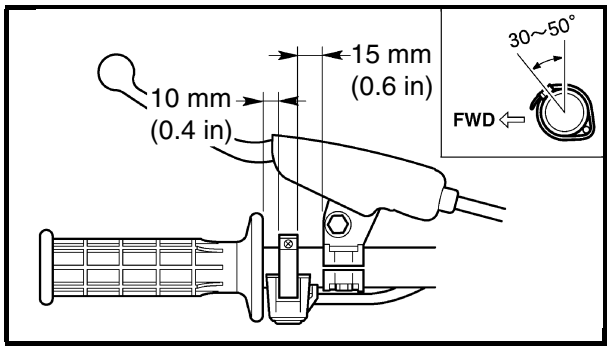
Install the bracket so that the arrow mark ⓐ face upward.

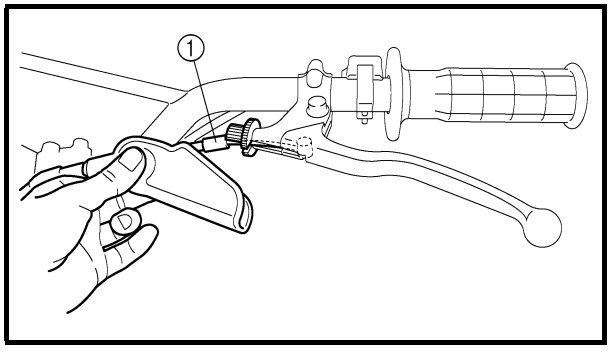


9. Install:
   • engine stop switch ①
   • clutch lever holder ②
     4 Nm (0.4 m•kg, 2.9 ft•lb)
   • clamp ③

NOTE:

The engine stop switch and clutch lever holder should be installed according to the dimensions shown.

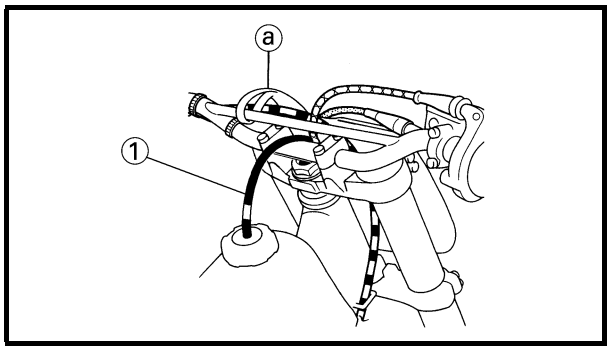




10. Install:
    • clutch cable ①

NOTE:

Apply the lithium soap base grease on the clutch cable end.

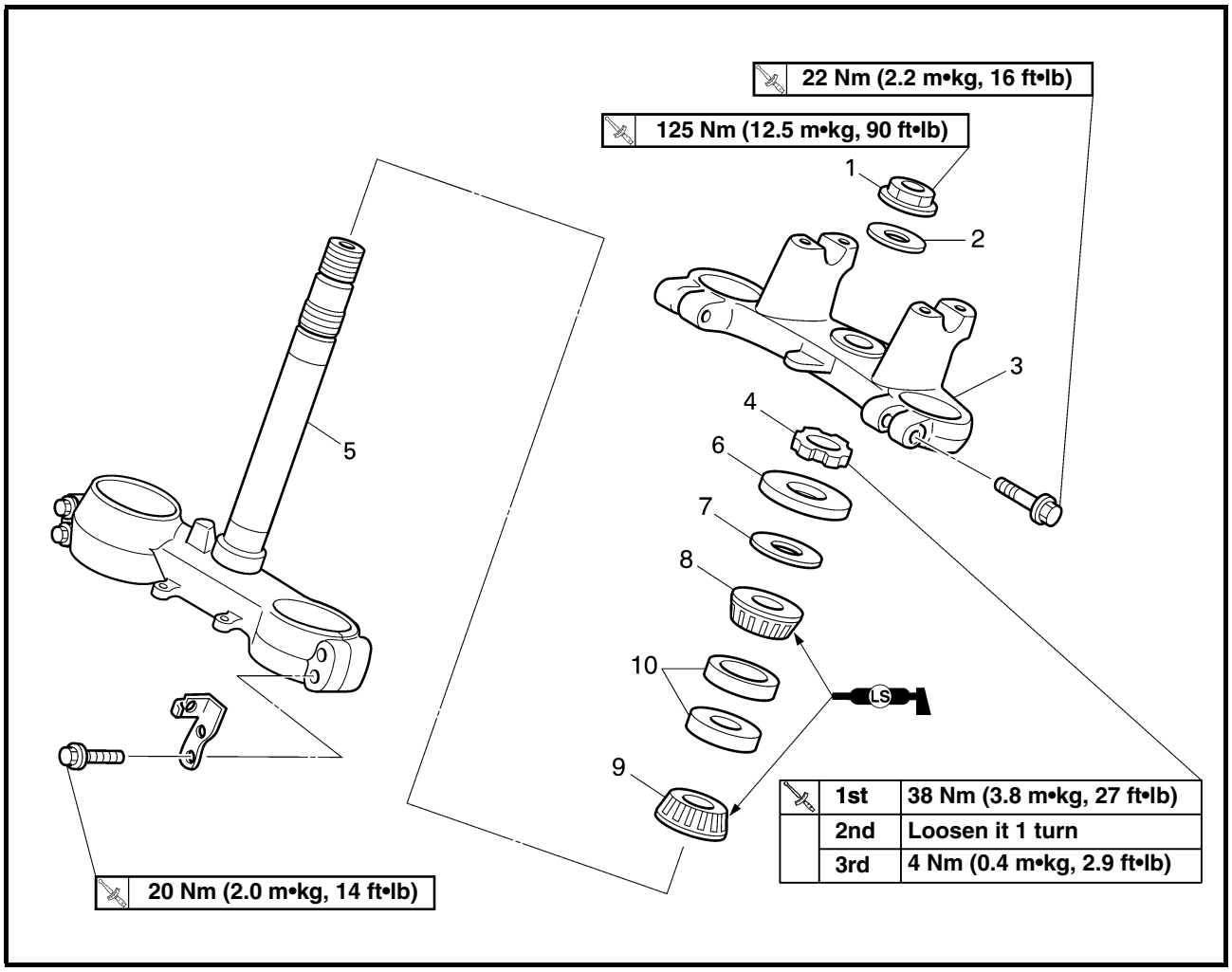


11. Adjust:
    • clutch lever free play
    Refer to “ADJUSTING THE CLUTCH CABLE FREE PRAY” in chapter 3.
12. Clamp the clamp portion ⓐ of the number plate to the handlebar.
13. Insert the end of the fuel tank breather hose ① into the hole of the steering stem.

EAS00675

STEERING HEAD

UNDER BRACKET



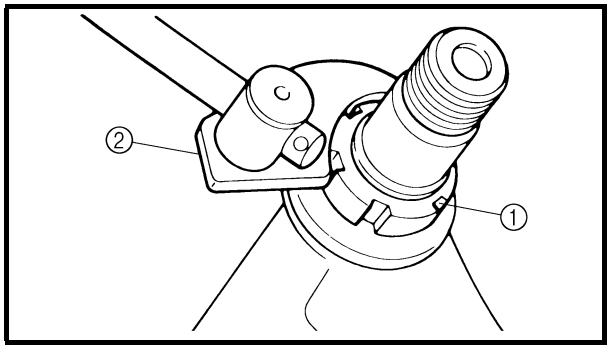
Order	Job/Part	Q'ty	Remarks
	Removing the lower bracket		Remove the parts in the order listed.
	Number plate		Refer to "SEAT, SIDE COVERS AND FUEL TANK" in chapter 3.
	Handlebar		Refer to "HANDLEBAR".
	Front fender		
1	Steering stem nut	1	
2	Washer	1	
3	Upper bracket	1	
4	Steering ring nut	1	
5	Lower bracket	1	
6	Bearing race cover	1	
7	Washer	1	
8	Upper bearing	1	
9	Lower bearing	1	
10	Bearing race	2	
			For installation, reverse the removal procedure.

EAS00677
REMOVING THE LOWER BRACKET
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Remove:
   - steering stem nut
   - washer
   - upper bracket
   - steering ring nut ①
     (with the ring nut wrench ②)



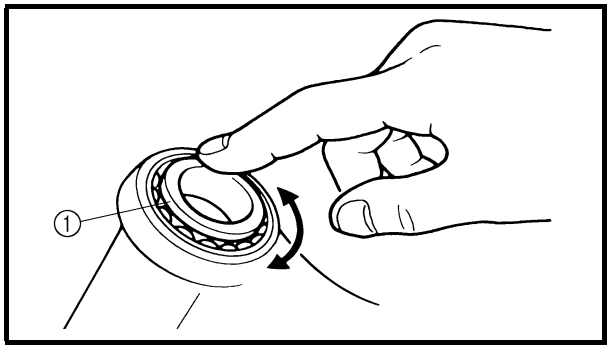
Steering nut wrench
90890-01403, YU-33975

⚠ WARNING

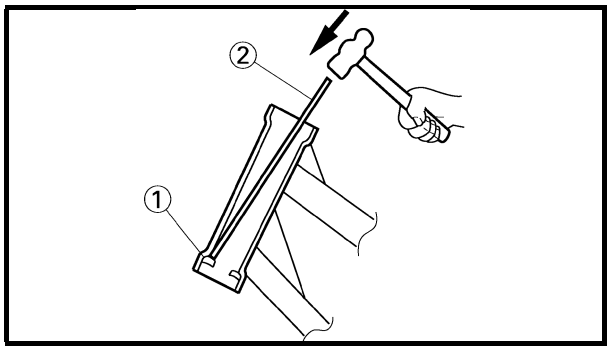
Securely support the lower bracket so that there is no danger of it falling.

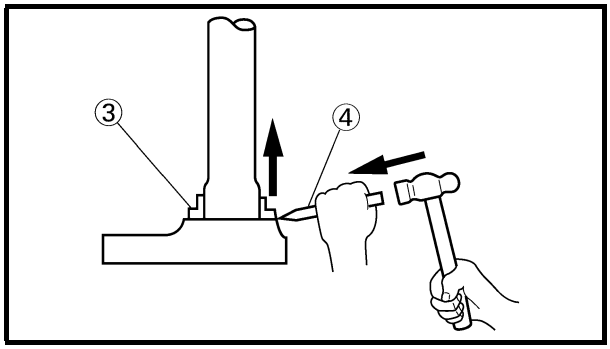
EAS00682
CHECKING THE STEERING HEAD
1. Wash:
   - bearings
   - bearing races

Recommended cleaning solvent
Kerosene



2. Check:
   - bearings ①
   - bearing races
     Damage/pitting → Replace.





3. Replace:
   • lower bearing
   • bearing races

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a. Remove the bearing races ① from the steering head pipe with a long rod ② and hammer.
b. Remove the bearing race ③ from the lower bracket with a floor chisel ④ and hammer.
c. Install a new dust seal and new bearing races.

CAUTION:

If the bearing race is not installed properly, the steering head pipe could be damaged.

NOTE:

- Always replace the bearing balls and bearing races as a set.
- Whenever the steering head is disassembled, replace the dust seal.

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4. Check:
   • upper bracket
   • lower bracket
   (along with the steering stem)
   Bends/cracks/damage → Replace.

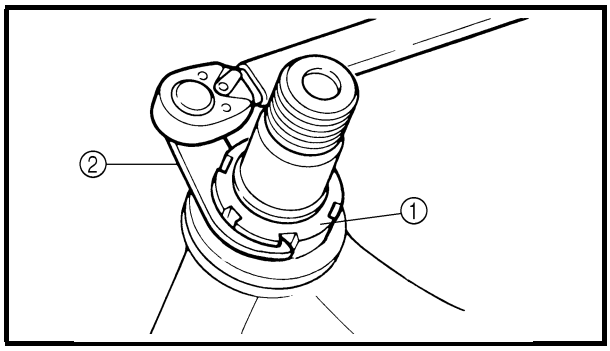
EAS00683

INSTALLING THE STEERING HEAD

1. Lubricate:
   • upper bearing
   • lower bearing
   • bearing races

	Recommended lubricant **Lithium-soap-based grease**

2. Install:
   • lower bracket
   • upper bearing
   • washer
   • bearing race cover
   Refer to “CHECKING THE STEERING HEAD”.



3. Install:
   • steering ring nut ①
   4 Nm (0.4 m•kg, 2.9 ft•lb)
   (with the ring nut wrench ②)

	Steering nut wrench **90890-01403, YU-33975**

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a. Tighten the steering ring nut.
38 Nm (3.8 m•kg, 27 ft•lb)
b. Loosen it one turn.
c. Retighten the steering ring nut.
4 Nm (0.4 m•kg, 2.9 ft•lb)

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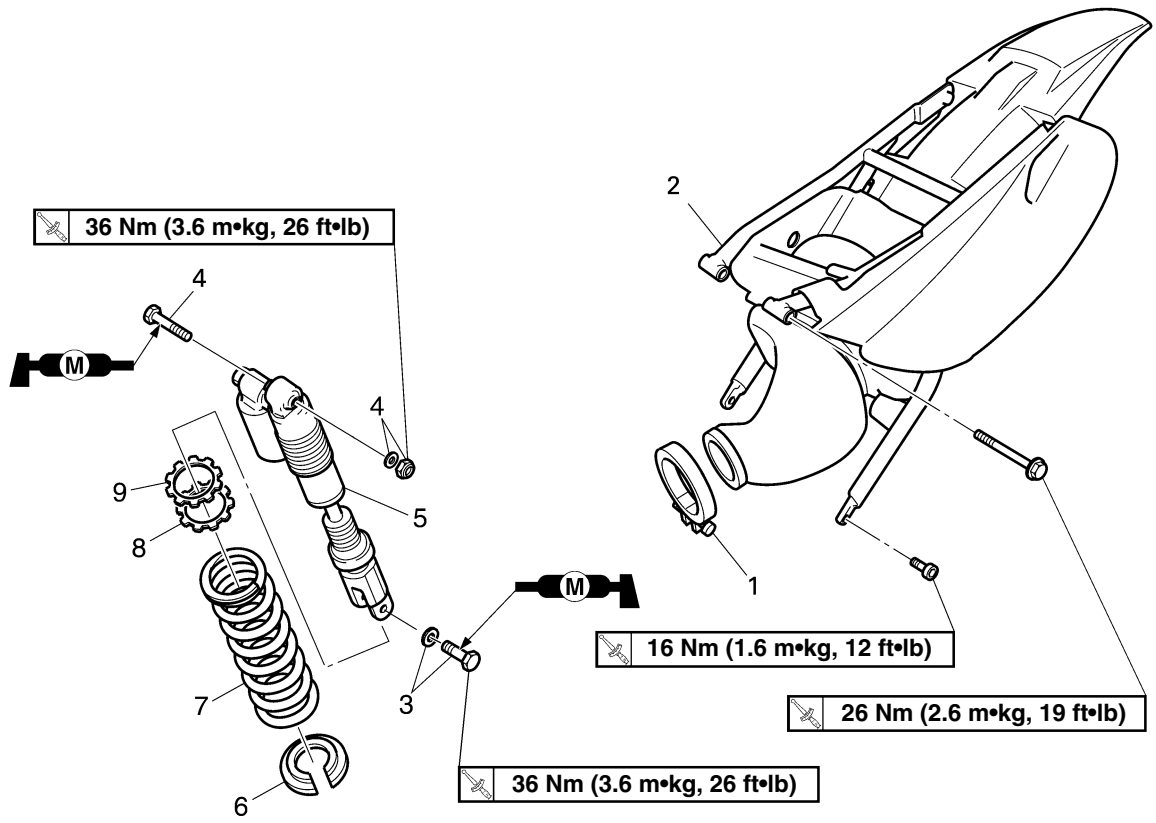
4. Install:
   • upper bracket
   • washer
   • steering stem nut
   125 Nm (12.5 m•kg, 90 ft•lb)
5. Install:
   • front fork legs
   Refer to “INSTALLING THE FRONT FORK LEGS”.

NOTE:

Temporarily tighten the upper and lower bracket pinch bolts.

EAS00685

REAR SHOCK ABSORBER ASSEMBLY

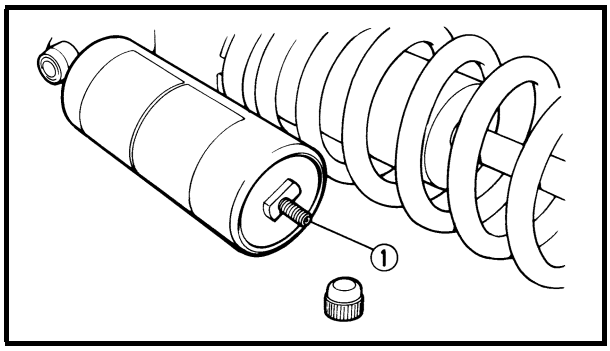


Order	Job/Part	Q'ty	Remarks
	Removing the rear shock absorber assembly		Remove the parts in the order listed.
	Seat		Refer to "SEAT, SIDE COVERS AND FUEL TANK" in chapter 3.
	Right side cover		
	Silencer		Refer to "EXHAUST PIPE" in chapter 5.
1	Clamp	1	Loosen
2	Rear frame	1	
3	Washer/bolt	1/1	
4	Self-locking nut/washer/bolt	1/1/1	
5	Rear shock absorber	1	
6	Spring guide	1	
7	Spring	1	
8	Adjuster	1	
9	Locknut	1	
			For installation, reverse the removal procedure.

EAS00687
HANDLING THE REAR SHOCK ABSORBER AND GAS CYLINDER

⚠ WARNING

This rear shock absorber and gas cylinder contain highly compressed nitrogen gas. Before handling the rear shock absorber or gas cylinder, read and make sure you understand the following information. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling of the rear shock absorber and gas cylinder.
- **Do not tamper or attempt to open the rear shock absorber or gas cylinder.**
- **Do not subject the rear shock absorber or gas cylinder to an open flame or any other source of high heat. High heat can cause an explosion due to excessive gas pressure.**
- **Do not deform or damage the rear shock absorber or gas cylinder in any way. If the rear shock absorber, gas cylinder or both are damaged, damping performance will suffer.**



EAS00689
DISPOSING OF A REAR SHOCK ABSORBER AND GAS CYLINDER

1. Gas pressure must be released before disposing of a rear shock absorber and gas cylinder. Before disposing the rear shock absorber, be sure to extract the nitrogen gas from valve ①.

⚠ WARNING

Wear eye protection to prevent eye damage from released gas or metal chips.

EAS00694
REMOVING THE REAR SHOCK ABSORBER ASSEMBLY

1. Stand the vehicle on a level surface.

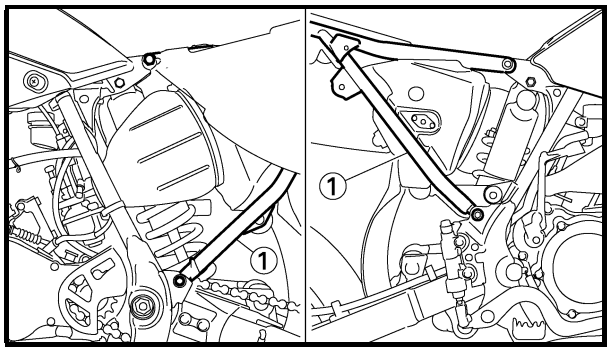
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

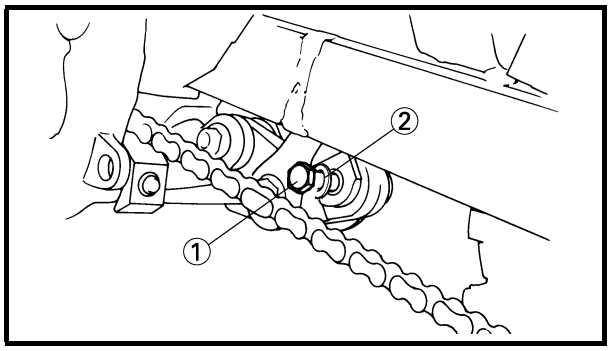
NOTE:

Place the vehicle on a suitable stand so that the rear wheel is elevated.

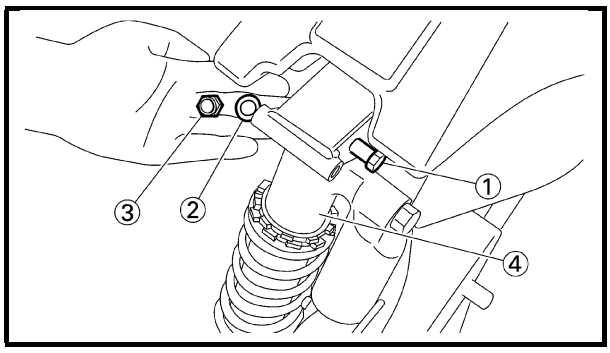
2. Remove:
   - seat and right side cover
     Refer to "SEAT, SIDE COVERS AND FUEL TANK" in chapter 3.
   - silencer
     Refer to "EXHAUST PIPE" in chapter 5.



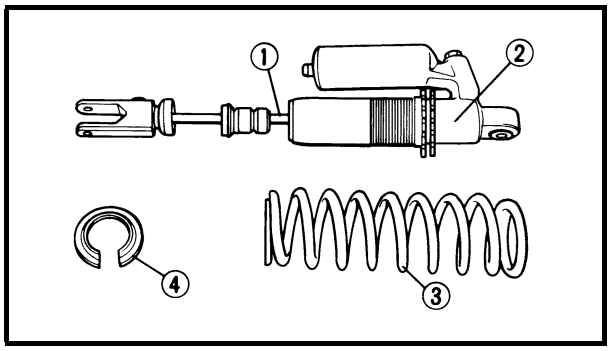
3. Loosen:
   - air filter clamp
4. Remove:
   - rear frame ①



5. Remove:
   - rear shock absorber lower bolt ①
   - washer ②



6. Remove:
   - rear shock absorber upper bolt ①
   - washer ②
   - self-locking nut ③
   - rear shock absorber ④



EAS00696

CHECKING THE REAR SHOCK ABSORBER ASSEMBLY AND GAS CYLINDER

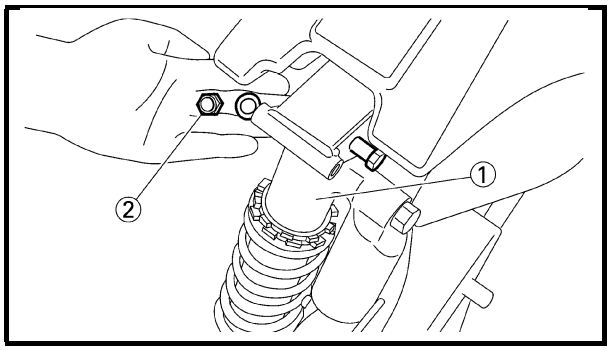
1. Check:
   - rear shock absorber rod ①
     Bends/damage → Replace the rear shock absorber assembly.
   - rear shock absorber ②
     Gas leaks/oil leaks → Replace the rear shock absorber assembly.
   - spring ③
     Damage/wear → Replace the rear shock absorber assembly.
   - spring guide ④
     Damage/wear → Replace.
   - gas cylinder
     Damage/gas leaks → Replace.
   - bushings
     Damage/wear → Replace.
   - dust seals
     Damage/wear → Replace.
   - bolts
     Bends/damage/wear → Replace.

EAS00698

INSTALLING THE REAR SHOCK ABSORBER ASSEMBLY

1. Lubricate:
   - spacers
   - bolts

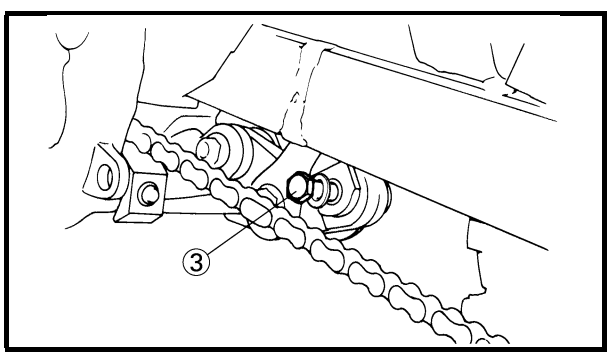
	Recommended lubricant **Molybdenum disulfide grease**



2. Install:
   - rear shock absorber ①

NOTE:

- When installing the rear shock absorber assembly, lift up the swingarm.
- Install the connecting arm front bolt from the right.

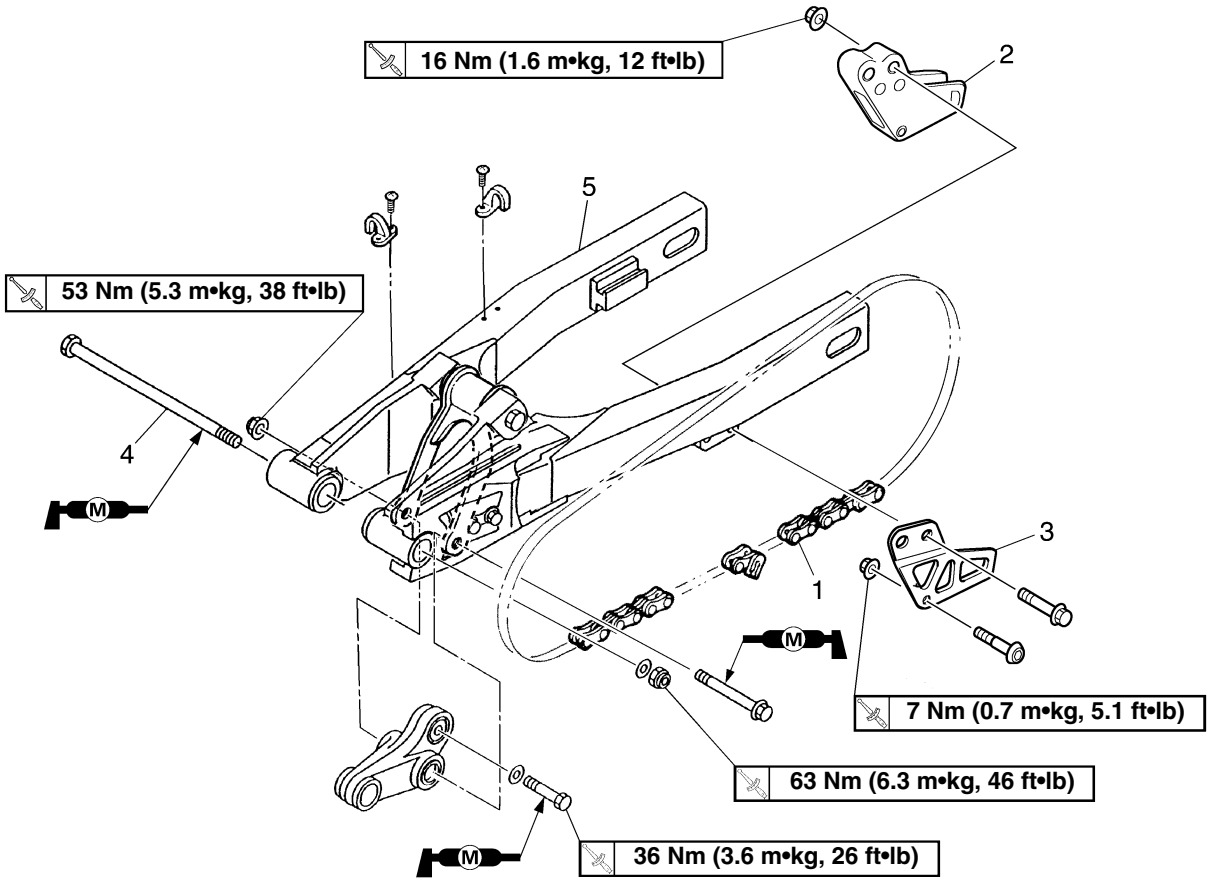


3. Tighten:
   - rear shock absorber upper nut ②
     36 Nm (3.6 m•kg, 26 ft•lb)
   - rear shock absorber lower bolt ③
     36 Nm (3.6 m•kg, 26 ft•lb)
4. Install:
   - rear frame (upper)
     26 Nm (2.6 m•kg, 19 ft•lb)
   - rear frame (lower)
     16 Nm (1.6 m•kg, 12 ft•lb)
   - clamp

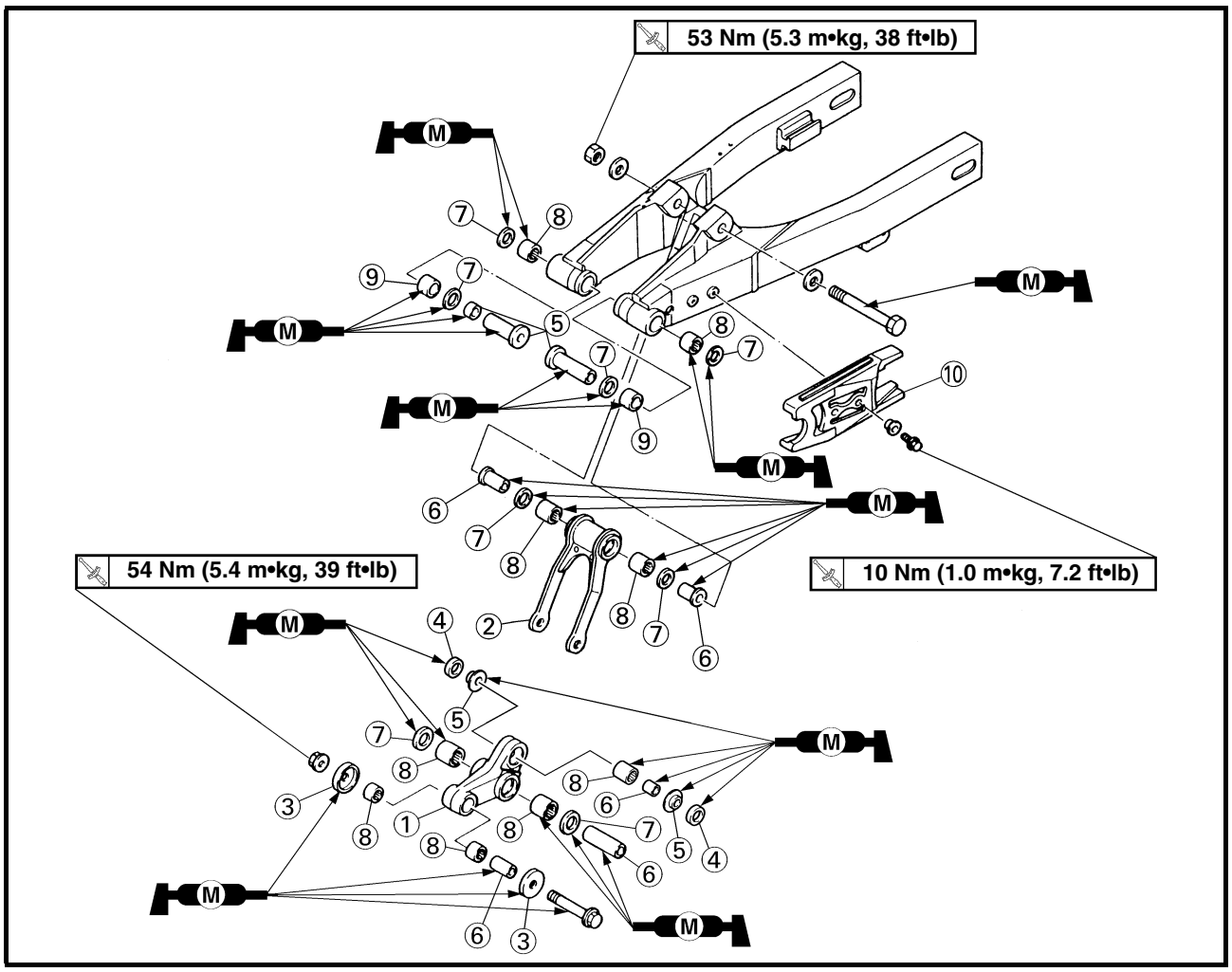
5. Install:
   • silencer
   Refer to “EXHAUST PIPE” in chapter 5.
   • seat and right side cover
   Refer to “SEAT, SIDE COVERS AND FUEL TANK” in chapter 3.
6. Adjust
   • spring preload
   • rebound damping
   • compression damping
   Refer to “ADJUSTING THE REAR SHOCK ABSORBER” in chapter 3.

EAS00700

SWINGARM AND DRIVE CHAIN



Order	Job/Part	Q'ty	Remarks
	Removing the swingarm and drive chain		Remove the parts in the order listed.
	Rear wheel		Refer to "REAR WHEEL, AND BRAKE DISC".
	Brake hose holder		Refer to "FRONT AND REAR BRAKES".
	Rear brake caliper		
	Left crankcase cover		Refer to "CDI MAGNETO" in chapter 5.
1	Drive chain	1	
2	Drive chain support	1	
3	Drive chain support cover	1	
4	Pivot shaft	1	
5	Swingarm	1	
			For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the swingarm		Disassemble the parts in the order listed.
①	Relay arm	1	
②	Connecting rod	1	
③	Cover	2	
④	Dust seal	2	
⑤	Collar	5	
⑥	Bushing	5	
⑦	Oil seal	8	
⑧	Bearing	9	
⑨	Bushing	2	
⑩	Drive chain guide	1	
			For assembly, reverse the disassembly procedure.

EAS00703
REMOVING THE SWINGARM

1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:

Place the vehicle on a suitable stand so that the rear wheel is elevated.

2. Remove:
   - rear wheel
     Refer to "REAR WHEEL AND BRAKE DISC".
   - brake hose holder and rear brake caliper
     Refer to "FRONT AND REAR BRAKES".
   - left crankcase cover
     Refer to "CDI MAGNETO" in chapter 5.

3. Measure:
   - swingarm side play
   - swingarm vertical movement

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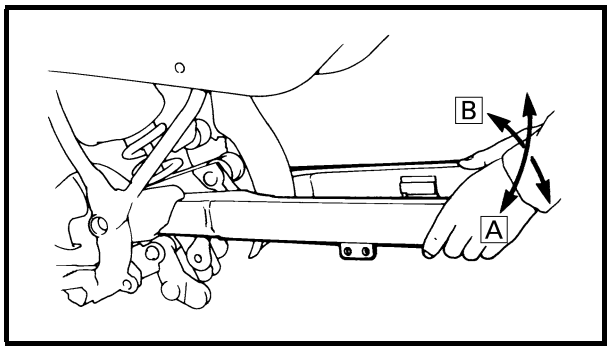
a. Measure the tightening torque of the pivot shaft nut.

	**Pivot shaft nut** **63 Nm (6.3 m•kg, 46 ft•lb)**

b. Measure the swingarm side play [A] by moving the swingarm from side to side.
c. If the swingarm side play is out of specification, check the spacers, bearings, washers, and dust covers.



	**Swingarm sideplay** **(at the end of the swingarm)** **1.0 mm (0.04 in)**

d. Check the swingarm vertical movement [B] by moving the swingarm up and down.
   If swingarm vertical movement is not smooth or if there is binding, check the spacers, bearings, washers, and dust covers.

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EAS00706

REMOVING THE DRIVE CHAIN

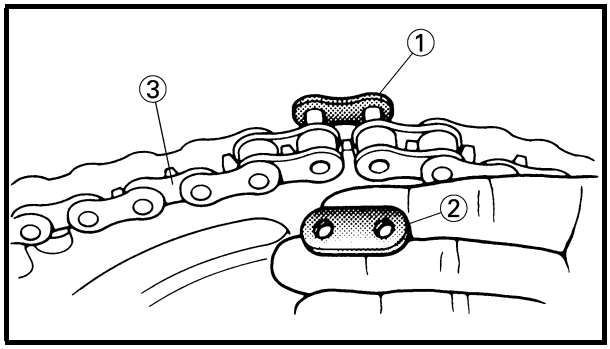
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:

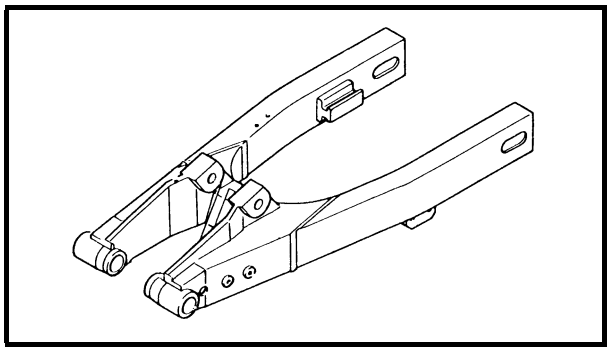
Place the vehicle on a suitable stand so that the rear wheel is elevated.



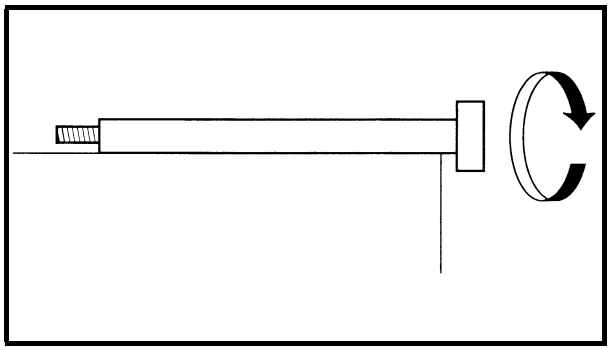
2. Remove:
   - master link clip
   - master link ①
   - master link plate ②
   - drive chain ③

EAS00707

CHECKING THE SWINGARM



1. Check:
   - swingarm
     Bends/cracks/damage → Replace.



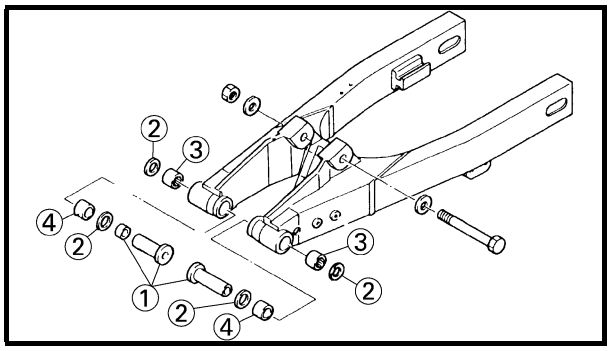
2. Check:
   - pivot shaft
     Roll the pivot shaft on a flat surface.
     Bends → Replace.

⚠ WARNING

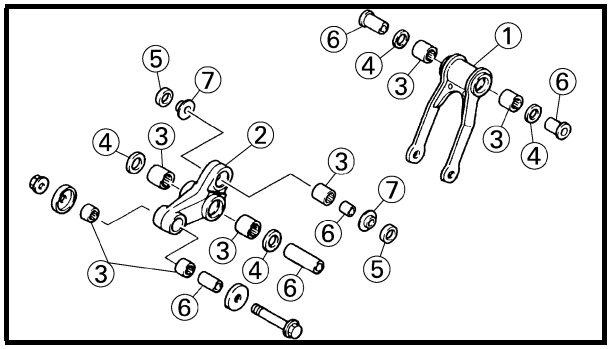
Do not attempt to straighten a bent pivot shaft.

3. Wash:
   - pivot shaft
   - collar
   - bearings

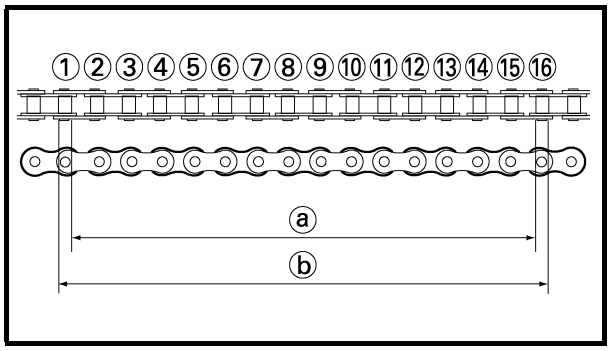
	Recommended cleaning solvent **Kerosene**

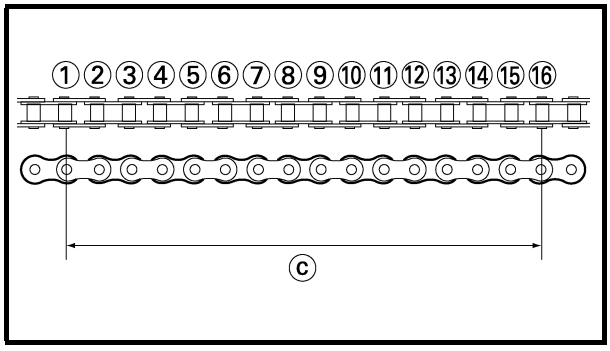


4. Check:
   • collars ①
   • oil seals ②
   Damage/wear → Replace.
   • bearings ③
   Damage/pitting → Replace.
   • bushings ④
   Damage/wear → Replace.



5. Check:
   • connecting rod ①
   • relay arm ②
   Damage/wear → Replace.
6. Check:
   • bearings ③
   • oil seals ④
   Damage/wear → Replace.
   • dust seals ⑤
   Damage/pitting → Replace.
7. Check:
   • bushings ⑥
   Damage/wear → Replace.
   • spacers ⑦
   Damage/scratches → Replace.



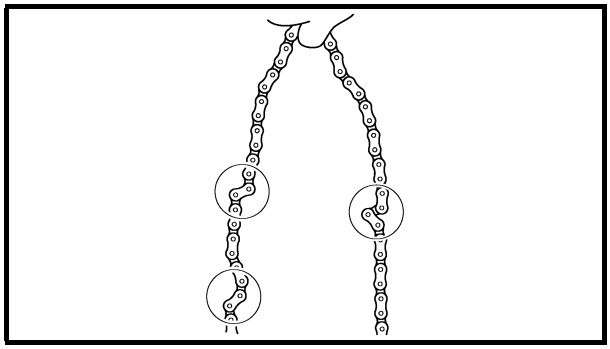


EAS00710
CHECKING THE DRIVE CHAIN

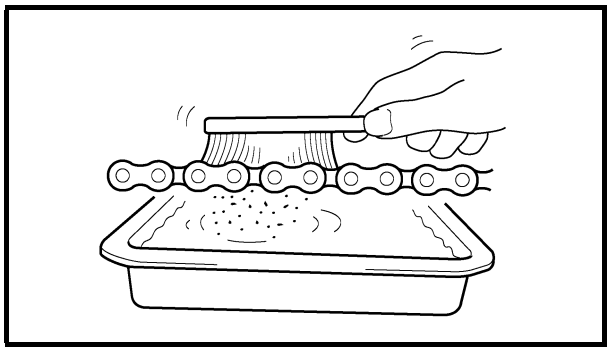
1. Measure:
   • Measure the dimension between 15-links on the inner side ⓐ and outer side ⓑ of the roller and calculate the dimension between pin centers.
   • Dimension ⓒ between pin centers = (Inner dimension ⓐ + Outer dimension ⓑ)/2
   • 15-link section ⓒ of the drive chain
   Out of specification → Replace the drive chain, front drive sprocket and rear drive sprocket as a set.

15-link drive chain section limit (maximum)
194.3 mm (6.75 in)

NOTE:
- While measuring the 15-link section, push down on the drive chain to increase its tension.
- Perform this measurement at two or three different places.



2. Check:
   - drive chain
     Stiffness → Clean and lubricate or replace.



3. Clean:
   - drive chain

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a. Wipe the drive chain with a clean cloth.
b. Put the drive chain in kerosene and remove any remaining dirt.
c. Remove the drive chain from the kerosene and completely dry it.

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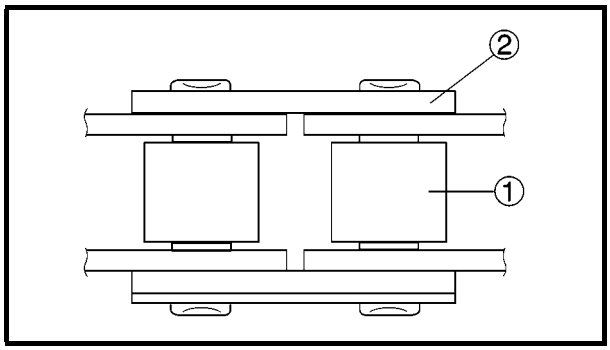
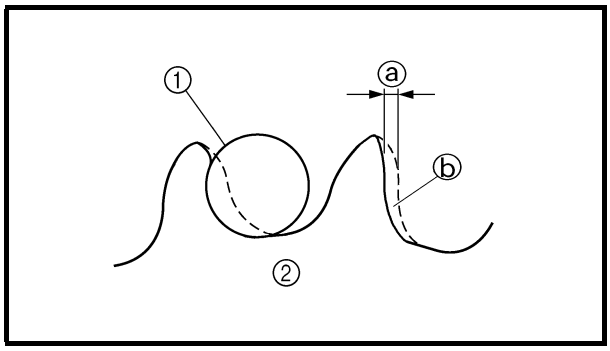


4. Check:
   - drive chain rollers ①
     Damage/wear → Replace the drive chain.
   - drive chain side plates ②
     Damage/wear → Replace the drive chain.
     Cracks → Replace the drive chain and make sure the battery breather hose is properly routed away from the drive chain and below the swingarm.

