

SERVICING

HONDA

MOTOR CYCLES

XL 175



CYCLESERV

PUBLICATIONS



Servicing
HONDA
Motor Cycles

XL 175

Published by:

TRACTOR & MECHANICAL PUBLICATIONS

for

CYCLESERV
PUBLICATIONS



55-57 Hume Street, Crows Nest, N.S.W.
Telephone: 439-5088

and at 405 Pitt Street, Sydney, N.S.W., Aust.

Telephone: 212-4486
Telegrams & Cables: "Cycleserv" Sydney

Publishers of Automotive & Motor Cycle books

Published June 1974

Copyright © TRACTOR & MECHANICAL Publications

Sole Proprietor. Cecil R. Dodd – Cremorne N.S.W. Aust.

Registered at National Library Canberra, A.C.T. Australia

No. — ISBN 0-909969-90-6.

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic mechanical photocopying, recording or otherwise, without the prior written permission of TRACTOR & MECHANICAL Publications.

No liability can be accepted for any inaccuracies or omissions in this publication, although every possible care has been taken to make it as complete and accurate as possible.

Published by arrangement with and special thanks to

HONDA MOTOR Co. Ltd.

Foreign Service Division

18-1 Honcho, Wako-shi, Saitama-ken.

JAPAN, 351.

Produced by: TRACTOR & MECHANICAL Publications

for



SYDNEY – AUSTRALIA

INDEX

SERVICE DATA	1
SERVICE PRECAUTIONS	13
INSPECTION AND ADJUSTMENT	14
Tappet clearance.....	14
Breaker point gap and ignition timing.....	14
Carburetor.....	15
Throttle grip play.....	16
Clutch.....	16
Cam chain.....	16
Engine oil.....	17
Front brake.....	17
Rear brake.....	18
Air cleaner.....	19
Oil filter.....	19
Fuel filter.....	20
Spark plug.....	21
Drive chain.....	21
Front suspension and wheel.....	22
Rear suspension and wheel.....	22
Battery.....	23
Head light.....	23
Stop light switch.....	23
 ENGINE	24
On-vehicle servicing.....	24
Engine removal and installation.....	24
Cylinder head, camshaft, cylinder and piston.....	25
Oil pump and oil filter.....	31
Clutch.....	34
Kick starter.....	36
Gearshift mechanism.....	38
Transmission.....	40
Cam chain tensioner.....	42
Crankshaft and connecting rod.....	43
Crankcase.....	44
Carburetor.....	45
 FRAME	47
Front wheel and front brake.....	47
Rear wheel and rear brake.....	49
Steering handlebar.....	51
Steering stem.....	53
Front suspension.....	55
Rear suspension.....	57
Frame body.....	59
 ELECTRICAL SYSTEM	
General descriptions.....	62
Ignition system.....	63
Charging system.....	66
Electrical equipment.....	70
Wiring diagram.....	73
 SERVICE DATA	
Maintenance schedule.....	9
Torque specifications.....	8
Service data.....	6
Trouble shooting.....	10
Specifications.....	5

