INDEX

This manual has been combined with previous service manuals to provide complete service information for **YTM 225 DRS.**

Please read and give special consideration to the "NOTICE" on the preceding page for your safety.

YTM 225 DRS Supplementary	DRS
YTM 225 DRN Supplementary	DRN
YTM 200 ERN Supplementary	ERN
YTM 225 DXK Supplementary **YTM 225 (DXL) Uses This Section**	DXK
YTM 200 EK Service Manual **YTM 200 (EL) Uses This Section**	EK

YAMAHA

YTM225DRS

DRS

Supplementary Service Manual

LIT-11616-05-33

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the YTM225DRS. For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with following manual:

YTM200EK Service Manual (LIT-11616-03-82)
YTM225DXK Supplementary Service Manual (LIT-11616-03-81)
YTM225DRN Supplementary Service Manual (LIT-11616-04-86)

NOTICE

This manual was writtrn by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specificaitions or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLE OPERATIONS
YAMAHA MOTOR CO., LTD

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.

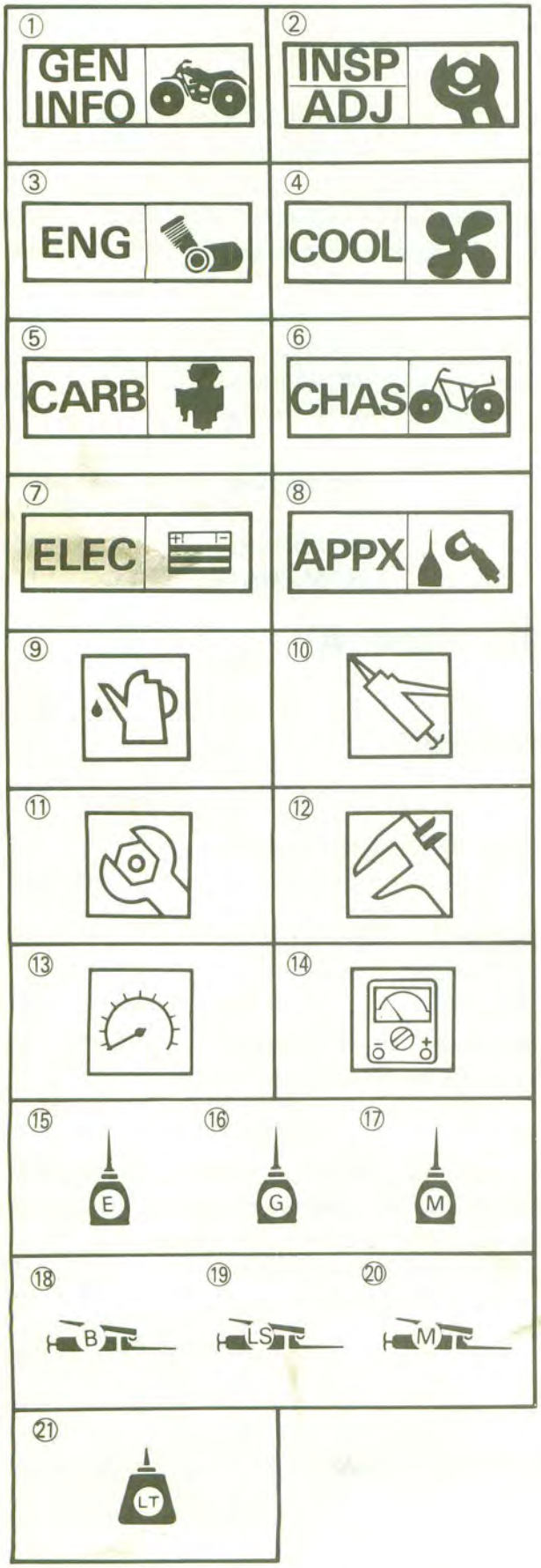
MANUAL FORMAT

All of the procedures in this mamual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handly 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.



ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols 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

Illustrated symbols ⑨ to ⑭ are used to identify the specifications appearing in the text.

⑨ Filling fluid
⑩ Lubricant
⑪ Tightening
⑫ Wear limit, clearance
⑬ Engine speed
⑭ Ω, V, A

Illustrated symbols 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®)

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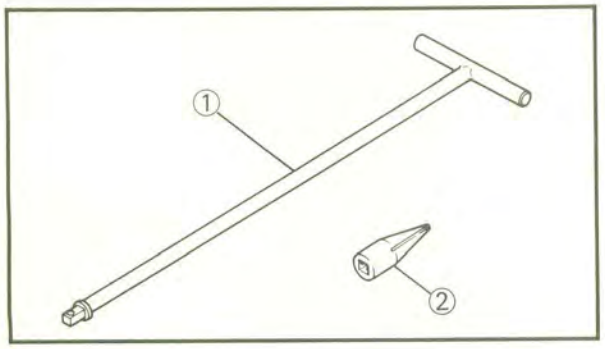
SPECIAL TOOLS

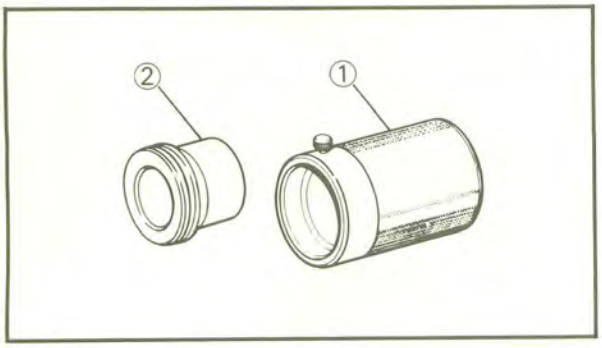
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR CHASSIS SERVICE

1. T-Handle
   P/N. YM-01326 ..... ①
   Front Fork Cylinder Holder
   P/N. YM-01300-1 ..... ②

This tool is used to loosen and tighten the front fork cylinder holding bolt.



2. Front Fork Seal Driver (weight)
   P/N. YM-33963 ..... ①
   Adapter (33 mm)
   P/N. YM-1368 ..... ②

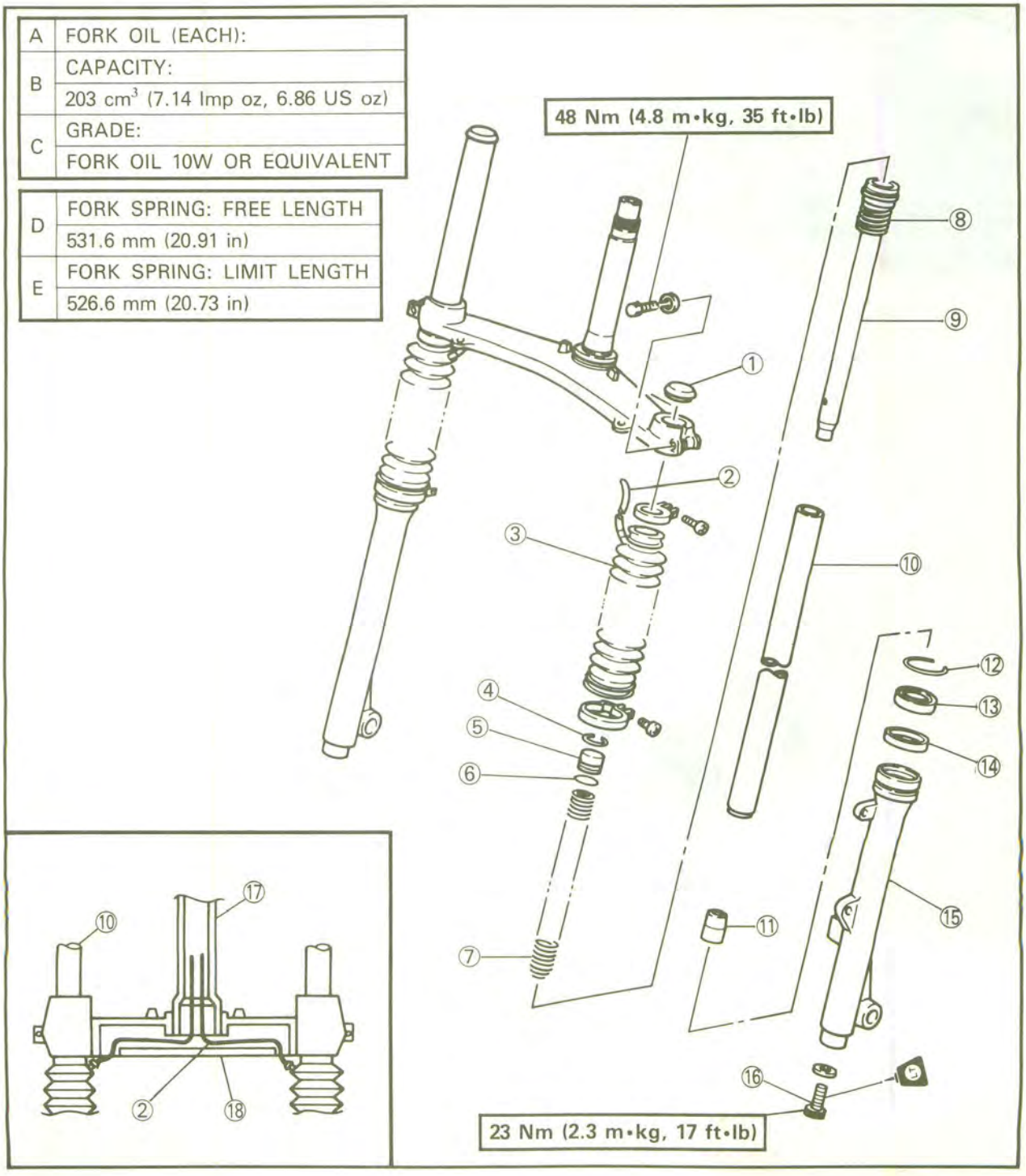
These tools are used when installing the fork seat.

FRONT FORK

① Rubber cap
② Breather pipe
③ Boot
④ Stopper ring
⑤ Spring seat
⑥ O-ring
⑦ Fork spring
⑧ Damper rod spring
⑨ Damper rod
⑩ Inner fork tube
⑪ Taper spindle
⑫ Retaining clip
⑬ Oil seal
⑭ Guide bushing
⑮ Outer fork tube
⑯ Damper rod securing bolt
⑰ Under bracket
⑱ Fender

A	FORK OIL (EACH):
B	CAPACITY:
	203 cm^3 (7.14 Imp oz, 6.86 US oz)
C	GRADE:
	FORK OIL 10W OR EQUIVALENT

D	FORK SPRING: FREE LENGTH
	531.6 mm (20.91 in)
E	FORK SPRING: LIMIT LENGTH
	526.6 mm (20.73 in)

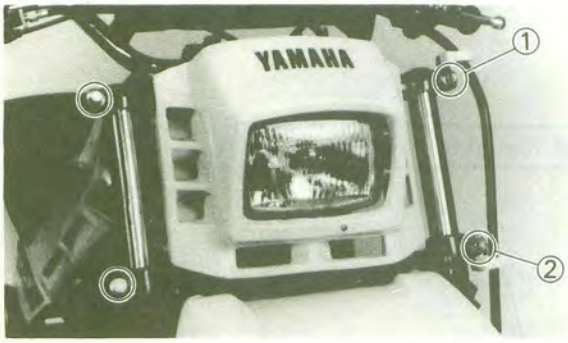


REMOVAL AND DISASSEMBLY

1. Elevate the front wheel by placing a suitable stand under the footrests.
2. Remove:
   - Front wheel
   - Front tender

WARNING:

Support the motorcycle securely so there is no danger of it falling over.



3. Loosen:
   - Upper front fork pinch bolt ①
   - Lower front fork pinch bolt ②

CAUTION:

Support the fork before loosening the pinch bolts.

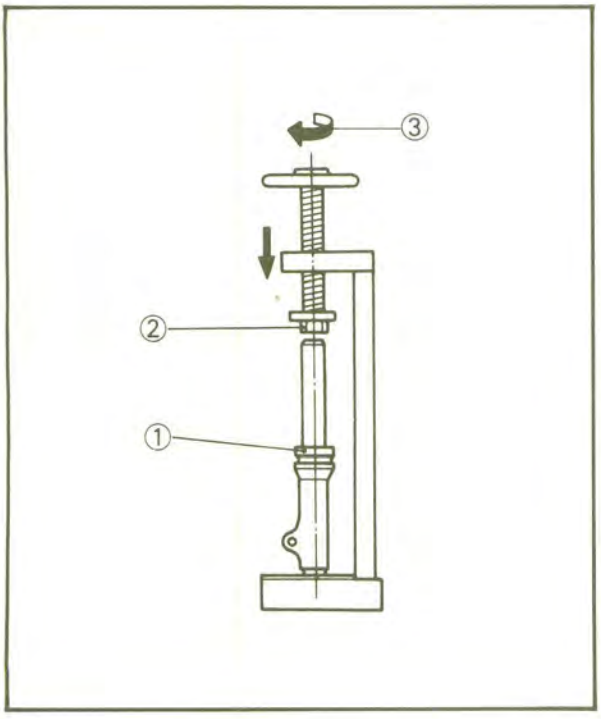
4. Remove:
   - Front fork assembly (from the under bracket)

5. Remove:
   - Dust boot
   - Rubber cap
   - Stopper ring ②
   - Spring seat ①
   - Fork spring

NOTE:

Remove the stopper ring pressing in the spring seat.

6. Remove:
   - Retaining clip

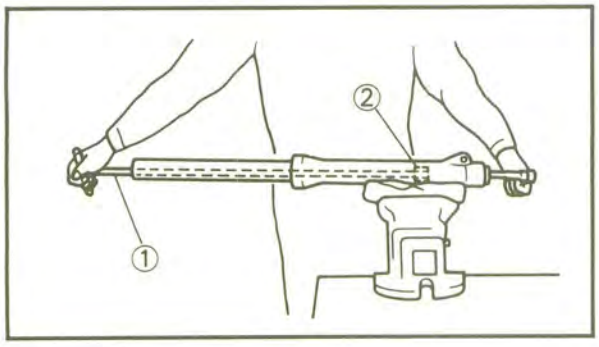


7. Fill:
   - Fork inner tube
     (with fork oil)
     Stretch the inner tube before filling.
8. Install:
   - Spring seat
   - Stopper ring
9. Remove:
   - Oil seal
     (from outer tube.)
     Press the inner tube to facilitate removal.

① Wrap with rag
② Spacer
③ Turn slowly

CAUTION:

- **If air enters the inner tube or it is compressed abruptly, oil may spurt out or the oil seal may be ejected.**
- **Never touch the inner tube during a disassembly operation.**
- **Be sure to wrap the oil seal with a rag for safety.**



10. Remove:
    - Oil seal
    - Stopper ring
    - Spring seat
11. Drain:
    - Fork
12. Remove:
    - Damper rod securing bolt
      Use T-handle ① (YM-01326) and Front Fork Cylinder Holder (YM-01300-1) ② to lock the damper rod.
      damper rod.
13. Remove:
    - Damper rod
    - Damper rod spring
    - Inner fork tube
    - Taper spindle
    - Guide bushing

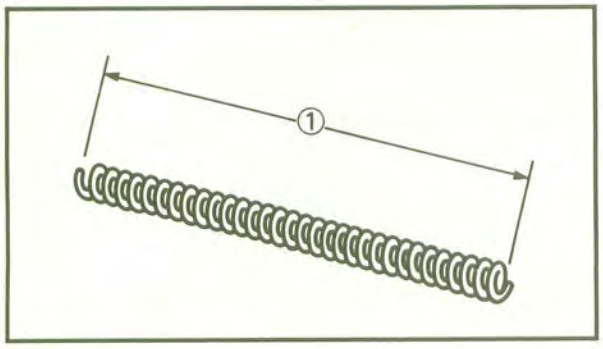
INSPECTION

1. Inspect:
   - Inner fork tube
     Severe scratches/Bends→Replace.
     Damaged oil lock valve→Replace.

WARNING:

Do not attempt to straighten a bent fork tube as this may dangerously weaken the tube.

2. Inspect:
   - Outer fork tube
     Bends→Replace.
     Damaged fork seal seat→Replace.
   - Fork oil seal
     Lip damage→Replace.
     Outer surface damage→Replace.



3. Inspect:
   - Fork spring ①
     Over specified limit→Replace.

Fork Spring Free Length Limit:
526.6 mm (20.73 in)

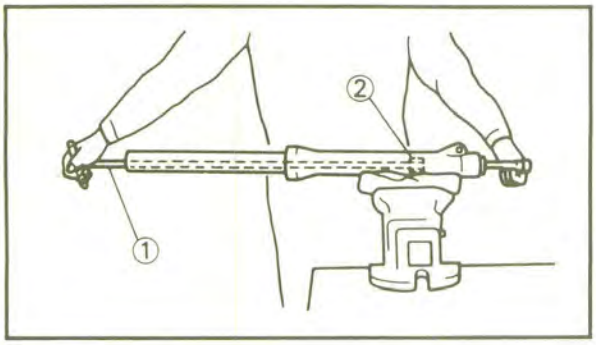
4. Inspect:
   - Damper rod
     Worn damper rod seal→Replace.
     Contamination→Wash and blow out all passages.
   - Spring seat O-ring ①
     Damage→Replace.

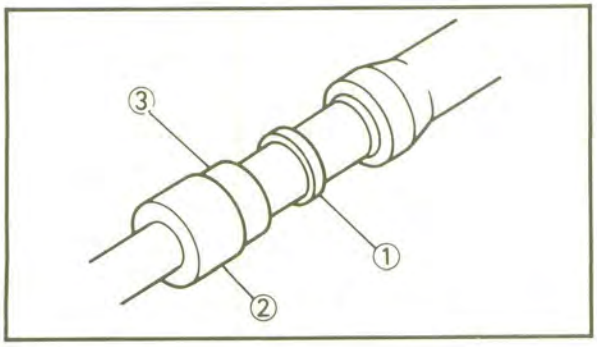
ASSEMBLY

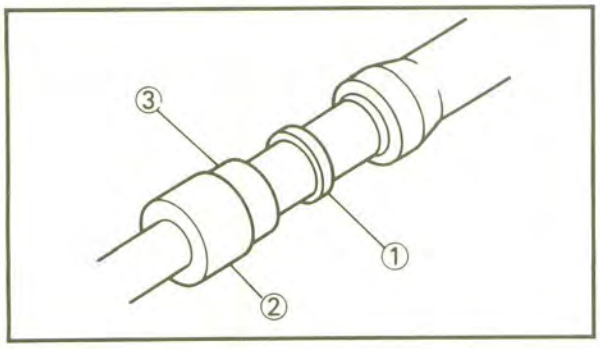
NOTE:

Be sure all components are clean before assembly.

1. Install:
   - Damper rod spring
   - Damper rod
     Allow rod to slide slowly down the inner fork tube until it protrudes from the bottom.







- Taper spindle
- Inner fork tube

2. Install:
   - Damper rod securing bolt

   Hold damper rod with Front Fork Cylinder Holder ② (YM-01300-1) and T-handle ① (YM-01326).

23 Nm (2.3 m•kg, 17 ft•lb)
LOCTITE®

3. Install:
   - Guide bushing ①

   Press guide bushing into the outer fork tube with Fork Seal Driver ② (YM-33963) and Adapter (YM-1368) ③.

4. Install:
   - Fork oil seal ①

   Press fork oil seal into the outer fork tube with Fork Seal Drive ② (YM-33963) and Adapter (YM-1368) ③.

CAUTION:

Be sure oil seal numbered side face upward.

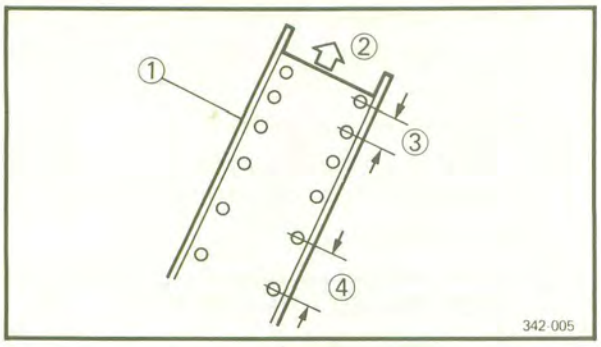
5. Install:
   - Retaining clip
6. Fill:
   - Inner tube

   (with fork oil)

Capacity (each):
203 cm³(7.14 Imp oz, 6.86 US oz)
Type:
Fork oil 10W or equivalent

NOTE:

After filling, slowly pump the fork up and down to distribute oil.



7. Install:
   - Fork spring

NOTE:

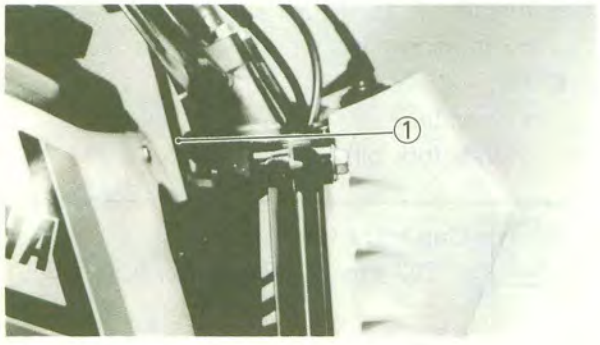
The fork spring must be installed with the smaller pitch ③ side facing upward ②.

① Inner fork tube
④ Large pitch

   - Spring seat ①
   - Stopper ring ②
   - Rubber cap
     (into the inner fork tube)
   - Dust boot
8. Install:
   - Front fork assembly
     (into the underbracket, and handle crown)

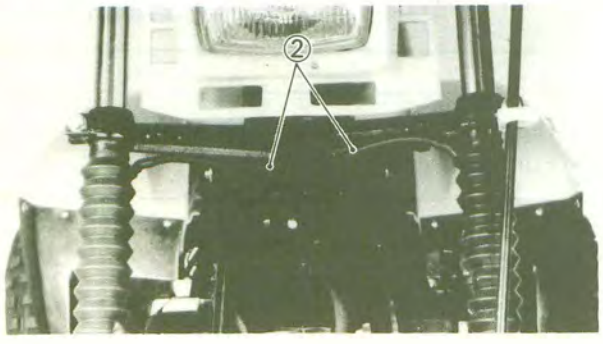
9. Tighten:
   - Upper front fork pinch bolts ①
   - Lower front fork pinch bolts ②
   - Cap bolt

Upper Pinch Bolts:
20 Nm (2.0 m•kg, 14 ft•lb)
Lower Pinch Bolts:
48 Nm (4.8 m•kg, 35 ft•lb)



NOTE:

- Be sure the inner fork tube end is flush ① with the top of the handlebar.
- When installing the front fender, make sure the breather pipes ② are properly connected and routed.



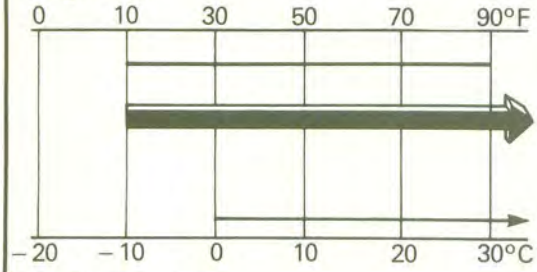
10. Continue assembly by reversing of Removal and Disassembly sequence.
    Install and torque tighten each component as specified.

Front Wheel Axle:
50 Nm (5.0 m•kg, 36 ft•lb)

APPENDICES

SPECIFICATIONS

I. GENERAL SPECIFICATIONS

Model	YTM225DRS
Model Code Number	1NV
Vehicle Identification Number	JY31NV00*GC000101
Engine Starting Number	1NV-000101
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	 1,835 mm (72.2 in) 1,000 mm (39.4 in) 1,030 mm (40.6 in) 720 mm (28.3 in) 1,150 mm (45.3 in) 205 mm (8.1 in)
Basic Weight: With Oil and Full Fuel Tank	 157 kg (346 lb)
Minimum Turning Radius:	2,200 mm (86.6 in)
Engine: Engine Type Cylinder Arrangement Displacement Bore × Stroke Compression Ratio Compression Pressure Starting System	 4-stroke, gasoline, SOHC Single cylinder, Forward inclined 223.2 cm^3 70 × 58 mm (2.76 × 2.28 in) 8.8 : 1 883 kPa (9 kg/cm^2, 128 psi) Recoil starter and Electric starter
Lubrication System:	Wet sump
Oil Type or Grade: Engine Oil  Final gear oil	 SAE 10W30 type SE motor oil SAE 10W40 type SE motor oil Yamalube 4-cycle oil or SAE 20W40 type SE motor oil (20W50) SAE 80 API GL-4 Hypoid gear oil
Oil Capacity: Engine Oil Periodic Oil Change Total Amount Final Gear Case Oil	 1.5 L (1.3 Imp qt, 1.6 US qt) 1.8 L (1.6 Imp qt, 1.9 US qt) 0.13 L (0.11 Imp qt, 0.14 US qt)
Air Filter	Wet type element

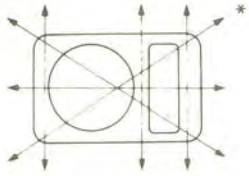
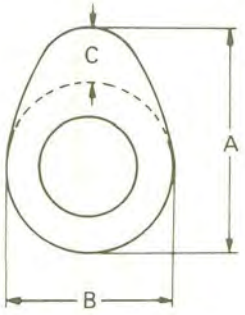
Model	YTM225DRS
Fuel:	
Type	Regular gasoline
Tank Capacity	9.5 L (2.1 Imp gal, 2.5 US gal)
Reserve Amount	2.4 L (0.5 Imp gal, 0.6 US gal)
Carburetor:	
Type/Manufacturer	VM24SH/MIKUNI
Spark Plug:	
Type/Manufacturer	D7EA/NGK or X22ES-U/NIPPONDENSO
Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Clutch Type:	Wet, multiple-disc, Centrifugal automatic
Transmission:	
Primary Reduction System	Spur gear
Primary Reduction Ratio	73/22 (3.318)
Secondary Reduction System	Shaft drive
Secondary Reduction Ratio	19/18 × 43/12 = 3.782
Transmission Type	Constant mesh, 5-speed
Operation	Left foot operation
Gear Ratio	
1st	34/12 (2.833)
2nd	34/19 (1.789)
3rd	29/22 (1.318)
4th	26/25 (1.040)
5th	23/28 (0.821)
Reverse	34/12 (2.833)
Chassis:	
Frame Type	Double cradle
Caster Angle	20°18′
Trail	35 mm (1.38 in)
Tire:	
Type	Tubeless
Size (F)	22 × 11 − 8
Size (R)	22 × 11 − 8 × 2 pcs
Tire Pressure (Cold tire):	
Front and Rear:	
Standard	14.7 kPa (0.15 kg/cm^2, 2.2 psi)
Minimum	11.8 kPa (0.12 kg/cm^2, 1.8 psi)
Maximum	68.6 kPa (0.7 kg/cm^2, 10 psi)
Brake:	
Front Brake Type	Drum brake
Operation	Right hand operation
Rear Brake Type	Single disc brake
Operation	Left hand operation, Right foot operation

SPECIFICATIONS

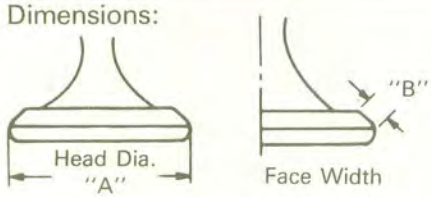
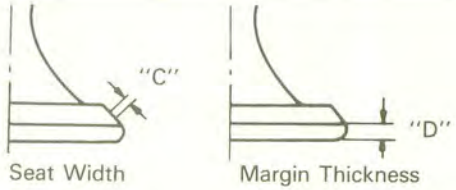
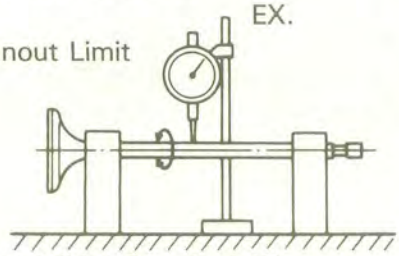
Model	YTM225DRS
Suspension:	
Front Suspension	Telescopic fork
Rear	Monocross suspension
Shock Absorber:	
Front Shock Absorber	Coil spring, Oil damper
Rear Shock Absorber	Coil spring, Gas-Oil damper
Wheel Travel:	
Front Wheel Travel	140 mm (5.5 in)
Rear Wheel Travel	110 mm (4.3 in)
Electrical:	
Ignition System	C.D.I. Magneto
Generator System	Flywheel magneto
Battery Type/Capacity	GM14AZ—4A/12V, 14AH
Headlight Type	Bulb
Bulb Wattage/Quantity:	
Headlight	45W/45W × 1
Taillight	7.5W × 1
Indicator Light Wattage/Quantity	
"NEUTRAL"	3.4W × 1
"REVERSE"	3.4W × 1

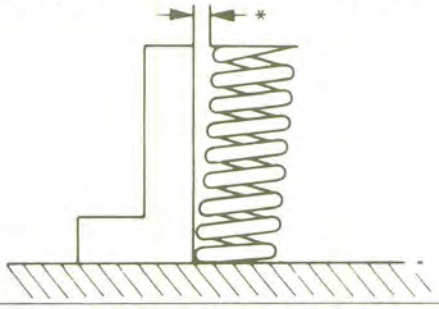
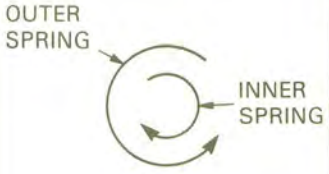
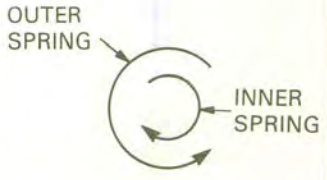
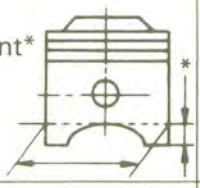
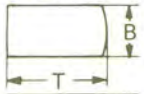
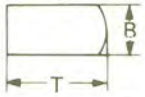
II. MAINTENANCE SPECIFICATIONS

A. Engine

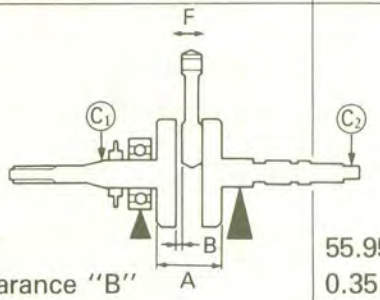
Model	YTM225DRS
Cylinder Head:	
Warp Limit 	<0.03 mm (0.0012 in)> * Lines indicate straightedge measurement.
Cylinder:	
Bore Size	69.97 ~ 70.02 mm (2.7547 ~ 2.7567 in)
Taper Limit	<0.05 mm (0.02 in)>
Out-of-round Limit	<0.01 mm (0.0004 in)>
Camshaft:	
Drive Method	Chain (Left)
Camshaft Bearing (Cylinder)	25.000 ~ 25.021 mm (0.9843 ~ 0.9851 in), 20.000 ~ 20.021 mm (0.7874 ~ 0.7882 in)
Camshaft Outside Diameter	24.960 ~ 24.980 mm (0.9827 ~ 0.9835 in), 19.998 ~ 19.999 mm (0.7873 ~ 0.7874 in)
Shaft-to-cap Clearance	0.020 ~ 0.061 mm (0.0008 ~ 0.0024 in)
Cam Dimensions	
Intake "A"	36.537 ~ 36.637 mm (1.4385 ~ 1.4424 in)
 "B"	30.131 ~ 30.231 mm (1.1863 ~ 1.1902 in)
"C"	6.587 mm (0.2593 in)
Exhaust "A"	36.577 ~ 36.677 mm (1.440 ~ 1.444 in)
"B"	30.214 ~ 30.314 mm (1.1895 ~ 1.1935 in)
"C"	6.627 mm (0.2609 in)
Camshaft Runout Limit	<0.03 mm (0.0012 in)>
Cam Chain Type/Number of Links	DID25SH/104 Links
Cam Chain Adjustment Method	Automatic
Rocker Arm/Rocker Arm Shaft:	
Rocker Arm Inside Diameter	12.000 ~ 12.018 mm (0.4724 ~ 0.4731 in)
Shaft Outside Diameter	11.985 ~ 11.991 mm (0.4718 ~ 0.4721 in)
Arm-to-shaft Clearance	0.009 ~ 0.037 mm (0.0004 ~ 0.0015 in)
Valve, Valve Seat, Valve Guide:	
Valve Clearance (Cold)	
IN.	0.05 ~ 0.09 mm (0.0020 ~ 0.0035 in)
EX.	0.11 ~ 0.15 mm (0.0043 ~ 0.0059 in)

SPECIFICATIONS

Model		YTM225DRS
Valve Dimensions:  		
"A" Head Dia.	IN.	33.9 ~ 34.1 mm (1.3346 ~ 1.3425 in)
	EX.	28.4 ~ 28.6 mm (1.1181 ~ 1.1260 in)
"B" Face Width	IN.	2.26 mm (0.089 in)
	EX.	2.26 mm (0.089 in)
"C" Seat Limit Width	IN.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
"D" Margin Thickness Limit		
	IN.	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
	EX.	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
Stem Outside Diameter	IN.	5.975 ~ 5.990 mm (0.2352 ~ 0.2358 in)
	EX.	5.960 ~ 5.975 mm (0.2346 ~ 0.2352 in)
Guide Inside Diameter	IN.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)
	EX.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 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 		
Valve Seat Width Standard	IN.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
Valve Spring:		
Free Length		
Inner Spring	IN.	35.5 mm (1.40 in)
	EX.	35.5 mm (1.40 in)
Outer Spring	IN.	37.2 mm (1.46 in)
	EX.	37.2 mm (1.46 in)
Compressed Length (Valve Closed)		
Inner Spring	IN.	30.5 mm (1.20 in)
	EX.	30.5 mm (1.20 in)
Outer Spring	IN.	32.0 mm (1.26 in)
	EX.	32.0 mm (1.26 in)

Model		YTM225DRS	
Tilt Limit*:			
Inner Spring	IN. & EX.	2.5° or 1.6 mm (0.063 in)	
Outer Spring	IN. & EX.	2.5° or 1.6 mm (0.063 in)	
			
Direction of Winding (Top view)		IN	EX
			
Piston:			
Piston Size/Measuring Point*		69.935 ~ 69.985 mm (2.7533 ~ 2.7553 in)/ 4 mm (0.157 in) (From bottom line of piston skirt)	
Piston Clearance		0.035 ~ 0.055 mm (0.0014 ~ 0.0022 in)	
Piston Ring:			
Sectional Sketch	Top Ring	Plain B = 1.2 mm (0.0472 in) T = 2.8 mm (0.1102 in)	
	2nd Ring	Plain B = 1.2 mm (0.0472 in) T = 2.8 mm (0.1102 in)	
	Oil Ring	B = 2.5 mm (0.0984 in) T = 2.8 mm (0.1102 in)	
End Gap (Installed)	Top Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)	
	2nd Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)	
	Oil Ring	0.3 ~ 0.9 mm (0.0118 ~ 0.0354 in)	
Side Clearance	Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	
	2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	

SPECIFICATIONS

Model	YTM225DRS
Crankshaft: 	
Crank Width "A"	55.95 ~ 56.00 mm (2.2028 ~ 2.2047 in)
Big End Side Clearance "B"	0.35 ~ 0.65 mm (0.0138 ~ 0.0256 in)
Runout Limit "C1"	<0.02 mm (0.0008 in)>
"C2"	<0.06 mm (0.0024 in)>
Small End Free Play "F" <Limit>	<2.0 mm (0.08 in)>
Balancer Drive Method:	Gear
Primary Clutch:	
Shoe Thickness/Quantity	2.0 mm (0.079 in)/3
Wear Limit	1.5 mm (0.0591 in)
Secondary Clutch:	
Friction Plate Thickness/Quantity	3.0 mm (0.12 in)/5
Wear Limit	<2.8 mm (0.11 in)>
Clutch Plate Thickness/Quantity	1.6 mm (0.06 in)/4
Warp Limit	<0.2 mm (0.008 in)>
Clutch Spring Free Length/Quantity	34.9 mm (1.37 in)/4
Clutch Release Method	Outer push
Clutch-In Revolution	1,850 ~ 2,150 r/min
Clutch-Stall Revolution	2,900 ~ 3,300 r/min
Transmission:	
Main Axle Deflection Limit	<0.08 mm (0.0031 in)>
Drive Axle Deflection Limit	<0.08 mm (0.0031 in)>
Shifter:	
Shifter Type	Guide bar
Decompression Device:	
Type	Manual
Air Filter Oil Grade (Oiled Filter)	Foam-air-filter oil or SAE 10W30 type SE motor oil
Carburetor:	
Type/Manufacturer/Quantity	VM24/MIKUNI/1
I.D.Mark	1NV00
Main Jet (M.J.)	#112.5
Main Air Jet (M.A.J.)	ø1.6
Jet Needle-clip Position (J.N.)	5L10-4
Needle Jet (N.J.)	O-0
Cutaway (C.A.)	#3.5
Pilot Jet (P.J.)	#20
Pilot Air jet (P.A.J.)	#120

Model		YTM225DRS
Pilot Screw	(P.S.)	1 and 3/4 ± 1/2
Valve Seat	(V.S.)	ø1.8
Starter Jet	(G.S.)	ϕ60
Fuel Level	(F.L.)	3.0 ± 1.0 mm (0.12 ± 0.04 in)
Float Height	(F.H.)	21.5 ± 0.5 mm (0.85 ± 0.02 in)
Engine Idling Speed		1,400 ± 50 r/min
Lubrication System:		
Oil Filter Type		Wire mesh
Oil Pump Type		Trochoid pump
Tip Clearance		0.15 mm (0.0059 in)
Side Clearance		0.04 ~ 0.09 mm (0.0016 ~ 0.0035 in)
Bypass Valve Setting Pressure		78.46 ~ 117.68 kPa (0.8 ~ 1.2 kg/cm^2, 11.376 ~ 17.064 psi)
Middle Gear Lash	Forward	0.1 ~ 0.2 mm (0.004 ~ 0.008 in)
	Reverse	0.1 ~ 0.25 mm (0.004 ~ 0.01 in)
Final Gear Lash		0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

B. Chassis

Model		YTM225DRS
Steering System:		
Steering Bearing Type		Ball Bearing
No./Size of Steel Balls	Upper	19 pcs/1/4 in
	Lower	19 pcs/1/4 in
Front Suspension:		
Front Fork Travel		140 mm (5.5 in)
Fork Spring Free Length		531.6 mm (20.91 in)
<Limit>		<526.6 mm (20.73 in)>
Spring Rate/Stroke		K_1 = 6.13 N/mm (0.625 kg/mm, 35.0 lb/in)/ 0 ~ 80 mm (0 ~ 3.15 in) K_2 = 7.97 N/mm (0.813 kg/mm, 45.5 lb/in)/ 80 ~ 120 mm (3.15 ~ 4.72 in) K_3 = 10.42 Nm (1.063 kg/mm, 59.5 lb/in)/ 120 ~ 160 mm (4.72 ~ 6.30 in)
Optional Spring		No
Oil Capacity or		203 cm^3 (7.14 Imp oz, 6.86 US oz)
Oil Level		383.5 mm (15.1 in) (From top of inner tube fully compressed without spring.)
Oil Grade		Yamaha fork oil 10wt or equivalent
Rear Suspension:		
Shock Absorber Travel		55 mm (2.17 in)
Spring Free Length		201 mm (7.91 in)
Fitting Length		196 mm (7.72 in)
Spring Rate/Stroke		K_1 = 98 Nm (10 kg/mm, 559 lb/in)/ 0 ~ 32.5 mm (0 ~ 1.28 in) K_2 = 168 Nm (17.11 kg/mm, 958 lb/in)/ 32.5 ~ 55 mm (1.28 ~ 2.17 in)
Optional Spring		No
Wheel:		
Front Wheel Type		Disc Wheel
Rear Wheel Type		Disc Wheel
Front Rim Size/Material		8.25 × 8/Steel
Rear Rim Size/Material		8.25 × 8/Steel
Rim Runout Limit	Vertical	<2.0 mm (0.08 in)>
	Lateral	<2.0 mm (0.08 in)>
Drum Brake:		
Type	Front	Leading and trailing
Drum inside Dia		
<Limit>		110 mm (4.33 in) < 111 mm (4.37 in)>
Lining Thickness		
<Limit>		4.0 mm (0.16 in) < 2.0 mm (0.08 in)>
Shoe Spring Free Length	Front	34.5 mm (1.36 in)

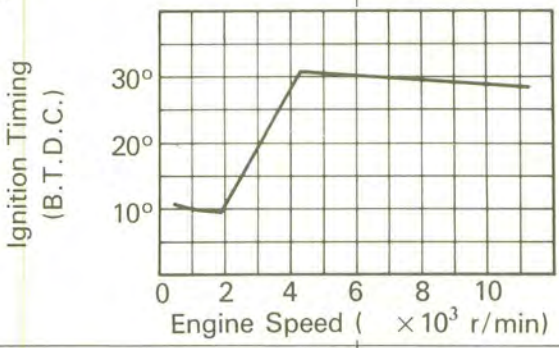
Model		YTM225DRS
Disc Brake:		
Type	Rear	Single disc
Outside Dia × Thickness		224 × 4 mm (8.82 × 0.16 in)
Pad Thickness		
<Limit>	Inner	8.0 mm (0.31 in) <2.0 mm (0.0787 in)>
	Outer	8.0 mm (0.31 in) <2.0 mm (0.0787 in)>
Brake Lever & Brake Pedal:		
Rear:		
Brake Lever Free Play		<10 mm (0.4 in)> at level pivot
Brake Pedal Free Play		<50 mm (2.0 in)>
Brake Pedal Height		5 mm (0.2 in) below the footrest top end
Front:		
Brake Lever Free Play		5 ~ 8 mm (0.2 ~ 0.31 in) at lever pivot

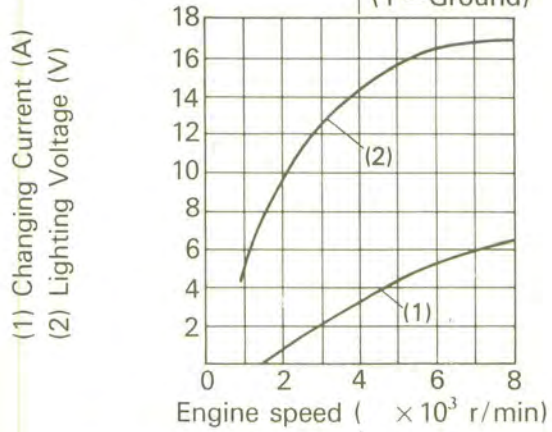
SPECIFICATIONS

Tightening torque:		Thread size	Q'ty	Nm	m•kg	ft•lb	Remarks
Front axle shaft	Nut	M14×1.5	1	50	5.0	36	
Wheel panel (Front and rear)	Nut	M10×1.25	9	45	4.5	32	
Front brake cam	Bolt	M6 ×1.0	1	9	0.9	6.5	
Under bracket & inner fork tube	Bolt	M10×1.25	2	48	4.8	35	
Steering crown & inner fork tube	Bolt	M8 ×1.25	2	20	2.0	14	
Steering stem	Bolt	M14×1.25	1	90	9.0	65	
Handlebar upper holder	Bolt	M8 ×1.25	4	20	2.0	14	
Engine front & Frame	Nut	M8 ×1.25	1	33	3.3	24	
Upper engine bracket & Engine	Nut	M8 ×1.25	1	33	3.3	24	
Upper engine bracket & Frame	Nut	M8 ×1.25	2	33	3.3	24	
Engine rear upper and lower & Frame	Nut	M8 ×1.25	2	33	3.3	24	
Rear axle shaft	Nut	M14×1.50	2	100	10.0	72	
Final gear housing & Swingarm	Nut	M8 ×1.25	4	23	2.3	17	
Bearing retainer	—	M63×1.0	1	100	10.0	72	Left-hand thread
Ring gear bearing housing & Final gear housing	Bolt	M8 ×1.25	6	23	2.3	17	
	Bolt	M10×1.25	2	45	4.5	32	
Rear wheel hub & Final gear housing	Bolt	M10×1.25	4	45	4.5	32	
Pivot shaft	Screw	M22×1.5	2	6	0.6	4.3	
Pivot shaft locknut	Nut	M22×1.5	2	100	10.0	72	
Shock absorber & Frame	Bolt	M10×1.25	1	25	2.5	18	
Footrest & Frame	Bolt	M12×1.25	4	90	9.0	65	
Rear brake caliper body	Bolt	M10×1.25	2	50	5.0	36	
Rear brake caliper	Nut	M6 ×1.0	3	9	0.9	6.5	
Brake pad adjuster locknut	Nut	M8 ×1.25	1	15	1.5	11	
Fuel tank & Fuel cock	Screw	M6 ×1.0	2	5	0.5	3.6	
Front fork cylinder comp & Outer tube	Bolt	M8 ×1.25	2	23	2.3	17	Apply LOCTITE®
Rear axle and Ring nut		M40×1.50	2	1st: Finger tighten the inside ring nut 2nd: Tighten the outside ring nut while holding the inside ring nut 190 Nm (19 m•kg, 140 ft•lb) 3rd: Loosen the inside ring nut while holding the outside ring nut 240 Nm (24 m•kg, 170 ft•lb)			Apply LOCTITE®

C. Electrical

Model	YTM225DRS
Voltage	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	10° at 1,000 r/min
Advanced Timing (B.T.D.C.)	30° at 6,000 r/min
Advancer Type	Electrical
C.D.I.:	
Magneto-Model/Manufacturer	F3T16471/MITSUBISHI
Pickup Coil Resistance (Color)	196Ω ± 10% at 20°C (68°F) (W/R—W/G)
Charging Coil Resistance (Color)	381Ω ± 10% at 20°C (68°F) (Br—B)
C.D.I. Unit-Model/Manufacturer	F8T07272/MITSUBISHI
Ignition Coil:	
Model/Manufacturer	F6T59072/MITSUBISHI
Minimum Spark Gap	6 mm (0.24 in)
Primary Winding Resistance	0.85Ω ± 15% at 20°C (68°F)
Secondary Winding Resistance	5.9kΩ ± 15% at 20°C (68°F)
Charging System/Type	Flywheel magneto
F.W. Magneto:	
Charging Current	1.8A or more at 3,000 r/min 4.5A or less at 8,000 r/min
Charging Coil Resistance (Color)	0.4Ω ± 10% at 20°C (68°F) (W—Ground)
Lighting Voltage	11.3V or more at 3,000 r/min 14V or more at 8,000 r/min
Lighting Coil Resistance (Color)	0.34Ω ± 10% at 20°C (68°F) (Y—Ground)





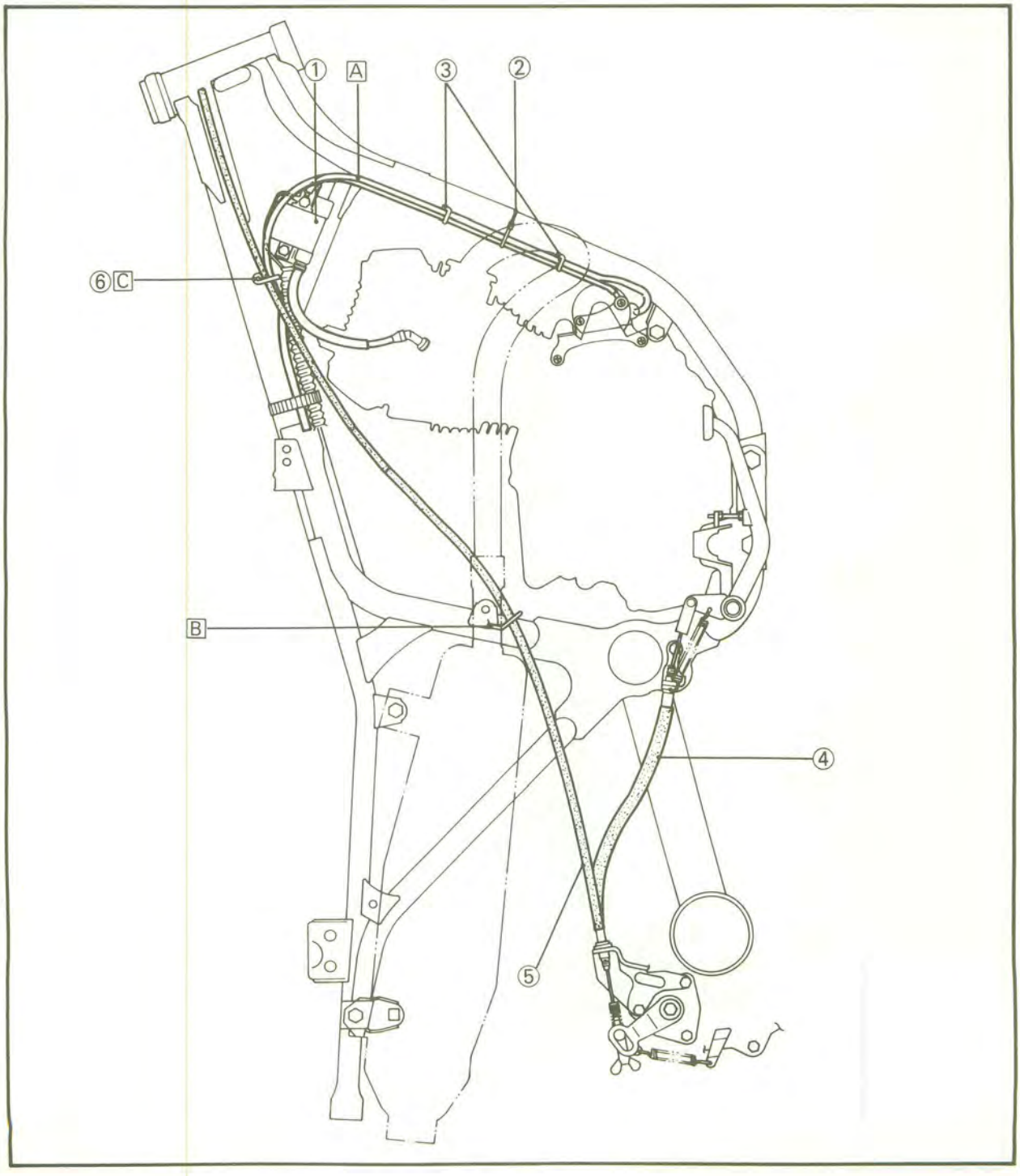
SPECIFICATIONS

Model	YTM225DRS
Voltage Regulator:	
-Type	Short circuit type
-Model/Manufacture	EHU-01TR12/MATSUSHITA
-No Load Regulated Voltage	12~16.5V
Rectifier:	
-Model/Manufacturer	EHU-01TR12/MATSUSHITA
-Capacity	5.5A
-Withstand Voltage	240V
Battery:	
Capacity	12V 14AH
Specific Gravity	1.28
Electric Starter System:	
Type	Constant mesh type
Starter Motor-Model/Manufacturer	SM-7252/MITSUBA
-Out put	0.4kW
Armature Coil Resistance	0.023Ω±20% at 20°C (68°F)
Brush-Overall Length	10.5 mm (0.413 in)
<Limit>	<5.0 mm (0.197 in)>
-Spring Pressure	400~600 g (14~23 oz)
Commutator Dia.	23 mm (0.906 in)
<Wear Limit>	<22 mm (0.866 in)>
-Mica Undercut	0.55 mm (0.022 in)
Starter Relay	
Model/Manufacturer	A104/HITACHI or I26/HONDA LOCK
Amperage Rating	150A
Coil Winding Resistance (Color)	3.4Ω±5% at 20°C (68°F) (R/W—L/W)
Starting Circuit Cut off Relay:	
Model/Manufacturer	ACA12/MATUSHITA
Coil Winding Resistance	80Ω±10% at 20°C (68°F)
Color Code	None
Diode	No
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit/Quantity	
Main	10A×1
Reserve	10A×1

CABLE ROUTING (1)

① Ignition coil
② Band
③ Clamp
④ Rear brake cable (Footrest)
⑤ Rear brake cable (Hand)
⑥ Clamp

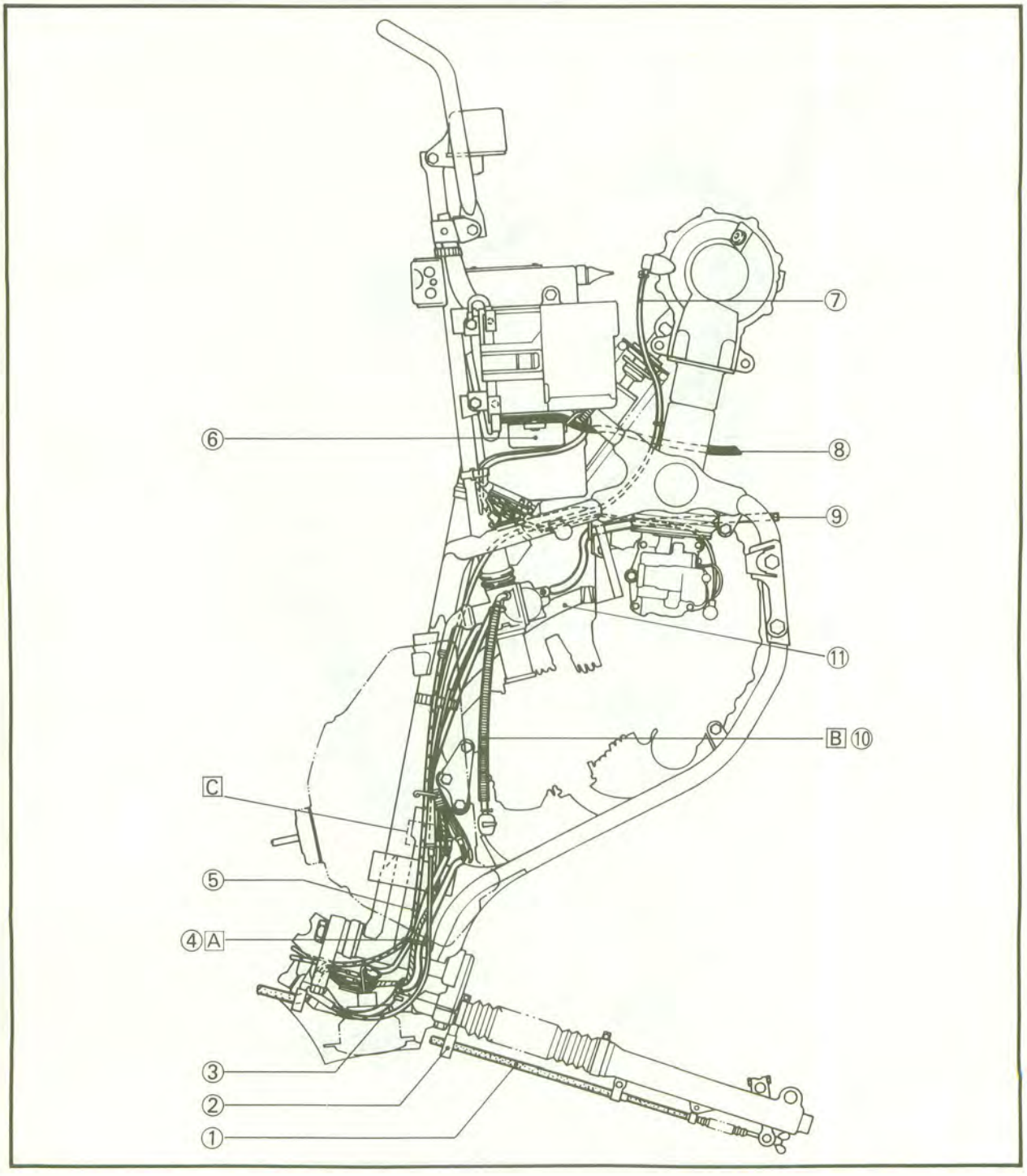
[A] Pass the starter motor lead over the ignition coil.
[B] Clamp the rear brake cable (Hand).
[C] Pass the rear brake cable over the starter motor lead.



CABLE ROUTING (2)

① Front brake cable
② Cable holder
③ Starter cable
④ Clamp
⑤ Throttle cable
⑥ C.D.I. unit
⑦ Rear gear case breather pipe
⑧ Battery breather pipe
⑨ Carburetor overflow pipe
⑩ Fuel pipe
⑪ Crankcase breather hose

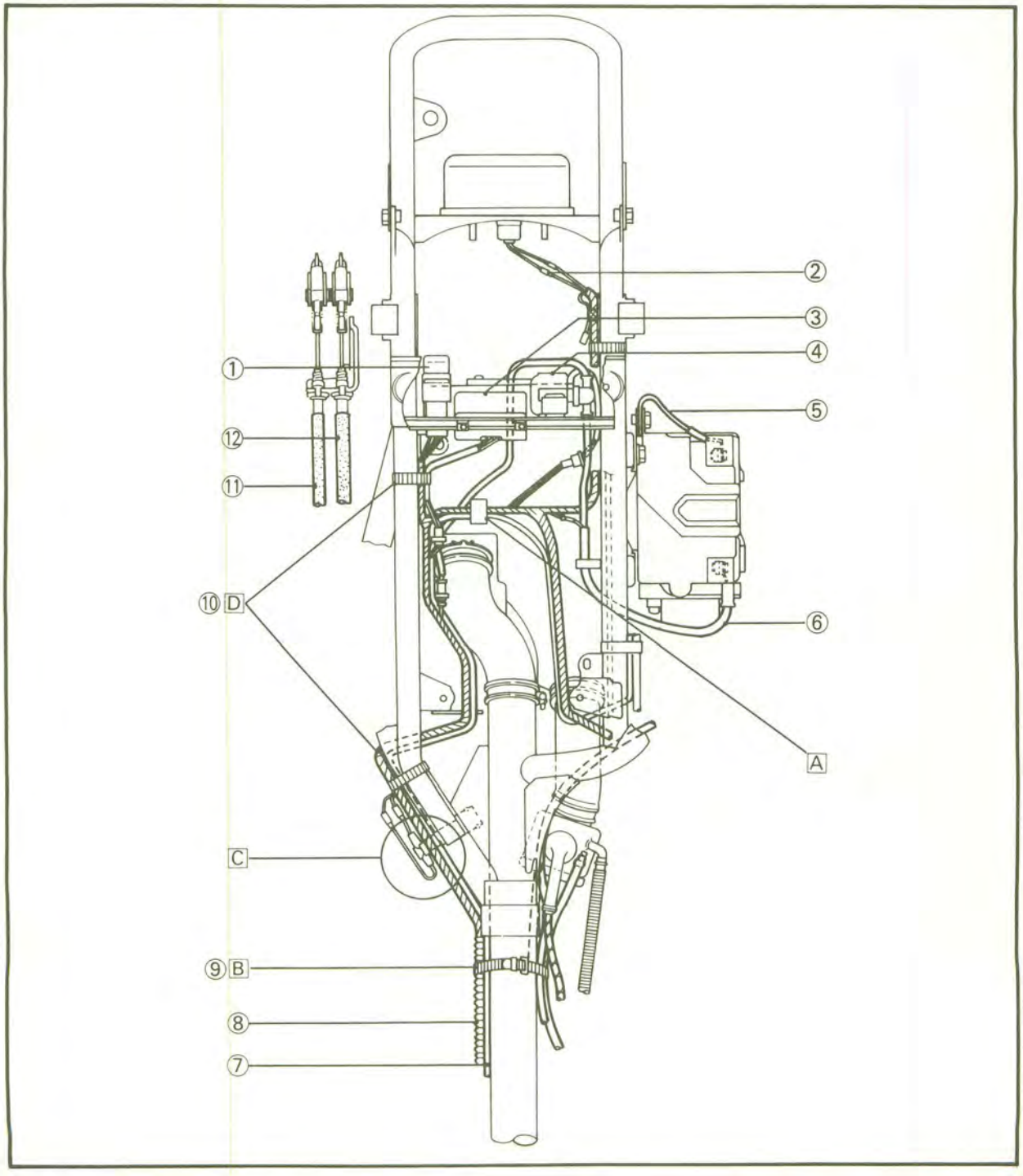
[A] Do not pass the starter cable.
[B] Insert the fuel cock side of the hose until it stops, and then insert the carburetor side so that the hose has no slack.
[C] Insert the rear gear case breather pipe and crankcase breather hose into the gusset.



CABLE ROUTING (3)

① Starting circuit cut-off relay
② Taillight lead
③ Rectifier/regulator
④ Starter switch
⑤ Battery negative (−) lead
⑥ Battery positive (+) lead
⑦ Starter motor lead
⑧ Wire harness
⑨ Band
⑩ Band
⑪ Rear brake cable (Hand)
⑫ Rear brake cable (Footrest)

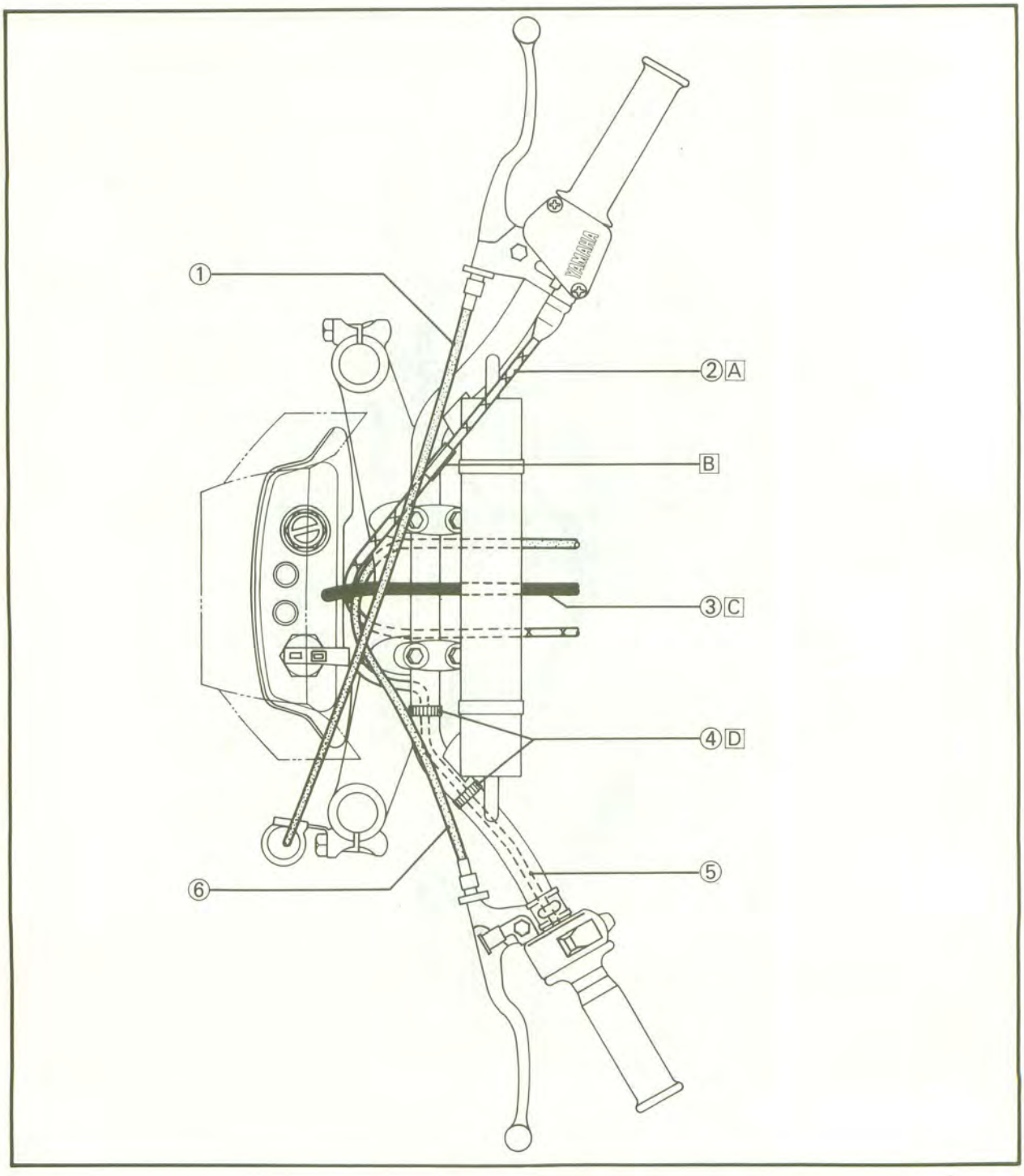
[A] Clamp the wire harness and leads.
[B] Secure the wire harness, starter motor lead, air bleed pipe and the final gear case breather pipe. Do not clogged the air bleed pipe and the final gear case breather pipe.
[C] Pass the wire harness and the starter motor lead over the fuse stay.
[D] Secure the wire harnes and leads.



CABLE ROUTING (4)

① Front brake cable
② Throttle cable
③ Breather pipe
④ Band
⑤ Handlebar switch lead
⑥ Rear brake cable (Hand)

[A] Route over the handlebar protector and under the front brake cable.
[B] Cover so that both caps contact each other.
[C] Pass under the handlebar protector.
[D] Secure lead only.



YAMAHA

YTM 225 DRN

DRN

Supplementary

Service Manual

LIT-11616-04-86

NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLE OPERATIONS
YAMAHA MOTOR CO., LTD.

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.

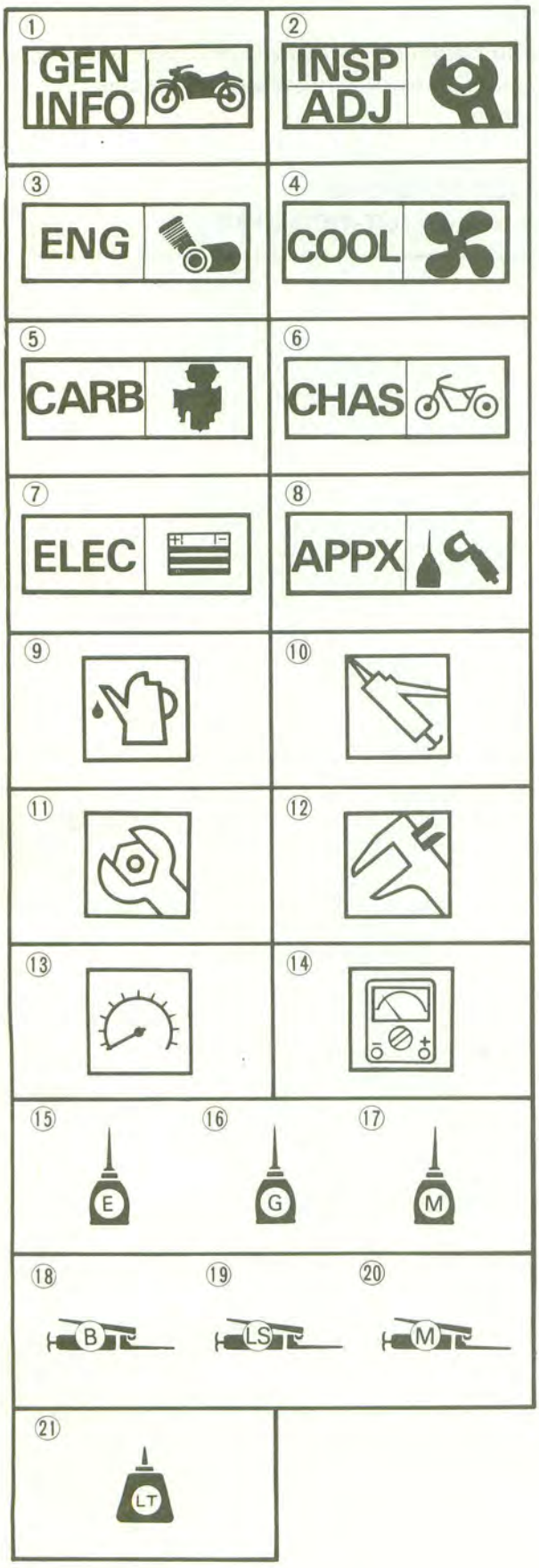
EXPLODED DIAGRAM

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

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the YTM225DRN. For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with following manual:

YTM200EK Service Manual (LIT-11616-03-82)
YTM225DXK Supplementary Service Manual (LIT-11616-03-81)



ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols 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

Illustrated symbols ⑨ to ⑭ are used to identify the specifications appearing in the text.

⑨ Filling fluid
⑩ Lubricant
⑪ Tightening
⑫ Wear limit, clearance
⑬ Engine speed
⑭ Ω, V, A

Illustrated symbols 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®)

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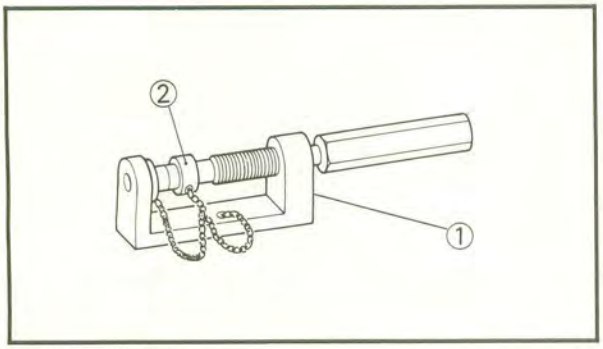
SPECIAL TOOLS

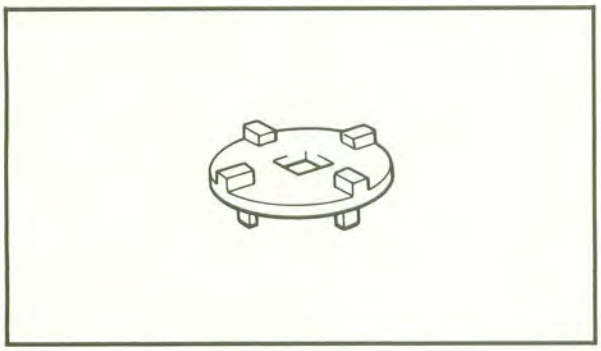
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



For Middle Gear Service

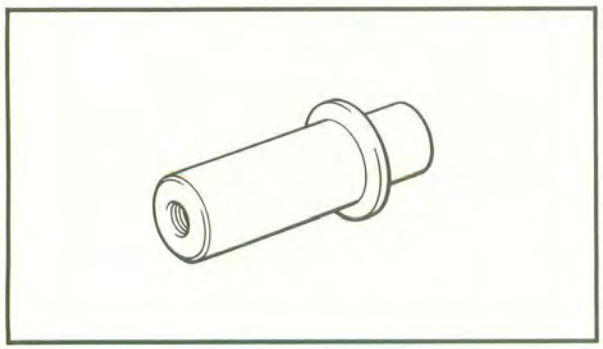
1. Universal Joint Holder
   P/N YM-04062 ..... ①
   Attachment
   P/N YM-33291 ..... ②

This tool is used when disassembling/assembling the U-joint and adjusting gear lash.



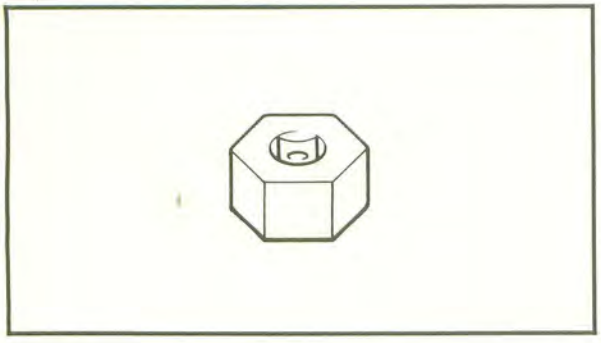
2. Ring Nut Wrench
   P/N. YM-1391

This tool is used to remove and install the ring nuts which hold the bearing in the middle gear housing.



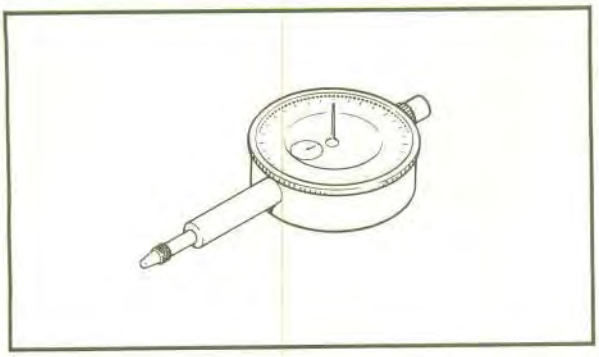
3. Middle Gear Lash Tool
   P/N. YM-1392

This tool is used to measure the middle gear backlash.



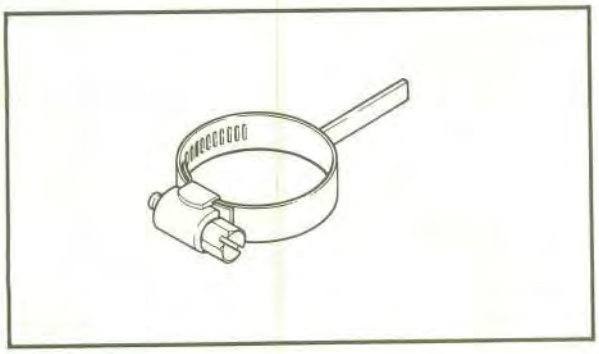
4. Bearing Retainer Wrench
   P/N. YM-33289

This tool is used to remove and install the bearing retainer nut in the middle gear housing.



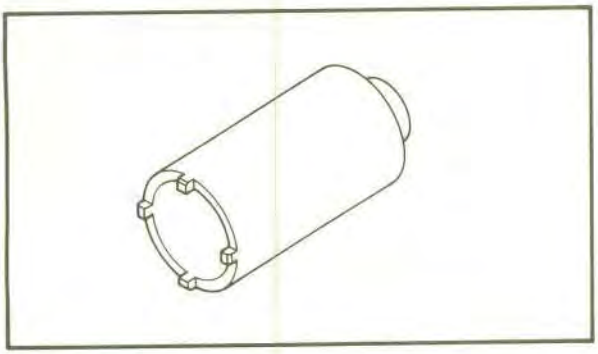
5. Dial Indicator
   P/N. YU-03097

This tool is used with magnet stand when measuring gear lash for middle and final gear.



6. Gear Lash Tool
   P/N. YM-01230

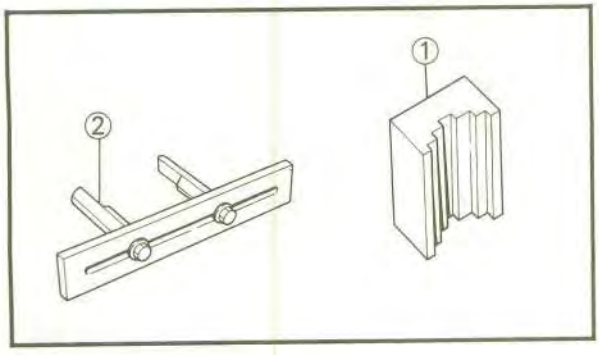
This tool is needed when measuring gear lash for middle gear.



For Final Gear Service

1. Middle-Drive-Shaft-Bearing-Retainer Wrench
   P/N YM-33214

This tool is used to loosen or tighten the bearing retainer.

