
FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the XJ900RL/XJ900P. For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with following manual:

XJ900 Service Manual 33F-28197-20
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**OVERSEAS SERVICE
OVERSEAS OPERATIONS
YAMAHA MOTOR CO., LTD.**

NOTICE

This manual has been written by Yamaha Motor Company for use by Authorized Yamaha Dealers and their qualified mechanics. In light of this purpose it has been assumed that certain basic mechanical precepts and procedures inherent to our products are already known and understood by the mechanic. Without such basic knowledge, repairs or service to this model may render the machine unsafe, and for this reason we must advise that all repairs and/or service be performed by an Authorized Yamaha Dealer who is in possession of the requisite basic product knowledge.

Yamaha Motor Company, Ltd. is continually striving to further improve all models manufactured by the company. Modifications are therefore inevitable and changes in specifications or procedures will be forwarded to all Authorized Yamaha Dealers and will, where applicable, appear in future editions of this manual.

HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

NOTE:

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

CAUTION:

A CAUTION indicates special procedures that must be followed to avoid damage to the motorcycle.

WARNING:

A WARNING indicates special procedures that must be followed to avoid injury to a motorcycle operator or person inspecting or repairing the motorcycle.

MANUAL FORMAT

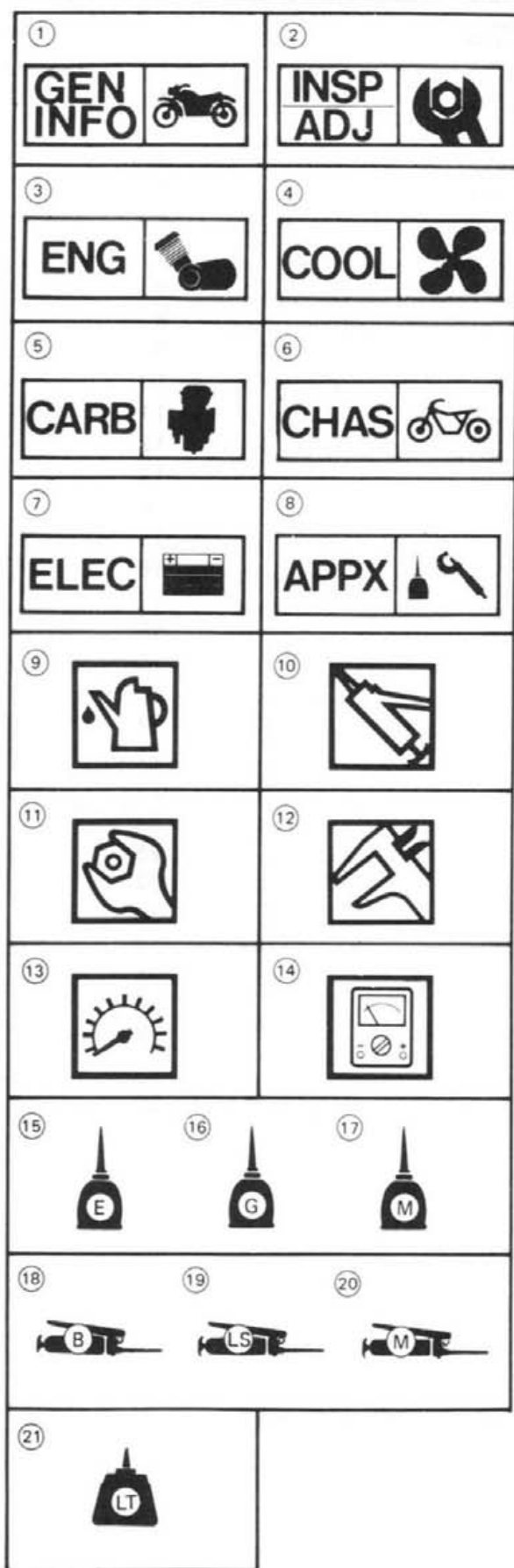
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

- Bearings;
Pitting/Damage → Replace.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.



SYMBOL MARKS

(Refer to the illustration)

Symbol marks ① to ⑧ are designed as thumb tabs to indicate the chapter's number and content.

- ① General information
- ② Periodic inspection and adjustment
- ③ Engine
- ④ Cooling system
- ⑤ Carburetion
- ⑥ Chassis
- ⑦ Electrical
- ⑧ Appendices

Symbol marks ⑨ to ⑭ indicate specific data as the following items:

- ⑨ Recommended liquid
- ⑩ Recommended grease
- ⑪ Tightening torque
- ⑫ Wear limit
- ⑬ Engine speed
- ⑭ Ω , V, A

Symbol marks ⑮ to ㉑ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑮ Apply engine oil
- ⑯ Apply gear oil
- ⑰ Apply molybdenum disulfide oil
- ⑱ Apply wheel bearing grease
- ⑲ Apply lightweight lithium-soap base grease
- ⑳ Apply molybdenum disulfide grease
- ㉑ Apply locking agent (LOCTITE®)

CONTENTS

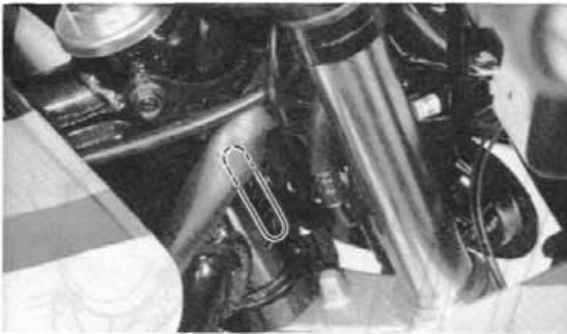
GENERAL INFORMATION	1
MOTORCYCLE IDENTIFICATION	1
COWLING	2
PERIODIC MAINTENANCE/LUBRICATION INTERVALS	4
FRONT AND REAR BRAKE PAD	5
ANTI-DRIVE	6
EXPLODED DIAGRAMS	8
CYLINDER HEAD	8
VALVE/CAM CHAIN	9
CRANKSHAFT/PISTON	10
CLUTCH	11
TRANSMISSION	12
MIDDLE GEAR/DAMPER	13
OIL COOLER	14
CARBURETOR	15
FRONT WHEEL	16
REAR WHEEL	17
FRONT BRAKE CALIPER	18
REAR BRAKE CALIPER	19
FRONT MASTER CYLINDER	20
REAR MASTER CYLINDER	21
FRONT FORK	22
SWINGARM/REAR SHOCK ABSORBER	23
FINAL GEAR/DRIVE SHAFT	24
ELECTRICAL	25
LUBRICATION DIAGRAMS	27
CABLE ROUTING	30
 SPECIFICATIONS	 34
I. GENERAL SPECIFICATIONS	34
II. MAINTENANCE SPECIFICATIONS	37
 WIRING DIAGRAM	 50

GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

FRAME SERIAL NUMBER

The frame serial number is stamped into the right side of the steering head pipe.



ENGINE SERIAL NUMBER

The engine serial number is stamped into the elevated part of the right rear section of the engine.



NOTE:

The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.

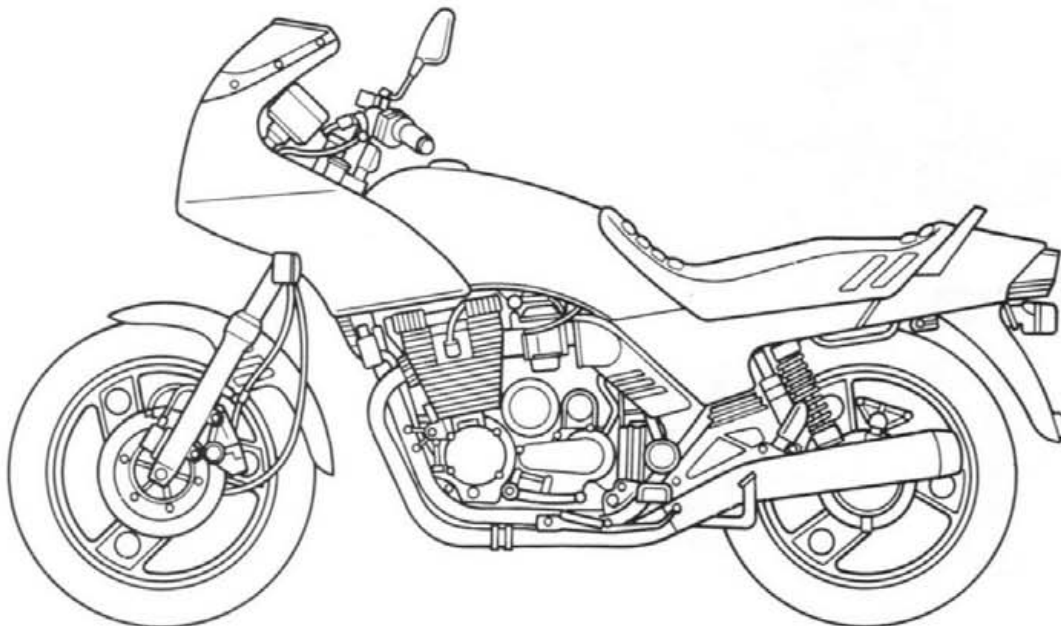
Starting Serial Number:

XJ900RL 33F-001101

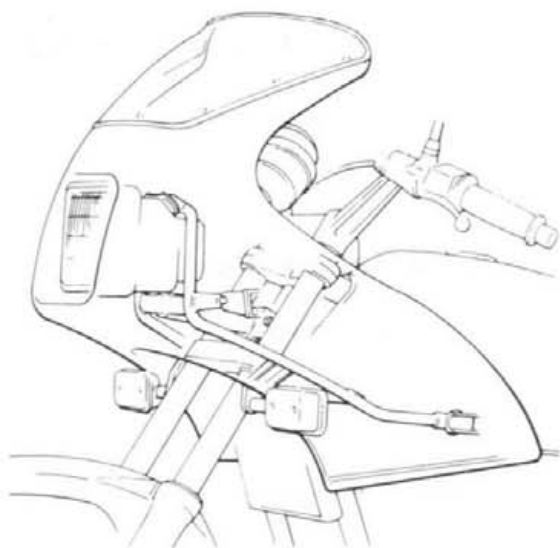
XJ900P 33F-005101

NOTE:

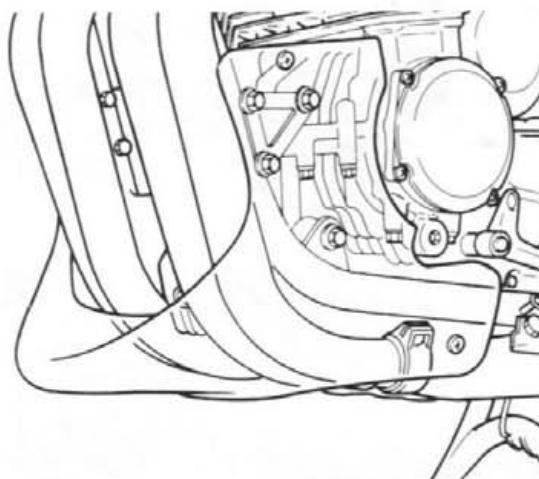
Designs and specifications are subject to change without notice.



UPPER COWL



**LOWER COWL
(Except for XJ900P)**



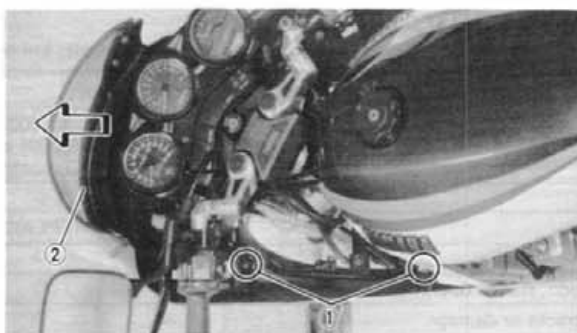
COWLING

UPPER COWL

Removal

1. Remove:
 - Screws ①
2. Disconnect:
 - Headlight lead ①
 - Auxiliary light lead ②
3. Remove:
 - Headlight unit ③
4. Remove:
 - Wire harness holder ①
 - Bolts ②





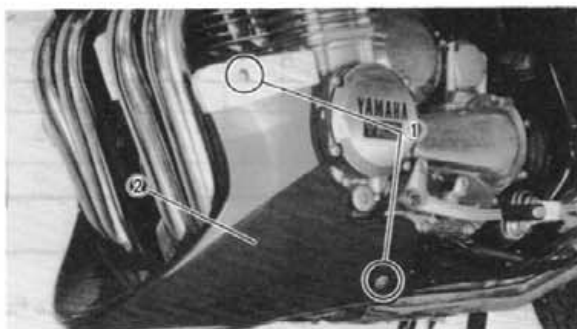
5. Remove:
 - Bolts (1)
 - Upper cowl (2)

Installation

1. Install:
 - Reverse the removal procedure



Cowling Securing Bolts:
5 Nm (0.5 m·kg, 3.6 ft·lb)



LOWER COWL (Except for XJ900P)

Removal

1. Remove:
 - Screws (1)
 - Lower cowl (2)

Installation

1. Install:
 - Lower cowl
 - Screws



PERIODIC MAINTENANCE/LUBRICATION INTERVALS

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

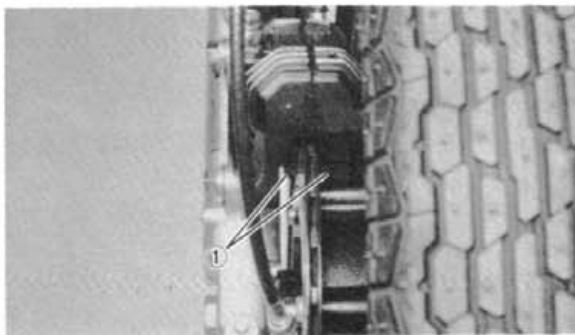
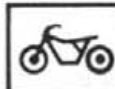
Unit: km (mi)

ITEM	REMARKS	BREAK-IN 1,000 (600)	EVERY	
			6,000 (4,000) or 6 months	12,000 (8,000) or 12 months
Valve clearance	Check/Adjust valve clearance.			○
Spark plug(s)	Check/Clean or replace.	○	○	REPLACE
Air filter	Clean. Replace if necessary.		○	○
Carburetor	Check/Adjust/idle speed, synchronization, starter operation.	○	○	○
Fuel line	Check fuel hose and vacuum pipe for cracks or damage.		○	○
Engine oil	Replace (Warm engine before draining).	○	○	○
Engine oil filter	Replace.	○		○
Final gear oil	Replace every 24,000 (16,000) or 24 months.	○	CHECK	CHECK
Brake	Check operation/fluid leakage/See NOTE/Adjust if necessary		○	○
Clutch	Check operation/Adjust if necessary.		○	○
Rear arm pivot bearings	Check rear arm assembly for looseness. Moderately repack every 24,000 (16,000) or 24 months. Use medium weight wheel bearing grease.			CHECK
Wheels	Check balance/damage/runout.		○	○
Wheel bearings	Check bearings assembly for looseness/damage. Replace if damaged.		○	○
Steering bearing	Check bearings assembly for looseness. Moderately repack every 24,000 (16,000) or 24 months. Use medium weight wheel bearing grease.			CHECK
Front forks	Check operation/oil leakage		○	○
Rear shock absorber	Check operation/oil leakage		○	○
Fittings/Fasteners	Check all chassis fittings and fasteners.	○	○	○
Center and sidestand	Check operation	○	○	○
Battery	Check specific gravity. Check breather pipe for proper operation.		○	○
A.C. Generator	Replace generator brushes.			○

NOTE:

Brake fluid replacement:

1. When disassembling the master cylinder or caliper cylinder, replace the brake fluid. Normally check the brake fluid level and add the fluid as required.
2. On the inner parts of the master cylinder and caliper cylinder, replace the oil seals every two years.
3. Replace the brake hoses every four years, or if cracked or damaged.



PAD CHECK (FRONT AND REAR)

A wear indicator is attached to each brake pad to facilitate disc brake pad checks. This indicator permits a visual check without disassembling the pads. To check, depress the brake lever or pedal and inspect the wear indicator. If the wear indicator is **ALMOST** in contact with the disc plate, replace the pads.

1. Wear indicator

CALIPER PAD REPLACEMENT (FRONT AND REAR)

Removal

NOTE:

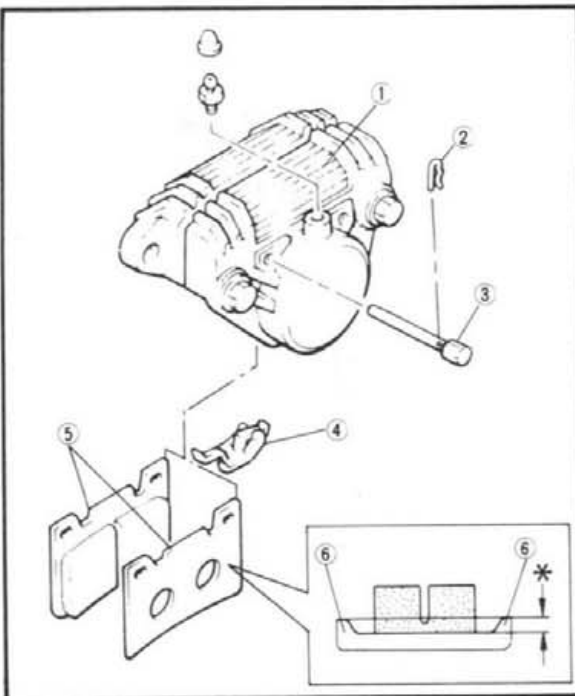
It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

1. Remove:

- Brake caliper cover ①
- Circlips ②
- Retaining pins ③
- Pad spring ④
- Pads ⑤

NOTE:

Replace the pads as a set if either is found to be worn to the wear limit.



*** Pad Wear Limit: (Front and Rear)**
0.5 mm (0.02 in)

6. Wear indicator

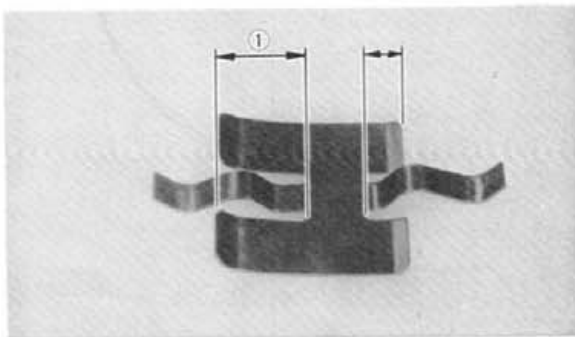
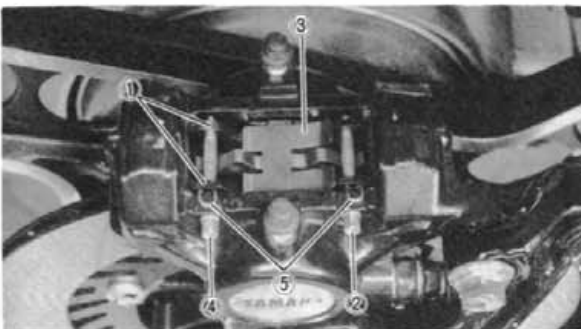
Installation

1. Install:

- Pads ①
- Retaining pin ②
- Pad spring ③
- Retaining pin ④
- Circlips ⑤
- Brake caliper cover

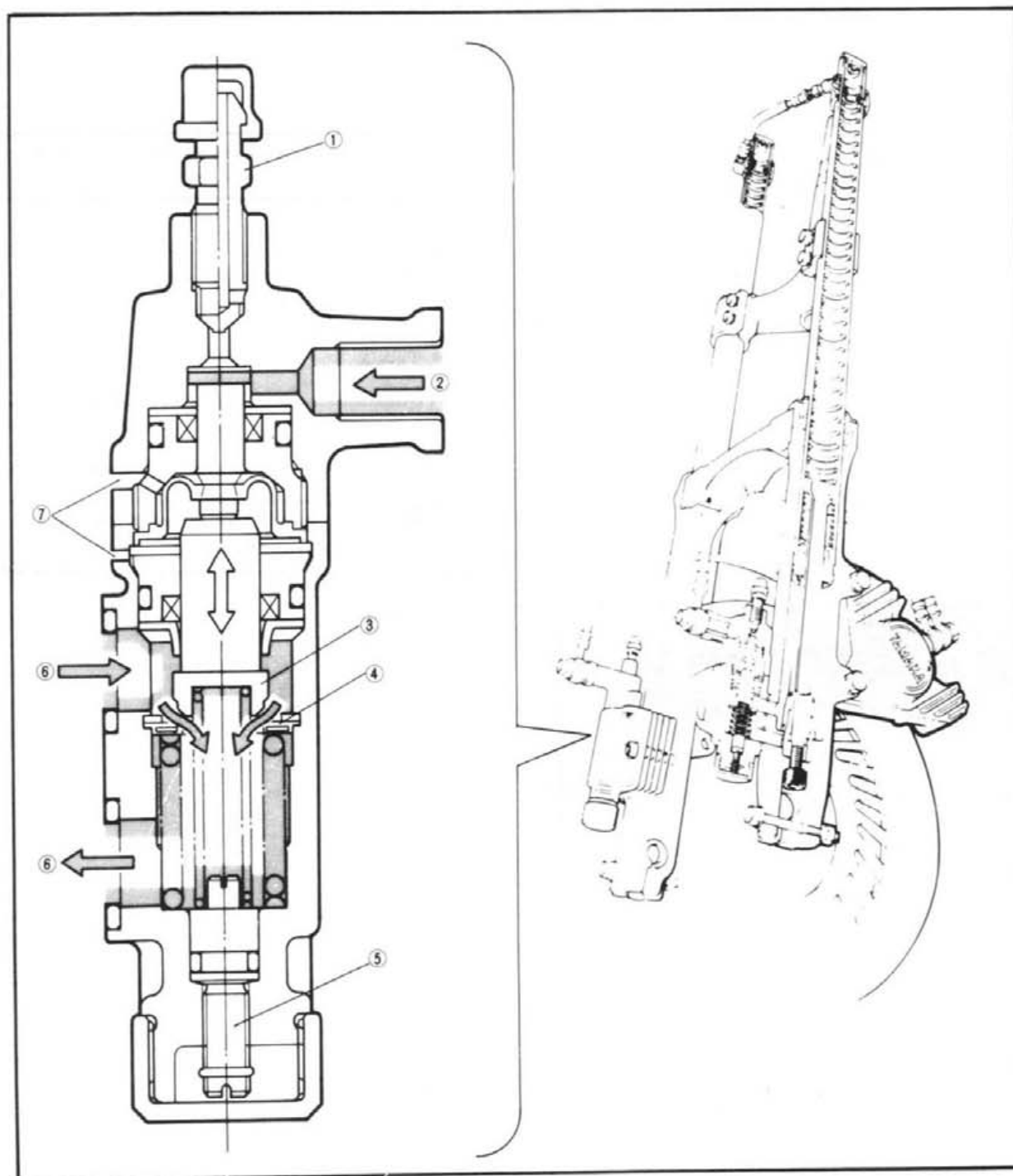
NOTE:

Install the pad spring with its longer tangs ① in the disc rotation direction.