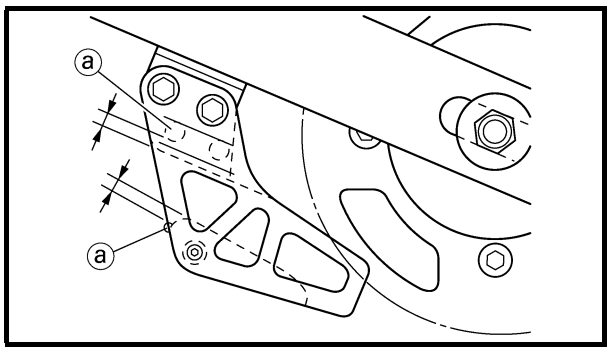
5. Lubricate:
   - drive chain

Recommended lubricant
Engine oil or chain lubricant suitable for non-O-ring chains



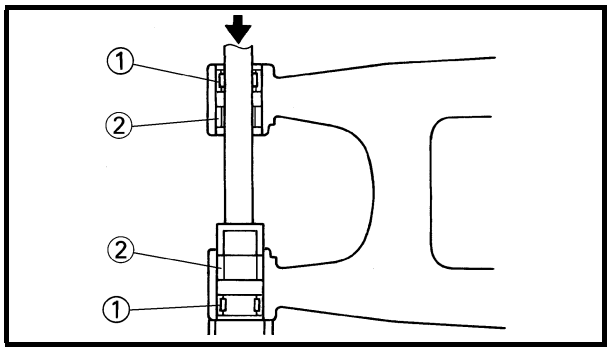
6. Check:
   • drive sprocket
   • rear wheel sprocket
   More than 1/4 tooth ⓐ wear → Replace the drive chain sprockets as a set.
   Bent teeth → Replace the drive chain sprockets as a set.

ⓑ Correct
① Drive chain roller
② Drive chain sprocket



CHECKING THE DRIVE CHAIN SUPPORT

1. Check:
   • dive chain support
   Limit reaches indicator ⓐ → Replace.



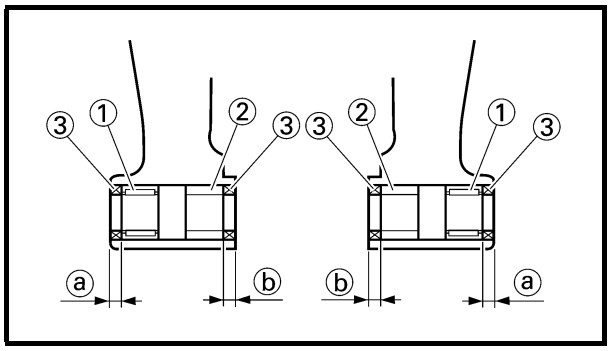
EAS00711

INSTALLING THE SWINGARM

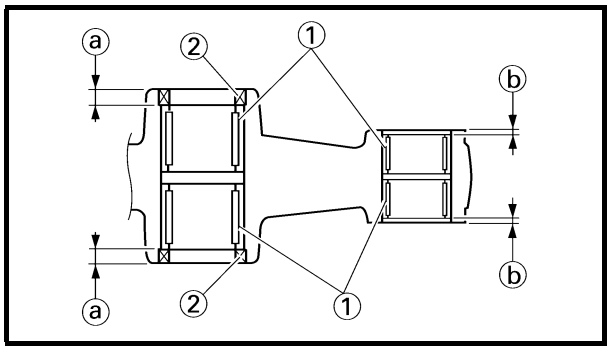
1. Install:
   • bearing ①
   • bushing (swingarm) ②
   • oil seal ③
   (with the swingarm)

NOTE:

- Apply the molybdenum disulfide grease on the bearing and bushing when installing.
- Install the bearing by pressing it on the side having the manufacture's marks or numbers.
- First install the bushing and then the bearing to a specified depth from inside.



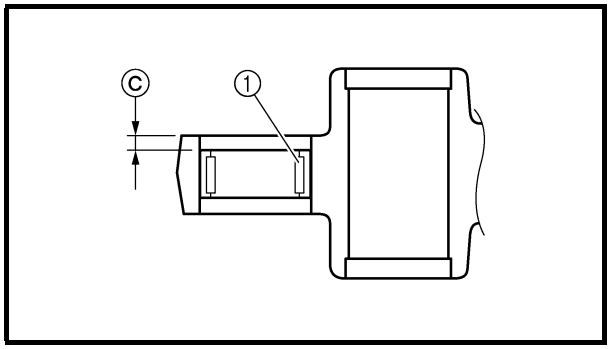
Installed depth of bearings and bushings
Bearing ⓐ: 4.5 mm (0.18 in)
Bushing ⓑ: 4.5 mm (0.18 in)



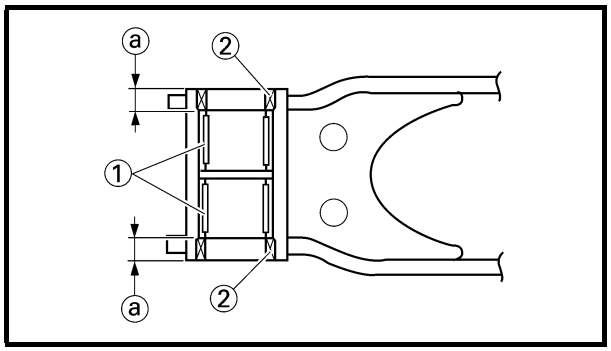
2. Install:
   • bearing ①
   • oil seal ②
   (with the relay arm)

NOTE:

- Apply the molybdenum disulfide grease on the bearing when installing.
- Install the bearing by pressing it on the side having the manufacture's marks or numbers.



Installed depth of bearings
Depth ⓐ: 4.5 mm (0.18 in)
Depth ⓑ: 0.5 mm (0.02 in)
Depth ⓒ: 4.0 mm (0.16 in)

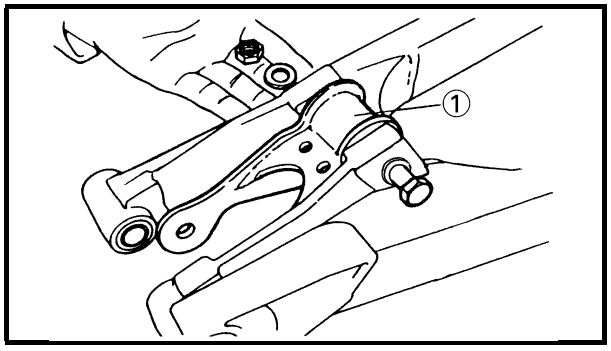


3. Install:
   • bearing ①
   • oil seal ②
   (with the connecting rod)

NOTE:

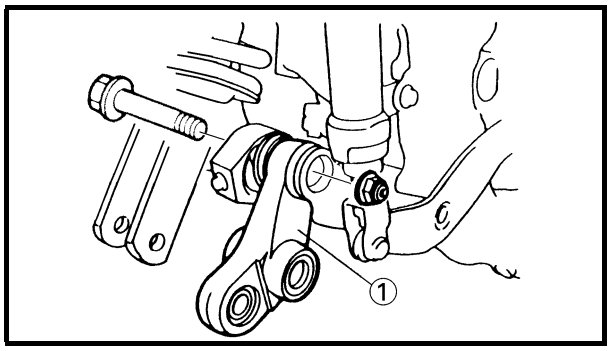
- Apply the molybdenum disulfide grease on the bearing when installing.
- Install the bearing by pressing it on the side having the manufacture's marks or numbers.

Installed depth of bearings ⓐ
6.5 mm (0.26 in)

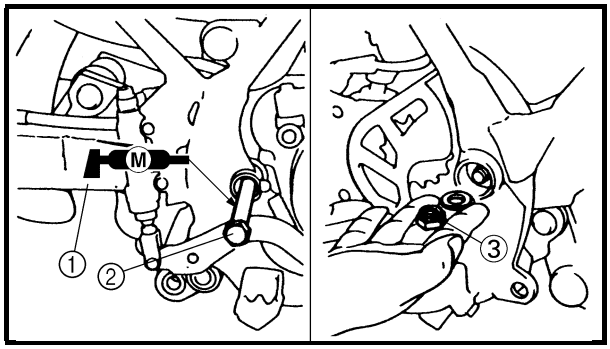


4. Install:
   • connecting rod ①

53 Nm (5.3 m•kg, 38 ft•lb)



5. Install:
   • relay arm ①
   54 Nm (5.4 m•kg, 39 ft•lb)



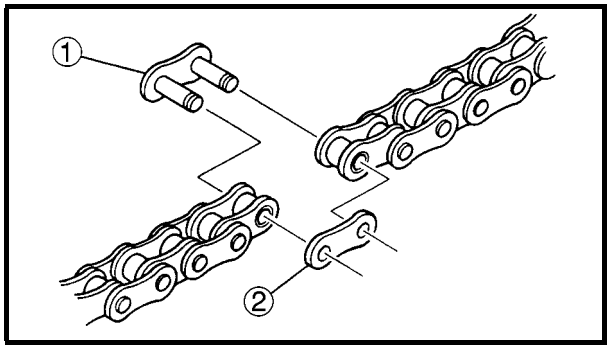
6. Install:
   • swingarm ①
   • pivot shaft ②
   • pivot shaft nut ③
   63 Nm (6.3 m•kg, 46 ft•lb)
7. Install:
   • rear shock absorber
   • rear wheel
   Refer to “REAR WHEEL AND BRAKE DISC”.
8. Adjust:
   • drive chain slack
   Refer to “ADJUSTING THE DRIVE CHAIN SLACK” in chapter 3.

Drive chain slack
35 ~ 45 mm (1.38 ~ 1.77 in)

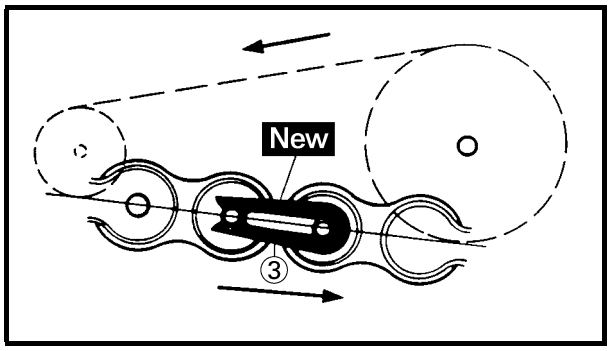
EAS00714
INSTALLING THE DRIVE CHAIN

1. Lubricate:
   • drive chain
   • master link

Recommended lubricant
Engine oil or chain lubricant suitable for non-O-ring chains



2. Install:
   • master link ①
   • master link plate ②



3. Install:
   • master link clip ③ New

CAUTION:

• The closed end of the master link clip must face in the direction of drive chain rotation.
• Never install a new drive chain onto worn drive chain sprockets; this will dramatically shorten the drive chain's life.

4. Adjust:
   • drive chain slack
   Refer to "ADJUSTING THE DRIVE CHAIN SLACK" in chapter 3.

Drive chain slack
35 ~ 45 mm (1.38 ~ 1.77 in)

CAUTION:

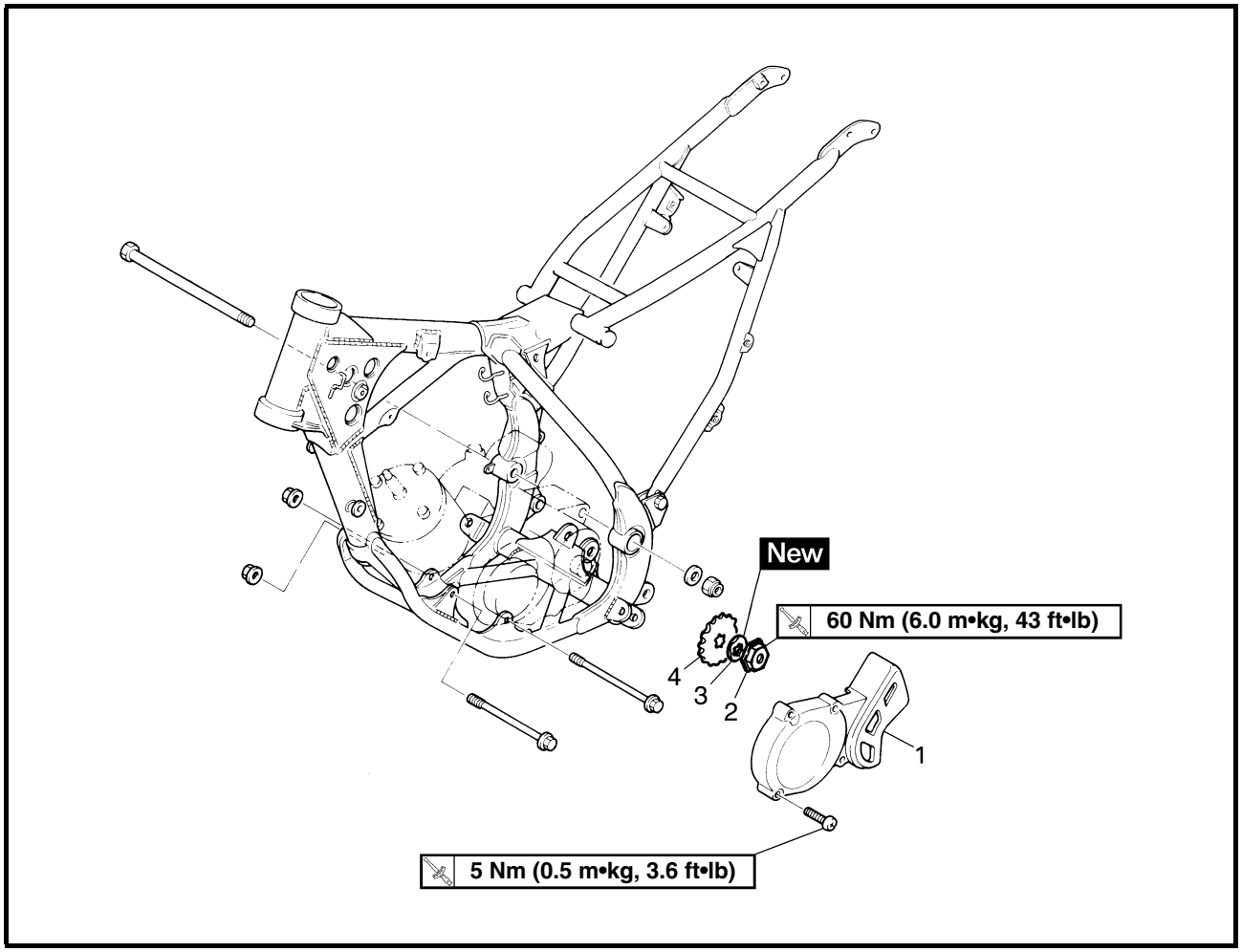
A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.

CHAPTER 5
ENGINE

ENGINE

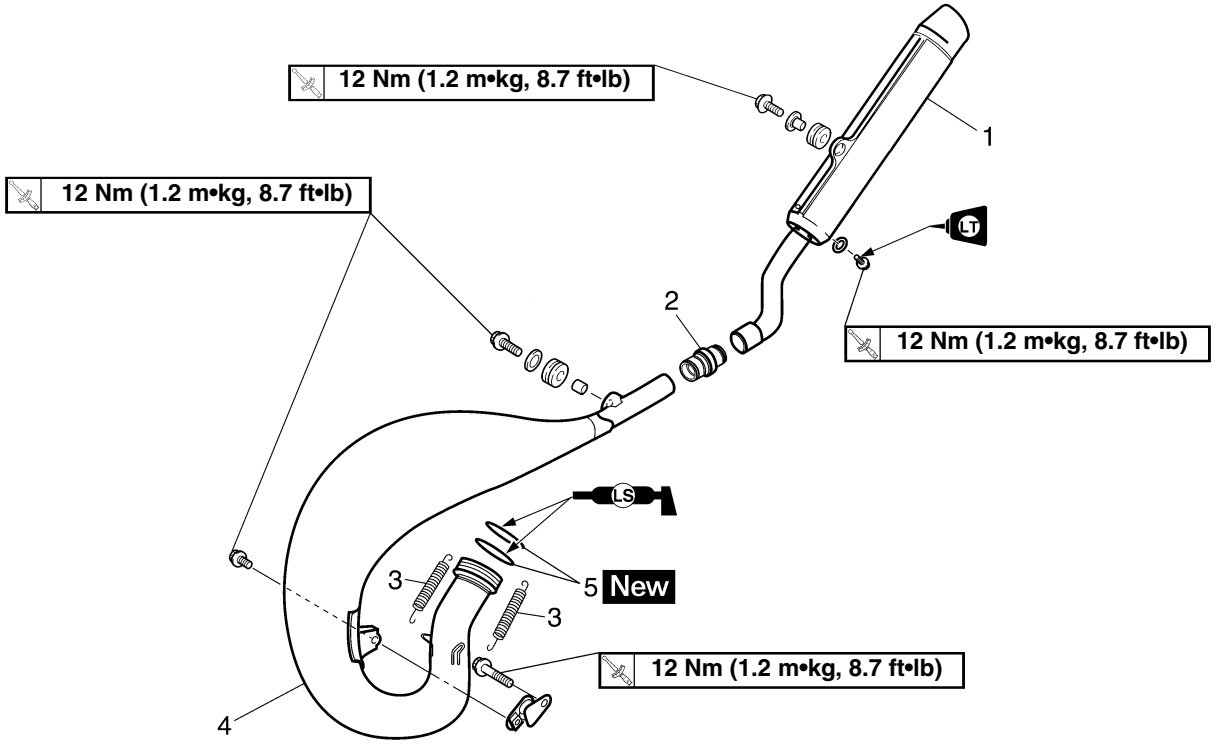
ENGINE

DRIVE SPROCKET

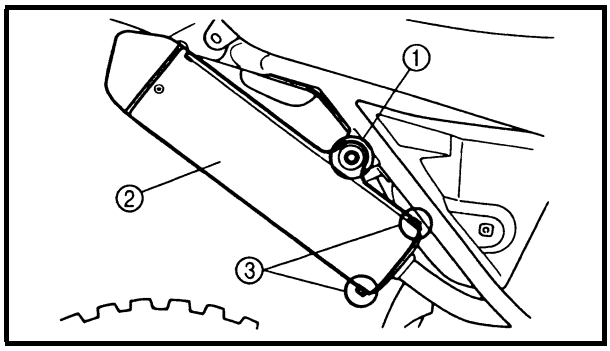


Order	Job/Part	Q'ty	Remarks
	Removing the drive sprocket		Remove the parts in the order listed.
	Drive chain		Loosen. Refer to "ADJUSTING THE DRIVE CHAIN SLACK" in chapter 3.
1	Left crank case cover	1	
2	Nut	1	
3	Lock washer	1	
4	Drive sprocket	1	
			For installation, reverse the removal procedure.

EXHAUST PIPE

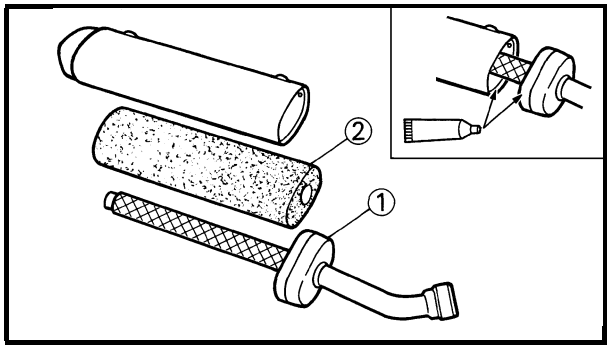


Order	Job/Part	Q'ty	Remarks
	Removing the exhaust pipe		Remove the parts in the order listed.
	Seat		Refer to "SEAT, SIDE COVERS AND FUEL TANK" in chapter 3.
	Right side cover		
1	Silencer	1	
2	Exhaust pipe joint	1	
3	Exhaust pipe spring	2	
4	Exhaust pipe	1	
5	Exhaust pipe gasket	2	
			For installation, reverse the removal procedure.



SILENCER FIBER REPLACEMENT

1. Remove:
   - seat
   - right side cover
   - bolt (silencer) ①
   - silencer ②
   - bolt (fiber) ③
   - washer

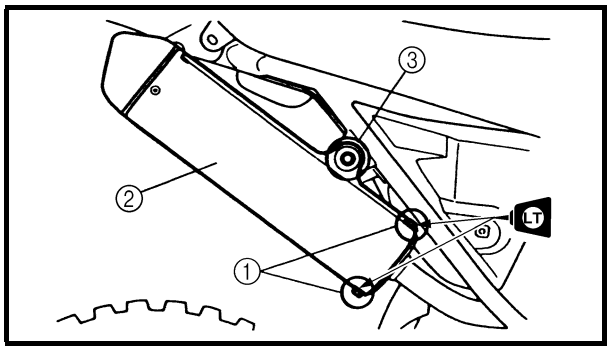


2. Remove:
   - inner pipe ①
3. Replace:
   - fiber ②
4. Install:
   - inner pipe

NOTE:

Fully apply Yamaha bond No. 1215 (Three bond No. 1215®) or equivalent as shown.

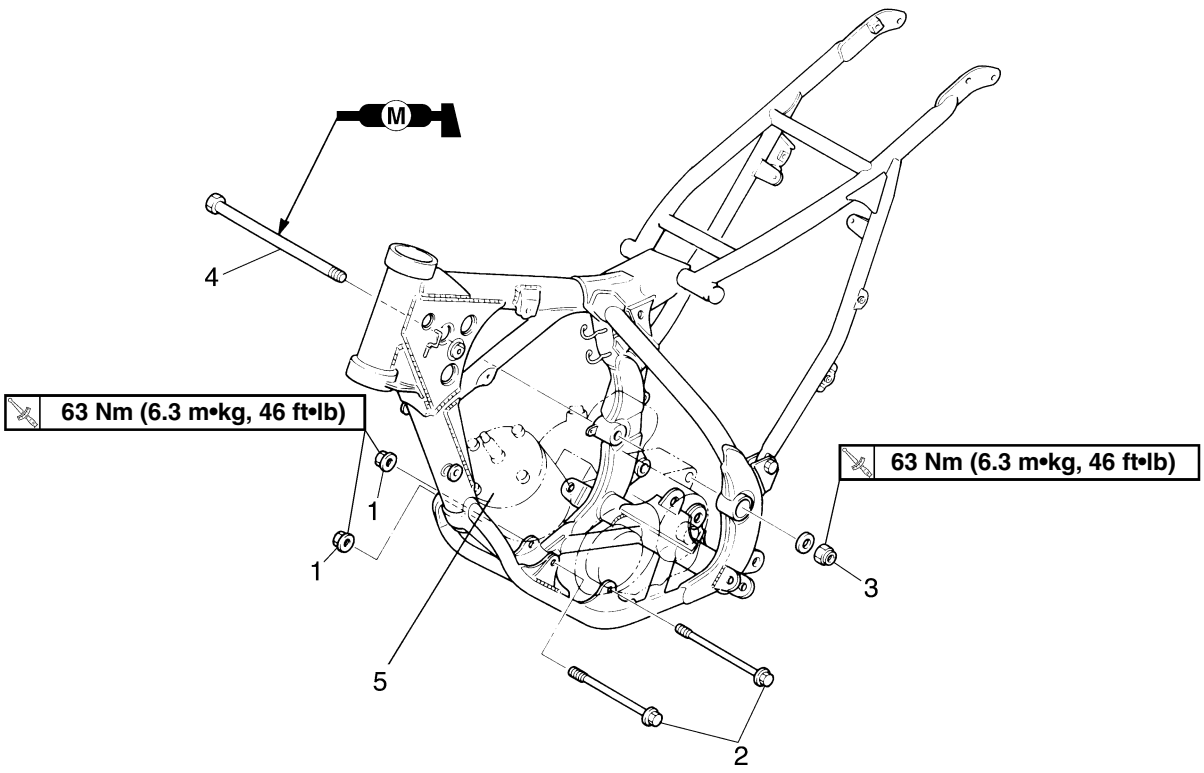
Yamaha bond No.1215
(Three Bond No.1215®)
90890-85505



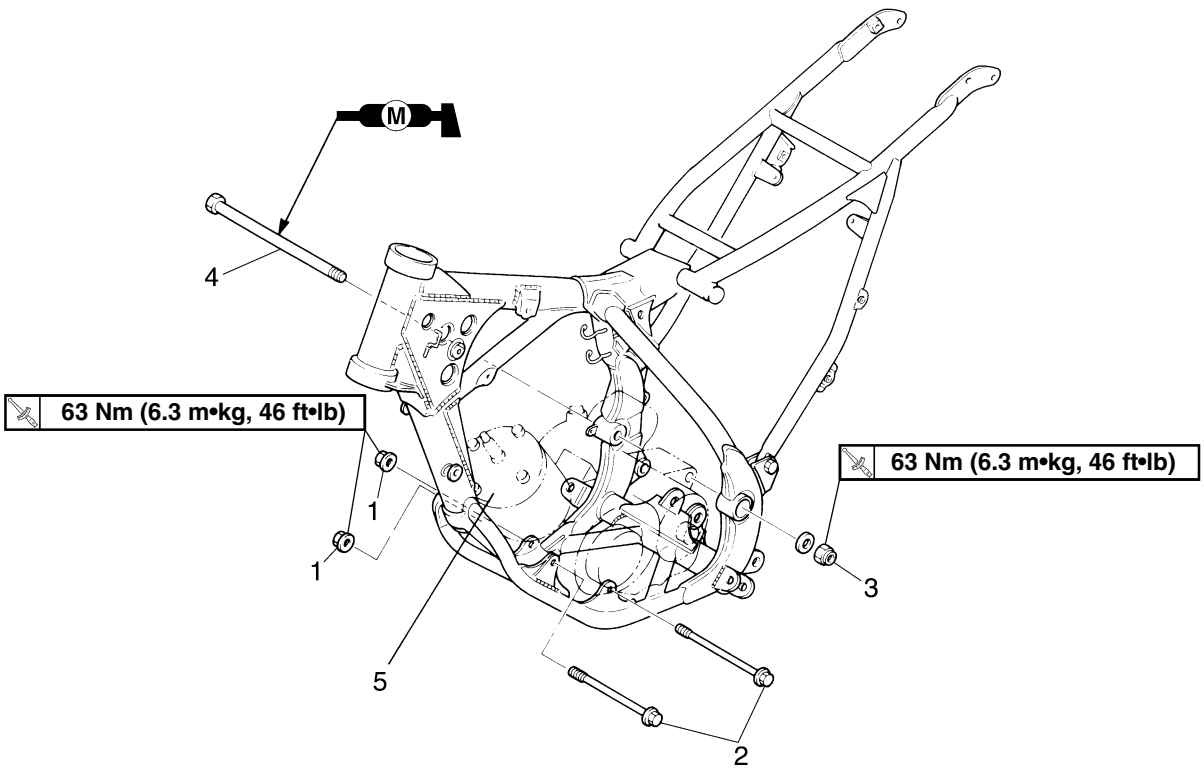
5. Install:
   - washer
   - bolt (fiber) ① — 12 Nm (1.2 m•kg, 8.7 ft•lb) — LOCTITE®
   - silencer ②
   - bolt (silencer) ③ — 12 Nm (1.2 m•kg, 8.7 ft•lb)
   - right side cover — 7 Nm (0.7 m•kg, 5.1 ft•lb)
   - seat — 7 Nm (0.7 m•kg, 5.1 ft•lb)

EAS00191

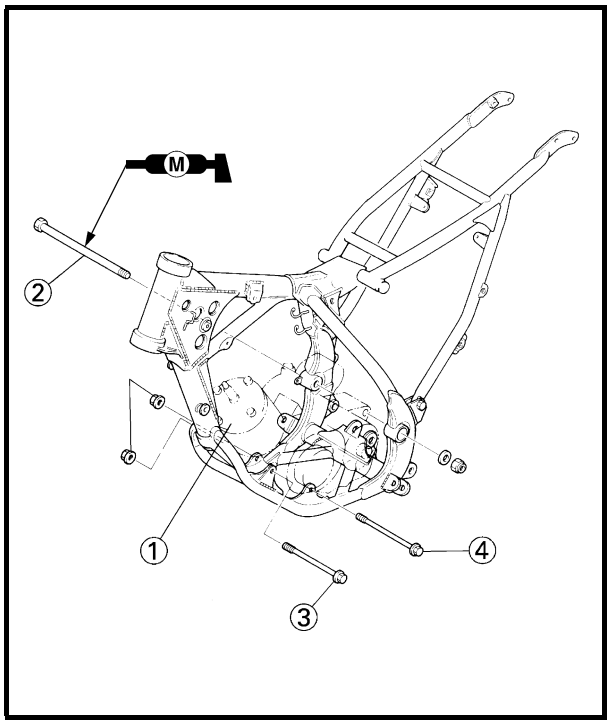
ENGINE



Order	Job/Part	Q'ty	Remarks
	Removing the engine		Remove the parts in the order listed. **NOTE:** Place a suitable stand under the frame and engine.
	Coolant		Drain Refer to "CHANGING THE COOLANT" in chapter 3.
	Seat Fuel tank		Refer to "SEAT, SIDECOVERS AND FUEL TANK" in chapter 3.
	Carburetor		Refer to "CARBURETOR" in chapter 7.
	Exhaust pipe Silencer		Refer to "EXHAUST PIPE".
	Clutch cable		Refer to "HANDLEBAR" in chapter 4.
	Radiator hose		Refer to "RADIATOR" in chapter 6.
	CDI magneto lead		Disconnect. Loosen.



Order	Job/Part	Q'ty	Remarks
	CDI magneto lead		Disconnect.
	Drive chain		Loosen. Refer to "ADJUSTING THE DRIVE CHAIN SLACK" in chapter 3.
1	Engine mount nut	2	
2	Engine mount bolt	2	
3	Pivot shaft nut	1	
4	Pivot shaft	1	
5	Engine	1	
			For installation, reverse the removal procedure.



EAS00192

INSTALLING THE ENGINE

1. Install:
   - engine ①
   - pivot shaft ②
   - engine mount bolt (front) ③
   - engine mount bolt (lower) ④

NOTE:

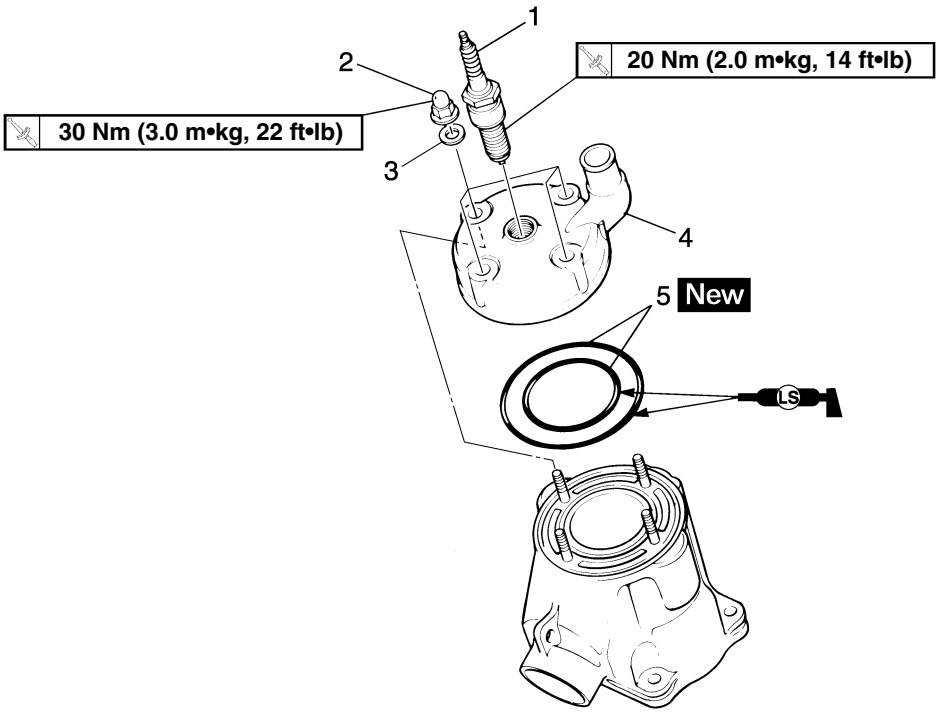
Do not fully tighten the bolts.

2. Tighten:
   - pivot shaft nut — **63 Nm (6.3 m•kg, 46 ft•lb)**
   - engine mount nut (front) — **69 Nm (6.9 m•kg, 50 ft•lb)**
   - engine mount nut (lower) — **69 Nm (6.9 m•kg, 50 ft•lb)**

EAS00221

CYLINDER HEAD, CYLINDER AND PISTON

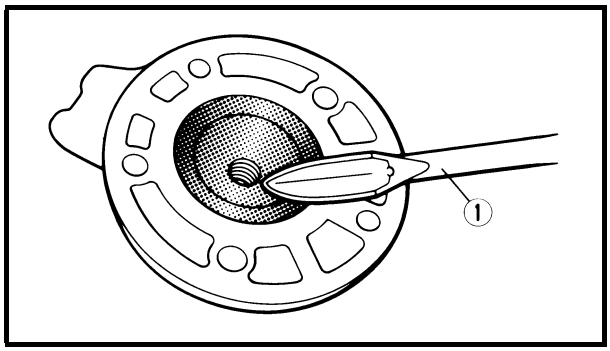
CYLINDER HEAD



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder head		Remove the parts in the order listed.
	Coolant		Drain Refer to "CHANGING THE COOLANT" in chapter 3.
	Seat		Refer to "SEAT, SIDECOVERS AND FUEL TANK" in chapter 3.
	Fuel tank		
	Radiator hose		Refer to "RADIATOR" in chapter 6.
1	Spark plug	1	
2	Cylinder head nut	4	
3	Copper washer	4	
4	Cylinder head	1	
5	O-ring	2	
			For installation, reverse the removal procedure.

EAS00222
REMOVING THE CYLINDER HEAD
1. Remove:
   • cylinder head nuts

NOTE:
- Loosen the nuts in the proper sequence as shown.
- Loosen each nut 1/2 of a turn at a time. After all of the nuts are fully loosened, remove them.

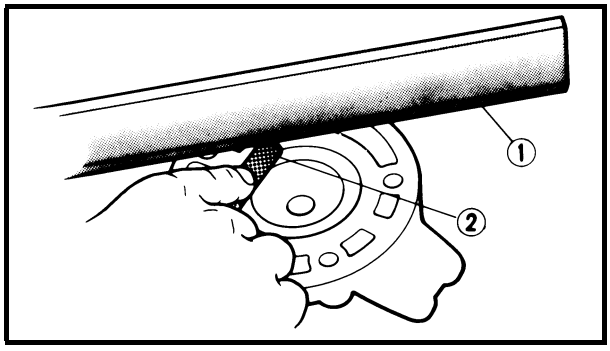


EAS00229
CHECKING THE CYLINDER HEAD
1. Eliminate:
   • combustion chamber carbon deposits (with a rounded scraper ①)

NOTE:
Do not use a sharp instrument to avoid damaging or scratching:
- spark plug bore threads

2. Check:
   • cylinder head
     Damage/scratches → Replace.
   • cylinder head water jacket
     Mineral deposits/rust → Eliminate.
3. Measure:
   • cylinder head warpage
     Out of specification → Resurface the cylinder head.

	Maximum cylinder head warpage 0.03 mm (0.012 in)



a. Place a straightedge ① and a thickness gauge ② across the cylinder head.
b. Measure the warpage.
c. If the limit is exceeded, resurface the cylinder head as follows.

d. Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

NOTE:

To ensure an even surface, rotate the cylinder head several times.

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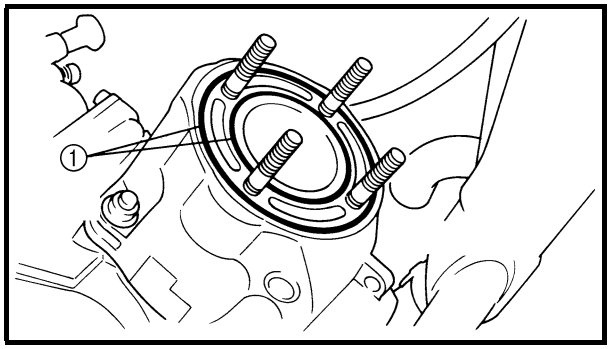
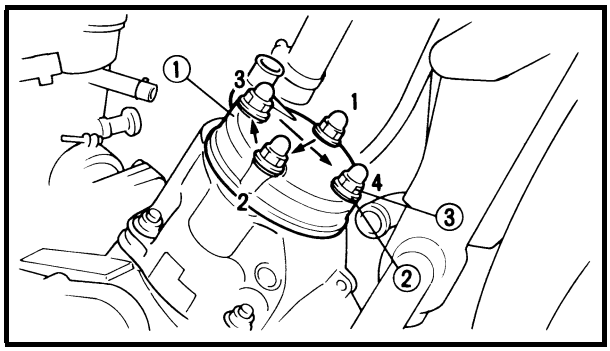




EAS00233

INSTALLING THE CYLINDER HEAD

1. Lubricate:
   • O-rings

	Recommended lubricart **Lithium-soap-based grease**

2. Install:
   • O-rings ① New

3. Install:
   • cylinder head ①
   • copper washer ②
   • cylinder head nuts ③

30 Nm (3.0 m•kg, 22 ft•lb)

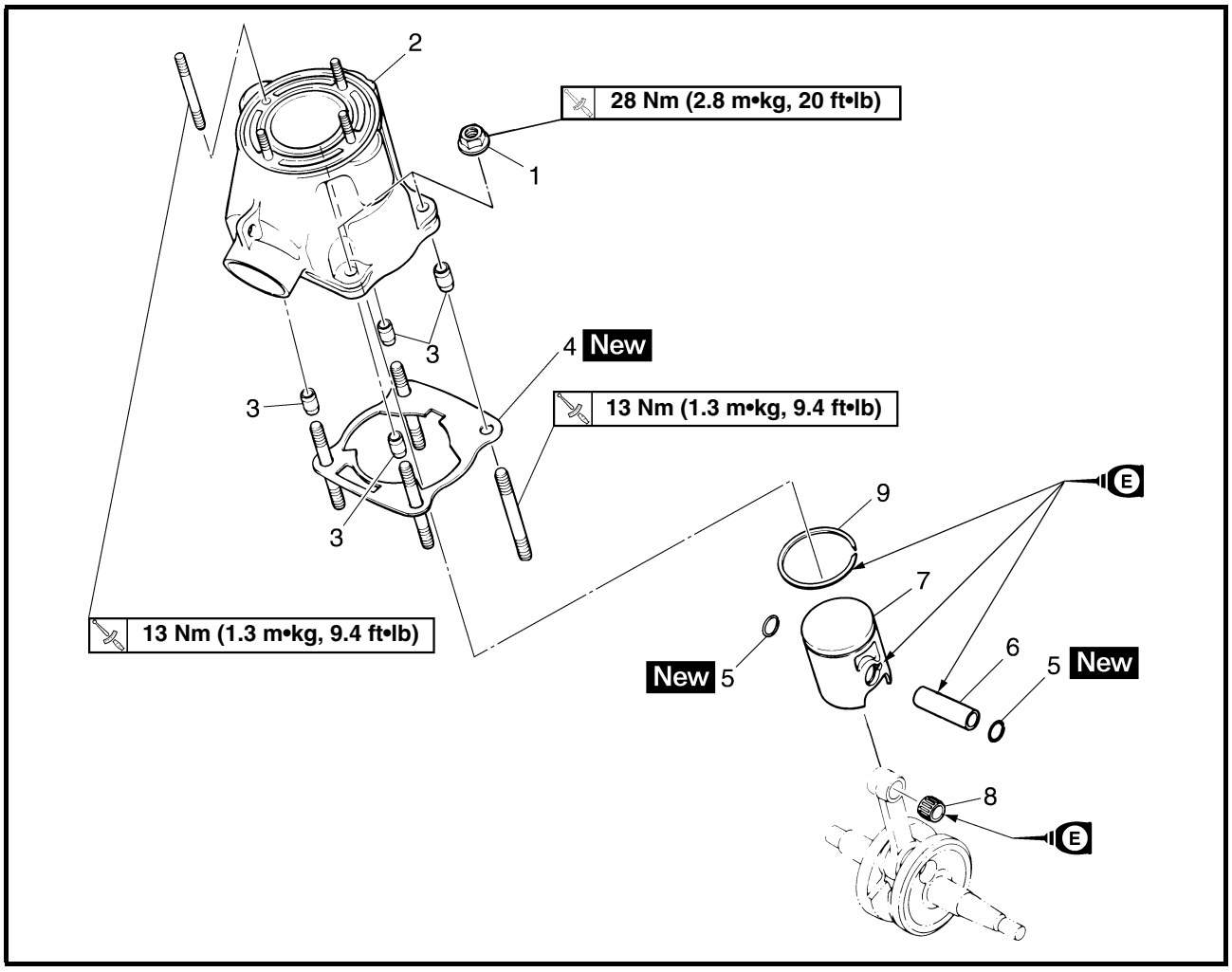
NOTE:

Tighten the cylinder head nuts in stage, using a crisscross pattern.

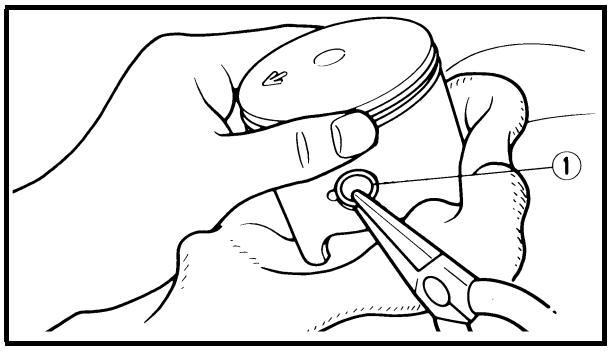
4. Install:
   • spark plug
   • spark plug cap
   • radiator hoses.

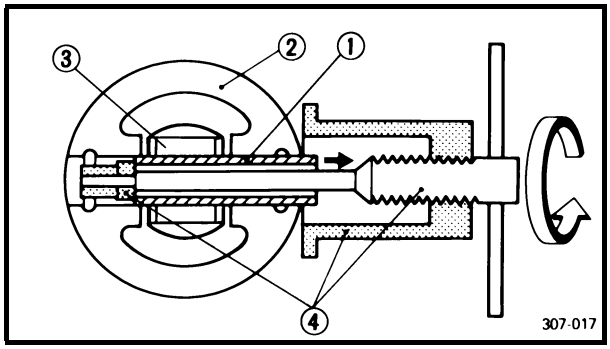
EAS00251

CYLINDER AND PISTON



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder and piston		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Cylinder nut	4	
2	Cylinder	1	
3	Dowel pin	4	
4	Cylinder gasket	1	
5	Piston pin clip	2	
6	Piston pin	1	
7	Piston	1	
8	Small end bearing	1	
9	Piston ring	1	
			For installation, reverse the removal procedure.





EAS00253

REMOVING THE CYLINDER AND PISTON

1. Remove:
   • piston pin clip ①

NOTE:

Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.

2. Remove:
   • piston pin ①
   • piston ②
   • small end bearing ③

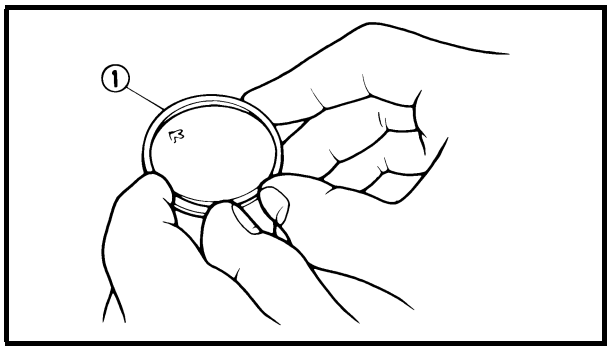
CAUTION:

Do not use a hammer to drive the piston pin out.