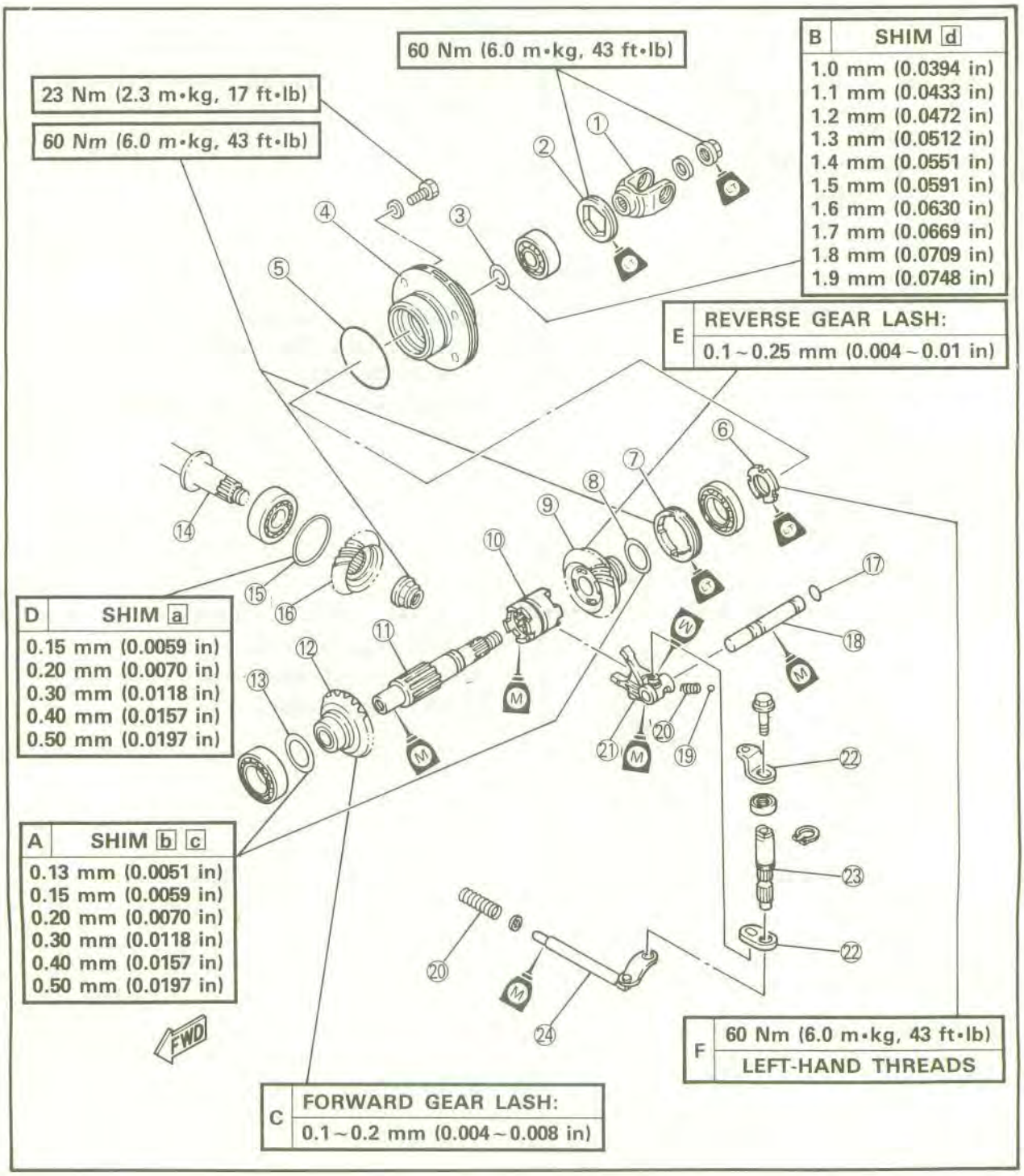


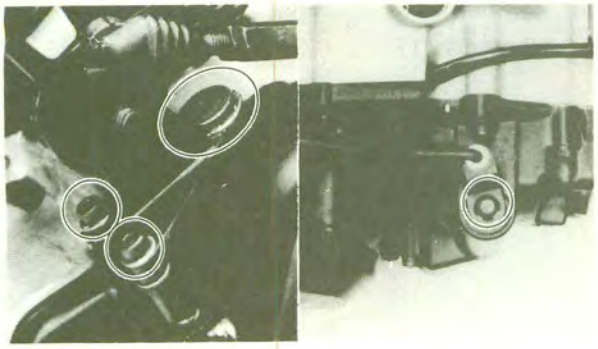
2. Damper spring compressor
   P/N. YM-33286 ①, YM-33222 ②

This tool is used when disassembling or assembling the damper spring.

MIDDLE GEAR SERVICE

① U-joint
② Bearing retainer 1
③ Shim [d]
④ Bearing housing
⑤ O-ring
⑥ Reverse gear retainer
⑦ Bearing retainer 2
⑧ Shim [c]
⑨ Reverse gear
⑩ Dog clutch
⑪ Middle driven shaft
⑫ Forward gear
⑬ Shim [b]
⑭ Drive axle
⑮ Shim [a]
⑯ Middle drive gear
⑰ O-ring
⑱ Guide bar
⑲ Ball
⑳ Spring
㉑ Shift fork
㉒ Lever
㉓ Shaft
㉔ Stopper rod

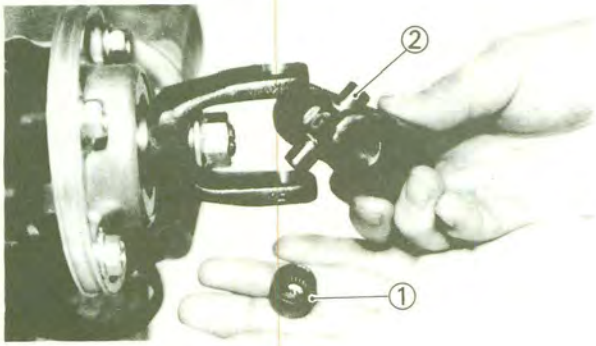




DISASSEMBLY

Drive Select Lever

1. Remove:
   - Drive select lever assembly

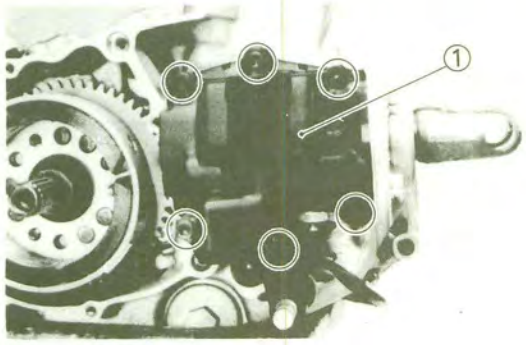


Universal Joint

1. Remove:
   - Circlips
   - Bearings ①
   - Yoke ②

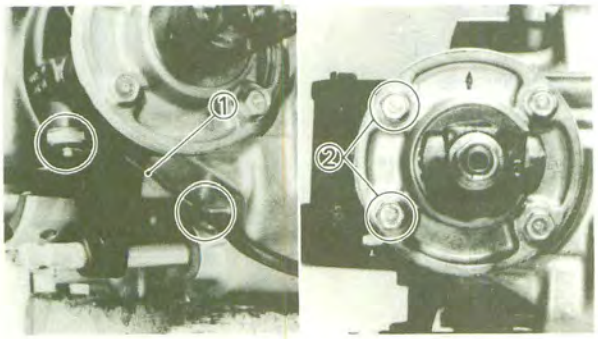
NOTE:

Remove the bearings while lightly tapping the universal joint with a hammer.

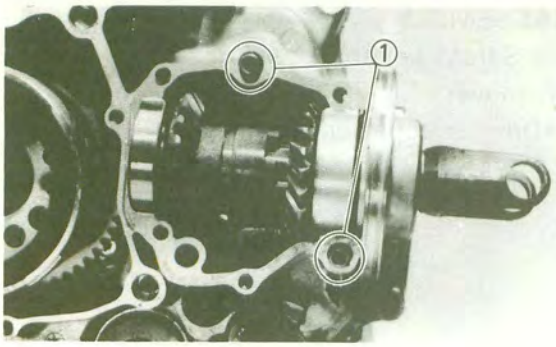


Middle Gear Case Cover

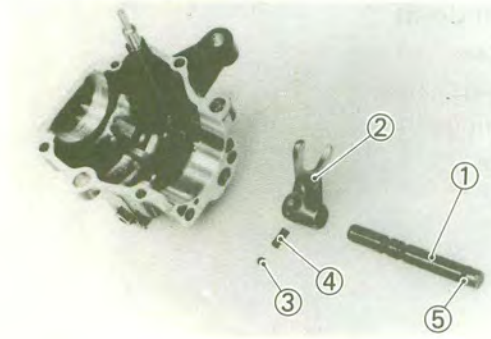
1. Remove:
   - Recoil starter assembly
   - Left crankcase cover
   - Middle gear case cover ① screws



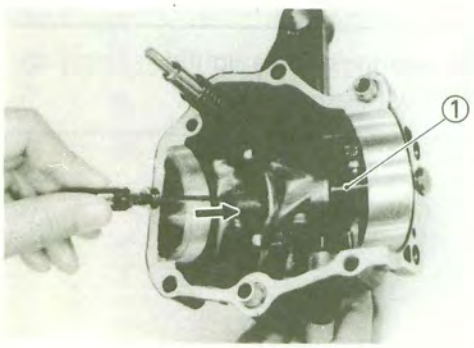
2. Disconnect:
   - Reverse switch lead ①
3. Remove:
   - Bearing housing left side bolts ②
   - Middle gear case cover assembly



4. Remove:
   • Dowels ①

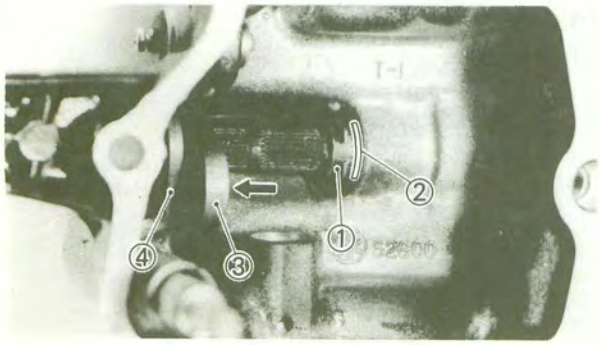


5. Remove:
   • Guide bar ①
   • Shift fork ②
   • Ball ③
   • Spring ④
   • O-ring ⑤



NOTE:

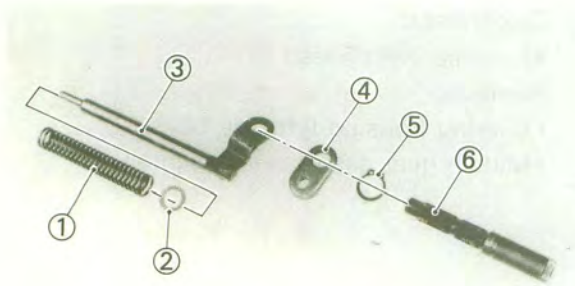
Insert the screwdriver into the hole and push out the guide bar ①.



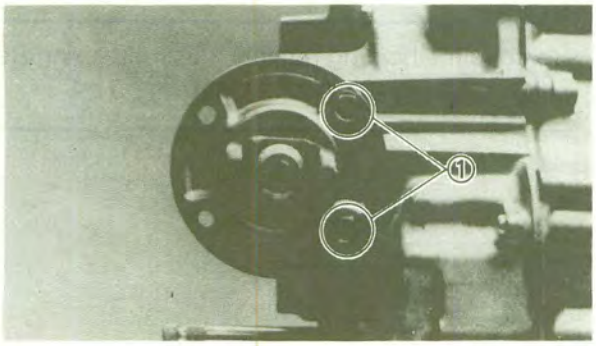
6. Remove:
   • Circlip ①
   (from the shaft groove ②)

NOTE:

Push the lever ③ to the stopper rod ④.

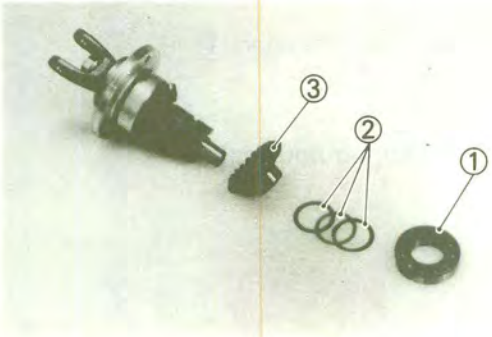


7. Remove:
   • Spring ①
   • Washer ②
   • Stopper rod ③
   • Lever ④
   • Circlip ⑤
   • Shaft ⑥

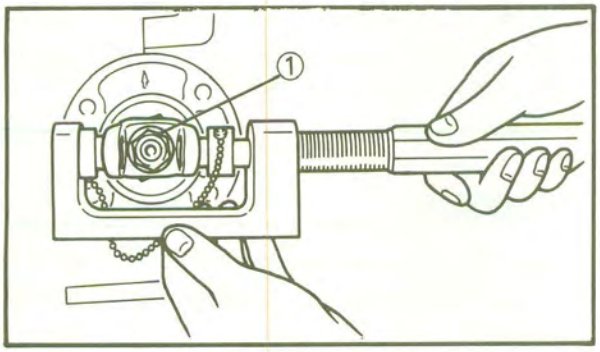


Middle Driven Shaft

1. Remove:
   - Bearing housing bolts ①
   - Middle driven shaft assembly (from left crankcase)

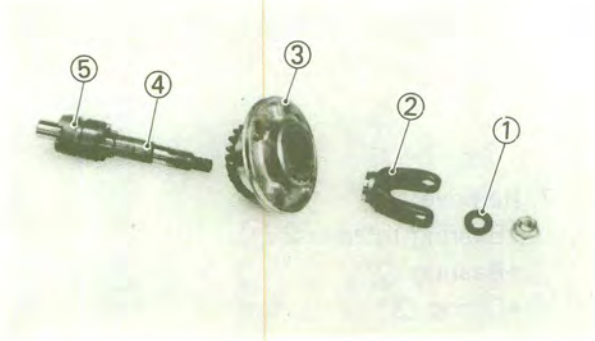


2. Remove:
   - Bearing ①
   - Shims [b] ②
   - Forward gear ③

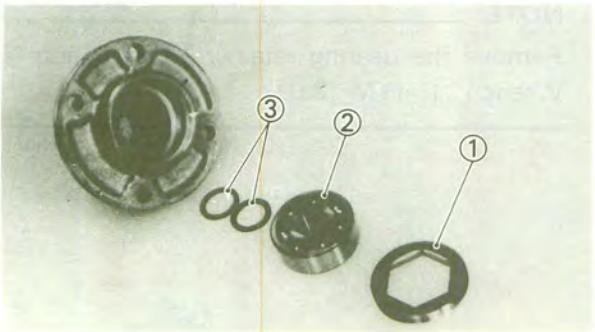


3. Remove:
   - Driven shaft nut ①

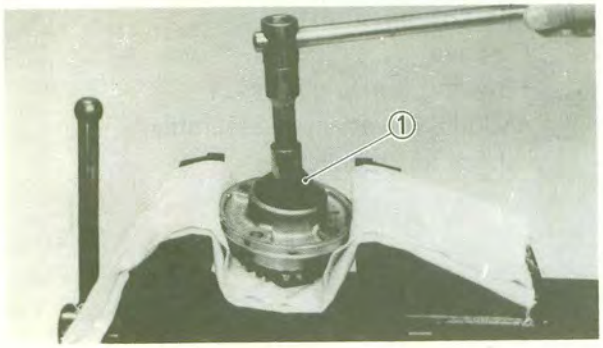
   Use Universal Joint Holder (YM-04062).



4. Remove:
   - Washer ①
   - Universal joint ②
   - Bearing housing assembly ③
   - Middle driven shaft ④
   - Dog clutch ⑤

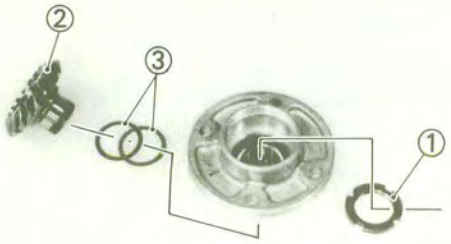


5. Remove:
   - Bearing retainer 1 ①
   - Bearing ②
   - Shims [d] ③

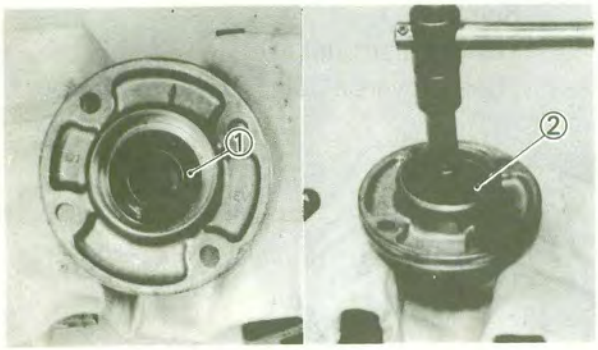


NOTE:

Remove the bearing retainer 1 using Bearing Retainer Wrench ① (YM-33289).



6. Remove:
   - Reverse gear retainer ①
   - Reverse gear ②
   - Shims [c] ③
     (from bearing housing)

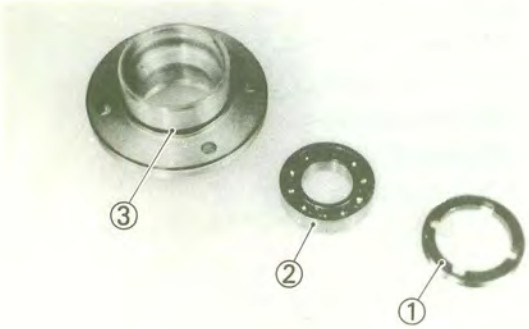


NOTE:

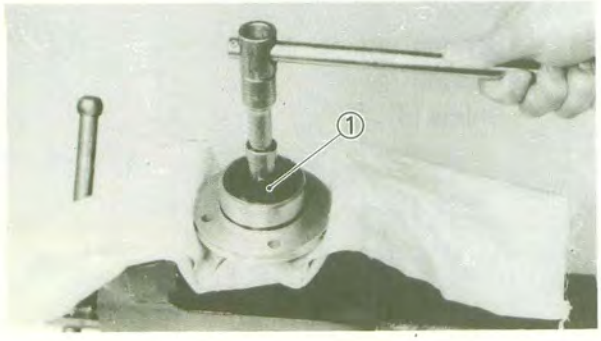
Remove the reverse gear retainer ① using Ring Nut Wrench ② (YM-1391).

CAUTION:

Turn the reverse gear retainer "clockwise" to loosen because the retainer has a left-hand thread.



7. Remove:
   - Bearing retainer 2 ①
   - Bearing ②
   - O-ring ③



NOTE:

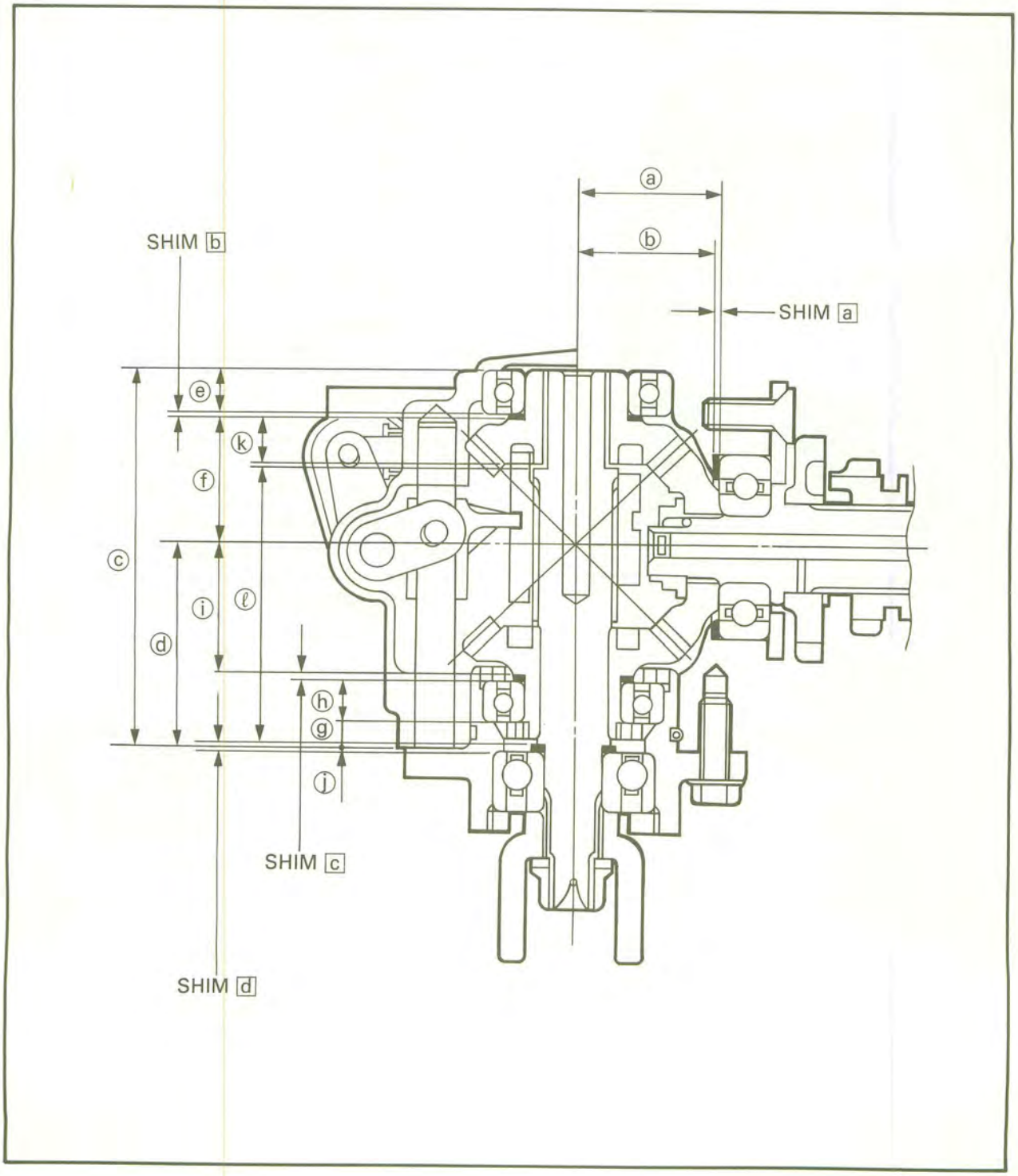
Remove the bearing retainer 2 using Ring Nut Wrench ① (YM-1391).

GEAR SHIM SELECTION

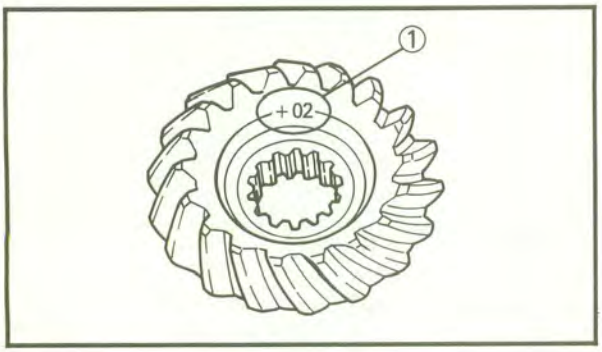
1. Select proper middle-drive-gear shim.

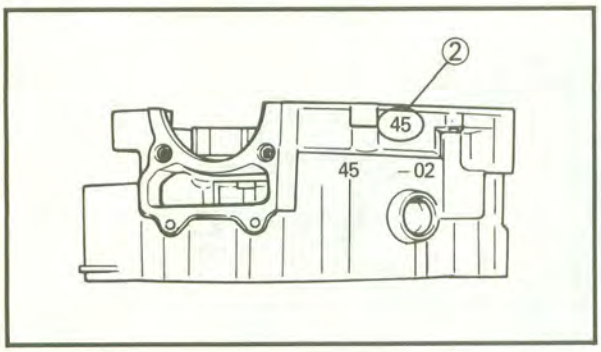
NOTE:

Select proper middle-drive-gear shim whenever crankcase and/or middle gears are replaced.



MIDDLE GEAR SERVICE





Shim [a] thickness calculation:
- Calculate shim thickness using formula below:

Shim [a] thickness = a – b

a = 42 plus or minus the number found on the drive pinion gear.
b = 41 plus the number found on the crankcase.
- For example:

If drive pinion gear is marked "+02" ①.
a = 42 + 0.02
a = 42.02
If left side crankcase is stamped "45" ②.
b = 41 + 0.45
b = 41.45
Shim [a] thickness = a – b
= 42.02 – 41.45
= 0.57
Calculated shim thickness is 0.57 mm.

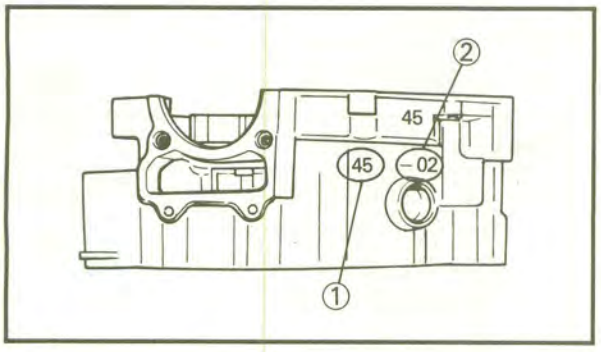
Shim thicknesses:

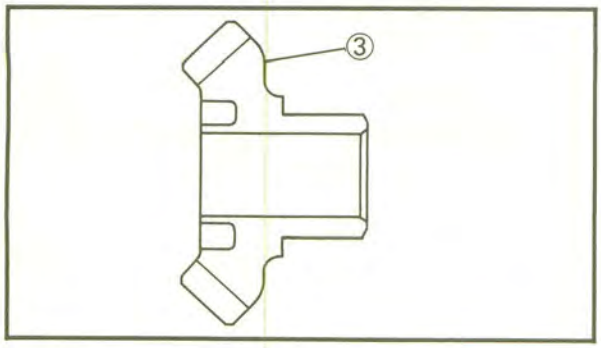
0.15 mm 0.20 mm 0.30 mm
0.40 mm 0.50 mm

Because shims can only be selected in 0.05 mm increments, use following chart to round off the hundredths digit of calculated thickness, and select appropriate shim.

Hundredths digit	Rounded value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

In above example, calculated shim thickness is 0.57 mm. The chart instructs you, however, to round off the 7 to 5. Thus you should use one 0.15 mm shim and one 0.50 shim.





Shim [b] thickness calculation:
• Calculate shim thickness using formula below:

Shim [b] thickness = c – b – e – f

c = 110 plus or minus the number found on the crankcase.
d = 59 plus or minus the number found on the crankcase.
e = Bearing width
= 13.00 (Constant)
f = 37.5 plus or minus the number found on the driven pinion gear (forward gear).

• For example:
If left side crankcase is stamped "45" ①
c = 110 + 0.45 = 110.45
If left side crankcase is stamped " – 02" ②
d = 59 – 0.02 = 58.98

If forward gear is stamped " + 02" ③
f = 37.5 + 0.02 = 37.52
Shim [b] thickness = c – d – e – f
= 110.45 – 58.98 – 13.00
– 37.52
= 0.95
Calculated shim thickness is 0.95 mm.

Shim thicknesses:

0.13 mm, 0.15 mm, 0.20 mm,
0.30 mm, 0.40 mm, 0.50 mm

Because shims can only be selected in 0.02 mm and 0.03 mm increments, use following chart to round off the hundredths digit of calculated thickness, and select appropriate shim.

Hundredths digit	Rounded value
0, 1	0
2, 3	3
4, 5, 6	5
7, 8	8
9	10

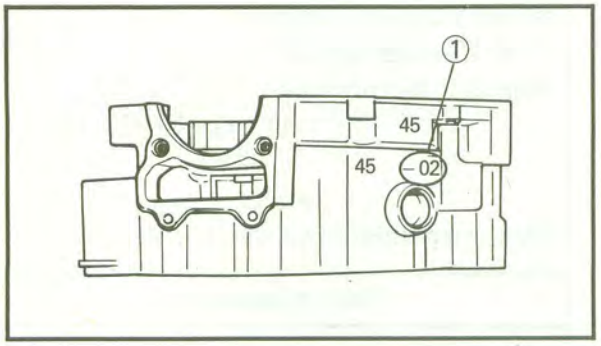
In above example, calculated shim thickness is 0.95 mm. The chart instructs you, however, to round off the 5 to 5. Thus you should use one 0.15 mm shim, one 0.50 shim, and one 0.30 shim.

Shim [c] thickness calculation:

- Calculate shim thickness using formula below:

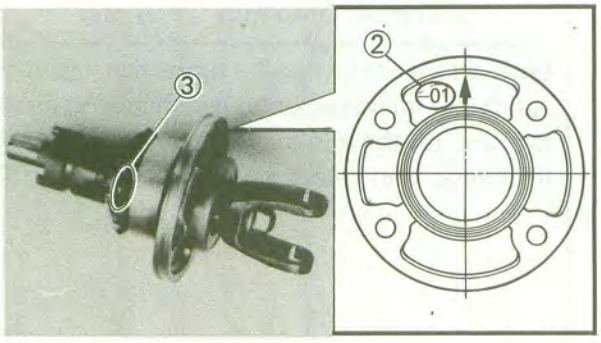
Shim [c] thickness = d – g – h – i

g = 7.5 plus or minus the number found on the bearing housing.
h = Bearing width
= 12.00 (constant)
i = 39 plus or minus the number found on the reverse gear.



- For example:

If left side crankcase is stamped "–02" ①
d = 59 – 0.02 = 58.98



If bearing housing is stamped "–01" ②
g = 7.5 – 0.01 = 7.49
If reverse gear is stamped "–02" ③
i = 39 – 0.02 = 38.98

Shim [c] thickness = d – g – h – i
= 58.98 – 7.49 – 12.00
– 38.98
= 0.51
Calculated shim thickness is 0.51 mm.

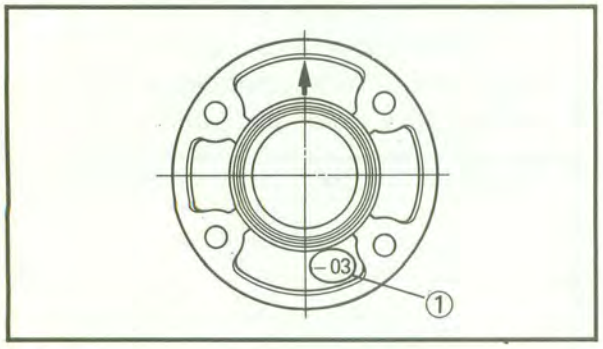
Shim thicknesses:

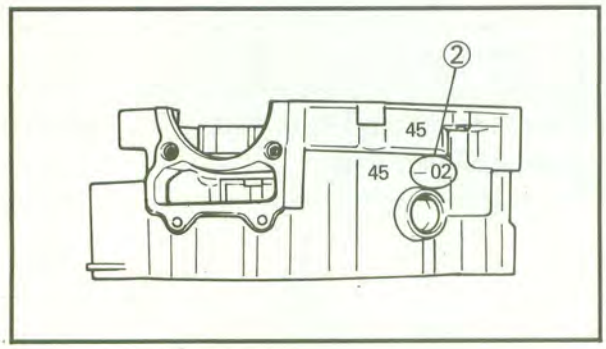
**0.13 mm, 0.15 mm, 0.20 mm,
0.30 mm, 0.40 mm, 0.50 mm**

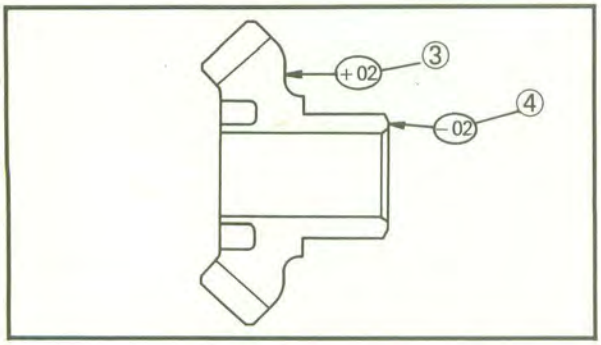
Becuse shims can only be selected in 0.02 mm and 0.03 mm increments, use following chart to round off the hundredths digit of calculated thickness, and select appropriate shim.

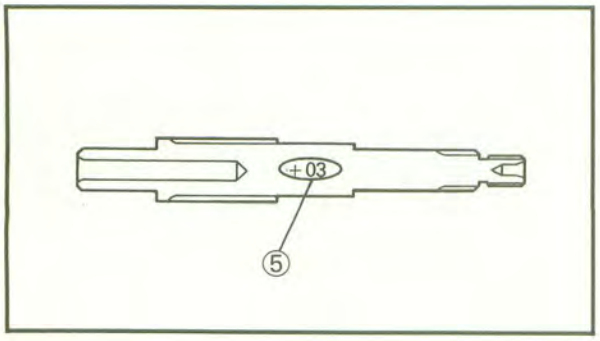
Hundredths digit	Rounded value
0, 1	0
2, 3	3
4, 5, 6	5
7, 8	8
9	10

In above example, calculated shim thickness is 0.51 mm. The chart instructs you, however, to round off the 1 to 0. Thus you should use one 0.50 mm shim.









Shim [d] thickness calculation:

- Calculate shim thickness using formula below:

Shim [d] thickness = j + d + f − k − ℓ − 0.25

j = 1 plus or minus the number found on the bearing housing.

k = 14.5 plus or minus the number found on the driven pinion gear (forward gear).

ℓ = 80.5 plus or minus the number found on the middle drive shaft.

- For example:

If bearing housing is stamped "−03" ①

j = 1 − 0.03 = 0.97

If left side crankcase is stamped "−02" ②

d = 59 − 0.02 = 58.98

If forward gear is stamped "+02" ③ and "−02" ④

f = 37.5 + 0.02 = 37.52

k = 14.5 − 0.02 = 14.48

If middle drive shaft is stamped "+03" ⑤

ℓ = 80.5 + 0.03 = 80.53

Shim [d] thickness = j + d + f − k − ℓ − 0.25

= 0.97 + 58.98 + 37.52 − 14.48 − 80.53 − 0.25

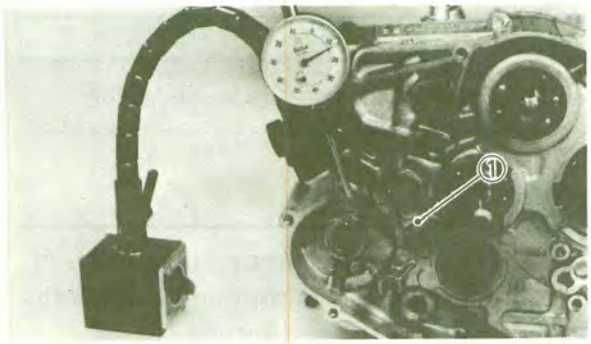
= 2.21

Calculated shim thickness is 2.21 mm.

Shim thicknesses:
1.0 mm, 1.1 mm, 1.2 mm, 1.3 mm, 1.4 mm 1.5 mm, 1.6 mm, 1.7 mm, 1.8 mm, 1.9 mm
Because shims can only be selected in 0.05 mm increments, use following chart to round off the hundredths digit of calculated thickness, and select appropriate shim.

Hundredths digit	Rounded value
0, 1, 2, 3, 4	0
5, 6, 7, 8, 9	10

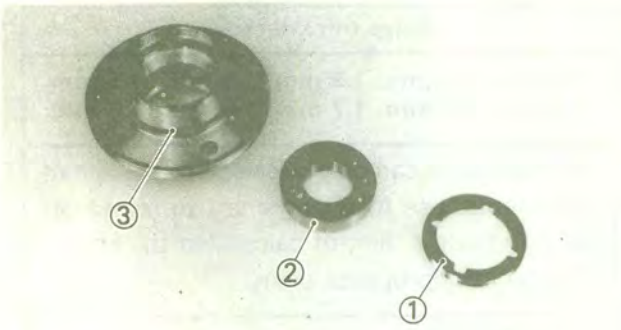
In above example, calculated shim thickness is 2.21 mm. The chart instructs you, however, to round off the 1 to 0. Thus you should use one 1.0 mm shim and one 1.2 mm shim.



GEAR LASH MEASUREMENT

1. Remove:
   - Right crankcase cover
   - Clutches
2. Install:
   - Gear Lash Tool ① (YM-1392)

3. Install:
   - Bearing
   - Shim [b]
     (Refer to shim [b] thickness calculation)
   - Forward gear
     (onto left crankcase)

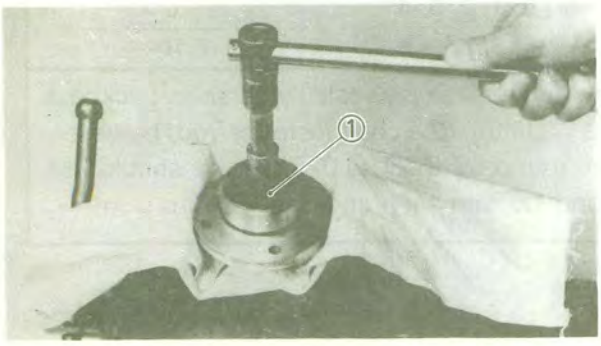


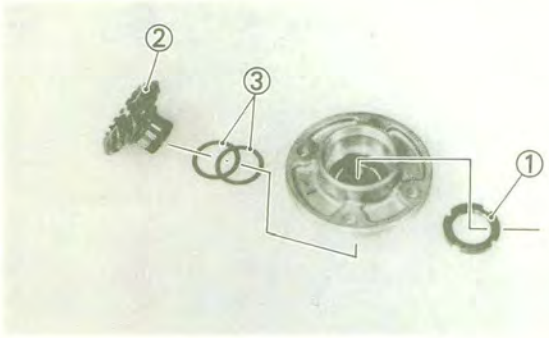
4. Install:
   - O-ring ③
   - Bearing ②
   - Bearing retainer 2 ①
     (into bearing housing)

Bearing Retainer 2:
60 Nm (6.0 m•kg, 43 ft•lb)
LOCTITE®

NOTE:

Use Ring Nut Wrench ① (YM-1391).



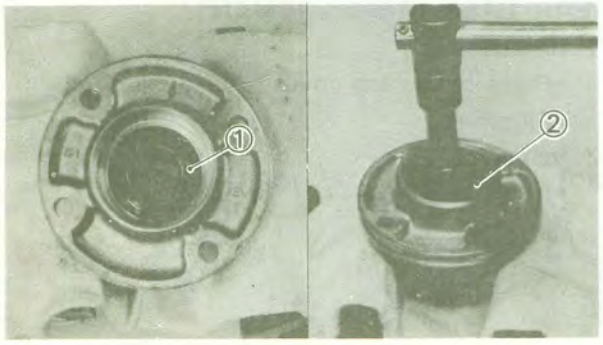


5. Install:
   - Shim [c] ③
     (Refer to Shim [c] thickness calculation)
   - Reverse gear ②
   - Reverse gear retainer ①
     (into bearing housing)

Reverse Gear Retainer:
60 Nm (6.0 m•kg, 43 ft•lb)
LOCTITE®

NOTE:

Use Ring Nut Wrench ② (YM-1391).



CAUTION:

Turn the reverse gear retainer ① "counterclockwise" to tighten because the retainer has a left-hand thread.

6. Install:
   - Middle Gear Lash Tool (YM-1392).
     (into the forward gear)

7. Install:
   • Bearing housing assembly

	Bearing Housing Bolts: 23 Nm (2.3 m•kg, 17 ft•lb)

   • Middle gear case cover

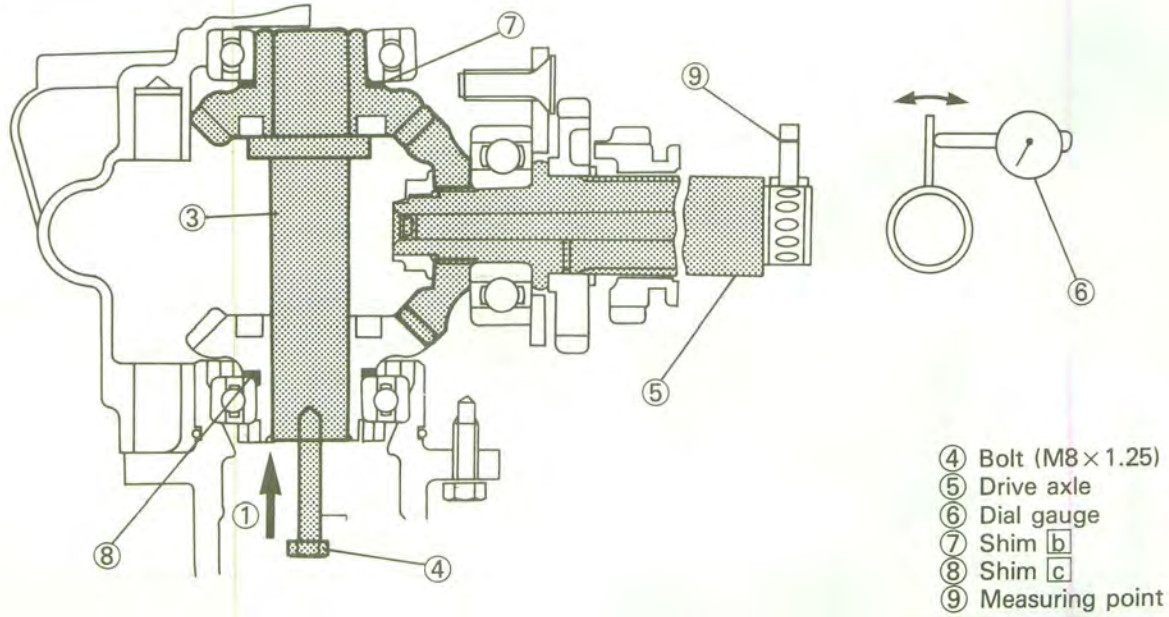
	Case Cover Screws: 10 Nm (1.0 m•kg, 7.2 ft•lb)

8. Measure:
   • Forward gear lash [A]
   (Push in ① the Middle Gear Lash Tool ③ to lock the forward gear)
   • Reverse gear lash [B]
   (Pull out ② the Middle Gear Lash Tool ③ to lock the reverse gear)

	Forward Gear Lash: 0.1 ~ 0.2 mm (0.00394 ~ 0.00787 in) **Reverse Gear Lash: 0.1 ~ 0.25 mm (0.00394 ~ 0.00984 in)**

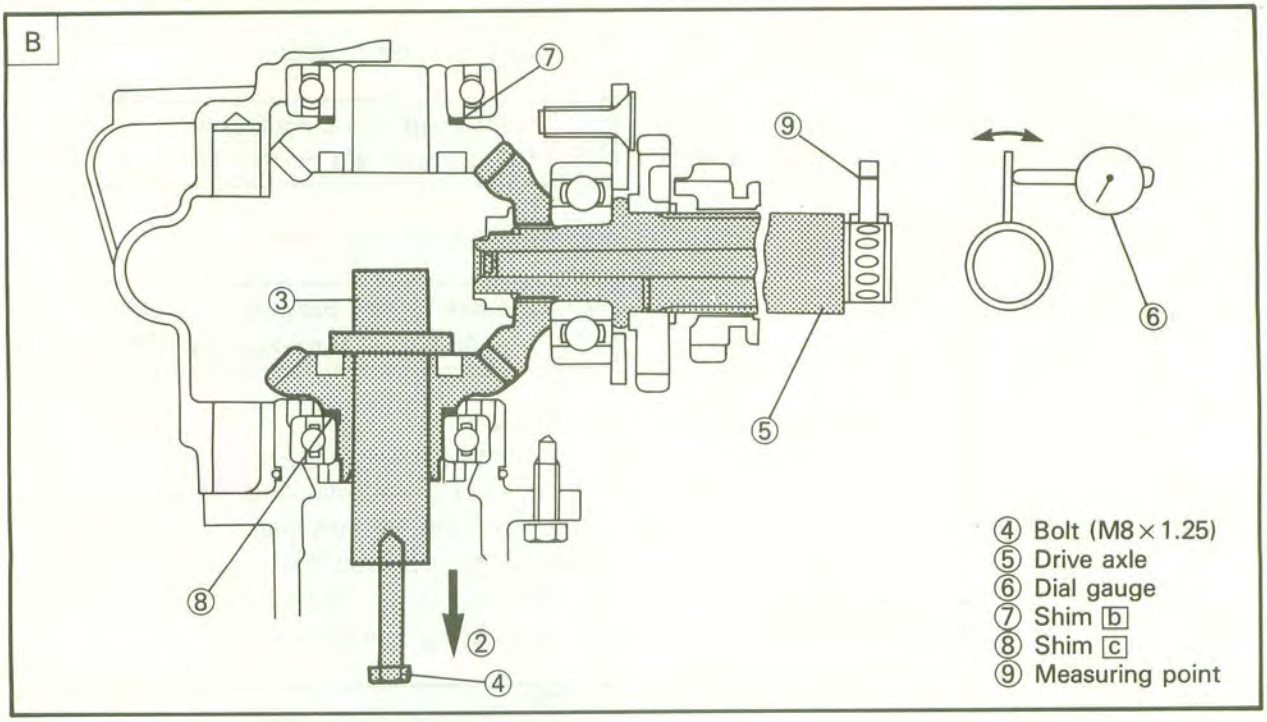
Out of specification → Adjust shim [b] and shim [c]

A



④ Bolt (M8 × 1.25)
⑤ Drive axle
⑥ Dial gauge
⑦ Shim [b]
⑧ Shim [c]
⑨ Measuring point

B



④ Bolt (M8 × 1.25)
⑤ Drive axle
⑥ Dial gauge
⑦ Shim [b]
⑧ Shim [c]
⑨ Measuring point

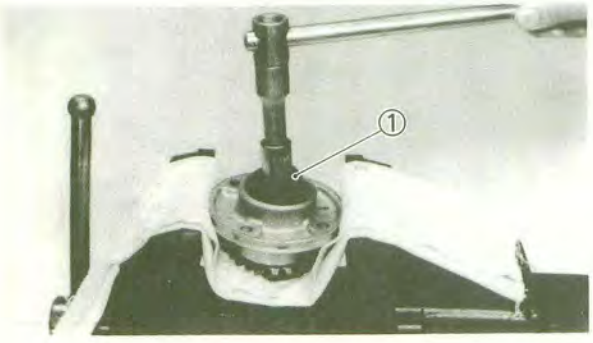
DRIVEN SHAFT POSITIONING

NOTE:

Driven shaft positioning must follow the gear lash measurement.

1. Follow the Gear Lash Measurement step 1 to 5.
2. Install:
   - Shim [d] ③
     (Refer to shim [d] thickness calculation)
   - Bearing ②
   - Bearing retainer 1 ①

Bearing Retainer 1:
60 Nm (6.0 m•kg, 43 ft•lb)
LOCTITE®



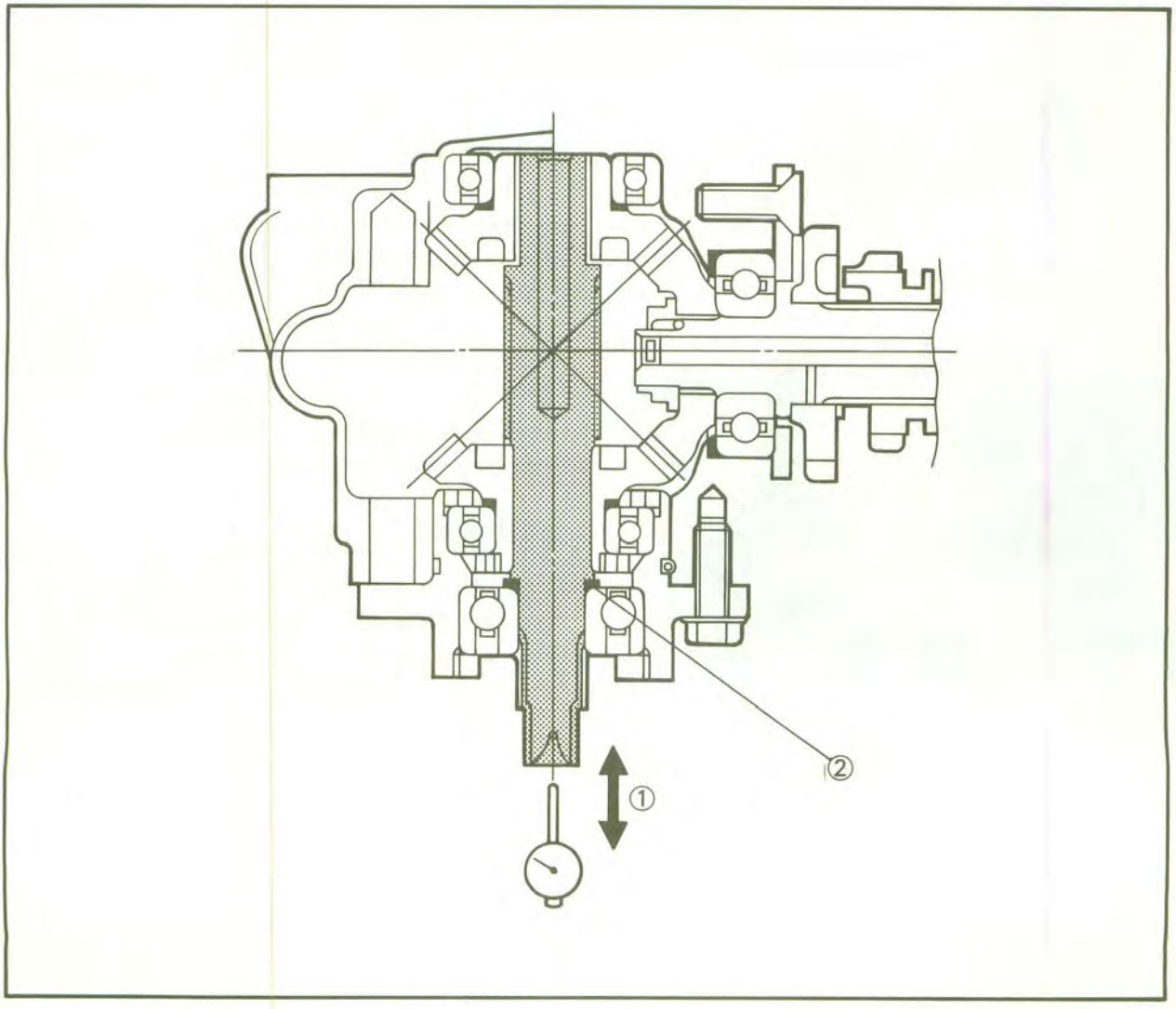
NOTE:

Use Bearing Retainer Wrench ① (YM-33289).

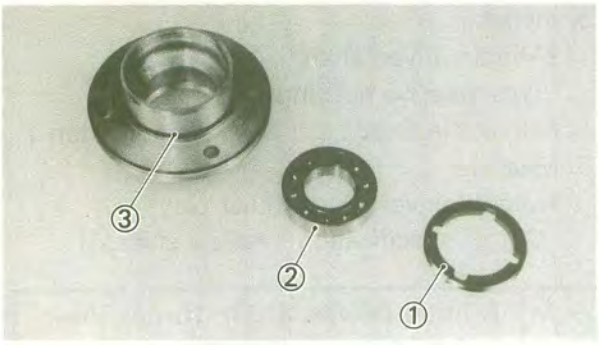
3. Install:
   - Middle driven shaft
     (into bearing housing)
4. Follow the Gear Lash Measurement step 7.
5. Measure:
   - Middle driven shaft thrust play ①
     Out of specification→Adjust shim [d]

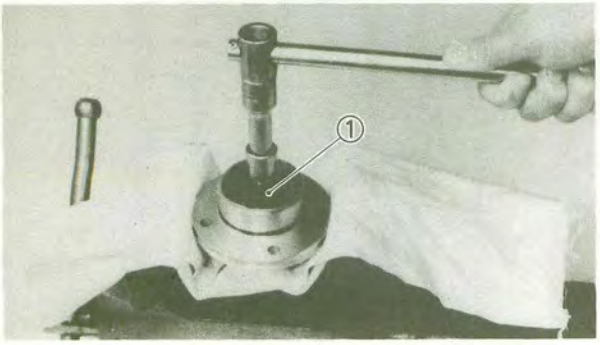
Middle Driven Shaft Thrust Play:
0.1 ~ 0.4 mm (0.00394 ~ 0.0157 in)

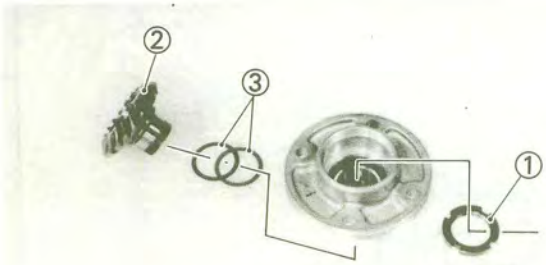
② Shim [d]

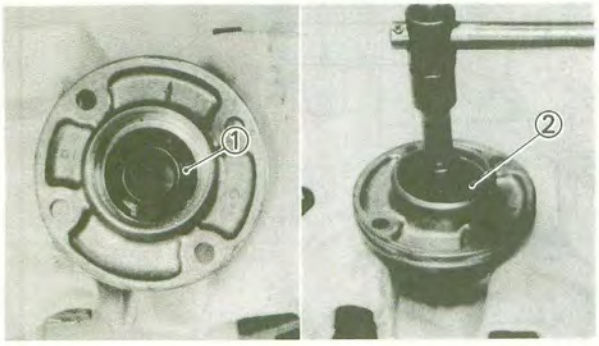


MIDDLE GEAR SERVICE









ASSEMBLY

1. Install:
   - O-ring ③
   - Bearing ②
   - Bearing retainer 2 ①
     (into bearing housing)

Bearing Retainer 2:
60 Nm (6.0 m•kg, 43 ft•lb)
LOCTITE®

NOTE:

Use Ring Nut Wrench ① (YM-1391).

2. Install:
   - Shim [c] ③
     (Refer to GEAR LASH MEASUREMENT)
   - Reverse gear ②
   - Reverse gear retainer ①
     (into bearing housing)

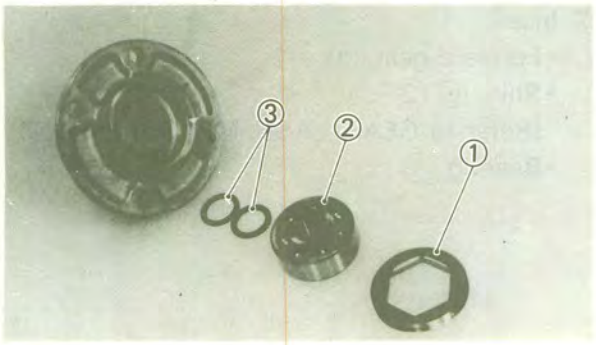
Reverse Gear Retainer:
60 Nm (6.0 m•kg, 43 ft•lb)
LOCTITE®

NOTE:

Use Ring Nut Wrench ② (YM-1391).

CAUTION:

Turn the reverse gear retainer ① "counterclockwise" to tighten because the retainer has a left-hand thread.

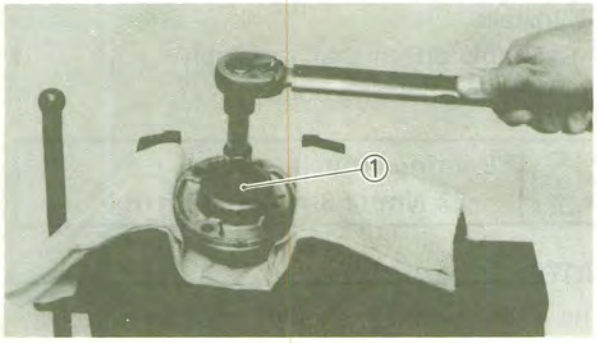


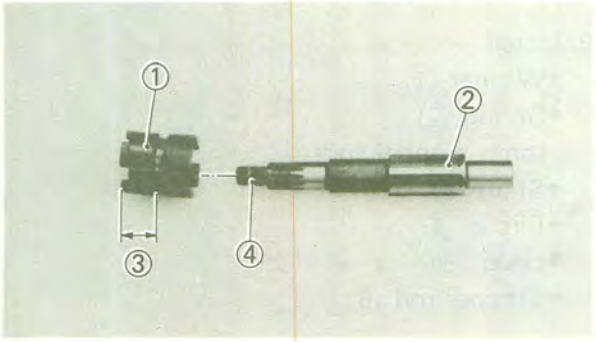
3. Install:
   - Shim [d] ③
     (Refer to DRIVEN SHAFT POSITIONING)
   - Bearing ②
   - Bearing retainer 1 ①

Bearing Retainer 1:
60 Nm (6.0 m•kg, 43 ft•lb)
LOCTITE®

NOTE:

Use Bearing Retainer Wrench ① (YM-33289).

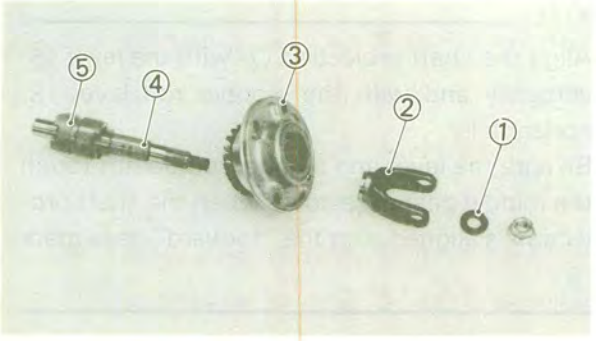




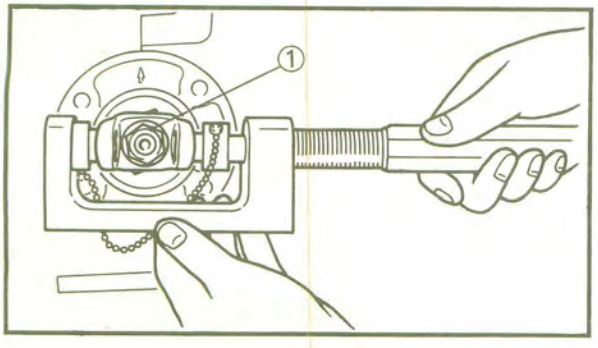
4. Install:
   - Dog clutch ①
     (onto the middle dirven shaft ②)

NOTE:

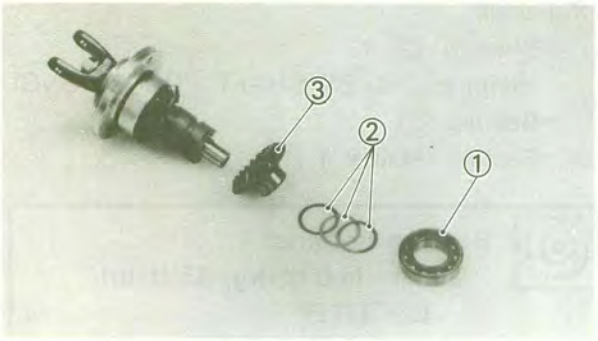
The dog clutch longer side ③ should be positioned driven shaft thread ④ side.



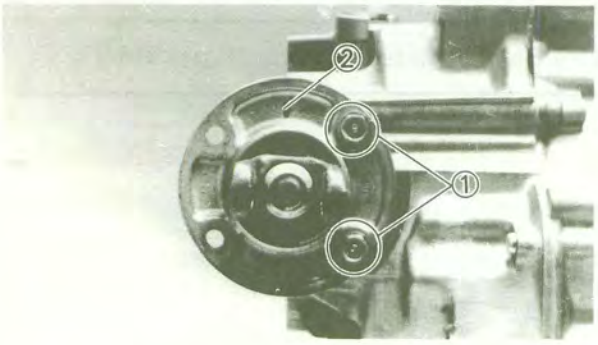
5. Install:
   - Dog clutch ⑤ and middle driven shaft ④ assembly
   - Bearing housing assembly ③
   - Universal joint ②
   - Washer ①
   - Driven shaft nut



6. Tighten:
   - Driven shaft nut ①
     Use Universal Joint Holder (YM-04062).



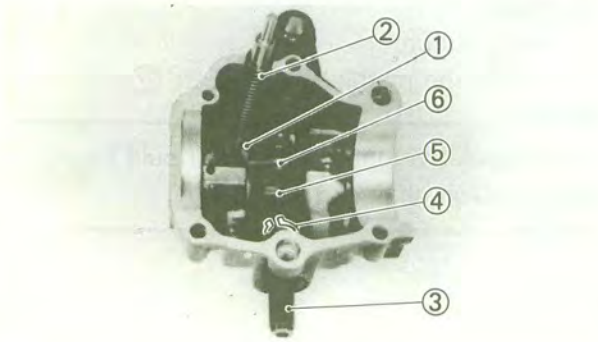
7. Insall:
   - Forward gear ③
   - Shim [b] ②
     (Refer to GEAR LASH MEASUREMENT)
   - Bearing ①



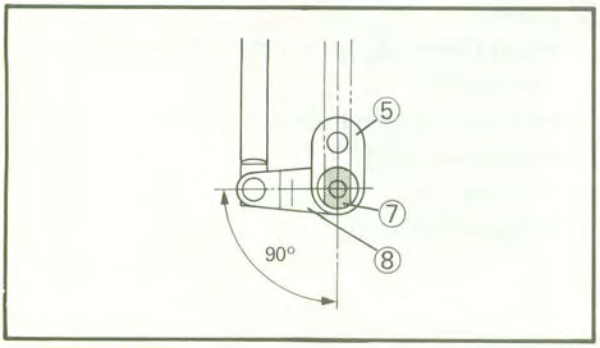
8. Install:
   - Middle driven shaft assembly
   - Bearing housing bolts ①

Bearing Housing Bolts:
23 Nm (2.3 m•kg, 17 ft•lb)

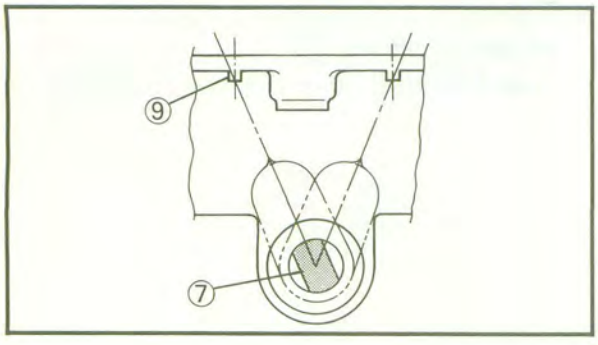
NOTE:
The arrow mark ② should face upward.

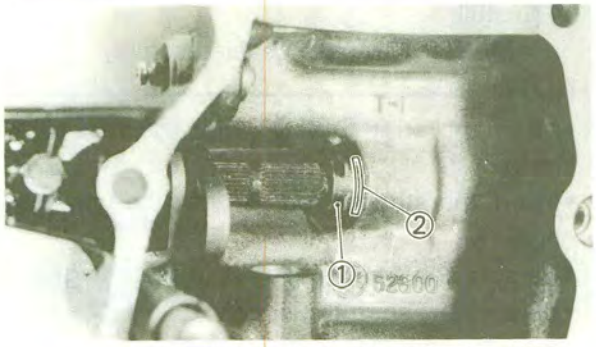


9. Install:
   - Washer ①
   - Spring ②
     (onto stopper rod)
   - Shaft ③
   - Circlip ④
   - Lever ⑤
   - Stopper rod ⑥

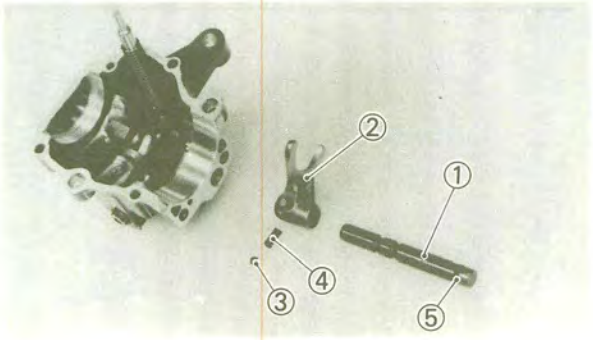


NOTE:
- Align the shaft projection ⑦ with the lever ⑤ vertically and with the stopper rod lever ⑧ horizontally.
- Be sure the lever and stopper rod do not touch the middle gear case cover when the shaft projection is aligned with the "forward" case mark ⑨.

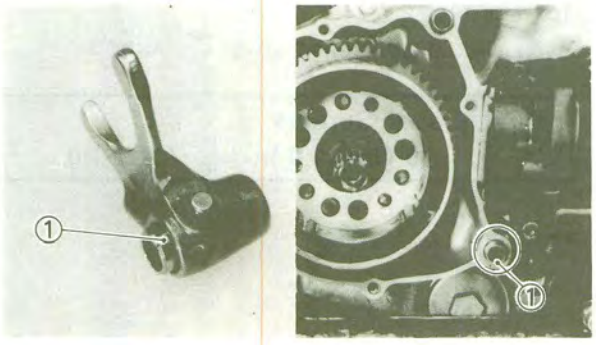




10. Install:
    - Circlip ①
      (onto the shaft circlip groove ②)

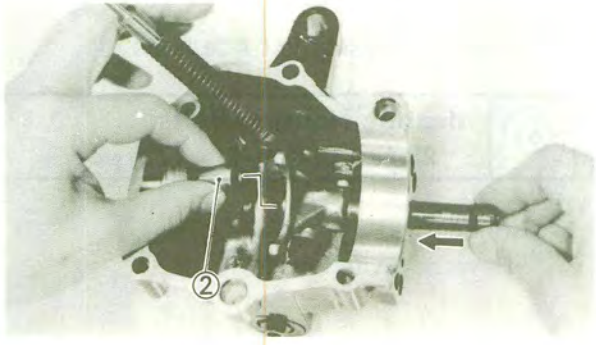


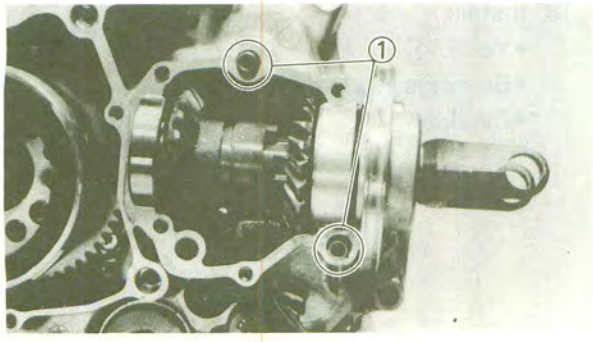
11. Install:
    - Spring ④
    - Ball ③
      (into the shift fork)
    - O-ring ⑤
    - Shift fork ②
    - Guide bar ①



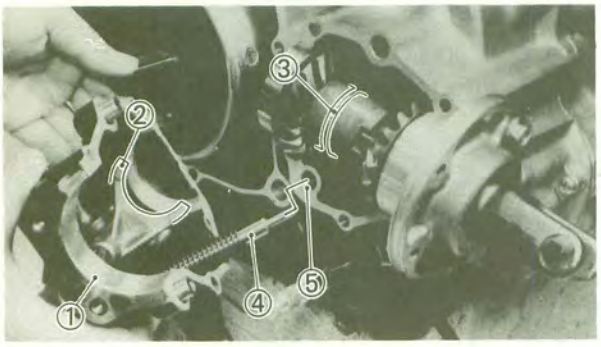
NOTE:

- Install the spring and ball into the shift fork using dowel ① of the right crankcase cover.
- Push the guide bar into the shift fork and remove the dowel ②





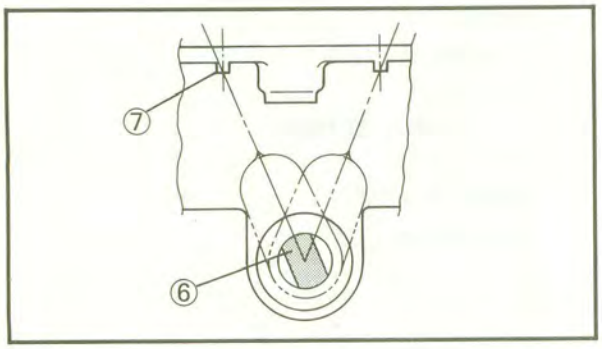
12. Install:
    - Dowels ①
13. Apply:
    - Quick Gasket
      (ACC-11001-05-01)
      (to the left crankcase place contacting with middle gear case cover.)

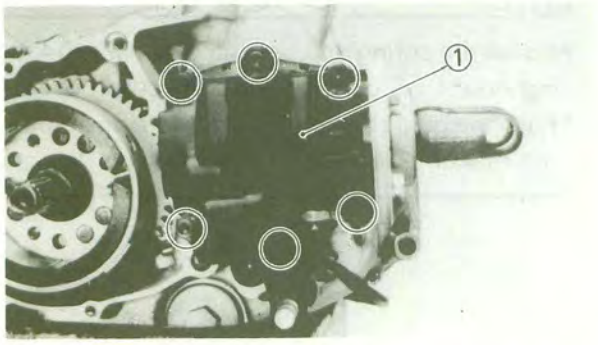


14. Install:
    - Middle gear case cover assembly ①

NOTE:

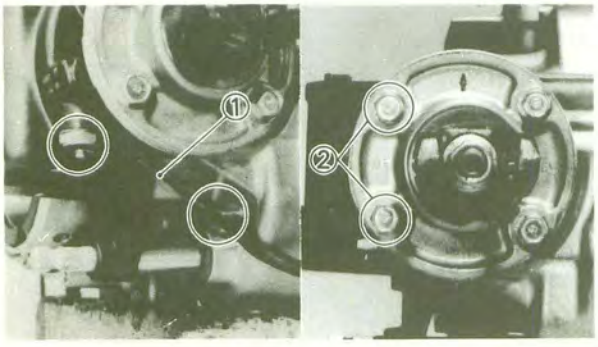
- Mesh the shift fork ② with the dog clutch groove ③.
- Insert the stopper rod ④ into the crankcase hole ⑤.
- Be sure the transmission is in first (1) gear
- Be sure the shaft projection ⑥ is aligned with the "forward" case mark ⑦.





15. Tighten:
    - Middle gear case cover ① screws

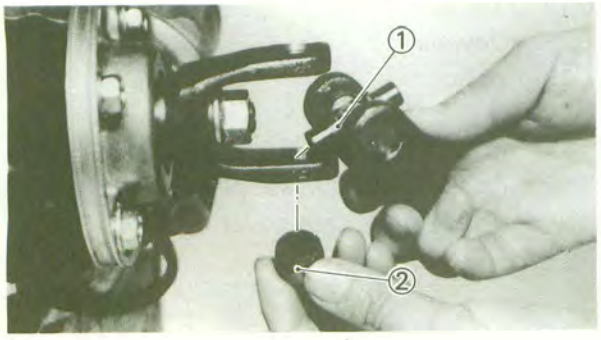
	Cover Screws: 10 Nm (1.0 m•kg, 7.2 ft•lb)



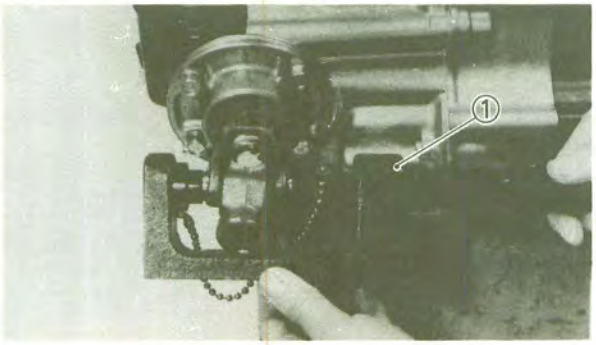
16. Install:
    - Bearing housing left side bolts ②

	Bearing Housing Bolts: 23 Nm (2.3 m•kg, 17 ft•lb)

17. Connect:
    - Reverse switch lead ①

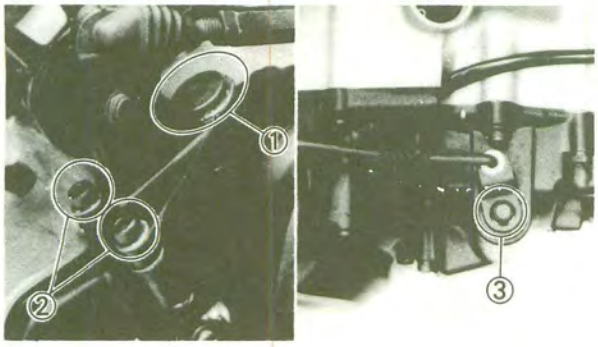


18. Install:
    - Yoke ①
    - Bearings ②
    - Circlips



NOTE:

Install the bearing using Universal Joint Holder ① (YM-04062).

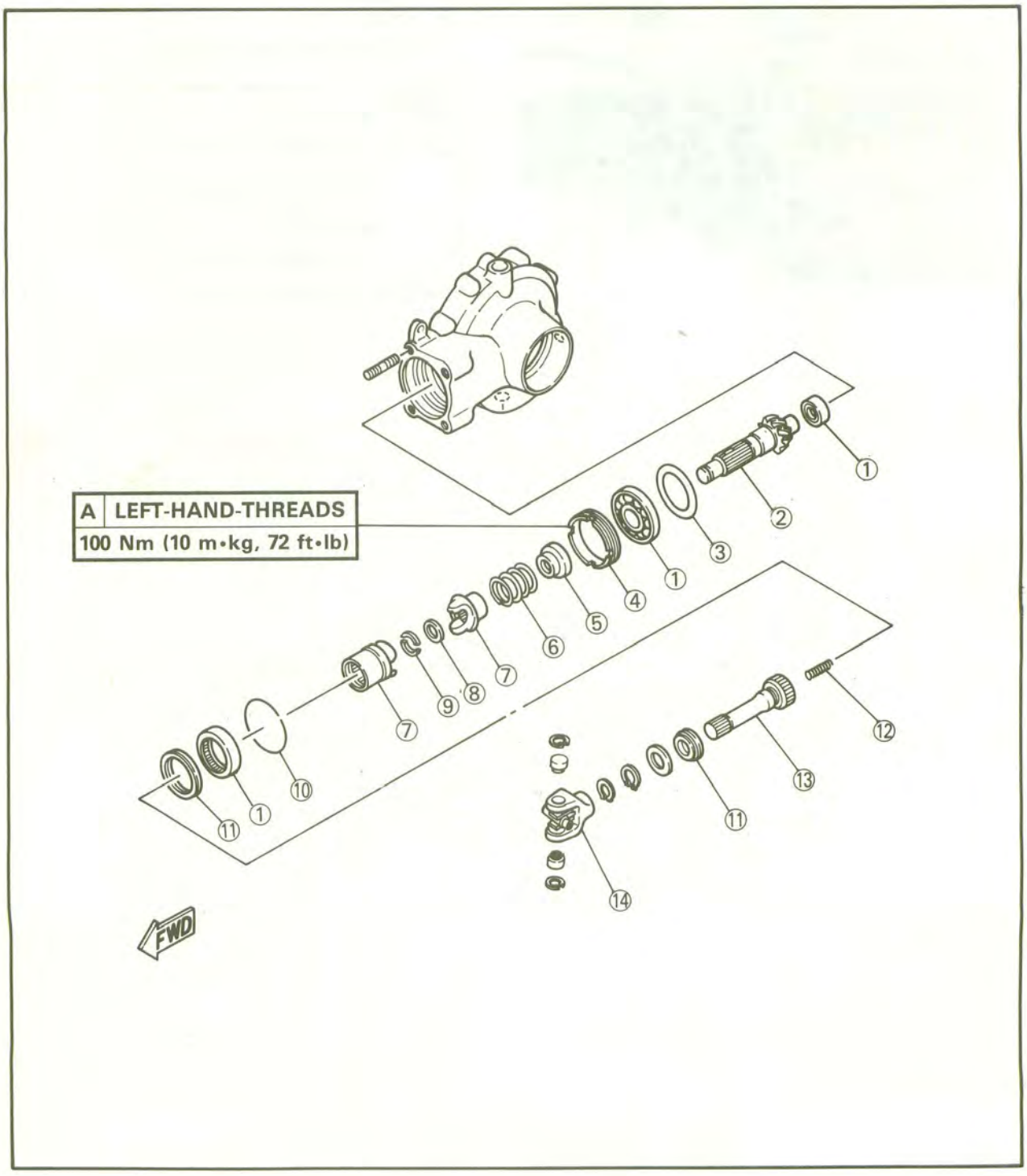


19. Install:
    - Drive select lever assembly

Screw ①:
15 Nm (1.5 m•kg, 11 ft•lb)
Screw ②:
7 Nm (0.7 m•kg, 5.1 ft•lb)
Bolt ③:
10 Nm (1.0 m•kg, 7.2 ft•lb)

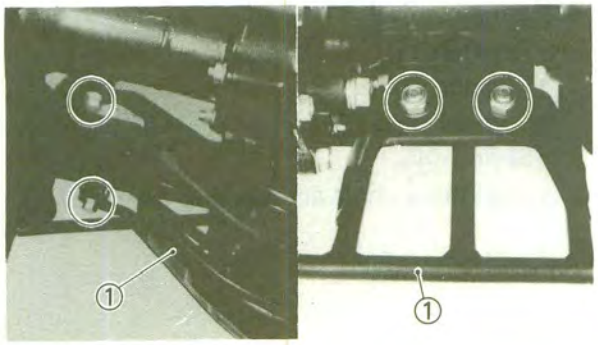
DRIVE SHAFT

① Bearing
② Final drive shaft (Pinion gear)
③ Shim
④ Retainer
⑤ Spring seat
⑥ Damper spring
⑦ Damper cam
⑧ Washer
⑨ Retainer
⑩ O-ring
⑪ Oil seal
⑫ Spring
⑬ Drive shaft
⑭ Universal joint

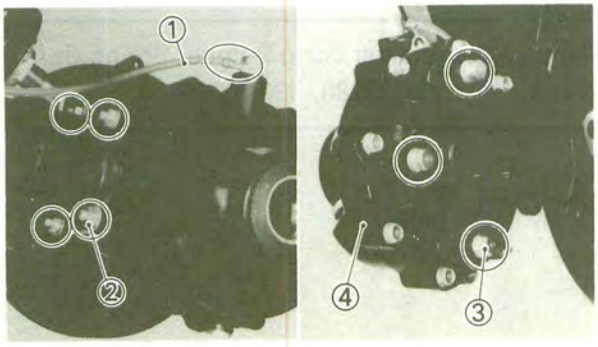


REMOVAL

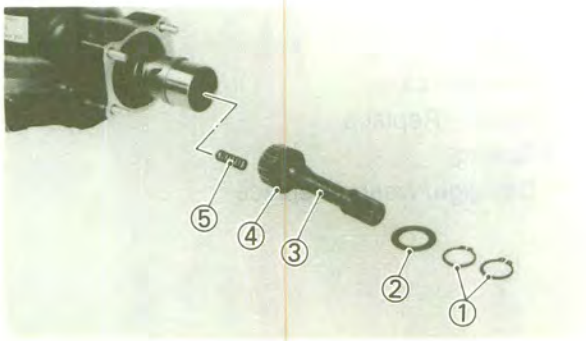
1. Remove:
   - Rear wheel
   - Disc brake assembly
   - Rear axle



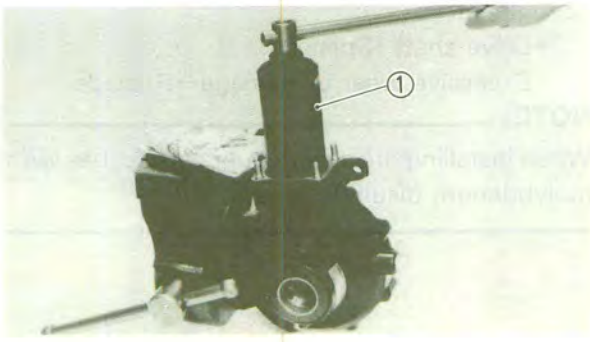
2. Remove:
   - Final gear case guard ①



3. Disconnect:
   - Breather hose ①
4. Remove:
   - Nuts ②
   - Bolts ③
   - Final gear case assembly ④



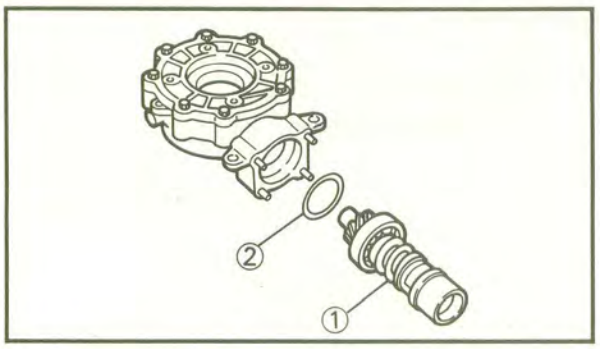
5. Remove:
   - Circlips ①
   - Washer ②
   - Oil seal ③
   - Drive shaft ④
   - Spring ⑤



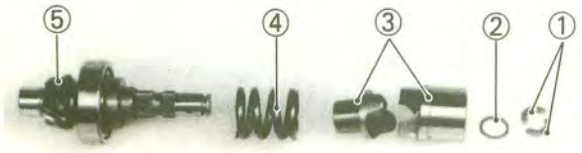
6. Remove:
   - Final drive shaft bearing retainer
     Use Middle-Drive-Shaft-Bearing Retainer Wrench (YM-33214) ①.

