YAMAHA

RD125B / RD200B

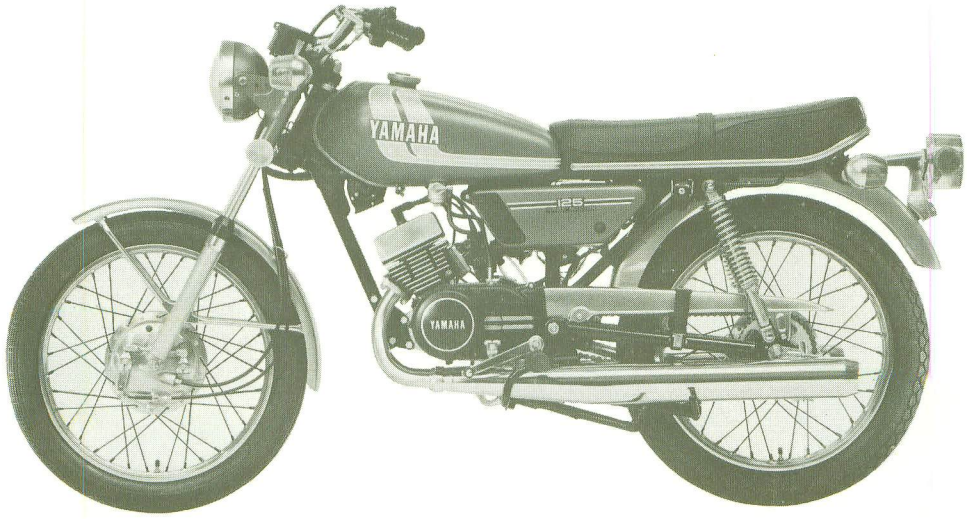
507-000101 / 397-200101

SERVICE MANUAL

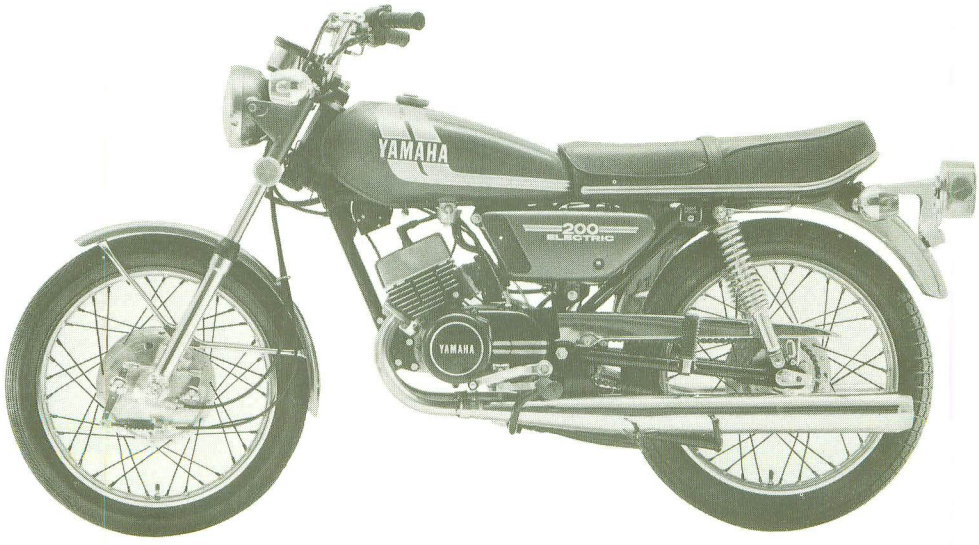
FOREWORD

This Service Manual has been written to acquaint the mechanic with the disassembly, reassembly, maintenance, and troubleshooting procedures required to provide optimum performance and longevity of the unit.

The information enclosed should be closely studied to avoid unnecessary repairs and to provide the owner with a sound, safe, dependable machine.



RD125B



RD200B

YAMAHA MOTOR CO., LTD.
SERVICE DEPARTMENT

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CHAPTER 1. GENERAL

1-1. Machine identification

The frame serial number is located on the right hand side of the headstock assembly. The first three digits identify the model. This is followed by a dash. The remaining digits identify the production number of the unit.

The engine serial number is located on a raised boss on the upper rear, left hand side of the engine. Engine identification follows the same code as frame identification.

Normally, both serial numbers are identical: however, on occasion they may be two or three numbers off.

Starting Serial Number	
RD125B	507-000101
RD200B	397-200101

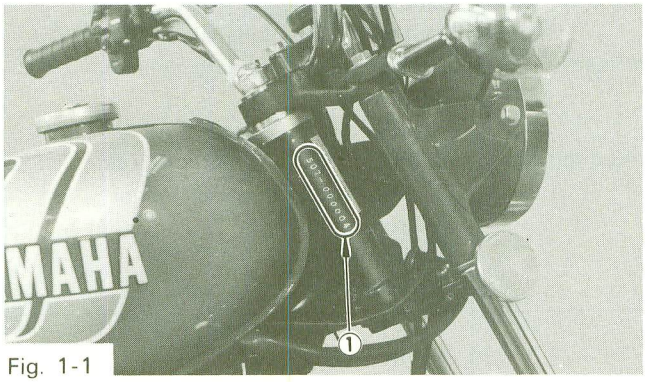

Fig. 1-1

Frame Serial Number (Typical)

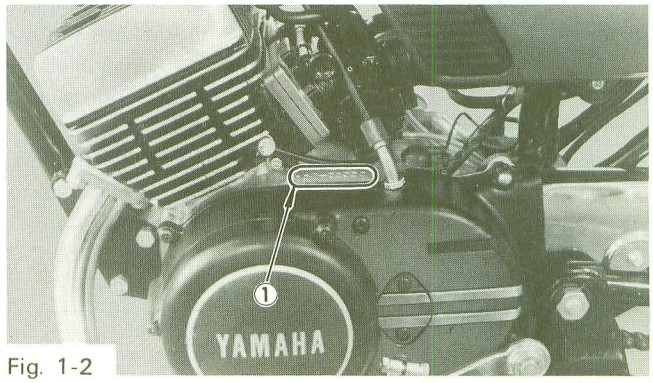

Fig. 1-2

Engine Serial Number (Typical)

1-2. Specifications

A. General specifications

Model	RD125B	RD200B
Dimensions:		
Overall length	76.2 ins. (1,935 mm.)	76.6 ins. (1,945 mm.)
Overall width	33.1 ins. (840 mm.)	29.1 ins. (740 mm.)
Overall height	41.7 ins. (1,060 mm.)	39.6 ins. (1,005 mm.)
Seat height (unloaded)	28.7 ins. (729 mm.)	30.3 ins. (770 mm.)
Wheelbase	48.8 ins. (1,240 mm.)	49.0 ins. (1,245 mm.)
Min. ground clearance	6.1 ins. (155 mm.)	6.1 ins. (155 mm.)
Weight:		
Net	228 lbs. (103.5 kgs.)	256 lbs. (116 kgs.)
Performance:		
Min. turning radius	82.7 ins. (2,100 mm.)	82.7 ins. (2,100 mm.)
Braking distance	46 ft. at 31 m.p.h. (14 m. at 50 km/h.)	46 ft. at 31 m.p.h. (14 m. at 50 km/h.)
Engine:		
Model/Type	507/2-stroke, gasoline	397/2-stroke gasoline
Lubricating system	Separate lubrication (YAMAHA Autolube)	Separate lubrication (YAMAHA Autolube)
Cylinder	Two in parallel, forward inclined, torque induction	Two in parallel, forward inclined, torque induction
Displacement	7.57 cu.in. (124 c.c.)	11.89 cu.in. (195 c.c.)
Bore and stroke	1.693 × 1.693 ins. (43 × 43 mm.)	2.047 × 1.811 ins. (52 × 46 mm.)
Starting system	Primary kick starter	Electric and primary kick starter
Ignition system	Battery ignition	Battery ignition
Ignition timing	1.8 mm. B.T.D.C.	1.8 mm. B.T.D.C.
Spark plug/MFR	B-8HS/NGK	B-8HS/NGK
Carburetor:		
Type/MFR	Y18P-1C/Teikei	Y20P-1A/Teikei
Main jet	#94	#94
Jet needle type-position	4D50-2	4F51-3
Air cleaner:	Oiled foam rubber	Oiled foam rubber
Primary drive:		
Clutch	Wet, multiple-disk	Wet, multiple-disk
Primary reduction system	Helical gear	Helical gear
Primary reduction ratio	3.894 (74/19)	3.312 (53/16)
Capacities:		
Gasoline tank/Type fuel	11.5 lits. (3.0 US.gals.) Low-lead gasoline/86 + Octane	11.5 lits. (3.0 US.gals.) Low-lead gasoline/86 + Octane
Oil tank/Type	1.5 lits. (1.6 US.qts.) Yamalube 2-cycle	1.5 lits. (1.6 US.qts.) Yamalube 2-cycle
Transmission/Type	700 ~ 800 c.c. (0.74 ~ 0.84 US.qts.) Yamalube 4-cycle	800 ~ 850 c.c. (0.84 ~ 0.90 US.qts.) Yamalube 4-cycle
Front forks/Type	137 c.c. (4.6 oz.) Yamaha shock fluid	157 c.c. (5.3 oz.) Yamaha shock fluid
Transmission:		
Type	Constant mesh 5-speed forward	Constant mesh 5-speed forward

Model	RD125B	RD200B
Transmission:		
Reduction ratio		
1st	3.181 (35/11)	2.833 (34/12)
2nd	1.812 (29/16)	1.705 (29/17)
3rd	1.300 (26/20)	1.250 (25/20)
4th	1.045 (23/22)	1.045 (23/22)
5th	0.840 (21/25)	0.916 (22/24)
Secondary reduction system	Chain	Chain
Secondary reduction ratio	2.785 (39/14)	2.571 (36/14)
Chassis:		
Model	507	397
Frame	Steel tubing, diamond structure	Steel tubing, diamond structure
Suspension system, front	Telescopic fork - Coil spring, Oil damped	Telescopic fork - Coil spring, Oil damped
Suspension system, rear	Swing arm - Coil spring, Oil damped	Swing arm - Coil spring, Oil damped
Steeing system:		
Caster	62°30'	62°30'
Trail	3.5 ins. (90 mm.)	3.7 ins. (95 mm.)
Braking system:		
Type of brake	Drum, internal expansion, front and rear	Drum, internal expansion, front and rear
Operation system, front	Right hand operation	Right hand operation
Operation system, rear	Right foot operation	Right foot operation
Tire size:		
Front	2.75—18—4PR	2.75—18—4PR
Rear	3.00—18—4PR	3.00—18—4PR
Generating system:		
Model/Type	K108-12/AC generator	GS214-02/Starter dynamo
Manufacturer	Hitachi	Hitachi
Battery:		
Model/MFR	AYT2-12/Furukawa	12N9A-3A-1/GS
Capacity	12V. 5.5AH.	12V. 9AH.
Lighting:		
Headlight	12V., 30W./30W.	12V., 35W./25W.
Taillight	12V., 8W.	12V., 8W.
Stoplight	12V., 23W.	12V., 23W
Meter light	12V., 3W.	12V., 3W. × 2
Flasher light	12V., 27W.	12V., 27W.
High beam indicator light	12V., 2W.	12V., 2W
Neutral light	12V., 3W.	12V., 3W.
Charge light	—	12V., 3W.

Note:
The Research and Engineering Departments of Yamaha are continually striving to further perfect all models. Improvements and modifications are therefore inevitable.
In light of this fact, all specifications within this manual are subject to change without notice. Information regarding changes is forwarded to all Authorized Yamaha Dealers as soon as available.

B. External views (RD125B)

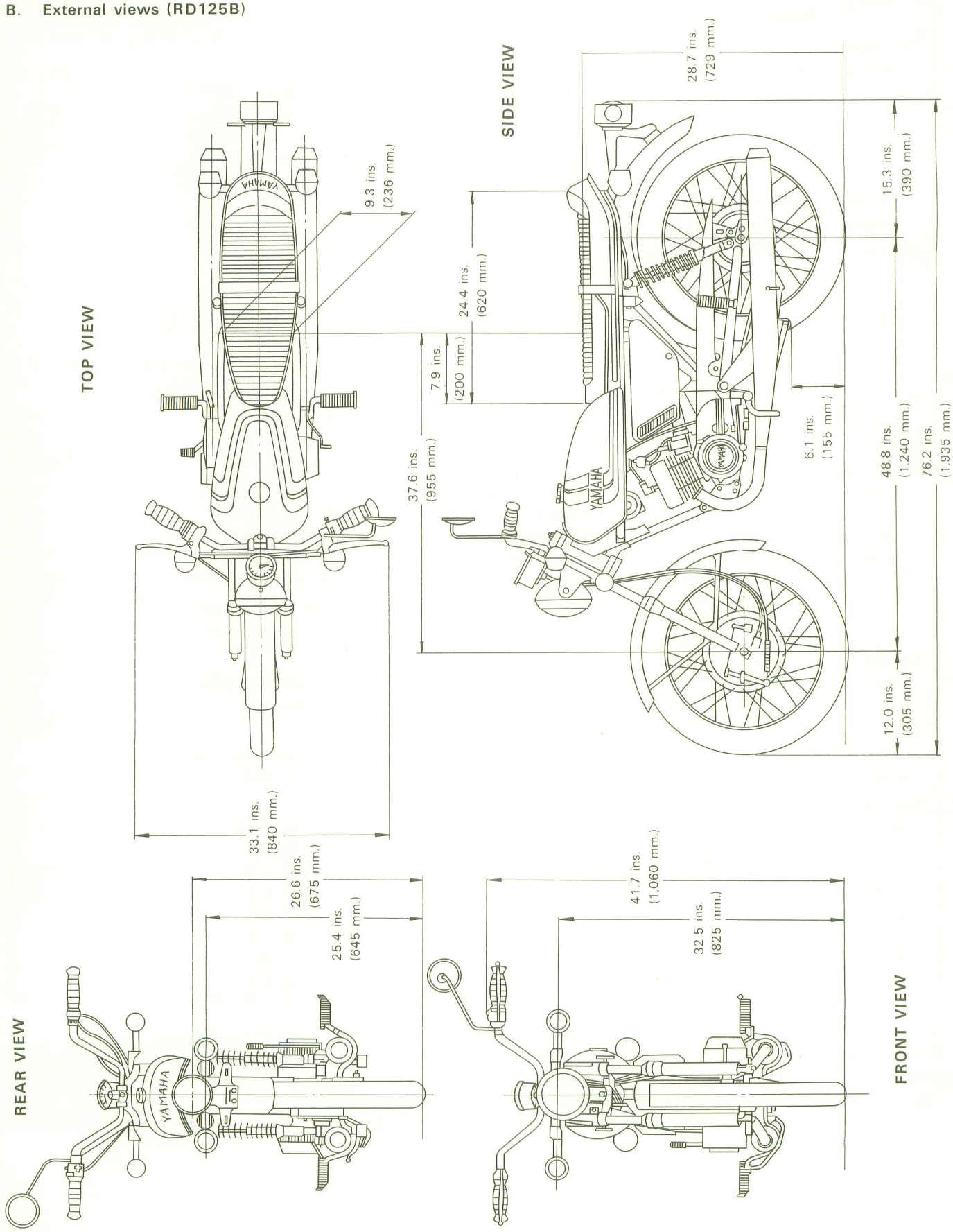

Fig. 1-3

External views (RD200B)

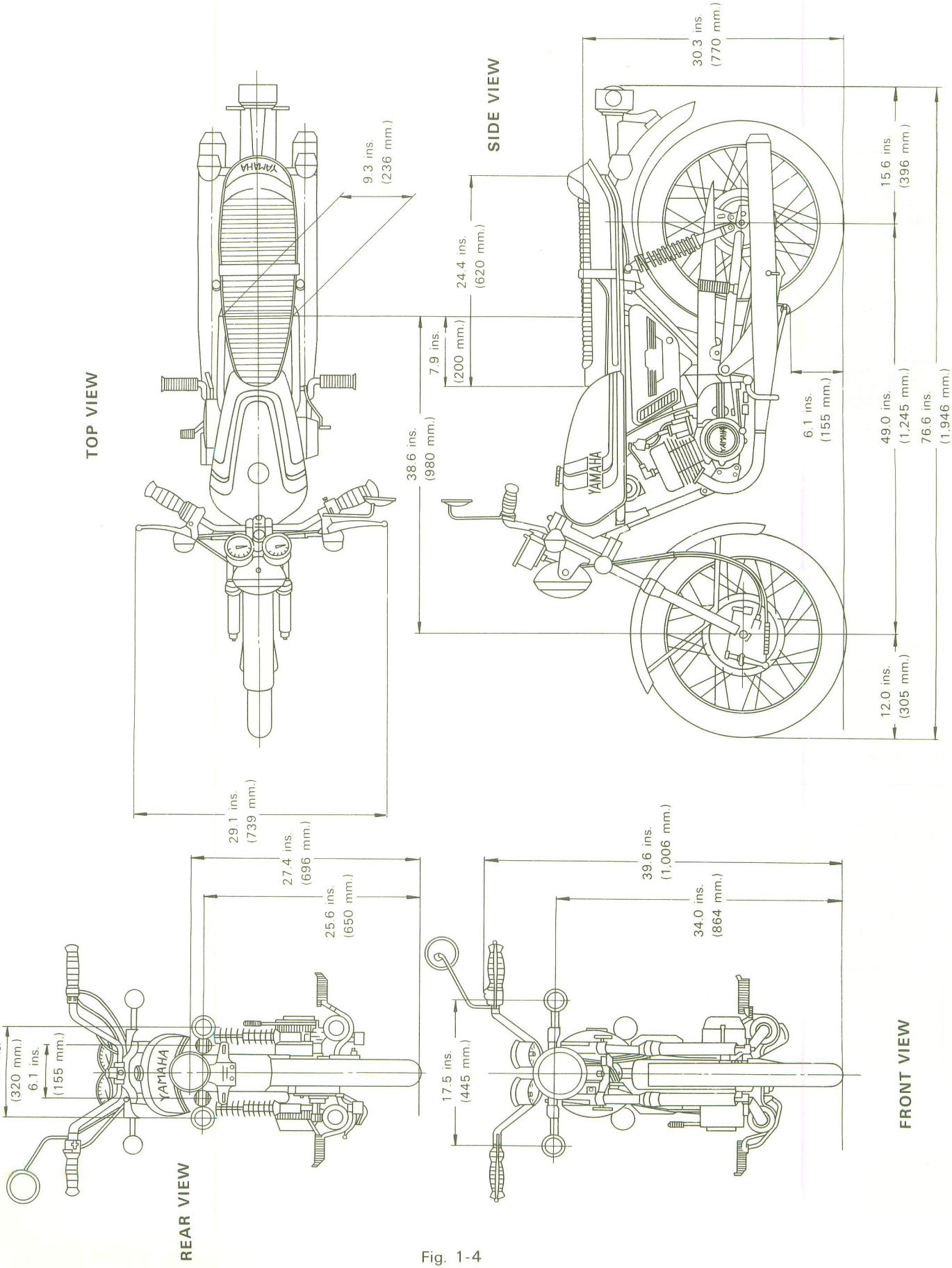

Fig. 1-4

1-3. Tools

The special tools are given below. For your convenience, we have also included a list of additional recommended hand tools and supplies.

A. Special tools and instruments

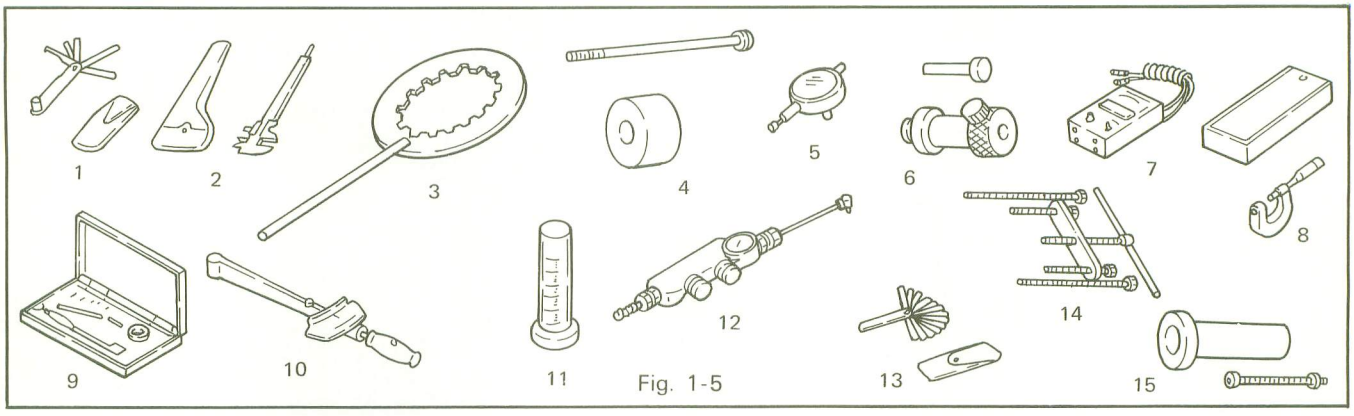

Fig. 1-5

* 1. Autolube feeler gauge
* 2. Vernier calipers
* 3. Clutch holding tool
* 4. Armature shock puller
* 5. Dial gauge (mm.)
* 6. Dial gauge stand
* 7. Point checker for continuity checker
* 8. Outside micrometer (50 ~ 75 mm.)
Outside micrometer (25 ~ 50 mm.)
Outside micrometer (0 ~ 25 mm)
* 9. Cylinder gauge (25 ~ 100 mm.)
10. Torque wrench (0 ~ 10 m-kgs. or 0 ~ 600 in-lbs.)
11. Measuring cup (0 ~ 250 c.c. 10 c.c. increments)
12. Tire pressure gauge (Dial type recommended)
13. Feeler gauge set
*14. Crankcase disassembly tool
*15. Crankcase assembly tool

Note:
Those items marked with an asterisk (*) are available from Yamaha.

B. General tools and materials

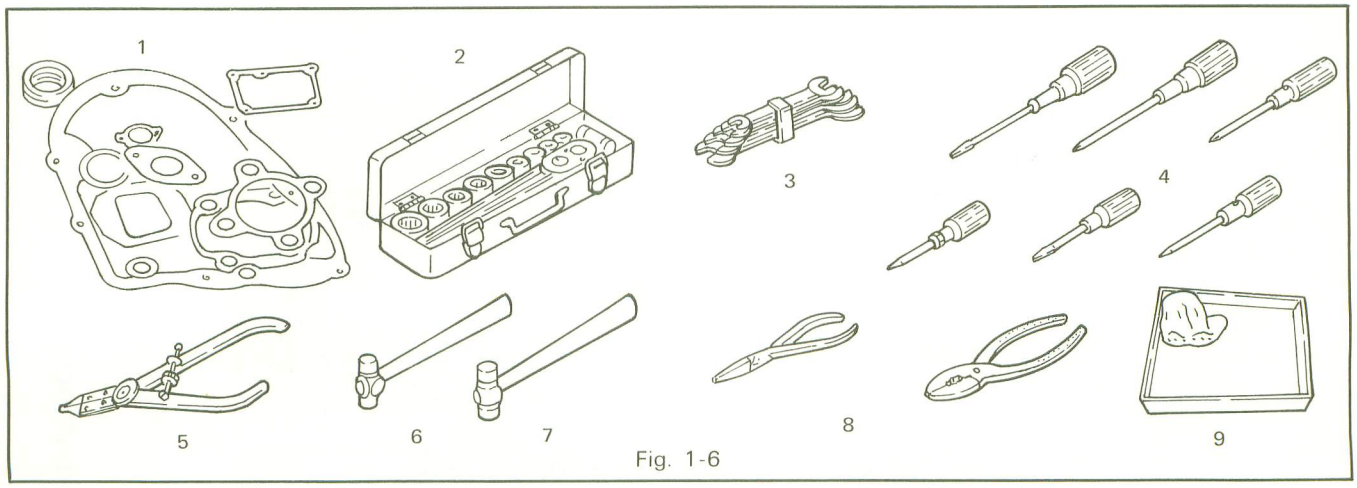

Fig. 1-6

1. Gasket set
2. Socket wrench set (mm.)
3. Combination wrench set (mm.)
4. Selection of Phillips and slotted head screwdrivers
5. Circlip pliers (outside)
6. Steel hammer
7. Soft faced hammer
8. Selection of pliers and wire cutters
9. Parts trays and shop rags

1-4. Maintenance specifications (RD125B)

Item	RD125B		
	Nominal (New)	Minimum allowable	Maximum allowable
AUTOLUBE			
Pump plunger diameter	0.16 in. (4 mm.)	—	—
Pump stroke (Max. throttle)	—	0.065 in. (1.66 mm.)	0.075 in. (1.91 mm.)
Pump stroke (Min. throttle)	—	0.008 in. (0.20 mm.)	0.010 in. (0.25 mm.)
IGNITION			
Minimum spark length	—	0.24 in. (6 mm.)	—
Ignition coil — Primary resistance	4.0Ω. ±10% at 20°C	—	—
Ignition coil — Secondary resistance	11kΩ. ±20% at 20°C	—	—
Ignition coil — Condenser capacity	0.15μF.	—	—
Ignition point gap	0.014 in. (0.35 mm.)	0.012 in. (0.30 mm.)	0.016 in. (0.40 mm.)
Spark plug type/Manufacturer	B-8HS/NGK	—	—
Spark plug cap	—	0.024 in. (0.6 mm.)	0.028 in. (0.7 mm.)
Ignition timing (B.T.D.C.)	0.071 in. (1.8 mm.)	0.065 in. (1.65 mm.)	0.078 in. (1.95 mm.)
ENGINE — TOP END			
Cylinder head volume	6.7 c.c.	—	—
Cylinder allowable taper	0.0002 in. (0.005 mm.)	—	0.002 in. (0.05 mm.)
Cylinder allowable out-of-round	—	—	0.0004 in. (0.01 mm.)
Ring end gap, Free — Top	0.20 in. (5 mm.)	—	—
Ring end gap, Free — 2nd	0.20 in. (5 mm.)	—	—
Ring end gap, Installed — Top	—	0.008 in. (0.20 mm.)	0.016 in. (0.40 mm.)
Ring end gap, installed — 2nd	—	0.008 in. (0.20 mm.)	0.016 in. (0.40 mm.)
Ring groove clearance — Top	—	0.0012 in. (0.03 mm.)	0.0031 in. (0.08 mm.)
Ring groove clearance — 2nd	—	0.0012 in. (0.03 mm.)	0.0031 in. (0.08 mm.)
Piston clearance	—	0.0014 in. (0.035 mm.)	0.0016 in. (0.040 mm.)
ENGINE — CRANKSHAFT			
Small end play	Less than 0.08 in. (2 mm.)	0.031 in. (0.8 mm.)	0.08 in. (2.0 mm.)
Large end clearance	—	0.004 in. (0.1 mm.)	0.012 in. (0.3 mm.)
Run-out clutch side	—	—	0.0012 in. (0.03 mm.)
Run-out ignition side	—	—	0.0012 in. (0.03 mm.)
Flywheel width	$1.69\ ^{-0.002}_{-0.004}$ ins. $(43\ ^{-0.05}_{-0.10}$ mm.)	—	—
Width of crankshaft assembly	$4.96\ ^{+0}_{-0.008}$ ins. $(126\ ^{+0}_{-0.20}$ mm.)	—	—
ENGINE — CLUTCH			
Friction plate thickness	0.12 in. (3.2 mm.)	0.11 in. (2.9 mm.)	—
Clutch-warp. allowance	—	—	0.002 in. (0.05 mm.)
Housing bushing I.D.	$0.91\ ^{+0.0006}_{-0.0002}$ in. $(23\ ^{+0.016}_{-0.005}$ mm.)	—	0.906 in. (23.02 mm.)
Bushing spacer O.D.	$0.91\ ^{-0.0008}_{-0.0013}$ in. $(23\ ^{-0.020}_{-0.033}$ mm.)	—	0.905 in. (22.99 mm.)
Bushing/Spacer clearance	0.0011 ~ 0.0014 in. (0.028 ~ 0.036 mm.)	—	0.002 in. (0.056 mm.)
Main shaft O.D.	$0.69\ ^{-0.0002}_{-0.0007}$ in. $(17\ ^{-0.006}_{-0.017}$ mm.)	—	0.669 in. (17.01 mm.)
Bushing spacer I.D.	$0.69\ ^{+0.0005}_{-0.0002}$ in. $(17\ ^{+0.012}_{-0.006}$ mm.)	—	0.670 in. (17.02 mm.)
Shaft/Spacer clearance	0.0004 ~ 0.0007 in. (0.011 ~ 0.018 mm.)	—	0.001 in. (0.028 mm.)

Item	RD125B		
	Nominal (New)	Minimum allowable	Maximum allowable
Housing end play	0.04 $^{+0.004}_{-0.001}$ in. (1.11 $^{+0.11}_{-0.03}$ mm.)	—	—
Spring free length	1.24 in. (31.5 mm.)	1.20 in. (1.5 mm.)	—
Primary-drive gear "Lash" No.	73 ~ 77	—	—
Primary-driven gear "Lash" No.	63 to 67	—	—
Primary-lash tolerance	139 ~ 141	—	—
Primary-reduction ratio	3.894	—	—
ENGINE — TRANSMISSION			
Main axle clearance	0.020 in. (0.5 mm.)	—	—
Drive axle clearance	0.020 in. (0.5 mm.)	—	—
CARBURETION			
Manufacturer	Teikei	—	—
Model Number	Y18P-1C	—	—
I.D. Number	46620	—	—
Venturi size	18ϕmm.	—	—
Jet needle/Clip position	4D50-2	—	—
Cutaway	2.5	—	—
Pilot jet	#44	—	—
Air jet	2.0	—	—
Starter jet	#70	—	—
Air screw (Turns out)	1-1/2	—	—
Idle speed	1,150 ~ 1,250 r.p.m.	—	—
Float level	0.79 ±0.098 in. (2.0 ±2.5 mm.)	—	—
CHASSIS			
Front brake shoe diameter	5.9 in. (150 mm.)	—	—
Rear brake shoe diameter	5.2 in. (130 mm.)	—	—
Front tire manufacturer/size	Yokohama/2.75 — 18 — 4PR	—	—
Pressure	23 lbs/in.^{2} (1.6 kgs./cm.^{2})	—	—
Rear tire manufacturer/size	Yokohama/3.00 — 18 — 4PR	—	—
Pressure	28 lbs/in.^{2} (2.0 kgs/cm.^{2})	—	—
Wheel run-out limits — Lateral	0.08 in. (2 mm.)	—	—
Wheel run-out limits — Vertical	0.08 in. (2 mm.)	—	—
Drive chain — Pitch	DK428	—	—
No. of links	110L		
Front fork oil capacity (each leg)	4.6 oz. (137 c.c.)	—	—
Type	Yamaha shock fluid	—	—
Steering ball race quantity/size — (Upper)	19/1/4 ins. (6.3 mm.)	—	—
Steering ball race quantity/size — (Lower)	19/1/4 ins. (6.3 mm.)	—	—
Swing arm free play limits	0.4 in. (1.0 mm.)	—	—

Note:

Yamaha reserves the right to change specifications at any time without prior notice. Should a discrepancy be noted in any procedure or specification within this manual, contact the manufacturer, Yamaha Motor Company, Iwata, Japan; or the U.S. distributor, Yamaha International Corporation, Buena Park, California; or the Canadian distributor, Yamaha Motor Canada, Ltd., Richmond, B.C., Canada for verification.

1-5. Maintenance specifications (RD200B)

Item	RD200B		
	Nominal (New)	Minimum allowable	Maximum allowable
AUTOLUBE			
Pump plunger diameter	0.16 in. (4 mm.)	—	—
Pump stroke (Max. throttle)	—	0.081 in. (2.05 mm.)	0.089 in. (2.55 mm.)
Pump stroke (Min. throttle)	—	0.008 in. (0.20 mm.)	0.010 in. (0.25 mm.)
IGNITION			
Minimum spark length	—	0.24 in. (6 mm.)	—
Ignition coil — Primary resistance	4.0Ω. ±10% at 20°C	—	—
Ignition coil — Secondary resistance	11kΩ. ±20% at 20°C	—	—
Ignition coil — Condenser capacity	0.22μF.	—	—
Ignition point gap	0.014 in. (0.35 mm.)	0.012 in. (0.30 mm.)	0.016 in. (0.40 mm.)
Spark plug type/Manufacturer	B-8HS/NGK	—	—
Spark plug cap	—	0.024 in. (0.6 mm.)	0.028 in. (0.7 mm.)
Ignition timing (B.T.D.C.)	0.071 in. (1.8 mm.)	0.065 in. (1.65 mm.)	0.078 in. (1.95 mm.)
ENGINE — TOP END			
Cylinder head volume	12.2 c.c.	—	—
Cylinder allowable taper	0.0003 in. (0.008 mm.)	—	0.002 in. (0.05 mm.)
Cylinder allowable out-of-round	—	—	0.0004 in. (0.01 mm.)
Ring end gap, Free — Top	0.16 in. (4.0 mm.)	—	—
Ring end gap, Free — 2nd	0.18 in. (4.5 mm.)	—	—
Ring end gap, Installed — Top	—	0.006 in. (0.15 mm.)	0.014 in. (0.35 mm.)
Ring end gap, installed — 2nd	—	0.006 in. (0.15 mm.)	0.014 in. (0.35 mm.)
Ring groove clearance — Top	—	0.0012 in. (0.03 mm.)	0.0031 in. (0.08 mm.)
Ring groove clearance — 2nd	—	0.0012 in. (0.03 mm.)	0.0031 in. (0.08 mm.)
Piston clearance	—	0.0016 in. (0.040 mm.)	0.0018 in. (0.045 mm.)
ENGINE — CRANKSHAFT			
Small end play	Less than 0.08 in. (2 mm.)	—	—
Large end clearance	—	0.004 in. (0.1 mm.)	0.012 in. (0.3 mm.)
Run-out clutch side	—	—	0.0012 in. (0.03 mm.)
Run-out ignition side	—	—	0.0012 in. (0.03 mm.)
Flywheel width	$1.85\ ^{-0.002}_{-0.004}$ ins. $(47\ ^{-0.05}_{-0.10}$ mm.)	—	—
Width of crankshaft assembly	$5.51\ ^{+0}_{-0.008}$ ins. $(140\ ^{+0}_{-0.20}$ mm.)	—	—
ENGINE — CLUTCH			
Friction plate thickness	0.16 in. (4.0 mm.)	0.15 in. (3.7 mm.)	—
Clutch-warp. allowance	—	—	0.002 in. (0.05 mm.)
Housing bushing I.D.	$1.024\ ^{+0.0006}_{-0.0002}$ ins. $(26\ ^{+0.016}_{-0.005}$ mm.)	—	1.024 ins. (26.02 mm.)
Bushing spacer O.D.	$1.024\ ^{-0.0008}_{-0.0009}$ ins. $(26\ ^{-0.020}_{-0.023}$ mm.)	—	1.022 ins. (25.95 mm.)
Bushing/Spacer clearance	0.001 ~ 0.002 in. (0.020 ~ 0.040 mm.)	—	0.002 in. (0.05 mm.)
Main shaft O.D.	$0.787\ ^{-0.0003}_{-0.0008}$ in. $(20\ ^{-0.007}_{-0.020}$ mm.)	—	0.785 in. (19.95 mm.)
Bushing spacer I.D.	$0.787\ ^{+0.0394}_{-0.0002}$ in. $(20\ ^{+0.012}_{-0.006}$ mm.)	—	0.788 in. (20.02 mm.)
Shaft/Spacer clearance	0.00004 ~ 0.00157 in. (0.01 ~ 0.00157 mm.)	—	0.007 in. (0.050 mm.)
Housing end play	0.008 in. (0.2 mm.)	0.004 in. (0.1 mm.)	0.012 in. (0.3 mm.)
Spring free length	1.34 ins. (34 mm.)	1.30 ins. (33 mm.)	—

Item	RD200B		
	Nominal (New)	Minimum allowable	Maximum allowable
Primary-drive gear "Lash" No.	73 ~ 77	—	—
Primary-driven gear "Lash" No.	40 ~ 45	—	—
Primary-lash tolerance	117 ~ 119	—	—
Primary-reduction ratio	3.312	—	—
ENGINE — TRANSMISSION			
Main axle clearance	0.020 in. (0.5 mm.)	—	—
Drive axle clearance	0.020 in. (0.5 mm.)	—	—
CARBURETION			
Manufacturer	Teikei	—	—
Model Number	Y20P-1A	—	—
I.D. Number	39763	—	—
Venturi size	20ϕmm.	—	—
Jet needle/Clip position	4F51-3	—	—
Cutaway	2.0	—	—
Pilot jet	#42	—	—
Air jet	0.9ϕ	—	—
Starter jet	#70	—	—
Air screw (Turns out)	1-1/4 ±1/8	—	—
Idle speed	1,150 ~ 1,250 r.p.m.	—	—
Float level	0.79 ±0.098 in. (2 0 ±2.5 mm.)	—	—
CHASSIS			
Front brake shoe diameter	7.1 in. (180 mm.)	6.9 in. (175 mm.)	—
Rear brake shoe diameter	5.9 ins. (150 mm.)	5.7 ins. (145 mm.)	—
Front tire manufacturer/size	Yokohama/2.75 — 18 — 4PR		
Pressure	23 lbs/in.^{2} (1.6 kgs./cm.^{2})	—	—
Rear tire manufacturer/size	Yokohama/3.00 — 18 — 4PR		
Pressure	28 lbs/in.^{2} (2.0 kgs/cm.^{2})	—	—
Wheel run-out limits — Lateral	0.08 in. (2 mm.)	—	—
Wheel run-out limits — Vertical	0.08 in. (2 mm.)	—	—
Drive chain — Pitch	DK428		
No. of links	108L		
Front fork oil capacity (each leg)	5.3 oz. (157 c.c.)	—	—
Type	Yamaha shock fluid	—	—
Steering ball race quantity/size — (Upper)	19/1/4 ins. (6.3 mm.)	—	—
Steering ball race quantity/size — (Lower)	19/1/4 ins. (6.3 mm.)	—	—
Swing arm free play limits	0.4 in. (1.0 mm.)	—	—

Note:

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1-6. Maintenance and lubrication intervals

These charts should be considered strictly as a guide to general maintenance and lubrication intervals. You must take into consideration that weather, terrain, geographical location, and variety of individual uses all tend to demand that each owner alter this time schedule to match his environment. For example, if the motorcycle is continually operated in an area of high humidity, then all parts must be lubricated much more frequently than shown on the chart to avoid damage caused by water to metal parts.

Maintenance intervals

Page	Item	Remarks	Initial (miles)			Thereafter every (miles)			
			250	500	1,000	2,000	1,000	2,000	8,000
25 ~ 26	Brake system (Complete)	Check/Adjust as required — Repair as required		○	○			○	
23	Clutch	Check/Adjust as required		○	○			○	
103	Battery	Top-off/Check specific gravity as required — Monthly or→	○	○	○		○		
92	Spark plug	Inspect/Clean or replace as required	○	○	○		○		
109 ~ 115	Wheels and Tires	Pressure/Spoke tension/Runout	○	○	○		○		
—	Fitting and Fasteners	Tighten before each trip and/or→	○	○	○		○		
22 ~ 23	Autolube	Cable operation/Adjustment	○	○	○			○	
26 ~ 27	Drive chain	Tension/Alignment	○	○	○		○	○	
24	Transmission oil level check	Includes transmission/Autolube tank (#1)	○	○	○		○		
20 ~ 22	Air filter	Foam type — See "Service Notes" #2, #3	○	○	○		○		
—	Fuel petcock	Clean/Flush tank as required	○		○			○	
18 ~ 19	Ignition timing	Adjust/Clean or replace points as required		○	○			○	
20 ~ 21	Carburetor adjustment	Check operation/Fittings		○	○			○	
76 ~ 81	Carburetor overhaul	Clean/Repair as required — Refit/Adjust				○			○
—	Cylinder compression	Preventive maintenance check		○	○			○	
—	Engine decarbonization	Includes exhaust system			○			○	

Service Notes:

#1. Check Autolube tank level before each ride. Top off when oil level shows at the sight glass or before any prolonged use. See "Lubrication intervals" for type of oil to use.

#2. Foam element air filters must be damp with oil at all times to function properly. Remove, clean, and oil filter at least once per month or every 250 ~ 500 miles; whichever occurs first. (If extremely hard usage, such as dirt riding, clean and lube daily.) See "Lubrication intervals" for additional details.

#3. For additional information regarding drive chain, engine oil level, wet-type air filter, see "Lubrication intervals".

Lubrication intervals

Page	Item	Remarks	Type	Period							
				Initial (miles)				Thereafter every (miles)			
				250	500	1,000	2,000	1,000	2,000	4,000	8,000
22	Autolube	See "Service Notes"	No. 1	See "Service Notes"							
24	Transmission oil	Warm engine before draining	No. 2					Check	○		
115 ~ 117	Drive chain	Lube/Adjust as required	No. 3	See "Service Notes"							
115 ~ 117	Drive chain	Remove1/Adjust as required	No. 3					○			
20 ~ 22	Air filter	Foam type	No. 9	See "Service Notes"							
—	Control/Meter cables	Apply thoroughly	No. 4		○				○		
—	Throttle grip/Housing	Light application	No. 5		○				○		
—	Tacho/Speedometer gear housings	Light application	No. 5			○				○	
—	Rear arm pivot shaft	Apply until shows	No. 6			○			○		
—	Brake pedal shaft	Light application	No. 5			○			○		
—	Change pedal shaft	Light application	No. 5			○			○		
—	Stand shaft pivot	Light application	No. 5			○			○		
117 ~ 120	Front forks	Drain completely/Check specs.	No. 10		Check		○		Check	○	
—	Steering ball races	Inspect thoroughly — Med. pack	No. 7				○			○	
—	Point cam lubricating wick	Very light application	No. 8			○				○	
—	Wheel bearings	Do not overpack	No. 7				○			○	

No. 1 Check tank level before each ride. Top off when oil level is at sight glass or before any prolonged use.
Use the following lubricant (in order of preference):
Yamalube "2-cycle" or ; two-stroke oil labeled "BIA certified for service TC-W".

No. 2 At ambient temperatures of 45 ~ 90°F, use Yamalube 4-cycle. Do not use "additives" in oil.

No. 3 Use 10W/30"SE" motor oil. (If desired, specialty type lubricants of quality manufacture may be used.)
"Drive chains" — Lube every 250 ~ 500 miles. If severe usage, every 50 ~ 100 miles.

No. 4 Use graphite base type (specialty types available — use name-brand, quality manufacturer).

No. 5 Light duty — Smooth, light-weight "white" grease (Lithium soap base).
Heavy duty — Standard lube grease (do not use lube grease on throttle/housing).

No. 6 Use standard lube grease-smooth, not coarse.

No. 7 Medium-weight wheel bearing grease of quality manufacture-preferably waterproof.

No. 8 Light-weight machine oil.

No. 9 Air filters — Foam element air filters must be damp with oil at all times to function properly. Clean and lube monthly or per mileage.
If hard usage, clean and lube daily. Do not over-oil. Use SAE 10W/30"SE"

No. 10 Use Yamaha Fork Oil.

CHAPTER 2. ENGINE TUNING AND CHASSIS ADJUSTMENTS

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2

CHAPTER 2. ENGINE TUNING AND CHASSIS ADJUSTMENTS

In general, the following chapter covers those points on the motorcycle which would require servicing if the machine were just being set-up prior to delivery (new machine); coming in for a minor tune-up; or, if the engine or other components had been removed for overhaul or troubleshooting.

In other words, in addition to performing those adjustments required when a component is disassembled, the following items must be covered thoroughly prior to delivering the machine to the customer.

For more detailed information regarding individual components, please refer to the appropriate section further on in this manual, and/or the following:

Basic assembly manual
Individual model assembly manual
Yamaha shop guide (Y.I.C.)
Basic service manual (Y.M.C.)

If the information is not available, or not clearly understood, contact your nearest Distributor.

In the United States:
Yamaha International Corp.,
P.O.Box 6600
Buena Park, California 90620
U.S.A.

In Canada:
Yamaha Motor Canada, Ltd.
1350 Verdun Place
Richmond, B.C.

Maintenance and Minor Repairs

The following sections provide information for the disassembly, troubleshooting and maintenance of various components of the motorcycle. If you do not have the necessary tools and an understanding of the mechanical principles involved, please refrain from attempting repairs. The use of improper tools and/or procedures can cause major damage to the unit with resultant additional repair costs.
Unless otherwise noted, specifications called out in text are identical for both models.

2-1. Special tools

A. Point checker

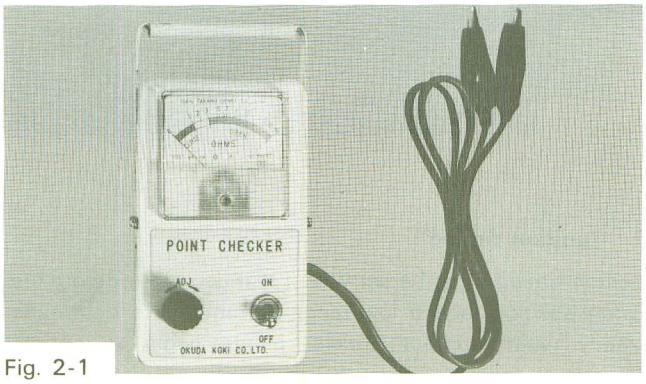

Fig. 2-1

B. Dial gauge assembly

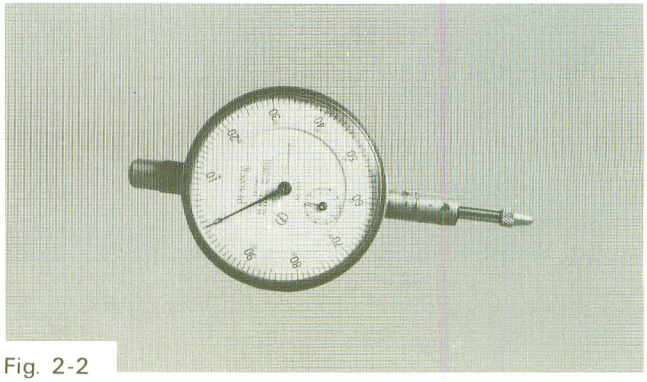

Fig. 2-2

C. Dial gauge stand

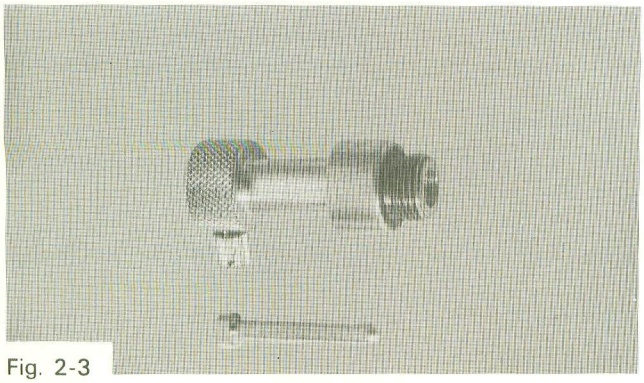

Fig. 2-3

D. Steering nut wrench

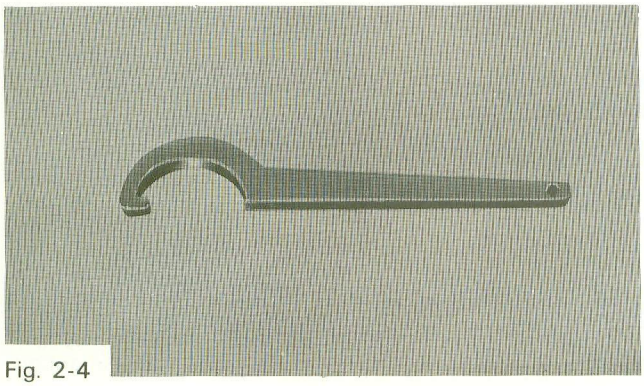

Fig. 2-4

E. Feeler gauge

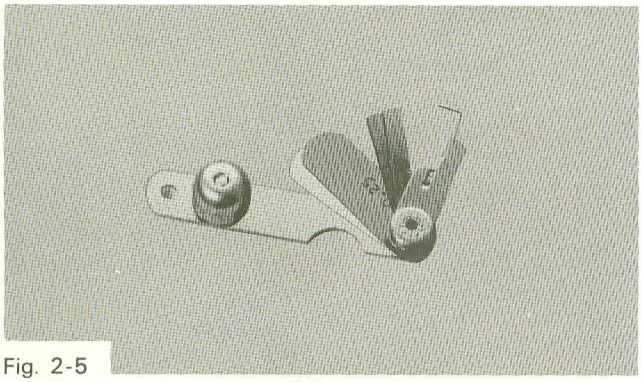

Fig. 2-5

F. Hydrometer

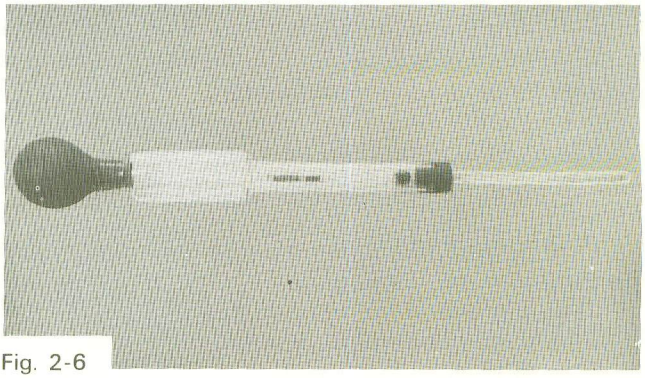

Fig. 2-6

2-2. Engine tuning

A. Ignition point adjustment

1. Remove generator cover.
   a. Rotate crankshaft counterclockwise and insert a thickness gauge of 0.012 — 0.016 in. (0.3 — 0.4 mm.) with the point gap at maximum. The gap is satisfactory if the thickness gauge can be inserted.
   b. Adjust as required if the gap is not proper.

Point gap:	0.011 ~ 0.016" (0.30 ~ 0.40 mm.)

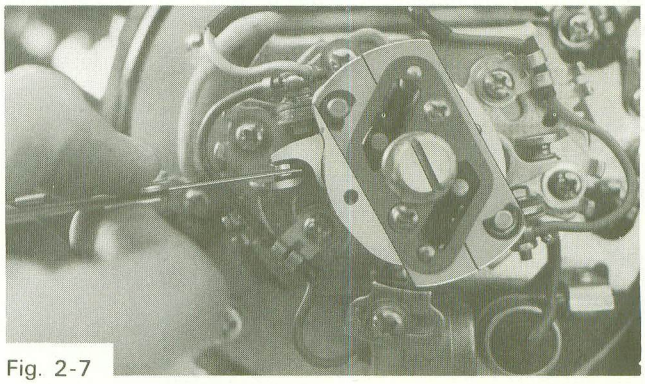

Fig. 2-7

B. Ignition timing

Ignition timing must be set with a dial gauge (to determine piston position) and a low-range ohmmeter (to determine exactly when contact breaker points begin to open). Proceed as follows:

Note:
Unless otherwise noted, timing procedure is identical for both models. However, model RD125B does not come equipped with an automatic advance mechanism.

1. Remove spark plug and screw dial gauge stand into spark plug hole.
2. Insert dial gauge assembly into stand, and tighten.

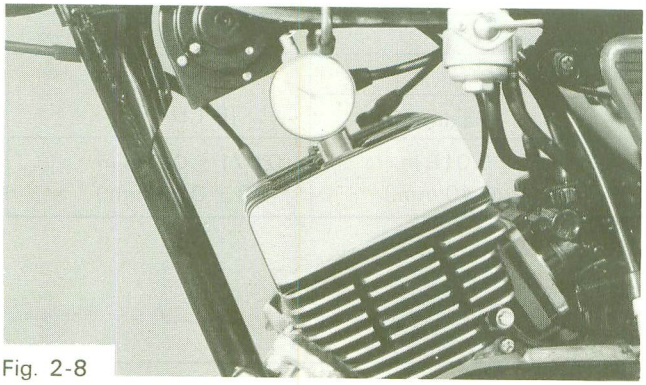
Fig. 2-8

3. Turn the crankshaft counterclockwise until the piston reaches top dead center. At this point the dial gauge needle will pause.
   Turn the dial gauge face until the zero indicator lines up with needle.

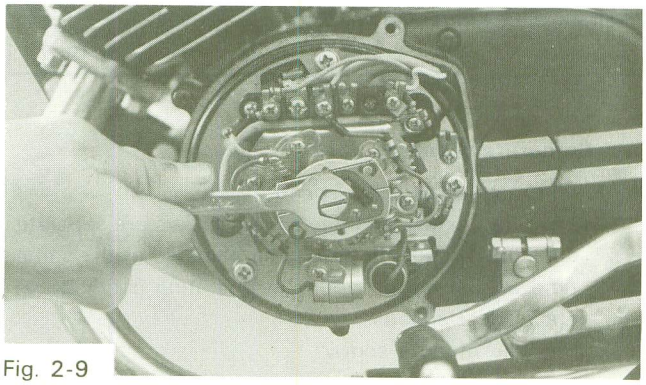
Fig. 2-9

4. Insert a bent spoke or other suitable material into the hole in the advance plate of the governor assembly. This will hold the governor assembly at the maximum advance position. This governor assembly must be at the maximum advance position before the engine is timed. (RD200B only)

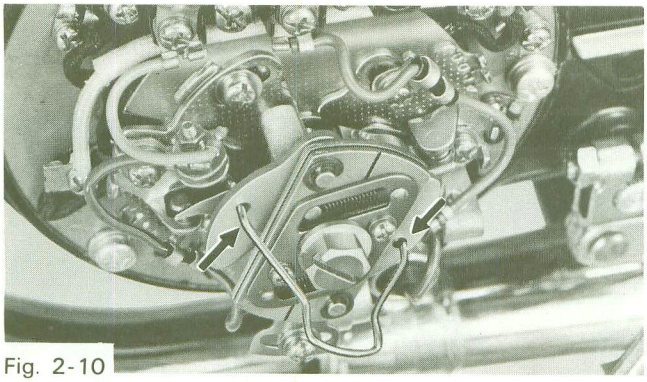
Fig. 2-10

5. Connect the point checker or electro tester terminals to the point assembly.
   Positive (+) lead to I_1 (grey) for the righthand cylinder or I_2 (orange) for the lefthand cylinder.
   Negative (—) to a good ground.

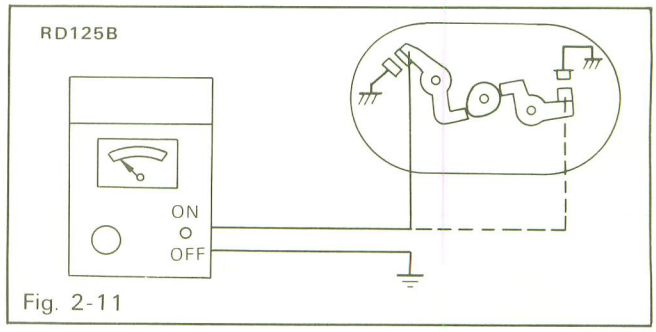

Fig. 2-11

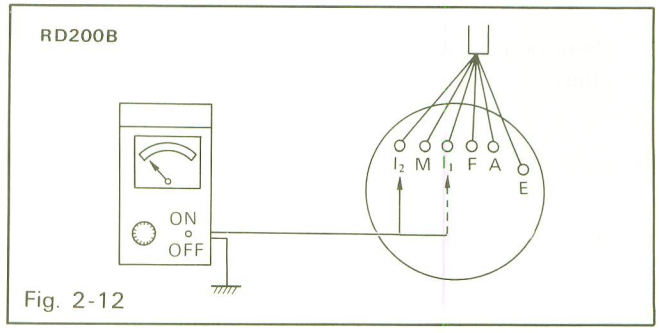

Fig. 2-12

I_2	Orange	I_1	Gray	A	White
M	Light green	F	Green	E	Black

6. Starting at T.D.C. rotate the crankshaft clockwise until dial gauge reads approximately 0.13 in. (3.0 mm.) before top dead center (B.T.D.C.)
7. Slowly turn crankshaft counterclockwise until dial gauge reads ignition advance setting listed in Specifications Table. At this time, the point checker needle should swing from "CLOSED" to "OPEN" position, indicating the contact breaker (ignition points) have just begun to open.
8. Repeat steps 6 and 7 to verify point opening position. If points do not open within specified tolerance, they must be adjusted.
9. Adjust ignition points by barely loosening Phillips head screw and carefully rotating contact breaker assembly with a slotted screwdriver. Make minor adjustment and retighten Phillips head screw before rechecking timing. Recheck timing by repeating steps 7 ~ 8.

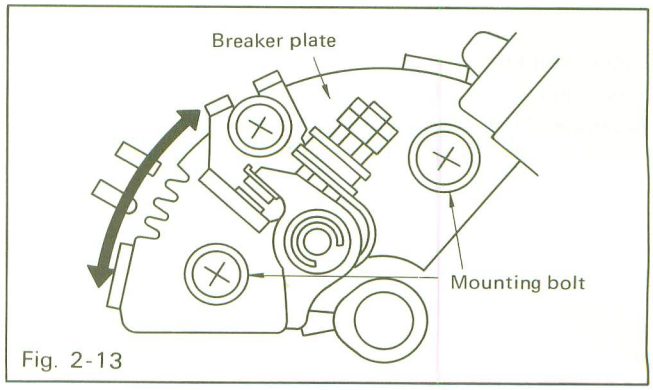

Fig. 2-13

Ignition timing specifications				
Model	Point gap			Timing (B.T.D.C.)
	Nominal	Minimum	Maximum	
RD125B/200B	0.014 in. (0.35 mm.)	0.012 in. (0.30 mm.)	0.016 in. (0.40 mm.)	0.071 ± 0.006 in. (1.8 ± 0.15 mm.)

10. Repeat procedure for opposite cylinder.

11. Remove dial gauge assembly and stand. Reinstall spark plugs.

12. Disconnect point checker.

13. Replace generator cover.

C. Spark plug

The spark plug indicates how the engine is operating. If the engine is operating correctly, and the machine is being ridden correctly, then the tip of the white insulator around the positive electrode of the spark plug will be a medium to light tan color. If the insulator is a very dark brown or black color, then a hotter heat range might be required. This situation is quite common during the engine break-in period. If the insulator tip shows a very light tan or glazed white color or if electrodes show signs of melting, then a spark plug with a colder heat range is required.

Remember, the insulator tip of the spark plug must be a medium-to-light tan color. If it is not, check carburetion, timing and ignition adjustments.

The spark plug must be removed and checked prior to using the machine. Check electrode wear, insulator color, and negative to positive electrode gap.

Spark plug gap: 0.24 ~ 0.28 in. (0.6 ~ 0.7 mm.)

Engine conditions will cause any spark plug to slowly break down and erode. If erosion begins to increase, or if the electrodes finally become too worn, or if for any reason you believe the spark plug is not functioning correctly, replace it.

Standard spark plug: NGK B-8HS

When installing the plug, always clean the gasket surface, use a new gasket, wipe off any grime that might be present on the surface of the spark plug, torque the spark plug properly.

Spark plug tightening torque: 230 ~ 250 in-lbs. (2.5 ~ 3.0 m-kgs.)

D. Carburetion and air filter

1. Idle mixture and idle speed

   The idle mixture and idle speed screws are separate adjustments but they must be adjusted at the same time to achieve an optimum operating condition at engine idle speeds.

   a. Idle mixture screw

      Turn idle mixture screws until it is lightly seated, then back it out to turn specified in Specifications.

      This adjustment can be made with engine stopped.

	RD125B	RD200B
Air screw (turns out)	1-1/2 ± 1/8	1-1/4 ± 1/8

   b. Start the engine and let it warm up.

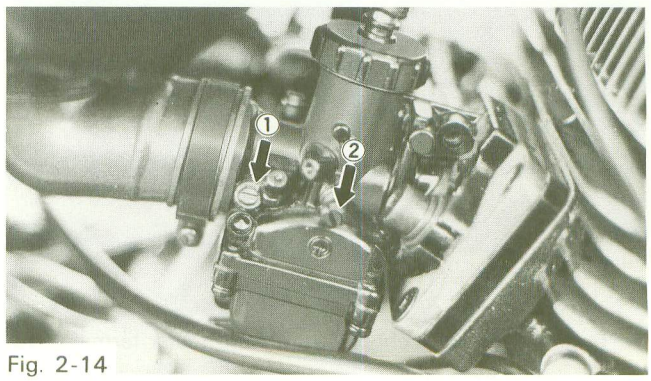

Fig. 2-14

1. Idle air screw (R) 2. Idle speed screw (R)

Note:
Lefthand carburetor idle air adjust screw located in board on left carburetor.

c. Idle speed screws
Turn idle speed screws in or out to achieve smooth engine operation at idle speed specified in Specifications.

Idling speed: 1150 ~ 1250 r.p.m.

2. Throttle cable adjustment
   a. After engine idle speed is set, make cable slack adjustment at cable adjustor near throttle grip. Loosen lock nut and turn adjustor until there is 0.02 ~ 0.04 in. (0.5 ~ 1.0 mm.) slack between throttle cable housing and cable adjustor. Retighten lock nut.
   b. Loosen cable adjustor lock nut (at top of carburetor) and turn cable adjustor until there is 0.04 in. (1.0 mm.) slack in cable "B". Retighten lock nut.

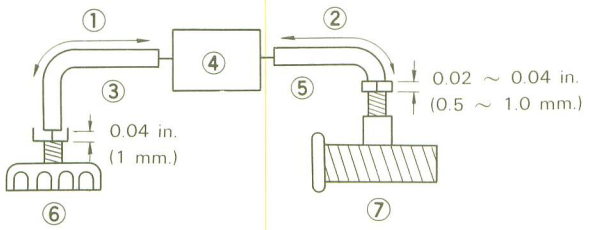

Fig. 2-15

1. Slide
2. Slide
3. Cable "B"
4. Junction block
5. Cable "A"
6. Carburetor cap
7. Throttle grip

3. Synchronizing carburetors
Both cylinders will not pull evenly unless the carburetion system for each side is identical. If one slide is higher in the carburetor more than the other slide, overall poor engine performance will be the result.
   a. With the engine not running, remove the rubber air filter connectors.
   b. Twist the throttle grip fully open so that the slides lift completely up.
   c. Reach into the air intake of both carburetors with the fingers of one hand (a side angle mirror placed in front of the air intakes will also allow the slide positions to be checked) and feel the top of the bores for the throttle slides.
   d. Slowly close the throttle grip until the throttle slides just begin to enter the bore.
   e. Both slides must be synchronized to enter the bore at exactly the same time. If the slides are not synchronized, then make an adjustment at the top of the carburetor, using the cable adjustor, to raise or lower one slide to match the other.
4. Air filter
   a. Remove the side covers.
   b. Remove with air cleaner case screws and caps.
   c. Remove the air filter element assemblies.

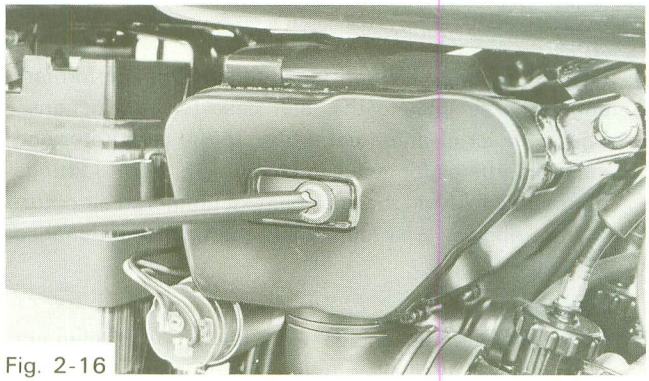
Fig. 2-16

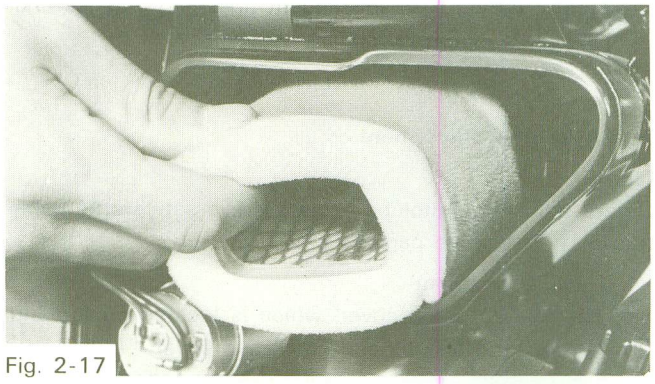
Fig. 2-17

   d. Slip the element off the wire mesh guide.

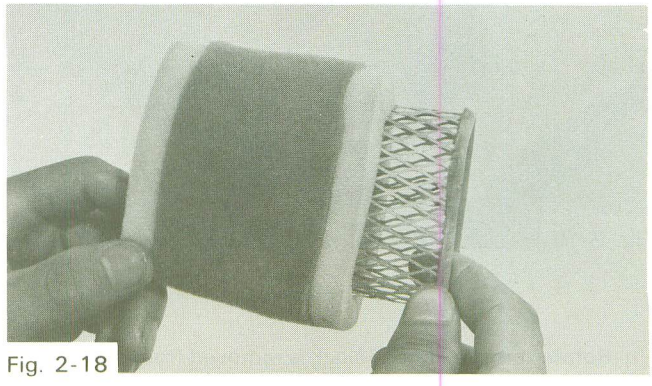
Fig. 2-18

   e. Wash the element gently, but thoroughly, in solvent.
   f. Squeeze excess solvent out of element and dry.
   g. Pour a small quantity of motor oil onto filter element and work thoroughly into the porous foam material.

Note:
In order to function properly, the element must be damp with oil at all times... but not "dripping" with oil.

h. Re-insert the wire mesh filter element guide into the element.
i. Coat the outer edges of the filter element with lube grease. This will provide an air-tight seal between the filter case cover and filter seat.
j. Re-install the element assembly, case cover and oil tank.

Note:
Each time filter element maintenance is performed, check the air inlet to the filter case for obstructions. Check the air cleaner joint rubber to the carburetor and manifold fittings for an air-tight seal. Tighten all fittings thoroughly to avoid the possibility of unfiltered air entering the engine. See lubrication chart for maintenance intervals.

Caution:
Never operate the engine with the air filter element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the filter element will affect carburetor jetting with subsequent poor performance and possible engine overheating.

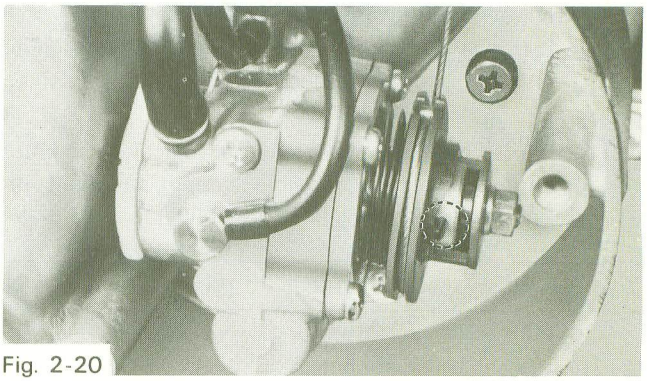
Fig. 2-20

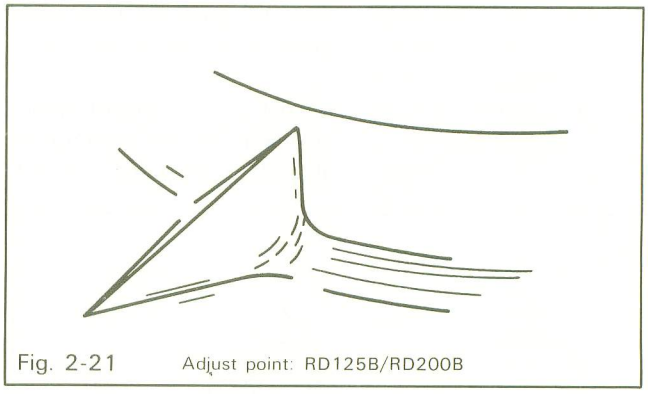
Fig. 2-21 Adjust point: RD125B/RD200B

E. Autolube adjustment

Note:
Before adjusting Autolube cable, always set throttle cable free play first. (See page 21)

1. Cable adjustment
a. Remove oil pump cover, which is located on forward portion of the righthand crankcase cover.

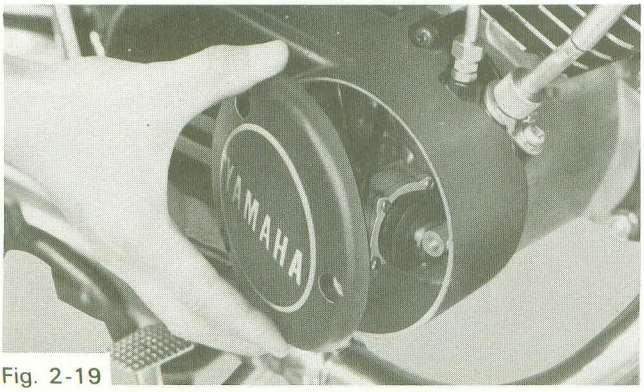

Fig. 2-19

b. Rotate throttle until all slack is removed from all cables. Hold this position.
c. Check to see that Autolube pump plunger pin is aligned with the mark on the Autolube pump pulley.
d. If the mark and pin are not in alignment, loosen cable length adjustor lock nut on upper edge of crankcase cover and adjust cable length until alignment is achieved.
Tighten adjustor lock nut.