NOTE:

Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set ④.

	Piston pin puller set **90890-01304, YU-1304**



3. Remove:
   • piston ring ①

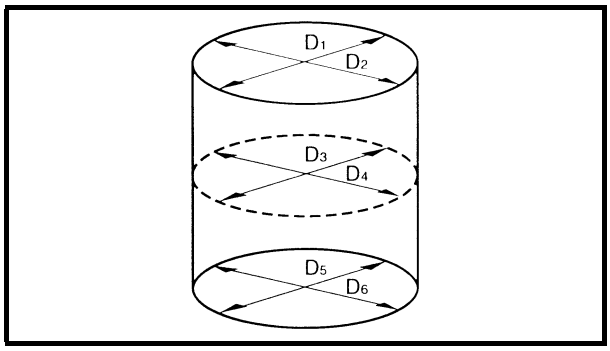
NOTE:

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.

EAS00257

CHECKING THE CYLINDER AND PISTON

1. Check:
   • piston wall
   • cylinder wall
   Vertical scratches → Replace the cylinder, and the piston and piston rings as a set.



2. Measure:
   • piston-to-cylinder clearance

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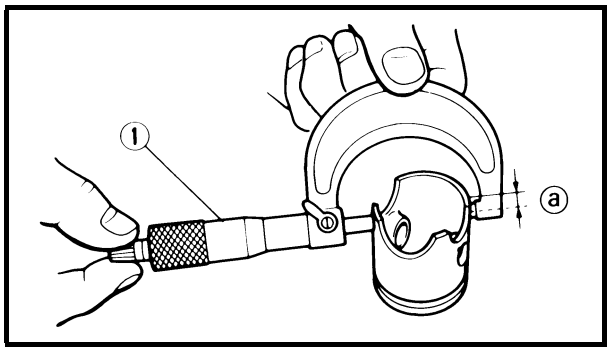
a. Measure cylinder bore "C" with the cylinder bore gauge.

NOTE:

Measure cylinder bore "C" by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.

Standard	**47.500 ~ 47.514 mm (1.8701 ~ 1.8706 in)**
Wear limit	**47.6 mm (1.8740 in)**
Taper limit "T"	**0.05 mm (0.0020 in)**
Out of round "R"	**0.05 mm (0.0020 in)**

"C" =	**maximum of D_1 ~ D_6**
"T" =	**maximum of D_1 or D_2 – maxmum of D_5 or D_6**
"R" =	**maximum of D_1 D_3 or D_5 – minimum of D_2 D_4 or D_6**



b. If out of specification, replace the cylinder, and the piston and piston rings as a set.
c. Measure piston skirt diameter "P" with the micrometer.

ⓐ 20.0 mm (0.79 in) from the bottom edge of the piston

Piston size "P"
Standard
47.457 ~ 47.472 mm (1.8684 ~ 1.8690 in)

d. If out of specification, replace the piston and piston rings as a set.
e. Calculate the piston-to-cylinder clearance with the following formula.

Piston-to-cylinder clearance =
Cylinder bore "C" –
Piston skirt diameter "P"

Piston-to-cylinder clearance
0.040 ~ 0.045 mm
(0.0016 ~ 0.0018 in)
<Limit>: 0.10 mm (0.0039 in)

f. If out of specification, replace the cylinder, and the piston and piston rings as a set.

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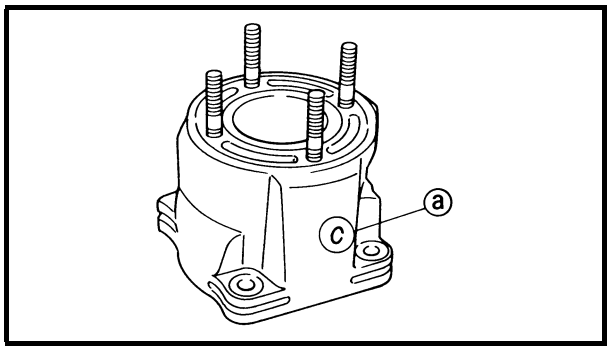
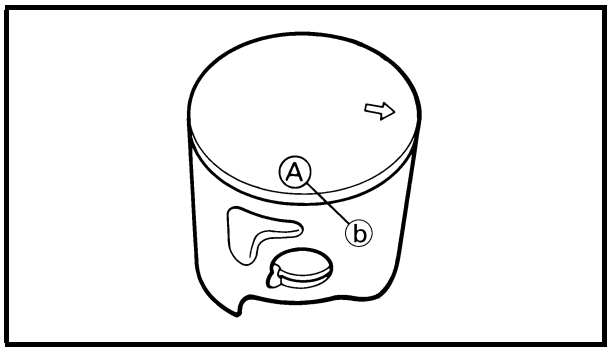




COMBINATION OF PISTON AND CYLINDER

1. Check:
   • cylinder mark ⓐ

Cylinder mark ⓐ	Cylinder size
A	47.500 ~ 47.502 mm (1.8701 ~ 1.8702 in)
B	47.504 ~ 47.506 mm (1.8702 ~ 1.8703 in)
C	47.508 ~ 47.510 mm (1.8704 ~ 1.8705 in)
D	47.512 ~ 47.514 mm (1.87055 ~ 1.87063 in)

2. Check:
   • piston mark ⓑ

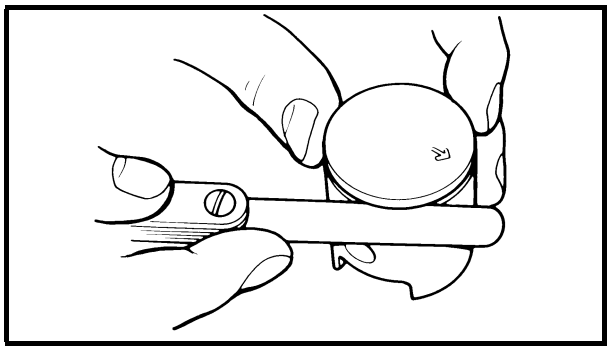
Piston mark ⓑ (color)	Piston size
A (red)	47.457 ~ 47.460 mm (1.8684 ~ 1.8685 in)
B (orange)	47.461 ~ 47.464 mm (1.8685 ~ 1.8687 in)
C (green)	47.465 ~ 47.468 mm (1.8687 ~ 1.8688 in)
D (purple)	47.469 ~ 47.472 mm (1.8689 ~ 1.8690 in)

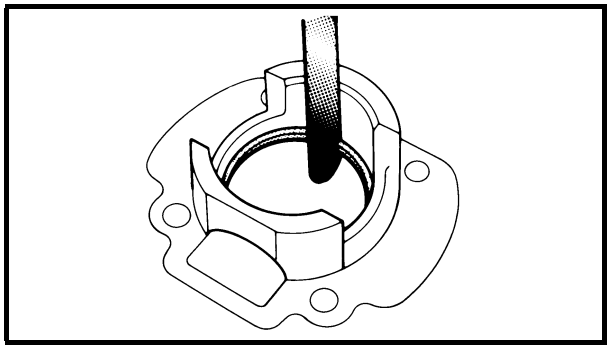
3. Combination:
   • combine the piston and cylinder by the following chart.

Cylinder mark	Piston mark (color)
A	A (red)
B	B (orange)
C	C (green)
D	D (purple)

NOTE:

When you purchase a cylinder, you cannot designate its size. Choose the piston that matches the above chart.





EAS00263
CHECKING THE PISTON RING
1. Measure:
   • piston ring side clearance
   Out of specification → Replace the piston and piston ring as a set.

NOTE:
Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston ring.

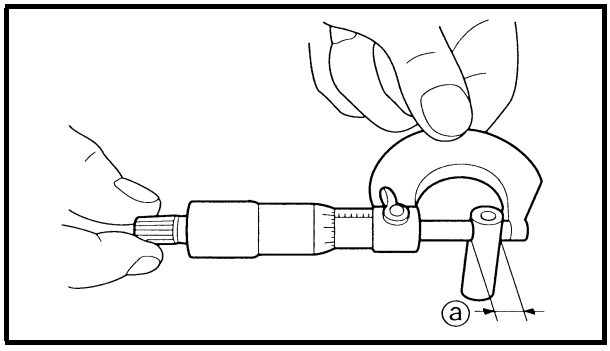
Piston ring side clearance
Piston ring
0.030 ~ 0.065 mm
(0.001 ~ 0.003 in)
<Limit>: 0.1 mm (0.004 in)

2. Install:
   • piston ring
   (into the cylinder)

NOTE:
Level the piston ring into the cylinder with the piston crown.

3. Measure:
   • piston ring end gap
   Out of specification → Replace the piston ring.

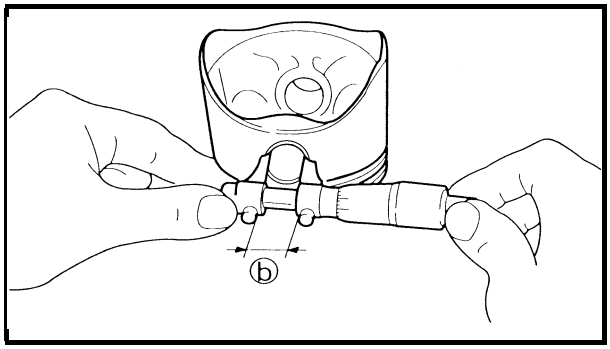
Piston ring end gap
Top ring
0.30 ~ 0.45 mm
(0.012 ~ 0.018 in)
<Limit>: 0.80 mm (0.032 in)



CHECKING THE PISTON PIN
1. Check:
   • piston pin
   Blue discoloration/grooves → Replace the piston pin and then check the fuel and engine mixing oil.
2. Measure:
   • piston pin outside diameter ⓐ
   Out of specification → Replace the piston pin.

Piston pin outside diameter
13.996 ~ 14.000 mm
(0.5510 ~ 0.5512 in)
<Limit>: 13.975 mm (0.5502 in)

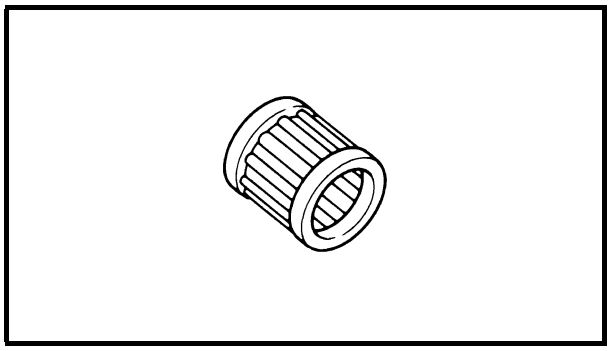
3. Measure:
   • piston pin bore inside diameter ⓑ
   Out of specification → Replace the piston.



Piston pin bore inside diameter
14.004 ~ 14.015 mm
(0.5513 ~ 0.5518 in)
<Limit>: 14.040 mm (0.5528 in)

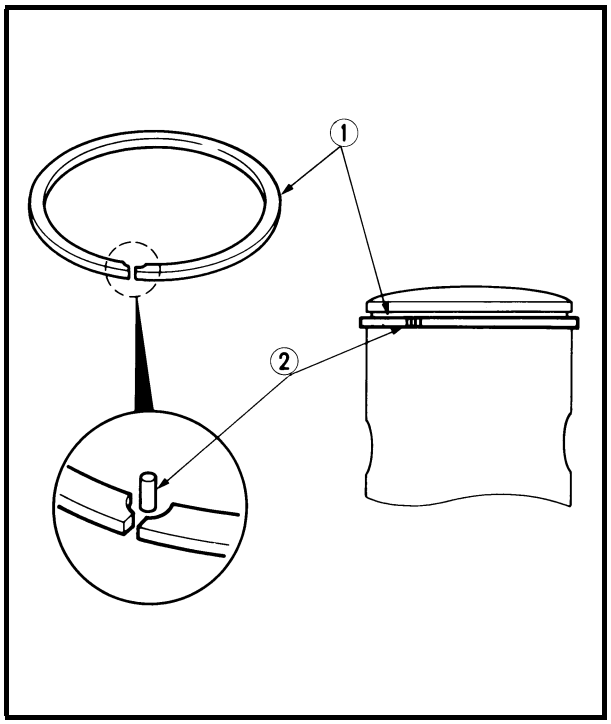
4. Calculate:
   • piston-pin-to-piston clearance
   Out of specification → Replace the piston pin and piston as a set.

Piston-pin-to-piston clearance =
Piston pin bore size –
Piston pin outside diameter
Piston-pin-to-piston clearance
0.008 ~ 0.015 mm
(0.0003 ~ 0.0006 in)
<Limit>: 0.065 mm (0.0026 in)



CHECKING THE SMALL END BEARING

1. Check:
   • small end bearing
   Signs of heat discoloration → Replace.

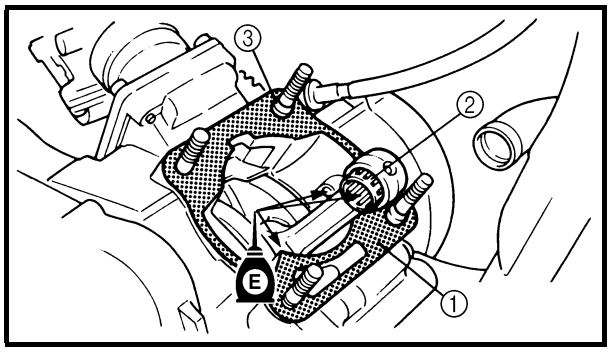


EAS00267
INSTALLING THE PISTON AND CYLINDER

1. Install:
   • piston ring ①

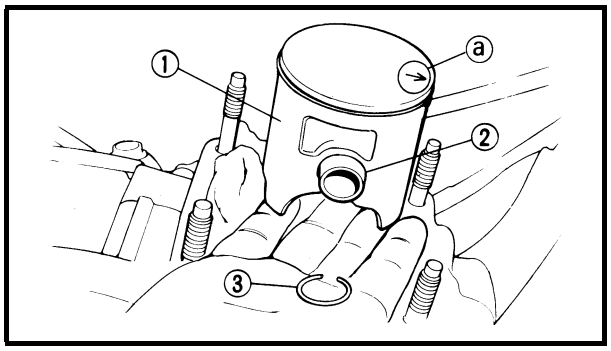
NOTE:

- Take care not to scratch the piston or damage the piston ring.
- Align the piston ring gap with the pin ②.
- After installing the piston ring, check the smooth movement of it.



2. Install:
   • gasket (cylinder) ① New
   • small end bearing ②
     (with the recomended lubricant)
   • dowel pin ③

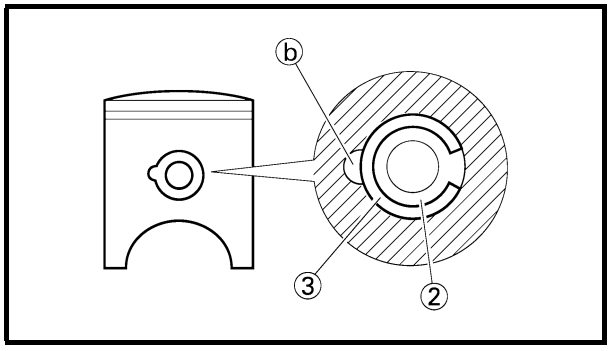
	Recommended lubricant **Engine oil**

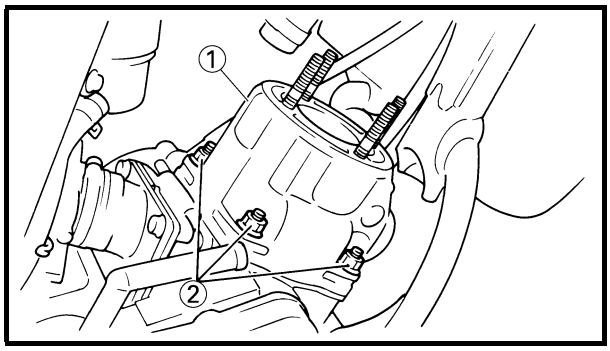


3. Install:
   • piston ①
   • piston pin ②
   • piston pin clip ③ New

NOTE:

- Apply engine oil the piston pin.
- Make sure the arrow mark ⓐ on the piston points towards the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.
- Do not allow the clip open ends to meet the piston pin slat ⓑ.





4. Lubricate:
   • piston
   • piston ring
   • cylinder
   (with the recommended lubricant)

	Recommended lubricant **Engine oil**

5. Install:
   • cylinder ①
   • cylinder nut ② **28 Nm (2.8 m•kg, 20 ft•lb)**

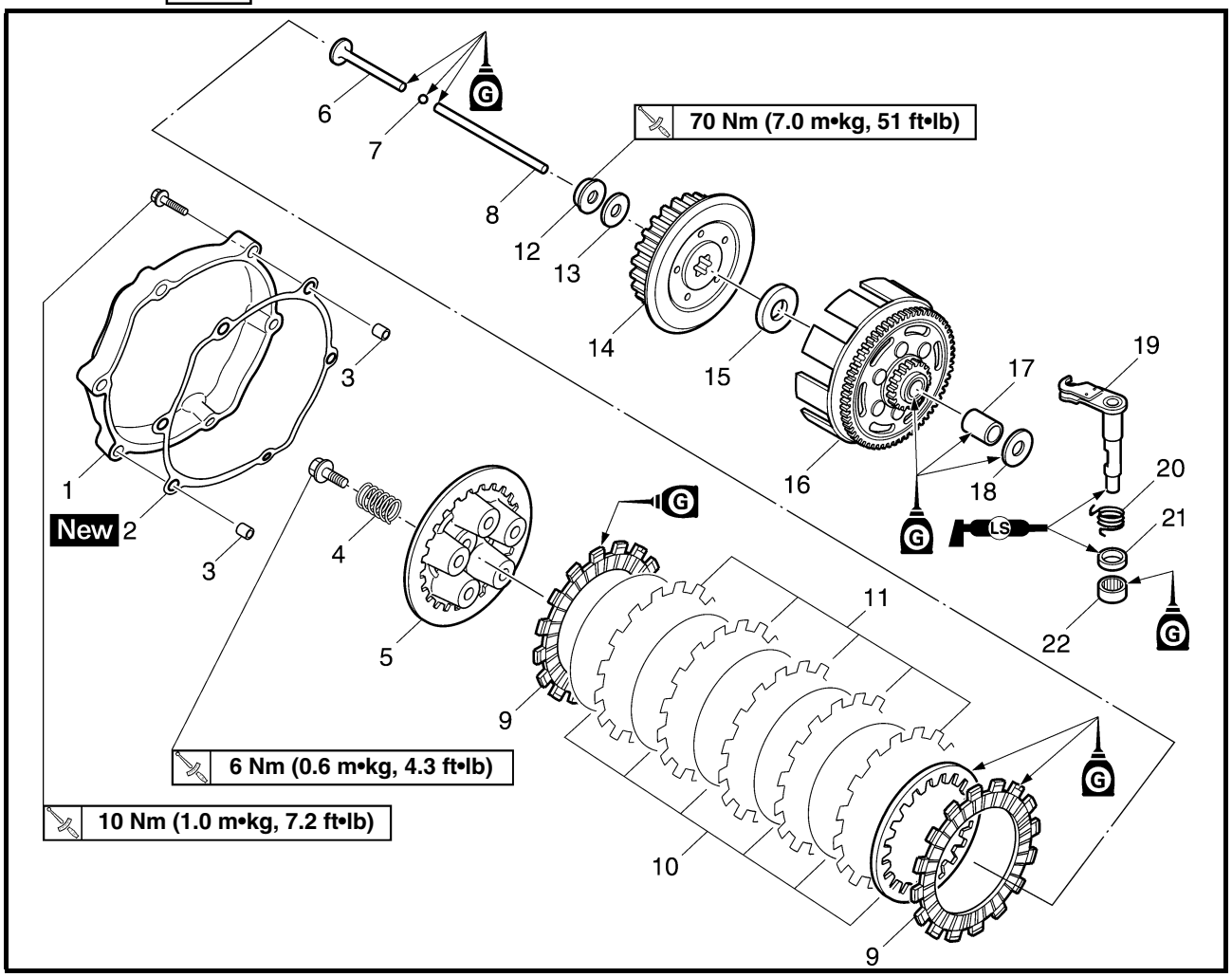
NOTE:

- While compressing the piston ring with one hand, install the cylinder with the other hand.
- Tighten the nuts in stage, using a crisscross pattern.

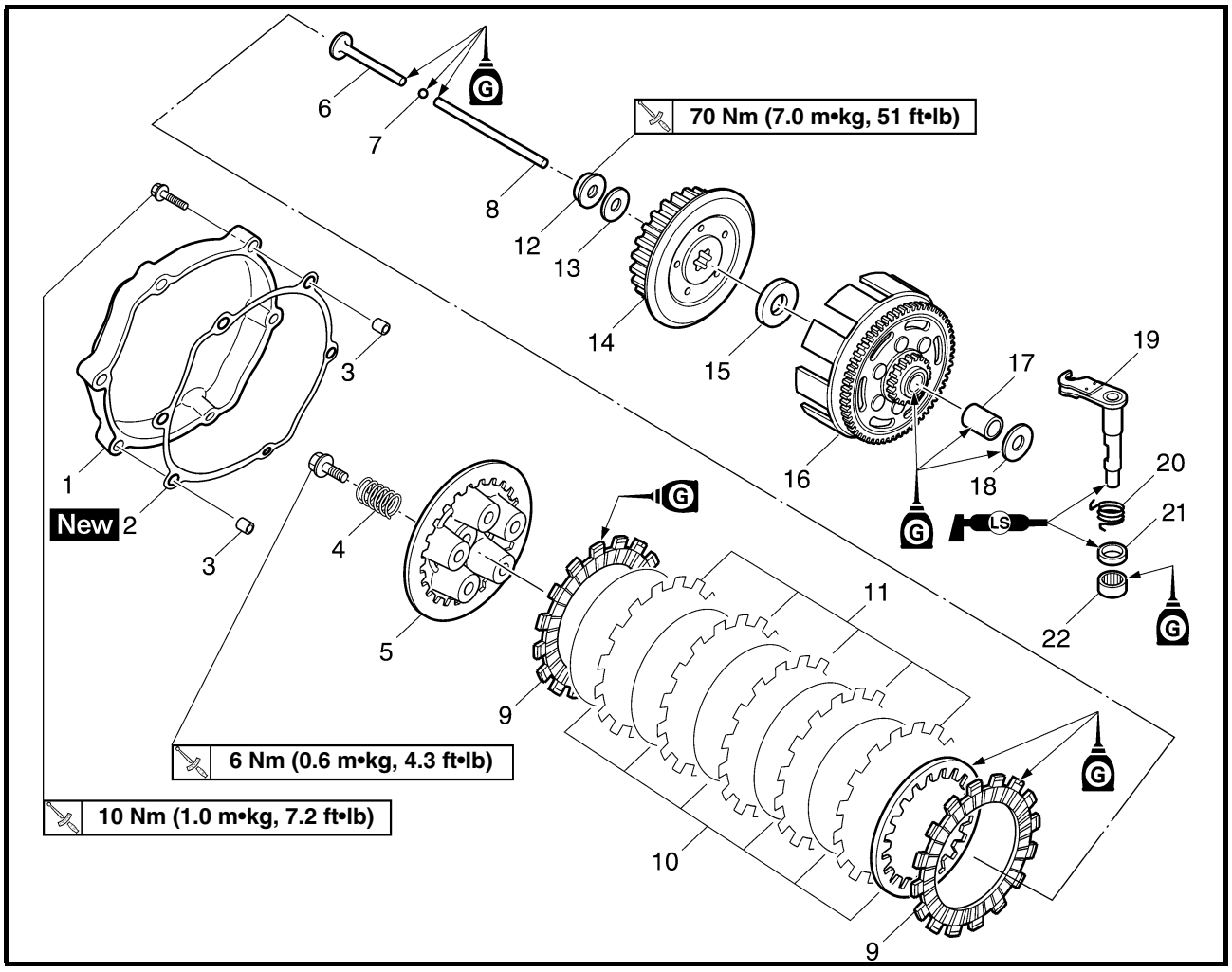
EAS00274

CLUTCH

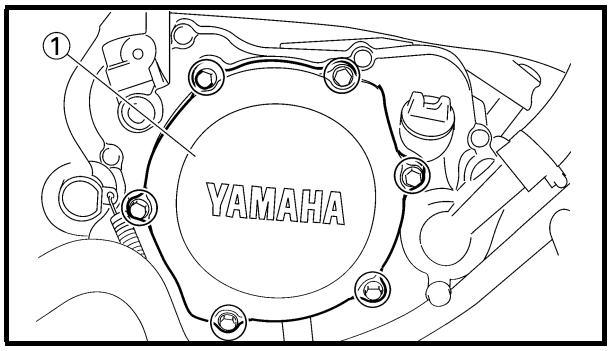
CLUTCH



Order	Job/Part	Q'ty	Remarks
	Removing the clutch		
	Transmission oil		Drain Refer to "CHANGING THE TRANSMISSION OIL" in chapter 3.
	Clutch cable		Disconnect
1	Clutch cover	1	
2	Clutch cover gasket	1	
3	Dowel pin	2	
4	Compression spring	5	
5	Pressure plate	1	
6	Push rod 1	1	
7	Ball	1	
8	Push rod 2	1	
9	Friction plate 1	2	
10	Clutch plate 1	6	
11	Friction plate 2	5	
12	Clutch boss nut	1	



Order	Job/Part	Q'ty	Remarks
13	Conical washer	1	
14	Clutch boss	1	
15	Washer	1	
16	Primary drive gear	1	
17	Spacer	1	
18	Washer	1	
19	Push lever shaft	1	
20	Spring	1	
21	Oil seal	1	
22	Bearing	1	
			For installation, reverse the removal procedure.

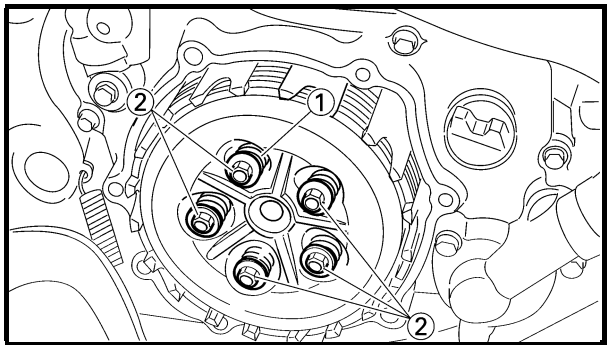


EAS00276
REMOVING THE CLUTCH

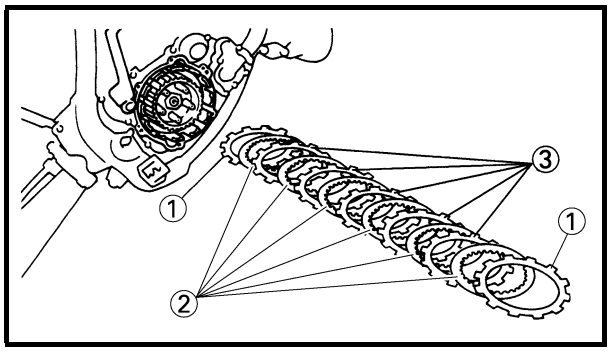
1. Remove:
   - clutch cover ①
   - gasket

NOTE:

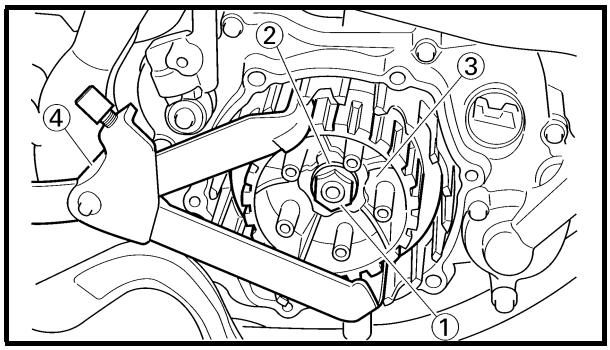
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern.
After all of the bolts are fully loosened, remove them.



2. Remove:
   - compression spring bolts ①
   - compression springs
   - pressure plate ②
3. Remove:
   - push rod 1
   - ball
   - push rod 2



4. Remove:
   - friction plate 1 ①
   - clutch plate ②
   - friction plate 2 ③



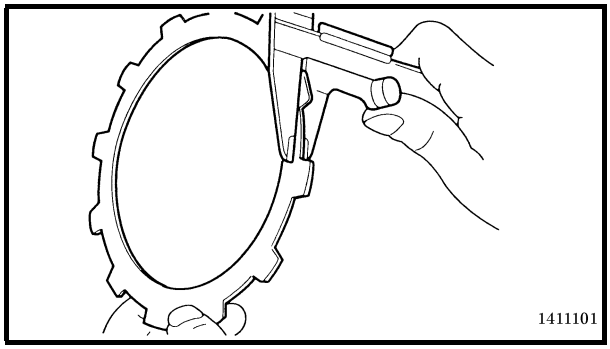
5. Remove:
   - clutch boss nut ①
   - washer ②
   - clutch boss ③

NOTE:

While holding the clutch boss with the universal clutch holder ④, loosen the clutch boss nut.

	Universal clutch holder **90890-04086, YM-91042**

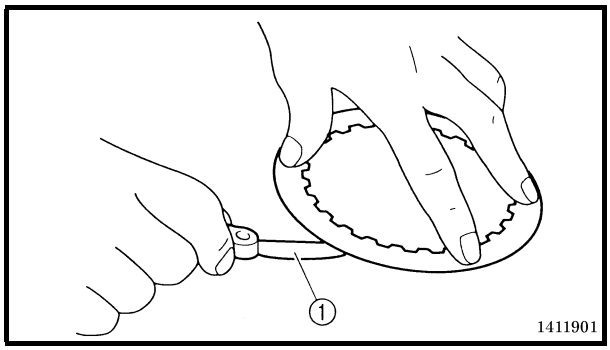
6. Remove:
   - washer
   - primary driven gear
   - spacer



EAS00280
CHECKING THE FRICTION PLATES
The following procedure applies to all of the friction plates.
1. Check:
   • friction plate
   Damage/wear → Replace the friction plates as a set.
2. Measure:
   • friction plate thickness
   Out of specification → Replace the friction plates as a set.

NOTE:
Measure the friction plate at four places.

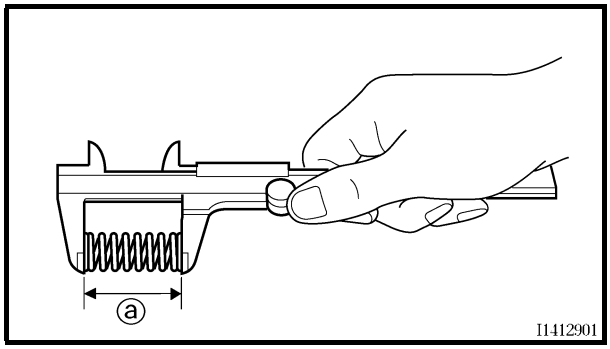
Friction plate thickness
2.9 ~ 3.1 mm (0.114 ~ 0.112 in)
<Limit>: 2.7 mm (0.106 in)



EAS00281
CHECKING THE CLUTCH PLATES
The following procedure applies to all of the clutch plates.
1. Check:
   • clutch plate
   Damage → Replace the clutch plates as a set.
2. Measure:
   • clutch plate warpage
   (with a surface plate and thickness gauge ①)
   Out of specification → Replace the clutch plates as a set.

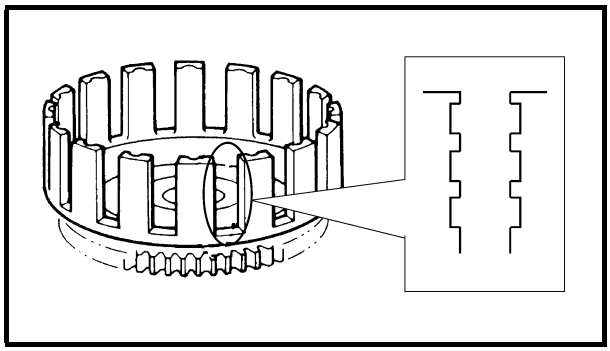
Clutch plate warpage limit
0.1 mm (0.004 in)

EAS00282
CHECKING THE CLUTCH SPRINGS
The following procedure applies to all of the clutch springs.
1. Check:
   • clutch spring
   Damage → Replace the clutch springs as a set.



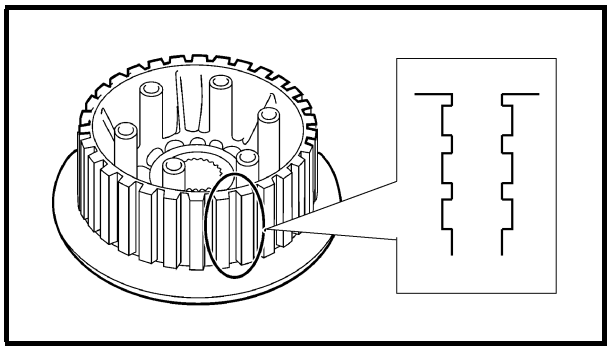
2. Measure:
   • clutch spring free length ⓐ
   Out of specification → Replace the clutch springs as a set.

Clutch spring free length
33.0 mm (1.30 in)
<Limit>: 31.0 mm (1.22 in)



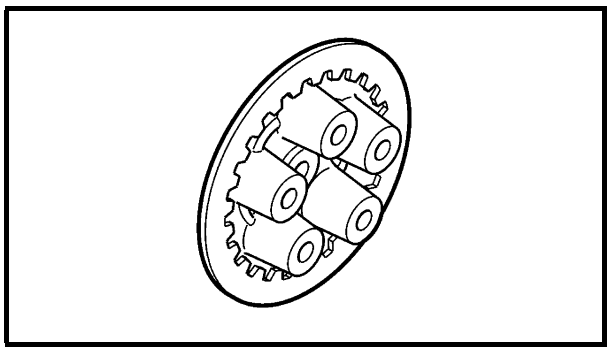
EAS00284
CHECKING THE CLUTCH HOUSING
1. Check:
   • clutch housing dogs
   Damage/pitting/wear → Deburr the clutch housing dogs or replace the clutch housing.

NOTE:
Pitting on the clutch housing dogs will cause erratic clutch operation.

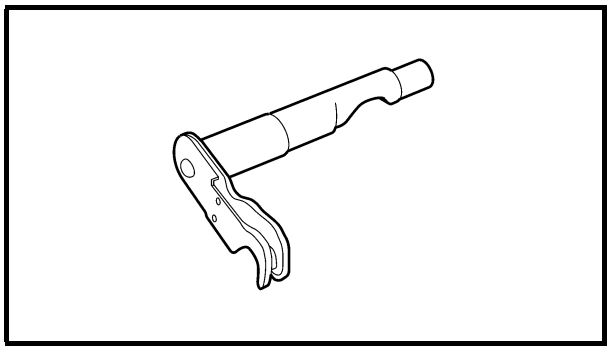


EAS00285
CHECKING THE CLUTCH BOSS
1. Check:
   • clutch boss splines
   Damage/pitting/wear → Replace the clutch boss.

NOTE:
Pitting on the clutch boss splines will cause erratic clutch operation.

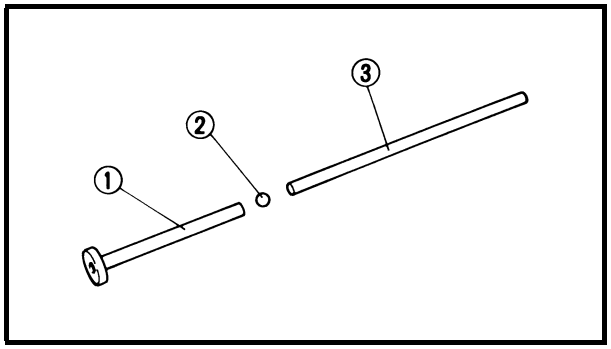


EAS00286
CHECKING THE PRESSURE PLATE
1. Check:
   • pressure plate
   Cracks/damage → Replace.



CHECKING THE PUSH LEVER SHAFT

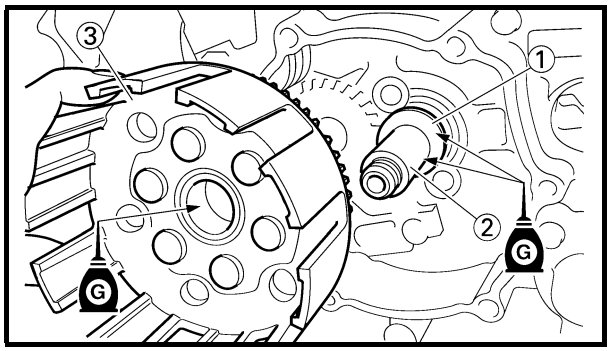
1. Check:
   • push lever shaft
   Wear/damage → Replace.



EAS00288

CHECKING THE CLUTCH PUSH RODS

1. Check:
   • push rod 1 ①
   • ball ②
   • push rod 2 ③
   Wear/damage/bend → Replace.

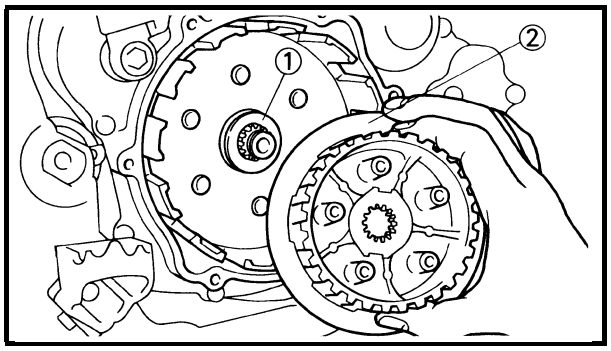


EAS00298

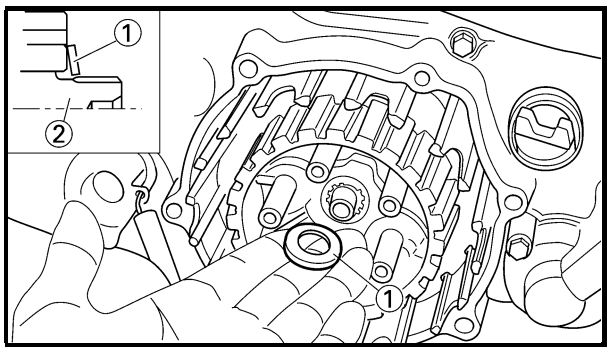
INSTALLING THE CLUTCH

1. Install:
   • washer ①
   • spacer ②
   • primary driven gear ③
   (with the recommended lubricant)

	Recommended lubricant **Transmission oil**



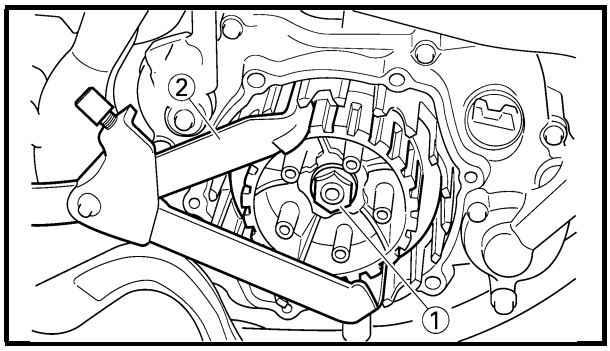
2. Install:
   • washer ①
   • clutch boss ②



3. Install:
   • washer ①

NOTE:

Install the conical washer to the main axle ② as shown in the illustration.



4. Install:
   • clutch boss nut ①

70 Nm (7.0 m•kg, 51 ft•lb)

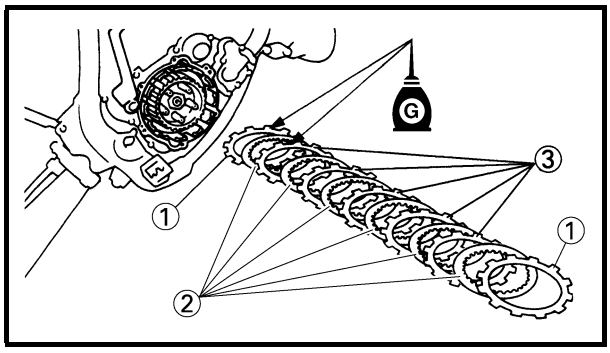
NOTE:

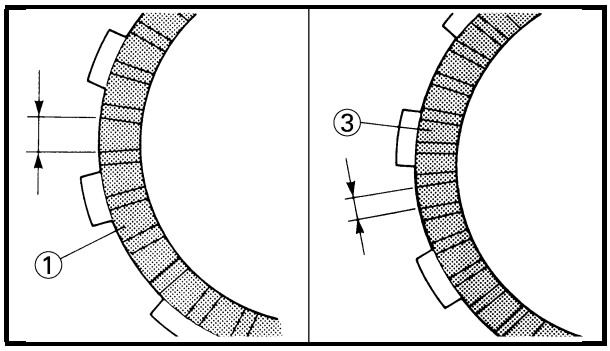
While holding the clutch boss with the universal clutch holder ②, tighten the clutch boss nut.

Universal clutch holder
90890-04086, YM-91042

5. Lubricate:
   • friction plates
   • clutch plates
   (with the recommended lubricant)

Recommended lubricant
Transmission oil

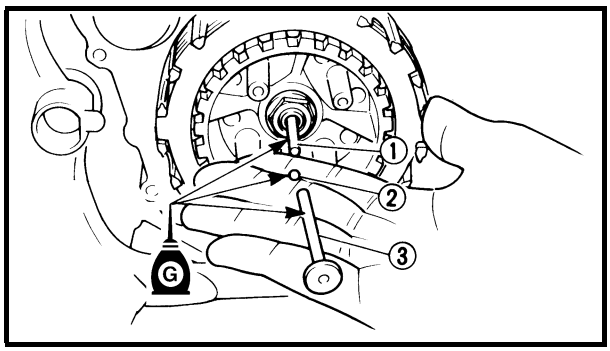




6. Install:
   • friction plate 1 ①
   • clutch plate ②
   • friction plate 2 ③

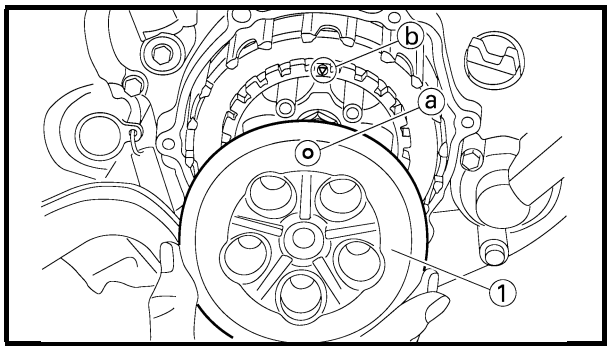
NOTE:

- Install the clutch plates and friction plates alternately on the clutch boss, starting with a friction plate and ending with a friction plate.
- Use the friction plate for the first and final while paying attention to the difference in surface pattern.



7. Install:
   • push rod 2 ①
   • ball ②
   • push rod 1 ③
   (with the recommended lubricant)

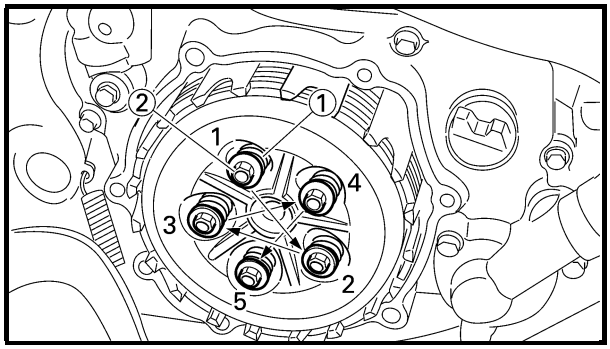
Recommended lubricant
Transmission oil



8. Install:
   • pressure plate 1 ①

NOTE:

Align the punch mark ⓐ on the pressure plate with the punch mark ⓑ on the clutch boss.

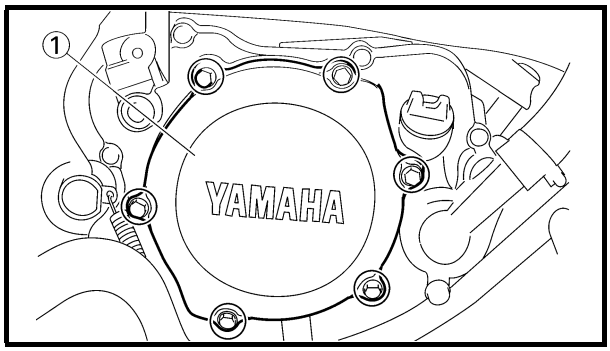


9. Install:
   • clutch spring ①
   • clutch spring bolt ②

6 Nm (0.6 m•kg, 4.3 ft•lb)

NOTE:

Tighten the clutch spring bolts in stages and in a crisscross pattern.