CAUTION:

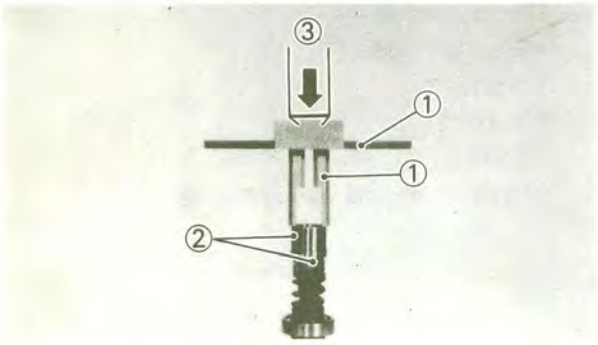
Final-drive-shaft-bearing-retainer nut has left-hand threads. Turn retainer nut clockwise to loosen it.



7. Remove:
   - Final Drive Shaft assembly ①
   - Shim ②



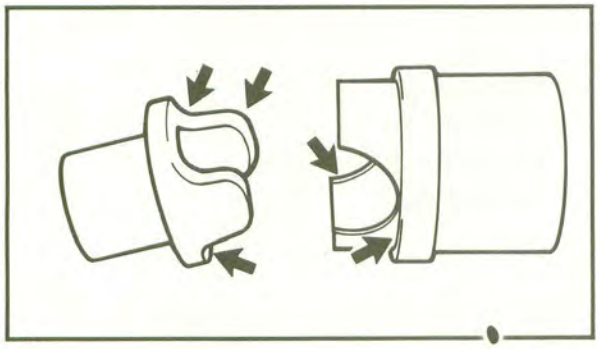
8. Remove:
   - Retainer ①
   - Washer ②
   - Damper cam ③
   - Spring ④
   - Final drive shaft and bearing assembly ⑤



NOTE:

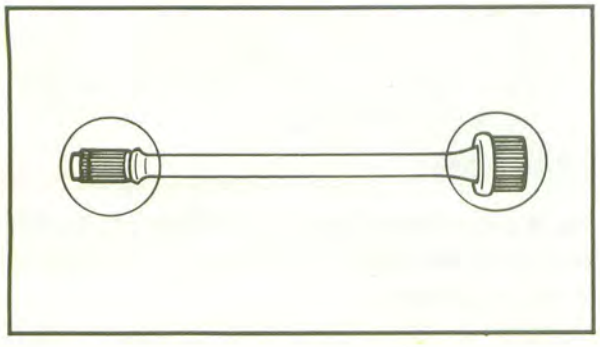
Remove the retainer using Damper Spring Compressor ① (YM-33286, YM-33222)

② Damper cam
③ Hydraulic press



INSPECTION

1. Check:
   - Damper cam
     Wear→Replace
   - Spring
     Damage/wear→Replace



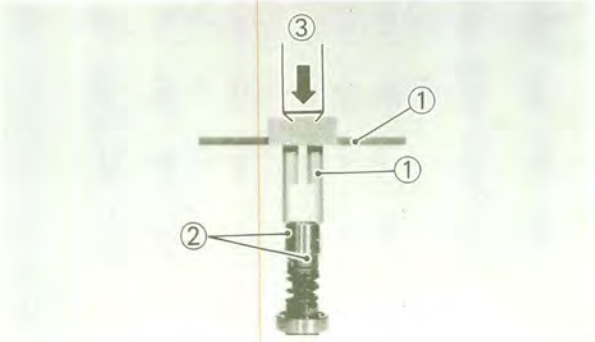
2. Inspect:
   - Drive shaft (Splines)
     Excessive wear or damage→Replace.

NOTE:

When installing drive shaft, lubricate splines with molybdenum disulfide grease.

ASSEMBLY

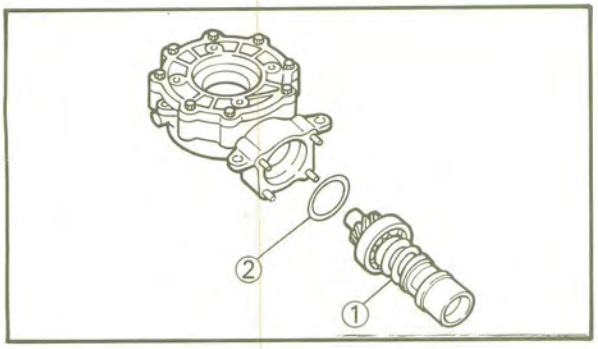
1. Install:
   - Final drive shaft and bearing assembly ⑤
   - Spring ④
   - Damper cam ③
   - Washer ②
   - Retainer ①



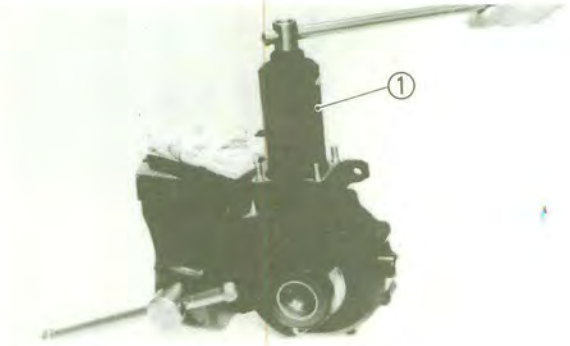
NOTE:

Install the retainer using Damper Spring Compressor ① (YM-33286, YM-33222)

② Damper cam
③ Hydraulic press



2. Install:
   - Shim ②
   - Final Drive Shaft Assembly ①



3. Install:
   - Final drive shaft bearing retainer
     Use Middle-Drive-Shaft-Bearing Retainer Wrench (YM-33214) ①.

	Final Drive Shaft Bearing Retainer: 100 Nm (10 m•kg, 72 ft•lb)

CAUTION:

Final-drive-shaft-bearing-retainer nut has left-hand threads. Turn retainer nut counterclockwise to tighten it.

4. Reverse removal steps

Final Gear Case Nut:
23 Nm (2.3 m•kg, 17 ft•lb)
Final Gear Case Bolt:
45 Nm (4.5 m•kg, 32 ft•lb)

ELECTRICAL

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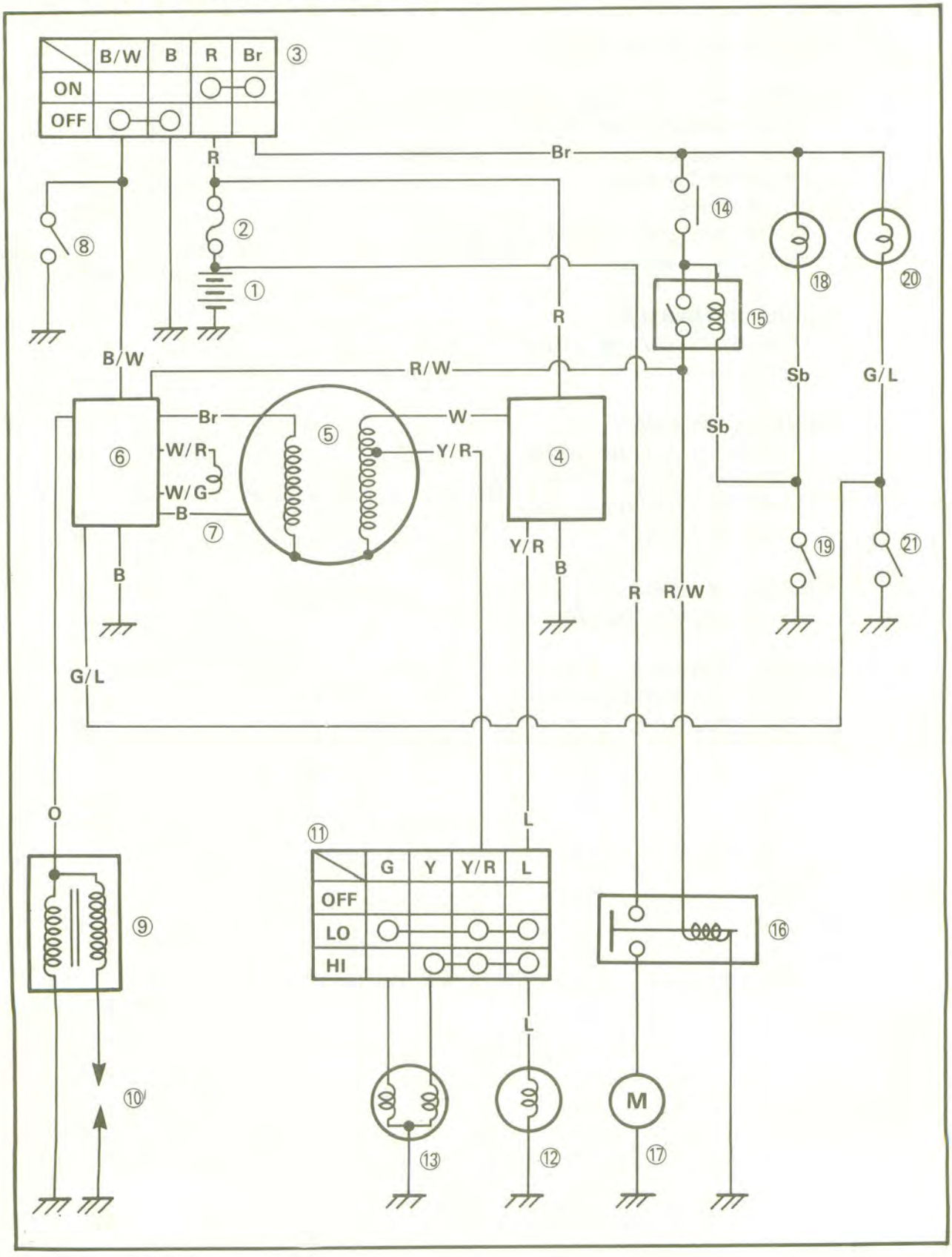
ELECTRICAL

YTM225DRN CIRCUIT DIAGRAM



① Battery
② Main fuse
③ Main switch
④ Rectifier/Regulator
⑤ CDI Magneto
⑥ CDI unit
⑦ Pick up coil
⑧ Engine stop switch
⑨ Ignition coil
⑩ Spark plug
⑪ Light (Dimmer) switch
⑫ Tail light
⑬ Headlight
⑭ Starting switch
⑮ Starting circuit cutoff relay
⑯ Starter relay
⑰ Starter motor
⑱ Neutral indicator
⑲ Neutral switch
⑳ Reverse indicator
㉑ Reverse switch

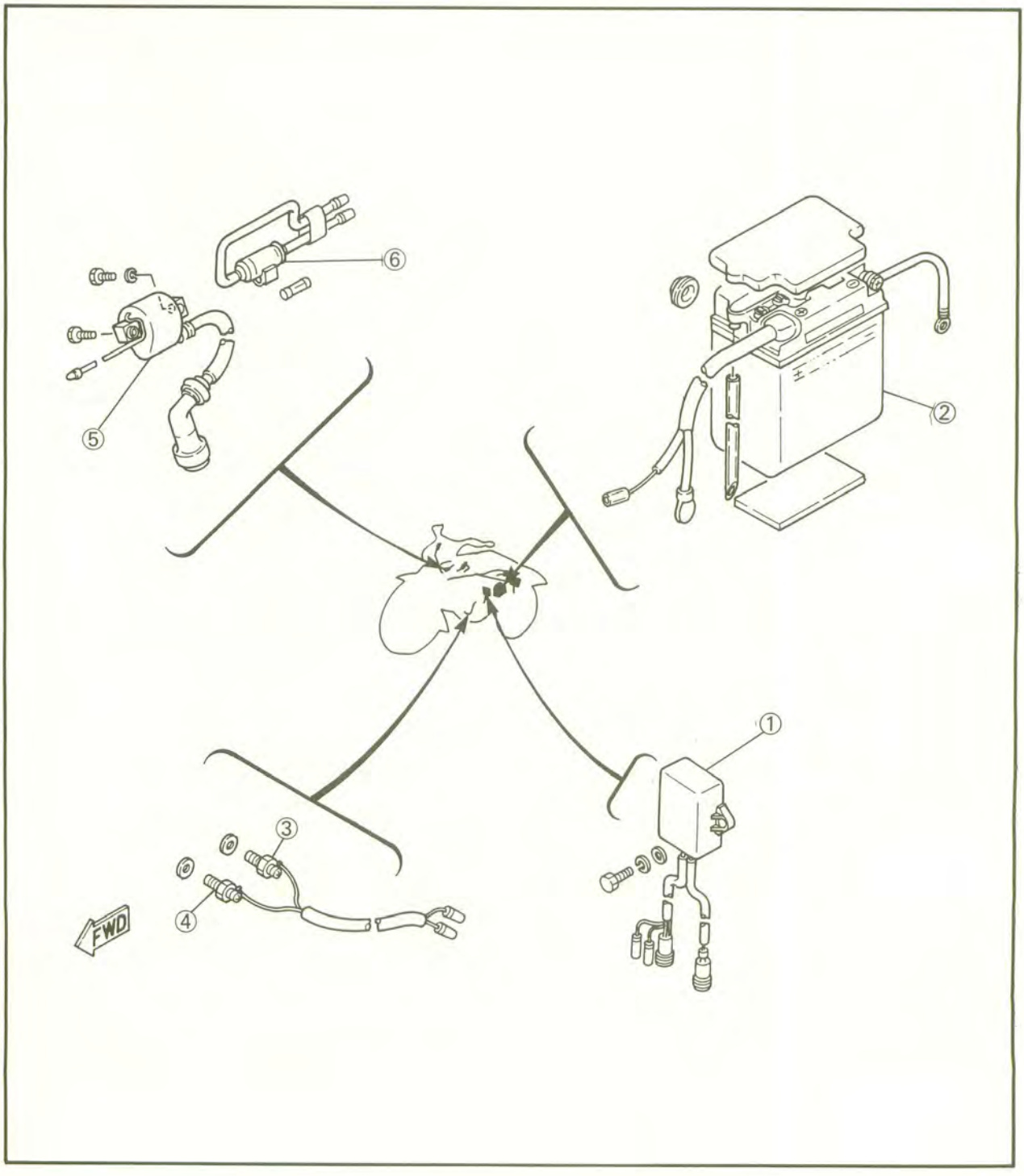
COLOR CODE

B	Black
Br	Brown
L	Blue
O	Orange
R	Red
Sb	Skyblue
W	White
Y	Yellow
W/R	White/Red
W/G	White/Green
B/W	Black/White
Y/R	Yellow/Red
G/L	Green/Blue
R/W	Red/White

ELECTRICAL COMPONENTS 1

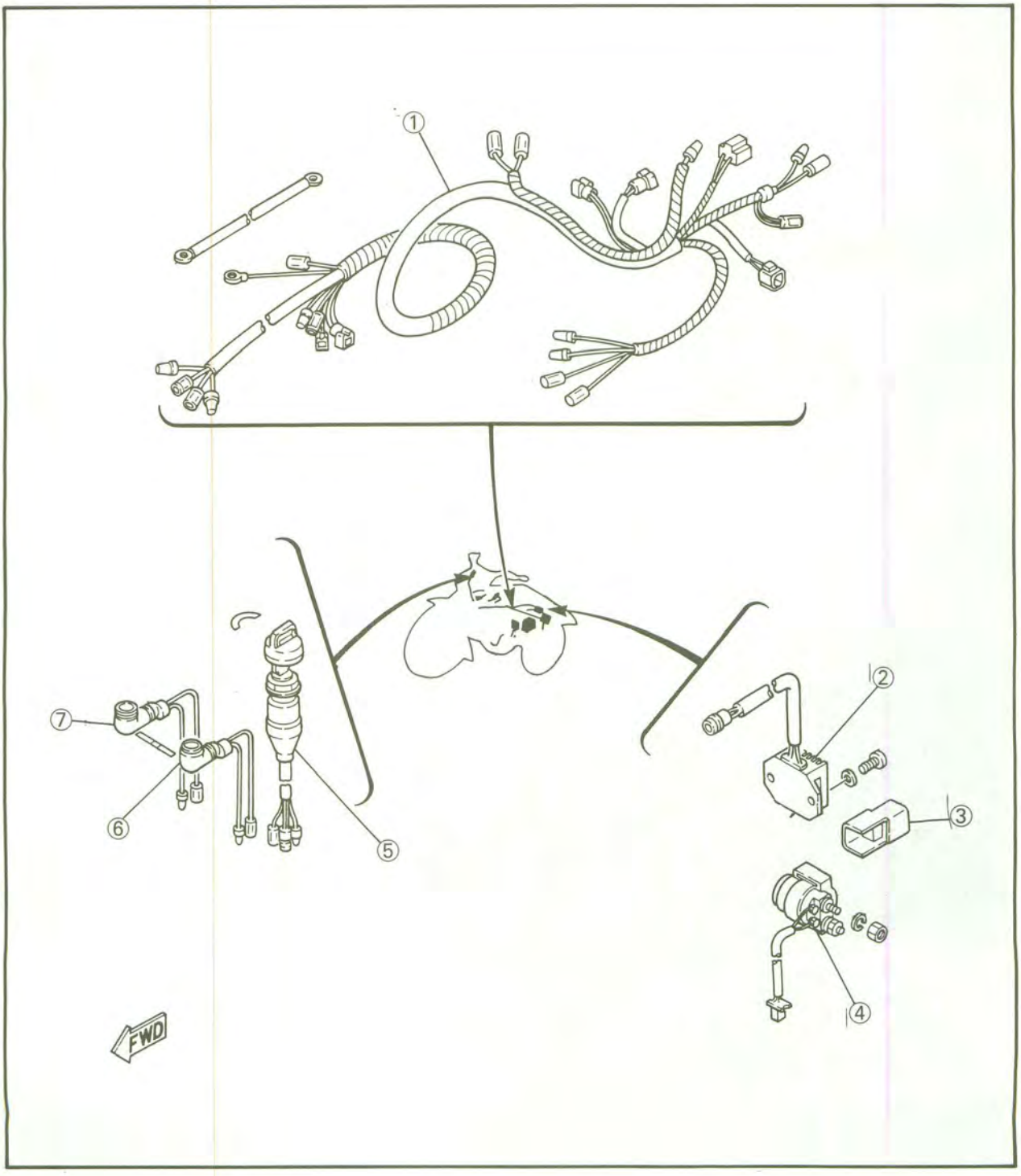
① CDI unit
② Battery
③ Neutral switch
④ Reverse switch
⑤ Ignition coil
⑥ Fuse holder

IGNITION COIL:
PRIMARY WINDING RESISTANCE: 0.85Ω ± 15% at 20°C (68°F)
SECONDARY WINDING RESISTANCE: 5.9kΩ ± 15% at 20°C (68°F)
BATTERY
CAPACITY: 12V 14AH
SPECIFIC GRAVITY: 1.280

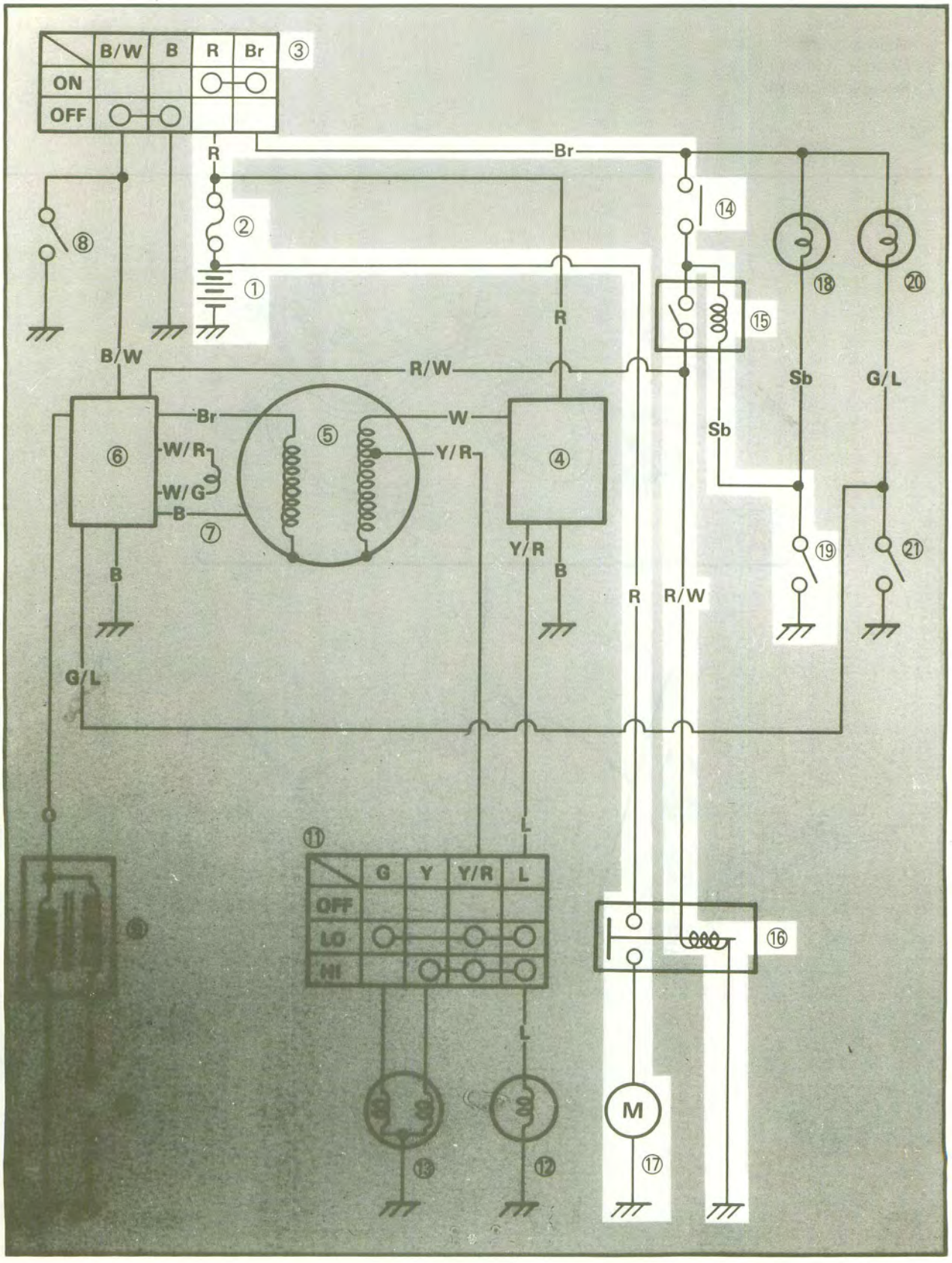


ELECTRICAL COMPONENTS 2

① Wire harness
② Rectifier/Regulator
③ Starting circuit cutoff relay
④ Starter relay
⑤ Main switch
⑥ Neutral indicator
⑦ Reverse indicator



ELECTRIC STARTING SYSTEM



① **Battery**
② **Main fuse**
③ **Main switch**
④ Rectifier/Regulator
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⑰ **Starter motor**
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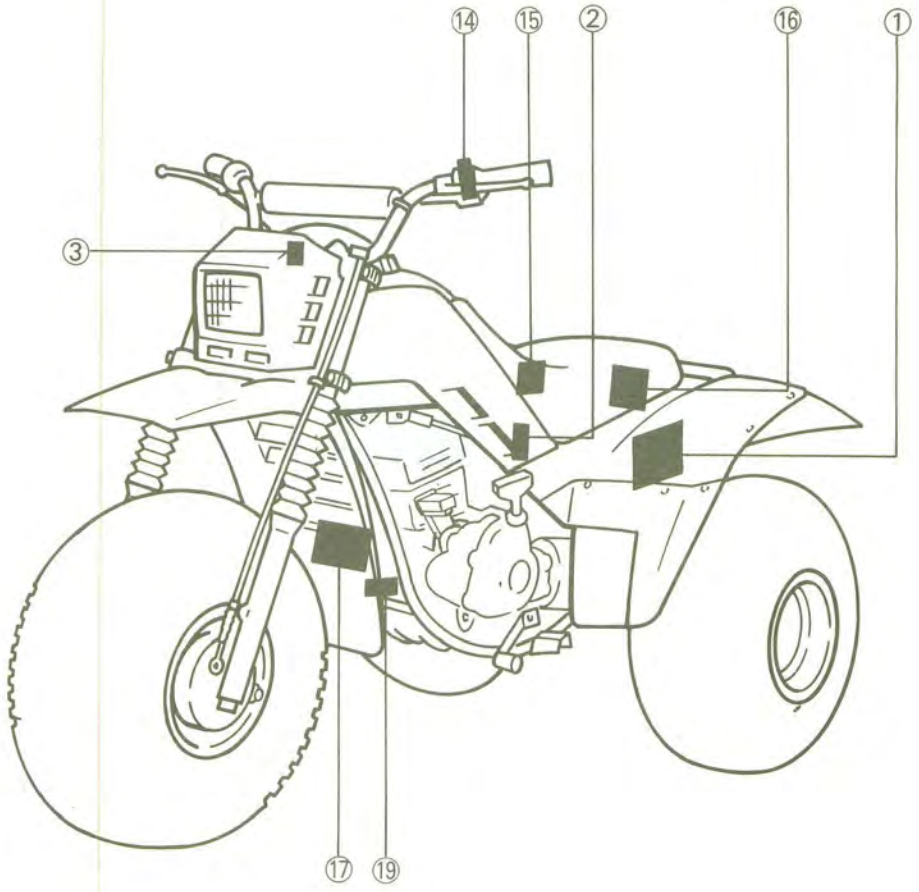


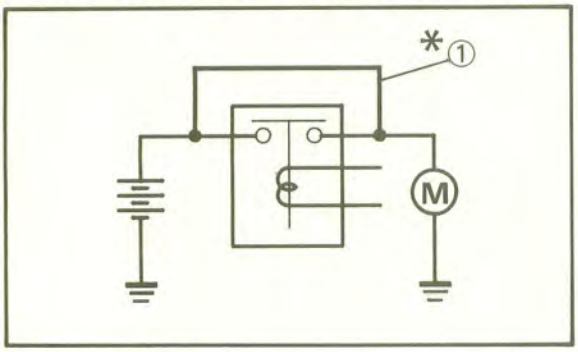
ELECTRIC STARTING SYSTEM

TROUBLESHOOTING CHART

THE STARTER MOTOR DOES NOT OPERATE

A

1. Remove:
   - Seat
   - Rear fender assembly
2. Connect:
   - Starter relay terminals (Battery side and starter motor side)



① Jumper lead

3. Check:
   - Starter motor operation

No → Check battery.

Check battery.
- No → Replace and/or charge battery.
- OK → Repair and/or replace starter motor.

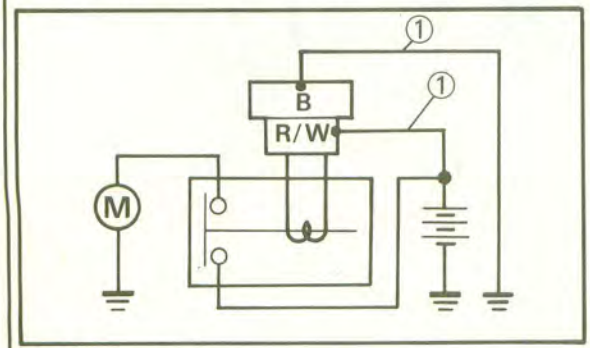
*
WARNING:

1. A wire for the jumper lead ① must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.
2. This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

OK ↓

B

1. Disconnect:
   - Starter relay coupler
2. Connect:
   - Starter relay coupler terminals



① Jumper lead

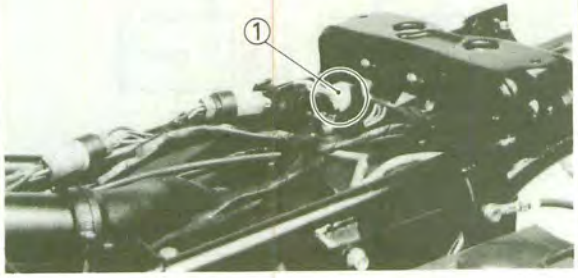
3. Check:
   - Starter motor operation

No → Replace starter relay.

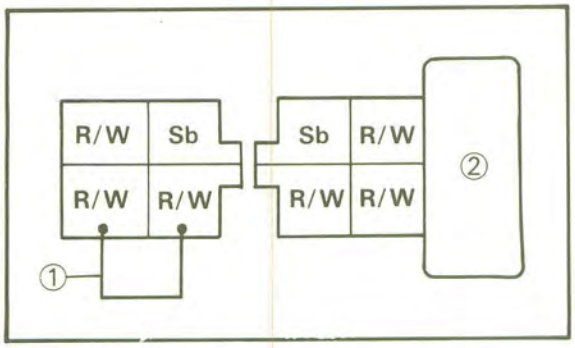
OK ↓

C

1. Disconnect:
   • Starting circuit cutoff relay ① coupler



2. Connect:
   • Starting circuit cutoff relay coupler terminals.
   (Wire harness side)



① Jumper lead
② Starting circuit cutoff relay assembly

4. Check:
   • Starter motor operation
   Turn the main switch to "ON".
   Push the starter switch.

OK → Check neutral switch.

Check neutral switch.
- No → Replace
- OK → Replace starting circuit cutoff relay assembly.

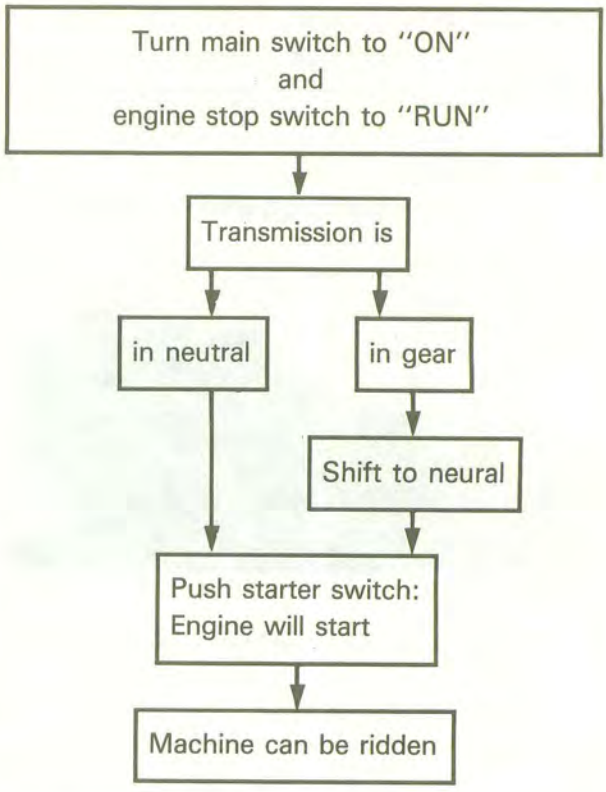
No → Correct connection.

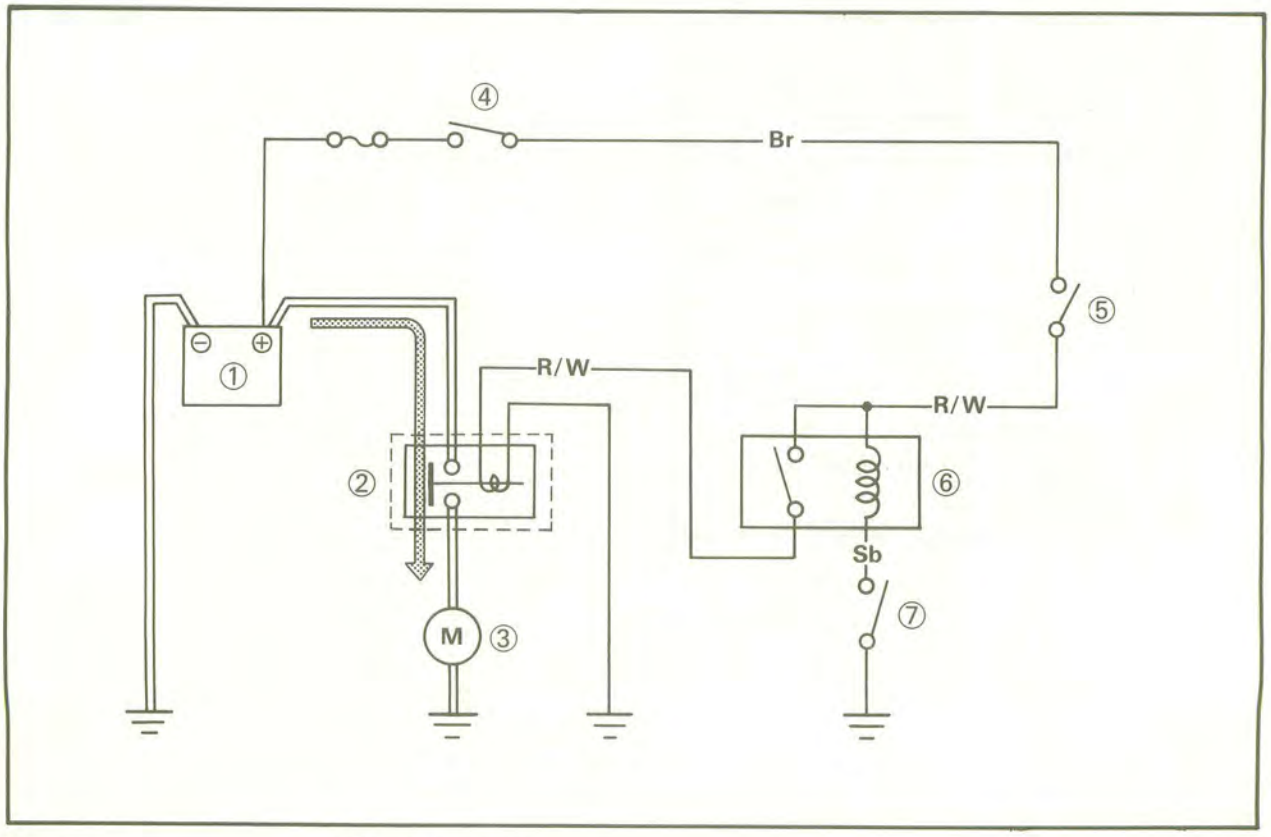
ELECTRIC STARTING SYSTEM

STARTING CIRCUIT CUT-OFF SYSTEM

The starting circuit on this model consists of the starter motor, starter relay, starting circuit cutoff relay, and neutral switch. If the engine stop switch and the main switch are both on, the starter motor can operate only if:

- The transmission is in neutral (the neutral switch is on)

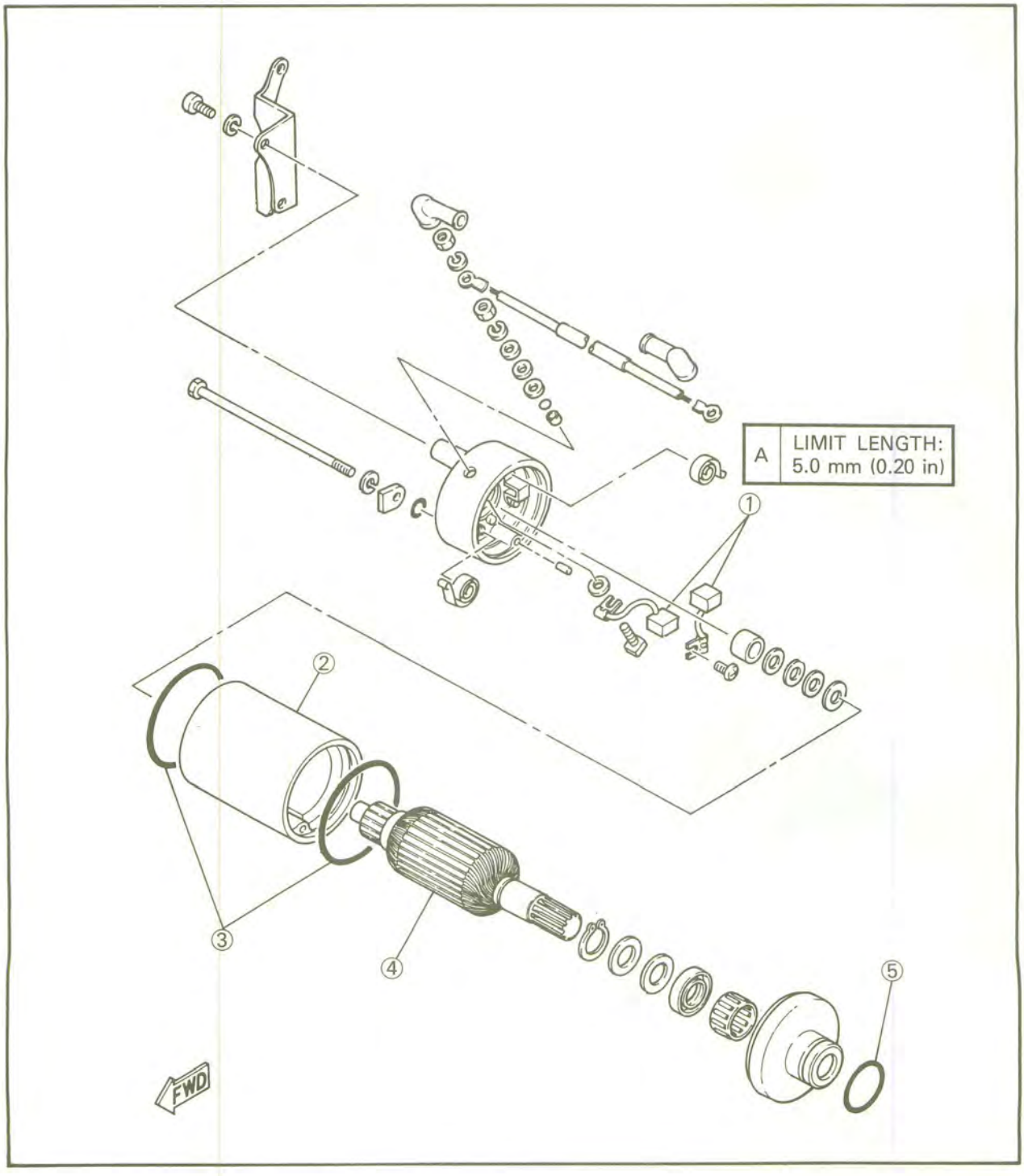




① Battery
② Starter relay
③ Starter motor
④ Main switch
⑤ Starter switch
⑥ Starting circuit cut-off relay
⑦ Neutral switch

STARTER MOTOR

① Brush
② Stator
③ Gasket
④ Armature
⑤ O-ring

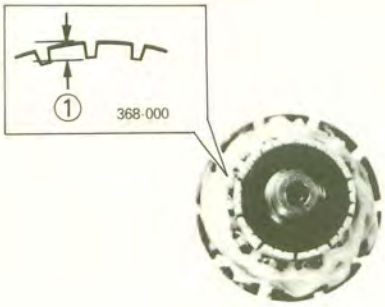


Inspection and Repair

Amature coil inspection

1. Inspect:
   - Commutator (Outer surface)
     Dirty→Clean with #600 grit sandpaper.
2. Measure:
   - Mica (Insulation depth)
     (between commutator segments)
     Out of specification→Scrape mica to proper limits.

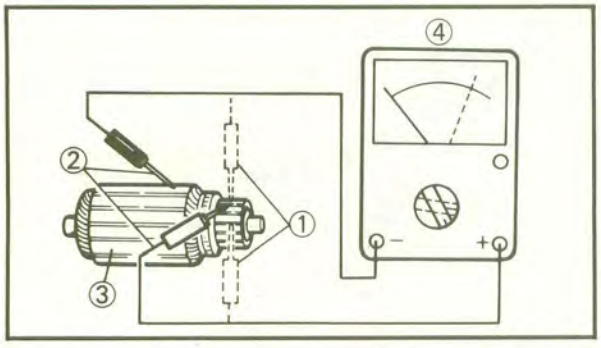
Use a hacksaw blade that is ground to fit.



Depth of Insulator ①:
0.55 mm (0.022 in)

NOTE:

The mica insulation of the commutator must be undercut to ensure proper operation of the commutator.



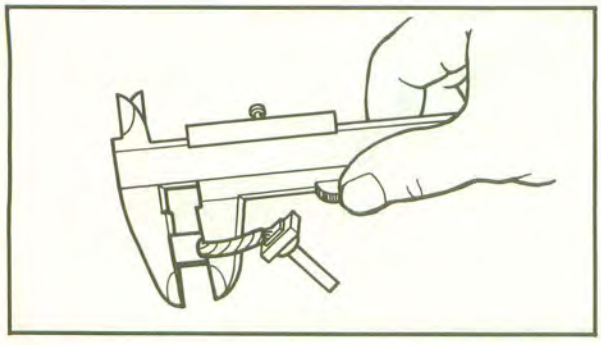
3. Measure:
   - Armature coil (Insulation/Continuity)
     Defect(s)→Replace starter motor.

Armature coil:
0.023Ω ±20% at 20°C (68°F)

① Continuity check
② Insulation check
③ Armature coil

Bearing, and O-ring Inspection

1. Inspect:
   - Bearing
     Wear/Damage→Replace.
   - O-ring
     Wear/Damage→Replace.

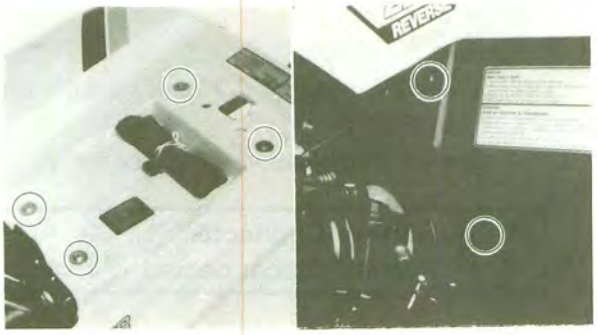


Brush Inspection

1. Measure:
   - Brush length (Each)
     Out of specification→Replace.

Minimum Brush Length:
5.0 mm (0.20 in)

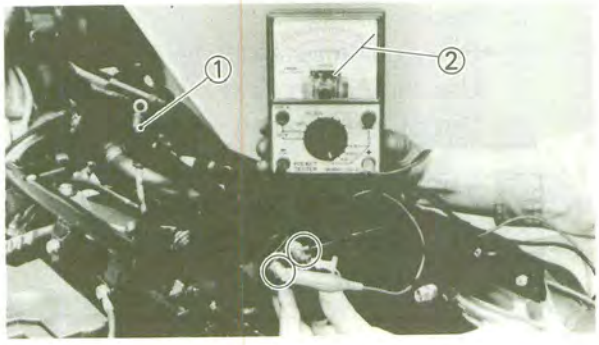
2. Inspect:
   - Brush spring:
     Compare with new spring.
     Weaker/Damage→Replace.



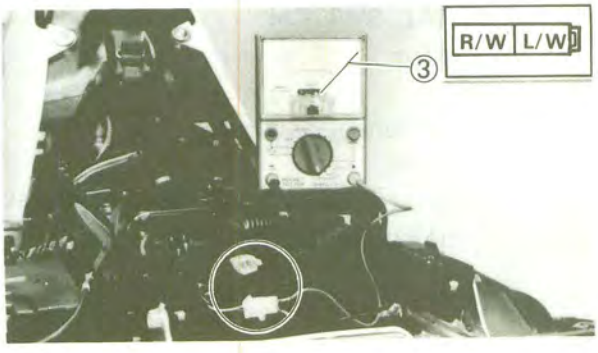
STARTER RELAY

Inspection

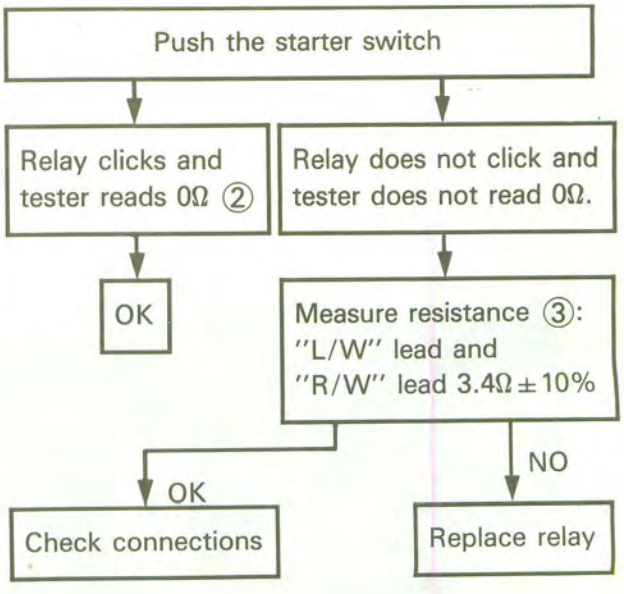
1. Remove:
   - Seat
   - Rear fender assembly

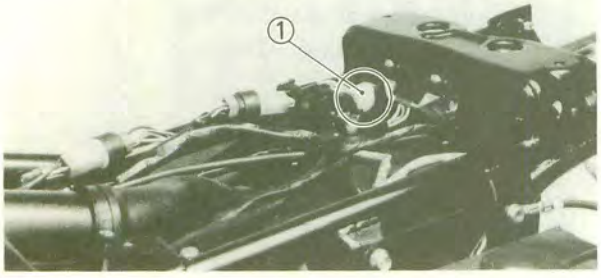


2. Disconnect:
   - Starter relay lead
     (Battery side) ①
3. Connect:
   - Pocket Tester (YU-33263) to starter relay terminal



Preparation steps:
- Turn main switch to "ON"
- Shift to neutral

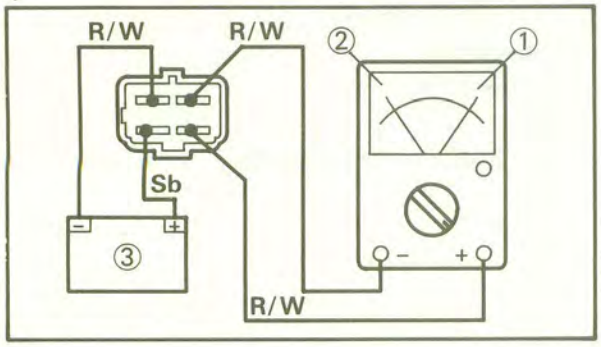




STARTING CIRCUIT CUT-OFF RELAY

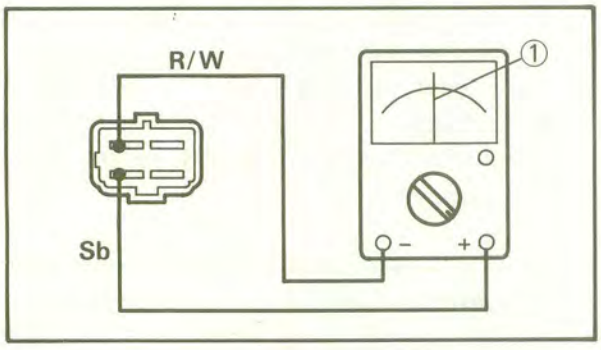
Inspection

1. Remove:
   - Seat
   - Rear fender assembly
   - Starting circuit cut-off relay ①



2. Check:
   - Relay contacts
     Use 12V battery ③ and Pocket Tester (YU-33263)
     Out of specification→Replace relay.

	Battery Connected ①: 0Ω **Battery Disconnected ②: ∞**

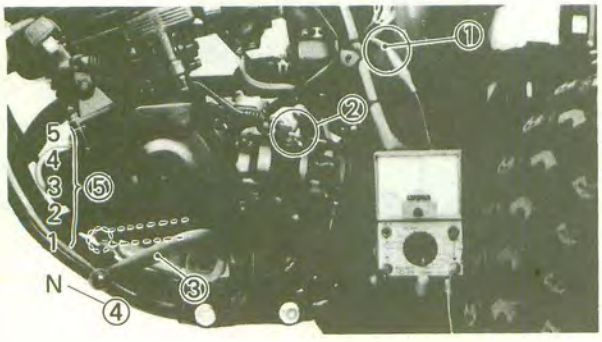


3. Check:
   - Relay coil resistance ①
     Use the Pocket Tester (YU-33263).
     Out of specification→Replace.

	Relay Coil Resistance: **80Ω ± 10% at 20°C (68°F)** **(R/W–Sb)**

NEUTRAL SWITCH

1. Remove:
   - Seat
   - Rear fender assembly
2. Connect:
   - Pocket-Tester (YU-33263) to neutral switch side connector (Sb lead)

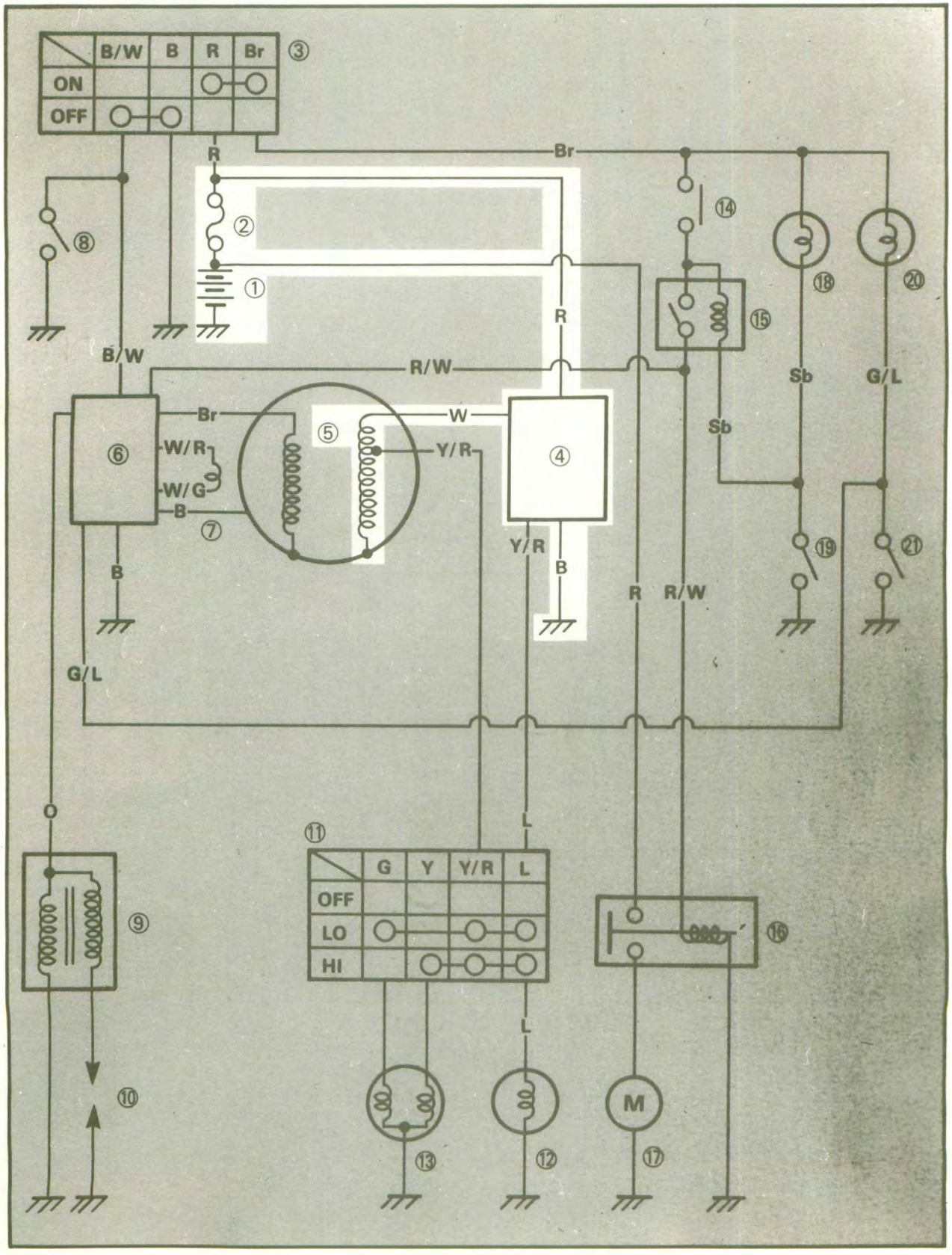


3. Check:
   - Neutral switch contact
     Out of specification→Replace switch.

Change Pedal ③	In Neutral ④	In Gear ⑤
Tester	0Ω	∞

① Sb lead
② Ground

CHARGING SYSTEM



① **Battery**
② **Main fuse**
③ Main switch
④ **Rectifier/Regulator**
⑤ **CDI Magneto**
⑥ CDI unit
⑦ Pick up coil
⑧ Engine stop switch
⑨ Ignition coil
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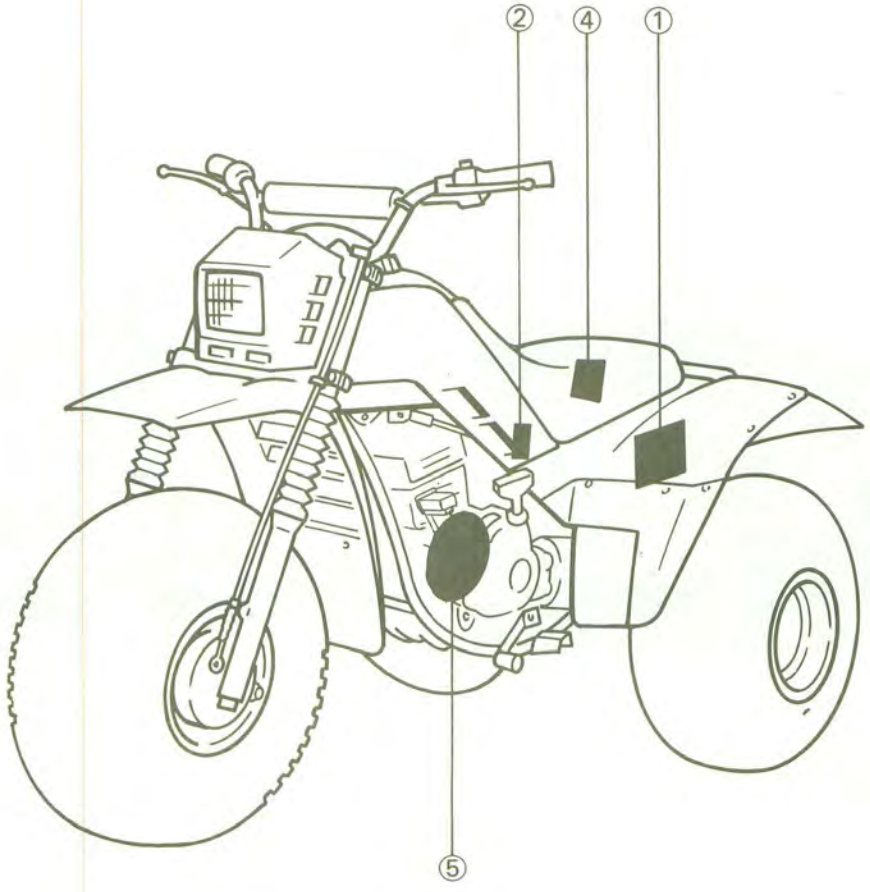


CHARGING SYSTEM

TROUBLESHOOTING CHART

THE BATTERY IS NOT CHARGED

⇩

A

1. Connect:
   - Pocket Tester
     (to the battery terminals)
2. Measure:
   - Battery voltage
   - Fluid gravity

Battery Voltage: 12V
Battery Gravity: 1.280

Out of specification →

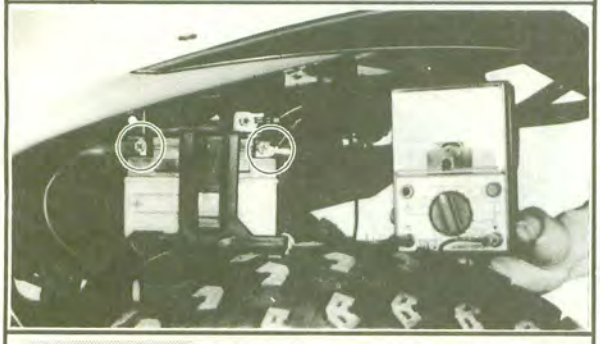
- Check the battery.
- Replace and/or charge battery.

⇩ OK

B

1. Start the engine and accelerate to 5,000 r/min
2. Measure:
   - Generator charging voltage

Generator Charging Voltage:
14 ~ 15V/5,000 r/min

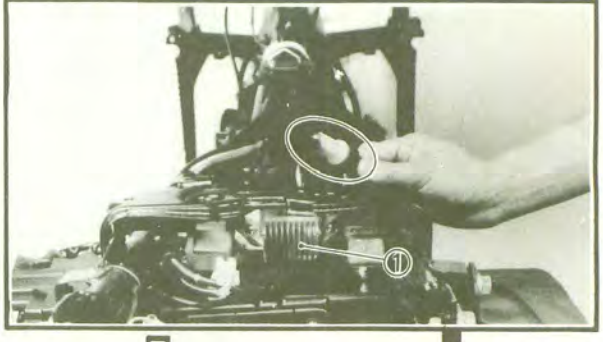


CAUTION:

Never disconnect battery cables while generator is operating or rectifier/regulator will be damaged.

More than 15V →

1. Remove:
   - Seat
   - Rear fender assembly
2. Check:
   - Rectifier/regulator ① connection



Defects → Correct connections

⇩ OK

Replace rectifier/regulator

⇩ Less than 14V

C

1. Check:
   - Main fuse

Faulty → Replace.

OK ↓

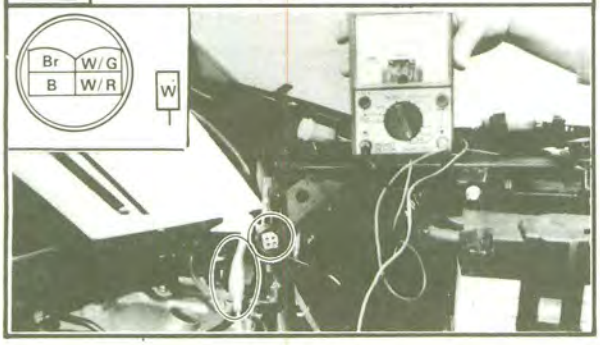
D

1. Remove:
   - Seat
   - Rear fender assembly
2. Disconnect:
   - Charging coil connector
3. Measure:
   - Charging coil resistance

OK → Correct connection.

Charging Coil Resistance:
0.4Ω ± 10% (White – Black)

Out of specification → Replace charging coil (lighting coil).



BATTERY

CAUTION:

To insure maximum battery performance be sure to:
- **Charge a new battery before use.**
- **Maintain proper electrolyte level.**
- **Charge at proper current; 1.4 amps/10 hrs. or until the specific gravity reaches 1.280 at 20°C (68°F).**

Failure to observe these points will result in a shortened battery life.

WARNING:

Battery electrolyte is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.

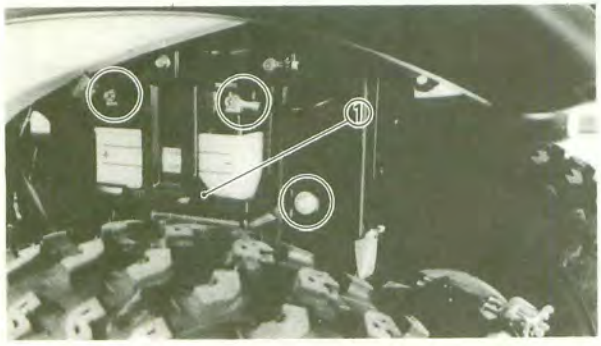
Always follow these preventive measures:
- **Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.**
- **Wear protective eye gear when handling or working near batteries.**

Antidote (EXTERNAL):
- **SKIN-Flush with water.**
- **EYES-Flush with water for 15 minutes and get immediate medical attention.**
- **Drink large quantities of water or milk and follow with milk of magnesia, beaten egg, or vegetable oil.**

Get immediate medical attention.

Batteries also generate explosive hydrogen gas, therefore you should always follow these preventive measures:
- **Charge batteries in a well-ventilated area.**
- **Keep batteries away from fire, sparks, or open flames (e.g., welding equipment, lighted cigarettes, etc.)**
- **DO NOT SMOKE when charging or handling batteries.**

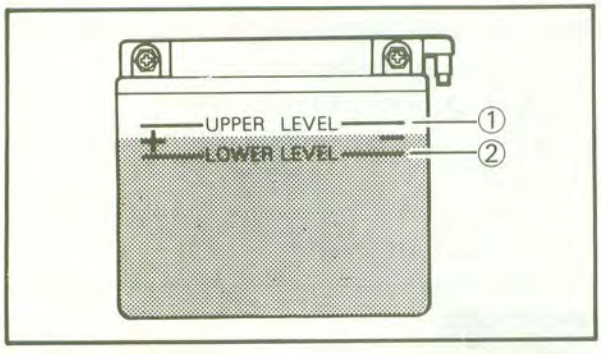
KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.



Inspection

1. Remove:
   - Battery cover ①
   - Battery

   Disconnect negative lead first.



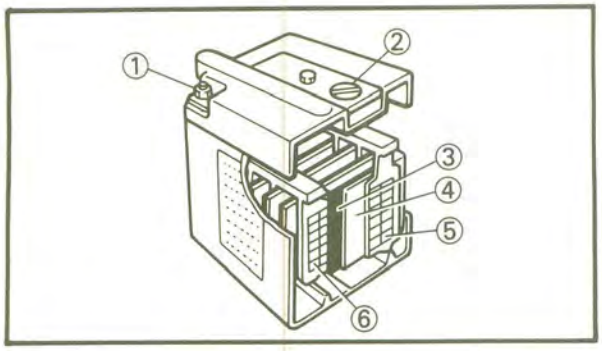
2. Inspect:
   - Battery fluid level

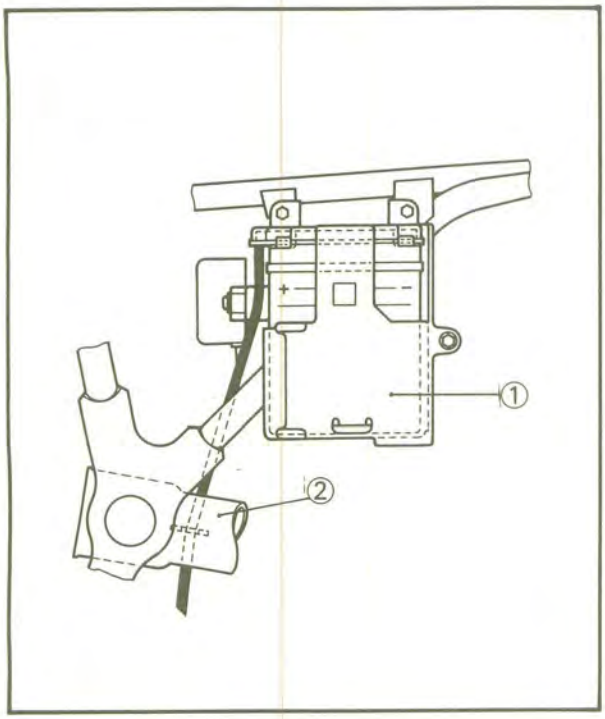
   Below lower level→Add distilled water.

① Upper level
② Lower level

NOTE:

Replace the battery if:
- Battery voltage will not rise to a specific value or bubbles fail to rise even after many hours of charging.
- Sulfation of one or more cells occurs, as indicated by the plates turning white, or an accumulation of material exists in the bottom of the cell.





- Specific gravity readings after a long, slow charge indicate one cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.

① Terminal
② Cap
③ Insulator
④ Separation plate
⑤ Negative electrode
⑥ Positive electrode

3. Measure:
   - Specific gravity:
     Less than 1.280→Recharge battery.
4. Install:
   - Battery
     Connect positive lead first.
5. Check:
   - Breather hose
     Improper routing→Correct.
     Obstruction/Damage→Replace.

① Battery
② Rear arm

Battery Storage

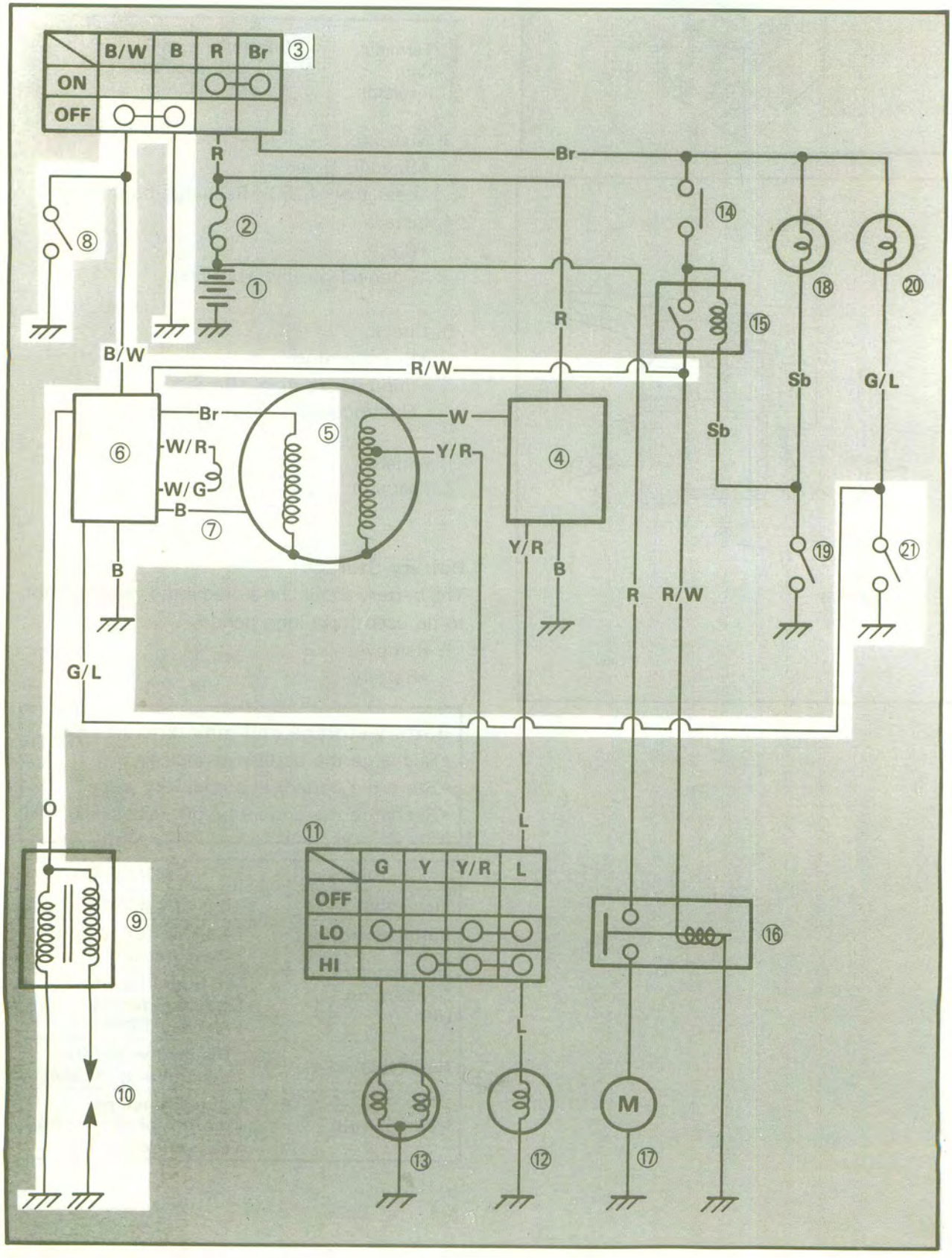
The battery should be stored if the vehicle is not to be used for a long period.

1. Remove:
   - Battery

Battery storage and maintenance tips:
- Recharge the battery periodically.
- Store the battery in a cool, dry place.
- Recharge the battery before reinstalling.

Battery	GM14AZ-4A
Electrolyte	Specific gravity: 1.280
Initial charging rate	1.4Amp for 10 hours (new battery)
Recharging rate	10 hours (or until specific gravity reaches 1.280)
Refill fluid	Distilled water (to maximum level line)
Refill period	Check once per month (or more often as required)

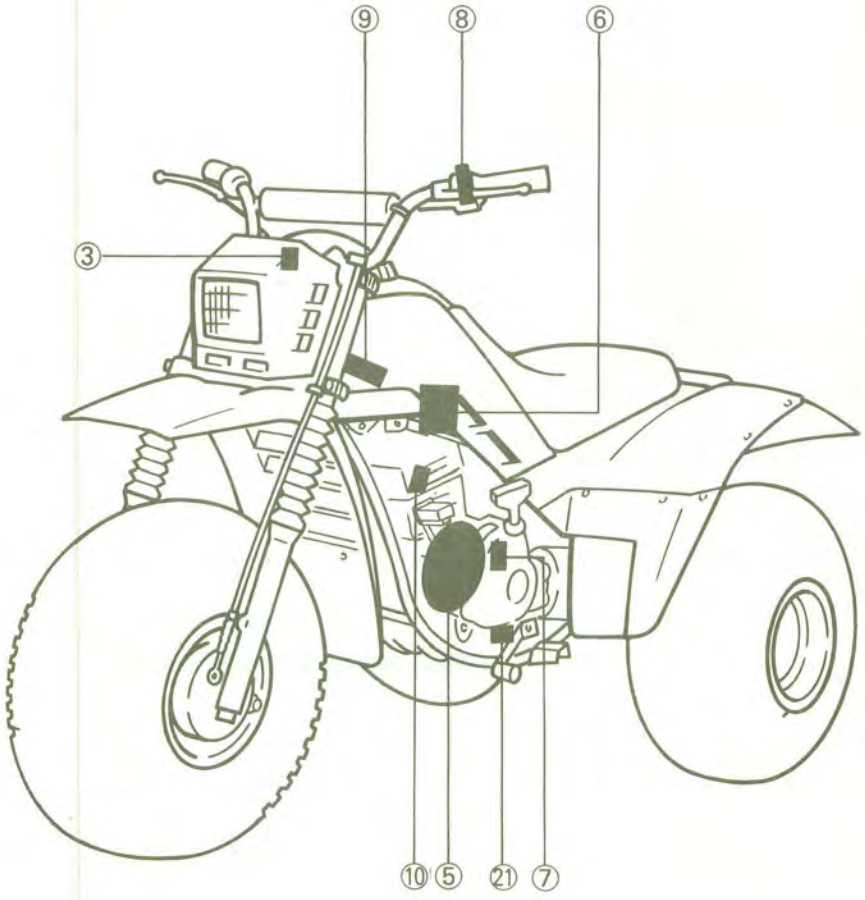
IGNITION SYSTEM



① Battery
② Main fuse
③ Main switch
④ Rectifier/Regulator
⑤ CDI Magneto
⑥ CDI unit
⑦ Pick up coil
⑧ Engine stop switch
⑨ Ignition coil
⑩ Spark plug
⑪ Light (Dimmer) switch
⑫ Tail light
⑬ Headlight
⑭ Starting switch
⑮ Starting circuit cutoff relay
⑯ Starter relay
⑰ Starter motor
⑱ Neutral indicator
⑲ Neutral switch
⑳ Reverse indicator
㉑ Reverse switch

COLOR CODE

B	Black
Br	Brown
L	Blue
O	Orange
R	Red
Sb	Skyblue
W	White
Y	Yellow
W/R	White/Red
W/G	White/Green
B/W	Black/White
Y/R	Yellow/Red
G/L	Green/Blue
R/W	Red/White



TROUBLESHOOTING CHART

NO SPARK OR WEAK SPARK.

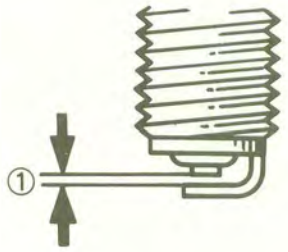
A

1. Remove:
   - Spark plug
2. Check:
   - Spark plug type

Standard Spark Plug:
D7EA (NGK)
X22ES-U (N/D)

3. Measure:
   - Electrode gap

Spark Plug Electrode Gap ①:
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)



Out of specification → Clear off carbon/Regap/Replace spark plug.

OK ⇩

B

1. Remove:
   - Spark plug cap
2. Measure:
   - Spark plug cap resistance

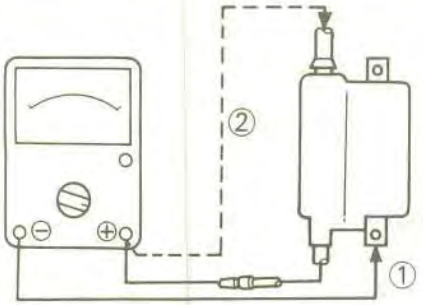
Spark Plug Cap Resistance:
10kΩ ± 25% at 20°C (68°F)

Out of specification → Replace spark plug cap.

OK ⇩

C

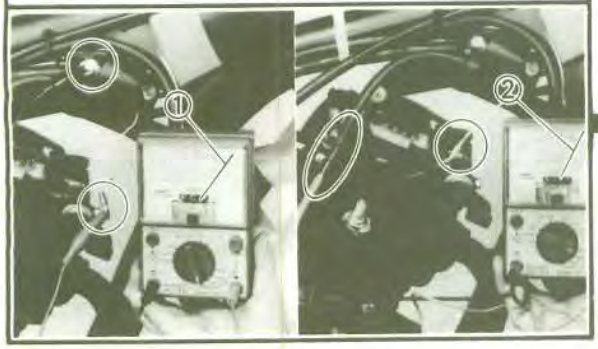
1. Remove:
   - Fuel tank
2. Connect:
   - Pocket Tester
     (to ignition coil side connector)



① Primary
② Secondary

3. Measure:
   - Primary coil resistance
   - Secondary coil resistance

Ignition Coil Resistance:
Primary ①: 0.85Ω ± 15%
Secondary ②: 5.9KΩ ± 15 %



Out of specification → Replace ignition coil.