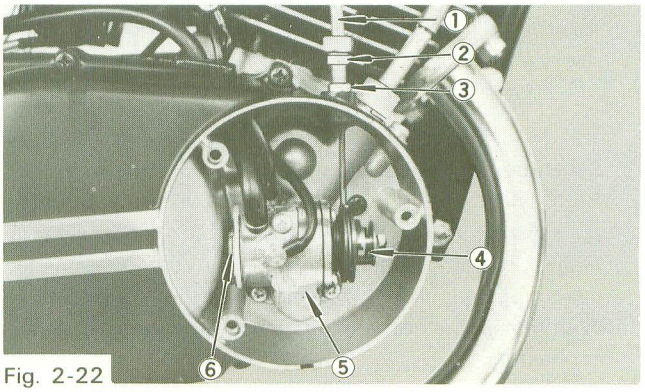

Fig. 2-22

1. Pump cable
2. Cable adjusting bolt
3. Lock nut
4. Adjusting plate
5. Oil pump
6. Starter plate

2. Pump stroke adjustment
a. With throttle closed, rotate starter plate until the pump plunger moves fully out and away from the pump body to its outermost limit.

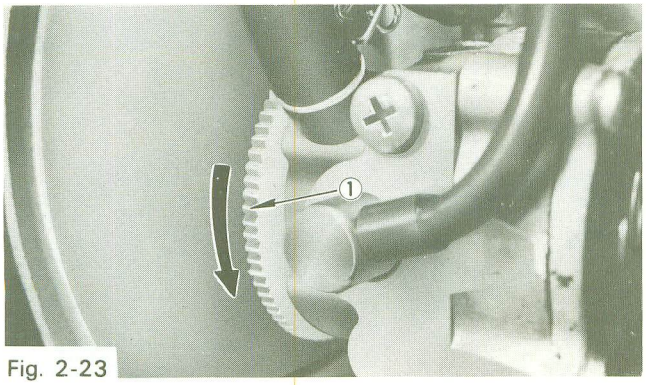

Fig. 2-23

1. Starter plate

b. Measure gap between raised boss on pump cable pulley and pump stopper plate. If clearance is incorrect, remove adjust plate lock nut and adjusting plate.

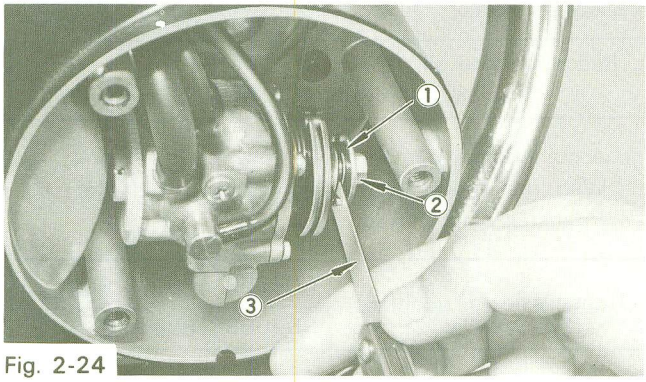

Fig. 2-24

1. Adjusting plate 2. Lock nut 3. Feeler gauge

Minimum pump stroke: RD125B/200B
0.008 ~ 0.010 in. (0.20 ~ 0.25 mm.)

Maximum pump stroke	
RD125B	0.065 ~ 0.075 in. (1.66 ~ 1.91 mm.)
RD200B	0.081 ~ 0.089 in. (2.05 ~ 2.25 mm.)

c. Remove or add an adjustment shim as required.

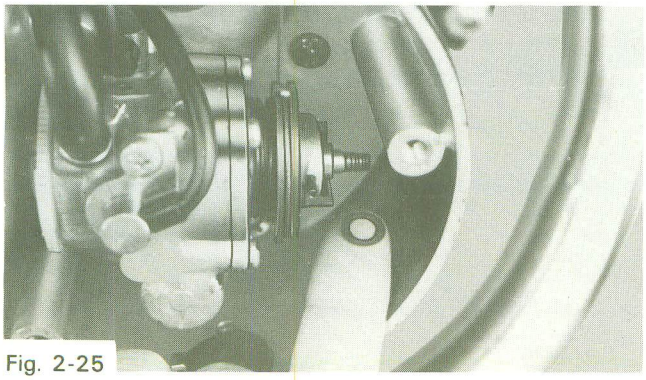

Fig. 2-25

d. Re-install adjusting plate and lock nut. Tighten the lock nut.
Re-measure gap. Repeat procedure as required.

3. Bleeding the pump

a. The Autolube pump and delivery lines must be bled on any of the following occasions:
   1) A new machine out of the crate.
   2) Whenever the Autolube reservoir tank has run dry.
   3) Whenever any portion of the Autolube system is disconnected.

b. Remove the pump cover.

c. Remove the pump bleed screw, and allow 3 to 5 minutes to fill pump with oil and begin to drain from bleed screw hole.

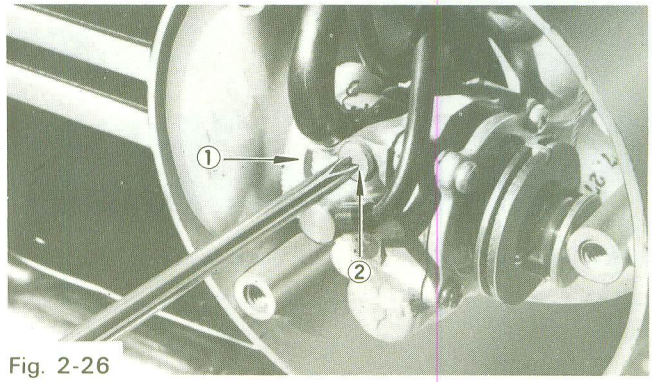

Fig. 2-26

1. Starter plate 2. Bleed screw

d. Turn the throttle to the full open position.

e. Rotate the starter plate until a steady flow of oil, with no air bubbles, comes out.

f. Re-install bleed screw and pump cover.

F. Clutch adjustment

Proper clutch adjustment requires two separate procedures.

1. Loosen cable and adjusting screw lock nut.
2. Turn clutch cable adjustor (at lever) all the way into the lever.

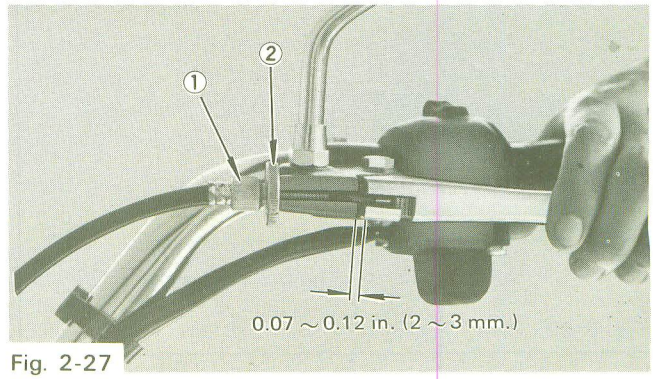

Fig. 2-27

1. Adjustor 2. Adjusting screw lock nut

Note:
The above procedure provides for maximum cable free play to allow for proper clutch actuating mechanism adjustment.

3. Remove the cap cover.
4. Loosen the adjusting screw lock nut, and slowly tighten the adjusting screw until resistance is felt.
   This means that the play of the push rod is removed, then back it off a 1/4 turn.

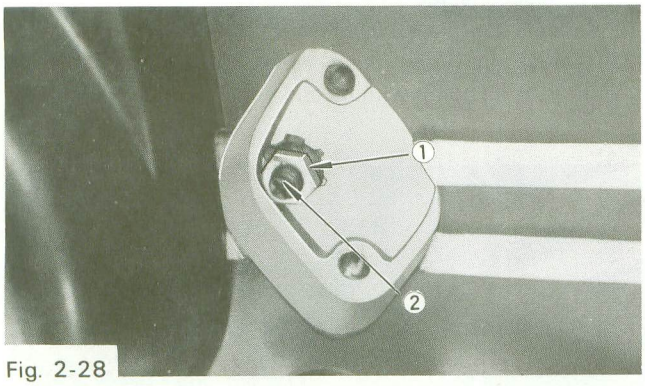

Fig. 2-28

1. Adjusting screw lock nut
2. Adjusting screw

5. Tighten lock nut.
6. Re-install cap cover.
7. At clutch lever assembly, on left handlebar, turn cable length adjustor in or out until free play at lever pivot equals 0.07 ~ 0.12 in. (2 ~ 3 mm.)
8. Tighten adjusting bolt lock nut.

G. Transmission and shifter

1. Transmission

a. The dip stick is located above and slightly behind the kick crank. To check level, start the engine and let it run for several minutes to warm and distribute oil. Stop engine and unscrew the dip stick and clean. Set the dip stick as illustrated. Remove and check level.

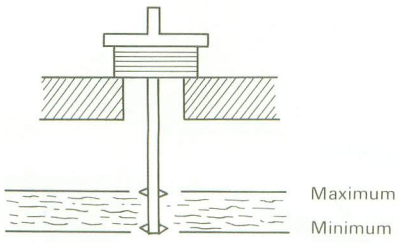

Fig. 2-29

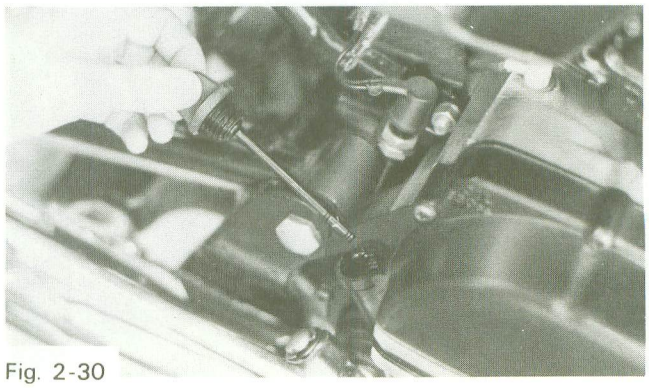

Fig. 2-30

Note:
Machine must be in level position during above measurement.

b. The stick has Minimum and Maximum marks. The oil level should be between the two. Top off as required.

Recommended oil:
Yamalube 4-cycle or 10W 30 SE Motor Oil

c. A drain bolt is located on the bottom of the crankcase. With the engine warm, remove plug and drain oil. Re-install plug and add fresh oil.

Transmission oil quantity	RD125B	700 ~ 800 c.c.
	RD200B	800 ~ 850 c.c.

Transmission drain plug torque:
174 ~ 217 in-lbs. (2.0 ~ 2.5 m-kgs.)

Transmission oil should be replaced several times during the break-in period. See Maintenance Chapter.

— — — Caution — — —

Under no circumstances should any additives be included in the transmission oil. This oil also lubricates and cools the clutch. Many additives will cause severe clutch slippage.

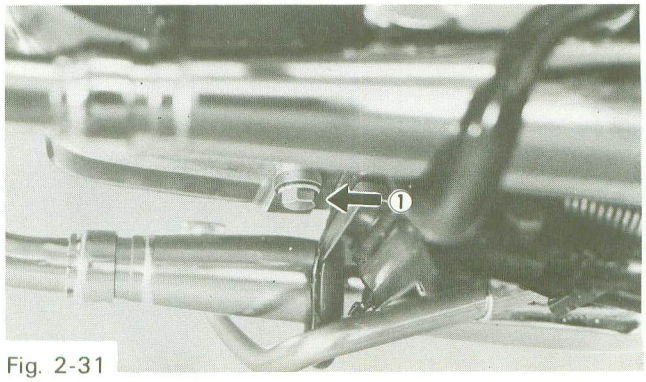

Fig. 2-31

1. Drain bolt

2. Shifter

A 5-speed transmission is employed. Low gear is at the bottom of the shift pattern; high gear at the top of the shift pattern; neutral is located half-way between first and second positions.

The shift mechanism is of the ratcheting type common to most motorcycles.

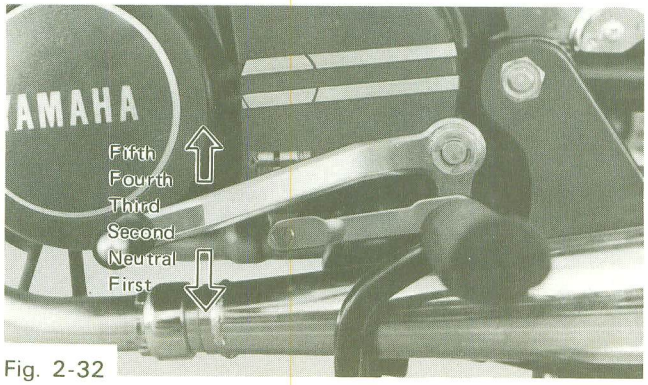

Fig. 2-32

2-3. Chassis adjustments

A. Front brake

Front brake should be adjusted to suit rider preference with a minimum play at the brake lever pivot point of 0.20 ~ 0.32 in. (5 ~8 mm.)

1. Loosen lock nut on front brake actuating cam connecting rod.

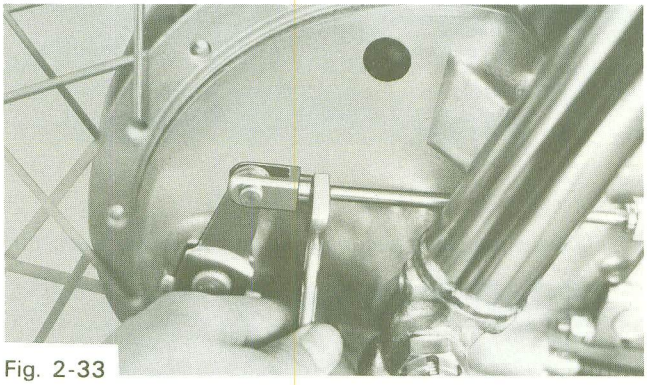

Fig. 2-33

2. Actuate front brake lever
3. Turn connecting rod, forcing camshaft levers 1 and 2 out, towards wheel rim, until all slack is removed and rod is fairly tight. Tighten rod lock nut.

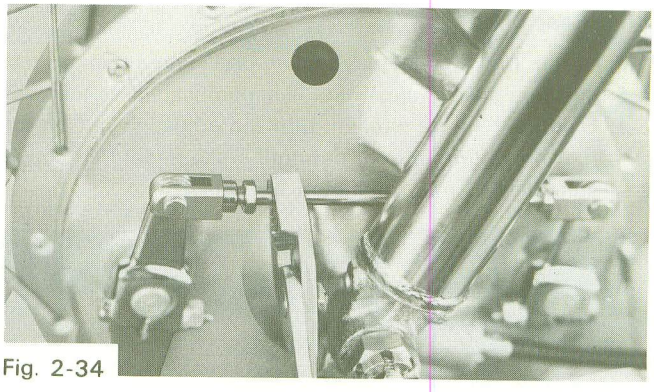

Fig. 2-34

4. Using cable length adjustor at lever and/or at front wheel hub, adjust cable length until there is a 0.20 ~ 0.32 in. (5 ~ 8 mm.) free play at lever pivot point.

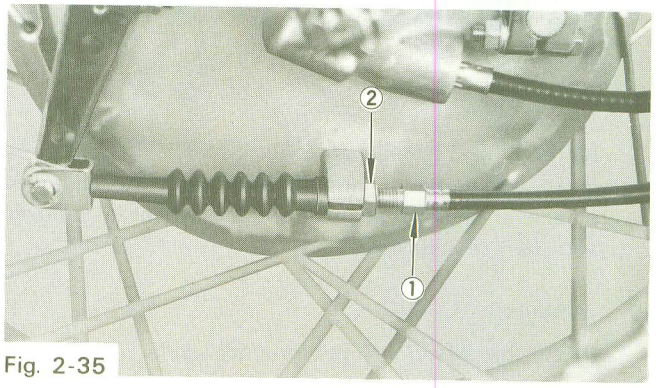

Fig. 2-35

1. Adjusting bolt 2. Lock nut

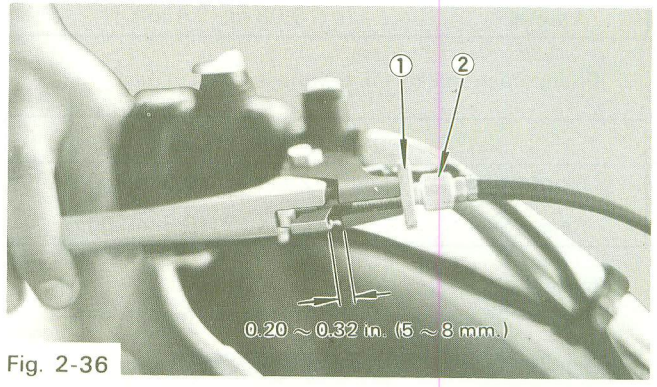

Fig. 2-36

1. Lock nut 2. Adjustor

5. Tighten the adjusting bolt lock nut.

B. Rear brake

Adjust rear brake pedal play to suit, providing a minimum of 25 mm. free play. Adjustment is accomplished as follows:

1. Using a 13 mm. wrench, turn the adjusting nut on the rear brake ferrule in or out until brake pedal free play is suitable (25 mm. minimum free play).

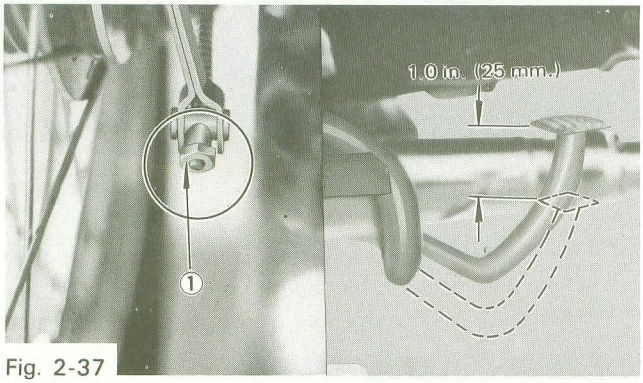

Fig. 2-37

1. Adjusting nut

Note:
Rear brake pedal adjustment must be checked whenever chain is adjusted or rear wheel is removed and then re-installed.

C. Wheels

1. Raise the wheel off the ground. Spin. Check rim runout.

Rim runout limits	
Vertical	0.08 in. (2 mm.)
Lateral	0.08 in. (2 mm.)

2. Check each spoke for tightness.

Spoke torque	
Front wheel	25 in-lbs. (0.3 m-kg.)
Rear wheel	25 in-lbs. (0.3 m-kg.)

Note:
If loose spokes are found, tighten. Repeat step 1.

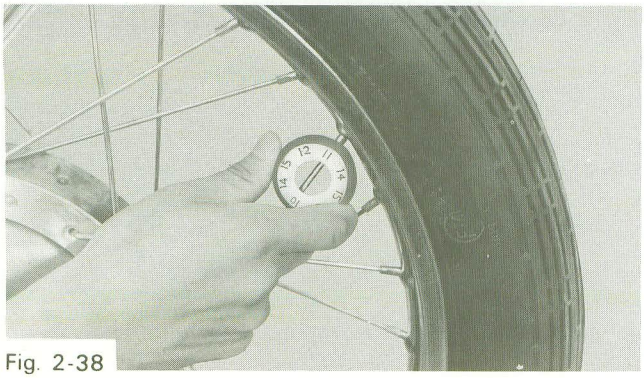

Fig. 2-38

3. Check axle nut torque.

Front axle nut torque:
570 ~ 910 in-lbs. (6.6 ~ 10.5 m-kgs.)

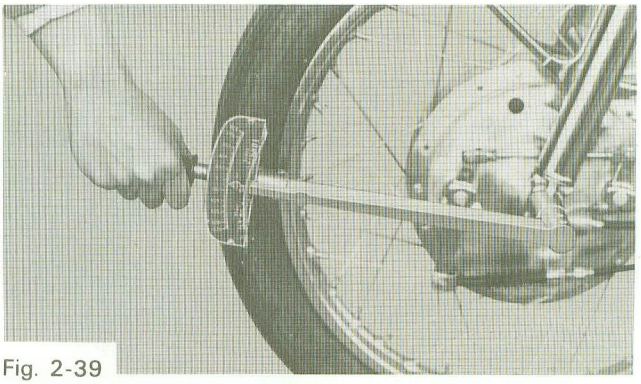

Fig. 2-39

D. Drive chain adjustment

To adjust drive chain, proceed as follows:

1. Remove rear axle cotter pin.

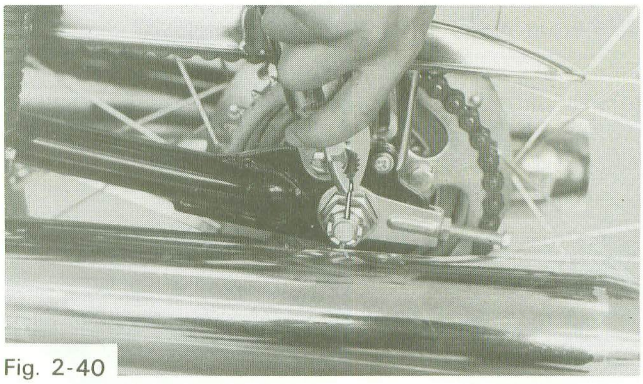

Fig. 2-40

2. Loosen rear axle securing nut and sprocket shaft nut.

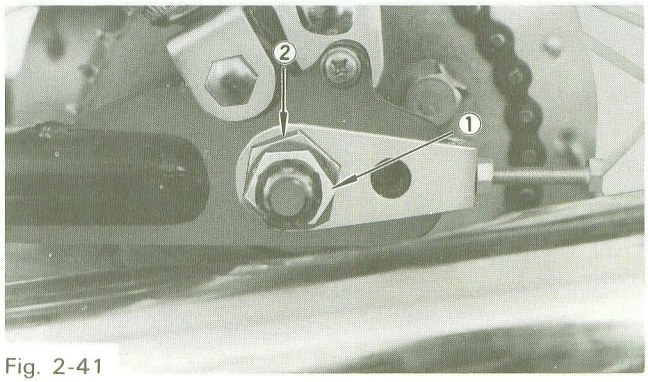

Fig. 2-41

1. Rear axle securing nut
2. Sprocket shaft nut

3. With rider in position on machine, both wheels on ground, set axle adjustors until there is 15 to 20 mm. slack in the drive chain at the bottom of the chain at a point midway between the drive and driven axles.

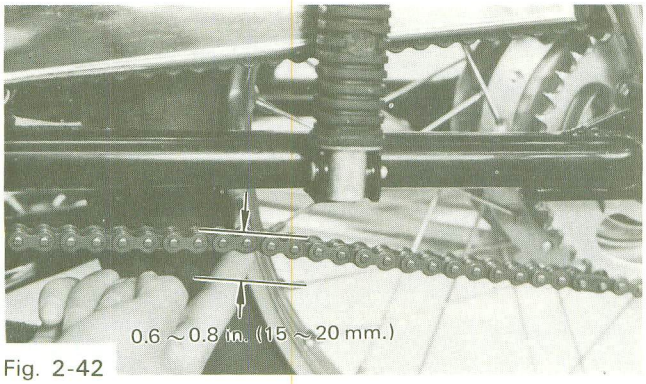

Fig. 2-42

4. Turn adjustors both left and right, until axle is situated in same positions as shown by position marks on swing arm axle tabs.

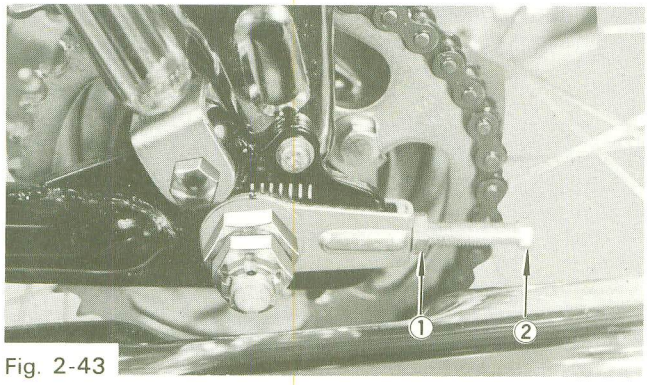

Fig. 2-43

1. Lock nut 2. Adjustor

5. Tighten the rear axle securing nut.

Axle nut torque:
570 ~ 910 in-lbs. (6.6 ~ 10.5 m-kgs.)

6. Install a new cotter pin, bend the ends over. Cut off excess.

E. Suspension, steering and swing arm

1. Steering head adjustment
The steering assembly should be checked periodically for any looseness. Do this as follows:

a. Block machine up so that front wheel is off the ground.

b. Grasp bottom of forks and gently rock fork assembly backward and forward. Checking for any looseness in the steering assembly bearings.

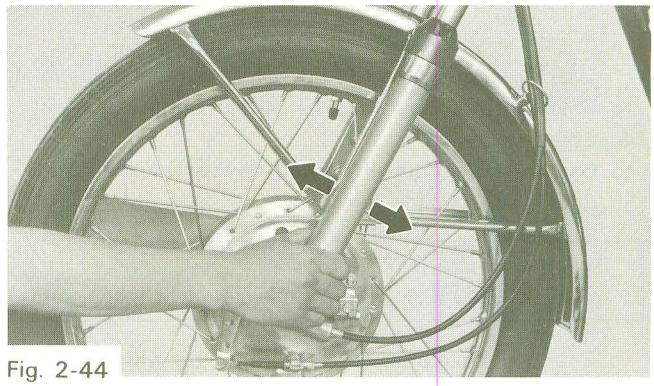

Fig. 2-44

c. If steering head needs adjustment, loosen crown nut.

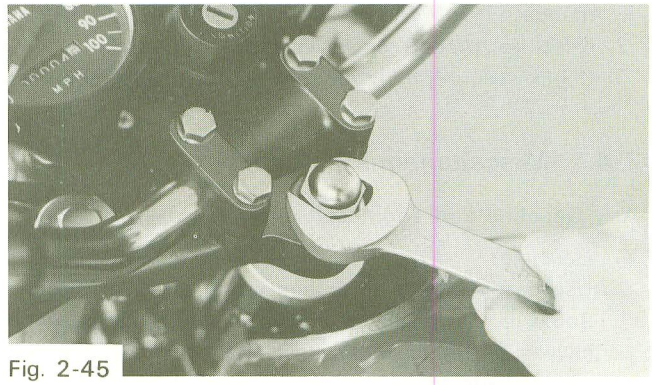

Fig. 2-45

d. Using steering nut wrench, adjust steering head fitting nut until steering head is tight without binding when forks are turned.

Note:
Excessive tightening of this nut will cause rapid wear of ball bearings and races.
Re-check for looseness and freedom of movement.

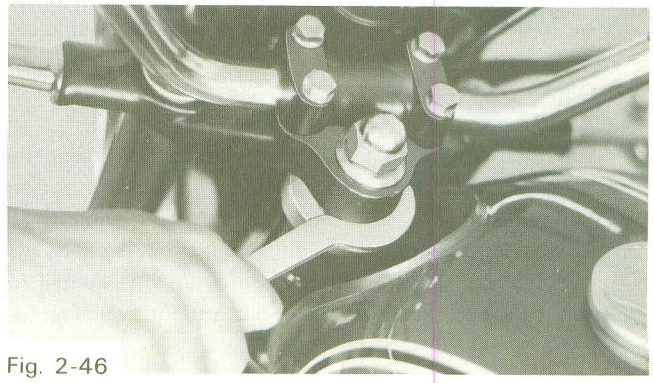

Fig. 2-46

e. Tighten crown nut.

Note:
After completing steering adjustment, make certain forks pivot from stop to stop without binding. If binding is noticed, repeat adjustment.

2. Suspension
   a. Check all suspension for proper operation.
      Check rear cushions (R and L) for identical adjustment.
   b. Check all securing bolts for proper tightness.
3. Swing arm
   a. Check for freedom of up and down movement.
   b. Check side to side free play.

Swing arm free play:
0.040 in. (1.0 mm.) at end of swing arm

   c. Check all securing bolts for proper tightness.

F. Miscellaneous

1. Check for proper cable routing of all components. See cable routing diagrams in Appendices section of this manual.
2. Check for proper control location.
3. Check securing bolts on controls for proper tightness.

2-4. Miscellaneous

A. Gasoline and engine oil

1. Gasoline
   Use gasoline with an octane rating of 86 or more.
   Some regular gasolines and most mid-range gasolines have such ratings. High-test or Ethyl grade gasolines usually have octane ratings in excess of 94. In addition, they often have considerable tetra-ethyl lead added, which can cause spark plug problems.
   Always use fresh, name-brand gasoline.....
   Low-lead or unleaded gasolines are suitable provided they meet the minimum (86 or more) octane requirements.

— — — Caution — — —

With the Autolube feature it is unnecessary and even harmful to the engine to mix oil with the gasoline. Never mix oil with the gasoline. Always use straight gasoline.

2. Oil
   a. Autolube Oil
      We recommend that your first choice be "Yamalube 2-cycle" which can be purchased from any Authorized Yamaha Dealer. If for any reason you should use another type, the oil should meet or exceed BIA certification "TC-W". Check container top or label for service specification. If above oils are not available, use a 30 or 40 wt. 2-stroke oil.

— — — Caution — — —

Under extremely cold conditions (+32 degrees Fahrenheit or below) 30 wt. and 40 wt. oils become very thick and will not flow readily to the Autolube pump. This may cause oil pump starvation. "Yamalube" will flow normally to the pump at ambient temperatures down to zero degrees Fahrenheit.

   b. Autolube tank
      Always check Autolube tank oil level before operating machine. If oil level shows at sight glass window:
      1) Raise seat.
      2) Remove filter cap and top off tank.

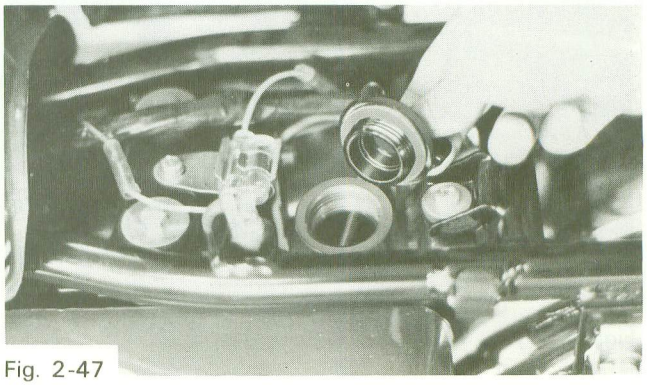

Fig. 2-47

B. Break-in

The first 500 miles is the most critical time for any sportcycle. It is during the break-in period that the pistons, rings, bearings, gears, and virtually every other moving part become fitted to their surrounding counterparts.

During this period prolonged full throttle operation, or any condition which might result in excessive head and cylinder temperatures must be avoided. However, momentary full throttle operation under load (2-3 seconds maximum) does not harm the engine. Each full throttle acceleration should be followed by an equal decelleration period, such as you would find in normal city driving. The decelleration periods will aid in the engine in ridding itself of the temporary build up of heat.

The method for breaking in your Yamaha is quite simple.

0 TO 100 MILES: Avoid operation above 4000 r.p.m. Allow a cooling off period of 5 to 10 minutes after every 30 minutes of operation. Vary the speed of the motorcycle from time to time. Do not operate it at one, set, throttle position.

100 TO 250 MILES: Avoid prolonged operation above 5000 r.p.m. Allow the motorcycle to rev freely through the gears but do not use full throttle at any time.

250 TO 500 MILES: Avoid prolonged full throttle operation. Avoid cruising speeds in excess of 6000 r.p.m.

500 MILES AND BEYOND: Avoid prolonged full throttle operation. Avoid speeds in excess of r.p.m. red-line. Vary speeds occasionally.

RECOMMENDED CRUISING SPEED AFTER BREAK-IN: For sustained load and throttle conditions, such as those encountered on the open highway, cruise up to 3/4 throttle or 3/4 of r.p.m. red-line, whichever comes first. This 3/4 figure should be considered a maximum. In addition, road and weather conditions must be taken into consideration. Upgrades and headwinds usually require a wider throttle opening to maintain a steady speed, but the 3/4 throttle recommendation for prolonged operation still applies. Under any conditions there will be a pace where your bike will feel "happy". By operating close to this "happy" point, you will be making the most efficient use of your bike.

C. Pre-operation check chart

Item	Routine
Brakes	Check operation/adjustment
Clutch	Check operation/lever adjustment
Autolube tank	Check oil level/top-off as required
Transmission	Check oil level/top-off as required
Drive chain	Check alignment/adjustment/lubrication
Throttle	Check for proper throttle and Autolube cable operation
Air filters	Foam type must be clean and damp with oil at all times
Wheels/tires	Check pressure/runout/spoke tightness/axle nuts
Fittings/fasteners	Check and tighten as necessary

Pre-operation checks should be made each time the machine is used. Such an inspection can be thoroughly accomplished in a very short time; and the added safety it assures is more than worth the time involved.

D. Cleaning and storage

1. Cleaning

Frequent thorough cleaning of your motorcycle will not only enchance its appearance but will improve general performance and extend the useful life of many components.

a. Before cleaning the machine:
   1) Block off end of exhaust pipe(s) to prevent water entry; a plastic bag and strong rubber band may be used.
   2) Remove air filter(s) or protect it from water with plastic covering.
   3) Make sure spark plug(s), gas tank cap, oil tank cap, transmission oil level gauge cap and battery caps are properly installed.

b. If engine case is excessively greasy, apply degreaser with a paint brush. Do not apply degreaser to chain, sprockets, or wheel axles.

c. Rinse dirt and degreaser off with garden hose, using only enough hose pressure to do the job. Excessive hose pressure may cause water seepage and contamination of wheel bearings, front forks, brake drums, and transmission seals.

Many expensive repair bills have resulted from improper high-pressure detergent applications such as those available in coin-operated car washers.

d. Once the majority of dirt has been hosed off, wash all surfaces with warm water and mild, detergent-type soap. An old tooth brush or bottle brush is handy to reach those hard-to-get-to places.

e. Rinse machine off immediately with clean water and dry all surfaces with a chamois skin, clean towel, or soft absorbent cloth.

f. Immediately after washing, remove excess moisture from chain and lubricate to prevent rust.

g. Chrome-plated parts such as handlebars, rims, spokes, forks, etc., may be further cleaned with automotive chrome cleaner.

h. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.

Automotive-type wax may be applied to all painted and chrome-plated surfaces. Avoid combination cleaner-waxes. Many contain abrasives which may mar paint or protective finish on fuel and oil tanks.

j. After finishing, start the engine immediately and allow to idle for several minutes.

2. Storage

Long term storage (30 days or more) of your motorcycle will require some preventive procedures to insure against deterioration. After cleaning machine thoroughly, prepare for storage as follows:

a. Drain fuel tank, fuel lines, and carburetor float bowl(s).

b. Remove empty fuel tank, pour a cup of 10W to 30W oil in tank, shake tank to coat inner surfaces thoroughly and drain off excess oil. Re-install tank.

c. Remove spark plug(s), pour about one tablespoon of 10W to 30W oil in spark plug hole(s) and re-install spark plug(s).

Kick engine over several times (with ignition off) to coat cylinder walls with oil.

d. Remove drive chain. Clean thoroughly with solvent and lubricate with graphite-base chain lubricant. Re-install chain or store in a plastic bag (tie to frame for safe-keeping).

e. Lubricate all control cables.

f. Remove battery and charge. Store in a dry, cool place and re-charge once a month. Do not store battery in an excessively warm or cold place (less than 32°F or more than 90°F).

g. Block up frame to raise both wheels off ground. (Main stands can be used on machines so equipped.)

h. Deflate tires to 15 psi.

i. Tie a plastic bag over exhaust pipe outlets to prevent moisture from entering. If storing in humid or stale-air atmosphere, coat all exposed metal surfaces with a light film of oil. Do not apply oil to rubber parts or seat cover.

j. During long-term storage, it is beneficial to periodically (every 15 ~ 20 days) crank the engine several times to re-distribute the oil film over internal engine parts.

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3

CHAPTER 3. ENGINE, CLUTCH AND TRANSMISSION

3-1. Special tools

The following special tools are required for complete engine disassembly in addition to the general tools listed in Chapter 1. Please refer to the special tools catalog for part number and application

A. Press Box

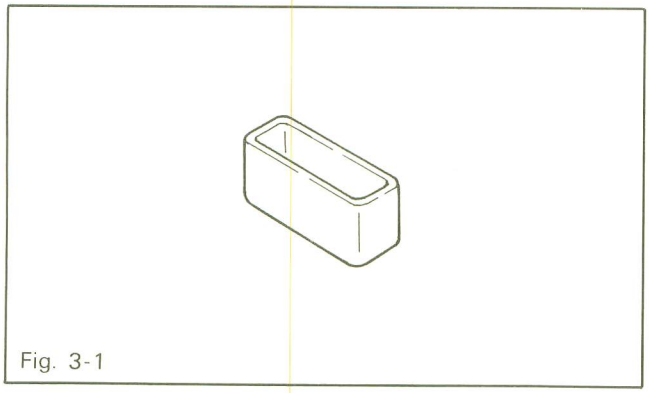


Fig. 3-1

B. Crankshaft Jig

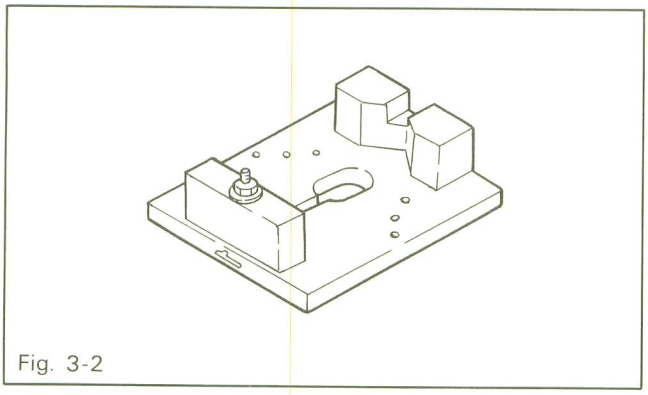


Fig. 3-2

C. Rotor puller (RD125B)

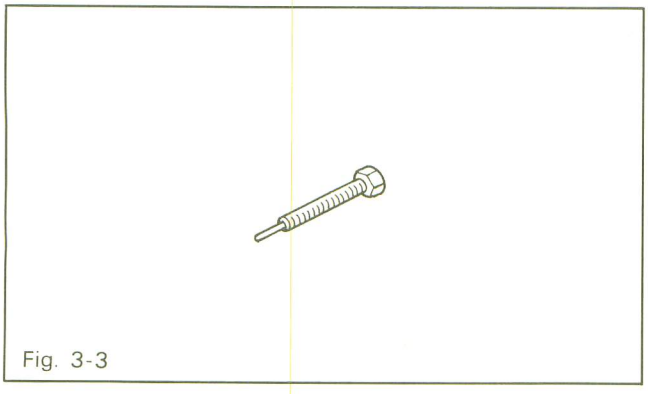


Fig. 3-3

D. Support plates (2/Set)

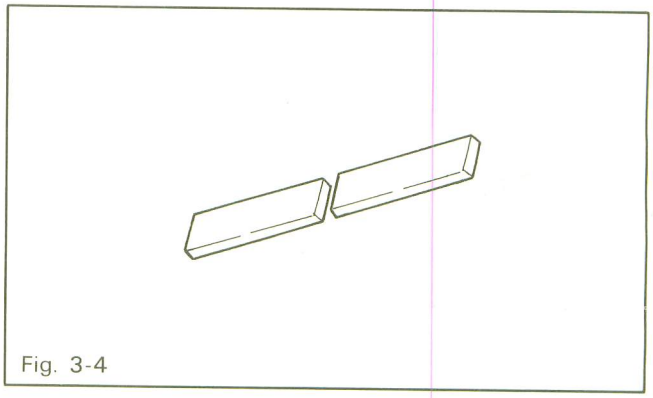


Fig. 3-4

E. Wedge

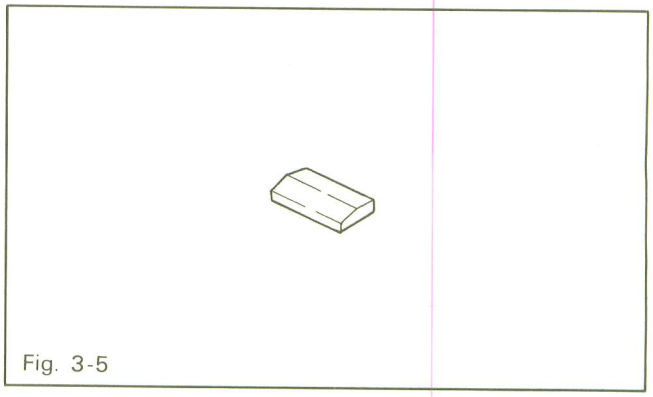


Fig. 3-5

F. Stops - 43 mm. (RD125B)
47 mm. (RD200B)

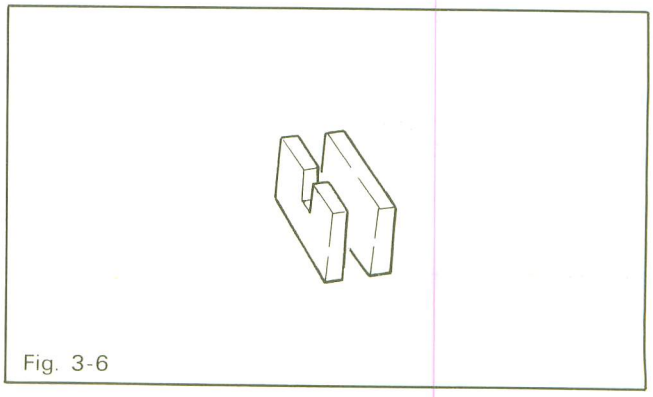


Fig. 3-6

G. Crankshaft separator

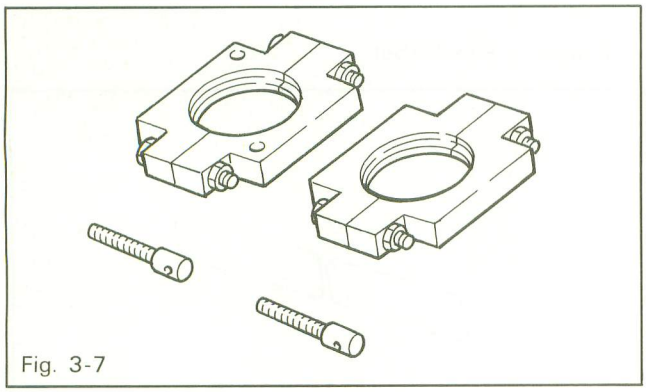


Fig. 3-7

H. Crankshaft installation tool

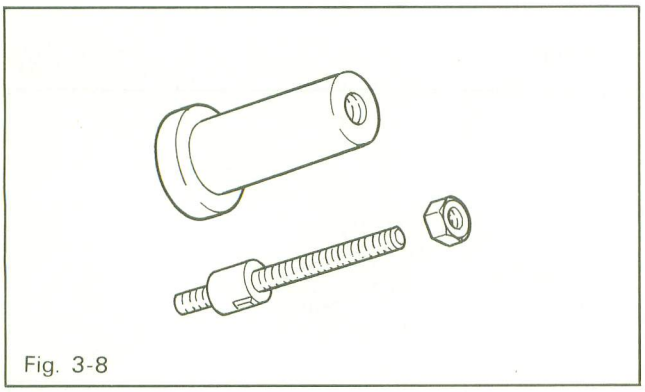


Fig. 3-8

I. Clutch holder

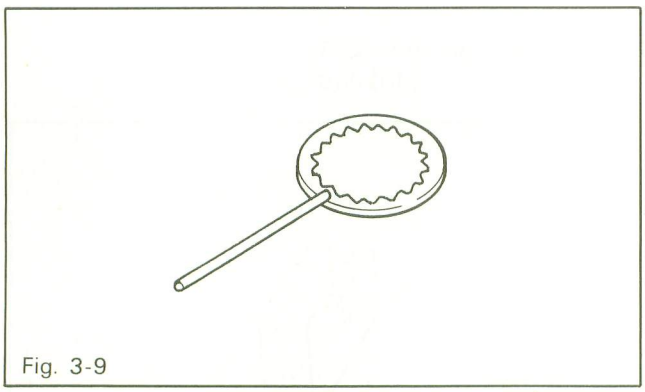


Fig. 3-9

J. Special tools, Description, Engine removal

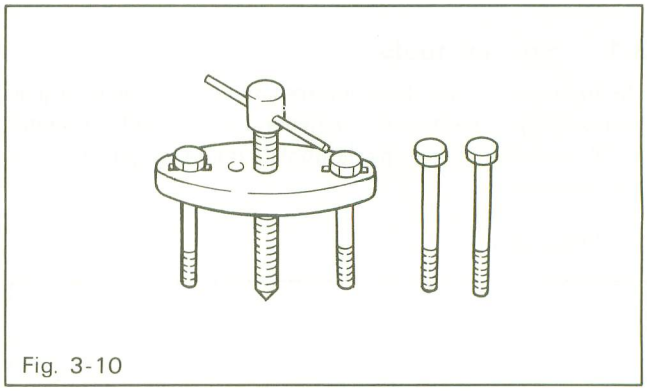


Fig. 3-10

K. Slide hammer

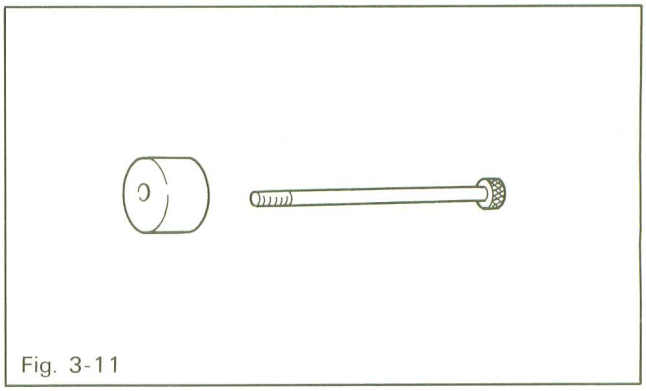


Fig. 3-11

3-2. Description

The engine is a parallel twin-cylinder two-stroke utilizing reed valve induction. The cylinders are aluminum alloy with case iron inserts. The transmission provides five ratios and is disengaged by a wet, multi-plate clutch driven by helical primary gears.

Primary kick starting is employed for both models. The RD200B is also provided with a starter dynamo for electric starting.

Disassembly and assembly of the engine and its components should be done in the following manner and order. This will insure correct maintenance and service work for the owner and mechanic.

3-3. Engine removal

A. Preparation for removal and disassembly

1. All dirt, mud, dust, and foreign material should be thoroughly removed from the exterior of the engine before removal and disassembly. This will prevent any harmful foreign material from entering the interior of the engine assembly.
2. Before engine removal and disassembly, be sure you have proper tools and cleaning equipment so you can perform a clean and efficient job.

3. During disassembly of the engine, clean and place all parts in trays and in order of disassembly. This will ease and speed assembly time and insure correct reinstallation of all engine parts.
4. Start the engine and warm it for a few minutes; turn off and drain transmission oil.

Transmission oil	RD125B	RD200B
Volume	700 ~ 800 c.c.	800 ~ 850 c.c.
Type	Yamalube 4-cycle or 10W 30 SE motor oil	

B. Removal

1. Remove the right and left muffler.

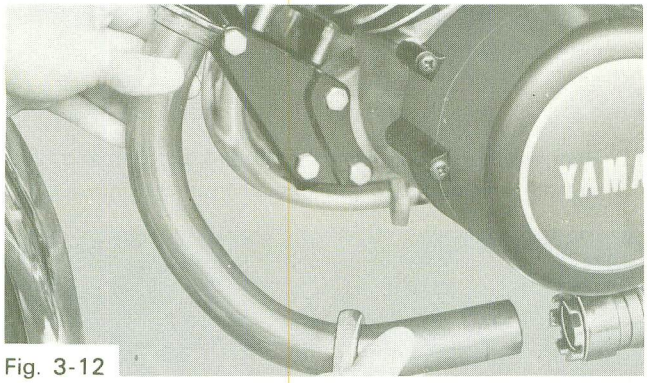


Fig. 3-12

2. Remove the foot rest and change pedal assemblies.

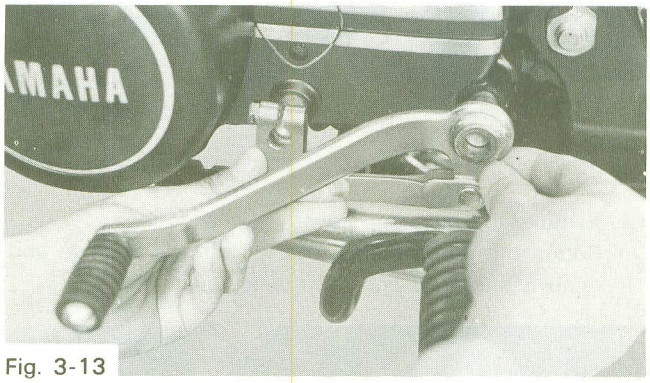


Fig. 3-13

3. Remove the left crankcase cover.

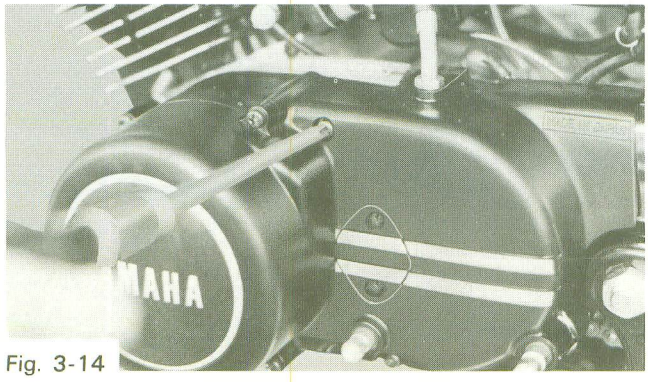


Fig. 3-14

4. Remove the clutch wire end from push lever.

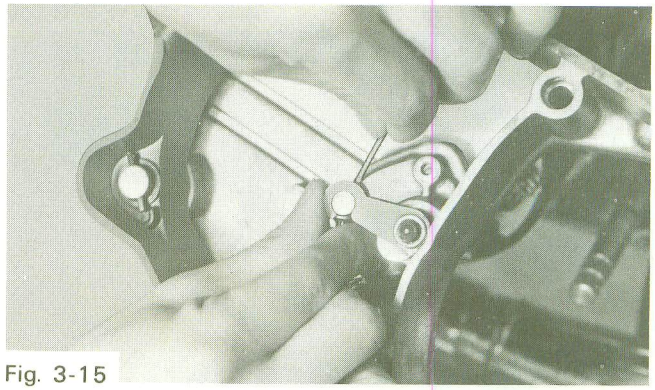


Fig. 3-15

5. Remove the neutral switch lead wire by loosening the neutral switch screw. (RD200B)

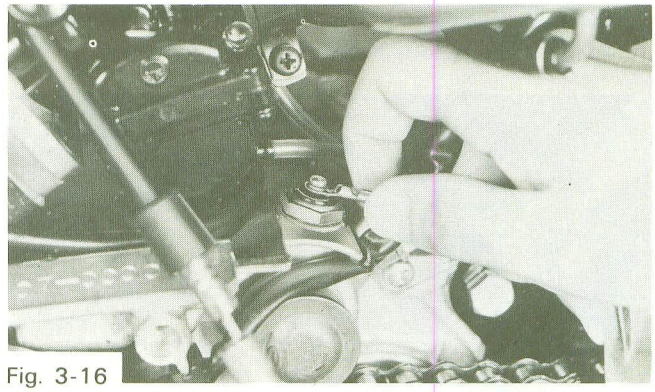


Fig. 3-16

6. Remove the wire harness. (RD200B)

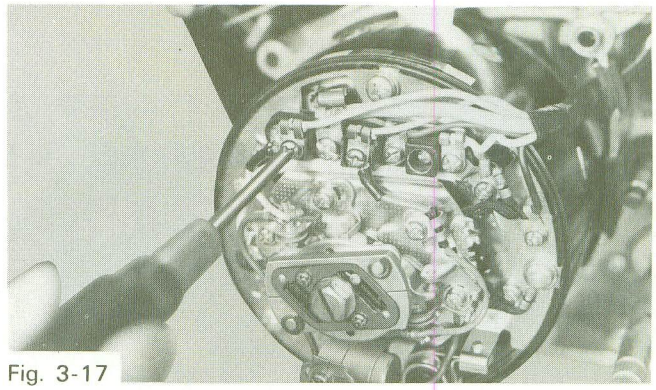


Fig. 3-17

7. Remove the dynamo wiring and the neutral switch wire. (RD125B)

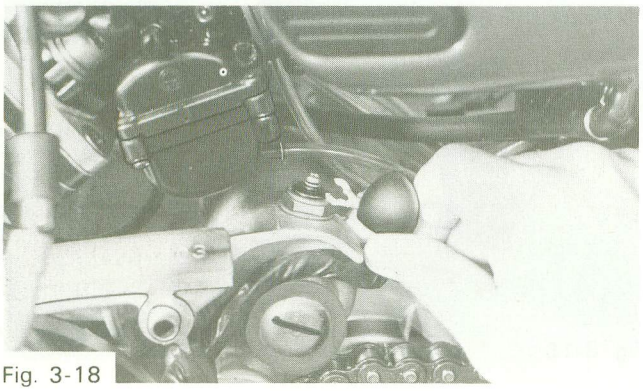


Fig. 3-18

8. Remove the AC generator assembly. (RD125B)
   a. Remove the stator assembly.

   Caution:
   Avoid damage to ignition point cam followers.

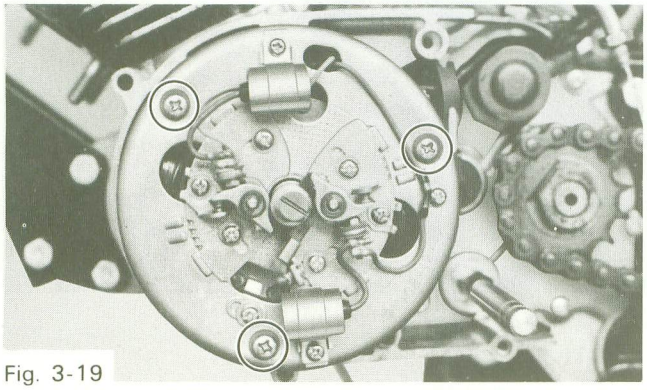


Fig. 3-19

9. Remove the cam.

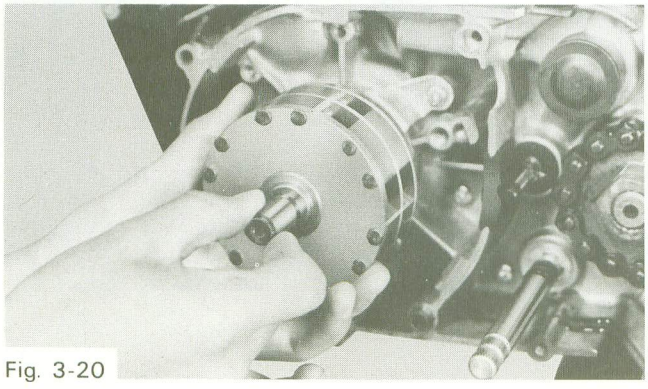


Fig. 3-20

10. Remove the rotor assembly using the armature puller bolt or shock puller.

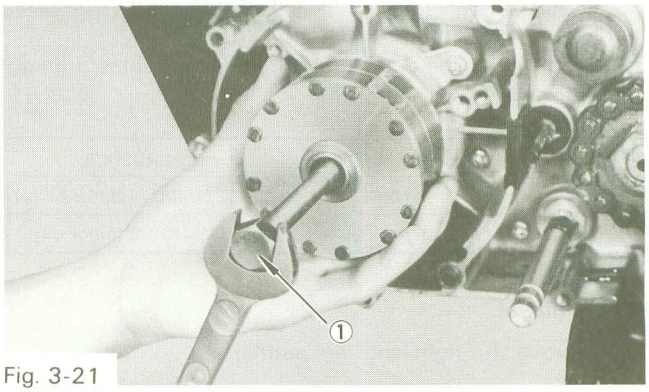


Fig. 3-21

1. Armature puller bolt.

11 Remove the oil line from the oil tank bottom, and plug the oil tank outlet to prevent oil from flowing out.

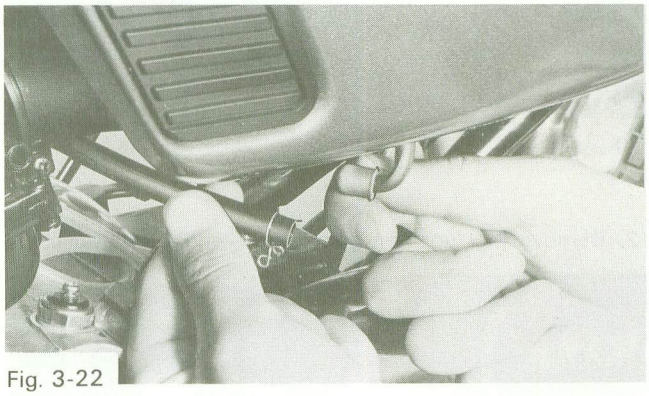


Fig. 3-22

12. Remove the oil pump cover.
    Rotate the pump pulley to a full throttle position and remove the cable end from pulley seat.

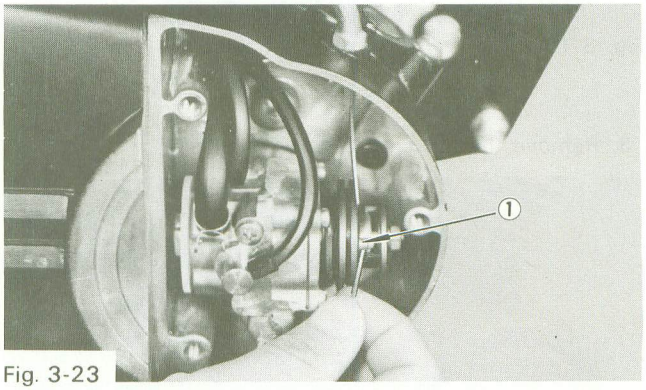


Fig. 3-23

1. Oil pump cable end

13. Loosen the 10 mm. lock nut holding the Autolube pump cable adjusting bolt to the side case. Remove the adjusting bolt and cable complete.

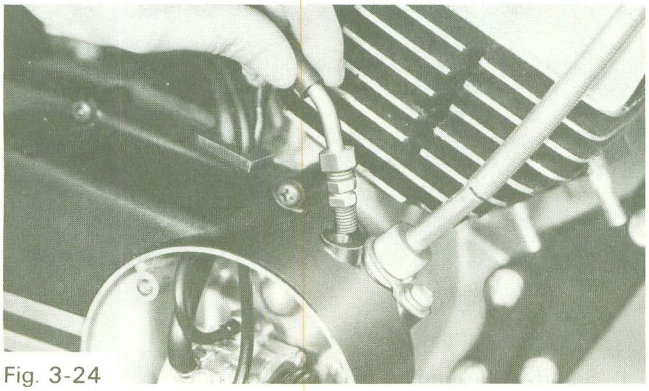


Fig. 3-24

14. Remove spark plug cap lead wires.

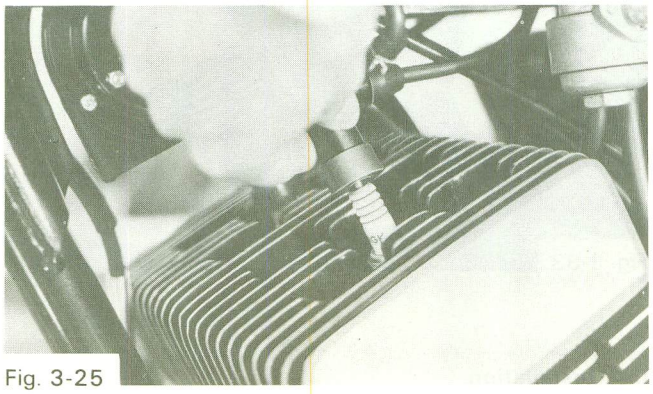


Fig. 3-25

15. Disconnect the tachometer cable. (RD200B)

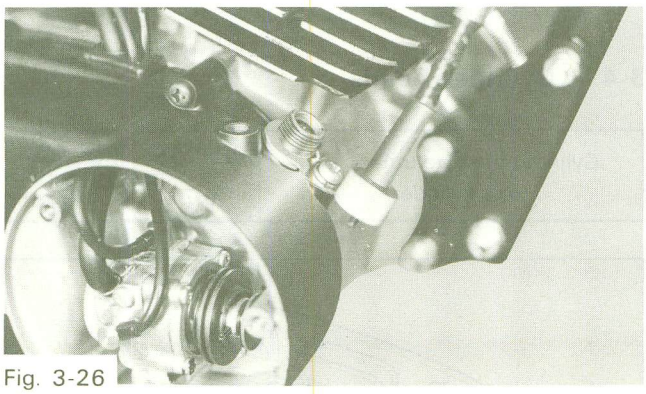


Fig. 3-26

16. To ease sprocket and distance collar removal, proceed as follows:
   a. Bend down lock tab.
   b. Put transmittion in gear.
   c. Apply rear brake.
   d. Remove sprocket securing nut and drive sprocket.

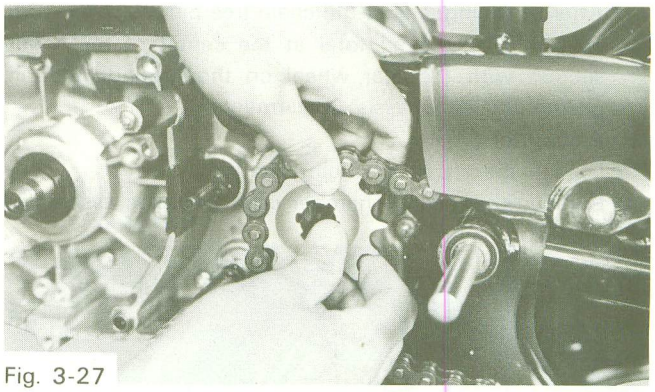


Fig. 3-27

Drive sprocket securing nut torque: 610 ~ 780 in-lbs. (7.0 ~ 9.0 m-kg.)

17. Drive chain
   a. Disconnect the master link and remove the chain.

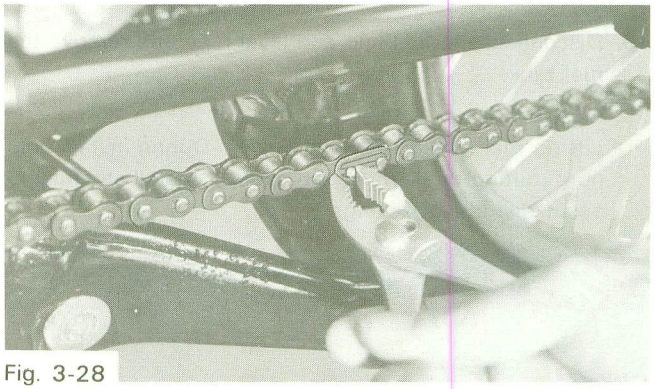


Fig. 3-28

   b. When replacing the chain, be sure that master link is facing in the correct direction.

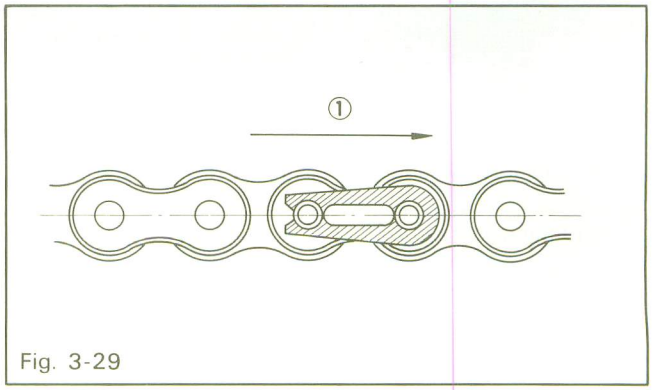


Fig. 3-29

1. Driving direction

c. After replacing, adjust the chain free play to 0.6 ~ 0.8 in. (15 ~ 20 mm.) total at the center of the lower section with the rear wheel on the ground, rider in position. (See Chassis Adjustments)

18. Carburetor
    a. Loosen the air cleaner joint bands.
    b. Remove the mixing chamber caps and slide assembly.

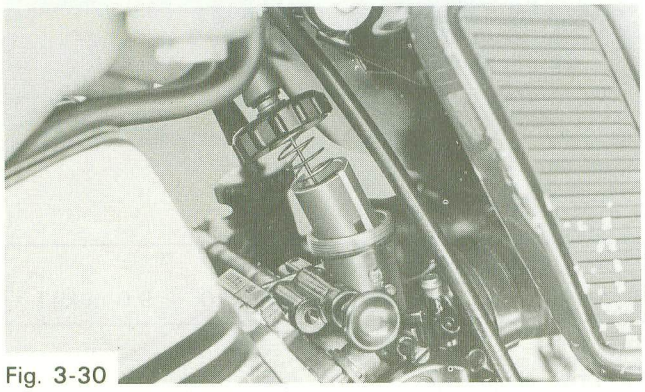


Fig. 3-30

19. Disconnect the fuel line and level pipe and remove the fuel tank.

    Note:
    Lift up rear of tank and slide back. During installation, note routing of all wires and cables. Install carefully to avoid disturbing routing.

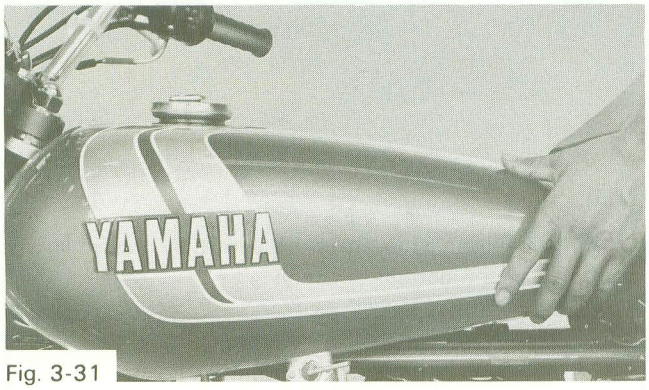


Fig. 3-31

20. Remove the six engine and engine stay mounting bolts.

Tightening torque:
217 ~ 304 in-lbs. (2.5 ~ 3.5 m-kgs.)

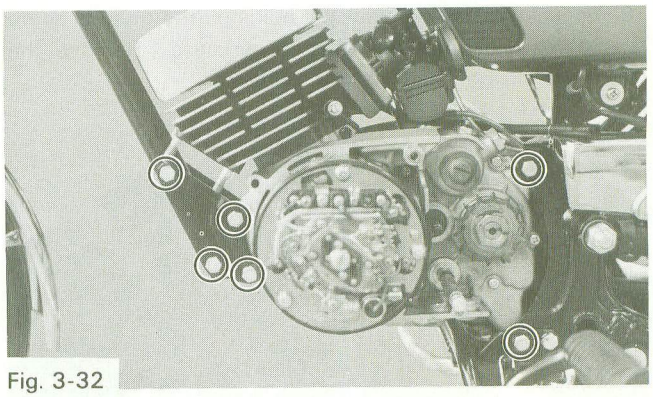


Fig. 3-32

21. Remove the engine from the frame.

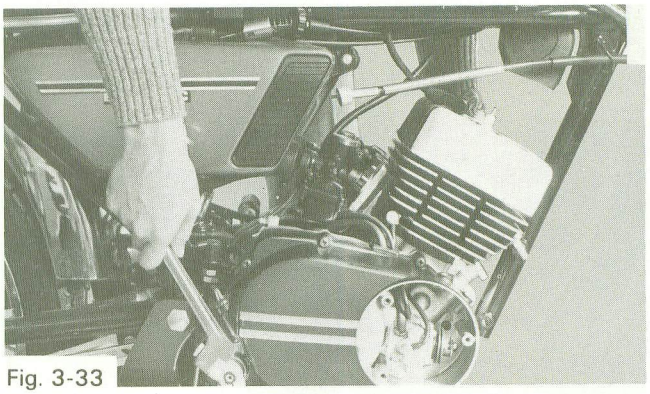


Fig. 3-33

C. Installation

1. Reverse the foregoing procedure.
2. Pay particular attention to cable and wire routing and proper torque on fasteners and fittings.
3. See 2-2, Engine Tuning, for proper setup procedure.

3-4. Cylinder heads

Cylinder head volume (c.c.) (one cylinder)	RD125B	RD200B
	6.7	12.2

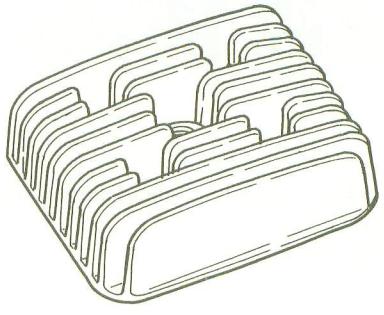


Fig. 3-34

A. Removal

1. Remove the carburetor securing bolts. Remove the carburetors and carburetor gaskets.

   Note:
   Replace the carburetor gaskets during reassembly.

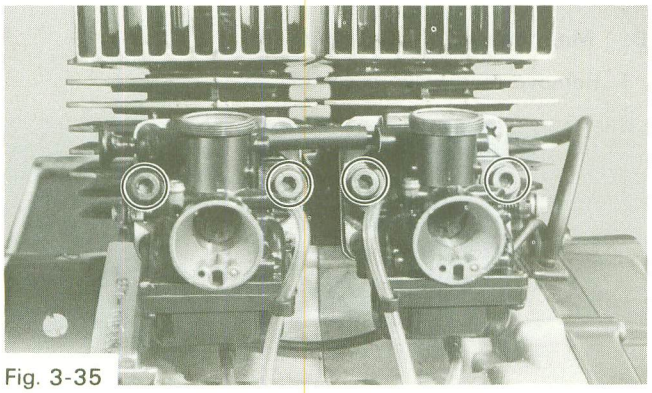


Fig. 3-35

2. Remove nuts (8) holding cylinder heads to cylinders. Remove cylinder heads and gaskets.

   Note:
   Break each nut loose (1/4 turn) prior to removing any one nut.