10. Install
   • dowel pin
   • clutch cover gasket New
   • clutch cover ① **10 Nm (1.0 m•kg, 7.2 ft•lb)**

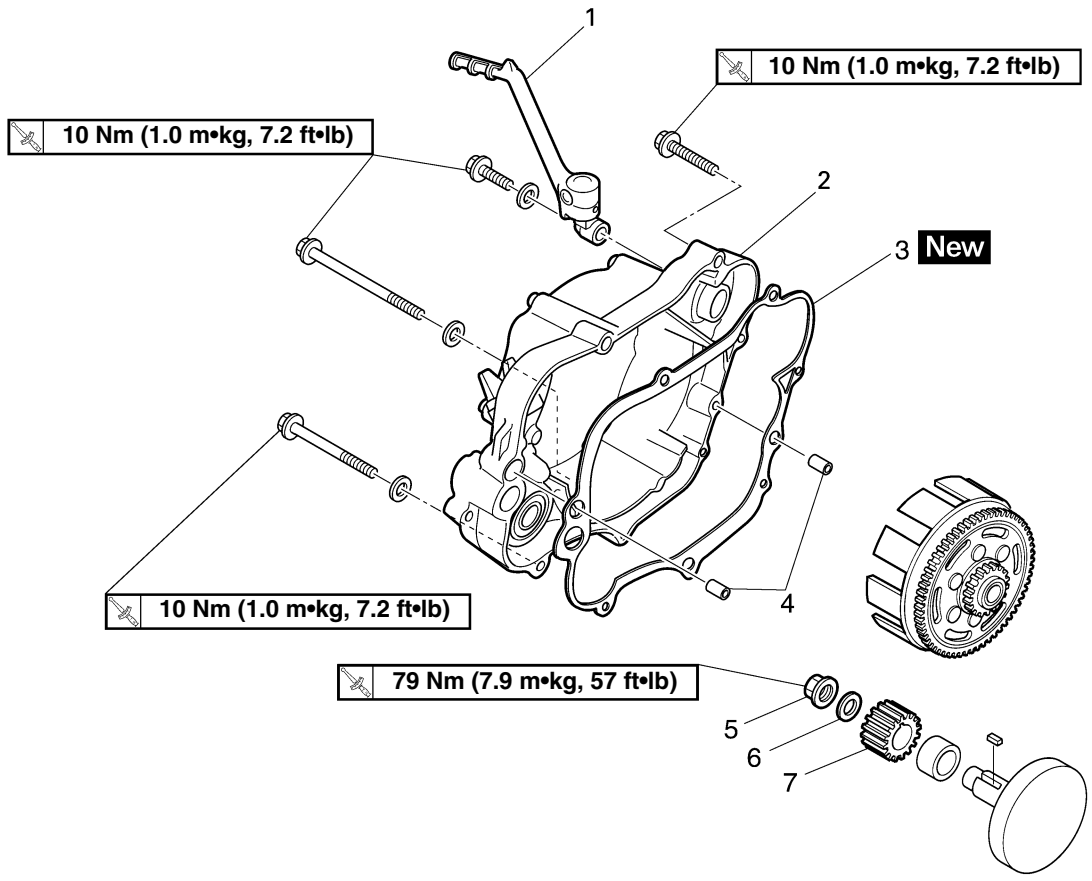
NOTE:

Tighten the bolts in stage, using a crisscross pattern.

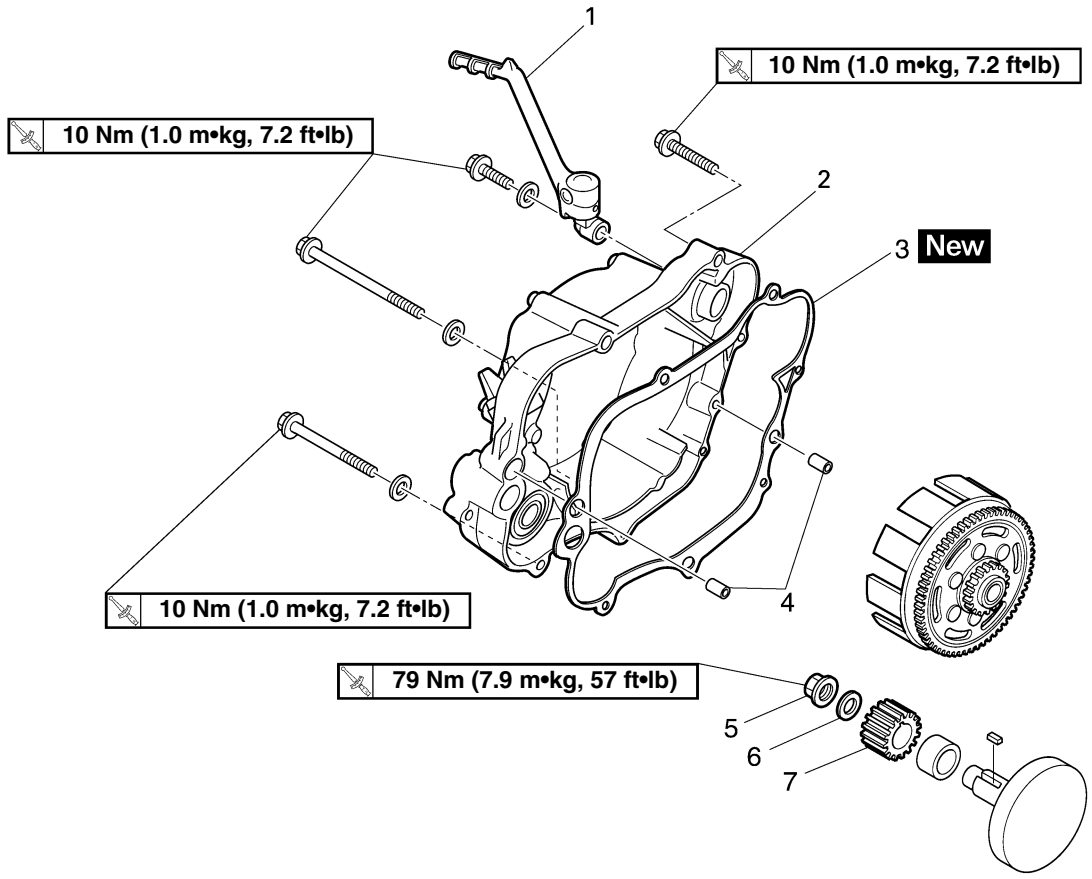
EAS00327

KICK STARTER AND SHIFT SHAFT

PRIMARY DRIVE GEAR

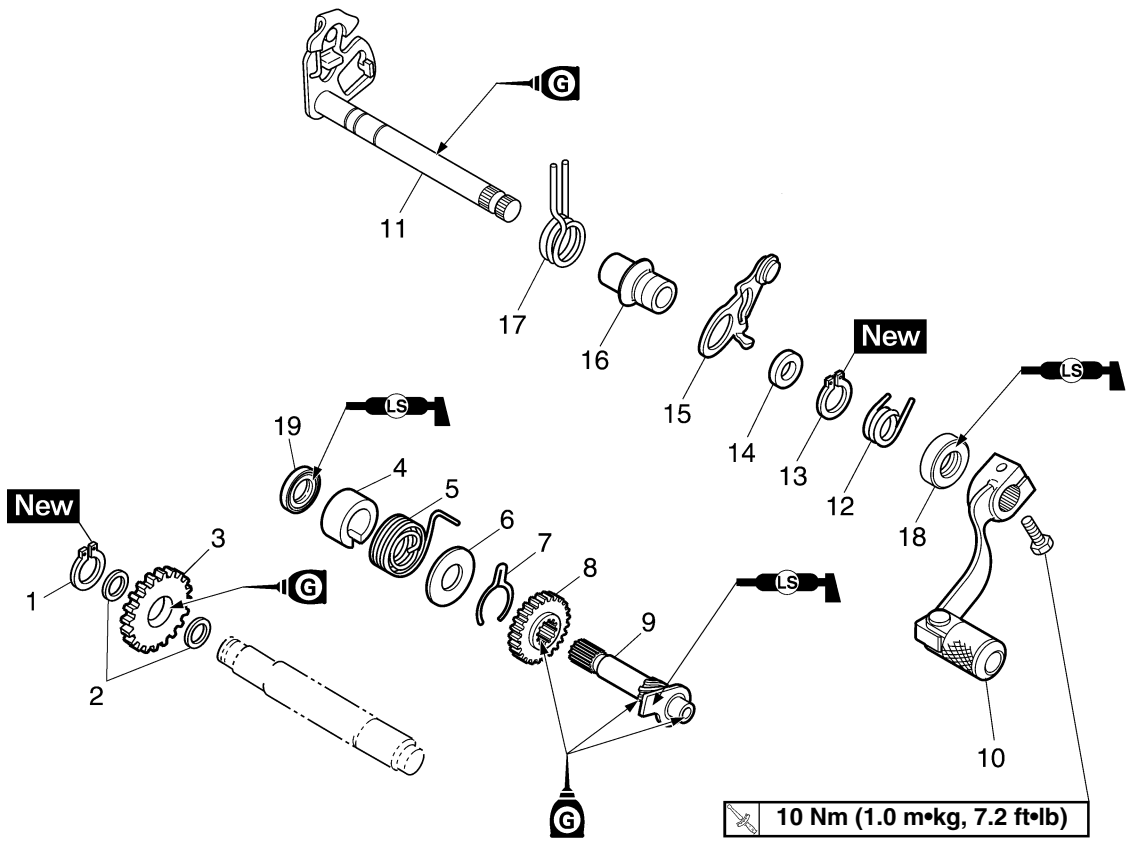


Order	Job/Part	Q'ty	Remarks
	Removing the primary drive gear		Remove the parts in the order listed.
	Transmission oil		Drain. Refer to "CHANGING THE TRANSMISSION OIL" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
	Water pump housing		Refer to "WATER PUMP" in chapter 6.
	Radiator hose 2		Refer to "RADIATOR" in chapter 6.
	Brake pedal		
	Clutch		Refer to "CLUTCH".
1	Kick starter crank	1	
2	Right crankcase cover	1	
3	Gascket	1	
4	Dowel pin	2	
5	Primary drive gear nut	1	
6	Washer	1	

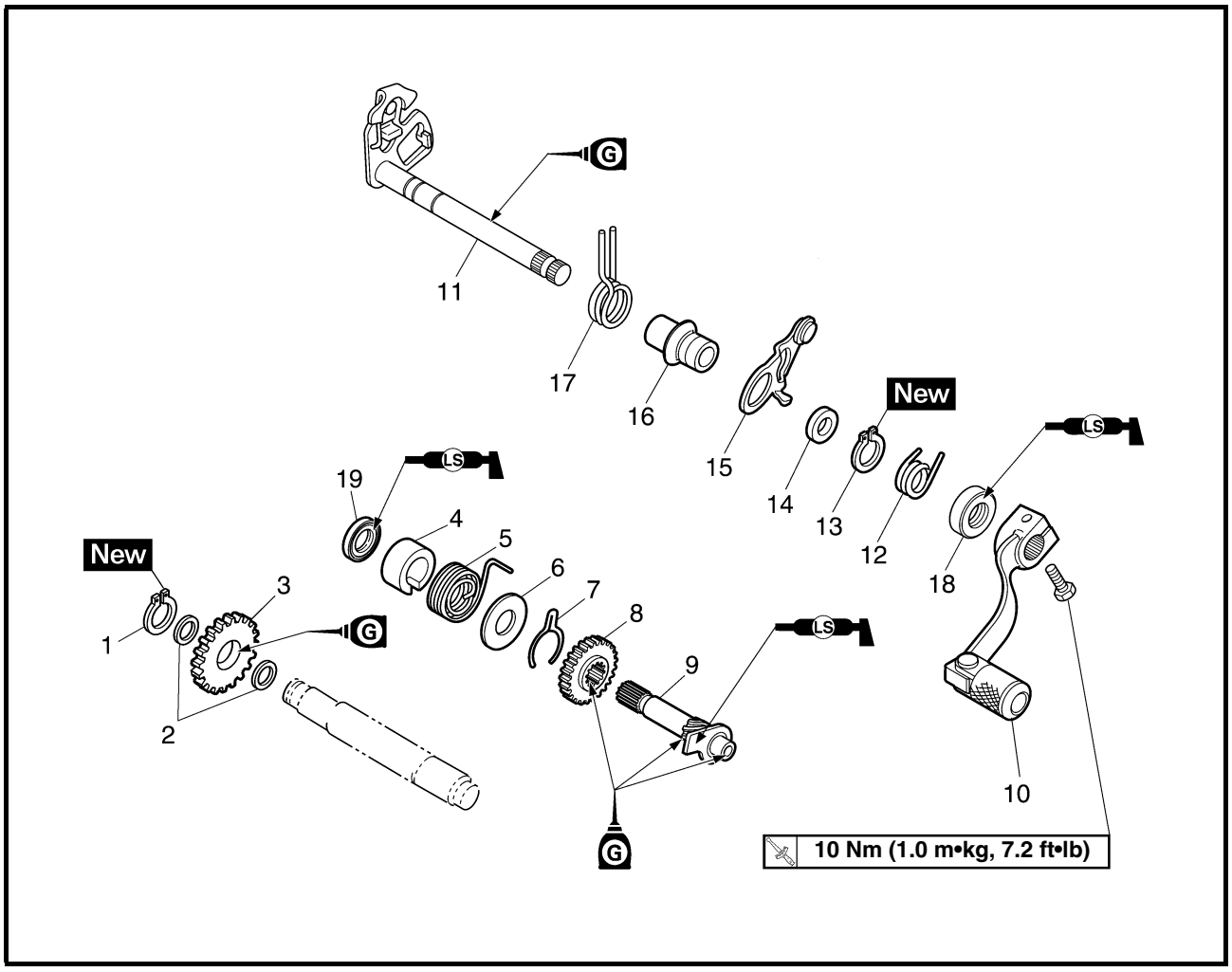


Order	Job/Part	Q'ty	Remarks
7	Primary drive gear	1	For installation, reverse the removal procedure.

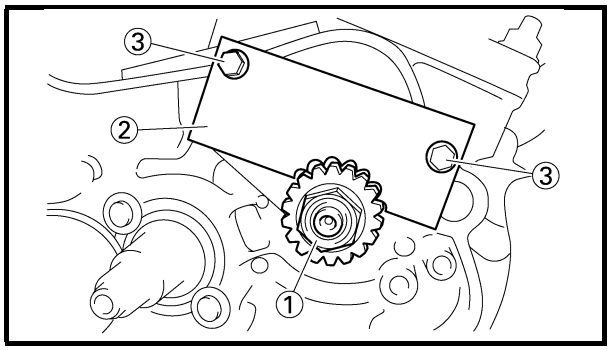
KICK STARTER AND SHIFT SHAFT



Order	Job/Part	Q'ty	Remarks
	Removing the kick starter shaft and shift shaft		Remove the parts in the order listed.
1	Circlip	1	
2	Washer	2	
3	Kick idle gear	1	
4	Spring guide	1	
5	Torsion spring	1	
6	Washer	1	
7	Kick starter gear clip	1	
8	Kick starter gear	1	
9	Kick starter shaft	1	
10	Shift pedal	1	
11	Shift shaft	1	
12	Stopper lever spring	1	
13	Circlip	1	



Order	Job/Part	Q'ty	Remarks
14	Washer	1	
15	Stopper lever	1	
16	Collar	1	
17	Shift shaft spring	1	
18	Oil seal	1	
19	Oil seal	1	
			For installation, reverse the removal procedure.



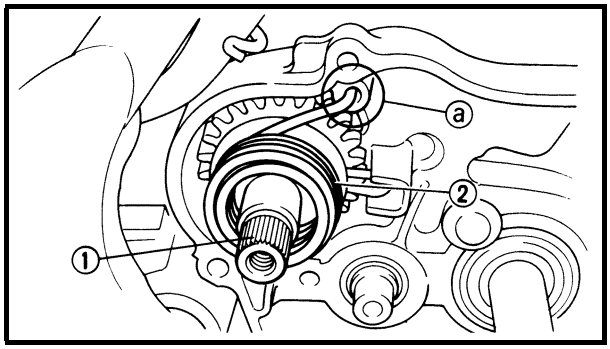
REMOVING THE PRIMARY DRIVE GEAR

1. Remove:
   • nut (primary drive gear) ①

NOTE:

Hold the drive gear holder ② onto the crankcase using the M6 bolts ③.

	Drive gear holder **90890-01495, YM-01495**

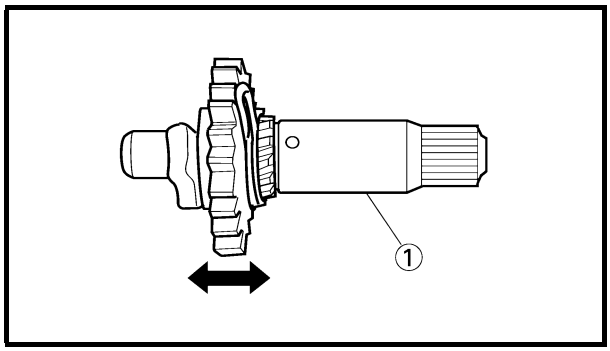


REMOVING THE KICK SHAFT ASSEMBLY

1. Remove:
   • kick shaft assembly ①

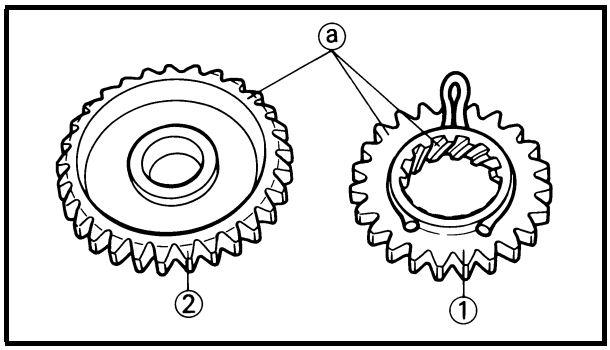
NOTE:

Unhook the torsion spring ② from the hole ⓐ in the crankcase.

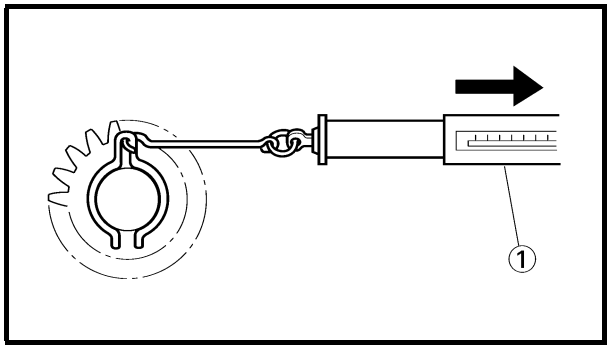


CHECKING THE KICK STARTER

1. Check:
   • kick starter gear smooth movement
   Unsmooth movement → Replace.
   • kick starter shaft ①
   Wear/damage → Replace.

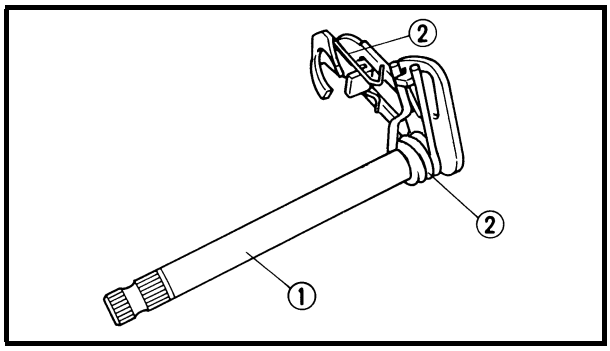


2. Check:
   • kick starter gear ①
   Wear/damage → Replace.
   • kick idle gear ②
   Wear/damage → Replace.
   • gear teeth ⓐ
   Wear/damage → Replace.

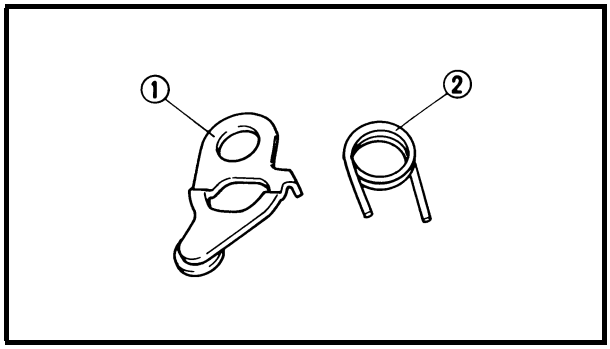


3. Measure:
   • kick starter gear clip friction force
   Out of specification → Replace.
   (with the spring gauge ①)

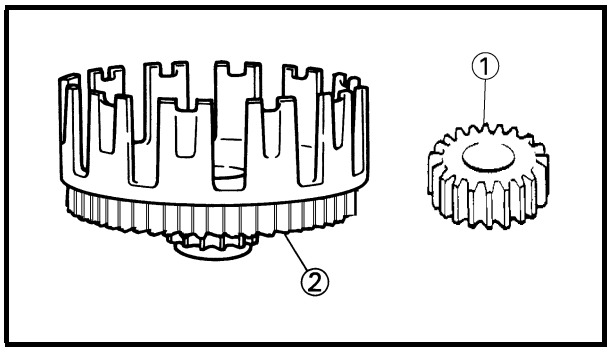
	Kick starter gear clip force **0.6 ~ 1.5 kg (1.3 ~ 3.3 lb)**



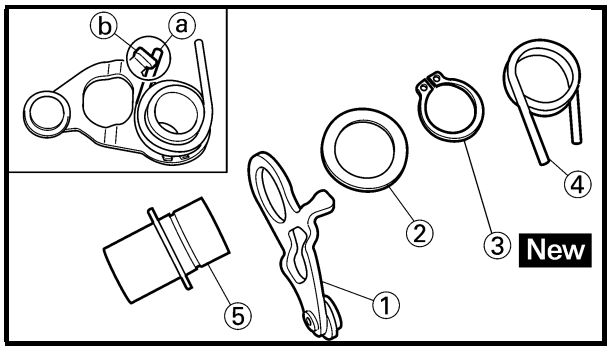
EAS00328
CHECKING THE SHIFT SHAFT
1. Check:
   - shift shaft ①
     Bends/damage/wear → Replace.
   - spring ②
     Damage/wear → Replace.



EAS00330
CHECKING THE STOPPER LEVER
1. Check:
   - stopper lever ①
     Bends/damage → Replace.
   - torsion spring ②
     Damage/ware → Replace.



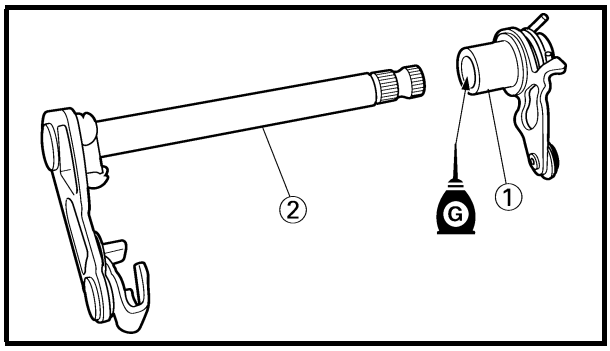
CHECKING THE PRIMARY DRIVE GEAR AND PRIMARY DRIVEN GEAR
1. Check:
   - primary drive gear ①
     Damage/wear → Replace.
   - primary driven gear ②
     Damage/wear → Replace.
2. Check:
   - primary driven gear circumferencial play
     Free play exists → Replace.



EAS00331
INSTALLING THE SHIFT SHAFT
1. Install:
   - stopper lever ①
   - washer ②
   - circlip ③ New
   - torsion spring ④
     (with thw collar ⑤)

NOTE:

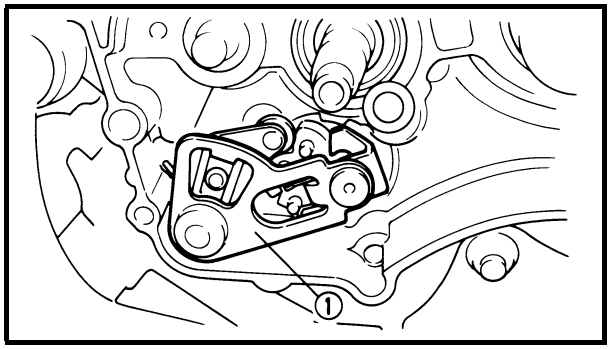
Install the torsion spring with its shorter end ⓐ aligning with the stopper ⓑ.



2. Install:
   • stopper lever assembly ①
   (with the shift shaft ②)

NOTE:

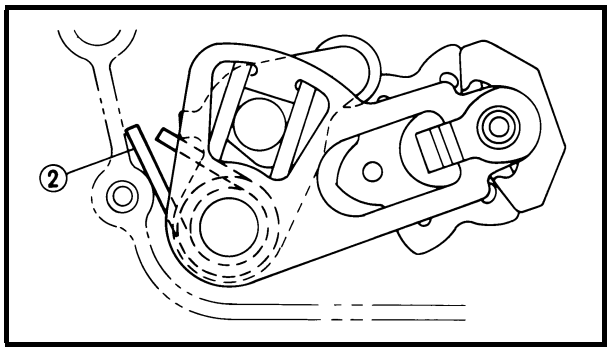
Apply the transmission oil on the stopper lever assembly.

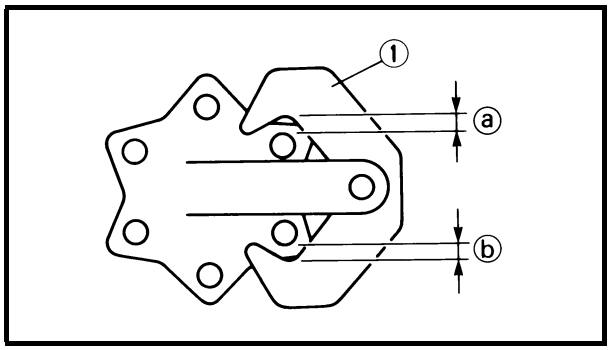


3. Install:
   • stopper lever
   • shift shaft ①

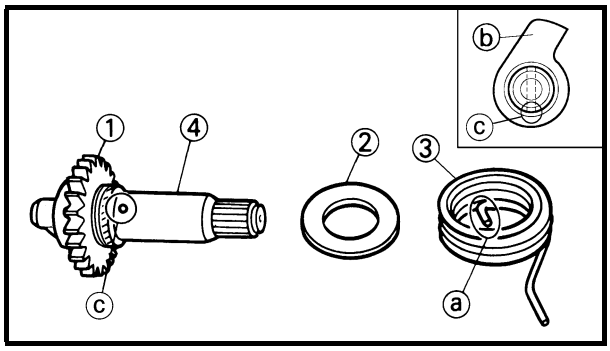
NOTE:

- Apply transmission oil on the shift shaft.
- When installing the shift shaft, align the stopper lever roller with the slot on segment.
- When installing the shift shaft, make sure that the torsion spring ② is in the position as shown.





4. Check:
   • shift lever ① position
   Gaps ⓐ and ⓑ are not equal except in neutral → Replace the shift shaft.

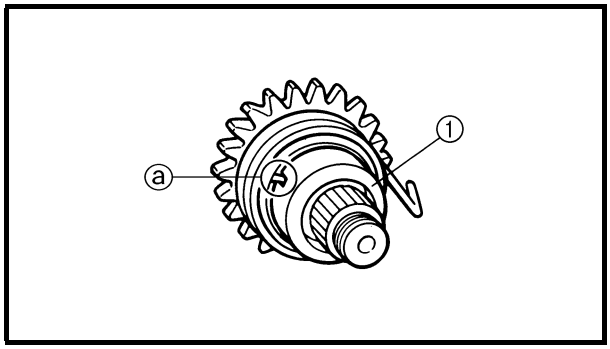


INSTALLING THE KICK STARTER SHAFT ASSEMBLY

1. Install:
   - kick starter gear ①
   - washer ②
   - torsion spring ③

NOTE:

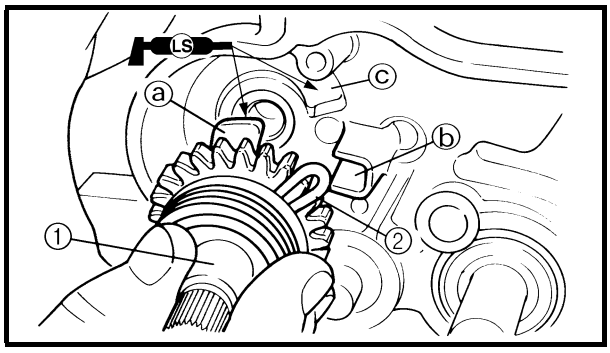
Make sure the stopper ⓐ of the torsion spring fits into the hole ⓒ in the other side of the stopper ⓑ of the kick starter shaft ④.



2. Install:
   - spring guide ①

NOTE:

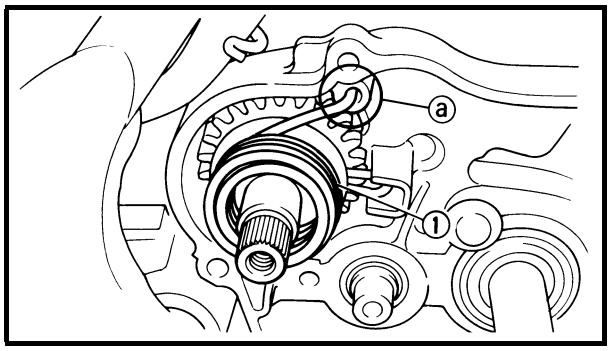
Slide the spring guide into the kick starter shaft, make sure the groove ⓐ in the spring guide fits on the stopper of the torsion spring.



3. Install:
   - kick starter shaft assembly ①

NOTE:

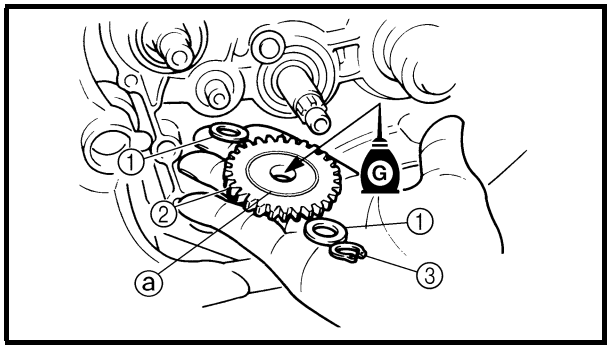
- Apply the transmission oil on the kick shaft.
- Apply the lithium soap base grease on the kick shaft stopper.
- Slide the kick starter shaft assembly into the crankcase, make sure the clip ② and kick starter shaft stopper ⓐ fit into their home positions ⓑ, ⓒ.



4. Install:
   - torsion spring ①

NOTE:

Turn the torsion spring clockwise and hook into the proper hole ⓐ in the crankcase.

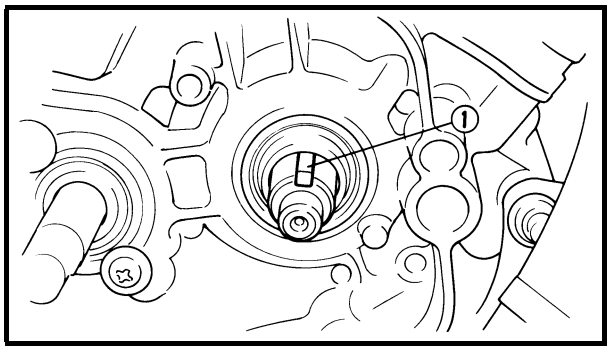


INSTALLING THE KICK IDLE GEAR

1. Install:
   - washer ①
   - kick idle gear ②
   - circlip ③ New

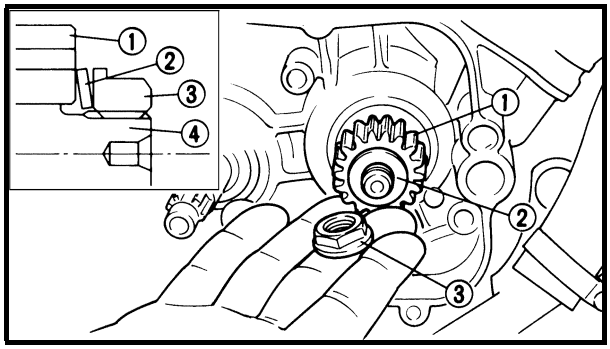
NOTE:

- Apply the transmission oil on the kick idle gear inner circumference.
- Install the kick idle gear with its groove ⓐ facing the engine.



INSTALLING THE PRIMARY DRIVE GEAR

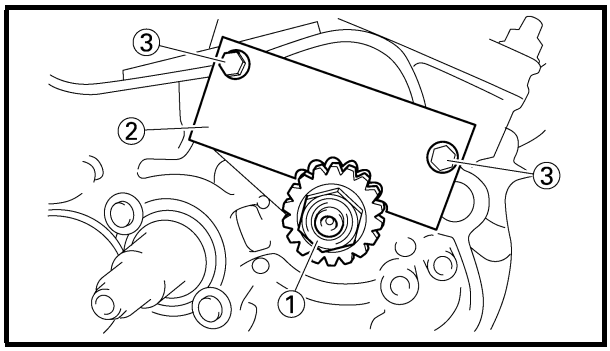
1. Install:
   • straight key ①



2. Install:
   • primary drive gear ①
   • washer ②
   • primary drive gear nut ③

NOTE:

Install the conical washer to the crankshaft ④ as shown in the illustration.



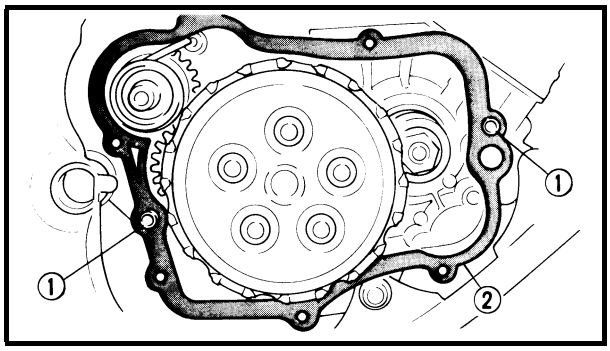
3. Tighten:
   • primary drive gear nut ①

79 Nm (7.9 m•kg, 57 ft•lb)

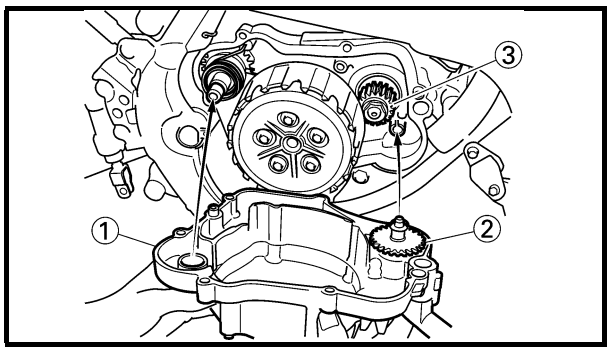
	Drive gear holder **90890-01495, YM-01495**

NOTE:

Hold the drive gear holder ② onto the crankcase using the M6 bolts ③.



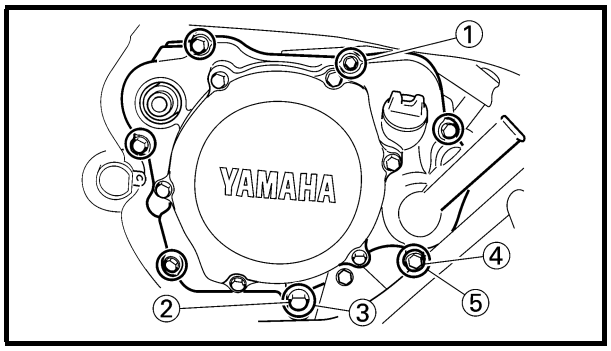
4. Install:
   • primary driven gear
   Refer to “CLUTCH”.
5. Install:
   • dowel pin ①
   • gasket (right crankcase cover) ② New



6. Install:
   • right crankcase cover ①

NOTE:

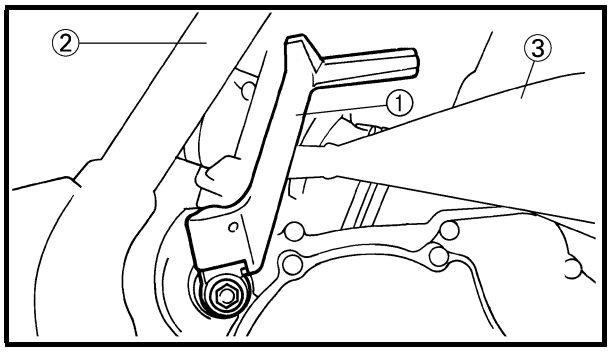
Mesh the impeller shaft gear ② with primary drive gear ③.



7. Install:
   - bolt (right crankcase cover) ①
     10 Nm (1.0 m•kg, 7.2 ft•lb)
   - copper washer (oil drain bolt) ② New
   - oil drain bolt ③
     10 Nm (1.0 m•kg, 7.2 ft•lb)
   - copper washer (coolant drain bolt) ④ New
   - coolant drain bolt ⑤
     10 Nm (1.0 m•kg, 7.2 ft•lb)

NOTE:

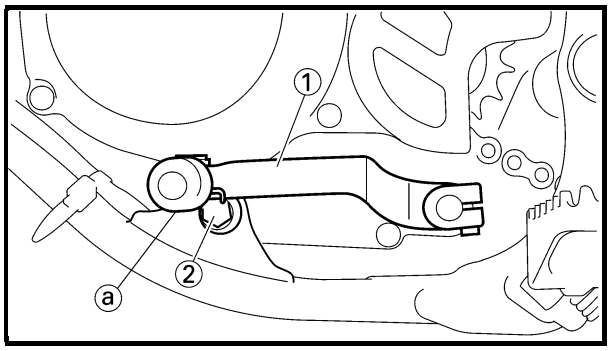
Tighten the bolts in stage, using a crisscross pattern.



8. Install:
   - kick starter crank ①
     10 Nm (1.0 m•kg, 7.2 ft•lb)

NOTE:

Install the kick starter crank closest to but not contacting the pillar tube ② and exhaust pipe ③.



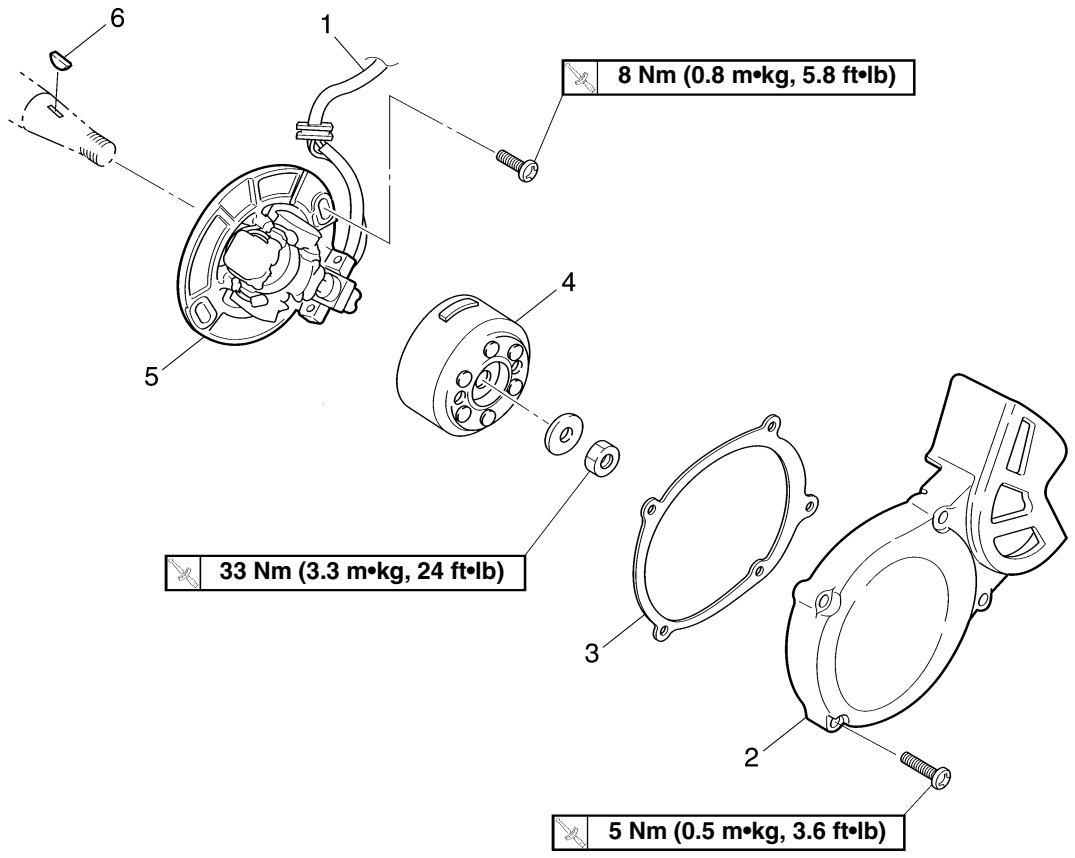
9. Install:
   - shift pedal ① **10 Nm (1.0 m•kg, 7.2 ft•lb)**

NOTE:

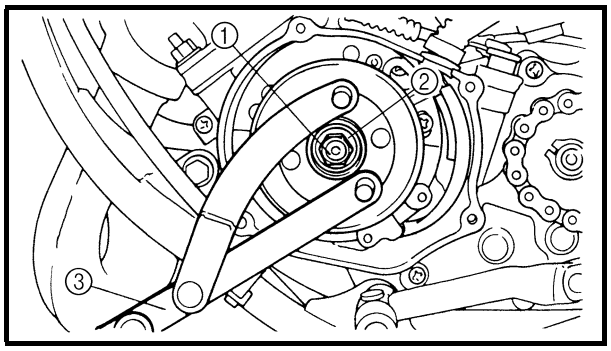
Install the shift pedal with the bottom of the pedal outer diameter ⓐ as close to the center of the engine mounting bolt ② as possible.

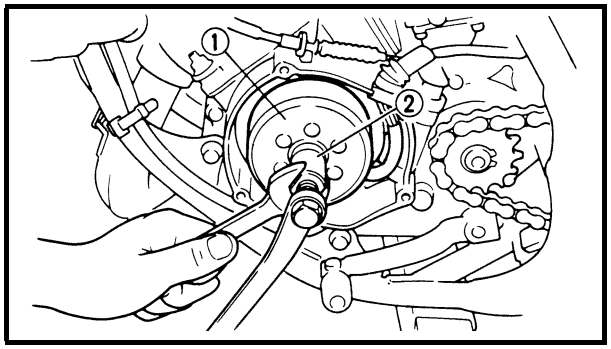
EAS00343

CDI MAGNETO



Order	Job/Part	Q'ty	Remarks
	Removing the CDI magneto		Remove the parts in the order listed.
	Seat		
	Fuel tank		
1	CDI magneto lead	1	Disconnect.
2	Left crankcase cover	1	
3	Left crankcase cover gasket	1	
4	Rotor	1	
5	Stator	1	
6	Woodruff key	1	
			For installation, reverse the removal procedure.





EAS00346
REMOVING THE ROTOR
1. Remove:
   • nut ①
   • washer ②

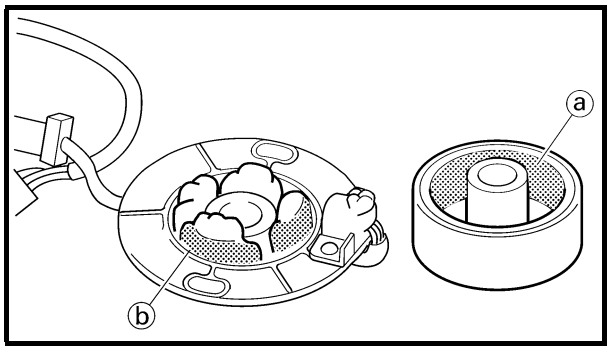
NOTE:
While holding the rotor with the rotor holding tool ③, loosen the rotor nut.