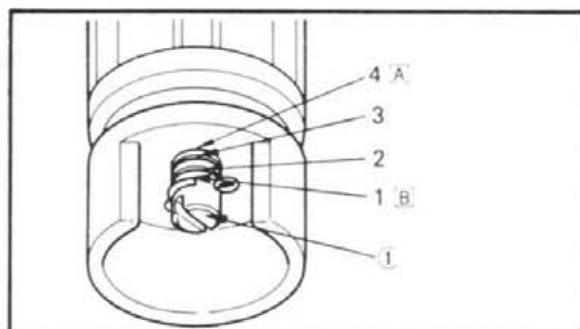
ANTI-DIVE

- 1 Air bleed screw
- 2 Brake fluid
- 3 Valve
- 4 Valve seat
- 5 Adjusting bolt
- 6 Fork oil
- 7 Pilot hole



**ANTI-DIVE ADJUSTMENT**

1. Remove:
 - Rubber caps ①
2. To **decrease** the anti-dive effect, turn the adjusting bolt **clockwise** until the first line appears level to the top of the machined slot(s).
3. To **increase** the anti-dive effect, turn the adjusting bolt **counterclockwise**.

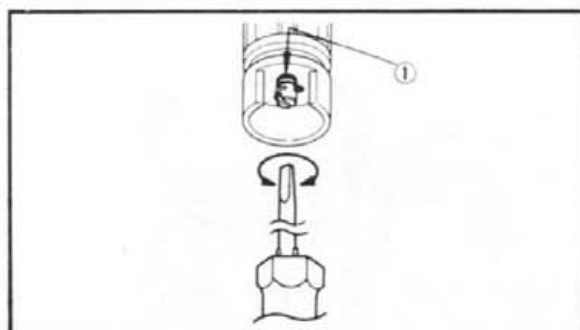
**WARNING:**

The anti-dive settings must be the same on both anti-dive units. Hence, be sure to perform the above procedure on both anti-dive units.

A: MAXIMUM POSITION

B: MINIMUM POSITION

1. Adjusting bolt

**CAUTION:**

When the fourth line of the adjusting bolt appears from the bottom of the anti-dive housing, the adjusting bolt will bottom in the anti-dive unit and a resistance will be felt. Do not attempt to turn the adjusting bolt beyond this point, or the anti-dive unit will be damaged.

4. Install:
 - Rubber caps
1. Machined slot

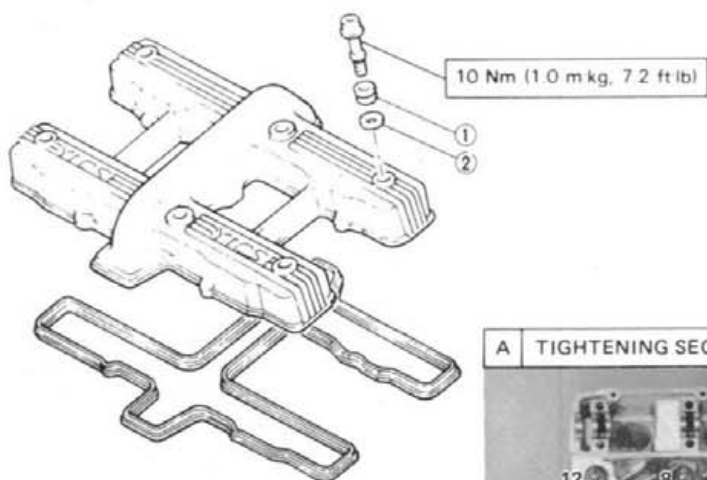
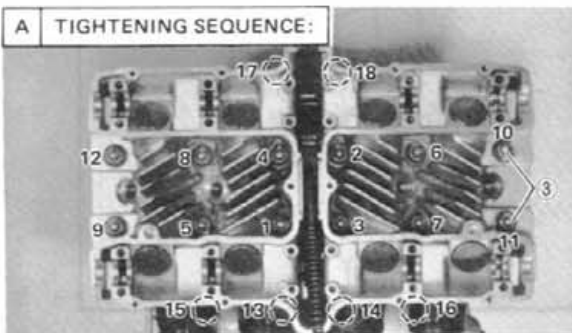
Adjusting bolt position	Loading condition		
	Solo rider	With accessory equipments or passenger	With accessory equipments and passenger
1	○		
2	○	○	
3		○	○
4			○

**ENG**

CYLINDER HEAD

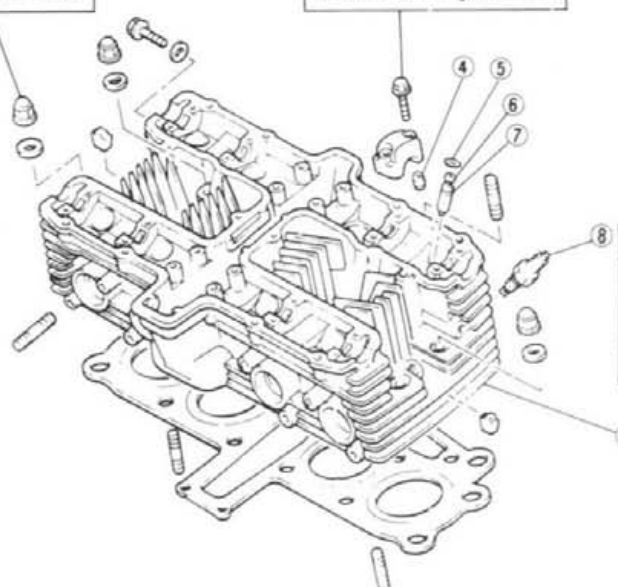
EXPLODED DIAGRAMS**CYLINDER HEAD**

- | | |
|------------------|------------------|
| 1. Grometo | 8. Spark plug |
| 2. Washer | 9. Cylinder head |
| 3. Copper washer | |
| 4. Dowel | |
| 5. Circlip | |
| 6. Oil seal | |
| 7. Valve guide | |

**A TIGHTENING SEQUENCE:**

32 Nm (3.2 m kg, 23 ft lb)

10 Nm (1.0 m kg, 7.2 ft lb)

**BPR8ES (NGK)****GAP:**

B	0.7 ~ 0.8 mm (0.028 ~ 0.032 in)
---	------------------------------------

20 Nm (2.0 m kg, 14 ft lb)

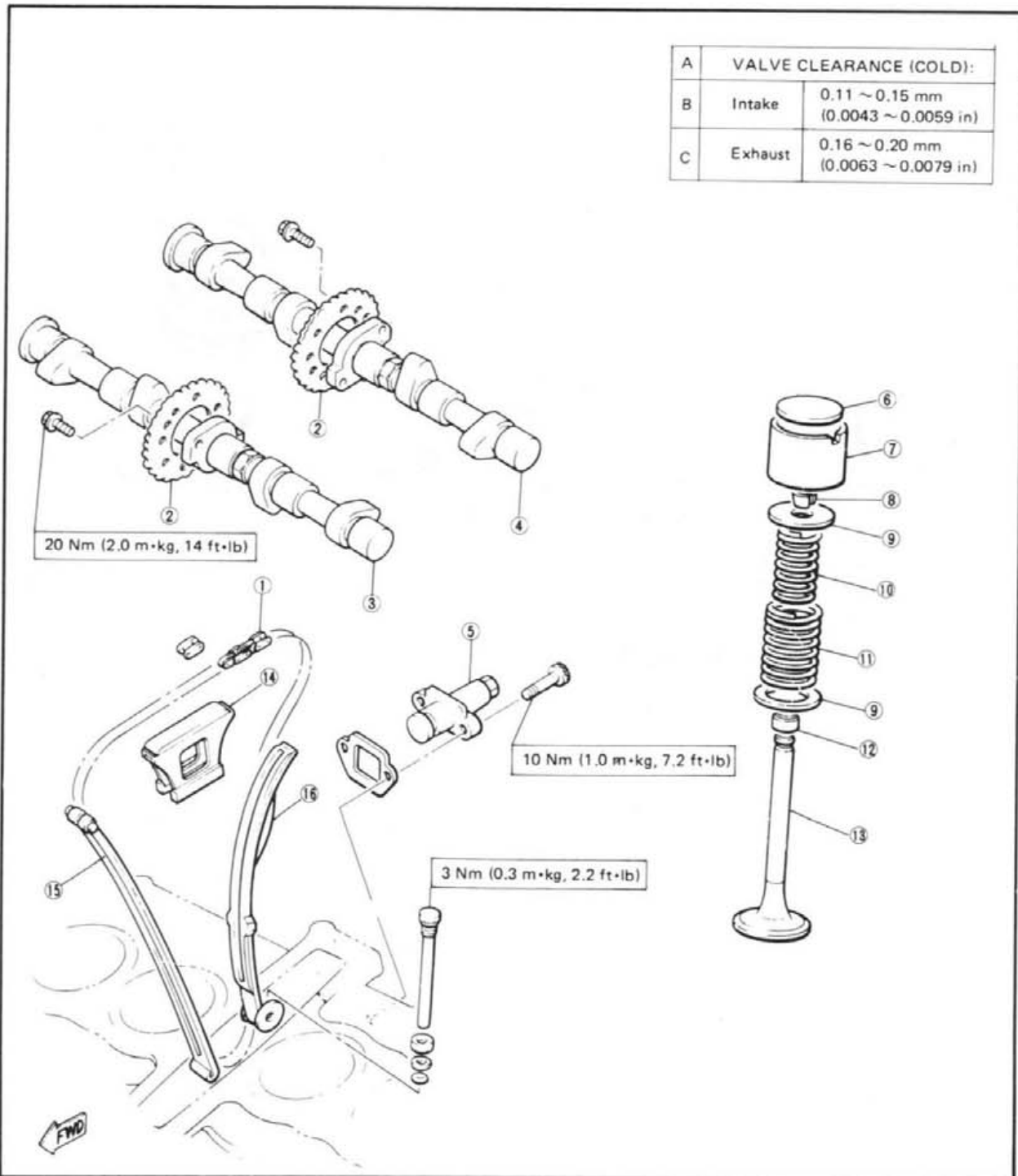
C	CYLINDER HEAD WEAR LIMIT: 0.03 mm (0.0012 in)
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VALVE/CAM CHAIN

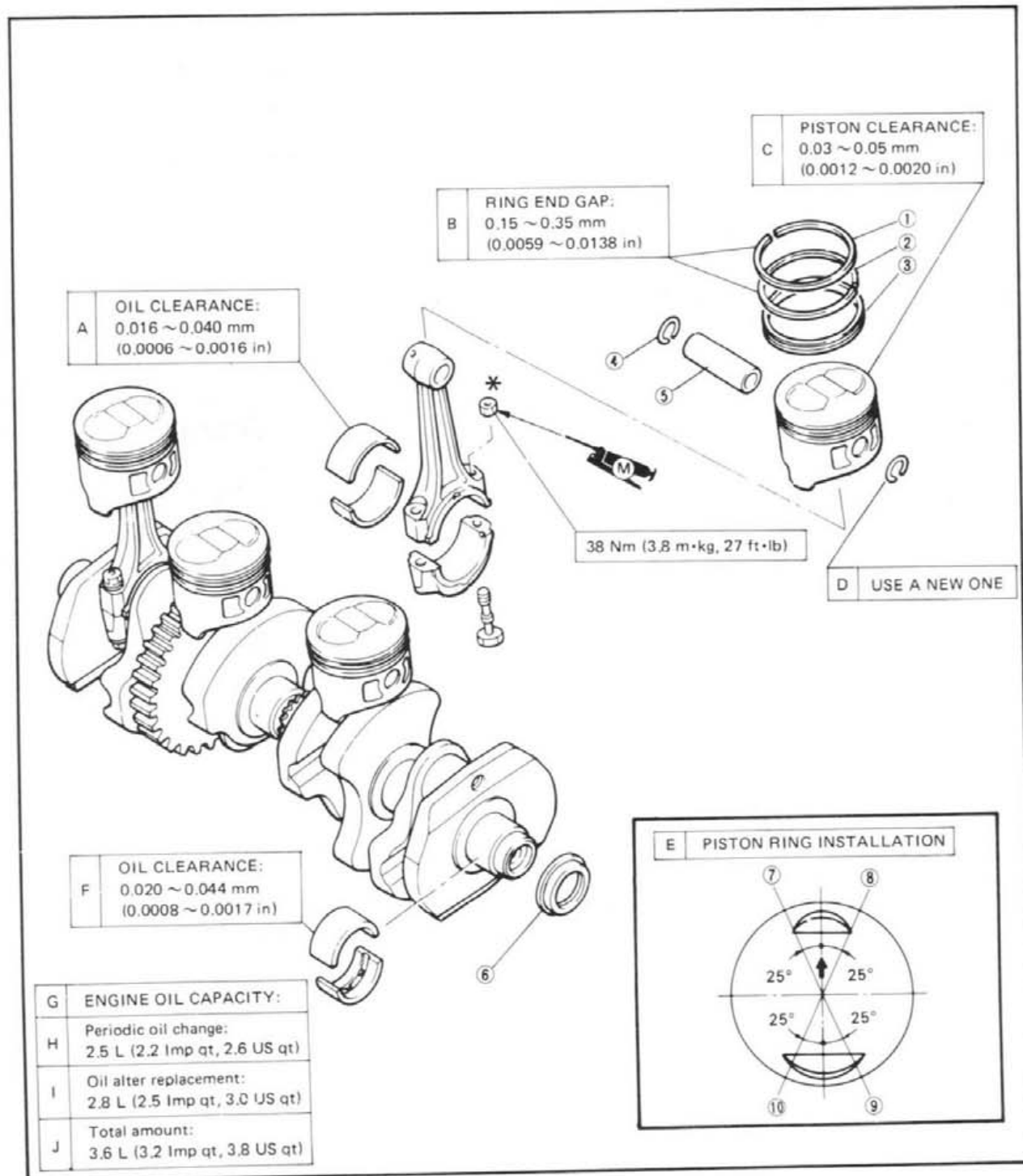
- | | |
|-----------------------|-------------------------|
| 1. Cam chain | 12. Oil seal |
| 2. Cam sprocket | 13. Valve |
| 3. Camshaft (Exhaust) | 14. Chain guide (Top) |
| 4. Camshaft (Intake) | 15. Chain guide (Front) |
| 5. Chain tensioner | 16. Chain guide (Rear) |
| 6. Adjusting pad | |
| 7. Valve lifter | |
| 8. Valve retainer | |
| 9. Spring seat | |
| 10. Inner spring | |
| 11. Outer spring | |



**ENG****CRANKSHAFT/PISTON****CRANKSHAFT/PISTON**

1. Top ring
2. Second ring
3. Oil ring
4. Circlip
5. Piston pin
6. Oil seal
7. Top ring
8. Oil ring (Lower rail)
9. Second ring
10. Oil ring (Upper rail)

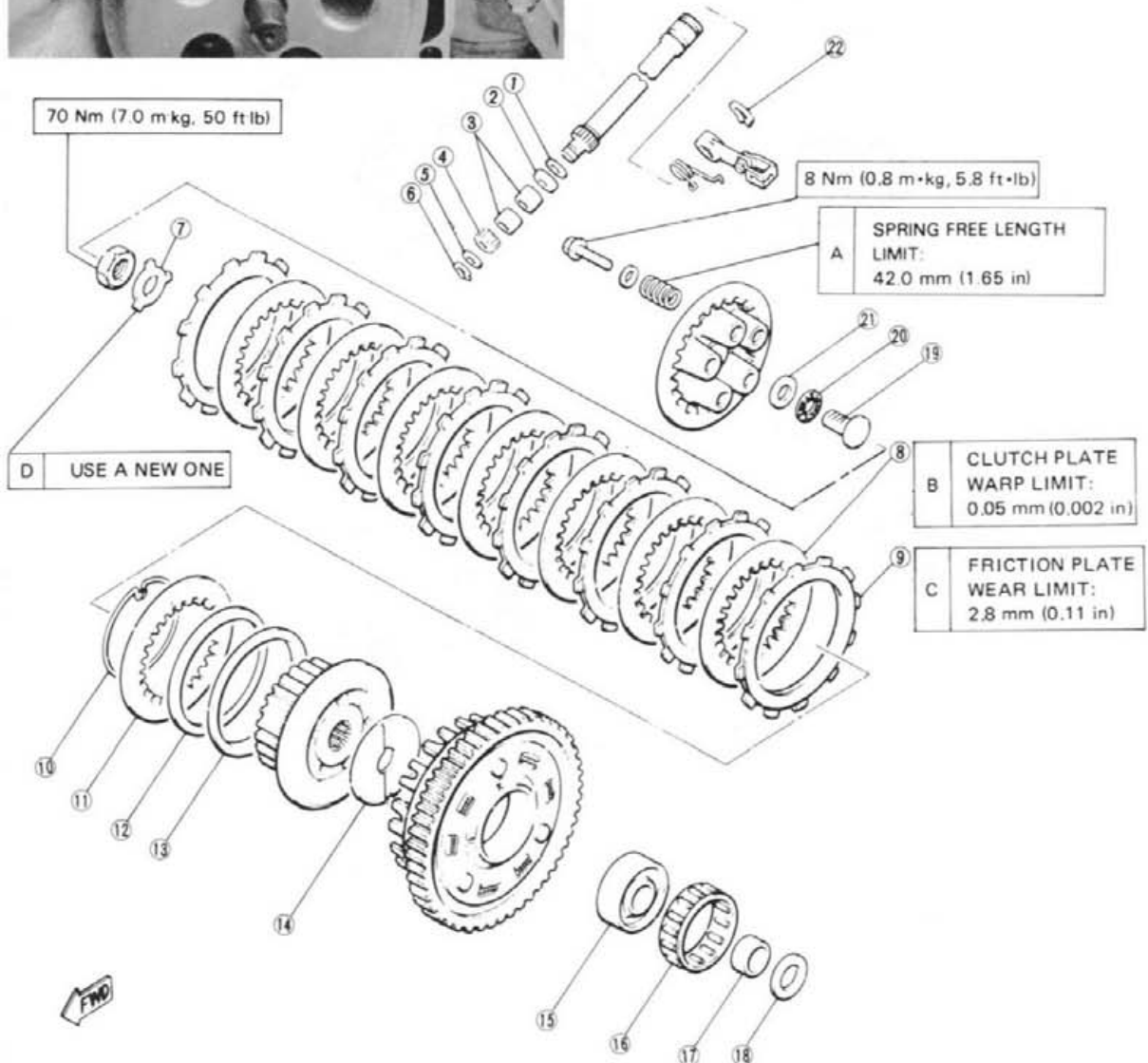
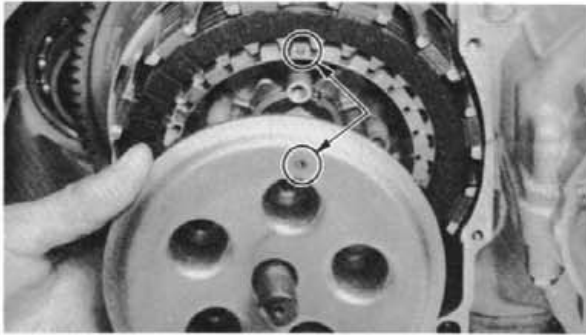
* When installing the connecting rod, be sure that the securing nuts are on top.