OK

D

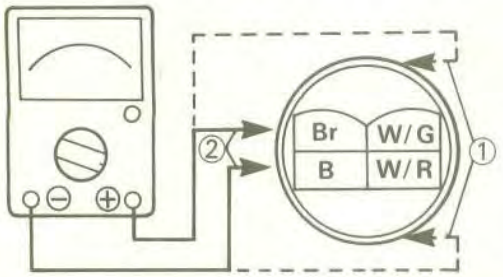
1. Check:
   - Main switch
   - Engine stop switch

Faulty → Replace faulty parts

OK

E

1. Remove:
   - Seat
   - Rear fender assembly
2. Disconnect:
   - Source/Pick up coil coupler
3. Connect:
   - Pocket Tester
     (to CDI coupler)



Out of specification

Replace faulty parts.

① Pickup coil
② Source coil

4. Measure:
   - Pick-up coil resistance
   - Source coil resistance

Pickup Coil Resistance:
196Ω ± 10% at 20°C (68°F)
(White/Red — White/Green)
Source Coil Resistance:
381Ω ± 10% at 20°C (68°F)
(Brown — Black)

OK

Check all connections.

Detects

Correct connections.

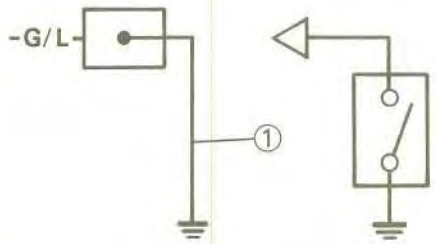
Replace CDI unit.

TROUBLESHOOTING CHART (2)

ENGIEN OPERATES OVER 5,500 RPM
When transmission is reverse

A

1. Remove:
   - Seat
   - Rear fender asembly
2. Disconnect:
   - Reverse switch connector
3. Connect:
   - Reverse switch coupler terminal (Wire harness side)



① Jumper lead

4. Check:
   - Engine rpm

   Shift to neutral.
   Start and racing the engine.

More than 5,500 rpm

Check "G/L" lead connections.

Defects

Correct connection.

OK

Replace CDI unit.

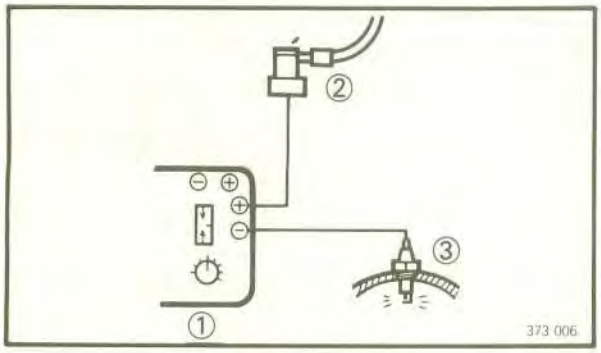
Less than 5,500 rpm

Replace reverse switch.

ENTIRE IGNITION SYSTEM CHECK

The entire ignition system can be checked for misfire and weak spark by using the Electro Tester.

1. Warm up the engine so that all of the electrial components are at operating temperature.



2. Connect:
   - Electro Tester (YU-33261) ①
3. Start the engine, and increase the spark gap until misfire occurs. (Test at vaious r/min between idle and red line.)

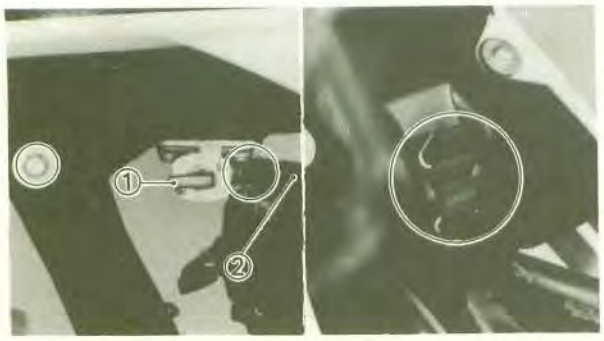
② Spark plug wire
③ Spark plug

CAUTION:

Do not run the engine in neutral above 6,000 r/min for more than 1 or 2 seconds.

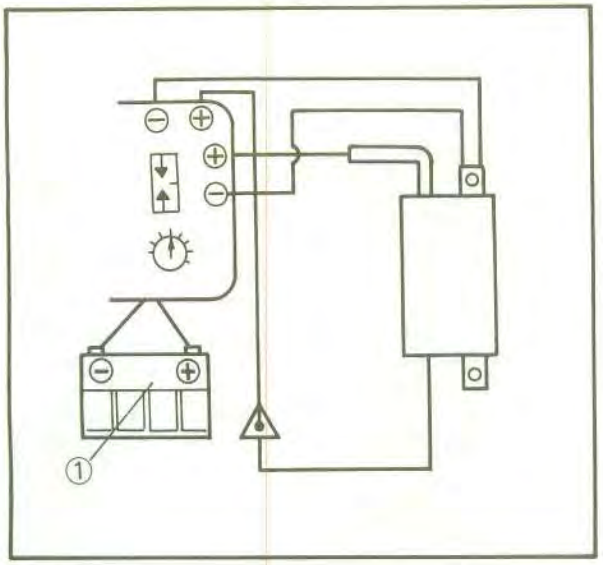
Minimum Spark Gap:
6 mm (0.24 in)

Faulty ignition system operation (at the minimum spark gap or smaller) → Follow the troubleshooting chart until the source of the problem is located.



IGNITION COIL SPARK GAP

1. Turn fuel cock to "OFF" ①
2. Remove:
   - Fuel hose ②
   - Fuel tank
2. Disconnect:
   - Ignition coil leads
   - Spark plug leads
3. Connect:
   - Electro Tester (YU-33261)



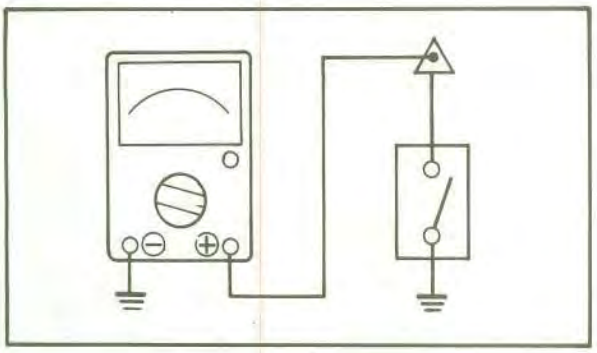
NOTE:

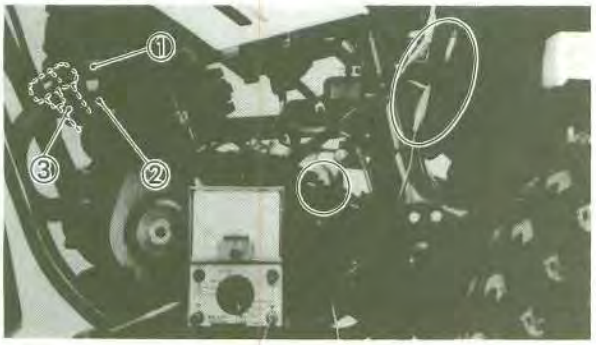
Be sure to use a fully charged battery.

4. Turn the spark plug gap adjuster and increase the gap to the maximum limit unless misfire occurs first.

Minimum Spark Gap:
6 mm (0.24 in)

① Battery (12V)





REVERSE SWITCH

1. Remove:
   - Seat
   - Rear fender assembly
2. Disconnect:
   - Reverse switch connector
3. Connect:
   - Pocket Tester to switch side coupler and ground
4. Check:
   - Reverse switch contact

   Out of specification→Replace switch.

Drive select lever ①	Reverse ②	Forward ③
Tester	0Ω	∞

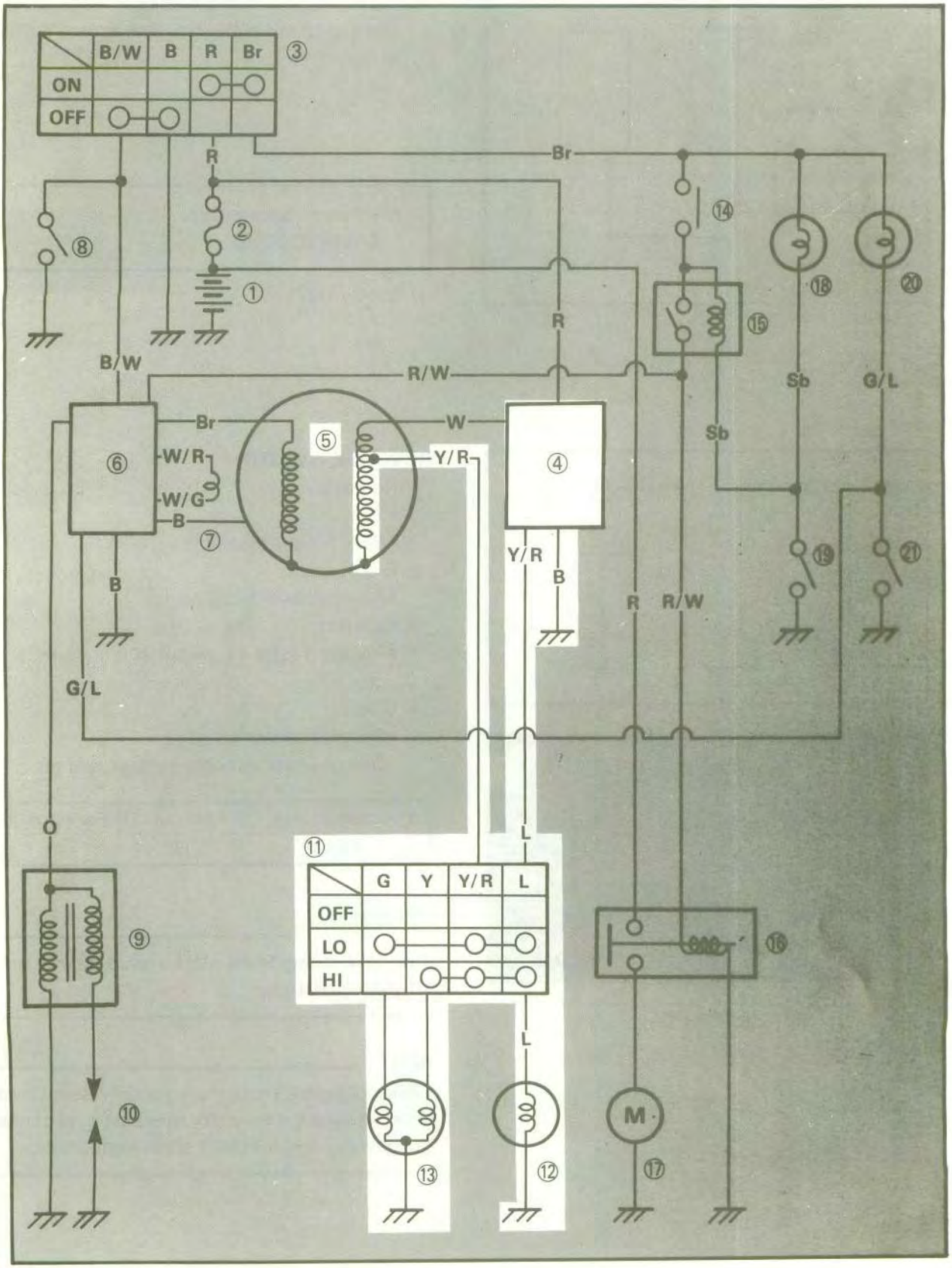
CAUTION:

The drive select lever can be used only in first (1) gear position.

NOTE:

While pulling the knob, move the drive select lever either toward the front (for forward drive) or rear (for reverse drive) until it stops completely.

LIGHTING SYSTEM



① Battery
② Main fuse
③ Main switch
④ **Rectifier/Regulator**
⑤ **CDI Magneto**
⑥ CDI unit
⑦ Pick up coil
⑧ Engine stop switch
⑨ Ignition coil
⑩ Spark plug
⑪ **Light (Dimmer) switch**
⑫ **Tail light**
⑬ **Headlight**
⑭ Starting switch
⑮ Starting circuit cutoff relay
⑯ Starter relay
⑰ Starter motor
⑱ Neutral indicator
⑲ Neutral switch
⑳ Reverse indicator
㉑ Reverse switch

COLOR CODE

B	Black
Br	Brown
L	Blue
O	Orange
R	Red
Sb	Skyblue
W	White
Y	Yellow
W/R	White/Red
W/G	White/Green
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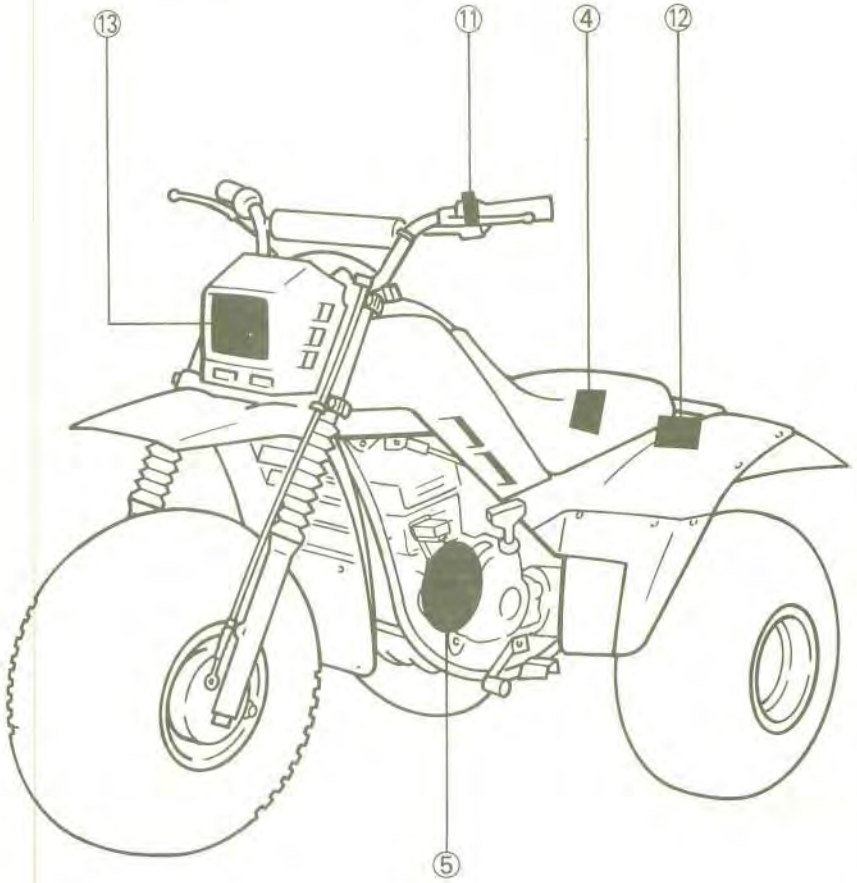
G/L	Green/Blue
R/W	Red/White

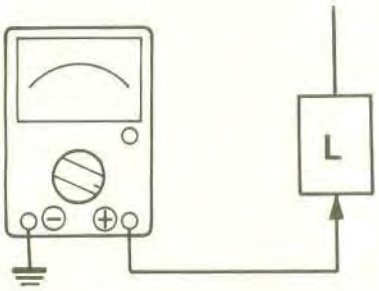


TROUBLESHOOTING CHART

THE HEADLIGHT AND TAIL LIGHT DO NOT COME ON

A

1. Remvoe:
   - Seat
   - Rear fender assembly
2. Disconnect:
   - Tail light connector
3. Connect:
   - Pocket Tester
     (to wire harness side connector)



4. Measure:
   - Generator voltage
     Start the engine and accelerate to 5,000 r/min.
   Turn light (dimmer) switch to "LO" or "HI"

Generator Lighting Voltage:
13 ~ 14V/5,000 r/min

More than 14V → Replace rectifier/regulator.

Less than 13V → Check light (dimmer) switch.

Faulty → Replace switch.

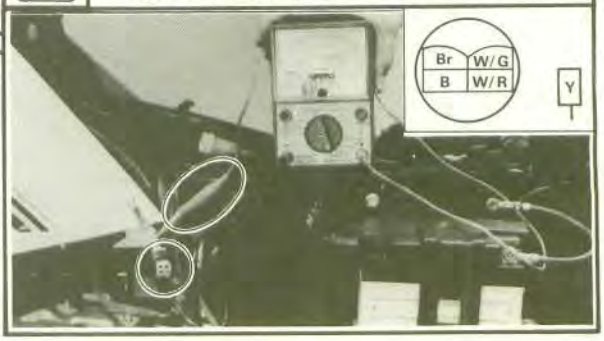
OK → B

OK → Replace bulbs.

B

1. Disconnect:
   - Lighting coil coupler
   - Sourse/Pick up coil coupler
2. Measure:
   - Lighting coil resistance

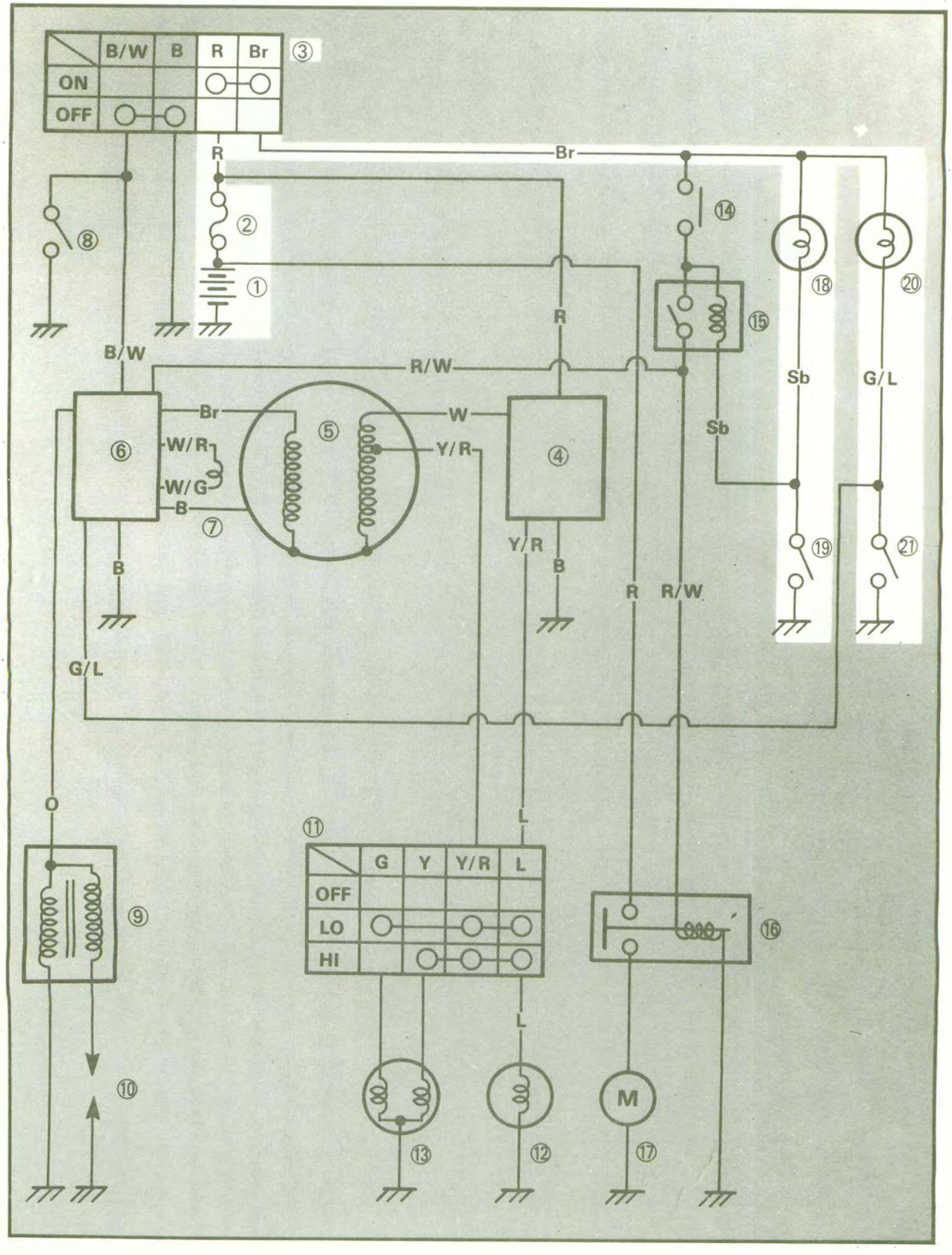
Lighting Coil Resistance:
0.34 ± 10% (Yellow — Black)



Out of specification → OK → Correct connection.

Out of specification → Replace lighting coil.

SIGNAL SYSTEM



① **Battery**
② **Main fuse**
③ **Main switch**
④ Rectifier/Regulator
⑤ CDI Magneto
⑥ CDI unit
⑦ Pick up coil
⑧ Engine stop switch
⑨ Ignition coil
⑩ Spark plug
⑪ Light (Dimmer) switch
⑫ Tail light
⑬ Headlight
⑭ Starting switch
⑮ Starting circuit cutoff relay
⑯ Starter relay
⑰ Starter motor
⑱ **Neutral indicator**
⑲ **Neutral switch**
⑳ **Reverse indicator**
㉑ **Reverse switch**

COLOR CODE

B	Black
Br	Brown
L	Blue
O	Orange
R	Red
Sb	Skyblue
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Y	Yellow
W/R	White/Red
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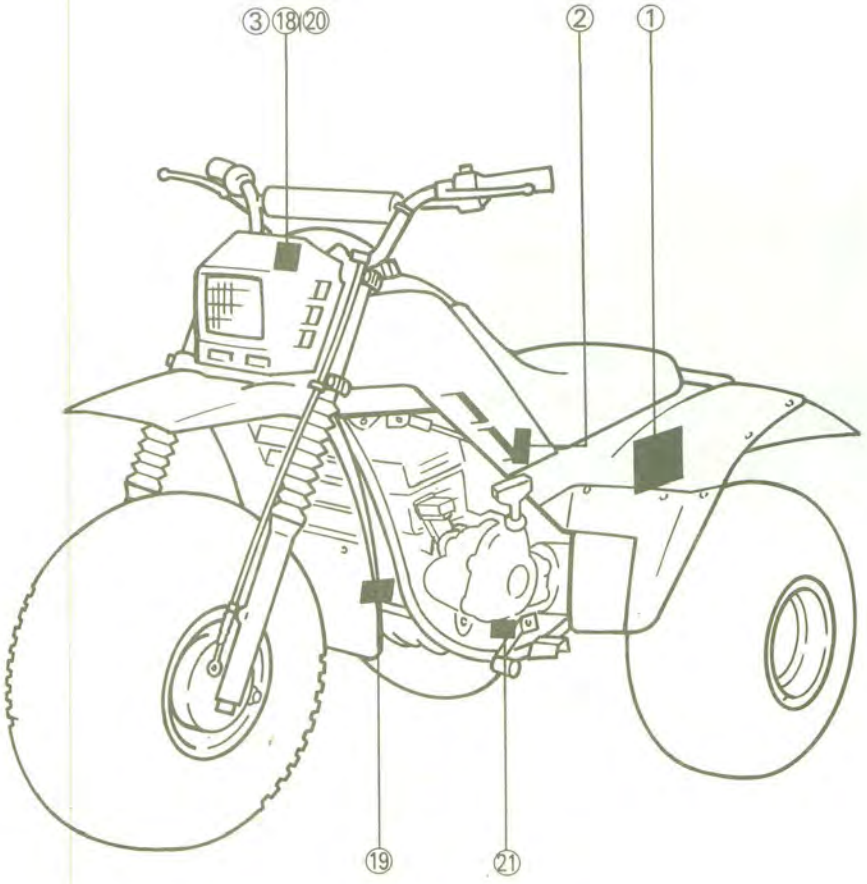


TROUBLESHOOTING CHART

THE NEUTRAL AND REVERSE INDICATOR LIGHTS DO NOT COME ON

⇩

A

1. Remove:
   - Headlight assembly
   - Neutral light bulb
   - Reverse light bulb
4. Check:
   - Bulb

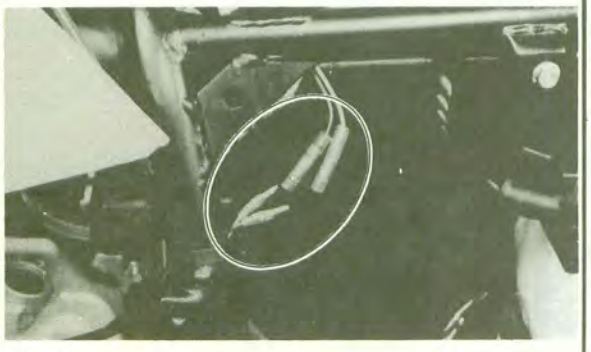
Faulty → Replace bulb.

⇩ OK

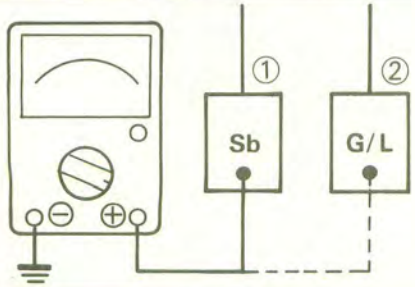
B

1. Remove:
   - Seat
   - Fuel tank
2. Disconnect:
   - Neutral and reverse switch connector

12V → Replace neutral and/or reverse switches.



3. Connect:
   - Pocket Tester
     (to wire harness side connector)



① Neutral switch lead
② Reverse switch lead

4. Measure:
   - Battery voltage
     (on the "Sb and G/L" lead)
     Turn main switch to "ON."

Less than 12V →

- Check the main switch, main fuse, and battery.
- Replace faulty parts and/or charge battery.

SWITCHES

Switches may be checked for continuity with the Pocket Tester on the "Ohm × 1" position.

A Main switch

Switch position	Wire color			
	B/W	B	R	Br
OFF	○	○		
ON			○	○

B "ENGINE STOP" switch

Switch position	Wire color	
	B/W	B
OFF	○	○
RUN		

C Starting switch

Switch position	Wire color	
	Br	R/W
OFF		
ON	○	○

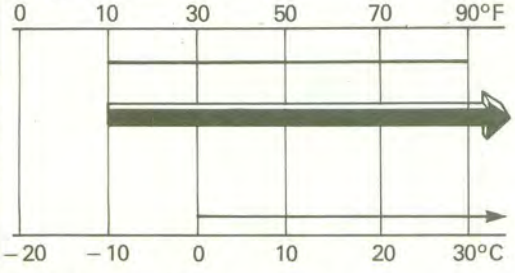
D Light (Dimmer) switch

Switch position	Wire color			
	Y/R	L	G	Y
OFF				
LOW	○	○	○	
HI	○	○		○

APPENDICES

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

Model	YTM225DRN
Model Code Number	1EV
Vehicle Identification Number	JY31EV00*FC000101
Engine Starting Number	1EV-000101
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	 1,835 mm (72.2 in) 1,000 mm (39.4 in) 1,030 mm (40.6 in) 720 mm (28.3 in) 1,150 mm (45.3 in) 205 mm (8.1 in)
Basic Weight: With Oil and Full Fuel Tank	 155 kg (342 lb)
Minimum Turning Radius:	2,200 mm (86.6 in)
Engine: Engine Type Cylinder Arrangement Displacement Bore × Stroke Compression Ratio Compression Pressure Starting System	 4-stroke, gasoline, SOHC Single cylinder, Forward inclined 223.2 cm^3 70 × 58 mm (2.76 × 2.28 in) 8.8 : 1 883 kPa (9 kg/cm^2, 128 psi) Recoil starter and Electric starter
Lubrication System:	Wet sump
Oil Type or Grade: Engine oil  Final Gear Oil	 SAE 10W30 type SE motor oil SAE 10W40 type SE motor oil Yamalube 4-cycle oil or SAE 20W40 type SE motor oil (20W50) SAE 80 API GL-4 Hypoid gear oil
Oil Capacity: Engine Oil Periodic Oil Change Total Amount Final Gear Case Oil	 1.5 L (1.3 Imp qt, 1.6 US qt) 1.8 L (1.6 Imp qt, 1.9 US qt) 0.13 L (0.11 Imp qt, 0.14 US qt)
Air Filter	Wet type element

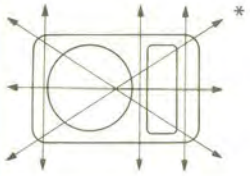
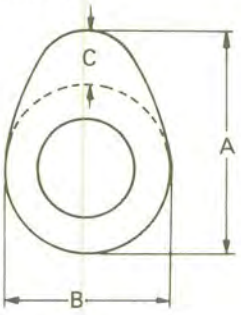
Model	YTM225DRN
Fuel:	
Type	Regular gasoline
Tank Capacity	9.5 L (2.1 Imp gal, 2.5 US gal)
Reserve Amount	2.4 L (0.5 Imp gal, 0.6 US gal)
Carburetor:	
Type/Manufacturer	VM24SH/MIKUNI
Spark Plug:	
Type/Manufacturer	D7EA (NGK), X22ES-U (NIPPONDENSO)
Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Clutch Type:	Wet, multiple-disc, Centrifugal automatic
Transmission:	
Primary Reduction System	Gear
Primary Reduction Ratio	73/22 (3.318)
Secondary Reduction System	Shaft drive
Secondary Reduction Ratio	19/18 × 43/12 = 3.782
Transmission Type	Constant mesh, 5-speed
Operation	Left foot operation
Gear Ratio	
1st	34/12 (2.833)
2nd	34/19 (1.789)
3rd	29/22 (1.318)
4th	26/25 (1.040)
5th	23/28 (0.821)
Reverse	34/12 (2.833)
Chassis:	
Frame Type	Double cradle
Caster Angle	20°22′
Trail	35 mm (1.38 in)
Tire:	
Type	Tubeless
Size (F)	22 × 11 – 8
Size (R)	22 × 11 – 8 × 2 pcs
Tire Pressure (Cold tire):	
Front and Rear:	
Standard	14.7 kPa (0.15 kg/cm^2, 2.2 psi)
Minimum	11.8 kPa (0.12 kg/cm^2, 1.8 psi)
Maximum	68.6 kPa (0.7 kg/cm^2, 10 psi)
Brake:	
Front Brake Type	Drum brake
Operation	Right hand operation
Rear Brake Type	Single disc brake
Operation	Left hand operation, Right foot operation

SPECIFICATIONS

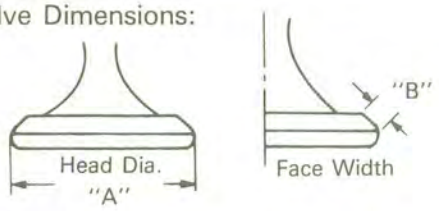
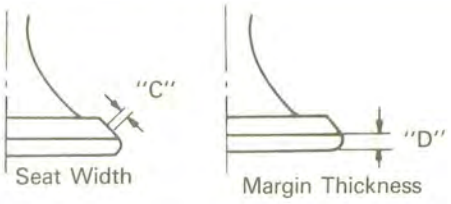
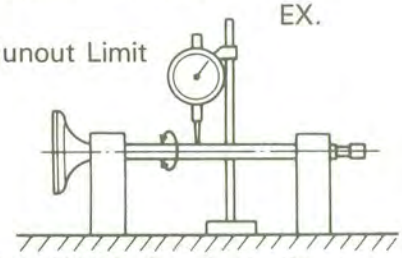
Model	YTM225DRN
Suspension:	
Front Suspension	Telescopic fork
Rear	Monocross suspension
Shock Absorber:	
Front Shock Absorber	Coil spring, Oil damper
Rear Shock Absorber	Coil spring, Gas-Oil damper
Wheel Travel:	
Front Wheel Travel	130 mm (5.1 in)
Rear Wheel Travel	110 mm (4.3 in)
Electrical:	
Ignition System	C.D.I. Magneto
Generator System	Flywheel magneto
Battery Type/Capacity	GM14AZ—4A/12V, 14AH
Headlight Type	Bulb
Blub Wattage/Quantity:	
Headlight	45W/45W × 1
Taillight	7.5W × 1
Indicator Light Wattage/Quantity	
"NEUTRAL"	3.4W × 1
"REVERSE"	3.4W × 1

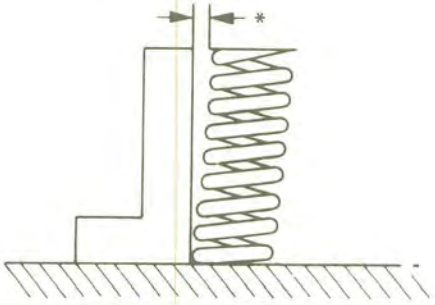
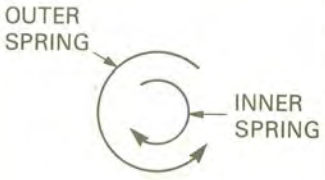
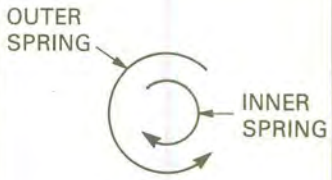
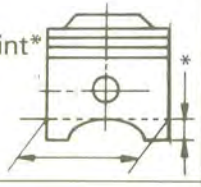
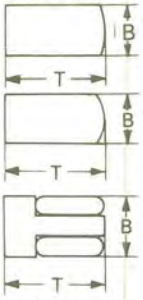
II. MAINTENANCE SPECIFICATIONS

A. Engine

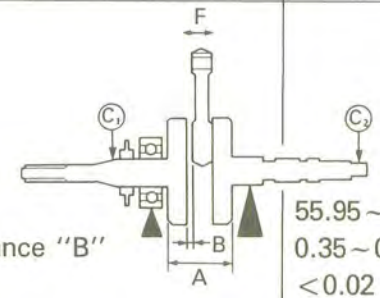
Model	YTM225DRN
Cylinder Head:	
Warp Limit 	<0.03 mm (0.0012 in)> *Lines indicate straightedge measurement.
Cylinder:	
Bore Size	69.97 ~ 70.02 mm (2.7547 ~ 2.7567 in)
Taper Limit	<0.05 mm (0.02 in)>
Out-of-round Limit	<0.01 mm (0.0004 in)>
Camshaft:	
Drive Method	Chain (Left)
Camshaft Bearing (Cylinder)	25.000 ~ 25.021 mm (0.9843 ~ 0.9851 in), 20.000 ~ 20.021 mm (0.7874 ~ 0.7882 in)
Camshaft Outside Diameter	24.960 ~ 24.980 mm (0.9827 ~ 0.9835 in), 19.998 ~ 19.999 mm (0.7873 ~ 0.7874 in)
Shaft-to-cap Clearance	0.020 ~ 0.061 mm (0.0008 ~ 0.0024 in)
Cam Dimensions	
Intake  "A"	36.537 ~ 36.637 mm (1.4385 ~ 1.4424 in)
"B"	30.131 ~ 30.231 mm (1.1863 ~ 1.1902 in)
"C"	6.587 mm (0.2593 in)
Exhaust "A"	36.577 ~ 36.677 mm (1.440 ~ 1.444 in)
"B"	30.214 ~ 30.314 mm (1.1895 ~ 1.1935 in)
"C"	6.627 mm (0.2609 in)
Camshaft Runout Limit	<0.03 mm (0.0012 in)>
Cam Chain Type/Number of Links	DID25SH/104 Links
Cam Chain Adjustment Method	Automatic
Rocker Arm/Rocker Arm Shaft:	
Rocker Arm Inside Diameter	12.000 ~ 12.018 mm (0.4724 ~ 0.4731 in)
Shaft Outside Diameter	11.985 ~ 11.991 mm (0.4718 ~ 0.4721 in)
Arm-to-shaft Clearance	0.009 ~ 0.037 mm (0.0004 ~ 0.0015 in)
Valve, Valve Seat, Valve Guide:	
Valve Clearance (Cold)	
IN.	0.05 ~ 0.09 mm (0.0020 ~ 0.0035 in)
EX.	0.11 ~ 0.15 mm (0.0043 ~ 0.0059 in)

SPECIFICATIONS

Model		YTM225DRN
Valve Dimensions:  		
"A" Head Dia.	IN.	33.9 ~ 34.1 mm (1.3346 ~ 1.3425 in)
	EX.	28.4 ~ 28.6 mm (1.1181 ~ 1.1260 in)
"B" Face Width	IN.	2.26 mm (0.089 in)
	EX.	2.26 mm (0.089 in)
"C" Seat Limit Width	IN.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
"D" Margin Thickness Limit		
	IN.	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
	EX.	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
Stem Outside Diameter	IN.	5.975 ~ 5.990 mm (0.2352 ~ 0.2358 in)
	EX.	5.960 ~ 5.975 mm (0.2346 ~ 0.2352 in)
Guide Inside Diameter	IN.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)
	EX.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 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 		
Valve Seat Width Standard	IN.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
Valve Spring:		
Free Length		
Inner Spring	IN.	35.5 mm (1.40 in)
	EX.	35.5 mm (1.40 in)
Outer Spring	IN.	37.2 mm (1.46 in)
	EX.	37.2 mm (1.46 in)
Compressed Length (Valve Closed)		
Inner Spring	IN.	30.5 mm (1.20 in)
	EX.	30.5 mm (1.20 in)
Outer Spring	IN.	32.0 mm (1.26 in)
	EX.	32.0 mm (1.26 in)

Model		YTM225DRN
Tilt Limit*:		
Inner Spring	IN. & EX.	2.5° or 1.6 mm (0.063 in)
Outer Spring	IN. & EX.	2.5° or 1.6 mm (0.063 in)
		
Direction of Winding (Top view)		IN:  EX: 
Piston:		
Piston Size/Measuring Point* 		69.935 ~ 69.985 mm (2.7533 ~ 2.7553 in)/ 4 mm (0.157 in) (From bottom line of piston skirt)
Piston Clearance		0.035 ~ 0.055 mm (0.0014 ~ 0.0022 in)
Piston Ring:		
Sectional Sketch 	Top Ring	Plain B = 1.2 mm (0.0472 in) T = 2.8 mm (0.1102 in)
	2nd Ring	Plain B = 1.2 mm (0.0472 in) T = 2.8 mm (0.1102 in)
	Oil Ring	B = 2.5 mm (0.0984 in) T = 2.8 mm (0.1102 in)
End Gap (Installed)	Top Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
	2nd Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
	Oil Ring	0.3 ~ 0.9 mm (0.0118 ~ 0.0354 in)
Side Clearance	Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
	2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)

SPECIFICATIONS

Model	YTM225DRN
Crankshaft: 	
Crank Width "A"	55.95 ~ 56.00 mm (2.2028 ~ 2.2047 in)
Big End Side Clearance "B"	0.35 ~ 0.65 mm (0.0138 ~ 0.0256 in)
Runout Limit "C1"	<0.02 mm (0.0008 in)>
"C2"	<0.06 mm (0.0024 in)>
Small End Free Play "F" <Limit>	<2.0 mm (0.08 in)>
Balancer Drive Method:	Gear
Primary Clutch:	
Shoe Thickness/Quantity	2.0 mm (0.079 in)/3
Wear Limit	1.5 mm (0.0591 in)
Secondary Clutch:	
Friction Plate Thickness/Quantity	3.0 mm (0.12 in)/5
Wear Limit	<2.8 mm (0.11 in)>
Clutch Plate Thickness/Quantiy	1.6 mm (0.06 in)/4
Warp Limit	<0.2 mm (0.008 in)>
Clutch Spring Free Length/Quantity	34.9 mm (1.37 in)/4
Clutch Release Method	Outer push
Clutch-In Revolution	1,850 ~ 2,150 r/min
Clutch-Stall Revolution	2,900 ~ 3,300 r/min
Transmission:	
Main Axle Deflection Limit	<0.08 mm (0.0031 in)>
Drive Axe Deflection Limit	<0.08 mm (0.0031 in)>
Shifter:	
Shifter Type	Guide bar
Decompression Device	
Type	Manual
Air Filter Oil Grade (Oiled Filter)	Foam-air-filter oil or SAE 10W30 type SE motor oil

Model		YTM225DRN
Carburetor:		
· Type/Manufacturer/Quantity		VM22/MIKUNI/1
I.D.Mark		29U01
Main Jet	(M.J.)	#112.5
Main Air Jet	(M.A.J.)	ø1.6
Jet Needle-clip Position	(J.N.)	5L10-3
Needle Jet	(N.J.)	N-8
Cutaway	(C.A.)	#3.5
Pilot Jet	(P.J.)	#20
Pilot Air jet	(P.A.J.)	#60
Pilot Screw	(P.S.)	1 and 1/2
Valve Seat	(V.S.)	ø1.8
Starter Jet	(G.S.)	ø80
Fuel Level	(F.L.)	3.0±1.0 mm (0.12±0.04 in)
Float Height	(F.H.)	21.5±0.5 mm (0.85±0.02 in)
Engine Idling Speed		1,400±50 r/min
Lubrication System:		
Oil Filter Type		Wire mesh
Oil Pump Type		Trochoid pump
Tip Clearance		0.15 mm (0.0059 in)
Side Clearance		0.04~0.09 mm (0.0016~0.0035 in)
Bypass Valve Setting Pressure		78.46~117.68 kPa (0.8~1.2 kg/cm^2, 11.376~17.064 psi)
Middle Gear Lash	Forward	0.1~0.2 mm (0.004~0.008 in)
	Reverse	0.1~0.25 mm (0.004~0.01 in)
Final Gear Lash		0.1~0.2 mm (0.004~0.008 in)

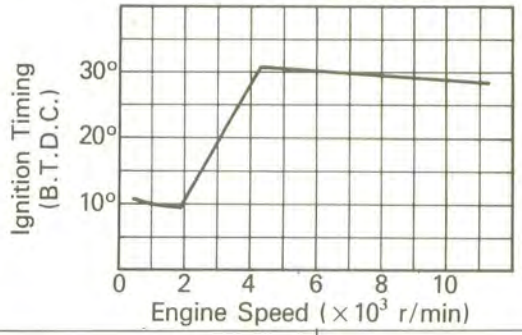
B. Chassis

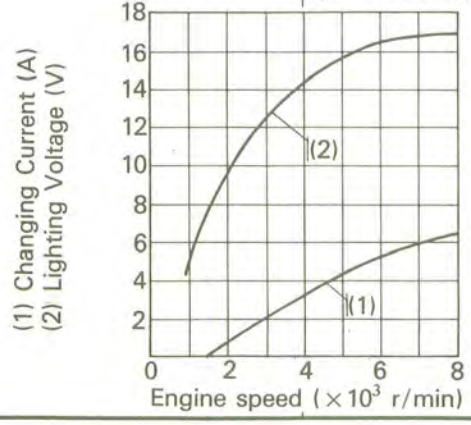
Model		YTM225DRN
Steering System:		
Steering Bearing Type		Ball Bearing
No./Size of Steel Balls	Upper	19 pcs/1/4 in
	Lower	19 pcs/1/4 in
Front Suspension:		
Front Fork Travel		130 mm (5.12 in)
Fork Spring Free Length		506.1 mm (19.93 in)
<Limit>		<501.1 mm (19.73 in)>
Spring Rate/Stroke		K_1 = 6.86 N/mm (0.7 kg/mm, 39.2 lb/in)/ 0 ~ 80 mm (0 ~ 3.15 in)
		K_2 = 7.56 N/mm (0.771 kg/mm, 43.2 lb/in)/ 80 ~ 150 mm (3.15 ~ 5.91 in)
Optional Spring		No.
Oil Capacity or		117 cm^3 (4.12 Imp oz, 3.96 US oz)
Oil Level		419.6 mm (16.5 in) (From top of inner tube fully compressed without spring.)
Oil Grade		Yamaha fork oil 10 wt or equivalent
Rear Suspension:		
Shock Absorber Travel		55 mm (2.17 in)
Spring Free Length		201 mm (7.91 in)
Fitting Length		196 mm (7.72 in)
Spring Rate/Stroke		K_1 = 98 Nm (10 kg/mm, 559 lb/in)/ 0 ~ 50 mm (0 ~ 1.97 in)
		K_2 = 191 Nm (19.5 kg/mm, 1,092 lb/in)/ 50 ~ 70 mm (1.97 ~ 2.76 in)
Optional Spring		No.
Wheel:		
Front Wheel Type		Disc Wheel
Rear Wheel Type		Disc Wheel
Front Rim Size/Material		8.25 × 8/Steel
Rear Rim Size/Material		8.25 × 8/Steel
Rim Runout Limit	Vertical	<2.0 mm (0.08 in)>
	Lateral	<2.0 mm (0.08 in)>
Drum Brake:		
Type	Front	Leading and trailing
Drum inside Dia		
<Limit>		110 mm (4.33 in) <111 mm (4.37 in)>
Lining Thickness		
<Limit>		4.0 mm (0.16 in) <2.0 mm (0.08 in)>
Shoe Spring Free Length	Front	34.5 mm (1.36 in)

Model		YTM225DRN
Disc Brake:		
Type	Rear	Single disc
Outside Dia × Thickness		224 × 4 mm (8.82 × 0.16 in)
Pad Thickness		
<Limit>	Inner	8.0 mm (0.31 in) <2.0 mm (0.0787 in)>
	Outer	8.0 mm (0.31 in) <2.0 mm (0.0787 in)>
Brake Lever & Brake Pedal:		
Rear:		
Brake Lever Free Play		<10 mm (0.4 in)> at level pivot
Brake Pedal Free Play		<50 mm (2.0 in)>
Brake Pedal Height		5 mm (0.2 in) below the footrest top end
Front:		
Brake Lever Free Play		5 ~ 8 mm (0.2 ~ 0.31 in) at lever pivot

C. Electrical

Model	YTM225DRN
Voltage	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	10° at 1,000 r/min
Advanced Timing (B.T.D.C.)	30° at 6,000 r/min
Advancer Type	Electrical
C.D.I.:	
Magneto-Model/Manufacturer	F3T16471/MITSUBISHI
Pickup Coil Resistance (Color)	196Ω ± 10% at 20°C (68°F) (W/R—W/G)
Charging Coil Resistance (Color)	381Ω ± 10% at 20°C (68°F) (Br—B)
C.D.I. Unit-Model/Manufacturer	F8T07272/MITSUBISHI
Ignition Coil:	
Model/Manufacturer	F6T59072/MITSUBISHI
Minimum Spark Gap	6 mm (0.24 in)
Primary Winding Resistance	0.85Ω ± 15% at 20°C (68°F)
Secondary Winding Resistance	5.9KΩ ± 15% at 20°C (68°F)
Charging System/Type	Flywheel magneto
F.W. Magneto:	
Charging Current	1.8A or more at 3,000 r/min 4.5A or less at 8,000 r/min
Charging Coil Resistance (Color)	0.4Ω ± 10% at 20°C (68°F) (W—Ground)
Lighting Voltage	11.3V or more at 3,000 r/min 14V or more at 8,000 r/min
Lighting Coil Resistance (Color)	0.34Ω ± 10% at 20°C (68°F) (Y—Ground)



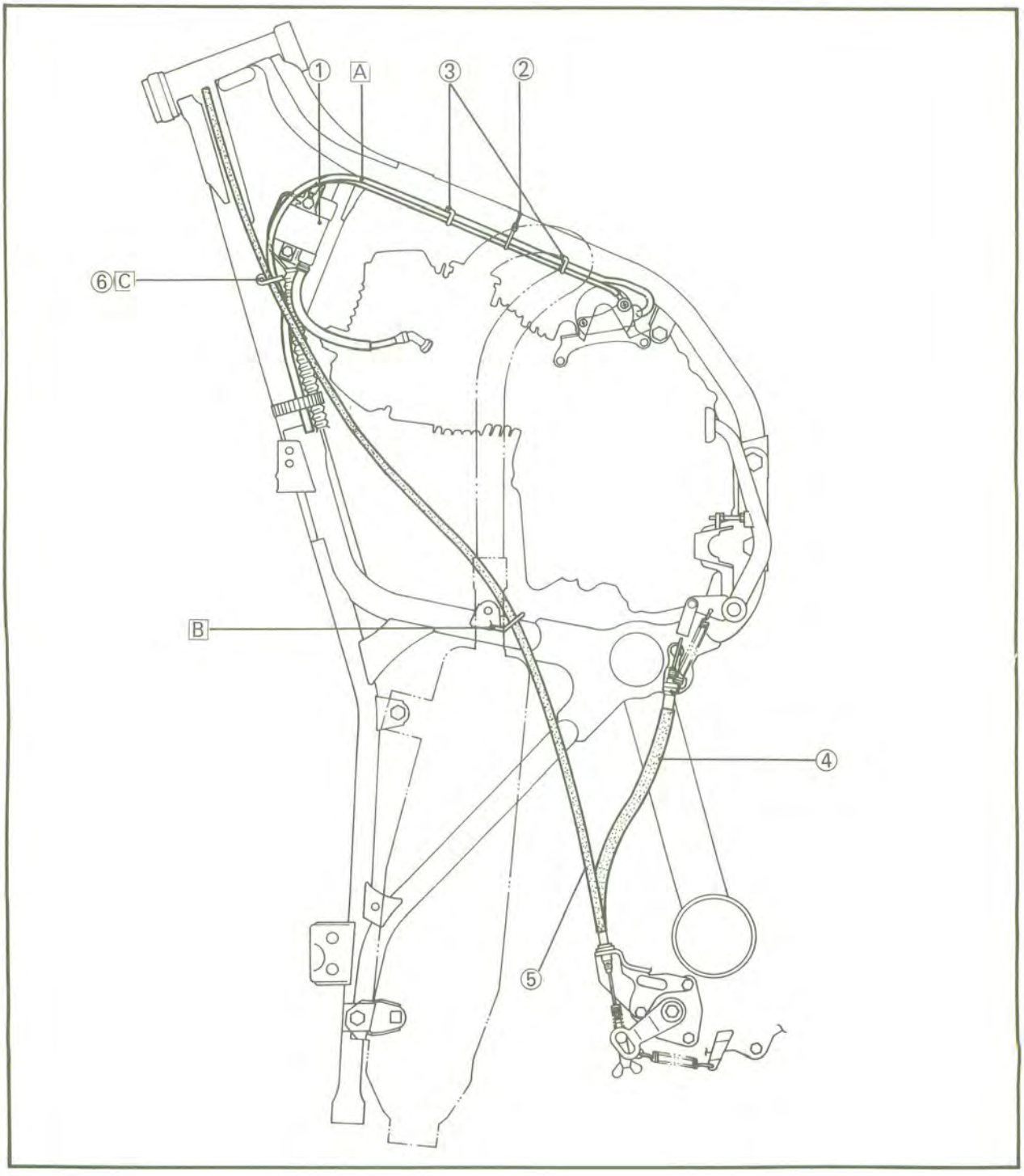


Model	YTM225DRN
Voltage Regulator:	
-Type	Short circuit type
-Model/Manufacture	EHU-01TR12/MATSUSHITA
-No Load Regulated Voltage	12~16.5V
Rectifier:	
-Model/Manufacturer	SU230Y/STANLEY
-Capacity	5A
-Withstand Voltage	120V
Battery:	
Capacity	12V 14AH
Specific Gravity	1.28
Electric Starter System:	
Type	Constant mesh type
Starter Motor-Model/Manufacturer	SM-7252/MITSUBA
-Out put	0.4kW
Armature Coil Resistance	0.023Ω±20% at 20°C (68°F)
Brush-Overall Length	10.5 mm (0.413 in)
<Limit>	<5.0 mm (0.197 in)>
-Spring Pressure	400~600 g (14~23 oz)
Commutator Dia.	23 mm (0.906 in)
<Wear Limit>	<22 mm (0.866 in)>
-Mica Undercut	0.55 mm (0.022 in)
Starter Relay	
Model/Manufacturer	A104/HITACHI
Amperage Rating	150A
Coil Winding Resistance (Color)	3.4Ω±5% at 20°C (68°F) (R/W—L/W)
Starting Circuit Cut off Relay:	
Model/Manufacturer	ACA12/MATUSHITA
Coil Winding Resistance	80Ω±10% at 20°C (68°F)
Color Code	None
Diode	No
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit/Quantity	
Main	10A×1
Reserve	10A×1

CABLE ROUTING (1)

① Ignition coil
② Band
③ Clamp
④ Rear brake cable (Footrest)
⑤ Rear brake cable (Hand)
⑥ Clamp:

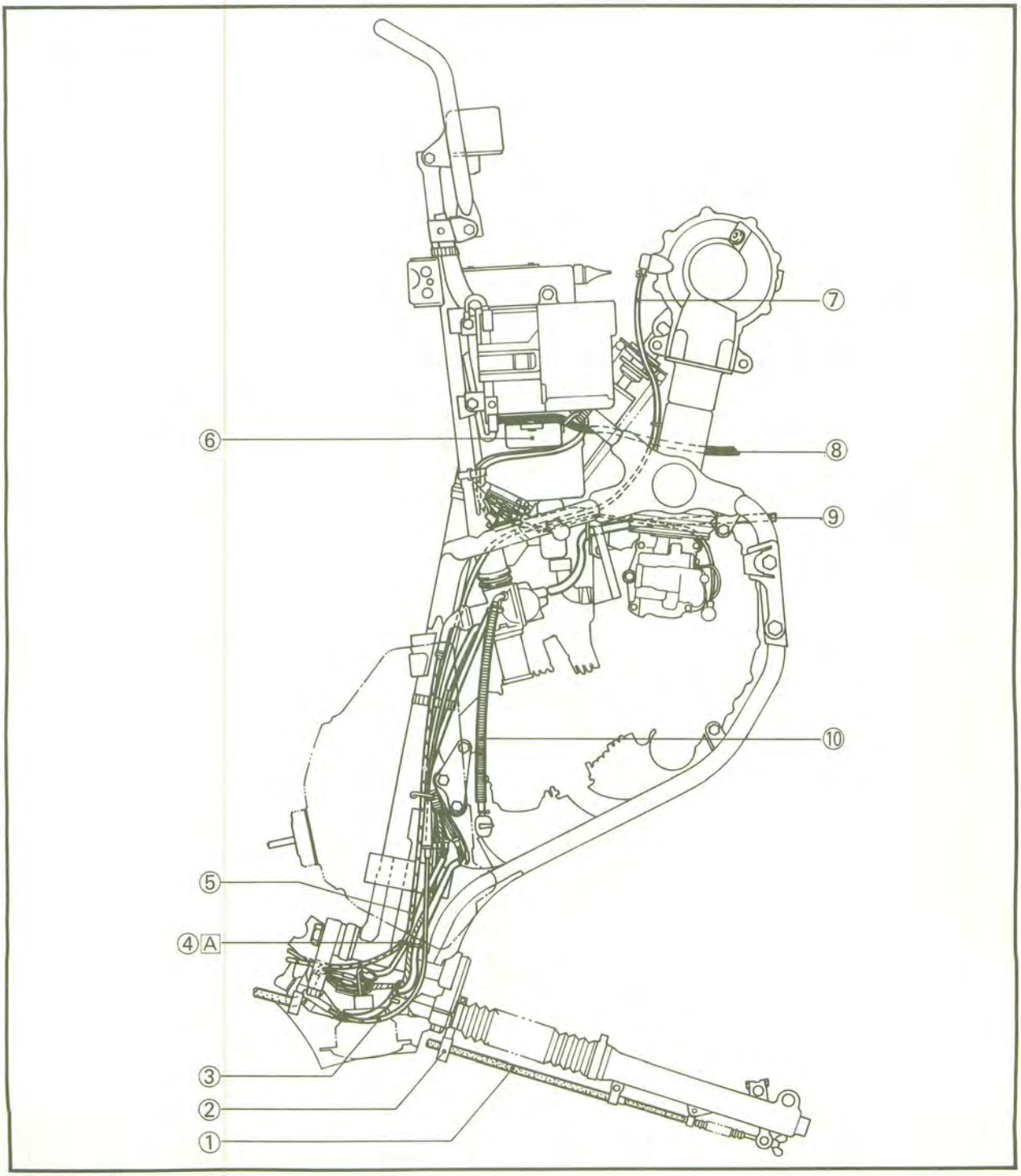
Ⓐ Pass the starter motor lead over the ignition coil.
Ⓑ Clamp the rear brake cable (Hand).
Ⓒ Pass the rear brake cable over the starter motor lead.



CABLE ROUTING (2)

① Front brake cable
② Cable holder
③ Starter cable
④ Clamp:
⑤ Throttle cable
⑥ C.D.I. unit
⑦ Rear gear case breather pipe
⑧ Battery breather pipe
⑨ Carburetor overflow pipe
⑩ Fuel pipe

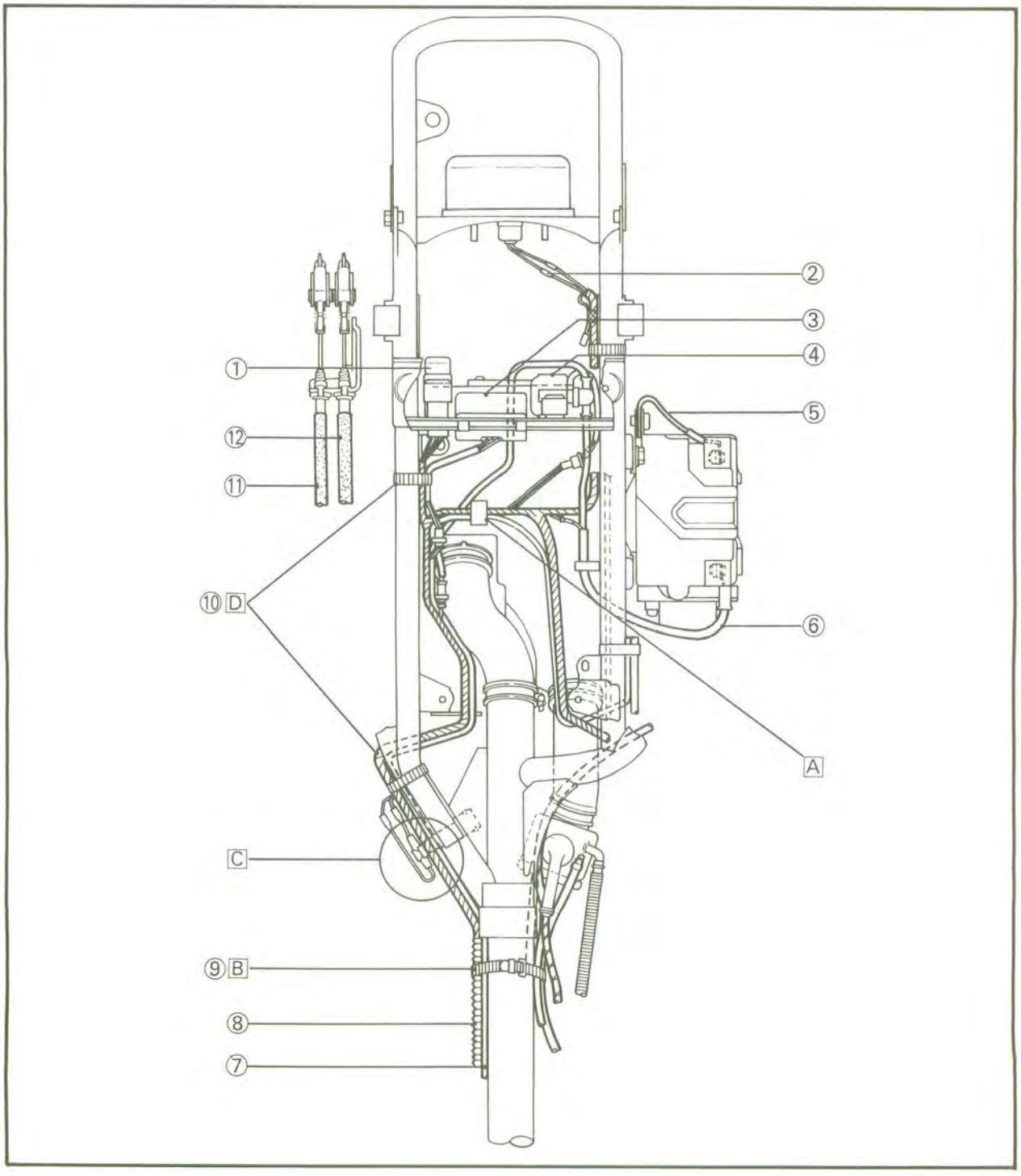
Ⓐ Do not pass the starter cable.



CABLE ROUTING (3)

① Starting circuit cut-off relay
② Taillight lead
③ Rectifier/regulator
④ Starter switch
⑤ Battery negative (−) lead
⑥ Battery positive (+) lead
⑦ Starter motor lead
⑧ Wire harness
⑨ Band:
⑩ Band:
⑪ Rear brake cable (Hand)
⑫ Rear brake cable (Footrest)

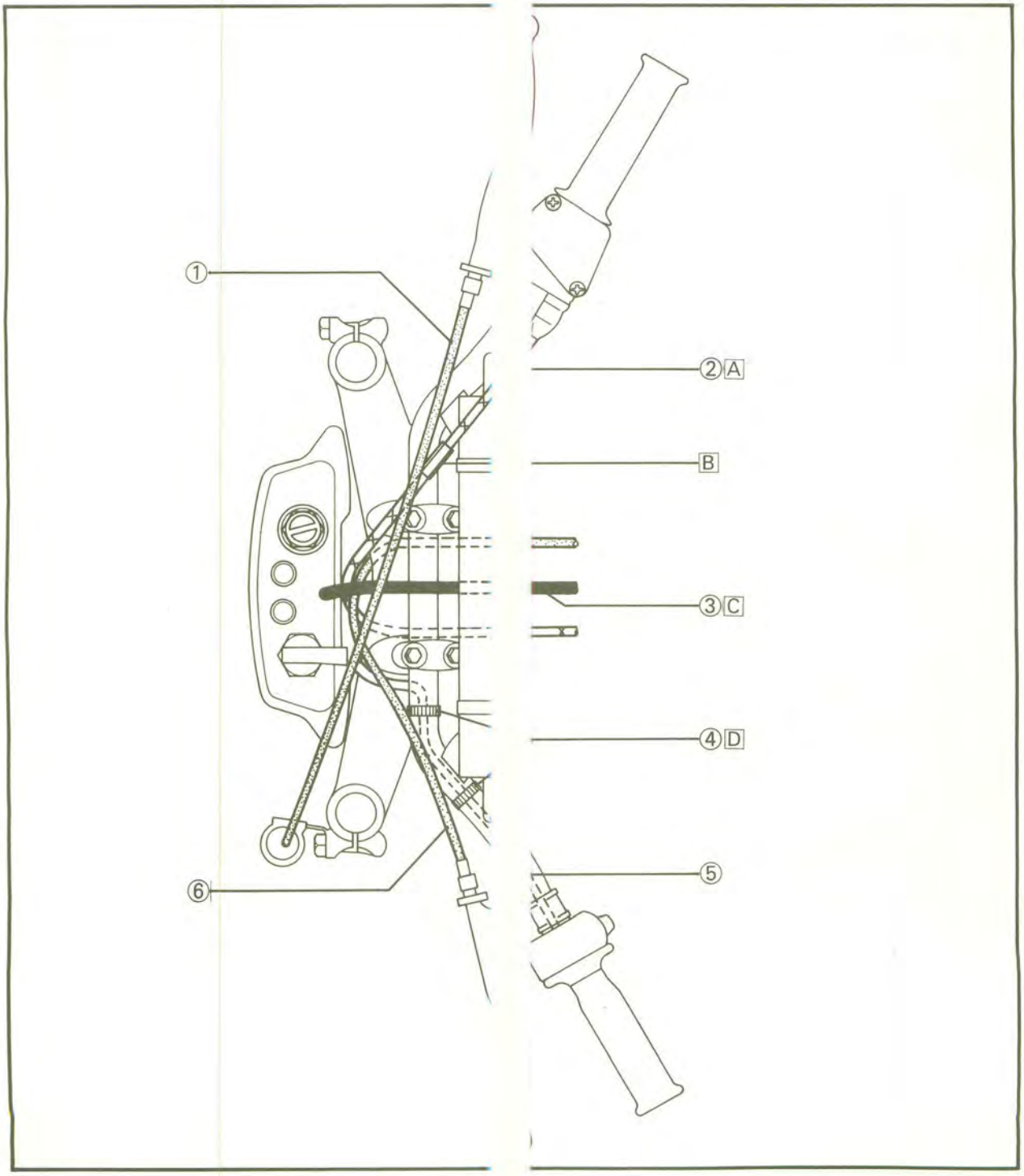
[A] Clamp the wire harness and leads.
[B] Secure the wire harness, starter motor lead, air bleed pipe and the final gear case breather pipe. Do not clogged the air bleed pipe and the final gear case breather pipe.
[C] Pass the wire harness and the starter motor lead over the fuse stay.
[D] Secure the wire harness and leads.



CABLE ROUTING (4)

① Front brake cable
② Throttle cable:
③ Breather pipe:
④ Band:
⑤ Handlebar switch lead
⑥ Rear brake cable (Hand)

A Route over the handlebar protector and under the front brake cable.
B Cover so that both caps contact each other.
C Pass under the handlebar protector.
D Secure lead only.

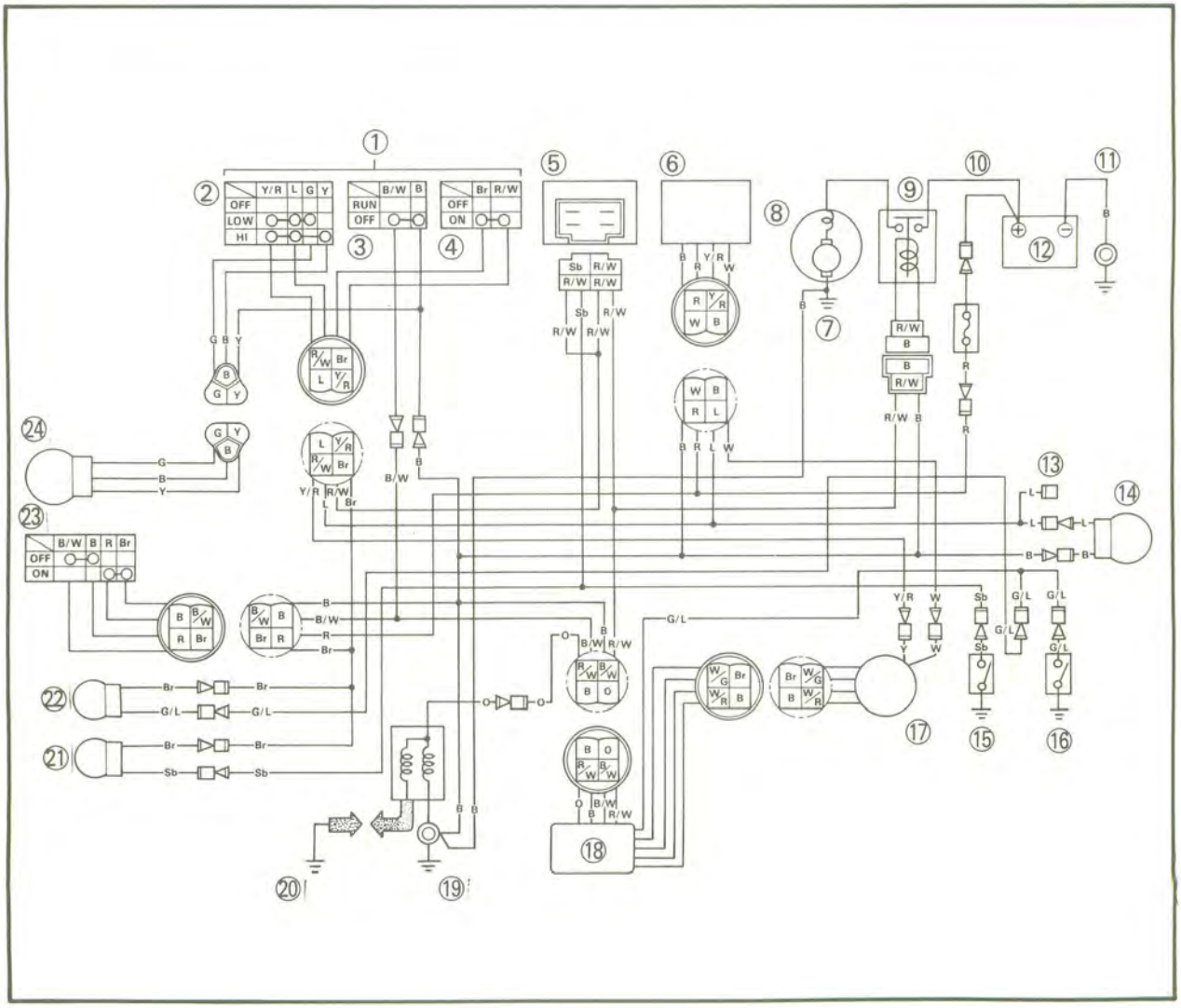


WIRING DIARAM

① Handlebar switch
② "LIGHT" Dimmer switch
③ "ENGINE STOP" switch
④ "START" switch
⑤ Starting circuit cut-off relay
⑥ Rectifier/Regulator
⑦ Engine earth
⑧ Starter motor
⑨ Starter switch
⑩ Fuse
⑪ Body earth
⑫ Battery
⑬ Flaglight
⑭ Taillight
⑮ Reverse switch
⑯ Neutral switch
⑰ C.D.I. magneto
⑱ C.D.I. unit
⑲ Body earth
⑳ Ignition coil
㉑ Neutral indicator light
㉒ Reverse indicator light
㉓ Main switch
㉔ Headlight

COLOR CODE

B.....Black
O.....Orange
L.....Blue
R.....Red
G.....Green
Y.....Yellow
W.....White
Sb.....Skyblue
Br.....Brown
Y/R.....Yellow/Red
R/W.....Red/White
W/R.....White/Red
W/G.....White/Green
B/W.....Black/White
G/L.....Green/Blue



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gĕn·ū·ĭne

adj. 1. Real 2. Authentic, not artificial 3. Yamaha.

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IWATA, JAPAN

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YAMAHA

YTM200ERN

ERN

Supplementary Service Manual

LIT-11616-04-14

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the YTM200ERN. For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with following manual:

YTM200EK Service Manual 24W-28197-10

OVERSEAS SERVICE
OVERSEAS OPERATIONS
YAMAHA MOTOR CO., LTD.

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.

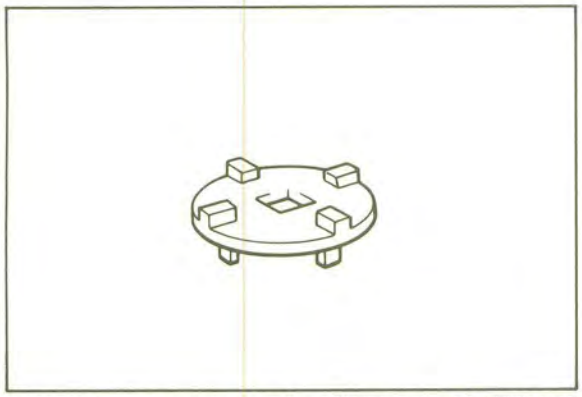
NOTICE

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 knowladge, 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 manufctured 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.

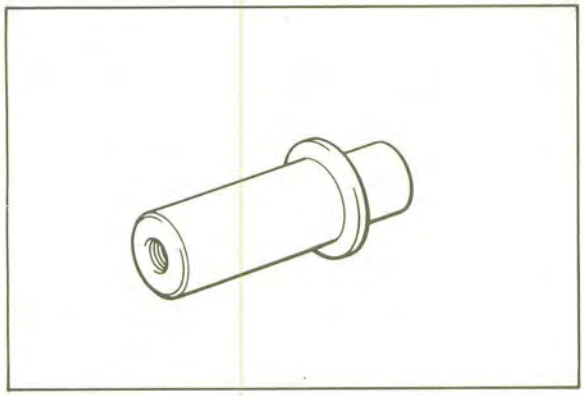
SPECIAL TOOLS

1. Ring nut wrench
   YM-1391



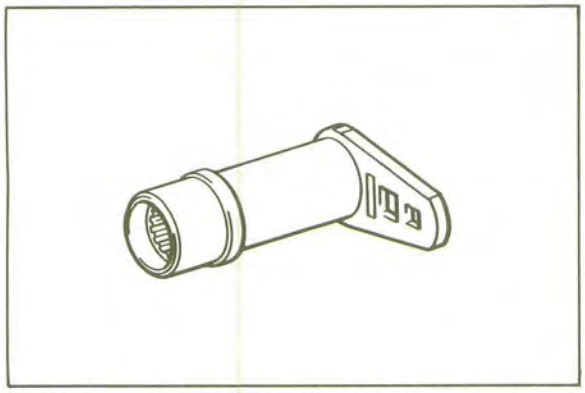
This tool is used to remove and install the ring nuts which hold the bearing in the middle gear housing.

2. Middle gear backlash tool
   YM-1392



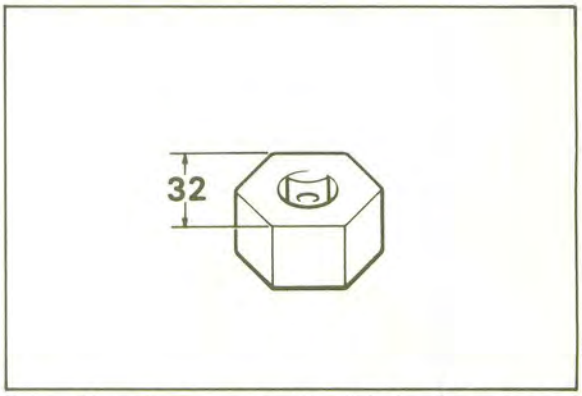
This tool is used to measure the middle gear backlash.

3. Coupling gear holder
   YM-1393



This tool is used to hold the coupling gear when removing and installing the middle pinion nut.

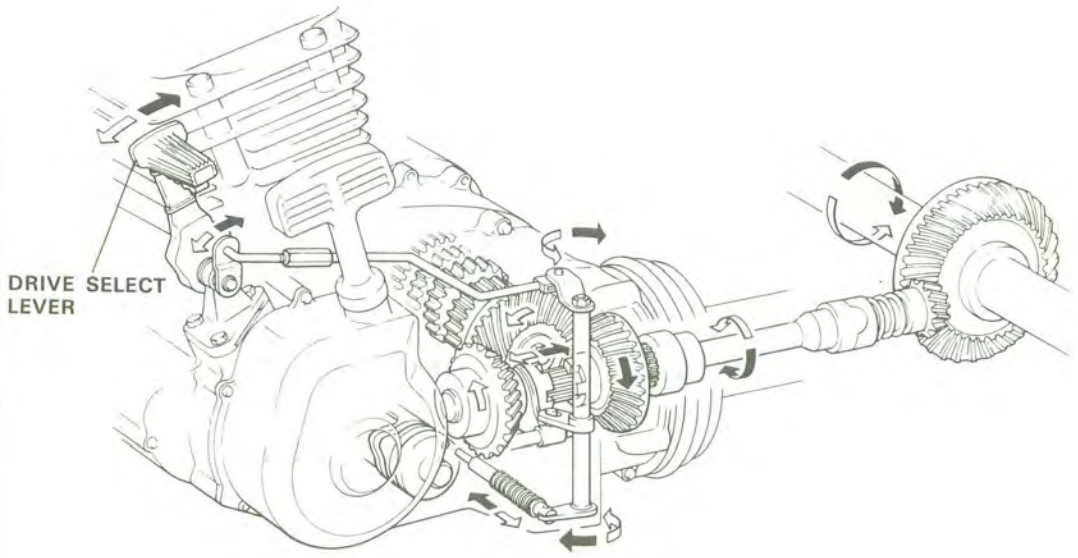
4. Bearing retainer wrench
   YM-33289



This tool is used to remove and install the bearing retainer nut in the middle gear housing.