	Rotor holding tool **90890-01235, YU-1325**

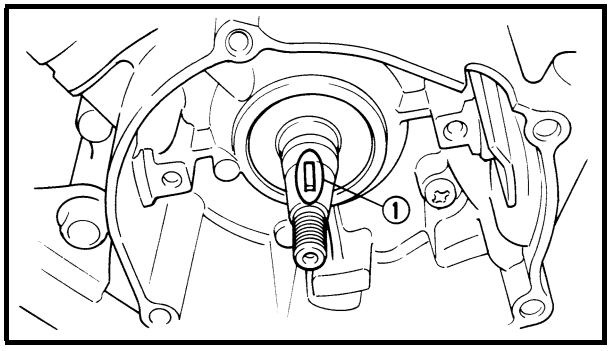
2. Remove:
   • rotor ①
   (with the flywheel puller ②)
   • woodruff key

	Flywheel puller **90890-01189, YM-1189**

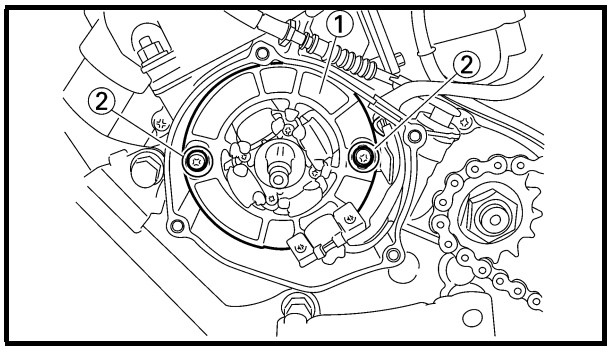
NOTE:
When installing the flywheel puller, turn it counterclockwise.



CHECKING THE CDI MAGNETO
1. Check:
   • rotor inner surface ⓐ
   • stator outer surface ⓑ
   Damage → Inspect the crankshaft runout and crankshaft bearing.
   If necessary, replace CDI magneto and/or stator.



CHECKING THE WOODRUFF KEY
1. Check:
   • woodruff key ①
   Damage → Replace.

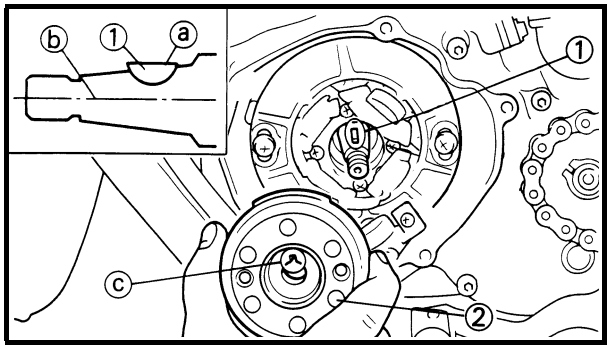


INSTALLING THE CDI MAGNETO

1. Install:
   - stator ①
   - screw ②

NOTE:

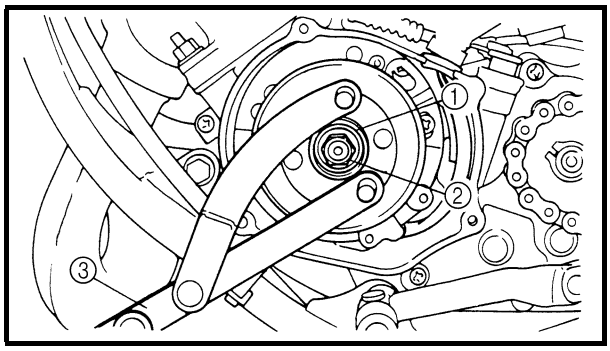
Temporarily tighten the screw at this point.



2. Install:
   - woodruff key ①
   - rotor ②

NOTE:

- Clean the tapered portions of the crankshaft and rotor.
- When installing the woodruff key, make sure that its flat surface ⓐ is in parallel with the crankshaft center line ⓑ.
- When installing the rotor, align the keyway ⓒ of the rotor with the woodruff key.



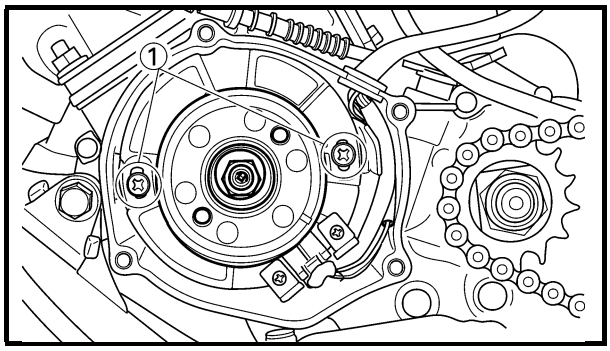
3. Install:
   - washer ①
   - nut ② **33 Nm (3.3 m•kg, 24 ft•lb)**
     (with the rotor holding tool ③)

	Rotor holding tool **90890-01235, YU-1325**

4. Adjust:
   - ignition timing

	Ignition timing (B.T.D.C.) **0.9 mm (0.035 in)**

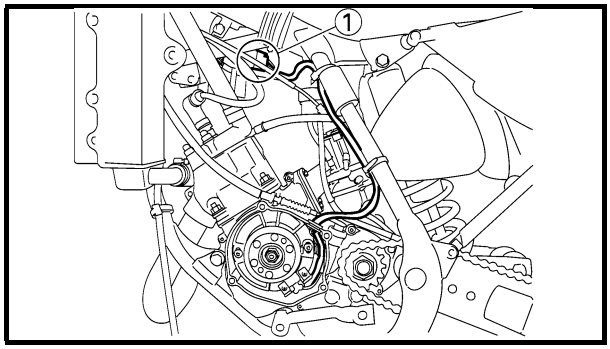
Refer to “CHECKING THE IGNITION TIMING” in chapter 3.



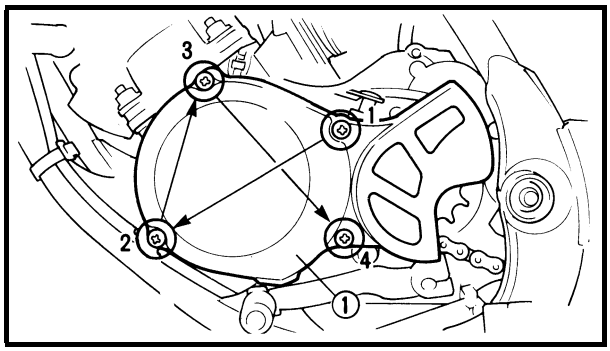
5. Tighten:
   • screw (stator) ①

8 Nm (0.8 m•kg, 5.8 ft•lb)

6. Check:
   • ignition timing
   Re-check the ignition timing.



7. Connect:
   • CDI magneto lead ①
   Refer to “CABLE ROUTING” in chapter 2.



8. Install:
   • gasket (left crankcase cover) New
   • left crankcase cover ①

5 Nm (0.5 m•kg, 3.6 ft•lb)

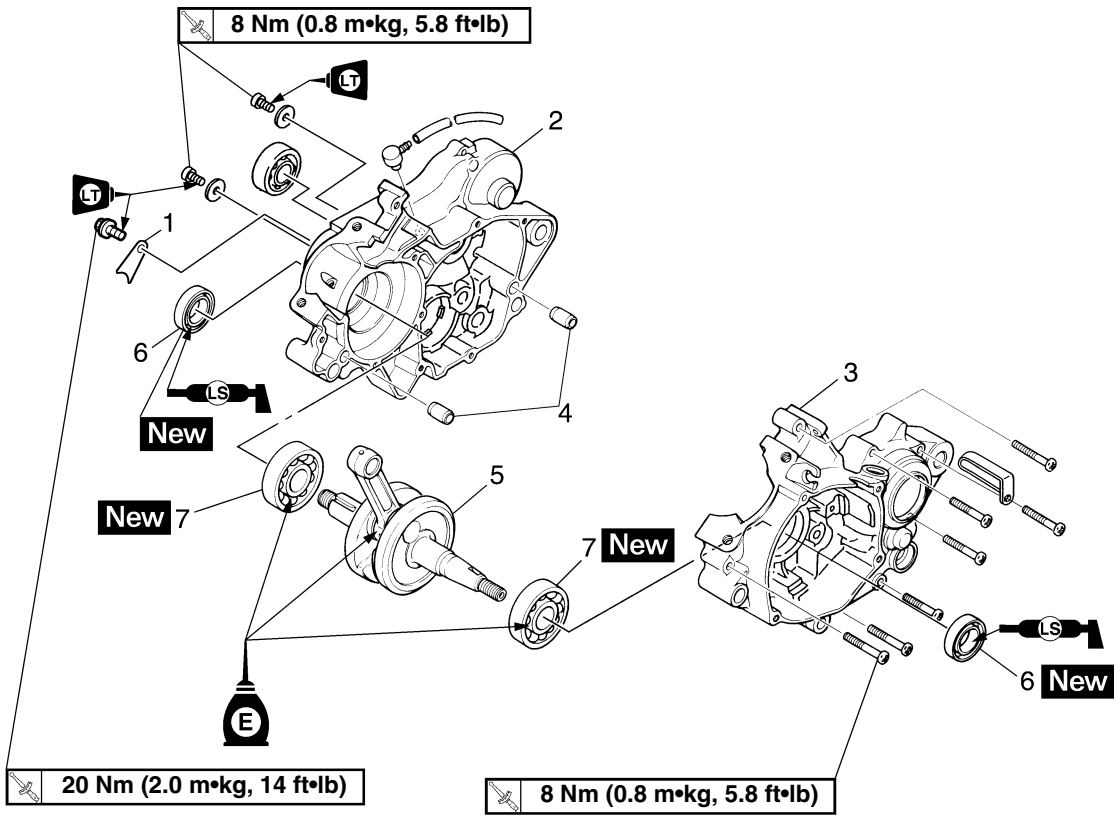
NOTE:

Tighten the screws in stage, using a crisscross pattern.

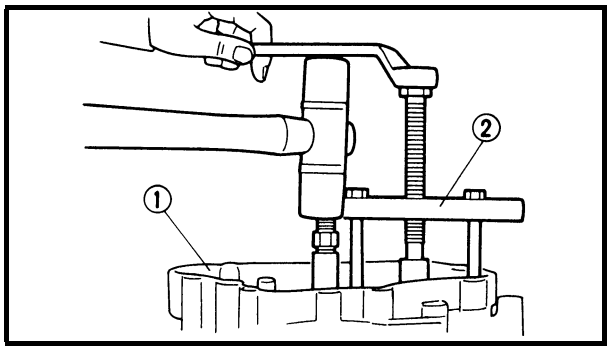
EAS00381

CRANKCASE AND CRANKSHAFT

CRANKCASE AND CRANKSHAFT



Order	Job/Part	Q'ty	Remarks
	Removing the crankcase and crankshaft		Remove the parts in the order listed.
	Engine		Refer to "ENGINE".
	Piston		Refer to "CYLINDER AND PISTON".
	Primary drive gear		Refer to "CLUTCH".
	Kick idle gear		Refer to "KICK STARTER AND SHIFT SHAFT".
	Stopper lever		
	Rotor and stator		Refer to "CDI MAGNETO".
1	Crank case oil seal holder	1	
2	Right crankcase	1	
3	Left crankcase	1	
4	Dowel pin	2	
5	Crankshaft	1	
6	Oil seal	2	
7	Bearing	2	
			For installation, reverse the removal procedure.



EAS00385
DISSASSEMBLING THE CRANKCASE

1. Remove:
   • right crankcase ①
   (with the crankcase separating tool ②)

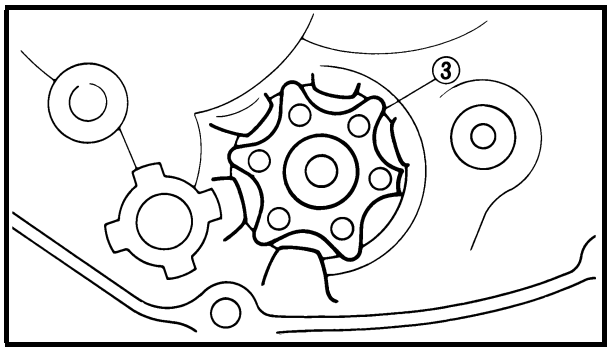
	Crankcase separating tool 90890-01135, YU-1135-A

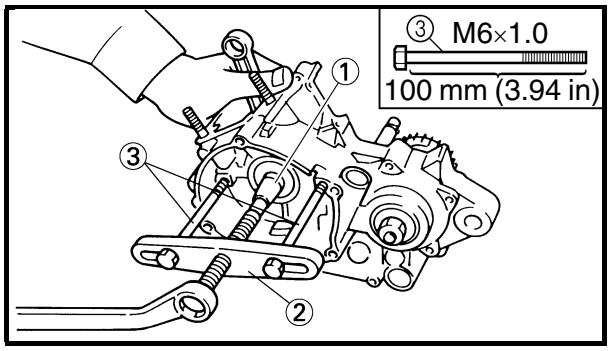
NOTE:

- Fully tighten the tool holding bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.
- As pressure is applied, alternately tap on the front engine mounting boss and transmission shafts.

CAUTION:

- **Turn the segment ③ to the position shown in the figure so that it does not contact the crankcase.**
- **Use soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end "hangs up", take pressure off the push screw, realign, and start over. If the cases do not separate, check for a remaining case screw or fitting. Do not force.**





EAS00388
REMOVING THE CRANKSHAFT ASSEMBLY

1. Remove:
   • crankshaft ①
   (with the crankcase separating tool ②)

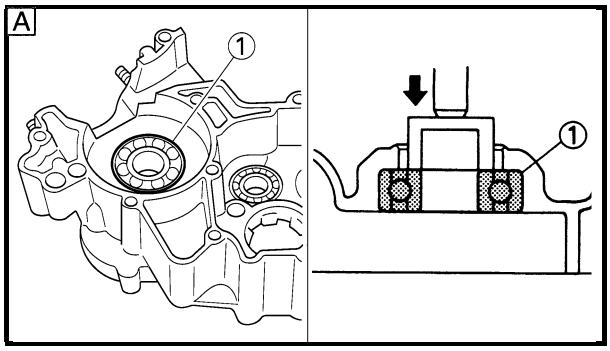
	Crankcase separating tool 90890-01135, YU-1135-A

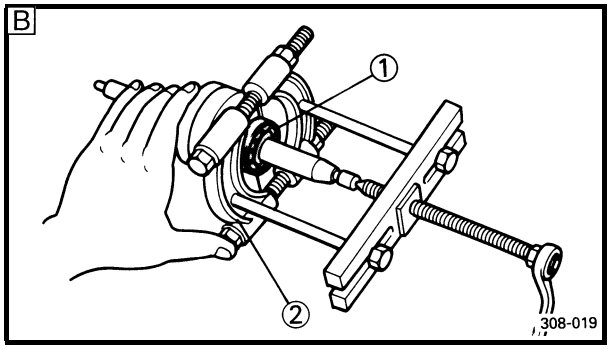
NOTE:

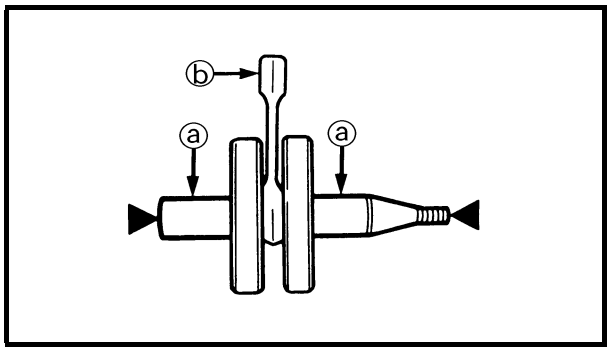
Make appropriate bolts ③ as shown available by yourself and attach the tool with them.

CAUTION:

Do not use a hammer to drive out the crankshaft.







REMOVING THE CRANKSHAFT BEARING

1. Remove:
   • bearing ①

NOTE:

- Remove the bearing from the crankcase by pressing its inner race as shown in A.
- If the bearing is removed together with the crankshaft, remove the bearing using a general bearing puller ② as shown in B.

CAUTION:

Do not use the removed bearing.

EAS00394

CHECKING THE CRANKSHAFT AND CONNECTING ROD

1. Measure:
   • crankshaft runout ⓐ
   Out of specification → Replace the crankshaft, bearing or both.

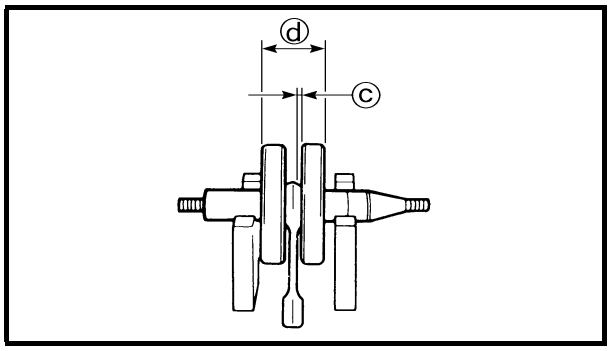
NOTE:

Turn the crankshaft slowly.

Maximum crankshaft runout
0.08 mm (0.003 in)

2. Measure:
   • small end free play ⓑ
   Out of specification → Replace the small end bearing or piston pin.

Maximum small end free play
2.0 mm (0.08 in)

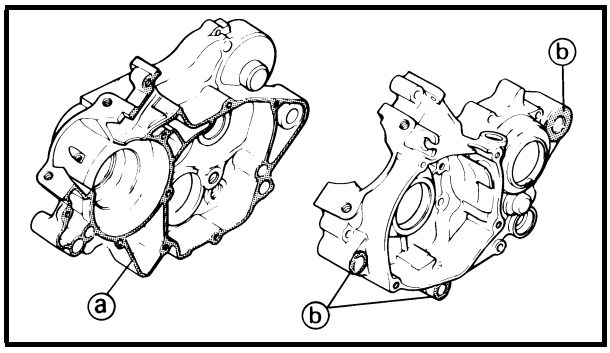


3. Measure:
   • big end side clearance ⓒ
   Out of specification → Replace the big end bearing, crankshaft pin, or connecting rod.

Big end side clearance
0.20 ~ 0.70 mm (0.008 ~ 0.028 in)

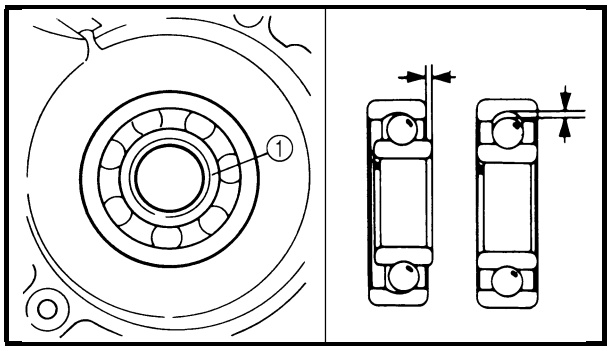
4. Measure:
   • crankshaft width ⓓ
   Out of specification → Replace the crankshaft.

Crankshaft width
44.90 ~ 44.95 mm
(1.768 ~ 1.770 in)



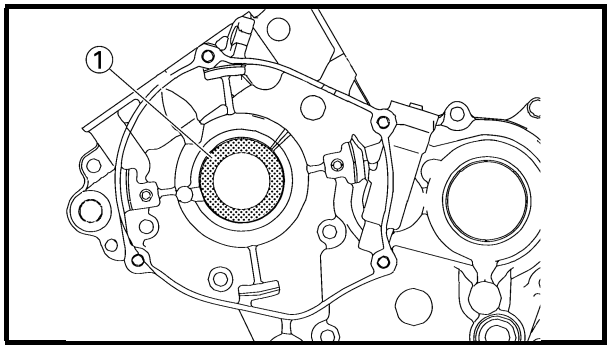
EAS00399
CHECKING THE CRANKCASE

1. Check:
   • contacting surface ⓐ
   Scratches → Replace.
   • engine mounting boss ⓑ, crankcase
   Cracks/damage → Replace.

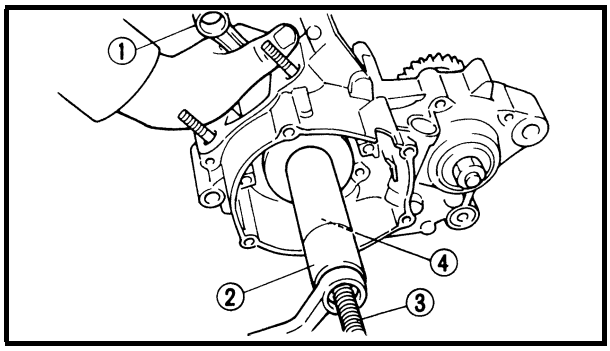


EAS00401
CHECKING THE BEARINGS AND OIL SEALS

1. Check:
   • bearings ①
   Clean and lubricate the bearings, then rotate the inner race with your finger.
   Rough movement → Replace.



2. Check:
   • oil seals ①
   Damage/wear → Replace.



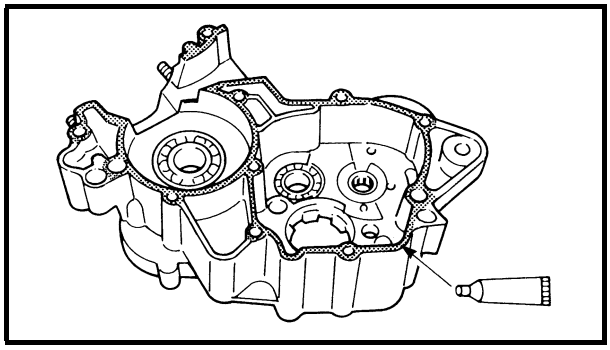
EAS00408
INSTALLING THE CRANKSHAFT
1. Install:
   • crankshaft assembly ①

NOTE:
• Install the crankshaft assembly with the crankshaft installer pot ②, crankshaft installer bolt ③, adapter (M10) ④.

Crankshaft installer pot
90890-01274, YU-90050
Crankshaft installer bolt
90890-01275, YU-90050
Adapter (M10)
90890-01277, YM-1277

CAUTION:
To avoid scratching the crankshaft and to ease the installation procedure, lubricate the oil seal lips with lithium-soap-based grease and each bearing with engine oil.

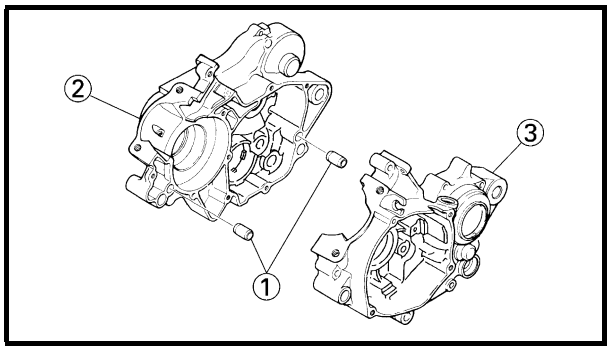
NOTE:
Hold the connecting rod at top dead center with one hand while turning the nut of the crankshaft installer bolt with the other. Turn the crankshaft installer bolt until the crankshaft assembly bottoms against the bearing.



EAS00416
ASSEMBLING THE CRANKCASE
1. Apply:
   • sealant
   (onto the crankcase mating surfaces)

Yamaha bond No. 1215
(Three Bond No. 1215®)
90890-85505

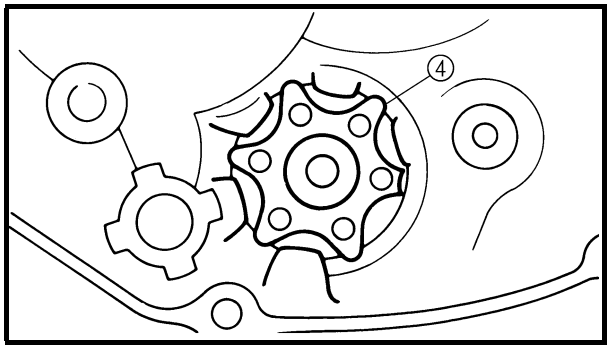
NOTE:
Do not allow any sealant to come into contact with the oil gallery.

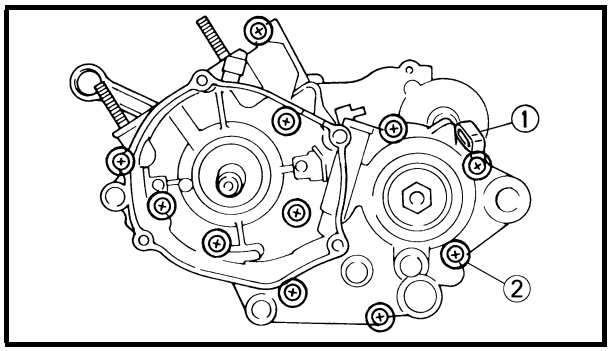


2. Install:
   • dowel pin ①
   • right crankcase ②
   (onto the left crankcase ③)

NOTE:

- Turn the shift cam ④ to the position shown in the figure so that it does not contact the crankcase when installing the crankcase.
- Fit the right crankcase onto the left crankcase. Tap lightly on the case with soft hammer.
- When installing the crankcase, the connecting rod should be positioned at TDC.



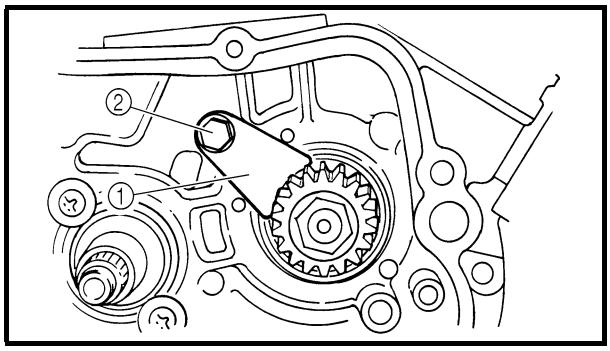


3. Install:
   • clamp ①
   • screw ②

8 Nm (0.8 m•kg, 5.8 ft•lb)

NOTE:

Tighten the crankcase tightening screws in stage, using a crisscross pattern.



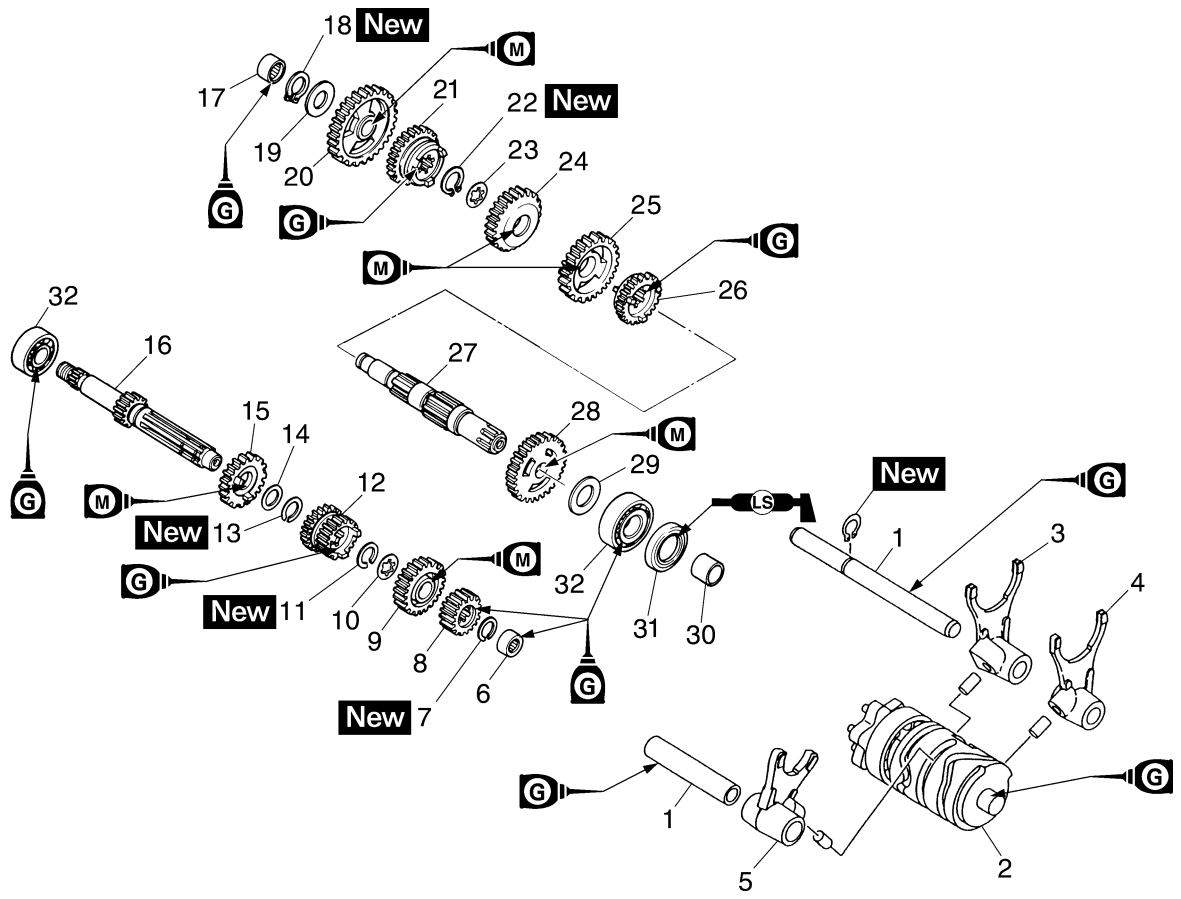
4. Install:
   • crankcase oil seal holder ①
   • bolt ②

20 Nm (2.0 m•kg, 14 ft•lb)
LOCTITE®

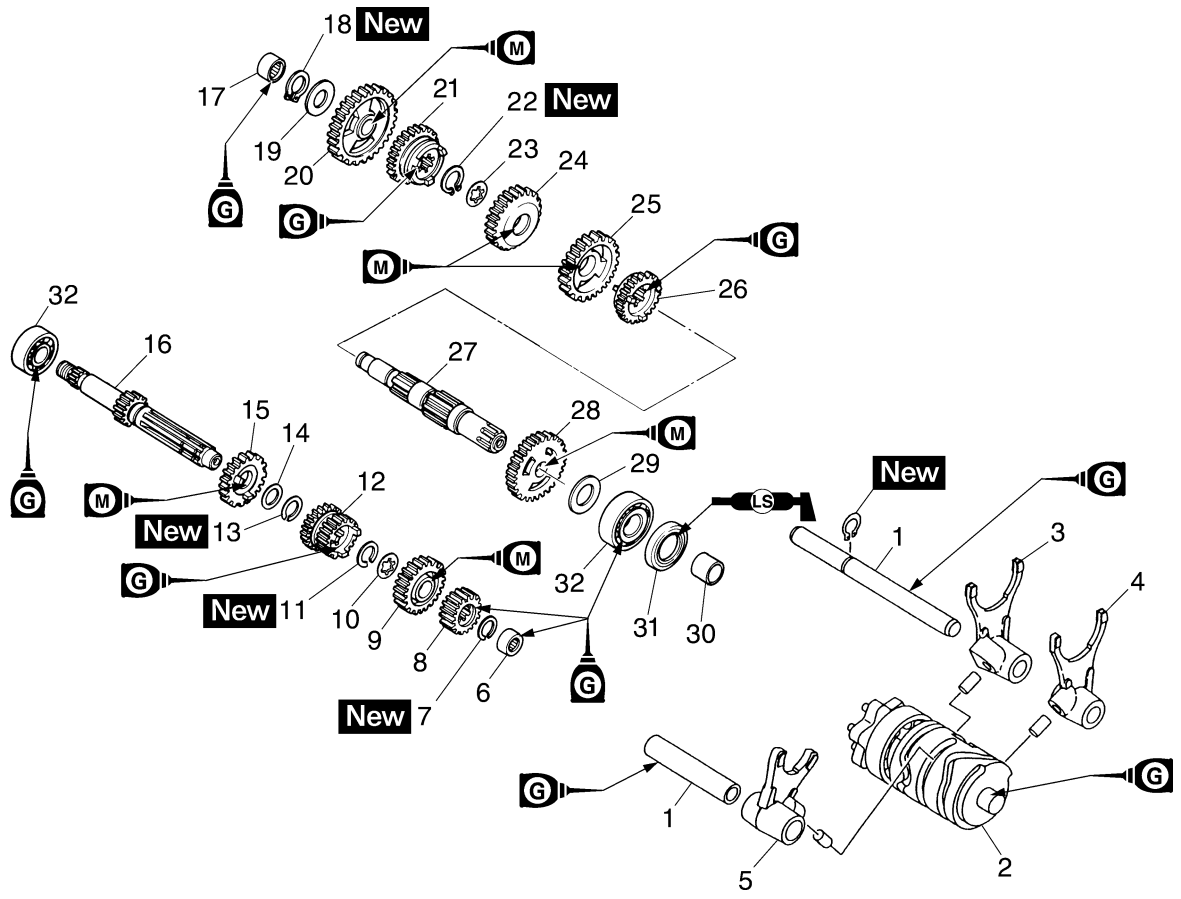
5. Remove:
   • sealant
   • forced out on the cylinder mating surface.
6. Apply:
   • Transmission oil
   To the crank pin, bearing, oil delivery hole and connecting rod end washer.
7. Check:
   • crankshaft and transmission operation
   Unsmooth operation → Repair.

EAS00419

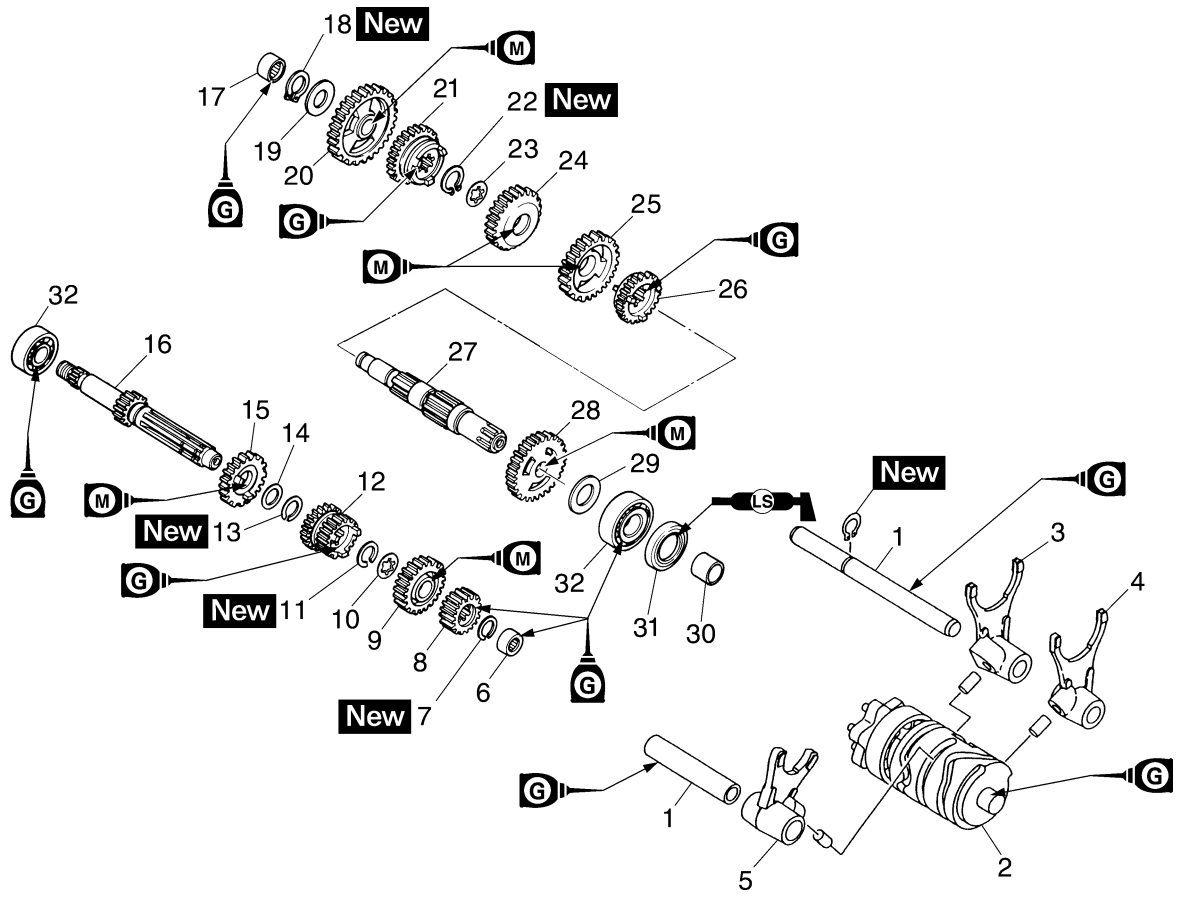
TRANSMISSION



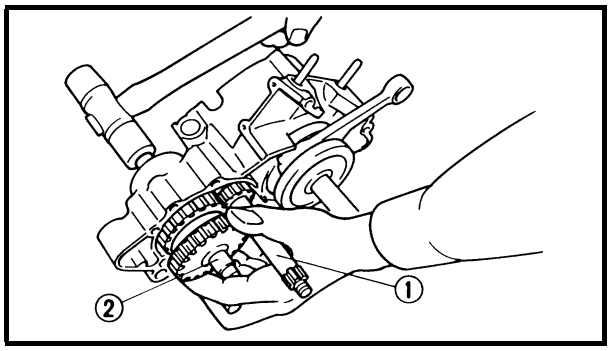
Order	Job/Part	Q'ty	Remarks
	Removing the transmission		Remove the parts in the order listed.
	Engine		Refer to "ENGINE".
	Crankcase		Separate. Refer to "CRANKCASE AND CRANKSHAFT".
1	Shift fork guide bar	2	
2	Shift drum	1	
3	Shift fork-R	1	
4	Shift fork-L	1	
5	Shift fork-C	1	
6	Bearing	1	
7	Circlip	1	
8	2ND pinion gear	1	
9	6TH pinion gear	1	
10	Washer	1	
11	Circlip	1	



Order	Job/Part	Q'ty	Remarks
12	3RD pinion gear	1	
13	Circlip	1	
14	Washer	1	
15	5TH pinion gear	1	
16	Main axle	1	
17	Bearing	1	
18	Circlip	1	
19	Washer	1	
20	1ST wheel gear	1	
21	5TH wheel gear	1	
22	Circlip	1	
23	Washer	1	
24	4TH wheel gear	1	
25	3RD wheel gear	1	
26	6TH wheel gear	1	
27	Drive axle	1	

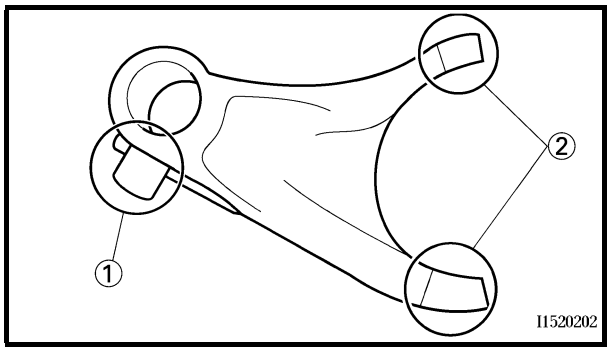


Order	Job/Part	Q'ty	Remarks
28	2ND wheel gear	1	
29	Washer	1	
30	Bearing	1	
31	Oil seal	1	
32	Bearing	2	
			For installation, reverse the removal procedure.

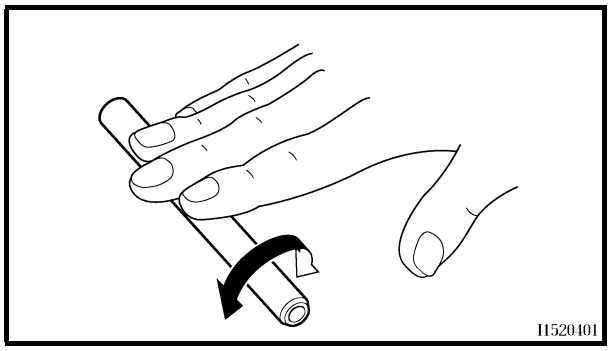


EAS00420
REMOVING THE TRANSMISSION
1. Remove:
   • right crankcase
   Refer to “CRANKCASE AND CRANKSHAFT”.
2. Remove:
   • main axle ①
   • drive axle ②

NOTE:
- Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.
- Remove the main axle and drive axle by tapping lightly on the transmission drive axle with a soft hammer.



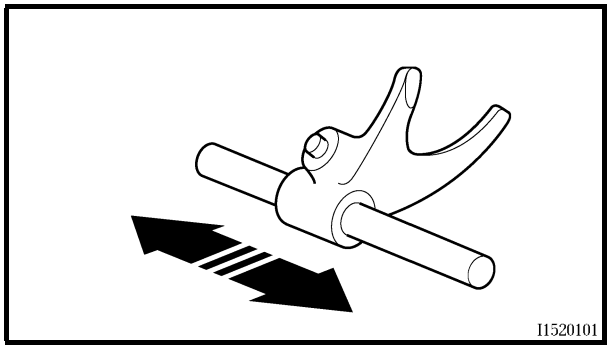
AS00421
CHECKING THE SHIFT FORKS
The following procedure applies to all of the shift forks.
1. Check:
   • shift fork pin ①
   • shift fork cam follower ②
   Bends/damage/scoring/wear → Replace the shift fork.



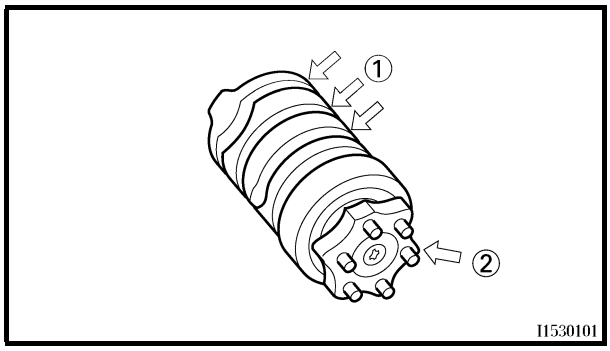
2. Check:
   • shift fork guide bar
   Roll the shift fork guide bar on a flat surface.
   Bends → Replace.

⚠ WARNING

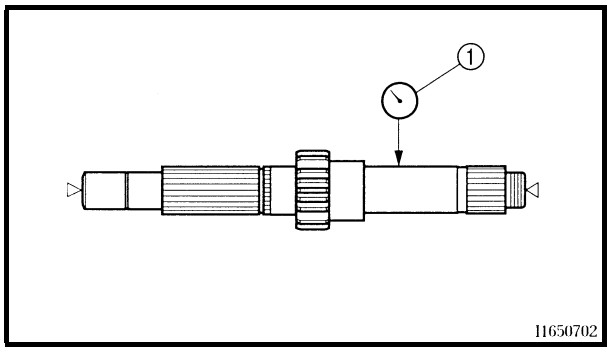
Do not attempt to straighten a bent shift fork guide bar.

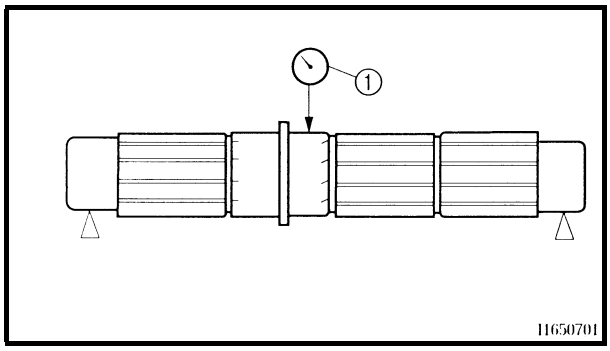


3. Check:
   • shift fork movement
   (along the shift fork guide bar)
   Rough movement → Replace the shift forks and shift fork guide bar as a set.



EAS00422
CHECKING THE SHIFT DRUM ASSEMBLY
1. Check:
   - shift drum grooves
     Damage/scratches/wear → Replace the shift drum assembly.
   - shift drum segment ①
     Damage/wear → Replace the shift drum assembly.
   - shift drum bearing ②
     Damage/pitting → Replace the shift drum assembly.



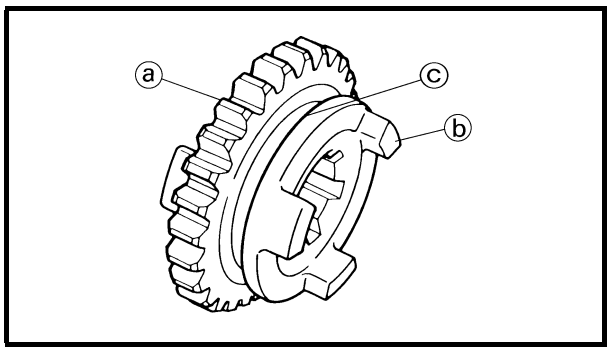


EAS00423
CHECKING THE TRANSMISSION
1. Measure:
   - main axle runout
     (with a centering device and dial gauge ①)
     Out of specification → Replace the main axle.