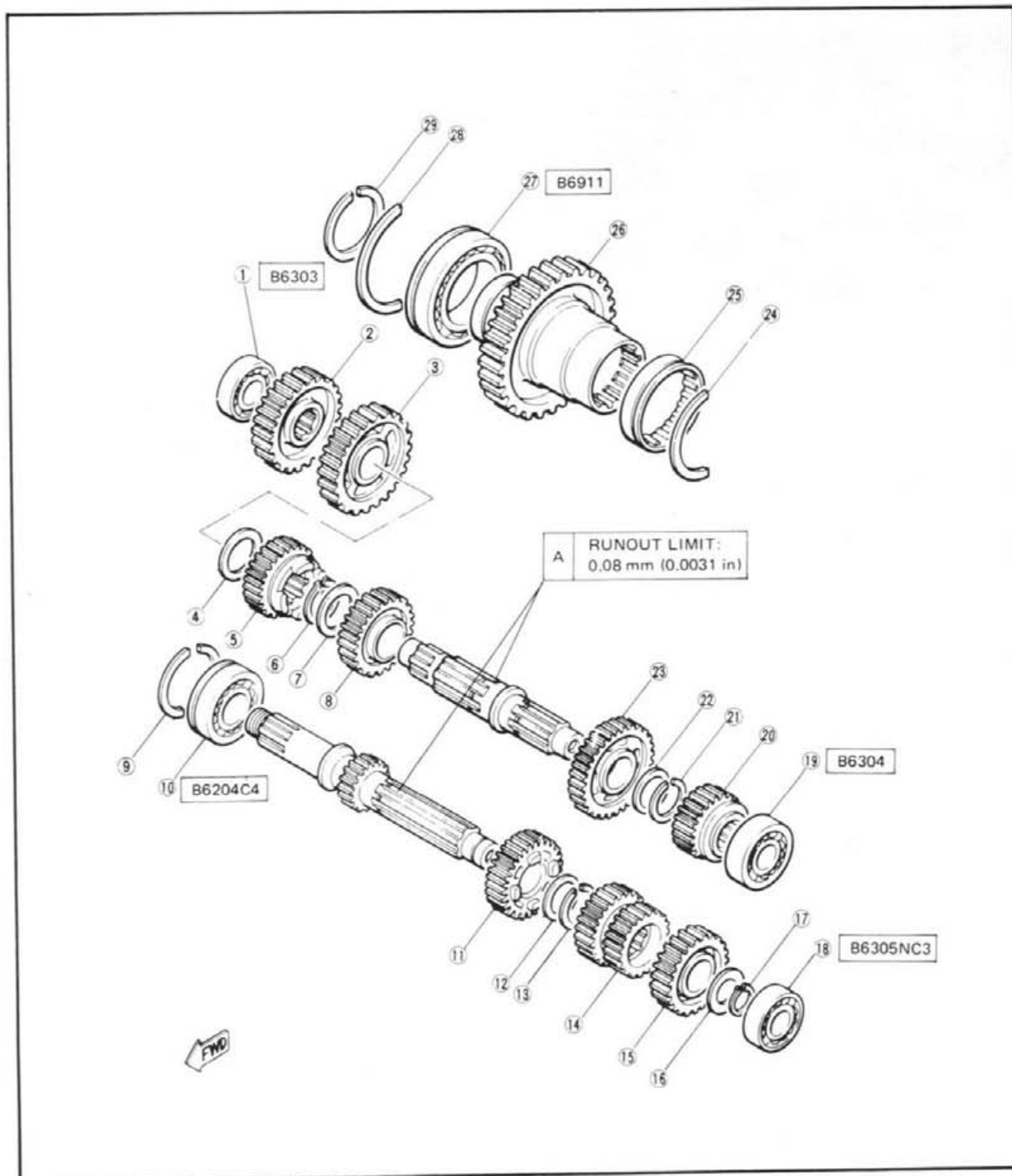
CLUTCH

- | | |
|---------------------------|------------------------|
| 1. Plate washer | 12. Clutch boss spring |
| 2. Oil seal | 13. Spring seat |
| 3. Bearing | 14. Thrust plate |
| 4. Pinion gear | 15. Spacer |
| 5. Plate washer | 16. Bearing |
| 6. Circlip | 17. Collar |
| 7. Lock washer | 18. Thrust plate |
| 8. Clutch plate (7 pcs) | 19. Pull rod |
| 9. Friction plate (8 pcs) | 20. Bearing |
| 10. Wire clip | 21. Plate washer |
| 11. Clutch plate | 22. Circlip |



TRANSMISSION

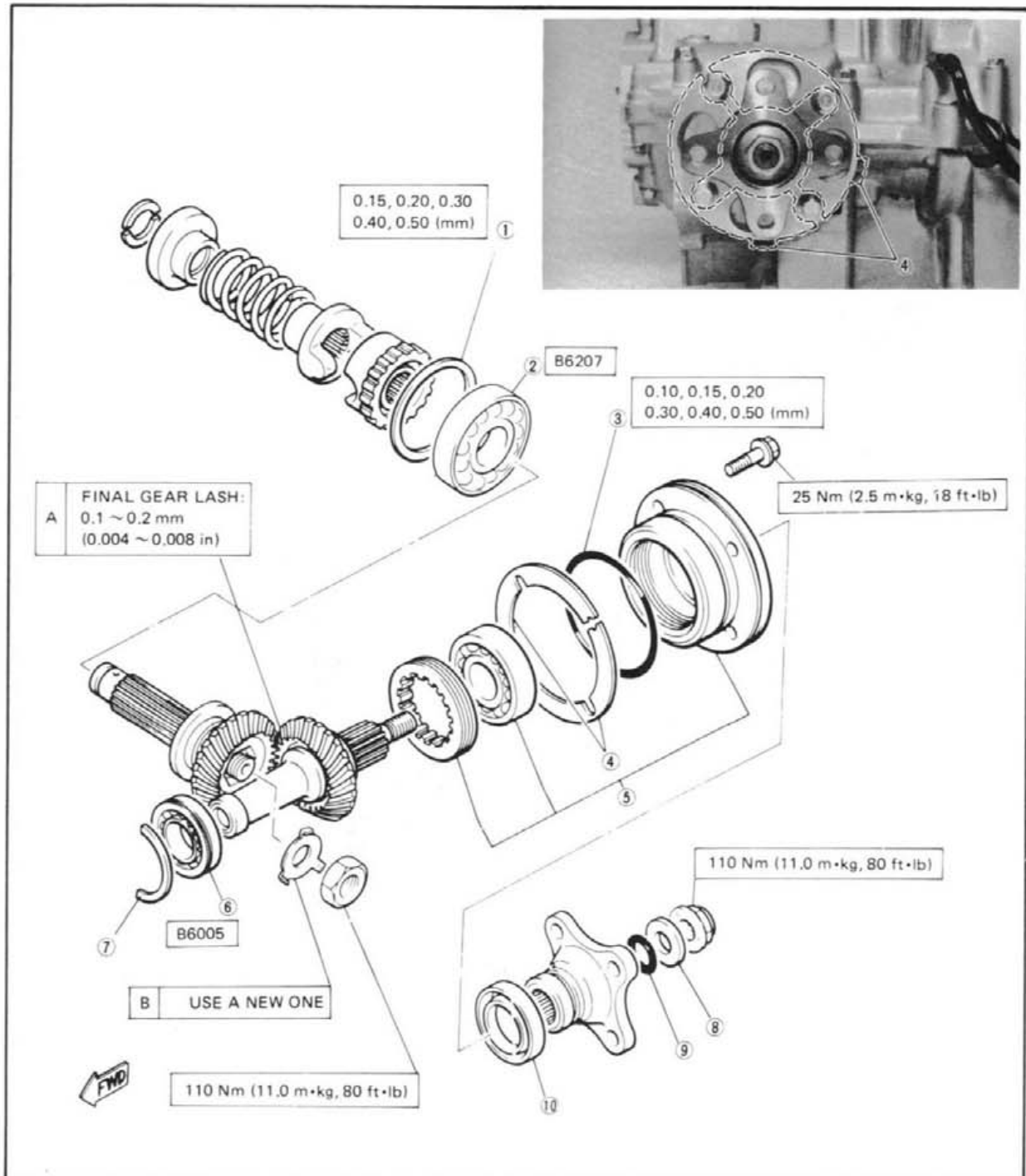
- | | | |
|----------------------|---------------------|------------------------|
| 1. Bearing | 12. Washer | 23. 2nd wheel gear |
| 2. Middle drive gear | 13. Circlip | 24. Clip |
| 3. 1st wheel gear | 14. 2nd pinion gear | 25. Bearing |
| 4. Plate washer | 15. 5th pinion gear | 26. Middle driven gear |
| 5. 4th wheel gear | 16. Plate washer | 27. Bearing |
| 6. Circlip | 17. Circlip | 28. Clip |
| 7. Washer | 18. Bearing | 29. Circlip |
| 8. 3rd wheel gear | 19. Bearing | |
| 9. Clip | 20. 5th wheel gear | |
| 10. Bearing | 21. Circlip | |
| 11. 4th pinion gear | 22. Washer | |





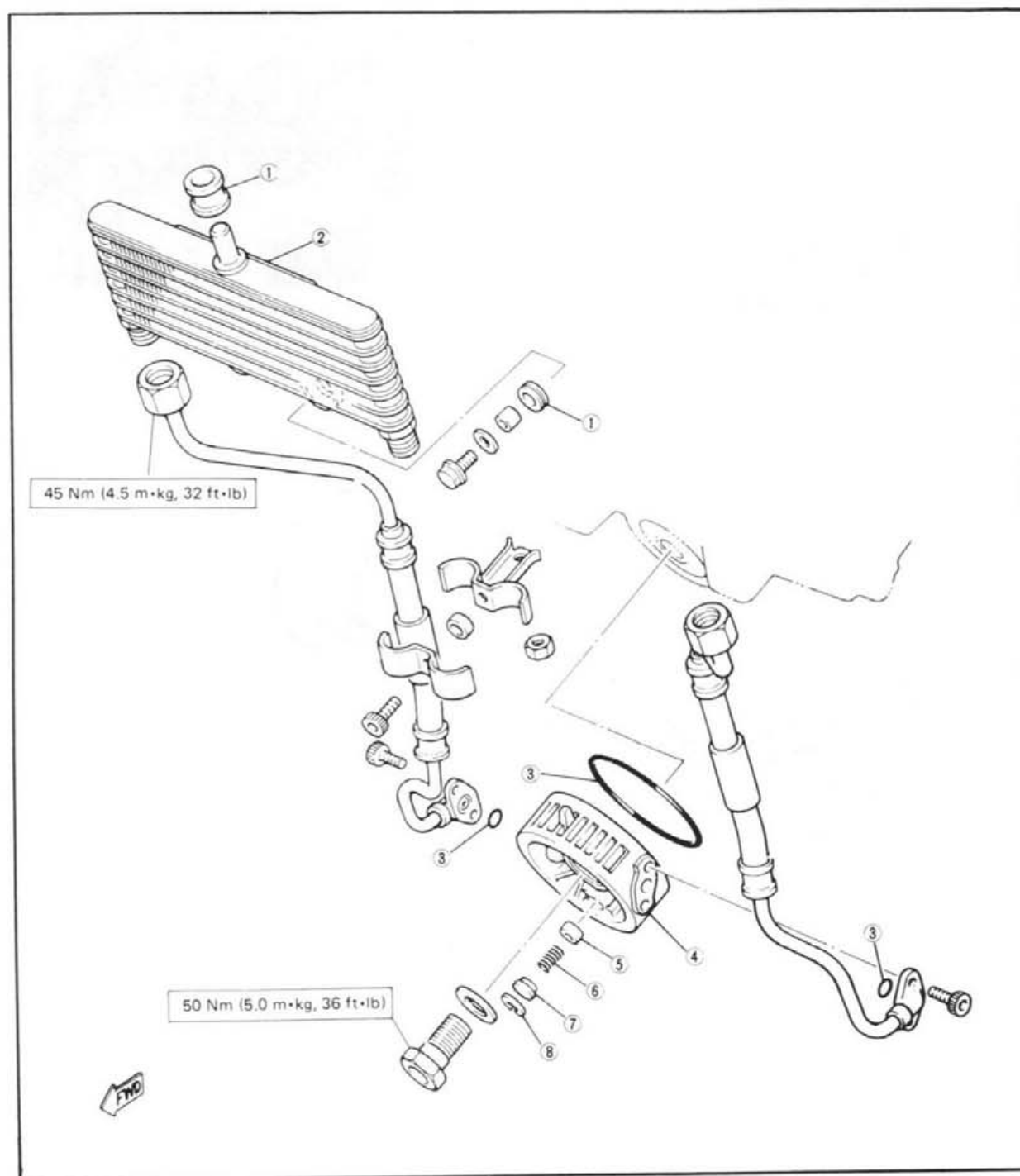
MIDDLE GEAR/DAMPER

1. Shim
2. Bearing
3. O-ring
4. Shim
5. Bearing housing comp.
6. Bearing
7. Clip
8. Plate washer
9. O-ring
10. Oil seal



OIL COOLER

1. Grommet
2. Oil cooler assembly
3. O-ring
4. Spacer
5. Plunger
6. Spring
7. Washer
8. Circlip



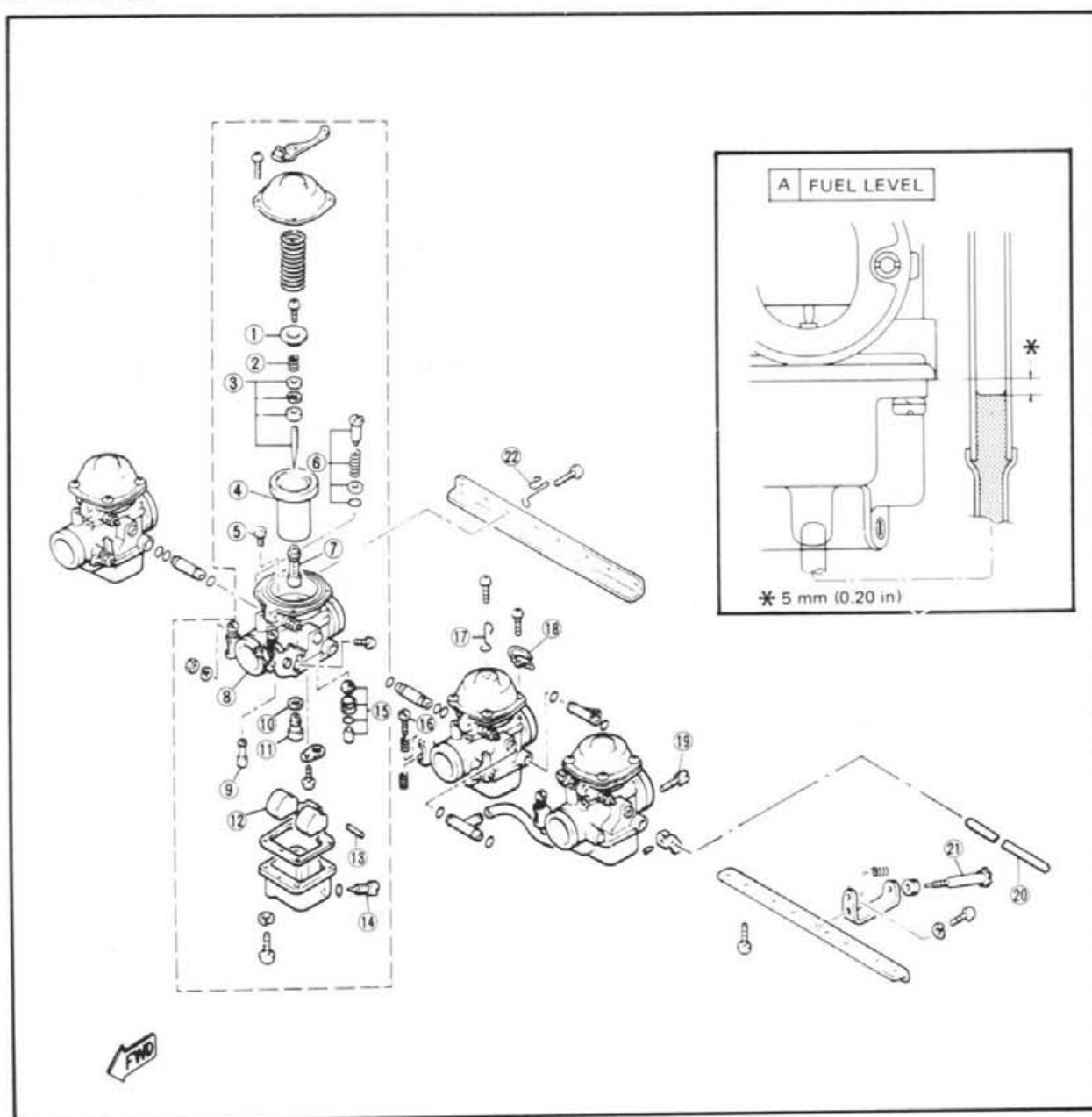


CARBURETOR

1. Jet needle cover
2. Set spring
3. Jet needle
4. Piston valve
5. Starter jet
6. Pilot screw
7. Main nozzle
8. Starter lever
9. Pilot jet
10. Main jet washer
11. Main jet
12. Float
13. Float pin
14. Drain screw
15. Float valve
16. Synchronizing screw
17. Vacuum pipe clip
18. Fuel hose clip
19. Pilot air jet
20. Starter lever shaft
21. Throttle stop screw
22. Clutch wire clip

SPECIFICATIONS

Main jet	# 102.5
Jet needle	4H226-3
Needle jet	Y-0 (#318)
Starter jet	#32.5
Fuel level	5.0 ± 1 mm (0.20 ± 0.04 in)
Float height	22.3 mm (0.878 in)
Pilot screw	2 turns
Float valve seat	φ2.0
Engine idle speed	1,100 r/min.



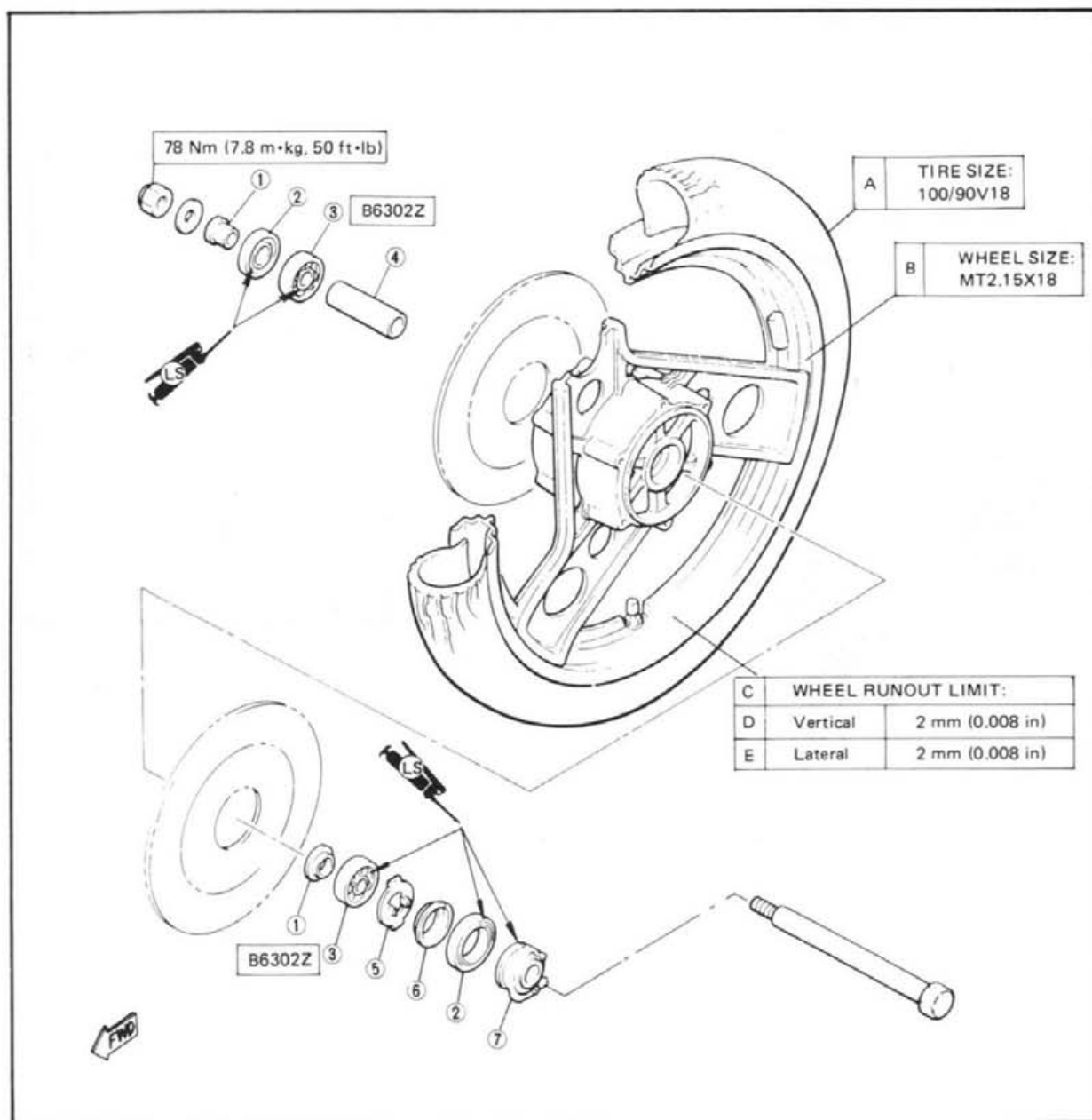
FRONT WHEEL

1. Collar
2. Oil seal
3. Bearing
4. Spacer
5. Meter clutch
6. Clutch retainer
7. Gear unit assembly

TIRE AIR PRESSURE (COLD):

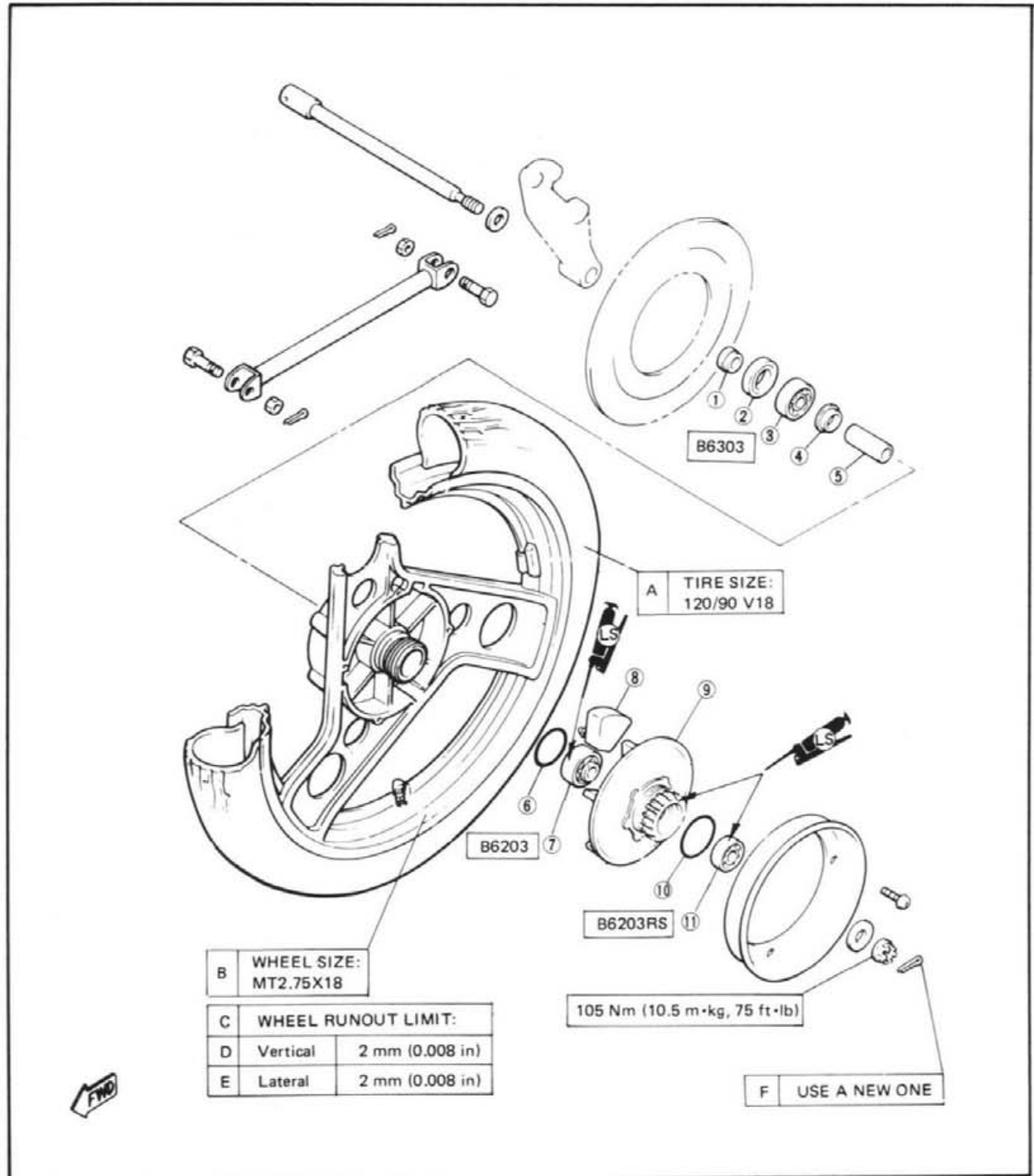
Basic weight: With oil and full fuel tank	242 kg (534 lb)	
Maximum load *	194 kg (428 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load *	226 kPa (2.3 kg/cm ² , 32 psi)	245 kPa 2.5 kg/cm ² , 36 psi)
90 kg (198 lb) ~ Maximum load *	245 kPa (2.5 kg/cm ² , 36 psi)	284 kPa (2.9 kg/cm ² , 42 psi)
High speed riding	245 kPa (2.5 kg/cm ² , 36 psi)	284 kPa (2.9 kg/cm ² , 42 psi)

* Load is the total weight of cargo, rider, passenger, and accessories.