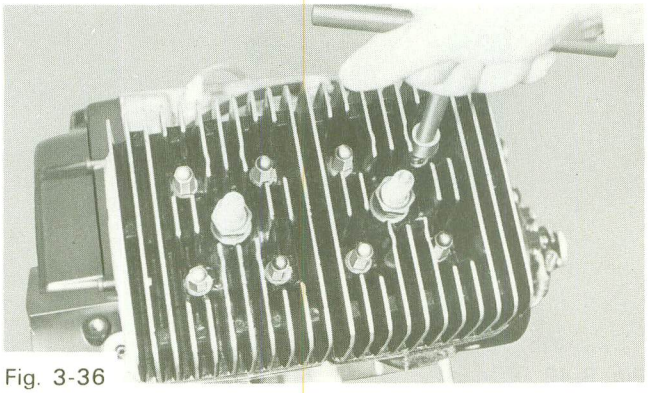


Fig. 3-36

B. Maintenance — cylinder head

1. Remove spark plugs.
2. Using a rounded scraper, remove carbon deposits from combustion chamber. Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.

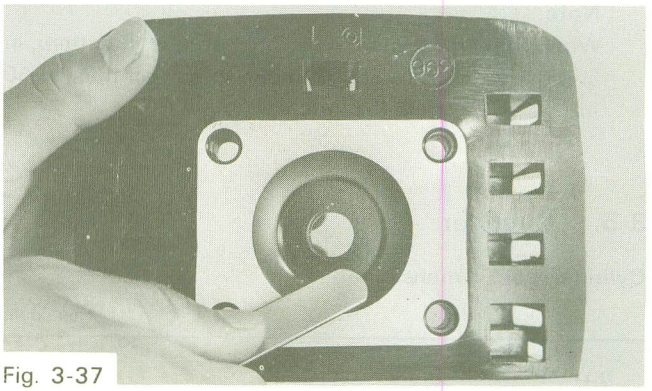


Fig. 3-37

3. Place head on a surface plate. There should be no warpage. Correct by re-surfacing. (Place 400-600 grit wet sandpaper on surface plate and re-surface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from one side.)

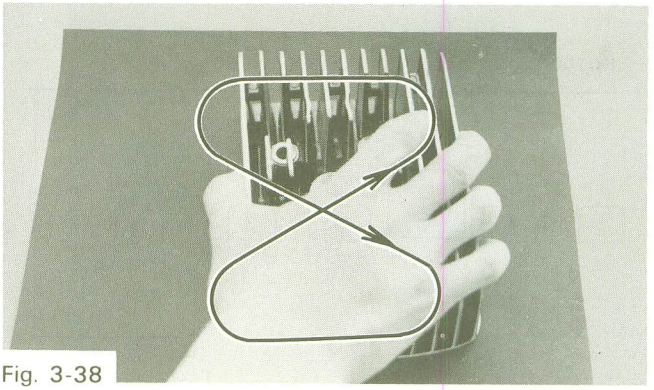


Fig. 3-38

4. Clean spark plug gasket mating surface thoroughly.
5. Wash head in solvent and wipe dry.
6. Install new cylinder head gasket during reassembly.

Cylinder head nut torque:
86.8 ~ 130.2 in-lbs. (1.0 ~ 1.5 m-kgs.)

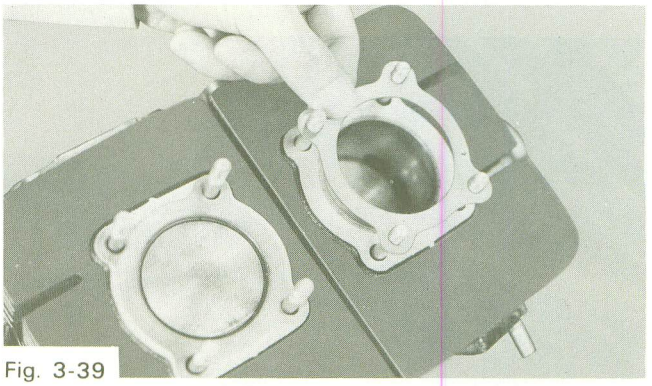


Fig. 3-39

Note:
When torquing cylinder head nuts, torque in pattern, in successive stages. For example, torque all nuts to 50 in-lbs., then 7.5 in-lbs., etc.

3-5. Cylinder

Cylinder port dimensions

Unit: mm.

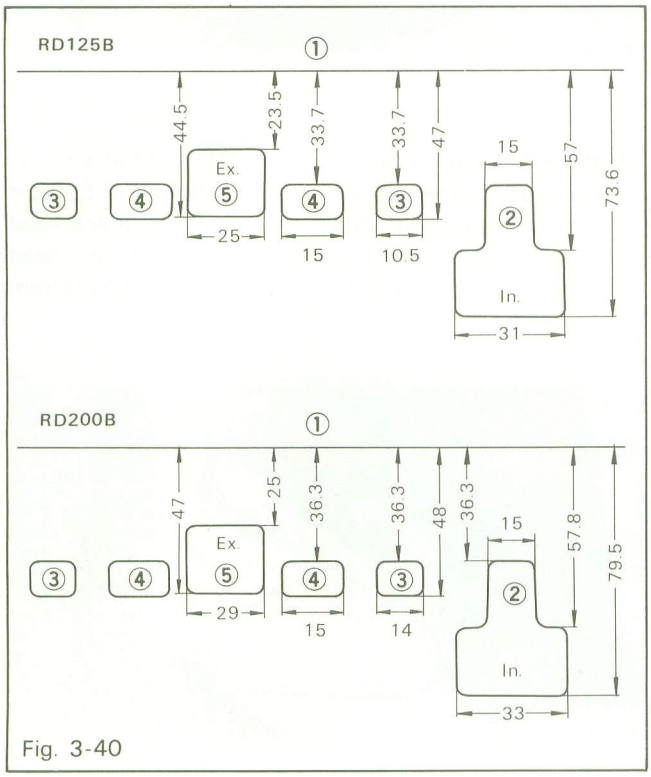


Fig. 3-40

1. Top of cylinder
2. 7th-port
3. 5th-port
4. Main transfer port
5. Exhaust port
6. Inlet port

A. Removing cylinder

1. Remove banjo bolts (2) securing oil pump delivery line to cylinders.

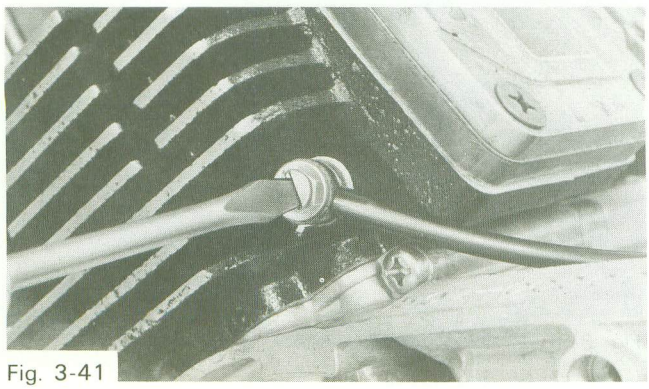


Fig. 3-41

2. If necessary, loosen each cylinder by striking lightly with a rubber or rawhide hammer.
3. With piston at Top Dead Center, raise cylinder until cylinder skirts clear crankcase. Stuff a clean shop rag into crankcase cavity, around rod, to prevent dirt and other foreign particles from entering. Remove cylinder.

B. Maintenance — Cylinder

1. Remove reed valve assembly.

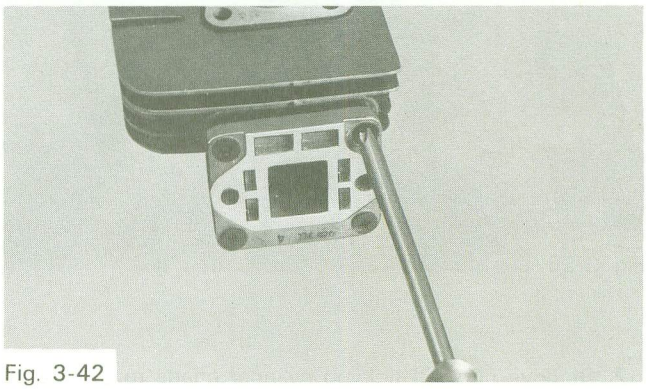


Fig. 3-42

2. Using a rounded scraper, remove carbon deposits from exhaust port.

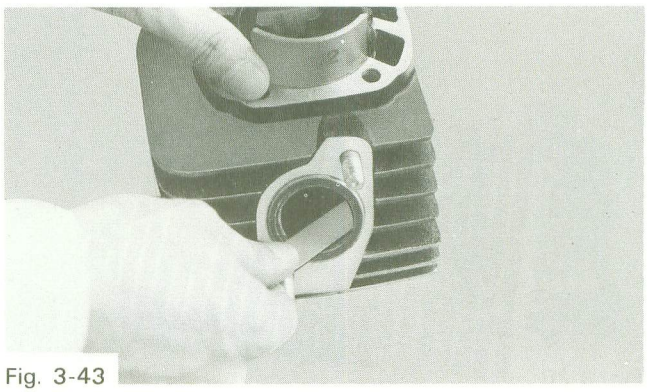


Fig. 3-43

3. Remove cylinder base gasket and clean gasket seat on cylinder and crankcase thoroughly.

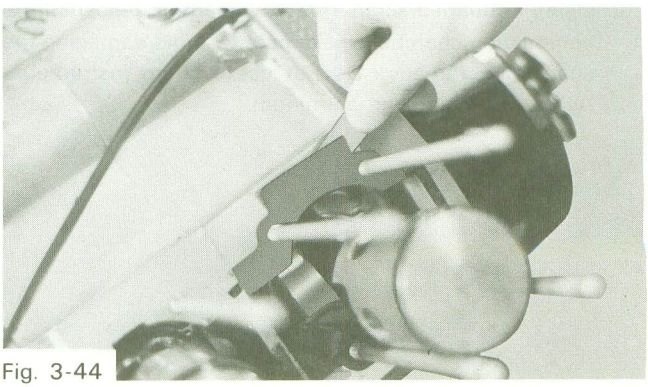


Fig. 3-44

4. Check cylinder bore. Using a cylinder hone, rimove any scoring, hone lightly, using fine stones. Hone no more than required to avoid excessive piston clearance.
5. Using a cylinder gauge set to standard bore size, measure the cylinder. Measure at six points, at top, center, and 0.4 in. (10 mm.) from bottom of skirts, in line with the piston pin and at right angle to pin. Compare minimum and maximum measurements. If over tolerance, and not correctable by honing, rebore to next over-size.

Max. allowable taper:	0.002 in. (0.05 mm.)
Max. allowable out-of-round:	0.0004 in. (0.01 mm.)

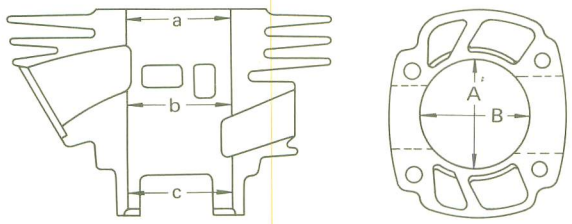


Fig. 3-45

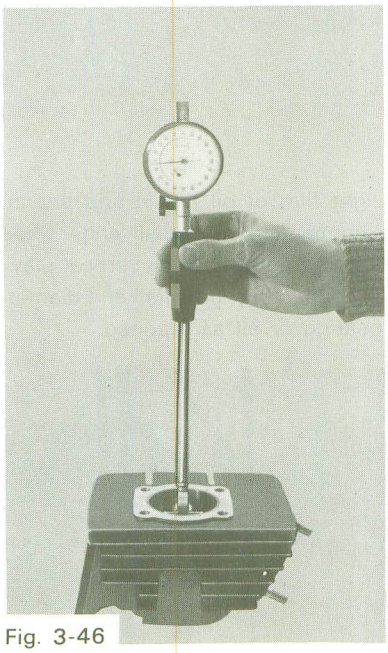


Fig. 3-46

6. Wash cylinder thoroughly with soap and water. Dry coat walls with light oil film immediately.
7. During re-assembly, always use a new cylinder base gasket.

C. Maintenance — muffler/spark arrester

1. Using a rounded scraper, remove excess carbon deposits from manifold area of muffler. Check exhaust gasket condition. The gasket seat is located around the cylinder exhaust port.

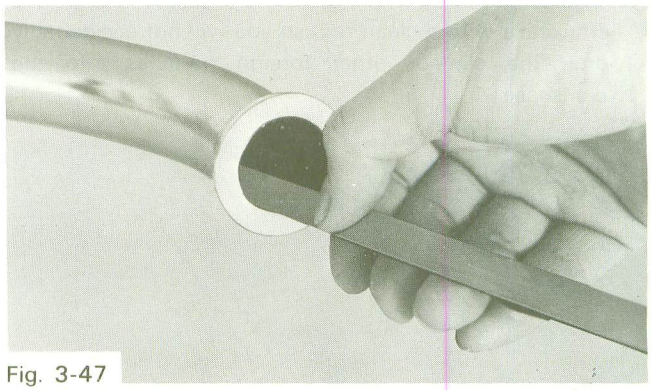


Fig. 3-47

2. Remove silencer securing screw. Remove silencer.

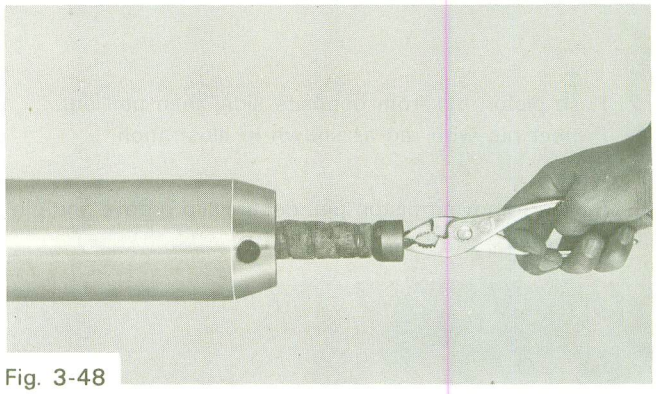


Fig. 3-48

3. Using a stiff brush, clean carbon off silencer.

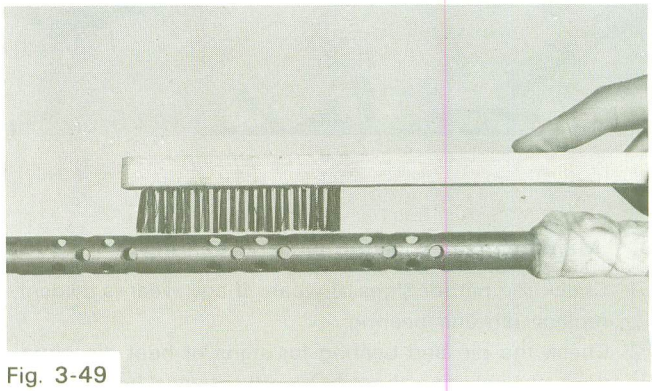


Fig. 3-49

4. Carbon deposits within the muffler may be removed by lightly tapping the outer shell with a rawhide hammer and then blowing out with compressed air. heavy wire, such as a coat hanger, may be inserted to break loose deposits. Use care. Reinstall silencer.

3-6. Piston pins and bearings

A. Piston pin removal

1. Remove piston pin clips from pistons.

   Note:
   Before removing the piston pin clips, cover the crankcase with a clean rag, so you will not accidentally drop the clip or other foreign particles into the crankcase.

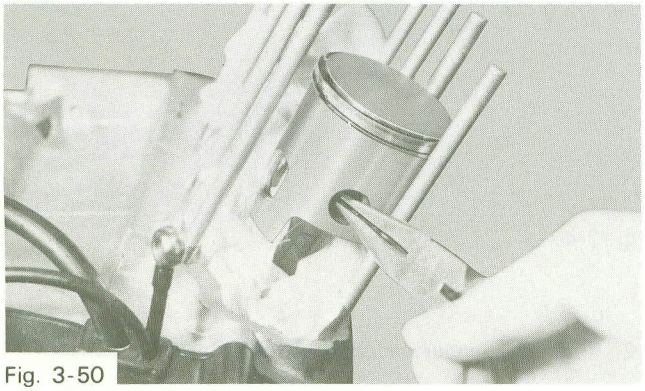


Fig. 3-50

2. Push piston pin from opposite side, then pull out. Protect pin with rag as shown in illustration.

   Note:
   Before removing piston pin, deburr clip groove and pin hole area.

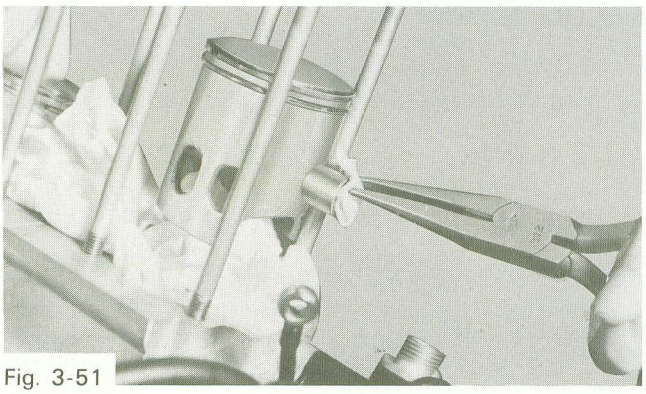


Fig. 3-51

B. Maintenance — piston pin and bearing

1. Check the pin for signs of wear. If any wear is evident, replace pin and bearing.
2. Check the pin and bearing for signs of heat discoloration. If excessive (heavily blued), replace both.

   Note:
   Shiny spots on pin from race wear are normal. Replace pin and bearing only if wear is excessive. (Indentation on pin, etc.)

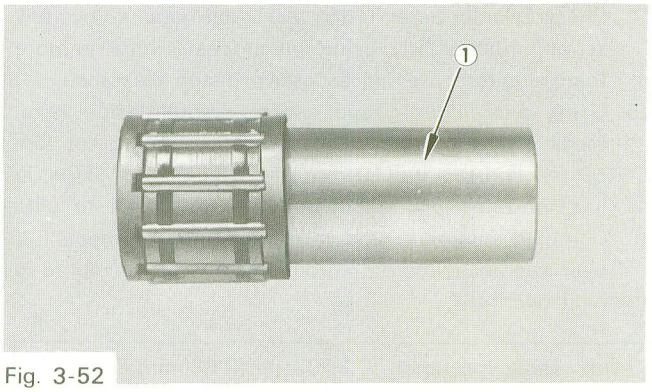


Fig. 3-52

1. Normal wear

3. Check the bearing cage for excessive wear. Check the rollers for signs of flat spots. If found, replace pin and bearing.

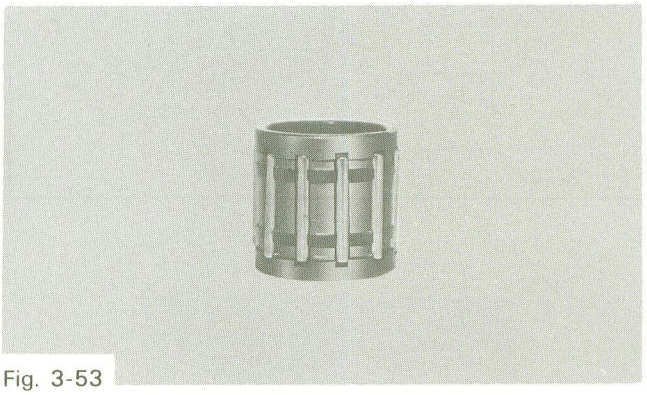


Fig. 3-53

4. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end. Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end diameter. Replace pin and bearing or all as required.

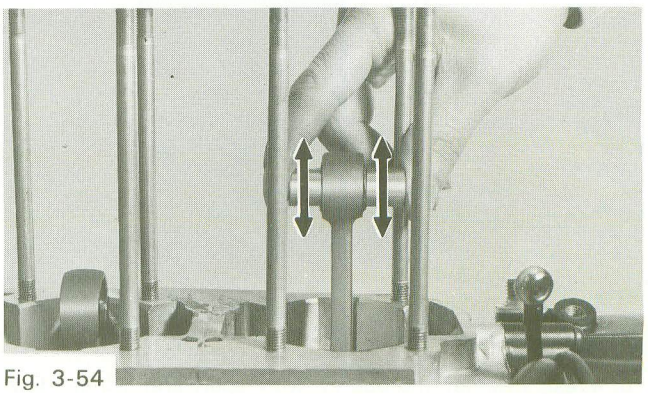


Fig. 3-54

5. The piston pin should fit snugly in its bore so that it drags a little as you turn it. If the piston is loose, replace the pin and/or the piston.

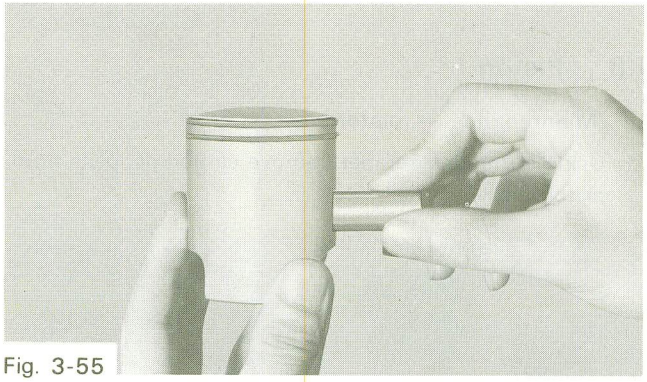


Fig. 3-55

3-7. Piston rings

L type keystone ring

The L type keystone ring is installed in the top ring groove as illustrated. The ring provides increased output through better combustion pressure sealing. The taper of 6° 45′ on the lower part of the ring aids in increased sealing and prevents sticking. (RD200B)

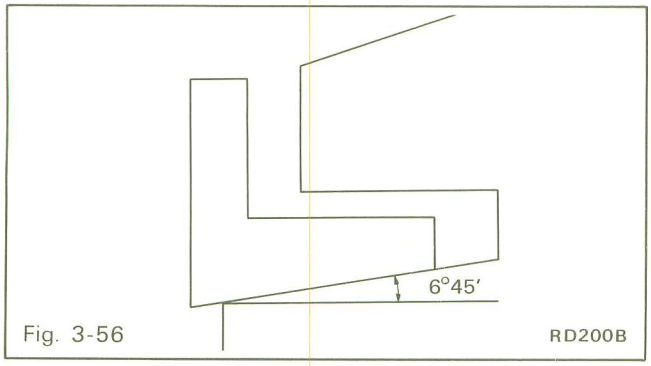


Fig. 3-56 RD200B

A. Removal

1. Put your thumb at each end of the piston ring and pull the piston ring ends apart. Remove the ring by moving the ring off the ring groove at the side opposite the ring ends.

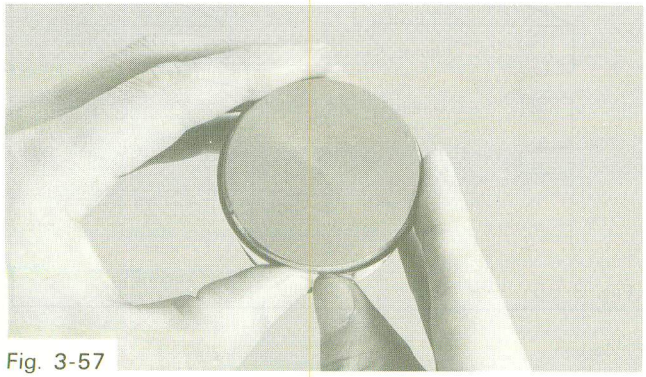


Fig. 3-57

2. Remove ring expander from lower ring groove.

B. Maintenance — piston rings

1. Check rings for scoring. If any severe scratches are noticed, replace set.
2. Measure ring end gap in free position. If beyond tolerance, replace set.

	RD125B	RD200B
Top ring end gap, free	Approx. 0.20 in. (5.0 mm.)	Approx. 0.16 in. (4.0 mm.)
2nd ring end gap, free	Approx. 0.20 in. (5.0 mm.)	Approx. 0.18 in. (4.5 mm.)

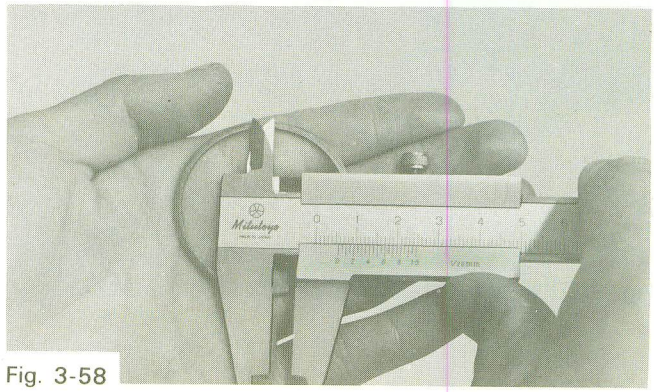


Fig. 3-58

3. Insert each ring into cylinder. Push down approximately 3/4 in. (20 mm.) into cylinder using piston crown to maintain right angle to bore. Measure installed ring end gap. If beyond tolerance, replace set.

	Min.		Max	
	RD125B	RD200B	RD125B	RD200B
Top/2nd ring end gap, installed	0.008 in. (0.2 mm.)	0.006 in. (0.15 mm.)	0.016 in. (0.4 mm.)	0.014 in. (0.35 mm.)

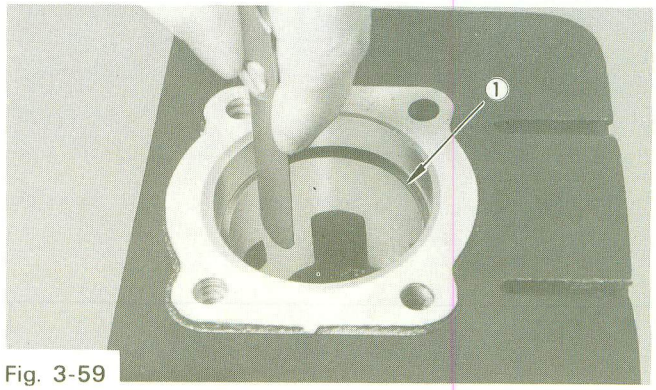


Fig. 3-59

1. Piston ring

4. Holding cylinder towards right, check for full seating of ring around bore. It not fully seated, check cylinder. If cylinder is not out-of-round, replace ring set.

5. Check ring expander. If worn excessively, or broken, replace ring set.
6. With rings installed in grooves, insert feeler gauge between ring side and groove. If beyond tolerance, replace ring/or piston as required.

	Min.	Max.
Top ring groove, clearance	0.0012 in. (0.03 mm.)	0.0031 in. (0.08 mm.)
2nd ring groove, clearance	0.0012 in. (0.03 mm.)	0.0031 in. (0.08 mm.)

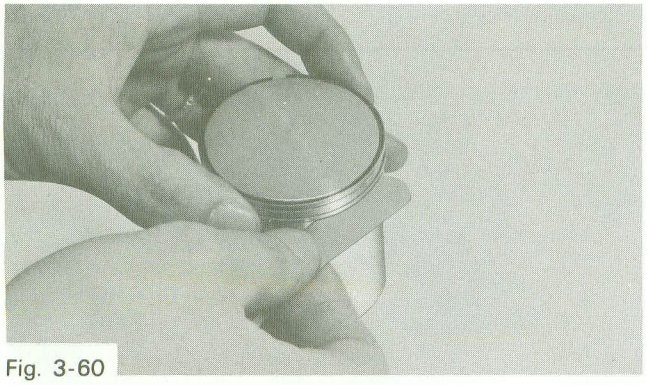


Fig. 3-60

C. Installing the piston rings

1. During installation, make sure ring ends are properly positioned on either side of locating pin in ring groove. Make sure ring expander is positioned in like manner. Apply liberal coating of two-stroke oil to rings.

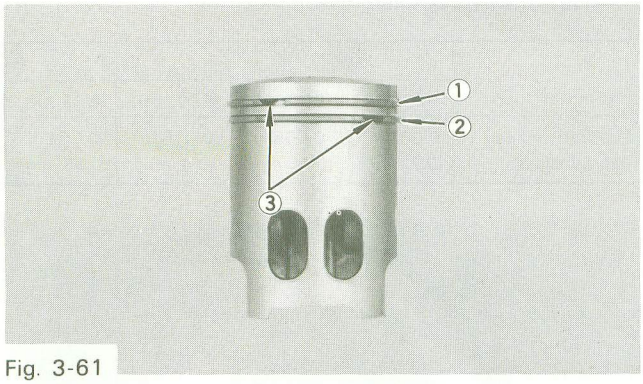


Fig. 3-61

1. First ring
2. Second ring
3. Knock pin

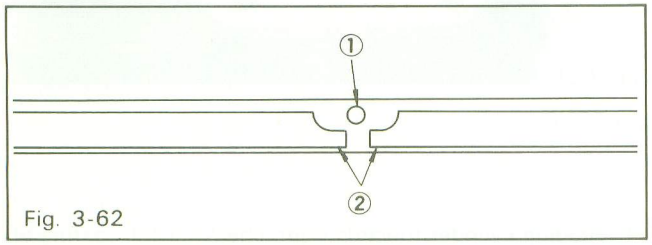


Fig. 3-62

1. Knock pin
2. Ring ends

2. New rings require break-in. Follow new machine break-in procedure.

3-8. Piston

A. Maintenance — piston

1. Using a rounded scraper, remove carbon deposits from piston crown.

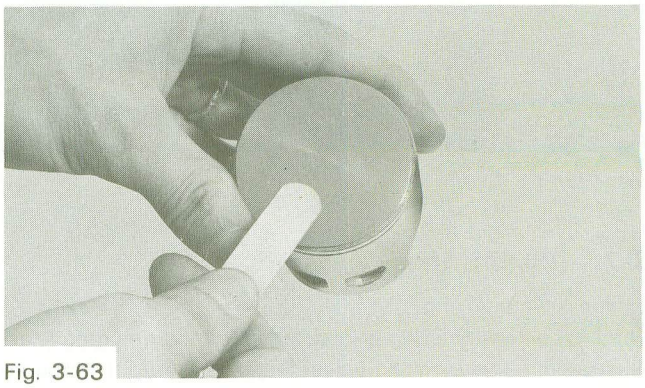


Fig. 3-63

2. Break a used piston ring in two. File end square. Deburr edges to avoid scratching ring groove and clean carbon deposits from ring grooves.

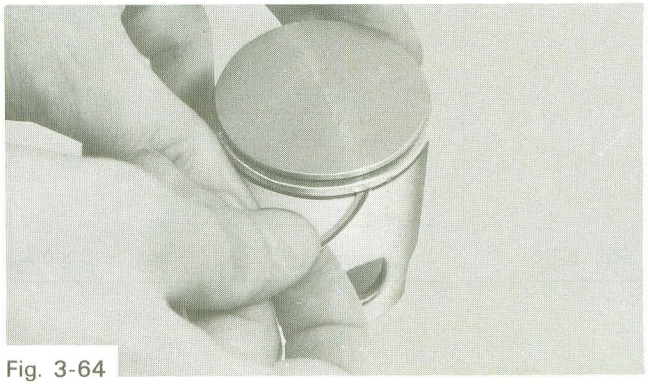


Fig. 3-64

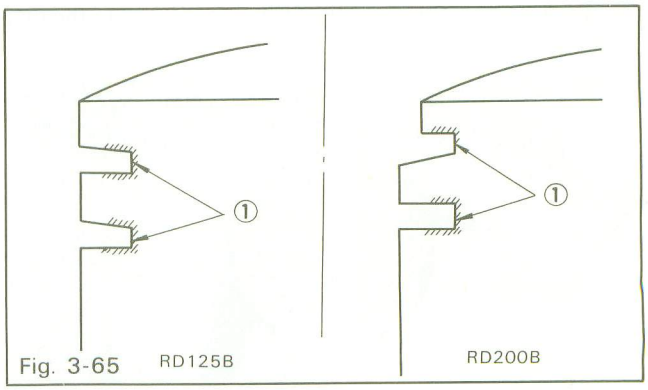


Fig. 3-65

1. Carbon

3. Using 400-600 grit wet sandpaper, lightly sand score marks and lacquer deposits from sides of piston. Sand in crosshatch pattern. Do not sand excessively.

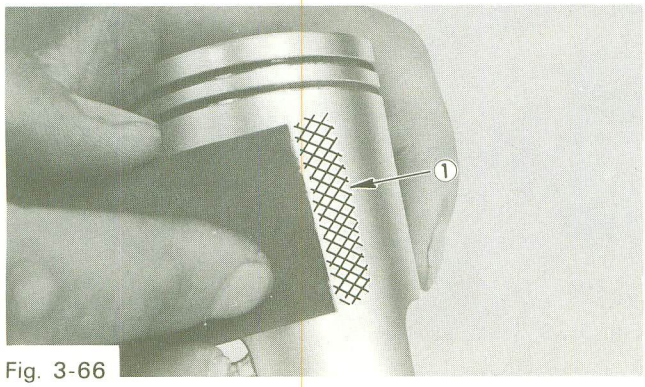


Fig. 3-66

1. Crosshatch pattern.

4. Wash piston in solvent and wipe dry.
5. Using an outside micrometer, measure piston diameter. The piston is cam-ground and tapered. The only measuring point is at right-angles to the piston pin holes about 0.4 in. (10 mm.) from bottom of piston. Compare piston diameter to cylinder bore measurements.
   Piston maximum diameter subtracted from minimum cylinder diameter gives piston clearance. If beyond tolerance, hone cylinder to tolerance or re-bore to next over-size and fit new piston.

	Min		Max	
	RD125B	RD200B	RD125B	RD200B
Piston clearance	0.0014 in. (0.035 mm.)	0.0016 in. (0.040 mm.)	0.0016 in. (0.040 mm.)	0.0018 in. (0.045 mm.)
Maximum wear limit	0.004 in. (0.1 mm.)			

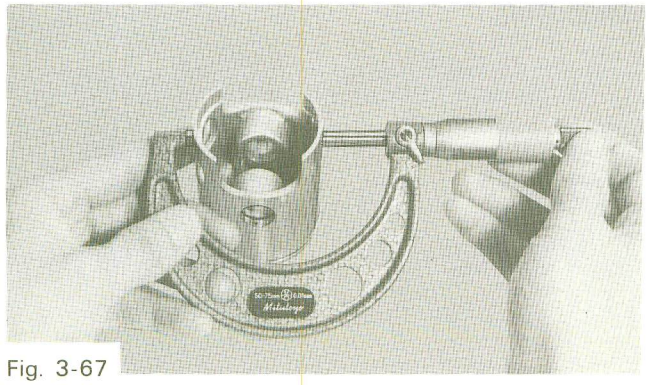


Fig. 3-67

B. Installation — piston

1. During re-assembly, coat the piston skirt areas liberally with two-stroke oil.
2. Install new piston pin clips and make sure they are fully seated within their grooves.

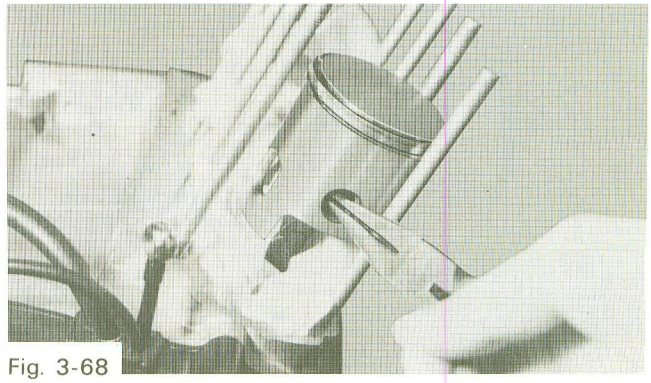


Fig. 3-68

3. Take care during installation to avoid damaging the piston skirts against the crankcase as the cylinder is installed. Note the two induction holes in the piston skirt. These must be to the rear during installation.

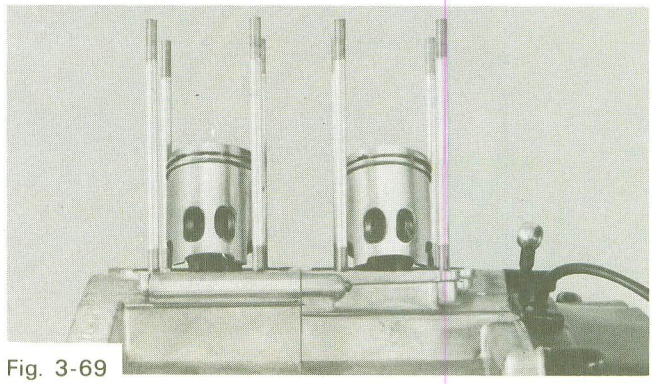


Fig. 3-69

4. Make sure the rings are properly positioned as the cylinder is installed.

3-9. Generator

A. Starter generator removal (RD200B)

Note:

1) For timing procedure, see chapter 2, "Engine Tuning, Ignition Timing". For theory of operation and troubleshooting, see "Electrical" chapters.
2) See engine removal section for RD125B A.C. generator removal.

1. Remove the governor securing bolt, and then remove the governor.

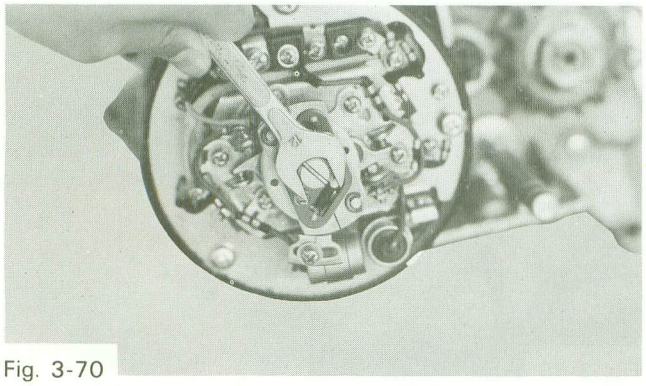


Fig. 3-70

2. Pull up the four brushes, and hold the brushes with the brush springs.

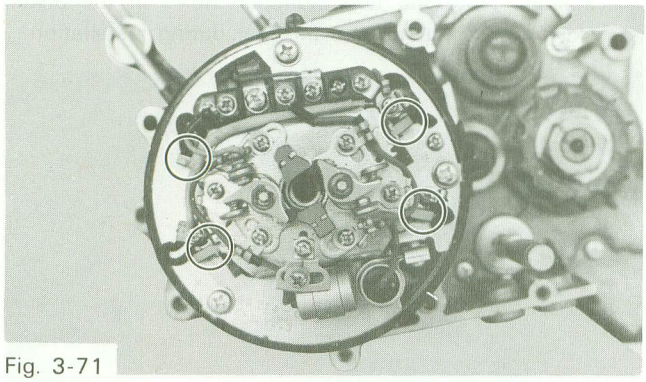


Fig. 3-71

3. Remove the yoke holding screws, and then remove the yoke assembly complete.

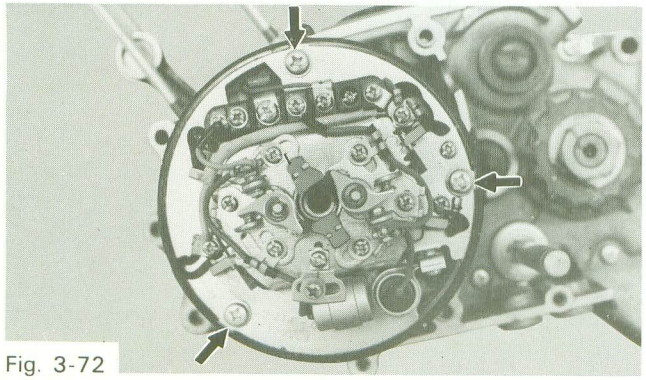


Fig. 3-72

4. Remove the armature by using the armature shock puller or armature puller bolt.

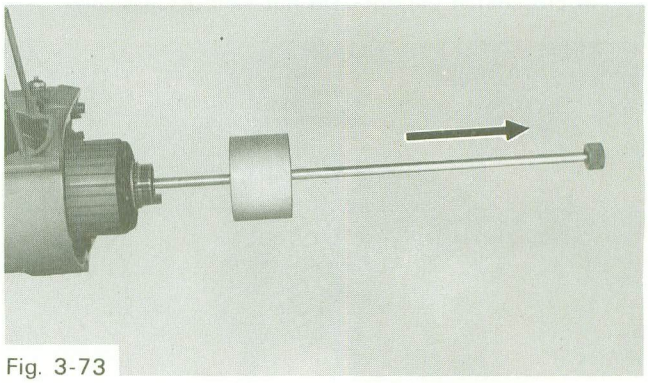


Fig. 3-73

5. Pry out the woodruff key. remove the dowel pin.

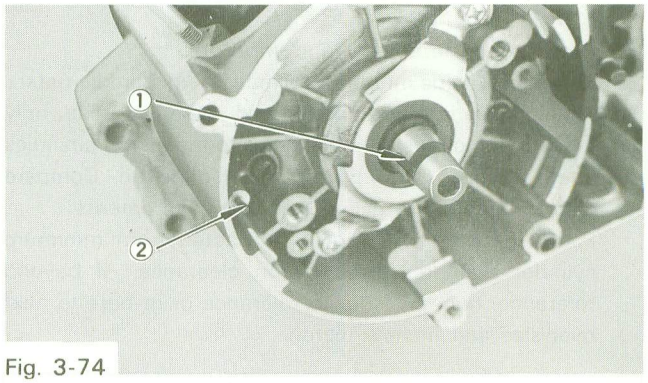


Fig. 3-74

1. Woodruff key 2. Dowel pin

Alternating current generator (RD125B)

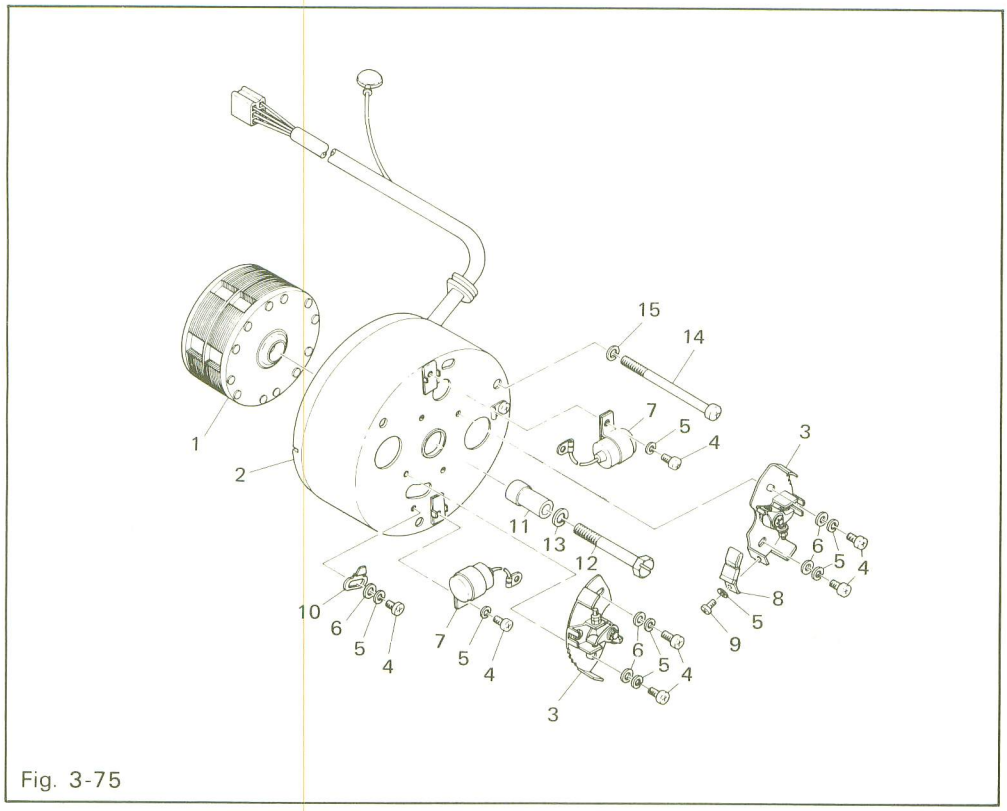


Fig. 3-75

1. Rotor assembly
2. Stator assembly
3. Contact breaker assembly
4. Pan head screw
5. Spring washer
6. Plain washer
7. Condenser
8. Lubricator
9. Pan head screw
10. Timing plate
11. Cam
12. Bolt
13. Spring washer
14. Pan head screw
15. Spring washer

Starter generator (RD200B)

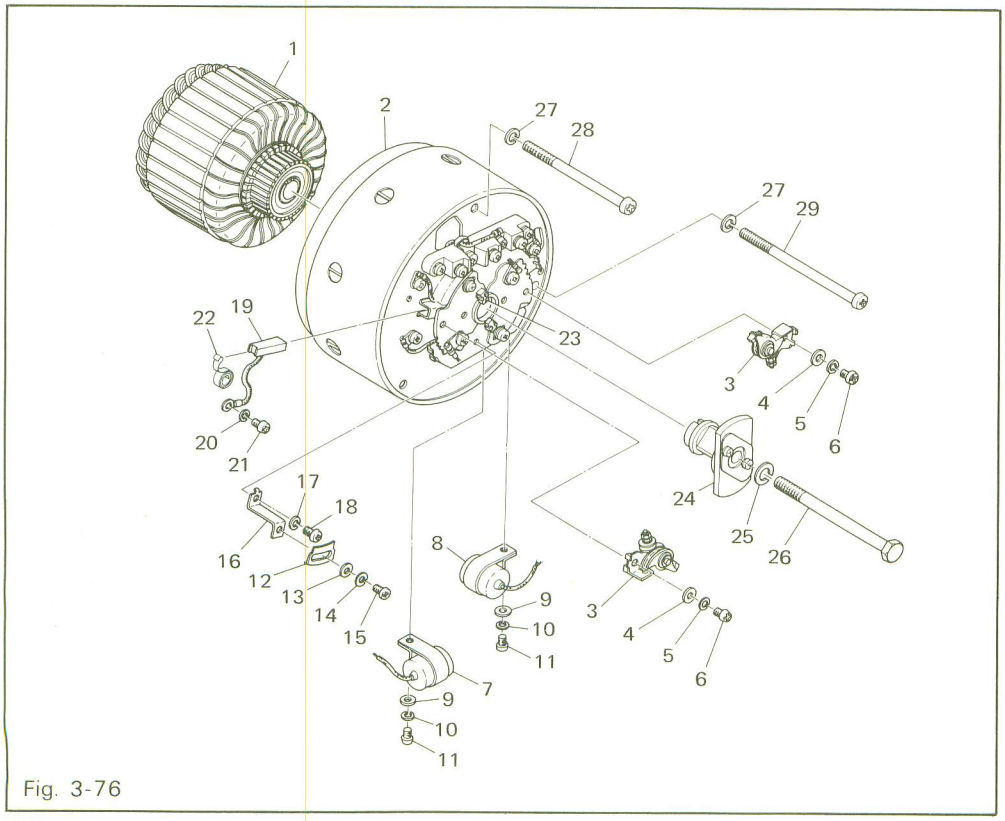


Fig. 3-76

1. Armature
2. Stator assembly
3. Contact breaker assembly
4. Plain washer
5. Spring washer
6. Cylinder head screw
7. Left condenser
8. Right condenser
9. Plain washer
10. Spring washer
11. Pan head screw
12. Timing plate
13. Plain washer
14. Spring washer
15. Cylinder head screw
16. Timing plate fixture
17. Spring washer
18. Pan head screw
19. Brush
20. Spring washer
21. Pan head screw
22. Brush spring
23. Lubricator
24. Governor assembly
25. Spring washer
26. Bolt
27. Spring washer
28. Pan head screw
29. Pan head screw

B. Maintenance

1. Apply a few drops of light-weight machine oil or distributor lubricant to the point cam lubricating wick.
2. The ignition points can be lightly filed with an ignition point file or sanded with 400-600 grit sandpaper. Place a piece of clean paper between the points, let them close, and repeatedly remove the paper until no residue shows. The paper may be dipped in lacquer thinner or point cleaning fluid to provide a solvent to remove oil and sanding residue from point surfaces.
3. Point replacement should only occur when point gap exceeds maximum tolerance; when the points are severely pitted; or if the points become shorted or show faulty operation.
4. When replacing certain components, soldering is required.
   Use a low wattage gun. Do not allow wiring to overheat as lacquer insulation on coil windings may be destroyed. The use of a heat sink is recommended.
5. When installing armature or rotor, make sure woodruff key is properly seated in keyway in crankshaft. Apply a light coating of lithium soap base grease to tapered portion of crankshaft end. Carefully install, taking care to align for woodruff key.
6. Install the dowel pin. Install the starter after making sure that the four brushes are pulled up. (RD200B)
7. Install the governor. (RD200B)

Note:
Whenever the starter generator (RD200B) or rotor (RD125B) is removed, ignition timing must be reset.

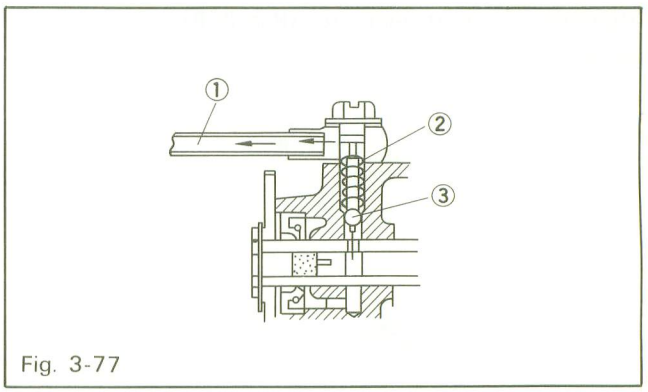


Fig. 3-77

1. Delivery pipe
2. Check-ball spring
3. Check-ball

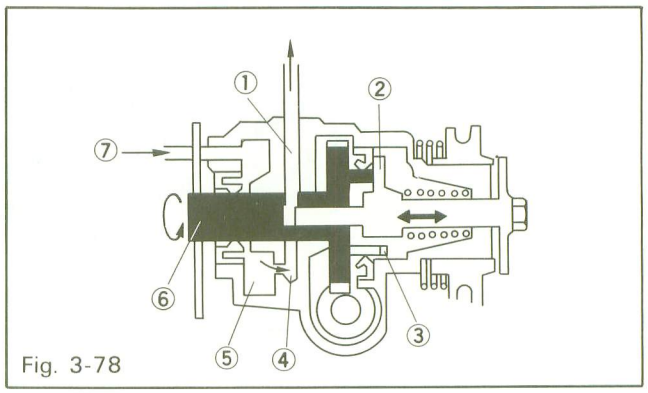


Fig. 3-78

1. Outlet
2. Guide pin
3. Cam
4. Inlet
5. Oil chamber
6. Distributor
7. Oil

3-10. Autolube

The adjustments and servicing of the Autolube pump are covered in Chapter 2. Section 2, Engine tuning. The following information pertains to disassembly and troubleshooting of the pump assembly.

A. Description of operation

1. The pump is driven by the crankshaft through reduction gears. Its output per stroke is controlled by the throttle grip setting.
2. Oil flow to the pump from the Autolube tank is via gravity feed. If Yamalube is used as a lubricating oil, normal ambient temperatures are of no concern as far as the possibility of oil viscosity limiting or impeding oil delivery to the pump.
3. Oil flow from the pump to the cylinder is via rubber tubing and banjo bolts and fittings. Oil is delivered directly into the cylinder intake port where it is atomized by the carburetor air stream prior to delivery to the bottom end and cylinder walls.
4. A spring-loaded check ball at the delivery line junction prevents backflow to the pump when the engine is not running.

B. Removal and disassembly

1. Remove pump cover.
2. Remove fitting on right-hand crankcase cover securing pump cable.

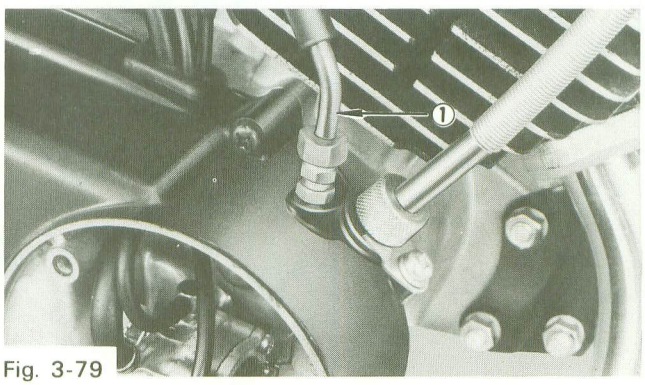


Fig. 3-79

1. Pump cable

3. Remove cable end from pump pulley. Remove cable and fitting.

Note:
If side cover only is being removed, pump removal is not necessary. Proceed with steps 1, 3 and then remove side cover.

4. Remove Philips screws (2) securing pump to crankcase cover.
   Remove banjo fittings and delivery line. remove pump.

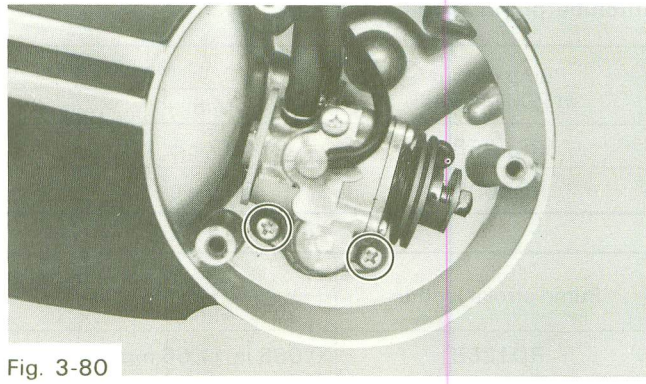


Fig. 3-80

Oil pump

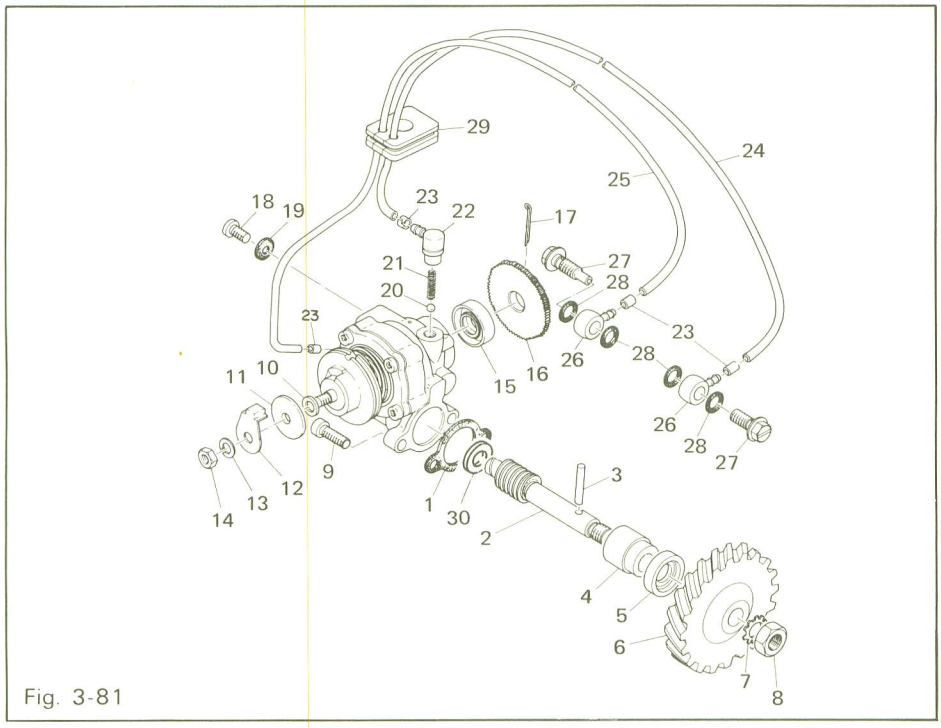


Fig. 3-81

1. Pump case gasket
2. Worm shaft
3. Dowel pin
4. Worm shaft outer metal
5. Oil seal
6. Drive gear
7. Tooth washer
8. Nut
9. Pan head screw
10. Shim
11. Adjusting plate
12. Cover
13. Spring washer
14. Nut
15. Oil seal
16. Starter plate
17. Cotter pin
18. Bind screw
19. Breather gasket
20. Ball
21. Check ball spring
22. Nozzle
23. Delivery pipe clip
24. Delivery pipe
25. Delivery pipe
26. Delivery pipe banjo
27. Banjo bolt 2
28. Banjo bolt gasket
29. Oil pipe holder
30. Shim

5. The pump is a sealed unit. Its output has been checked and adjusted at the factory, and the pump assembled. Except for the components shown in the illustration, no further disassembly of the pump should be attempted.
6. Disassembly is straightforward and can be accomplished by reviewing the parts illustration.
   Reference numbers 2 ~ 6, worm shaft and drive gear components, require crankcase cover removal prior to disassembly.

C. Troubleshooting and repair

1. Wear or an internal malfunction may cause pump output to vary from the factory setting.
   This situation is, however, extremely rare. If output is suspect, check the following:
   a. Obstructions in delivery line to pump or from pump to cylinder.
   b. Worn or damaged pump body seal or crankcase cover seal.
   c. Missing or improperly installed check ball or spring.
   d. Improperly installed or routed oil delivery lines.
   e. Loose fittings allowing air entry to pump and/or engine.
2. If all inspections show no obvious problems, and pump output is still suspect, connect a delivery line from the pump to a graduated container (c.c.). Keep the delivery line short. Rotate the pump bleed wheel while counting pump plunger strokes. If output is not to specification, replace pump assembly.

Autolube pump specifications

Pump output at 200 strokes	Maximum throttle		Minimum throttle	
	Min.	Max.	Min.	Max.
RD125B	4.17 c.c.	4.80 c.c.	0.50 c.c.	0.63 c.c.
RD200B	5.15 c.c.	5.65 c.c.	0.50 c.c.	0.63 c.c.

Pump stroke length	Maximum throttle		Minimum throttle	
	Min.	Max.	Min.	Max.
RD125B	0.065 in. (1.66 mm.)	0.075 in. (1.91 mm.)	0.009 in. (0.20 mm.)	0.010 in. (0.25 mm.)
RD200B	0.081 in. (2.05 mm.)	0.089 in. (2.25 mm.)	0.009 in. (0.20 mm.)	0.010 in. (0.25 mm.)

Pump gear ratios	Primary drive to pump drive gear		Worm shaft to worm wheel		Overall reduction ratio
	Teeth	Ratio	Teeth	Ratio	
RD125B	19/34	0.56	1/55	0.018	0.010
RD200B	16/20	0.80	1/55	0.018	0.015

Pump plunger diameter	0.17 in. (4 mm.)

D. Reassembly and installation

1. Always install a new pump case gasket.
2. During installation, make sure the worm shaft in the crankcase cover is properly meshed with the worm wheel in the pump body.
3. Whenever the pump cable is removed or the pump partially disassembled, the pump must be bled and the cable must be adjusted. See Chapter 2, Autolube adjustment.

3-11. Clutch

A. Description

The clutch is a wet, multi-disc type consisting of molded cork friction plates (5 pcs.), five steel clutch plates and five cushion rings in the clutch housing which is mounted on the transmission main axle. To disengage the clutch, an inner push rod system is employed.

The primary driven gear, coupled with the clutch housing, is meshed with a kick pinion gear allowing starting with the clutch disengaged (or engaged in neutral).

A shock absorber system consistisg of rubber dampers is mounted between the primary driven gear and the clutch housing to absorb shock loads on the drive train.

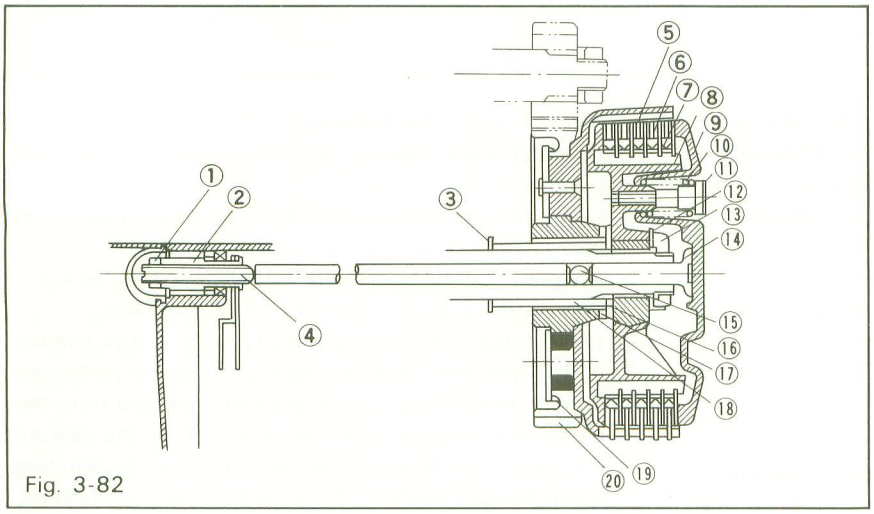


Fig. 3-82

1. Locknut
2. Push screw
3. Thrust plate
4. Adjusting screw
5. Friction plate
6. Clutch plate
7. Cushion ring
8. Clutch plate
9. Pressure plate
10. Clutch spring
11. Spring screw
12. Lock washer
13. Locknut
14. Push crown
15. Ball (5/16")
16. Thrust plate
17. Thrust bearing
18. Spacer
19. Friction ring
20. Primary driven gear assembly

B. Removal and disassembly

1. Cover removal
   a. Remove pan head screws securing right crankcase cover.

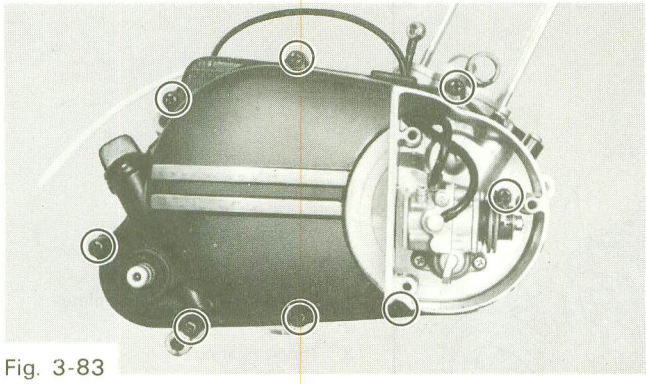


Fig. 3-83

   b. Remove crankcase cover.
   The crankcase cover can be removed without taking off the oil pump.

   Note:
   If cylinder is in place, remove banjo bolt securing oil delivery line.

   c. Remove crankcase cover gasket. Replace during reassembly.

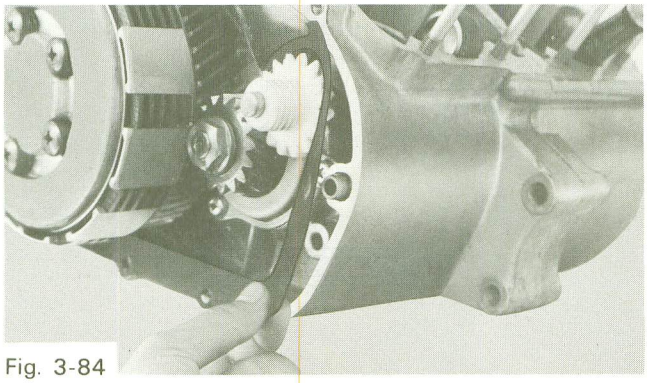


Fig. 3-84
(RD200B)

2. Cover installation
   a. Spread YAMAHA Bond No. 5 over the mating surface of the right-hand crankcase.

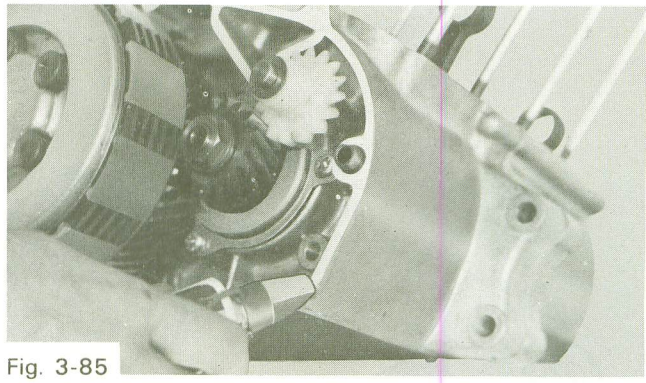


Fig. 3-85
(RD200B)

   b. Place the crankcase cover gasket on the crankcase.
   c. Install the right-hand crankcase cover.

   Note:
   When installing the crankcase cover (R), make sure that the pump drive gear is correctly engaged with the primary drive gear.

3. Remove clutch spring holding screws (5), pressure plate, and push rod 1.

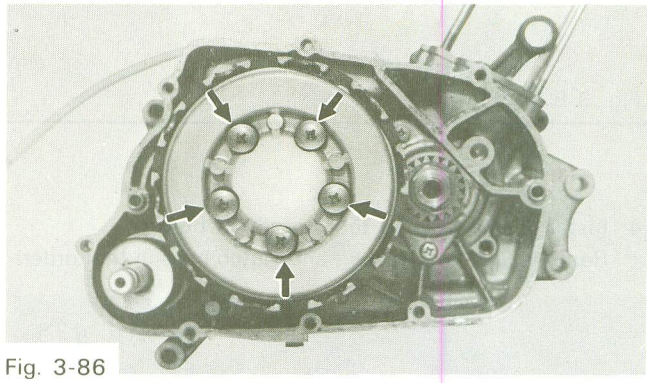


Fig. 3-86

Clutch

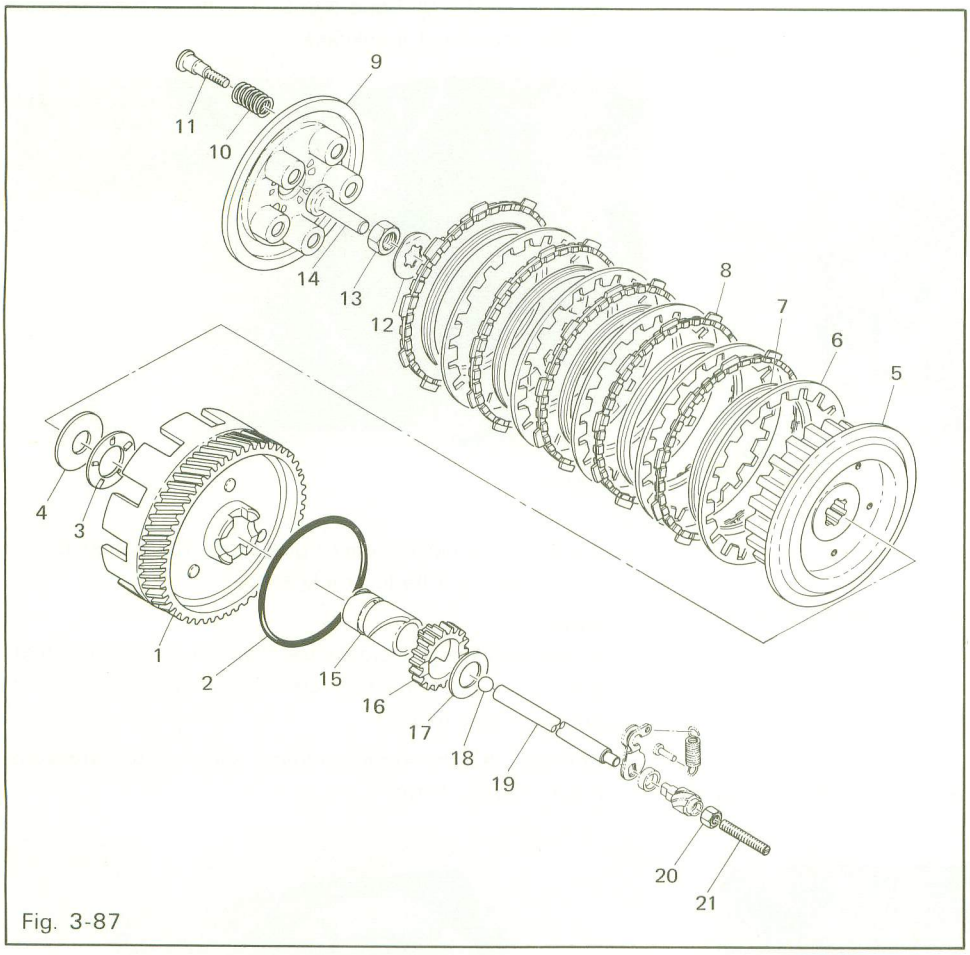


Fig. 3-87

1. Primary driven gear complete
2. O-ring
3. Thrust bearing
4. Thrust plate
5. Clutch boss
6. Clutch plate
7. Cushion ring
8. Friction plate
9. Pressure plate
10. Clutch spring
11. Spring screw
12. Lock washer
13. Locknut
14. Push rod 1
15. Distance collar
16. Kick pinion gear
17. Thrust plate
18. Ball
19. Push rod 2
20. Nut
21. Adjusting screw

4. Install clutch holding tool on clutch boss.
   Remove lock nut, washer, and clutch boss in that order.

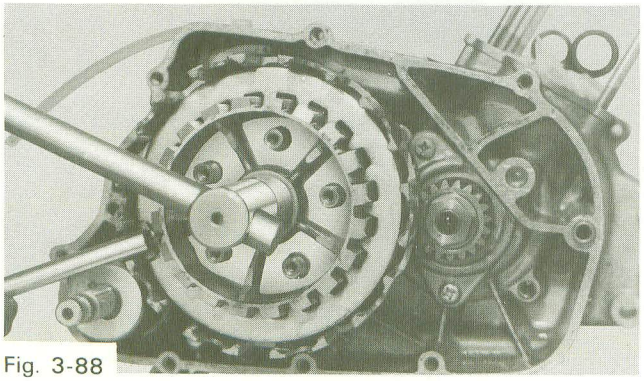
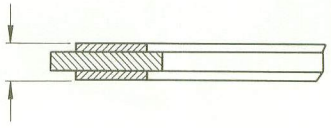


Fig. 3-88

5. If the clutch housing spacer remains on the transmission main shaft, remove it.
   Remove the thrust plate and thrust plate spacers.