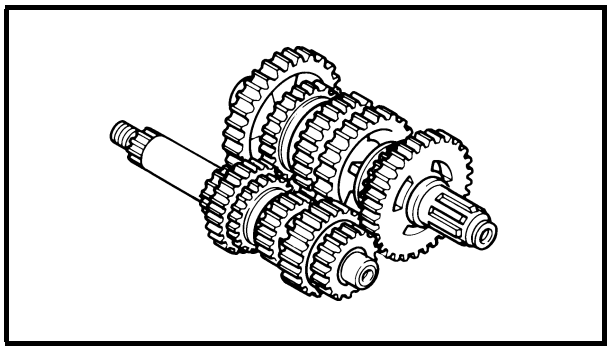
Main axle runout limit
0.01 mm (0.0004 in)

2. Measure:
   - drive axle runout
     (with a centering device and dial gauge ①)
     Out of specification → Replace the drive axle.

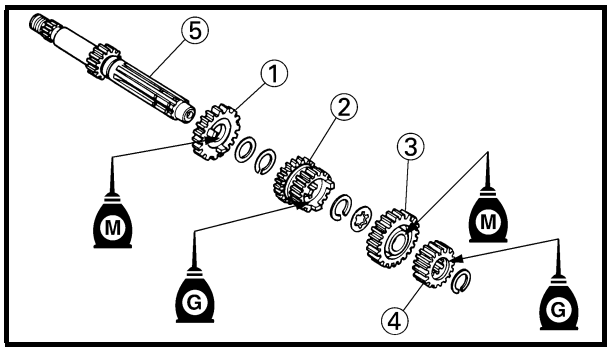
Drive axle runout limit
0.01 mm (0.0004 in)



3. Check:
   - transmission gears ⓐ
     Blue discoloration/pitting/wear → Replace the defective gear(s).
   - transmission gear dogs ⓑ
     Cracks/damage/rounded edges → Replace the defective gear(s).
   - transmission shift fork groove ⓒ
     Wear/damage → Replace.



4. Check:
   • transmission gear engagement
   (each pinion gear to its respective wheel gear)
   Incorrect → Reassemble the transmission axle assemblies.
5. Check:
   • transmission gear movement
   Rough movement → Replace the defective part(s).
6. Check:
   • circlips
   Bends/damage/looseness → Replace.



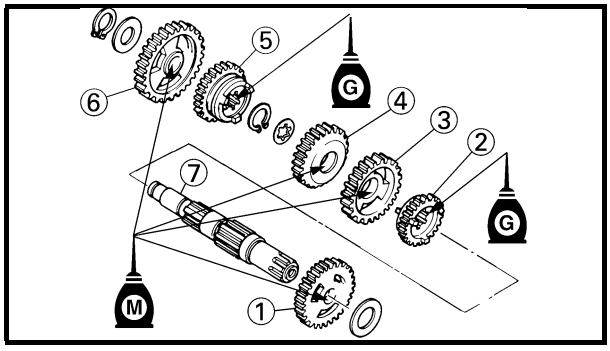
INSTALLING THE TRANSMISSION

1. Install:
   • 5TH pinion gear ①
   • 3RD/4TH pinion gear ②
   • 6TH pinion gear ③
   • 2ND pinion gear ④
   (onto the main axle ⑤)

NOTE:

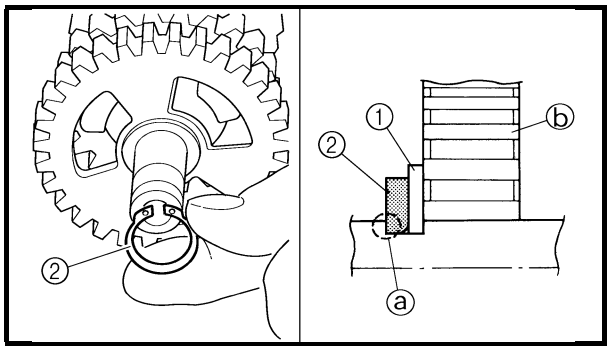
- Apply the molybdenum disulfide oil on the 5TH and 6TH pinion gears inner circumference and on the end surface.
- Apply the transmission oil on the 3RD/4TH and 2ND pinion gears inner circumference.

2. Install:
   • 2ND wheel gear ①
   • 6TH wheel gear ②
   • 3RD wheel gear ③
   • 4TH wheel gear ④
   • 5TH wheel gear ⑤
   • 1ST wheel gear ⑥
   (onto the drive axle ⑦)



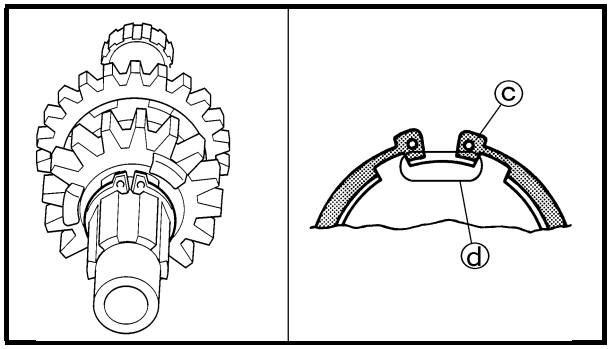
NOTE:

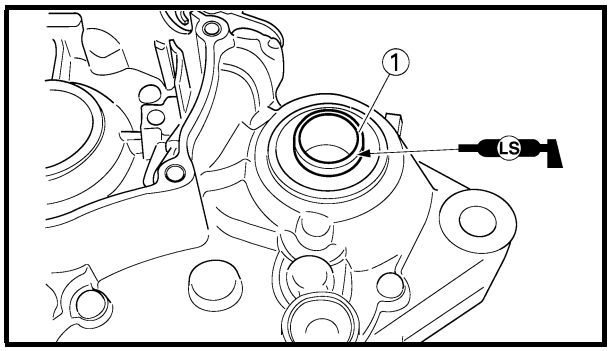
- Apply the molybdenum disulfide oil on the 1ST, 2ND, 3RD and 4TH wheel gears inner circumference and on the end surface.
- Apply the transmission oil on the 5TH and 6TH wheel gears inner circumference.



3. Install:
   • washer ①
   • circlip ② New

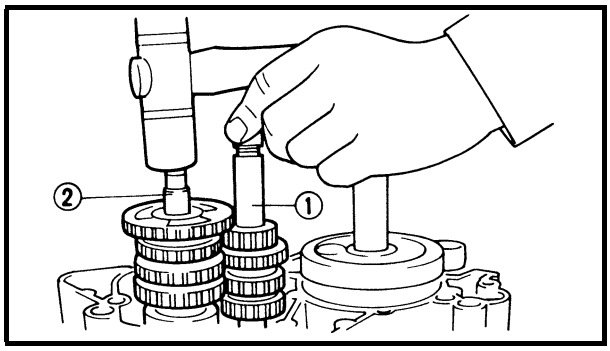
NOTE:
- Be sure the circlip sharp-edged corner ⓐ is positioned opposite side to the washer and gear ⓑ.
- Be sure the circlip end ⓒ is positioned at axle spline groove ⓓ.



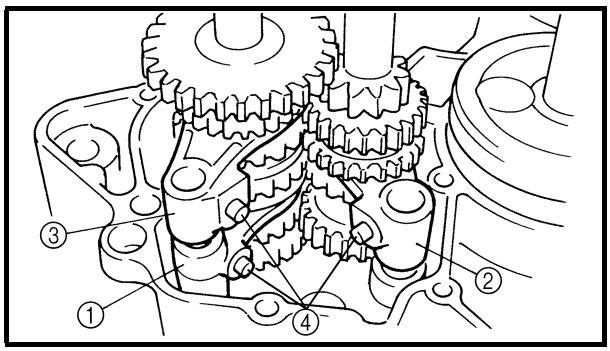


4. Install:
   • collar ①

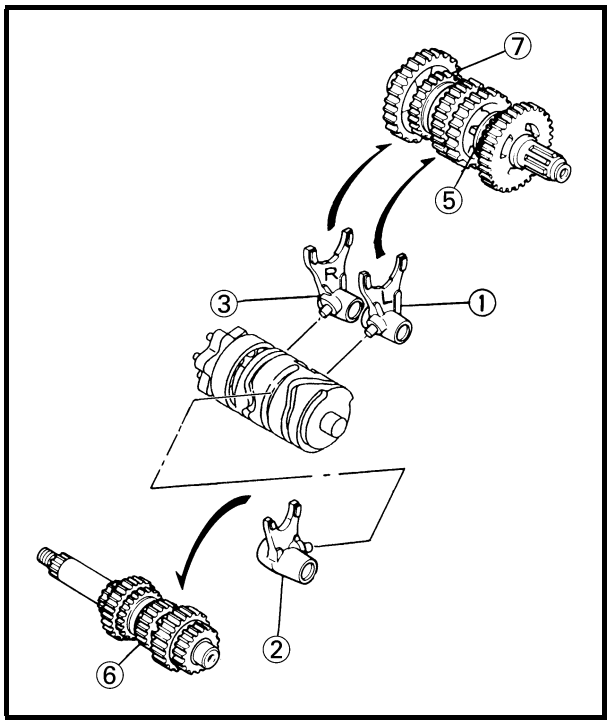
NOTE:
- Apply the lithium soap base grease on the oil seal lip.
- When installing the collar into the crankcase, pay careful attention to the crankcase oil seal lip.



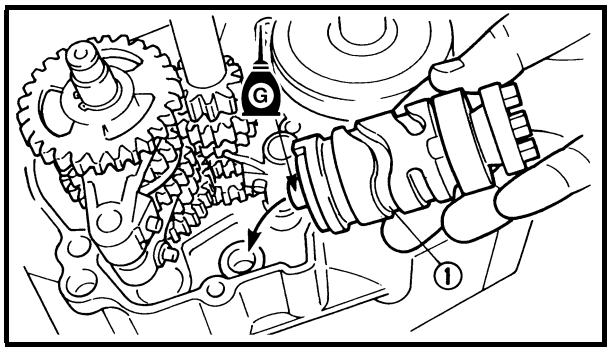
5. Install:
   • main axle ①
   • drive axle ②



6. Install:
   • shift fork-L ①
   • shift fork-C ②
   • shift fork-R ③
   • shift fork pin ④

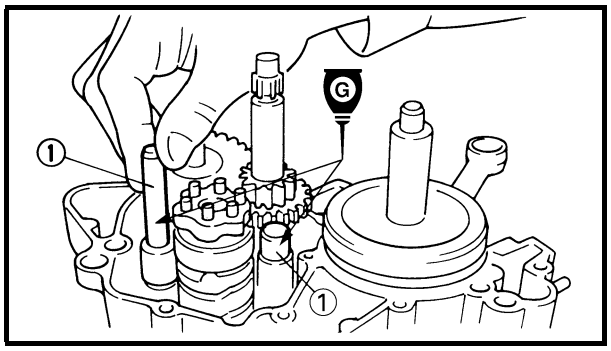


NOTE:
- Mesh the shift fork-L ① with the 6th wheel gear ⑤ and shift fork-R ③ with the 5TH wheel gear ⑦ on the drive axle.
- Mesh the shift fork-C ② with the 3RD/4TH pinion gear ⑥ on the main axle.



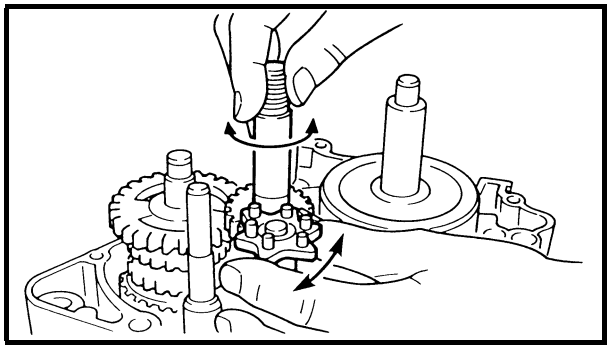
7. Install:
   - shift cam ①

NOTE:
Apply the transmission oil on the shift cam.



8. Install:
   - shift fork guide bar ①

NOTE:
- Apply the transmission oil on the guide bars.
- Be sure the long bar is inserted into the shift fork-L and shift fork-R and the short one into shift fork-C.



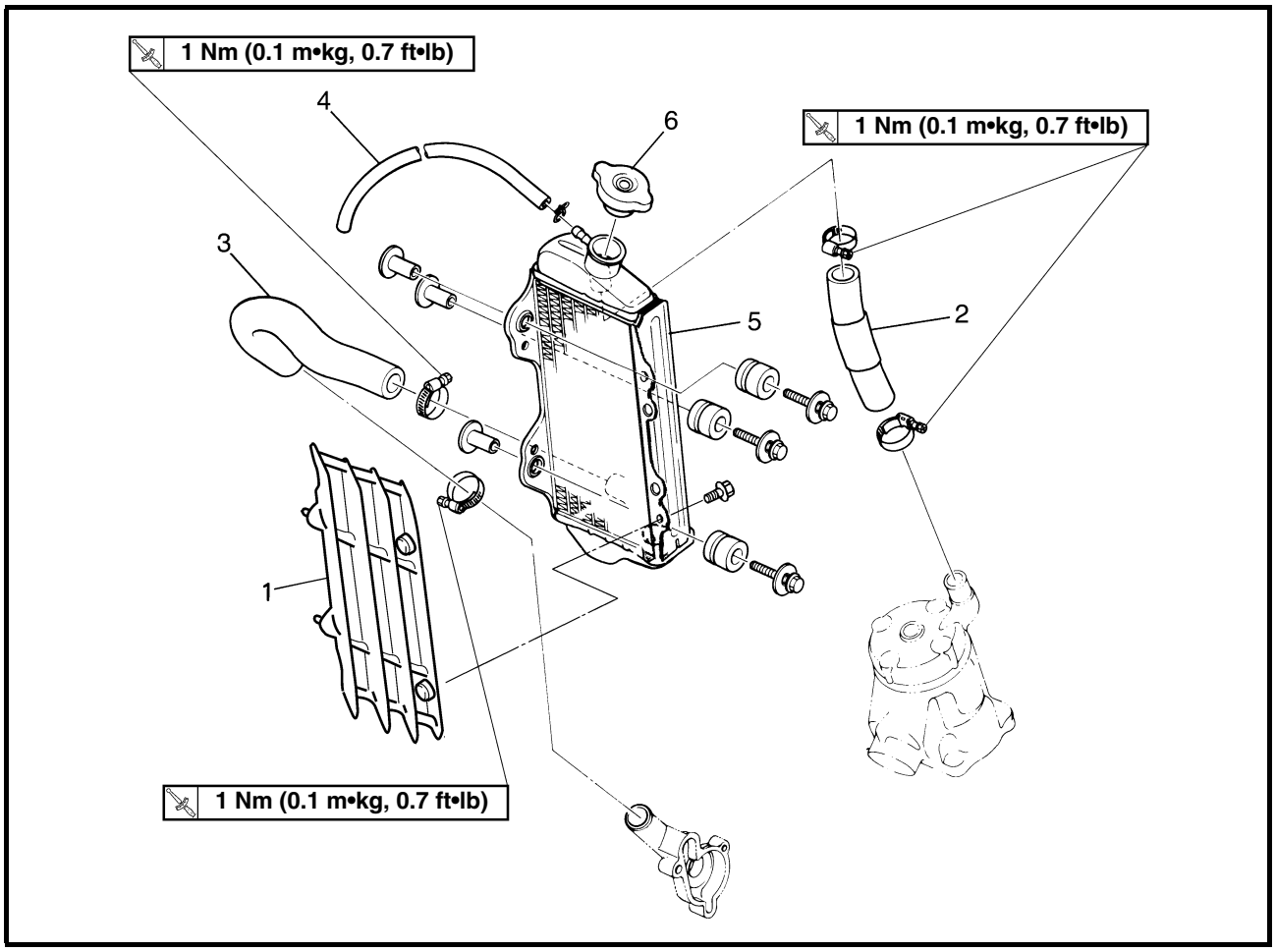
9. Check:
   - shifter operation
   - transmission operation

CHAPTER 6
COOLING SYSTEM

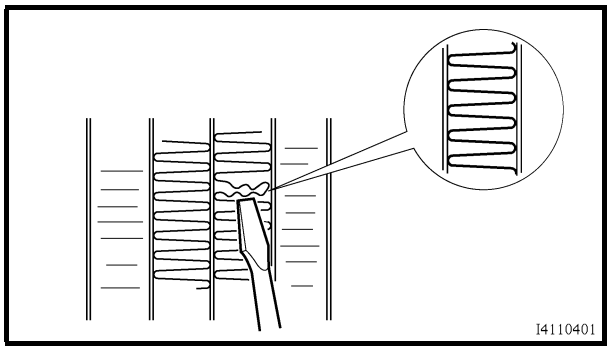
EAS00454

COOLING SYSTEM

RADIATOR



Order	Job/Part	Q'ty	Remarks
	Removing the radiator		Remove the parts in the order listed.
	Air scoop		Refer to "SEAT, SIDECOVERS AND FUEL TANK" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Radiator guard	1	
2	Radiator inlet hose	1	
3	Radiator outlet hose	1	
4	Radiator breather hose	1	
5	Radiator	1	
6	Radiator cap	1	
			For installation, reverse the removal procedure.



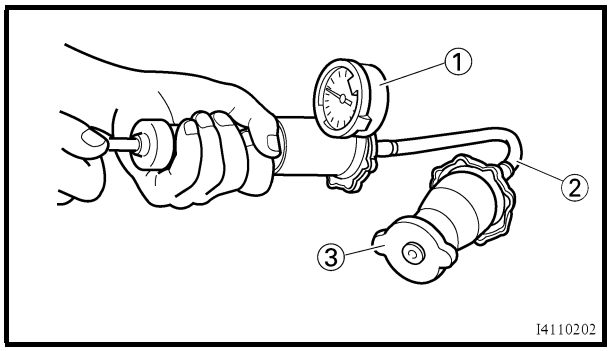
EAS00455
CHECKING THE RADIATOR

1. Check:
   • radiator fins
   Obstruction → Clean.
   Apply compressed air to the rear of the radiator.
   Damage → Repair or replace.

NOTE:

Straighten any flattened fins with a thin, flat-head screwdriver.

2. Check:
   • radiator hoses
   Cracks/damage → Replace.
3. Measure:
   • radiator cap opening pressure
   Below the specified pressure → Replace the radiator cap.



Radiator cap opening pressure
93 ~ 123 kPa
(0.93 ~ 1.23 kg/cm^2, 13.2 ~ 17.5 psi)

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a. Install the radiator cap tester ① and radiator cap tester adapter ② to the radiator cap ③.

Radiator cap tester
90890-01325, YU-24460-01
Radiator cap tester adapter
90890-01352, YU-33984

b. Apply the specified pressure for ten seconds and make sure there is no drop in pressure.

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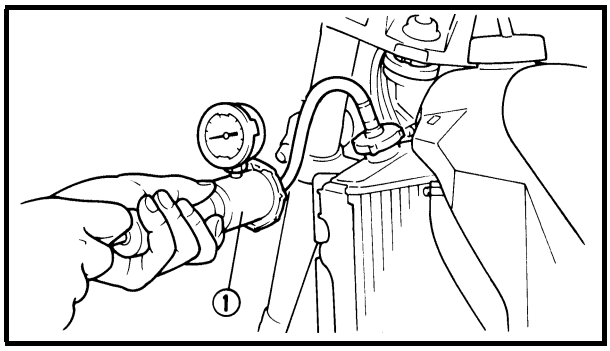
EAS00456
INSTALLING THE RADIATOR

1. Fill:
   • cooling system
   (with the specified amount of the recommended coolant)
   Refer to “CHANGING THE COOLANT” in chapter 3.



2. Check:
   • cooling system
   Leaks → Repair or replace any faulty part.

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a. Attach the radiator cap tester ① to the radiator.

Radiator cap tester
90890-01325, YU-24460-01
Radiator cap tester adapter
90890-01352, YU-33984

b. Apply 100 kPa (1.0 kg/cm^2, 14.22 psi) of pressure.
c. Measure the indicated pressure with the gauge.

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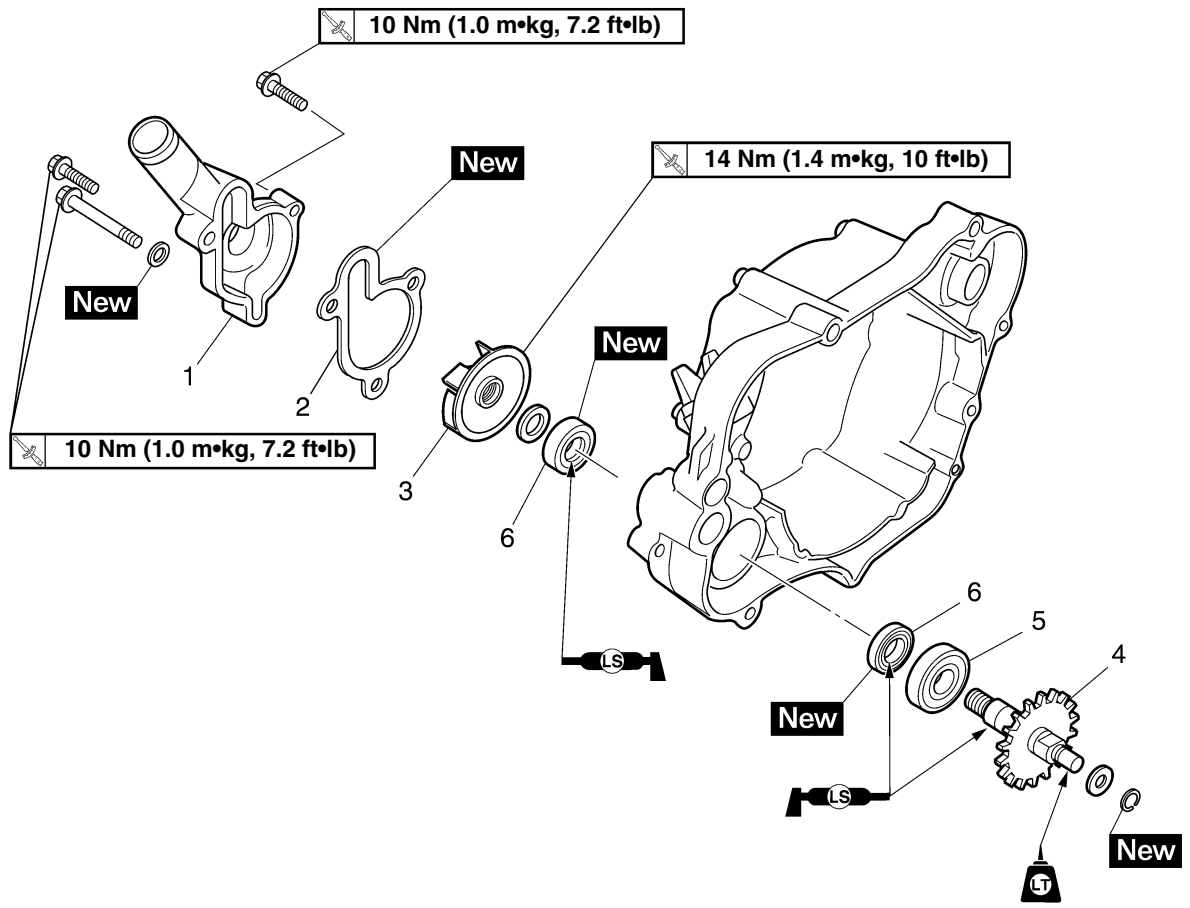
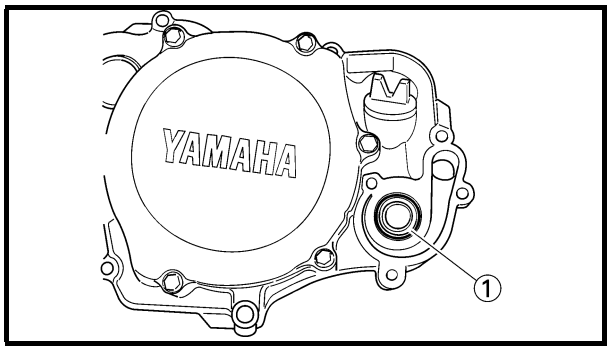
EAS00468

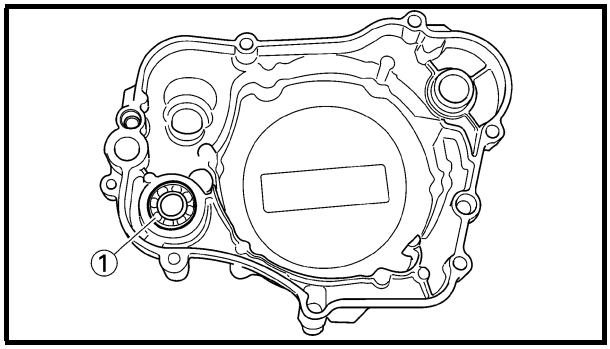
WATER PUMP



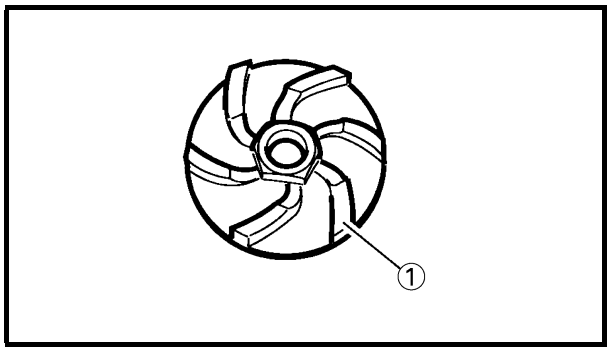
Order	Job/Part	Q'ty	Remarks
	Removing the water pump		Remove the parts in the order listed.
			NOTE: It is not necessary to remove the water pump unless the coolant level is extremely low or the coolant contains engine oil.
	Right crankcase cover		Refer to "PRIMARY DRIVE GEAR" in chapter 5.
1	Water pump housing	1	
2	Gasket	1	
3	Impeller	1	
4	Water pump impeller shaft	1	
5	Bearing	1	
6	Oil seal	2	
			For installation, reverse the removal procedure.



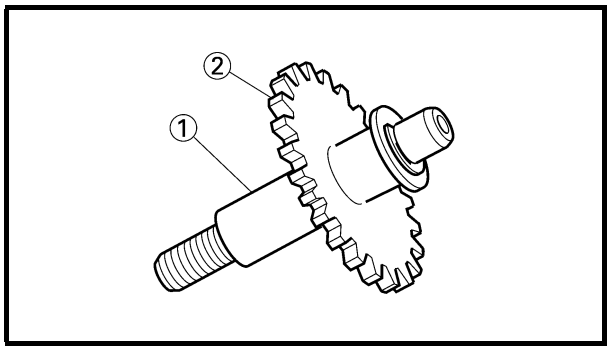
EAS00472
CHECKING THE WATER PUMP
1. Check:
   • oil seal ①
   Damage/wear → Replace.



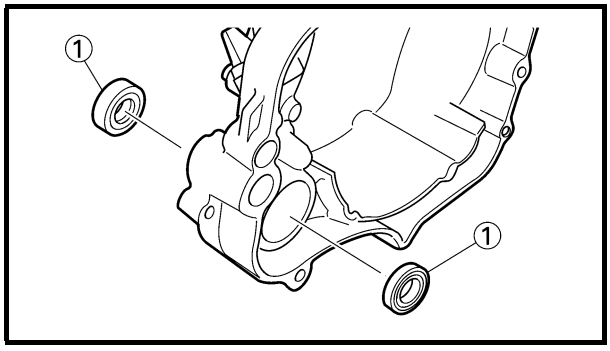
2. Check:
   • bearing ①
   Rough movement → Replace.



3. Check:
   • impeller ①
   Cracks/damage/wear → Replace.

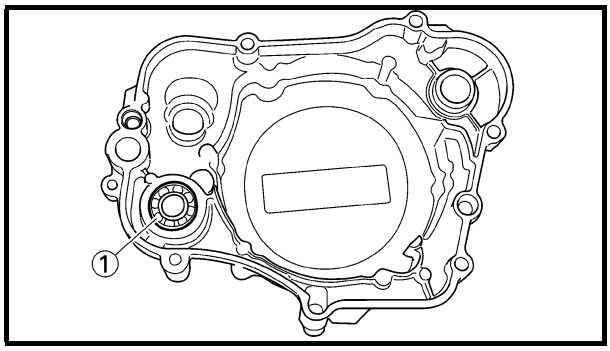


4. Check:
   • water pump impeller shaft ①
   Damage/wear → Replace.
   • water pump drive gear ②
   Damage/wear → Replace.



EAS00479
INSTALLING THE WATER PUMP
1. Install:
   • oil seal ① New

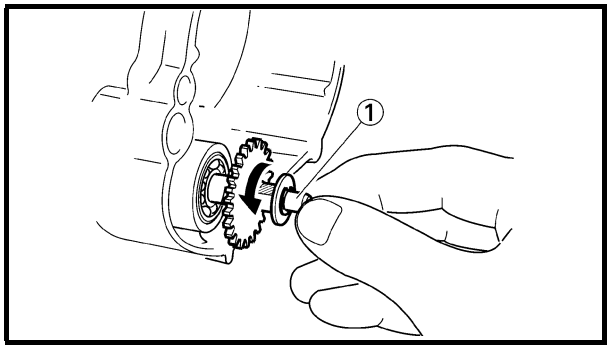
NOTE:
Lubricate the oil seal with a thin coat of lithium-soap-based grease.



2. Install:
   • bearing ①

NOTE:

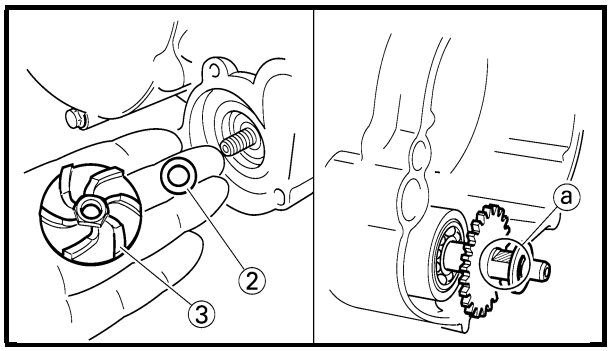
Install the bearing by pressing its outer race parallel.

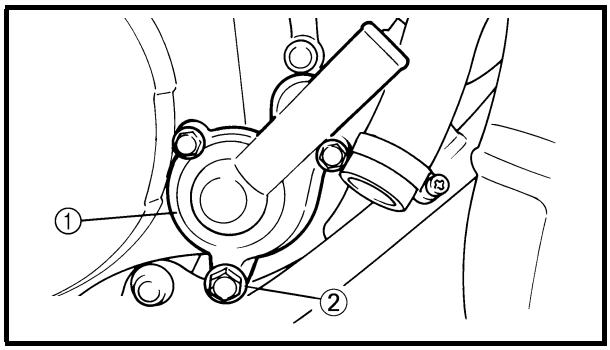


3. Install:
   • water pump impeller shaft ①
   • washer ②
   • impeller ③ **14 Nm (1.4 m•kg, 10 ft•lb)**

NOTE:

- Take care so that the oil seal lip is not damaged or the spring does not slip off its position.
- When installing the water pump impeller shaft, apply the lithium-soap-base grease on the oil seal lip and water pump impeller shaft. And install the shaft while turning it.
- Hold the impeller shaft on its width across the flats ⓐ with spanners, etc. and install the impeller.





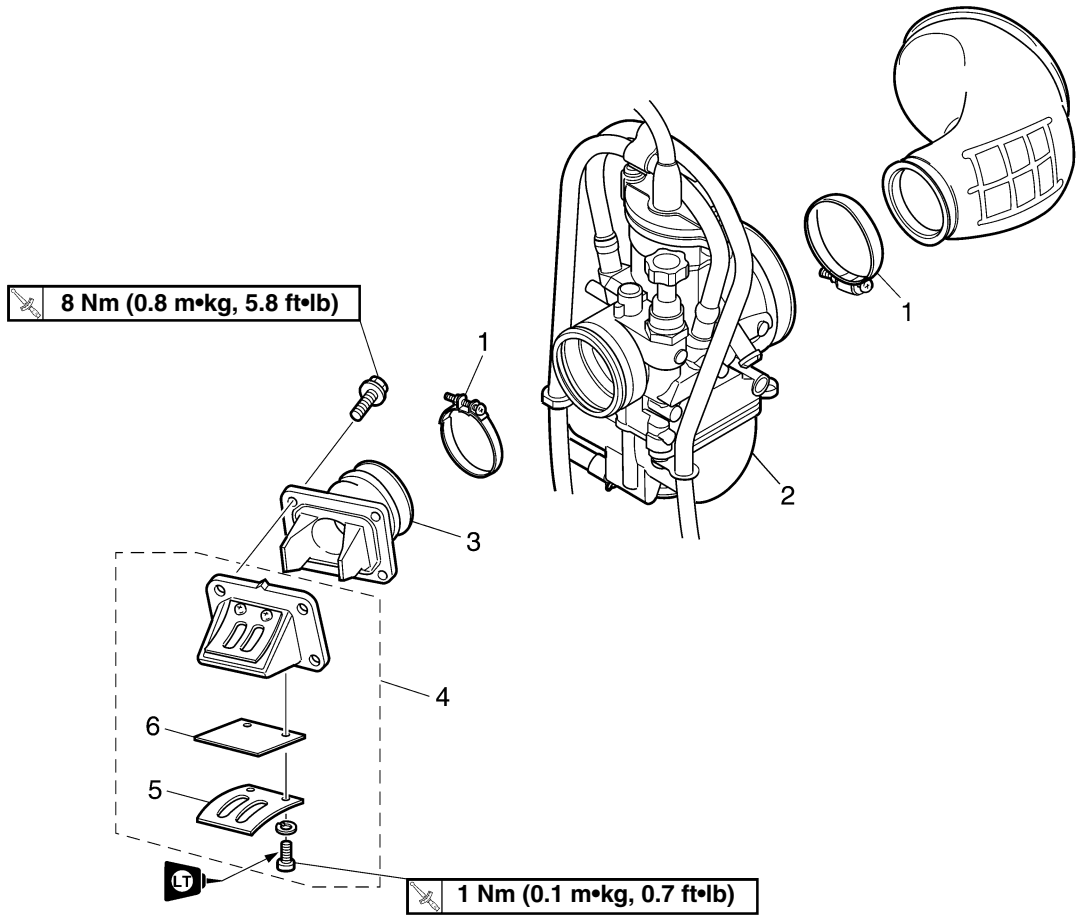
4. Install:
   • gasket New
   • water pump housing ① **10 Nm (1.0 m•kg, 7.2 ft•lb)**
   • copper washer ② New
5. Fill:
   • cooling system
   (with the specified amount of the recommended coolant)
   Refer to “CHANGING THE COOLANT” in chapter 3.
6. Check:
   • cooling system
   Refer to “CHECKING THE COOLING SYSTEM” in chapter 3.

CHAPTER 7
CARBURETOR

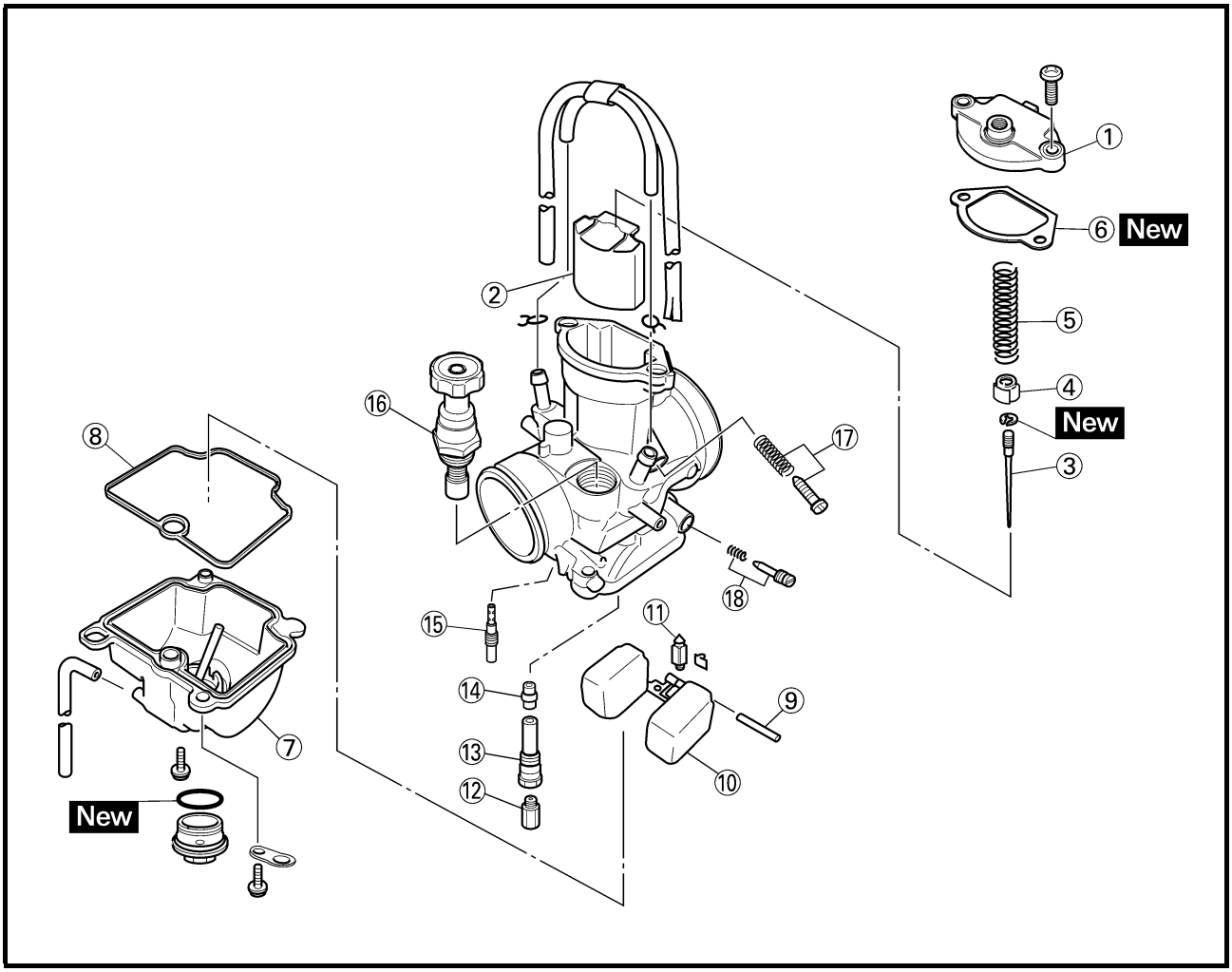
EAS00480

CARBURETOR

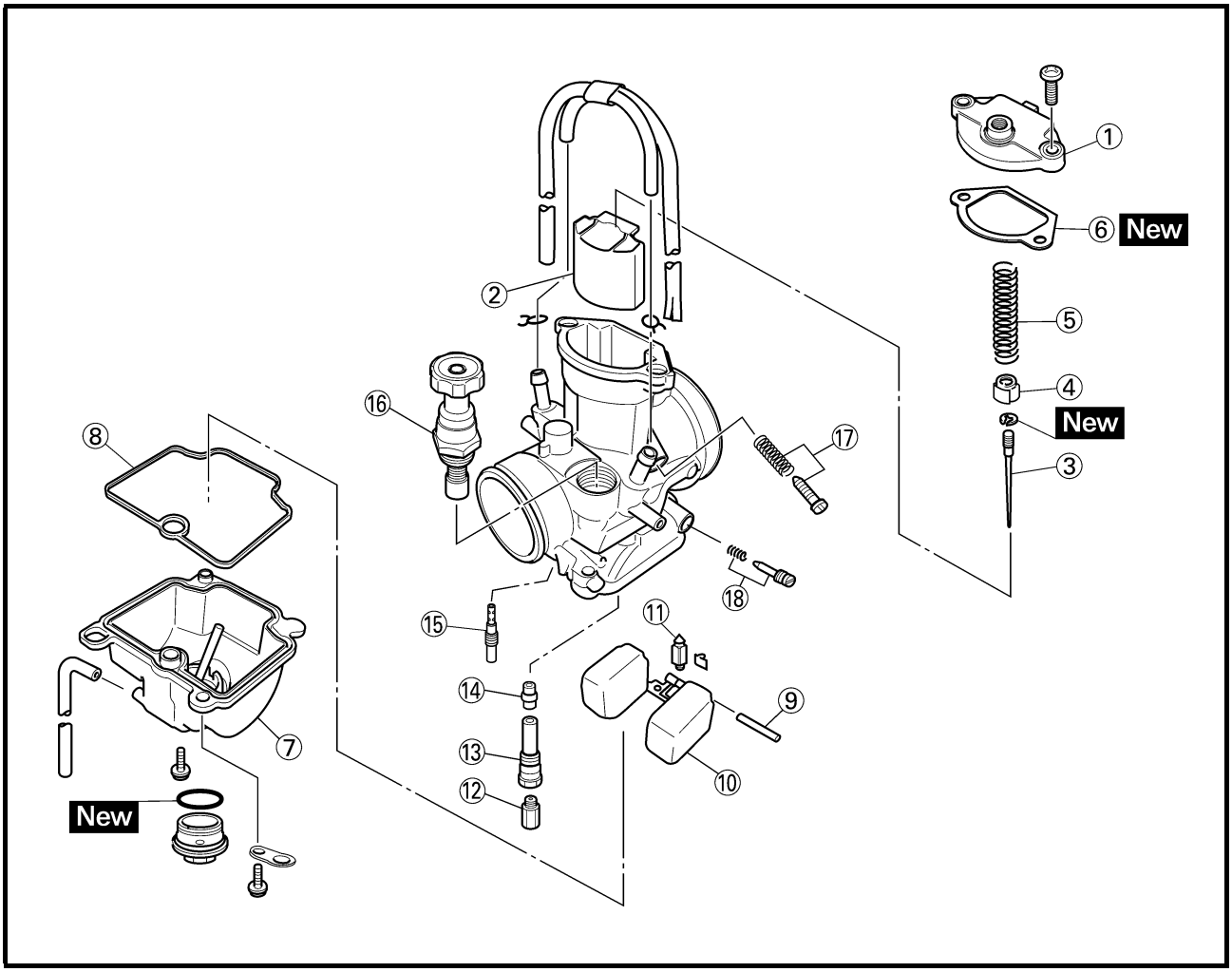
CARBURETOR AND REED VALVE



Order	Job/Part	Q'ty	Remarks
	Removing the carburetor and reed valve		Remove the parts in the order listed.
1	Clamp	2	Loosen.
2	Carburetor assembly	1	
3	Carburetor joint	1	
4	Reed valve assembly	1	
5	Reed valve stopper	2	
6	Reed valve	2	
			For installation, reverse the removal procedure.



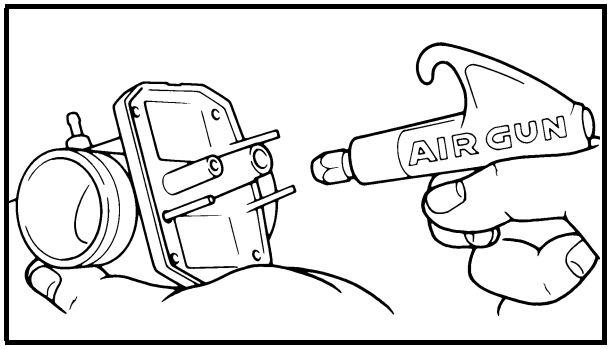
Order	Job/Part	Q'ty	Remarks
	Disassembling the carburetor		Remove the parts in the order listed
①	Mixing chamber top	1	
②	Throttle valve	1	
③	Jet needle	1	
④	Ring	1	
⑤	Throttle valve spring	1	
⑥	Gascket (mixing chamber top)	1	
⑦	Float chamber	1	
⑧	Gascket (float chamber)	1	
⑨	Float pin	1	
⑩	Float	1	
⑪	Needle valve	1	
⑫	Main jet	1	
⑬	Main nozzle holder	1	
⑭	Main nozzle	1	
⑮	Pilot jet	1	



Order	Job/Part	Q'ty	Remarks
⑯	Starter plunger	1	
⑰	Throttle stop screw	1	
⑱	Pilot air screw	1	
			For assembly, reverse the disassembly procedure.