REAR WHEEL

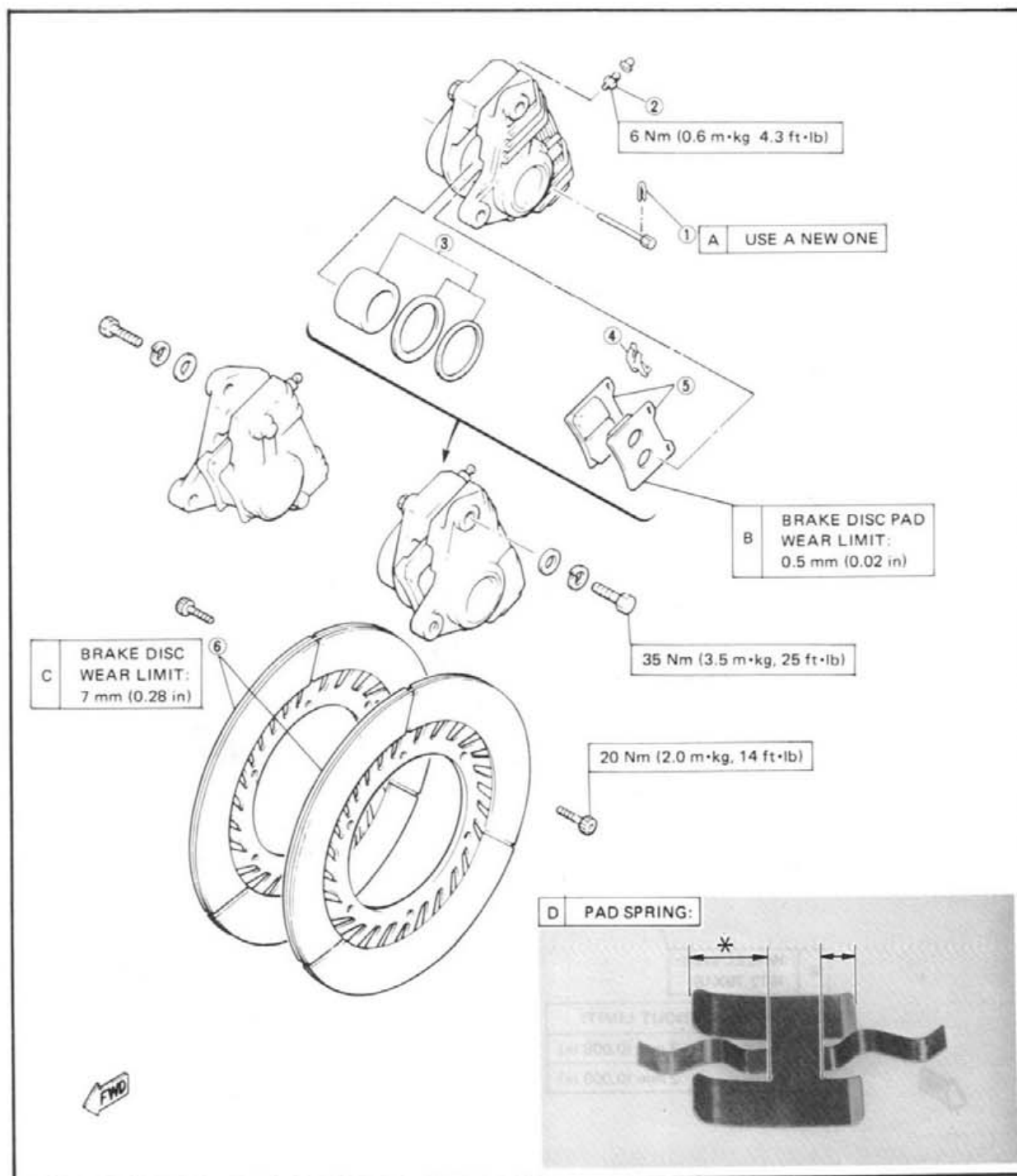
1. Collar
2. Oil seal
3. Bearing
4. Spacer flange
5. Spacer
6. O-ring
7. Bearing
8. Damper
9. Clutch hub
10. O-ring
11. Bearing



FRONT BRAKE CALIPER

1. Circlip
2. Bleed screw
3. Caliper piston assembly
4. Pad spring
5. Front brake pad
6. Brake disc

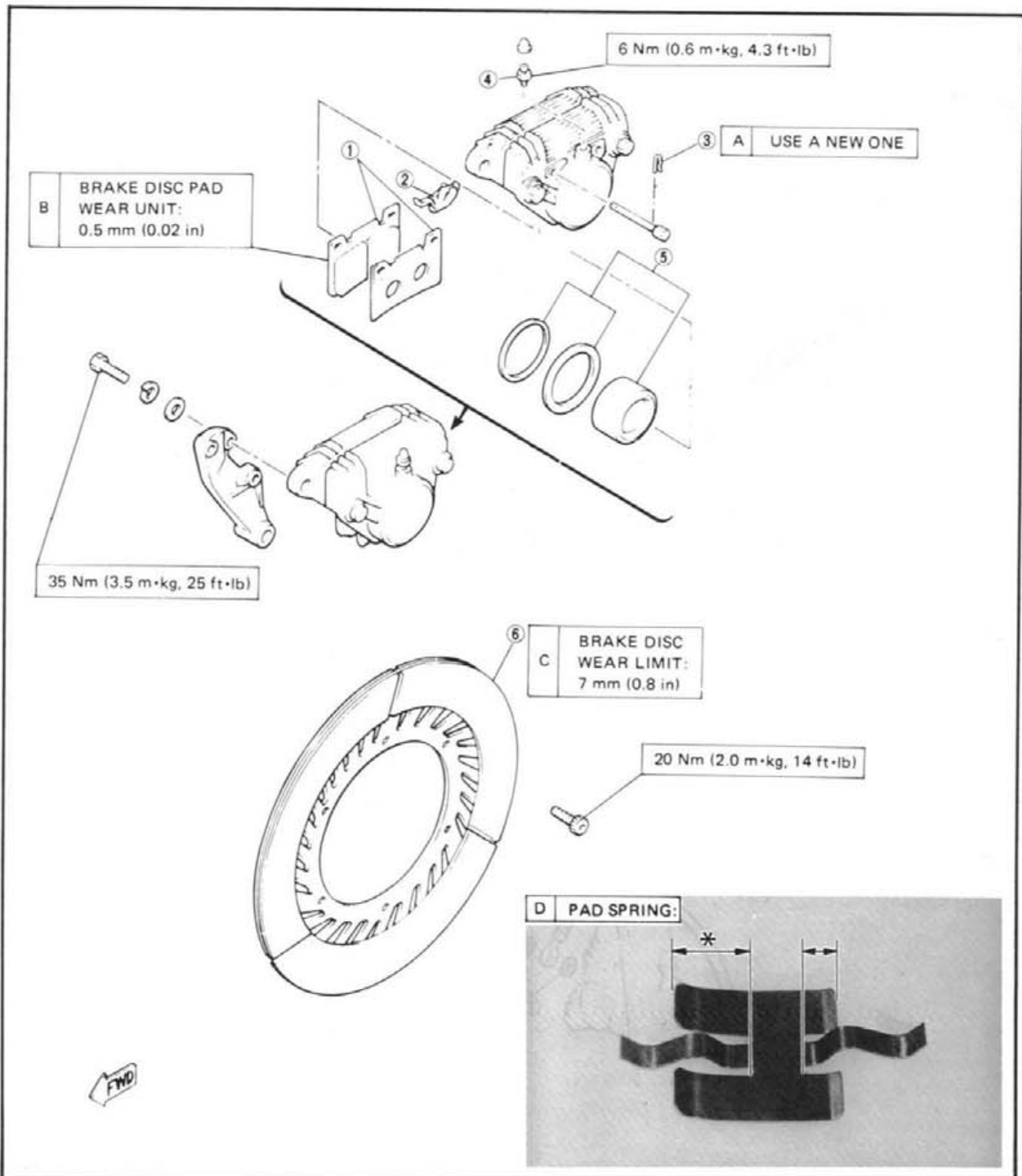
* Install the pad spring with its longer tangs in the disc rotation direction.



REAR BRAKE CALIPER

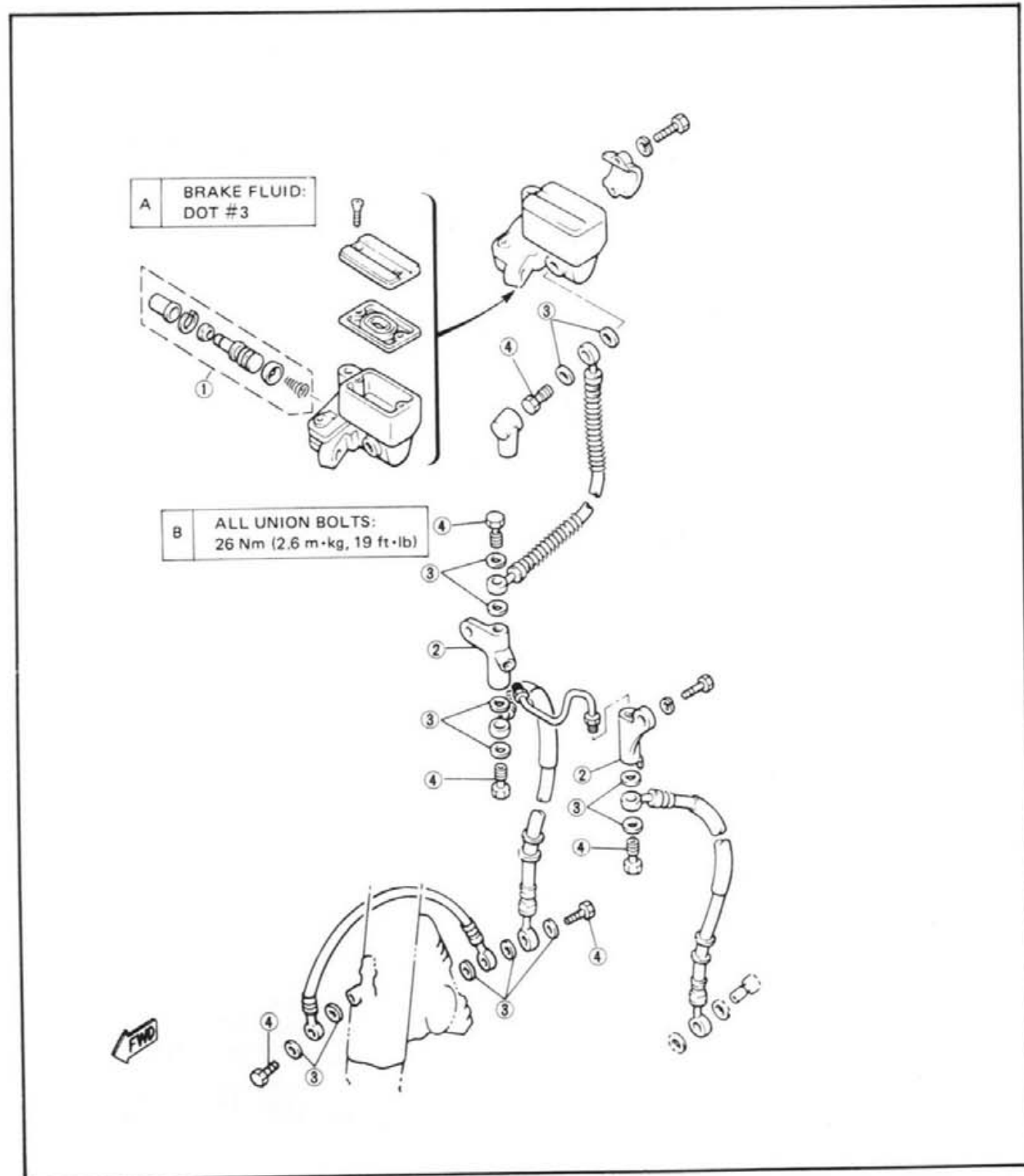
1. Rear brake pad
2. Pad spring
3. Circlip
4. Bleed screw
5. Caliper piston assembly
6. Brake disc

* Install the pad spring with its longer tangs in the disc rotation direction



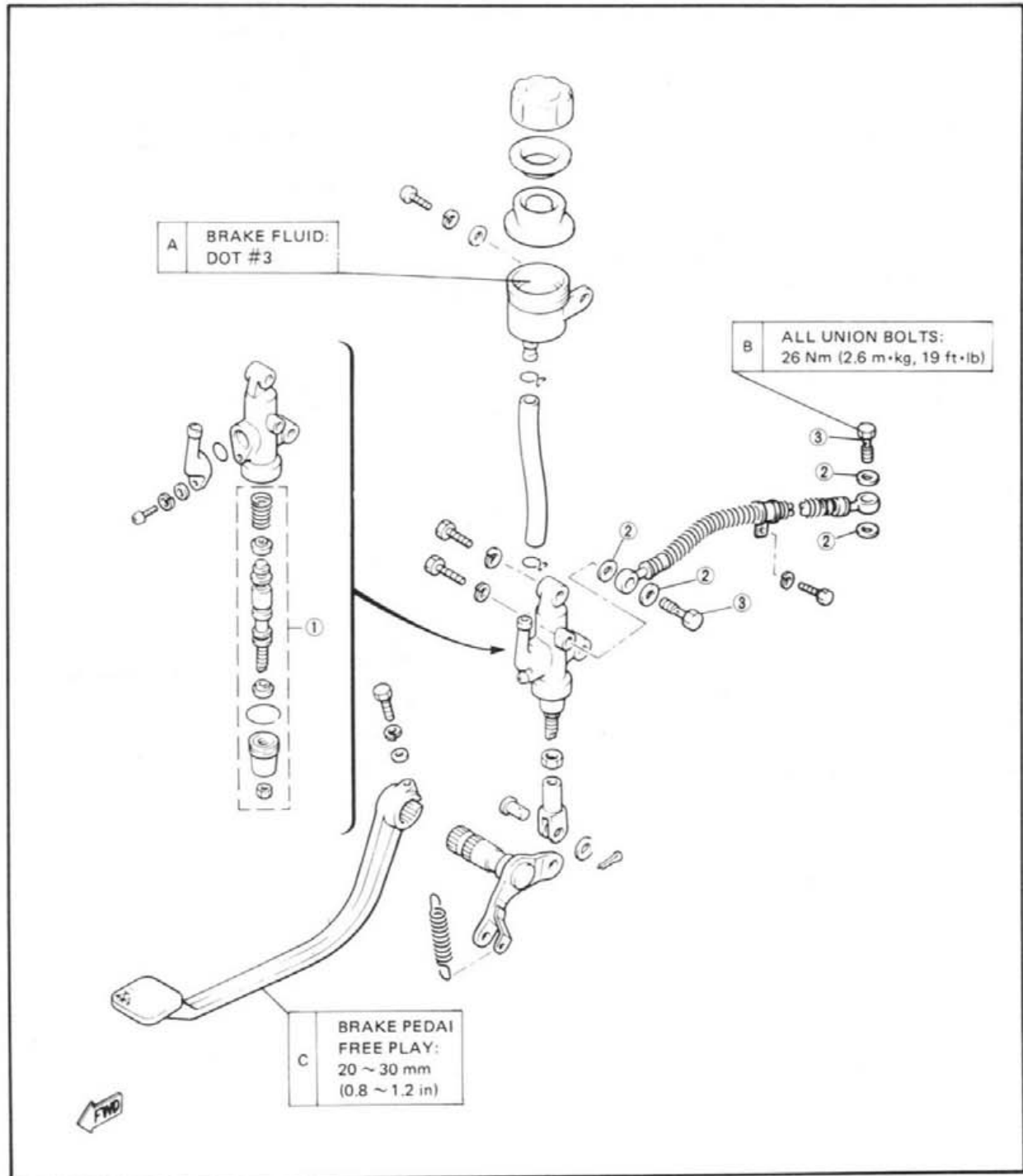
FONT MASTER CYLINDER

1. Master cylinder kit
2. Joint
3. Copper washer
4. Union bolt



REAR MASTER CYLINDER

1. Master cylinder kit
2. Copper washer
3. Union bolt

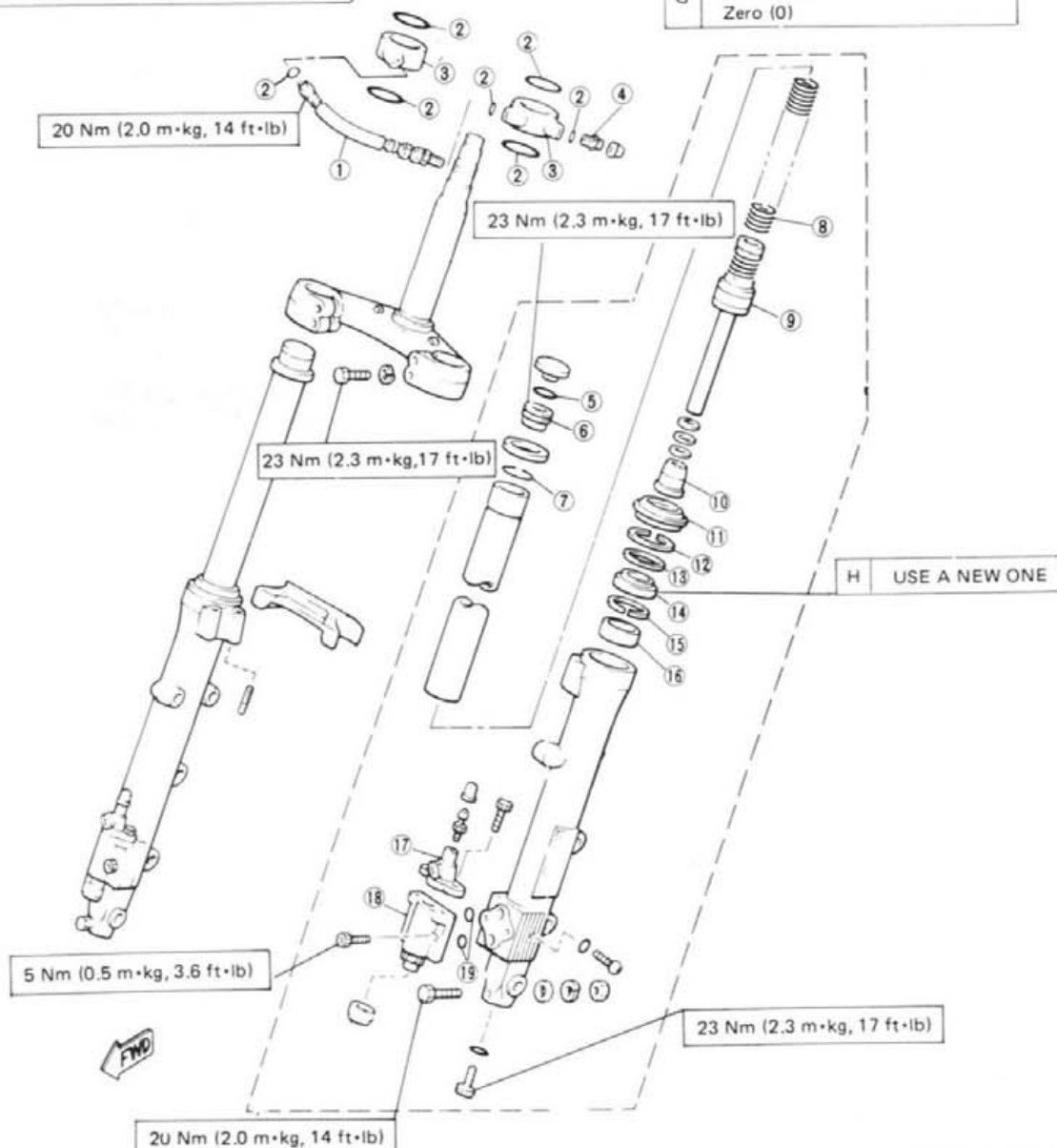


FRONT FORK

- | | |
|----------------------|------------------------------|
| 1. Air hose | 12. Retaining clip |
| 2. O-ring | 13. Back-up ring |
| 3. Air joint | 14. Oil seal |
| 4. Air valve | 15. Seal spacer |
| 5. O-ring | 16. Bush |
| 6. Cap bolt | 17. Actuating piston housing |
| 7. Circlip | 18. Anti-dive valve housing |
| 8. Spring | 19. O-ring |
| 9. Cylinder complete | |
| 10. Taper spindle | |
| 11. Dust seal | |