C. Troubleshooting and repair

1. Measure the friction plates at three or four points. If their minimum thickness exceeds tolerance, replace.



Friction plate thickness	New	Wear limit
RD125B	0.12 in. (3.2 mm.)	0.11 in. (2.9 mm.)
RD200B	0.16 in. (4.0 mm.)	0.15 in. (3.7 mm.)

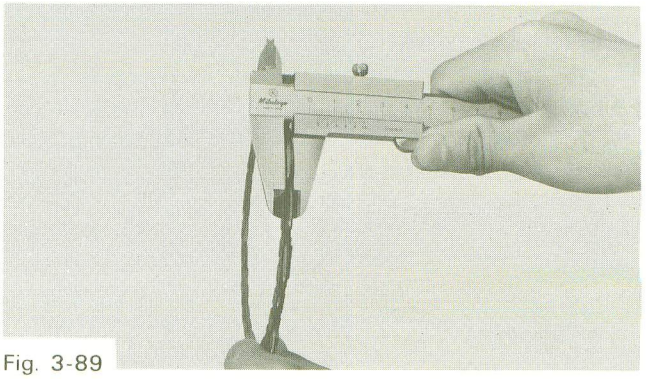


Fig. 3-89

2. Check the friction plates for signs of warpage and heat damage. Replace as required.
3. Check each clutch plate for signs of heat damage and warpage. Place on surface plate (plate glass is acceptable) and use feeler gauge as illustrated. If warpage exceeds tolerance, replace.

Clutch plate warpage allowance: 0.002 in. (0.005 mm. maximum)

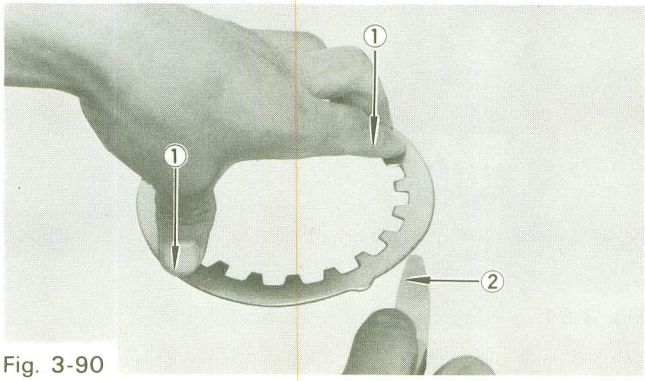


Fig. 3-90

1. Press down
2. Feeler gauge

Note:
For optimum performance, if any friction or clutch plate requires replacement, it is advisable to replace the entire set.

4. Thoroughly clean the clutch housing and spacer. Apply a light film of oil on the bushing surface and spacer. Fit the spacer into the bushing. It should be a smooth, thumb-press fit. The spacer should rotate smoothly within the bushing. If appropriate measuring devices are available, measure the minimum I.D. of the clutch housing bushing and the maximum O.D. of the bushing spacer.

RD125B:

	Nominal	Maximum
Clutch housing bushing I.D.	0.91 $^{+0.0006}_{-0.0002}$ in. (23 $^{+0.016}_{-0.005}$ mm.)	0.906 in. (23.02 mm.)
Bushing Spacer O.D.	0.91 $^{-0.0008}_{-0.0013}$ in. (23 $^{-0.020}_{-0.033}$ mm.)	0.905 in. (22.99 mm.)
Bushing/Spacer clearance	0.0011~0.0014 in. (0.028~0.036 mm.)	0.002 in. (0.056 mm.)

RD200B:

	Nominal	Maximum
Clutch housing bushing I.D.	1.024 $^{+0.0006}_{-0.0002}$ ins. (26 $^{+0.016}_{-0.005}$ mm.)	1.024 ins. (26.02 mm.)
Bushing spacer O.D.	1.024 $^{-0.0008}_{-0.0009}$ ins. (26 $^{-0.020}_{-0.023}$ mm.)	1.022 ins. (25.95 mm.)
Bushing/spacer clearance	0.001~0.002 in. (0.020~0.040 mm.)	0.002 in. (0.060 mm.)

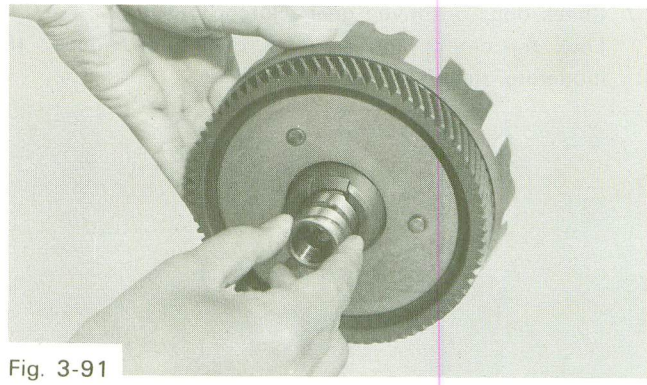


Fig. 3-91

5. Check the bushing, spacer and main shaft for signs of galling, heat damage, etc. If severe, replace as required.

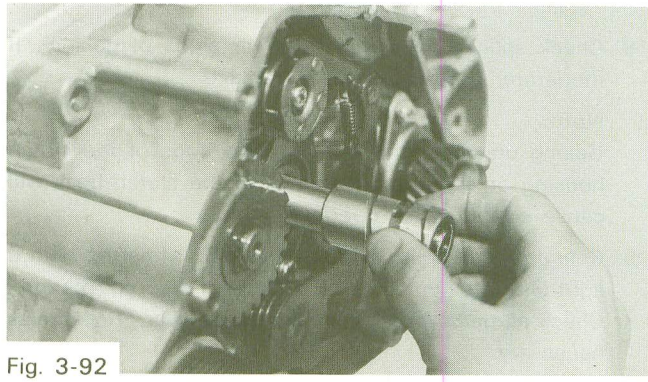


Fig. 3-92

6. Apply a thin coat of oil on transmission main shaft and bushing spacer bore. Slip spacer over main shaft. Spacer should fit with approximately same "feel" as in clutch housing. Replace as required. See measurement tolerances.

RD125B:

	Nominal	Maximum
Main shaft O.D.	0.69 $^{-0.0002}_{-0.0007}$ in. (17 $^{-0.006}_{-0.007}$ mm.)	0.669 in. (17.01 mm.)
Bushing spacer I.D.	0.69 $^{+0.0005}_{-0.0002}$ in. (17 $^{+0.012}_{-0.006}$ mm.)	0.670 in. (17.02 mm.)
Shaft/Spacer clearance	0.0004~0.0007 in. (0.011~0.012 mm.)	0.001 in. (0.028 mm.)

RD200B:

	Nominal	Maximum
Main shaft O.D.	0.787 $^{-0.0003}_{-0.0008}$ in. (20 $^{-0.007}_{-0.020}$ mm.)	0.785 in. (19.95 mm.)
Bushing spacer I.D.	0.787 $^{+0.0394}_{-0.0002}$ in. (20 $^{+0.012}_{-0.006}$ mm.)	0.788 in. (20.02 mm.)
Shaft/Spacer clearance	0.00004~0.00157 in. (0.001~0.040 mm.)	0.007 in. (0.050 mm.)

7. Check dogs on driven gear (clutch housing). Look for cracks and signs of galling on edges. If moderate, deburr. If severe, replace.

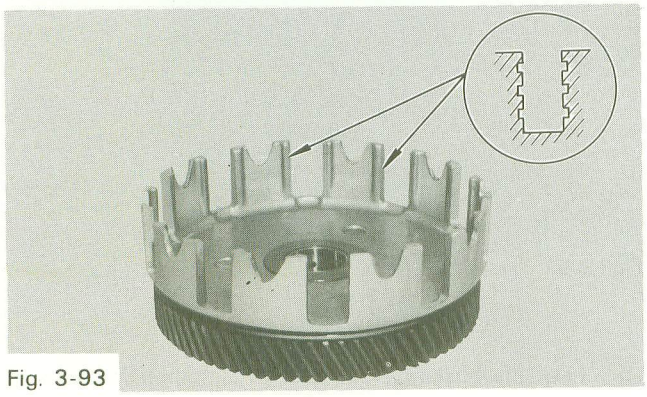


Fig. 3-93

8. Check splines on clutch boss for signs of galling. If moderate, deburr. If severe, replace.

Note:
Galling on either the friction plate dogs of the clutch housing or clutch plate splines of the clutch boss will cause erratic clutch operation.

9. Coat the clutch thrust plate and thrust bearing with a light film of oil on all parts. Check for smooth rotation. Check all parts for signs of excessive wear. Replace as necessary.
10. If clutch operation has been abnormal, and the above procedures show no major failures, install the clutch housing on the transmission main shaft with thrust plates, thrust bearing and clutch boss in their proper positions for reassembly. Do not install clutch or friction plates. Install lock washer and clutch securing nut. Torque to standard assembly value.

Clutch securing nut torque:
560 ~ 695 in-lbs. (6.5 ~ 8.0 m-kgs.)

11. With transmission in neutral and primary driven gear stationary, the clutch boss should turn without excessive drag within the clutch housing. If housing does not turn easily, indicating insufficient housing end play, check thrust plates and thrust bearing for incorrect thickness.
Correct by installing thinner thrust plates.
Clutch housing end play is given in table and can be measured with a dial gauge.

	Nominal	Minimum	Maximum
Clutch housing end play	0.008 in. (0.2 mm.)	0.004 in. (0.1 mm.)	0.012 in. (0.3 mm.)

12. Measure each clutch spring. If beyond tolerance, replace.

Clutch spring free length	New	Minimum
RD125B	1.24 in. (31.5 mm.)	1.20 in. (30.5 mm.)
RD200B	1.34 in. (34.0 mm.)	1.30 in. (33.0 mm.)

Note:
For optimum clutch operation it is advisable to replace the clutch springs as a set if one or more are faulty.

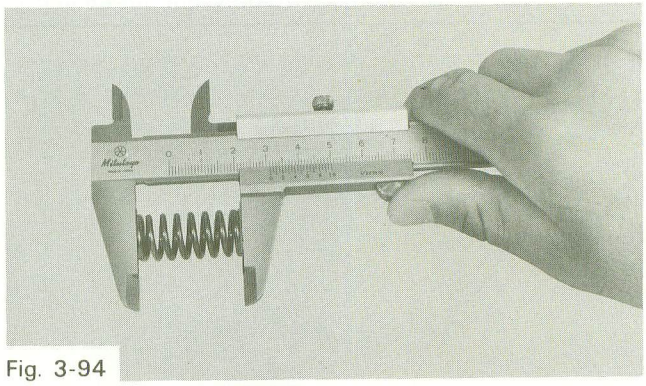


Fig. 3-94

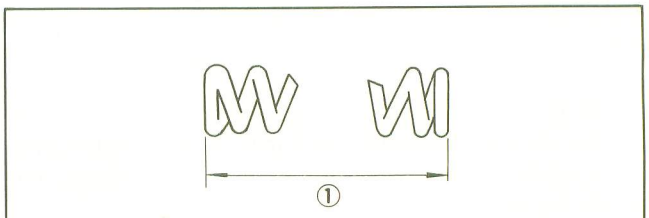


Fig. 3-95

1. Free length

13. Stack the clutch spring set on a level surface. Rotate each spring until all are at approximately the same vertical angle and maximum apparent height. Place a straight edge across the set. If any spring exceeds tolerance, replace that spring.

Clutch spring set maximum length difference:
0.04 in. (1 mm.)

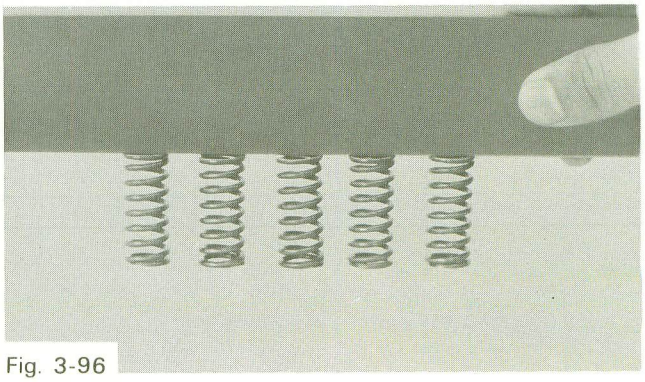


Fig. 3-96

14. The push rod and ball should slide out of the main shaft. If not, use a small magnet to retrieve.
15. Roll the push rod across a surface plate. If rod is bent, replace.

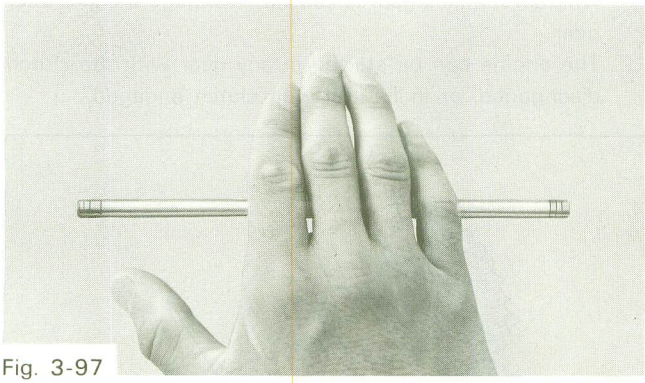


Fig. 3-97

D. Installation

1. During installation of the clutch assembly, take care that the thickest clutch plate is installed on the clutch boss first. Take care that the thrust plates do not slip out of position as the housing and clutch boss are installed. Install all parts with a heavy coat of 10W.-30 motor oil on their mating surfaces.

   Note:
   A cushion ring is installed between the clutch boss and each of the friction plates to insure even engagement and complete disengagement of the plates.
   When fitting cushion rings, be sure they are flat and not twisted.

Clutch securing nut torque:
560 ~ 695 in-lbs. (6.5 ~ 8.0 m-kgs.)

2. In order to reduce noise caused by the clutch plates and clutch boss, each clutch plate is cut away at part of the edge #1. This permits the clutch plate to move outward due to centrifugal force.
   The clutch plates must be so installed that their cutaways do not overlap each other, as shown in illustration. (RD125B)

Clutch plate cutaway

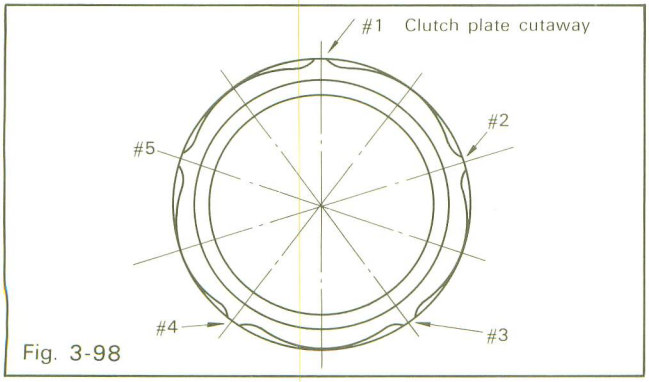


Fig. 3-98

3-12. Primary drive

A. Description

1. Primary drive is via helical cut gears. The drive gear is mounted on the crankshaft and the driven gear is integral with the clutch assembly and mounted on the transmission main shaft.

Primary drive gears

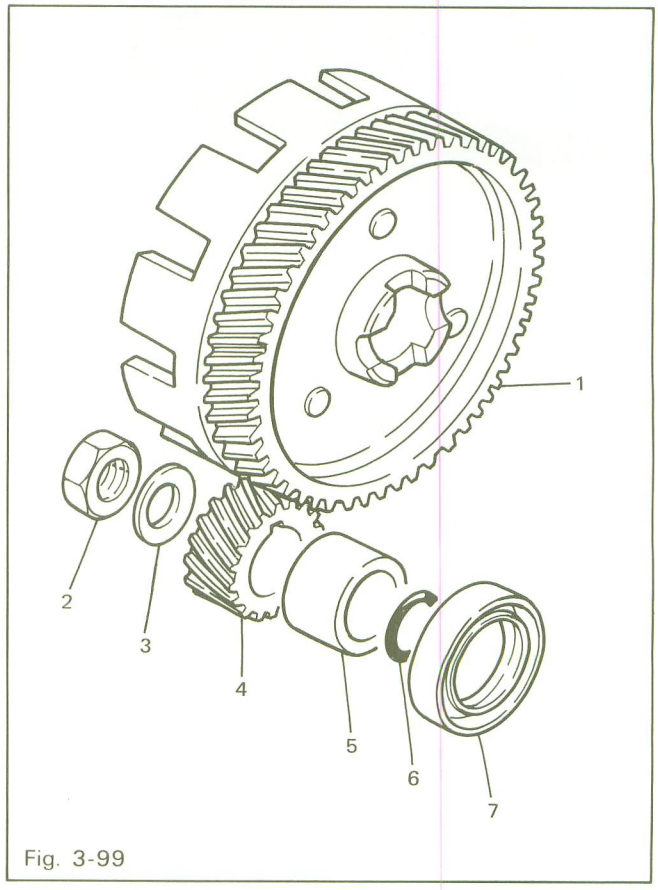


Fig. 3-99

1. Primary driven gear complete (53T)
2. Locknut
3. Bellevile spring
4. Primary drive gear (16T)
5. Distance collar
6. O-ring (1.2-17.6)
7. Oil seal (SW-32-48-8)

B. Removal and disassembly

With the right-hand crankcase cover removed, remove the primary drive gear securing nut and washer as follows:

Note:
The securing nut can most easily be removed with the clutch assembly installed.

Feed a rolled-up rag between the teeth of the primary drive gear and the primary driven gear to lock them, and loosen the primary drive gear locknut. Remove the locknut, bevelled washer, gear, plain key, and distance color.

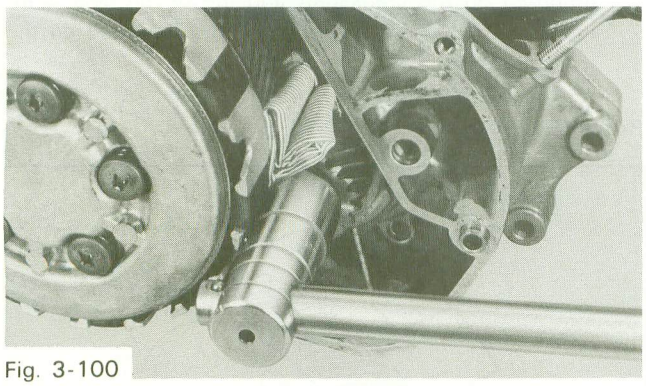


Fig. 3-100

C. Troubleshooting and repair

1. Check the drive gear for obvious signs of wear or damage from foreign material within the crankcase. Repeat procedure for driven gear.
2. If primary drive gears exhibit excessive noise during operation, gear backlash may be incorrect. Numbers are scribed on the side of the drive + driven gears. Add these numbers. If their total exceeds tolerance, replace with a numbered gear that will bring total within specification.

   Note:
   This procedure is rarely required. However, if a gear must be replaced due to damage, it is always advisable to pay strict attention to the backlash numbers during replacement.

Backlash numbers	RD125B	RD200B
Primary drive gear	73 ~ 77	73 ~ 77
Primary driven gear	63 ~ 67	40 ~ 45
Backlash tolerance (Drive + driven)	139 ~ 141	117 ~ 119

3. Check the shoulder on the distance collar where the crankshaft seal rides. It should not be severely worn or galled. If so, replace collar and seal.
4. Check the O-ring on the crankshaft. If damaged or misshapen, replace.

D. Reassembly and installation

1. Primary driven gear installation is covered within Section 3-11. D., Clutch.
2. Reverse steps 3-11 B. 3, 4, 5 for primary drive gear installation.

	Securing nut torque
Drive gear	390 ~ 620 in-lbs. (4.5 ~ 7.2 m-kgs.)
Driven gear	560 ~ 700 in-lbs. (6.5 ~ 8.0 m-kgs.)

3-13. Kick starter and tachometer drive

A. Description

1. The kick starter employs a ratcheting mechanism wherein the kick gear is caused to engage the kick idler gear.
2. The engine can be started in any gear with the clutch disengaged, or in neutral with clutch engaged.

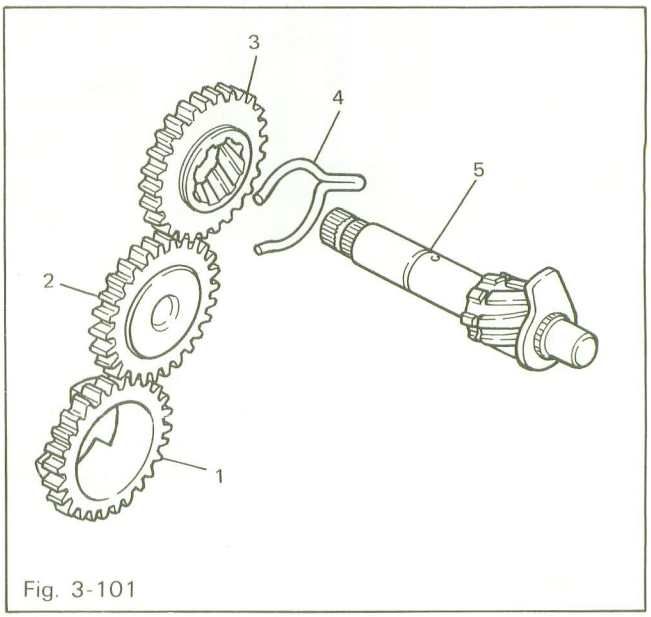


Fig. 3-101

1. Kick pinion gear
2. Kick idle gear
3. Kick gear
4. Kick clip
5. Kick axle assembly

3. As the kick crank is depressed, the kick axle rotates. The kick gear is pushed out by the kick clip and engages the kick idle gear.
4. The kick gear, which is splined to the kick axle, transfers torque through the kick idle gear, to the kick pinion gear which is constantly engaged with the primary driven gear.
5. The tachometer drive gear is made of nylon and driven off the primary drive gear. Maintenance is rarely required. Should disassembly be required, follow the illustration.

Tachometer gear (RD200B)

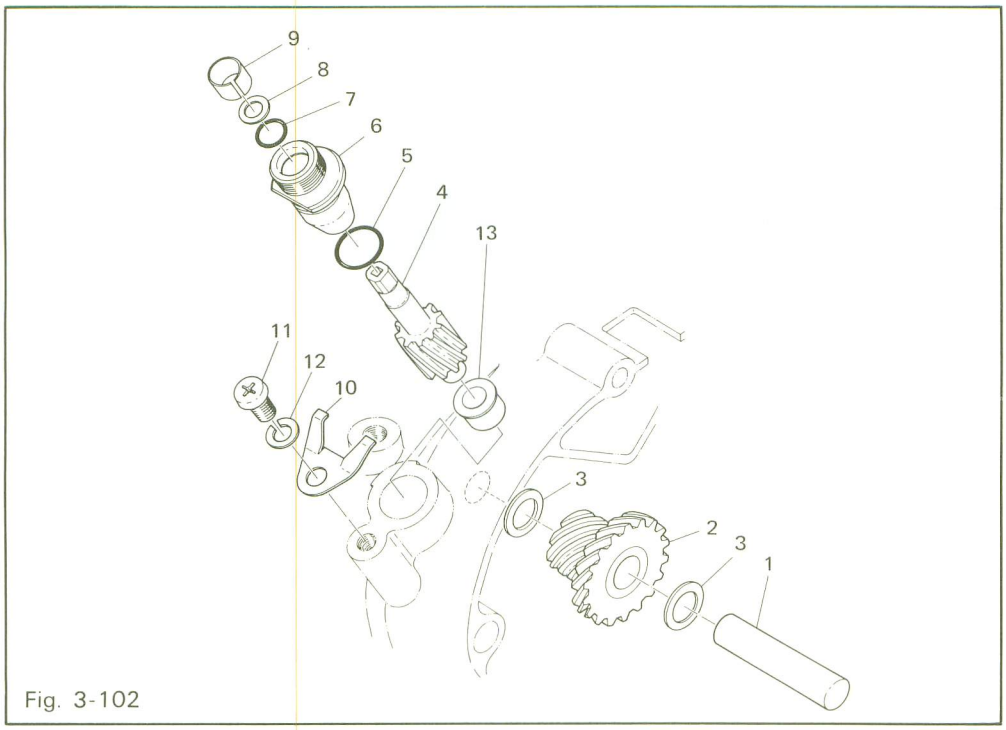


Fig. 3-102

1. Drive gear axle
2. Drive gear
3. Shim (10.2-16-1.0)
4. Drive gear
5. O-ring (1.8-13)
6. Housing
7. O-ring (2.2-7.2)
8. Shim (7.5-10.8-0.4)
9. Bushing
10. Stopper
11. Pan head screw
12. Spring washer
13. Bushing

Kick starter

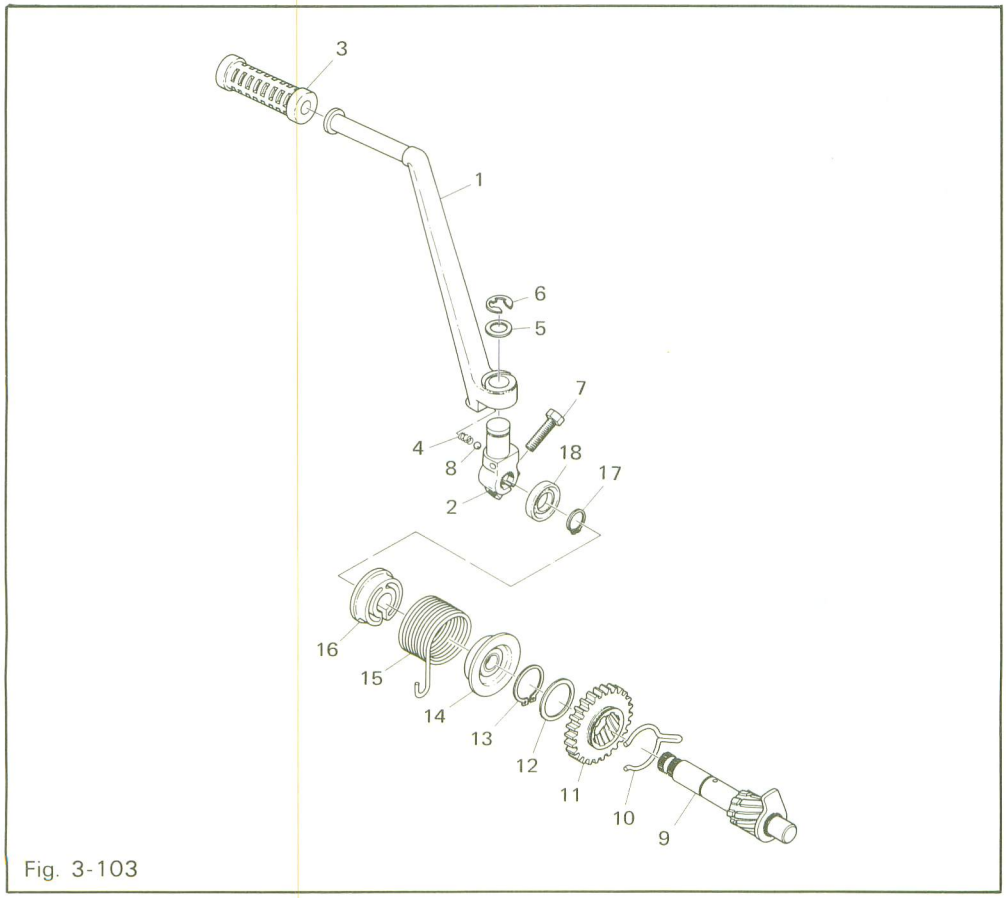


Fig. 3-103

1. Kick crank
2. Kick crank boss
3. Kick lever cover
4. Boss stopper spring
5. Washer (15.5-24-1.5)
6. Circlip (E-10)
7. Bolt
8. Ball (7/32 in.)
9. Kick axle assembly
10. Kick clip
11. Kick gear (26T)
12. Shim (25.1-32-1.0)
13. Circlip (S-25)
14. Kick spring guide
15. Kick spring
16. Kick spring cover
17. Circlip (S-15)
18. Oil seal (SDO-15-26-6)

B. Removal and disassembly

1. Remove kick crank assembly and right-hand crankcase cover.

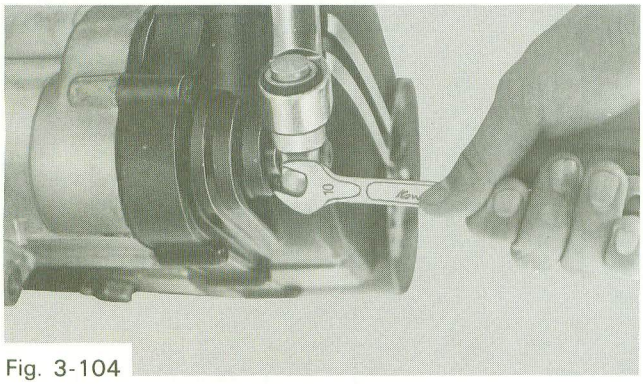


Fig. 3-104

2. Unhook the kick spring from its post in the crankcase. Allow it to relax.
   Then remove the kick starter assembly by rotating the shaft counterclockwise and then pulling out the entire assembly. Check to see that the kick gear spirals freely on the worm shaft. Check the gear teeth for wear and breakage.

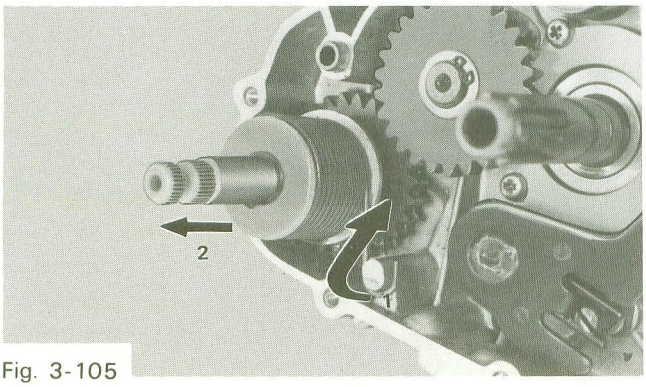


Fig. 3-105

3. The kick axle assembly may be disassembled by removing the circlips holding the kick gear.
4. During disassembly, note the location of all parts as they are removed. Keep them in sequence to ease reassembly.
5. Remove the circlip with clip pliers, and then the kick idler gear can be easily removed.

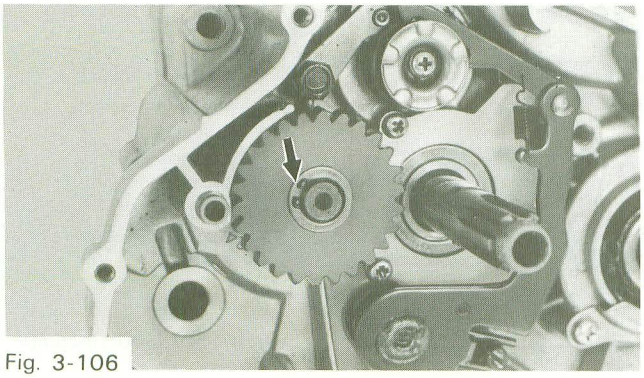


Fig. 3-106

6. The tachometer drive gear is engaged with the primary drive gear to convey the revolutions per minute of the crankshaft to the tachometer through the tachometer cable. Pull off of shaft to remove. Note location of shims. (RD200B)

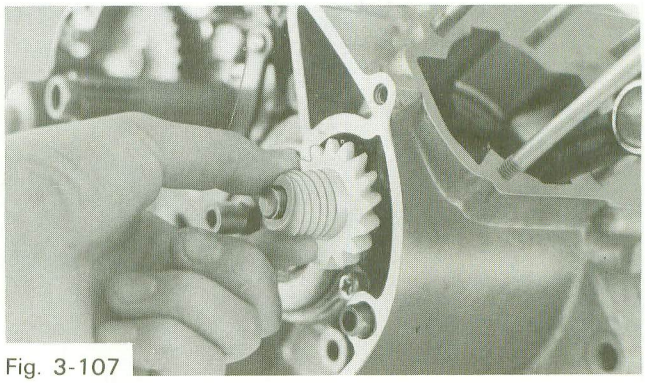


Fig. 3-107

C. Troubleshooting and repair

1. Check the teeth on the kick gear and idler gear. The mating edges should fit flush against each other. If there is severe rounding off, replace as set.
2. Check to see that the kick gear moves out freely on the kick axle. If not, replace either or both as required. Replace if any signs of galling are found.
3. The kick gear clip is built in the ratchet wheel. The force of the clip is measured by a spring balance placed as illustrated.
   Replace if not within limits.

Standard tension: 800 ~ 1,500 g.

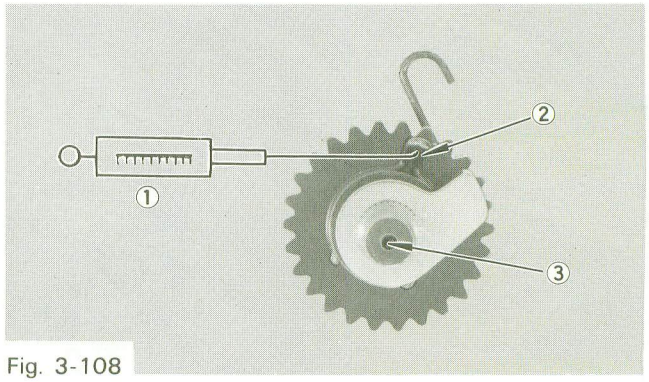


Fig. 3-108

1. Spring gauge
2. Kick gear clip
3. Kick axle

3-14. Shift mechanism

A. Description

1. The shift mechanism is the ratcheting type with first gear located at the bottom of the shift pattern. Neutral is situated halfway between first and second gears.
2. When the pedal is raised or depressed, the movement is transferred to the change shaft.
3. As the change shaft rotates, the ratchet arm on the change shaft pushes or pulls one of the gear shift pins attached to the gear shift cam; turning it. A total of five pins are installed on the cam, providing a total of five positive gear positions.

Shifter 1

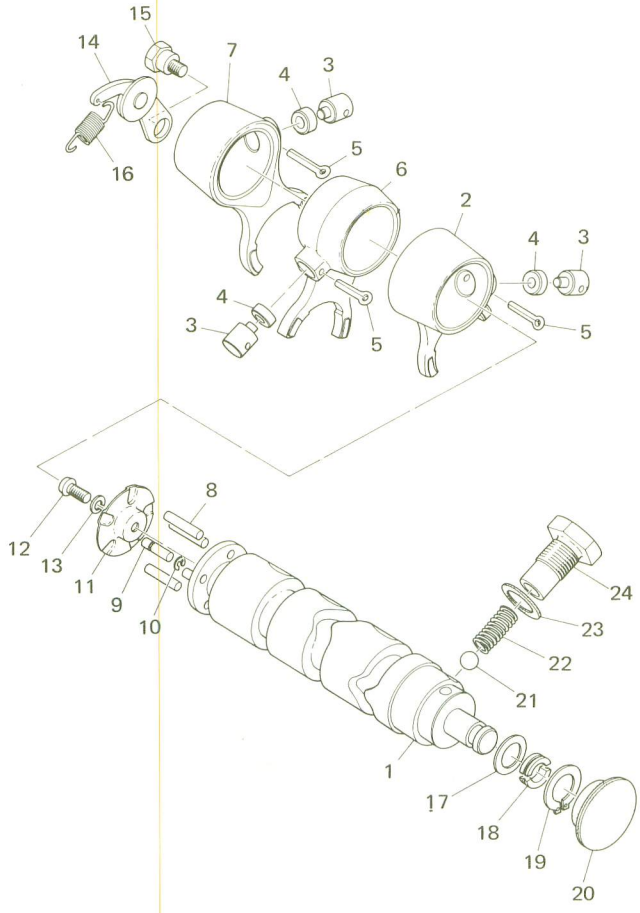


Fig. 3-109

1. Shift cam
2. Shift fork 1
3. Cam follower pin
4. Cam follower roller (RD200B only)
5. Cotter pin
6. Shift fork 2
7. Shift fork 3
8. Dowel pin
9. Locating pin
10. Circlip
11. Side plate
12. Pan head screw
13. Spring washer
14. Stopper lever assembly
15. Stopper bolt
16. Stopper spring
17. Plain washer
18. Shift cam holder
19. Circlip
20. Blind plug
21. Ball
22. Neutral spring
23. Gasket
24. Spring screw

Shifter 2

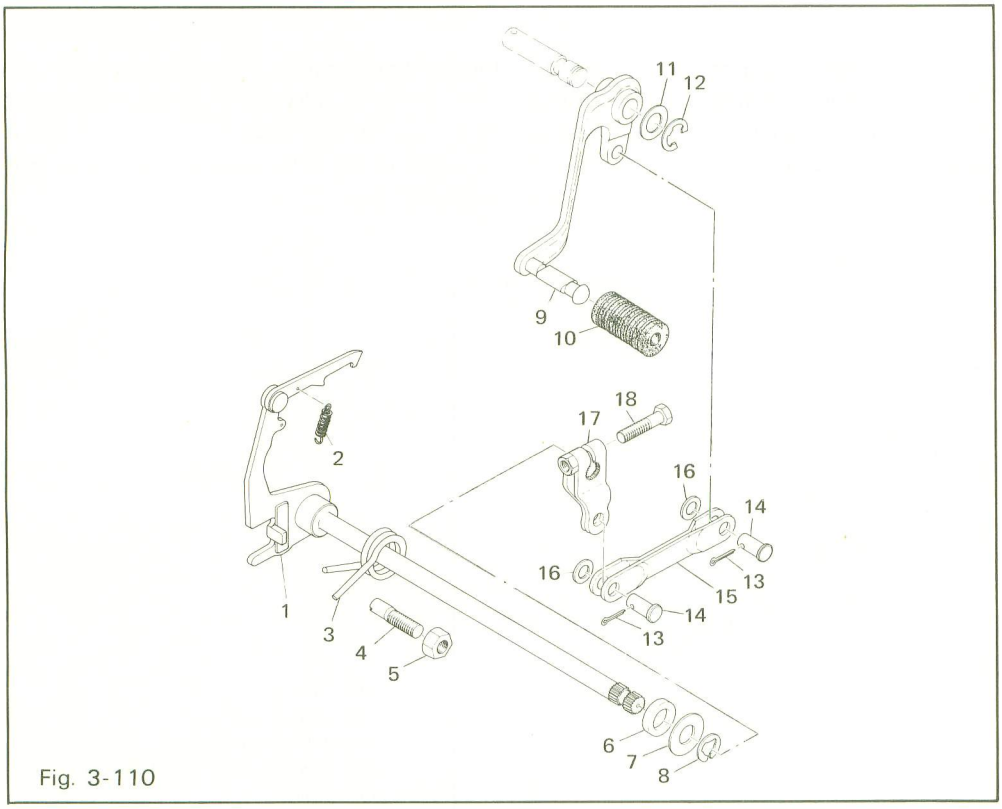


Fig. 3-110

1. Change shaft assembly
2. Shift arm spring
3. Shift return spring
4. Adjusting screw
5. Nut
6. Oil seal
7. Change axle washer
8. Circlip
9. Change pedal
10. Change pedal cover
11. Washer
12. Circlip
13. Cotter pin
14. Joint pin
15. Change rod
16. Washer
17. Change arm
18. Bolt

4. As the shift cam turns, shift fork cam followers move along profiles grooved into the shift cam. This causes the shift forks to move. Each fork controls the movement of a gear within the transmission. Working in concert, their movement allows the selection of the various transmission ratios available.
5. On the opposite end of the shift cam is the neutral mechanism. As the cam rotates, the neutral spring forces the stopper into the plate at the neutral position, holding the transmission in that gear.

B. Disassembly and troubleshooting

Note:
Shifter maintenance and adjustment should be performed with clutch assembly removed.

1. To remove change shaft assembly, remove the circlip and washer. Lift the shift arm from away from the shift cam dowel pins, and remove the shaft from the right side of the crankcase.

   Note:
   The shift return spring will come off with change shaft assembly.

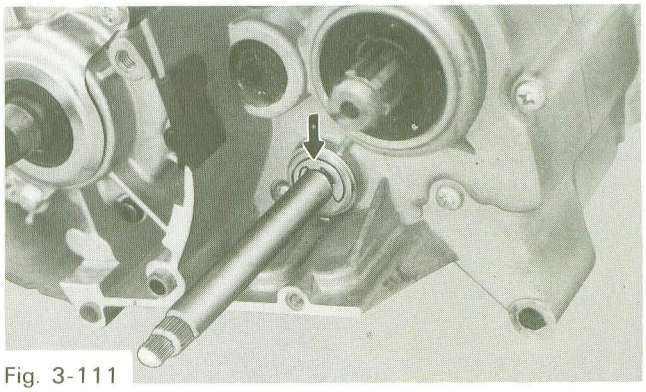


Fig. 3-111

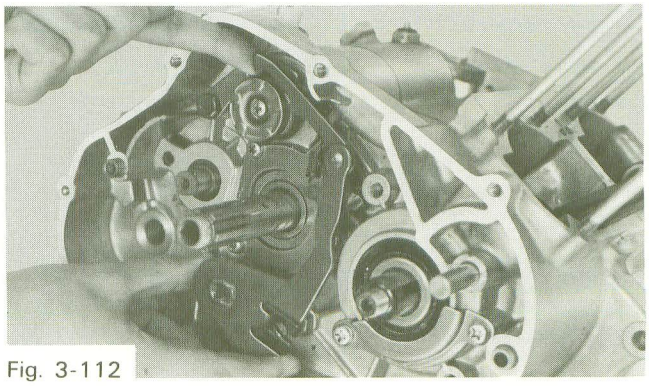


Fig. 3-112

2. Inspect shift return spring. A broken on worn spring will impair the return action of the shifting mechanism.

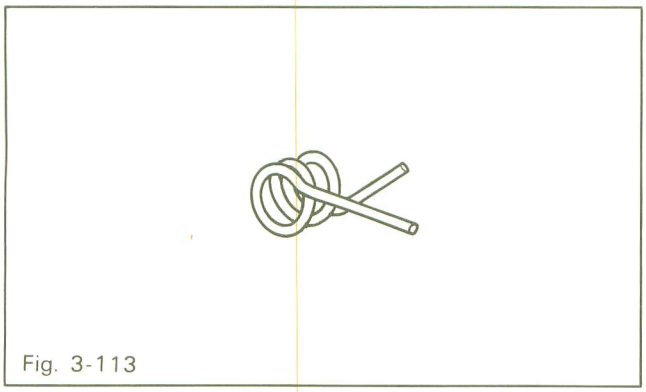


Fig. 3-113

3 Inspect change shaft assembly for bending of shaft, worn or bent splines, and broken or worn shift arm spring. A bent shaft will cause hard shifting.

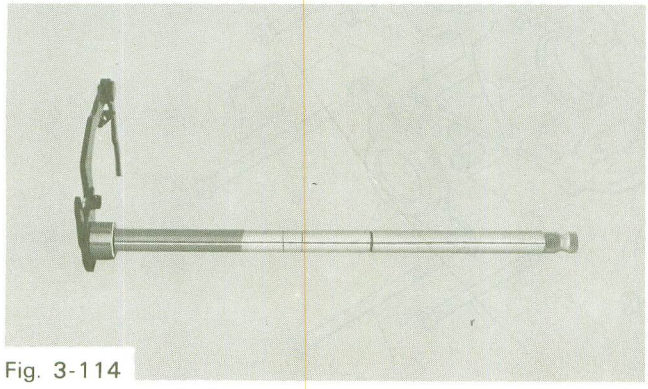


Fig. 3-114

4. Remove the stopper lever assembly.

Note:
During reassembly, apply "Lock-Tite" to the bolt.

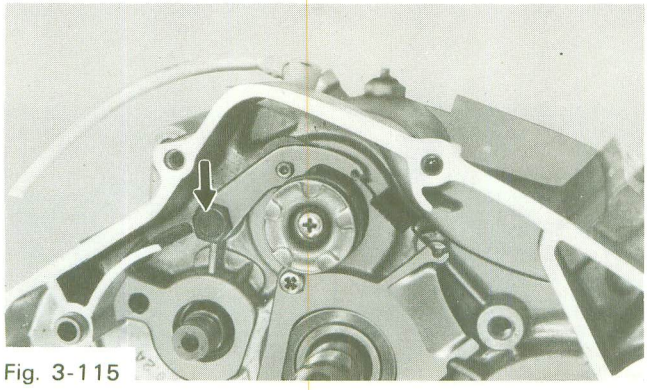


Fig. 3-115

C. Adjustment

To adjust and correct the travel of the gear shift arm to prevent improper shifting progression (excess feed or insufficient feed of the gear shift arm), turn the adjusting screw until distance A and A' are equal. Adjust with transmission in the 2nd gear position.

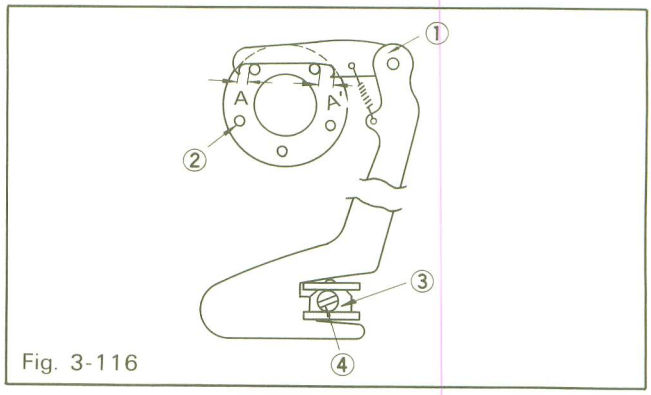


Fig. 3-116

1. Gear shift arm
2. Pin
3. Locknut
4. Adjusting screw

3-15. Crankcase

A. Description

1. The crankcase assembly is manufactured from die-cast aluminum alloy. It separates into right and left halves.
2. Airtight sealing between case halves is accomplished with a sealing agent. No gasket is used. In light of this fact it is important that the case halves be treated carefully and that no damage occur to the mating surfaces of the case halves.
3. Sealing of shafts is accomplished through the use of neoprene seals and/or O-rings. Two-stroke engines require hermetic sealing within the crankshaft area. It is advisable to replace all seals and O-rings whenever the case halves are disassembled.

Crankcase

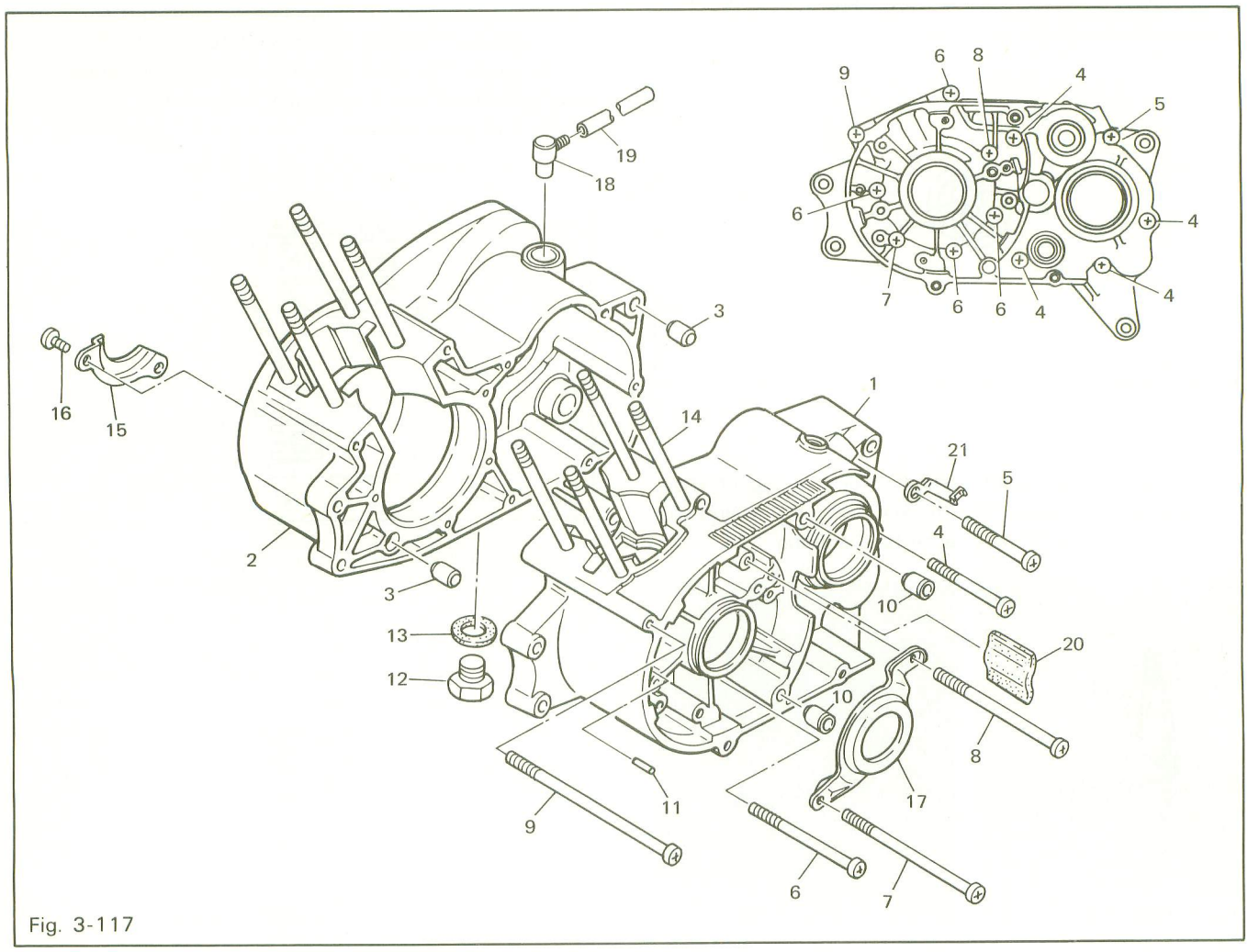


Fig. 3-117

1. Crankcase, left
2. Crank case, right
3. Dowel pin
4. Pan head screw
5. Pan head screw
6. Pan head screw
7. Pan head screw
8. Pan head screw
9. Pan head screw
10. Dowel pin
11. Dowel pin
12. Drain plug
13. Drain plug gasket
14. Cylinder holding bolt
15. Holder
16. Pan head screw
17. Holder
18. Breather
19. Breather pipe
20. Grommet
21. Clamp

B. Notes on disassembly

Note:

Review Sections 3-4 to 3-14 for components which must be removed prior to crankcase disassembly. Crankcase disassembly must not be attempted without the proper tools and special equipment as outlined in Section 3-1.

Additional components which must be removed:

1. Chain drive sprocket.
2. Shift drum cam stopper assembly.

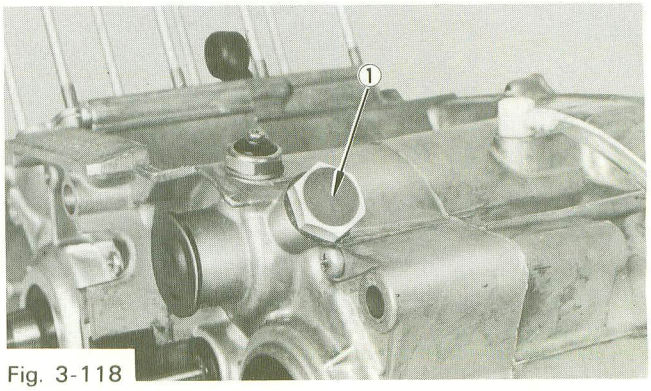


Fig. 3-118

1. Cam stopper

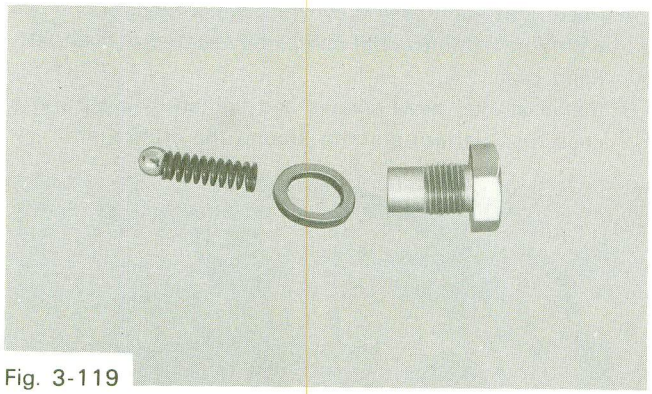


Fig. 3-119

3. Shift cam blind plug, circlip, shift cam holder and plain washer.

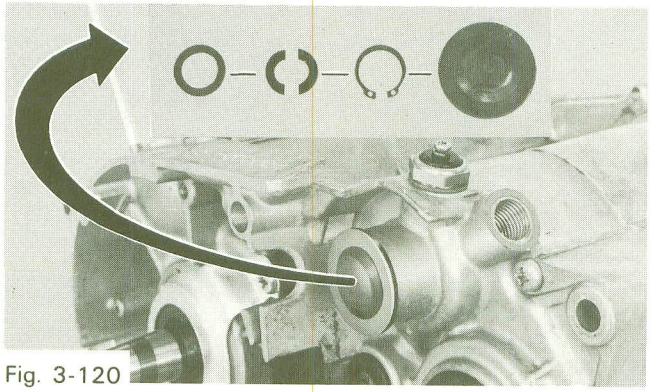


Fig. 3-120

C. Disassembly

1. Working in a cross-pattern, loosen all pan head screws 1/4 turn each until loose. Remove.

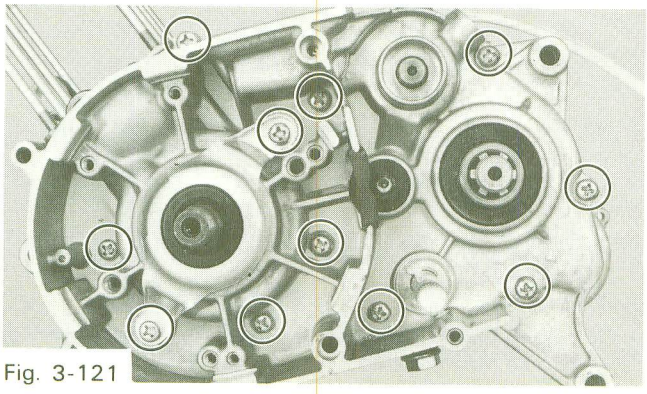


Fig. 3-121

2. Install crankcase separating tool. Tool may be used on either crankcase half, but it is easier to disassemble cases when tool is installed on right case half.
3. Fully tighten the tool securing bolts taking care to see that the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.
4. While keeping the connecting rod at top dead center position, tighten push screw of tool.
5. As pressure is applied, alternately tap on the front and rear of the case half as it rises. If a transmission shaft or the shift drum hang up, tap them back into their seats in the left case half.

   Caution:
   Use a rubber or rawhide hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface.

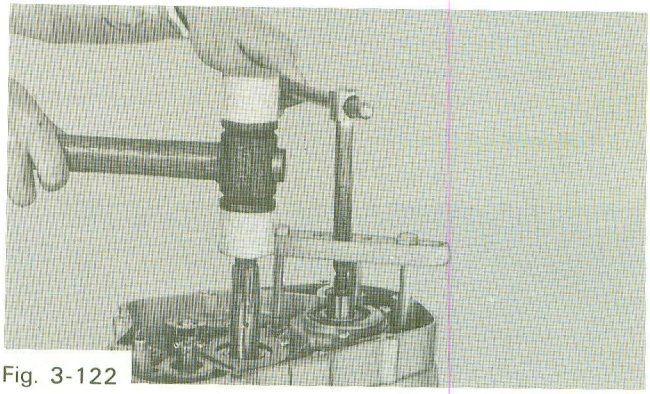


Fig. 3-122

6. Work slowly and carefully. Make sure the case halves separate evenly. If one end "Hangs up" take pressure off the push screw, realign and start over.
7. If the halves are reluctant to separate, check for a missed securing screw or fitting. Do not force.

D. Troubleshooting and repair

Note:
See Section 3-16 to 3-18 prior to following.

1. Thoroughly wash the case halves in mild solvent.
2. Clean all gasket mating surfaces and crankcase half mating surfaces thoroughly.
3. Visually inspect case halves for any cracks, damage, etc.
4. Check all fittings not previously removed for signs of loosening or damage.
5. If bearings have been removed, check their seats for signs of damage; such as the bearing spinning in the seat, etc.
6. Check oil delivery passages in transfer ports for signs of blockage.
7. If bearings have not been removed, oil them thoroughly immediately after washing and drying. Rotate the bearings looking for hard spots indicating damaged races or balls.
8. Check needle bearings in transmission section for damaged cases, needles, etc.
9. See Section 3-18, Bearings and Seals for further information.

E. Reassembly

Note:
Prior to reassembly, study Section 3-16 to 3-18.

1. After all bearings and seals have been installed in both crankcase halves and after the crankshaft and transmission have been placed into the left-hand crankcase half, assemble the cases.
2. Place the case half in a horizontal position supported on its outside machined surface. Check for correct transmission installation (Section 3-16), and make certain that all loose shims are in place.
3. Apply YAMAHA Bond No. 5 to the mating surfaces of both case halves. Apply thoroughly, over all mating surfaces.

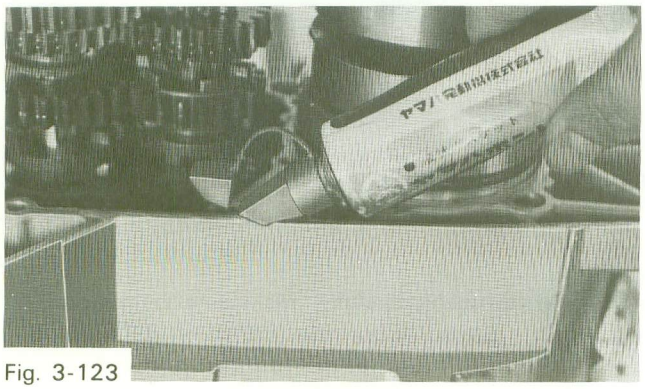


Fig. 3-123

4. Push right-hand case downward while tapping on case with soft hammer until completely seated against left-hand case.
5. Install all pan head screws and tighten by stages in a crisscross pattern starting around the crankshaft.

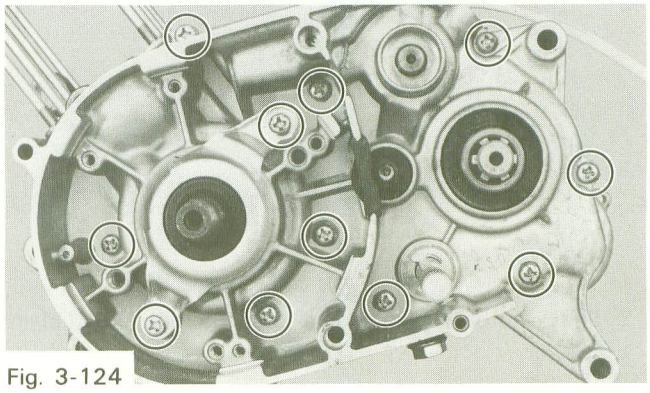


Fig. 3-124

3-16. Transmission

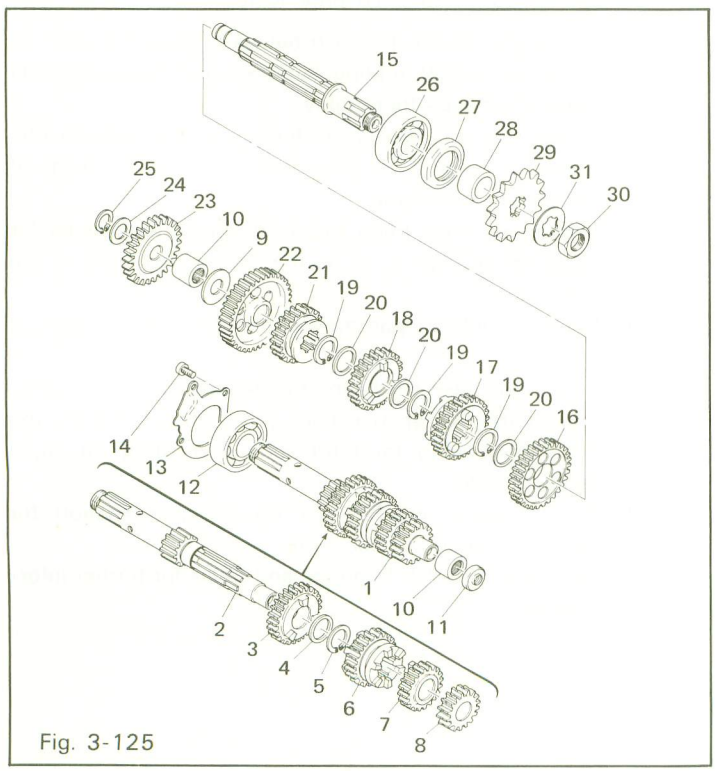


Fig. 3-125

1. Main axle complete
2. Main axle
3. 5th pinion gear
4. Gear hold washer
5. Main axle clip
6. 4th pinion gear
7. 3rd pinion gear
8. 2nd pinion gear
9. Drive axle shim
10. Bearing
11. Push rod seal
12. Bearing
13. Bearing cover plate
14. Pan head screw
15. Drive axle
16. 2nd wheel gear
17. 3rd wheel gear
18. 4th wheel gear
19. Main axle clip
20. Gear hold washer
21. 5th wheel gear
22. 1st wheel gear
23. Kick idle gear
24. Thrust washer
25. Circlip
26. Bearing
27. Oil seal
28. Distance collar
29. Drive sprocket
30. Locknut
31. Lock washer

A. Removal and disassembly

1. With the left case half in an upright position, the transmission assembly, shift forks, and shift cam assembly can be removed as an assembly. Tap lightly on the transmission drive shaft with a soft hammer to remove.

   Note:
   Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.

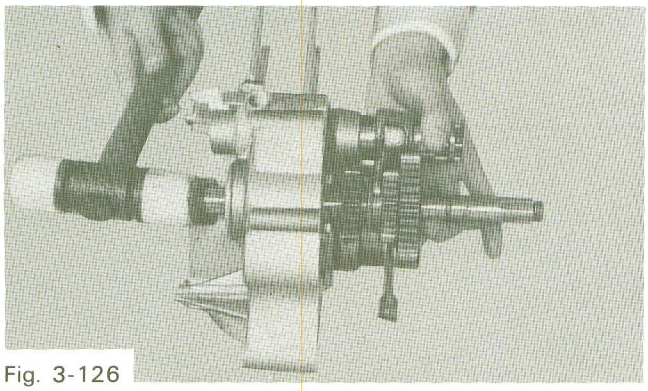


Fig. 3-126

B. Inspection

1. Inspect each shift fork for signs of galling on tooth edges. Check for signs of bending. Make sure each fork slides freely on shift cam.
2. Check the shift cam grooves for signs of wear or damage. If any profile has excessive wear and/or any indication of damage, replace cam.

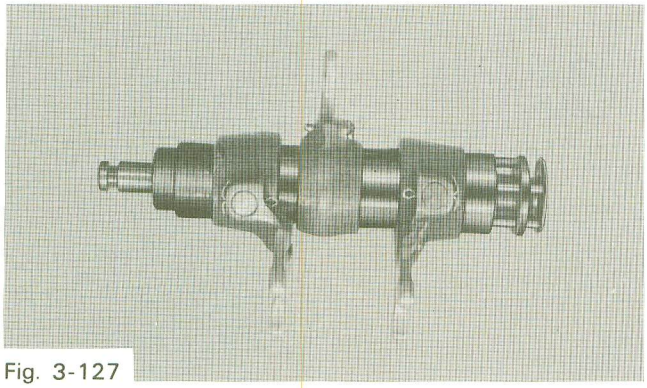


Fig. 3-127

3. Check the cam followers in each shift fork for wear. The follower should fit snugly into its seat in the shift fork, but not over-tight. Check the ends that ride in the grooves in the shift cam. If they are worn or damaged in any way, replace.
4. Check shift cam dowel pin (5) and side plate for looseness, damage, or wear. Repair as required.
5. Check the transmission shafts using a centering device and dial gauge. If any shaft is bent, replace.
6. Carefully inspect each gear. Look for signs of obvious heat damage (blue discoloration). Check the gear teeth for signs of pitting, galling, or other extreme wear.
7. Check to see that each gear moves freely on its shaft.
8. Check to see that all washers and clips are properly installed and undamaged.
9. Check to see that each gear properly engages its counterpart on the shaft. Check the mating dogs for rounded edges, cracks, or missing portions. Replace as required.
10. After repairing transmission, and before installation in left crankcase half, measure transmission shaft overall widths.
11. Next, measure from each case half mating surface to the inner bearing race and/or seat that the transmission shaft ends fit into. Compare these measurements. If clearance is beyond specification, change shim thickness as required.

Transmission Spacing	
	Allowable Clearance
Main axle	0.020 in. (0.5 mm.)
Drive axle	0.020 in. (0.5 mm.)

C. Reassembly and installation

1. Paying particular attention to the parts illustration, assemble the transmission shafts, shift cam, and shift forks and guide bars as an assembly.
2. Install the assembly into the left case half. Tap into place with soft hammer, as required, until all shafts are fully seated.
3. Check to see that all four parts move freely prior to installing right case half.

3-17. Crankshaft

A. Description

1. The crankshaft requires the highest degree of accuracy in engineering and servicing of all the engine parts.
2. The crankshaft is more susceptible to wear, and therefore, the crank bearings must be inspected with special care.

B. Crankshaft assembly

1. Removal.

a. Remove crankshaft assembly with the crankcase separating tool, after removal case half is removed.

Note:
Fully tighten bolts of the crankcase separating tool, and keep tool body parallel with crankcase surface.

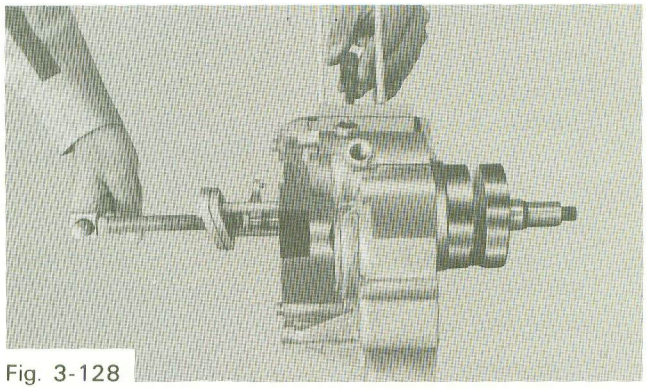


Fig. 3-128

Crank piston

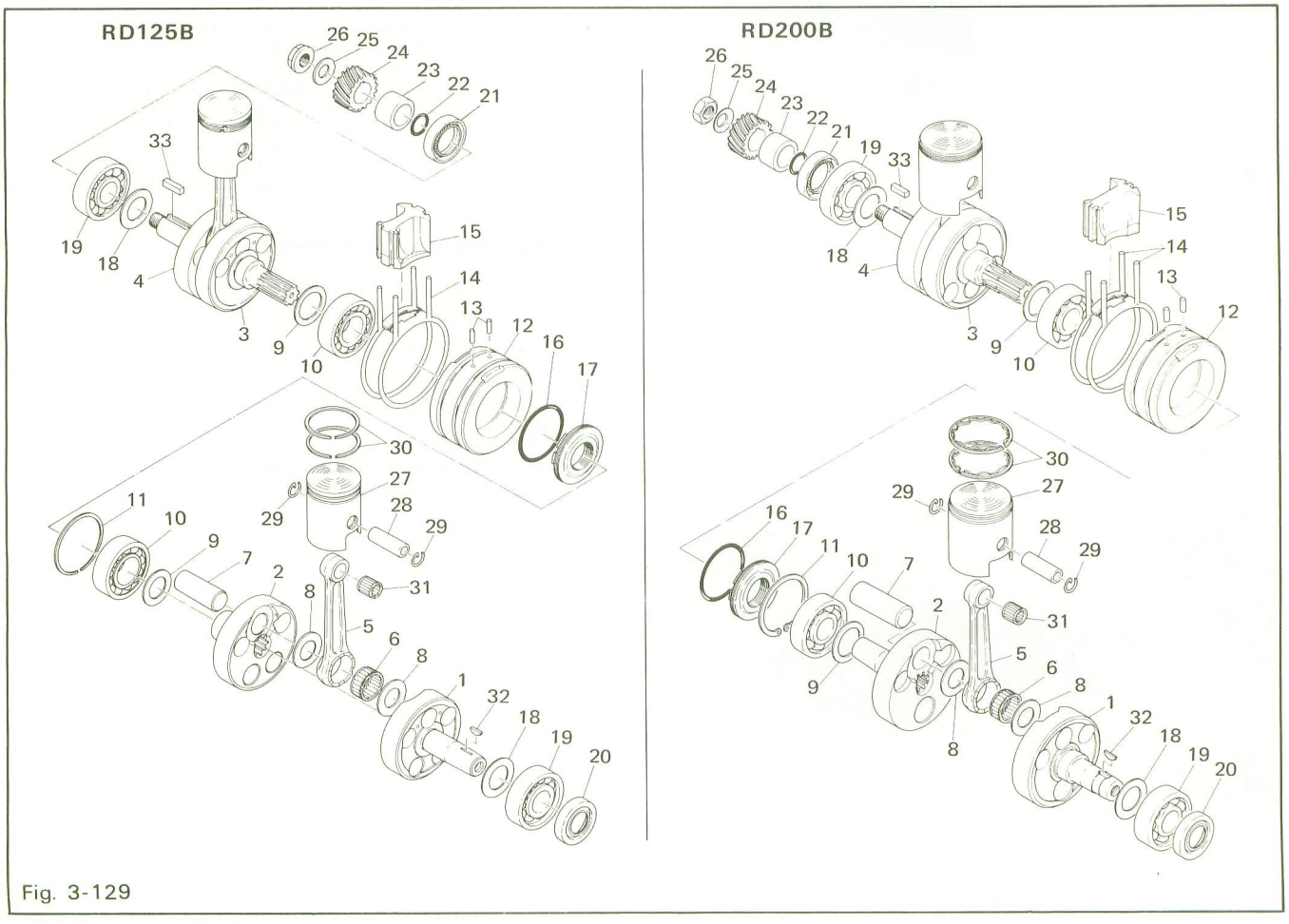


Fig. 3-129

1. Left crank 1
2. Right crank 1
3. Left crank 2
4. Right crank 2
5. Connecting rod
6. Bearing
7. Crank pin
8. Washer
9. Crank inside shim
10. Bearing
11. Circlip
12. Crank cover
13. Dowel pin
14. Crank cover seal
15. Filter metal
16. O-ring
17. Labyrinth seal
18. Crank outside shim
19. Bearing
20. Oil seal
21. Oil seal
22. O-ring
23. Collar
24. Primary drive gear
25. Spring
26. Nut
27. Piston
28. Piston pin
29. Piston pin clip
30. Piston ring set
31. Bearing
32. Key
33. Key

2. Check crankshaft components per chart.

Check connecting rod axial play at small end (to determine the amount of wear of crank pin and bearing at large end).	Small end axial play should not exceed 0.08 in. (2 mm.).	If small end play exceeds 2 mm., disassemble the crankshaft, check connecting rod, crank pin and large end bearing. Replace defective parts. Small end play after re-assembly should be within 0.036 ~ 0.039 in. (0.8 ~ 1.0 mm.)
Check the connecting rod for side clearance at large end.	Move the connecting rod to one side and insert a feeler gauge. Large end clearance should be within 0.004 ~ 0.112 in. (0.1 ~ 0.3 mm.)	If excessive side clearance is present, 0.016 in. (0.4 mm., or more) disassemble the crankshaft and replace any worn parts.
Check accuracy of the crankshaft assembly runout. (Misalignment of parts of the crankshaft.)	Dial gauge readings should be within 0.0012 in. (0.03 mm.).	Correct any misalignment by tapping the flywheel with a brass hammer and by using a wedge.