NEW SERVICE

REVERSE SYSTEM



POWER FLOW

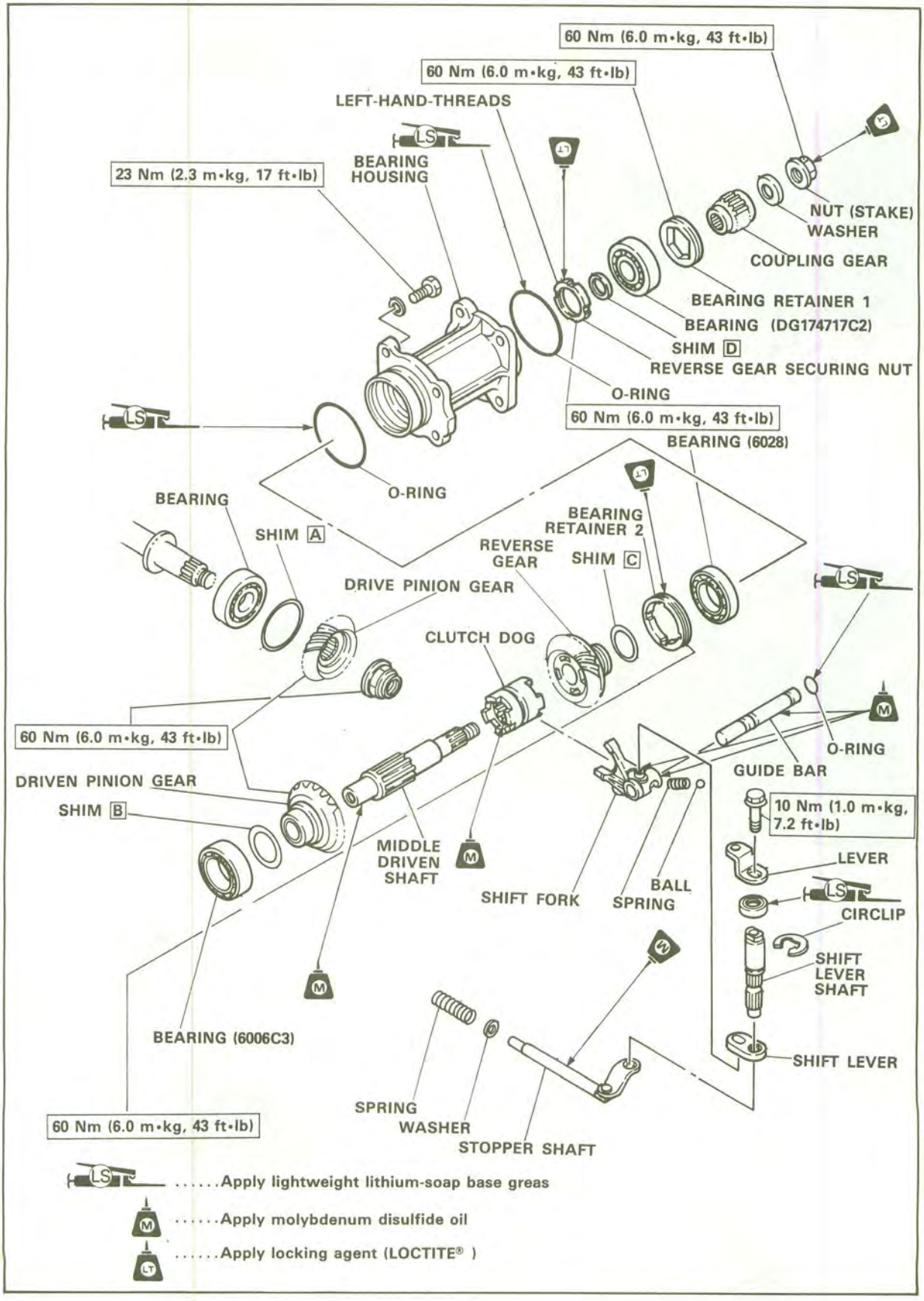
REVERSE

FORWARD

A. Mechanism
Basicaly added a dog clutch and reverse gear to the middle gear case on YTM200E. This is similar to outboat reverse gear mechanism.

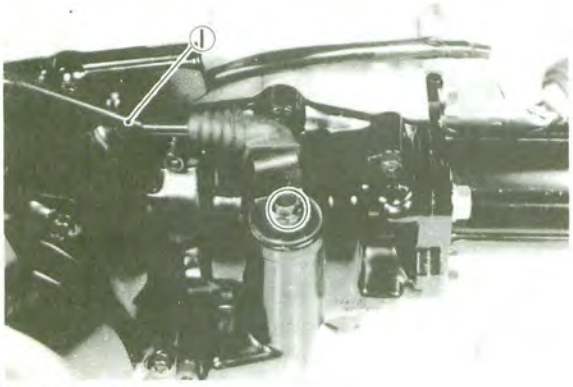
B. Transmission
Forward . . . . . 5 speeds
Reverse . . . . . 1st speed only

MIDDLE GEAR


60 Nm (6.0 m•kg, 43 ft•lb)
60 Nm (6.0 m•kg, 43 ft•lb)
LEFT-HAND-THREADS
BEARING HOUSING
23 Nm (2.3 m•kg, 17 ft•lb)
NUT (STAKE)
WASHER
COUPLING GEAR
BEARING RETAINER 1
BEARING (DG174717C2)
SHIM D
REVERSE GEAR SECURING NUT
O-RING
60 Nm (6.0 m•kg, 43 ft•lb)
BEARING (6028)
O-RING
BEARING
SHIM A
BEARING RETAINER 2
REVERSE GEAR
SHIM C
DRIVE PINION GEAR
CLUTCH DOG
60 Nm (6.0 m•kg, 43 ft•lb)
O-RING
GUIDE BAR
DRIVEN PINION GEAR
SHIM B
10 Nm (1.0 m•kg, 7.2 ft•lb)
LEVER
MIDDLE DRIVEN SHAFT
SHIFT FORK
BALL
SPRING
CIRCLIP
SHIFT LEVER SHAFT
BEARING (6006C3)
SHIFT LEVER
SPRING
WASHER
STOPPER SHAFT
60 Nm (6.0 m•kg, 43 ft•lb)
.....Apply lightweight lithium-soap base greas
.....Apply molybdenum disulfide oil
.....Apply locking agent (LOCTITE®)

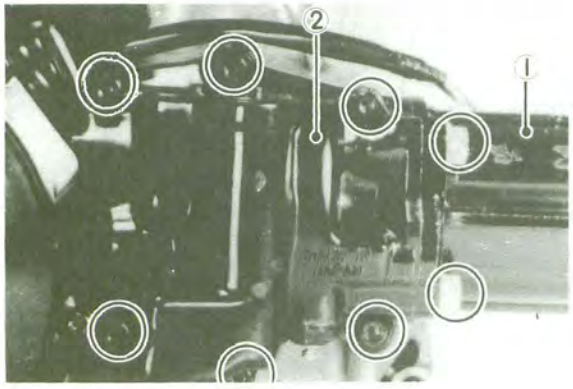
Disassembly

1. Remove the drive selector rod, recoil starter assembly and crankcase cover (L).



① Drive selector rod

2. Remove the bearing housing securing bolts and middle gear case cover securing bolts.
   Remove the middle drive shaft assembly.



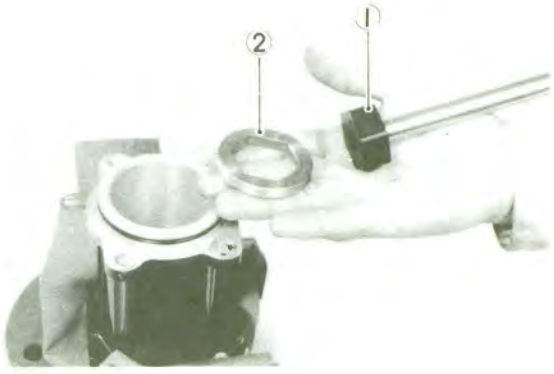
① Bearing housing
② Middle gear case cover

3. Using special tool, remove the coupling gear securing nut, washer, coupling gear and middle driven shaft sub-assy from housing.

① Special tool

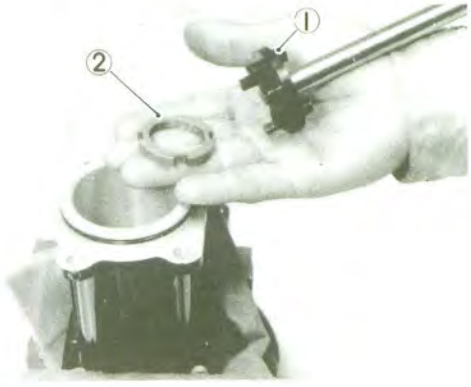
① Nut
② Washer
③ Coupling gear
④ Middle driven shaft sub-assy

4. Using special tool, remove the bearing retainer nut 1, bearing and shim [D].



① Special tool
② Nut

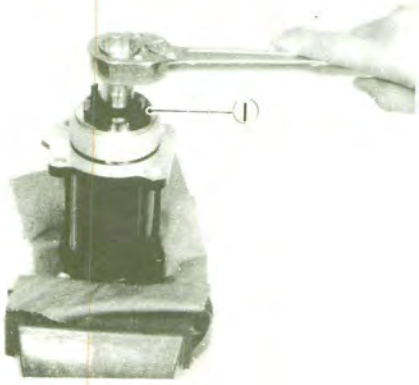
5. Using special tool, remove the reverse gear securing nut [Left-hand-Threads], shim [C] and reverse gear.



① Special tool
② Nut

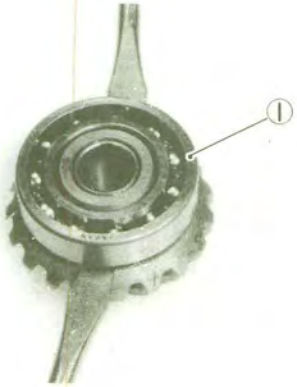
① Shim C
② Reverse gear

6. Using special tool, remove the bearing retainer nut 2 and bearing.



① Special tool

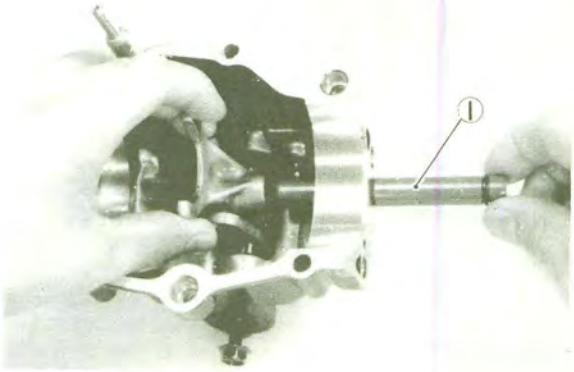
7. Driven pinion gear bearing can easilly removed as shown.



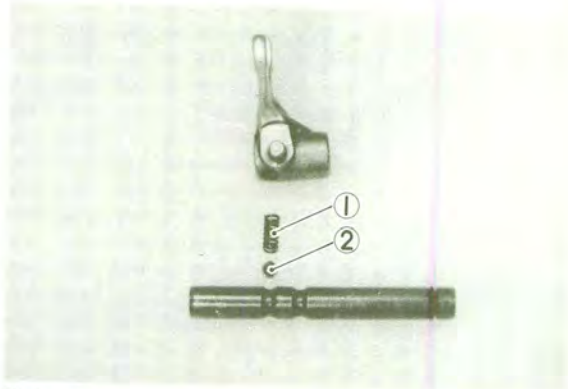
① Bearing

① Shim B

8. Remove the shift fork guide bar and the shift fork. At this time, take care not to lose the stopper spring and ball in the shift fork.

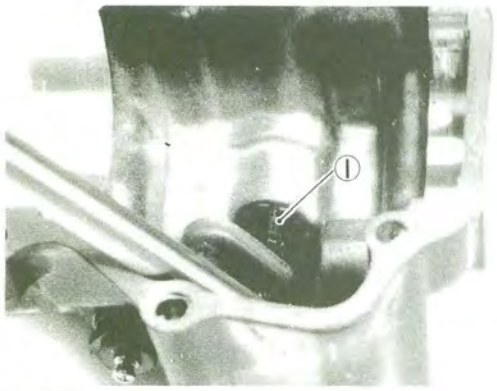


① Shift fork guide bar



① Spring
② Ball

9. Remove the circlip and then pull out the shift lever shaft.

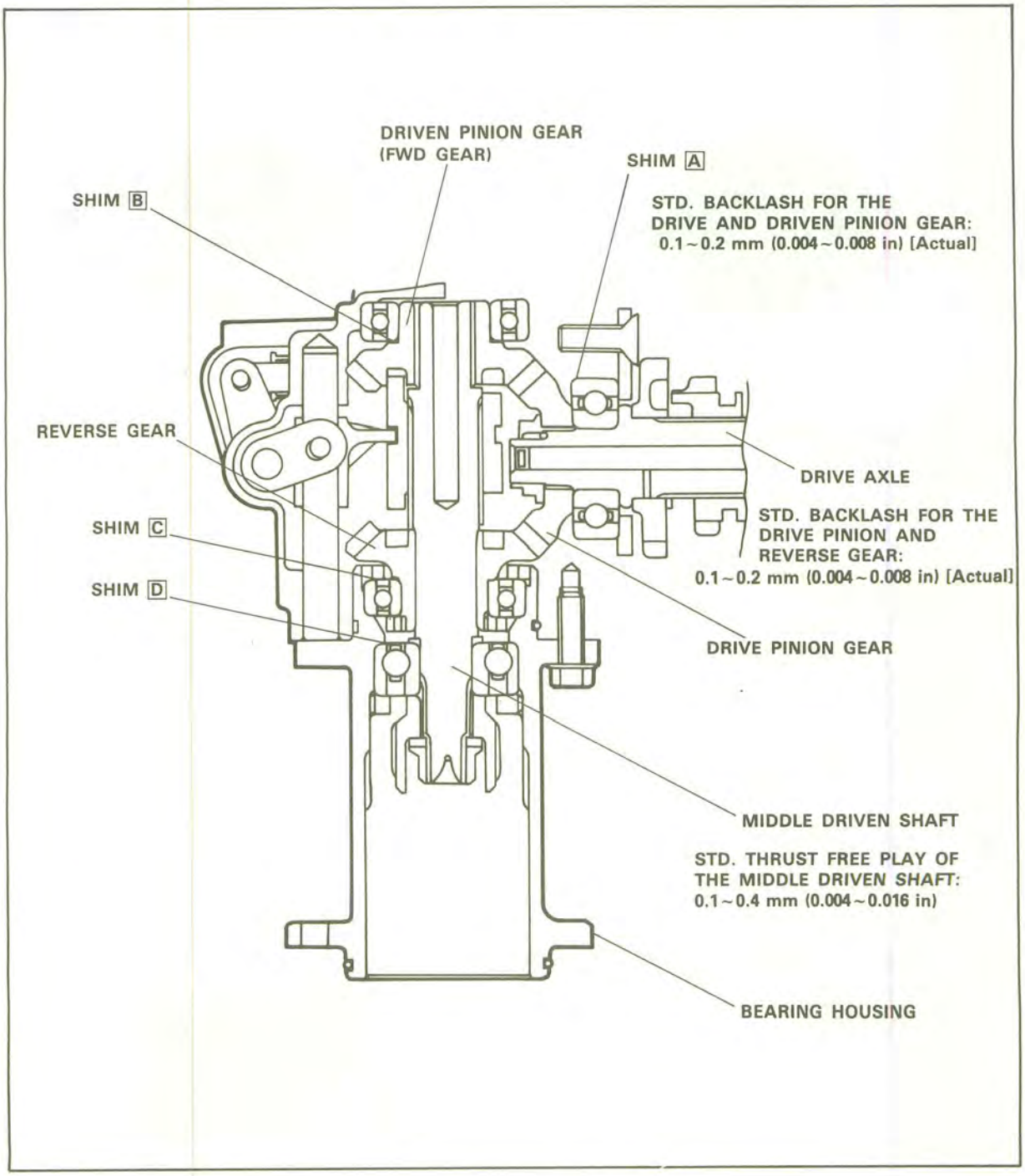


① Circlip

① Shift lever shaft
② Shift lever
③ Stopper lever

Gears Positioning

When the crankcase and/or the drive axle are replaced, you must position the drive pinion gear [Shim A], driven pinion gear [Shim B], reverse gear [Shim C] and middle driven gear [Shim D].



1. Calculate the shim thickness using the formula shown below.

   Shim A = a – b
   Shim B = c – d – e – f
   Shim C = d – g – h – i
   Shim D = j + c – e – Shim B – k – ℓ – 0.25

NOTE:

Adjust the shims in the sequence of A, B, C and D.

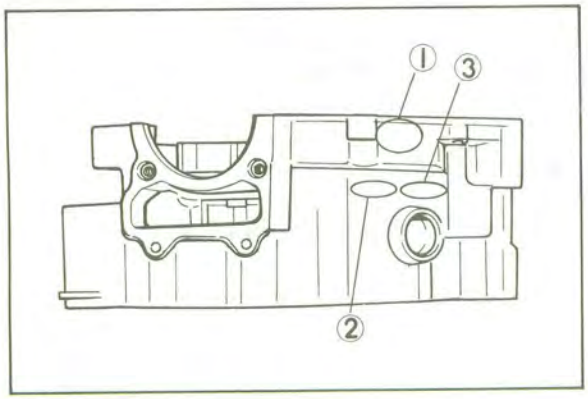
a = 42 plus or minus the number found on the drive pinion gear.
(ex) If number is "+02",
a = 42 + 0.02 = 42.02

① a

b = 41 plus the number found on the crankcase.
(ex) If number is "45",
b = 41 + 0.45 = 41.45

c = 110 plus or minus the number found on the crankcase.
(ex) If number is "45",
c = 110 + 0.45 = 110.45

d = 59 plus or minus the number found on the crankcase.
(ex) If number is "−02",
d = 59 − 0.02 = 58.98



① b
② c
③ d

e = 13.00 [Constant]

f = 37.5 plus or minus the number found on the driven pinion gear.
(ex) If number is "+02",
f = 37.5 + 0.02 = 37.52

① f

g = 7.5 plus or minus the number found on the bearing housing.
(ex) If number is "01",
g = 7.5 − 0.01 = 7.49

h = 12.00 [Constant]

i = 39 plus or minus the number found on the reverse gear.
(ex) If number is "−02",
i = 39 − 0.02 = 38.98

j = 1 plus or minus the number found on the bearing housing.
(ex) If number is "−03",
j = 1 − 0.03 = 0.97

① g
② i
③ j

k = 14.5 plus or minus the number found on the driven pinion gear.
(ex) If number is "−02",
k = 14.5 − 0.02 = 14.48

① k

l = 80.5 plus or minus the number found on the middle driven shaft.
(ex) If number is "+03",
l = 80.5 + 0.03 = 80.53

① ℓ

A = a − b = 42.02 − 41.45 = 0.57
B = c − d − e − f = 110.45 − 58.98 − 13.00 − 37.52 = 0.95
C = d − g − h − i = 58.98 − 7.49 − 12.00 − 38.98 = 0.51
D = j + c − e − Shim B* − k − ℓ − 0.25
= 0.97 + 110.45 − 13.00 − 0.95* − 14.48 + 80.53 − 0.25 = 2.21

*Use the rounded number (= actual shim thickness). See page 10.

2. Shims are supplied in the following thickness.
Shim A B C
0.15 mm (0.0059 in)
0.20 mm (0.0070 in)
0.30 mm (0.0118 in)
0.40 mm (0.0157 in)
0.50 mm (0.0197 in)

Shim D

1.0 mm (0.0394 in)	1.1 mm (0.0433 in)
1.2 mm (0.0472 in)	1.3 mm (0.0512 in)
1.4 mm (0.0551 in)	1.5 mm (0.0591 in)
1.6 mm (0.0630 in)	1.7 mm (0.0669 in)
1.8 mm (0.0709 in)	1.9 mm (0.0748 in)

3. Use the following chart to round off the hundredths digit of the calculated thickness and select the appropriate shims.

Shim [A], [B], [C]

Hundredths digit	Rounded value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

[EX]
[A] = 0.57 ⇒ 0.55 = 0.15 + 0.40
[B] = 0.95 ⇒ 0.95 = 0.15 + 0.40 + 0.40
[C] = 0.51 ⇒ 0.50 = 0.50

Shim [D]

Hundredths digit	Rounded value
0, 1, 2, 3, 4	0
5, 6, 7, 8, 9	10

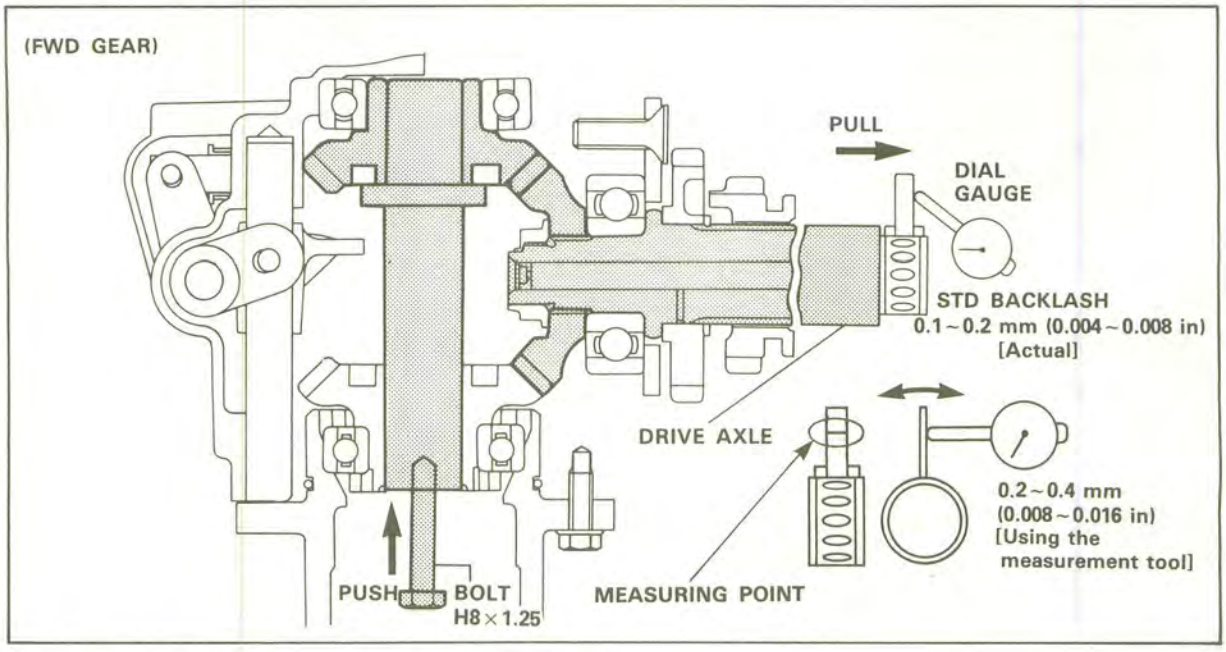
[EX]
[D] = 2.21 ⇒ 2.20 = 1.0 + 1.2

Backlash Measurement

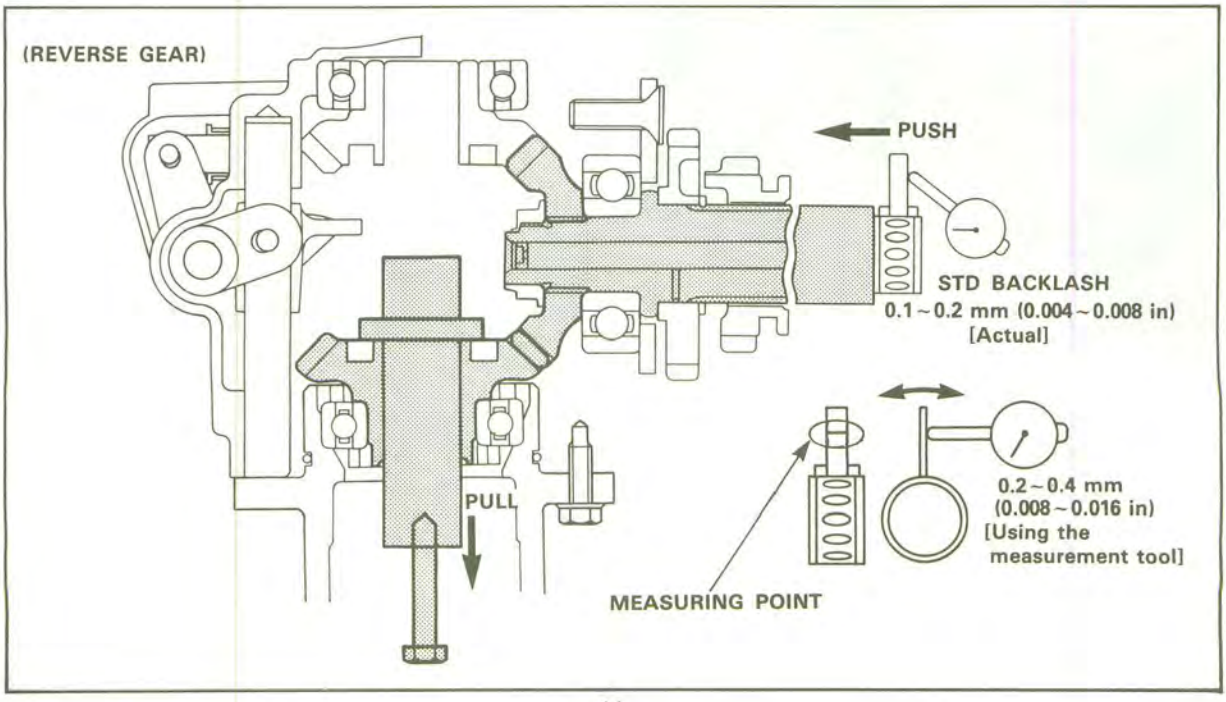
NOTE:

When measuring backlash, tighten all securing bolts (middle gear case cover, bearing housing) with specified torque.

1. While pushing the tool and pulling the drive axle, measure the backlash at the drive axle end.

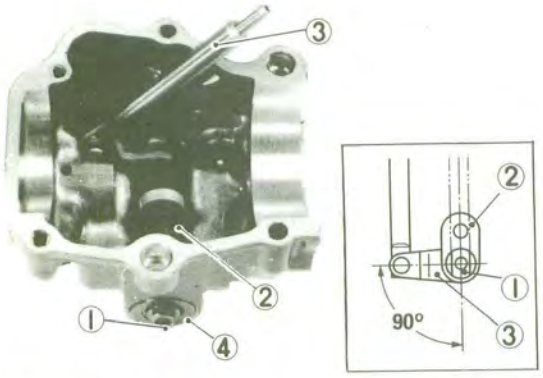


2. While pulling the tool and pushing the drive axle, measure the backlash at the drive axle end.



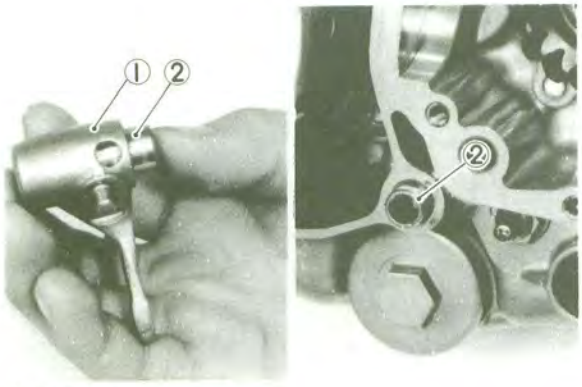
Assembly

1. Apply grease to the oil seal lips and insert the shift lever shaft into the cover. Then install the shift lever and stopper lever onto the shift lever shaft paying attention to the fitting angle as shown. Install the circlip.



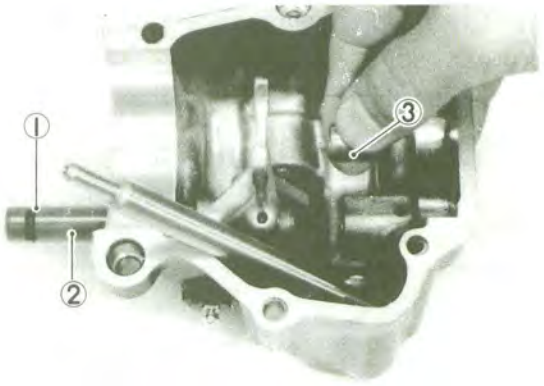
① Shift lever shaft
② Shift lever
③ Stopper lever
④ Oil seal

2. Apply molybdenum disulfide oil to the shift fork inner diameter and to the pin. Secure the spring and ball to the shift fork using the dowel knock pin of the middle driven gear case cover.



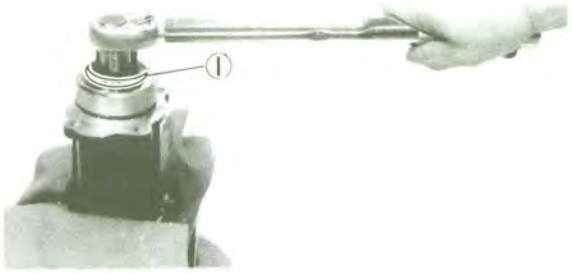
① Shift fork
② Dowel knock pin

3. Apply grease to the O-ring of the shift fork guide bar. Insert the shift fork guide bar into the cover and shift fork.



① O-ring
② Shift fork guide bar
③ Dowel knock pin

4. Install the bearing. Apply LOCTITE® to the nut threads and tighten with specified torque.



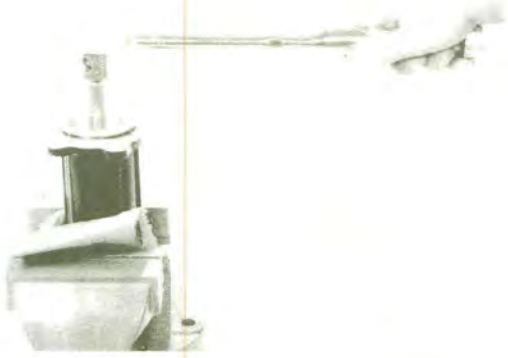
① Apply LOCTITE®

Tightening torque:
60 Nm (6.0 m•kg, 43 ft•lb)

5. Install the shim and reverse gear. Apply LOCTITE® to the reverse gear tightening nut and tighten with specified torque.

Tightening torque:
60 Nm (6.0 m•kg, 43 ft•lb)

6. Install shim(s), bearing and tighten the bearing retainer nut with specified torque.

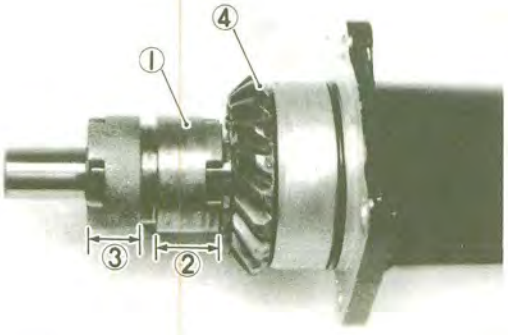


Tightening torque:
60 Nm (6.0 m•kg, 43 ft•lb)

7. Apply molybdenum disulfide oil to inside of the clutch dog. Taking care of its direction, install the clutch dog onto the middle drive shaft.

8. Install the middle drive shaft, coupling gear and washer. Then after applying LOCTITE®, tighten the nut with specified torque.

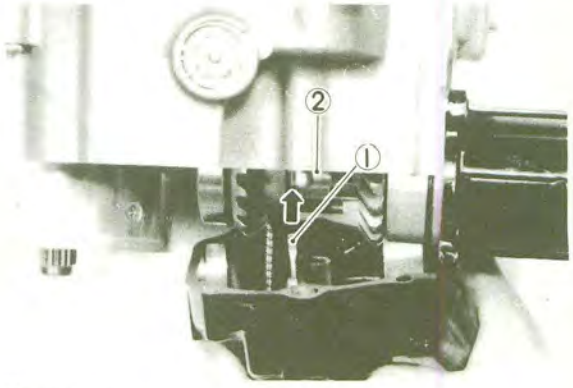
Tightening torque:
60 Nm (6.0 m•kg, 43 ft•lb)



① Clutch dog
② Longer
③ Shorter
④ Reverse gear

9. Install the middle drive shaft assembly to the crankcase and then onto the middle driven gear case cover assy. While doing this, make sure that groove.

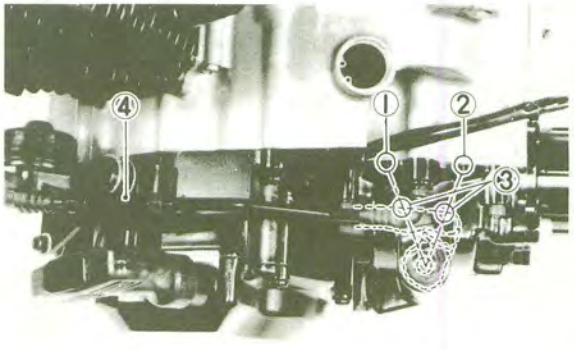
Middle driven gear case cover:
10 Nm (1.0 m•kg, 7.2 ft•lb)



① Shift fork
② Clutch dog

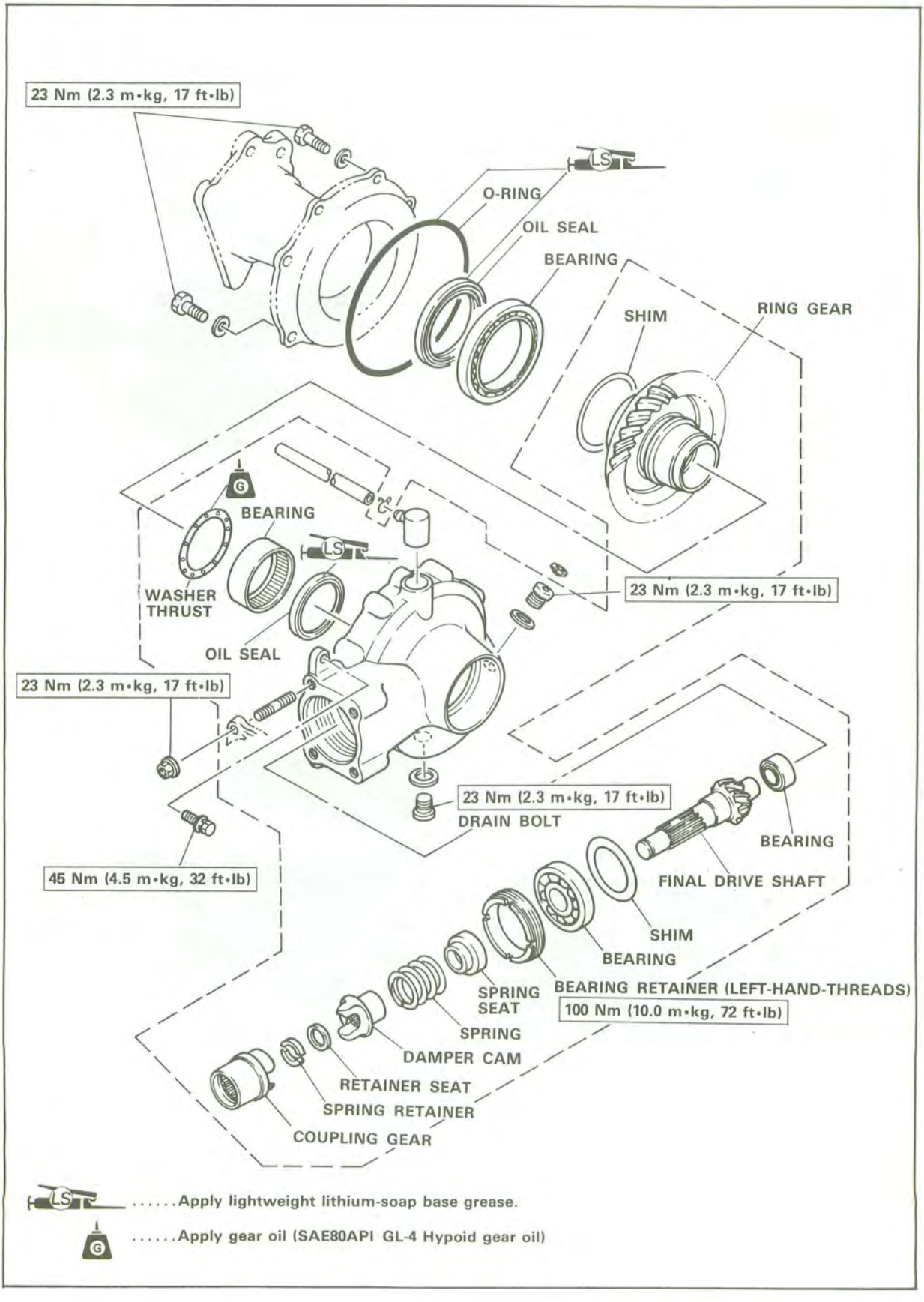
10. Install the selector rod. Align the match mark on the crankcase with the match mark on the lever cover.

Drive selector rod:
10 Nm (1.0 m•kg, 7.2 ft•lb)



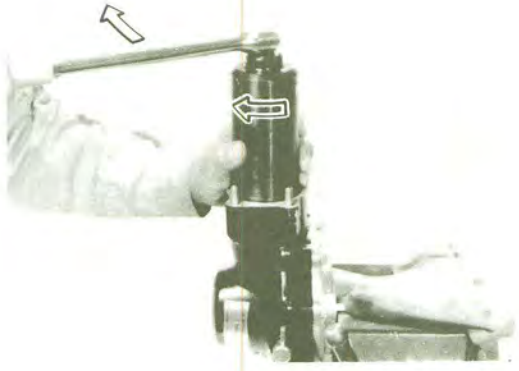
① Match mark (F.W.D.)
② Match mark (Reverse)
③ Match mark on the lever cover
④ Adjuster

DAMPER CAM


23 Nm (2.3 m•kg, 17 ft•lb)
O-RING
OIL SEAL
BEARING
SHIM
RING GEAR
BEARING
WASHER THRUST
OIL SEAL
23 Nm (2.3 m•kg, 17 ft•lb)
23 Nm (2.3 m•kg, 17 ft•lb)
23 Nm (2.3 m•kg, 17 ft•lb)
DRAIN BOLT
45 Nm (4.5 m•kg, 32 ft•lb)
BEARING
FINAL DRIVE SHAFT
SHIM
BEARING
BEARING RETAINER (LEFT-HAND-THREADS)
100 Nm (10.0 m•kg, 72 ft•lb)
SPRING SEAT
SPRING
DAMPER CAM
RETAINER SEAT
SPRING RETAINER
COUPLING GEAR
.....Apply lightweight lithium-soap base grease.
.....Apply gear oil (SAE80API GL-4 Hypoid gear oil)

Disassembly

1. Remove the bearing retainer nut (Left-Hand-Threads) with special tool, and damper cam assembly.

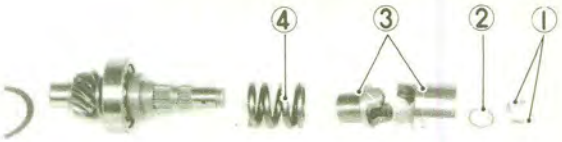


2. Place the damper cam assembly in a hydraulic press. Remove the spring retainers, retainer seat, damper cam and spring from final drive shaft.

① Hydraulic press

NOTE:

If the coupling gear is stiff, tap it with plastic hammer.

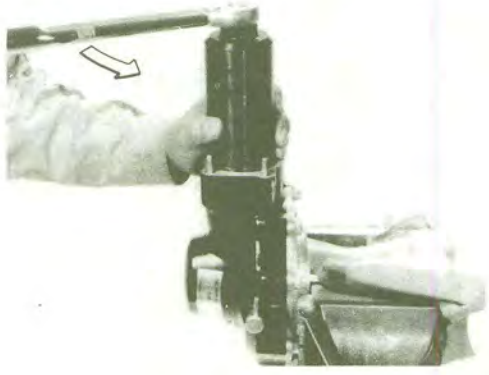


1. Spring retainer 2. Retainer seat
3. Damper cam 4. Spring

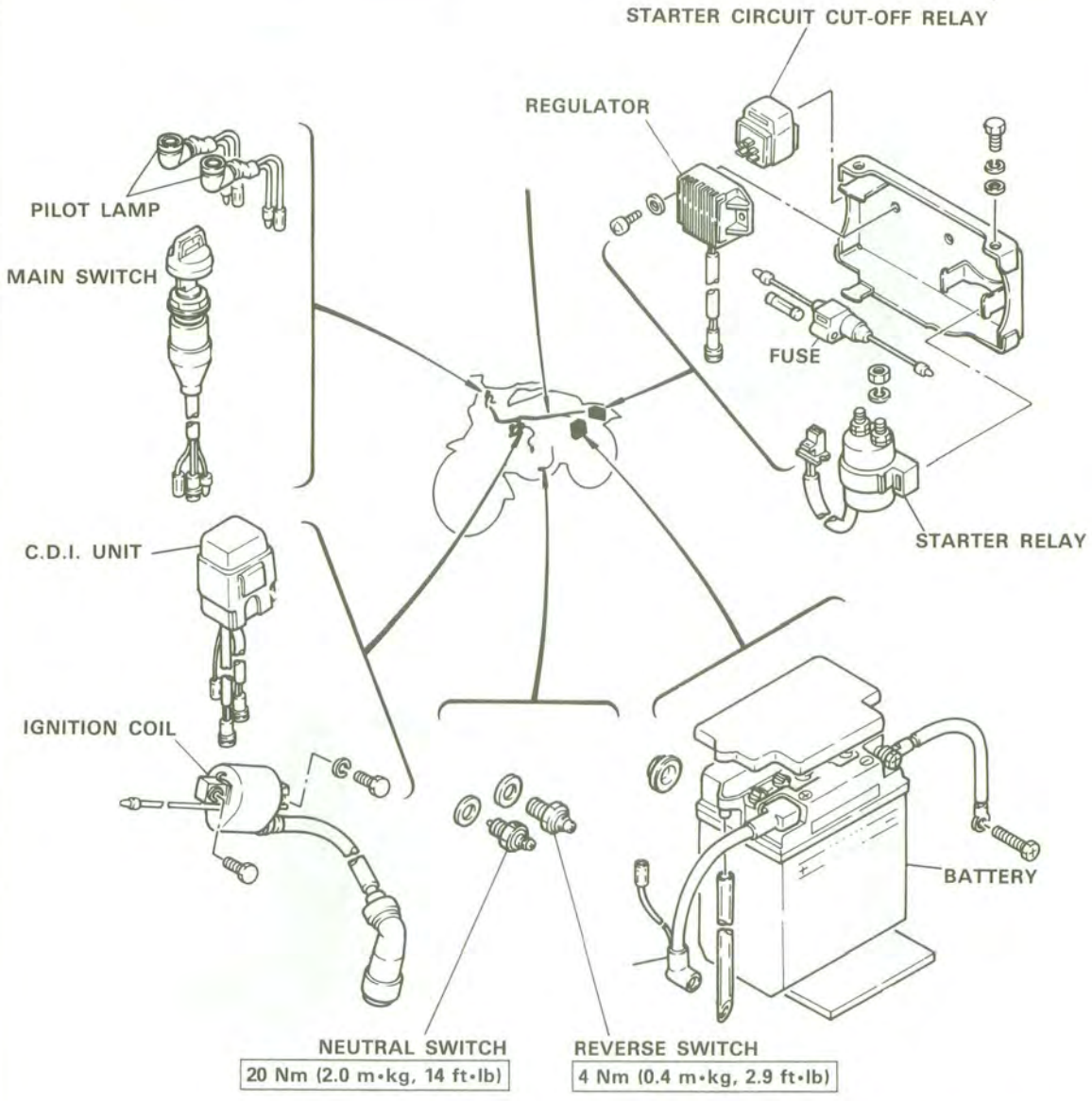
Assembly

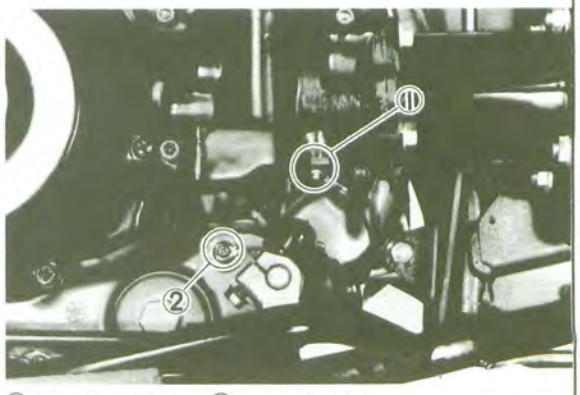
For assembly, reverse the disassembly procedure.
Tighten the bearing retainer nut (Lef-Hand-Threads) with specified torque.

Tightening torque:
100 Nm (10 m•kg, 72 ft•lb)



ELECTRICAL COMPONENTS





① Reverse switch ② Neutral switch

APPENDICES

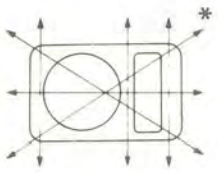
SPECIFICATIONS

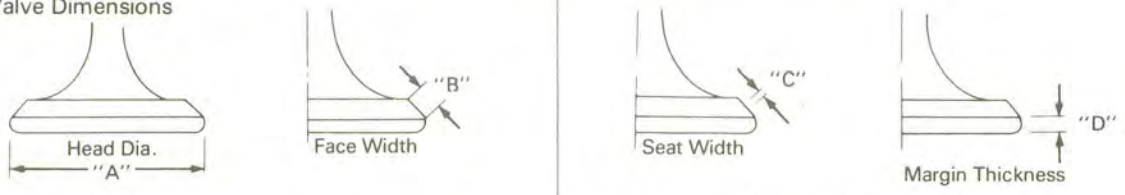
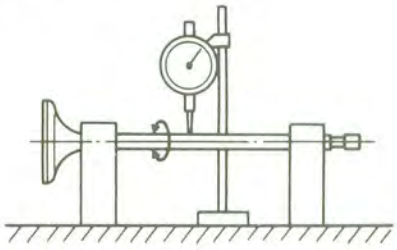
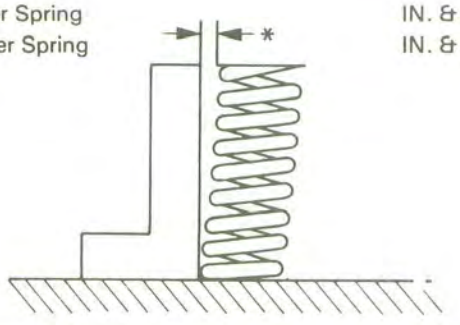
1. GENERAL SPECIFICATIONS

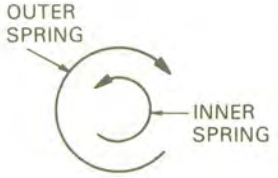
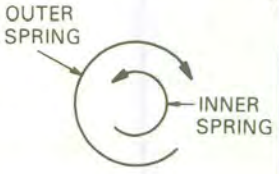
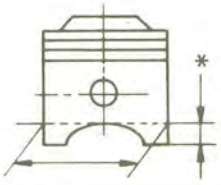
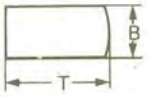
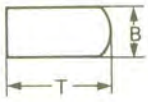
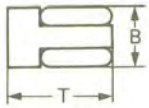
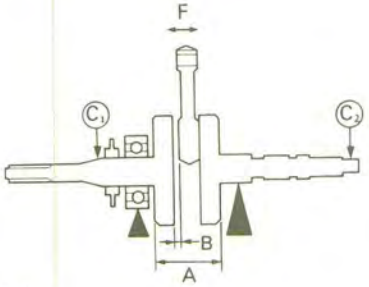
Model	YTM200ERN
Model Code Number	52G
Vehicle Identification Number	JY352G00*FC000101
Engine Starting Number	52G
Dimensions:	
Overall Length	1,865 mm (73.4 in)
Overall Width	1,050 mm (41.3 in)
Overall Height	980 mm (38.6 in)
Seat Height	725 mm (28.5 in)
Wheelbase	1,150 mm (45.3 in)
Minimum Ground Clearance	140 mm (5.5 in)
Basic Weight:	
With Oil and Full Fuel Tank	163 kg (359 lb)
Minimum Turning Radius:	2,250 mm (88.6 in)
Engine:	
Engine Type	4-stroke, gasoline, SOHC
Cylinder Arrangement	Single cylinder
Displacement	196.3 cm^3
Bore × Stroke	67.0 × 55.7 mm (2.64 × 2.19 in)
Compression Ratio	8.5 : 1
Compression Pressure (STD)	883 kPa (9 kg/cm^2, 128 psi)
Starting System	Recoil starter and Electric starter
Lubrication System:	Wet sump
Oil Type or Grade:	
Engine Oil	Yamalube 4-cycle oil or SAE 20W40 type SE motor oil
Final gear	SAE 80API GL-4 Hypoid gear oil
Oil Capacity:	
Engine Oil	
Periodic Oil Change	1.5 L (1.3 Imp qt, 1.6 US qt)
Total Amount	1.8 L (1.6 Imp qt, 1.9 US qt)
Final Gear Case Oil Amount	0.13 L (0.11 Imp qt, 0.14 US qt)
Air Filter	Wet type element
Fuel:	
Type	Regular gasoline
Tank Capacity	9.0 L (2.0 Imp gal, 2.4 US gal)
Reserve Amount	1.9 L (0.4 Imp gal, 0.5 US gal)
Carburetor:	
Type/Manufacturer	VM22SH/MIKUNI
Spark Plug:	
Type/Manufacturer	X22ES-U (NIPPON DENSO) D7EA (N.G.K)
Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Clutch Type:	Wet, multiple-disc, Centrifugal automatic

Model	YTM200ERN
Transmission:	
Primary Reduction System	Gear
Primary Reduction Ratio	73/22 (3.318)
Secondary Reduction system	Shaft drive
Secondary Reduction Ratio	19/18 × 46/11 = 4.414
Transmission Type	Constant mesh, 5-speed (Forward) 1-speed (Reverse)
Operation	Left foot operation
Gear Ratio	
1st	35/11 (3.182)
2nd	31/15 (2.067)
3rd	30/21 (1.429)
4th	26/25 (1.040)
5th	23/28 (0.821)
Reverse	35/11 (3.181)
Chassis:	
Frame Type	Semi double cradle
Caster Angle	17.5°
Trail	26 mm (1.02 in)
Tire:	
Type	Tubeless
Size (F)	25 × 12-9
Size (R)	25 × 12-9 × 2 pcs
Tire Pressure (Cold tire):	
Front and Rear	
Standard	14.7 kPa (0.15 kg/cm², 2.2 psi)
Minimum	11.8 kPa (0.12 kg/cm², 1.8 psi)
Maximum	68.6 kPa (0.7 kg/cm², 10 psi)
Standard Tire Circumference	1.735 mm (68.3 in)
Minimum Tire Circumference	1.725 mm (67.9 in)
Brake:	
Front Brake Type	Drum brake
Operation	Right hand operation
Rear Brake Type	Single disc brake
Operation	Left hand operation and Right foot operation
Suspension:	
Front Suspension	Telescopic fork
Rear	Rigid
Shock Absorber:	
Front Shock Absorber	Coil spring, Oil damper
Wheel Travel:	
Front Wheel Travel	100 mm (4.0 in)
Rear	0 mm (0 in)
Electrical:	
Ignition System	C.D.I. Magneto
Generator System	A.C. Generator
Battery Type/ Capacity	GM14AZ-4A/ 12V, 14AH
Headlight Type:	Bulb type
Bulb Wattage/ Quantity:	
Headlight	45W/ 45W × 1
Taillight	8W × 1
Indicator Light Wattage/ Quantity:	
"NEUTRAL"	3.4W × 1
"REVERSE"	3.4W × 1

II. MAINTENANCE SPECIFICATIONS
A. Engine

Model		YTM200ERN
Cylinder Head:		
Warp Limit		<0.03 mm (0.0012 in)> *Lines indicate straightedge measurement.
Cylinder:		
Bore Size		$67^{+0.020}_{-0.030}$ mm ($2.64^{+0.0008}_{-0.0012}$ in)
Taper Limit		<0.005 mm (0.0002 in)>
Out-of-round Limit		<0.01 mm (0.0004 in)>
Camshaft:		
Drive Method		Chain
		Left
Camshaft Bearing (Cylinder)		$25^{+0.021}_{0}$ mm ($0.98^{+0.0008}_{0}$ in), $20^{+0.021}_{0}$ mm ($0.79^{+0.0008}_{0}$ in)
Camshaft Outside Diameter		$25^{-0.020}_{-0.040}$ mm ($0.98^{-0.0008}_{-0.0016}$ in), $20^{-0.020}_{-0.040}$ mm ($0.79^{-0.0008}_{-0.0016}$ in)
Shaft-to-cap Clearance		0.020 ~ 0.061 mm (0.0008 ~ 0.0024 in)
Cam Dimensions		
Intake	"A"	36.587 ± 0.05 mm (1.44 ± 0.002 in)
	"B"	31.181 ± 0.05 mm (1.23 ± 0.002 in)
	"C"	6.587 mm (0.26 in)
Exhaust	"A"	36.627 ± 0.05 mm (1.44 ± 0.002 in)
	"B"	30.264 ± 0.05 mm (1.19 ± 0.002 in)
	"C"	6.627 mm (0.26 in)
Camshaft Runout Limit:		<0.03 mm (0.0012 in)>
Cam Chain Type/Number of Links		DID25SH/104 Links
Cam Chain Adjustment Method		Manual
Rocker Arm/Rocker Arm Shaft:		
Rocker Arm Inside Diameter		$12^{+0.018}_{0}$ mm ($0.47^{+0.0007}_{0}$ in)
<Limit>		<12.03 mm (0.474 in)>
Shaft Outside Diameter		$12^{-0.009}_{-0.015}$ mm ($0.47^{-0.0004}_{-0.0006}$ in)
<Limit>		<11.94 mm (0.470 in)>
Arm-to-shaft Clearance		0.009 ~ 0.037 mm (0.0004 ~ 0.0016 in)
Valve, Valve Seat, Valve Guide:		
Valve Clearance (Cold)		
	IN.	0.05 ~ 0.09 mm (0.002 ~ 0.004 in)
	EX.	0.11 ~ 0.15 mm (0.004 ~ 0.006 in)

Model		YTM200ERN
Valve Dimensions 		
"A" Head Dia.	IN.	34 ± 0.1 mm (1.34 ± 0.004 in)
	EX.	28.5 ± 0.1 mm (1.12 ± 0.004 in)
"B" Face Width	IN.	2.26 mm (0.09 in)
	EX.	2.26 mm (0.09 in)
"C" Seat Limit Width	IN.	1.0 ± 0.1 mm (0.04 ± 0.004 in)
	EX.	1.0 ± 0.1 mm (0.04 ± 0.004 in)
"D" Margin Thickness Limit	IN.	1 ± 0.2 mm (0.04 ± 0.008 in)
	EX.	1 ± 0.2 mm (0.04 ± 0.008 in)
Stem Outside Diameter	IN.	$6^{-0.010}_{-0.025}$ mm ($0.24^{-0.0004}_{-0.0010}$ in)
	EX.	$6^{-0.025}_{-0.040}$ mm ($0.24^{-0.0010}_{-0.0016}$ in)
Guide Inside Diameter	IN.	$6^{+0.012}_{0}$ mm ($0.24^{+0.0005}_{0}$ in)
	EX.	$6^{+0.012}_{0}$ mm ($0.24^{+0.0005}_{0}$ 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 		
Valve Seat Width Standard		1.0 ± 0.1 mm (0.039 ± 0.0039 in)
Valve Spring:		
Free Length		
Inner Spring	IN.	35.5 mm (1.40 in)
	EX.	35.5 mm (1.40 in)
Outer Spring	IN.	37.2 mm (1.46 in)
	EX.	37.2 mm (1.46 in)
Compressed Length (Valve Closed)		
Inner Spring	IN.	30.5 mm (1.20 in)
	EX.	30.5 mm (1.20 in)
Outer Spring	IN.	32.0 mm (1.26 in)
	EX.	32.0 mm (1.26 in)
Tilt Limit*:		
Inner Spring	IN. & EX.	2.5° or 1.6 mm (0.063 in)
Outer Spring 	IN. & EX.	2.5° or 1.6 mm (0.063 in)

Model		YTM200ERN	
Direction of Winding (Top view)		IN	EX
			
Piston: Piston Size/Measuring Point* Piston Clearance		$67^{-0.015}_{-0.065}$ mm ($2.6^{-0.0006}_{-0.0026}$ in)/7.5 mm (0.30 in) (From bottom line of piston skirt) 0.025 ~ 0.045 mm (0.0010 ~ 0.0018 in)	
Piston Ring: Sectional Sketch	Top Ring 	Plain B = $1.2^{-0.01}_{-0.03}$ mm ($0.05^{-0.0004}_{-0.0012}$ in) T = 2.7 ± 0.1 mm (0.11 ± 0.004 in)	
	2nd Ring 	Plain B = $1.2^{-0.01}_{-0.03}$ mm ($0.05^{-0.0004}_{-0.0012}$ in) T = 2.7 ± 0.1 mm (0.11 ± 0.004 in)	
	Oil Ring 	B = $2.5^{+0.03}_{+0.01}$ mm ($0.10^{+0.0012}_{+0.0004}$ in) T = 2.8 ± 0.1 mm (0.11 ± 0.004 in)	
End Gap (Installed)	Top Ring	0.15 ~ 0.35 mm (0.0059 ~ 0.0138 in)	
	2nd Ring	0.15 ~ 0.35 mm (0.0059 ~ 0.0138 in)	
	Oil Ring	0.3 ~ 0.9 mm (0.0118 ~ 0.0354 in)	
<Limit>	Top Ring	<0.75 mm (0.0295 in)>	
	2nd Ring	<0.75 mm (0.0295 in)>	
Side Clearance	Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	
	2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	
	Oil Ring	0 mm (0 in)	
<Limit>	Top Ring	<0.1 mm (0.004 in)>	
	2nd Ring	<0.9 mm (0.035 in)>	
	Oil Ring	<— mm (— in)>	
Crankshaft: 			
Crank Width "A"		$56^{0}_{-0.05}$ mm ($2.20^{0}_{-0.002}$ in)	
Big End Side Clearance "B"		0.35 ~ 0.65 mm (0.014 ~ 0.026 in)	
Runout Limit "C1"		<0.02 mm (0.0008 in)>	
"C2"		<0.06 mm (0.0024 in)>	
Small End Free Play "F" <Limit>		<2.0 mm (0.08 in)>	
Balancer Drive Method:		Gear	

Model	YTM200ERN
Primary Clutch:	
Shoe Thickness/Quantity	2.0 mm (0.079 in)/3
Wear Limit	1.5 mm (0.0591 in)
Secondary Clutch:	
Friction Plate Thickness/Quantity	3.0 mm (0.12 in)/5
Wear Limit	<2.8 mm (0.11 in)>
Clutch Plate Thckness/Quantiy	1.6 mm (0.06 in)/4
Warp Limit	<0.2 mm (0.008 in)>
Clutch Spring Free Length/Quantity	34.9 mm (1.37 in)/4
Clutch Release Method	Outer push
Clutch-In Revolution	1,850 ~ 2,150 r/min
Clutch-Stall Revolution	2,900 ~ 3,300 r/min
Transmission:	
Main Axle Deflection Limit	<0.08 mm (0.0031 in)>
Drive Axe Deflection Limit	<0.08 mm (0.0031 in)>
Shifter:	
Shifter Type	Guide bar
Decompression Device	
Type	Manual
Air Filter Oil Grade (Oiled Filter)	Foam-air-filter oil or SAE 10W30 type SE motor oil
Carburetor:	
Type/Manufacturer/Quantity	VM22SH/MIKUNI/1
I.D. Mark	24W01
Main Jet (M.J.)	#112.5
Main Air Jet (M.A.J.)	ø1.7
Jet Needle-clip Position (J.N.)	4H23-3
Needle Jet (N.J.)	N-6
Cutaway (C.A.)	#4.0
Pilot Jet (P.J.)	#25
Pilot Air jet (P.A.J.)	#130
Pilot Screw (P.S.)	2 ± 1/2 (turns out)
Valve Seat (V.S.)	ø1.8
Starter Jet (G.S.)	#85
Fuel Level (F.L.)	3.0 ± 1.0 mm (0.12 ± 0.04 in)
Float Height (F.H.)	21.5 ± 0.5 mm (0.85 ± 0.02 in)
Engine Idling Speed	1,400 ± 50 r/min
Lubrication System:	
Oil Filter Type	Wire mesh
Oil Pump Type	Trochoid pump
Tip Clearance	0.15 mm (0.0059 in)
Side Clearance	0.04 ~ 0.09 mm (0.0016 ~ 0.0035 in)
Bypass Valve Setting Pressure	98 ± 19.6 kPa (1.0 ± 0.2 kg/cm², 14 ± 2.8 psi)
Middle Gear Lash:	
Middle driven gear & reverse gear	
(Actual Gear Lash on the Gear Teeth)	0.1 ~ 0.2 mm (0.004 ~ 0.008 in)
(When Using the Measurement Tool)	0.2 ~ 0.4 mm (0.008 ~ 0.016 in)
Middle driven shaft thrust clearance:	0.1 ~ 0.4 mm (0.004 ~ 0.016 in)
Final Gear Lash:	0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

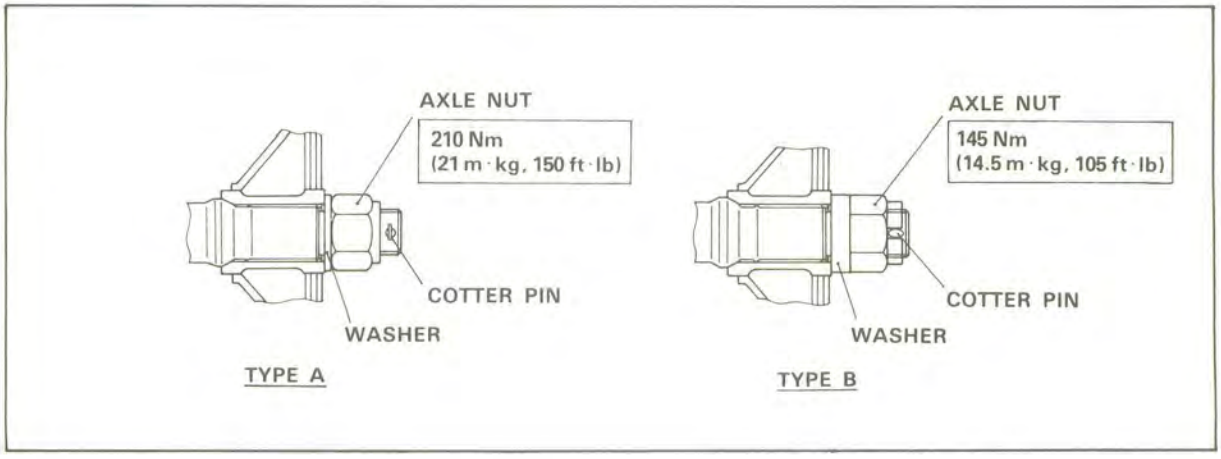
Tightening torque:		Size/Q'ty	Nm	m•kg	ft•lb	Remarks
Oil galley bolt	Bolt	M6 × 1	7	0.7	5.1	
Cylinder head	Bolt	M8 × 4	22	2.2	16.0	Apply engine oil to the washers
Cylinder head	Bolt	M8 × 2	20	2.0	14.0	
Cam sprocket cover	Screw	M6 × 2	7	0.7	5.1	
Tappet cover	Bolt	M6 × 5	10	1.0	7.2	
Rocker arm shaft stopper	Bolt	M6 × 2	8	0.8	5.8	Use lock washer
Spark plug	—	M12× 1	20	2.0	14.0	
Cylinder body	Bolt	M6 × 2	10	1.0	7.2	
Balancer shaft	Nut	M14× 1	50	5.0	36.0	Use lock washer
Recoil starter pulley	Bolt	M10× 1	50	5.0	36.0	
Valve adjuster lock	Nut	M6 × 2	14	1.4	10.0	
Sprocket cam	Bolt	M10× 1	60	6.0	43.0	
Chain tensioner	Nut	M14× 1	30	3.0	22.0	
Tensioner cap	Cap nut	M14× 1	5	0.5	3.6	
Chain guide #2 stopper	Bolt	M6 × 2	8	0.8	5.8	
Oil pump assembly	Screw	M6 × 3	7	0.7	5.1	
Drain plug	Plug	M35× 1	43	4.3	31.0	
Filter cover	Bolt	M6 × 2	10	1.0	7.2	
Filter cover drain	Bolt	M6 × 1	10	1.0	7.2	
Carburetor joint	Bolt	M6 × 2	12	1.2	8.7	
Carburetor	Nut	M6 × 2	8	0.8	5.8	
	Screw	M5 × 1	2	0.2	1.4	
Exhaust pipe flange	Bolt	M6 × 2	10	1.0	7.2	
Muffler assembly	Bolt	M8 × 2	27	2.7	19.0	
Exhaust pipe protector	Screw	M6 × 2	7	0.7	5.1	Apply LOCTITE®
Exhaust outlet pipe	Screw	M6 × 1	10	1.0	7.2	
Crankcase	Screw	M6 ×11	7	0.7	5.1	
Crankcase spacer (L/H)	Screw	M6 × 8	7	0.7	5.1	
Bearing retainer (L/H)	Screw	M5 × 3	7	0.7	5.1	Apply LOCTITE®
Crankcase spacer (R/H)	Screw	M6 × 3	7	0.7	5.1	
Bearing retainer (R/H)	Screw	M6 × 3	10	1.0	7.2	Apply LOCTITE®
Clutch cover	Screw	M6 × 9	7	0.7	5.1	
Clutch cover protector	Screw	M6 × 3	7	0.7	5.1	
Recoil starter	Screw	M6 × 6	7	0.7	5.1	
Primary clutch	Nut	M22× 1	78	7.8	56.0	Use lock washer
Clutch spring	Screw	M5 × 4	6	0.6	4.3	
Clutch boss	Nut	M14× 1	50	5.0	36.0	Use lock washer
Cam shift segment	Screw	M6 × 1	12	1.2	8.7	Apply LOCTITE®
Clutch adjuster	Nut	M8 × 1	15	1.5	11.0	
Middle driven gear case cover	Bolt	M6 × 6	10	1.0	7.2	
Bearing retainer (Drive axle)	Screw	M8 × 3	25	2.5	18.0	STAKE
Bearing retainer (Housing)	—	M50× 1.5	60	6.0	43.0	
	—	M55× 1.5	60	6.0	43.0	Apply LOCTITE® Left-hand threads
Coupling gear	Nut	M28× 1	60	6.0	43.0	Apply LOCTITE®
	Nut	M28× 1	60	6.0	43.0	
Bearing housing	Bolt	M8 × 4	23	2.3	17.0	
	Nut	M8 × 4	23	2.3	17.0	
Starter clutch	Screw	M8 × 3	30	3.0	22.0	STAKE
Neutral switch	—	M10× 1	20	2.0	14.0	
Reverse switch	—	M12× 1	4	0.4	2.9	
Starter motor bracket	Screw	M6 × 4	7	0.7	5.1	
Final gear housing & Frame	Bolt	M10× 2	45	4.5	32.0	
Bearing retainer (Final gear)	—	M63× 1	100	10.0		Left-hand thread

Tightening torque:		Size/Q'ty	Nm	m•kg	ft•lb	Remarks
Rear wheel hub & Final gear housing	Bolt	M8 × 6	23	2.3	17.0	
Rear wheel hub & Final gear housing	Bolt	M10× 2	23	2.3	17.0	
Shift rod (Joint)	Bolt	M6 × 1	10	1.0	7.2	
CDI magneto base	Screw	M6 × 3	7	0.7	5.1	

Model		YTM200ERN
Steering System:		
Steering Bearing Type		Ball Bearing
No./Size of Steel Balls	Upper	19 pcs/1/4 in
	Lower	19 pcs/1/4 in
Front Suspension:		
Front Fork Travel		100 mm (3.94 in)
Fork Spring Free Length		405.1 mm (15.95 in)
<Limit>		<395.1 mm (15.56 in)>
Spring Rate/Stroke		K_1 = 7.85 N/mm (0.8 kg/mm, 44.8 lb/in) 0 ~ 70 mm (0 ~ 2.76 in) K_2 = 9.81 N/mm (1.0 kg/mm, 56.0 lb/in) 70 ~ 120 mm (2.76 ~ 4.72 in)
Optional Spring		No.
Oil Capacity or		194 cm^3 (6.82 Imp oz, 6.56 Us oz)
Oil Level		311 mm (12.2 in) (From top of inner tube fully compressed without spring.)
Oil Grade		Yamaha fork oil 10wt or equivalent
Wheel:		
Front Wheel Type		Disc Wheel
Rear Wheel Type		Disc Wheel
Front Rim Size/Material		10 × 9/Steel
Rear Rim Size/Material		10 × 9/Steel
Rim Runout Limit	Vertical	<1.0 mm (0.04 in)>
	Lateral	<1.0 mm (0.04 in)>
Drum Brake:		
Type	Front	Leading and trailing
Drum Inside Dia		
<Limit>		110 mm (4.33 in) <111 mm (4.37 in)>
Lining Thickness		
<Limit>		4.0 mm (0.16 in) <2.0 mm (0.08 in)>
Shoe Spring Free Length	Front	34.5 mm (1.36 in)
Disc Brake:		
Type	Rear	Single disc
Outside Dia × Thickness		224 × 4 mm (8.82 × 0.16 in)
Pad Thickness		
<Limit>	Inner	8.0 mm (0.31 in) <1.5 mm (0.06 in)>
	Outer	8.0 mm (0.31 in) <1.5 mm (0.06 in)>
Brake Lever & Brake Pedal:		
Brake Lever Free Play Limit		<10 mm (0.4 in)> at lever pivot
Brake Pedal Free Play Limit		<50 mm (2.0 in)>

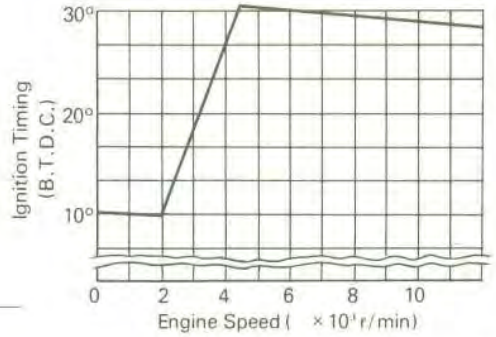
B: Chassis

Tightening torque:		Thread size	Q'ty	Nm	m·kg	ft·lb	Remarks
Front axle shaft	Nut	M14×1.5	1	50	5.0	36	
Wheel panel (Front and rear)	Nut	M8 ×1.25	12	28	2.8	20	
Front brake cam	Bolt	M6 ×1.0	1	9	0.9	6.5	
Under bracket & inner fork tube	Bolt	M8 ×1.25	2	30	3.0	22	
Steering crown & inner fork tube	Bolt	M8 ×1.25	2	20	2.0	14	
Steering stem	Bolt	M14×1.25	1	90	9.0	65	
Steering shaft ring nut	Nut	M25×1.0	1	38	3.8	27	
Handlebar upper holder	Bolt	M8 ×1.25	4	20	2.0	14	
Engine front bracket & Engine	Bolt	M8 ×1.25	2	33	3.3	24	
Engine front bracket & Frame	Nut	M8 ×1.25	2	33	3.3	24	
Upper engine bracket & Engine	Nut	M8 ×1.25	1	33	3.3	24	
Upper engine bracket & Frame	Nut	M8 ×1.25	2	33	3.3	24	
Engine rear upper and lower & Frame	Nut	M8 ×1.25	2	44	4.4	32	
Rear axle shaft (Type A)	Nut	M20×1.50	2	210	21.0	150	Refer to illust 1
(Type B)	Nut	M20×1.50	2	145	14.5	105	Refer to illust 2
Rear axle shaft	Ring nut	M40×1.50	2	100	10.0	72	Apply LOCTITE®
Rear hub & Frame	Bolt	M10×1.25	3	50	5.0	36	
Rear brake caliper body	Bolt	M10×1.25	2	50	5.5	36	
Rear brake caliper	Nut	M6 ×1.0	3	9	0.9	6.5	
Brake pad adjuster locknut	Nut	M8 ×1.25	1	15	1.5	11	
Footrest & Frame	Bolt	M8 ×1.25	4	33	3.3	24	
Fuel tank & Fuel cock	Screw	M6 ×1.0	2	5	0.5	3.6	
Frame & Rear bamper	Bolt	M8 ×1.25	4	23	2.3	17	

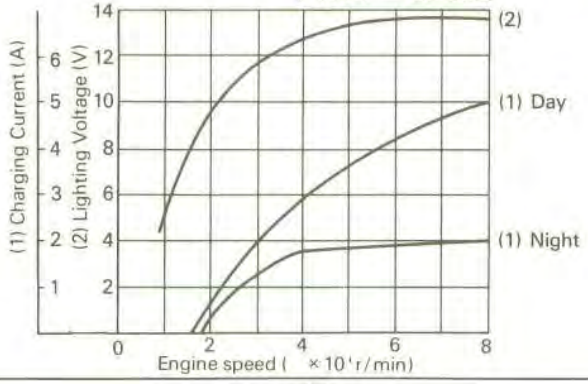


C. Electrical

Model	YTM200ERN
Voltage	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	10° at 1,000 r/min
Advanced Timing (B.T.D.C.)	30° at 6,000 r/min
Advancer Type	Electrical



C.D.I.:	
Magneto-Model/Manufacturer	F3T16371/MITSUBISHI
Pickup Coil Resistance (Color)	196Ω ± 10% at 20°C (68°F) (W/R – W/G)
Source Coil Resistance (Color)	381Ω ± 10% at 20°C (68°F) (Br – B)
C.D:I. Unit-Model/Manufacturer	F8T07272/MITSUBISHI
Ignition Coil:	
Model/Manufacturer	F6T50971/MITSUBISHI
Minimum Spark Gap	10kV or more at 300 r/min 17 kV or less at 8,000 r/min 6 mm (0.24 in)
Primary Winding Resistance	0.85Ω ± 15% at 20°C (68°F)
Secondary Winding Resistance	5.9KΩ ± 15% at 20°C (68°F)
Charging System/Type	Flywheel magneto
F.W. Magneto	
Charging Current	Day 1.8A or: more at 3,000 r/min 4.5A or more at 8,000 r/min Night 0.7A or more at 3,000 r/min 1.7A or more at 8,000 r/min
Charging Coil Resistance (Color)	0.4Ω ± 10% at 20°C (68°F) (W – B)
Lighting Voltage	11.3V or more at 3,000 r/min 12.5 ~ 13.5V at 8,000 r/min
Lighting Coil Resistance (Color)	0.34Ω ± 10% at 20°C (68°F) (Y/R – Ground)

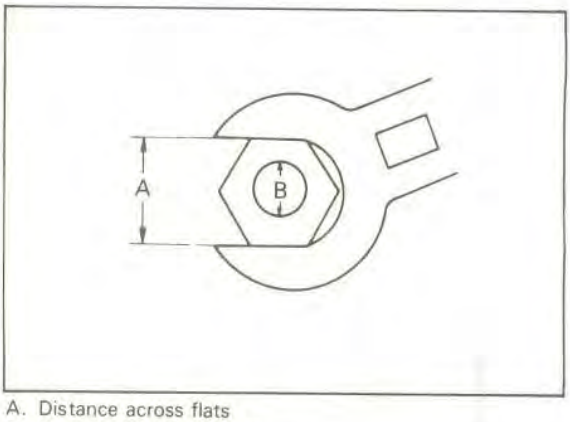


Model	YTM200ERN
Voltage Regulator:	
-Type	Short circuit type
-Model/ Manufacture	SU230Y/ STANLEY
-No Load Regulated Voltage	12 ~ 16.5V
Rectifier:	
-Model/ Manufacturer	SU230Y/ STANLEY
-Capacity	5A
-Withstand Voltage	120V
Battery:	
Capacity	12V 14AH
Specific Gravity	1.280
Electric Starter System:	
Type	Constant mesh type
Starter Motor-Model/ Manufacturer	SM-7252/ MITSUBA
-Out put	0.4kW
Armature Coil Resistance	0.023Ω at 20°C (68°F)
Brush-Overall Length	10.5 mm (0.41 in)
<Limit>	<5.0 mm (0.20 in)>
-Spring Pressure	400 ~ 660 g (14 ~ 23 oz)
Commutator Dia.	23 mm (0.901 in)
<Wear Limit>	<22 mm (0.866 in)>
-Mica Undercut	0.55 mm (0.022 in)
Starter switch	
Model/ Manufacturer	I26/ HONDA LOCK
Amperage Rating	150A
Coil Winding Resistance	3.43Ω ± 5% at 20°C (68°F)
Starting Circuit Cut off Relay:	
Model/ Manufacturer	G4MW-121T/ TATEISHI
Coil Winding Resistance	75Ω ± 10% at 20°C (68°F)
Color Code	No
Diode	Yes
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit/ Quantity	
Main	10A × 1
Reserve	10A × 1

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		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

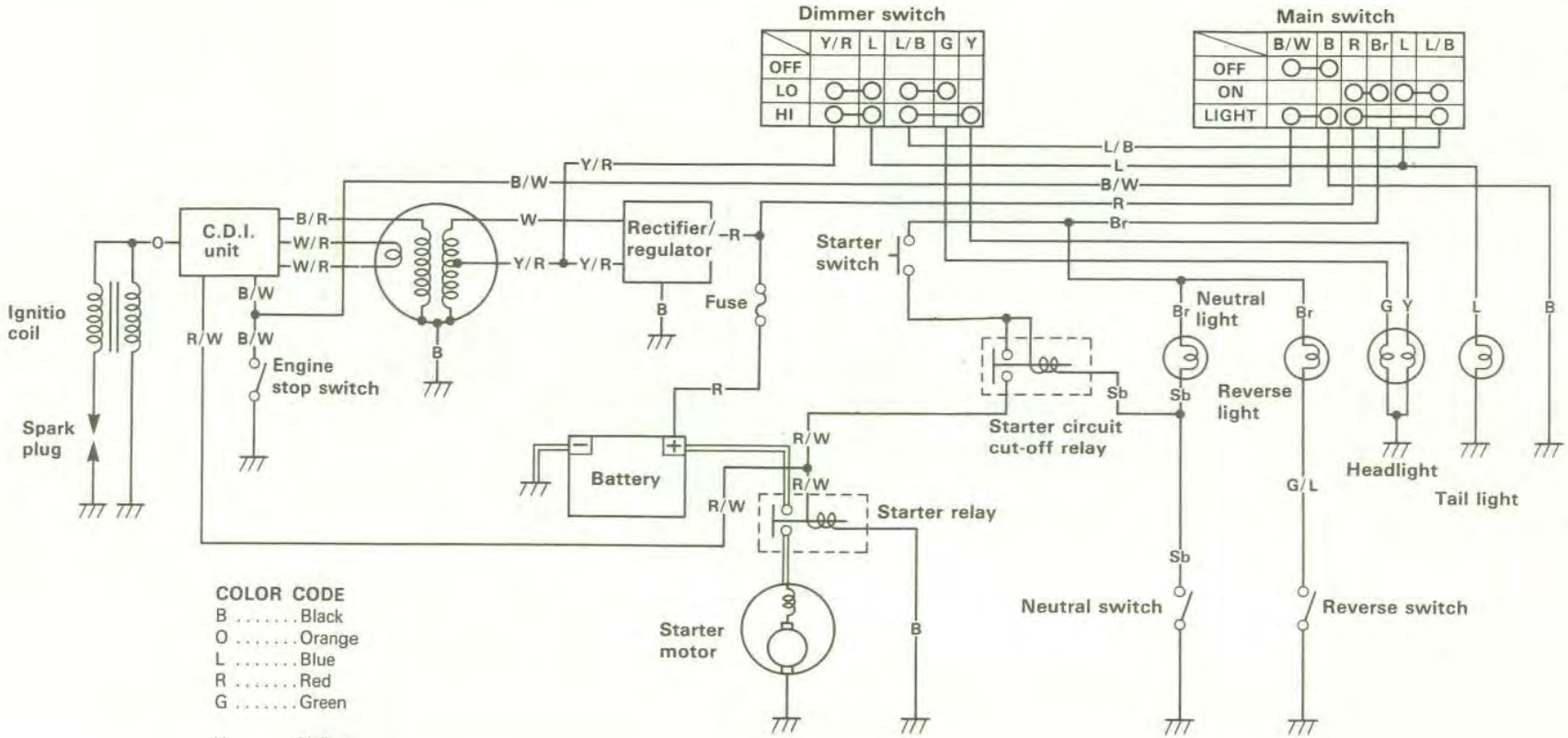


A. Distance across flats
B. Outside thread diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm	millimeter	10^{-3} meter	Length
cm	centimeter	10^{-2} meter	Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg × m/sec^2	Force
Nm	Newton meter	N × m	Torque
m·kg	Meter kilogram	m × kg	Torque
Pa	Pascal	N/m^2	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter	——	Volume
cm^3	Cubic centimeter		or Capacity
r/min	Rotation per minute	——	Engine Speed

CIRCUIT DIAGRAM



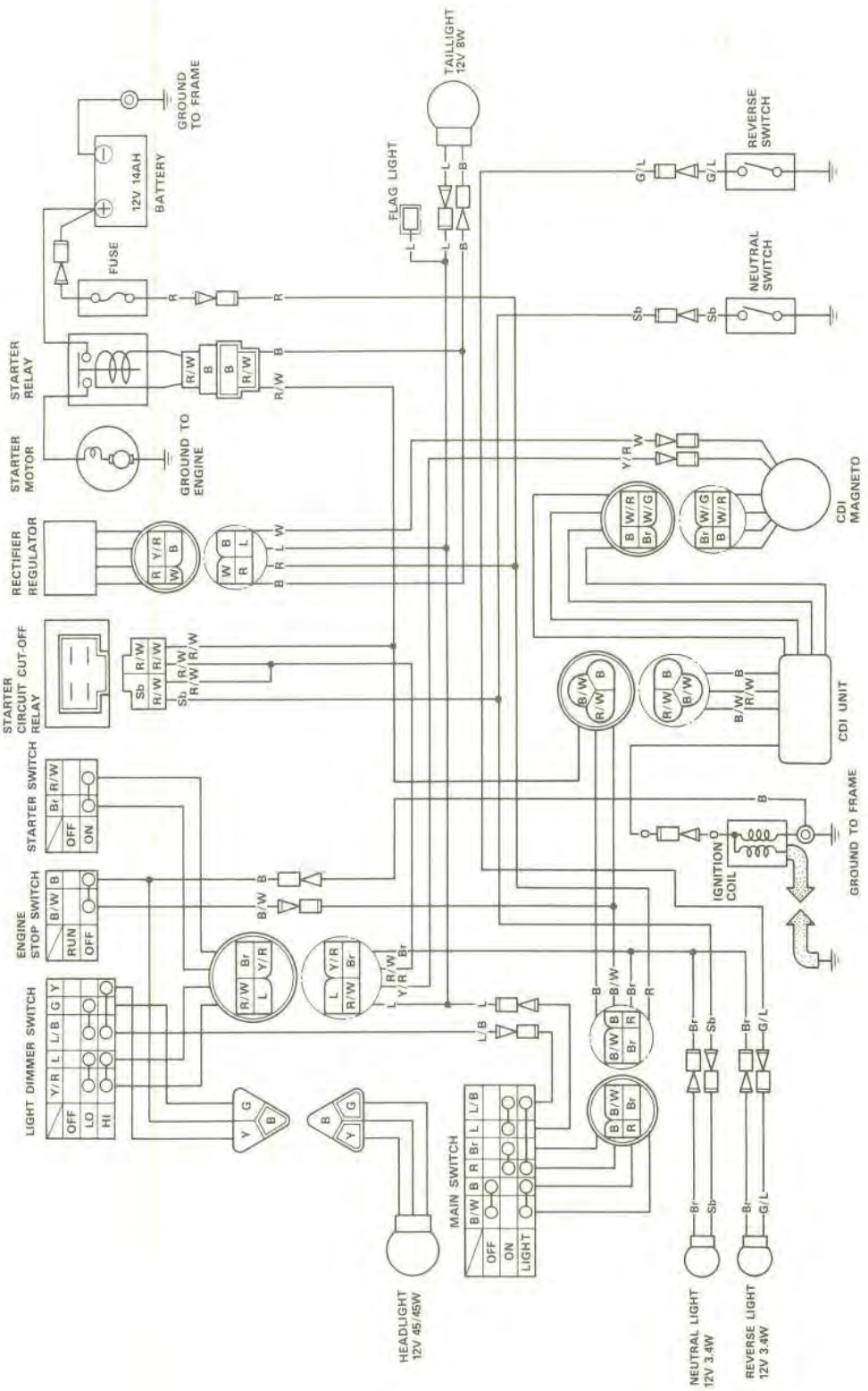
COLOR CODE

B .....Black
O .....Orange
L .....Blue
R .....Red
G .....Green

Y .....Yellow
W.....White
Sb .....Sky blue
Br.....Brown
L/B .....Blue/Black

Y/R .....Yellow/Red
R/W ....Red/White
W/R ....White/Red
B/R .....Black/Red
B/W ....Black/White
G/L .....Green/Blue

WIRING DIAGRAM



YAMAHA

YTM 225DXK

Supplementary

Service Manual

DXK

LIT-11616-03-81

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the YTM225DXK. For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with following manual:

YTM200EK Service Manual (LIT-11616-03-82)

OVERSEAS SERVICE
OVERSEAS OPERATIONS
YAMAHA MOTOR CO., LTD.