EAS00485
CHECKING THE CARBURETOR

1. Check:
   - carburetor body
   - float chamber
   - jet housing
   Cracks/damage → Replace.



2. Check:
   - fuel passages
   Obstruction → Clean.

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a. Wash the carburetor in a petroleum-based solvent. Do not use any caustic carburetor cleaning solution.
b. Blow out all of the passages and jets with compressed air.

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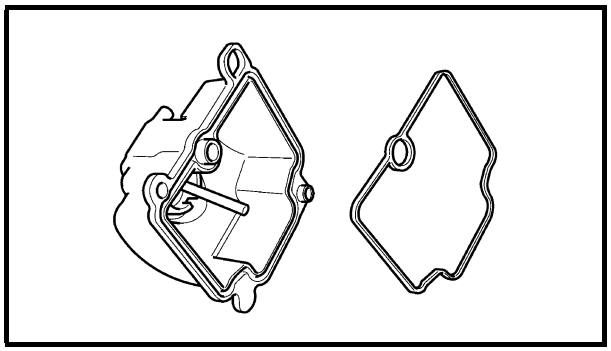
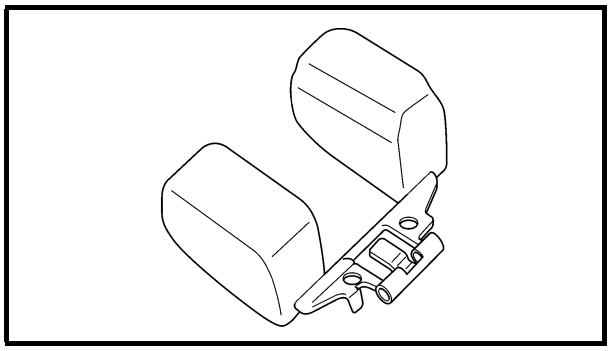
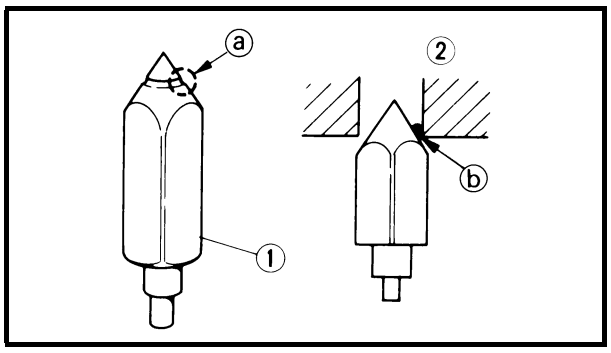


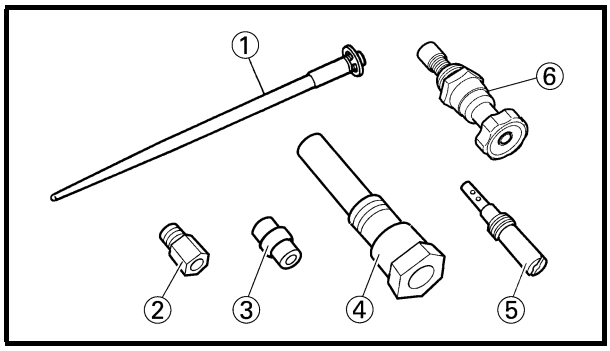
3. Check:
   - float chamber body
   Dirt → Clean.
4. Check:
   - float chamber rubber gasket
   Cracks/damage/wear → Replace.



5. Check:
   - float
   Damage → Replace.

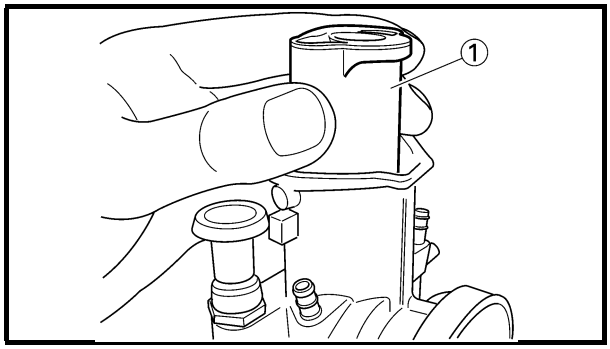


6. Check:
   - needle valve ①
   - needle valve seat ②
   Damage/wear ⓐ → Replace.
   Obstruction ⓑ → Clean.



7. Check:
   - jet needle ①
   - main nozzle ③
   - main jet ②
   - main nozzle holder ④
   - pilot jet ⑤
   - starter plunger ⑥

   Bends/damage/wear → Replace.
   Obstruction → Clean.
   Blow out the jets with compressed air.



8. Check:
   - piston valve movement

   Insert the piston valve ① into the carburetor body and move it up and down.
   Tightness → Replace the piston valve.

9. Check:
   - hose joints

   Cracks/damage → Replace.

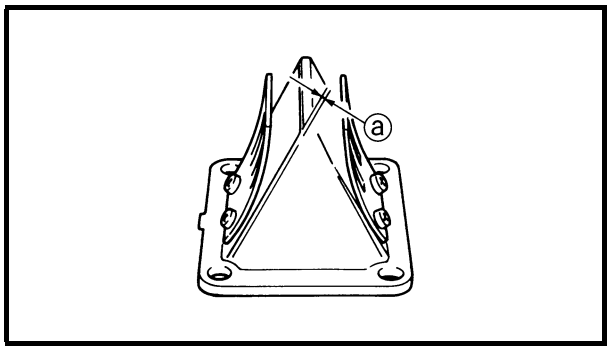
10. Check:
    - carburetor breather hoses
    - fuel hoses

    Cracks/damage/wear → Replace.
    Obstruction → Clean.
    Blow out the hoses with compressed air.

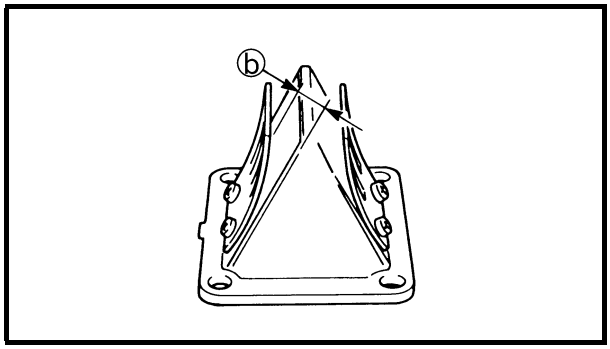
CHECKING THE REED VALVE

1. Measure:
   - reed valve bending ⓐ

   Out of limit → Replace.



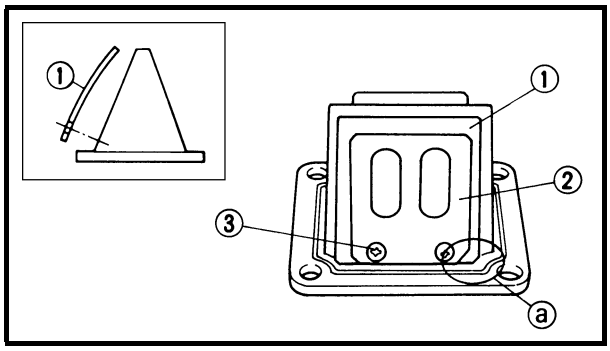
	Reed valve bending limit **0.2 mm (0.008 in)**



- valve stopper height ⓑ

  Out of specification → Replace.

	Valve stopper height **7.4 ~ 7.8 mm (0.291 ~ 0.307 in)**



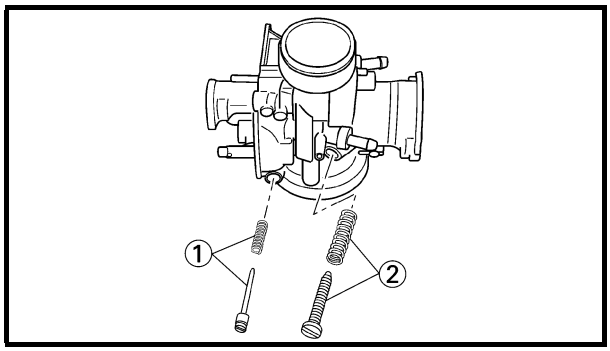
ASSEMBLY THE REED VALVE

1. Install:
   - reed valve ①
   - reed valve stopper ②
   - screw (reed valve) ③

1 Nm (0.1 m•kg, 0.7 ft•lb)
LOCTITE®

NOTE:

- Install the reed valve with the reed valve bending as shown.
- Note the cut ⓐ in the lower corner of the reed valve and stopper.
- Tighten each screw gradually to avoid warping.



EAS00487

ASSEMBLING THE CARBURETOR

CAUTION:

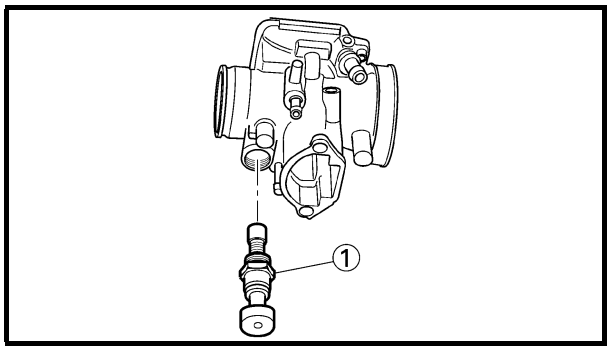
- **Before assembling the carburetor, wash all of the parts in a petroleum-based solvent.**
- **Always use a new gasket.**

1. Install:
   - pilot air screw ①
   - throttle stop screw ②

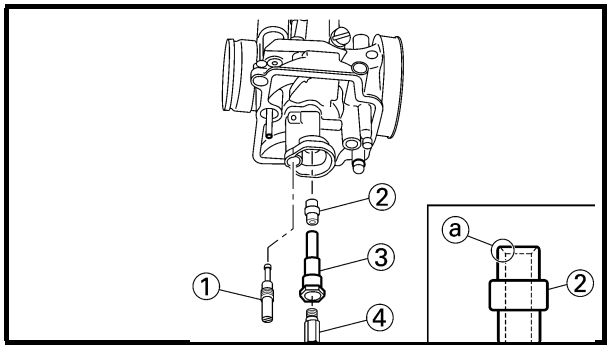
NOTE:

- Turn in the pilot air screw until it is lightly seated.
- Turn out the pilot air screw by the number of turns recorded before removing.

Pilot air screw setting
2 turns out



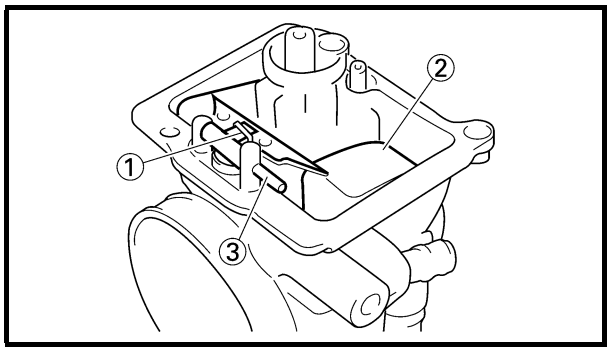
2. Install:
   • starter plunger ①



3. Install:
   • pilot jet ①
   • main nozzle ②
   • main jet holder ③
   • main jet ④

NOTE:

Install the main nozzle with its chamfered side ⓐ facing the carburetor.

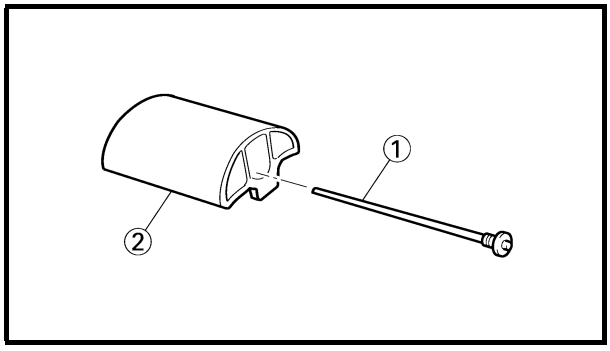


4. Install:
   • needle valve ①
   • float ②
   • float pin ③

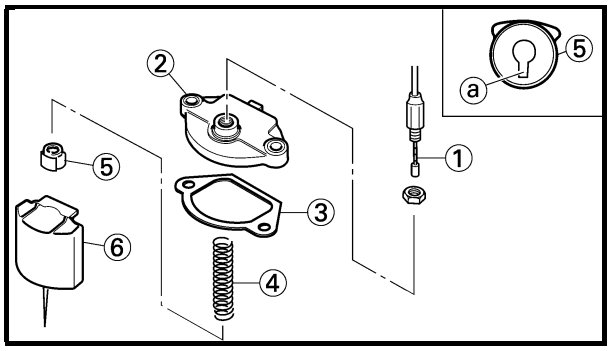
NOTE:

- After installing the needle valve to the float, install them to the carburetor.
- Check the float for smooth movement.

5. Install:
   • float chamber
   • gascket (float chamber) New
   • hose holder (carburetor breather hose)
6. Install:
   • carburetor breather hose
   • overflow hose



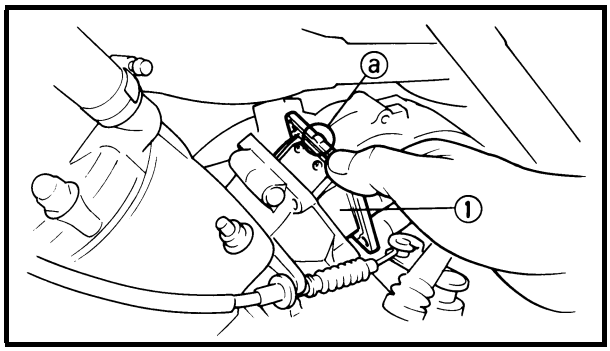
7. Install:
   • jet needle ①
   • throttle valve ②



8. Install:
   - throttle cable ①
   - mixing chamber top ②
   - gascket (mixing chamber top) ③ New
   - spring (throttle valve) ④
   - ring ⑤
   - throttle valve ⑥

NOTE:

- While compressing the spring, connect the throttle cable.
- Align the cut ⓐ in the ring with the throttle cable.

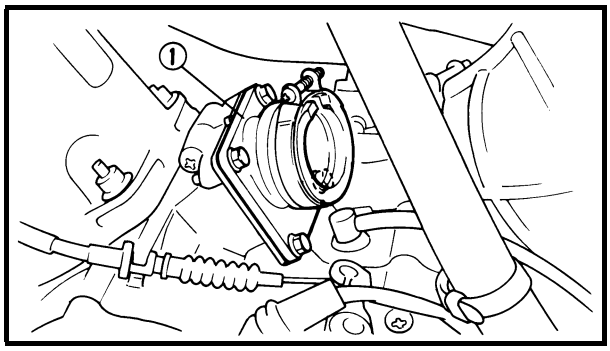


INSTALLING THE REED VALVE

1. Install:
   - reed valve assembly ①

NOTE:

Install the reed valve assembly with its projection ⓐ facing upward.



2. Install:
   - carburetor joint ①

8 Nm (0.8 m•kg, 5.8 ft•lb)

EAS00492

INSTALLING THE CARBURETOR

1. Adjust:
   - engine idle speed

Refer to “ADJUSTING THE ENGINE IDLING SPEED” in chapter 3.

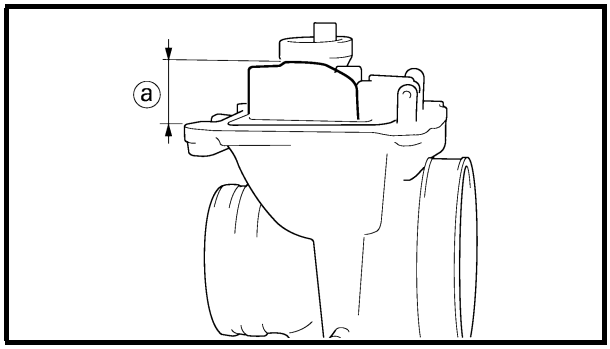
2. Adjust:
   • throttle cable free play

	Throttle cable free play **3 ~ 5 mm (0.12 ~ 0.20 in)**

Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.

EAS00498

MEASURING AND ADJUSTING THE FUEL LEVEL



1. Measure:
   • fuel height ⓐ
   Out of specification → Adjust.

	Fuel height **18 ~ 20 mm (0.71 ~ 0.79 in)**

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a. Hold the carburetor in an upside down position.
b. Measure the distance between the mating surface of the float chamber and top of the float using a vernier calipers.

NOTE:

The float arm should be resting on the needle valve, but not compressing the needle valve

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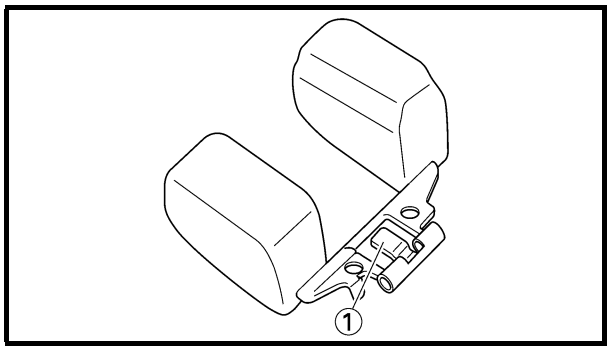
2. Adjust:
   • fuel level



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a. Check the needle valve seat and needle valve.
b. If either is worn, replace them as a set.
c. If both are fine, adjust the float level by slightly bending the float tang ①.
d. Measure the fuel height again.
e. Repeat steps (c) to (d) until the fuel level is within specification.

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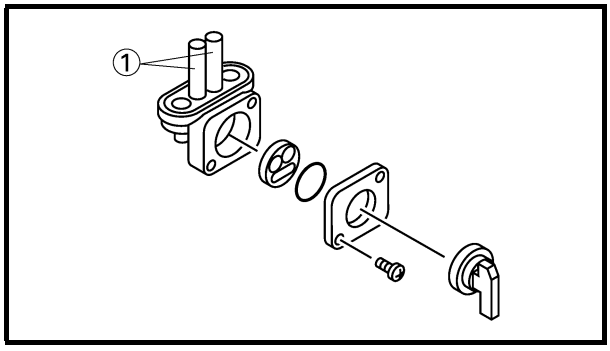


EAS00505

CHECKING THE FUEL COCK

1. Check:
   • fuel cock
   Cracks/damage/wear → Replace.
2. Check:
   • fuel cock strainer ①
   Obstruction → Clean.
   Blow out the jets with compressed air.
   Damage → Replace.

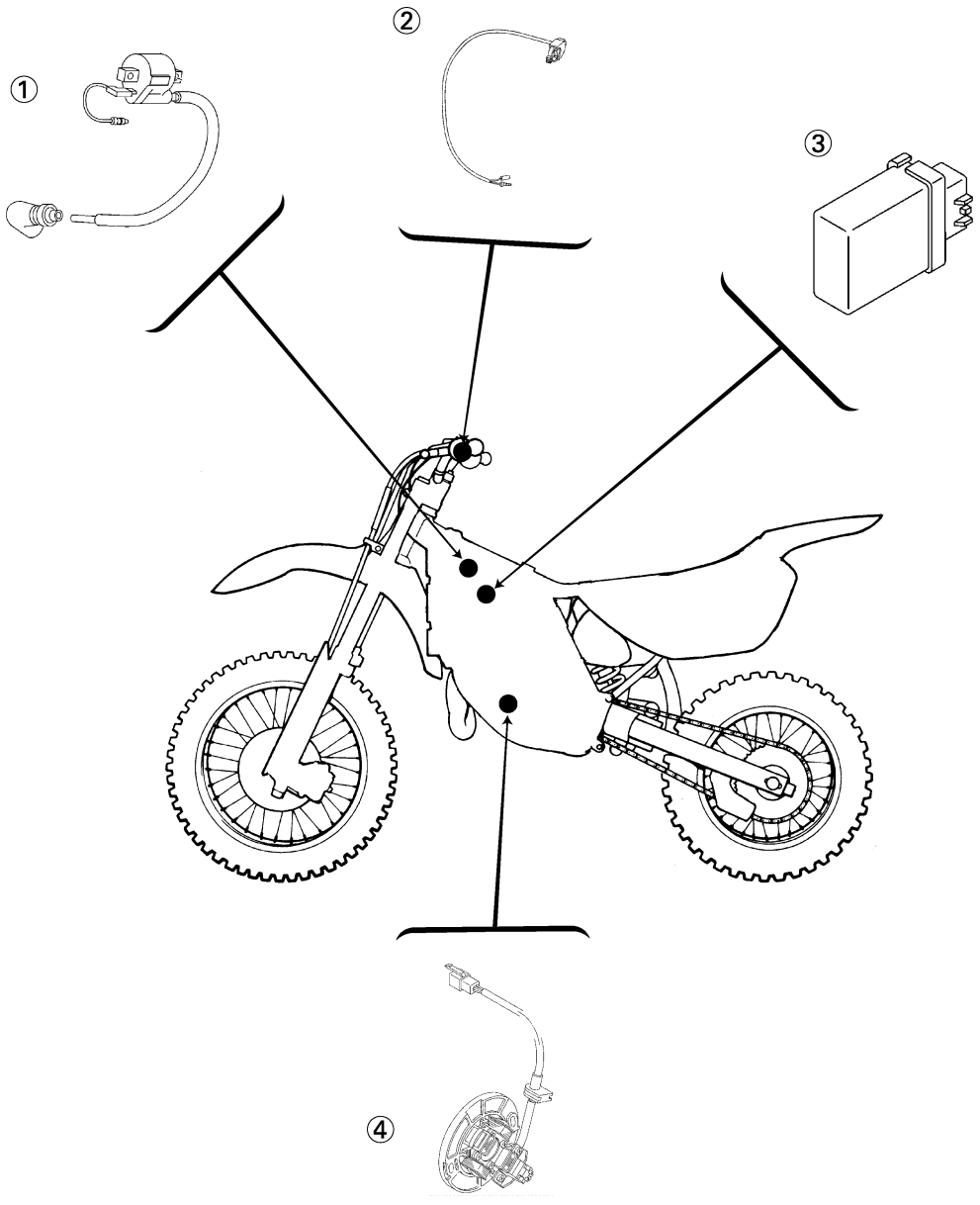
CHAPTER 8
ELECTRICAL SYSTEM

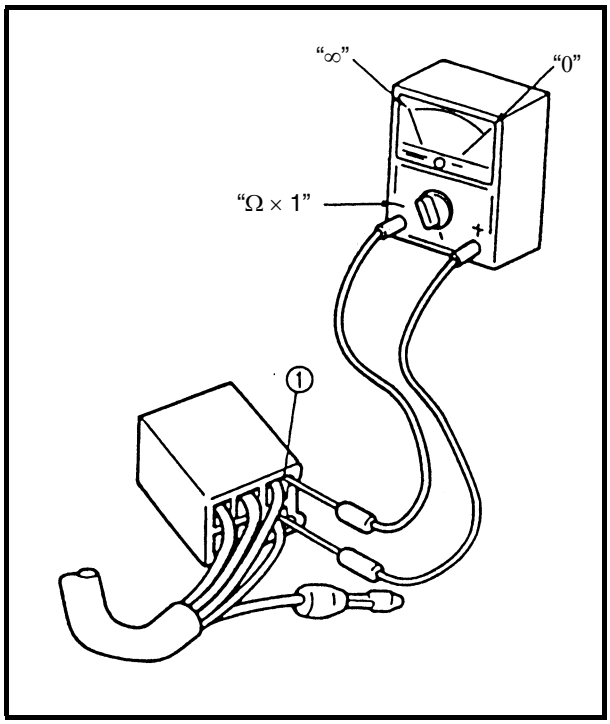
EAS00729

ELECTRICAL SYSTEM

ELECTRICAL COMPONENTS

① Ignition coil
② Engine stop switch
③ CDI unit
④ CDI magneto





CEAS00730

CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

CAUTION:

Never insert the tester probes into the coupler terminal slots. Always insert the probes from the opposite end of the coupler ① taking care not to loosen or damage the leads.

Pocket tester
90890-03112, YU-3112

NOTE:

- Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.
- When checking for continuity, switch back and forth between the switch positions a few times.

EAS00736

IGNITION SYSTEM

TROUBLESHOOTING

The ignition system fails to operate (no spark or intermittent spark).

Check:
1. Spark plug
2. Ignition spark gap
3. Spark plug cap resistance
4. Ignition coil resistance
5. Engine stop switch
6. Pickup coil resistance
7. Charging coil resistance
8. Wiring connections (of the entire ignition system)

NOTE:

- Before troubleshooting, remove the following part(s):

1. seat
2. air scoop
3. fuel tank

- Troubleshoot with the following special tool(s).

Dynamic spark tester
YM-34487
Ignition checker
90890-06754
Pocket tester
90890-03112, YU-3112-C

EAS00740

1. Spark plug

- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap.
  Refer to "CHECKING THE SPARK PLUG" in chapter 3.

Standard spark plug
BR10EG (NGK)
Spark plug gap
0.5 ~ 0.6 mm (0.0197 ~ 0.0236 in)

- Is the spark plug in good condition, is it of the correct type, and is its gap within specification?

YES

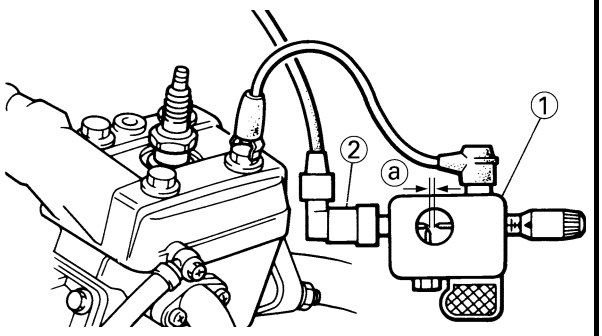
NO

Re-gap or replace the spark plug.

EAS00742

2. Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker/dynamic spark tester ① as shown.
- ② Spark plug cap
- Kick the kicstarter crank.
- Measure the ignition spark gap ⓐ.
- Crank the engine, and gradually increase the spark gap until a misfire occurs.



Minimum ignition spark gap
6.0 mm (0.24 in)

- Is there a spark and is the spark gap within specification?

NO

YES

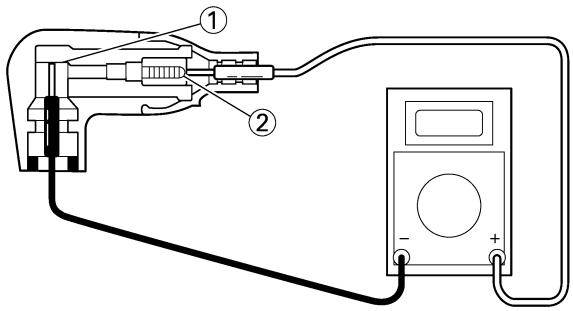
The ignition system is OK.

EAS00744

3. Spark plug cap resistance

- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester ("Ω × 1k" range) to the spark plug cap as shown.
- Measure the spark plug cap resistance.

Positive tester probe →
spark plug lead terminal ①
Negative tester probe →
spark plug terminal ②



Spark plug cap resistance
4 ~ 6 kΩ at 20 °C (68 °F)

- Is the spark plug cap OK?

YES

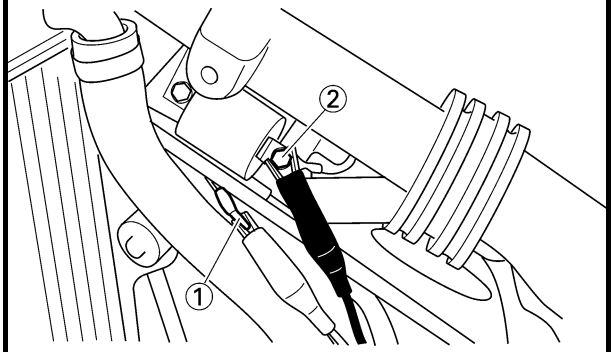
NO → Replace the spark plug cap.

EAS00746

4. Ignition coil resistance

- Disconnect the ignition coil connectors from the ignition coil terminals.
- Connect the pocket tester (Ω × 1) to the ignition coil as shown.

Positive tester probe → orange ①
Negative tester probe → black ②

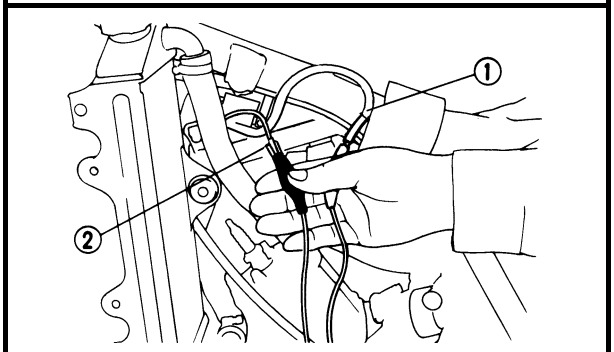


- Measure the primary coil resistance.

Primary coil resistance
0.18 ~ 0.28 Ω at 20 °C (68 °F)

- Connect the pocket tester (Ω × 1k) to the ignition coil as shown.

Positive tester probe →
spark plug lead ①
Negative tester probe → orange ②



- Measure the secondary coil resistance.

Secondary coil resistance
6.3 ~ 9.5 kΩ at 20 °C (68 °F)

- Is the ignition coil OK?

YES

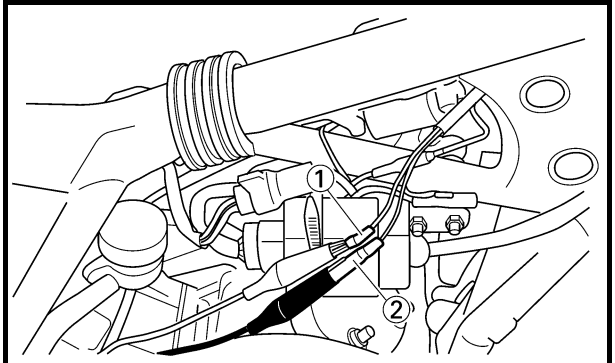
NO → Replace the ignition coil.

EAS00750

5. Engine stop switch

- Check the engine stop switch for continuity.
- Connect the pocket tester (Ω × 1) to the engine stop switch as shown.

Positive tester probe → black/white ①
Negative tester probe → black ②



Engine stop switch continuity
PUSH → continuity
FREE → no continuity

- Is the engine stop switch OK?

YES

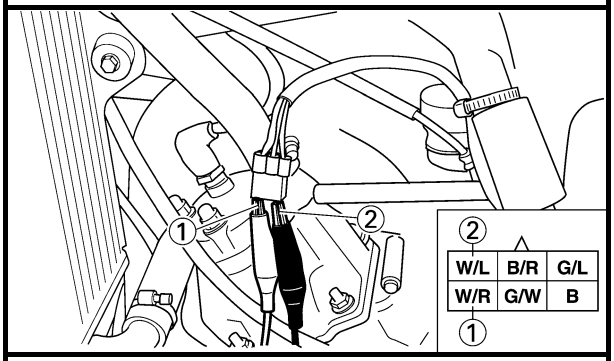
NO → Replace the engine stop switch.

EAS00748

6. Pickup coil resistance

- Disconnect the pickup coil coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the pickup coil terminal as shown.

Positive tester probe → white/red ①
Negative tester probe → white/blue ②



- Measure the pickup coil resistance.

Pickup coil resistance
248 ~ 372 Ω at 20 °C (68 °F)
(between white/red and white/blue)

- Is the pickup coil OK?

YES

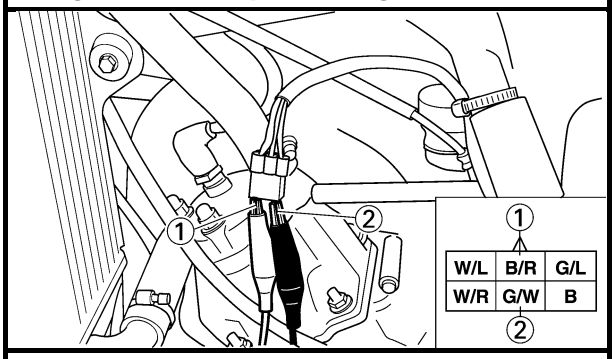
NO → Replace the pickup coil.

EAS00775

7. Charging coil resistance

- Disconnect the charging coil coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the charging coil terminal as shown.

Positive tester probe → black/red ①
Negative tester probe → green/white ②

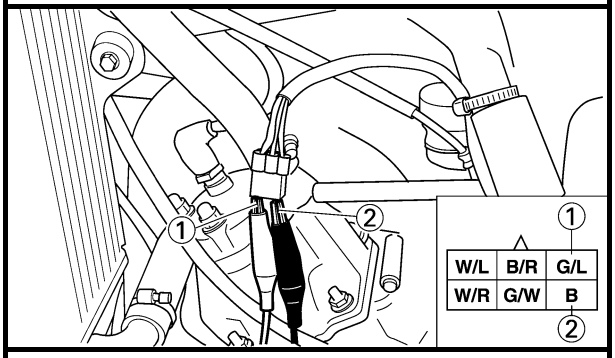


- Measure the charging coil resistance.

Charging coil resistance
720 ~ 1,080 Ω at 20 °C (68 °F)

- Connect the pocket tester (Ω × 10) to the charging coil

Positive tester probe → green/blue ①
Negative tester probe → black ②



- Measure the charging coil resistance.

Charging coil resistance
44 ~ 66 Ω at 20 °C (68 °F)

- Is the charging coil OK?

YES

NO

Replace the charging coil.

EAS00754

8. Wiring

- Check the entire ignition system's wiring. Refer to "WIRING DIAGRAM".
- Is the ignition system's wiring properly connected and without defects?

YES

Replace the CDI unit.

NO

Properly connect or repair the ignition system's wiring.

CHAPTER 9
TUNING

TUNING

ENGINE

CARBURETOR SETTING

- The role of fuel is to cool the engine, and in the case of a 2-stroke engine, to lubricate the engine in addition to power generation. Accordingly, if a mixture of air and fuel is too lean, abnormal combustion will occur, and engine seizure may result. If the mixture is too rich, spark plugs will get wet with oil, thus making it impossible to bring the engine into full play or if the worst comes to the worst, the engine may stall.
- The richness of the air-fuel mixture required for the engine will vary with atmospheric conditions of the day and therefore, the settings of the carburetor must be properly suited to the atmospheric conditions (air pressure, humidity and temperature).
- Finally, the rider himself must make a test run and check his vehicle for conditions (pick-up of engine speed, road surface conditions) and for the discoloration of the spark plug(s).
  After taking these into consideration, he must select the best possible carburetor settings.

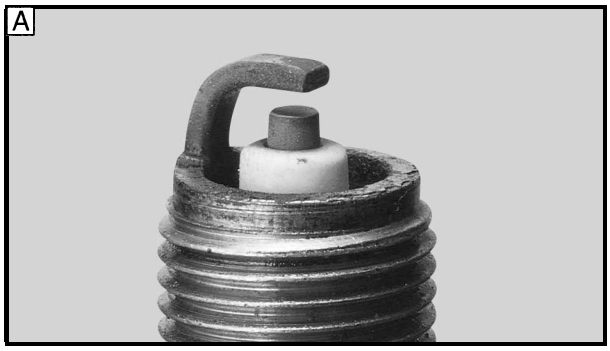
* It is advisable to make a note of settings, atmospheric conditions, road surface condition, lap-time, etc. so that the memorandum can be used as a reference useful for future.

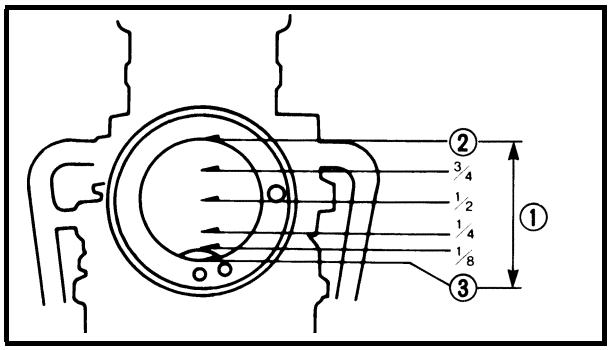
ATMOSPHERIC CONDITIONS AND CARBURETOR SETTINGS

Air temp.	Humidity	Air pressure (altitude)	Mixture	Setting
High	High	Low (high)	Richer	Leaner
Low	Low	High (low)	Leaner	Richer

The air density (i.e., concentration of oxygen in the air) determines the richness or leanness of the air/fuel mixture. Therefore, refer to the above table for mixture settings.
That is:

- Higher temperature expands the air with its resultant reduced density.
- Higher humidity reduces the amount of oxygen in the air by so much of the water vapor in the same air.
- Lower atmospheric pressure (at a high altitude) reduces the density of the air.





TEST RUN

After warming up the engine equipped with the standard type carburetor(s) and spark plug(s), run two or three laps of the circuit and check the smooth operation of the engine and discoloration of spark plug(s).

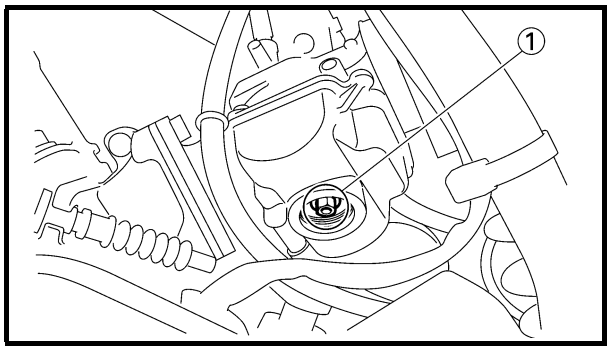
Discoloration	Condition of spark plug
Normal	Insulator is dry and burnt brown.
Over burned (too lean)	Insulator is whitish.
Oil fouled (too rich)	Insulator is sooty and wet.

A Normal
B Over burned (too lean)
C Oil fouled (too rich)

EFFECTS OF THE SETTING PARTS ON THE THROTTLE VALVE OPENING

Setting part		Throttle valve opening Full-closed 1/4 1/2 3/4 Full-open
Pilot jet Pilot air screw		
Jet needle	Diameter of straight portion	
Jet needle	Clip position	
Main jet		

① Throttle valve opening
② Full-open
③ Full-closed

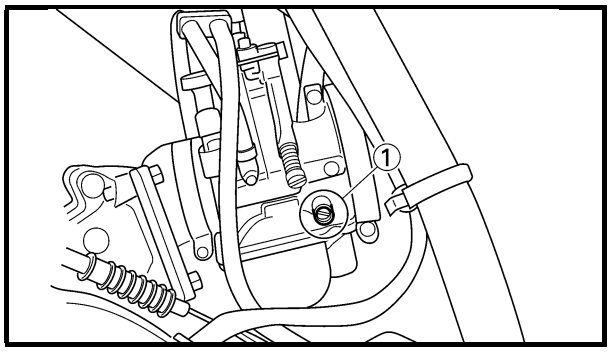


MAIN JET ADJUSTMENT

The richness of air-fuel mixture with 3/4 ~ 4/4 throttle can be set by changing the main jet ①.

Standard main jet	#138

1. Spark plug is too hot.
   Select a main jet having higher calibrating No. than standard. (To be enriched)
2. Spark plug is wet.
   Select a main jet having lower calibrating No. than standard. (To be leaned out)

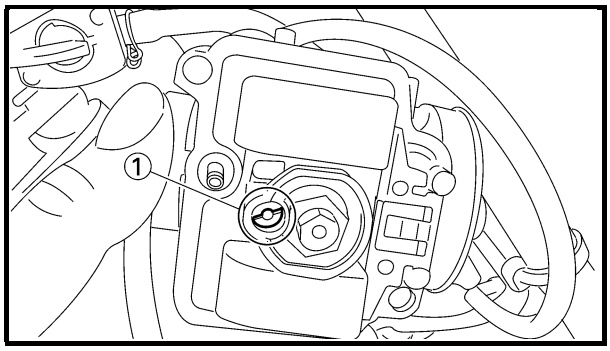


PILOT AIR SCREW ADJUSTMENT

The richness of the air-fuel mixture with the throttle fully closed to 1/4 open can be set by turning the pilot air screw ①.

Turning in the pilot air screw will make the mixture enrich at low speeds, and turning it out will lean it.

Standard pilot air screw position	2 turns out

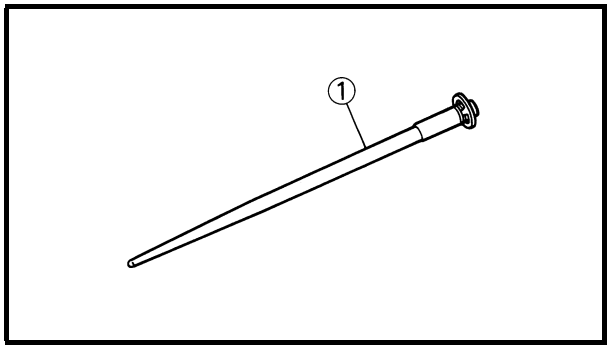


PILOT JET ADJUSTMENT

The richness of air-fuel mixture with the throttle fully closed to 1/2 open can be set by turning the pilot jet ①. It is changed when adjustment cannot be made by the pilot air screw alone.

A larger size jet results in a richer mixture at low speeds, and a smaller size in a leaner mixture.

Standard pilot jet	#45

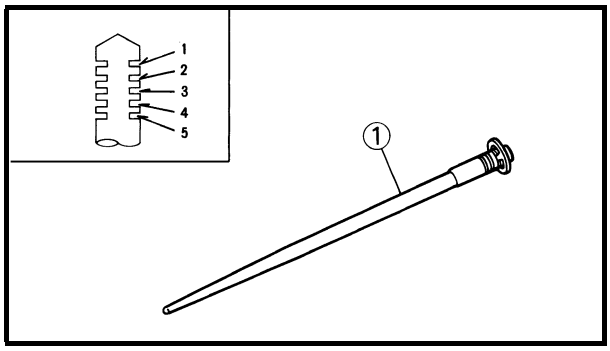


JET NEEDLE ADJUSTMENT

The richness of air-fuel mixture with 1/4 ~ 3/4 throttle can be set by changing the jet needle ①.

A smaller diameter jet needle results in a richer mixture at middle speeds, and a larger diameter in a leaner mixture.

Standard jet needle	NBKF



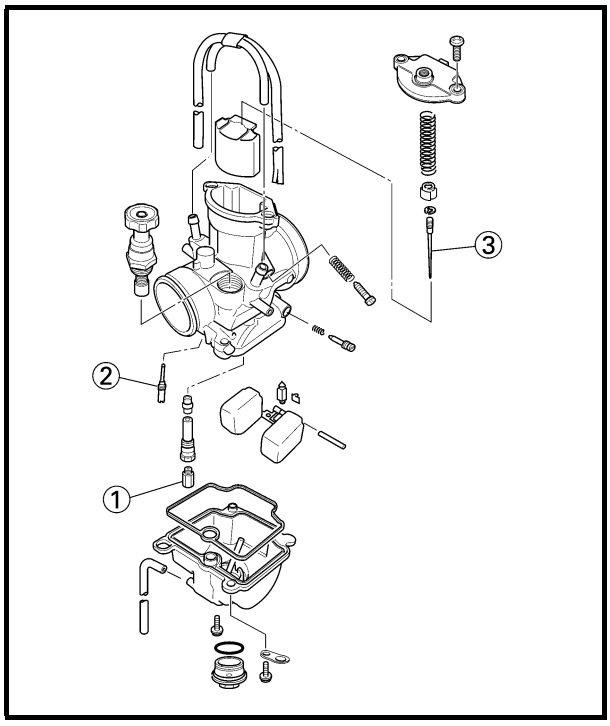
JET NEEDLE GROOVE POSITION ADJUSTMENT

Should the engine be hard to run smoothly at intermediate speeds, the jet needle ① must be adjusted. If the mixture is too rich or too lean at intermediate speed operation, irregular engine operation and poor acceleration will result.

Whether or not the richness of the mixture is proper is hard to be determined by means of the spark plug and therefore, it should be judged from your feeling of actual engine operation.

Standard clip position	No.2 groove

1. Too rich at intermediate speeds
   Rough engine operation is felt and the engine will not pick up speed smoothly.
   In this case, step up the jet needle clip by one groove and move down the needle to lean out the mixture.
2. Too lean at intermediate speeds
   The engine breathes hard and will not pick up speed quickly.
   In this case, step down the jet needle clip by one groove and move up the needle to enrich the mixture.