A	FRONT FORK OIL:
B	Oil capacity: 286 ± 4 cm ³ (10.1 ± 0.14 Imp oz, 9.67 ± 0.14 US oz)
C	Recommended oil: SAE 5W type SE motor oil

D	FRONT FORK AIR PRESSURE:
E	Standard: 39.2 kPa (0.4 kg/cm ² , 5.7 psi)
F	Maximum: 118 kPa (1.2 kg/cm ² , 17.1 psi)
G	Minimum: Zero (0)



SWINGARM/REAR SHOCK ABSORBER

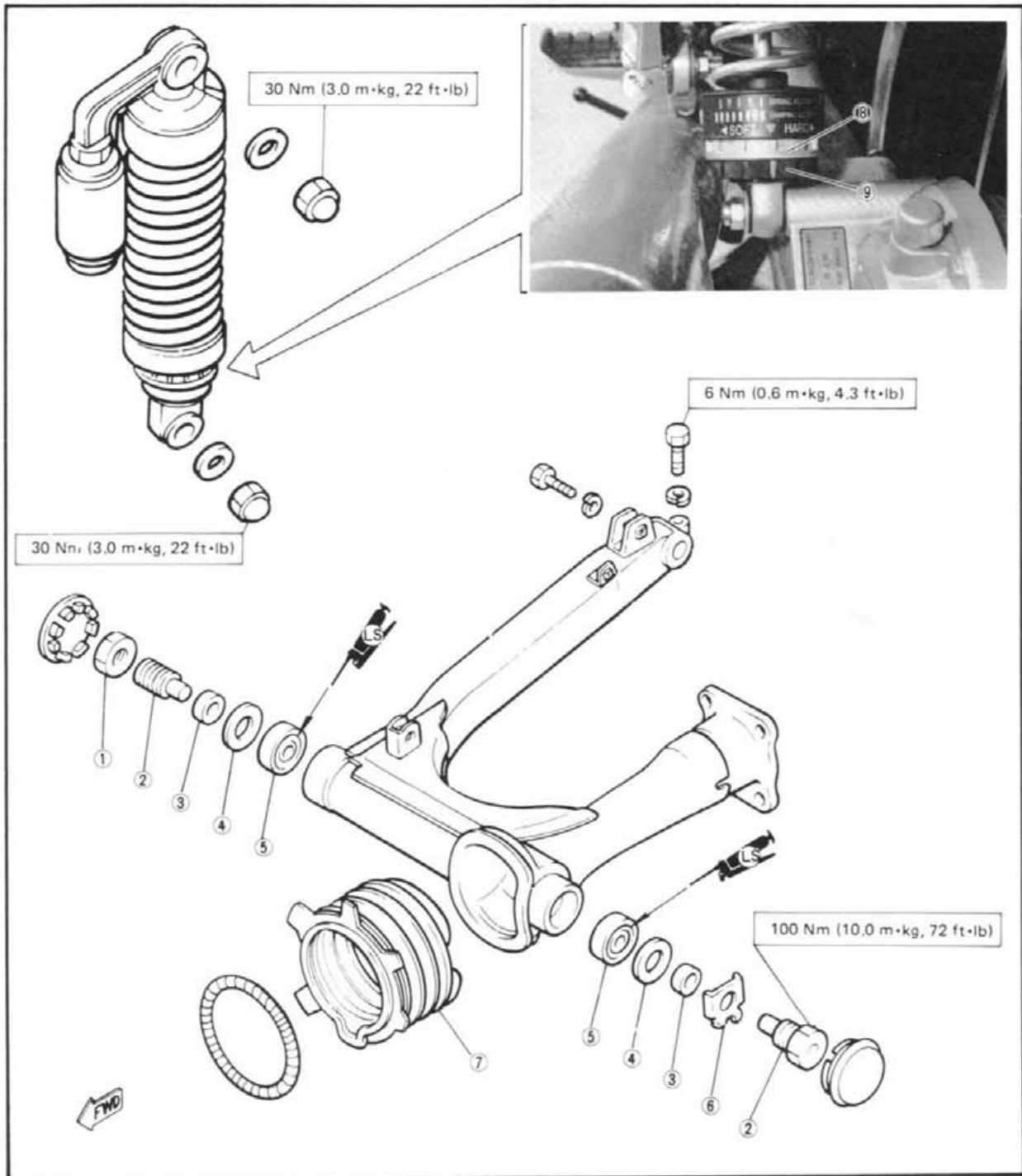
1. Locknut
2. Pivot shaft
3. Collar
4. Oil seal
5. Taper roller bearing
6. Lock washer
7. Rubber boot
8. Spring preload adjuster
9. Damping adjuster

DAMPING ADJUST:

Standard position:
 6 clicks turns out (or red mark)
 Minimum 12 clicks turns out
 Maximum 1 clicks turn out

SPRING PRELOAD ADJUST:

	HARD			STD
Mark	□	▽	□	▽

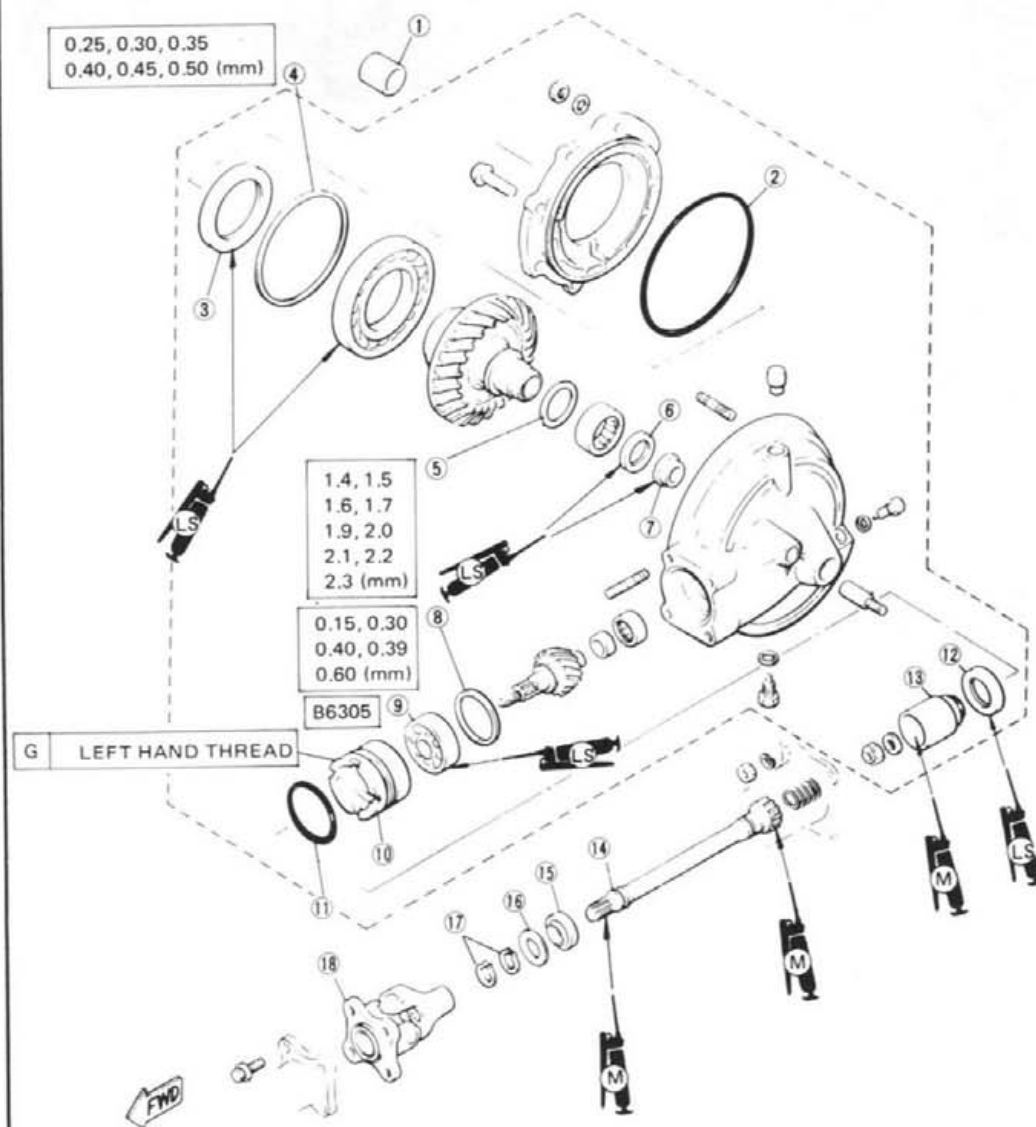


FINAL GEAR/DRIVE SHAFT

1. Collar
2. O-ring
3. Oil seal
4. Ring gear shim
5. Thrust washer
6. Oil seal
7. Guide collar
8. Shim
9. Bearing
10. Bearing retainer
11. O-ring
12. Oil seal
13. Gear coupling
14. Drive shaft
15. Oil seal
16. Plate washer
17. Circlip
18. Universal joint

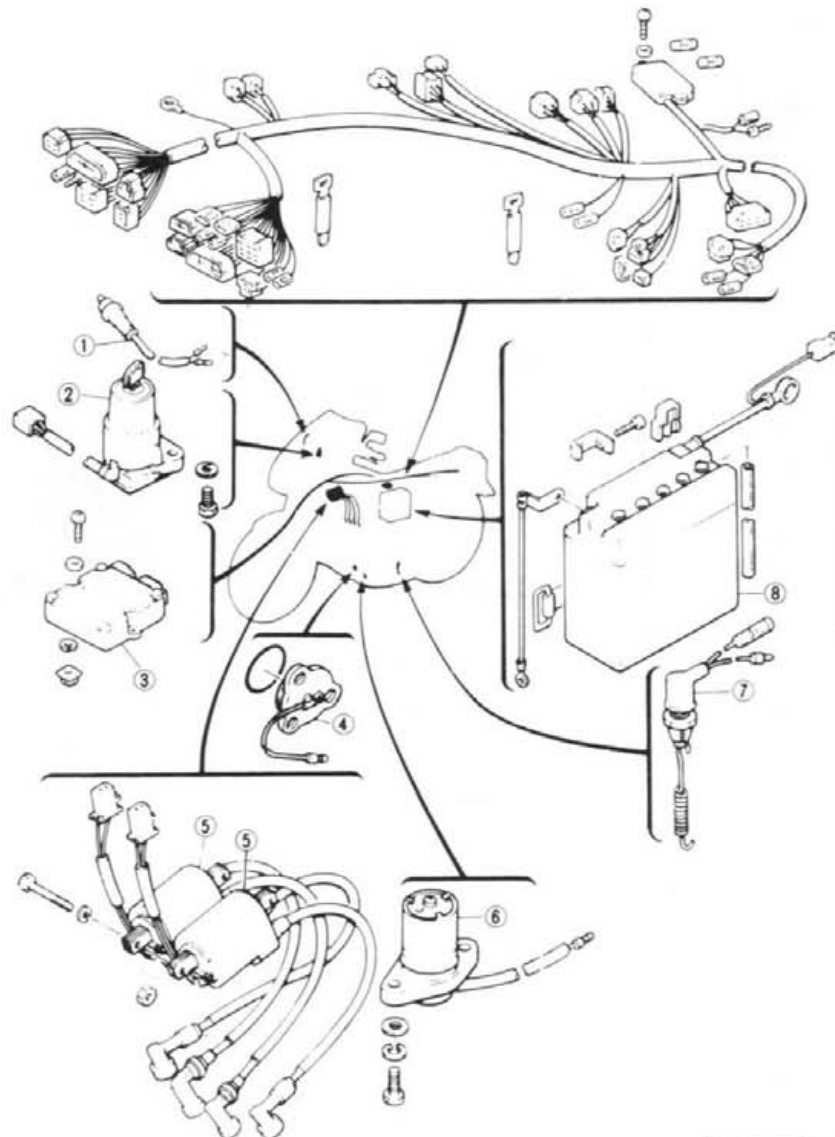
A	FINAL GEAR OIL:
B	Grade or type SAE80 API "GL-4" Hypoid gear oil
C	Total amount 0.2 L (0.18 Imp qt, 0.21 US qt)

D	FINAL GEAR LASH:
E	When using measurement tool: 0.25 ~ 0.50 mm (0.01 ~ 0.02 in)
F	Actual gear lash on the final gear teeth: 0.1 ~ 0.2 mm (0.004 ~ 0.008 in)



ELECTRICAL

1. Front brake switch
2. Main switch
3. Ignitor unit (T.C.I. unit)
4. Neutral switch
5. Ignition coil
6. Oil level switch
7. Rear brake switch
8. Battery



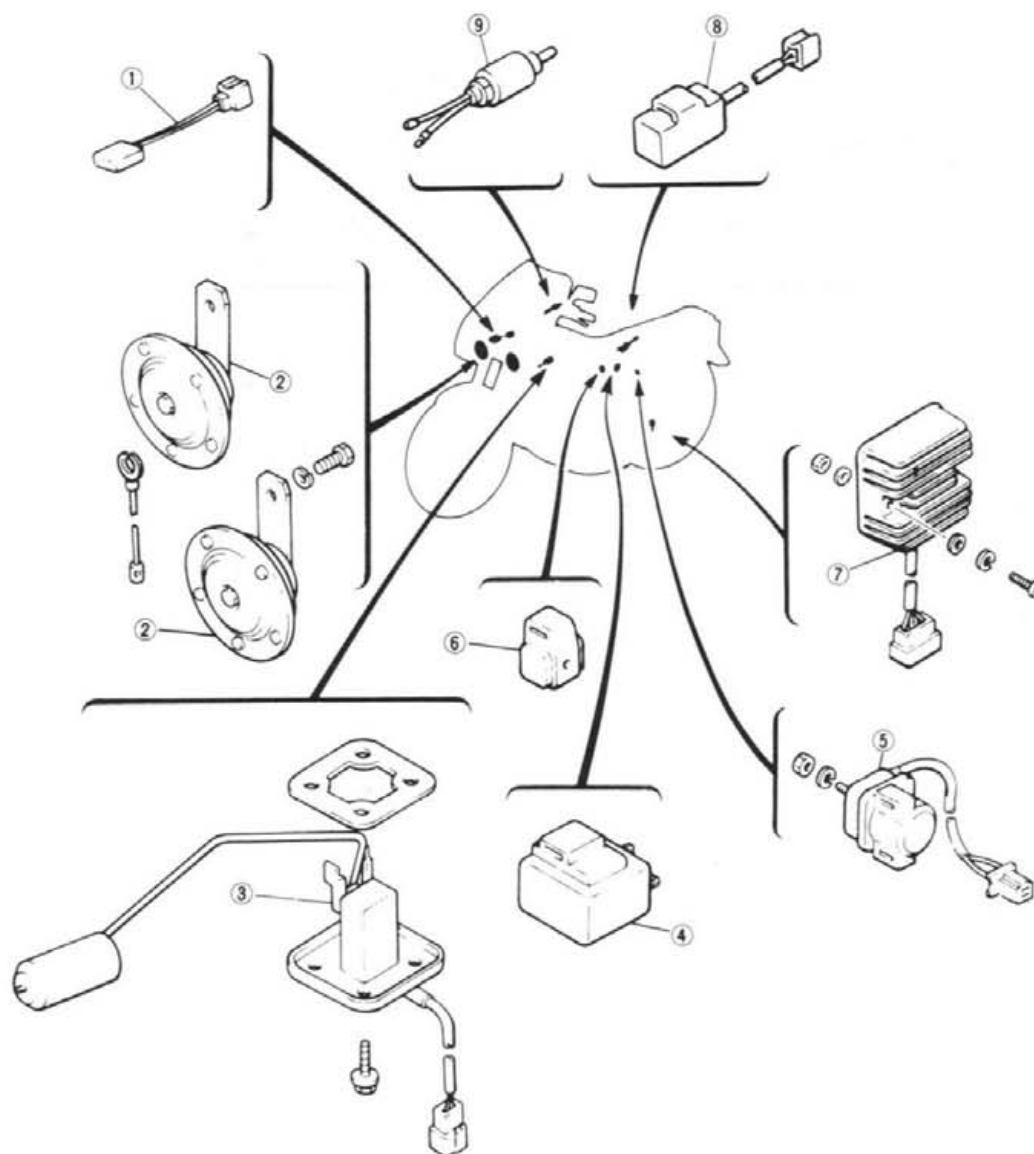
A	BATTERY:
B	Type: YB14L
C	Capacity: 12V/4AH
D	Specific gravity: 1.280

H	PICKUP COIL:	
I	Resistance	120Ω ± 20% at 20°C (68°F)
J	Color	O — B, Gy — B

E	IGNITION COIL:
F	Primary winding resistance: 2.7Ω ± 10% at 20°C (68°F)
G	Secondary winding resistance: 13.2 kΩ ± 20% at 20°C (68°F)

ELECTRICAL

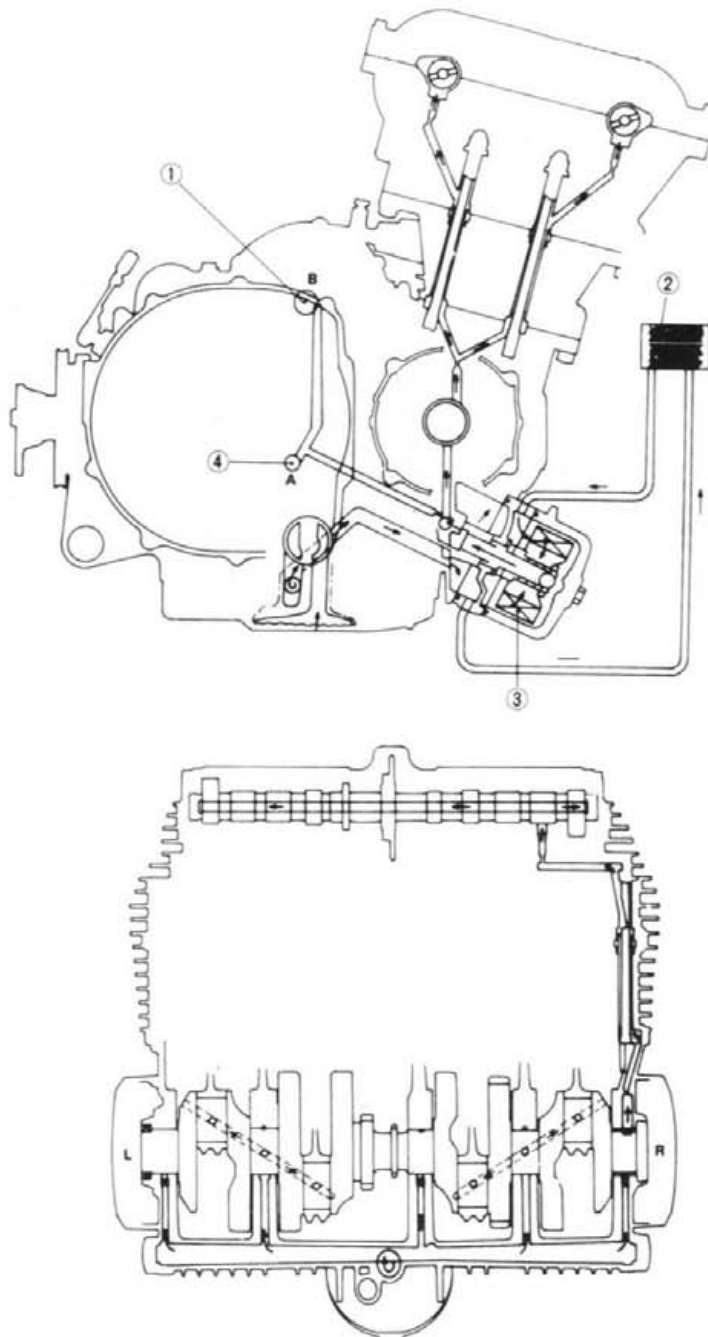
1. Diode block
2. Horn
3. Fuel meter sender unit
4. Flasher relay
5. Starter relay
6. Starting-circuit cut-off relay
7. Rectifier/regulator
8. Flasher cancelling unit
(Except for Germany)
9. Clutch switch



A FUEL METER SENDER UNIT RESISTANCE:		
B	Full	2 ~ 12Ω at 20°C (68°F)
C	Empty	87.5 ~ 102.5Ω at 20°C (68°F)