SPECIFICATIONS

Item		
DIMENSION		
Overall length		2,075 mm (81.7 in.)
Overall width		840 mm (33.1 in.)
Overall height		1,095 mm (43.1 in.)
Wheel base		1,360 mm (53.5 in.)
Seat height		810 mm (31.9 in.)
Ground clearance		210 mm (8.3 in.)
Dry weight		108 kg (239 lb.)
FRAME		
Type		Semi double cradle type
F. suspension, travel		Telescopic fork, travel 152 mm (6.0 in.)
R. suspension, travel		Swing arm, travel 114 mm (4.5 in.)
F. tire size, type		2.75-21-4PR, tire air pressure 1.5 kg/cm ² , (21 psi)
R. tire size, type		3.50-18-4PR, tire air pressure 1.5 kg/cm ² , (21 psi)
F. brake		Internal expanding shoes
R. brake		Internal expanding shoes
Fuel capacity		7.0 lit. (1.8 U.S. gal. 1.5 Imp. gal.)
Fuel reserve capacity		1.5 lit. (0.4 U.S. gal. 0.3 Imp. gal.)
Caster angle		60° 30'
Trail length		132 mm (5.2 in.)
ENGINE		
Type		Air cooled 4-stroke O.H.C. engine
Cylinder arrangement		Single 10° inclined from vertical
Bore and stroke		64.0×54.0 mm (2.520×2.126 in.)
Displacement		173 cc (10.6 cu in.)
Compression ratio		9.0 : 1
Valve train		Chain driven over head camshaft
Maximum horsepower		15 BHP/8,500 rpm (SAE J245)
Maximum torque		1.4 kg-m/7,000 rpm (10.1 lb-ft/7,000 rpm)
Oil capacity		1.5 lit. (1.6 U.S. qt 1.3 Imp. qt)
Lubrication system		Forced and wet sump
Intake valve	Opens	At 10° (before top dead center)
	Closes	At 40° (after bottom dead center)
Exhaust valve	Opens	At 40° (before bottom dead center)
	Closes	At 10° (after top dead center)
Valve tappet clearance		IN: 0.05, EX: 0.08 mm (IN: 0.002, EX: 0.003 in.)
Idle speed		1,200 rpm
DRIVE TRAIN		
Clutch		Wet multi plate type
Transmission		5-speed constant mesh
Primary reduction		3.700
Gear ratio I		2.769
" II		1.882
" III		1.450
" IV		1.174
" V		0.960
Final reduction		2.714, drive sprocket 14 T, driven sprocket 38 T
Gear shift pattern		Left foot operated return system
ELECTRICAL		
Ignition		Battery and ignition coil
Starting system		Kick starter
Alternator		AC generator 0.055 kw/5,000 rpm
Battery capacity		6V-6AH
Spark plug		NGK B7ES, ND W22ES

SERVICE DATA

ENGINE

Item	Unit	Standard value	Service limit
Rocker arm-to-shaft clearance	mm (in.)	0.016~0.052 (0.0006~0.0021)	0.1 (0.0039)
Camshaft journal OD	RH LH	mm (in.)	21.939~21.960 (0.8637~0.8646) 22.939~22.960 (0.9031~0.9039)
Cam height	IN EX	mm (in.)	40.544 (1.5962) 40.568 (1.5972)
Valve stem OD	IN EX	mm (in.)	6.975~6.990 (0.2746~0.2752) 6.955~6.970 (0.2738~0.2744)
Valve stem-to-guide clearance	IN EX	mm (in.)	0.01~0.035 (0.0004~0.0014) 0.03~0.055 (0.0012~0.0022)
Valve spring free length	INNER OUTER	mm (in.)	36.25 (1.427) 43.1 (1.697)
Valve spring tension	INNER OUTER	kg/mm (lb/in.)	8.3/30.8 (18.3/1.213) 23.2/35.7 (51.2/1.406)
Cylinder bore dia.	mm (in.)	64.0~64.01 (2.5197~2.5201)	64.1 (2.5236)
Piston OD	mm (in.)	63.970~63.990 (2.5185~2.5193)	63.85 (2.5138)
Piston pin hole dia.	mm (in.)	15.002~15.008 (0.5906~0.5909)	15.05 (0.5925)
Piston pin OD	mm (in.)	14.994~15.000 (0.5903~0.5906)	14.9 (0.5866)
Piston ring-to-groove clearance	TOP SECOND OIL	mm (in.)	0.030~0.060 (0.0012~0.0024) 0.015~0.045 (0.0006~0.0018) 0.015~0.045 (0.0006~0.0018)
Piston ring gap	TOP SECOND OIL	mm (in.)	0.2~0.4 (0.0079~0.0157) 0.2~0.4 (0.0079~0.0157) 0.2~0.4 (0.0079~0.0157)
Connecting rod small end ID	mm (in.)	15.016~15.034 (0.5912~0.5919)	15.07 (0.5933)
Connecting rod big end radial clearance	mm (in.)	0.004~0.012 (0.0002~0.0005)	0.05 (0.0020)
Connecting rod big end axial clearance	mm (in.)	0.12~0.38 (0.0047~0.0150)	0.60 (0.02362)
Outer rotor OD-to-pump body clearance	mm (in.)	0.15~0.21 (0.0059~0.0083)	0.35 (0.0138)
Outer rotor-to-inner rotor clearance	mm (in.)	0.15 (0.0059)	0.3 (0.0118)
Clutch friction disc thickness	mm (in.)	2.92~3.08 (0.1150~0.1213)	2.6 (0.1024)
Clutch plate face runout	mm (in.)	0.1 (0.0039)	0.2 (0.0079)
Clutch spring free length	mm (in.)	28.26 (1.113)	27.0 (1.063)
Clutch spring tension	kg/mm (lb/in.)	18.3~18.5/22.5 (42.55~42.99/0.886)	—
Transmission gear backlash	mm (in.)	—	0.2 (0.0079)
Gear shift fork ID	mm (in.)	13.000~13.018 (0.5118~0.5125)	12.95 (0.5098)
Shift fork guide shaft OD	mm (in.)	12.966~12.984	12.90 (0.5079)
Shift fork thickness	mm (in.)	5.36~5.44(0.2110~0.2142)	5.0 (0.1969)