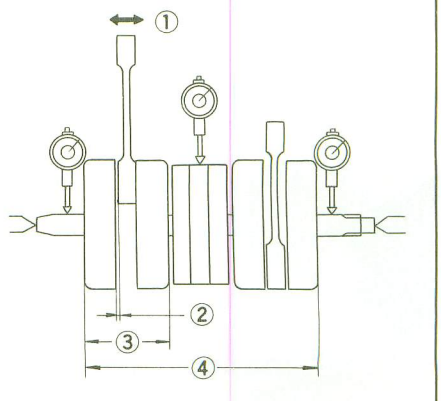


Fig. 3-130

1. Axial play
2. Side clearance
3. Flywheel width
4. Width of crankshaft assembly

Crankshaft specifications

Unit: in. (mm.)

Model	Defection tolerance		Flywheel width	Width of Crankshaft assembly	Rod clearance			
					Axial		Side	
	1	2	3	4	New	Max.	Min.	Max.
RD125B	0.0012 (0.03)	0.0012 (0.03)	$1.69\ ^{-0.002}_{-0.004}$ $(43\ ^{-0.05}_{-0.10})$	$4.96\ ^{+0}_{-0.008}$ $(126\ ^{+0}_{-0.20})$	0.031 ~ 0.039 (0.8 ~ 1.0)	0.08 (2.0)	0.004 (0.1)	0.012 (0.3)
RD200B	0.0012 (0.03)	0.0012 (0.03)	$1.85\ ^{-0.002}_{-0.004}$ $(47\ ^{-0.05}_{-0.10})$	$5.51\ ^{+0}_{-0.008}$ $(140\ ^{+0}_{-0.20})$	0.031 ~ 0.039 (0.8 ~ 1.0)	0.08 (2.0)	0.004 (0.1)	0.012 (0.3)

C. Reinstalling crankshaft assembly

1. Put shim on left side of the crankshaft, and install the crankshaft into left case half using crankshaft installing tool.

   Note:
   Prior to installation, apply a light coat of YAMAHA Bond #5 to the crank cover seal.

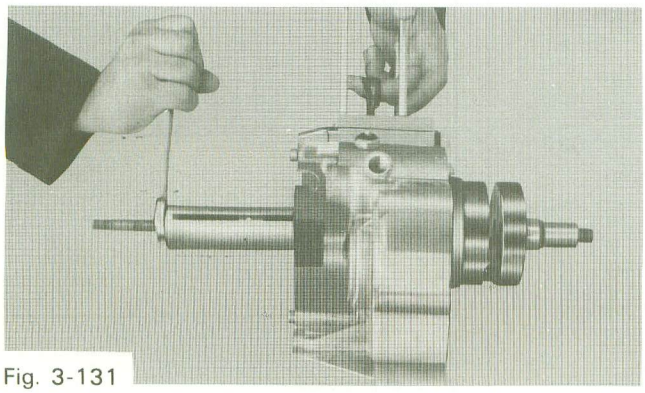


Fig. 3-131

2. Hold the connecting rod at top dead center with one hand while tightening the pulling bolt nut of the installing tool with the other.
3. During reassembly, apply a liberal coating of two stroke oil to the piston pin and bearing. Apply several drops of oil to the connecting rod big end. Apply several drops of oil into each crankshaft bearing oil delivery hole.

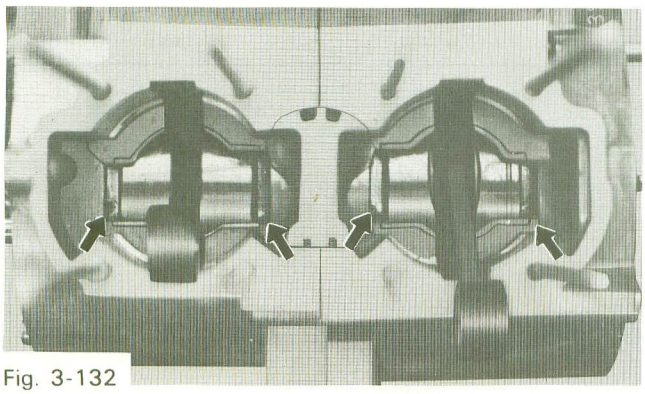


Fig. 3-132

D. Disassembling the crankshaft assembly

To disassemble the crankshaft assembly use a set of crankshaft separators.

1. Insert the tool (lower) into the gap between crank webs.

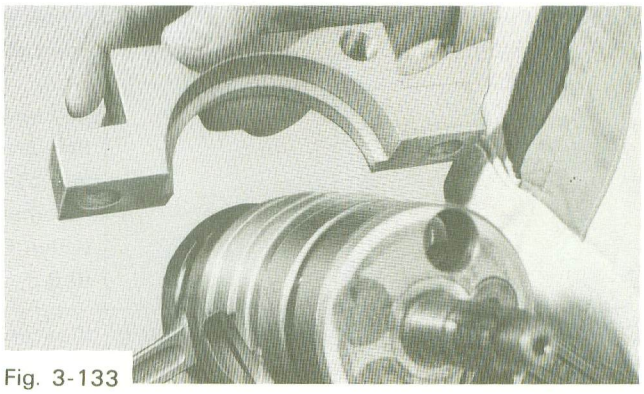


Fig. 3-133

2. Fully tighten the securing bolts. Failure to tighten the bolts completely can result in tool failure.

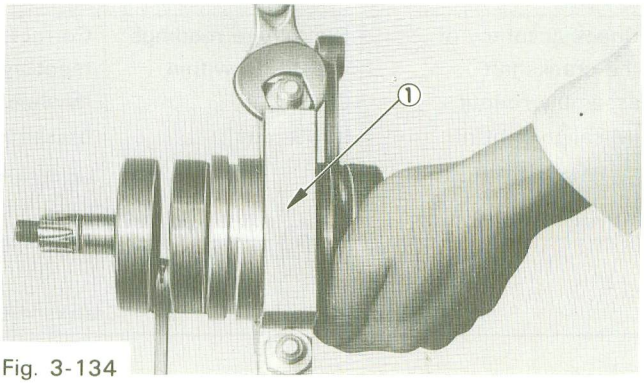


Fig. 3-134

1. Tool, lower

3. Fig. 3-135 shows the tools installed on the crankshaft assembly.

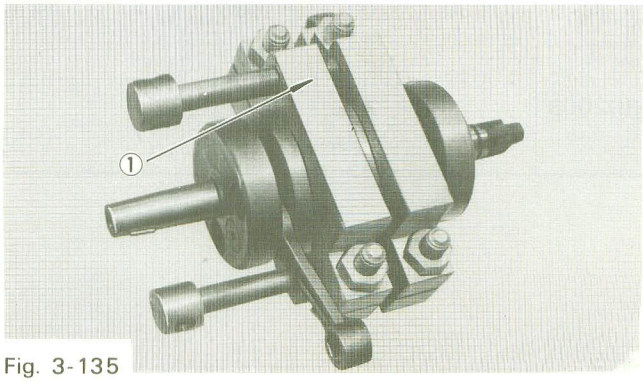


Fig. 3-135

1. Tool, upper

4. Hold the tool assembly in a vice as shown and disassemble the crankshaft into two parts by alternately giving one turn to each press bolt.

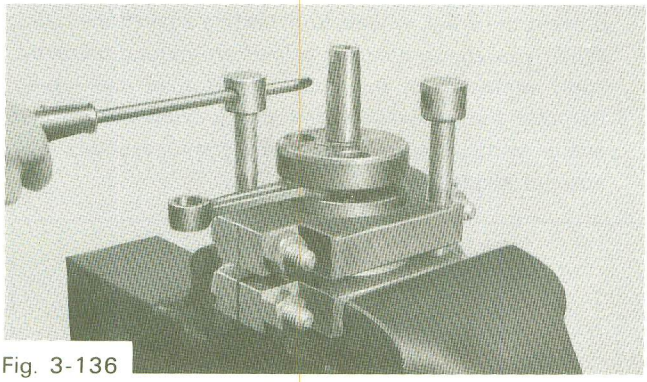


Fig. 3-136

5. To remove the crank cover and bearing, use a press.

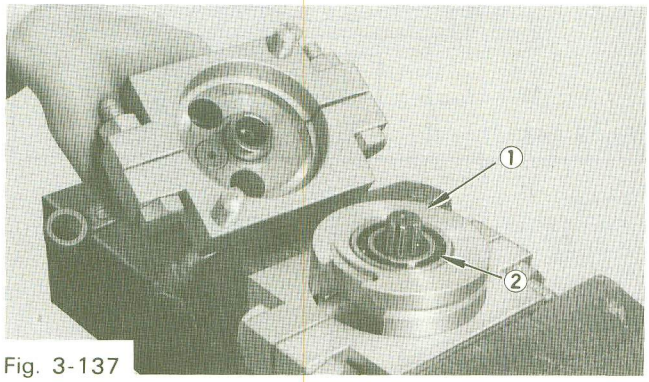


Fig. 3-137

1. Crank cover
2. Bearing

6. Remove the crank pin in the manner as shown. (For this purpose, use the special tool jig.)

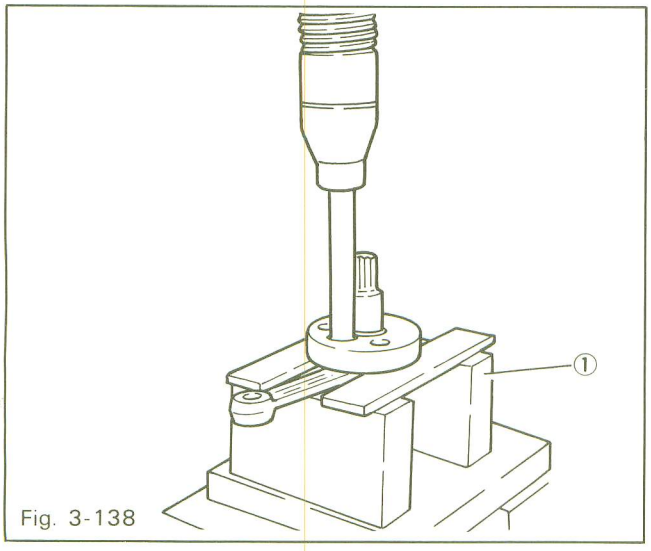


Fig. 3-138

1. Special took, jig

7. Next, take the remaining crank wheel with the crank pin still in it, turn the wheel over, place it on the support plates, and press out the crank pin.
8. Repeat steps 6. and 7. to disassemble the other crank half.

E. Reassembling the crankshaft assembly

To reassemble the crankshaft assembly use the special jig.

1. Install the proper stops used to space the crankshaft assembly on the crankshaft jig.

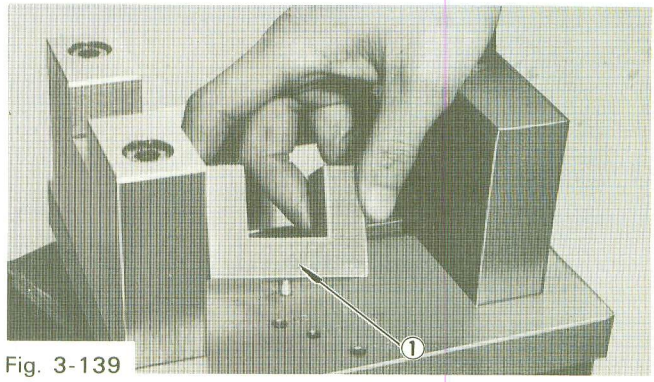


Fig. 3-139

1. Stop: 43 mm. (RD125B), 47 mm. (RD200B)

2. Press the crank pin into one crank wheel, and position the crank wheel in the cranshaft jig. Then install the connecting rod and shims on the crank pin.

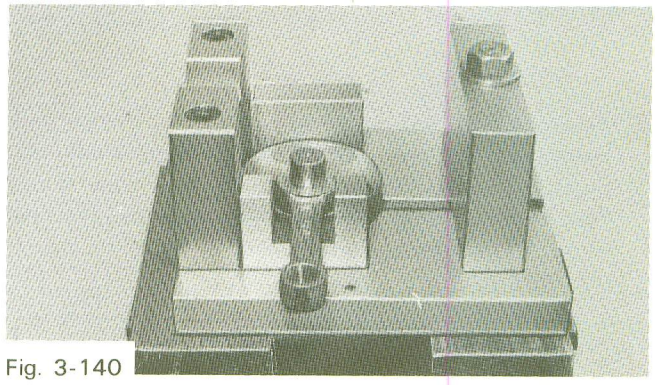


Fig. 3-140

3. Place the other crank wheel in position and lightly tap it onto the crank pin. Keep the crank wheel horizontal when tapping it in place.
   Position the slide plate against the rim of the crank wheel, and tap the slide plate until it contacts the crank wheel (to align the crankshaft temporarily).

   Note:
   When using the hammer, keep the slide plate bolt locknut loose.

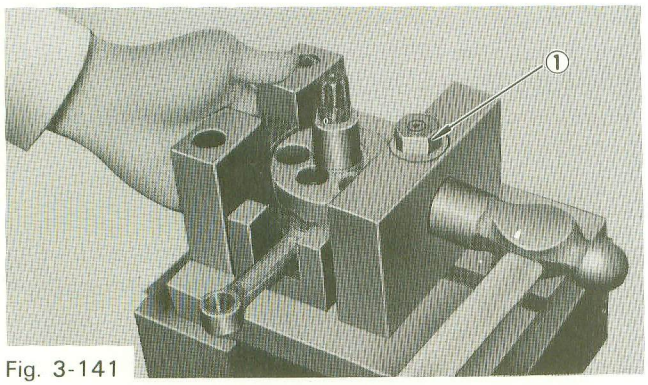


Fig. 3-141

1. Bolt locknut

4. Fully tighten the slide plate locknut.

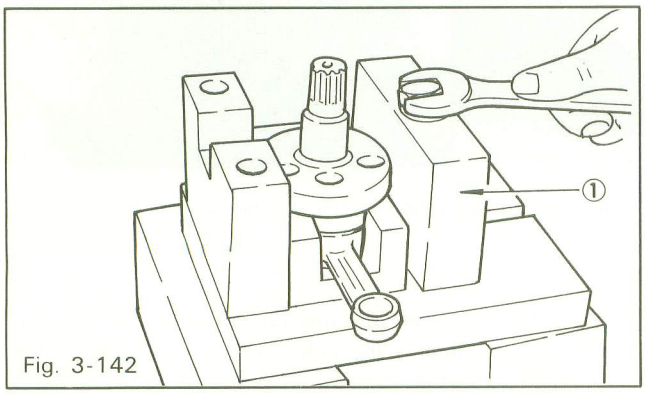


Fig. 3-142

1. Slide plate

5. Place the press box on the face of the crank wheel and press the wheel downward with a hand press until the press box comes in contact with the top of the stops. Then continue pressing until the pressure load reaches 5 tons. (Pressure should be applied in the center line of the crank pin.)

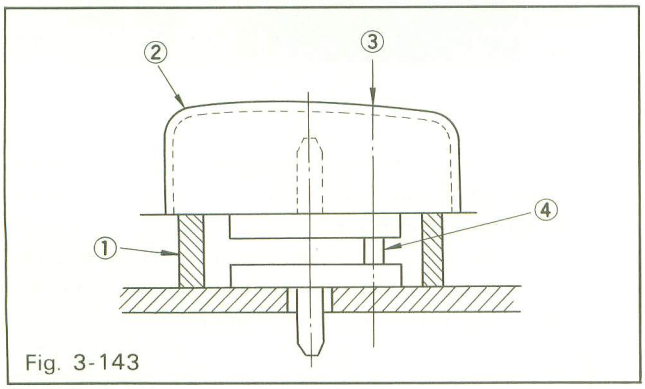


Fig. 3-143

1. Stops
2. Press box
3. Press this side
4. Crank pin

6. First, install the crank cover over the male center spline. Then join the two crank halves together, making sure the rods are 180° apart. Note that the crankshaft wedge is placed between the upper crank wheels to prevent the crank wheels from butting against the rods. When you are sure center splines are mating correctly, apply pressure on the order of 10 tons and more. Remove the crankshaft and check overall width. If overall width is correct the entire crank assembly may now be aligned.

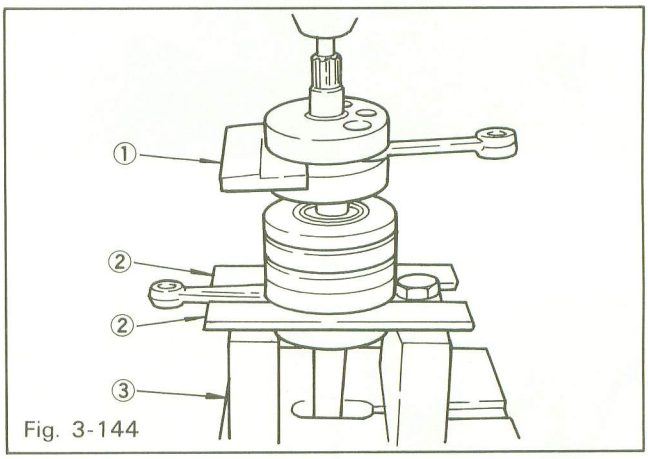


Fig. 3-144

1. Wedge
2. Support plates
3. Crank jig

7. Check the crankshaft. Refer to deflection and width tolerances in specification's table.

3-18. Bearing and oil seals

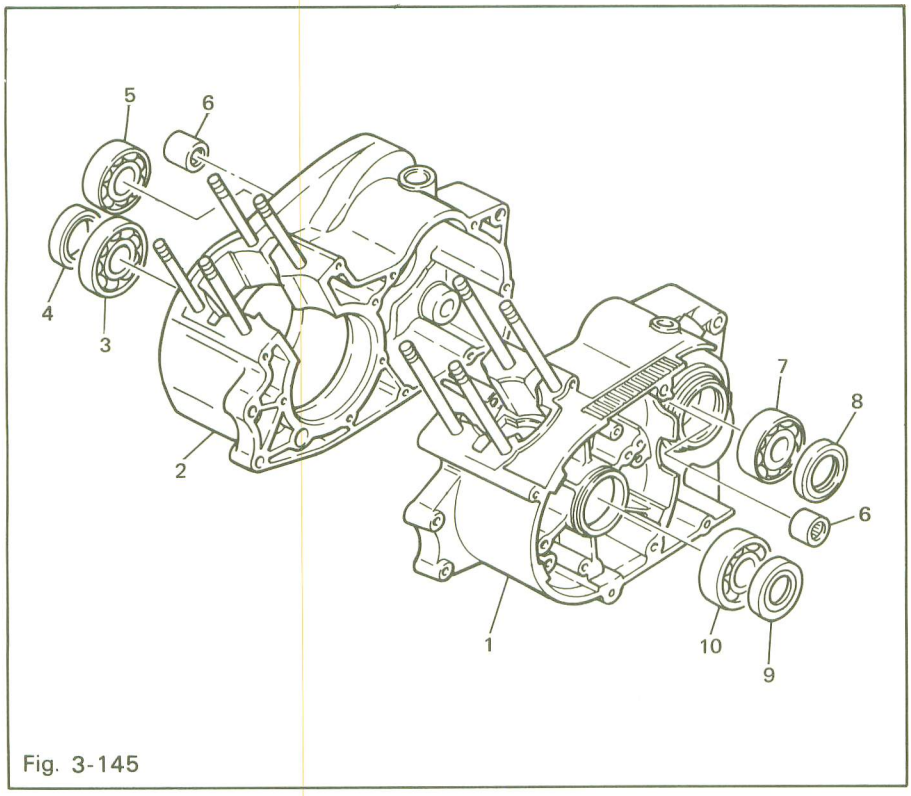


Fig. 3-145

1. Crank case, left
2. Crank case, right
3. Bearing RD125B: (B6204C3 special)
   RD200B: (B6305C3)
4. Oil seal RD125B: (SW-28-40-8)
   RD200B: (SW-32-48-8)
5. Bearing RD125B: (B6303Z)
   RD200B: (B6304Z)
6. Bearing
7. Bearing (B6304)
8. Oil seal (SD-28-44-7)
9. Oil seal (SD-20-40-8)
10. Bearing RD125B: (B6304C3 special)
    RD200B: (B6205C4)

a. Removal

1. Pry the oil seals out of place with a slotted head screwdriver. Always replace all oil seals when overhauling engine.

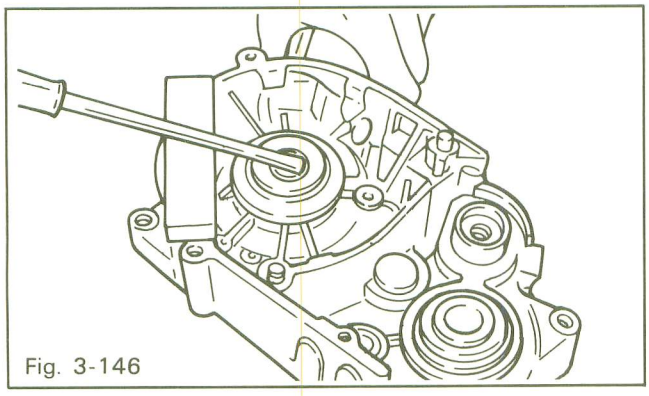


Fig. 3-146

Note:
Place a piece of wood under the screwdriver to prevent damage to case.

2. Drive out bearings with a bearing tool.

Note:
Bearings are most easily removed or installed if the cases are first heated to approximately 200°F. However, cold removal and installation may be done satisfactorily.

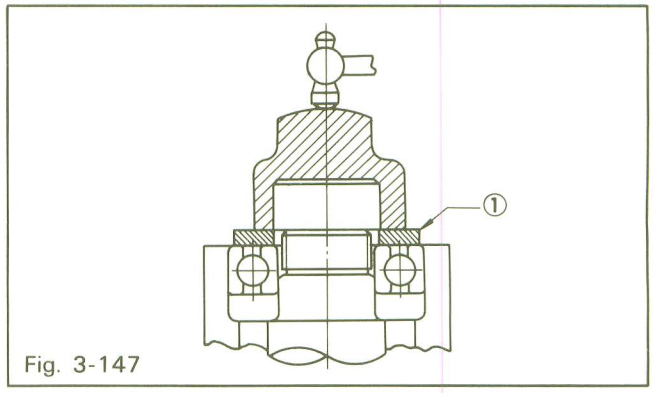


Fig. 3-147

1. Spacer

B. Installation

1. Install bearings and oil seals with their stamped manufacturer's marks or numerals facing outward. (In other words, the stamped letters must be on the exposed view side). When installing bearings or seals, apply a light coating of light-weight lithium base grease to balls and seal lips.

MEMO

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4

CHAPTER 4. CARBURETION AND INTAKE

4-1. Special tools

A. Vernier Caliper

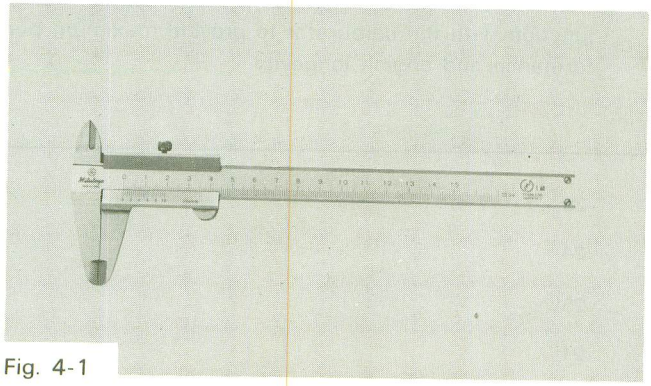

Fig. 4-1

4-2. Air filter

A. Description

1. The air filter is housed within a case below the oil tank.
2. The filter is made of Polyurethane foam with a stiff bristle covering.
3. For carburetion to function properly, the filter must be in place; must be clean; and must be damp with oil to provide adequate protection to vital engine parts.
4. For air filter maintenance see Chapter 2, Section 2-D.

Air cleaner

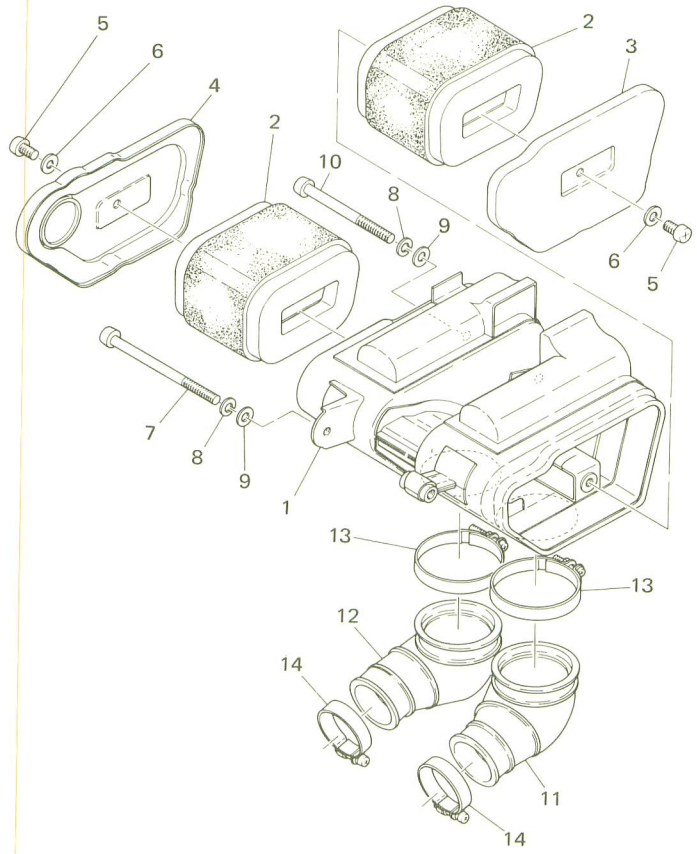

Fig. 4-2

1. Air cleaner case
2. Air cleaner element
3. Cleaner left cap
4. Cleaner right cap
5. Pan head screw
6. Plain washer
7. Pan head screw
8. Spring washer
9. Plain washer
10. Pan head screw
11. Air cleaner left joint
12. Air cleaner right joint
13. Band
14. Band

4-3. Carburetor

A. Description

1. The carburetor is of primary concern to proper engine operation. Considerable care should be taken during disassembly, inspection, and maintenance to see that all circuits are working correctly and that all adjustments are properly made.
2. Prior to carburetor disassembly, study the sections on air filter, spark plug, Autolube and ignition timing thoroughly. Each of these components works in conjunction with the carburetor to provide maximum performance and engine longevity.

Carburetor

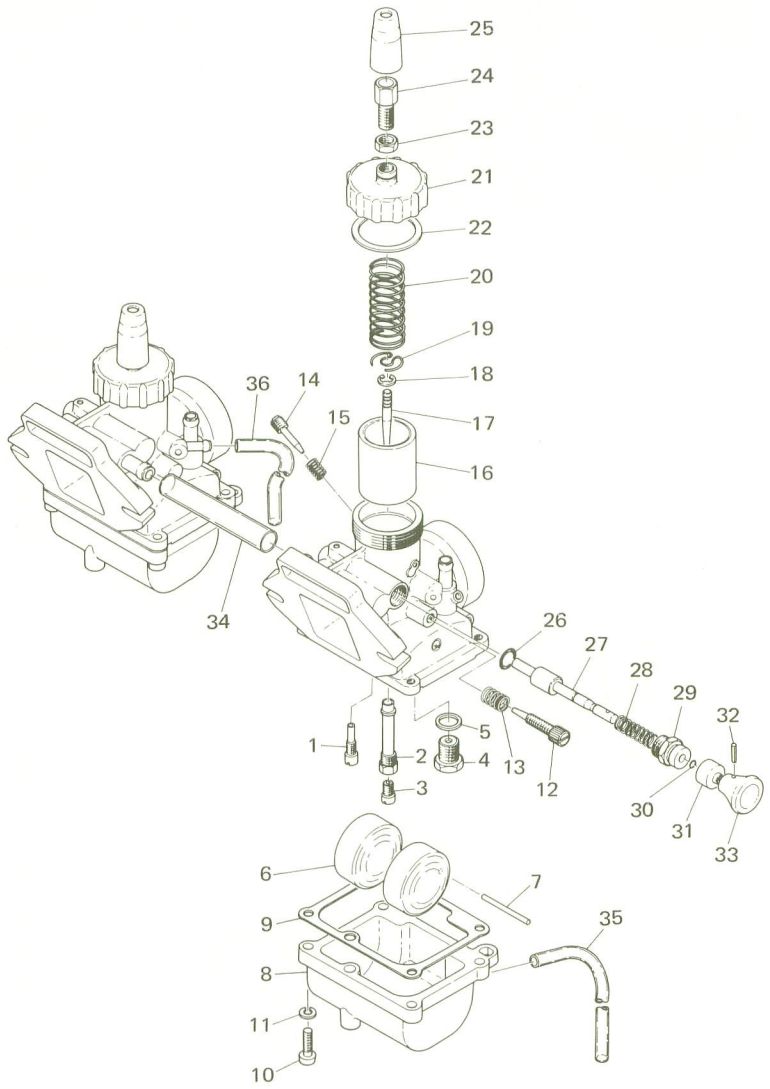

Fig. 4-3

1. Pilot jet
2. Main nozzle
3. Main jet
4. Valve seat assembly
5. Valve seat washer
6. Float
7. Float pin
8. Float chamber body
9. Float chamber gasket
10. Pan head screw
11. Spring washer
12. Pilot adjusting screw
13. Pilot adjusting spring
14. Air adjusting screw
15. Air adjusting spring
16. Throttle valve
17. Needle
18. Clip
19. Throttle spring receiver
20. Throttle valve spring
21. Mixing chamber cap
22. Packing
23. Wire adjusting nut
24. Wire adjusting screw
25. Cap
26. O-ring
27. Starter planger
28. Plunger spring
29. Plunger cap
30. Plunger clip
31. Plunger cap cover
32. Spring pin
33. Knob
34. Joint pipe
35. Over flow pipe (3-160)
36. Air vent pipe (3-220)

B. Removal

1. Turn fuel petcock lever to the "OFF" position.
2. Remove the gasoline tank fuel line from fittings at carburetors.
3. Unscrew the mixing chamber caps. Remove the throttle valve and needle assemblies.

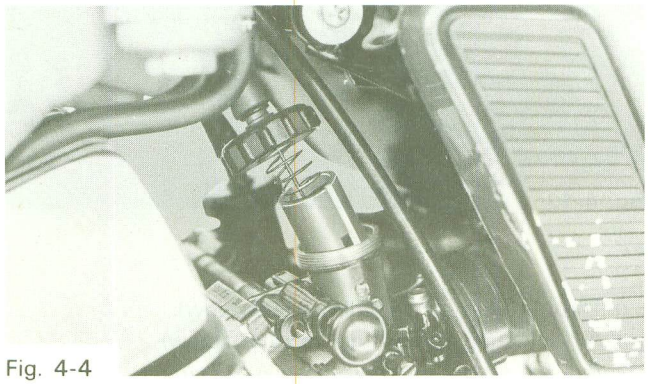

Fig. 4-4

4. Loosen the hose clamp screws and remove the air cleaner joints (L.R.).

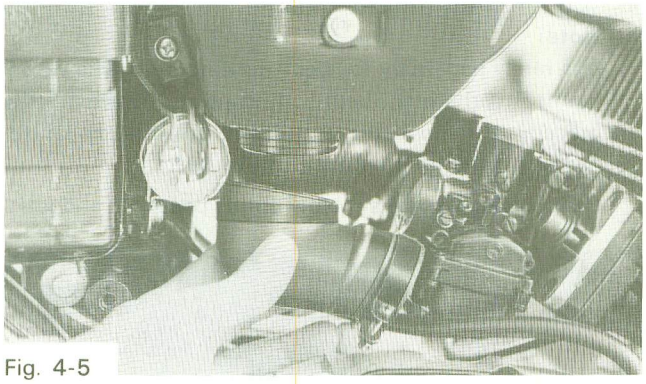

Fig. 4-5

5. Remove the hexagon bolts holding the carburetors.

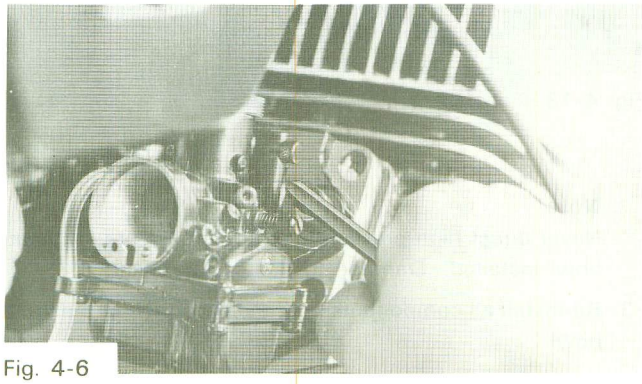

Fig. 4-6

6. Remove the carburetors and disconnect starter jet joint hose.
7. Remove the carburetor mount gasket. Replace during reassembly.

C. Disassembly

Note:
Right carburetor does not incorporate starter jet assembly. Both right and left carburetors are connected by a joint pipe. Otherwise, carburetor assemblies are identical and all disassembly, maintenance and troubleshooting procedures are also identical.

1. Remove the Phillips screws (4) holding float bowl to body. With carburetor in upright position, remove float bowl.

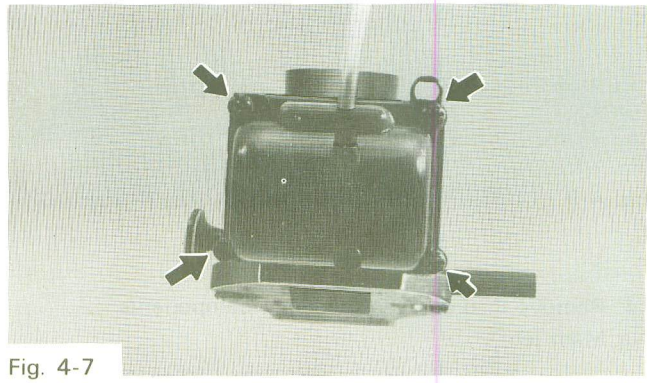

Fig. 4-7

2. On the carburetor body, remove the float pin securing the float assembly. Remove the float assembly.
   If fuel has entered a float, replace float assembly. If float arm is loose or damaged, or if the floats are damaged in any fashion, replace.

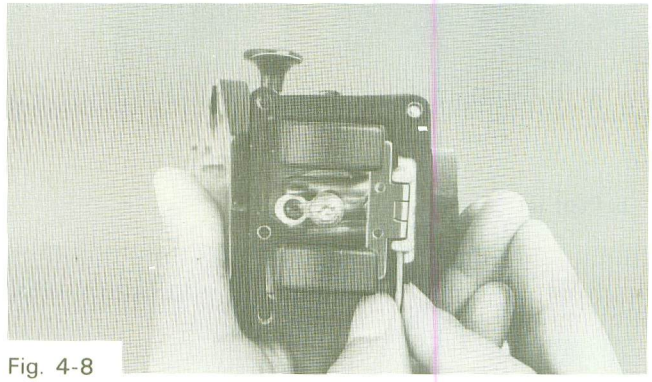

Fig. 4-8

3. Remove the inlet needle directly beneath the float arm tang. Inspect the needle and seat for signs of excessive wear or attached foreign particles.
   Replace as required. Always replace inlet needle and inlet valve seat as an assembly.

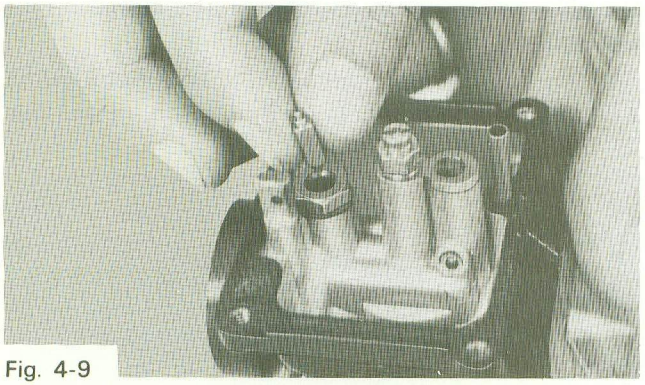

Fig. 4-9

4. Remove in order, the following components:
   a. Main jet

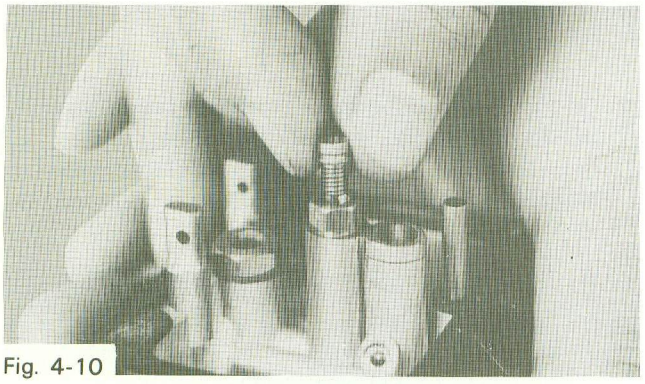

Fig. 4-10

   b. Pilot jet

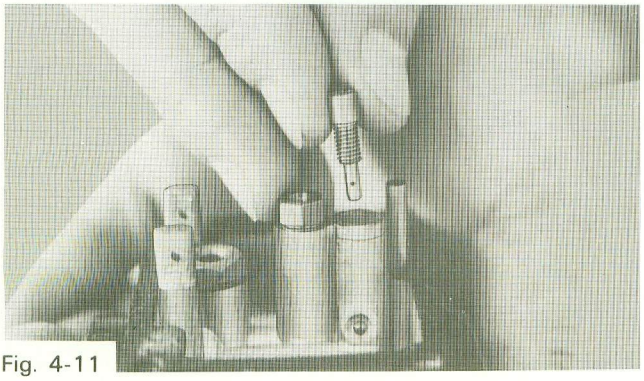

Fig. 4-11

   c. Main nozzle

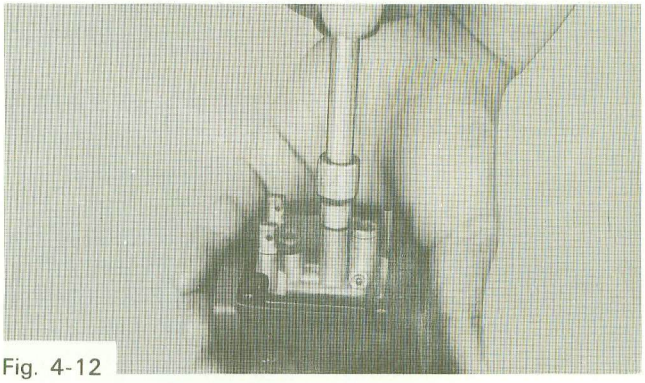

Fig. 4-12

   d. Throttle stop screw (Idle speed screw).
   e. Air adjusting screw (Idle mixture screw).
5. Pull the starter jet knob to open the circuit. (Left-hand carburetor.)

D. Maintenance

1. Wash the carburetor in petroleum base solvent. Wash all associated parts.

   Note:
   It is rarely necessary to "boil" the carburetor in a warm or hot carburetor bath. If deposits warrant this procedure, remove the starter jet assembly to avoid damaging the jet's neoprene valve seat.

2. Using high pressure air, blow out all passages and jets.

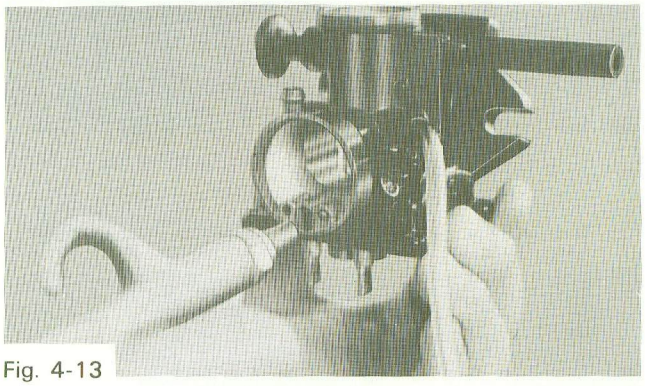

Fig. 4-13

   Note:
   Never direct high pressure air into carburetor with float bowl installed. Damage to floats may occur.

3. Re-install all components with the exception of the float bowl.

Carburetor Specifications			
Part Name	Abbrev.	Setting	
		RD125B	RD200B
Manufacturer•Model	—	Teikei Y18P-1C	Teikei Y20P-1A
I.D.Number	—	46620	37763
Venturi size	—	18φmm.	20φmm.
Main jet	M.J.	#94	#94
Needle jet	N.J.	N30	N80
Jet needle/Clip position	J.N.	4D50-2	4F51-3
Cut away	C.A.	2.5	2.0
Pilot jet	P.J.	#44	#42
Air jet	A.J.	2.0	0.9φ
Starter jet	S.J.	#70	#70
Air screw (turns out)	A.S.	1-1/2	1-1/4
Idle speed (r.p.m.)	—	1,150 ~ 1,250 r.p.m.	1,150 ~ 1,250 r.p.m.
Float level	F.L.	0.79 ±0.098 in. (20 ±2.5 mm.)	0.79 ± 0.098 in. (20 ±2.5 mm.)

E. Troubleshooting and repair

Cylinder porting, combustion chamber compression, ignition timing, muffler design, and carburetor size and component selection are all balanced to achieve optimum performance. However, variations in temperature, humidity and altitude, to name a few, will affect carburetion and consequently engine performance.

The following list gives each of the major components of the carburetor that can be readily changed in order to modify carburetor performance if required.

1. Idle air mixture screw
   Controls the tatio of air to fuel in the idle circuit. Turning the screw in decreases the air supply giving a richer mixture.
   OPERATING RANGE MOST AFFECTED BY THIS ADJUSTMENT: ZERO TO 1/8 THROTTLE

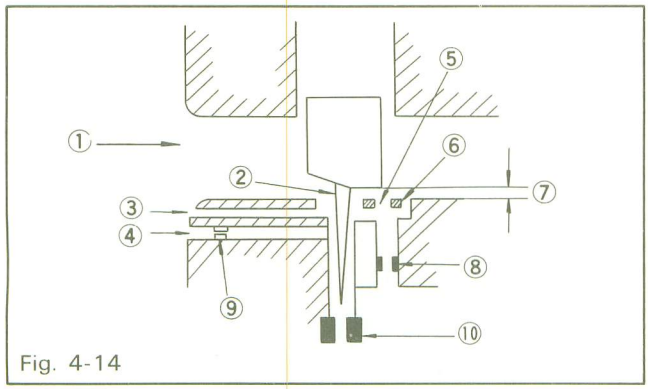

Fig. 4-14

1. Main air
2. Jet needle
3. Pilot air
4. Bleed air
5. Bypass
6. Pilot outlet
7. Opening 0 to 1/8
8. Pilot jet
9. Air jet
10. Main jet

2. Pilot jet
   Controls the ratio of fuel to air in the idle circuit. Changing the jet to one with a higher number supplies more fuel to the circuit giving a richer mixture.
   OPERATING RANGE MOST AFFECTED BY THIS JET: ZERO TO 1/8 THROTTLE.
3. Throttle valve (slide)
   The throttle valve (slide) has a portion of the base cutaway to control air flowing over the main nozzle. A wider angle (more "cutaway") will create a leaner mixture. Throttle valves are numbered according to the angle of the cutaway. The higher the number, the more the cutaway, the leaner the mixture.
   OPERATING RANGE MOST AFFECTED BY THE THROTTLE VALVE: 1/8 TO 1/4 THROTTLE.

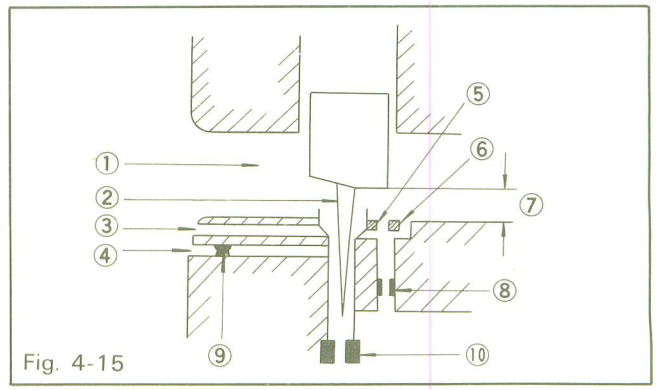

Fig. 4-15

1. Main air
2. Jet needle
3. Pilot air
4. Bleed air
5. Bypass
6. Pilot outlet
7. Opening 1/8 to 1/4
8. Pilot jet
9. Air jet
10. Main jet

4. Jet needle

The jet needle is fitted within the throttle valve. The tapered end of the needle fits into the main nozzle outlet. Raising the needle allows more fuel to flow out of the nozzle outlet giving a richer mixture. There are five circlip grooves at the top of the needle. Moving the needle clip from the first, or top groove, through the fifth, or bottom groove, will give a correspondingly richer mixture.

OPERATING RANGE MOST AFFECTED BY THE JET NEEDLE: 1/4 TO 3/4 THROTTLE.

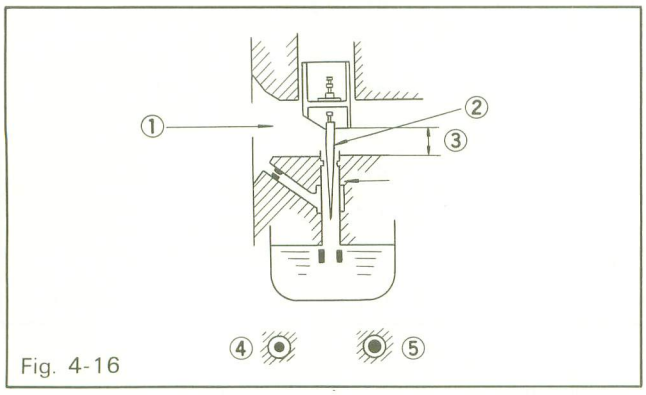

Fig. 4-16

1. Main air
2. Jet needle
3. Opening 1/4 to 3/4
4. 3/4
5. 1/4

5. Main jet

The main jet controls overall fuel flow through the main nozzle.

Changing the jet to one with a higher number supplies more fuel to the main nozzle giving a richer mixture.

OPERATING RANGE MOST AFFECTED BY THE MAIN JET: 3/4 TO FULL THROTTLE.

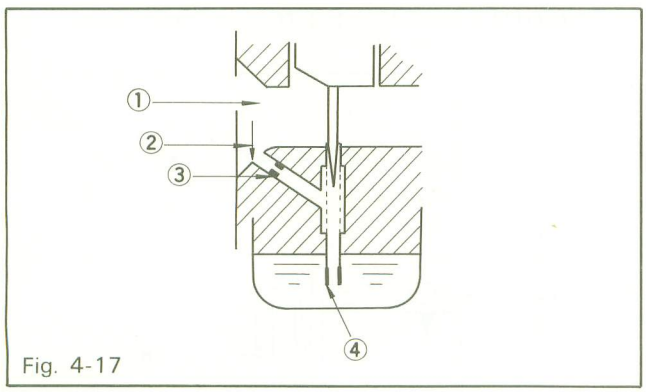

Fig. 4-17

1. Main air
2. Bleed air
3. Air jet
4. Main jet

Note:

Excessive changes in main jet size can affect overall performance.

Caution:

The fuel/air mixture ratio is a governing factor upon engine operating temperature.

Any carburetor changes, whatsoever, must be followed by a thorough test of spark plug temperature during actual engine operation.

6. Float level

a. Float level is one factor within the carburetor which will change with use.

b. If float level within the carburetor float chamber body decreases, the fuel/air mixture ratio will be leaner. If the level increases, mixture will be richer.

c. The level is set according to the design of the carburetor and float bowl chamber. Under no circumstances should float level be altered in an attempt to correct a performance problem. Look for the problem in other related components or carburetor circuits.

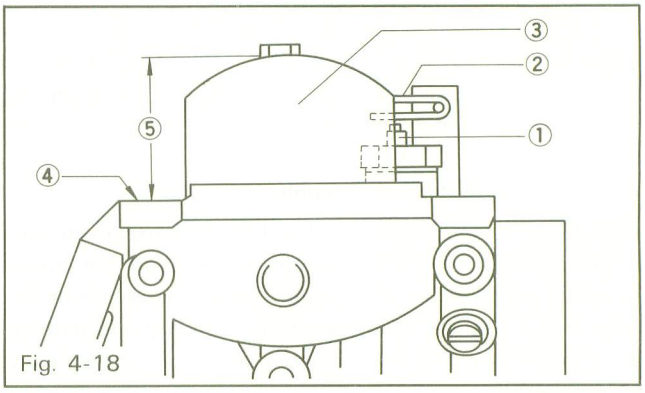

Fig. 4-18

1. Needle
2. Float holding plate
3. Float
4. Edge of the mixing chamber
5. Float level

d. Using a vernier caliper, measure the distance of the float arm from the top of the float chamber gasket seat (gasket removed) to the float. See specifications for correct level.

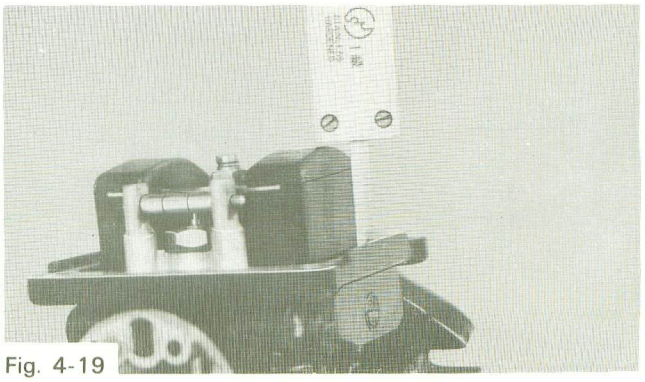
Fig. 4-19

Note:
The float arm tang should be just resting on, but not depressing, the spring loaded inlet needle.

e. To correct float level remove the float assembly and bend the tang a slight amount as required.
Both the right and left sides of the float arm should measure identically.
Correct as required.

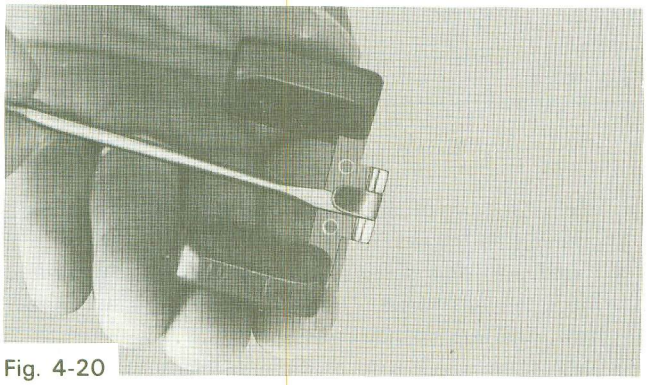

Fig. 4-20

F. Reassembly and installation

1. Install the float bowl.
2. Push needle out of seat in throttle valve (slide). Inspect for signs of bending, scratches or wear.
Replace as required.

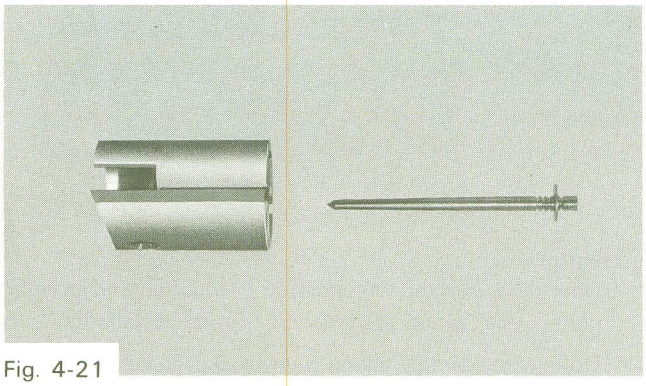

Fig. 4-21

3. Check needle clip position. See Specifications.
Clip position is counted starting with the first clip groove at the top of the needle.
4. Check throttle valve (slide) for signs of wear. Insert into carburetor body and check for free movement.
If slide, or body, is out of round causing slide to stick, replace as required.
5. Install throttle valve and needle assembly in carburetor mixing chamber. Tighten mixing chamber cap as tight as possible by hand.
Do not use pliers or vise-grips as they may deform the mixing chamber shape, causing the throttle valve to stick during operation.
6. Install all overflow and vent tubes. Re-install carburetors. Install starter jet joint hose.
Check position and routing of all tubes. Check tightness of all fittings. Make sure carburetors are mounted in a level position.
7. After installation, re-adjust throttle cable and Autolube pump cable per directions in "cable routing diagrams".
8. Next adjust idle and slide synchronization.

4-4. Reed valve assembly

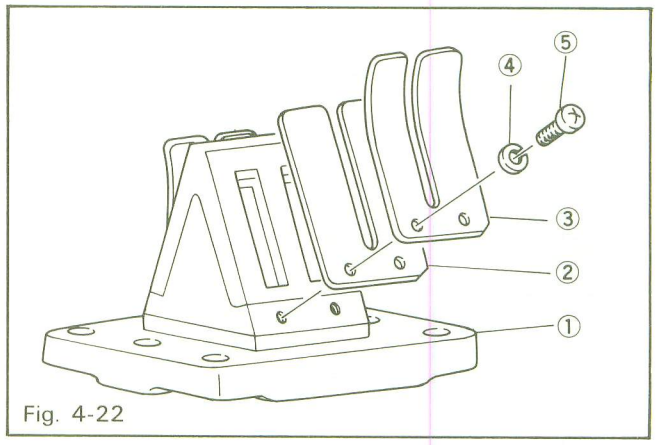

Fig. 4-22

1. Case
2. Reed valve
3. Reed valve stopper
4. Spring washer
5. Pan head screw

A. Description

1. Yamaha has designed a unique stainless steel reed valve located between the carburetor and cylinder. The valve works independently on a demand bases. There's no mechanical device, such as a rotary valve or piston skirt to govern its opening and closing.

2. Construction of reed valve assembly
   a. Valve
      The valve is made of special flexible stainless steel and is designed to open and close the inlet port.
   b. Case
      The case is made of a die-cast aluminum alloy.
   c. Gasket
      Made of heat-and oil-resistant neoprene, the gasket is bonded to the case by heat.
   d. Valve stopper
      The valve stopper is made of highly-durable cold-rolled stainless steel plate, and controls the movement of the valve.

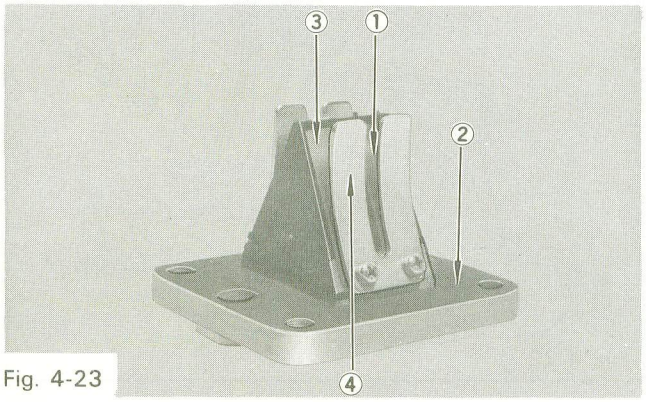

Fig. 4-23

1. Valve
2. Case
3. Gasket
4. Valve stopper

3. Handling the reed valve
   a. As explained earlier, the reed valve is operated by changes in crankcase pressure and by the inertia effect of the fuel-air stream. It is a high-precision piece, and therefore, it must be handled with special care.
4. Storage
   a. When not installed on machine, the reed valve must be stored in a clean and dry place. It must not be exposed to the sun. Particularly, it must be kept free from salt. Avoid touching the valve.

B. Removal and troubleshooting

With carburetor removed, proceed as follows:

1. Remove the hex head screws holding the reed valve assemblies to cylinders.
   Remove assemblies.
2. Inspect reed petals for signs of fatigue and cracks. Reed petals should fit flush or nearly flush against neoprene seats. If in doubt as to sealing ability, apply suction to carburetor side of assembly. Leakage should be slight to moderate.
3. Valve stopper
   The valve stopper controls the movement of the valve. Check clearance "a".

Standard value (RD125B/200B: "a" — 0.38 in. (9.6 mm.)

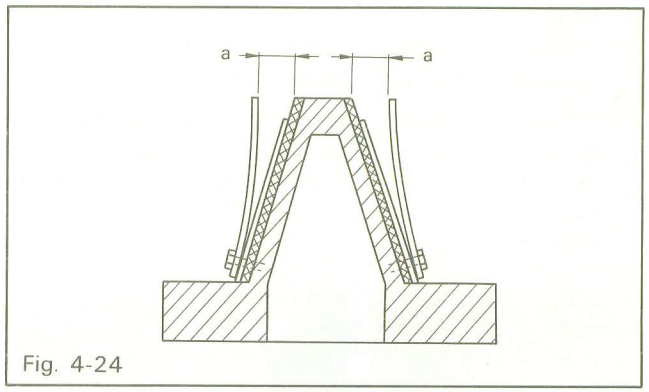

Fig. 4-24

4. If disassembly of the reed valve assembly is required, proceed as follows:
   a. Remove Phillips screws (2) securing stopper plate and reed to reed case. Handle reed carefully. Avoid scratches and do not bend.
      Note from which side of the reed block the reed and stopper plate were removed. Re-install on same side.

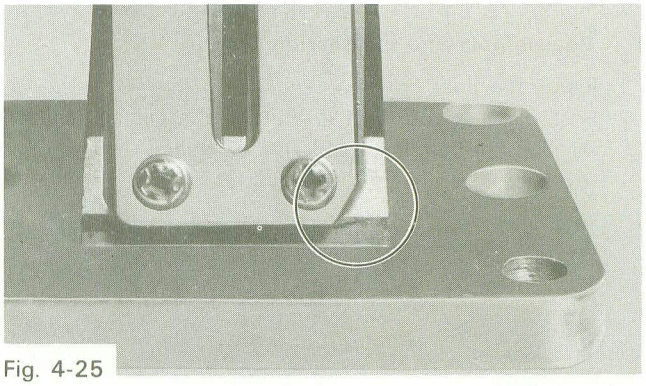

Fig. 4-25

Note:
Note the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.

   b. During reassembly, clean reed block, reed, and stopper plate thoroughly. Apply a holding agent, such as "Lock-Tite", to threads of Phillips screws. Tighten each screw gradually to avoid warping.

Torque: 0.70 in-lbs. (8.0 cm-kg.)

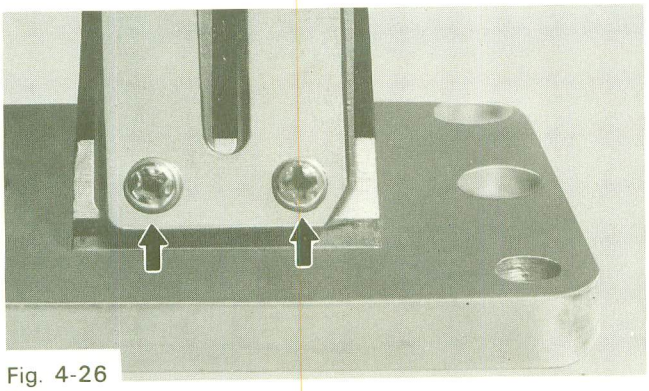

Fig. 4-26

Note:
If clearance "a" is larger than specified, the valve will be broken. If smaller, valve performance can be impaired.

5. Check the reed valve case surfaces for worpage, replace if warped.
6. Check the phenolic joint between the reed case and carburetor for warpage, resurface or replace as required.

C. Installation

1. Install new gaskets between cylinder, reed case, phenolic joint, and carburetor.
2. Tighten hex head screws in successive stages, in pattern.

MEMO

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CHAPTER 5. ELECTRICAL SYSTEM

5-1. Special tools

A. Pocket tester

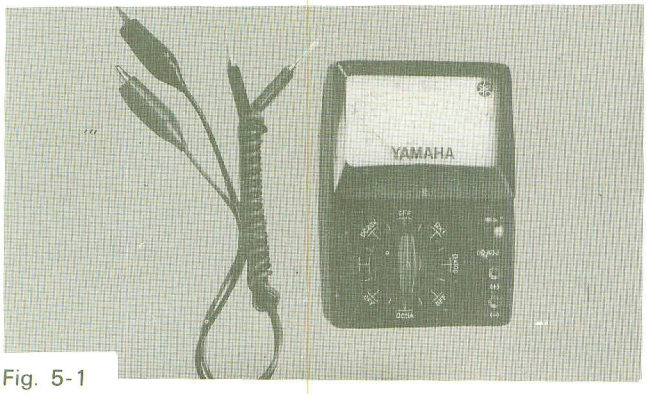

Fig. 5-1

B. Electro-tester

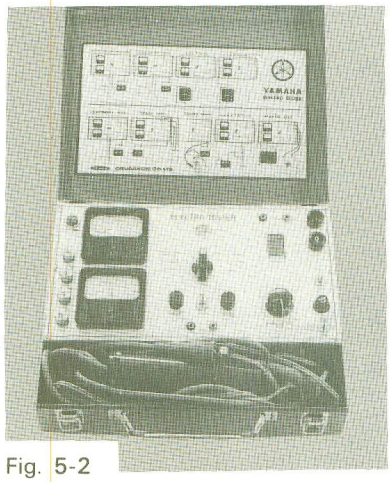

Fig. 5-2

5-2. Description

The RD200B is equipped with a 12 volt starter-dynamo which serves as a combination starter and direct current generator. All electrical components are powered directly by the 12 volt storage battery.
If the RD125B is equipped with an alternating current generator and full wave rectifier.

A. A.C. Generator specifications (RD125B only)

Item	Specification
Manufacturer	Hitachi, Ltd.
Type	K108-12
Direction of rotation and speed	counterclockwise, 300 ~ 10,000 r.p.m.
Voltage	12V.
Normal load	Battery (12V., 5.5AH.) ± 2 ignition coils
Night load	Normal load ± headlight (12V., 35W.) ± taillight (12V., 8W.) ± meter lamp (12V., 3W. × 2)
Charging characteristic	Charging begins at 2,000 r.p.m. or less
(Daytime)	1.6 ±0.5A. at 5,000 r.p.m.
(Night time)	1.3 ±0.5A. at 5,000 r.p.m.
Breaker point gap	0.012 ~ 0.016 in. (0.3 ~ 0.4 mm.)
Breaker closing angle	140° ±5°/point gap of 0.014 in. (0.35 mm.)
Condenser capacity	0.15 ±10%μF.
Ignition timing	0.071 ±0.0079 in. (1.8 ± 0.2 mm.) B.T.D.C.