LUBRICATION DIAGRAMS

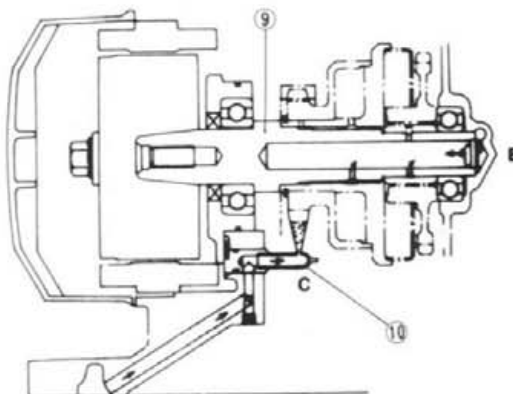
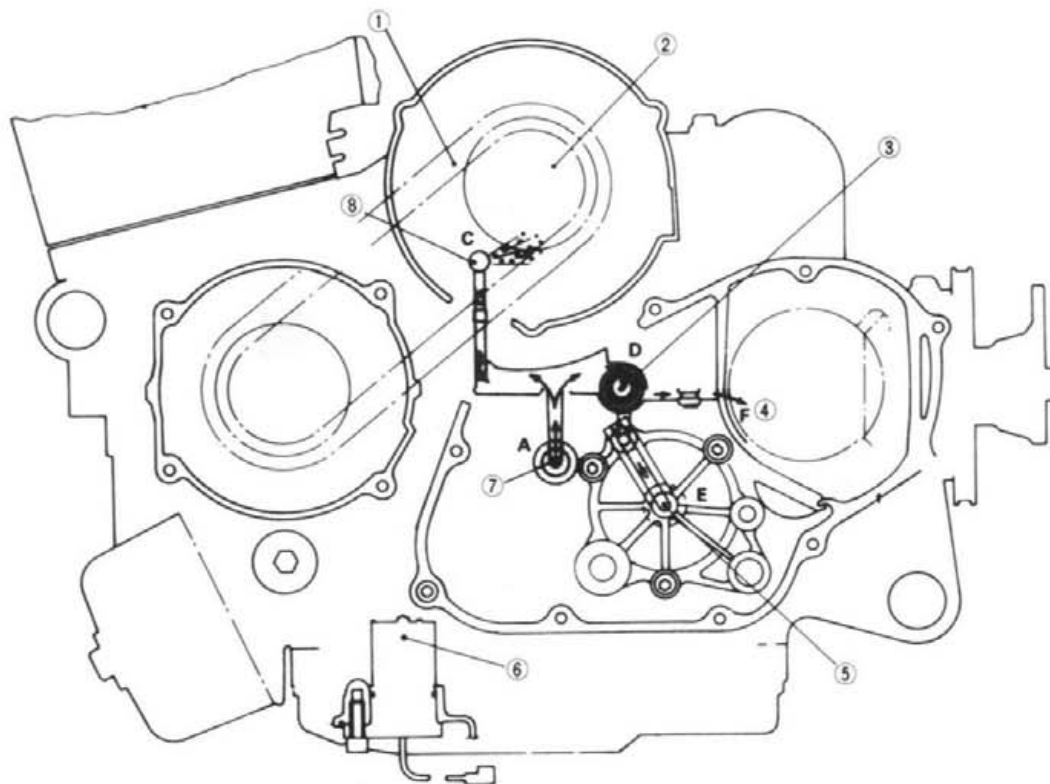
1. Generator shaft
2. Oil cooler
3. Oil filter
4. Shift bar





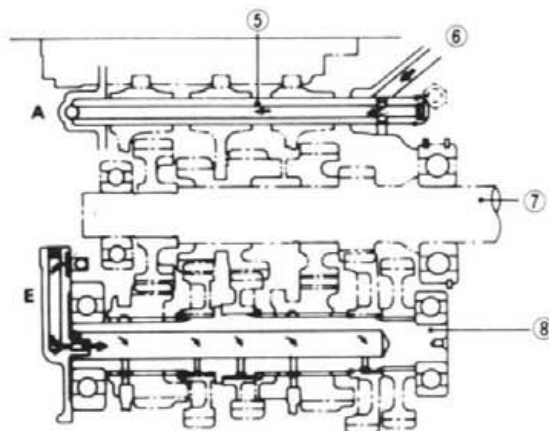
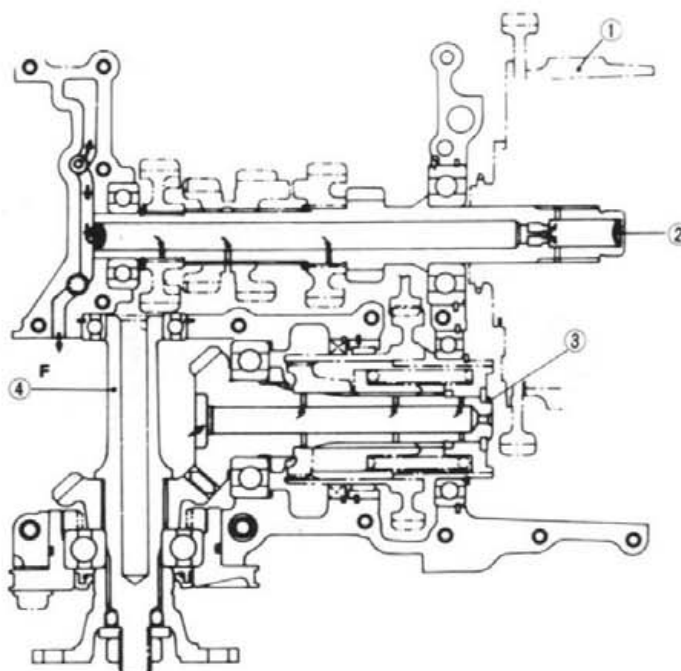
LUBRICATION DIAGRAMS

1. Primary chain
2. A.C. generator
3. Main axle
4. Middle gear
5. Drive axle
6. Oil level switch
7. Shift bar
8. Nozzle
9. Generator shaft
10. Nozzle



LUBRICATION DIAGRAMS

1. Clutch
2. Main axle
3. Middle drive shaft
4. Middle driven shaft
5. Shift bar
6. Oil filter
7. Main axle
8. Drive axle

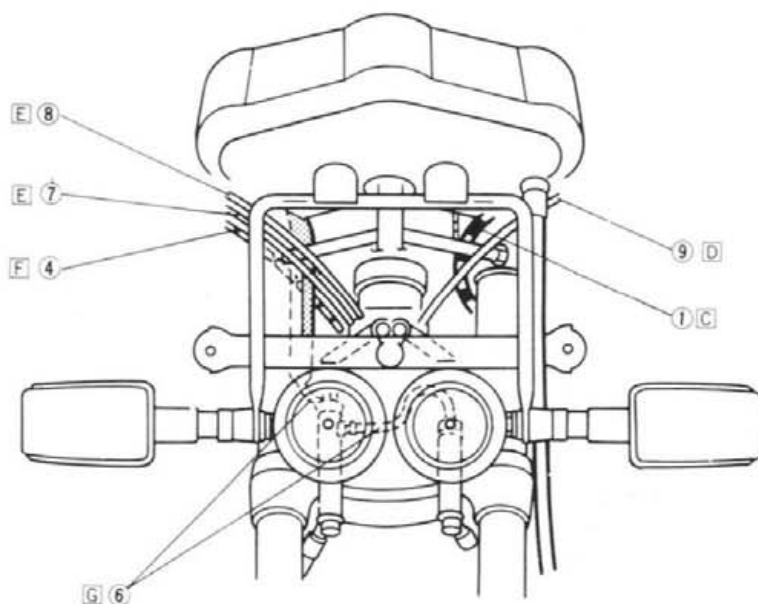
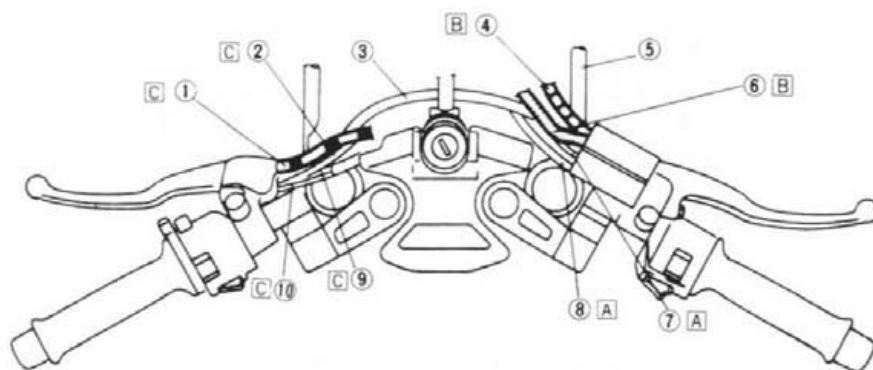




CABLE ROUTING

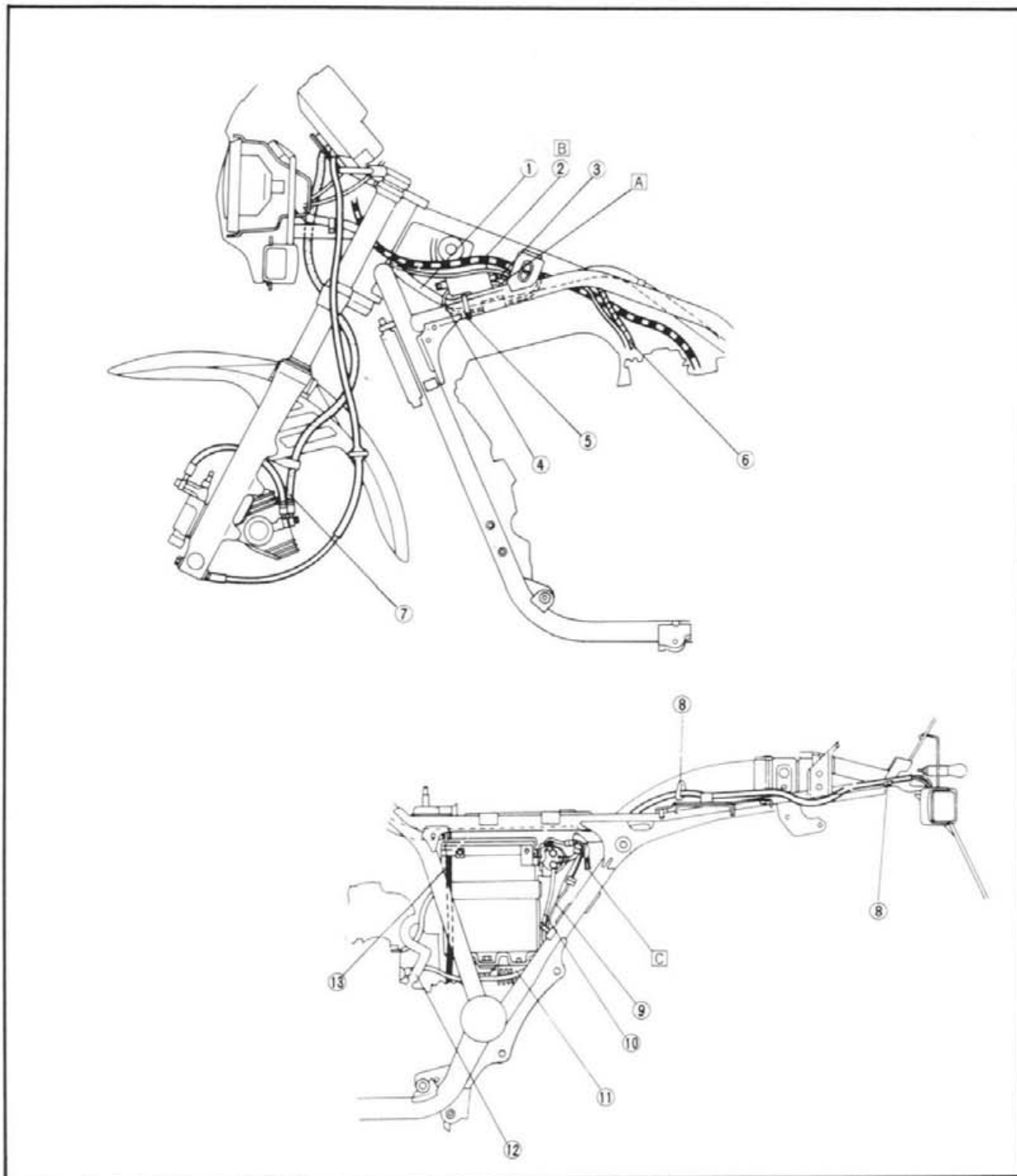
1. Clutch cable
2. Starter cable
3. Air hose
4. Throttle cable
5. Meter stay
6. Brake hose
7. Front brake switch lead
8. Right handlebar switch lead
9. Left handlebar switch lead
10. Clutch switch lead

- A Pass front brake switch lead and right handlebar switch lead behind air hose.
- B Pass brake hose and throttle cable between air hose and meter stay.
- C Pass clutch cable, clutch switch leads, left handlebar switch lead and starter cable behind air hose.
- D Pass left handlebar switch lead behind meter stay.
- E Pass left handlebar switch lead and brake switch lead behind meter stay.
- F Pass throttle cable behind brake hose.
- G Do not contact brake hoses with front fork and/or horns.



CABLE ROUTING

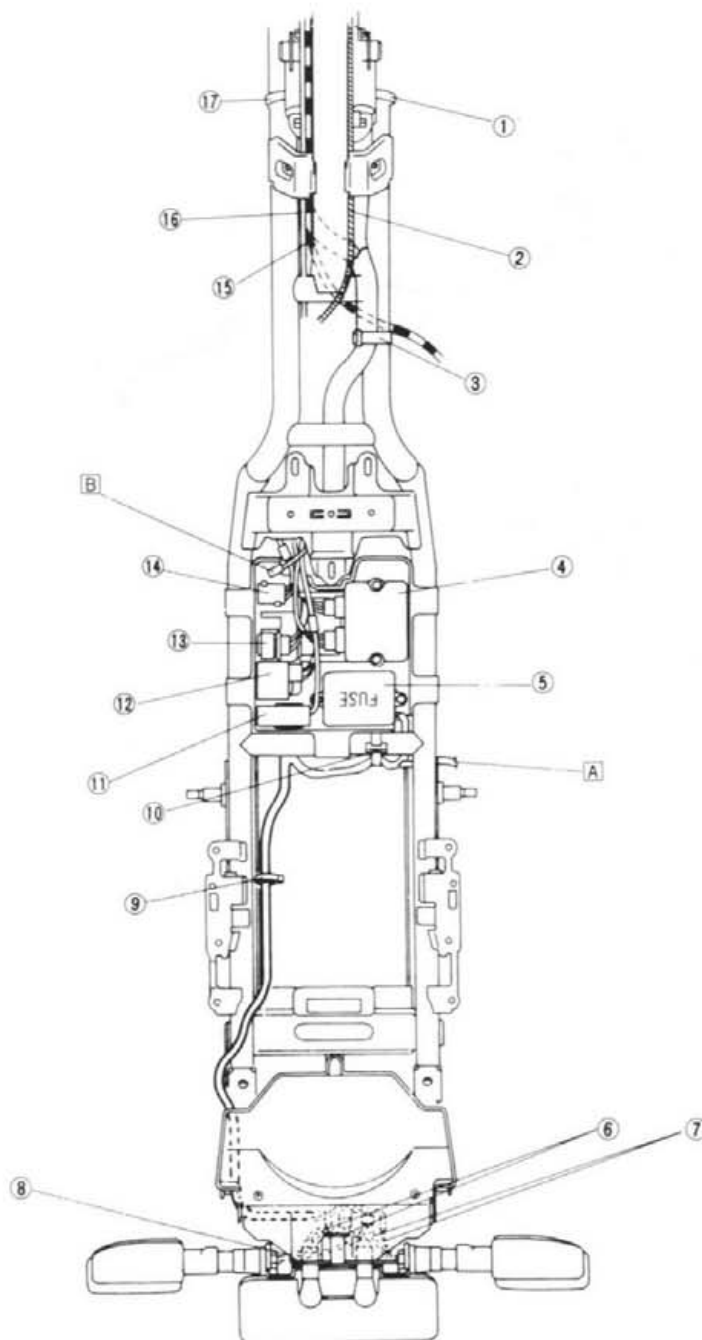
- | | | |
|----------------------------------|--------------------------------|--------------------------------------|
| 1. Wire harness | 12. Crankcase ventilation hose | A Fasten ground lead together |
| 2. Clutch cable | 13. Battery breather hose | left ignition coil. |
| 3. Starter cable | | B Pass clutch cable between |
| 4. Ignition coil lead | | air cleaner joint #3 and #4. |
| 5. Band | | C Connect A.C. generator lead |
| 6. Throttle cable | | |
| 7. Brake hose | | |
| 8. Clamp | | |
| 9. Rectifier with regulator lead | | |
| 10. Starter motor lead | | |
| 11. Rectifier with regulator | | |





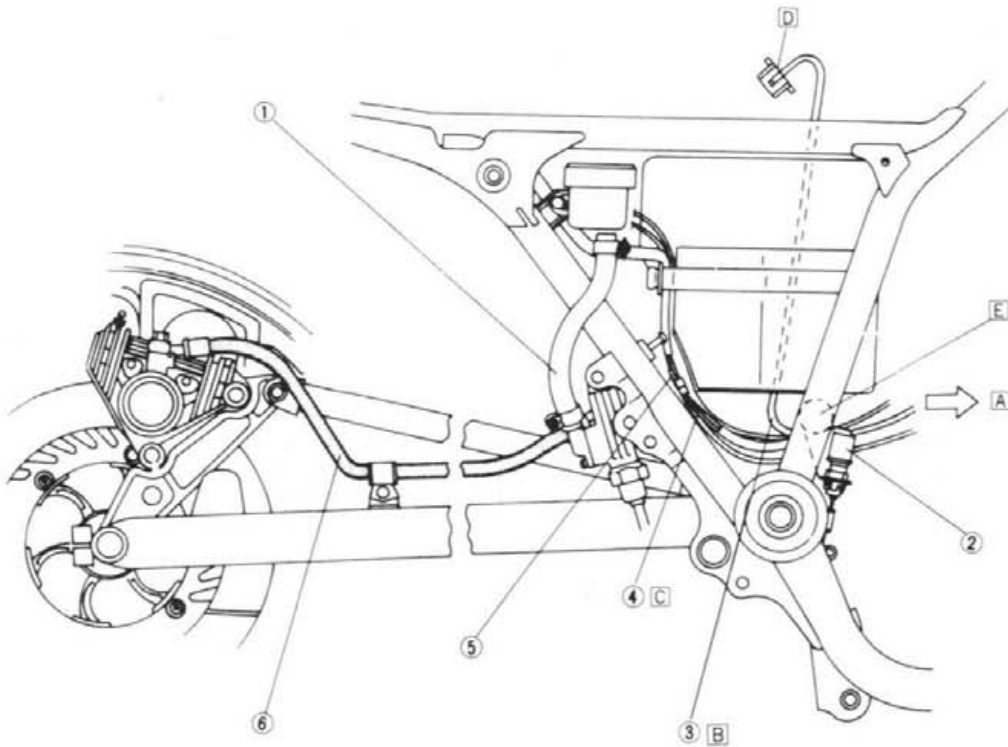
CABLE ROUTING

- | | | |
|----------------------------------|--------------------|-----------------------------|
| 1. Band | 12. Flasher relay | A Connect brake switch lead |
| 2. Throttle cable | 13. Starter relay | B Connect fuel sender unit |
| 3. Band | 14. Diode assembly | |
| 4. Ignitor unit | 15. Clutch cable | |
| 5. Fuse box | 16. Starter cable | |
| 6. Taillight lead | 17. Band | |
| 7. Right rear flasher light lead | | |
| 8. Left rear flasher light lead | | |
| 9. Clamp | | |
| 10. Band | | |
| 11. Flasher cancelling unit | | |



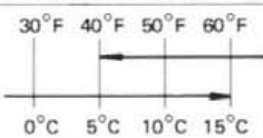
CABLE ROUTING

- | | |
|---------------------------|---|
| 1. Reservoir tank hose | A To engine |
| 2. Rear brake switch | B Pass pick-up coil lead between air cleaner and battery box, connect ignitor unit. |
| 3. Pick-up coil lead | C Connect A.C. generator lead at rear of air cleaner and battery box. |
| 4. A.C. genertar lead | D Connect ignitor unit |
| 5. Rear brake switch lead | E Be sure to clamp |
| 6. Brake hose | |



SPECIFICATIONS

I. GENERAL SPECIFICATIONS

Model code number	47L (XJ900RL)	53M (XJ900P)
Frame starting number	33F-001101	33F-005101 hers)
Engine starting number	33F-001101	33F-005101 rs)
Dimensions:		
Overall length	2,190 mm (86.2 in)	
Overall width	735 mm (28.9 in)	
Overall height	1,245 mm (49.0 in)	
Seat height	790 mm (31.1 in)	
Wheelbase	1,480 mm (58.3 in)	
Minimum ground clearance	150 mm (5.9 in)	
Weight:		
With oil and full fuel tank	242 kg (534 lb)	
Minimum turning radius	2,900 mm (114.2 in)	
Engine:		
Engine type	D.O.H.C., air-cooled, gasoline	
Cylinder arrangement	Forward-incline, parallel 4-cylinder	
Displacement	853 cm ³ (52.05 cu.in)	
Bore x Stroke	67.0 x 60.5 mm (2.638 x 2.382 in)	
Compression ratio	9.6 : 1	
Compression pressure	785 ~ 1,177 kPa (8.0 ~ 12.0 kg/cm ² , 114 ~ 171 psi)	
Starting system	Electric	
Lubrication system	Pressure lubricated, wet sump	
Engine oil type or grade		
Engine oil capacity:		
Periodic oil change	2.5 L (2.2 Imp qt, 2.6 US qt)	
Oil filter replacement	2.8 L (2.5 Imp qt, 3.0 US qt)	
Total amount	3.6 L (3.2 Imp qt, 3.8 US qt)	
Final gear oil:		
Grade or type	SAE 80 API "GL-4" Hypoid gear oil	
Final gear case oil amount	0.2 L (0.18 Imp qt, 0.21 US qt)	
Air filter	Dry type element	
Fuel:		
Type	Regular gasoline	
Tank capacity	22 L (4.84 Imp gal, 5.81 US gal)	
Reserve amount	5 L (1.10 Imp gal, 1.32 US gal)	
Carburetor:		
Type	BS35 x 4	
Manufacturer	MIKUNI	
Spark plug:		
Type	BPR8ES	
Manufacturer	NGK	
Gap	0.7 ~ 0.8 mm (0.028 ~ 0.032 in)	
Clutch type	Wet, multiple disc	