CARBURETOR SETTING PARTS

Part name		Size	Part number
Main jet ①	Rich	#148	4MX-14943-87
	↑	#145	4MX-14943-36
	↑	#142	4MX-14943-86
	↑	#140	4MX-14943-35
(STD)	↑	#138	4MX-14943-85
	↑	#135	4MX-14943-34
	Lean	#132	4MX-14943-84
Pilot jet ②	Rich	#48	4MX-14948-06
(STD)	↕	#45	4MX-14948-05
	Lean	#42	4MX-14948-04
Jet needle ③ Refer to the following table about the change in the air-fuel mixture ratio due to a different jet needle.		NBLE	5PA-14916-LE
		NBLF	5PA-14916-LF
		NBLG	5PA-14916-LG
		NBKE	5PA-14916-KE
		NBKF	5PA-14916-KF
		NBKG	5PA-14916-KG

Clip position \ Diameter of straight portion		Rich ← → Lean		
		ϕ 2.405 mm (0.0947 in)	ϕ 2.415 mm (0.0951 in)	ϕ 2.425 mm (0.0955 in)
Rich	1 richer	NBKE-3rd groove	NBKF-3rd groove	NBKG-3rd groove
↕	0.5 richer	NBLE-2nd groove	NBLF-2nd groove	NBLG-2nd groove
	STD	NBKE-2nd groove	NBKF-2nd groove (STD)	NBKG-2nd groove
	0.5 leaner	NBLE-1st groove	NBLF-1st groove	NBLG-1st groove
Lean	1 leaner	NBKE-1st groove	NBKF-1st groove	NBKG-1st groove

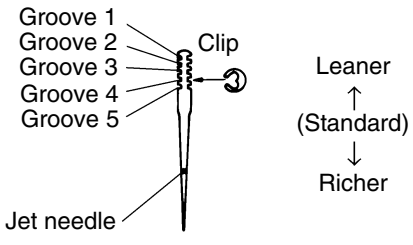
ROAD CONDITION AND EXAMPLES OF CARBURETOR SETTING

Conditions / Parts	General condition			Sandy condition		
	Under 10 °C (50 °F) (Winter)	15 ~ 25 °C (59 ~ 77 °F) (Spring, Autumn)	Over 30 °C (86 °F) (Summer)	Under 10 °C (50 °F) (Winter)	15 ~ 25 °C (59 ~ 77 °F) (Spring, Autumn)	Over 30 °C (86 °F) (Summer)
Main jet	#140	#138	#135 ~ #138	#142	#142	#142
Jet needle	NBKF-2	NBKF-2	NBKF-2	NBKF-2	NBKF-2	NBKF-2
Pilot jet	#45	#45	#45	#48	#48	#48
Pilot air screw	Zero	Zero	+1/4	–1/2	–1/2	Zero ~ +1/2

NOTE:

Optimum pilot air screw setting can be obtained by adding the ex-factory number of the same screw back-out turns to any required value provided in the chart.
For example, if the ex-factory number is “2”, add “2” to the value chosen in the chart.

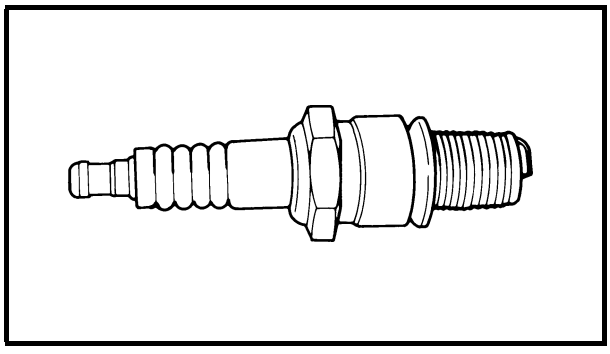
EXAMPLES OF CARBURETOR SETTING DEPENDING ON SYMPTOM

Symptom	Setting	Checking
At full throttle Stall at high speeds *Hard breathing Shearing noise Whitish spark plug ↓ Lean mixture	Increase main jet calibration no. (Gradually)	Discoloration of spark plug → If tan color, it is in good condition. If cannot be corrected: Clogged float valve seat Clogged fuel hose Clogged fuel cock
At full throttle Speed pick-up stops Slow speed pick-up Slow response Sooty spark plug ↓ Rich mixture	Decrease main jet calibration no. (Gradually) *In case of racing slight enrichment of mixture reduces engine trouble.	Discoloration of spark plug → If tan color, it is in good condition. If cannot be corrected: Clogged air filter Fuel overflow from carburetor
Lean mixture	Use jet needle with a smaller diameter, or NBLF. Lower jet needle clip position.	
Rich mixture	Use jet needle with a larger diameter, or NBKG. Raise jet needle clip position.	
1/4 ~ 3/4 throttle *Hard breathing Lack of speed	Use jet needle with a smaller diameter, or NBLF. Lower jet needle clip position.	
1/4 ~ 1/2 throttle Slow speed pick-up White smoke Poor acceleration	Use jet needle with a larger diameter, or NBKG. Raise jet needle clip position.	The clip position is the jet needle groove on which the clip is installed. The positions are numbered from the top.
Closed to 1/4 throttle *Hard breathing Speed down	Use jet needle with a smaller diameter. Turn out pilot air screw.	

Symptom	Setting	Checking
Closed to 1/4 throttle Poor acceleration White smoke	Use jet needle with a larger diameter. Turn in pilot air screw.	
Unstable at low speeds Pinking noise	Lower jet needle clip position. (1 groove down) Turn in pilot air screw.	
Poor response at extremely low speed	Reduce pilot jet calibration No. Turn out pilot air screw. If not effect, reverse the above procedures.	Dragging brake Overflow from carburetor
Poor response in the low to intermediate speeds	Raise jet needle clip position. If this has no effect, lower the jet needle clip position.	
Poor response when throttle is opened quickly	Check overall settings. Use main jet with a lower calibration no. Raise jet needle clip position. Use jet needle with a larger diameter. If these have no effect, use a main jet with a higher calibration no. and lower the jet needle clip position.	Check air filter for fouling.
Poor engine operation	Turn in pilot air screw. Adjust the throttle stop screw.	Check throttle valve operation.

* marked: In case of hard breathing, check the carburetor breather hoses for clogging.

This should be taken simply for an example. It is necessary to set the carburetor while checking the operating conditions of the engine and discoloration of spark plugs.
Normally, carburetor setting is made by means of the main jet, jet needle clip position, pilot jet and pilot air screw.



CHANGE OF THE HEAT RANGE OF SPARK PLUGS

Judging from the discoloration of spark plugs, if they are found improper, it can be corrected by the following two methods; changing carburetor settings and changing the heat range of spark plug.

Standard spark plug	BR10EG/NGK (resistance type)

- In principle, it is advisable to first use spark plugs of standard heat range, and judging from the discoloration of spark plugs, adjust carburetor settings.
- If the calibration No. of the main jet must be changed by ±30, it is advisable to change the heat range of spark plugs and newly select the proper main jet.

NOTE:

- When checking the discoloration of spark plugs, be sure to stop the engine immediately after a run and check.
- Avoid racing.
- When changing the heat range of spark plugs, never attempt to change it more than ±1 rank.
- When using a spark plug other than standard, check its heat range against the standard and check that it is a resistance type.
- Note that even if the discoloration seems proper, it may slightly vary with the spark plug maker and oil in use.

CHASSIS

SELECTION OF THE SECONDARY REDUCTION RATIO (SPROCKET)

$$\text{Secondary reduction ratio} = \frac{\text{Number of rear wheel sprocketteeth}}{\text{Number of drive sprocket teeth}}$$

Standard secondary reduction ratio	**YZ85:** **47/14 (3.357)** **(for EUR, CAN)** **48/14 (3.429)** **(for AUS, NZL)** **YZ85LW:** **52/14 (3.714)**

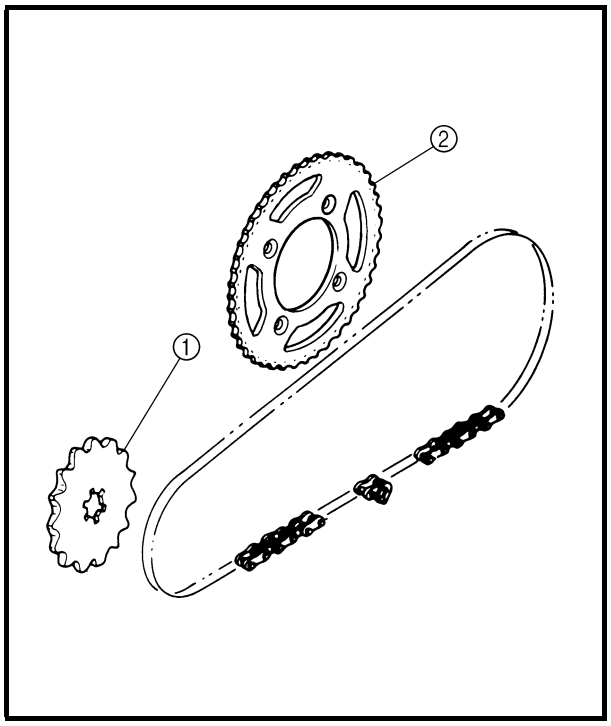
<Requirement for selection of secondary gear reduction ratio>

- It is generally said that the secondary gear ratio should be reduced for a longer straight portion of a speed course and should be increased for a course with many corners. Actually, however, as the speed depends on the ground condition of the day of the race, be sure to run through the circuit to set the vehicle suitable for the entire course.

- In actuality, it is very difficult to achieve settings suitable for the entire course and some settings may be sacrificed. Thus, the settings should be matched to the portion of the course that has the greatest effect on the race result. In such a case, run through the entire course while making notes of lap times to find the best balance; then, determine the secondary reduction ratio.
- If a course has a long straight portion where a vehicle can run at maximum speed, the vehicle is generally set such that it can develop its maximum revolutions toward the end of the straight line, with care taken to avoid the engine over-revving.

NOTE:

Riding technique varies from rider to rider and the performance of a vehicle also vary from vehicle to vehicle. Therefore, do not imitate other rider's settings from the beginning but choose your own setting according to the level of your riding technique.



DRIVE AND DRIVEN SPROCKETS SETTING PARTS

YZ85:

Part name		Size	Part number
Drive Sprocket ①	(STD)	14T	9382A-14227
		15T	9382A-15228
Real wheel sprocket ②	*(STD)	46T	5PA-25446-00
		47T	4ES-25447-10
	**(STD)	48T	5PA-25448-00
		49T	5PA-25449-00

*For EUR, CAN
**For AUS, NZL

YZ85LW:

Part name		Size	Part number
Drive Sprocket ①	(STD)	14T	9382A-14227
		15T	9382A-15228
Real wheel sprocket ②	(STD)	51T	5PA-25451-00
		52T	5PA-25452-00
		53T	5PA-25453-00

TIRE PRESSURE

Tire pressure should be adjust to suit the road surface condition of the circuit.

Standard tire pressure
100 kPa (1.0 kgf/cm^2, 15 psi)

- Under a rainy, muddy, sandy, or slippery condition, the tire pressure should be lower for a larger area of contact with the road surface.

Extent of adjustment
60 ~ 80 kPa
(0.6 ~ 0.8 kgf/cm^2, 9.0 ~ 12 psi)

- Under a stony or hard road condition, the tire pressure should be higher to prevent a flat tire.

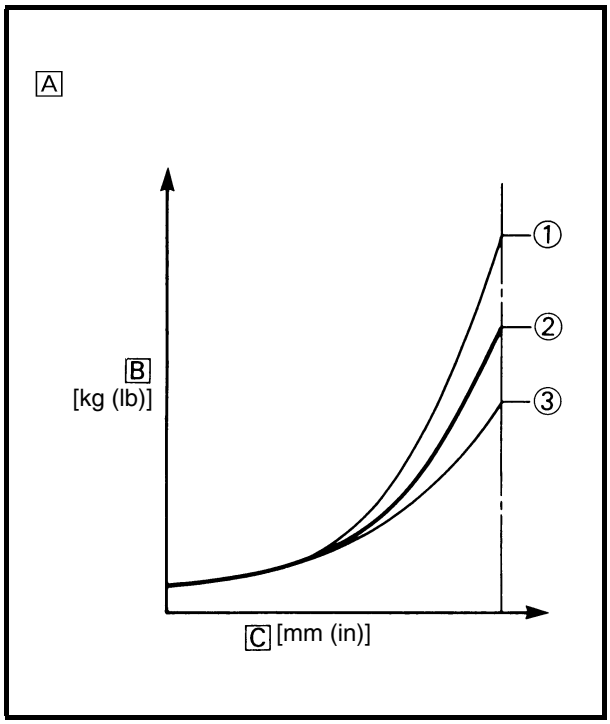
Extent of adjustment
100 ~ 120 kPa
(1.0 ~ 1.2 kgf/cm^2, 15 ~ 18 psi)

FRONT FORK SETTING

The front fork setting should be made depending on the rider's feeling of an actual run and the circuit conditions.

The front fork setting includes the following three factors:

1. Setting of air spring characteristics
   - Change the fork oil level.
2. Setting of spring preload
   - Change the spring.
3. Setting of damping force
   - Change the compression damping.
   - Change the rebound damping.
     The spring acts on the load and the damping force acts on the cushion travel speed.



CHANGE IN LEVEL AND CHARACTERISTICS OF FORK OIL

Damping characteristic near the final stroke can be changed by changing the fork oil amount.

CAUTION:

Adjust the oil level in 5 mm (0.2 in) increments or decrements. Too low oil level causes the front fork to produce a noise at full rebound or the rider to feel some pressure on his hands or body. Alternatively, too high oil level will develop unexpectedly early oil lock with the consequent shorter front fork travel and deteriorated performance an characteristics. Therefore, adjust the front fork within the specified range.

Front fork leg oil level (from the top of the outer tube, with the outer tube fully compressed and without the fork spring)
Standard: 90 mm (3.54 in)
Extent of adjustment: 80 ~ 120 mm (3.15 ~ 4.72 in)

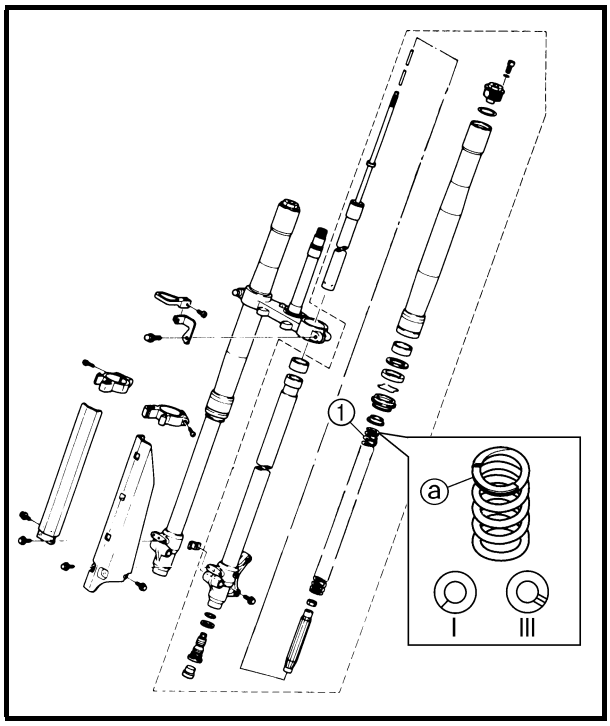
A Air spring characteristics in relation to oil level change
B Load
C Stroke
① Max. oil level
② Standard oil level
③ Min. oil level

SETTING OF SPRING AFTER REPLACEMENT

As the front fork setting can be easily affected by rear suspension, take care so that the vehicle front and rear are balanced (in position, etc.) when setting the front fork.

1. Use of soft spring
   Generally a soft spring gives a soft riding feeling. Rebound damping tends to become stronger and the front fork may sink deeply over a series of gaps.
   To set a soft spring:
   - Change the rebound damping.
     Turn out one or two clicks.
   - Change the compression damping.
     Turn in one or two clicks.

2. Use of stiff spring
   Generally a stiff spring gives a stiff riding feeling. Rebound damping tends to become weaker, resulting in lack of a sense of contact with the road surface or in a vibrating handlebar.
   To set a stiff spring:
   • Change the rebound damping.
   Turn in one or two clicks.
   • Change the compression damping.
   Turn out one or two clicks.



FRONT FORK SETTING PARTS

• Front fork spring ①

YZ85:

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. MARK (slits)
SOFT	0.280	4ES-23141-50	I
STD	0.290	4ES-23141-40	–
STIFF	0.300	4ES-23141-60	II

YZ85LW:

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. MARK (slits)
SOFT	0.290	4ES-23141-40	–
STD	0.300	4LB-23141-10	–
STIFF	0.310	4ES-23141-70	III

NOTE:

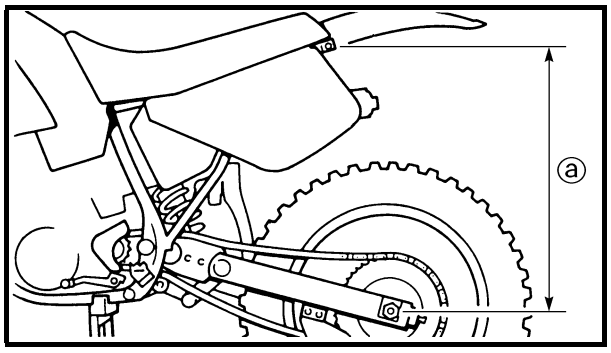
The I.D. mark (slits) ⓐ is proved on the end of the spring.

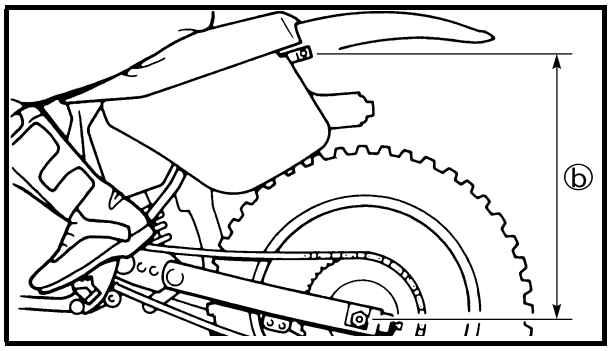
REAR SUSPENSION SETTING

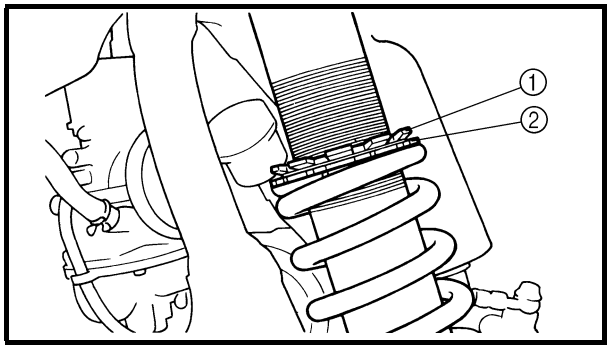
The rear suspension setting should be made depending on the rider's feeling of an actual run and the circuit conditions.

The rear suspension setting includes the following two factors:

1. Setting of spring preload
   - Change the set length of the spring.
   - Change the spring.
2. Setting of damping force
   - Change the rebound damping.
   - Change the compression damping.







CHOOSING SET LENGTH

1. Place a stand or block under the engine to put the rear wheel above the floor, and measure the length ⓐ between the rear wheel axle center and the rear fender holding bolt.
2. Remove the stand or block from the engine and with a rider astride the seat, measure the sunken length ⓑ between the rear wheel axle center and the rear fender holding bolt.
3. Loosen the locknut ① and make adjustment by turning the spring adjuster ② to achieve the standard figure from the subtraction of the length ⓑ from the length ⓐ.

Standard figure
75 ~ 85 mm (3.0 ~ 3.3 in)

NOTE:

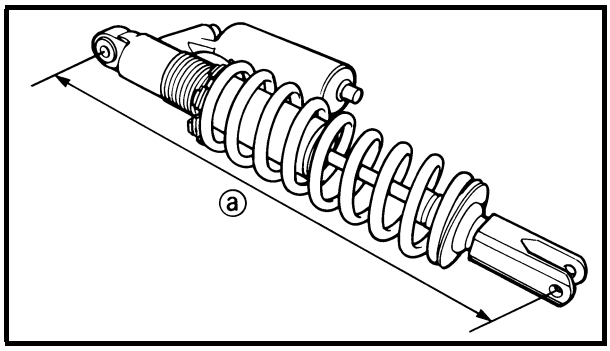
- If the vehicle is new and after it is broken in, the same set length of the spring may change because of the initial fatigue, etc. of the spring. Therefore, be sure to make reevaluation.
- If the standard figure cannot be achieved by adjusting the spring adjuster and changing the spring set length, replace the spring with an optional one and make re-adjustment.

SETTING OF SPRING AFTER REPLACEMENT

After replacement, be sure to adjust the spring to the set length [sunken length 75 ~ 85 mm (3.0 ~ 3.3 in)] and set it.

1. Use of soft spring
   - Set the soft spring for less rebound damping to compensate for its less spring load. Run with the rebound damping adjuster one or two clicks on the softer side and readjust it to suit your preference.
2. Use of stiff spring
   - Set the soft spring for more rebound damping to compensate for its greater spring load. Run with the rebound damping adjuster one or two clicks on the stiffer side and readjust it to suit your preference.

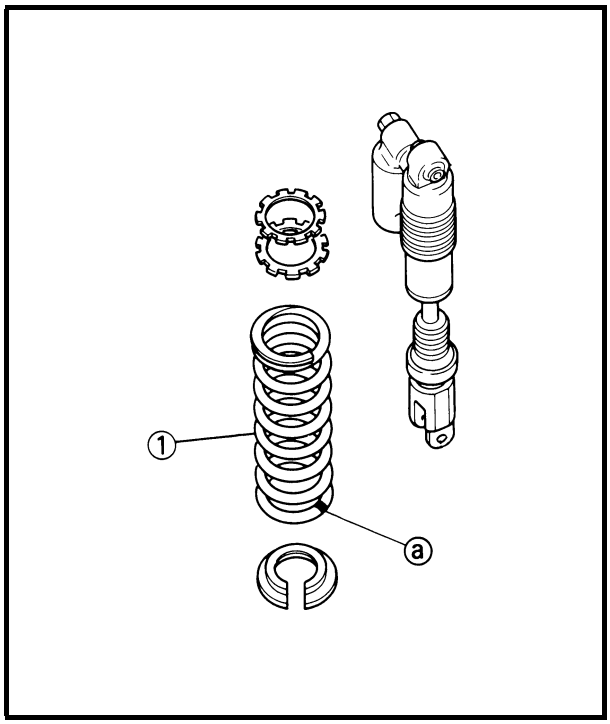
   * Adjusting the rebound damping will be followed more or less by a change in the compression damping. For correction, turn the compression damping adjuster on the softer side.



CAUTION:

When using a rear shock absorber other than currently installed, use the one whose overall length ⓐ does not exceed the standard as it may result in faulty performance. Never use one whose overall length is greater than standard.

Length ⓐ of standard shock
403.5 mm (15.89 in)



REAR SHOCK ABSORBER SETTING PARTS

• Rear shock spring ①

YZ85:

For EUR

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. COLOR
SOFT	4.4	4ES-22212-M0	Brown
STD	4.6	4ES-22212-K0	Green
STIFF	4.8	4ES-22212-G0	Red

For CAN, AUS, NZL

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. COLOR
SOFT	4.8	4ES-22212-G0	Red
STD	5.0	4ES-22212-F0	–
STIFF	5.2	4ES-22212-H0	Blue

YZ85LW:

For EUR

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. COLOR
SOFT	4.6	4ES-22212-K0	Green
STD	4.8	4ES-22212-G0	Red
STIFF	5.0	4ES-22212-F0	–

For AUS, NZL

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. COLOR
SOFT	5.0	4ES-22212-F0	–
STD	5.2	4ES-22212-H0	Blue
STIFF	5.4	4ES-22212-J0	Black

NOTE:

The I.D. color ⓐ is marked at the end of the spring.

SUSPENSION SETTING

• Front fork

NOTE:

- If any of the following symptoms is experienced with the standard position as the base, make resetting by reference to the adjustment procedure given in the same chart.
- Before any change, set the rear shock absorber sunken length to the standard figure 75 ~ 85 mm (3.0 ~ 3.3 in).

Symptom	Section				Check	Adjust
	Jump	Large gap	Medium gap	Small gap		
Stiff over entire range	○	○	○		Compression damping Oil level (oil amount) Spring	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Decrease oil level by about 5 ~ 10 mm (0.2 ~ 0.4 in). Replace with soft spring.
Unsmooth movement over entire range	○	○	○	○	Outer tube Inner tube Under bracket tightening torque	Check for any bends, dents, and other noticeable scars, etc. If any, replace affected parts. Retighten to specified torque.
Poor initial movement				○	Rebound damping Oil seal	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Apply grease in oil seal wall.
Soft over entire range, bottoming out	○	○			Compression damping Oil level (oil amount) Spring	Turn adjuster clockwise (about 2 clicks) to increase damping. Increase oil level by about 5 ~ 10 mm (0.2 ~ 0.4 in). Replace with stiff spring.
Stiff toward stroke end	○				Oil level (oil amount)	Decrease oil level by about 5 mm (0.2 in).
Soft toward stroke end, bottoming out	○				Oil level (oil amount)	Increase oil level by about 5 mm (0.2 in).
Stiff initial movement	○	○	○	○	Compression damping	Turn adjuster counterclockwise (about 2 clicks) to decrease damping.
Low front, tending to lower front posture			○	○	Compression damping Rebound damping Balance with rear end Oil level (oil amount)	Turn adjuster clockwise (about 2 clicks) to increase damping. Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Set sunken length for 80 ~ 85 mm (3.1 ~ 3.3 in) when one passenger is astride seat (lower rear posture). Increase oil level by about 5 mm (0.2 in).
"Obtrusive" front, tending to upper front posture			○	○	Compression damping Balance with rear end Spring Oil level (oil amount)	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Set sunken length for 75 ~ 80 mm (3.0 ~ 3.1 in) when one passenger is astride seat (upper rear posture). Replace with soft spring. Decrease oil level by about 5 ~ 10 mm (0.2 ~ 0.4 in).

• Rear shock absorber

NOTE:

- If any of the following symptoms is experienced with the standard position as the base, make resetting by reference to the adjustment procedure given in the same chart.
- Adjust the damping in 2-click increments or decrements.

Symptom	Section				Check	Adjust
	Jump	Large gap	Medium gap	Small gap		
Stiff, tending to sink			○	○	Rebound damping Spring set length	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Set sunken length for 75 ~ 80 mm (3.0 ~ 3.1 in) when one passenger is astride seat.
Spongy and unstable			○	○	Rebound damping Spring	Turn adjuster clockwise (about 2 clicks) to increase damping. Replace with stiff spring.
Heavy and dragging			○	○	Rebound damping Spring	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Replace with soft spring.
Poor road gripping				○	Rebound damping Compression damping Spring set length Spring	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Turn adjuster clockwise (about 2 clicks) to increase damping. Set sunken length for 75 ~ 80 mm (3.0 ~ 3.1 in) when one passenger is astride seat. Replace with soft spring.
Bottoming out	○	○			Compression damping Spring set length Spring	Turn adjuster clockwise (about 2 clicks) to increase damping. Set sunken length for 75 ~ 80 mm (3.0 ~ 3.1 in) when one passenger in astride seat. Replace with stiff spring.
Bouncing	○	○			Rebound damping Spring	Turn adjuster clockwise (about 2 clicks) to increase damping. Replace with soft spring.
Stiff travel	○	○			Compression damping Spring set length Spring	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Set sunken length for 80 ~ 85 mm (3.1 ~ 3.3 in) when one passenger is astride seat. Replace with soft spring.

CHAPTER 10
TROUBLESHOOTING

EAS00844

TROUBLESHOOTING

NOTE:

The following guide for troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to basic troubleshooting. Refer to the relative procedure in this manual for checks, adjustments, and replacement of parts.

STARTING FAILURES

ENGINE

Cylinder(s) and cylinder head(s)
- Loose spark plug
- Loose cylinder head or cylinder
- Damaged cylinder gasket
- Worn or damaged cylinder

Piston(s) and piston ring(s)
- Improperly installed piston ring
- Damaged, worn or fatigued piston ring
- Seized piston ring
- Seized or damaged piston

Air filter
- Improperly installed air filter
- Clogged air filter element

Crankcase and crankshaft
- Improperly assembled crankcase
- Seized crankshaft

Reed valve
- Deformed reed valve stopper
- Improperly seald reed valve stopper
- Incorrect tightened manifold
- Damaged gasket
- Damaged reed valve

FUEL SYSTEM

Fuel tank
- Empty fuel tank
- Clogged fuel strainer
- Clogged fuel tank drain hose
- Clogged rollover valve
- Clogged rollover valve hose
- Deteriorated or contaminated fuel

Fuel cock
- Clogged or damaged fuel hose

Carburetor(s)
- Deteriorated or contaminated fuel
- Clogged pilot jet
- Clogged pilot air passage
- Sucked-in air
- Damaged float
- Worn needle valve
- Improperly installed needle valve seat
- Incorrect fuel level
- Improperly installed pilot jet
- Clogged starter jet
- Faulty starter plunger
- Improperly adjusted starter cable

ELECTRICAL SYSTEMS

Spark plug(s)
- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil(s)
- Cracked or broken ignition coil body
- Broken or shorted primary or secondary coils
- Faulty spark plug lead

Ignition system
- Faulty CDI unit
- Faulty pickup coil
- Broken generator rotor woodruff key

Switches and wiring
- Faulty engine stop switch
- Broken or shorted wiring
- Improperly grounded circuit
- Loose connections

EAS00846

INCORRECT ENGINE IDLING SPEED

ENGINE

Air filter

- Clogged air filter element

FUEL SYSTEM

Carburetor(s)

- Faulty starter plunger
- Loose or clogged pilot jet
- Loose or clogged pilot air jet
- Damaged or loose carburetor joint
- Improperly synchronized carburetors
- Improperly adjusted engine idling speed (throttle stop screw)
- Improper throttle cable free play
- Flooded carburetor
- Faulty air induction system

ELECTRICAL SYSTEMS

Spark plug(s)

- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil(s)

- Broken or shorted primary or secondary coils
- Faulty spark plug lead
- Cracked or broken ignition coil

Ignition system

- Faulty CDI unit
- Faulty pickup coil
- Broken generator rotor woodruff key

EAS00848

POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE

Refer to “STARTING FAILURES”.

ENGINE

Air filter

- Clogged air filter element

FUEL SYSTEM

Carburetor(s)

- Faulty diaphragm
- Incorrect fuel level
- Loose or clogged main jet

EAS00850

FAULTY GEAR SHIFTING

SHIFTING IS DIFFICULT

Refer to “CLUTCH DRAGS”.

SHIFT PEDAL DOES NOT MOVE

Shift shaft

- Improperly adjusted shift rod
- Bent shift shaft.

Shift drum and shift forks

- Foreign object in a shift drum groove
- Seized shift fork
- Bent shift fork guide bar

Transmission

- Seized transmission gear
- Foreign object between transmission gears
- Improperly assembled transmission

JUMPS OUT OF GEAR

Shift shaft

- Incorrect shift pedal position
- Improperly returned stopper lever

Shift forks

- Worn shift fork

Shift drum

- Incorrect axial play
- Worn shift drum groove

Transmission

- Worn gear dog

EAS00851

FAULTY CLUTCH

CLUTCH SLIPS

Clutch
- Improperly assembled clutch
- Improperly adjusted clutch cable
- Loose or fatigued clutch spring
- Worn friction plate
- Worn clutch plate

Transmission oil
- Incorrect oil level
- Incorrect oil viscosity (low)
- Deteriorated oil

CLUTCH DRAGS

Clutch
- Unevenly tensioned clutch springs
- Warped pressure plate
- Bent clutch plate
- Swollen friction plate
- Bent clutch push rod
- Broken clutch boss
- Burnt primary driven gear bushing
- Match marks not aligned

Transmission oil
- Incorrect oil level
- Incorrect oil viscosity (high)
- Deteriorated oil

EAS00855

OVERHEATING

ENGINE

Clogged coolant passages
- Cylinder head(s) and piston(s)
- Heavy carbon buildup

Transmission oil
- Incorrect oil level
- Incorrect oil viscosity
- Inferior oil quality

COOLING SYSTEM

Coolant
- Low coolant level

Radiator
- Damaged or leaking radiator
- Faulty radiator cap
- Bent or damaged radiator fin

Water pump
- Damaged or faulty water pump
- Hose(s) and pipe(s)
- Damaged hose
- Improperly connected hose
- Damaged pipe
- Improperly connected pipe

FUEL SYSTEM

Carburetor(s)
- Incorrect main jet setting
- Incorrect fuel level
- Damaged or loose carburetor joint

Air filter
- Clogged air filter element

CHASSIS

Brake(s)
- Dragging brake

ELECTRICAL SYSTEMS

Spark plug(s)
- Incorrect spark plug gap
- Incorrect spark plug heat range

Ignition system
- Faulty CDI unit

EAS00857

POOR BRAKING PERFORMANCE

- Worn brake pad
- Worn brake disc
- Air in hydraulic brake system
- Leaking brake fluid
- Faulty brake caliper kit
- Faulty brake caliper seal
- Loose union bolt
- Damaged brake hose
- Oil or grease on the brake disc
- Oil or grease on the brake pad
- Incorrect brake fluid level

EAS00861

FAULTY FRONT FORK LEGS

LEAKING OIL

- Bent, damaged or rusty inner tube
- Cracked or damaged outer tube
- Improperly installed oil seal
- Damaged oil seal lip
- Incorrect oil level (high)
- Loose damper rod assembly bolt
- Damaged damper rod assembly bolt copper washer
- Cracked or damaged cap bolt O-ring

MALFUNCTION

- Bent or damaged inner tube
- Bent or damaged outer tube
- Damaged fork spring
- Worn or damaged outer tube bushing
- Bent or damaged damper rod
- Incorrect oil viscosity
- Incorrect oil level

EAS00864

UNSTABLE HANDLING

Handlebar

- Bent or improperly installed handlebar

Steering head components

- Improperly installed upper bracket
- Improperly installed lower bracket (improperly tightened ring nut)
- Bent steering stem
- Damaged ball bearing or bearing race

Front fork leg(s)

- Uneven oil levels (both front fork legs)
- Unevenly tensioned fork spring (both front fork legs)
- Broken fork spring
- Bent or damaged inner tube
- Bent or damaged outer tube

Swingarm

- Worn bearing or bushing
- Bent or damaged swingarm

Rear shock absorber assembly(-ies)

- Faulty rear shock absorber spring
- Leaking oil or gas

Tire(s)

- Uneven tire pressures (front and rear)
- Incorrect tire pressure
- Uneven tire wear

Wheel(s)

- Incorrect wheel balance
- Broken or loose spoke
- Damaged wheel bearing
- Bent or loose wheel axle
- Excessive wheel runout

Frame

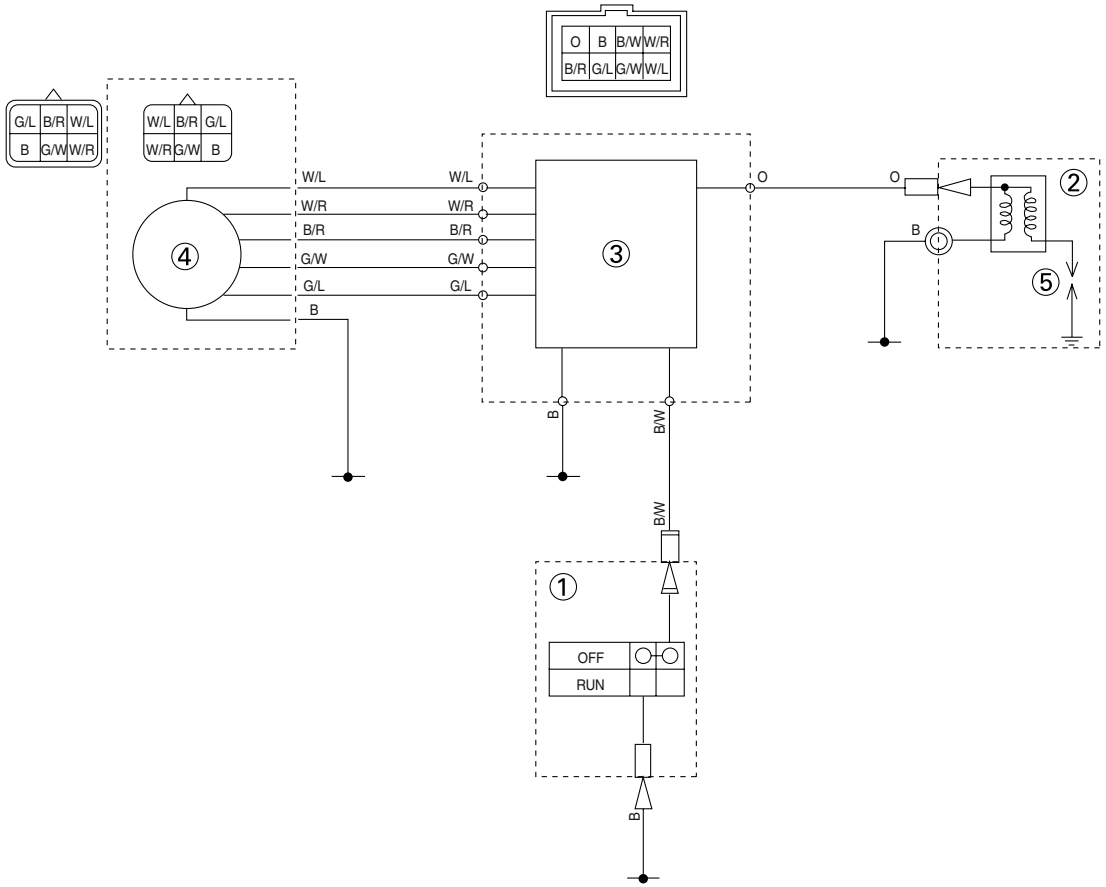
- Bent frame
- Damaged steering head pipe
- Improperly installed bearing race

YAMAHA MOTOR CO., LTD.
2500 SHINGAI IWATA SHIZUOKA JAPAN

YZ85W1/YZ85(W)/YZ85LW(W)
2007 WIRING DIAGRAM

YZ85W1/YZ85(W)/YZ85LW(W)
2007 SCHEMA DE CABLAGE

YZ85W1/YZ85(W)/YZ85LW(W)
SCHALTPLAN 2007



ELECTRICAL COMPONENTS
① Engine stop switch
② Ignition coil
③ CDI unit
④ CDI magneto
⑤ Spark plug

COLOR CODE
B . . . . . Black
O . . . . . Orange
B/R . . . . Black/Red
B/W . . . Black/White
G/L . . . . Green/Blue
G/W . . . Green/White
W/L . . . . White/Blue
W/R . . . White/Red

COMPOSANTS ELECTRIQUES
① Coupe-circuit du moteur
② Bobine d'allumage
③ Bloc CDI
④ Volant magnétique CDI
⑤ Bougie

CODE DE COULEUR
B . . . . . Noir
O . . . . . Orange
B/R. . . . Noir/Rouge
B/W . . . Noir/Blanc
G/L. . . . Vert/Bleu
G/W . . . Vert/Blanc
W/L . . . . Blanc/Bleu
W/R . . . . Blanc/Rouge

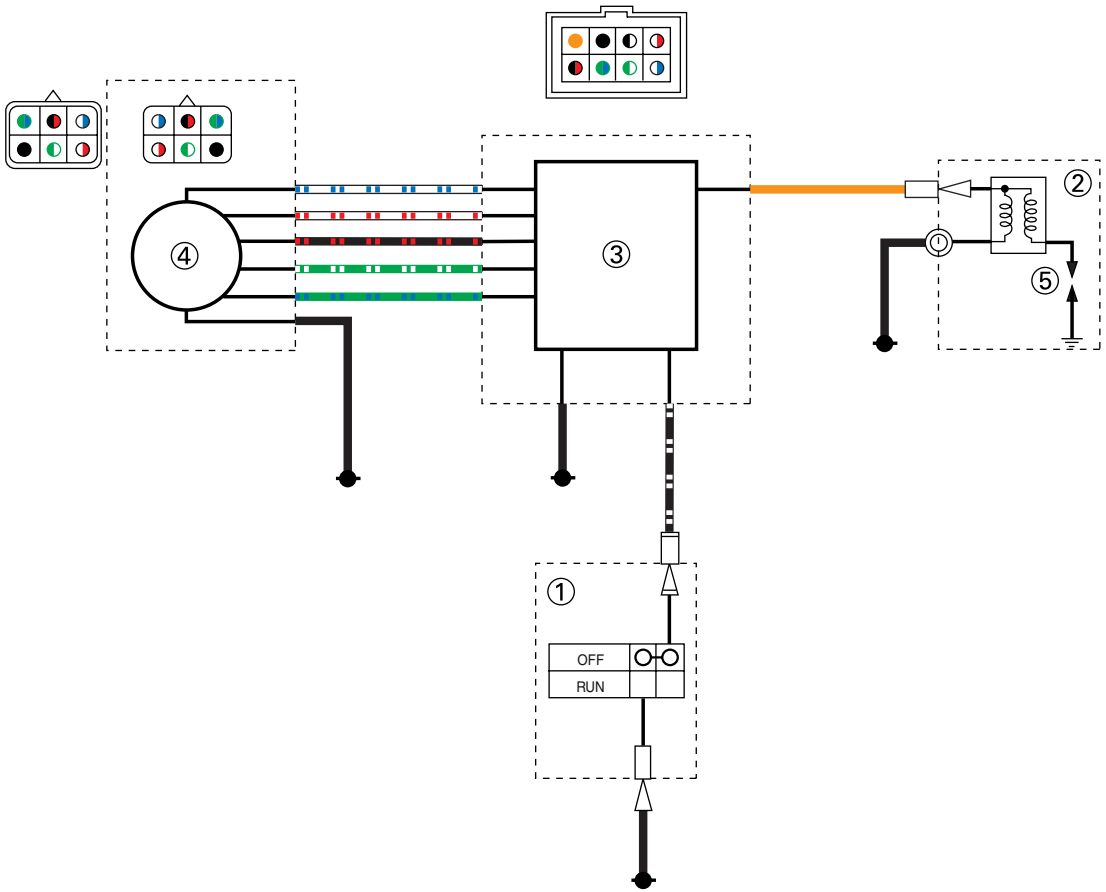
ELEKTRISCHEBAUTEILE
① Motorstoppschalter
② Zündspule
③ CDI-Magnetzünder
④ CDI-Magnet
⑤ Zündkerze

FARB-CODIERUNG
B . . . . . Schwarz
O . . . . . Orange
B/R . . . . Schwarz/Rot
B/W . . . . Schwarz/Weiß
G/L . . . . Grün/Blau
G/W . . . . Grün/Weiß
W/L . . . . Weiß/Blau
W/R . . . . Weiß/Rot

YZ85W1/YZ85(W)/YZ85LW(W)
2007 WIRING DIAGRAM

YZ85W1/YZ85(W)/YZ85LW(W)
2007 SCHEMA DE CABLAGE

YZ85W1/YZ85(W)/YZ85LW(W)
SCHALTPLAN 2007



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COMPOSANTS ELECTRIQUES
① Coupe-circuit du moteur
② Bobine d'allumage
③ Bloc CDI
④ Volant magnétique CDI
⑤ Bougie

CODE DE COULEUR
B . . . . . Noir
O . . . . . Orange
B/R . . . . Noir/Rouge
B/W . . . . Noir/Blanc
G/L . . . . Vert/Bleu
G/W . . . . Vert/Blanc
W/L . . . . Blanc/Bleu
W/R . . . . Blanc/Rouge

ELEKTRISCHEBAUTEILE
① Motorstoppschalter
② Zündspule
③ CDI-Magnetzünder
④ CDI-Magnet
⑤ Zündkerze

FARB-CODIERUNG
B . . . . . Schwarz
O . . . . . Orange
B/R . . . . Schwarz/Rot
B/W . . . . Schwarz/Weiß
G/L . . . . Grün/Blau
G/W . . . . Grün/Weiß
W/L . . . . Weiß/Blau
W/R . . . . Weiß/Rot