B. Electrical components

	RD125B		RD200B	
Parts Name	Manufacturer	Type	Manufacturer	Type
Spark plug	NGK	B-8HS	NGK	B-8HS
Ignition coil	Hitachi	CM11-50B	Hitachi	CM11-50B
Starter dynamo	—	—	Hitachi	GS214-02
Regulator	Hitachi	K108-12	Hitachi	T107-58
Fuse		20A × 2		20A × 2
Battery	Furukawa	AYT2-12	G.S.	12N9A-3A-1
Front stop switch	Asahi Denso		Asahi Denso	
Rear stop switch	Asahi Denso		Asahi Denso	
Headlight		12V., 30W./30W.		12V., 35W./25W.
Tail/Stoplight bulb		12V., 8W./23W.		12V., 8W./27W.
Flasher bulbs		12V., 27W.		12V., 27W.
High beam indicator bulb		12V., 2W.		12V., 2W.
Neutral light bulb		12V., 3W.		12V., 3W.
Speedometer bulb		12V., 3W.		12V., 3W.
Tachometer bulb		12V., 3W.		12V., 3W.
Flasher indicator light bulb		12V., 3W.		12V., 3W.
Flahser relay	Nippon Denso	JFK-0110	Nippon Denso	JFK-0110
Horn	Nikko Kinzoku	YP-12	Nikko Kinzoku	YP-12

C. Connection diagram

RD125B

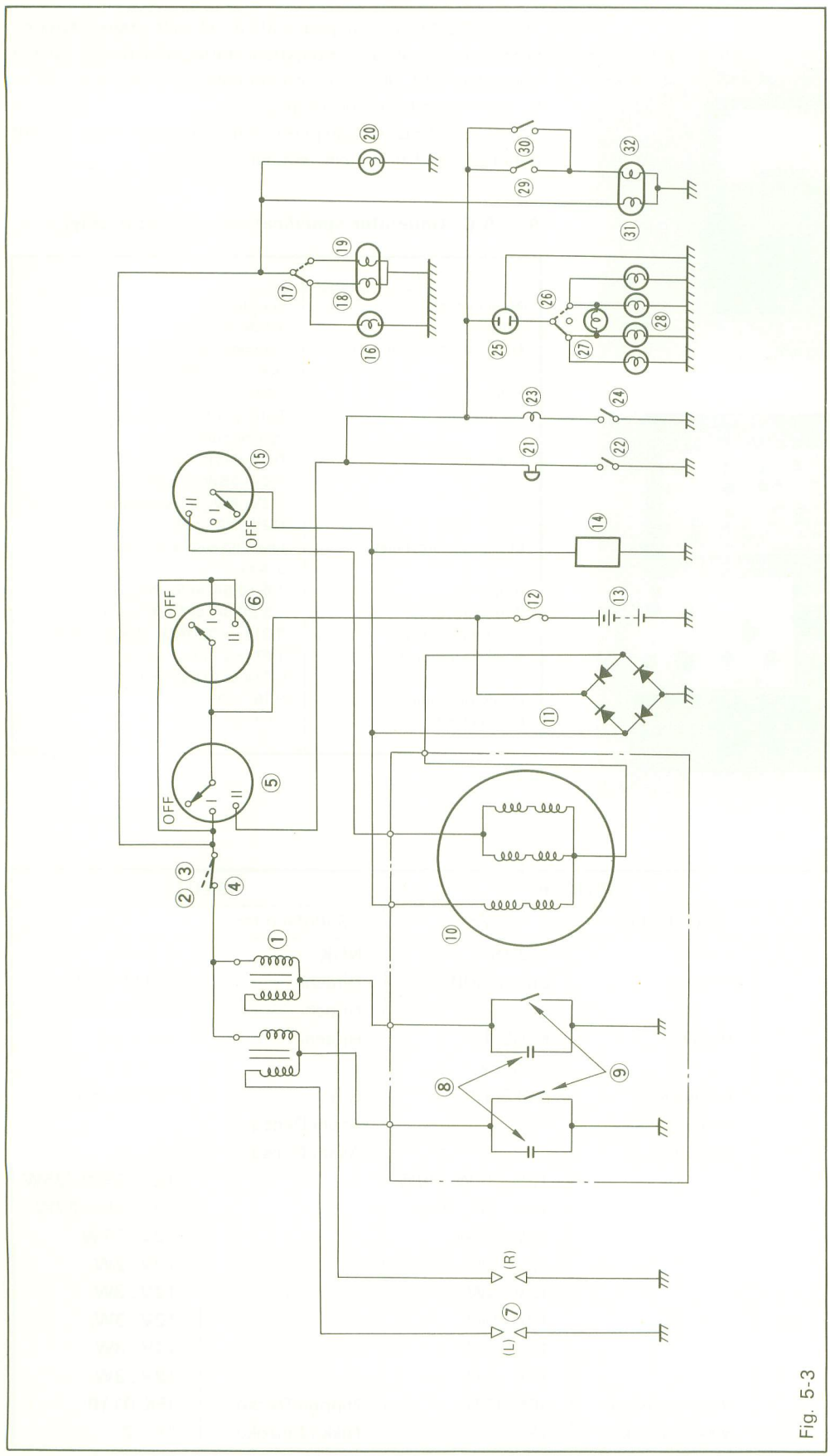

Fig. 5-3

1. Ignition coil
2. Engine stop switch
3. Off
4. On
5. Main switch I
6. Main switch II
7. Spark plug
8. Condenser
9. Contact breaker
10. A.C. generator
11. Rectifier
12. Fuse
13. Battery
14. Stator switch
15. Main switch III
16. High beam indicator
17. Dimmer switch
18. High beam
19. Low beam
20. Meter light
21. Horn
22. Horn switch
23. Neutral light
24. Neutral switch
25. Flasher relay
26. Flasher switch
27. Flasher indicator light
28. Flasher light
29. Front stop switch
30. Rear stop switch
31. Stoplight
32. Taillight

RD200B

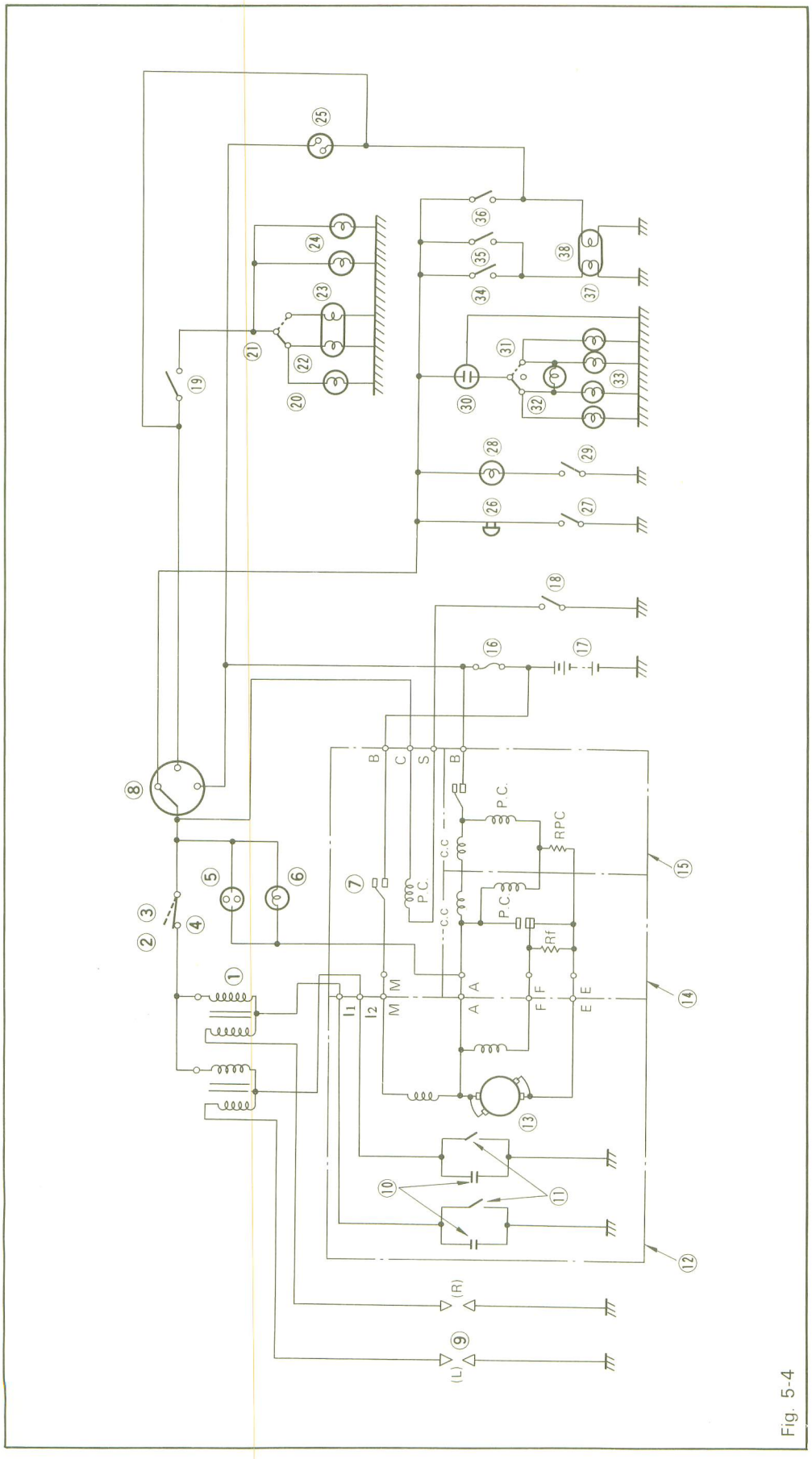

Fig. 5-4

1. Ignition coil
2. Engine stop switch
3. Off
4. On
5. Main switch II
6. Charge light
7. Magnetic switch
8. Main switch I
9. Spark plug
10. Condenser
11. Contact breaker
12. Starter dynamo
13. Armature
14. Voltage regulator
15. Cutout relay
16. Fuse
17. Battery
18. Starter switch
19. Lighting switch
20. High beam indicator
21. Dimmer switch
22. High beam
23. Low beam
24. Meter light
25. Main switch III
26. Horn
27. Horn switch
28. Neutral light
29. Neutral switch
30. Flasher relay
31. Flasher switch
32. Flasher indicator light
33. Flasher light
34. Front stop switch
35. Rear stop switch
36. Lighting switch
37. Stoplight
38. Tail lamp

D. Electrical — general

RD125B

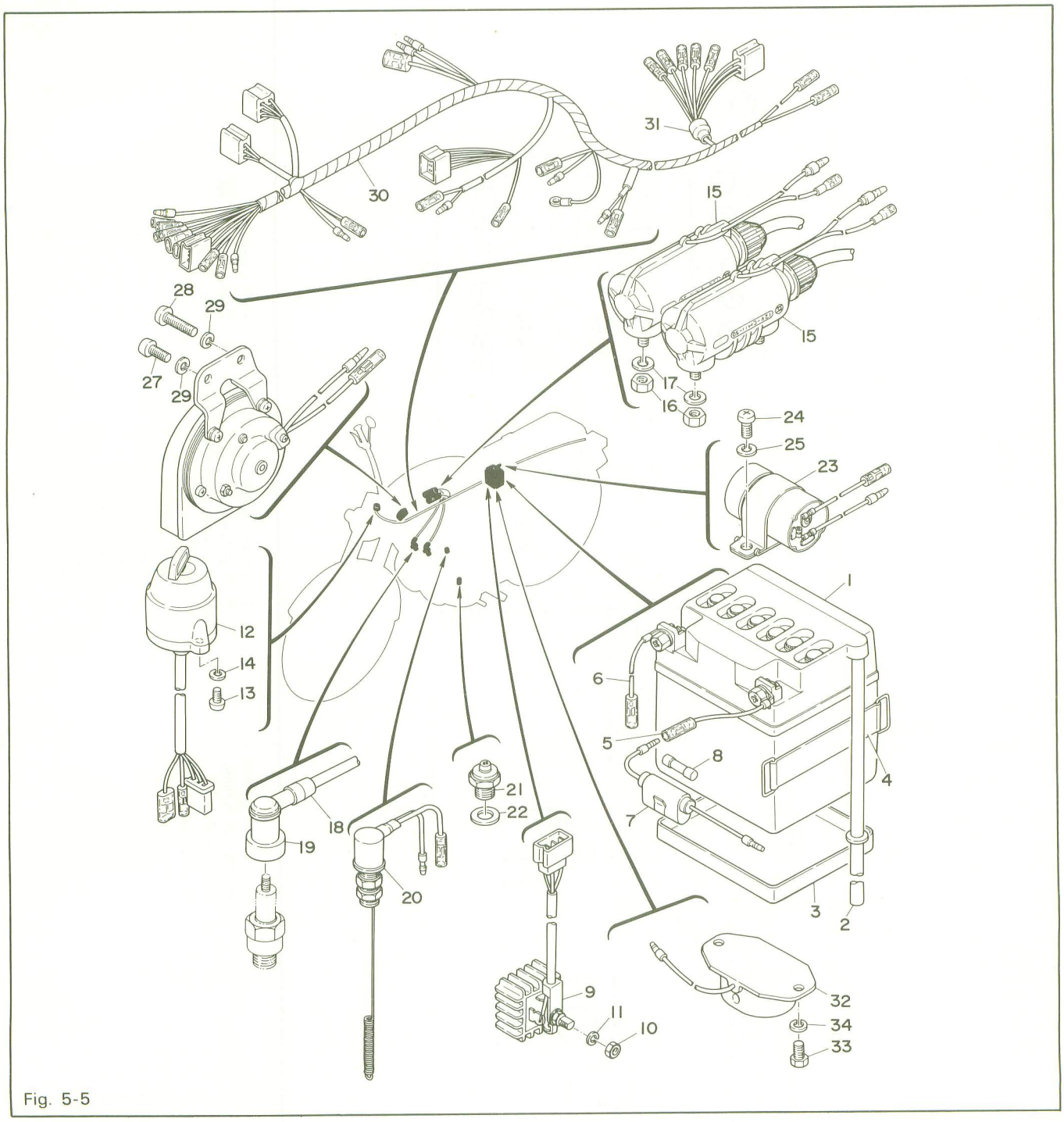

Fig. 5-5

1. Battery assembly
2. Breather pipe
3. Battery seat
4. Battery band
5. Plus lead wire
6. Minus lead wire
7. Fuse holder assembly
8. Fuse
9. Rectifier assembly
10. Nut
11. Spring washer
12. Main switch assembly
13. Pan head screw
14. Spring washer
15. Ignition coil assembly
16. Nut
17. Spring washer
18. Hitension cord
19. Plug cap assembly
20. Stop switch assembly
21. Neutral switch assembly
22. Gasket
23. Flahser relay assembly
24. Pan head screw
25. Spring washer
26. Horn
27. Pan head screw
28. Pan head screw
29. Spring washer
30. Wire harness assembly
31. Connector cover
32. Voltage regulator assembly
33. Bolt
34. Spring washer

RD200B

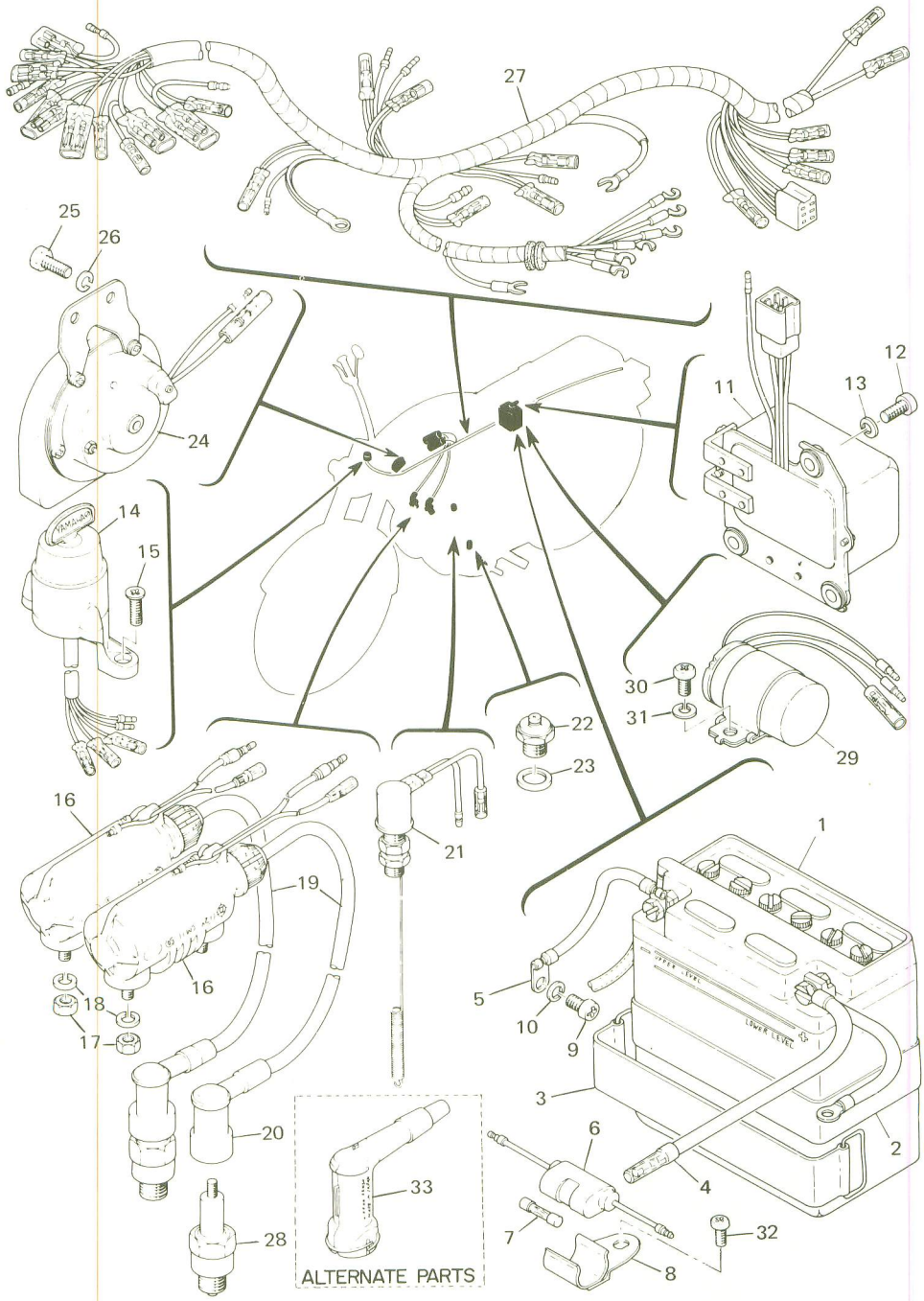

Fig. 5-6

1. Battery cap
2. Battery band
3. Battery band
4. Plus lead wire
5. Minus lead wire
6. Fuse holder assembly
7. Fuse
8. Fuse holder
9. Pan head screw
10. Spring washer
11. Voltage regulator assembly
12. Pan head screw
13. Spring washer
14. Main switch assembly
15. Flat head screw
16. Ignition coil assembly
17. Nut
18. Spring washer
19. High-tension cord
20. Plug cap assembly
21. Stop switch assembly
22. Neutral switch assembly
23. Gasket
24. Horn
25. Bolt
26. Spring washer
27. Wire harness assembly
28. Spark plug (B-8HS)
29. Flasher relay assembly
30. Pan head screw
31. Spring washer
32. Pan head screw
33. Plug cap assembly (with noise suppressor)

5-3. Spark plug

The life of a spark plug and its discoloring vary according to the habits of the rider. At each periodic inspection, replace burned or fouled plugs with suitable ones determined by the color and condition of the bad plugs.

One machine may be ridden only in urban areas at low speeds, whereas another may be ridden for hours at high speeds, so confirm what the present plugs indicate by asking the rider how long and how fast he rides, and recommend a hot, standard or cold plug accordingly. It is actually economical to install new plugs often since it will tend to keep the engine in good condition and prevent excessive fuel consumption.

A. How to "read" spark plug (condition)

1. Best — When the porcelain around the center electrode is a light tan color.

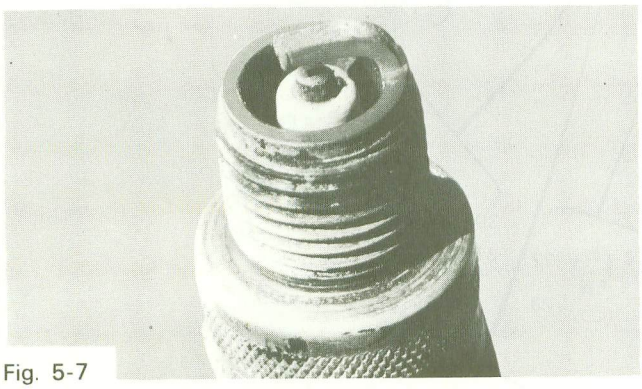

Fig. 5-7

2. If the electrodes and porcelain are black and somewhat oily, replace the plug with a hotter-type as required.

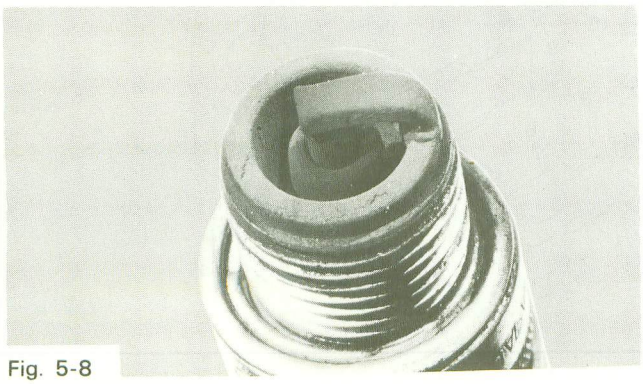

Fig. 5-8

3. If the porcelain is burned white and/or the electrodes are partially burned away, replace the plug with a colder-type as required.

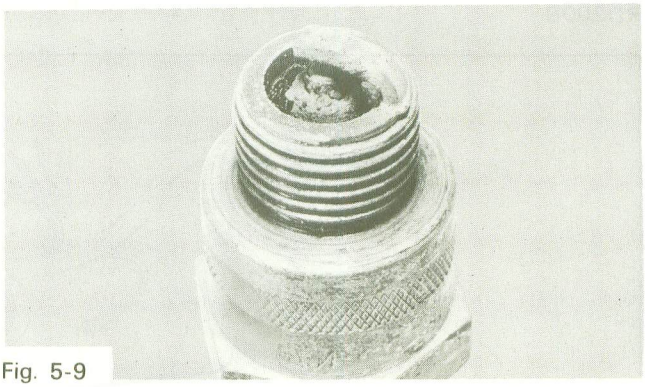

Fig. 5-9

— — — CAUTION — — —

Spark plug color is also an indication of the engines state of tune. Never undiscriminately replace a malfunctioning plug without checking to see that carburetion, ignition timing and compression are to specification.

B. Inspection

Instruct the rider to:

1. Inspect and clean the spark plug at least once per month or every 500, 1,000 miles.
2. Clean the electrodes of carbon and adjust the electrode gap.
3. Be sure to use the proper reach plug as replacement to avoid overheating, fouling, or piston damage.

Spark plug type	NGK B-8HS
Spark plug gap	0.024 ~ 0.028 in. (0.6 ~ 0.7 mm.)

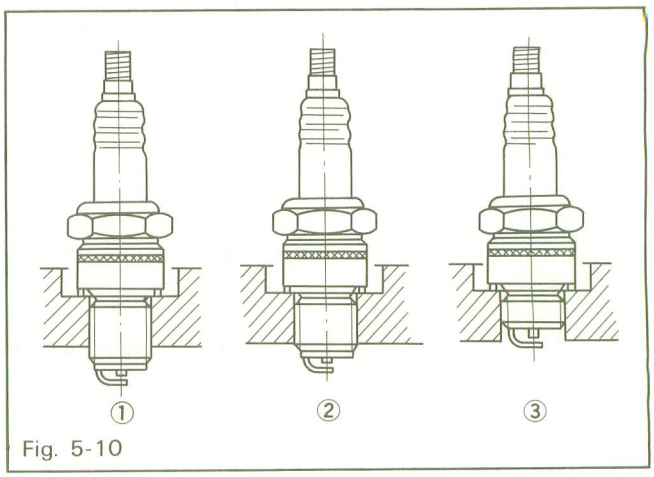

Fig. 5-10

1. Excessive reach (will overheat)
2. Proper reach
3. Insufficient reach (will foul)

5-4. Ignition system

A. Description of operation

The ignition system consists of the parts as shown in the following diagram. As the crankshaft rotates, the cam attached to the armature makes the contact points open and close. This causés the current to flow and stop flowing alternately, thus inducing a voltage in the primary circuit.

The voltage produced in the primary winding by self-induction is stepped up by mutual-induction, and a high voltage is generated in the secondary winding in proportion to the turns ratio of the primary winding to the secondary. This high voltage causes a spark across the sparkplug gap.

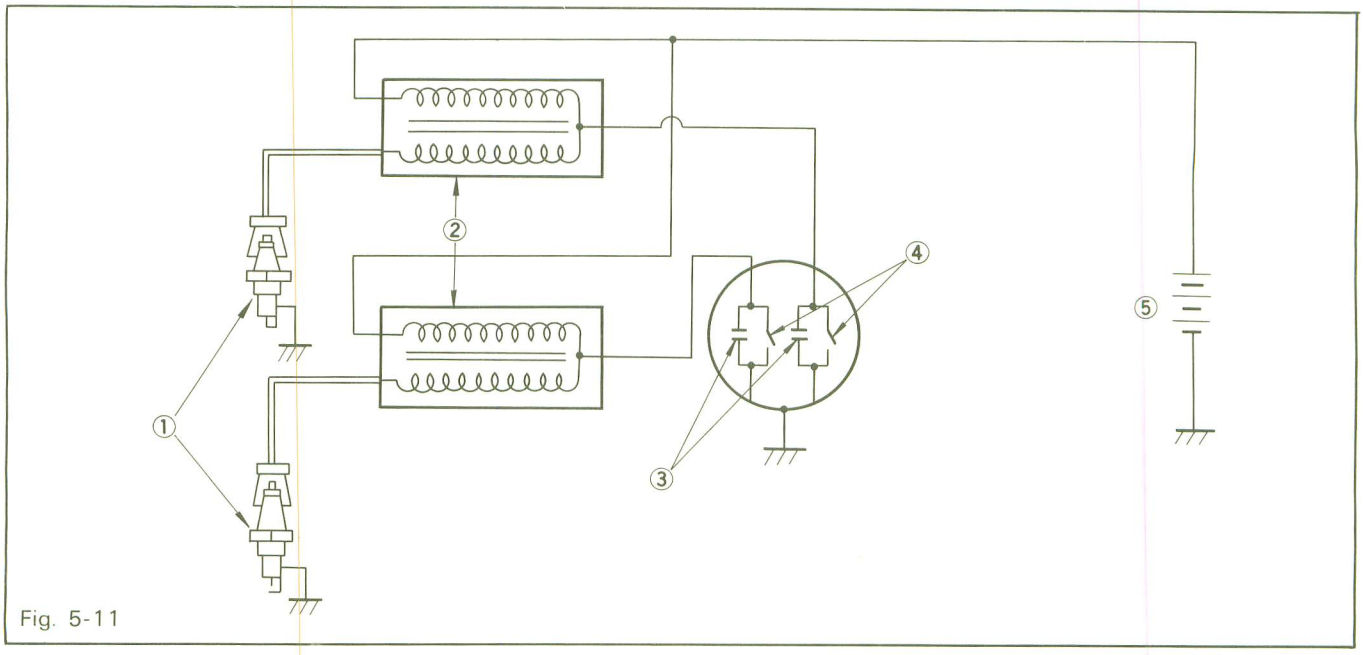

Fig. 5-11

1. Spark plug
2. Ignition coil
3. Condenser
4. Contact breaker
5. Battery

B. Ignition timing

Refer to Chapter 2. Engine tuning, for ignition timing procedure.

C. Ignition coil

The entire ignition system can be checked for misfire and weak spark using the Electro-Tester. If the ignition system will fire across a sufficient gap, the entire ignition system can be considered good. If not, proceed with individual component tests until the problem is found.

1. Dynamic test
   a. Warm-up engine thoroughly so that all electrical components are at operating temperature.
   b. Stop engine and connect tester as shown.
   c. Close the Electro-Tester point gap to zero.
   d. Start engine and increase spark gap until misfire occurs. (Test at various r.p.m.'s between idel and red line.)

Minimum spark gap:	0.24 in. (6 mm.)

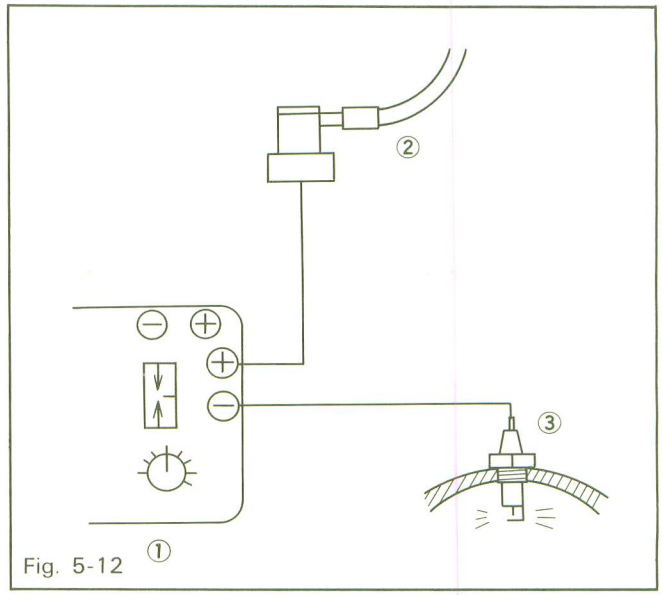

Fig. 5-12

1. Electro-Tester
2. Plug wire from coil
3. Spark plug

2. Static test
   a. Remove fuel tank and disconnect ignition coil lead wires from wire harness and spark plug cap.
   b. Connect Electro-Tester as shown.
   c. Connect fully charged 12V. battery to tester.
   d. Turn on spark gap dial and increase gap until misfire occurs.

Minimum spark gap:	0.24 in. (6 mm.)

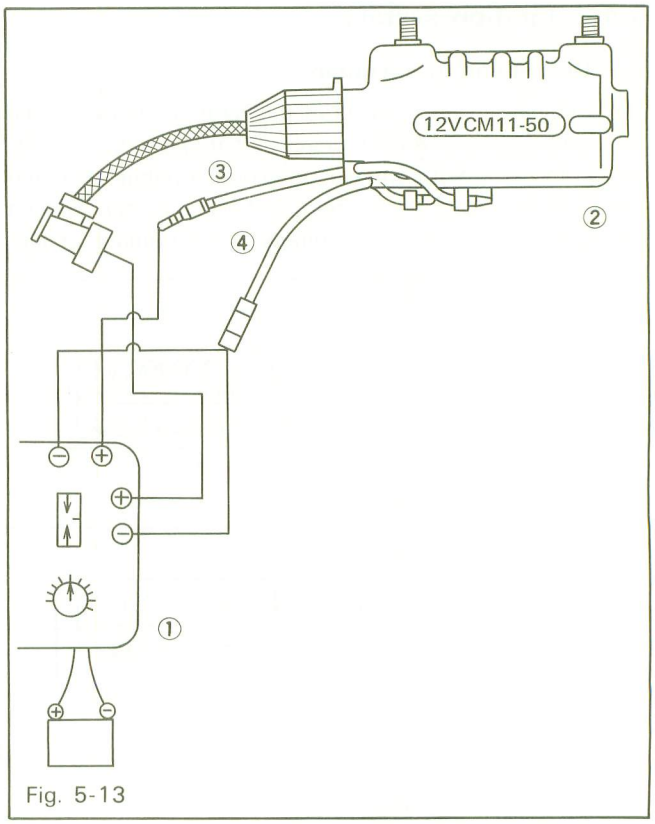

Fig. 5-13

1. Electro-Tester 2. Ignition coil 3. Brown 4. Orange

3. Direct current resistance test
   Use a pocket tester or equivalent ohmmeter to determine resistance and continuity of primary and secondary coil windings.

Primary coil resistance (Use "Ω. × 1" scale)	4.0Ω. ±10%/68°F (20°C)
Secondary coil resistance (Use "Ω. × 100" scale)	11kΩ. ±20%/68°F (20°C)

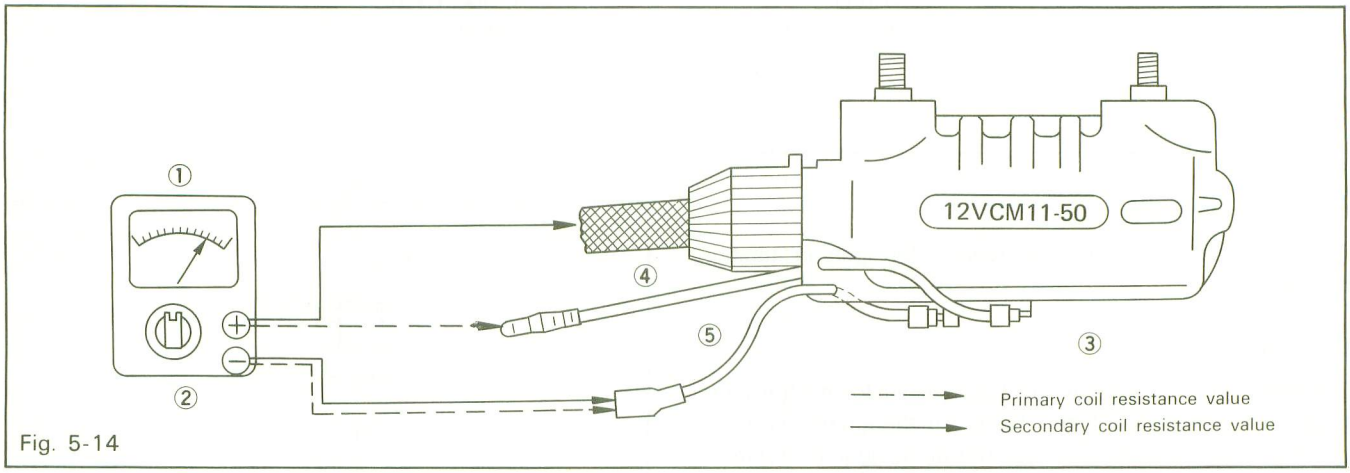

Fig. 5-14

1. Pocket-Tester
2. Set the tester on the "Resistance" position
3. Ignition coil
4. Brown
5. Orange

D. Condenser

The condenser instantly stores a static electric charge as the contact breaker points separate, and the energy stored in the condenser discharges instantly when the points are closed. If it were not for the condenser, an electric arc would jump across the separating contact points, causing them to burn. Burned contact points greatly affect the flow of current in the primary winding of the ignition coil. If the contact points show excessive wear, or the spark is weak (the ignition coil is in good condition), check the condenser.

1. Condenser insulation test (use Electro-Tester)
   a. Set ohmmeter to highest resistance scale (Ω × 1,000 or higher).
   b. Remove condenser from engine and connect ohmmeter as shown below.
   c. Resistance reading should be "Infinity" or very close to it.

Minimum resistance:	3MΩ.

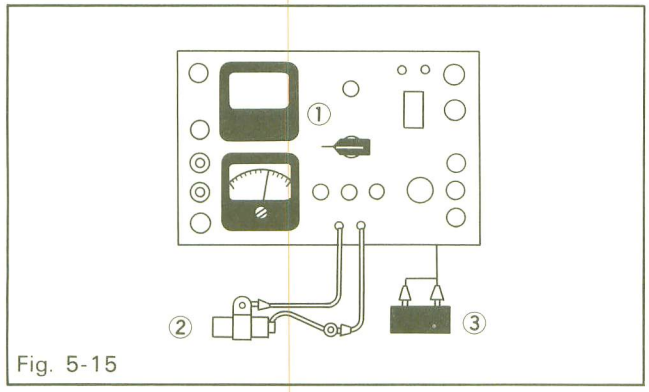

Fig. 5-15

1. Capacity 2. Condenser 3. Battery

2. Capacity test (use Electro-Tester)
   a. Calibrate capacity scale.
   b. Connect tester (same as insulation test).
   c. Meter needle will deflect and return to center as condenser is charged.
   After needle stops, note reading on μF. scale.

Condenser capacity:
0.15μF. (RD125B)
0.22μF. (RD200B)

Caution:
After this measurement, the condenser should be discharged by connecting the positive and negative sides with a thick wire to prevent shock.

5-5. Starting and charging system (RD200B)

The starter-dynamo has two functions:
1. Starting the engine.
2. Supplying current to the 12 volt storage battery.

A. Charging mode

The charging system of the starter dynamo consists of the yoke assembly (shunt field coil and brushes) and the armature assembly (commutator). The armature coil cuts through the magnetic lines of force of the field coil as the engine runs so that the flow of alternating current is induced. The alternating current is converted into a direct current through the commutator brushes. The direct current voltage is kept constant by the voltage regulator, and supplied to each lead of the ignition, lighting and signal system as well as to the battery.

B. Starting mode

In the starting system of the starter dynamo, the series coil and the armature, working as a D.C. motor, generate a great amount of torque, by which the engine is cranked.

C. Checking the dynamo

First disconnect the wires from terminal A (white), then ground terminal F, with a jumper wire. Connect the positive lead of the tester to terminal A (white), and ground the negative tester lead to the engine. Start the engine and keep it running at 1,000 ~ 2,000 r.p.m. If the electricity generated reads more than 10V. on the tester, the generator is in good working condition.

Caution:
Do not run the engine at more than 1,000 ~ 2,000 r.p.m. in this test. Otherwise, a high voltage current generated will ruin the coil, lead wire, etc.

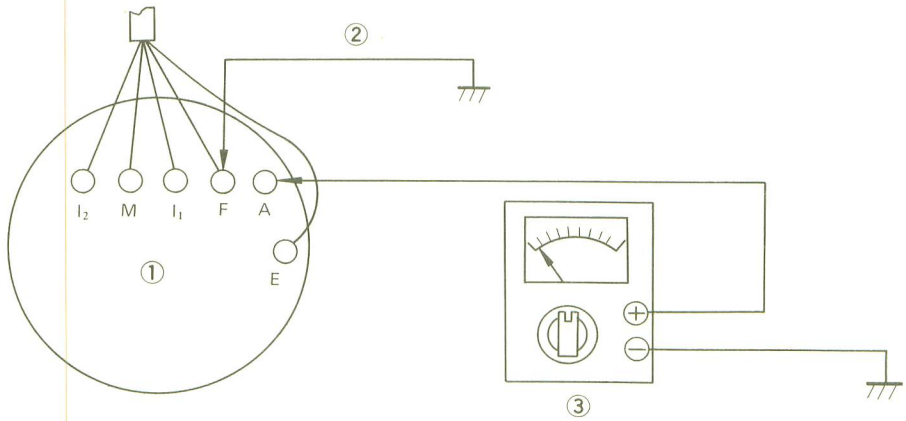

Fig. 5-16

1. Starter dynamo
2. Jumper wire
3. Set the tester on the "D.C. volt" position.

E (Black) I_1 (Gray)
I_2 (Orange) F (Green)
M (Light green) A (White)

1. Checking the yoke assembly
   Clean the yoke with a rag to remove dust, oil and carbon from brush wear, etc.
   a. Field coil brush insulation test
   The positive brush of the field coil is insulated from the yoke and using the tester, you can check its insulation. If the insulation is bad, the circuit between the field coil, or the brush holder, and the yoke is shorted.

Note:
The negative brush is not insulated.

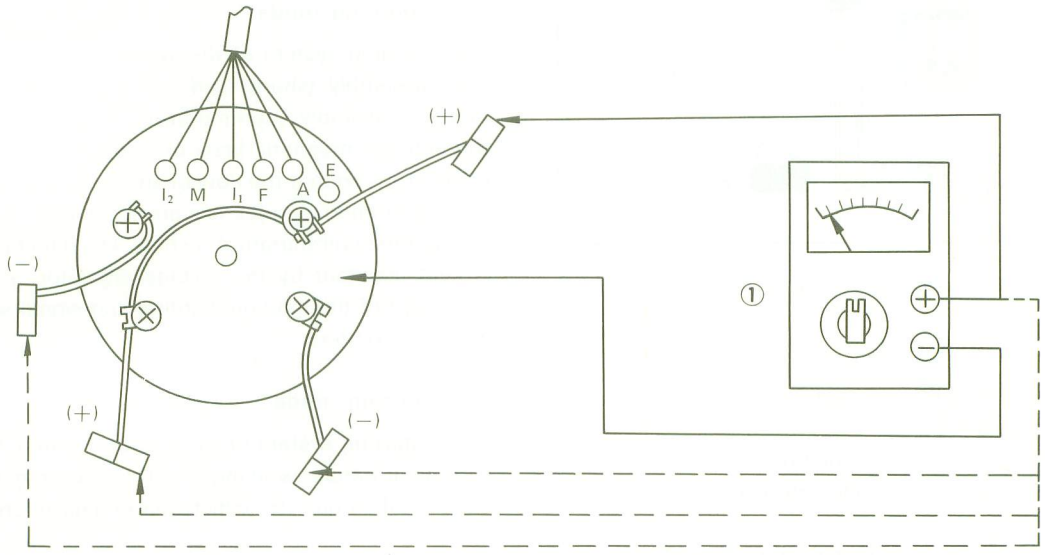

Fig. 5-17

1. Set the tester on the "Resistance" position.

b. Resistance test of field coil
Check the resistance between terminals M—A and A—F. If resistance is out of specification, the field coil is broken. Check the field coil connections. If the coil connections are good, then the coil is broken inside and it should be replaced.

Field coil resistance

Shunt coil (A—F)	4.6Ω. ±10%
Series coil (M—A)	0.0135Ω. ±10%

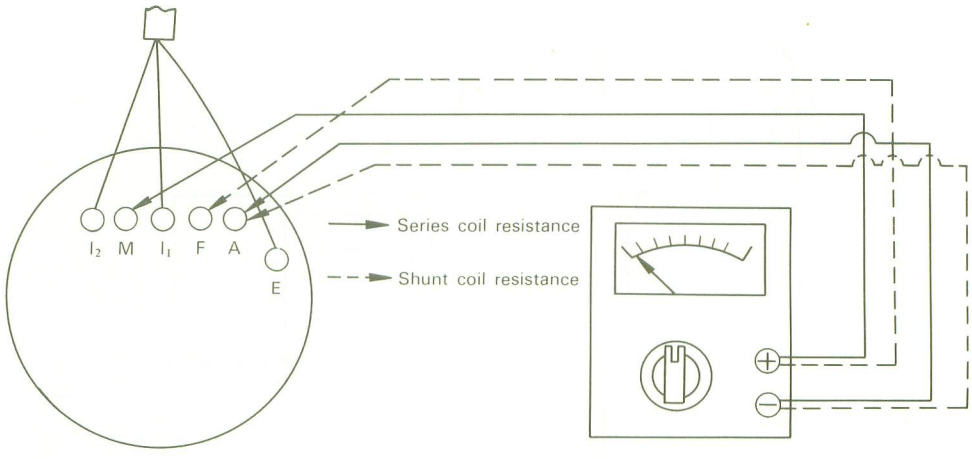

Fig. 5-18

Set the tester on the "Resistance" position.

2. Checking the brushes
   a. The brushes are one of the most important parts in the dynamo. Take out the brushes and check the condition of their contact surfaces. Each brush must contact the commutator with more than 3/4 of its surface area.
      1) If both brush and commutator surfaces are rough, check both the crankshaft and armature for alignment. Smooth down any burrs on the edge of the armature's tapered bore, and clean it thoroughly.
      2) If either brush is worn past the minimum length mark, replace them both with new ones.

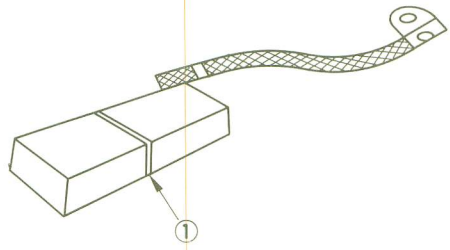

Fig. 5-19

1. Minimum length mark

   b. Materials of the brush
      Use the brush having the model No. "MH-23" on its side.
   c. Handing the brushes
      When replacing the brushes, be sure the braided lead of the positive brush does not touch the edge of the breaker plate or brush holder, and that the lead of the negative brush does not touch the positive brush spring. The friction of the braided lead against other parts as a result of vibrations may wear through the insulation and cause a short circuit.
3. Checking the armature assembly
   a. Thoroughly clean the commutator of oil and dirt.
      1) If the commutator is rough or dulled with brush dust, polish it with fine grain sandpaper (No. 400 ~ 600) by rotating the armature. Partial polishing will only deform the commutator and shorten brush life.

Fig. 5-20

      2) If the commutator is burned, out of round, or too rough to be sandpapered, turn it on a lathe no more than 0.0079 in. (2 mm.) under the standard 1.5157 in. (38.5 mm.) diameter.
   b. Checking the commutator mica undercut
      If the commutator is worn and if it has high mica, the mica should be undercut with saw blade.
      Sand off all burrs with sandpaper, and be sure the mica is cut away clean between segments, leaving no thin edge next to segments.

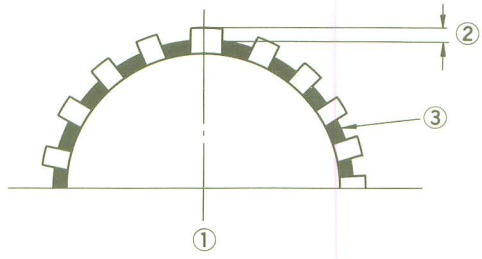

Fig. 5-21

1. Commutator 2. Undercut 3. Mica

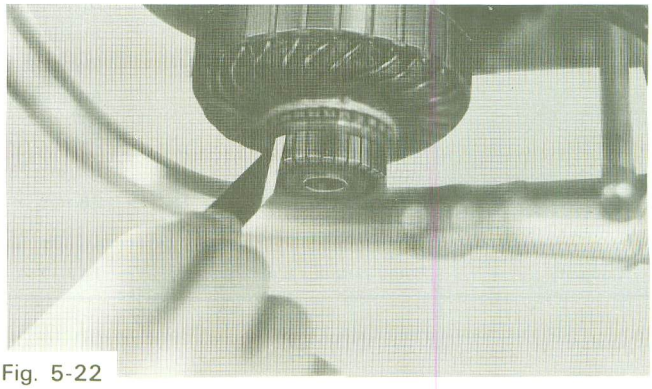

Fig. 5-22

Mica undercut specified value	0.0197 ~ 0.0315 in. (0.5 ~ 0.8 mm.)
Mica undercut wear limits	0.0079 in. (0.2 mm.)

c. Checking armature insulation

1) If there is electrical leakage between the commutator and shaft, replace the armature.

Fig. 5-23

2) If the field coil is perfectly insulated and conductivity is also good, but the dynamo coil might be short-circuited. Check the armature with a growler at a special service shop.

4. Dynamo adjustment standards

Part	Item	Maintenance	Inspection
Field coil	Resistance		When voltage is irregular
	Shunt	4.6Ω±10% (68° F or 20° C)	
	Series	0.0135Ω±10% (68° F or 20° C)	
Brushes	Material	MH23	First 4,000 mi. (600 kms.)
			Every 2,500 mi. (4,000 kms.)
	Number	4	Thereafter
	Width x thickness x length	0.31 x 0.18 x 0.83 in. (8 x 4.5 x 21 mm.)	
	Minimum length	9 mm.	
	Spring pressure	600 g.±15%	
Commutator	Diameter	1.51 in. (38.5 mm.)	
	Minimum diameter	1.43 in. (36.5 mm.)	
	Mica undercut	0.019 ~ 0.032 in. (0.5 ~ 0.8 mm.)	
	Minimum mica undercut	0.008 in. (0.2 mm.)	
	Difference between max. and min. diameter	0.0012 in. (0.03 mm.)	
Breaker	Point gap	0.012 ~ 0.016 in. (0.3 ~ 0.4 mm.)	Every 2,000 mi. (3,000 kms.)
	Point pressure	700±50 g.	(High r.p.m. irregular)
	Ignition timing	B.T.D.C. 1.8±0.15 mm.	(Ignition irregular)
	Automatic spark advance	Starting 1,700±150 r.p.m.	
		Final 2,000±100 r.p.m.	
		Advance 12° ±2°	
Others	Dynamo dia. (outer)	5.2 in. (134 mm.)	
	Dynamo dia. (inner)	5.1 in. (130 mm.)	
	Armature taper	28 mm. x 1/5	
	Cut-in r.p.m.	1,700 r.p.m.	
Capacity	Rated output r.p.m.	14V., 7 A./1,900 r.p.m.	

D. Regulator

The dynamo alone can not provide stable electric current because fluctuating engine r.p.m. affects the voltage. The regulator (also called a voltage relay) stabilizes the voltage generated by breaking the filed coil circuit when the voltage exceeds a proper level.

A cutout relay (also called a charging relay) is built into the regulator. It allows stable electric current from the dynamo to charge the battery. However, when the engine stops, or when its speed is so low that the dynamo output is lower than that of the battery voltage, it breaks the circuit to the battery so that battery will not drain.

The starting switch is provided to direct a flow of current to the starter dynamo when the engine is started.

Inspection and adjustment

If the regulator can no longer control the voltage, the battery will be drained or over-charged, and all electrical parts may be burned out. So use a good tester when inspecting or adjusting the regulator.

(It is advised that you learn how to adjust the regulator at training courses because it is very difficult.)

1. No-load voltage test

a. Inspection

1) Disconnect the lead wire (red) of the regulator and connect the positive tester lead to the lead wire (red). Then ground the negative tester lead.

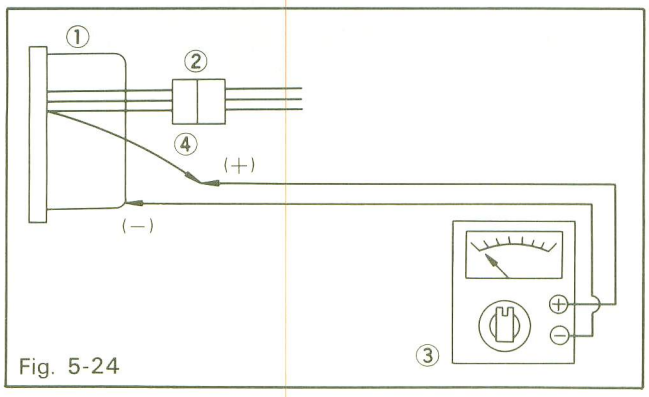

Fig. 5-24

1. Regulator
2. Connector
3. Set the tester on the "D.C. voltage" position.
4. Red wire

2) Start the engine and keep it running at 2,500 r.p.m. Your regulator is correct if the tester reads 15.8 ~ 16.5V.

3) Start the engine and keep it running at 5,000 r.p.m. Your regulator is correct if the tester reads less than 16.9V.

b. Adjustment

If the measured voltage is more or less than specified, adjust the following.

1) Remove the regulator from the frame, and check the contact points. If the point surfaces are rough, they should be smoothed away with sandpaper (#400 ~ 600). After sandpapering, thoroughly clean contact points with point contact cleaner.

2) Check the yoke gap, core gap and point gap. If any gap is incorrect, it should be adjusted.
First adjust the yoke gap and then core gap and point gap.

Yoke gap	0.024 ~ 0.028 in. (0.6 ~ 0.7 mm.)
Core gap	0.016 ~ 0.028 in. (0.4 ~ 0.7 mm.)
Point gap	0.016 ~ 0.020 in. (0.4 ~ 0.5 mm.)

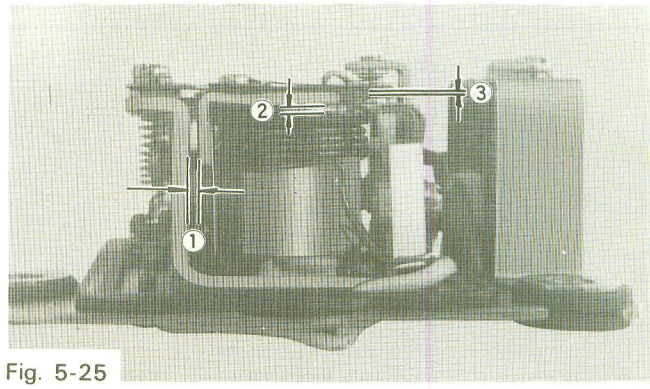

Fig. 5-25

1. Yoke gap
2. Core gap
3. Point gap

3) Adjust the no-load voltage by tightening or loosening the adjusting screw on the voltage relay side. To increase the voltage, turn the adjusting screw clockwise, while to decrease the voltage, turn the screw counterclockwise.

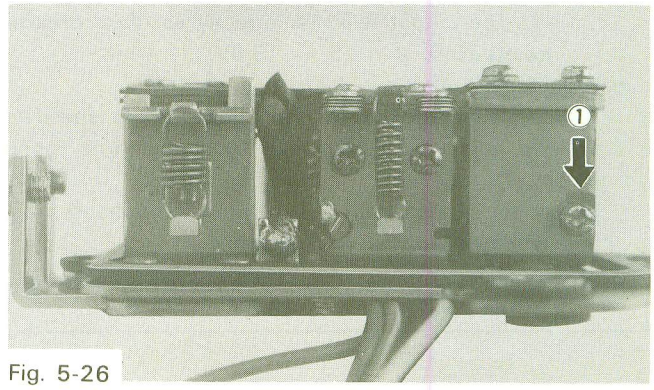

Fig. 5-26

1. Adjusting screw

No-load voltage

15.8 ~ 16.5V. at 2,500 r.p.m.	16.9V. or less at 5,000 r.p.m.

4) After the adjustment, the generated voltage shows slight fluctuations as illustrated. (Fig. 5-28)
When the dynamo speed increases from low (the lower contact is in operation) to high (the upper contact is in operation), the voltage fluctuates slightly, but this is a normal phenomenon. If the voltage shows a 0.5V. increase, the adjustment is considered to be correct.
If the voltage increase is more or less than 0.5V., the core gap should be readjusted.

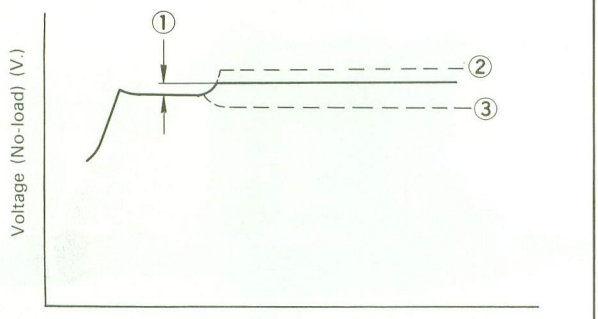

Fig. 5-27

1. About 0.5V. 2. Core gap (larger) 3. Core gap (smaller)

2. Cut-in voltage test of the cutout relay

a. Inspection

1) Connect the testers positive lead to A (white) terminal, then ground the negative lead to the engine.
2) Start the engine, and increase engine speeds slowly. The cutout relay is correctly set if its breaker points close at 12.5 ~ 13.5V.

b. Adjustment

If the breaker points will not close at the specified voltage, adjust the cutout relay by changing its spring tension.
When the spring retainer is lowered the voltage rises, and when raised, the voltage drops.

Cut-in voltage:	12.5V. ~ 13.5V.

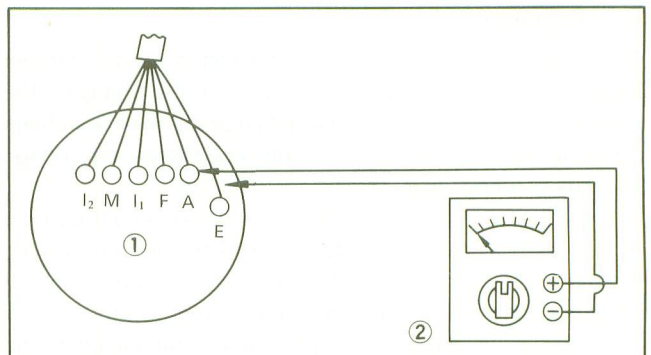

Fig. 5-28

1. Starter dynamo
2. Set the tester on the "D.C. volt" position.

E (Black) I_1 (Gray)
I_2 (Orange) F (Green)
M (Light green) A (White)

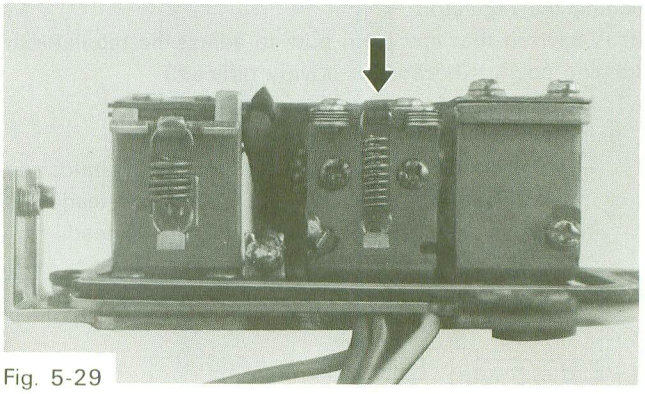

Fig. 5-29

Notes:

Inactual practice, there will rarely be need to adjust the cutout relay.
If the point surfaces of the voltage and cutout relays are worn or pitted, polish them with fine sandpaper (#400 ~ 600) before making any adjustment.

3. Regulator maintenance standards

Part Name	Item	Maintenance Standards	Inspection
Voltage regulator	No-load voltage adjustment value	15.8 ~ 16.5V./2,500 r.p.m. 16.9V. or less/5,000 r.p.m.	When voltage is irregular
	Voltage coil resistance value	11.8Ω ±15%	
	Yoke gap	0.024 ~ 0.028 in. (0.6 ~ 0.7 mm.)	
	Core gap	0.016 ~ 0.028 in. (0.4 ~ 0.7 mm.)	
	Point gap	0.016 ~ 0.020 in. (0.4 ~ 0.5 mm.)	
Cutout relay	Cut-in voltage	12.5 ~ 13.5V.	
	Reversing current	5A. or less	
	Voltage coil resistance value	11.2Ω ±15%	
	Core gap	0.031 ~ 0.039 in. (0.8 ~ 1.0 mm.)	
	Point gap	0.024 ~ 0.031 in. (0.6 ~ 0.8 mm.)	
Magnetic switch	Actuating voltage	10V.	
	Core gap	0.051 ~ 0.055 in. (1.3 ~ 1.4 mm.)	
	Point gap	0.055 ~ 0.059 in. (1.4 ~ 1.5 mm.)	

5-6. Charging system (RD125B)

An A.C. generator is used for RD125B. The current generated is rectified by a silicon rectifier of single phase bridge type and supplied diredtly to battery, ignition coil, headlight, tailight, stoplight, neutral pilot light, flasher lights, flasher pilot lights and horn.

A. Main components

This is electromagnetic generator that generates power by revolution of 6-pole permanent magnets inside the generator coils, and the principle of operation is entirely identical to that of flywheel magnetos. The A.C. generator is provided with the following advantages as compared with conventional ignition dynamo and starter dynamo.

1. Structure is simple, rugged and trouble-free.
2. S.C.R. type voltage regulator:
   There are no moving parts in this regulator; therefore, adjustment is unnecessary.

B. Voltage regulator — operation

This voltage regulator is connected to the generator coils of the A.C. generator at one end and grounded to the chassis on the other end. The voltage of the battery is detected on the A.C. output side of the regulator, and by controlling the A.C. output of half waves with S.C.R. (silicon controlled rectifier), the over-charging of the battery is prevented. That is, this regulator is of a generator coil shortcircuiting type.
As illustrated below, the voltage regulator (enclosed by a chain line) consists of the voltage detector circuit to detect the voltage of the battery, the gate trigger circuit and S.C.R. As the engine speed increases, the output of the generator coils increases. When the voltage of the battery increases, the voltage at the "a" point where the regulator is connected also increases. When the voltage at the "a" point exceeds the preset voltage by the voltage detector circuit in the regulator, the gate circuit trigger circuit operates, thus allowing current to flow to the gate of S.C.R. This makes S.C.R. conduct, and current flows from the generator coils as indicated by the broken line, and thereby the voltage of the battery is controlled properly.

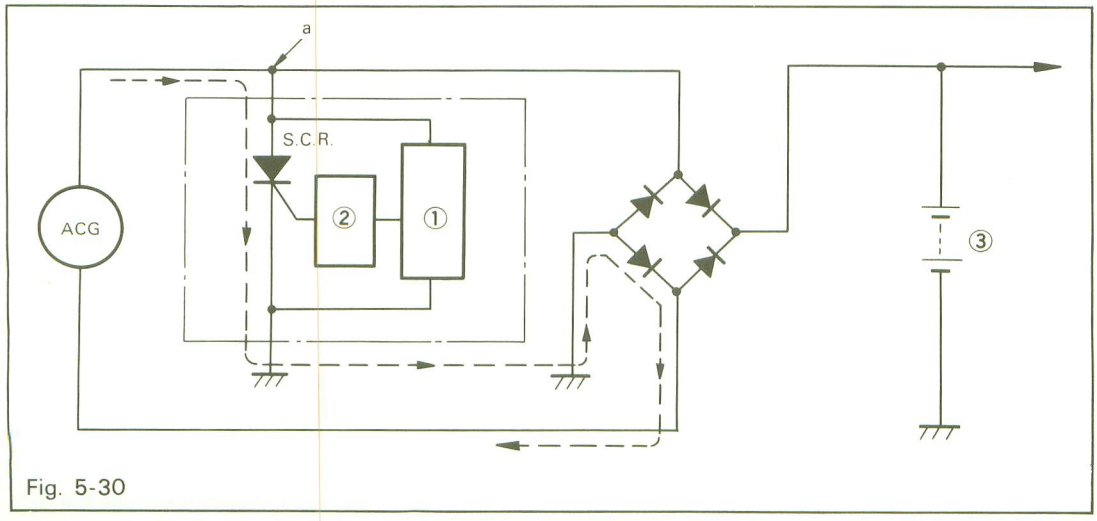

Fig. 5-30

1. Voltage detector circuit
2. Gate trigger circuit
3. Battery

C. Inspection of A.C. generator

It the headlight gives insufficient illumination and/or if battery discharges within a short period of time, make the following checks.

D. Measurement fo charging current

1. Disconnect the battery's red lead wire at connector.
2. Connect a D.C. ammeter (of about 5A) as shown in Fig. 5-31.
3. Start the engine and measure the charging current at specified engine r.p.m. with the switch placed in daytime position and then in nighttime position.
4. The amperage reading will be slightly higher than the normal value if battery is undercharged.

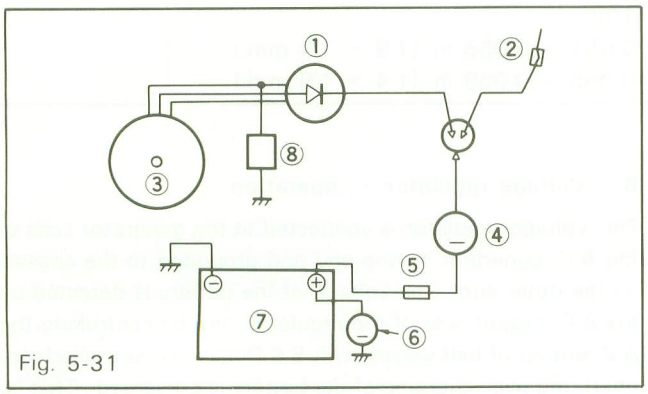

Fig. 5-31

1. Silicon rectifier
2. Fuse
3. AGC
4. Ammeter
5. Connector
6. Voltage meter
7. Battery
8. Voltage regulator

E. Standard value

Engine speed	Daytime	Night time
5,000 r.p.m.	1.6 ±0.5A.	1.3 ±0.5A.

F. Silicon rectifier

The single-phase bridge type silicon rectifier changes the alternating current generated by the A.C. generator into direct current.

As illustrated, remove the multiple connector before the test.

Rectifier

1) ..... White 1 — Shaft grounding
2) ..... Red — White 1
3) ..... Red — White 2
4) ..... White 2 — Shaft grounding

As illustrated, the silicon rectifier must be checked in both normal and reverse directions. If the tester readings are 9 to 10 ohms, the function of the rectifier in the forward direction is good. Then, test it in the reverse direction. If the tester pointer will not swing from ∞ resistance mark, the rectifier is considered to be in good condition.

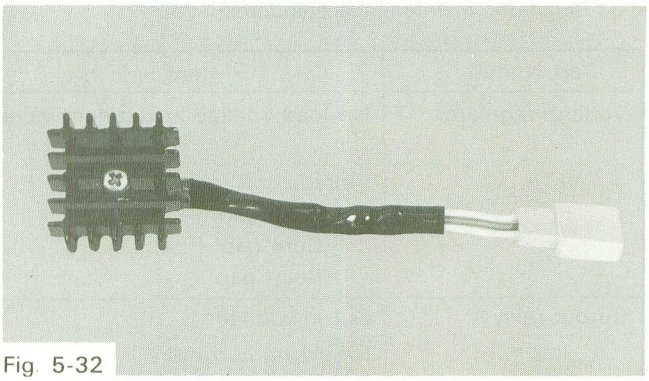
Fig. 5-32

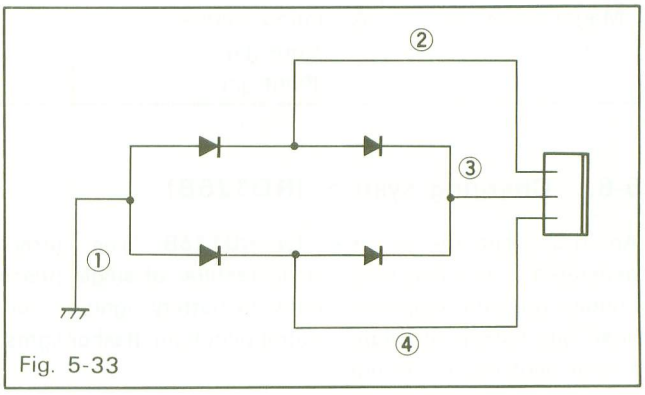

Fig. 5-33

1. Ground to the shaft
2. White 1
3. Red
4. White 2

G. Precautions for handling electrical equipment

1. Do not disconnect battery from electrical circuit while riding.
   Otherwise the no-load voltage of A.C. generator and a surge voltage of ignition coil will be impressed on the silicon rectifier, causing rectifier failures. Same trouble will occur if fuse is blown or any connector of battery wiring becomes loose while riding.
   Because of the fact that the silicon rectifier is grounded to the shaft. Care should be exercised in installation of silicon rectifier to the adaptor plate and installation of adaptor plate to frame.
2. Do not reverse battery connections.
   If connections are reversed, the battery will be shorted through the rectifier, resulting in failure.
   Never reverse the connections.
3. Use proper load.
   The battery charging current is determined to be appropriate when the load is as described in the section of charging performance of A.C. generator.
   The changing current drops when the load increases, and increases when the load decreases, and the battery will be discharged or overcharged accordingly.
4. Handing of silicon rectifier
   Do not make a wrong wiring, and do not expose the rec-

tifier to high temperature. Silicon may withstand temperature of up to 140°C (at junction) but a temperature higher than 140°C will break the silicon rectifier.

Do not apply excessive voltage (400V. or higher at peak value) during measurement.

Do not allow large current to flow through rectifier. (Current of 8.5A rating or higher should not be applied.)

5-7. Battery

The battery is the power source for the horn, stoplight, neutral light and flasher lights. Because of the fluctuating charging rate due to the changes in engine r.p.m., the battery will lose its charge if the horn and stoplight are excessively used.

The charging of the battery begins at about 2,500 r.p.m. Therefore, it is recommended to sustain engine r.p.m. at about 3,000 to 4,000 r.p.m. to keep the battery charged properly. If the horn, stoplight and starter switch are used very often, the battery water should be checked regularly as continuous charging will dissipate the water.

A. Checking

1. If sulfation occurs on plates due to lack of battery electrolyte, showing white accumulations, the battery should be replaced.
2. If the bottoms of the cells are filled with corrosive material falling off plates, the battery should be replaced.
3. If the battery shows the following defects, it should be replaced.

a. The voltage will not rise to a specific value even after long hours charging.
b. No gassing occurs in any cell.
c. The 12V. battery requires a charging voltage of more than 14V. in order to supply a current of 0.9A. for 10 hours.

B. Service life

The service life of a battery is usually 2 to 3 years, but lack of care as described below will shorten the life of the battery.

a. Negligence in re-filling the battery with electrolyte.
b. Battery being left discharged.
c. Over-charging by rushing charge.
d. Freezing.
e. Filling with water or electrolyte containing impurities.

Service standards RD125B

Battery Specification	12V. 5.5AH.	
Electrolyte-specific gravity	1.26	At full charge
Initial charging current	0.55A. for 25 hours or to max. spec. gravity	Brand new motorcycle
Charging current	0.55A. for 10 hours (Charge until specific gravity reaches 1.26)	When discharged
Re-filling of electrolyte	Distilled water up to the max. level line	Once a month/1,000 miles

Service standards RD200B

Battery Specification	12V. 9AH.	
Electrolyte-specific gravity	1.27 ~ 1.28	At full charge
Initial charging current	0.9A. for 25 hours or to max. spec. gravity	Brand new motorcycle
Charging current	0.9A. for 10 hours (Charge until specific gravity reaches 1.27 ~ 1.28)	When discharged
Re-filling of electrolyte	Distilled water up to the max. level line	Once a month/1,000 miles

C. Storage

1. If motorcycle is not used for long time, remove the battery and have it stored by a battery service shop. The following instructions should be observed by shops equipped with chargers.

a. Recharge the battery.
b. Store the battery in a cool, dry place, and avoid temperatures below 0°C (32°F).
c. Recharge the battery before mounting it on the motorcycle.
d. If left in storage for more than 30 days, the battery should be recharged every 30 days keeping electrolyte level at maximum at all times.

5-8. Lighting and signal systems

A. Description

The lighting system consists of the horn, headlight taillight, stoplight, flasher lights, meter lamps and the battery.

Warning:
Use bulbs of the correct capacity for the headlight, taillight, meter lamps and indicator lamps which are directly connected to the battery. If large capacity bulbs are used, the voltage will drop, giving a poor light. On the contrary, if smaller capacity bulbs are used, the voltage will rise, shortening the life of bulbs.

B. Lighting tests and checks

The 12V. battery provides power for operation of the horn, headlight, taillight, stoplight, neutral light and flasher lights. If none of the above operate, always check battery voltage before proceeding further. Low battery voltage indicates either a faulty battery, low battery water, or a defective charging system.
See Section 5-5, 5-6, starting and charging system, for checks of battery and charging system.

1. Horn does not work.
   a. Check for +12V. on brown wire to horn. (Main switch must be "ON" position.)
   b. Check for good grounding of horn (pink wire) when horn button is pressed.
2. Headlight does not work.
   a. Check the bulb.
   b. High beam does not work.
      Check for +12V. on yellow wire to headlight. (Main switch must be in I or III position and dimmer switch must be in "HI" position and lighting switch must be in "ON" position.)
   c. Low beam does not work
      Check for +12V. on green wire to headlight. (Main switch must be in I or III position and dimmer switch must be in "LO" position and lighting switch must be in "ON" position.)
   d. High and low beam do not work.
      1) Check for +12V. on blue/red wire to left handlebar switch. (Main switch must be in I or III position, and lighting switch must be in "ON" position.)
      2) Check for +12V. on red/yellow wire to right handlebar switch. (Main switch must be in I position.)
      3) Check for +12V. on blue wire to right handlebar switch. (Main switch must be in III position.)
      4) Check for ground on black wire to headlight assembly.
3. Neutral lamp does not work.
   a. Check bulb.
   b. Check for ground on light blue wire to neutral light when transmission is in neutral.
   c. Check for +12V. on brown wire to neutral light.
   d. Replace neutral switch.
4. Taillight does not work.
   a. Check bulb.
   b. Check for +12V. on blue wire to taillight.
   c. Check for ground on black wire to tail/stoplight assembly.
5. Stoplight does not work.
   a. Check bulb.
   b. Check for +12V. on yellow wire to stoplight.
   c. Check for +12V. on brown wire to each stop switch (front and rear brake switches).
   d. Check for ground on black wire to tail/stoplight assembly.
6. Flahser lights do not work.
   a. Check bulbs.
   b. Right circuit.
      1) Check for +12V. on dark green wire to light.
      2) Check for ground on black wire to light assembly.
   c. Left circuit.
      1) Check for +12V. on dark brown wire to light.
      2) Check for ground on black wire to light assembly.
   d. Right and left circuits do not work.
      1) Check for +12V. on brown/white wire to flasher switch on left handlebar.
      2) Check for +12V. on brown wire to flasher relay.
      3) Replace flasher relay.
      4) Replace flasher switch.

5-9. Switches

The main switch and the right and left handlebar switches may be checked for continuity or shorts with a pocket tester on the "Ω × 1" scale.