Transmission:		
Primary reduction system		Spar gear
Primary reduction ratio		97/58 (1.672)
Secondary reduction system		Shaft drive
Secondary reduction		
Transmission output	Type/teeth/ratio	Spar gear, 48/37 (1.297)
Middle gear case	Type/teeth/ratio	Bevel gear, 19/18 (1.055)
Final gear case	Type/teeth/ratio	Bevel gear, 32/11 (2.909)
Transmission type		Constant mesh, 5-speed drum shifter
Operation		Left foot operation
Gear ratio:	1st	35/16 (2.187)
	2nd	30/20 (1.500)
	3rd	30/26 (1.153)
	4th	28/30 (0.933)
	5th	26/32 (0.812)
Chassis:		
Frame type		Tubular steel double cradle
Caster angle		27°
Trail		114 mm (4.49 in)
Tire:		
Tire type		Tubeless
Tire size (F)		100/90V 18
Tire size (R)		120/90V 18
Tire pressure:		(Cold pressure)
Up to 90 kg (198 lb) load*	(F)	226 kPa (2.3 kg/cm ² , 32 psi)
	(R)	245 kPa (2.5 kg/cm ² , 36 psi)
90 kg (198 lb) ~ 194 kg (428 lb) load*	(F)	245 kPa (2.5 kg/cm ² , 36 psi)
	(R)	284 kPa (2.9 kg/cm ² , 42 psi)
High-speed ringing	(F)	245 kPa (2.5 kg/cm ² , 36 psi)
	(R)	284 kPa (2.9 kg/cm ² , 42 psi)
*Total weight of accessories, etc. excepting motorcycle		
Brake:		
Front brake type		Dual hydraulic disc
Operation		Right hand
Rear brake type		Single hydraulic disc
Operation		Right foot
Suspension:		
Front suspension		Telescopic fork
Rear suspension		Swingarm
Shock absorber:		
Front shock absorber		Oil damper, air and coil spring
Rear shock absorber		Oil damper, gas and coil spring
Wheel travel:		
Front wheel travel		150 mm (5.9 in)
Rear wheel travel		102 mm (4.02 in)
Electrical:		
Ignition system		Battery ignition (Full transistor ignition)
Generator system		A.C. generator
Battery type or model		YB14L-2A
Battery capacity		12V 14AH
Headlight type:		Bulb type (HALOGEN)

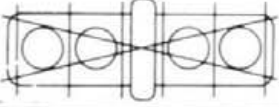
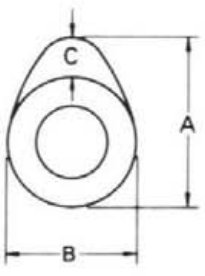
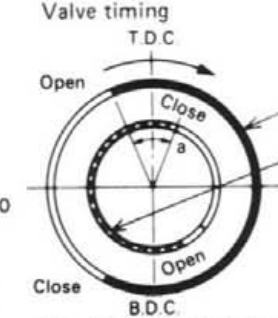
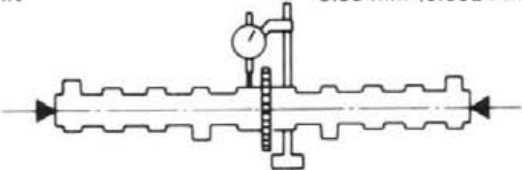


Bulb wattage x Pcs: Headlight Turn light Tail/Brake light Meter light Auxiliary light	60W/55W x 1 27W x 4 8W /27W x 2 3.4W x 6 3.4W x 1
Indicator light wattage x Pcs: NEUTRAL HIGH BEAM TURN OIL	3.4W x 1 3.4W x 1 3.4W x 2 3.4W x 1



II. MAINTENANCE SPECIFICATIONS

A. ENGINE

<p>Cylinder head:</p> <p>Volume</p> <p>Warp limit</p> 	<p>31.5 ~ 32.3 cm³ (1.92 ~ 1.97 cu.in)</p> <p>< 0.03 mm (0.0012 in) ></p> <p>* Lines indicate straightedge measurement</p>
<p>Cylinder:</p> <p>Material</p> <p>Bore size</p> <p>Taper limit</p> <p>Out-of-round limit</p>	<p>Aluminum alloy with cast iron sleeve</p> <p>66.96 ~ 67.0 mm (2.636 ~ 2.638 in)</p> <p>< 0.05 mm (0.0020 in) ></p> <p>< 0.01 mm (0.0004 in) ></p>
<p>Camshaft:</p> <p>Drive method</p> <p>Cam cap inside diameter</p> <p>Camshaft outside diameter</p> <p>Shaft-to-cap clearance</p> <p>Cam dimensions</p>  <p>Intake</p> <p>Exhaust</p> <p>Valve timing</p>  <p>Open</p> <p>Close</p> <p>IN.</p> <p>EX.</p> <p>Overl</p> <p>Camshaft runout limit</p>  <p>Cam chain type/Number or links</p> <p>Cam chain adjustment method</p>	<p>Chain drive (Center)</p> <p>25 ^{+0.021}₀ mm (0.984 ^{+0.008}₀ in)</p> <p>25 ^{-0.020}_{-0.033} mm (0.984 ^{-0.0008}_{-0.0013} in)</p> <p>0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in)</p> <p>36.75 ~ 36.85 mm (1.447 ~ 1.451 in)</p> <p>28.05 ~ 28.15 mm (1.104 ~ 1.108 in)</p> <p>8.75 ~ 8.85 mm (0.344 ~ 0.348 in)</p> <p>36.25 ~ 36.35 mm (1.427 ~ 1.431 in)</p> <p>28.55 ~ 28.65 mm (1.124 ~ 1.128 in)</p> <p>8.25 ~ 8.35 mm (0.325 ~ 0.329 in)</p> <p>B.T.D.C. 38°</p> <p>A.B.D.C. 58°</p> <p>B.B.D.C. 66°</p> <p>A.T.D.C. 26°</p> <p>a = 64°</p> <p>0.06 mm (0.0024 in)</p> <p>BUSH-CHAIN/120L</p> <p>Automatic</p>



Valve, Valve seat, Valve guide:

Valve clearance (Cold)

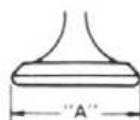
IN.

0.11 ~ 0.15 mm (0.0043 ~ 0.0059 in)

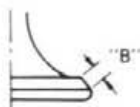
EX.

0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)

Valve dimensions



Head Dia.



Face Width



Seat Width



Margin Thickness

"A" Head dia.

IN.

36.1 ± 0.1 mm (1.42 ± 0.004 in)

EX.

30 ± 0.1 mm (1.18 ± 0.004 in)

"B" Face width

IN.

2.3 mm (0.091 in)

EX.

2.3 mm (0.091 in)

"C" Seat limit width

IN.

1 ± 0.1 mm (0.039 ± 0.004 in)

EX.

1 ± 0.1 mm (0.039 ± 0.004 in)

"D" Margin thickness limit

IN.

0.7 mm (0.028 in)

EX.

0.7 mm (0.028 in)

Stem outside diameter

IN.

7 $\begin{smallmatrix} -0.010 \\ -0.025 \end{smallmatrix}$ mm (0.2756 $\begin{smallmatrix} -0.0004 \\ -0.0010 \end{smallmatrix}$ in)

EX.

7 $\begin{smallmatrix} -0.025 \\ -0.040 \end{smallmatrix}$ mm (0.2756 $\begin{smallmatrix} -0.0010 \\ -0.0016 \end{smallmatrix}$ in)

Guide inside diameter

IN.

7 $\begin{smallmatrix} +0.012 \\ 0 \end{smallmatrix}$ mm (0.2756 $\begin{smallmatrix} +0.0005 \\ 0 \end{smallmatrix}$ in)

EX.

7 $\begin{smallmatrix} +0.012 \\ 0 \end{smallmatrix}$ mm (0.2756 $\begin{smallmatrix} +0.0005 \\ 0 \end{smallmatrix}$ in)

Stem-to-guide clearance

IN.

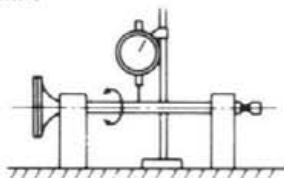
0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)

EX.

0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)

Stem runout limit

< 0.03 mm (0.0012 in) >



Valve seat width standard

< Limit >

0.9 ~ 1.1 mm (0.035 ~ 0.043 in)

< 2.0 mm (0.080 in) >

Valve spring:

Free length

Inner spring

IN.

35.9 mm (1.413 in)

EX.

35.9 mm (1.413 in)

Outer spring

IN.

39.5 mm (1.555 in)

EX.

39.5 mm (1.555 in)

Spring rate

Inner spring

IN.

K₁ : 2.36 kg/mm (132 lb/in) K₂ : 1.84 kg/mm (103 lb/in)

EX.

K₁ : 2.36 kg/mm (132 lb/in) K₂ : 1.84 kg/mm (103 lb/in)

Outer spring

IN.

K₁ : 4.58 kg/mm (256 lb/in) K₂ : 3.464 kg/mm (194 lb/in)

EX.

K₁ : 4.58 kg/mm (256 lb/in) K₂ : 3.464 kg/mm (194 lb/in)

Compression length (Valve closed)

Inner spring

IN.

31.0 mm (1.220 in)

EX.

31.0 mm (1.220 in)

Outer spring

IN.

34.0 mm (1.339 in)

EX.

34.0 mm (1.339 in)

Compression force (Valve closed)

Inner spring

IN.

8.1 ~ 9.9 kg (17.9 ~ 21.8 lb)

EX.

8.1 ~ 9.9 kg (17.9 ~ 21.8 lb)

Outer spring

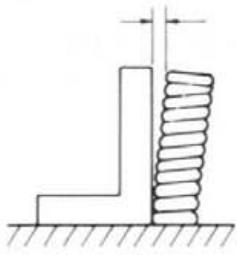
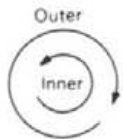
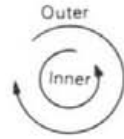
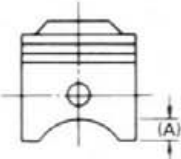


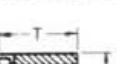
IN.

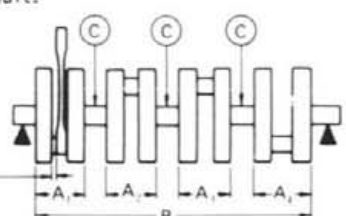
17.6 ~ 20.6 kg (38.8 ~ 45.4 lb)

EX.

17.6 ~ 20.6 kg (38.8 ~ 45.4 lb)



Tilt limit Inner spring IN. & EX. Outer spring IN. & EX.		2.5°/1.6 mm (0.063 in) 2.5°/1.6 mm (0.063 in)	
			
Direction of winding (Top view)		Intake	Exhaust
			
Piston: Piston size/Measuring point (A)		66.92 ~ 66.96 mm (2.635 ~ 2.636 in)/7.8 mm (0.307 in) (From bottom line of piston skirt)	
			
Clearance between piston & Cylinder		0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in)	
Limit		< 0.1 mm (0.0039 in) >	
Oversize		—	
1st		—	
2nd		67.50 mm (2.657 in)	
3rd		—	
4th		68.00 mm (2.677 in)	
Piston pin hole off-set		0.5 mm (0.02 in) IN-side	
Piston ring: Sectional sketch			
		Top ring $B = 1.2 \begin{smallmatrix} -0.01 \\ -0.03 \end{smallmatrix} \text{ mm } (0.0472 \begin{smallmatrix} -0.0004 \\ -0.0012 \end{smallmatrix} \text{ in})$ $T = 2.7 \pm 0.1 \text{ mm } (0.106 \pm 0.004 \text{ in})$	
		2nd ring $B = 1.2 \begin{smallmatrix} -0.01 \\ -0.03 \end{smallmatrix} \text{ mm } (0.0472 \begin{smallmatrix} -0.0004 \\ -0.0012 \end{smallmatrix} \text{ in})$ $T = 2.7 \pm 0.1 \text{ mm } (0.106 \pm 0.004 \text{ in})$	
		Oil ring $B = 2.5 \text{ mm } (0.098 \text{ in})$ $T = 2.8 \pm 0.15 \text{ mm } (0.110 \pm 0.0059 \text{ in})$	
End gap (Installed)		0.15 ~ 0.35 mm (0.0059 ~ 0.0138 in)	
Limit		< 1.0 mm (0.039 in) >	
		0.15 ~ 0.35 mm (0.0059 ~ 0.0138 in)	
		< 1.0 mm (0.039 in) >	
		0.3 ~ 0.9 mm (0.012 ~ 0.035 in)	
		< 1.5 mm (0.059 in) >	
Side clearance		0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	
Limit		< 0.15 mm (0.0059 in) >	
		0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	
		< 0.15 mm (0.0059 in) >	

Plating or coating	Top ring 2nd ring Oil ring	Chrome plated, Ferox coating Parkerrizing Chrome plated, Ferox coating
Connecting rod: Oil clearance Color code		0.016 ~ 0.040 mm (0.0006 ~ 0.0016 in) 1. Blue, 2. Black, 3. Brown, 4. Green
Crankshaft:  Crank width "A" Assembly width "B" Deflection limit "C" Big end side clearance "D" Journal oil clearance Color code — corresponding size		$A_1 = 56.15 \text{ mm (2.211 in)}$ $A_2 = 59.20 \text{ mm (2.331 in)}$ $A_3 = 60.45 \text{ mm (2.380 in)}$ $A_4 = 56.45 \text{ mm (2.222 in)}$ $341.4 \pm 0.6 \text{ mm (13.44} \pm 0.024 \text{ in)}$ $< 0.03 \text{ mm (0.0012 in)} >$ $0.16 \sim 0.26 \text{ mm (0.0063} \sim 0.0102 \text{ in)}$ $0.020 \sim 0.044 \text{ mm (0.0008} \sim 0.0017 \text{ in)}$ $1.5 \begin{smallmatrix} +0.006 \\ +0.002 \end{smallmatrix} \text{ mm (0.0591} \begin{smallmatrix} +0.00024 \\ +0.00008 \end{smallmatrix} \text{ in)}$ $1.5 \begin{smallmatrix} +0.002 \\ -0.002 \end{smallmatrix} \text{ mm (0.0591} \begin{smallmatrix} +0.00008 \\ -0.00008 \end{smallmatrix} \text{ in)}$ $1.5 \begin{smallmatrix} -0.002 \\ -0.006 \end{smallmatrix} \text{ mm (0.0591} \begin{smallmatrix} -0.00008 \\ -0.00024 \end{smallmatrix} \text{ in)}$ $1.5 \begin{smallmatrix} -0.006 \\ -0.010 \end{smallmatrix} \text{ mm (0.0591} \begin{smallmatrix} -0.00024 \\ -0.00039 \end{smallmatrix} \text{ in)}$ $1.5 \begin{smallmatrix} -0.010 \\ -0.014 \end{smallmatrix} \text{ mm (0.0591} \begin{smallmatrix} -0.00039 \\ -0.00055 \end{smallmatrix} \text{ in)}$
Clutch: Friction plate thickness/Quantity Wear limit Clutch plate thickness/Quantity Warp limit: Clutch spring free length limit/Quantity Minimum length Primary reduction gear backlash tolerance Primary drive gear Backlash numer Primary driven gear Backlash numer Clutch release method		$3.0 \pm 0.1 \text{ mm (0.12} \pm 0.004 \text{ in)}/8$ $< 2.8 \text{ mm (0.11 in)} >$ $2.0 \pm 0.1 \text{ mm (0.080} \pm 0.004 \text{ in)}/7$ $< 0.05 \text{ mm (0.002 in)} >$ $42.0 \text{ mm (1.65 in)}/5$ $43.0 \text{ mm (1.69 in)}$ 116 87 ~ 93 25 ~ 31 Rack & Piston pull, Outer pull
Transmission: Main axle run-out limit		$< 0.08 \text{ mm (0.0031 in)} >$
Shifter : Shifter type		Guide bar

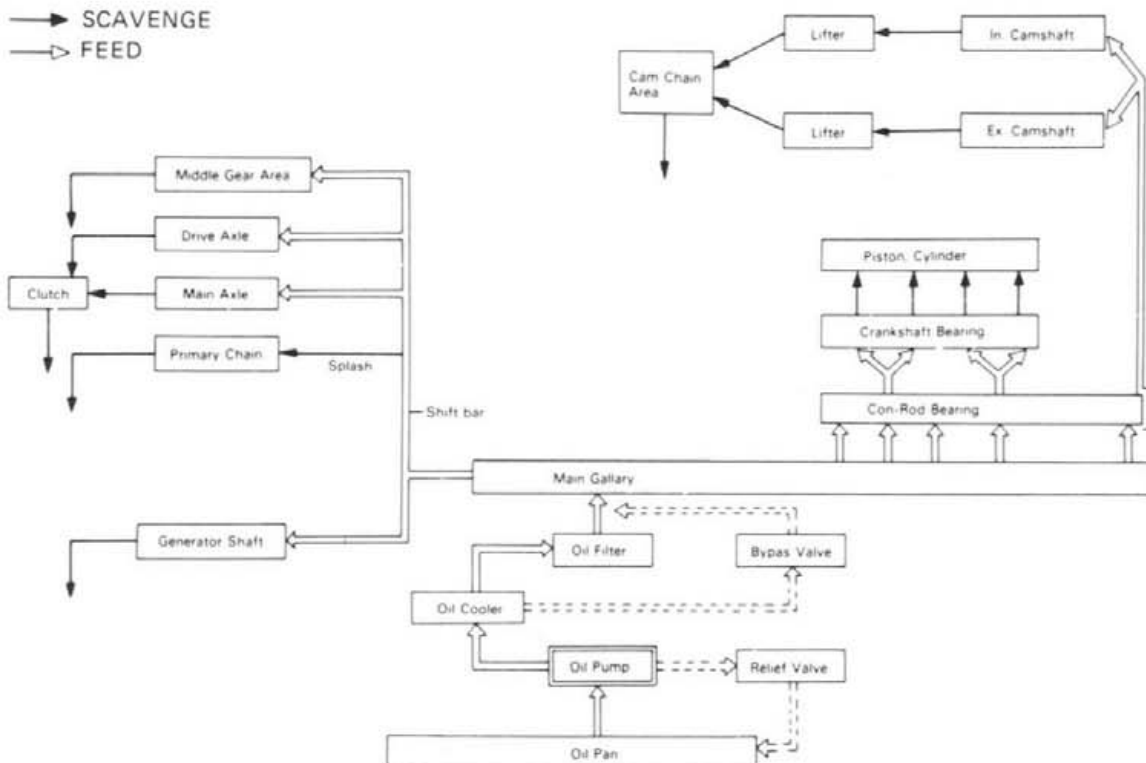
**Carburetor:**

Type/manufacturer/quantity	BS35/MIKUNI/4
I.D. mark	31A00
Main jet (M.J.)	# 102.5
Main air jet (M.A.J.)	# 45
Jet needle (J.N.)	4HZ26-3
Needle jet (N.J.)	Y-0 (# 318)
Throttle valve (Th.V.)	135
Pilot jet (P.J.)	# 40
Pilot air jet (P.A.J.)	# 160
Pilot screw (turns out) (P.S.)	2 turns
Pilot outlet size (P.O.)	ϕ 0.8
Starter jet (G.S.)	# 32.5
Valve seat size (V.S.)	ϕ 2.0
Fuel level (F.L.)	5 ± 1 mm (0.20 ± 0.04 in)
Float height (F.H.)	22.3 ± 0.5 mm (0.9 ± 0.02 in)
Engine idling speed	$1,100 \pm 50$ r/min
Vacuum pressure at idling speed	$225 \sim 235$ mmHg (8.85 ~ 9.25 inHg)

Lubrication system:

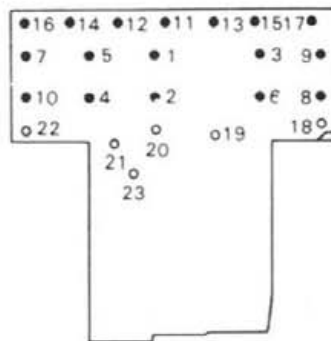
Oil filter type	Paper filter
Oil pump type	Trochoid pump
Tip clearance	$0.03 \sim 0.09$ mm ($0.0012 \sim 0.0035$ in)
Side clearance	$0.03 \sim 0.08$ mm ($0.0012 \sim 0.0031$ in)
Bypass valve setting pressure	98 ± 20 kPa (1.0 ± 0.2 kg/cm ² , 14.2 ± 2.8 psi)
Relief valve operating pressure	490 ± 50 kPa (5.0 ± 0.5 kg/cm ² , 71.1 ± 7.1 psi)
Lubrication diagram	

→ SCAVENGE
 → FEED

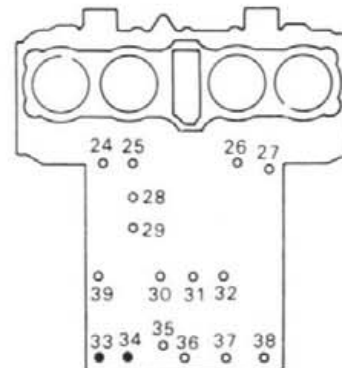


Middle gear backlash	0.1 ~ 0.2 mm (0.004 ~ 0.008 in)
Final gear backlash	0.1 ~ 0.2 mm (0.004 ~ 0.008 in)
Crankcase tightening sequence	

LOWER CASE



UPPER CASE



Tightening Torque:

- . . . 1.8 mm bolt: 24 Nm (2.4 m•kg, 17 ft•lb)
-6 mm bolt: 12 Nm (1.2 m•kg, 8.7 ft•lb)