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

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.

Starting Serial Number

YTM225DXK . . .29U-000101

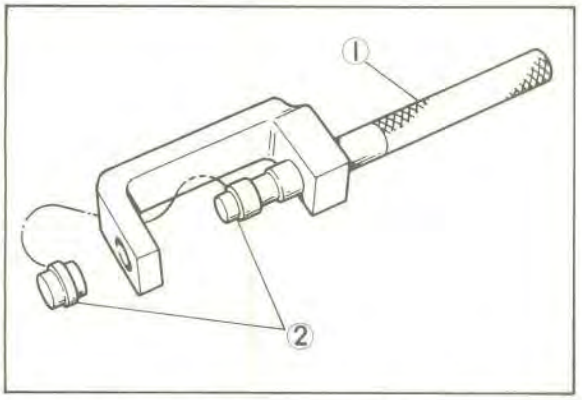
SPECIAL TOOLS

The proper special tools should be used for accurate tune-up and assembly and to help prevent damage caused by improper tools or improvised techniques.

The YTM225DXK's special tools are listed in the YTM200EK service manual LIT-11616-03 -82. The following special tools will also be required for servicing the middle gear and front forks.

For Middle Gear Service

Universal joint holder
(P/N YM-04062) ..... ①
Attachment
(P/N YM-33291) ..... ②



This tool is used when adjusting gear lash, in the middle gear.

MAINTENANCE AND LUBRICATION CHART

PERIODIC MAINTENANCE

Item	Remarks	Initial			Thereafter every	
		1 Month	3 Months	6 Months	6 Months	1 Year
Exhaust system/Spark arrester	Decarbonize		O	O	O	
*Cam chain	Check and adjust chain tension	O		O	O	
*Valve clearance	Check and adjust valve clearance when engine is cold	O		O	O	
*Spark plug	Inspect/Cleaning or replace as required	O	O	O	O	
*Air filter	Wet type-Must be washed and damped with Foam-air-filter oil or SAE 10W30 type SE motor oil		O	O	O	
Carburetor	Check operation/Fittings		O	O	O	
	Clean/Refit/Adjust					O
*Brake system (complete)	Check/Adjust as required-Repair as required	O	O	O	3 Months	
*Battery	Top-up/Check specific gravity and breather pipe	O	O	O	O	
*Wheels and tires	Check pressure/Wear/Balance/Run out	O	O	O	O	
Fuel cock	Clean/Flush tank as required	O	O	O	O	
*Lights	Check operation/Replace as required	O	O	O	O	
*Fittings/Fasteners	Tighten before each trip and/or...	O	O	O	O	

*Indicates pre-operation check items.

LUBRICATION INTERVALS

Item	Remarks	Type		Initial		Thereafter every	
			1 Month	3 Months	6 Months	6 Months	1 Year
*Engine oil	Replace/Warm engine before draining	Yamalube 4-cycle oil or SAE 20W40 type SE motor oil	O	Check	O	O	
*Oil filter/Oil strainer	Clean	—	O		O		O
*Final gear oil	Replace	SAE 80 API GL-4 Hypoid gear oil	O				O
*Throttle lever and housing	Apply lightly	Lithium base grease			O	O	
*Brake lever	Apply lightly	Lithium base grease		O	O	O	
Brake camshaft	Apply lightly	Lithium base grease		O	O	O	
Front forks	Drain completely Check specifications	Yamaha fork oil 10wt or equivalent	O		O		O
Steering bearings	Inspect thoroughly/pack moderately	Medium-weight wheel bearing grease			Check		2 Years
Wheel bearings	Do not over-pack yearly or ...	Medium-weight wheel bearing grease					O

*Indicates pre-operation check items.

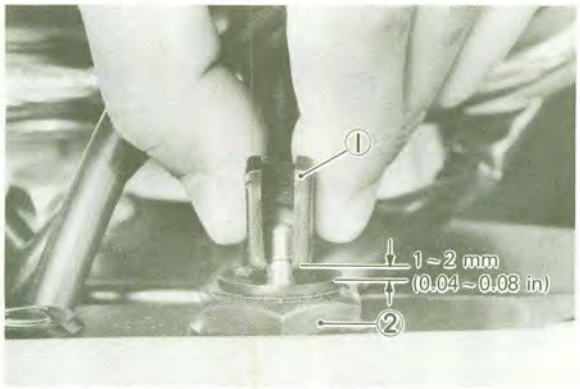
NEW SERVICE

*ENGINE

Starter Lever (CHOKE)

Free Play Inspection

1. Move the starter lever upward with your finger until resistance to felt. With the starter lever in this position, check the free play between the lever and the holder where as shown in the photograph.



1. Starter lever 2. Lever holder

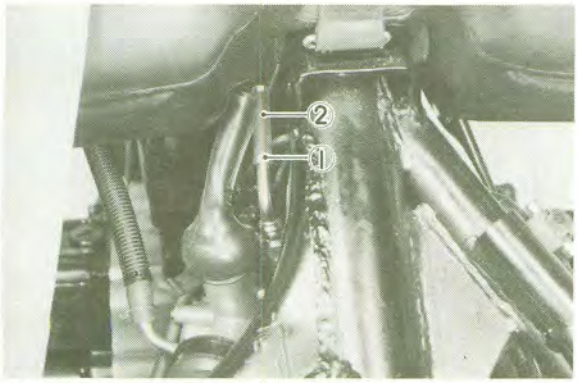
Starter lever free play: 1 ~ 2 mm (0.04 ~ 0.08 in) between lever and holder

2. If the free play within 1 ~ 2 mm (0.04 ~ 0.08 in) adjust the starter cable.

Free Play Adjustment

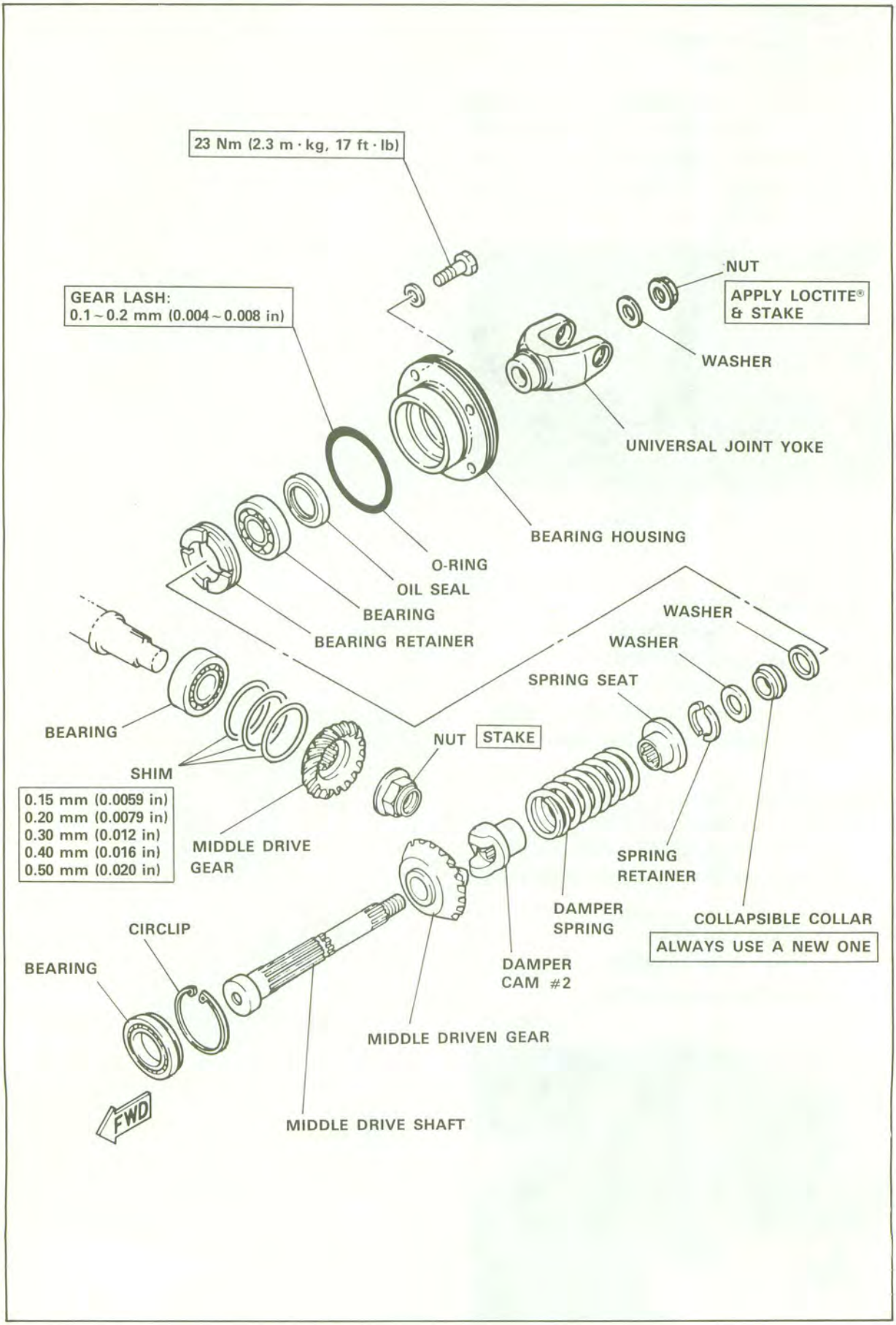
1. Loosen the starter cable locknut. Next, turn the length adjuster either in or out until proper lever free play is achieved.

Starter lever free play: 1 ~ 2 mm (0.04 ~ 0.08 in) between lever and holder



1. Locknut 2. Adjuster

MIDDLE GEAR SERVICE

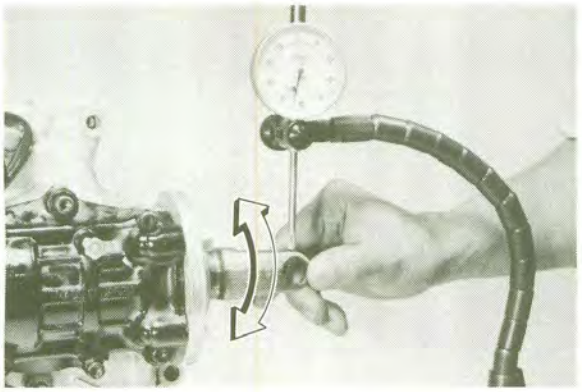


Gear Lash Measurement

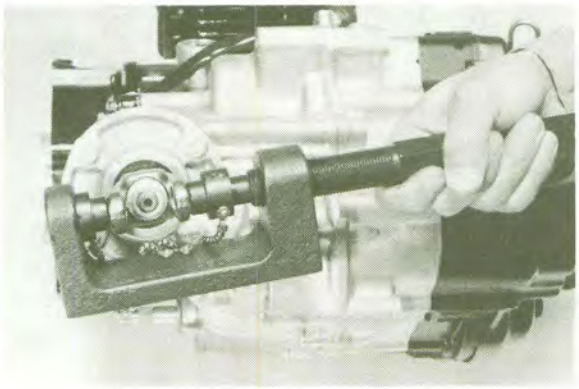
1. Set the dial gauge on the outside edge of yoke so that it is positioned over the centerline of the yoke bearing hole. Gently rotate the drive yoke back and forth. Note the lash measurement on the dial gauge.

Middle gear lash:
0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

2. Check the gear lash at four positions. Rotate the yoke 90 degrees each time, and repeat the gear lash check.



3. If the measurement exceeds the specified gear lash at any of the four points, the gear lash must be adjusted.
   Place the universal joint tool (with both adapters) on the U-joint on the middle drive shaft.

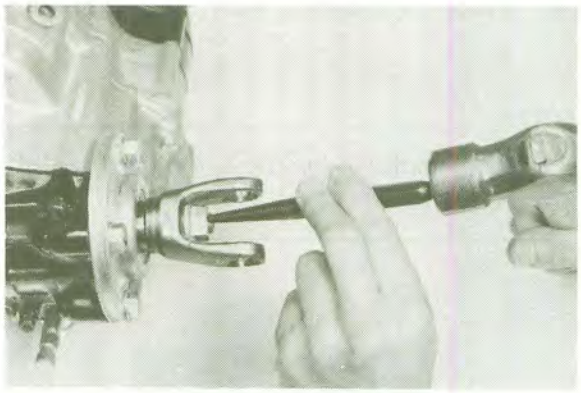


4. Install the securing nut onto the middle drive shaft, and apply Loctite® Stud N'bearing Mount to the threads. Carefully tighten the securing nut, then check the gear lash. Tighten the nut a little more, and check the gear lash. Repeat this tighten-and-check procedure until the gear lash measurement is within specification. You must proceed slowly, however, so the collapsible collar will not be damaged. If you tighten the securing nut so that gear lash is less than 0.1 mm (0.004 in), you will have to disassemble the middle driven shaft and replace the collapsible collar.

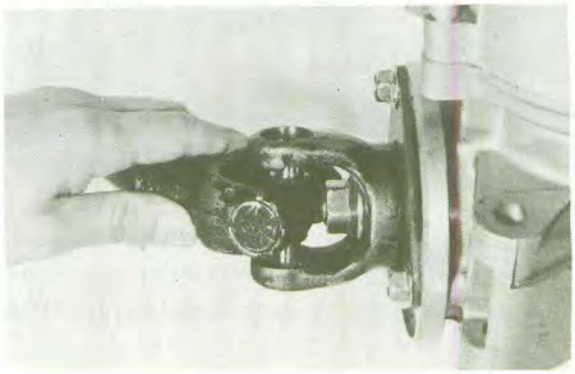
CAUTION:

Never loosen the securing nut when adjusting gear lash. There will be insufficient pressure on the collapsible collar.
Gear lash adjustment must be completed within five minutes, otherwise, the Loctite® will harden and inhibit gear lash adjustment.

5. With a center punch, lock the threads on the securing nut.



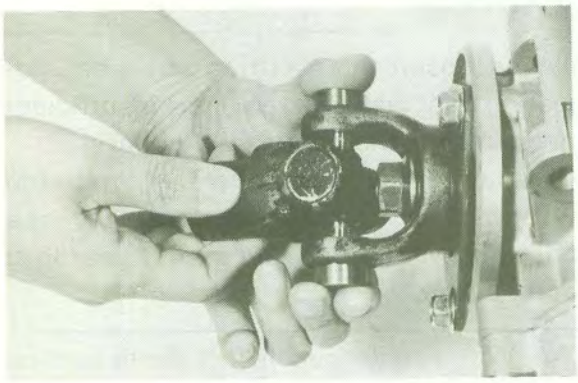
6. Place the yoke into the U-joint.



3. Grease the bearings, and insert them onto the yoke.

CAUTION:

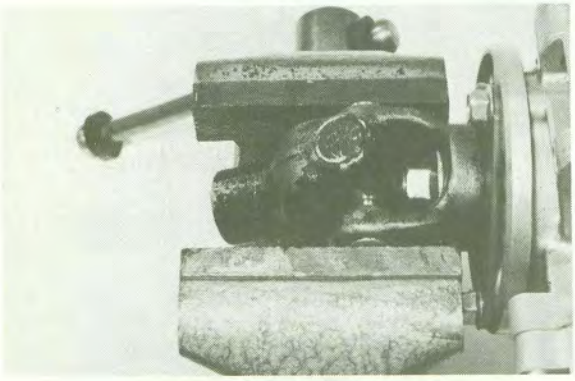
Check each bearing. The needles can easily fall out of their races. Slide the yoke back and forth in the bearings. The yoke will not go all the way into a bearing if a needle is out of place.



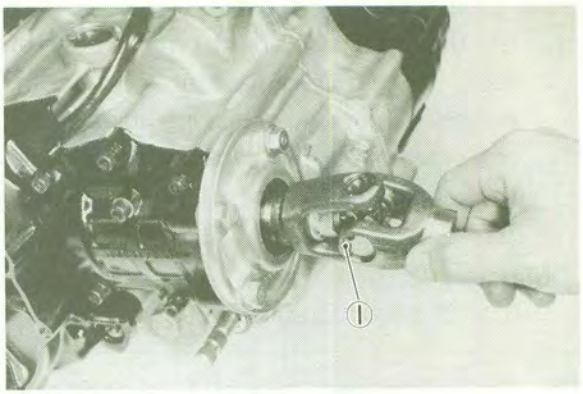
8. Press the bearings into the U-joint with a vise.

NOTE:

It may be helpful to tap the U-joint with a drift punch.



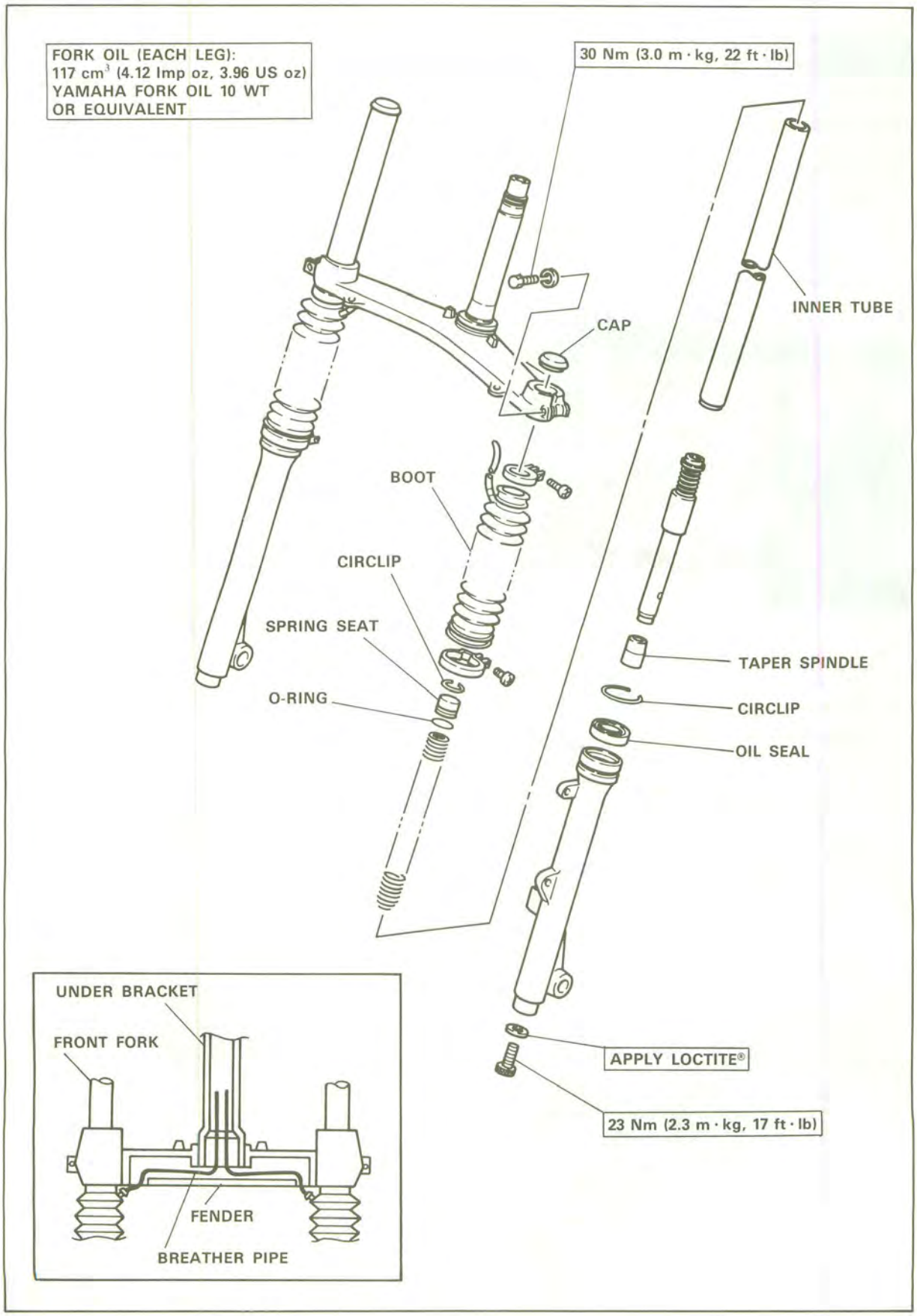
15. Using a suitable socket, further press each bearing into the U-joint until the retainer can be installed onto each bearing. The retainer fits in the slot on the yoke.



1. Retainer

*CHASSIS

FRONT FORK



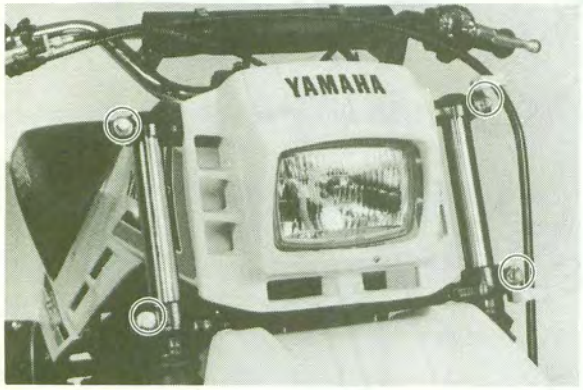
Removal and Disassembly

1. Raise the front wheel by placing the suitable stand under each footrest.

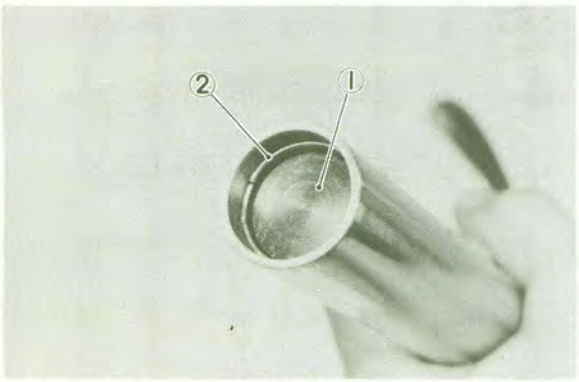
WARNING:

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

2. Remove the front wheel assembly and front fender.
3. Loosen the pinch bolts and remove the brake cable holder securing bolts. Remove the fork(s).

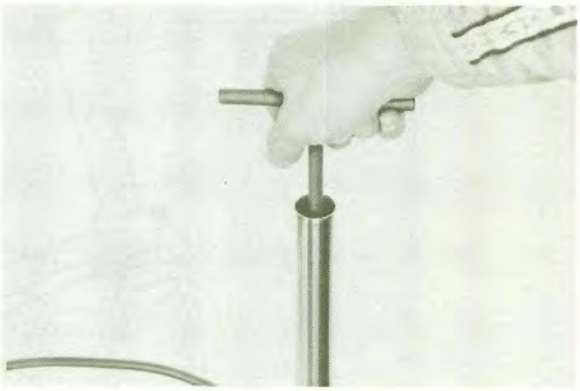


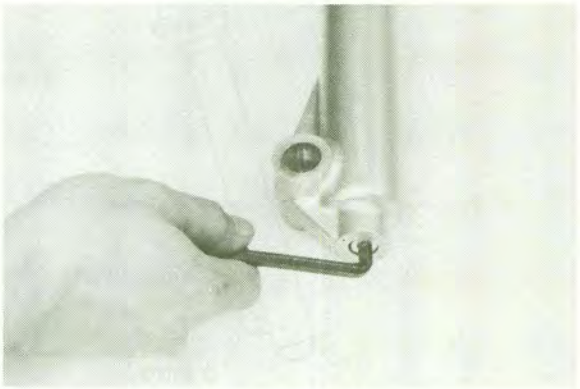
4. Loosen the dust-boot-clamp screws, and remove the dust boot from each fork.
5. Remove the rubber cap and stopper ring (Spring wire circlip) from the top of the each fork.
6. The spring seat and fork spring are retained by a stopper ring (Spring wire circlip). It is necessary to depress the spring seat and fork spring to remove the stopper ring. Remove the stopper ring by carefully prying out one end with a small screwdriver.



1. Spring seat 2. Stopper ring

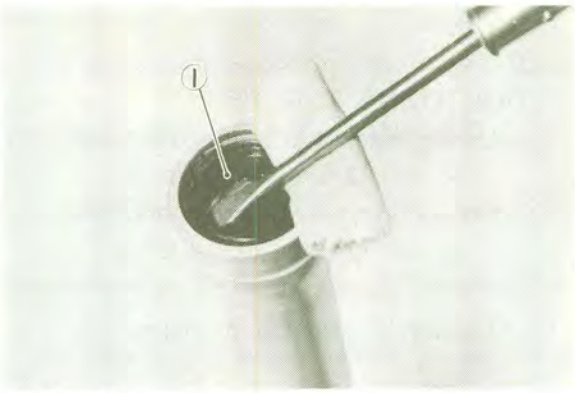
7. Remove the fork spring and remove the cylinder securing bolt from the bottom of the fork assembly. Hold the damper rod with the front-fork-cylinder holder. Remove the damper rod assembly and inner fork tube.





8. Remove the retaining clip from the outer fork tube, and pry out the fork seal. Be careful not to damage the fork tube surface.

1. Retaining clip



1. Oil seal

Inspection

1. Examine the inner fork tube. If the tube is severely scratched or bent, it should be replaced.

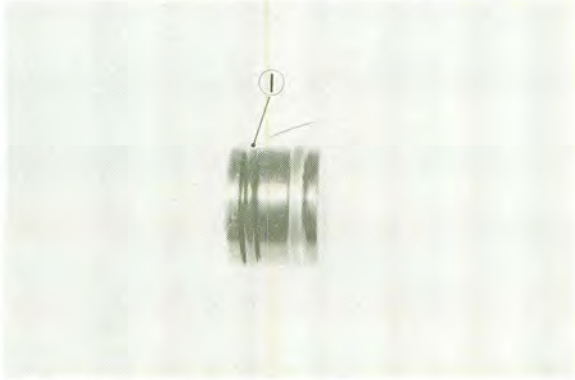
WARNING:

Do not attempt to straighten a bent fork tube; this may dangerously weaken the tube.

2. Inspect the outer surface of the fork seal seat in the outer fork tube. If this surface is damaged, replace the outer fork tube. If it is not damaged, replace the fork seal.
3. Check the outer fork tubes for dents. Replace the tube if it is dented.
4. Check the free length of the springs.

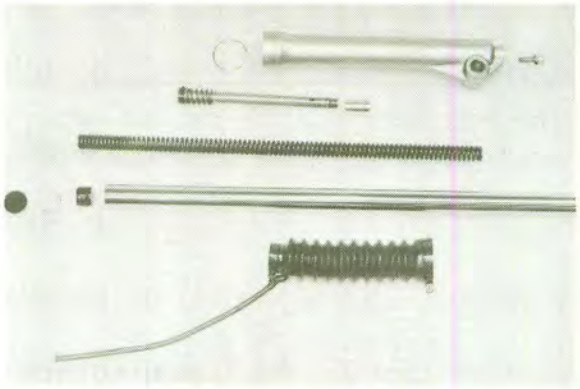
Fork spring free length limit: 501.1 mm (19.73 in)

5. Check the O-ring on the spring seat. If it's damaged, replace it.



1. O-ring

Assembly



1. Make sure all components are clean before assembly. Always install a new fork seal. Do not reuse a seal.
2. Apply oil to the fork seal, and install the fork seal by pressing it in with a large socket. Install the retaining clip.
3. Install the damper rod assembly into the inner fork tube. Hold the damper rod with the front fork cylinder holder.
4. Put the taper spindle on the damper rod.
5. Hold the inner fork tube, and carefully install the outer fork tube over the taper spindle.
6. Apply Loctite® (red) to the cylinder securing bolt, and install the bolt and a copper washer into the outer fork tube. Torque the bolt to specification.

TIGHTENING TORQUE: 23 Nm (2.3 m · kg, 17 ft · lb)

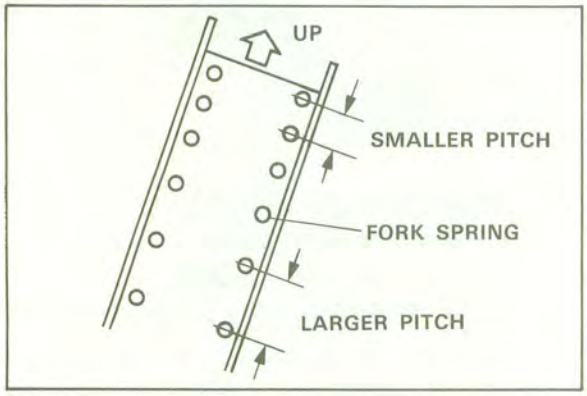
7. Pour the specified amount of fork oil into the inner fork tube.

Fork oil capacity: 117 cm^3 (4.12 Imp oz, 3.96 US oz) Fork oil level: 419.6 mm (16.5 in) (From top of inner tube fully compressed without spring.) Recommended oil: Yamaha fork oil 10 wt or equivalent

8. Install the fork spring, spring seat, and stopper ring into the inner tube.

NOTE:

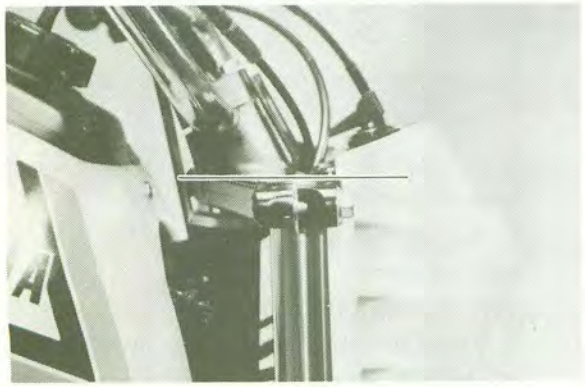
The fork spring must be installed with the smaller pitch side facing upward as shown.



CAUTION:

- **Always use a new stopper ring (Spring wire circlip).**
- **Be sure the stopper ring is properly seated in the groove in the fork tube.**

9. Install the dust boot onto the outer tube. Do not tighten the screws at this point.
10. Install the fork into the brackets. Make the top of the inner fork tube level with the top of the handle crown.



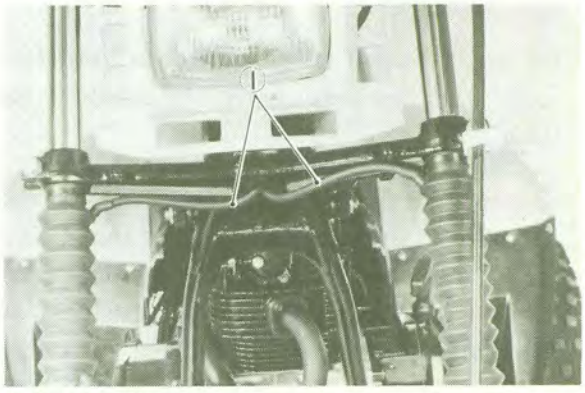
11. Tighten the pinch bolts to specification.

TIGHTENING TORQUE:
Under bracket & Inner fork tube:
30 Nm (3.0 m · kg, 22 ft · lb)
Steering crown & Inner fork tube:
20 Nm (2.0 m · kg, 14 ft · lb)

12. Tighten the dust boot clamps.
13. Reinstall the front fender and front wheel.

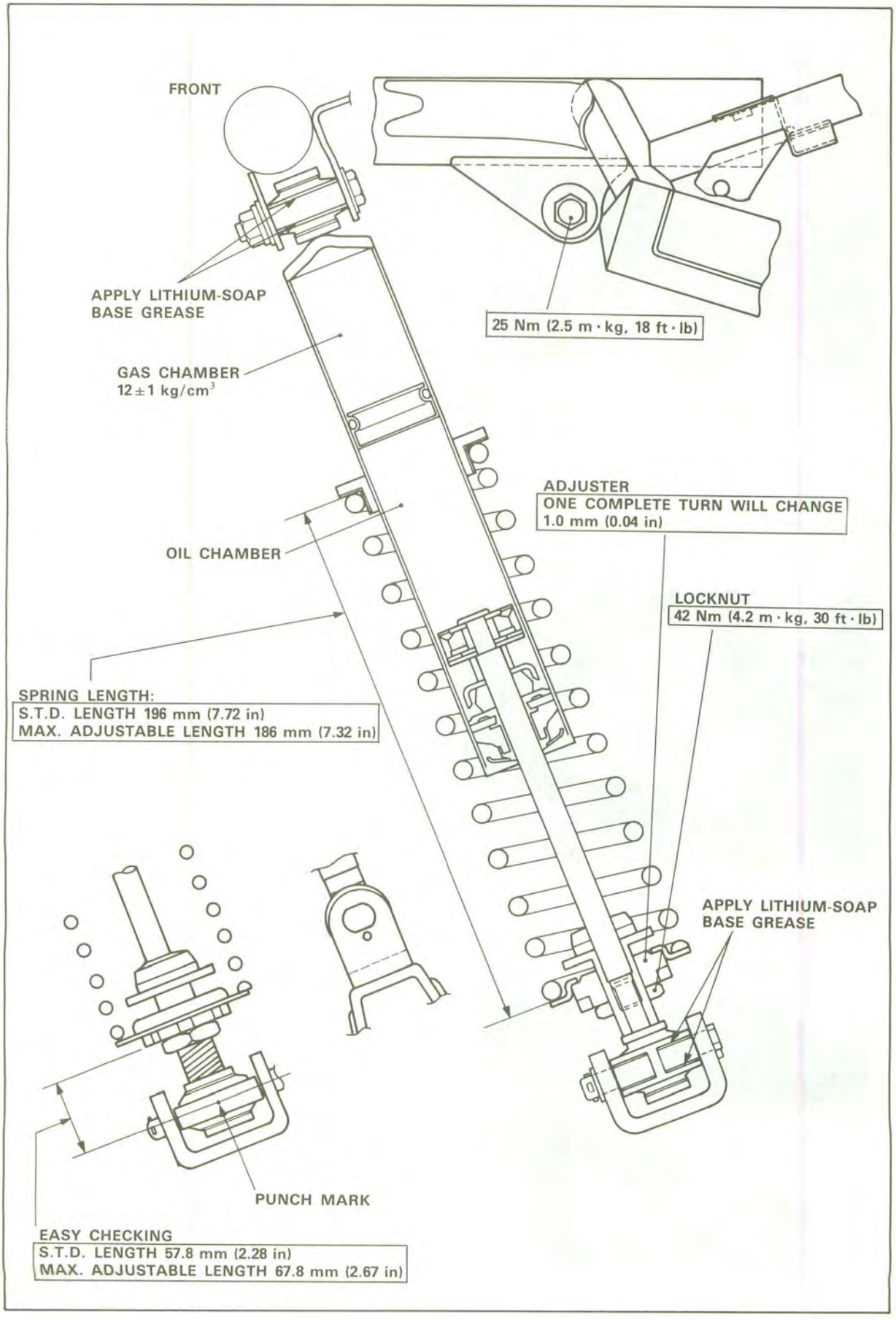
NOTE:

When installing the front fender, make sure the breather pipes are properly connected and routed.



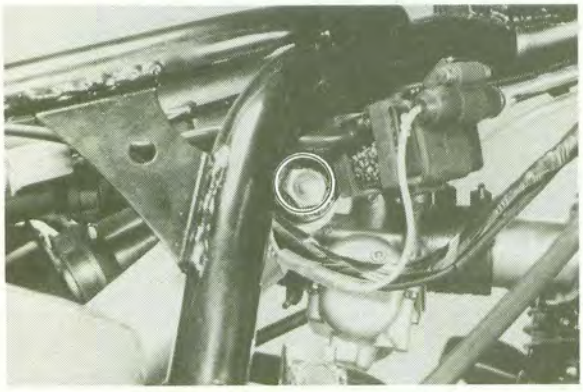
1. Breather pipe

REAR SHOCK ABSORBER



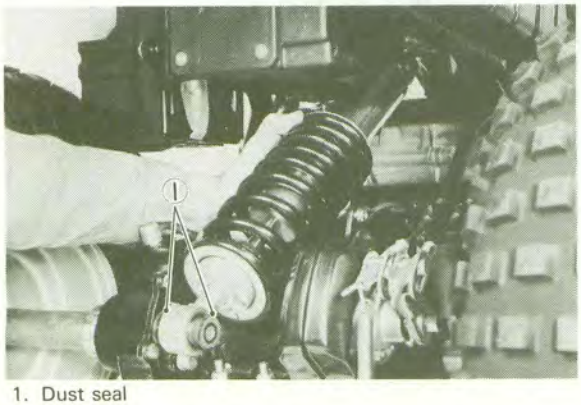
Removal

1. Raise the rear wheels by placing the suitable stand under the engine.
2. Remove the seat and rear fender.
3. Remove the shock absorber upper mounting bolt.



4. Remove the cotter pin from the swingarm, drive out the shock absorber pivot shaft, and disconnect the shock absorber from the swingarm.

5. Remove the shock absorber from the frame by carefully pulling it toward the rear of the machine.



1. Dust seal

6. Compress the spring and remove the spring seats.

NOTE:

The spring should be compressed as little as possible and handled with special care.

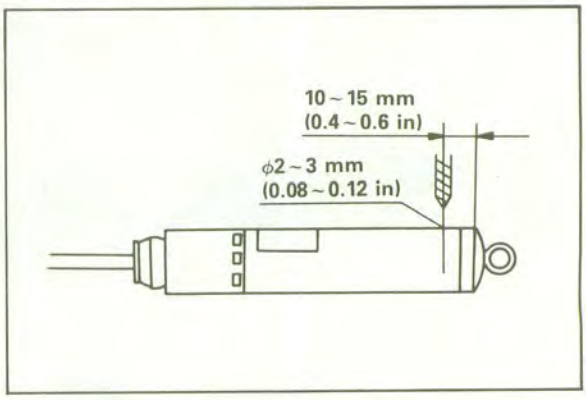
7. Remove the spring, spring guide, spring adjuster, and damper sub-assemblies from the shock absorber.

Inspection

Visually inspect the shock absorber for oil leaks. If you notice any signs of an oil leak, replace the entire shock absorber.

Notes on Disposal

Gas pressure must be released before disposing of the shock absorber. To do so, drill a 2 ~ 3 mm (0.08 ~ 0.12 in) hole through the cylinder wall at a point 10 ~ 15 mm (0.4 ~ 0.6 in) above the bottom of the cylinder.



CAUTION:

Always wear a proper eye protection to prevent eye damage from escaping gas and/or metal chips.

Installation and Adjustment

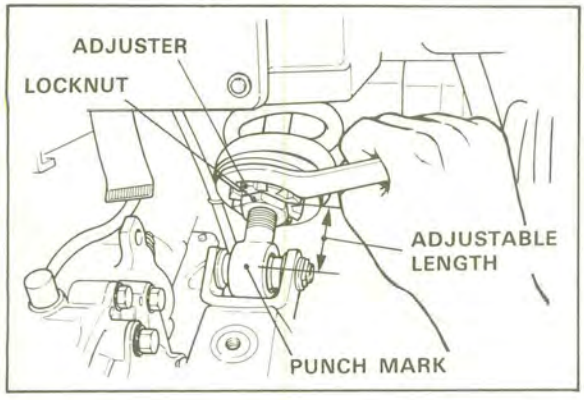
1. Lightly apply lithium-soap base grease to the pivot shaft and upper mounting bolt.
2. To install the shock absorber in the motorcycle, reverse the removal procedures.

TIGHTENING TORQUE:
Pivot shaft:
25 Nm (2.5 m · kg, 18 ft · lb)

Adjustment

The preload is adjusted by changing the set length of the spring: a shorter set length increases the preload, a longer set length decreases the preload.

1. To adjust the preload, loosen the locknut.
2. Adjust the spring set length by turning the spring adjuster with the special wrench.



3. To increase the preload, turn the spring adjuster clockwise.

CAUTION:

Do not decrease the preload more than standard position.

One complete turn of the adjuster will change 1 mm (0.04 in). Make changes in increments of 10 mm (0.39 in) at a time.

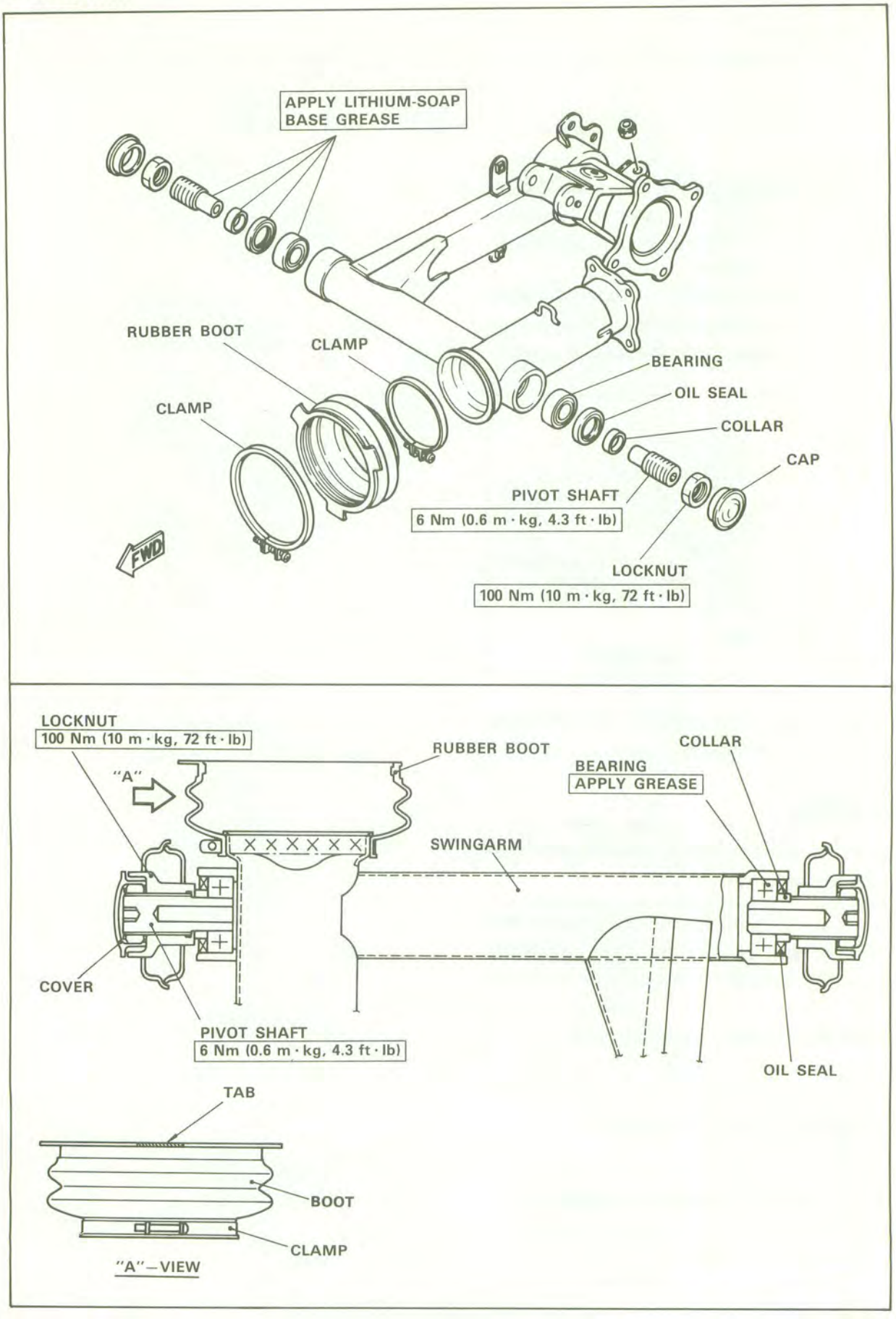
Standard Length: 57.8 mm (2.28 in)

Maximum Adjustable Length:
67.8 mm (2.67 in)

4. Tighten the locknut to specification.

TIGHTENING TORQUE:
42 Nm (4.2 m · kg, 30 ft · lb)

SWINGARM


APPLY LITHIUM-SOAP BASE GREASE
RUBBER BOOT
CLAMP
CLAMP
BEARING
OIL SEAL
COLLAR
CAP
PIVOT SHAFT
6 Nm (0.6 m · kg, 4.3 ft · lb)
FWD
LOCKNUT
100 Nm (10 m · kg, 72 ft · lb)
LOCKNUT
100 Nm (10 m · kg, 72 ft · lb)
"A"
RUBBER BOOT
COLLAR
BEARING
APPLY GREASE
SWINGARM
COVER
PIVOT SHAFT
6 Nm (0.6 m · kg, 4.3 ft · lb)
OIL SEAL
TAB
BOOT
CLAMP
"A"—VIEW

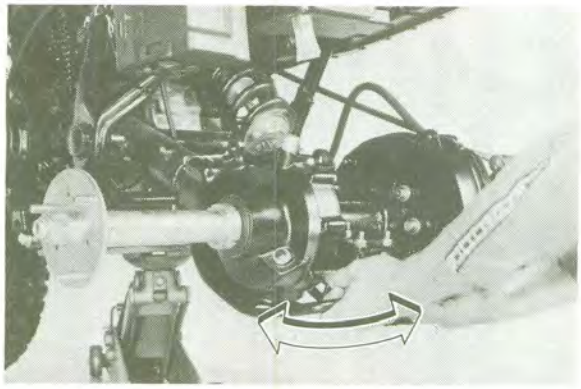
Free Play Inspection

1. Raise the rear wheels by placing the suitable stand under the engine.

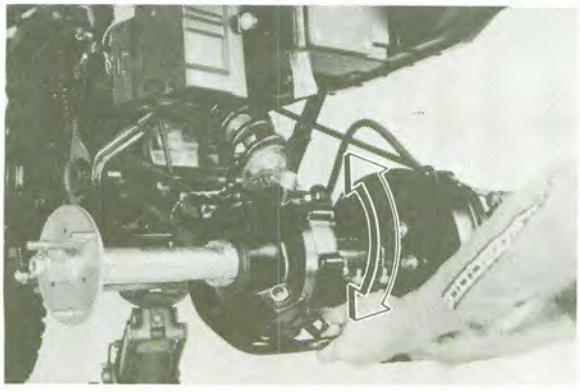
WARNING:

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

2. Remove the rear wheels and the shock absorber pivot shaft. Grasp the swingarm and try to move it from side to side as shown. There should be no noticeable side play.

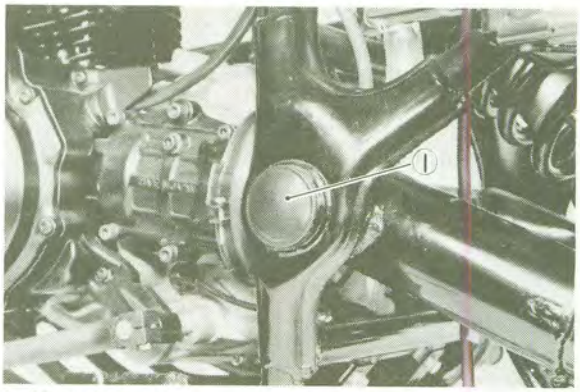


3. The swingarm is mounted on tapered bearings. Move the swingarm up and down as shown. The swingarm should move smoothly, without tightness, binding, or rough spots that could indicate damaged bearings.



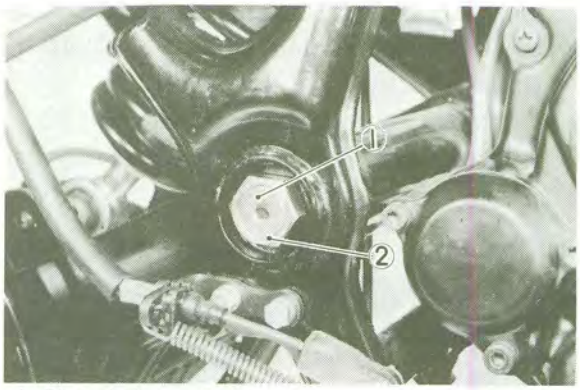
Adjustment

1. Remove the pivot shaft caps from the left and right side of the swingarm.



1. Pivot shaft cap

2. Loosen the right-side pivot shaft locknut and pivot shaft.



1. Pivot shaft 2. Locknut

3. Loosen the left-side pivot shaft locknut and tighten the pivot shaft to specification.

TIGHTENING TORQUE:
6 Nm (0.6 m · kg, 4.3 ft · lb)

CAUTION:

Do not allow the pivot shaft to turn while tightening the locknut.

4. Tighten the left-side locknut to specification.

TIGHTENING TORQUE:
100 Nm (10 m · kg, 72 ft · lb)

5. Tighten the right-side pivot shaft and locknut to specification.

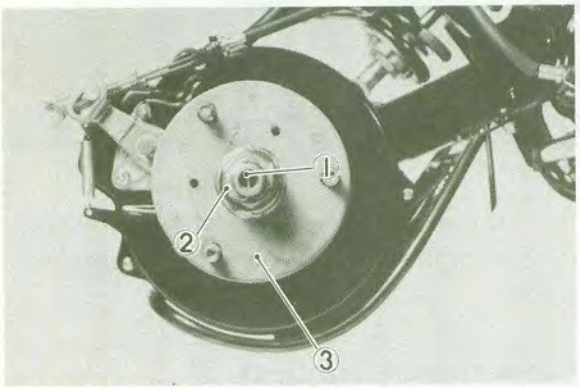
TIGHTENING TORQUE:
Pivot shaft:
6 Nm (0.6 m · kg, 4.3 ft · lb)
Locknut:
100 Nm (10 m · kg, 72 ft · lb)

Removal

NOTE:

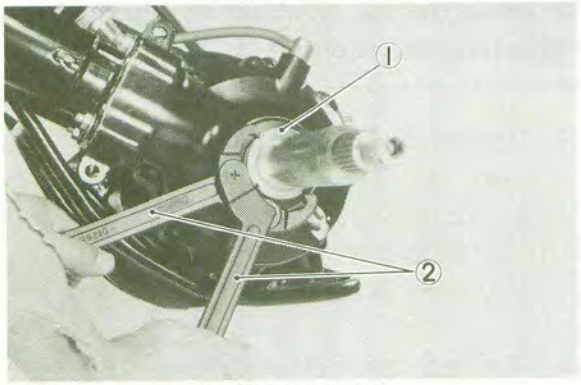
It is not necessary to remove the rear wheels, rear brake assembly, rear axle, and final gear assembly to replace the swingarm bearings.

1. Apply the parking brake, and remove the rear wheels.
2. Remove the cotter pins and axle nuts from the rear axle. Remove both wheel flanges from the rear axle.



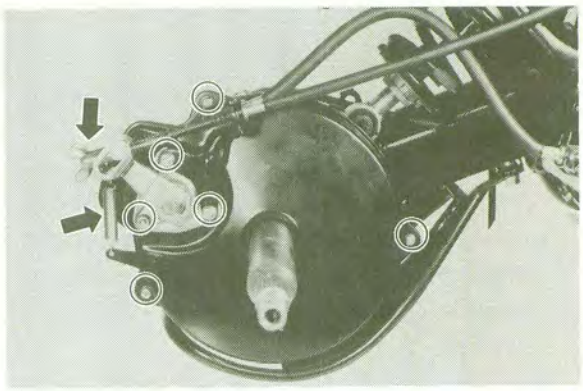
1. Cotter pin 2. Axle nut 3. Rear wheel flange

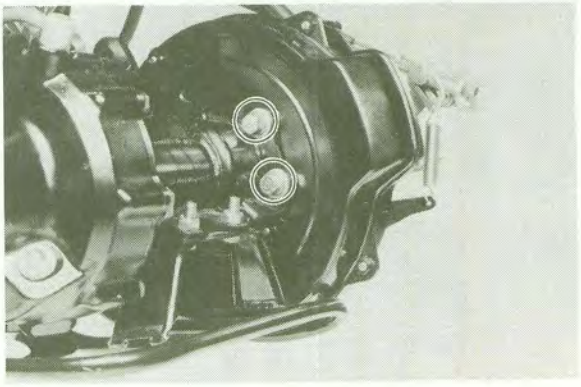
3. Remove the ring nuts from the rear axle; use the ring nut wrenches to loosen the ring nuts.



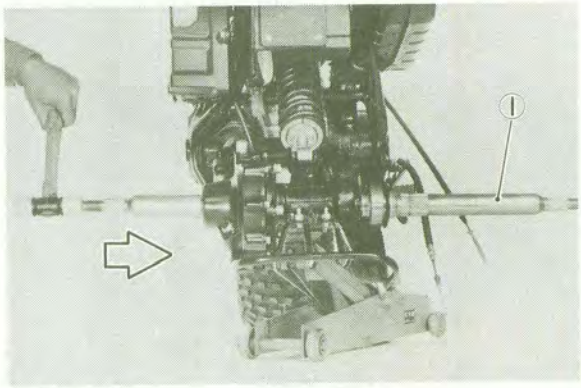
1. Ring nut 2. Ring nut wrench

4. Releace the parking brake. Disconnect the rear brake cables from the caliper lever. Remove the rear brake assembly.



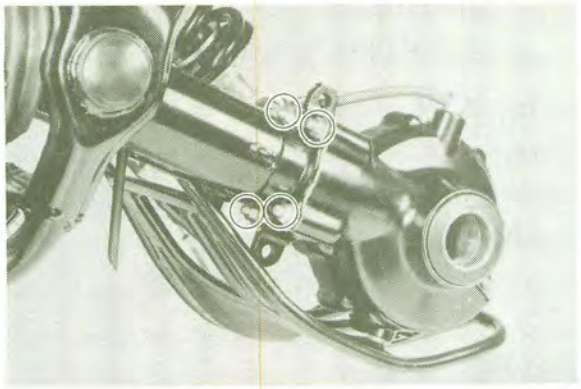


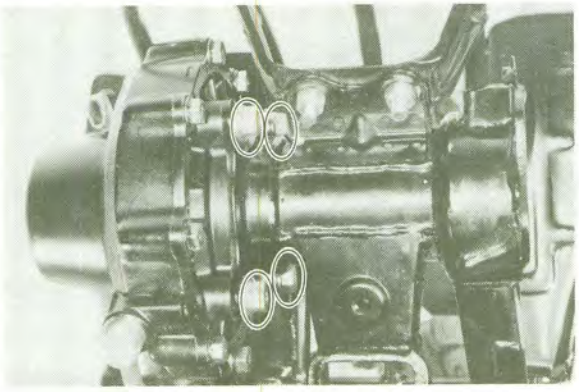
5. Remove the rear axle from the wheel hub by tapping the left end axle with a plastic hammer.



1. Rear axle

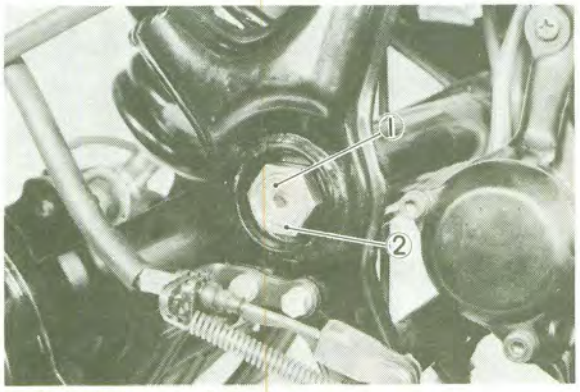
6. Remove the final gear assembly and the drive shaft from the swingarm.





Loosen the rubber boot clamp.

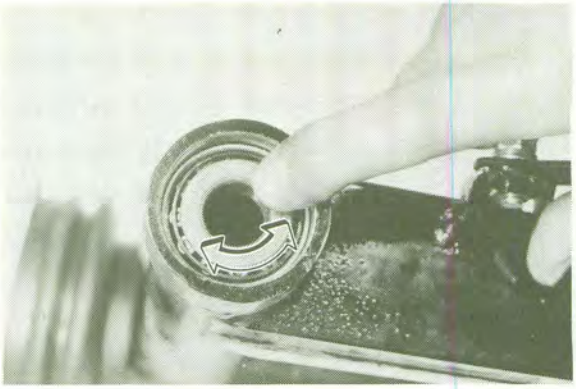
7. Remove the swingarm pivot caps, the pivot shafts and the swingarm.



1. Pivot shaft 2. Locknut

Inspection and Lubrication

1. Remove the oil seals collars, and the bearings. Inspect the bearings for pitting or other damage. Make sure that the bearings roll freely. If a bearing is damaged, both bearings and both races should be replaced.



CAUTION:

Do not use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.

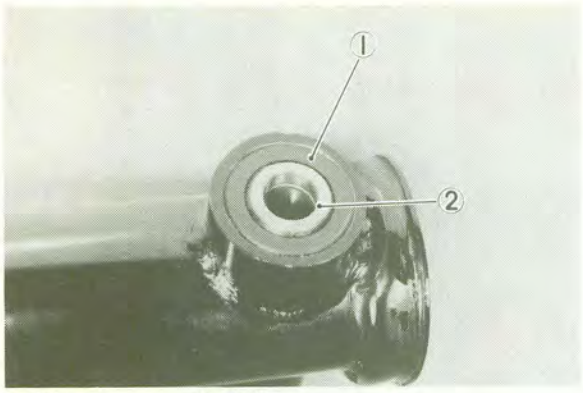
NOTE:

When installing new bearings, grease liberally with lithium-soap base grease.

2. Always replace the oil seals when bearings are removed.
3. Examine the rubber boot for damage. Replace if damaged.

Assembly

1. Apply grease the bearings, collars, and the lips of the oil seals. Use lightweight lithium-soap base grease.
2. Install the bearings, oil seals, and collars into the swingarm.



1. Oil seal 2. Collar

3. Install the swingarm and both pivot shafts. Finger-tighten both the shafts.
4. Tighten the left-pivot shaft to specification.

TIGHTENING TORQUE:
6 Nm (0.6 m · kg, 4.3 ft · lb)

5. Tighten the left-pivot shaft locknut to specification.

CAUTION:

Do not allow the pivot shaft to turn while tightening the locknut.

TIGHTENING TORQUE:
100 Nm (10 m · kg, 72 ft · lb)

6. Tighten the right-pivot shaft to specification.

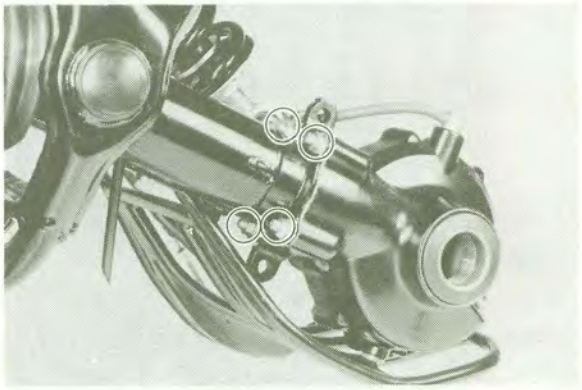
TIGHTENING TORQUE:
6 Nm (0.6 m · kg, 4.3 ft · lb)

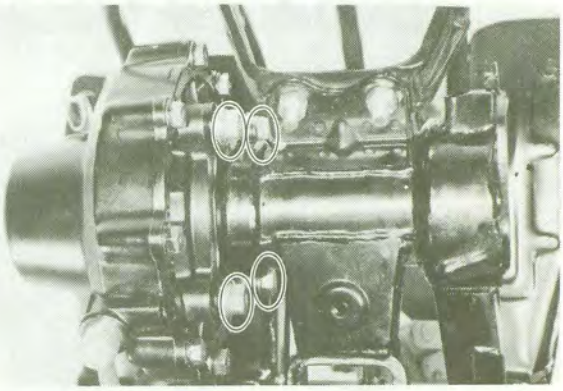
7. Tighten the right-side pivot shaft locknut to specification.

TIGHTENING TORQUE:
100 Nm (10 m · kg, 72 ft · lb)

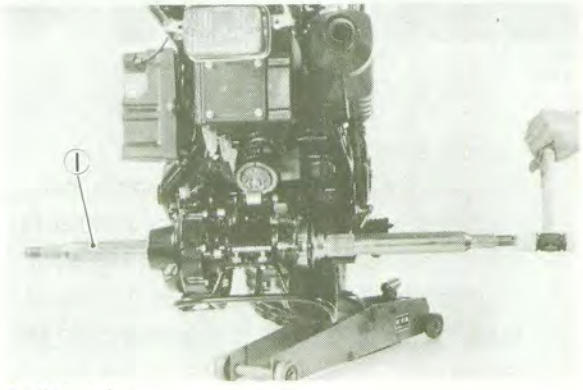
8. Install the pivot shaft caps.
9. Install the final gear assembly. Align the splines of the U-joint with those of the drive shaft; then move the final gear assembly into place in the swingarm.
10. Tighten the final gear housing securing bolts and nuts to specification.

TIGHTENING TORQUE:
Nuts:
23 Nm (2.3 m · kg, 18 ft · lb)
Bolts:
45 Nm (4.5 m · kg, 32 ft · lb)





11. Install the rear axle into the rear wheel hub by tapping the right end axle with a plastic hammer.

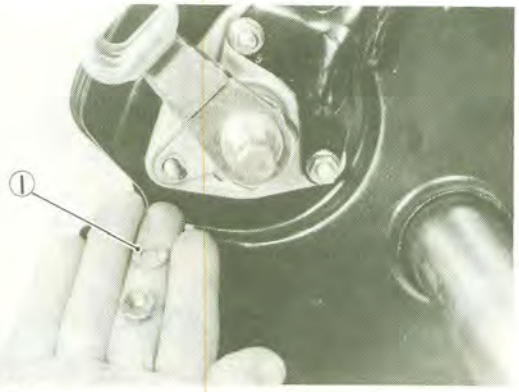


1. Rear axle

12. Install the ring nut onto the rear axle. Finger-tighten the ring nut.

13. Install the brake cover (inside) and tighten the screws.
14. Install the caliper body, pads, disc plate, and brake covers. Tighten the bolts and nuts to specification.

TIGHTENING TORQUE:
Caliper body:
Bolt: 50 Nm (5.0 m · kg, 36 ft · lb)
Nut: 9 Nm (0.9 m · kg, 6.5 ft · lb)



1. Washer

15. Connect the brake cables and adjust the rear brake. Refer to "Brake Pedal and Rear Brake Adjustment".
16. Apply the parking brake and tighten the ring nut to specification.

TIGHTENING TORQUE:
100 Nm (10 m · kg, 72 ft · lb)

17. Apply Loctite® (Red) to the outer ring nut threads, and torque the ring nut to specification.

TIGHTENING TORQUE:
100 Nm (10 m · kg, 72 ft · lb)

CAUTION:

Do not allow the inner ring nut to turn while tightening the outer ring nut.

18. Install the rear wheel flanges, washers, and axle nuts. Torque the nuts to specification.

TIGHTENING TORQUE:
50 Nm (5.0 m · kg, 36 ft · lb)

WARNING:

Always use a new cotter pin on the axle nut.

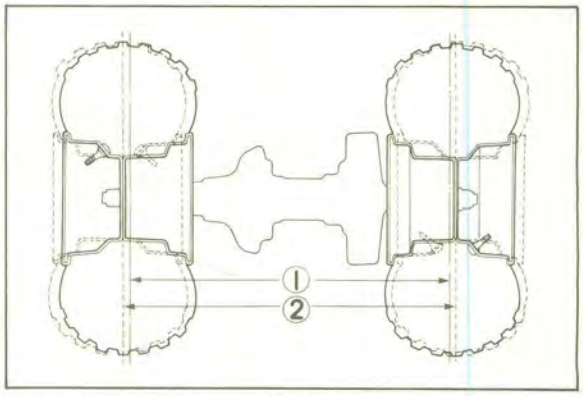
19. Install the rear wheels. Torque the nut to specification.

TIGHTENING TORQUE:
45 Nm (4.5 m · kg, 32 ft · lb)

NOTE:

The rear wheels can be mounted in two ways depending on the following two riding conditions.

- Standard mounting (Face the air valve toward the outside.): This is for every normal riding condition.
- Reversed mounting (Face the air valve toward the inside.): This is for a riding condition subjected to falls, such as sharp corners, etc.

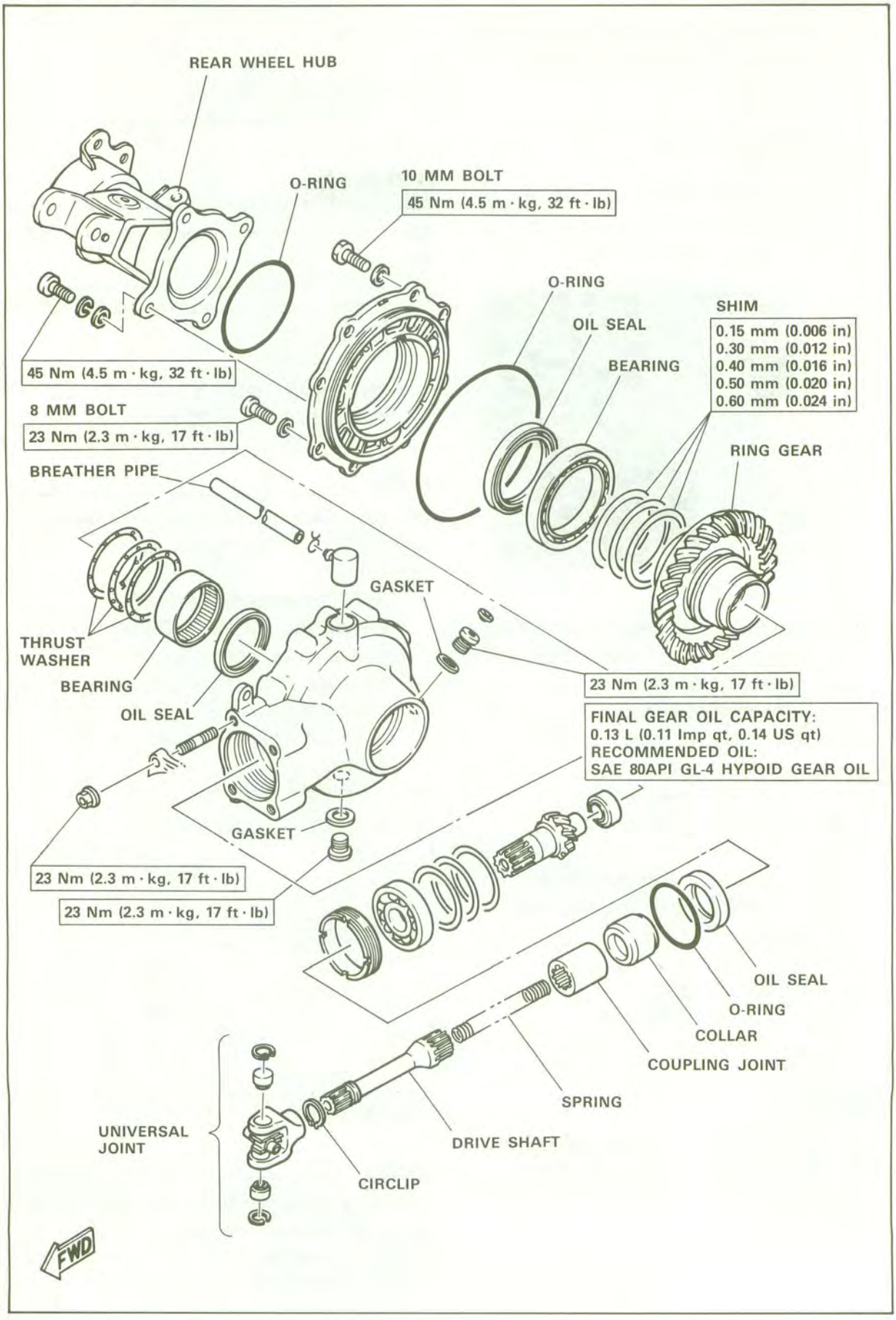


1. Standard position 2. Reversed position

NOTE:

Cornering performance is less good on the reversely mounted rear wheels than on the standard mounting. Thus, the standard mounting is recommended for normal riding.