Wire color abbreviations			
Red — R	Red/Yellow — R/Y	Green — G	Blue/White — L/W
Brown — Br	Brown/White — Br/W	Blue/Red — L/R	
White — W	Dark Brown — Ch	Yellow — Y	
Blue — L	Dark Green — Dg	Pink — P	

1. Main switch (RD200B)

Switch Position	Wire Color				
	R	Br	W	L	R/Y
OFF					
I	○	○			○
II		○	○		
III	○			○	

2. Main switch (RD125B)

Switch Position	Wire Color				
	R	Br	L	Y/W	G/W
OFF					
I	○	○			
II	○	○	○	○	○

3. "ENGINE STOP" switch (Right handlebar) (RD200/125B)

Switch Position	Wire Color	
	R/W	Br
RUN	○	○
OFF		

4. Lighting switch (Right handlebar) (RD200B only)

Switch Position	Wire Color		
	L	R/Y	L/R
OFF			
ON	○	○	○

5. "START" button (Right handlebar) (RD200B only)

Button Position	Wire Color	
	L/W	⏚
OFF		
PUSH	○	○

6. "DIMMER" switch (Left handlebar) (RD200/125B)

Switch Position	Wire Color		
	Y	L/R	G
HI	○	○	
LO		○	○

7. "TURN" switch (Left handlebar) (RD200/125B)

Switch Position	Wire Color		
	Dg	Br/W	Ch
RIGHT	○	○	
OFF			
LEFT		○	○

8. "HORN" button (Left handlebar) (RD200/125B)

Button Position	Wire Color	
	P	⏚
OFF		
PUSH	○	○

MEMO

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CHAPTER 6. CHASSIS

6-1. Special tools

1. Vernier caliper

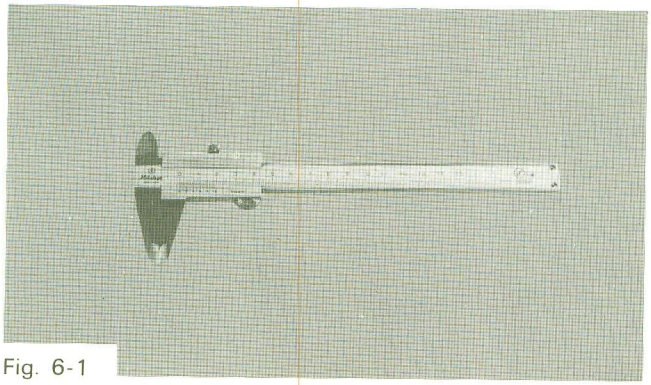

Fig. 6-1

2. Torque wrench

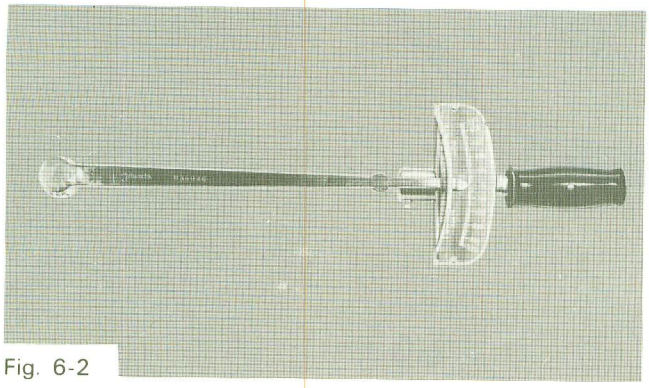

Fig. 6-2

3. Tire pressure gauge

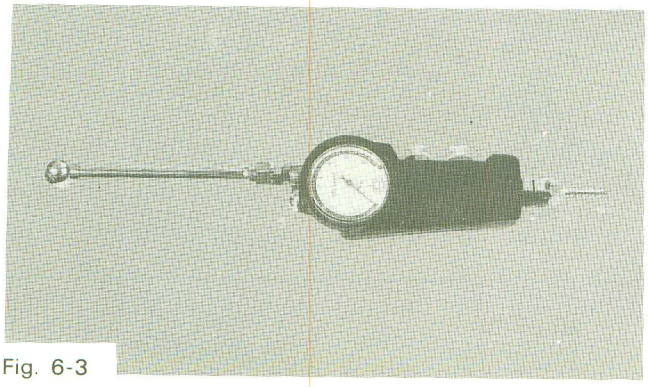

Fig. 6-3

4. Steering nut wrench

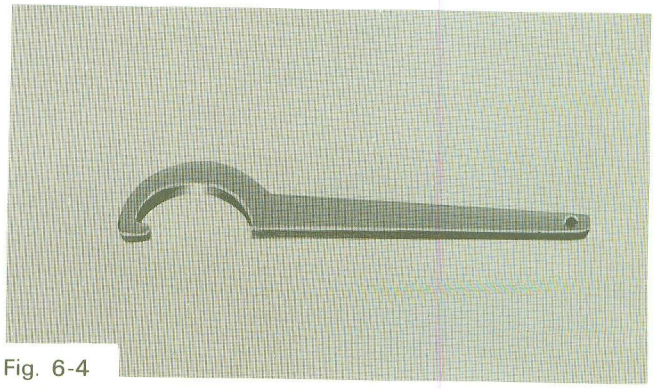

Fig. 6-4

5. Fluid measuring cup (CC)

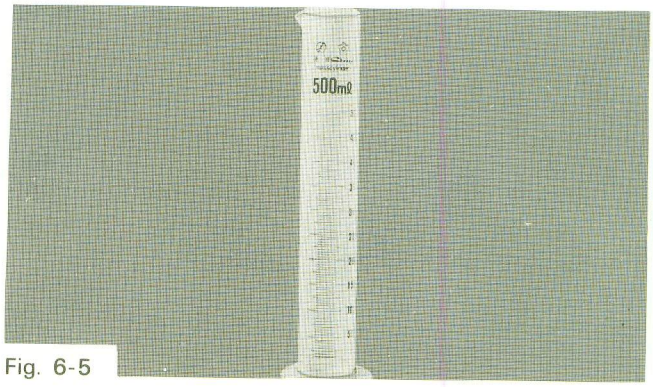

Fig. 6-5

6. Grease gun (hand pump type)

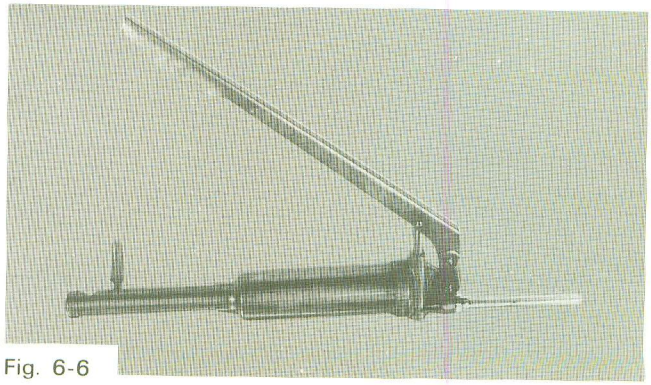

Fig. 6-6

6-2. Front wheel

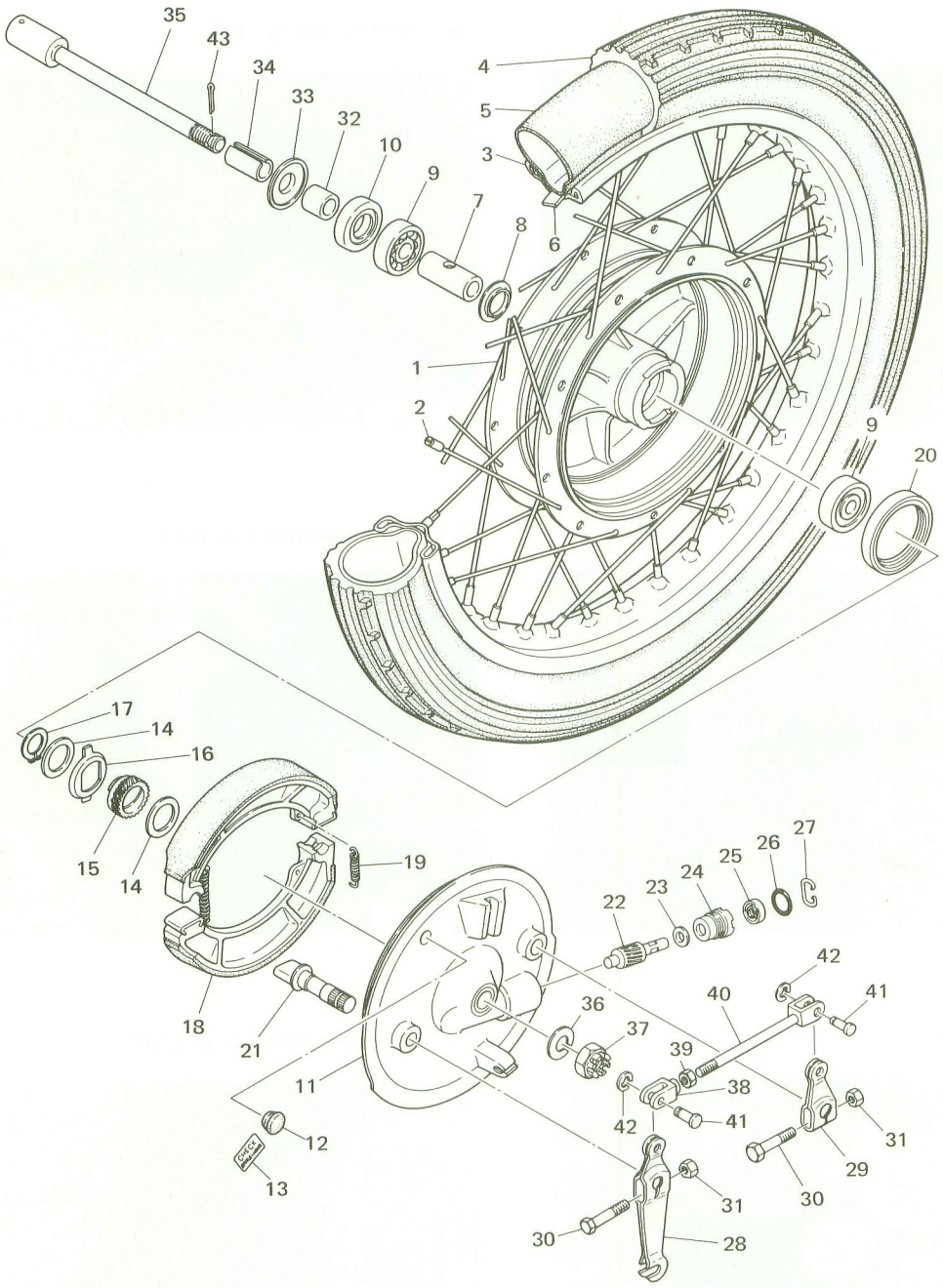

Fig. 6-7

1. Front hub
2. Spoke set
3. Rim
4. Front tire
5. Tube
6. Rim band
7. Bearing spacer
8. Spacer flange
9. Bearing
10. Oil seal
11. Plate brake shoe assembly
12. Grommet
13. Indicator label
14. Washer
15. Drive gear
16. Meter clutch
17. Circlip
18. Brake shoe complete
19. Spring
20. Oil seal
21. Camshaft
22. Meter gear
23. Washer
24. Bushing
25. Oil seal
26. O-ring
27. Stopper ring
28. Camshaft lever 1
29. Camshaft lever 2
30. Bolt
31. Nut
32. Collar
33. Hub dust cover
34. Collar
35. Wheel shaft
36. Spring washer
37. Nut
38. End rod
39. Nut
40. Connecting rod
41. Pin
42. Circlip
43. Cotter pin

A. Removal

1. Disconnect the brake cable.
2. Disconnect the speedometer cable from the front wheel backing plate.

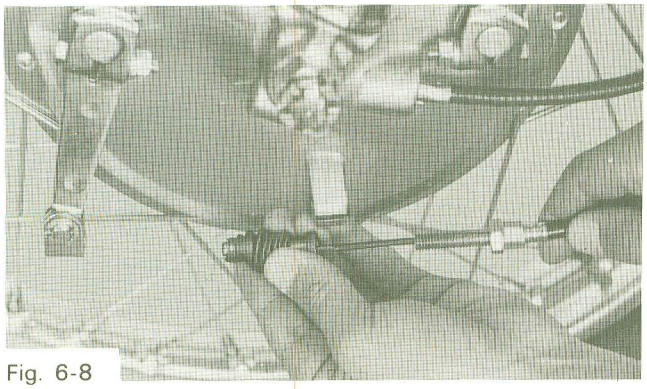

Fig. 6-8

3. Remove cotter pin from front wheel nut.
4. Loosen the axle pinch bolt at the bottom of the right-hand fork leg.

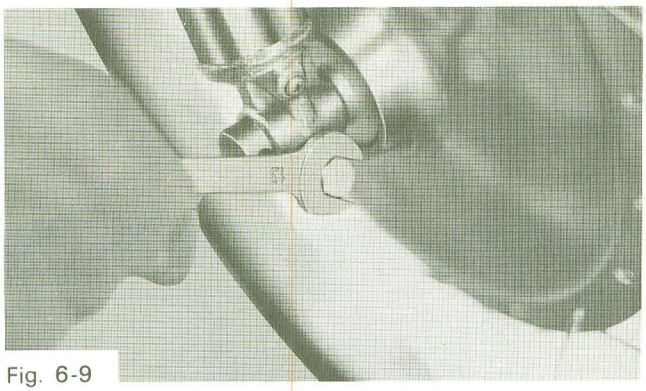

Fig. 6-9

5. Remove the front wheel nut.
   (Use a small round shaft in the hole at the end of the axle to keep axle from turning.)

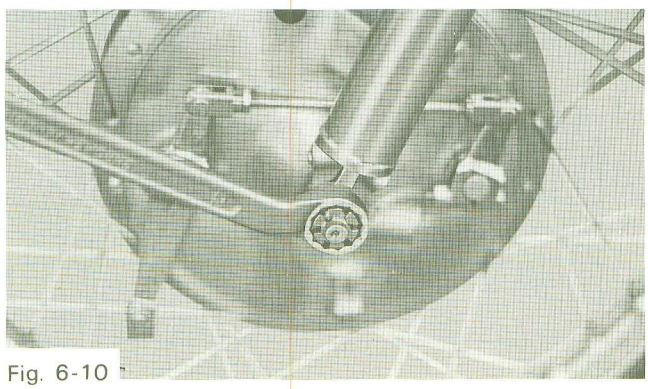

Fig. 6-10

6. Remove the front wheel axle by simultaneously twisting and pulling out on the axle. Then remove the wheel assembly.
   (Raise the front of the machine by placing a support under the engine.)

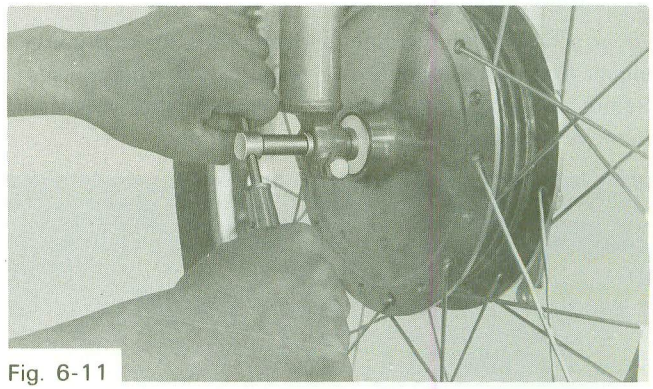

Fig. 6-11

B. Front axle

Remove any corrosion from the axle with emery cloth. Then place it on a surface plate and check for bending. If bent, replace.

C. Checking brake shoe wear

Measure the outside diameter at the brake shoe with slide calipers.
If it measures less than specified, replace.

	RD125B	RD200B
Front brake shoe diameter	5.9 ins. (150 mm.)	7.1 ins. (180 mm.)
Replacement limit	5.7 ins. (145 mm.)	6.9 ins. (175 mm.)

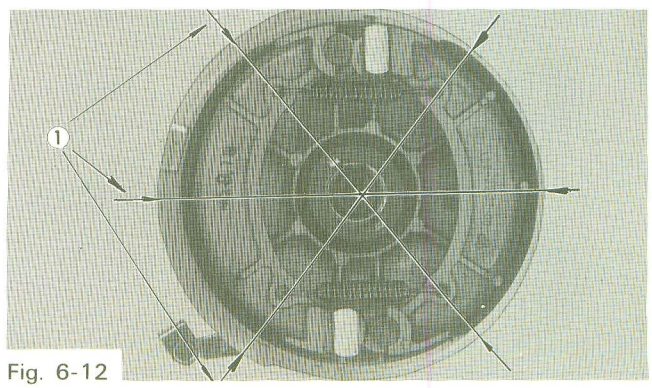

Fig. 6-12

1. Measuring point

Remove any glazed areas from brake shoes using coarse sandpaper or fine file. Remove only as much as required. Remeasure to make sure minimum thickness tolerance has not been exceeded.

D. Brake drum

Oil or scratches on the inner surface of the brake drum will impair braking performance or result in abnormal noises. Remove oil with a rag soaked in lacquer thinner or solvent. Remove scratches using emery cloth lightly.

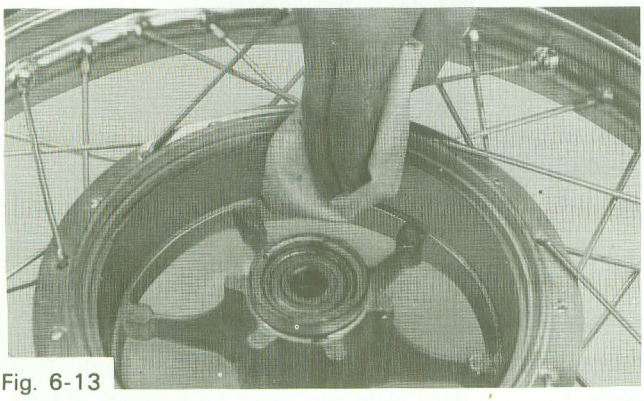

Fig. 6-13

E. Replacing wheel bearings

If the bearings allow play in the wheel or if they do not turn smoothly, replace as follows:

1. First clean the outside of the wheel hub.
2. Drive the bearing out by pushing the spacer to one side (the spacer "floats" between the bearings) and tapping around the perimeter of the bearing inner race with a soft metal drift pin and hammer. Or, using an L-shaped steel rod inserted into the hole in the bearing spacer, the spacer may be used to drive out the bearing. Either or both bearings can be removed in either manner.

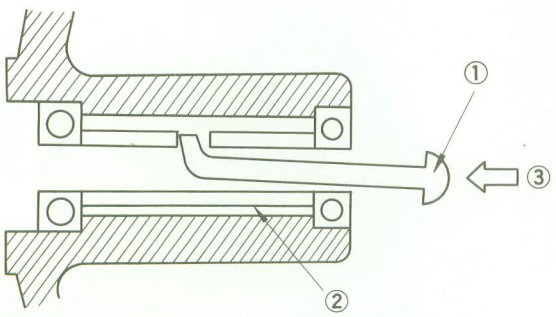

Fig. 6-14

1. L-shaped steel rod
2. Bearing spacer
3. Tap

3. Push out the bearing on the other side.
4. To install the wheel bearings, reverse the above sequence.
   Be sure to grease the bearings before installation.

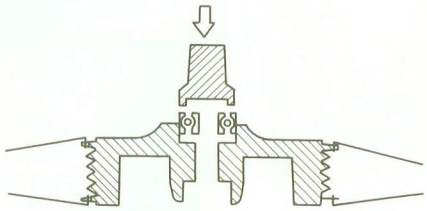

Fig. 6-15

5. If the tooth surface of the helical speedometer drive gear is excessively worn, replace it.
6. Check the lips of the seals for damage or wear. Replace as required.

F. Installing front wheel

Caution:

1. After replacing wheel and axle, tighten axle nut FIRST and install a new cotter pin.

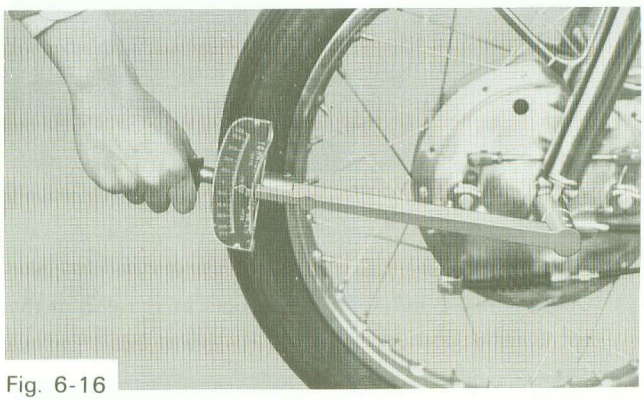

Fig. 6-16

Axle nut torque:
47.7 ~ 75.9 ft-lbs. (6.6 ~ 10.5 m-kgs.)

2. Then tighten the axle pinch bolt.

Pinch bolt torque:
139 ~ 226 in-lbs. (1.6 ~ 2.6 m-kgs.)

6-3. Rear wheel

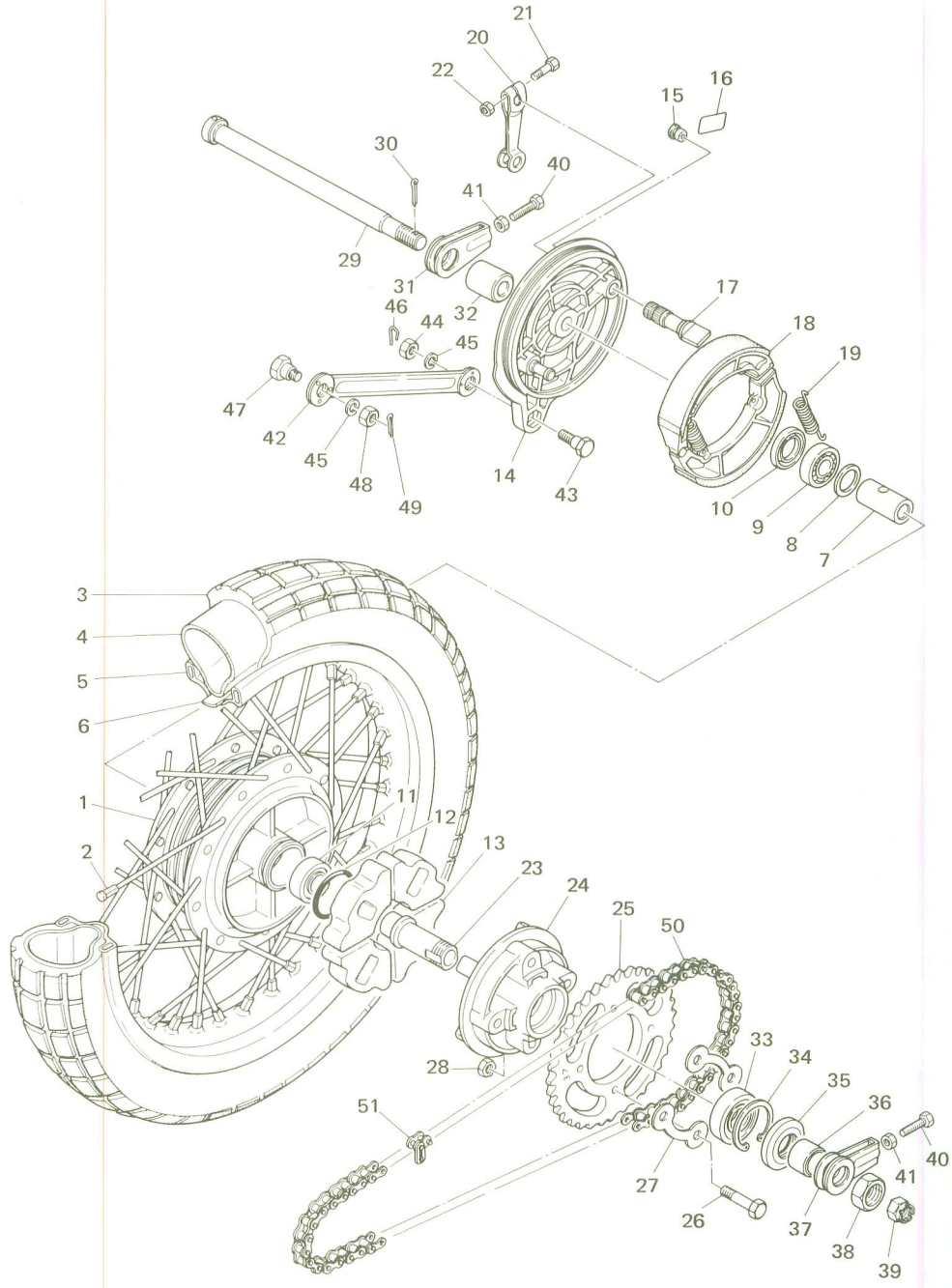

Fig. 6-17

1. Rear hub
2. Spoke set
3. Rear tire
4. Tube
5. Rim
6. Rim band
7. Spacer
8. Spacer flange
9. Bearing
10. Oil seal
11. Bearing
12. O-ring
13. Clutch damper
14. Plate brake shoe assembly
15. Grommet
16. Indicator label
17. Camshaft
18. Brake shoe complete
19. Spring
20. Camshaft lever
21. Bolt
22. Nut
23. Sprocket shaft
24. Hub clutch
25. Sprocket wheel gear
26. Bolt
27. Lock washer
28. Nut
29. Wheel shaft
30. Cotter pin
31. Chain puller
32. Collar
33. Bearing
34. Circlip
35. Oil seal
36. Collar
37. Chain puller
38. Nut
39. Nut
40. Bolt
41. Nut
42. Tension bar
43. Bolt
44. Nut
45. Spring washer
46. Clip
47. Bolt
48. Nut
49. Cotter pin
50. Chain
51. Chain joint

A. Removal

1. Remove the tension bar and brake rod from rear shoe plate.

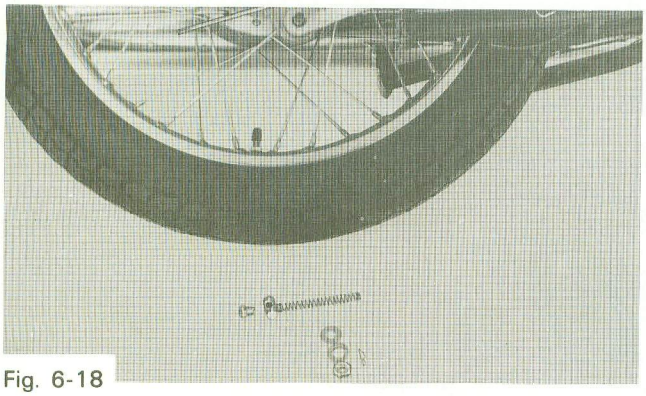

Fig. 6-18

2. Remove cotter pin from rear wheel axle nut.
3. Remove the rear wheel axle nut.
4. Pull out the rear wheel axle by simultaneously twisting and pulling out.

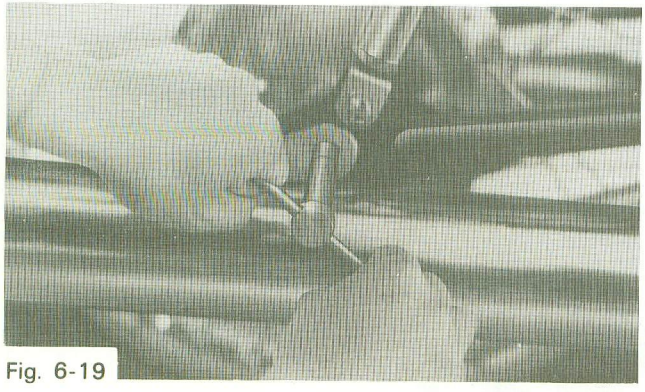

Fig. 6-19

5. Remove the rear brake shoe plate, and axle collar.

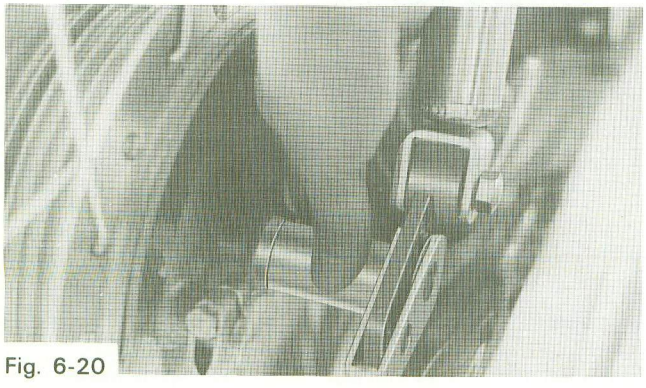

Fig. 6-20

6. Lean the machine over to the left and remove the rear wheel assembly.

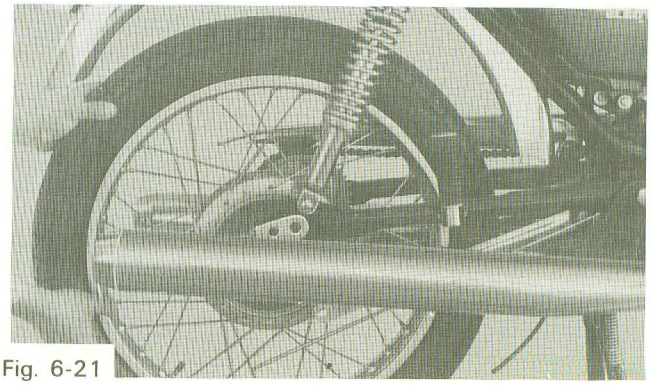

Fig. 6-21

B. Checking brake shoe wear

1. Measure the outside diameter at the brake shoe with slide calipers.
   If it measures less than specified, replace.

	RD125B	RD200B
Rear brake shoe diameter	5.1 ins. (130 mm.)	7.1 ins. (180 mm.)
Wear limit	4.9 ins. (125 mm.)	6.9 ins. (175 mm.)

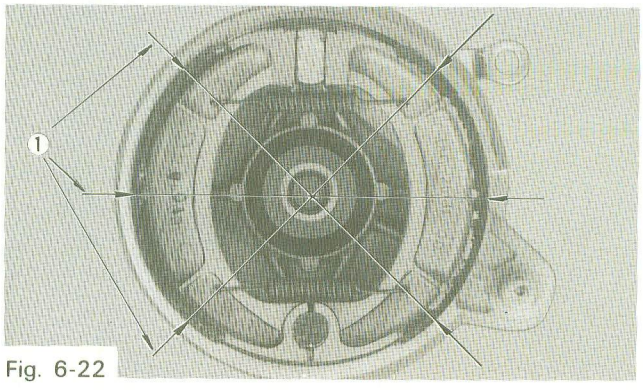

Fig. 6-22

1. Measuring point

2. Remove any glazed areas from brake shoes using coarse sandpaper or file.

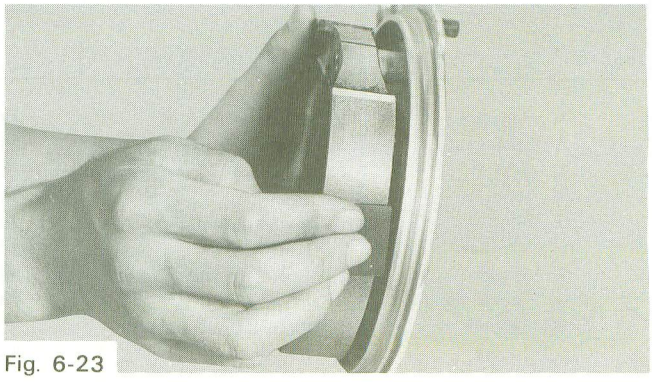

Fig. 6-23

C. Brake drum

Oil or scratches on the inner surface or the brake drum will impair braking performance or result in abnormal noises. Remove oil with a rag soaked in lacquer thinner or solvent. Remove scratches using emery cloth lightly.

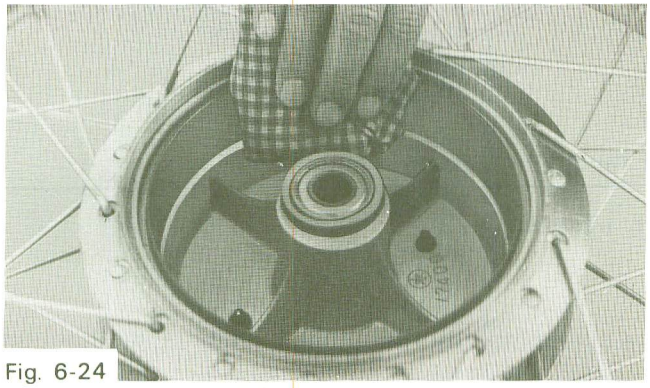

Fig. 6-24

D. Replacing wheel bearings

See front wheel section, paragraph 6.

E. Installation

1. Reverse disassembly procedure.
2. Align wheel, adjust chain tension, and check brake light operation per instructions in section 2-3, chassis adjustments.

6-4. Rims and spokes (front and rear wheels)

A. Checking for loose spokes

Loose spokes can be checked by bracing the machine off the ground so that the wheel can spin free.
Slowly revolve the wheel and at the same time let the metal shaft of a fairly heavy screwdriver bounce off each spoke. If all the spokes are tightened approximately the same, then the sound given off by the screwdriver hitting the spokes should sound the same. If one spoke makes a dull flat sound, then check it for looseness.

B. Checking rim "run-out"

While you have the wheel elevated, you should check that it does not have too much run-out.
"Run-out" is the amount the wheel deviates from a straight line as it spins. Spin the wheel, and solidly anchor some sort of a pointer about 1/8 in. (3 mm.) away from the side of the rim.
As the wheel spins, the distance between the pointer and the rim should not change more than 1/16 in. (2 mm.) total. Any greater fluctuation should be eliminated by properly adjusting the spokes.

Lateral run-out limits:	0.08 in. (2 mm.)
Vertical run-out limits:	0.08 in. (2 mm.)

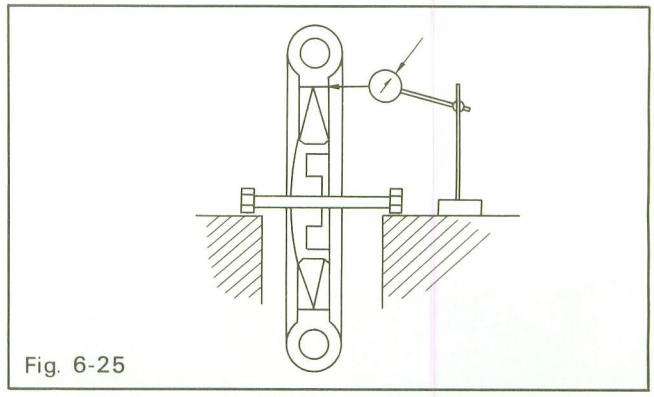

Fig. 6-25

6-5. Tires and tubes

A. Removal

1. Remove valve cap, valve core, and valve stem lock nut.
2. When all air is out of tube, separate tire bead from rim. (both sides) by stepping on tire with your foot.
3. Use two tire removal irons (with rounded edges) and begin to work the tire bead over the edge of the rim, starting 180° opposite the tube stem.
   Take care to avoid pinching the tube as you do this.
4. After you have worked one side of the tire completely off the rim, then you can slip the tube out. Be very careful not to damage the stem while pushing it back out of the rim hole.

   Note:
   If you are changing the tire itself, then finish the removal by working the tire off the same rim edge just previously mentioned.

B. Installing tire and tube

Reinstalling the tire and tube can be accomplished by reversing the disassembly procedure. The only difference in procedure would be right after the tube has been installed, but before the tire has been completely slipped onto the rim, inflate the tube. This removes any creases that might exist. Release the air and continue with reassembly. Also, right after the tire has been completely slipped onto the rim, make sure that the valve stem comes out of the hole in the rim at a right angle to the rim.

Tire pressure	Front	23 lbs/in.^{2} (1.6 kg/cm.^{2})	Normal riding
	Rear	28 lbs/in.^{2} (2.0 kg/cm.^{2})	

6-6. Drive chain and sprockets

A. Chain

Note:
Please refer to Maintenance and Lubrication Intervals charts for additional information.

1. Using a blunt-nosed pliers, remove the master link clip and side plate. Remove the chain.

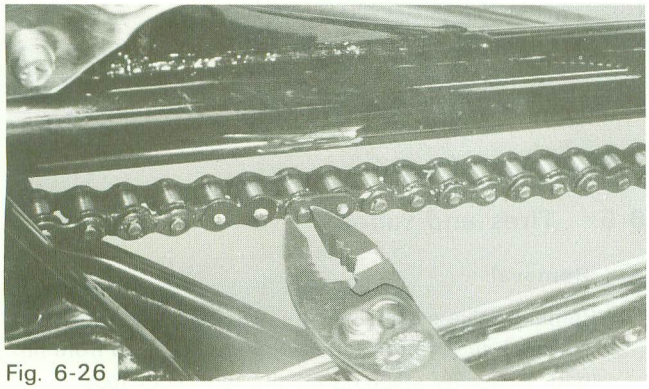

Fig. 6-26

2. During reassembly, the master link clip must be installed with rounded end facing the direction of travel.

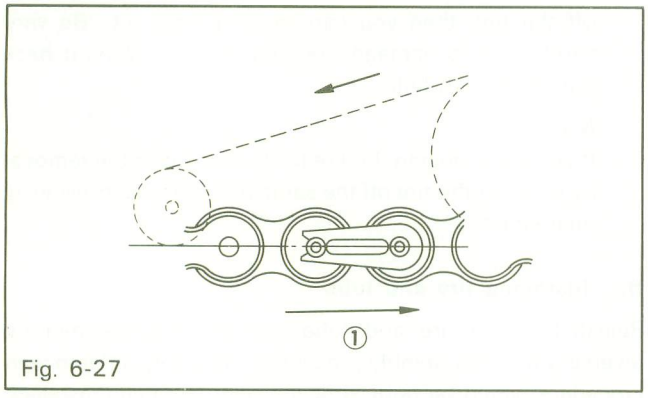

Fig. 6-27

1. Turning direction

3. With the chain installed on the machine, excessive wear may be roughly determined by attempting to pull the chain away from the rear sprocket. If the chain will lift away more than one-half the length of the sprocket teeth, remove and inspect.
   If any portion of the chain shows signs of damage, or if either sprocket shows signs of excessive wear, remove and inspect.

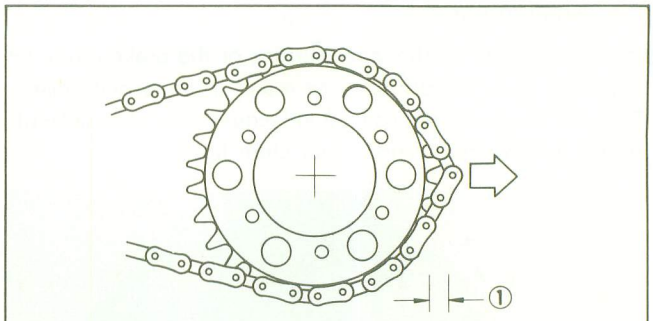

Fig. 6-28 Checking for excessively worn chain

1. 1/2 tooth

4. Check the chain for stiffness. Hold as illustrated. If stiff, soak in solvent solution, clean with medium bristle brush, dry with high pressure air. Oil chain thoroughly and attempt to work out kinks. If still stiff, replace.

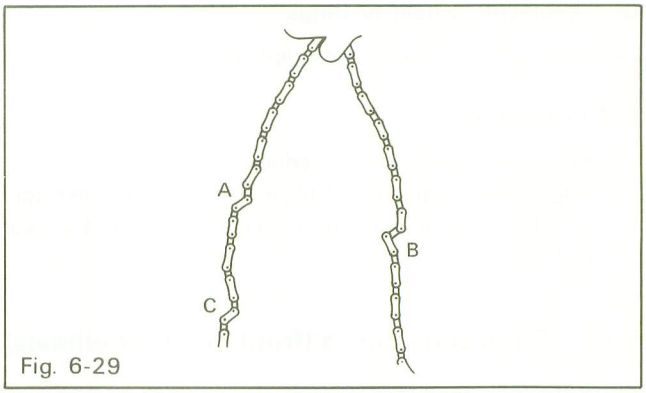

Fig. 6-29

5. Check the side plates for visible wear. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace as required.
6. The chain should be lubricated per the recommendations given in the Maintenance and Lubrication Intervals charts. More often if possible. Preferably after every use.

a. Wipe off dirt with shop rag. If accumulation is severe, use soft bristle brush, then rag.
b. Apply lubricant between roller and side plates on both inside and outside of chain. Don't skip a portion as this will cause uneven wear.
   Apply thoroughly. Wipe off excess.

   Note:
   Chain and lubricant should be at room temperature to assure penetration of lubricant into rollers.
   Choice of lubricant is determined by use and terrain. SAE 20W or 30W may be used, but several specialty types by accessory manufacturers offer more penetration, corrosion resistance and shear strength for roller protection.
   In certain areas, semi-drying lubricants are preferable. These will resist picking up sand particles, dust, etc.

c. Periodically, remove the chain. Wipe and/or brush excess dirt off. Blow off with high pressure air.
d. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly while off machine. Work each roller thoroughly to make sure lubricant penetrates. Wipe off excess oil. Re-install.

B. Drive sprocket

With the left crankcase cover removed, proceed as follows:

1. Using a blunt chisel, flatten the drive sprocket lock washer tab.

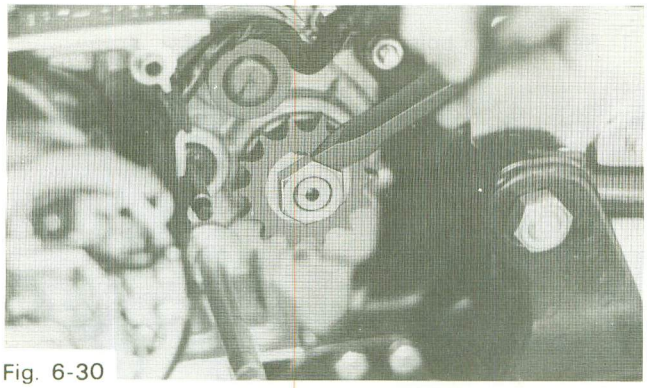

Fig. 6-30

2. With the drive chain in place, transmission in gear, firmly apply the rear brake. Remove the sprocket securing nut. Remove the sprocket.
3. Check sprocket for wear. Replace if wear decreases tooth height to a point approaching the roller center line.

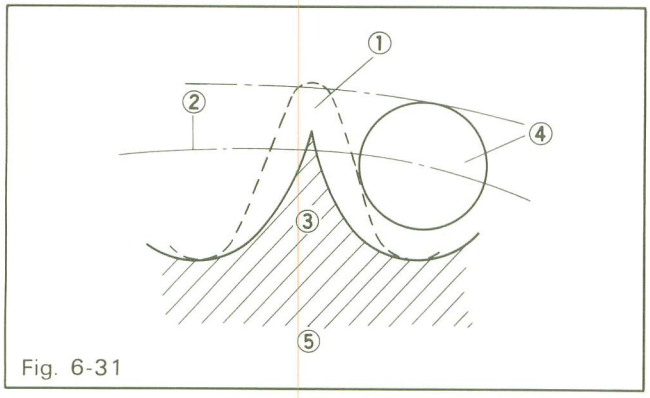

Fig. 6-31

1. Correct
2. Replace
3. Tooth
4. Roller
5. Sprocket

4. Replace if tooth wear shows a pattern such as that in the illustration, or as precaution and common sense dictate.

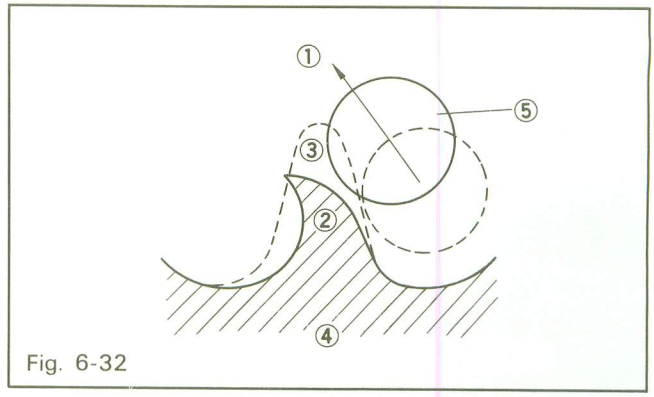

Fig. 6-32

1. Slip off
2. Replace
3. Tooth
4. Sprocket
5. Roller

Drive chain and sprockets

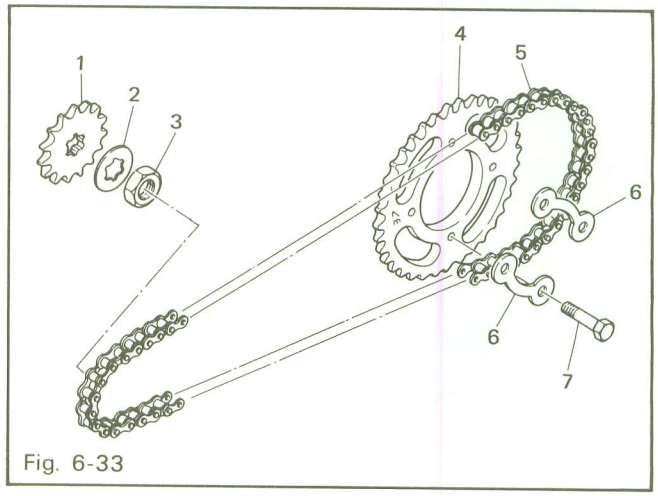

Fig. 6-33

1. Drive sprocket
2. Lock washer
3. Lock nut
4. Sprocket
5. Chain
6. Lock washer
7. Fitting bolt

5. During reassembly, make sure the lock washer splines are properly seated on the drive shaft splines. Tighten securing nut thoroughly to specified torque value. Bend lock washer tab fully against securing nut flats.

Drive sprocket securing nut torque:
564 ~ 781 in-lbs. (6.5 ~ 9.0 m-kgs.)

C. Driven sprocket

With the rear wheel removed, proceed as follows:

1. Remove the chain (refer to section A, Chain).

2. Remove the sprocket shaft nut and remove the driven sprocket assembly.

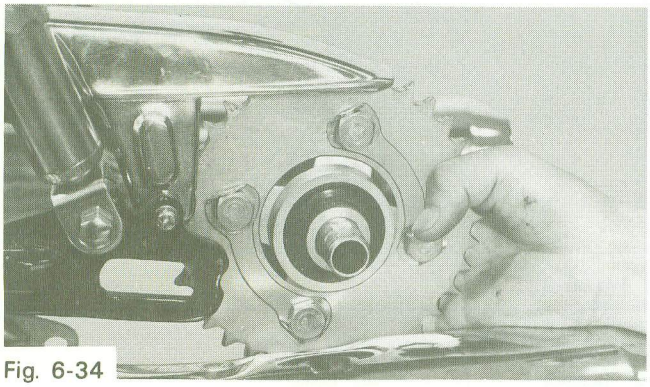

Fig. 6-34

3. Using a blunt chisel, flatten the securing bolt lock washer tabs.
   Remove the securing bolts (4). Remove the lock washers and sprocket.

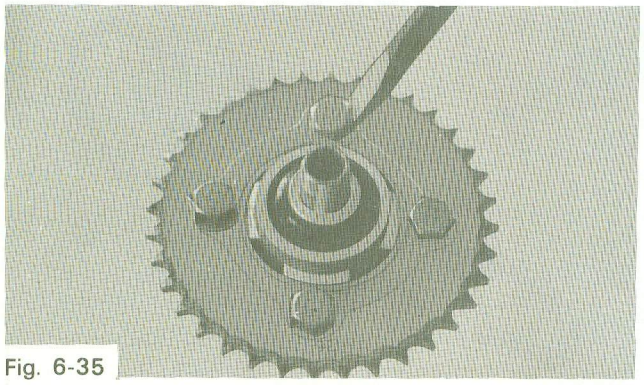

Fig. 6-35

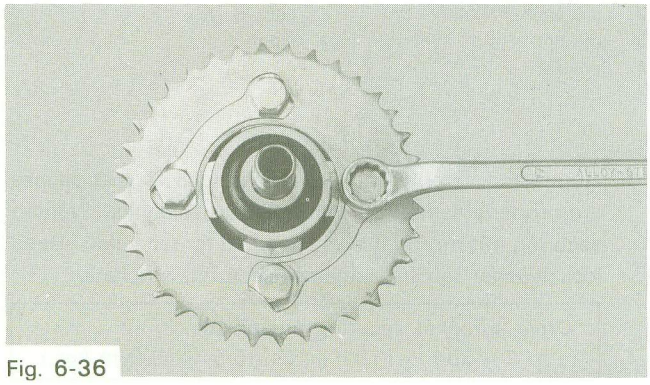

Fig. 6-36

4. Check sprocket wear per procedures for the drive sprocket.
5. Check the sprocket to see that it runs true. Do not heat and hammer to straighten. Use a press. If severely bent, replace.
6. During reassembly, make sure that sprocket and sprocket seat are clean. Tighten the securing bolts in a crisscross pattern.
   Bend the tabs of the lock washers fully against the securing bolt flats.

Driven sprocket securing bolt torque:
300 ~ 350 in-lbs. (3.5 ~ 4.0 m-kgs.)

6-7. Front forks

A. Front fork oil change

1. Remove cap bolts on inner fork tubes.

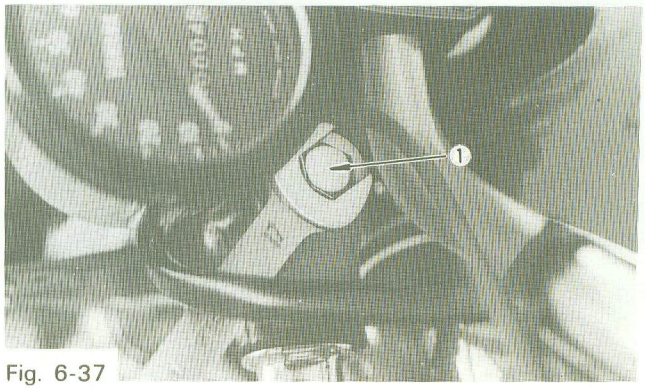

Fig. 6-37

1. Cap bolt

2. Remove drain screw from each outer tube. Place open container under each drain hole.

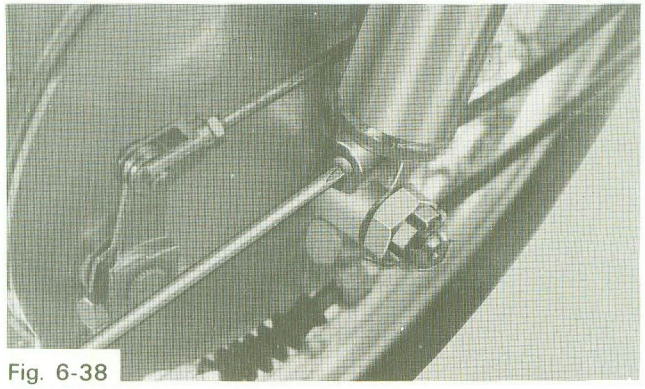

Fig. 6-38

3. After most of oil has drained, slowly raise and lower outer tubes to pump out remaining oil.
4. Replace drain screws.

   Note:
   Check gaskets. Replace if damaged.

5. Pour specified amount of oil into the inner tube through the upper end opening.

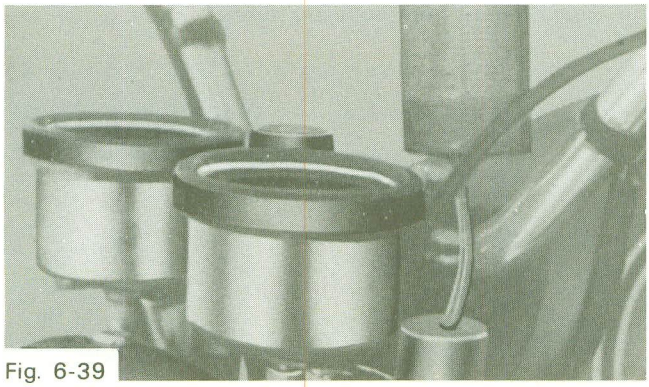

Fig. 6-39

	RD125B	RD200B
Front fork oil capacity	4.63 oz. (137 c.c.) per side	5.55 oz. (157 c.c.) per side
Type	YAMAHA SHOCK FLUID	

Note:
Select the weight oil that suits local conditions and rider preference (lighter for less damping; heavier for more damping).

6. After filling slowly pump the outer tubes up and down to distribute the oil.

Front fork

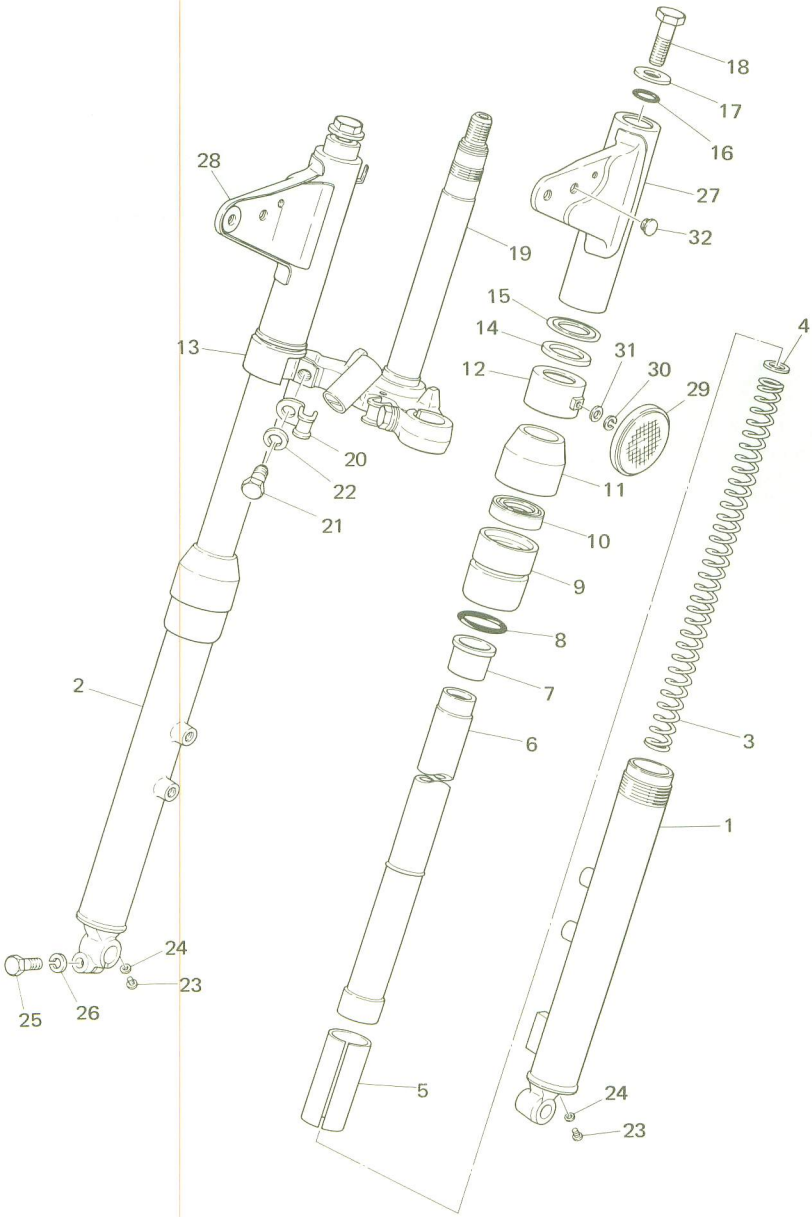

Fig. 6-40

1. Outer left tube
2. Outer right tube
3. Spring
4. Spring upper washer
5. Spacer (RD200B)
6. Inner tube
7. Slide metal
8. O-ring
9. Outer nut complete
10. Oil seal
11. Dust seal
12. Outer left cover
13. Outer right cover
14. Packing
15. Under cover
16. Packing (O-ring)
17. Cap washer
18. Cap bolt
19. Under bracket complete
20. Wire holder
21. Under bracket bolt
22. Spring washer
23. Drain plug
24. Drain plug gasket
25. Bolt
26. Spring washer
27. Upper left cover
28. Upper right cover
29. Reflector
30. Spring washer
31. Plain washer
32. Blind plug

7. Replace fork cap bolts and torque to specification.

Fork cap bolt torque:
130 ~ 260 in-lbs. (1.5 ~ 3.0 m-kgs.)

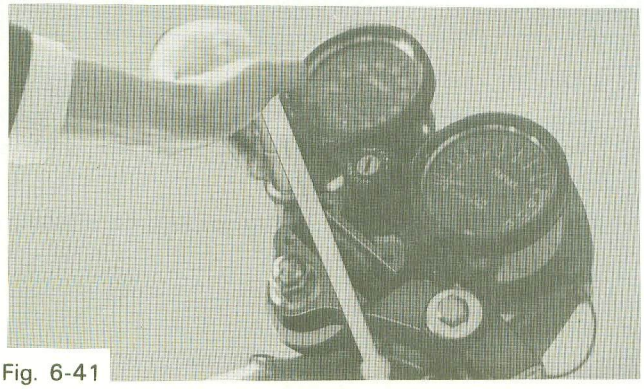

Fig. 6-41

B. Front fork disassembly

1. With the front wheel, front fender, and fork cap bolts removed, and the under bracket mounting bolts loosened, the fork tubes can be removed from the handle crown and lower bracket.

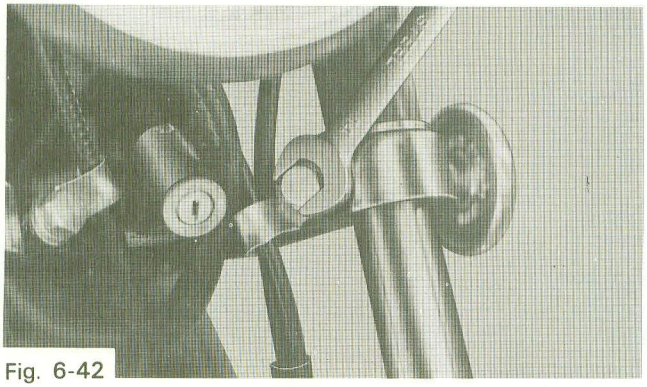

Fig. 6-42

2. Inspect O-ring at top of upper fork tube and replace if damaged.

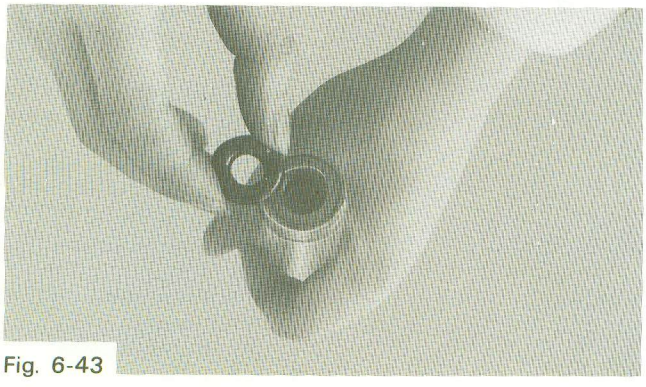

Fig. 6-43

3. Drain the oil from both fork tubes.

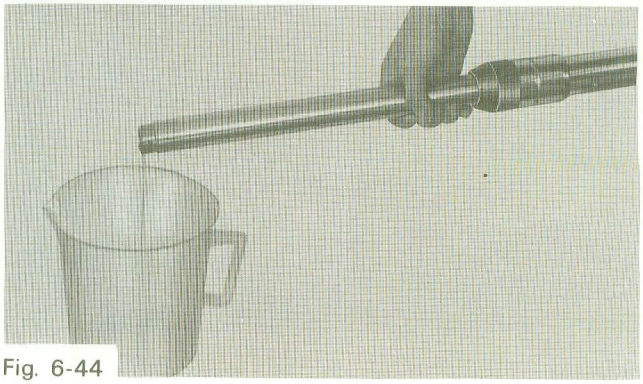

Fig. 6-44

4. Remove the dust seal.

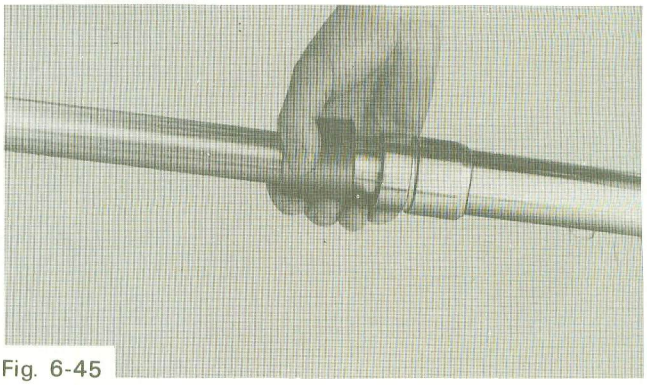

Fig. 6-45

5. Install a strap wrench around the outer tube nut, and remove the nut.

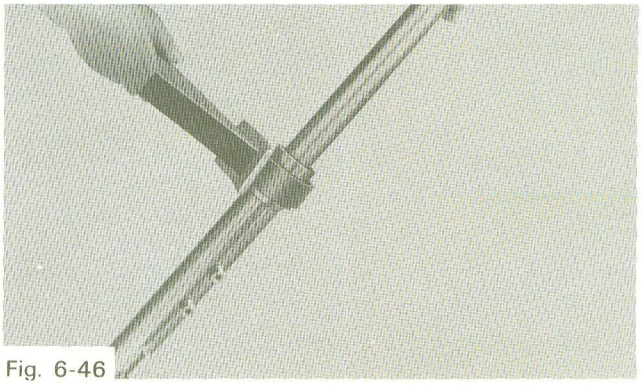

Fig. 6-46

6. Remove inner tube and spring assembly from outer tube.

7. Carefully pry out old seal and O-ring without damaging outer tube nut.
   To remove oil seal, tap the under side of the seal using punch and hammer.

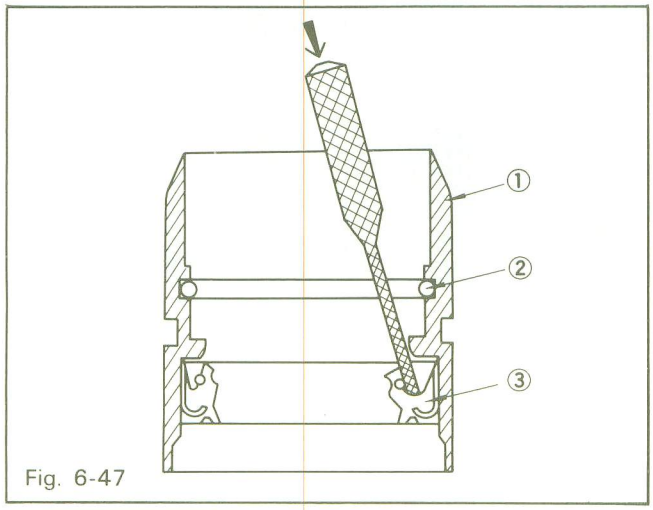

Fig. 6-47

1. Outer tube nut
2. O-ring
3. Oil seal

8. Inspect the O-ring in the outer tube nut, if damaged, replace it.

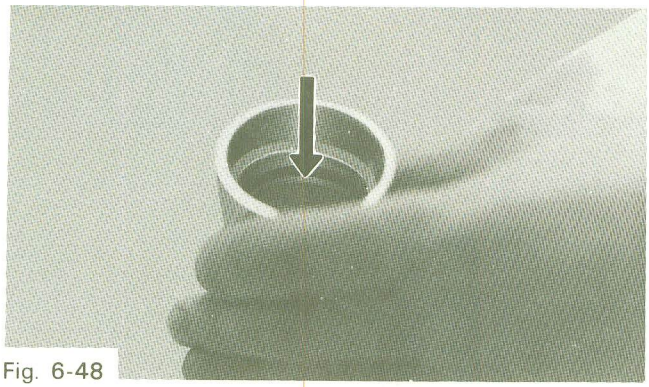
Fig. 6-48

9. Insert new seal with "open" side down using large socket and soft hammer.

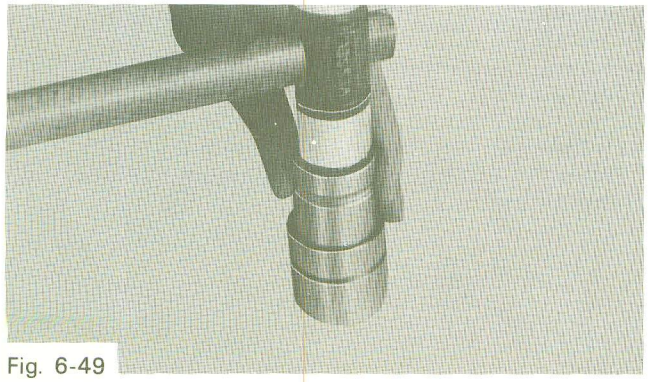
Fig. 6-49

10. Check the inner tube for bends or scratches. If the bend is slight, it can be corrected with a press. It is recommended, however, to replace the tube if possible.

C. Assembling and installation

1. When assembling the front forks, reverse the order of disassembly.

   Note:
   a. When installing the outer tube nut, grease the oil seal lip, and install it with special care.
   b. After assembling, check to see if the inner tube slides smoothly.

2. Installing the front forks on the frame.
   a. Bring up the front forks to the correct position and partially tighten the underbracket mounting bolt.

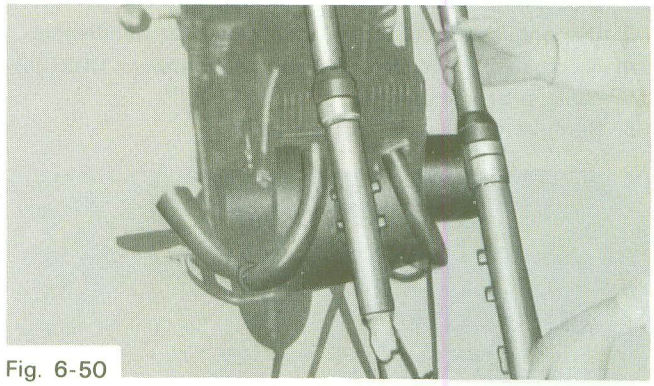
Fig. 6-50

   b. Pour specified amount of oil into the inner tube through the upper end opening. See 6-7, Oil change, for amount and type.

6-8. Steering head

The steering head pivot is supported by two sets of uncaged ball and race bearing assemblies.

A. Steering head adjustment

Refer to Section 2-3, for steering head adjustment procedure.

B. Disassembly

The front end should be raised off the ground with a support under the engine and the front wheel should be removed (see Section 8-2).

1. Remove headlight from headlight body.

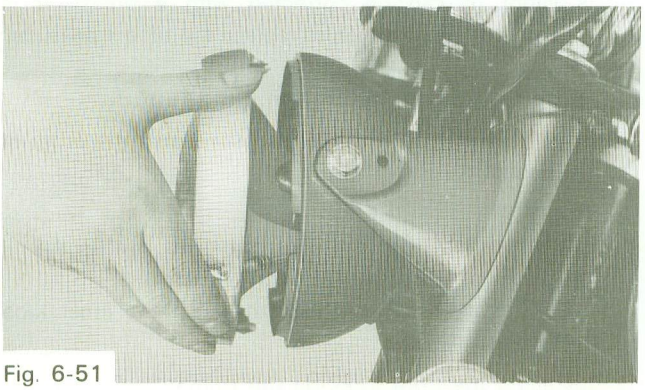

Fig. 6-51

2. Disconnect electrical wiring in headlight body.
3. Disconnect clutch and throttle cables at handlebars.
4. Disconnect speedometer (and tachometer: RD200B) cable(s) at instruments.
5. Remove handlebars and put aside.

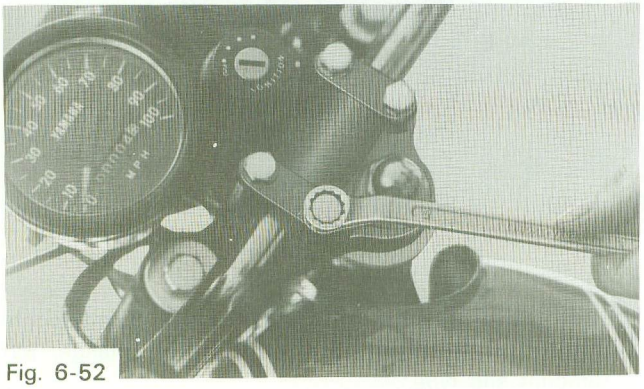

Fig. 6-52

6. Remove the cap bolts and front flasher lights.

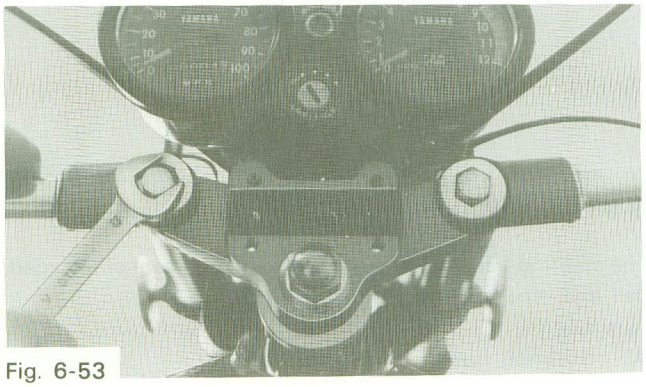

Fig. 6-53

Note:
At this point, removal of the fork tube assemblies is optional. If front fork disassembly is to be done, remove the tubes at this time. If not, leave the tubes installed in the lower fork bracket.

7. Remove crown nut and crown washer.

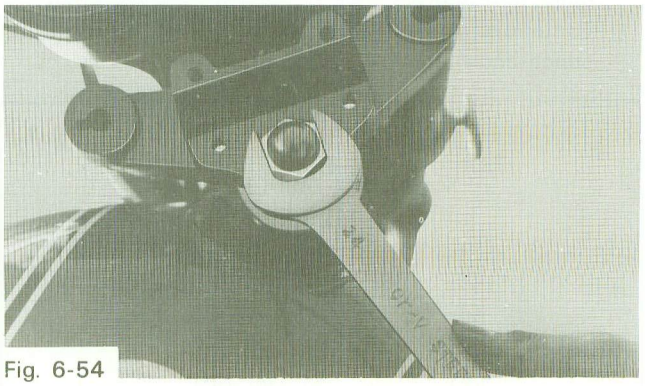

Fig. 6-54

Steering head

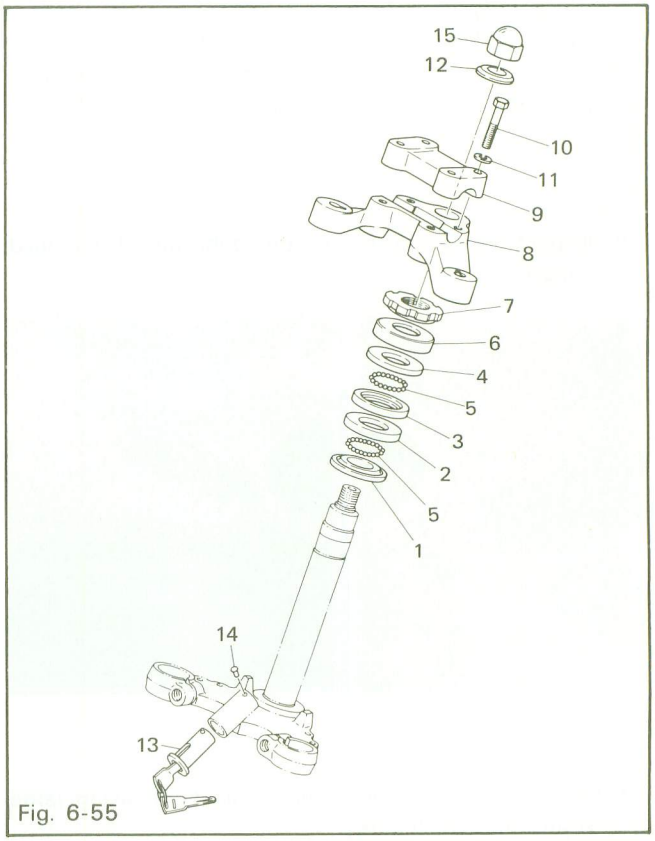

Fig. 6-55

1. Ball race 1
2. Ball race 2
3. Ball race 2
4. Ball race 1
5. Ball (1/4 in.)
6. Ball race cover
7. Fitting nut
8. Handle crown
9. Handle upper holder
10. Bolt
11. Spring washer
12. Crown washer
13. Steering lock assembly
14. Screw rivet
15. Crown nut

8. Remove handle crown (upper bracket) and instruments at the same time and put aside.

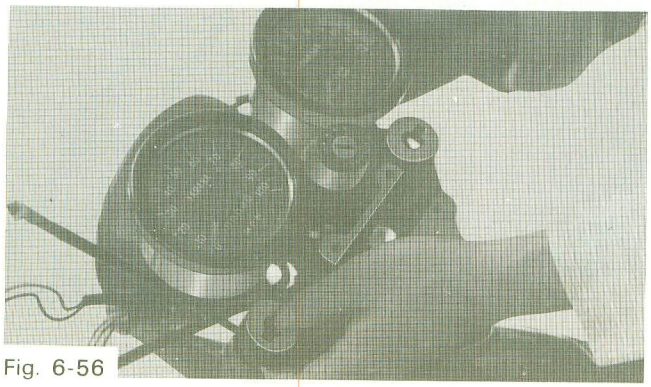

Fig. 6-56

9. Lift off the headlight body and its stays as an assembly.
10. Remove steering ring nut with steering nut wrench.

Caution:
Support the under bracket with a suitable stand to hold the bracket up into the headstock so that the loose bearings will not fall out.