Tightening Torque

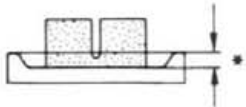
Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m·kg	ft·lb	
ENGINE:							
Camshaft cap	Bolt	M6 x 1.0	24	10	1.0	7.2	Tighten in stages
Cam chain (Front) (Rear)	Stud bolt	M6 x 1.0	2	5	0.5	3.6	Apply oil
	Nut	M6 x 1.0	2	10	1.0	7.2	
	Stud bolt	M6 x 1.0	2	5	0.5	3.6	Apply oil
	Nut	M6 x 1.0	2	10	1.0	7.2	
Exhaust pipe	Stud bolt	M6 x 1.0	8	8	0.8	5.8	Apply oil
Oil passage blind plug	Screw	M6 x 1.0	1	7	0.7	5.1	
YICS passage	Stud bolt	M8 x 1.25	2	15	1.5	11	Apply oil
	Nut	M8 x 1.25	2	20	2.0	14	
	Blind plug	M12 x 1.25	2	22	2.2	16	
Spark plug	—	M14 x 1.25	4	20	2.0	14	
Cylinder head	Nut	M10 x 1.25	12	32	3.2	23	Apply oil
Cylinder head cover	Bolt	M6 x 1.0	8	10	1.0	7.2	
Cam chain (Cylinder-front)	Stud bolt	M8 x 1.25	1	8	0.8	5.8	Apply oil
	Nut	M8 x 1.25	1	20	2.0	14	
Connecting rod	Nut	M8 x 0.75	8	38	3.8	27	Apply molybdenum disulfide grease
Cam sprocket	Bolt	M7 x 1.0	4	20	2.0	14	
Cam chain tensioner	Bolt	M6 x 1.0	2	10	1.0	7.2	
Cam chain tensioner guide	Bolt	M8 x 1.25	1	3	0.3	2.2	
Oil pump cover	Screw	M6 x 1.0	4	7	0.7	5.1	
Strainer housing	Screw	M6 x 1.0	3	7	0.7	5.1	
Oil pump	Bolt	M6 x 1.0	3	12	1.2	8.7	
Oil filter	Union bolt	M20 x 1.5	1	15	1.5	11	
Engine drain bolt	Bolt	M14 x 1.5	1	43	4.3	31	
Strainer cover	Bolt	M6 x 1.0	13	12	1.2	8.7	
Oil pump sprocket	Bolt	M6 x 1.0	1	12	1.2	8.7	
Baffle plate	Screw	M6 x 1.0	3	7	0.7	5.1	
Oil cooler adapter plate	Union bolt	M20 x 1.5	1	50	5.0	36	
Oil cooler hose and adapter	Bolt	M6 x 1.0	4	12	1.2	8.7	
Oil hose	Bolt	M6 x 1.0	1	12	1.2	8.7	
Oil cooler	Bolt	M6 x 1.0	3	10	1.0	7.2	
Oil cooler hose clamp	Nut	M8 x 1.25	1	10	1.0	7.2	
Carburetor joint	Bolt	M6 x 1.0	8	12	1.2	8.7	
Air filter case cover	Screw	M6 x 1.0	4	5	0.5	3.6	
Air filter case and frame	Bolt	M6 x 1.0	3	5	0.5	3.6	
Exhaust pipe joint band	Bolt	M8 x 1.25	6	20	2.0	14	
Exhaust pipe ring nut	Nut	M6 x 1.0	8	10	1.0	7.2	
Exhaust pipe and frame	Bolt	M10 x 1.25	2	25	2.5	18	
Cylinder	Stud bolt	M10 x 1.25	8	20	2.0	14	
	Bolt	M10 x 1.25	4	20	2.0	14	
Crankcase	Bolt	M8 x 1.25	19	24	2.4	17	
	Bolt	M6 x 1.0	19	12	1.2	8.7	
Bearing plate stopper	Screw	M8 x 1.25	4	25	2.5	18	
Breaker cover	Screw	M6 x 1.0	8	8	0.8	5.8	
Generator cover	Bolt	M6 x 1.0	3	12	1.2	8.7	
Generator housing bearing	Screw	M6 x 1.0	3	10	1.0	7.2	



Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Change cover	Bolt	M6 x 1.0	10	12	1.2	8.7	
Drive shaft housing bearing	Bolt	M6 x 1.0	3	12	1.2	8.7	
Clutch cover	Bolt	M6 x 1.0	10	12	1.2	8.7	
Clutch cable holder	Bolt	M6 x 1.0	2	12	1.2	8.7	
Middle drain bolt	Bolt	M8 x 1.25	1	16	1.6	11	
Breather pipe 1	Screw	M6 x 1.0	3	7	0.7	5.1	
Breather pipe 2	Screw	M6 x 1.0	4	7	0.7	5.1	
Main gallery blind plug	Plug	M20 x 1.5	2	12	1.2	8.7	Apply oil
Stopper plate	Bolt	M6 x 1.0	1	10	1.0	7.2	
Clutch starter outer	Bolt	M8 x 1.25	3	25	2.5	18	
Upper guide	Bolt	M6 x 1.0	3	10	1.0	7.2	
Clutch pressure plate	Bolt	M6 x 1.0	5	8	0.8	5.8	
Clutch boss	Nut	M20 x 1.0	1	70	7.0	50	
Drive shaft bearing	Nut	M34 x 1.0	1	110	11.0	80	
Driven shaft bearing	Nut	M65 x 1.5	1	110	11.0	80	
Middle gear flange	Nut	M14 x 1.5	1	90	9.0	65	
Housing bearing	Bolt	M8 x 1.25	4	25	2.5	18	
Stopper plate	Screw	M6 x 1.0	1	7	0.7	5.1	
	Bolt	M6 x 1.0	1	8	0.8	5.8	
Change pedal	Bolt	M6 x 1.0	1	10	1.0	7.2	
Change pedal link	Nut	M6 x 1.0	2	10	1.0	7.2	
A.C. Generator	Bolt	M10 x 1.25	1	55	5.5	40	
Pick-up coil base	Screw	M6 x 1.0	2	8	0.8	5.8	
Rotor	Bolt	M8 x 1.25	1	24	2.4	17	
Brush	Screw	M6 x 1.0	2	8	0.8	5.8	
Timing plate	Screw	M6 x 1.0	1	8	0.8	5.8	
Starter motor	Bolt	M6 x 1.0	2	7	0.7	5.1	
Oil level switch	Bolt	M6 x 1.0	2	7	0.7	5.1	
Drive shaft	U Nut	M14 x 1.5	1	110	11.0	80	
Bearing cap	Bolt	M10 x 1.25	2	23	2.3	17	
	Nut	M8 x 1.25	6	23	2.3	17	
Oil mount screw	Plug	M14 x 1.5	1	23	2.3	17	
Oil drain screw	Plug	M14 x 1.5	1	23	2.3	17	
Bearing retainer	—	M65 x 1.5	1	110	11.0	80	
Final gear case	Stud bolt	M10 x 1.25	4	17	1.7	12	
	Stud bolt	M8 x 1.25	6	9	0.9	6.5	







B. CHASSIS

Steering system:		
Steering bearing type		Taper roller bearing
Bearing type	Upper	KOYO 32005
	Lower	KOYO 32006
Lock-to-lock angle		35°
Front suspension:		
Front fork travel		150 mm (5.91 in)
Fork spring free length/limit		522.5 mm (20.6 in)/517.5 mm (20.37 in)
Spring rate/Stroke	K ₁	7.2 N/mm (0.72 kg/mm, 40.3 lb/in)/ 0 ~ 100 mm (0 ~ 3.94 in)
	K ₂	10.4 N/mm (1.04 kg/mm, 58.2 lb/in)/ 100 ~ 150 mm (3.94 ~ 5.91 in)
Optional spring		No.
Oil capacity		286 ± 4 cm ³ (10.1 ± 0.14 Imp oz, 9.67 ± 0.14 US oz)
or Oil level		168 mm (6.61 in)
		(From top of inner tube fully compressed without spring)
Oil grade		SAE 5W type SE motor oil or equivalent
Enclosed air pressure		39 kPa (0.4 kg/cm ² , 5.7 psi)
Rear suspension:		
Shock absorber travel		75 mm (2.95 in)
Spring free length		237 mm (9.33 in)
Spring rate/Stroke	K ₁	21.5 N/mm (2.15 kg/mm, 120.4 lb/in)/ 0 ~ 36 mm (0 ~ 1.42 in)
	K ₂	30.0 N/mm (3.0 kg/mm, 168.0 lb/in)/ 36 ~ 75 mm (1.42 ~ 2.95 in)
Optional spring		No.
Enclosed gas pressure		150 kPa (15 kg/cm ² , 213 psi)
Rear arm:		
Swingarm free play limit	End	1 mm (0.04 in)
	Side	1 mm (0.04 in)
Wheel:		
Front wheel type		Cast wheel
Rear wheel type		Cast wheel
Front rim size/Material		MT 2.15 x 18/Aluminum
Rear rim size/Material		MT 2.75 x 18/Aluminum
Rim runout limit	Vertical	< 2.0 mm (0.08 in) >
	Lateral	< 2.0 mm (0.08 in) >
Disc brake:		
Type	Front	Dual disc
	Rear	Single disc
Outside dia. x Thickness	Front	267 x 7.5 mm (10.5 x 0.30 in)
	Rear	267 x 8.5 mm (10.5 x 0.33 in)
Pad thickness	Front	5.5 mm (0.22 in)
	Rear	5.5 mm (0.22 in)
Limit*	Front	< 0.5 mm (0.020 in) >
	Rear	< 0.5 mm (0.020 in) >
		
Master cylinder inside dia.	Front	15.87 mm (0.62 in)
	Rear	12.7 mm (0.50 in)
Caliper cylinder inside dia.	Front	42.85 mm (1.69 in)
	Rear	42.85 mm (1.69 in)
Brake fluid type		DOT #3

Brake lever & Brake pedal:	
Brake lever free play	5.0 ~ 8.0 mm (0.2 ~ 0.3 in)
Brake pedal free play	20 ~ 30 mm (0.8 ~ 1.2 in)
Brake pedal position	30 mm (1.2 in) (Vertical height below footrest top.)
Clutch lever free play	2 ~ 3 mm (0.08 ~ 0.12 in)

Recommended combinations of the front fork and rear shock absorber settings.

Use this table as guidance to meet specific riding and motorcycle load conditions.

	Front fork	Rear shock absorber		Loading condition			
	Air pressure	Spring seat	Damping adjuster turns out*	Solo rider	With passenger	With accessory equipments	With accessory equipments and passenger
1	39.2 ~ 78.5 kPa (0.4 ~ 0.8 kg/cm ² , 5.7 ~ 11.4 psi)		6	○			
2	39.2 ~ 78.5 kPa (0.4 ~ 0.8 kg/cm ² , 5.7 ~ 11.4 psi)		4		○		
3	58.8 ~ 98.1 kPa (0.6 ~ 1.0 kg/cm ² , 8.5 ~ 14.2 psi)		4			○	
4	78.5 ~ 118 kPa (0.8 ~ 1.2 kg/cm ² , 11.4 ~ 17.1 psi)		3				○

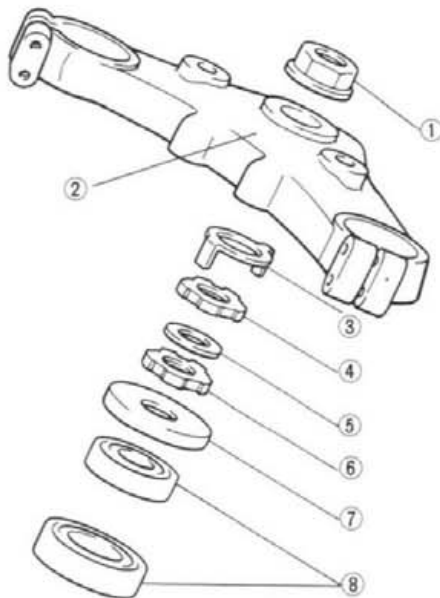
* Each numeral shows the damping value which can be set when the pointer is aligned with the individual slit in the spring seat. The damping adjuster may be further turned for a softer or harder damping; in each of the above settings, it is recommended that the damping be adjusted by one (1) or two (2) clicks on the softer side and one (1) click on the harder side.

Tightening Torque

Parts to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
CHASSIS:					
Front wheel axle and nut	M14 x 1.5	78	7.8	50	
Front fender and front fork	M6 x 1.0	9	0.9	6.5	
Steering crown and inner tube	M8 x 1.25	20	2.0	14	
Steering crown and steering shaft	M25 x 1.0	110	11.0	80	SEE BELOW
Under bracket and inner tube	M8 x 1.25	23	2.3	17	
Front fork cylinder and outer tube	M8 x 1.25	23	2.3	17	
Brake caliper (Front and rear)	M10 x 1.25	35	3.5	25	
Front fork and axle holder	M8 x 1.25	20	2.0	14	
Anti-nose dive and front fork	M5 x 0.8	5	0.5	3.6	
	M6 x 1.0	7	0.7	5.1	
Brake disc and wheel hub	M8 x 1.25	20	2.0	14	
Brake caliper and bleed screw (Front and rear)	M8 x 1.25	6	0.6	4.3	
Anti-nose dive and bleed screw	M8 x 1.25	6	0.6	4.3	
Union bolt (Front and rear)	M10 x 1.25	26	2.6	19	
Brake pipe and joint	M10 x 1.0	19	1.9	13	
Master cylinder and master cylinder cap	M5 x 0.8	2	0.2	1.4	
Handle crown and handlebar	M12 x 1.25	93	9.3	67	



Parts to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
Handlebar and grip bar	M10 x 1.25	50	5.0	36	
Grip bar and grip end	M18 x 1.5	26	2.6	19	
Front brake master cylinder and master cylinder bracket	M6 x 1.0	9	0.9	6.5	
Fuel sender unit and fuel tank	M5 x 0.8	4	0.4	2.9	
Engine mounting bolt: Front, upper Front, lower Rear	M10 x 1.25	42	4.2	30	
	M10 x 1.25	42	4.2	30	
	M12 x 1.25	70	7.0	50	
Engine stay and frame	M8 x 1.25	20	2.0	14	
Pivot shaft and rear arm	M22 x 1.5	6	0.6	4.3	
Pivot shaft and locknut	M22 x 1.5	100	10.0	72	
Rear shock absorber and frame	M10 x 1.25	30	3.0	22	
Rear shock absorber and rear arm	M10 x 1.25	30	3.0	22	
Rear shock absorber and housing gear	M10 x 1.25	30	3.0	22	
Rear wheel axle and nut	M14 x 1.5	105	10.5	75	
Middle gear flange and cross joint	M8 x 1.25	44	4.4	32	
Frame and muffler bracket	M10 x 1.25	42	4.2	30	
Rear footrest and muffler bracket	M10 x 1.25	42	4.2	30	
Rear brake master cylinder and frame	M8 x 1.25	20	2.0	14	
Compression bar and rear arm	M10 x 1.25	30	3.0	22	
Compression bar and caliper bracket	M10 x 1.25	30	3.0	22	
Rear stay and frame	M8 x 1.25	23	2.3	17	



STEERING STEM TIGHTENING STEPS:

1. Install bearing cover ⑦.
2. Tighten ring nut ⑥ 50 Nm (5.0 m•kg, 360 ft•lb).

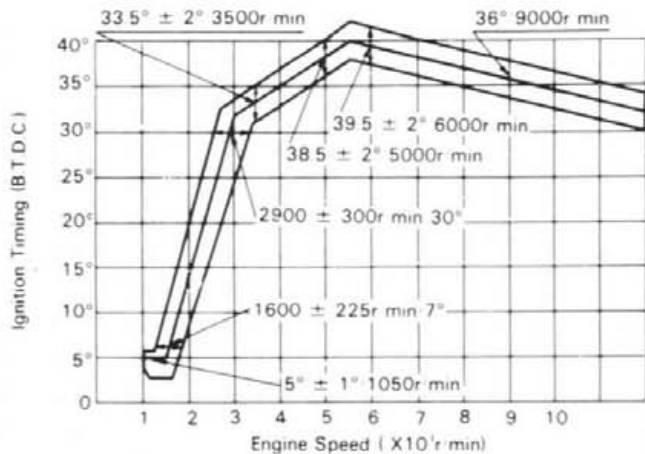
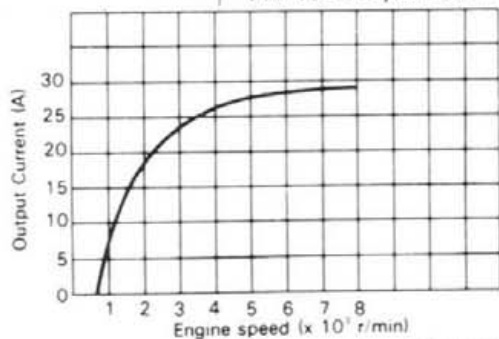
NOTE:

The taper side of ring nuts must face downward.

3. Check steering stem by turning it lock to lock. If there is any binding, remove steering stem assembly and inspect staring bearings ⑧.
4. Loosen ring nut ⑥ completely and retighten it 3 Nm (0.3 m•kg, 2.2 ft•lb).
5. Install rubber washer ⑤.
6. Install ring nut ④ and tighten by hand and align slots of both ring nut. If not aligned, hold the ring nut ⑥ and tighten ring nut ④ until they are aligned.
7. Install lock washer ③. Make sure the lock washer tab is placed in the slots.
8. Install steering crown ② and tighten steering stem nut ① 110 Nm (11.0 m•kg, 80 ft•lb).



C. ELECTRICAL

Voltage	12V
Ignition system: Ignition timing (B.T.D.C.) Advanced timing (B.T.D.C.)	5°/ 1,050 r/min 40°/ 5,500 r/min 
Advancer type	Electrical type
T.C.I.: Pick up coil resistance (Color) T.C.I. unit-model/Manufacturer	120Ω ± 20% at 20°C (68°F) (O – B, Gy – B) TID14-19/HITACHI
Ignition coil: Model/Manufacturer Minimum spark gap Primary winding resistance Secondary winding resistance	CM12-20/HITACHI 6 mm (0.24 in) or more at 500 r/min (19 kV/ 100 r/min at 6V, 16 kV/ 9,500 r/min at 14V) 2.7Ω ± 10% at 20°C (68°F) 13.2 kΩ ± 20% at 20°C (68°F)
Charging system: Type Model/Manufacturer Output Field (Inner) coil resistance (Color) Armature (Outer) coil resistance (Color) Brush – Overall length – Wear limit – Spring pressure	A.C. generator LD119-08/HITACHI 14V 18A at 5,000 r/min  4.0Ω ± 10% at 20°C (68°F) (G – Br) 0.46Ω ± 10% at 20°C (68°F) (W – W) 17 mm (0.67 in) 10 mm (0.39 in) 190 ~ 360 g (6.7 ~ 12.7 oz)
Voltage regulator: Type Model/Manufacturer No load regulated voltage	Field control type SH233-12/SHINDENGEN 14.2 ~ 14.8V



Rectifier: Model/Manufacturer Capacity Withstand voltage	SH233-12/SHINDENGEN 35A 320V
Battery: Capacity Specific gravity	12V 14AH 1,280
Electric starter system: Starter motor — Model/Manufacturer — Output Armature coil resistance Brush-overall length Limit Spring pressure Commutator dia. Wear limit Mica undercut Starter switch manufacturer Amperage rating Coil winding resistance	Constant mesh type ADB4D2/NIPPONDENSO 0.6 kW $0.014\Omega \pm 6\%$ at 20°C (68°F) 12 mm (0.47 in) < 8.5 mm (0.33 in) > 800 ± 150 g (28.22 ± 5.29 oz) 28 mm (1.1 in) < 27 mm (1.06 in) > 0.6 ± 0.2 mm (0.024 ± 0.008 in) 22U/HONDA LOCK 150A 3.4Ω at 20°C (68°F)
Horn: Type/Quantity Model/Manufacturer Maximum-amperage	Plane type/2 CF-12/NIKKO 2.5A
Flasher relay: Type Flasher frequency Wattage	Condenser type (For Others) FU249CD/NIPPONDENSO (For Others) Yes. (For Others) 85 ± 10 cycle/min $27\text{W} \times 2 + 3.4\text{W}$
Self-cancelling unit (Except for Germany): Model/Manufacturer	1A0/MATSUSHITA
Oil level switch: Manufacturer	4H7/NIPPONDENSO
Fuel gauge: Manufacturer Sender unit resistance — Full — Empty	31A/NIPPON SEIKI $2 \sim 12\Omega$ at 20°C (68°F) $87.5 \sim 102.5\Omega$ at 20°C (68°F)
Starting circuit cut off relay: Model/Manufacturer Coil winding resistance	12R/OMRON $75\Omega \pm 10\%$ at 20°C (68°F)
Circuit breaker: Type Amperage for individual circuit: Main Headlight Signal Ignition Reserve	Fuse 30A/1 20A/1 10A/1 10A/1 30A/1 and 20A/1



WIRING DIAGRAM

WIRING DIAGRAM

- | | | |
|------------------------------------|---------------------------------|---------------------------------|
| 1. Main switch | 21. Neutral switch | 41. Tachometer |
| 2. Handlebar switch (Right) | 22. Rear brake switch | 42. Over revolution switch |
| 3. "LIGHT" switch | 23. Flasher relay | 43. Reed switch |
| 4. "ENGINE STOP" switch | 24. Cancelling unit | 44. Digital clock |
| 5. "START" switch | 25. Rectifier with regulator | 45. "NEUTRAL" indicator light |
| 6. Front brake switch | 26. A.C. Generator | 46. "OIL" indicator light |
| 7. Fuel sender | 27. Oil level switch | 47. "HIGH BEAM" indicator light |
| 8. Fuse box | 28. Clutch switch | 48. Hone |
| 9. Diode | 29. Handlebar switch (Left) | 49. Front flasher light (Right) |
| 10. Starting-circuit cut-off relay | 30. "TURN" switch | |
| 11. Rear flasher light (Right) | 31. "HORN" switch | |
| 12. Rear flasher light (Left) | 32. Passing light switch "PASS" | |
| 13. Tail/brake light | 33. "LIGHTS" (Dimmer) switch | |
| 14. Battery | 34. Front flasher light (Left) | |
| 15. Starter relay | 35. Auxiliary light | |
| 16. Starter motor | 36. Headlight | |
| 17. Spark plug | 37. Meter assembly | |
| 18. Ignition coil | 38. Meter light | |
| 19. Ignitor | 39. "TURN" indicator light | |
| 20. Pick-up coil | 40. Fuelmeter | |

COLOR CODE

Br	Brown	Y	Yellow	L	Blue	R/W	Red/White	Y/B	Yellow/Black	Y/R	Yellow/Red
R	Red	Dg	Dark Green	P	Pink	L/W	Blue/White	Br/W	Brown/White	R/W	Red/White
W	White	Ch	Chocolate	O	Orange	L/B	Blue/Red	Y/G	Yellow/Green	L/R	Blue/Red
B	Black	Sb	Sky Blue	G	Green	R/Y	Red/Yellow	W/G	White/Green	G/Y	Green/Yellow

B/R	Black/Red
Gy	Gray
B/Y	Black/Yellow

WIRING DIAGRAM