FRAME

Item	Unit	Standard value	Service limit
Drive chain length (No. of links : 92)	mm (in.)	1444.625~1446.925 (56.875~56.966)	1490 (58.662)
Free length of front cushion spring A	mm (in.)	140.1 (5.516)	132 (5.197)
Free length of front cushion spring B	mm (in.)	320.7 (12.626)	302 (11.890)
Fork bottom pipe OD	mm (in.)	30.925~30.95 (1.2175~1.2185)	30.9 (1.2165)
Fork bottom case ID	mm (in.)	31.000~31.039 (1.2205~1.2220)	31.065 (1.2230)
Front wheel axle bend	mm (in.)	0.01 (0.0004)	0.2 (0.0079)
6302 ball bearing axial offset	mm (in.)	0.02 (0.0008)	0.04 (0.0016)
6302 ball bearing radial offset	mm (in.)	0.015 (0.0006)	0.03 (0.0012)
Front wheel rim (face runout)	mm (in.)	0.5 (0.0197)	2.0 (0.0787)
Front brake drum ID	mm (in.)	140.0~140.3 (5.5118~5.5236)	141 (5.5512)
Front brake shoe thickness	mm (in.)	4.5~4.8 (0.177~0.189)	2.5 (0.098)
Rear wheel axle bend	mm (in.)	0.01 (0.004)	0.20 (0.0079)
Rear fork pivot bushing ID	mm (in.)	21.50~21.552 (0.8465~0.8485)	21.70 (0.8543)
Rear fork center collar OD	mm (in.)	21.427~21.46 (0.8436~0.8449)	12.41 (0.8429)
Axial offset of 6303 ball bearings	mm (in.)	0.02 (0.0008)	0.04 (0.0016)
Radial offset of 6303 ball bearings	mm (in.)	0.015 (0.0006)	0.03 (0.0012)
Rear wheel rim (face runout)	mm (in.)	0.5 (0.0197)	2.0 (0.0787)
Rear brake drum ID	mm (in.)	130.0~130.3 (5.1181~5.1299)	131 (5.1575)
Rear brake shoe thickness	mm (in.)	4.0~4.3 (0.158~0.169)	2.5 (0.098)
Rear shock absorber spring A free length	mm (in.)	58.2 (2.291)	54 (2.126)
Rear shock absorber spring B free length	mm (in.)	178.6 (7.032)	168 (6.614)

TORQUE SPECIFICATIONS

ENGINE

Tightening point	Thread dia. (mm)	Torque	
		kg-cm	lbs-ft
Crankcase and crankcase cover	6, P 1.0	70~100	5.1~ 7.3
Cylinder head	8, P 1.25	220~280	15.2~20.3
Carburetor insulator-to-cylinder head	6, P 1.0	80~120	5.9~ 8.7
Cam sprocket	7, P 1.0	170~230	12.3~16.7
A.C. generator rotor	8, P 1.25	350~450	25.3~32.6
Oil filter rotor	16, P 1.0	500~600	36.2~43.4
Tappet adjusting nut	6, P 0.75	70~110	5.1~ 8.0
Upper and lower crankcase	8, P 1.25 6, P 1.0	220~280 90~140	15.2~20.3 6.5~10.1
Cylinder head cover	6, P 1.0	90~140	6.5~10.1