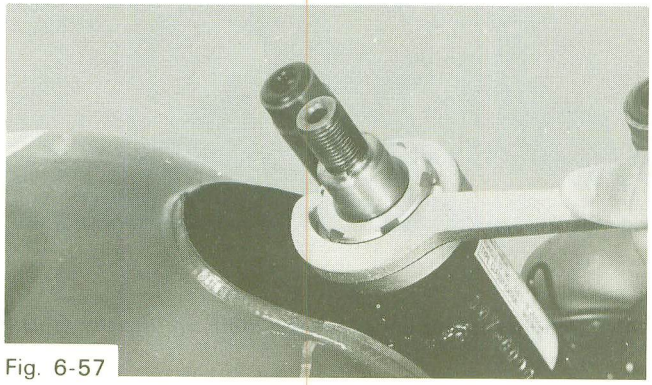

Fig. 6-57

11. While still supporting the under bracket, carefully lift off the upper bearing cover.

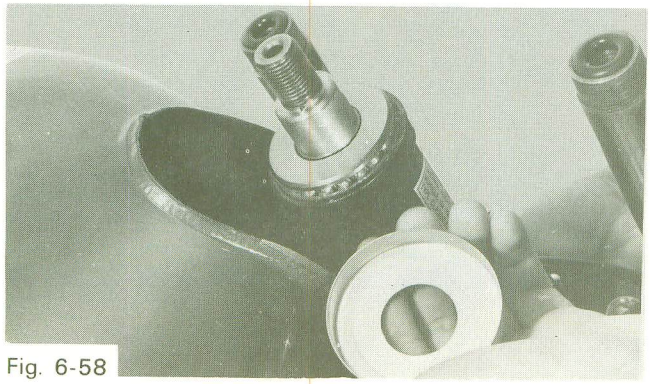

Fig. 6-58

12. Lift off the top bearing race and remove all of the ball bearings from the upper bearing assembly.

Ball quantity/Size:	19/0.25 in. (6.35 mm.)

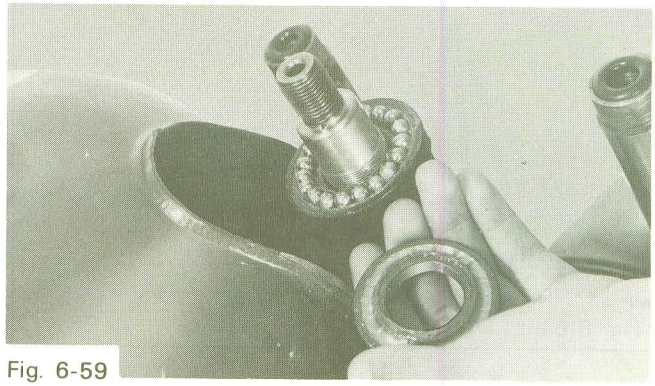

Fig. 6-59

13. Remove the supporting stand from the under bracket and remove bracket while being very careful not to lose any bearings from the lower assembly.

Ball quantity/Size:	19/0.25 in. (6.35 mm.)

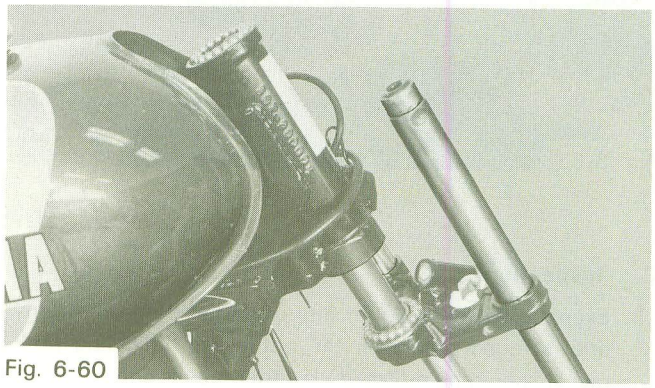

Fig. 6-60

14. To remove, press-fit races from steering head, tap out from back side with long punch. Tap lightly to avoid cracking the race.

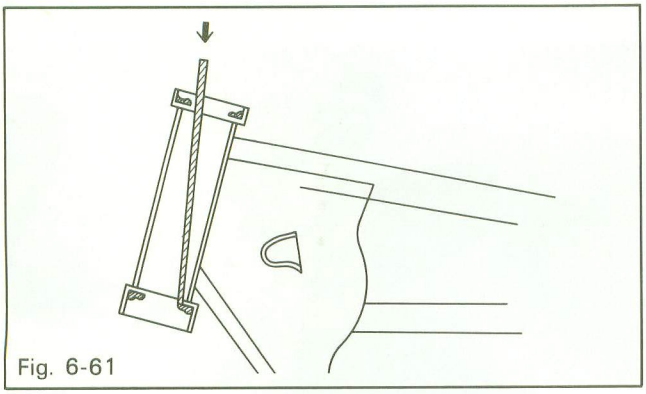

Fig. 6-61

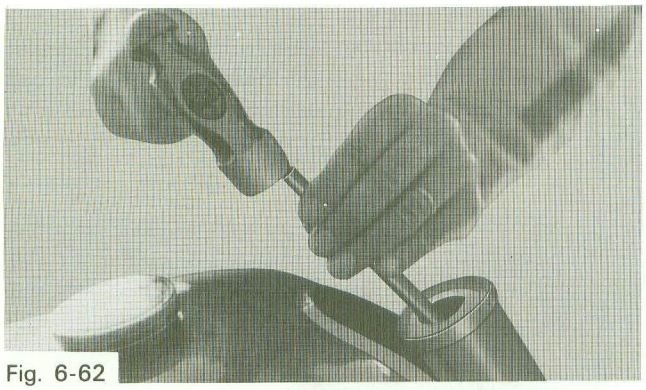

Fig. 6-62

C. Inspection

1. Examine all the balls for pits or partial flatness. If any one is found defective, the entire set (including both races) should be replaced. If either race is pitted, shows rust spots, or is damaged in any way, replace both races and all balls.
2. Examine dust seal under lowest race and replace if worn.

D. Reassembling

1. If pressed-in races have been removed, tap in new races.
2. Grease the lower ball race of the bottom assembly and arrange the balls around it. Then apply more grease.

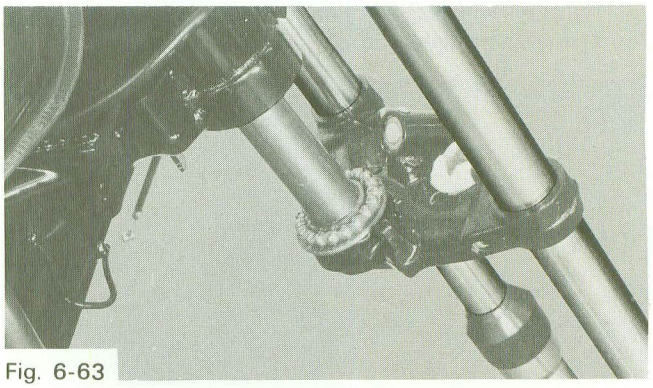

Fig. 6-63

3. Grease the lower ball race of the upper assembly and arrange the balls around it. Then apply more grease and set the top race into place.
   See lubrication chart for lubricant type.

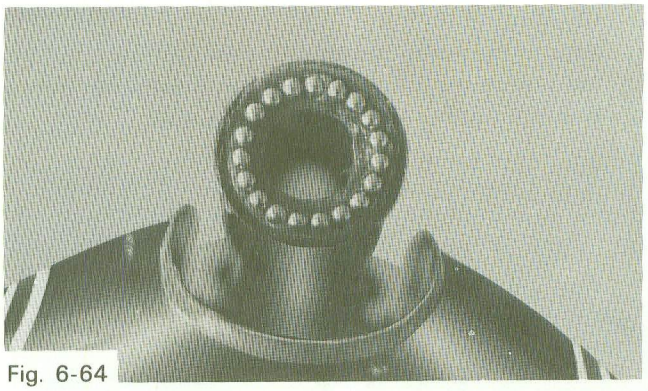

Fig. 6-64

4. Carefully slip the under-bracket stem up into the steering head.
   Hold the top bearing assembly in place so the stem does not knock any balls out of position.

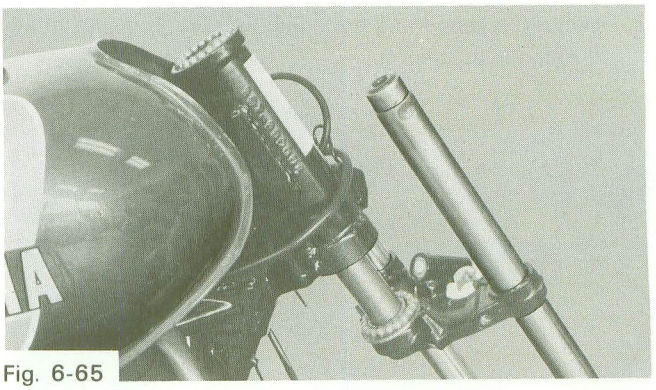

Fig. 6-65

5. Set the upper bearing cover on and thread on the ring nut.
   Tighten the ring nut so that all free play is taken up but the bracket can still pivot freely from lock to lock. Recheck for free play after the entire fork unit has been installed. (See Chapter 2, Section 2-3 for adjustment procedure.)

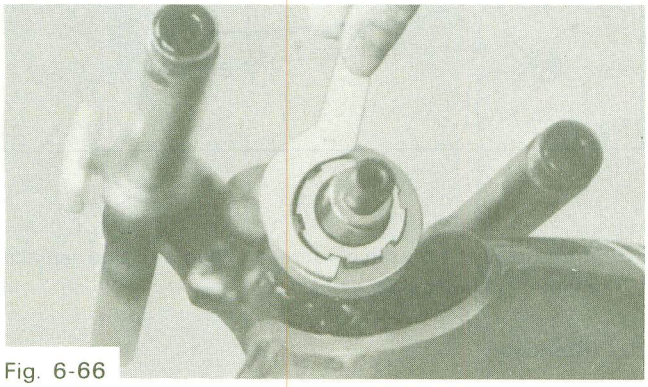
Fig. 6-66

6. Install the fork tubes into the under-bracket if they were previously removed.
7. Replace the headlight body and stays onto the fork tubes with all rubber and steel spacing washers properly in place.

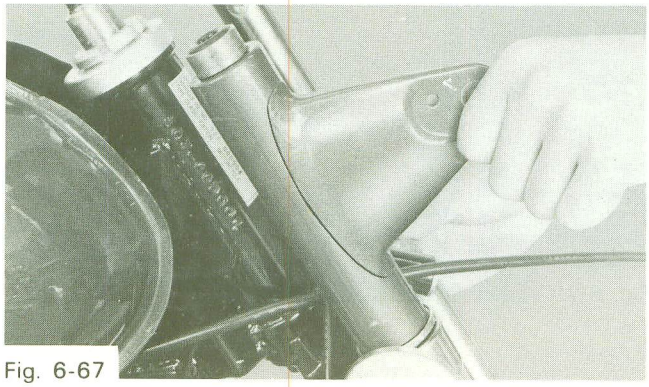
Fig. 6-67

8. Install the upper fork bracket. Tighten crown nut to specification.

Crown nut torque:
430 ~ 520 in-lbs. (5.0 ~ 6.0 m-kgs.)

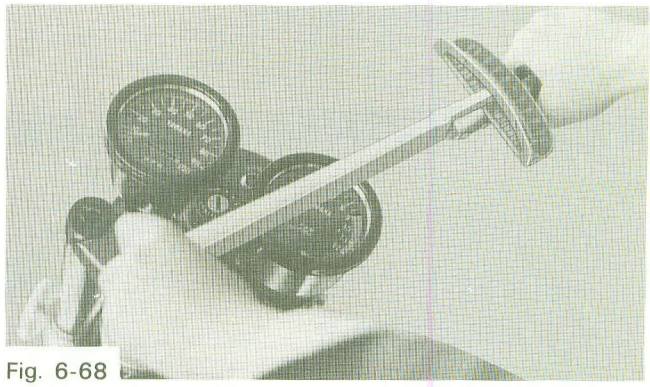
Fig. 6-68

9. Tighten fork cap bolts and torque to specification.

Fork cap bolt torque:
130 ~ 260 in-lbs. (1.5 ~ 3.0 m-kgs.)

Note:
Make certain that tops of fork tubes are adjusted to the same level. If necessary, loosen under-bracket pinch bolts and adjust.

10. Install handlebars and torque to specification.

Handlebar mounting bolt torque:
96 ~ 156 in-lbs. (1.1 ~ 1.8 m-kgs.)

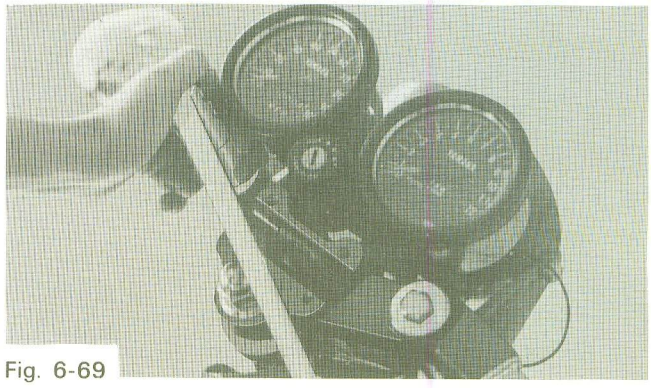
Fig. 6-69

11. Reconnect all electrical wiring and check operation.
12. Install headlight and check operation.
13. Install front wheel.
14. Reconnect speedometer (and tachometer: RD200B) cable(s).
15. Reconnect clutch, front brake and throttle cables, and check operation.

6-9. Rear shock absorber

1. Remove the shock absorber from the machine.

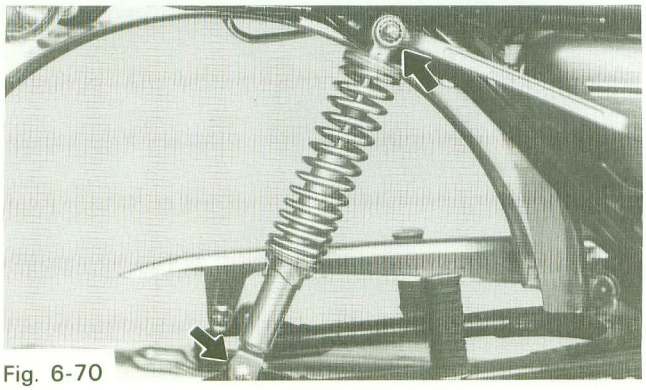

Fig. 6-70

2. Operate shock absorber shaft to check damping. As you push down, only slight damping should be felt. Return stroke will have considerable damping. If there is no damping, replace shock.

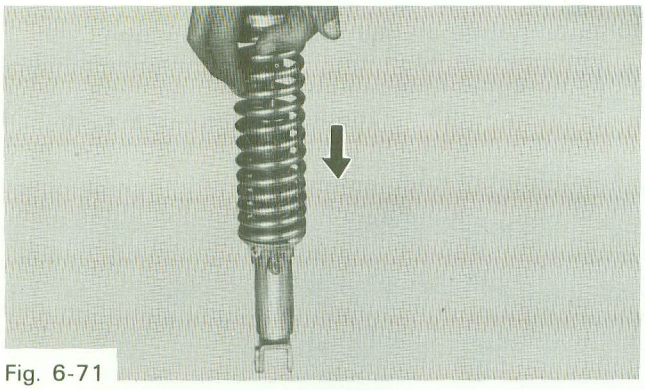

Fig. 6-71

6-10. Swing arm

A. Inspection

1. With rear wheel and shock absorbers removed, grasp the ends of the arm and move from right to left to check for freeplay.

Swing arm free play: 0.04 in. (1.0 mm.)

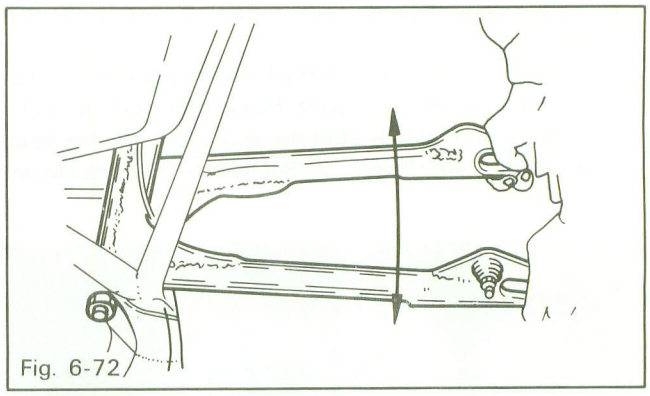

Fig. 6-72

2. If free play is excessive, remove swing arm and replace swing arm bushings.

B. Removal

1. Remove nut on swing arm pivot shaft and tap out shaft with a long aluminum or brass rod.

Pivot bolt torque: 570 ~ 910 in-lbs. (6.6 ~ 10.5 m-kgs.)

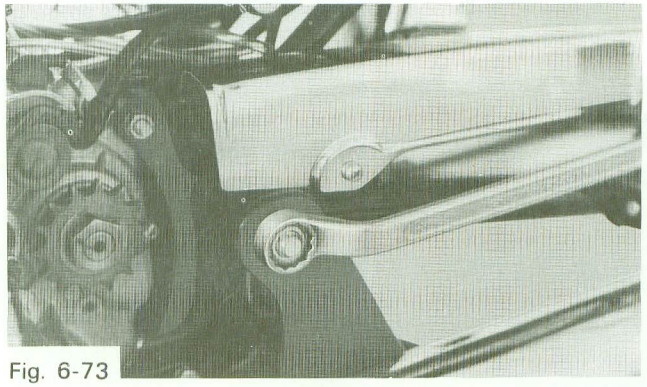

Fig. 6-73

2. Tap out old bushing from each side of pivot using the long rod.
3. Install new bushing.

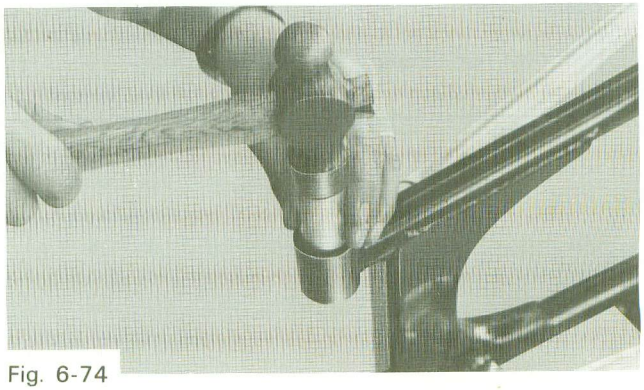

Fig. 6-74

Rear arm

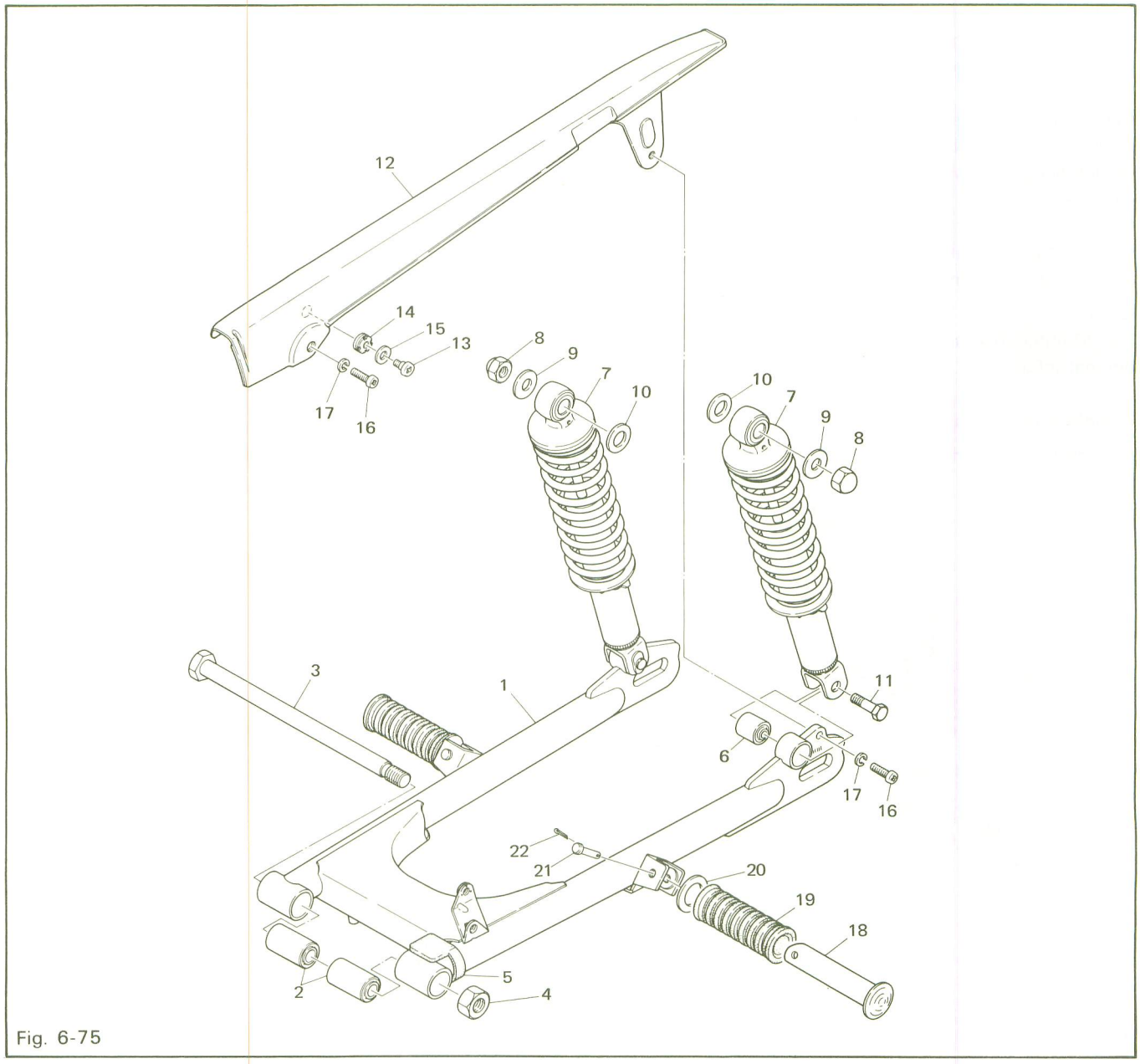

Fig. 6-75

1. Rear arm complete
2. Rear arm bushing
3. Pivot shaft
4. Nut
5. Guard seal
6. Rear cushion bushing
7. Rear cushion assembly
8. Crown nut
9. Washer
10. Washer
11. Bolt
12. Half chain case
13. Screw
14. Chain case damper
15. Washer
16. Pan head screw
17. Spring washer
18. Rear footrest
19. Rear footrest cover
20. Washer
21. Clevis pin
22. Cotter pin

C. Lubrication

1. To lubricate, remove pivot shaft.
2. Apply liberal coating of lube grease on pivot shaft and inside of bushings. Reinstall pivot shaft.

Recommended lubricant: Lube grease

3. Wipe off excess grease.

6-11. Cables and fittings

Cable maintenance is primarily concerned with preventing deterioration through rust and weathering: and providing for proper lubrication to allow the cable to move freely within its housing.

Cable removal is straightforward and uncomplicated.

Removal will not be discussed within this section. For details, see the individual maintenance section for which the cable is an integral part.

Cable routing is of paramount importance, however. For details of cable routing, see the cable routing diagrams at the end of this manual.

Note:

See Maintenance and Lubrication Intervals Charts for additional information.

A. General

1. Remove the cable.
2. Check for free movement of cable within its housing. If movement is obstructed, check for fraying of the cable strands. If fraying is evident, replace the cable assembly.
3. To lubricate cable, hold in vertical position. Apply lubricant to uppermost end of cable. Leave in vertical position until lubricant appears at bottom end. Allow excess lubricant to drain and re-install.

Note:

Choice of lubricant depends upon conditions and preference. However, a semidrying, graphite-base lubricant will probably perform most adequately under most conditions. Under certain conditions, a water resisting lubricant is more suitable.

Handle and cables

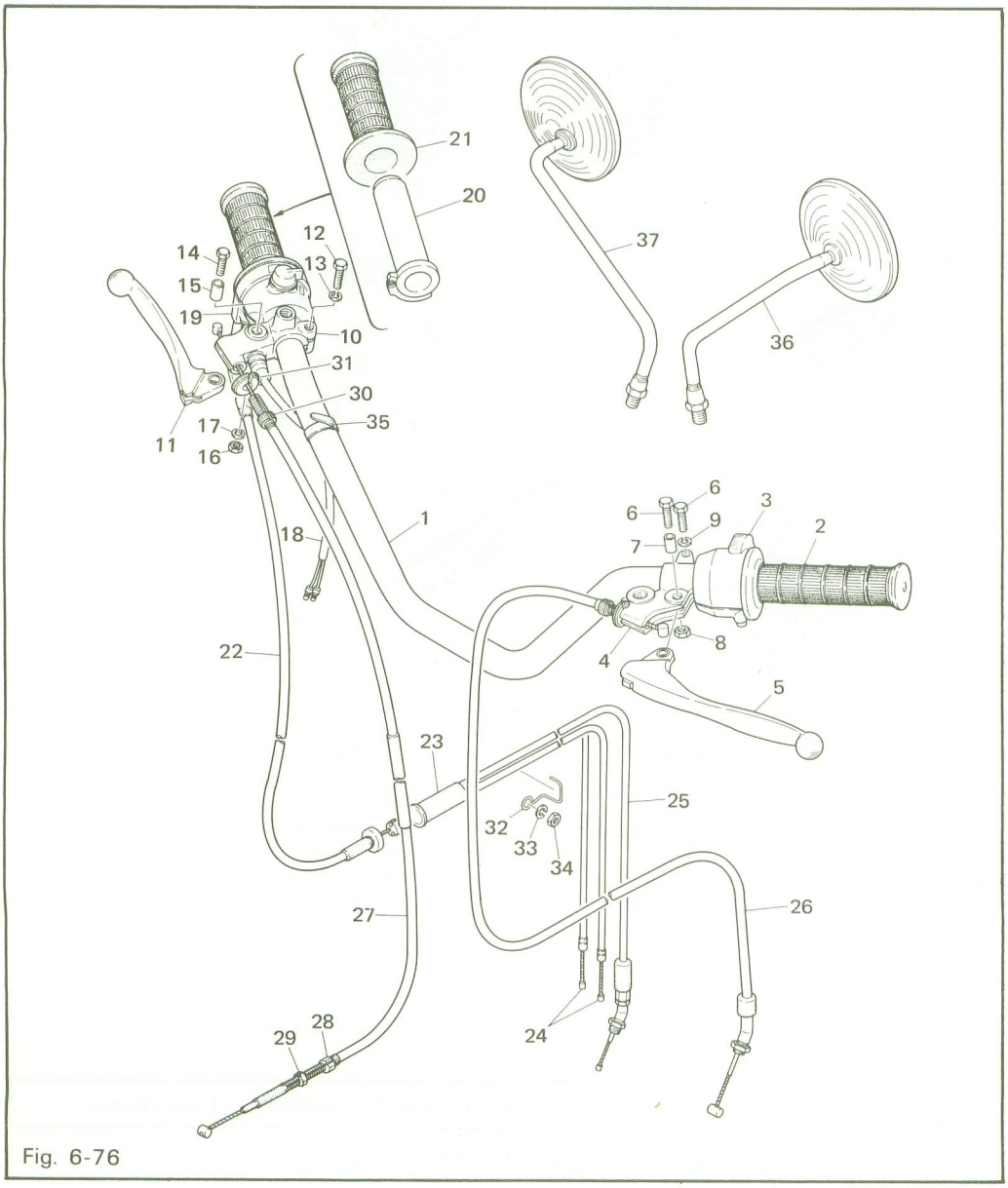

Fig. 6-76

1. Handle
2. Left grip
3. Switch handle 3
4. Left lever holder
5. Left lever
6. Bolt
7. Lever collar
8. Nut
9. Spring washer
10. Right lever holder
11. Right lever
12. Bolt
13. Spring washer
14. Bolt
15. Lever collar
16. Nut
17. Spring washer
18. Front stop switch assembly
19. Switch handle 1
20. Guide tube
21. Right grip
22. Throttle wire 1
23. Cylinder
24. Throttle wire 2
25. Pump wire
26. Clutch wire
27. Brake wire
28. Wire adjusting bolt
29. Nut
30. Wire adjusting bolt
31. Nut
32. Wire guide
33. Spring washer
34. Nut
35. Switch cord band
36. Left back mirror assembly
37. Right back mirror assembly

B. Throttle maintenance

1. Remove two Phillips head screws from throttle housing assembly and separate two halves of housing.
2. Disconnect cable end from throttle grip assembly and remove grip assembly.

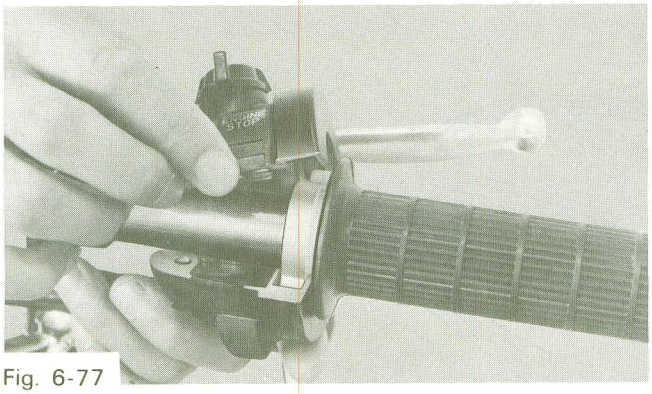

Fig. 6-77

3. Wash all parts in mild solvent and check contact surfaces for burrs or other damage. (Also clean and inspect righthand end of handlebars.)
4. Lubricate contact surfaces with light coat of lithium soap base grease and reassemble.

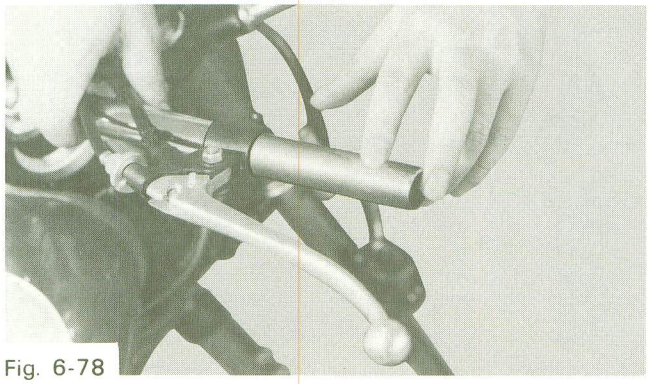

Fig. 6-78

Note:
Tighten housing screws evenly to maintain an even gap between the two halves.

5. Check for smooth throttle operation and quick spring return when released and make certain that housing does not rotate on handlebar.

C. Cable junction maintenance

The throttle cable cylinder (junction point for Autolube control cable) must be periodically maintained also.

1. Remove throttle wire 1 from handlebar housing.
2. Remove throttle wire 2 from carburetor mixing chamber top.
3. Remove Autolube pump cable from pump pulley. Remove cable adjustor.
4. Remove seat and fuel tank.
5. Remove wire/cylinder assembly.
6. Remove cylinder cap, throttle wire 2 and Autolube pump cable.
7. Wash assembly thoroughly in solvent.
8. Lubricate all associated cables.
9. Apply a thin coating of lubricant to cable cylinder walls.

   Note:
   A small amount of lithium soap base grease may be used in lieu of cable lubricant. However, if machine is to be used in extreme cold, this should be avoided.

10. Reassemble all cables. Make sure cable cylinder is sealed from damage due to weather and riding conditions. Re-install. See cable routing diagrams for correct installation position. See Engine Tuning and Chassis Adjustment for correct cable adjustment.

6-12. Miscellaneous chassis components

A. Fuel tank, RD125B/200B

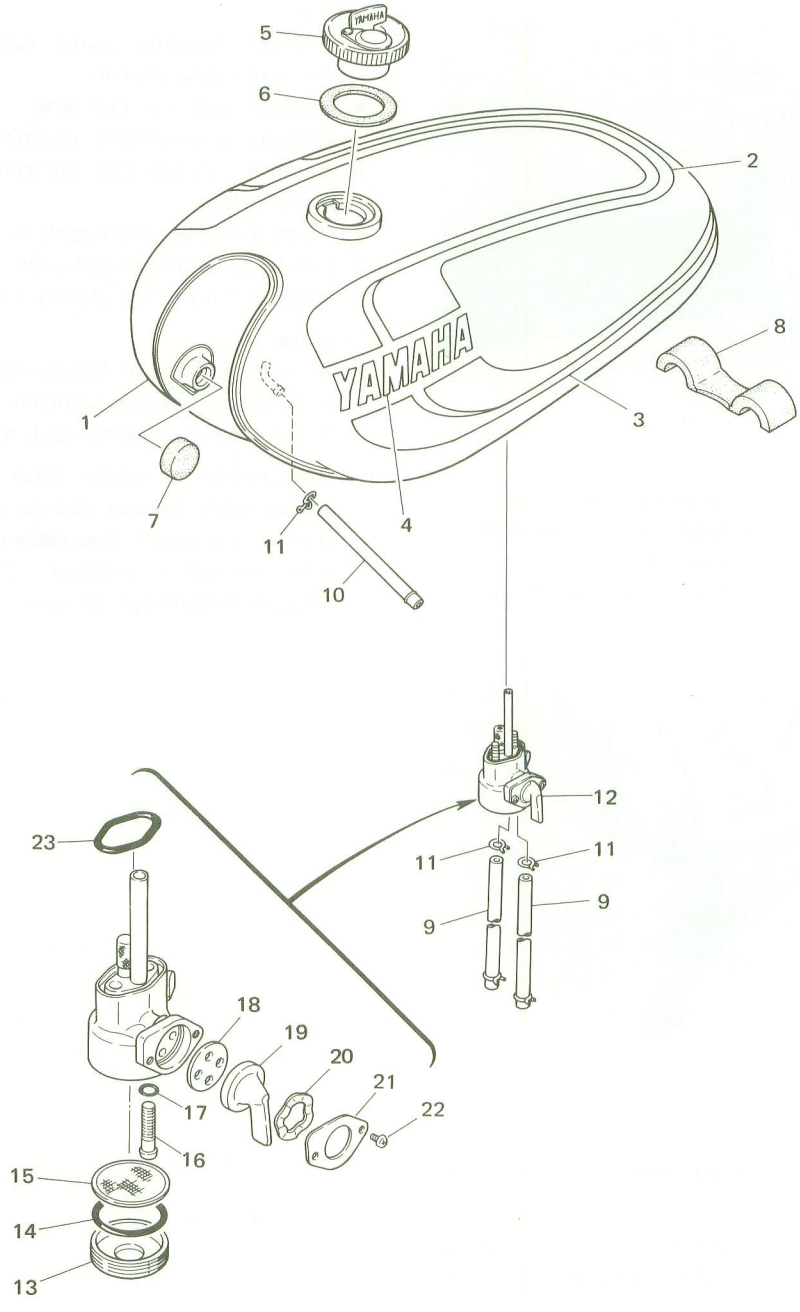

Fig. 6-79

1. Fuel tank complete
2. Fuel tank upper left graphic
3. Fuel tank upper right graphic
4. Fuel tank emblem
5. Cap assembly
6. Cap packing
7. Locating damper
8. Locating damper
9. Hose
10. Hose
11. Clip
12. Fuel cock assembly
13. Filter cup
14. Filter gasket
15. Strainer
16. Pan head screw
17. Gasket
18. Valve
19. Cock lever
20. Wave washer
21. Lever fitting plate
22. Pan head screw
23. O-ring

B. Oil tank, RD125B/200B

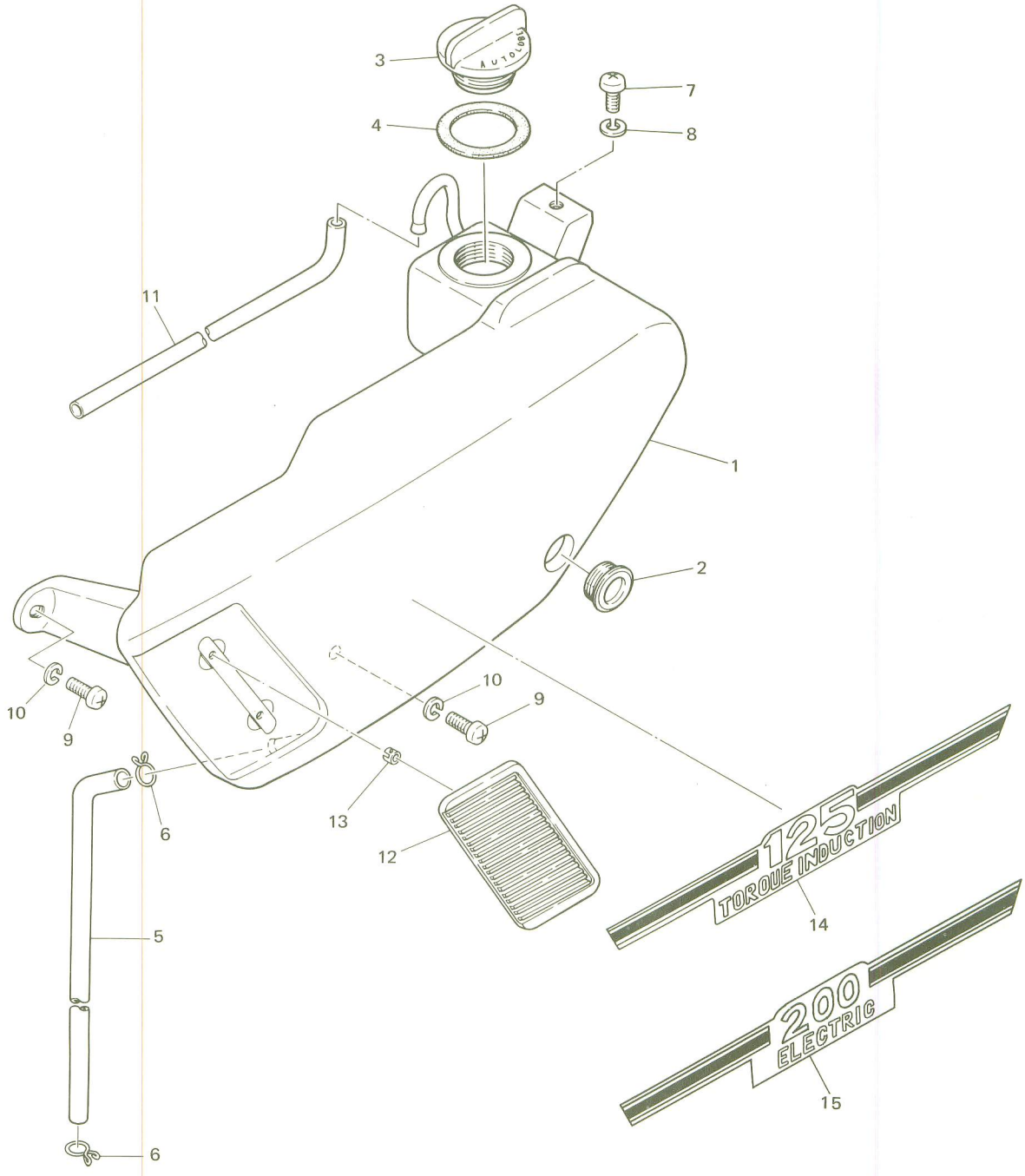

Fig. 6-80

1. Oil tank assembly
2. Level gauge
3. Oil tank cap
4. Gasket
5. Oil pipe
6. Clip
7. Pan head screw
8. Spring washer
9. Pan head screw
10. Spring washer
11. Hose
12. Left mold
13. Nut
14. Emblem 125 (RD125B)
15. Emblem 200 (RD200B)

C. Footpeg-brake, RD125B/200B

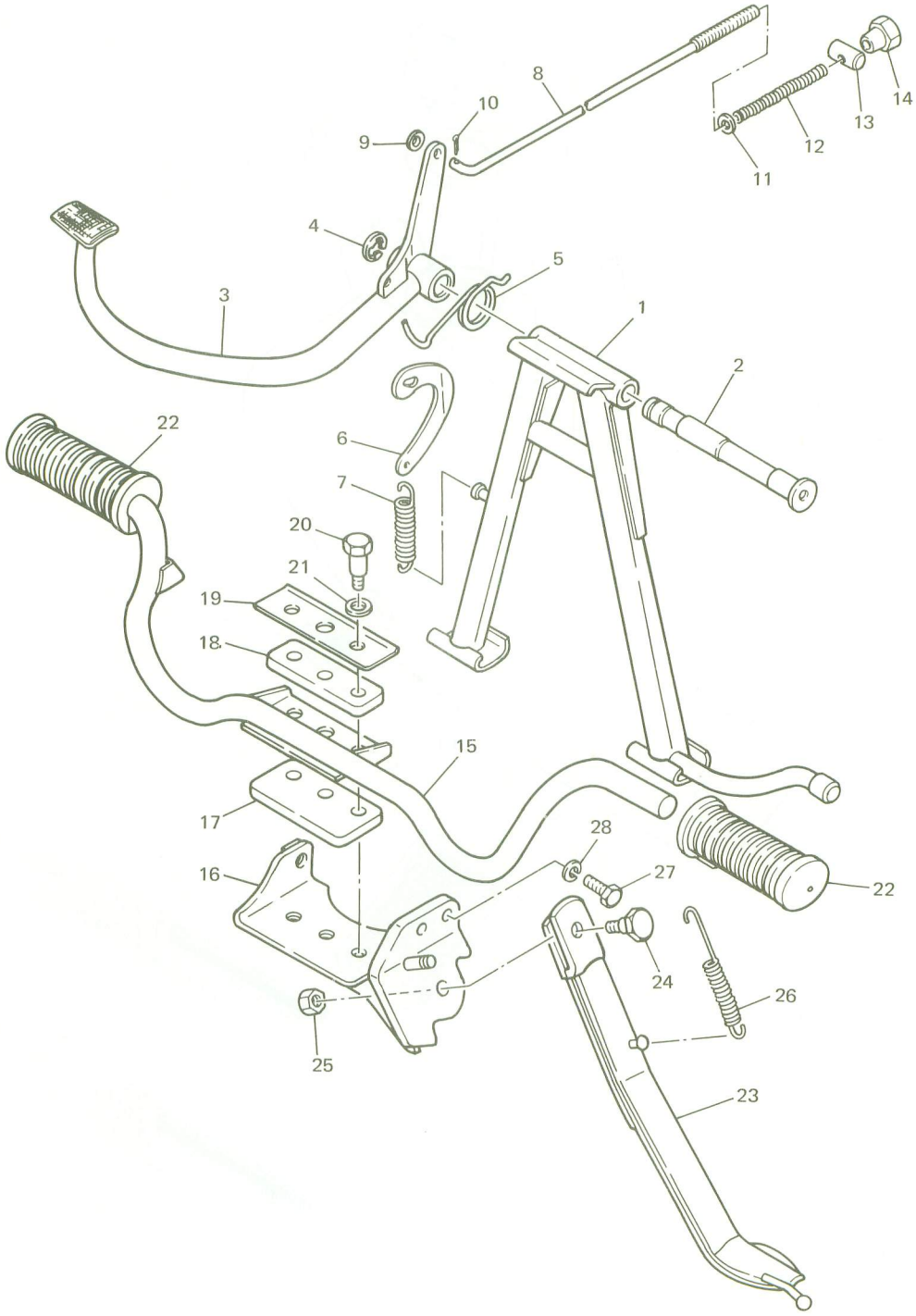

Fig. 6-81

1. Main stand
2. Main stand shaft
3. Brake pedal
4. Circlip
5. Return spring
6. Link
7. Main stand spring
8. Brake rod
9. Plain washer
10. Cotter pin
11. Plain washer
12. Rod spring
13. Clevis pin
14. Adjusting nut
15. Footrest
16. Footrest bracket
17. Damper 2
18. Damper 1
19. Special washer
20. Footrest bolt
21. Plain washer
22. Footrest cover
23. Side stand
24. Side stand bolt
25. Nut
26. Spring
27. Bolt
28. Spring washer

CHAPTER 7. APPENDICES

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CHAPTER 7. APPENDICES

7-1. Troubleshooting guide

The following guide is not complete in itself. If a problem is found within an individual component mentioned within the chart, refer to the section or chapter involved for inspection procedures.

A. No start or difficult to start

Possible Cause	Remedy
Ignition System	
No Spark	1. Check ignition main switch. 2. Check engine stop switch. 3. Check point assembly. 4. Check condenser. 5. Check wiring. 6. Check coil. 7. Check high tension lead. 8. Check spark plug.
Weak or Intermittent Spark	1. Use Electro-Tester, spark gap test. 2. Check spark plug. 3. Check high tension lead. 4. Check ignition coil and points.
Air/Fuel Systems	
No Fuel	1. Check fuel tank. 2. Check fuel petcock. 3. Remove main jet, check fuel flow.
Intermittent or Poor Fuel Flow	1. Clean fuel tank, check fuel tank cap vent. 2. Clean fuel petcock. 3. Remove carburetor, service.
Bad Fuel	1. Flush fuel system, completely. 2. Add fresh fuel, proper grade.
Blocked Air Intake or Malfunction	1. Clean and lube filter. 2. Check reed valve assembly.

B. Engine/Exhaust systems

Possible Cause	Remedy
Incorrect Compression Pressure	1. If reading too high, check for excessive carbon. 2. If reading too low, check. a. Cylinder head gasket. b. Cylinder base gasket. c. Piston, rings, cylinder.
Poor Bottom End Compression	Check crankcase seals L. & R.
Blocked Exhaust System	1. Check exhaust port carbon formation. 2. Check exhaust pipe for internal damage, excess carbon.

C. Poor idle and/or low speed performance

Possible Cause	Remedy
Ignition System	
Spark Plug Fouled or Incorrect Gap	Clean or correct gap, or replace if necessary.
Contact Points Bad	Clean or correct gap, or replace if necessary. Reset timing.
Ignition Timing Incorrect	Reset timing.
Weak Spark	Check ignition coil and condenser.
Air/Fuel Systems	
Tank Cap Vent Plugged	Clean or repair as necessary.
Fuel Petcock Plugged	Clean or repair as necessary.
Carburetor Slow Speed System Inoperative	Clean or repair as necessary.
Pilot Screw improperly adjusted or Plugged	Clean or repair as necessary.
Carburetor Float Level Incorrect	Measure and adjust if required.
Starter Lever on or leaking	Check or repair as necessary.
Air Leak	Check or repair as necessary.
Carburetor Not Level	Check or repair as necessary.
Engine/Exhaust Systems	See "No Start".

D. Poor mid-range and poor high speed performance

Possible Cause	Remedy
Ignition System	
Spark Plug Incorrect	Clean or correct gap or change plug if necessary.
Spark Advance Defective (RD200B)	Check for correct "retard" to "full advance" position.
Ignition Timing Incorrect	Reset.
Points Set too Close	Regap. Reset timing
Air/Fuel Systems	
Dirty Air Filter Element	Clean.
Carburetor Float Level Incorrect	Measure and adjust if required.
Incorrect Main Jet Size	Remove jet and check size.
Incorrect Jet Needle Notch	Check position of needle clip.
Cracked or Leaking Reeds	Replace.
Carburetor Not Level	Level.

7-2. Conversion tables

Metric to Inch System

	Known	Multiplier (Rounded Off)	Result
Torque	m-kgs.	7.233	ft-lbs.
	m-kgs.	86.80	in-lbs.
	cm-kgs.	0.0723	ft-lbs.
	cm-kgs.	0.8680	in-lbs.
Weight	kgs.	2.205	lbs.
	g.	0.03527	oz.
Flow/ Distance	km/lits.	2.352	mpg.
	km/h.	0.6214	mph.
	km.	0.6214	mi.
	m.	3.281	ft.
	m.	1.094	yd.
	cm.	0.3937	in.
	mm.	0.03937	in.
Volume/ Capacity	c.c. (cm^3)	0.03382	oz. (U.S.liq.)
	c.c. (cm^3)	0.06102	cu.in.
	Lits.	2.1134	pt. (U.S.liq.)
	Lits.	1.057	qt. (U.S.liq.)
	Lit.	0.2642	gal. (U.S.liq.)
Misc.	kgs/mm.	56.007	lb/in.
	kgs/$cm.^2$	14.2234	psi. (lb/$in.^2$)
	Centigrade (° C)	9/5 (°C) + 32	Fahrenheit (° F)

Inch to Metric System

	Known	Multiplier (Rounded Off)	Result
Torque	ft-lbs.	0.13826	m-kgs.
	in-lbs.	0.01152	m-kg.
	ft-lbs.	13.831	m-kgs.
	in-lbs.	1.1521	m-kgs.
Weight	lb.	0.4535	kg.
	oz.	28.352	g.
Flow/ Distance	mpg.	0.4252	km/lit.
	mph.	1.609	km/h.
	mi.	1.609	kms.
	ft.	0.3048	m.
	yd.	0.9141	m.
	in.	2.54	cm.
	in.	25.4	mm.
Volume/ Capacity	oz. (U.S.liq.)	29.57	c.c. (cm^3)
	cu.in.	16.387	c.c. (cm^3)
	pt. (U.S.liq.)	0.4732	Lit.
	qt. (U.S.liq.)	0.9461	Lit.
	gal. (U.S.liq.)	3.785	Lits.
Misc.	lb/in.	0.017855	kg/mm.
	psi. (lb/$in.^2$)	0.07031	kg/$cm.^2$
	Fahrenheit (° F)	5/9 (°F − 32)	Centigrade (° C)

Definition of terms:

m-kg. = Meter Kilograms: Usually torque.
g. = Gram(s).
kg. = Kilogram(s): 1,000 grams.
km. = Kilometer(s).
lits. = Liter(s).
km/lits. = Kilometer(s) Per Liter: Mileage.
c.c. = Cubic Centimeter(s) ($cm.^3$): Volume or Capacity.
kg/mm. = Kilogram(s) Per Millimeter: Usually Spring Compression Rate.
kg/$cm.^2$ = Kilogram(s) Per Square Centimeter: Pressure.

Millimeters to Inches

	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	0	0.0039	0.0079	0.0118	0.0157	0.0197	0.0236	0.2760	0.0315	0.0354
1	0.0394	0.0433	0.0472	0.0512	0.0551	0.0591	0.0630	0.0669	0.0709	0.0748
2	0.7890	0.0827	0.0866	0.0906	0.0945	0.0984	0.1024	0.1063	0.1102	0.1142
3	0.1181	0.1200	0.1260	0.1299	0.1339	0.1378	0.1417	0.1457	0.1496	0.1535
4	0.1575	0.1614	0.1654	0.1693	0.1732	0.1772	0.1811	0.1850	0.1890	0.1929
5	0.1969	0.2000	0.2047	0.2087	0.2126	0.2165	0.2205	0.2244	0.2283	0.2323
6	0.2362	0.2402	0.2441	0.2480	0.2520	0.2559	0.2598	0.2638	0.2677	0.2717
7	0.2756	0.2795	0.2835	0.2874	0.2913	0.2953	0.2992	0.3031	0.3071	0.3110
8	0.3150	0.3189	0.3228	0.3268	0.3307	0.3346	0.3386	0.3425	0.3465	0.3504
9	0.3543	0.3583	0.3622	0.3661	0.3701	0.3740	0.3780	0.3819	0.3858	0.3898
10	0.3937	0.3976	0.4016	0.4055	0.4094	0.4134	0.4173	0.4213	0.4252	0.4291

0.01 mm. = 0.0004 in. 0.03 mm. = 0.0012 in. 0.05 mm. = 0.0020 in. 0.07 mm. = 0.0028 in. 0.09 mm. = 0.0035 in.
0.02 mm. = 0.0008 in. 0.04 mm. = 0.0016 in. 0.06 mm. = 0.0024 in. 0.10 mm. = 0.0039 in.

Inches to Millimeters

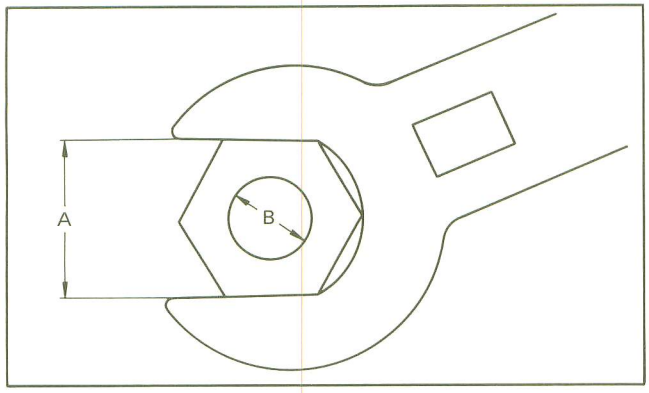
	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0	0	0.254	0.508	0.762	1.016	1.270	1.524	1.778	2.032	2.286
0.1	2.540	2.794	3.048	3.302	3.556	3.810	4.064	4.318	4.572	4.826
0.2	5.080	5.334	5.588	5.842	6.096	6.350	6.604	6.858	7.112	7.366
0.3	7.620	7.874	8.128	8.382	8.636	8.890	9.144	9.398	9.652	9.906
0.4	10.160	10.414	10.668	10.922	11.176	11.430	11.684	11.938	12.192	12.446
0.5	12.700	12.954	13.208	13.462	13.716	13.970	14.224	14.478	14.732	14.986
0.6	15.240	15.494	15.748	16.002	16.256	16.510	16.764	17.018	17.272	17.526
0.7	17.780	18.034	18.288	18.542	18.796	19.050	19.304	19.558	19.812	20.066
0.8	20.320	20.574	20.828	21.082	21.336	21.590	21.844	22.098	22.352	22.606
0.9	22.860	23.114	23.368	23.622	23.876	24.130	24.384	24.638	24.892	25.146
1.0	25.400	25.654	25.908	26.162	26.416	26.670	26.924	27.178	27.432	27.686

0.001 in. = 0.0254 mm. 0.003 in. = 0.00762 mm. 0.005 in. = 0.1270 mm. 0.007 in. = 0.1778 mm. 0.009 in. = 0.2286 mm.
0.002 in. = 0.0508 mm. 0.004 in. = 0.1016 mm. 0.006 in. = 0.1524 mm. 0.008 in. = 0.2032 mm. 0.010 in. = 0.254 mm.

7-3. Torque specifications

The list at right covers those stud/bolt sizes with standard I.S.O. pitch threads. Torque specifications for components with thread pitches other than standard are given within the applicable chapter.

Torque specifications call for dry, clean threads. Components such as the cylinder or cylinder head should be at room temperature prior to torquing. A cylinder head or any other item with several fasteners should be torqued down in a cross-hatch pattern in successive stages until torque specification is reached. The method is similar to installing an automobile wheel and will avoid warping the component.



A (Nut)	B (Bolt)	Torque Specification		
		m-kgs.	ft-lbs.	in-lbs.
10 mm.	06 mm.	1.0	7.0	085
13 mm.	08 mm.	2.0	15	175
14 mm.	08 mm.	2.0	15	175
17 mm.	10 mm.	3.5 ~ 4.0	25 ~ 30	300 ~ 350
19 mm.	12 mm.	4.0 ~ 4.5	30 ~ 35	350 ~ 400
22 mm.	14 mm.	4.5 ~ 5.0	30 ~ 35	400 ~ 400
26 mm.	17 mm.	6.0 ~ 7.0	40 ~ 50	500 ~ 600
27 mm.	18 mm.	6.0 ~ 7.0	40 ~ 50	500 ~ 600
30 mm.	20 mm.	7.0 ~ 8.0	50 ~ 60	600 ~ 700
14 mm. Spar Plug		2.5 ~ 3.0	20 ~ 22	230 ~ 250
12 mm. Spark Plug		1.5 ~ 2.0	11 ~ 15	130 ~ 175

Section Parts to Tightened	Tightening Torque
Cylinder head holding nut (8 mm.)	1.0 m-kg.
D.C. generator securing screw (6 mm.)	0.7 ~ 1.1 m-kgs.
Clutch boss securing nut (16 mm.)	6.5 ~ 8.0 m-kgs.
Drive sprocket securing nut (16 mm.)	6.5 ~ 9.0 m-kgs.
Crankcase tightening screw (6 mm.)	1.1 ~ 1.3 m-kgs.
Primary drive gear securing nut (12 mm.)	4.5 ~ 7.2 m-kgs.
Front wheel shaft securing nut (14 mm.)	6.6 ~ 10.5 m-kgs.
Front fork tube pinch bolt (10 mm.)	1.6 ~ 2.6 m-kgs.
Steering shaft securing nut (16 mm.)	5.0 ~ 6.0 m-kgs.
Engine mounting nut (6 mm.)	2.5 ~ 3.5 m-kgs.
Pivot shaft securing nut (14 mm.)	6.6 ~ 10.5 m-kgs.
Rear wheel shaft securing nut (14 mm.)	6.6 ~ 10.5 m-kgs.

7-4. Consumer Information

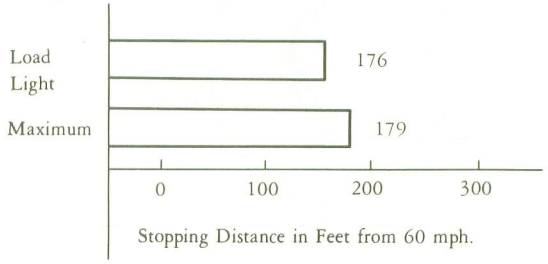
MODEL RD125B

> *Notice*
>
> *The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.*

STOPPING DISTANCE

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system.

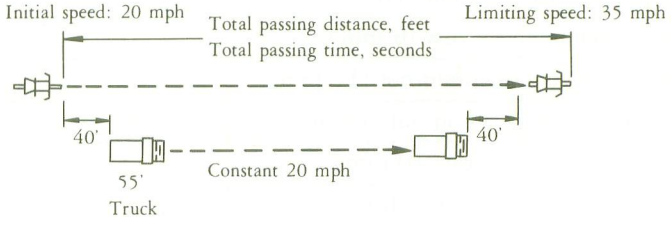
A. Fully Operational Service Brake



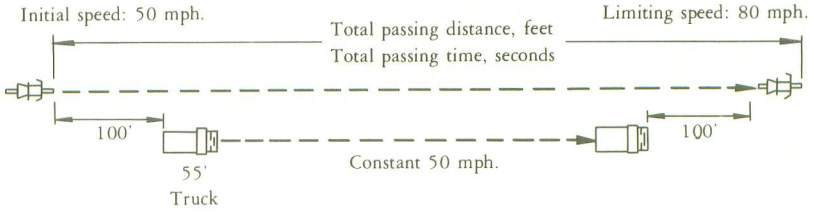
ACCELERATION AND PASSING ABILITY

This figure indicates passing times and distances that can be met or exceeded by the vehicles to which it applies, in the situations diagrammed below. The low-speed pass assumes an initial speed of 20 mph. and a limiting speed of 35 mph. The high-speed pass assumes an initial speed of 50 mph. and a limiting speed of 80 mph.

LOW SPEED PASS



HIGH SPEED PASS



SUMMARY

Low-speed pass	390 feet; 8.5 seconds.
High-speed pass	1,640 feet; 18.8 seconds.

MODEL RD200B

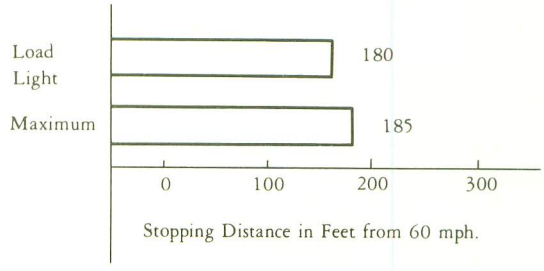
Notice

The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

STOPPING DISTANCE

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system.

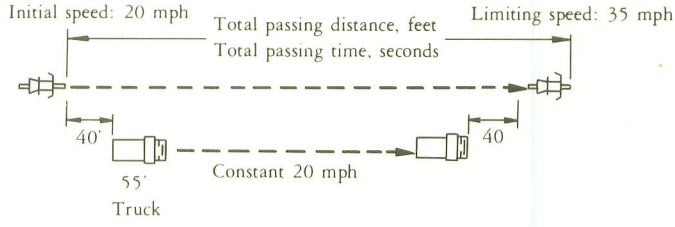
A. Fully Operational Service Brake



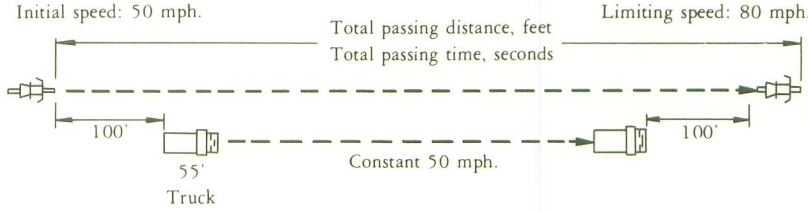
ACCELERATION AND PASSING ABILITY

This figure indicates passing times and distances that can be met or exceeded by the vehicles to which it applies, in the situations diagrammed below. The low-speed pass assumes an initial speed of 20 mph. and a limiting speed of 35 mph. The high-speed pass assumes an initial speed of 50 mph. and a limiting speed of 80 mph.

LOW SPEED PASS



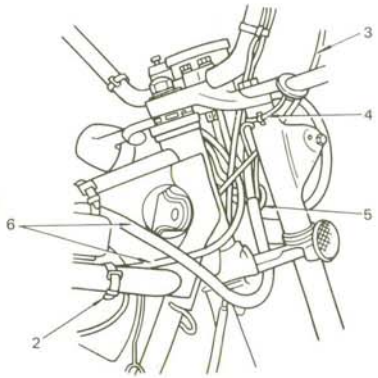
HIGH SPEED PASS

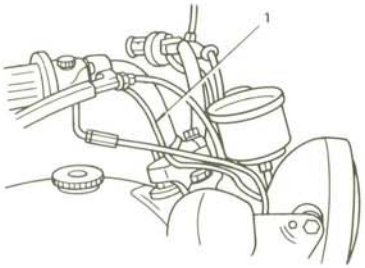


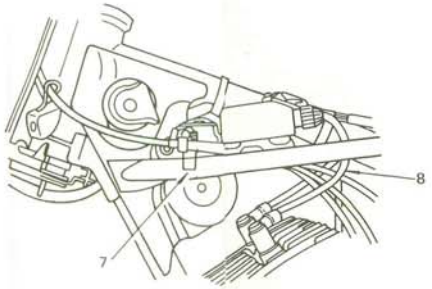
SUMMARY

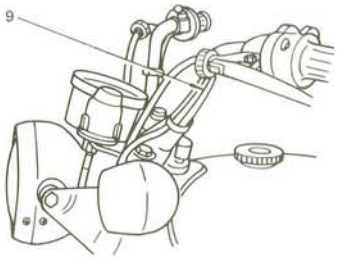
Low-speed pass ..... 0,365 feet; 07.6 seconds.
High-speed pass ..... 1,330 feet; 15.0 seconds.

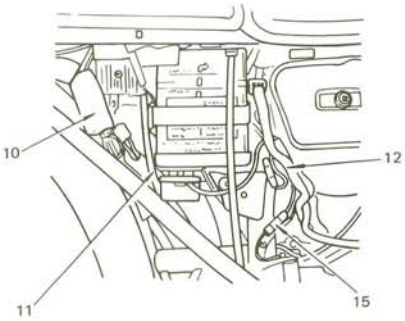
7-7. Wire and and pipe routing diagrams — RD125B

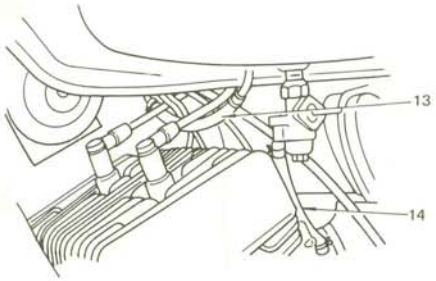


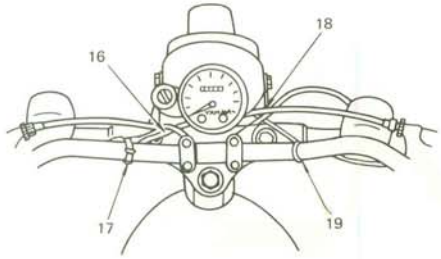


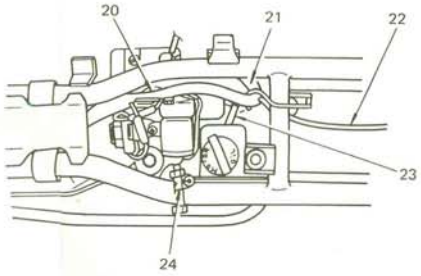


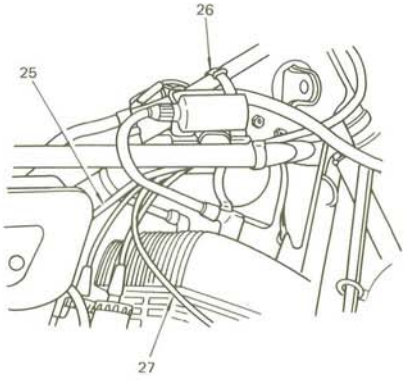




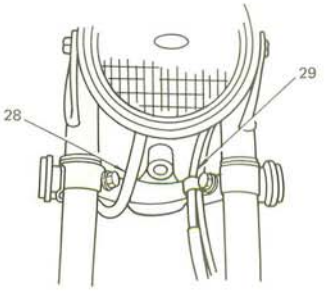


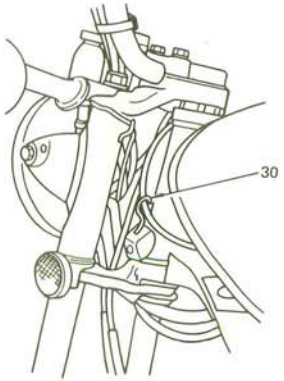






1. Pass stop switch lead wire and switch handle wire along the lower side of the left handlebar. Do not allow too much clearance between each lead and handlebar.
2. Clamp clutch wire with band.
3. Throttle wire, brake wire and clutch wire should be positioned closer to frame than wire harness lead wire, in order of throttle wire, brake wire and clutch wire from frame.
4. Front flasher light lead wires.
   Pass along fork, allowing no slack, and clip by bending clip attached to top of lamp *stay*. Perform the same for both right and left flasher lights.
5. Lead wires to be threaded through headlight body holes.
   - Stop switch lead wire . . . . . From right lever holder
   - Handle switch lead wires (2) . . . . . From left lever holder
   - Main switch lead wire
   - Speedometer lead wire
   - Right front flasher light lead wire
6. Clutch wire and wire harness should be positioned as close to frame as possible.
7. Set the gap between wire clip and wire cylinder cap to 0.039 in. (1.0 mm.). Changes in the gap caused by machine vibrations will be allowed.
8. Pass throttle wires (2) and pump wire, and clutch wire through between right and left high tension cords.
9. Pass lead wires (2) together along the lower side of the left handlebar. Do not allow too much clearance between each lead wire and handlebar.
10. After connecting lead wires, keep them together.
11. Oil tank breather pipe
    Pass between rear arm cross member and rear part of engine bracket, and extend outside the brake pedal.
12. Wire harness extending to AC generator
    Bring it downward from behind of air cleaner joint, and passalong main pipe.
13. Level pipe should be passed under all wires and cords and inserted into fuel tank. Don't let it slack too much.
14. Pass the fuel pipe (for right carburetor) *behind* left carburetor throttle wire.
15. Stop switch lead wire.
16. Pass clutch wire and lead wires (2) before handle crown and behind main switch. At the same time, the two lead wires should be positioned outside of clutch wire.
17. Clamp lead wires (2) with band.
18. Brake wire and lead wires (2) should be passed before handle crown. The two lead wires should be outside of brake wire.
19. Clamp lead wires (2) with hand.
20. After connecting lead wires, keep them together.
21. Hook wire harness.
22. Connect to rear flasher light lead wire in the center of rear fender.
23. Extend oil tank breather pipe downward.
24. Ground.
25. Pass clutch wire under coil bracket, and pass over throttle wires (2) and pump wire.
26. Clamp wire harness with band (at two places).
27. Pump wire should be at least 15 mm. off cylinder fins.
28. Wire harness should be so installed as not to *contact* shaft damper clip.
29. After threading speedometer cable and brake wire, clamp by bending wire guide inward. Do the same for both right and left sides.
30. After threading throttle wire, bend wire guide against head pie.





RD125B Wiring Diagram