FINAL GEAR


REAR WHEEL HUB
O-RING
10 MM BOLT
45 Nm (4.5 m · kg, 32 ft · lb)
O-RING
SHIM
0.15 mm (0.006 in)
0.30 mm (0.012 in)
0.40 mm (0.016 in)
0.50 mm (0.020 in)
0.60 mm (0.024 in)
OIL SEAL
BEARING
45 Nm (4.5 m · kg, 32 ft · lb)
8 MM BOLT
23 Nm (2.3 m · kg, 17 ft · lb)
RING GEAR
BREATHER PIPE
GASKET
THRUST WASHER
BEARING
OIL SEAL
23 Nm (2.3 m · kg, 17 ft · lb)
FINAL GEAR OIL CAPACITY:
0.13 L (0.11 Imp qt, 0.14 US qt)
RECOMMENDED OIL:
SAE 80API GL-4 HYPOID GEAR OIL
GASKET
23 Nm (2.3 m · kg, 17 ft · lb)
23 Nm (2.3 m · kg, 17 ft · lb)
OIL SEAL
O-RING
COLLAR
COUPLING JOINT
SPRING
UNIVERSAL JOINT
DRIVE SHAFT
CIRCLIP
FWD

Troubleshooting

The following conditions may indicate damaged shaft drive components:

Symptoms	Possible damaged areas
1. A pronounced hesitation or "jerky" movement during acceleration, deceleration, or sustained speed. (This must not be confused with engine surging or transmission characteristics.) 2. A "rolling rumble" noticeable at low speed; a high-pitched whine; a "clunk" from a shaft drive component or area.	A. Damage to bearings. B. Improper gear lash. C. Gear tooth damage.
3. A locked-up condition of the shaft drive mechanism; no power transmitted from engine to rear wheel.	D. Broken drive-shaft. E. Broken gear teeth. F. Seizure due to lack of lubrication. G. Small foreign object lodged between moving parts.

NOTE:

Damage areas A, B, and C above may be extremely difficult to diagnose. The symptoms are quite subtle and difficult to distinguish from normal motorcycle operating noise. If there is reason to believe these components are damaged, remove the components for specific inspection.

Inspection notes:

1. During coasting, accelerating, or decelerating, the "rolling rumble" will increase with rear wheel speed, not engine or transmission gear speeds. However, such noise may also be due to damaged wheel bearings.
2. Noise that varies with acceleration and deceleration: following incorrect reassembly, a condition of too-little gear lash may produce a whine during deceleration.

CAUTION:

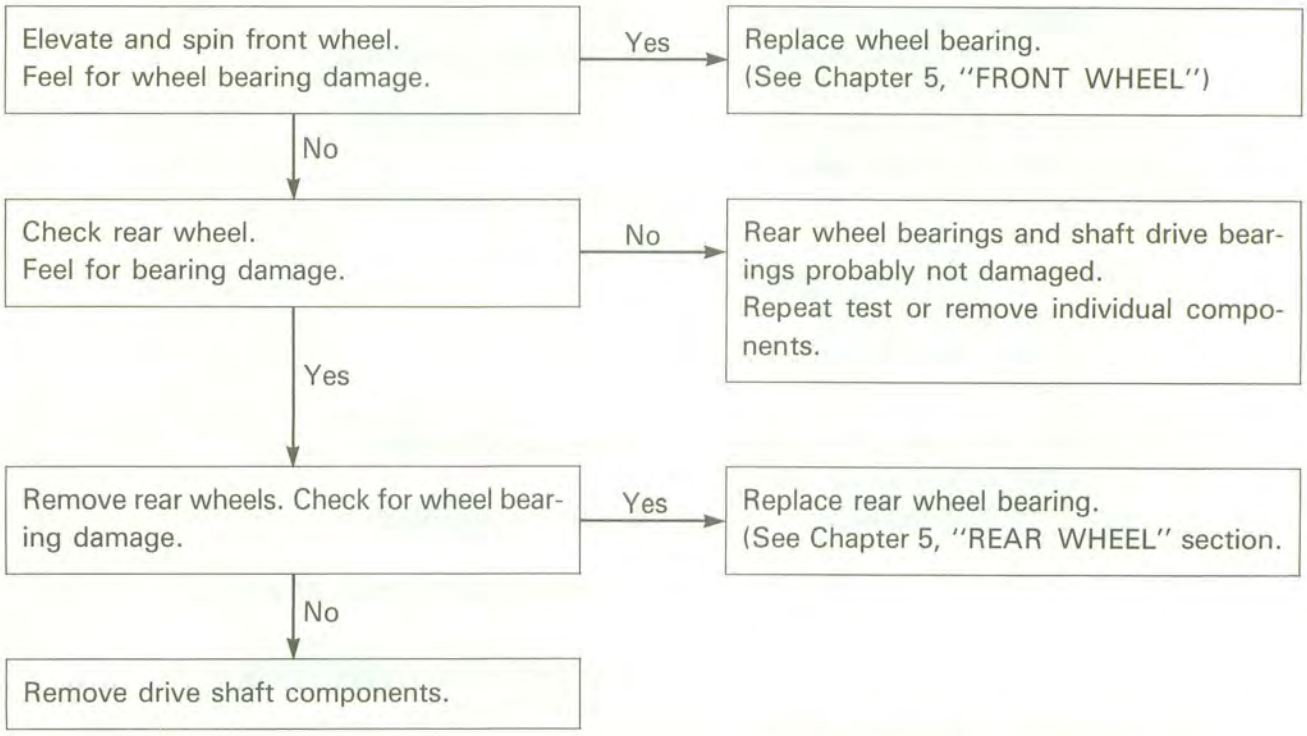
Too-little gear lash is extremely destructive to the gear teeth. If a test ride following reassembly indicates this condition, stop riding immediately to minimize damage to the gears.

3. A slight "thunk" must be distinguished from normal motorcycle operation. It will be most noticeable at low speed and could indicate broken gear teeth.

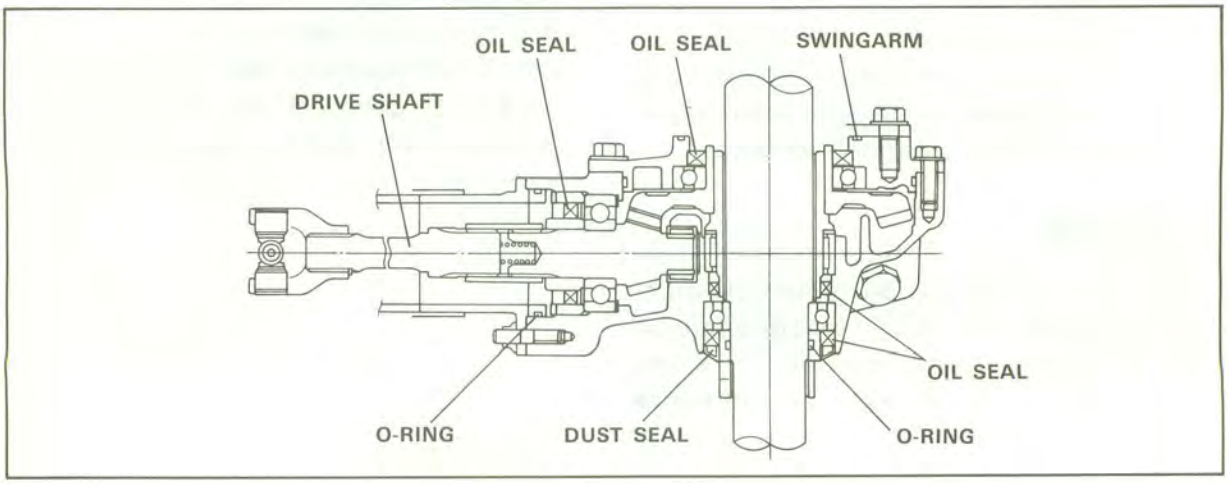
WARNING:

If broken gear teeth are suspected, stop riding immediately. This condition could lead to locking-up of the shaft drive assembly and result in harm to a rider.

4. Troubleshooting chart
   Where basic conditions "1" and "2" above exist, consider the following chart:



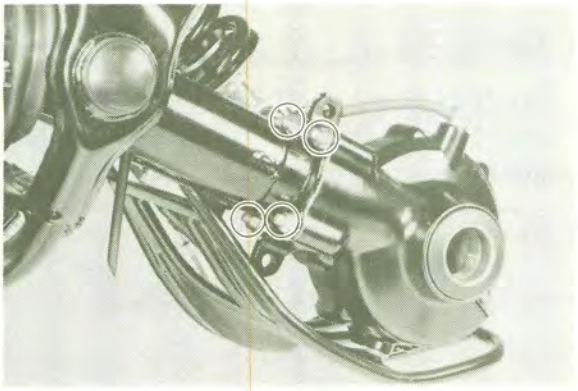
5. Oil leak inspection
   If a shaft drive component is suspected of leaking oil, first thoroughly clean the entire motorcycle. The apparent location of an oil leak on a dusty motorcycle may be misleading. Dry the motorcycle and apply a leak-localizing compound or a dry-powder spray that will limit the flow of any leaking oil. Operate the motorcycle prepared in this way for the distance necessary to locate precisely the leak. There is the possibility that a component housing may have been damaged by road debris or an accident, or a gasket or a seal may be cracked or broken. However, on a new or nearly new motorcycle, an apparent oil leak may be the result of a rust-preventive coating or excessive assembly lubrication of the seals. Always clean the motorcycle and recheck the suspected location of any apparent leakage.

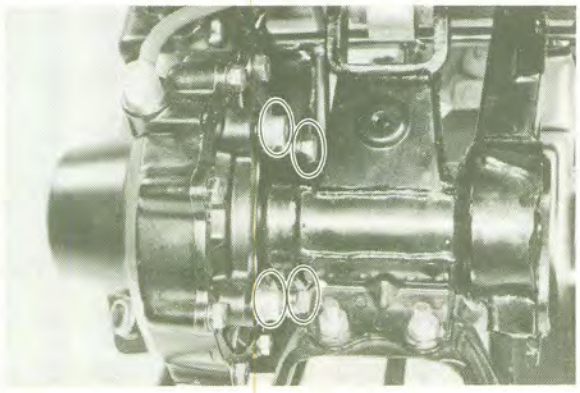


6. Checking drained oil
   Whenever a problem is suspected in either the middle or final gear assemblies, drain and inspect the oil. Metal particles on the drain plug or in the oil could indicate a bearing seizure or other problem. However, a small amount of metal particles in the oil is normal.

Final Gear Removal

1. Remove the rear wheels and the axle (see "SWINGARM" section).
2. Remove the four nuts and four bolts holding the final drive housing to the swingarm.





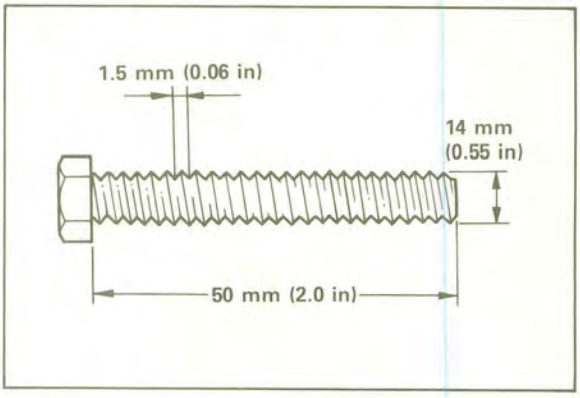
3. Remove the final gear assembly.

Gear Lash Check and Adjustment

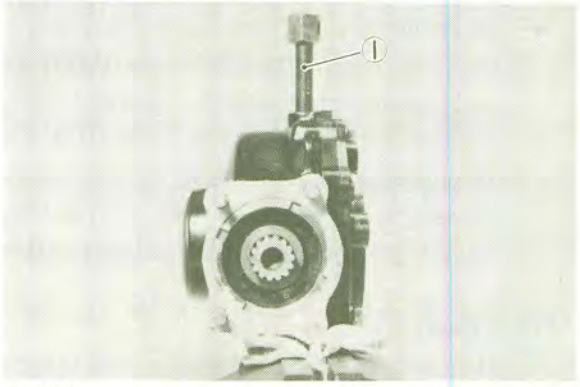
1. Remove the drain plug from the final gear case and drain the oil.
2. Secure the gear case in a vise or other support.
3. Install a specified size of bolt (as shown) into the drain plug hole. Finger-tighten the bolt until it holds the ring gear.

NOTE:

The bolt should not be over tightened, finger tight is sufficient.



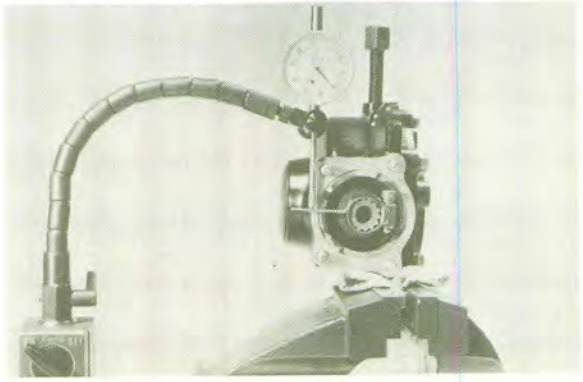
4. Install the final gear lash measurement tool on the drive shaft.



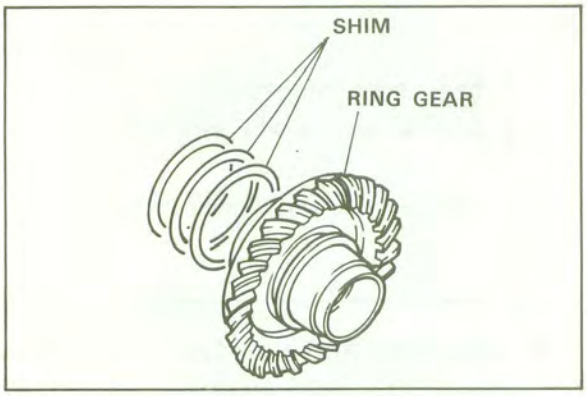
1. Bolt

5. Mount a dial gauge against the lash measurement tool at the scribed mark from the center of the shaft.
6. Gently rotate the gear coupling back and forth. Note the lash measurement on the dial gauge.

Final gear lash:
0.1 ~ 0.2 mm (0.004 ~ 0.008 in)



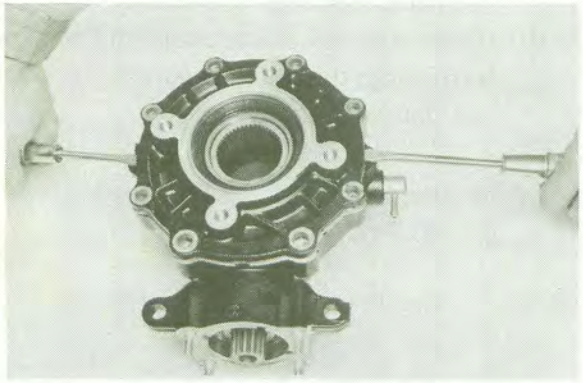
7. If the gear lash exceeds the specified limits, adjust as follows:
- To reduce gear lash, increase the ring gear shim.
- To increase gear lash, reduce the ring gear shim.

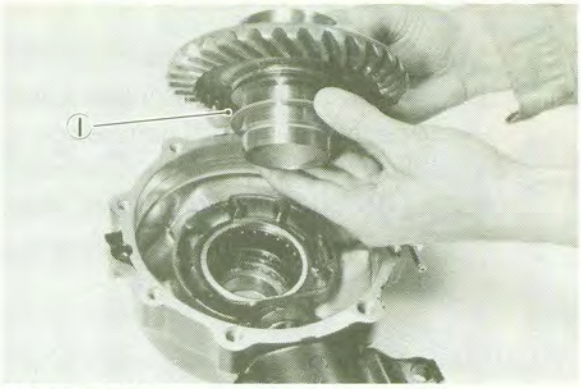


- If it is necessary to increase the ring gear shim by more than 0.1 mm (0.004 in), reduce the thrust washer thickness by 0.1 mm (0.004 in) for each 0.1 mm (0.004 in) of ring-gear-shim increase. If it is necesary to reduce the shim by more than 0.1 mm (0.004 in), reverse the above procedure.

Final Gear Disassembly

1. Remove the bolts holding the bearing housing.
2. Remove the ring gear assembly and thrust washer from the final gear case.



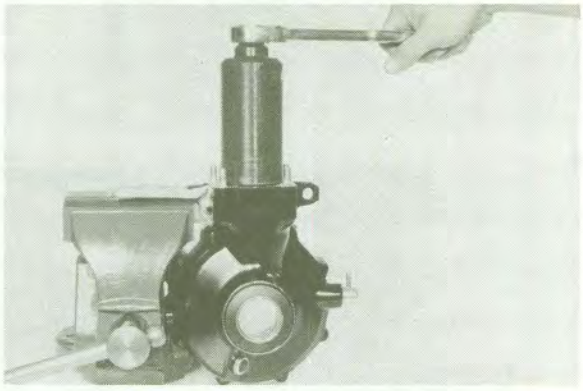


1. Thrust washer

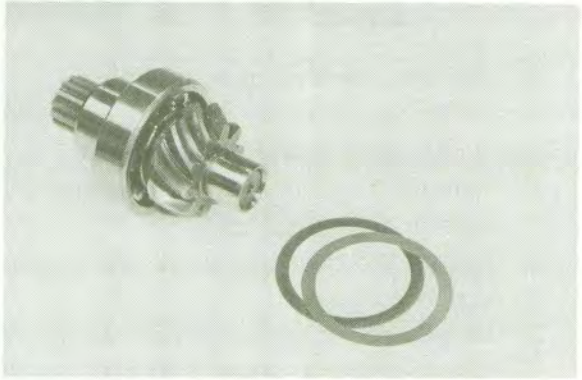
3. Remove the final-drive-shaft-bearing retainer with the final-drive-shaft-bearing-retainer wrench.

CAUTION:

The final-drive-shaft-bearing-retainer nut has left-hand threads. Turn the retainer nut clockwise to loosen it.



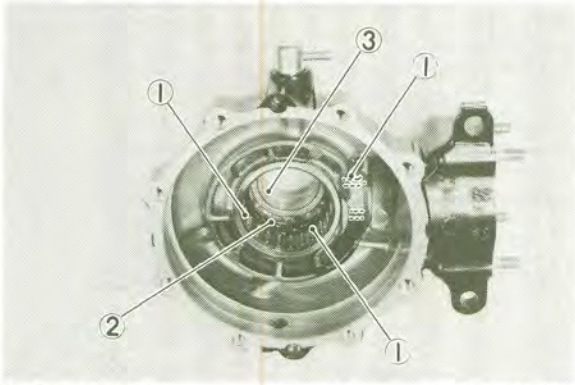
4. Remove final drive shaft assembly from the final gear case.



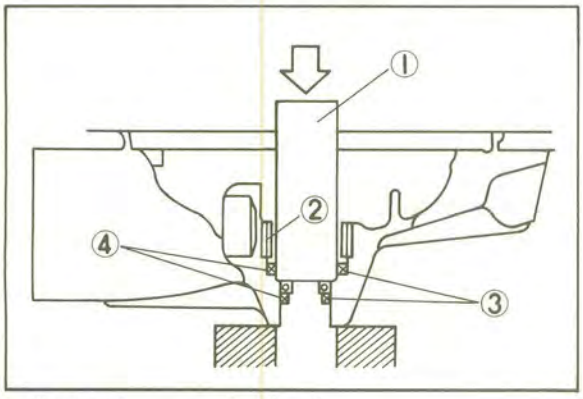
CAUTION:

Final drive shaft removal should be performed only if the gearing or damper cam replacement is necessary. Do not reuse the bearings or races after removal.

5. Remove the ball bearing, oil seals, and roller bearing from the main housing by using an appropriate press tool and a press. Use the appropriate supports for the main housing during this operation. The roller bearing may be reused if undamaged. Do not reuse the oil seal.

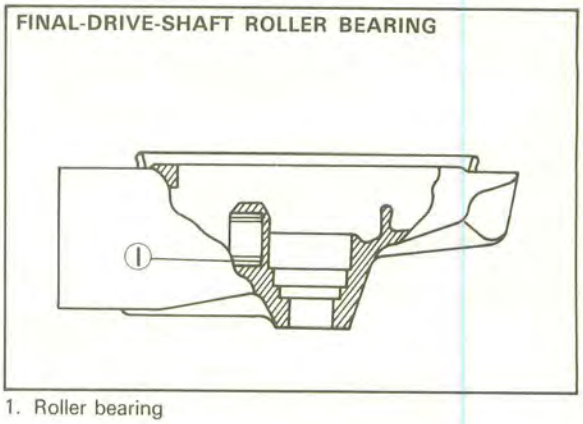


1. Roller bearing 2. Oil seal 3. Ball bearing



1. Press tool
2. Roller bearing
3. Oil seal
4. Ball bearing

6. Final-drive-shaft roller bearing; removal of this bearing is difficult and seldom necessary. Heat the bare housing to 150°C (302°F). Use an appropriately shaped punch to remove the roller bearing outer race. Remove the inner race from the final drive shaft.



1. Roller bearing

Final Gear Assembly

1. Install the new rear final drive shaft roller bearing. Heat the bearing housing to 150°C (302°F) and use an appropriate adapter to install the roller bearing outer race. Install the inner race onto the final drive shaft.
2. Using an appropriate press tool and a press, install the ball bearing, new oil seals, and roller bearing into the main housing.

NOTE:

The removed roller bearing can be used if undamaged; however, we recommend replacement with a new one.

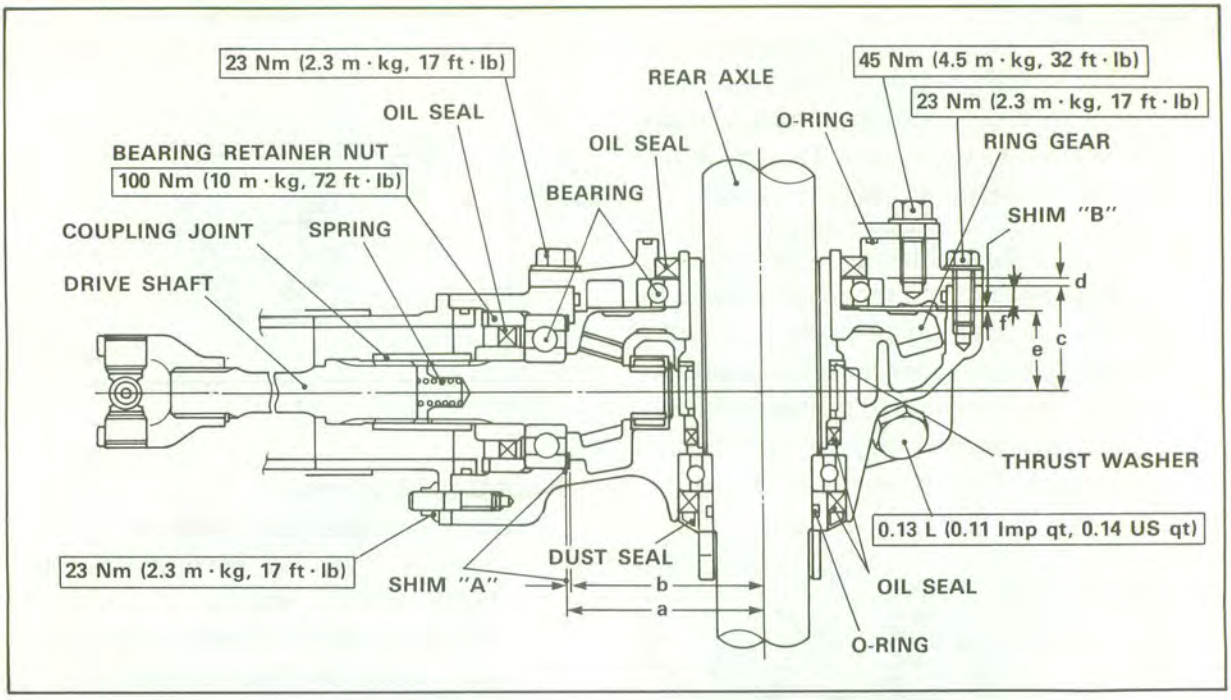
3. Final drive/ring gear positioning.

NOTE:

When any of the following parts are replaced, gear positioning is necessary:

- Final gear case
- Ring gear bearing housing
- Bearing(s)

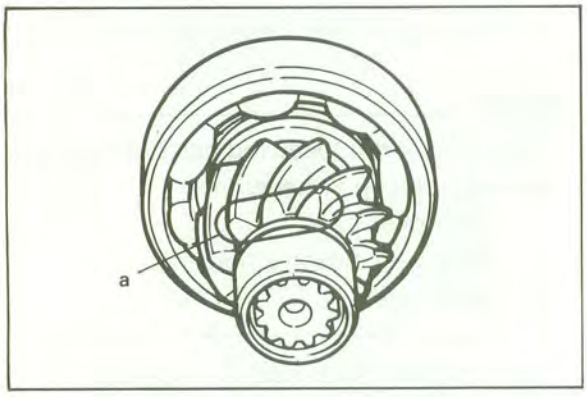
a. The shim thickness, A, necessary for the final-dirve-shaft gear positioning, can be calculated from the information found on the final gear case and on the drive gear end.



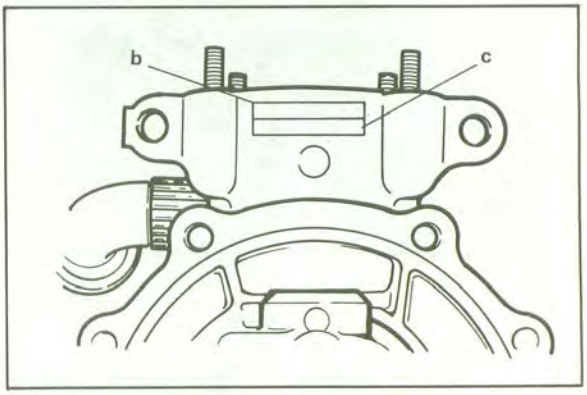
To find shim thickness, A, use the following formula:
A = a – b

Where:

a = a numeral (usually a decimal number) on the gear is either added to or subtracted from 79.



b = a numeral (usually a decimal number) on the gear case is either added to subtracted 79.



Example:
If the final-drive-shaft gear is marked "+01" or "0.01" "a" is 79.01.
If the gear case is marked "–50" "b" is 78.50.

A = 79.01 – 78.50
A = 0.51 (0.020 in)

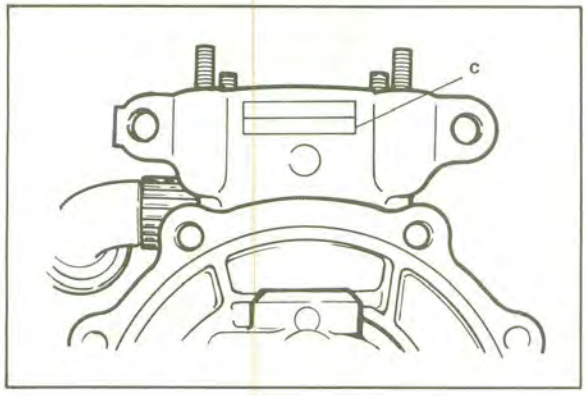
Then the necessary shim thickness is 0.51 mm (0.020 in).
Shim sizes are supplied in the following thicknesses:
0.15 mm (0.006 in), 0.30 mm (0.012 in), 0.40 mm (0.016 in), 0.50 mm (0.020 in), 0.60 mm (0.024 in)

Because the shims can only be selected in 0.05 mm (0.002 in) increments, round off the hundredths digit and select the appropriate shim(s).

Hundreds	Round value
0,1,2	0
3,4,5,6,7	5
8,9	10

In the example above, the calculated shim thickness is 0.51 mm (0.0201 in). The chart instructs you, however, to round off the 1 to 0. Thus you should use a 0.50 mm (0.0197 in) shim.

b. The shim thickness, B, necessary for the ring gear positioning, can be calculated from the information found on the final gear case, ring gear, and bearing.

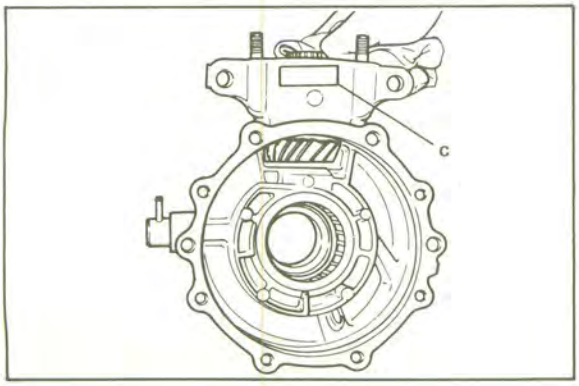


To find shim thickness, B, use the following formula:

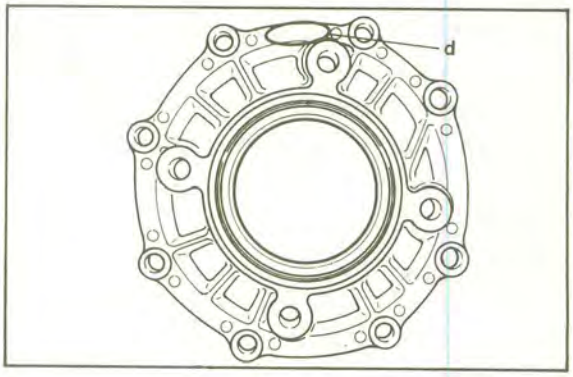
$B = c + d - (e + f)$

Where:

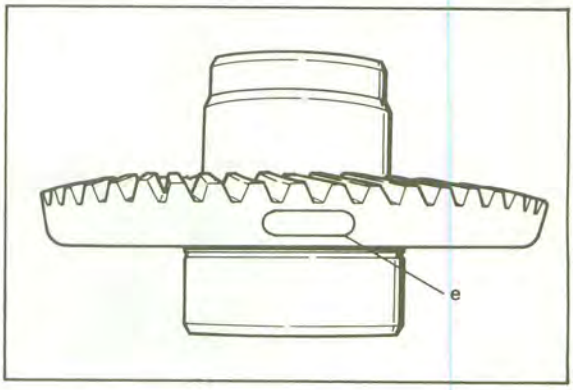
c = the numeral (usually a decimal number) on the gear case is either added to subtracted 42.



d = a numeral (usually a decimal number) on the bearing housing (rear wheel hub) and added to 2.



e = a numeral (usually a deicmal number) on the outside of the ring gear either added to or subtracted from 33.00



f = a bearing thickness (considered constant).

Bearing thickness
f = 11.00 mm (0.433 in)

Example:

- If the gear case is marked "03" . . . . . c is 42.03.
- If the ring gear bearing housing is marked 45 . . . . . d is 0.45 + 2 = 2.45.
- If the ring gear is marked "−5" or −0.05 . . . e is 33.00 − 0.05 = 32.95.
- f is 11.00.

$B = c + d - (e + f)$

$B = 42.03 + 2.45 - (32.95 + 11.00)$

$B = 44.48 - (43.95)$

$B = 0.53$

Then the necessary shim thickness is 0.53 mm (0.021 in).

NOTE:

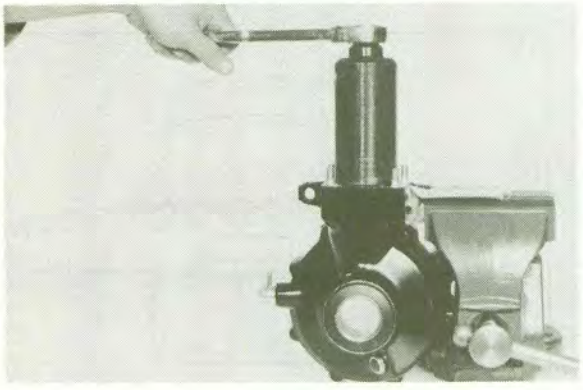
Use the chart for the final drive shaft shim to select the ring gear shim size.

4. Install the final drive shaft gear with the proper size shim(s), and secure it with the bearing retainer nut. Use the final-drive-shaft-bearing-retainer wrench.

NOTE:

The bearing retainer nut has left-hand threads; turn the nut counterclockwise to tighten it.

TIGHTENING TORQUE:
100 Nm (10 m · kg, 72 ft · lb)



5. Install the ring gear assembly without the thrust washer. Adjust the gear lash (refer to "GEAR LASH CHECK AND ADJUSTMENT").
6. Place four pieces of Plastigage® between the originally fitted thrust washer and the ring gear.
7. Install the ring gear into the gear case assembly, and tighten the nuts with the specified torque.

TIGHTENING TORQUE:
23 Nm (2.3 m · kg, 17 ft · lb)

NOTE:

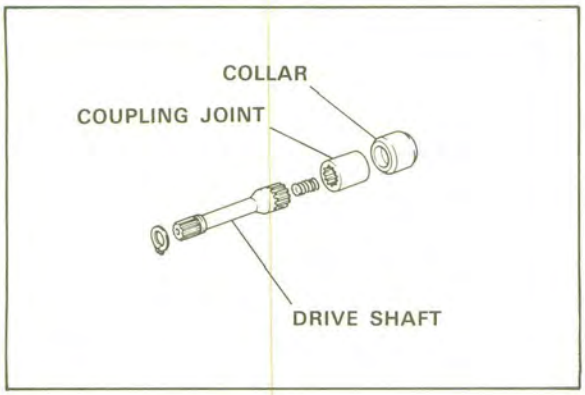
Do not turn the drive pinion/ring gear when measuring clearance with Plastigage®.

8. Remove the ring gear assembly and determine the clearance by measuring the width of the flattened Plastigage® .

Ring gear thrust clearance:
0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

9. If the clearance exceeds the specified value, replace the thrust washer to obtain the proper clearance.

DRIVE SHAFT



Removal

1. Remove the rear wheel. See "REAR WHEEL".
2. Remove the final gear case assembly.
3. Remove the drive shaft. See "SWING-ARM".

Inspection

1. Drive shaft
   Inspect the shaft splines for wear and/or damage. If wear is excessive, replace the drive shaft, and coupling joint as a set.

NOTE:

When installing the drive shaft, lubricate the splines with molybdenum disulfide grease.

Installation

When installing the drive shaft, reverse the removal procedure. Note the following points:

- Lubricate the shaft splines with molybdenum disulfide grease.
- Torque the final gear case nuts and bolts to specification.

TIGHTENING TORQUE:
Nuts:
23 Nm (2.3 m · kg, 18 ft · lb)
Bolts:
45 Nm (4.5 m · kg, 32 ft · lb)

SPECIFICATIONS

I. GENERAL SPECIFICATIONS

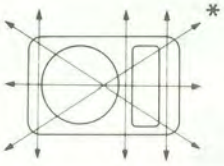
Model	YTM225DXK
Model Code Number	29U
Frame Starting Number	29U-000101
Engine Starting Number	29U-000101
Dimensions:	
Overall Length	1,835 mm (72.2 in)
Overall Width	1,000 mm (39.4 in)
Overall Height	1,030 mm (40.6 in)
Seat Height	720 mm (28.3 in)
Wheelbase	1,150 mm (45.3 in)
Minimum Ground Clearance	205 mm (8.1 in)
Basic Weight:	
With Oil and Full Fuel Tank	153 kg (337 lb)
Minimum Turning Radius:	2,200 mm (86.6 in)
Engine:	
Engine Type	4-stroke, gasoline, SOHC
Cylinder Arrangement	Single cylinder, Forward inclined
Displacement	223.2 cm^3
Bore × Stroke	70 × 58 mm (2.76 × 2.28 in)
Compression Ratio	8.8 : 1
Compression Pressure	883 kPa (9 kg/cm^2, 128 psi)
Starting System	Recoil starter and Electric starter
Lubrication System:	Wet sump
Oil Type or Grade:	
Engine oil	Yamalube 4-cycle oil or SAE 20W 40 type SE motor oil
Final Gear Oil	SAE 80 API GL-4 Hypoid gear oil
Oil Capacity:	
Engine Oil	
Periodic Oil Change	1.5 L (1.3 Imp qt, 1.6 US qt)
Total Amount	1.8 L (1.6 Imp qt, 1.9 US qt)
Final Gear Case Oil	0.13 L (0.11 Imp qt, 0.14 US qt)
Air Filter	Wet type element
Fuel:	
Type	Regular gasoline
Tank Capacity	9.5 L (2.1 Imp gal, 2.5 US gal)
Reserve Amount	2.4 L (0.5 Imp gal, 0.6 US gal)
Carburetor:	
Type/Manufacturer	VM24SH/MIKUNI
Spark Plug:	
Type/Manufacturer	D7EA (NGK), X22ES-U (NIPPONDENSO)
Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Clutch Type:	Wet, multiple-disc, Centrifugal automatic

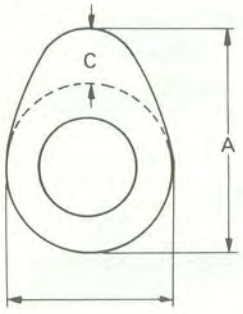
Model	YTM225DXK
Transmission:	
Primary Reduction System	Gear
Primary Reduction Ratio	73/22 (3.318)
Secondary Reduction System	Shaft drive
Secondary Reduction Ratio	19/18×43/12=3.782
Transmission Type	Constant mesh, 5-speed
Operation	Left foot operation
Gear Ratio	
1st	34/12 (2.833)
2nd	34/19 (1.789)
3rd	29/22 (1.318)
4th	26/25 (1.040)
5th	23/28 (0.821)
Chassis:	
Frame Type	Double cradle
Caster Angle	22°22′
Trail	35 mm (1.38 in)
Tire:	
Type	Tubeless
Size (F)	22×11−8
Size (R)	22×11−8×2 pcs
Tire Pressure (Cold tire):	
Front and Rear:	
Standard	14.7 kPa (0.15 kg/cm², 2.2 psi)
Minimum	11.8 kPa (0.12 kg/cm², 1.8 psi)
Maximum	68.6 kPa (0.7 kg/cm², 10 psi)
Brake:	
Front Brake Type	Drum brake
Operation	Right hand operation
Rear Brake Type	Single disc brake
Operation	Left hand operation, Right foot operation
Suspension:	
Front Suspension	Telescopic fork
Rear	Monocross suspension
Shock Absorber:	
Front Shock Absorber	Coil spring, Oil damper
Rear Shock Absorber	Coil spring, Gas-Oil damper
Wheel Travel:	
Front Wheel Travel	130 mm (5.1 in)
Rear Wheel Travel	110 mm (4.3 in)
Electrical:	
Ignition System	C.D.I. Magneto
Generator System	A.C. generator
Battery Type/Capacity	GM14AZ−4A/12V, 14AH
Headlight Type:	Bulb
Bulb Wattage/Quantity:	
Headlight	45 W/45W×1
Taillight	8 W×1
Indicator Light Wattage/Quantity	
"NEUTRAL"	3.4W×1

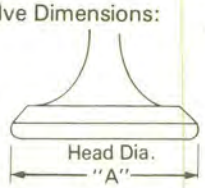
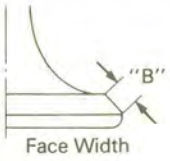
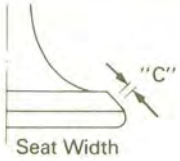
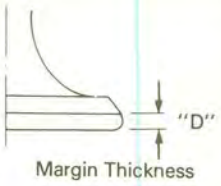
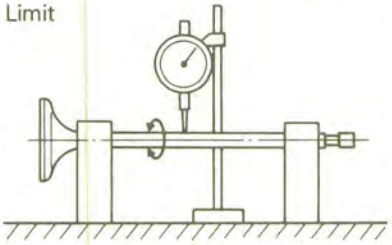
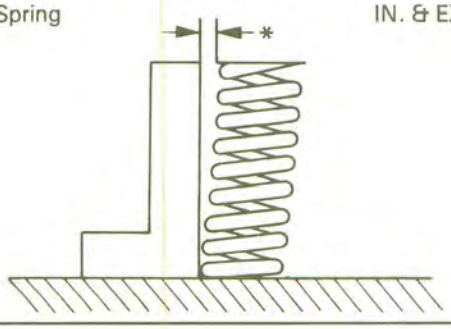
II. MAINTENANCE SPECIFICATIONS

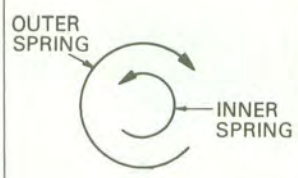
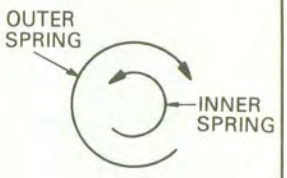
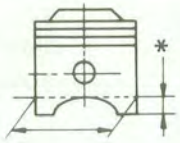
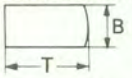
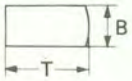
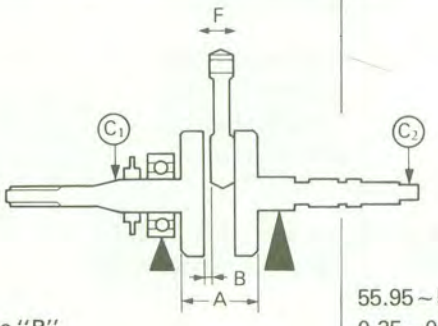
A. Engine

Model		YTM225DXK
Cylinder Head:		
Warp Limit		<0.03 mm (0.0012 in)> *Lines indicate straightedge measurement.
Cylinder:		
Bore Size		69.97 ~ 70.02 mm (2.7547 ~ 2.7567 in)
Taper Limit		<0.005 mm (0.0002 in)>
Out-of-round Limit		<0.01 mm (0.0004 in)>
Camshaft:		
Drive Method		Chain
		Left
Camshaft Bearing (Cylinder)		25.000 ~ 25.021 mm (0.9843 ~ 0.9851 in), 20.000 ~ 20.021 mm (0.7874 ~ 0.7882 in)
Camshaft Outside Diameter		24.960 ~ 24.980 mm (0.9827 ~ 0.9835 in), 19.998 ~ 19.999 mm (0.7873 ~ 0.7874 in)
Shaft-to-cap Clearance		0.020 ~ 0.061 mm (0.0008 ~ 0.0024 in)
Cam Dimensions		
Intake	"A"	36.537 ~ 36.637 mm (1.4385 ~ 1.4424 in)
	"B"	30.131 ~ 30.231 mm (1.1863 ~ 1.1902 in)
	"C"	6.587 mm (0.2593 in)
Exhaust	"A"	36.577 ~ 36.677 mm (1.440 ~ 1.444 in)
	"B"	30.214 ~ 30.314 mm (1.1895 ~ 1.1935 in)
	"C"	6.627 mm (0.2609 in)
Camshaft Runout Limit		<0.03 mm (0.0012 in)>
Cam Chain Type/Number of Links		DID25SH/104 Links
Cam Chain Adjustment Method		Manual
Rocker Arm/Rocker Arm Shaft:		
Rocker Arm Inside Diameter		12.000 ~ 12.018 mm (0.4724 ~ 0.4731 in)
<Limit>		<12.03 mm (0.474 in)>
Shaft Outside Diameter		11.985 ~ 11.991 mm (0.4718 ~ 0.4721 in)
<Limit>		<11.94 mm (0.470 in)>
Arm-to-shaft Clearance		0.009 ~ 0.037 mm (0.0004 ~ 0.0015 in)
Valve, Valve Seat, Valve Guide:		
Valve Clearance (Cold)		
	IN.	0.05 ~ 0.09 mm (0.0020 ~ 0.0035 in)
	EX.	0.11 ~ 0.15 mm (0.0043 ~ 0.0059 in)





Model		YTM225DXK
Valve Dimensions:    		
"A" Head Dia.	IN.	33.9 ~ 34.1 mm (1.3346 ~ 1.3425 in)
	EX.	28.4 ~ 28.6 mm (1.1181 ~ 1.1260 in)
"B" Face Width	IN.	2.26 mm (0.089 in)
	EX.	2.26 mm (0.089 in)
"C" Seat Limit Width	IN.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
"D" Margin Thickness Limit		
	IN.	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
	EX.	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
Stem Outside Diameter	IN.	5.975 ~ 5.990 mm (0.2352 ~ 0.2358 in)
	EX.	5.960 ~ 5.975 mm (0.2346 ~ 0.2352 in)
Guide Inside Diameter	IN.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)
	EX.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 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 		
Valve Seat Width Standard	IN	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
Valve Spring:		
Free Length		
Inner Spring	IN.	35.5 mm (1.40 in)
	EX.	35.5 mm (1.40 in)
Outer Spring	IN.	37.2 mm (1.46 in)
	EX.	37.2 mm (1.46 in)
Compressed Length (Valve Closed)		
Inner Spring	IN.	30.5 mm (1.20 in)
	EX.	30.5 mm (1.20 in)
Outer Spring	IN.	32.0 mm (1.26 in)
	EX.	32.0 mm (1.26 in)
Tilt Limit*:		
Inner Spring	IN. & EX.	2.5° or 1.6 mm (0.063 in)
Outer Spring	IN. & EX.	2.5° or 1.6 mm (0.063 in)
		

Model		YTM225DXK	
Direction of Winding (Top view)		IN	EX
			
Piston: Piston Size/Measuring Point*  Piston Clearance		69.935 ~ 69.985 mm (2.7533 ~ 2.7553 in)/ 4 mm (0.157 in) (From bottom line of piston skirt) 0.025 ~ 0.045 mm (0.0010 ~ 0.0018 in)	
Piston Ring: Sectional Sketch	Top Ring 	Plain B = 1.2 mm (0.0472 in) T = 2.8 mm (0.1102 in)	
	2nd Ring 	Plain B = 1.2 mm (0.0472 in) T = 2.8 mm (0.1102 in)	
	Oil Ring 	B = 2.5 mm (0.0984 in) T = 2.8 mm (0.1102 in)	
End Gap (Installed)	Top Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)	
	2nd Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)	
	Oil Ring	0.3 ~ 0.9 mm (0.0118 ~ 0.0354 in)	
<Limit>	Top Ring	<0.75 mm (0.0295 in)>	
	2nd Ring	<0.75 mm (0.0295 in)>	
	Oil Ring	<— mm (— in)>	
Side Clearance	Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	
	2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	
	Oil Ring	0 mm (0 in)	
<Limit>	Top Ring	<0.1 mm (0.004 in)>	
	2nd Ring	<0.9 mm (0.035 in)>	
	Oil Ring	<— mm (— in)>	
Crankshaft: 			
Crank Width "A"		55.95 ~ 56.00 mm (2.2028 ~ 2.2047 in)	
Big End Side Clearance "B"		0.35 ~ 0.65 mm (0.0138 ~ 0.0256 in)	
Runout Limit "C1"		<0.02 mm (0.0008 in)>	
"C2"		<0.06 mm (0.0024 in)>	
Small End Free Play "F"			
<Limit>		<2.0 mm (0.08 in)>	
Balancer Drive Method:		Gear	

Model		YTM225DXK
Primary Clutch:		
Shoe Thickness/Quantity		2.0 mm (0.079 in)/3
Wear Limit		1.5 mm (0.0591 in)
Secondary Clutch:		
Friction Plate Thickness/Quantity		3.0 mm (0.12 in)/5
Wear Limit		<2.8 mm (0.11 in)>
Clutch Plate Thckness/Quantiy		1.6 mm (0.06 in)/4
Warp Limit		<0.2 mm (0.008 in)>
Clutch Spring Free Length/Quantity		34.9 mm (1.37 in)/4
Clutch Release Method		Outer push
Clutch-In Revolution		1,850 ~ 2,150 r/min
Clutch-Stall Revolution		2,900 ~ 3,300 r/min
Transmission:		
Main Axle Deflection Limit		<0.08 mm (0.0031 in)>
Drive Axe Deflection Limit		<0.08 mm (0.0031 in)>
Shifter:		
Shifter Type		Guide bar
Decompression Device		
Type		Manual
Air Filter Oil Grade (Oiled Filter)		Foam-air-filter oil or SAE 10W30 type SE motor oil
Carburetor:		
Type/Manufacturer/Quantity		VM22/MIKUNI/1
I.D. Mark		29U00
Main Jet	(M.J.)	#112.5
Main Air Jet	(M.A.J.)	ϕ1.6
Jet Needle-clip Position	(J.N.)	5L10-3
Needle Jet	(N.J.)	N-8
Cutaway	(C.A.)	#3.5
Pilot Jet	(P.J.)	#20
Pilot Air jet	(P.A.J.)	#60
Pilot Screw	(P.S.)	1 and 1/2 ± 1/2
Valve Seat	(V.S.)	ø1.8
Starter Jet	(G.S.)	ø65
Fuel Level	(F.L.)	3.0 ± 1.0 mm (0.12 ± 0.04 in)
Float Height	(F.H.)	21.5 ± 0.5 mm (0.85 ± 0.02 in)
Engine Idling Speed		1,400 ± 50 r/min
Lubrication System:		
Oil Filter Type		Wire mesh
Oil Pump Type		Trochoid pump
Tip Clearance		0.15 mm (0.0059 in)
Side Clearance		0.04 ~ 0.09 mm (0.0016 ~ 0.0035 in)
Bypass Valve Setting Pressure		78.46 ~ 117.68 kPa (0.8 ~ 1.2 kg/cm^2, 11.376 ~ 17.064 psi)
Middle Gear Lash		0.1 ~ 0.2 mm (0.004 ~ 0.008 in)
Final Gear Lash		0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

Tightening torque:		Size/Q'ty	Nm	m·kg	ft·lb	Remarks
Oil galley bolt	Bolt	M6 × 1	7	0.7	5.1	
Cylinder head	Flange bolt	M8 × 4	22	2.2	16.0	Apply engine oil to the washers
Cylinder head	Bolt	M8 × 2	20	2.0	14.0	
Cam sprocket cover	Screw	M6 × 2	7	0.7	5.1	
Tappet cover	Bolt	M6 × 5	10	1.0	7.2	
Rocker arm shaft stopper	Bolt	M6 × 2	8	0.8	5.8	Use lock washer
Spark plug	—	M12× 1	20	2.0	14.0	
Cylinder body	Bolt	M6 × 2	10	1.0	7.2	
Balancer shaft	Nut	M14× 1	50	5.0	36.0	Use lock washer
Recoil starter pulley	Bolt	M10× 1	50	5.0	36.0	
Valve adjuster lock	Nut	M6 × 2	14	1.4	10.0	
Sprocket cam	Bolt	M10× 1	60	6.0	43.0	
Chain tensioner	Nut	M14× 1	30	3.0	22.0	
Tensioner cap	Cap nut	M14× 1	5	0.5	3.6	
Chain guide #2 stopper	Bolt	M6 × 2	8	0.8	5.8	
Oil pump assembly	Screw	M6 × 3	7	0.7	5.1	
Drain plug	Plug	M35× 1	43	4.3	31.0	
Filter cover	Bolt	M6 × 2	10	1.0	7.2	
Filter cover drain	Bolt	M6 × 1	10	1.0	7.2	
Carburetor joint	Bolt	M6 × 2	12	1.2	8.7	
Carburetor	Nut	M6 × 2	8	0.8	5.8	
Exhaust pipe flange	Bolt	M6 × 2	10	1.0	7.2	
Muffler assembly	Bolt	M8 × 2	27	2.7	19.0	
Exhaust pipe protector	Screw	M6 × 2	7	0.7	5.1	Apply LOCTITE®
Exhaust outlet pipe	Screw	M6 × 1	10	1.0	7.2	
Crankcase	Screw	M6 ×12	7	0.7	5.1	
Crankcase spacer (L/H)	Screw	M6 × 8	7	0.7	5.1	
Bearing retainer (L/H)	Screw	M5 × 3	7	0.7	5.1	Apply LOCTITE®
Crankcase spacer (R/H)	Screw	M6 × 3	7	0.7	5.1	
Bearing retainer (R/H)	Screw	M6 × 3	10	1.0	7.2	Apply LOCTITE®
Clutch cover	Screw	M6 × 9	7	0.7	5.1	
Clutch cover protector	Screw	M6 × 3	7	0.7	5.1	
Recoil starter	Screw	M6 × 6	7	0.7	5.1	
Primary clutch	Nut	M22× 1	78	7.8	56.0	Use lock washer
Clutch spring	Screw	M5 × 4	6	0.6	4.3	
Clutch boss	Nut	M14× 1	50	5.0	36.0	Use lock washer
Cam shift segment	Screw	M6 × 1	12	1.2	8.7	Apply LOCTITE®
Clutch adjuster	Nut	M8 × 1	15	1.5	11.0	
Middle gear case cover	Bolt	M6 × 6	10	1.0	7.2	Apply Yamabond #4 (2 bolts)
Bearing retainer (Drive axle)	Screw	M8 × 3	25	2.5	18.0	STAKE
Bearing retainer (Housing)	—	M50× 1	60	6.0	43.0	Left-hand threads
Bearing housing	Bolt	M8 × 4	23	2.3	17.0	
Starter clutch	Screw	M8 × 3	30	3.0	22.0	STAKE
Neutral switch	—	M10× 1	20	2.0	14.0	
Starter motor bracket	Screw	M6 × 4	7	0.7	5.1	
Change pedal	Bolt	M6 × 1	10	1.0	7.2	
CDI magneto base	Screw	M6 × 3	7	0.7	5.1	

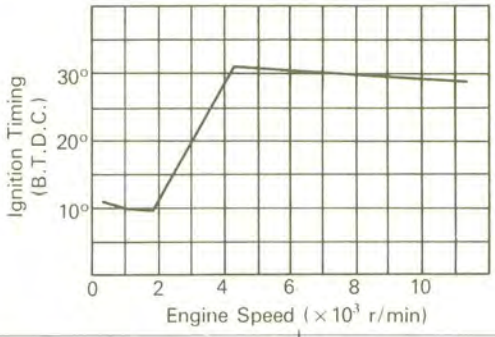
B. Chassis

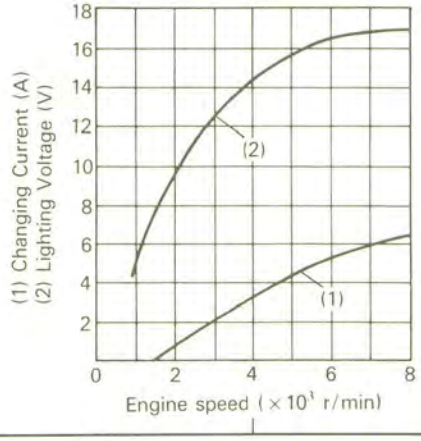
Model		YTM225DXK
Steering System:		
Steering Bearing Type		Ball Bearing
No./Size of Steel Balls	Upper	22 pcs/1/4 in
	Lower	19 pcs/3/16 in
Front Suspension:		
Front Fork Travel		130 mm (5.12 in)
Fork Spring Free Length		506.1 mm (19.93 in)
<Limit>		<501.1 mm (19.73 in)>
Spring Rate/Stroke		K_1 = 6.86 N/mm (0.7 kg/mm, 39.2 lb/in)/ 0 ~ 80 mm (0 ~ 3.15 in)
		K_2 = 7.56 N/mm (0.771 kg/mm, 43.2 lb/in)/ 80 ~ 150 mm (3.15 ~ 5.91 in)
Optional Spring		No.
Oil Capacity or		117 cm^3 (4.12 Imp oz, 3.96 US oz)
Oil Level		419.6 mm (16.5 in)
		(From top of inner tube fully compressed without spring.)
Oil Grade		Yamaha fork oil 10 wt or equivalent
Rear Suspension:		
Shock Absorber Travel		55 mm (2.17 in)
Spring Free Length		201 mm (7.91 in)
Fitting Length		196 mm (7.72 in)
Spring Rate/Stroke		K_1 = 108 Nm (11 kg/mm, 616 lb/in)/ 201 ~ 145 mm (7.91 ~ 5.71 in)
		K_2 = 191 Nm (19.5 kg/mm, 1,092 lb/in)
Optionel Spring		No.
Wheel:		
Front Wheel Type		Disc Wheel
Rear Wheel Type		Disc Wheel
Front Rim Size/Material		8.25 × 8/Steel
Rear Rim Size/Material		8.25 × 8/Steel
Rim Runout Limit	Vertical	<2.0 mm (0.08 in)>
	Lateral	<2.0 mm (0.08 in)>
Drum Brake:		
Type	Front	Leading and trailing
Drum inside Dia		
<Limit>		110 mm (4.33 in) <111 mm (4.37 in)>
Lining Thickness		
<Limit>		4.0 mm (0.16 in) <2.0 mm (0.08 in)>
Shoe Spring Free Length	Front	34.5 mm (1.36 in)
Disc Brake:		
Type	Rear	Single disc
Outside Dia × Thickness		224 × 4 mm (8.82 × 0.16 in)
Pad Thickness		
<Limit>	Inner	8.0 mm (0.31 in) <1.5 mm (0.06 in)>
	Outer	8.0 mm (0.31 in) <1.5 mm (0.06 in)>
Brake Lever & Brake Pedal:		
Brake Lever Free Play Limit		<10 mm (0.4 in)> at lever pivot
Brake Pedal Free Play Limit		<50 mm (2.0 in)>

Tightening torque:		Thread size	Q'ty	Nm	m·kg	ft·lb	Remarks
Front axle shaft	Nut	M14 × 1.5	1	50	5.0	36	
Wheel panel (Front and rear)	Nut	M10 × 1.25	9	45	4.5	32	
Front brake cam	Bolt	M6 × 1.0	1	9	0.9	6.5	
Under bracket & inner fork tube	Bolt	M10 × 1.25	2	30	3.0	22	
Steering crown & inner fork tube	Bolt	M8 × 1.25	2	20	2.0	14	
Steering stem	Bolt	M14 × 1.25	1	90	9.0	65	
Handlebar upper holder	Bolt	M8 × 1.25	4	20	2.0	14	
Engine front & Frame	Nut	M8 × 1.25	1	33	3.3	24	
Upper engine bracket & Engine	Nut	M8 × 1.25	1	33	3.3	24	
Upper engine bracket & Frame	Nut	M8 × 1.25	2	33	3.3	24	
Engine rear upper and lower & Frame	Nut	M8 × 1.25	2	33	3.3	24	
Rear axle shaft	Nut	M20 × 1.50	2	130	13.0	94	
Rear axle shaft	Ring nut	M40 × 1.50	2	100	10.0	72	Apply LOCTITE®
Final gear housing & Swingarm	Nut	M10 × 1.25	4	23	2.3	17.0	
Bearing retainer	—	M63 × 1.0	1	100	10.0	72.0	Left-hand thread
Ring gear bearing housing & Final gear housing	Bolt	M8 × 1.25	6	23	2.3	17.0	
	Bolt	M10 × 1.25	2	45	4.5	32.0	
Rear wheel hub & Final gear housing	Bolt	M10 × 1.25	4	45	4.5	32.0	
Pivot shaft	Screw	M22 × 1.5	2	6	0.6	4.3	
Pivot shaft locknut	Nut	M22 × 1.5	2	100	10.0	72	
Shock absorber & Frame	Bolt	M10 × 1.25	1	25	2.5	18	
Footrest & Frame	Bolt	M12 × 1.25	4	90	9.0	65	
Rear brake caliper body	Bolt	M10 × 1.25	2	50	5.0	36	
Rear brake caliper	Nut	M6 × 1.0	3	9	0.9	6.5	
Brake pad adjuster locknut	Nut	M8 × 1.25	1	15	1.5	11	
Fuel tank & Fuel cock	Screw	M6 × 1.0	2	5	0.5	3.6	
Frame & Rear bamper	Bolt	M8 × 1.25	4	23	2.3	17	
Front fork cylinder comp & Outer tube	Bolt	M8 × 1.25	2	23	2.3	17	Apply LOCTITE®

C. Electrical

Model	YTM225DXK
Voltage	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	10° at 1,000 r/min
Advanced Timing (B.T.D.C.)	30° at 6,000 r/min
Advancer Type	Electrical
C.D.I.:	
Magneto-Model/Manufacturer	F3T16471/MITSUBISHI
Pickup Coil Resistance (Color)	196Ω ± 10% at 20°C (68°F) (W/R — W/G)
Charging Coil Resistance (Color)	381Ω ± 10% at 20°C (68°F) (Br — B)
C.D.I. Unit-Model/Manufacturer	F8T07272/MITSUBISHI
Ignition Coil:	
Model/Manufacturer	F6T50972/MITSUBISHI
Minimum Spark Gap	18kV or more at 500 r/min 17 kV or less at 8,000 r/min 6 mm (0.24 in)
Primary Winding Resistance	0.85Ω ± 15% at 20°C (68°F)
Secondary Winding Resistance	5.9KΩ ± 15% at 20°C (68°F)
Charging System/Type	Flywheel magneto
F.W. Magneto:	
Charging Current	0.7A or more at 3,000 r/min 4A or less at 8,000 r/min
Charging Coil Resistance (Color)	0.4Ω ± 10% at 20°C (68°F) (W — Ground)
Lighting Voltage	11.3V or more at 3,000 r/min 18V or more at 8,000 r/min
Lighting Coil Resistance (Color)	0.34Ω ± 10% at 20°C (68°F) (Y — Ground)



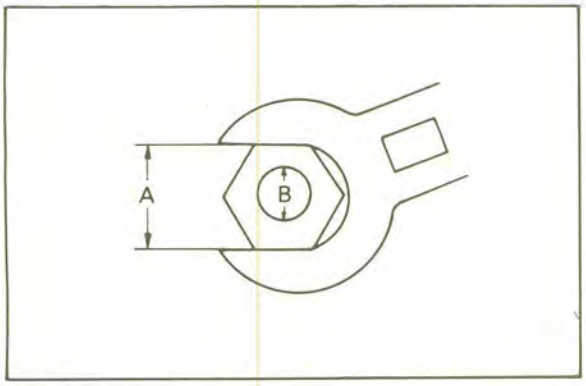


Model	YTM225DXK
Voltage Regulator:	
-Type	Short circuit type
-Model/ Manufacture	SU230Y/ STANLEY
-No Load Regulated Voltage	12 ~ 16.5V
Rectifier:	
-Model/ Manufacturer	SU230Y/ STANLEY
-Capacity	4A
-Withstand Voltage	120V
Battery:	
Capacity	12V 14AH
Specific Gravity	1.260
Electric Starter System:	
Type	Constant mesh type
Starter Motor-Model/ Manufacturer	SM-7252/ MITSUBA
-Out put	0.4kW
Armature Coil Resistance	0.023Ω ± 20% at 20°C (68°F)
Brush-Overall Length	10.5 mm (0.413 in)
<Limit>	< 5.0 mm (0.197 in) >
-Spring Pressure	400 ~ 600 g (14 ~ 23 oz)
Commutator Dia.	23 mm (0.906 in)
<Wear Limit>	< 22 mm (0.866 in) >
-Mica Undercut	0.55 mm (0.022 in)
Starter switch	
Model/ Manufacturer	126/ HONDALOCK
Amperage Rating	150A
Coil Winding Resistance (Color)	3.43Ω ± 5% at 20°C (68°F) (R/W — B)
Starting Circuit Cut off Relay:	
Model/ Manufacturer	G4MW-121T/ TATEISHI
Coil Winding Resistance	75Ω ± 10% at 20°C (68°F)
Color Code	None
Diode	No
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit/ Quantity	
Main	10A × 1
Reserve	10A × 1

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		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



A: Distance across flats
B: Outside thread diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm cm	millimeter centimeter	10^{-3} meter 10^{-2} meter	Length Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg × m/sec^{2}	Force
Nm m·kg	Newton meter Meter kilogram	N × m m × kg	Torque Torque
Pa N/mm	Pascal Newton per millimeter	N/m^{2} N/mm	Pressure Spring rate
L cm^{3}	Liter Cubic centimeter	———	Volume or Capacity
r/min	Rotation per minute	———	Engine Speed

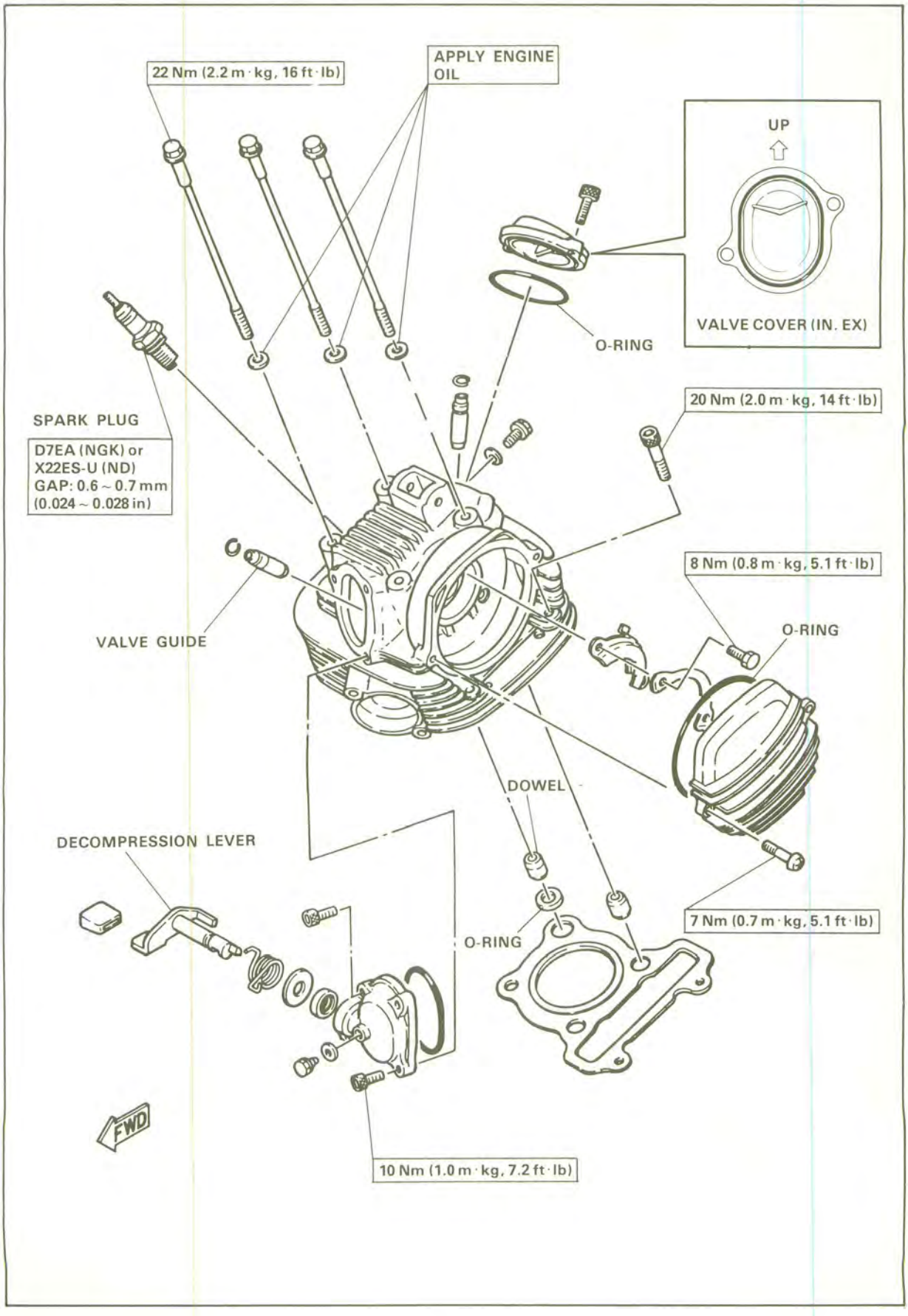
CONVERSION TABLES

Metric to inch system		
Known	Multiplier	Result
m · kg	7.233	ft · lb
m · kg	86.80	in · lb
cm · kg	0.0723	ft · lb
cm · kg	0.8680	in · lb
kg	2.205	lb
g	0.03527	oz
km/lit	2.352	mpg
km/hr	0.6214	mph
km	0.6214	mi
m	3.281	ft
m	1.094	yd
cm	0.3937	in
mm	0.03937	in
cc (cm^3)	0.03382	oz (US liq)
cc (cm^3)	0.06102	cu in
lit (liter)	2.1134	pt (US liq)
lit (liter)	1.057	qt (US liq)
lit (liter)	0.2642	gal (US liq)
kg/mm	56.007	lb/in
kg/cm^2	14.2234	psi (lb/in^2)
Centigrade (°C)	9/5 (°C) + 32	Fahrenheit (°F)

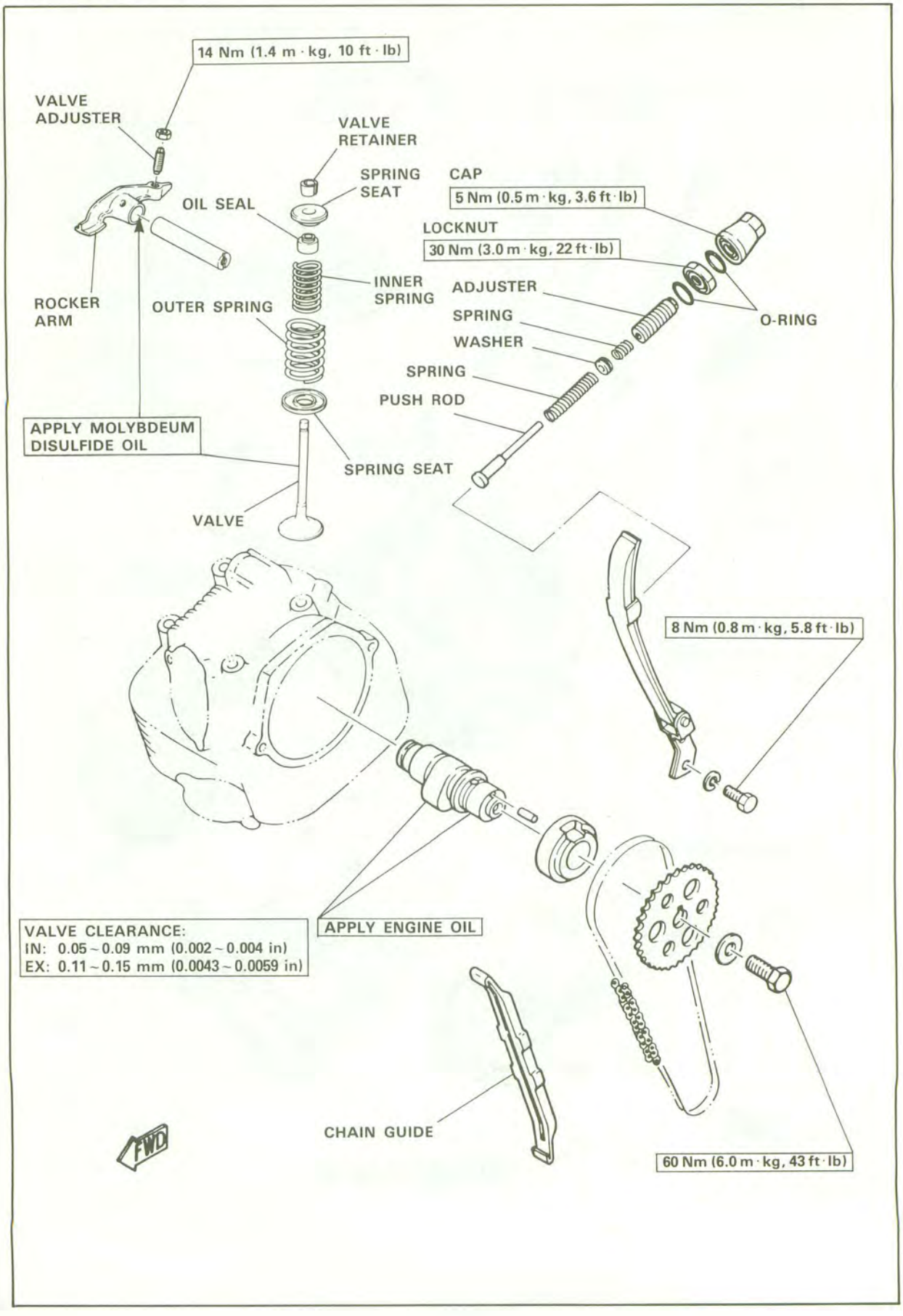
Inch to metric system		
Known	Multiplier	Result
ft · lb	0.13826	m · kg
in · lb	0.01152	m · kg
ft · lb	13.831	cm · kg
in · lb	1.1521	cm · kg
lb	0.4535	kg
oz	28.352	g
mpg	0.4252	km/lit
mph	1.609	km/hr
mi	1.609	km
ft	0.3048	m
yd	0.9141	m
in	2.54	cm
in	25.4	mm
oz (US liq)	29.57	cc (cm^3)
cu in	16.387	cc (cm^3)
pt (US liq)	0.4732	lit (liter)
qt (US liq)	0.9461	lit (liter)
gal (US liq)	3.785	lit (liter)
lb/in	0.017855	kg/mm
psi (lb/in^2)	0.07031	kg/cm^2
Fahrenheit (°C)	5/9 (°F − 32)	Centigrade (°F)