FRAME

Tightening point	Thread dia. (mm)	Torque	
		kg-cm	lbs-ft
Steering stem nut	23, P 1.0	800~1,200	57.9~86.9
Fork top bridge to front forks	8, P 1.25	180~250	13.1~18.1
Handlebar holder	8, P 1.25	180~250	13.1~18.1
Front fork bottom bridge to front forks	8, P 1.25	180~250	13.1~18.1
Spokes	—	20~25	1.5~1.8
Rear fork pivot bolt	14, P 1.5	550~700	39.8~50.7
Front wheel axle nut	14, P 1.5	600~800	43.4~57.9
Engine hanger bolt	10, P 1.25	300~400	21.7~29.0
Rear wheel axle nut	14, P 1.5	600~800	43.4~57.9
Final driven sprocket	8, P 1.25	200~250	14.5~18.1
Brake arm	6, P 1.0	80~120	5.9~8.7
Rear shock absorber	10, P 1.25	300~400	21.7~29.0
Gear change pedal	6, P 1.0	80~120	5.9~8.7
Kick arm	8, P 1.25	180~250	13.1~18.1

MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE This Maintenance Schedule is based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.	INITIAL SERVICE PERIOD	REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval, whichever occurs first.			
	500 miles	1 month 500 miles	3 months 1,500 miles	6 months 3,000 miles	13 months 6,000 miles
ENGINE OIL—Change.	●		○		
CENTRIFUGAL OIL FILTER—Clean.					○
OIL FILTER SCREEN—Clean.					○
SPARK PLUG—Clean and adjust gap or replace if necessary.				○	
*CONTACT POINTS AND IGNITION TIMING—Clean, check, and adjust or replace if necessary.	●			○	
*VALVE TAPPET CLEARANCE—Check, and adjust if necessary.	●			○	
*CAM CHAIN—TENSION—Adjust.	●			○	
POLYURETHANE FOAM AIR FILTER ELEMENT—Clean and oil.	(Service more frequently if operated in dusty areas)		○		
*CARBURETOR—Check, and adjust if necessary.	●			○	
THROTTLE OPERATION—Inspect cable. Check, and adjust free Play.	●			○	
FUEL FILTER SCREEN—Clean.				○	
FUEL LINES—Check.				○	
*CLUTCH—Check operation, and adjust if necessary.	●			○	
DRIVE CHAIN—Check, lubricate, and adjust if necessary.	**●	○			
*BRAKE SHOES—Inspect, and replace if worn.				○	
BRAKE CONTROL LINKAGE—Check linkage, and adjust free play if necessary.	●			○	
*WHEEL RIMS AND SPOKES—Check. Tighten spokes and true wheels, if necessary.	●			○	
TIRES—Inspect and check air pressure.	●	○			
FRONT FORK OIL—Drain and refill.	***●				○
FRONT AND REAR SUSPENSION—Check operation.	●			○	
REAR FORK BUSHING—Grease. Check for excessive looseness.				○	
*STEERING HEAD BEARINGS—Adjust.					○
BATTERY—Check electrolyte level, and add water if necessary.	●		○		
LIGHTING EQUIPMENT—Check and adjust if necessary.	●	○			
ALL NUTS, BOLTS, AND OTHER FASTENERS—Check security and tighten if necessary.	●	○			

Items marked *Should be serviced by an authorized Honda dealer, unless the owner has proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.

**INITIAL SERVICE PERIOD 200 MILES.

***INITIAL SERVICE PERIOD 1,500 MILES.

TROUBLE SHOOTING

ENGINE

Trouble	Probable cause	Remedy
Engine does not start	- Insufficient compression pressure - Incorrect tappet adjustment - Worn valve guide or improper valve seating - Incorrect valve timing - Worn piston rings - Worn cylinder - No sparking at spark plug and contact point - Dirty spark plug - Wet spark plug - Dirty contact breaker point - Improper point gap - Defective ignition coil - Disconnection or short circuit of ignition wire - Short circuit in capacitor - Fuel does not flow to carburetor - Clogged vent hole in tank cap - Clogged fuel cock - Defective carburetor float valve - Clogged fuel feed pipe	Adjust Replace or repair Adjust Replace Replace Clean Clean Clean Adjust Replace Replace Replace Clean Clean Replace Clean
Engine stalls soon	- Dirty spark plug - Dirty contact breaker point - Incorrect ignition timing - Clogged fuel feed pipe - Clogged carburetor jet - Incorrect tappet adjustment	Clean Clean Adjust Clean Clean Adjust
Noisy engine	- Noisy tappet - Large tappet clearance - Loss of valve spring tension - Piston knocking - Worn piston ring or cylinder - Carbon accumulated in combustion chamber - Worn piston pin or connecting rod small end - Cam chain - Stretched cam chain - Worn cam sprocket or timing sprocket - Noisy clutch - Loose clutch center spline - Excessive clearance between clutch friction disc and teeth of clutch outer housing - Warped friction disc or clutch plate - Crankshaft - Worn crankshaft bearing - Worn connecting rod big end - Noisy gear - Worn transmission gear or interference between gears - Worn spline - Worn primary gear or interference between gears	Adjust Replace Replace Clean Replace Replace or adjust cam chain tensioner Replace Replace Replace Replace or repair Replace Replace Replace Replace Replace

Trouble	Probable cause	Remedy
Noisy engine	1. Improper clutch adjustment (no play in clutch lever) 2. Weak clutch pressure plate spring 3. Worn or warped pressure plate 4. Warped clutch plate 5. Worn or warped friction disc	Adjust Replace Replace Replace Replace
Clutch slips	1. No play in the clutch lever 2. Weak or none uniform clutch spring 3. Worn or grazed friction disc	Adjust clutch lever Replace Replace
Clutch will not be disengaged	1. Excessive play of clutch lever 2. Warped friction disc 3. Warped pressure plate 4. Bent mainshaft	Adjust clutch lever Replace Replace Replace
Difficult gear shifting	1. Broken gear shift return spring 2. Interference between transmission case and gear shift spindle	Repair or replace Repair
Change gear slips out	1. Worn shifting gears on mainshaft and countershaft 2. Worn or bent gear shift fork 3. Weak shift drum stopper spring	Replace Repair or replace Replace
Engine idling is not stable	1. Improper tappet adjustment 2. Improper seating of cylinder head valve 3. Defective valve guide 4. Incorrect ignition timing 5. Faulty contact breaker point 6. Excessive spark plug gap 7. Weak ignition spark (defective capacitor or ignition coil) 8. Improper carburetor float level 9. Incorrect carburetor air screw adjustment	Adjust Replace Replace Adjust Repair Repair Replace Adjust Adjust
Engine high speed running is not stable	1. Weak valve spring 2. Incorrect valve timing 3. Insufficient spark plug gap 4. Retarded ignition timing 5. Faulty spark advancer 6. Weak point arm spring 7. Defective ignition coil 8. Improper carburetor float level adjustment (low level) 9. Clogged air cleaner element 10. Insufficient fuel in carburetor	Replace Adjust Adjust Adjust Replace Replace Replace Adjust Clean Clean or supply fuel
Exhaust smoke from muffler	1. Excessive engine oil 2. Worn cylinder and piston rings 3. Worn valve guide 4. Defective cylinder	Adjust oil level Check with level gauge Replace Replace Replace
Loss of power	1. Incorrect tappet Adjustment 2. Loss of valve spring tension 3. Incorrect valve timing 4. Worn cylinder and piston 5. Improper valve seating 6. Incorrect ignition timing 7. Defective contact breaker point 8. Incorrect spark plug gap 9. Clogged carburetor main or slow jet nozzle 10. Improper float level adjustment 11. Clogged air cleaner	Adjust Replace Adjust Replace Replace Adjust Repair or replace Repair Clean Adjust Clean

Trouble	Probable cause	Remedy
Engine overheating	1. Heavy carbon deposit on cylinder head 2. Insufficient engine oil 3. Defective oil pump, or clogged oil passage 4. Too lean gas mixture 5. Advanced ignition timing (knocking)	Remove carbon Supply to normal level Clean Adjust Adjust

FRAME.