EXPLODED DIAGRAMS

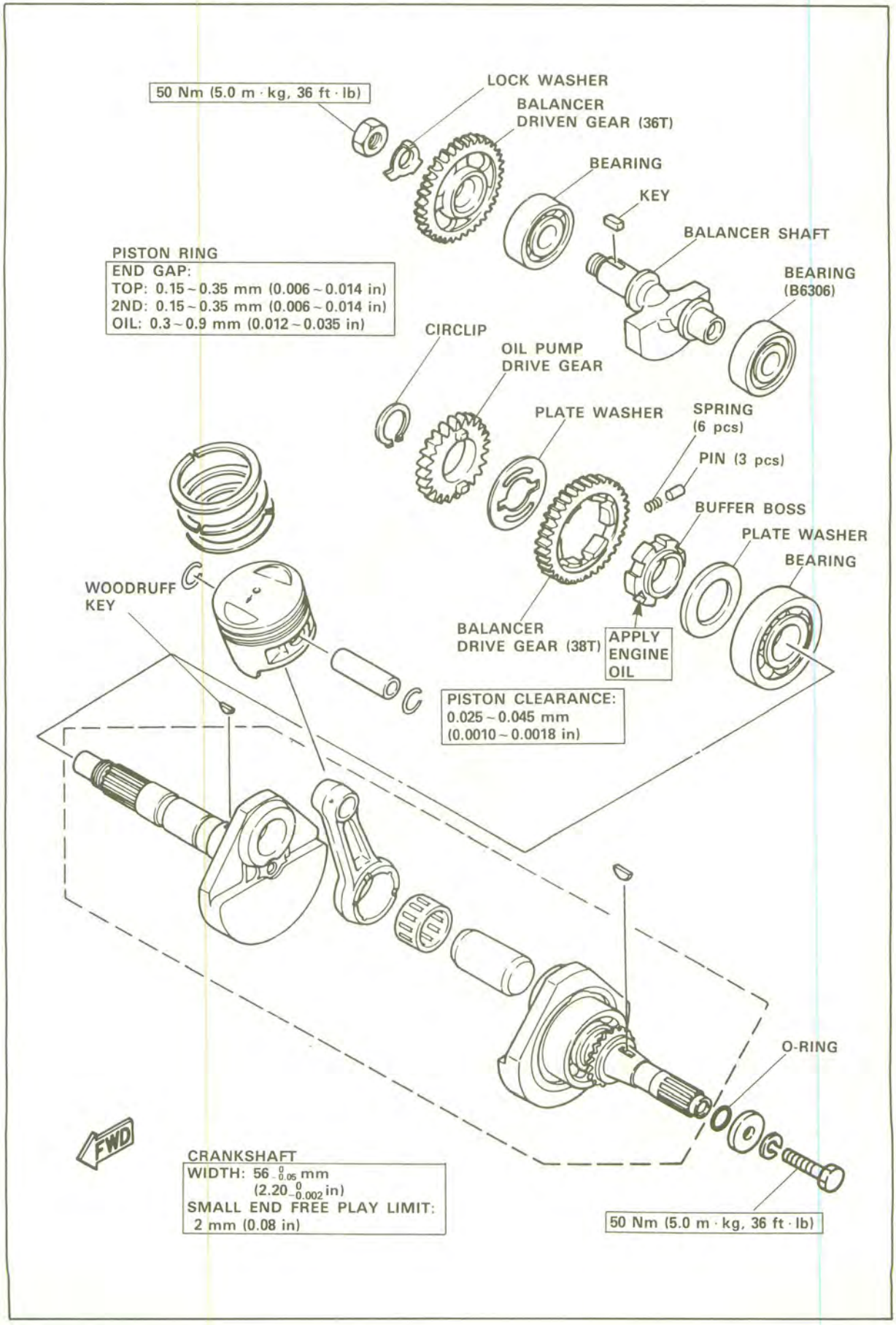
Cylinder Head



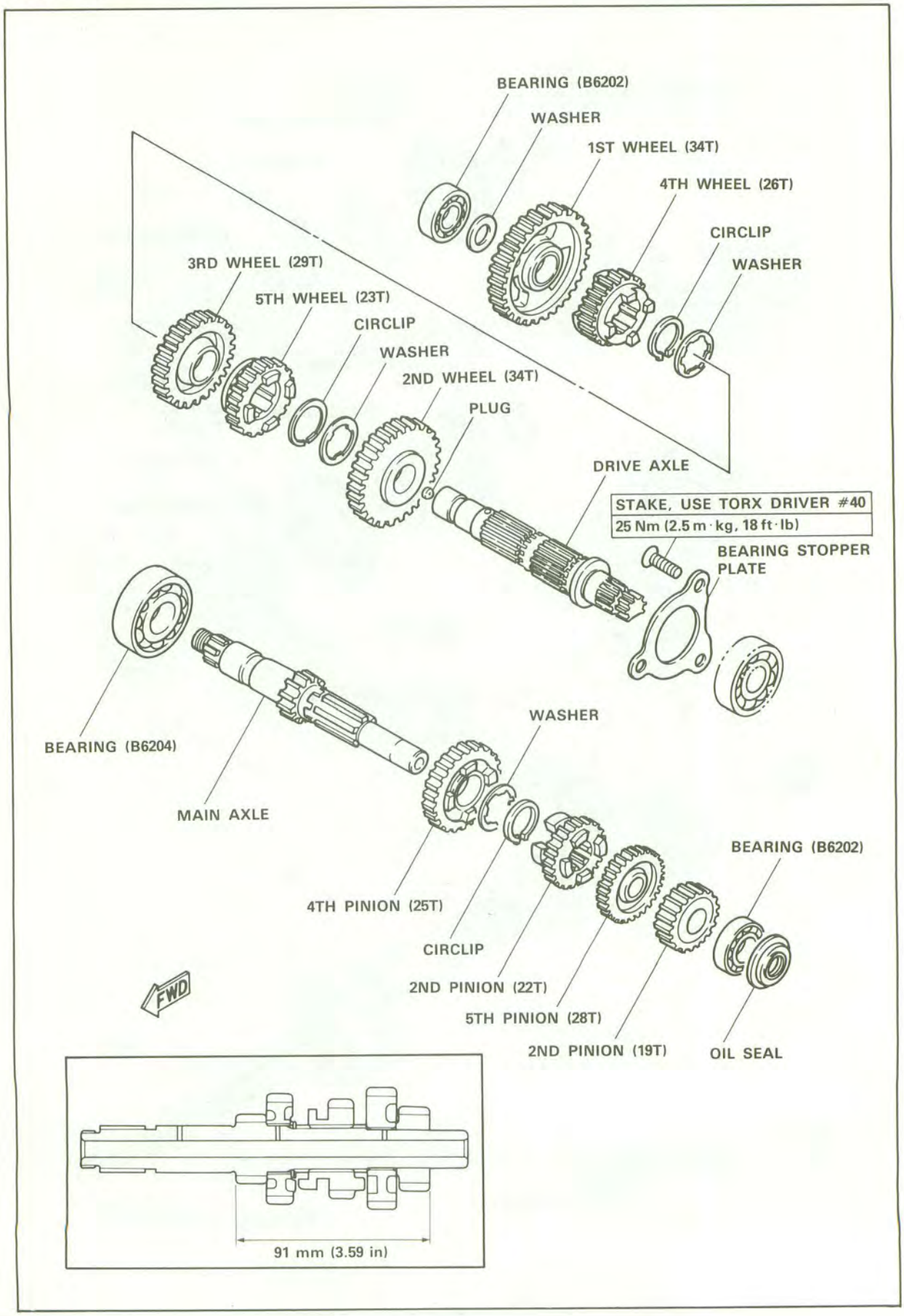
Valve/Cam Chain



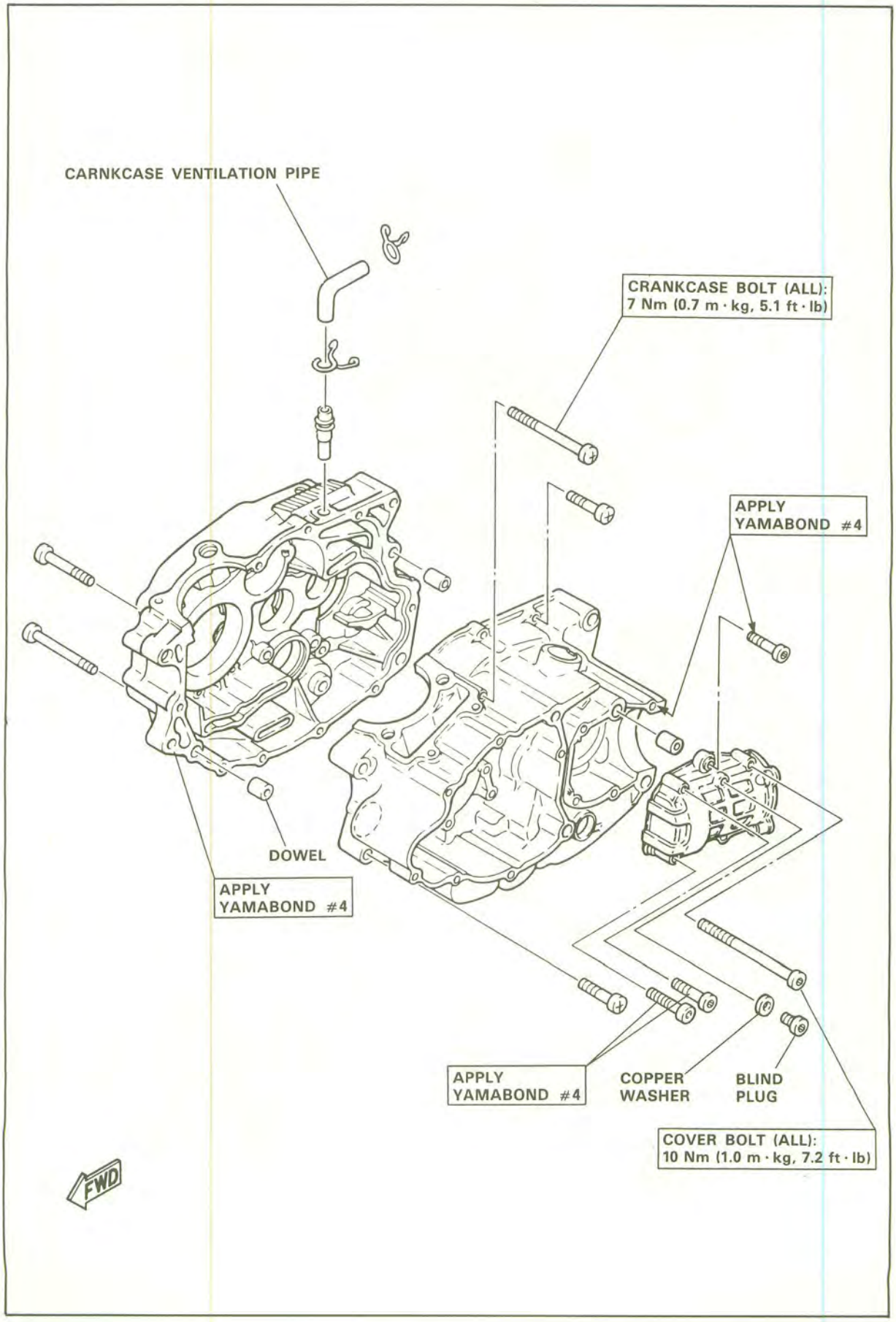
Crankshaft Assembly/Piston/ Balancer Shaft



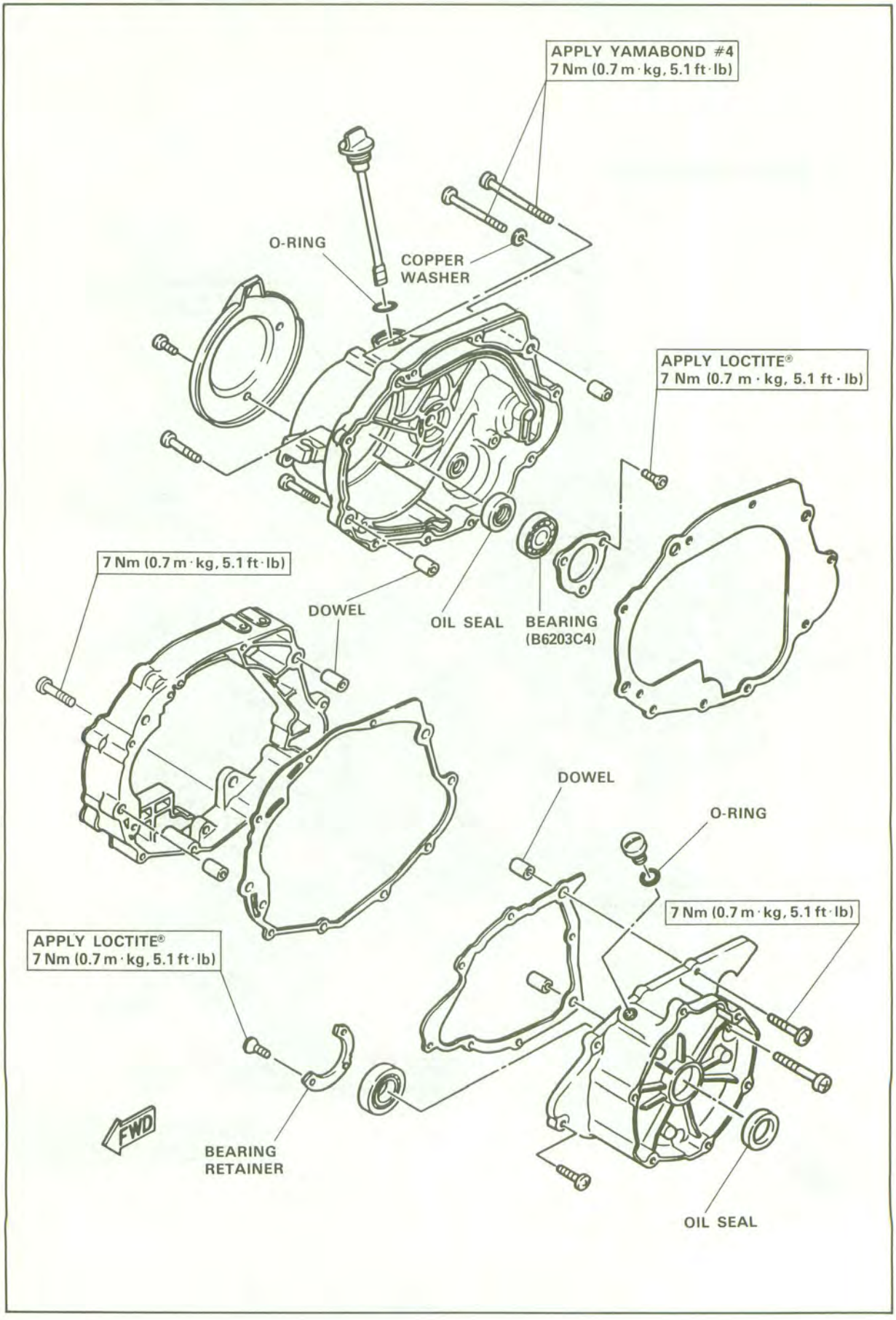
Transmission



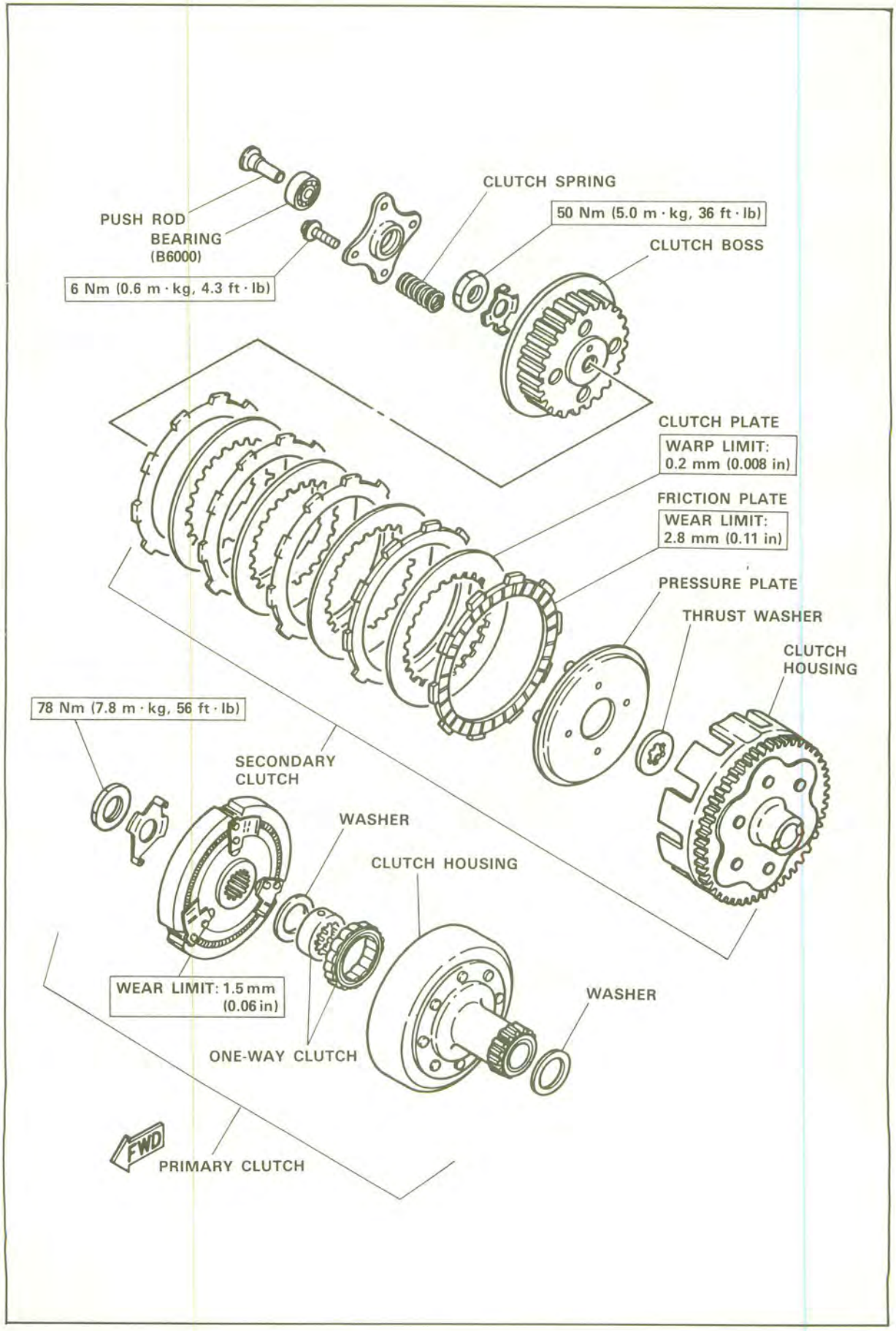
Crankcase


CARNKCASE VENTILATION PIPE
CRANKCASE BOLT (ALL):
7 Nm (0.7 m · kg, 5.1 ft · lb)
APPLY
YAMABOND #4
DOWEL
APPLY
YAMABOND #4
APPLY
YAMABOND #4
COPPER
WASHER
BLIND
PLUG
COVER BOLT (ALL):
10 Nm (1.0 m · kg, 7.2 ft · lb)
FWD

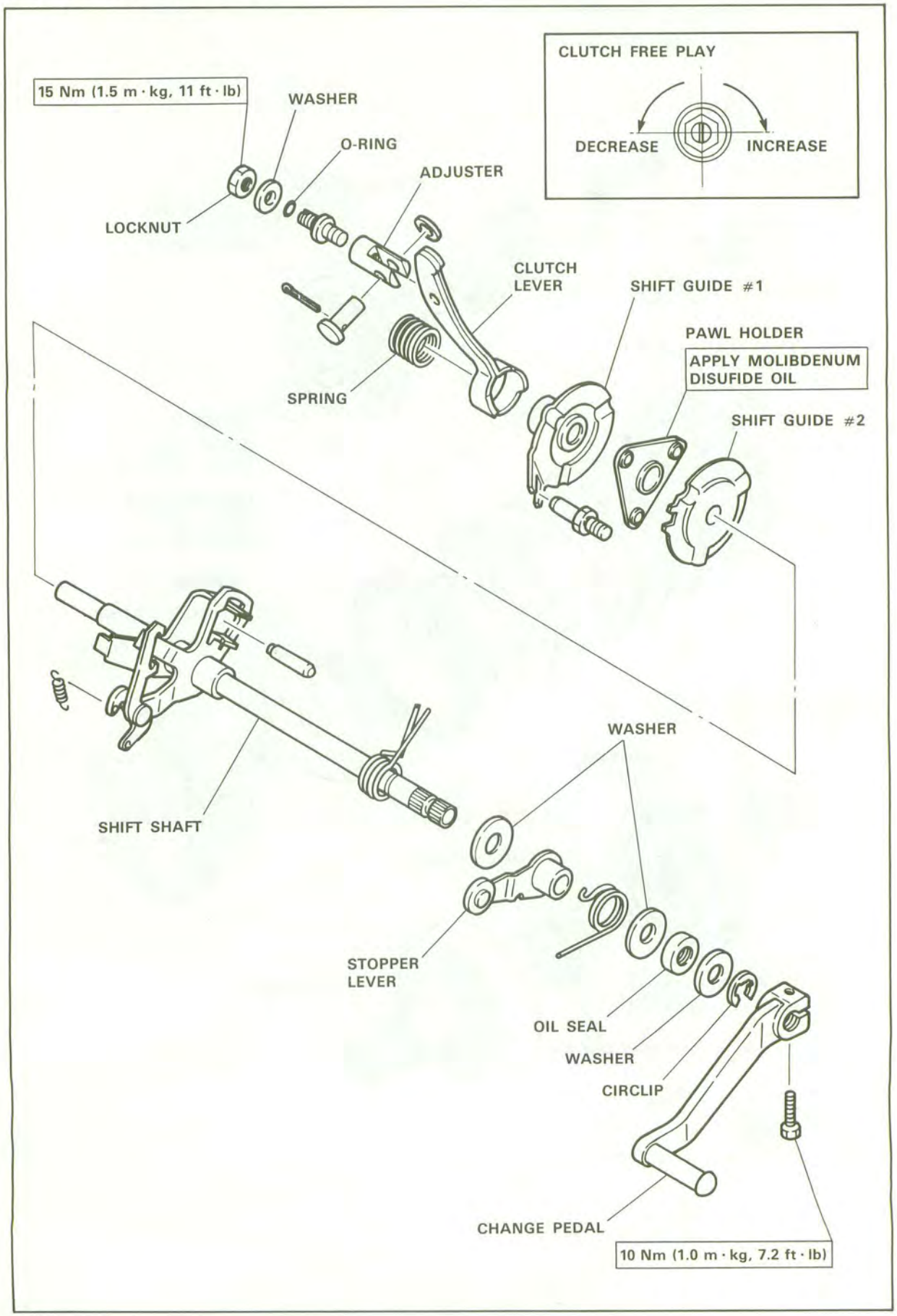
Crankcase Spacer/ Crankcase Covers



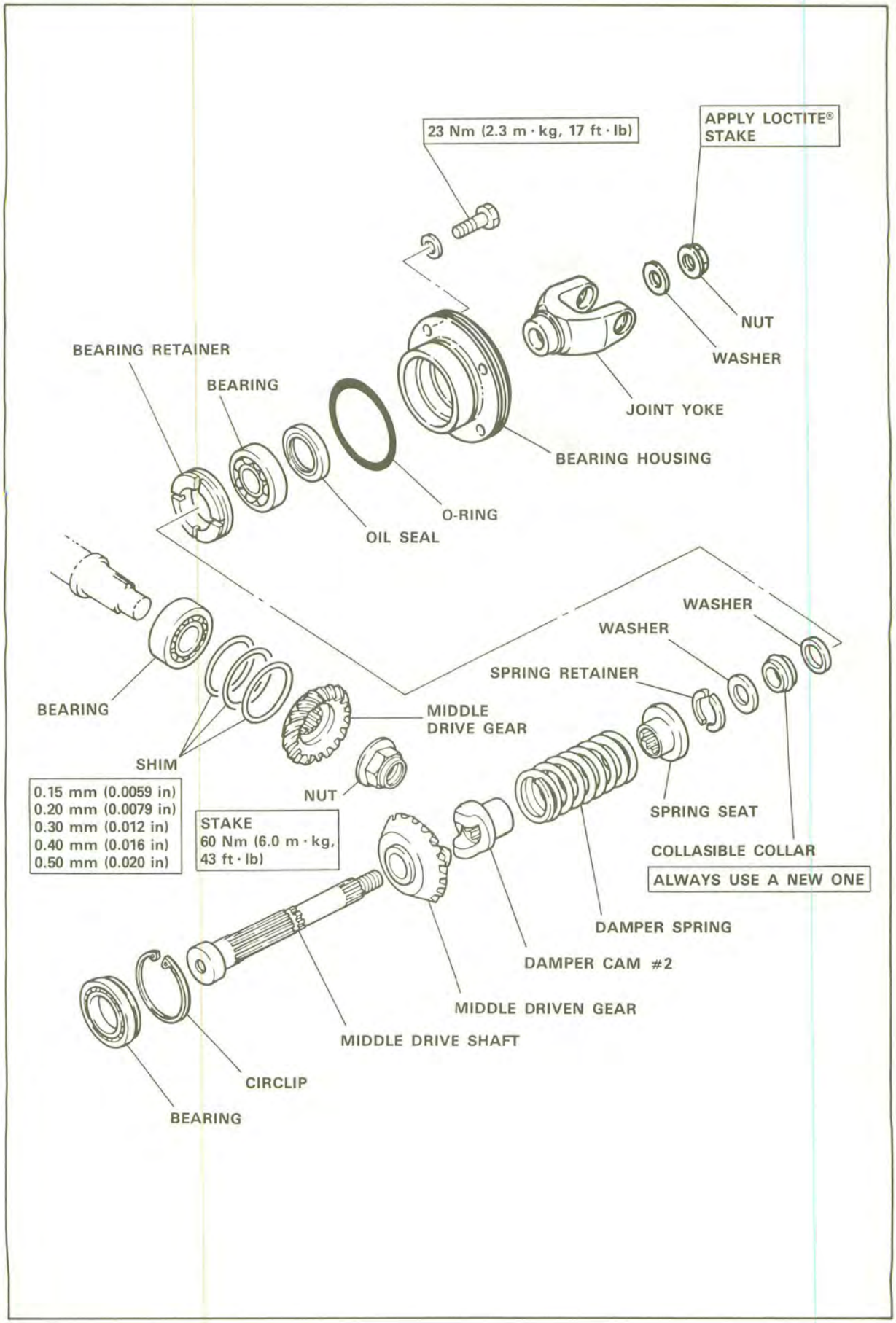
Clutch


PUSH ROD
BEARING
(B6000)
6 Nm (0.6 m · kg, 4.3 ft · lb)
CLUTCH SPRING
50 Nm (5.0 m · kg, 36 ft · lb)
CLUTCH BOSS
CLUTCH PLATE
WARP LIMIT:
0.2 mm (0.008 in)
FRICTION PLATE
WEAR LIMIT:
2.8 mm (0.11 in)
PRESSURE PLATE
THRUST WASHER
CLUTCH
HOUSING
78 Nm (7.8 m · kg, 56 ft · lb)
SECONDARY
CLUTCH
WASHER
CLUTCH HOUSING
WEAR LIMIT: 1.5 mm
(0.06 in)
WASHER
ONE-WAY CLUTCH
FWD
PRIMARY CLUTCH

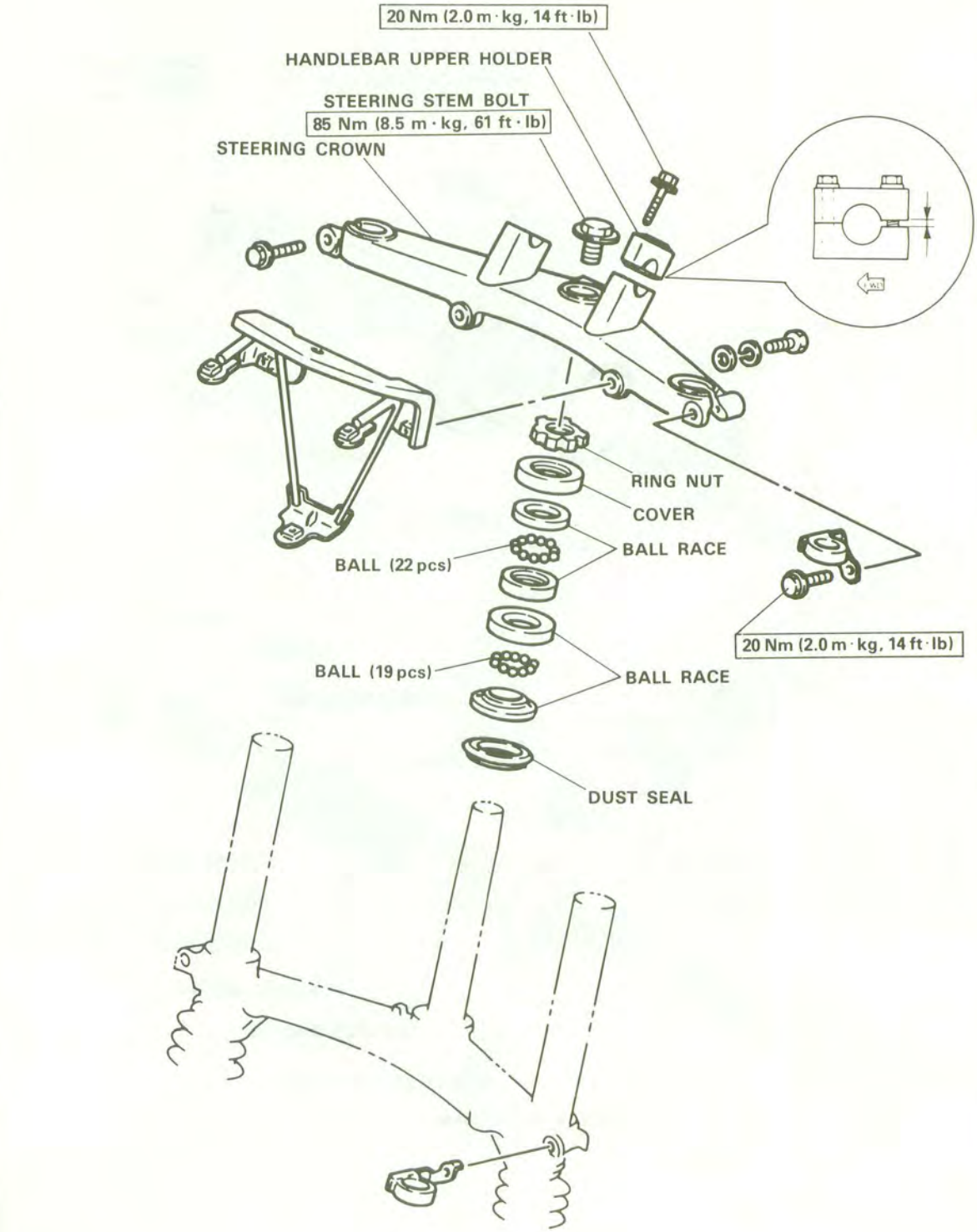
Shift Shaft/Change Pedal



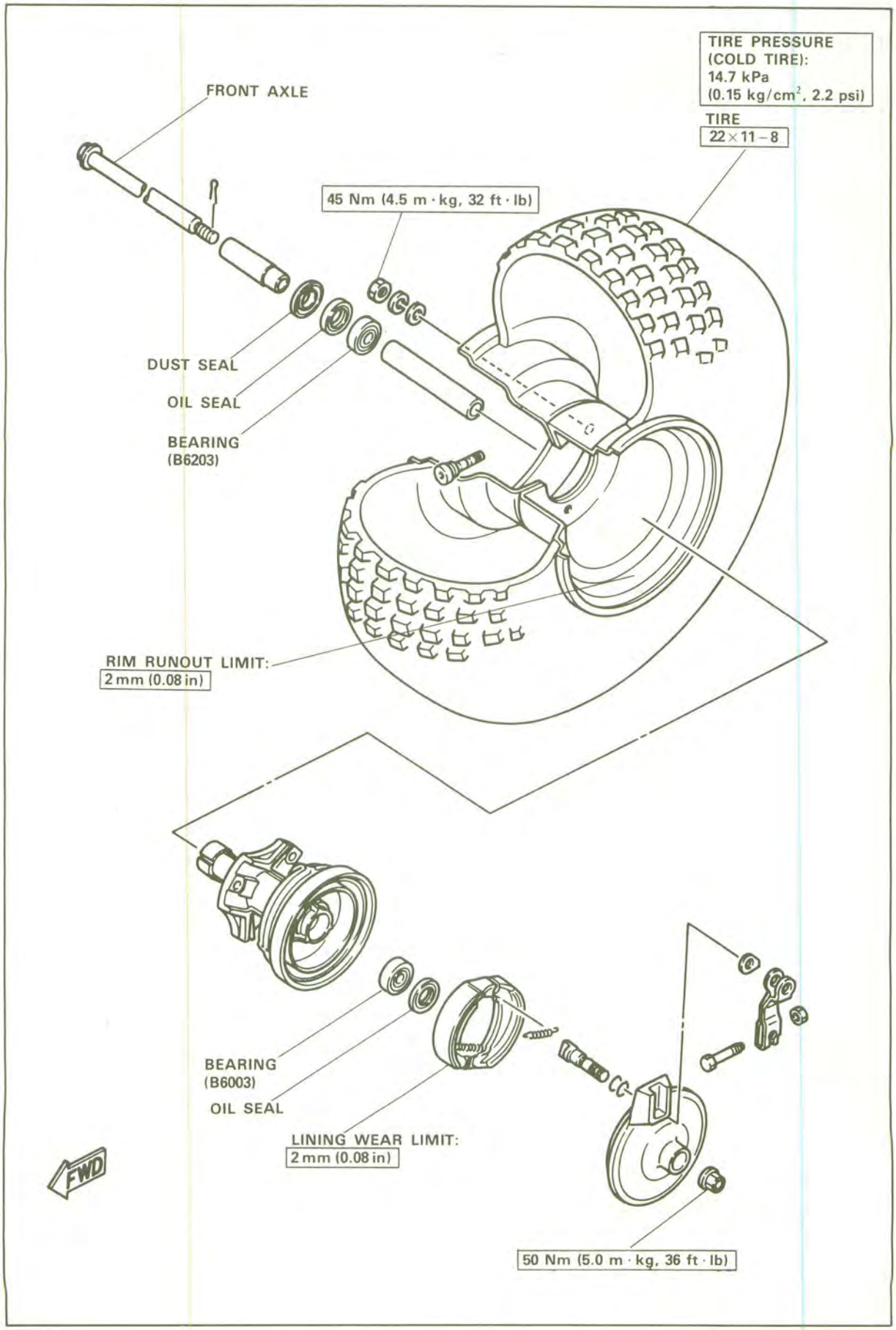
Middle Gear


23 Nm (2.3 m · kg, 17 ft · lb)
APPLY LOCTITE®
STAKE
NUT
WASHER
JOINT YOKE
BEARING HOUSING
BEARING RETAINER
BEARING
O-RING
OIL SEAL
WASHER
WASHER
SPRING RETAINER
BEARING
MIDDLE
DRIVE GEAR
SHIM
0.15 mm (0.0059 in)
0.20 mm (0.0079 in)
0.30 mm (0.012 in)
0.40 mm (0.016 in)
0.50 mm (0.020 in)
NUT
STAKE
60 Nm (6.0 m · kg,
43 ft · lb)
SPRING SEAT
COLLASIBLE COLLAR
ALWAYS USE A NEW ONE
DAMPER SPRING
DAMPER CAM #2
MIDDLE DRIVEN GEAR
MIDDLE DRIVE SHAFT
CIRCLIP
BEARING

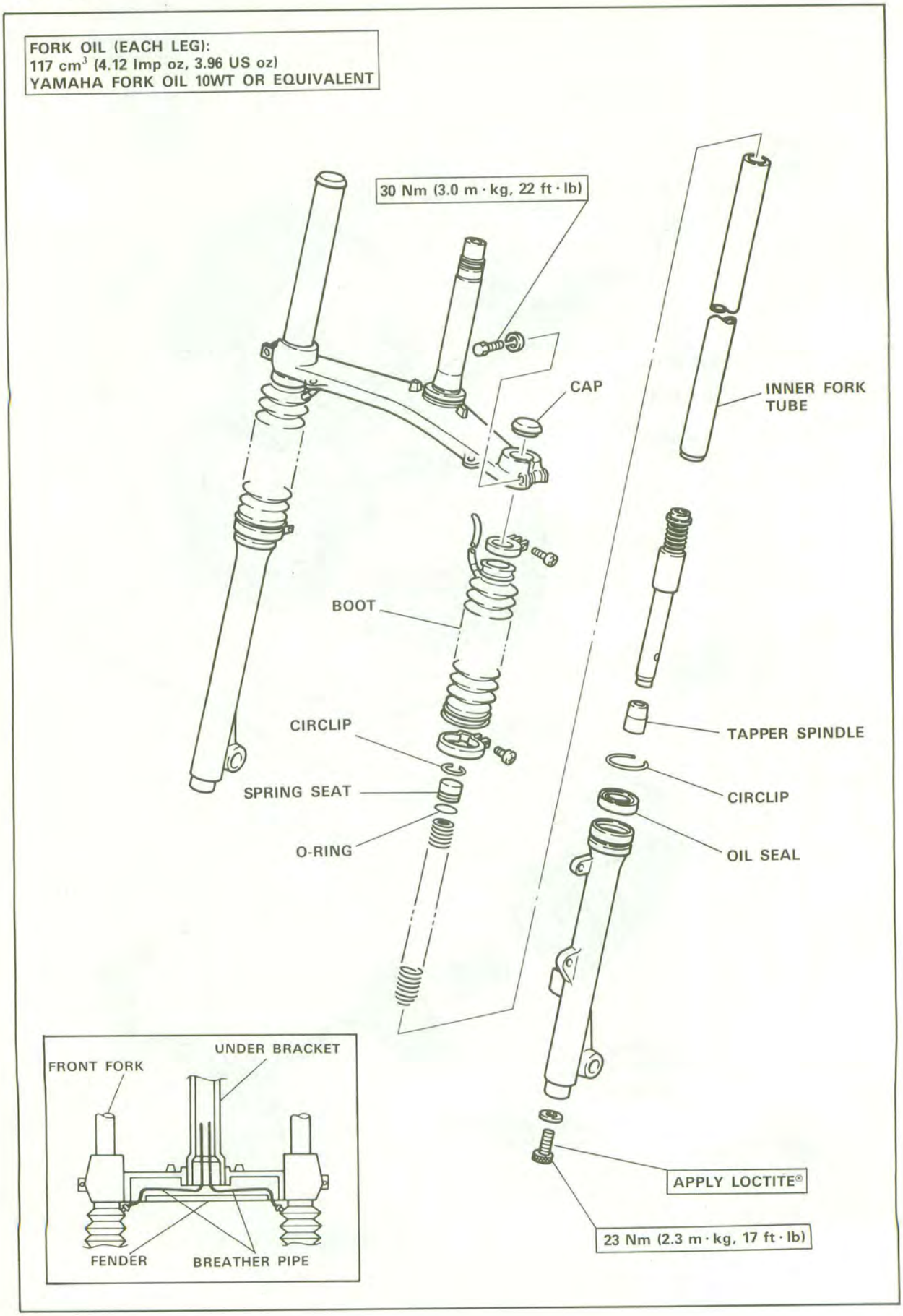
Steering


20 Nm (2.0 m · kg, 14 ft · lb)
HANDLEBAR UPPER HOLDER
STEERING STEM BOLT
85 Nm (8.5 m · kg, 61 ft · lb)
STEERING CROWN
RING NUT
COVER
BALL RACE
BALL (22 pcs)
20 Nm (2.0 m · kg, 14 ft · lb)
BALL (19 pcs)
BALL RACE
DUST SEAL
FWD

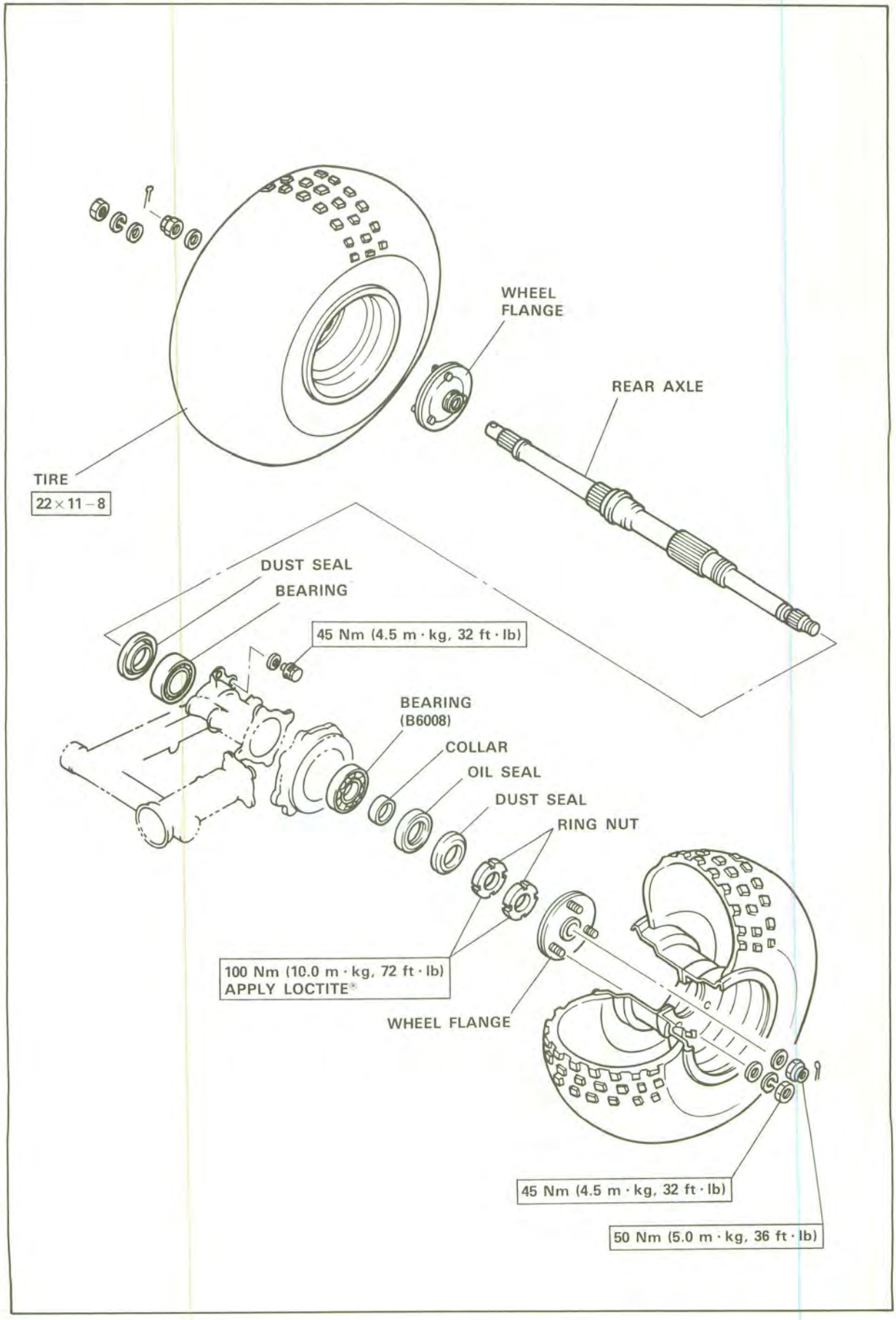
Front Wheel


TIRE PRESSURE
(COLD TIRE):
14.7 kPa
(0.15 kg/cm², 2.2 psi)
TIRE
22×11−8
FRONT AXLE
45 Nm (4.5 m · kg, 32 ft · lb)
DUST SEAL
OIL SEAL
BEARING
(B6203)
RIM RUNOUT LIMIT:
2 mm (0.08 in)
BEARING
(B6003)
OIL SEAL
LINING WEAR LIMIT:
2 mm (0.08 in)
FWD
50 Nm (5.0 m · kg, 36 ft · lb)

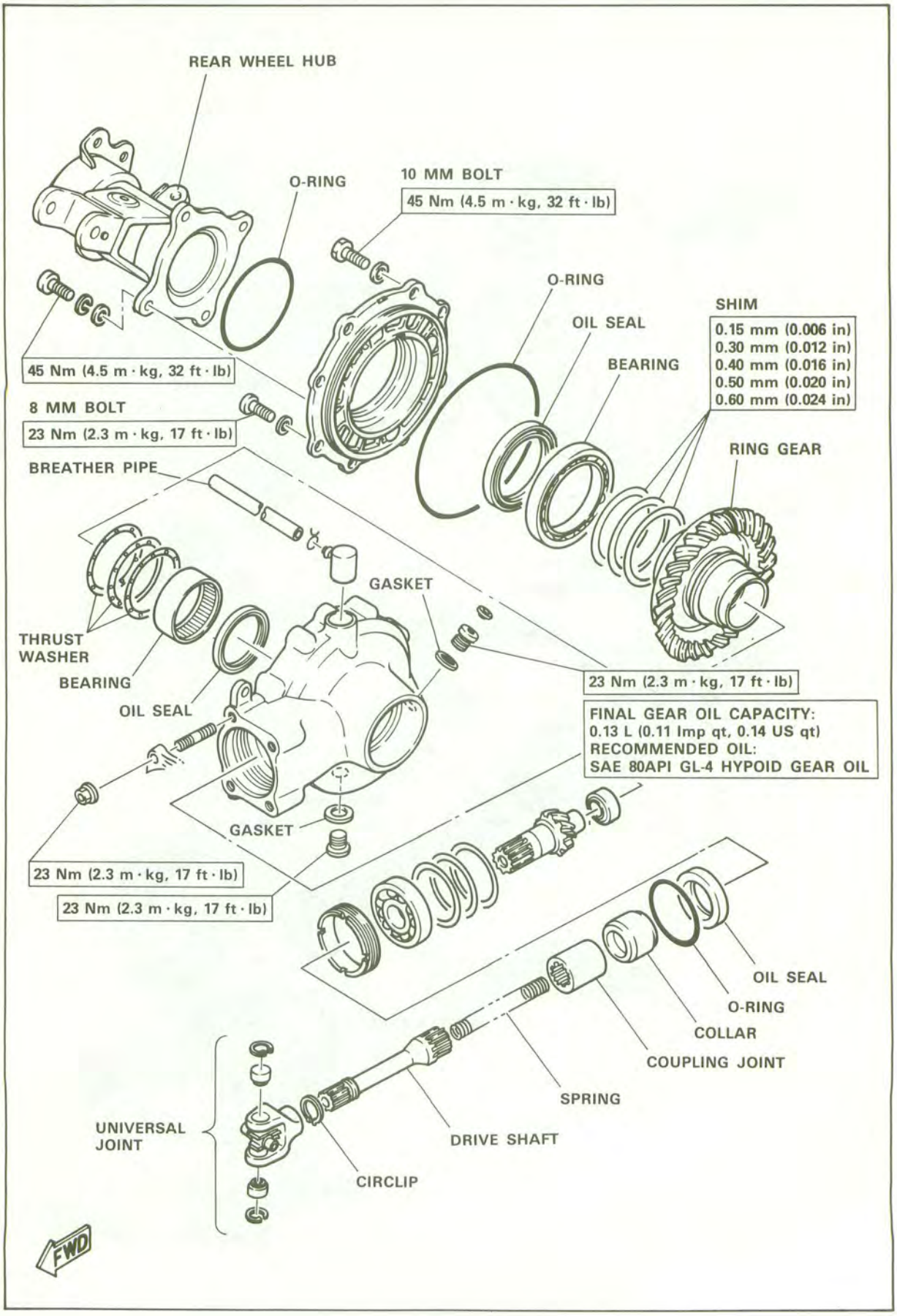
Front Fork


FORK OIL (EACH LEG):
117 cm³ (4.12 Imp oz, 3.96 US oz)
YAMAHA FORK OIL 10WT OR EQUIVALENT
30 Nm (3.0 m · kg, 22 ft · lb)
CAP
INNER FORK TUBE
BOOT
CIRCLIP
SPRING SEAT
O-RING
TAPPER SPINDLE
CIRCLIP
OIL SEAL
APPLY LOCTITE®
23 Nm (2.3 m · kg, 17 ft · lb)
FRONT FORK
UNDER BRACKET
FENDER
BREATHER PIPE

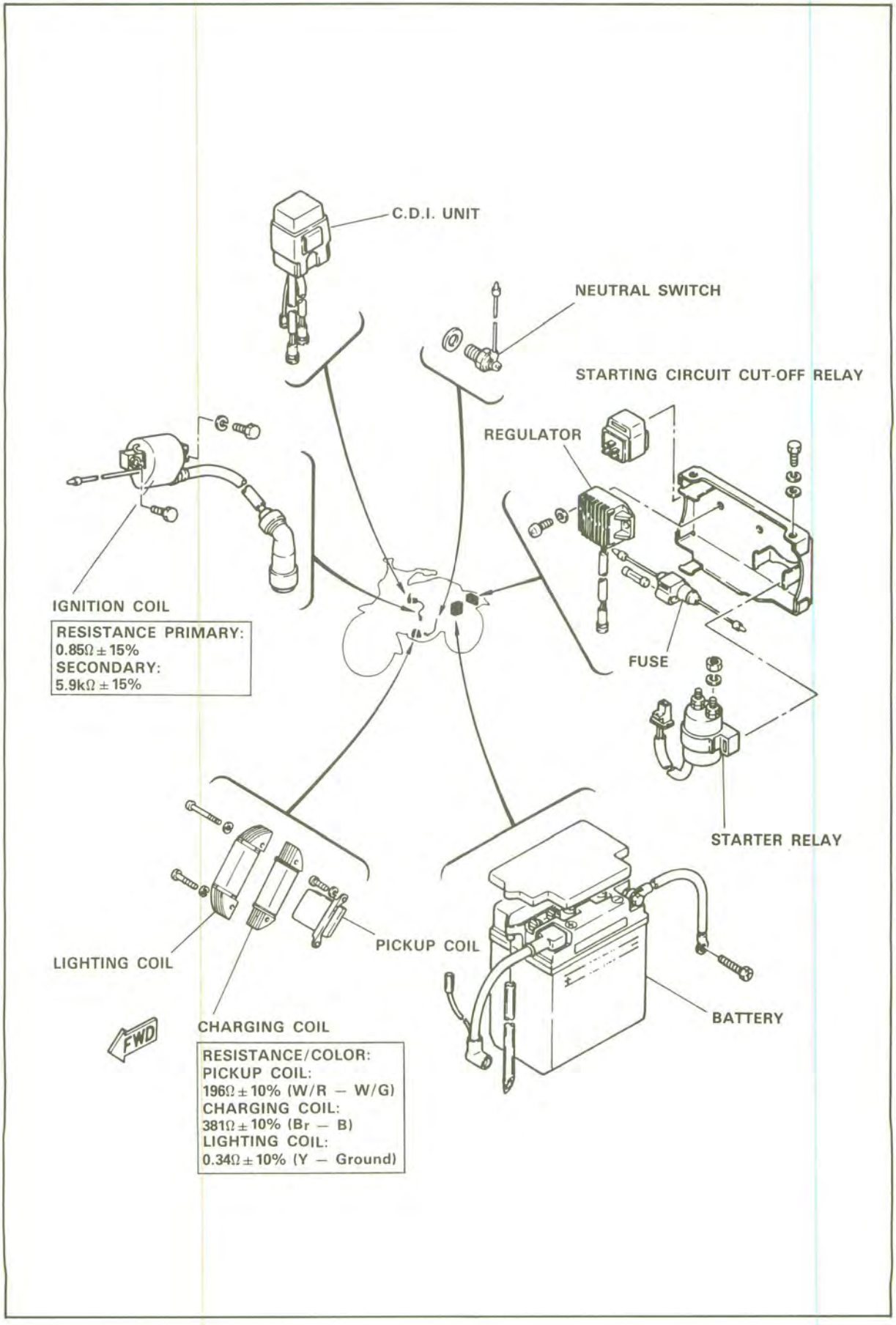
Rear Wheel


WHEEL FLANGE
REAR AXLE
TIRE
22×11−8
DUST SEAL
BEARING
45 Nm (4.5 m · kg, 32 ft · lb)
BEARING (B6008)
COLLAR
OIL SEAL
DUST SEAL
RING NUT
100 Nm (10.0 m · kg, 72 ft · lb)
APPLY LOCTITE®
WHEEL FLANGE
45 Nm (4.5 m · kg, 32 ft · lb)
50 Nm (5.0 m · kg, 36 ft · lb)

Final Gear

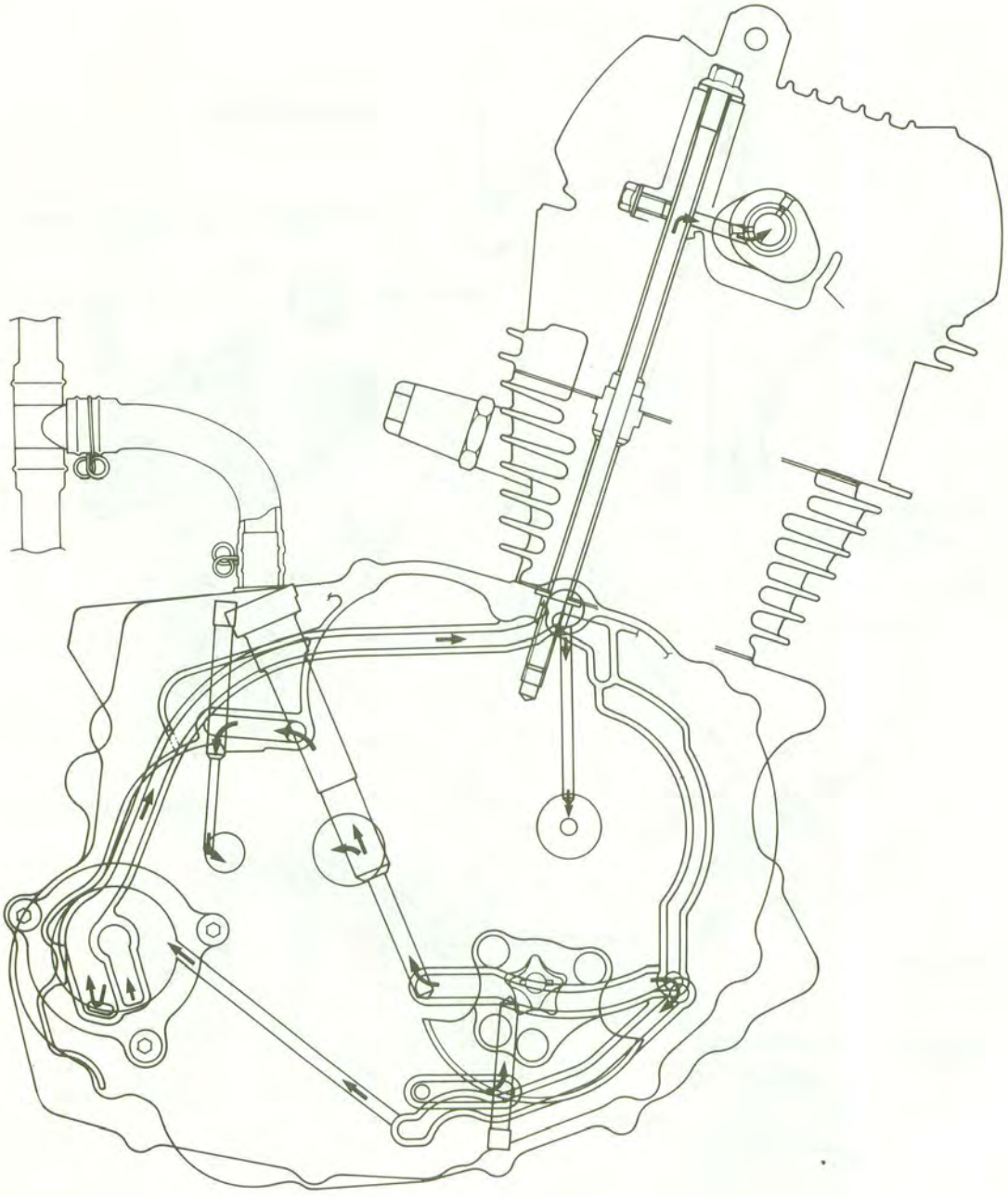

REAR WHEEL HUB
O-RING
10 MM BOLT
45 Nm (4.5 m · kg, 32 ft · lb)
O-RING
OIL SEAL
BEARING
SHIM
0.15 mm (0.006 in)
0.30 mm (0.012 in)
0.40 mm (0.016 in)
0.50 mm (0.020 in)
0.60 mm (0.024 in)
45 Nm (4.5 m · kg, 32 ft · lb)
8 MM BOLT
23 Nm (2.3 m · kg, 17 ft · lb)
BREATHER PIPE
RING GEAR
GASKET
THRUST WASHER
BEARING
OIL SEAL
23 Nm (2.3 m · kg, 17 ft · lb)
FINAL GEAR OIL CAPACITY:
0.13 L (0.11 Imp qt, 0.14 US qt)
RECOMMENDED OIL:
SAE 80API GL-4 HYPOID GEAR OIL
GASKET
23 Nm (2.3 m · kg, 17 ft · lb)
23 Nm (2.3 m · kg, 17 ft · lb)
OIL SEAL
O-RING
COLLAR
COUPLING JOINT
SPRING
DRIVE SHAFT
UNIVERSAL JOINT
CIRCLIP
FWD

Electrical Components

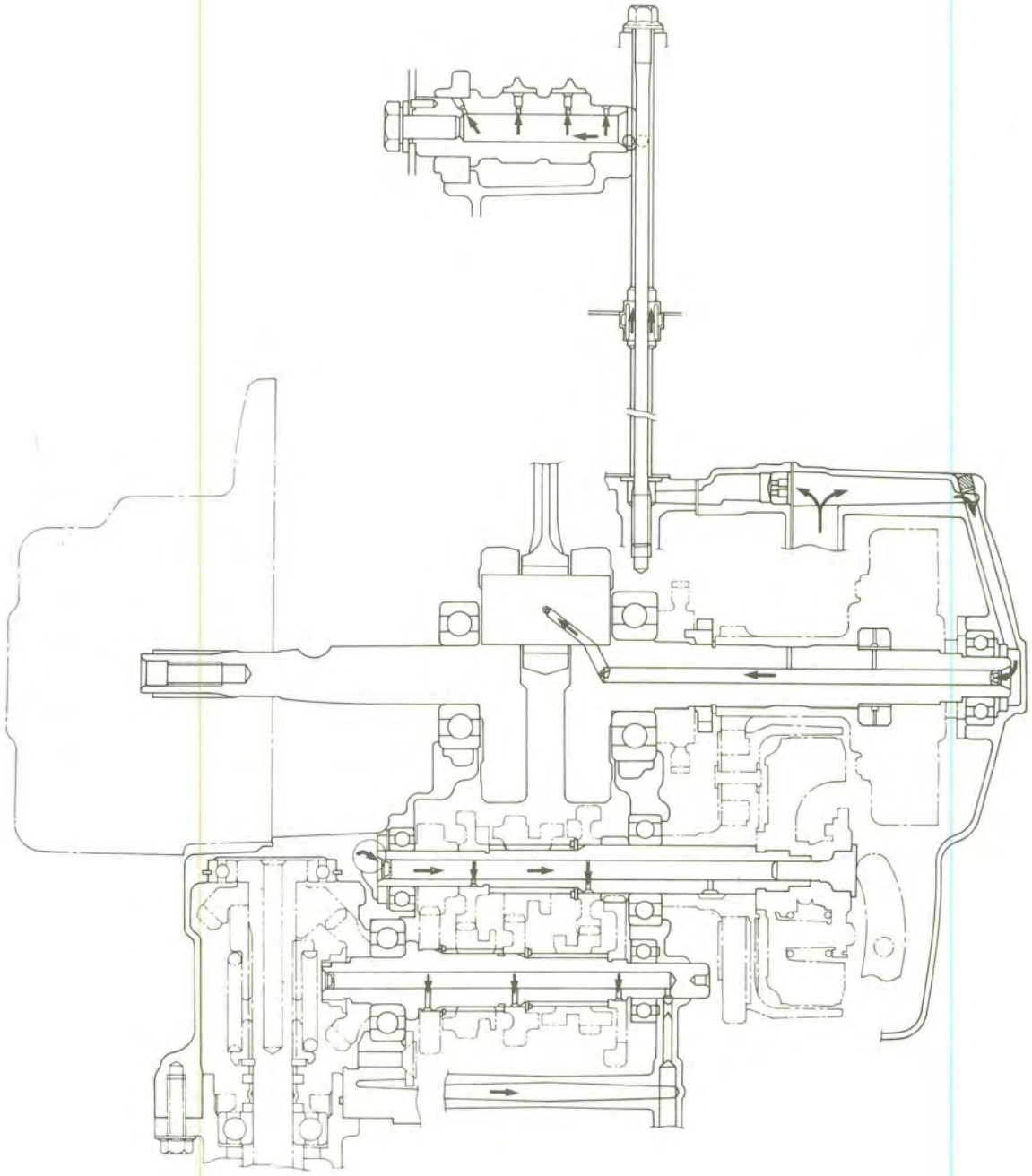


LUBRICATION DIAGRAMS

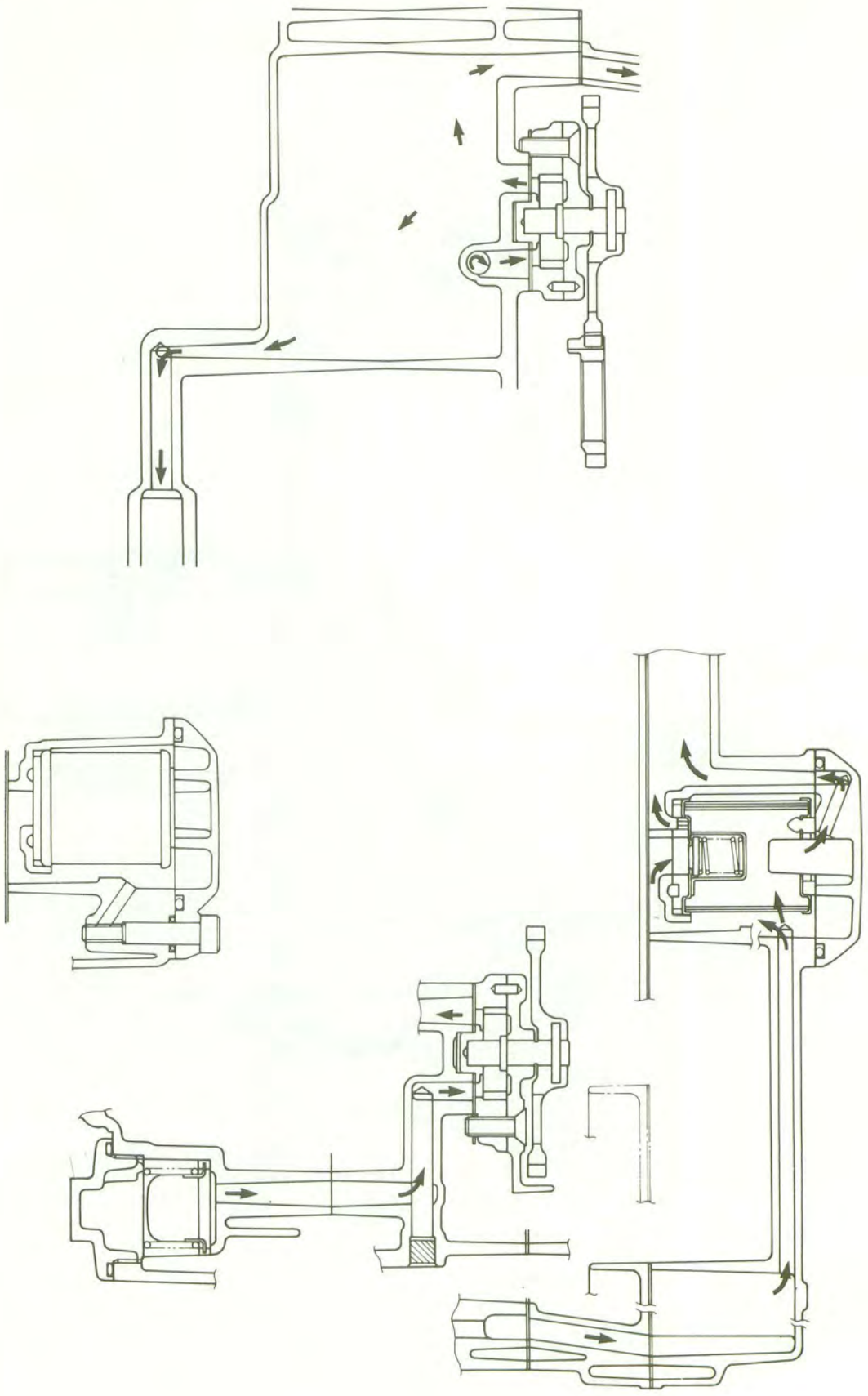
Lubrication Diagram (1)



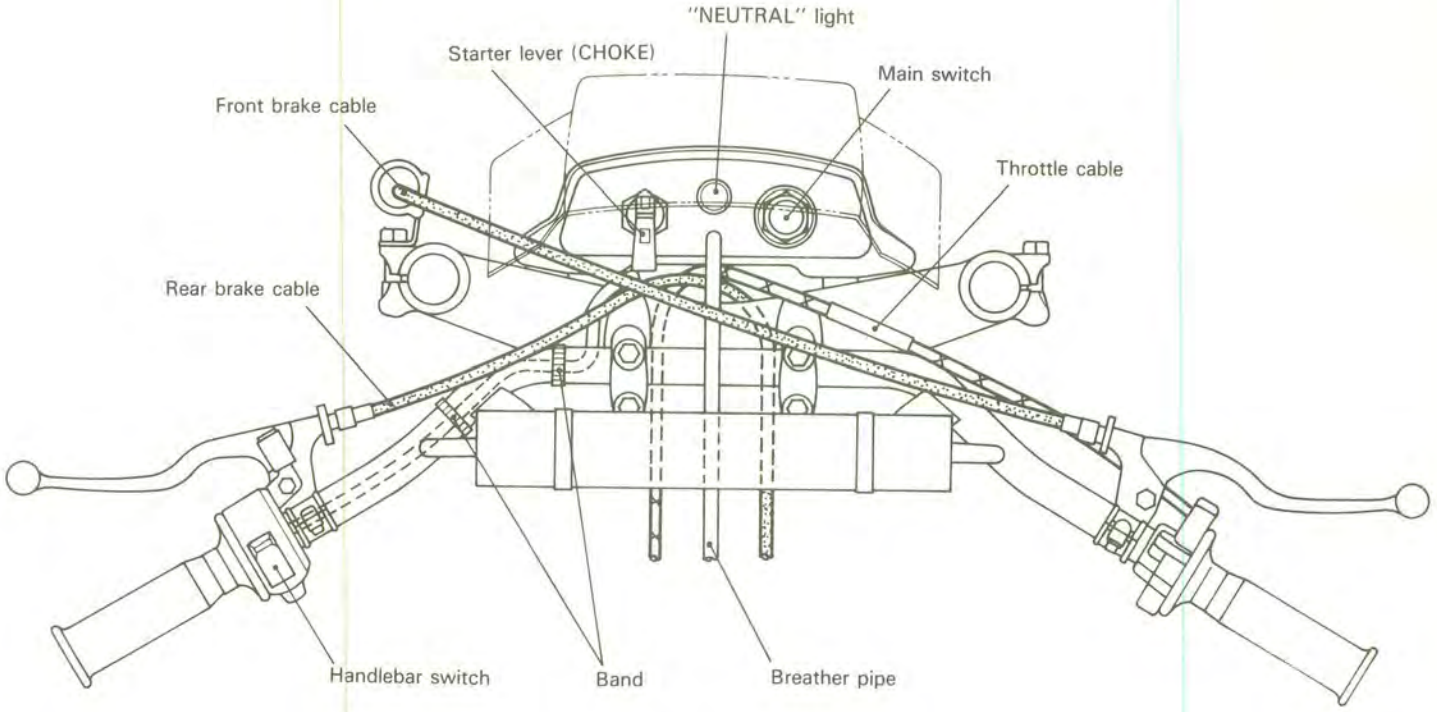
Lubrication Diagram (2)

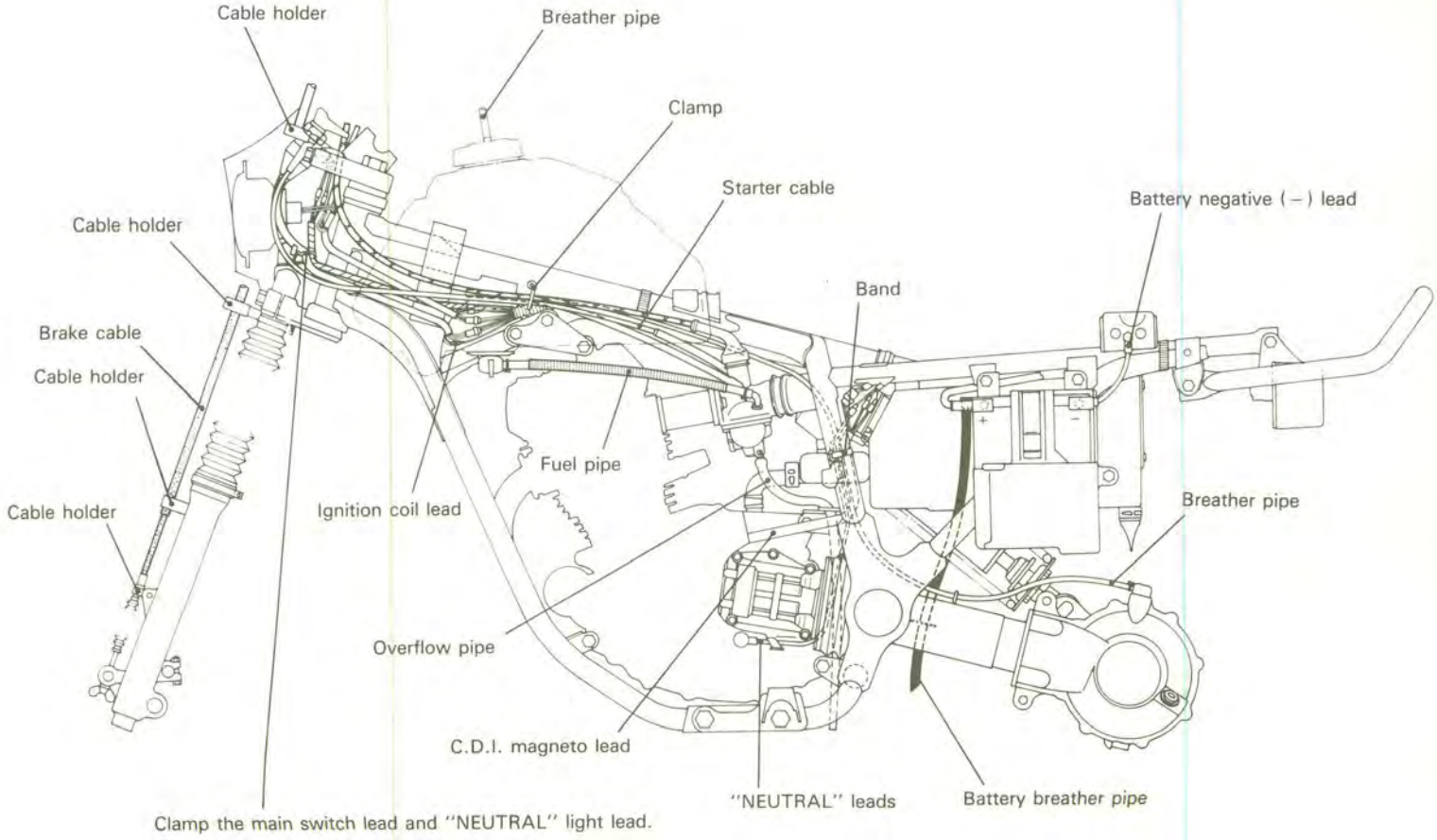


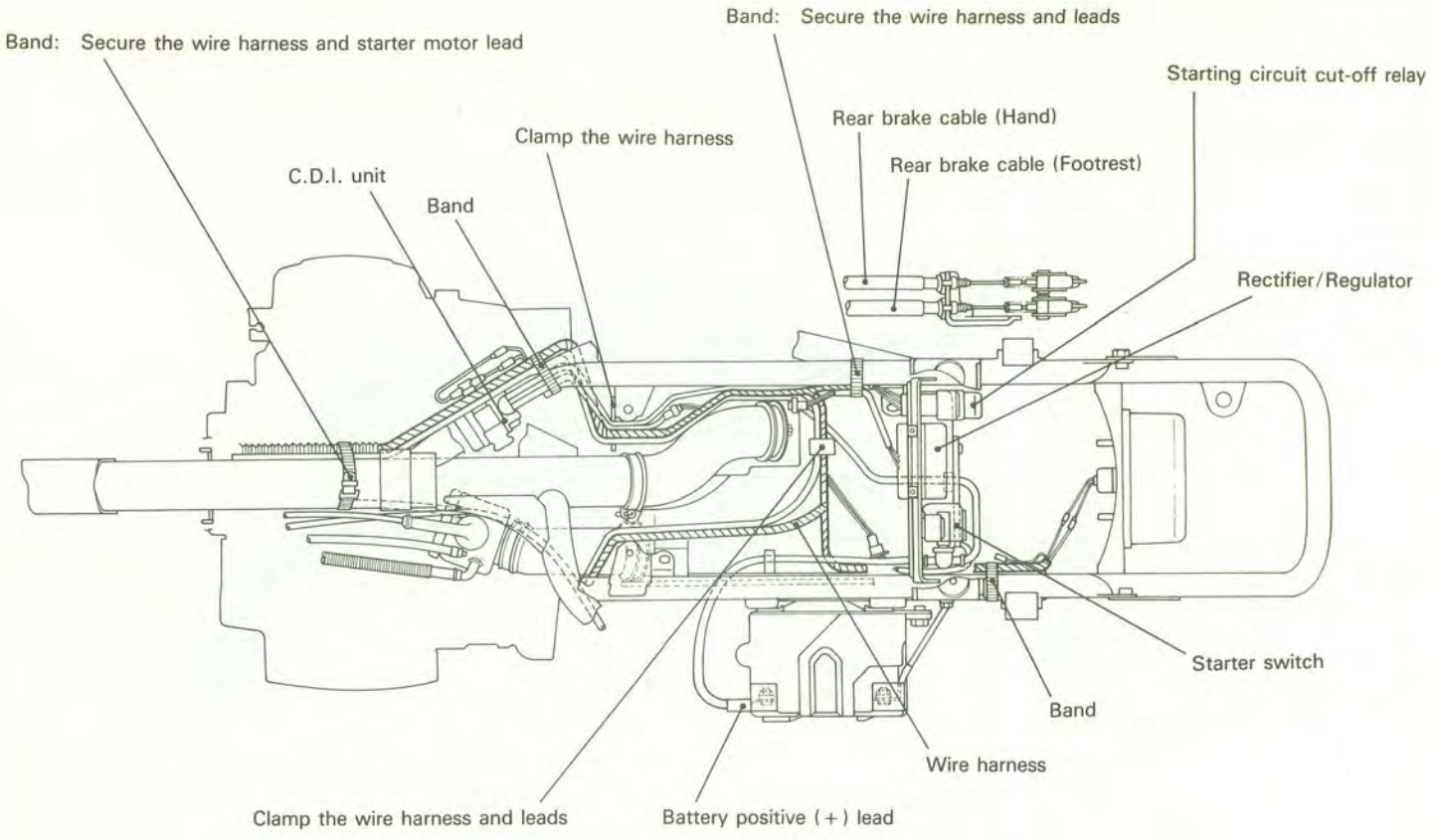
Lubrication Diagram (3)

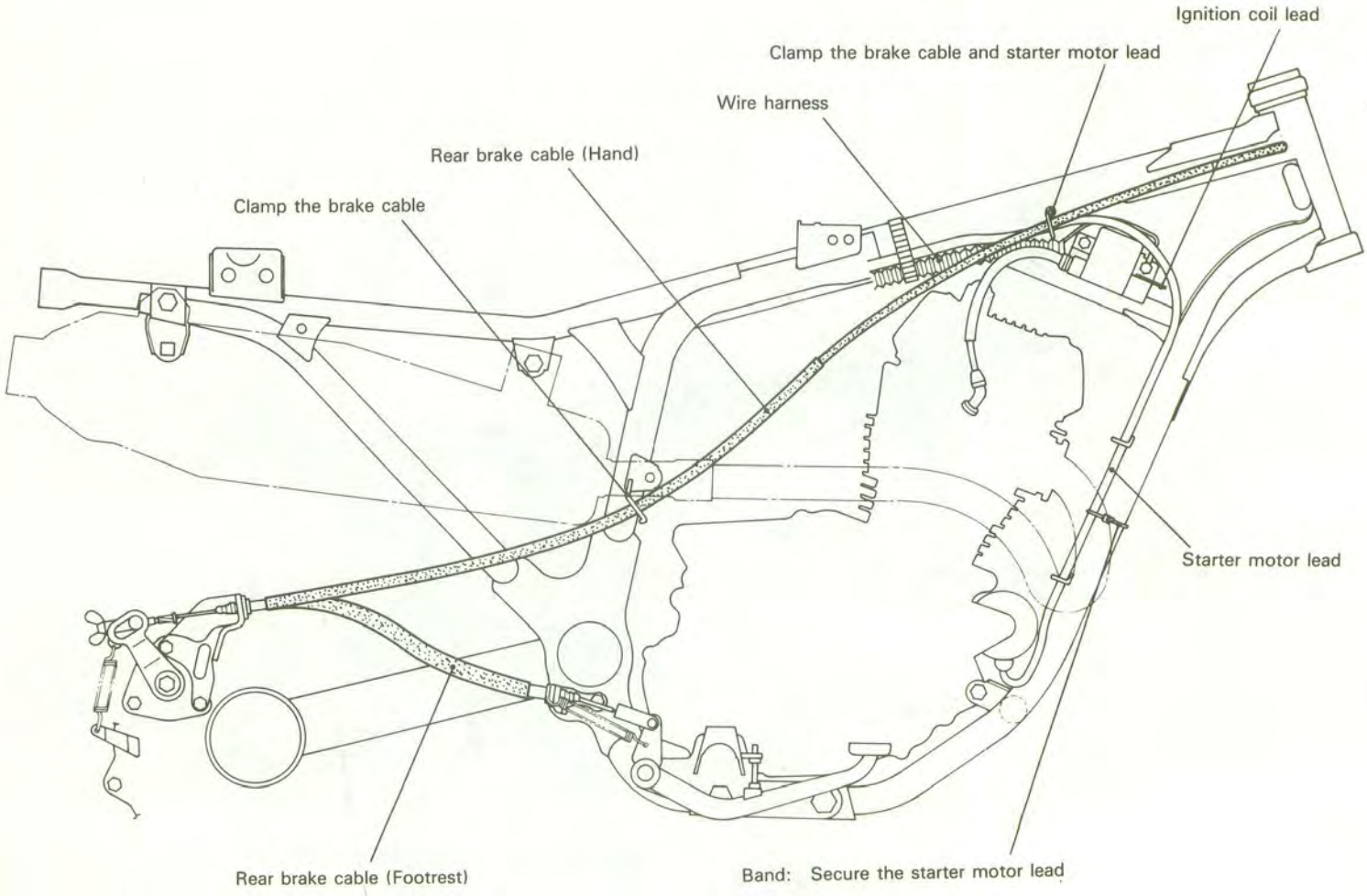


CABLE ROUTING






Band: Secure the wire harness and starter motor lead
Band: Secure the wire harness and leads
Starting circuit cut-off relay
Rear brake cable (Hand)
Clamp the wire harness
Rear brake cable (Footrest)
C.D.I. unit
Band
Rectifier/Regulator
Starter switch
Band
Wire harness
Clamp the wire harness and leads
Battery positive (+) lead


Ignition coil lead
Clamp the brake cable and starter motor lead
Wire harness
Rear brake cable (Hand)
Clamp the brake cable
Starter motor lead
Rear brake cable (Footrest)
Band: Secure the starter motor lead

YTM225DXK WIRING DIAGRAM