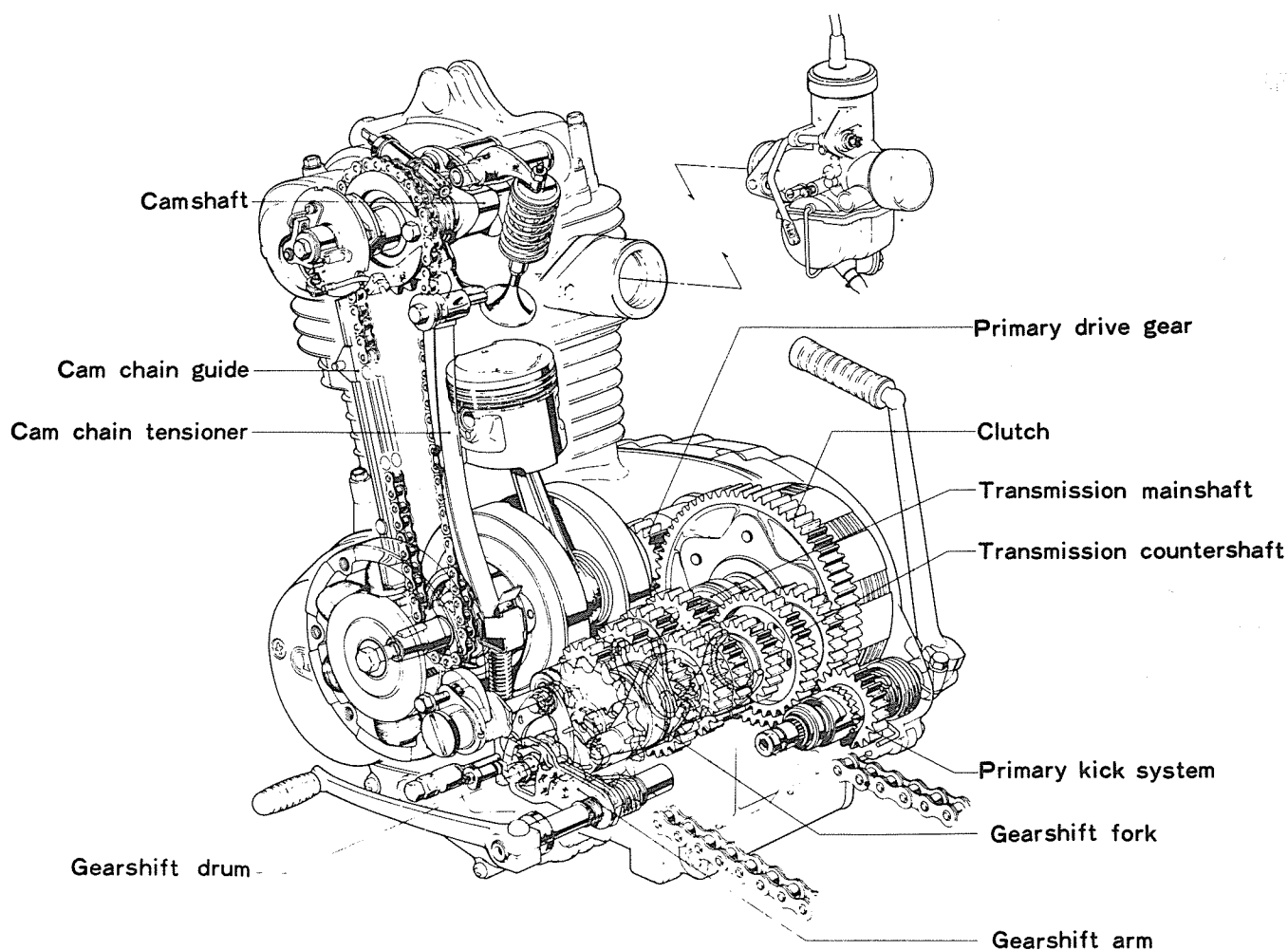
Trouble	Probable cause	Remedy
Hard steering	1. Over-tightend steering stem 2. Damaged steering stem steel balls 3. Bent steering stem 4. Low tire inflation pressure 5. Over-tightened steering cone race	Adjust Replace Replace Adjust Adjust
Motorcycle pulls to one side	1. Unequal tension of left and right cushion springs 2. Bent front fork 3. Bent front axle, or incorrect alignment of wheel	Replace Repair or replace Replace or repair
Front wheel wobbles	1. Deformed rim 2. Worn front wheel bearings 3. Loose spoke 4. Defective tire 5. Loose front axle	Replace Replace Retighten Replace Retighten
Soft front suspension	1. Loss of spring tension 2. Insufficient damper oil	Replace Add oil
Hard front suspension	1. High viscosity of damper oil 2. Excessive damper oil	Change Adjust
Noisy front suspension	1. Interference between cushion case and spring 2. Damaged cushion stopper rubber 3. Insufficient damper oil 4. Loose cushion	Replace Replace Adjust Retighten
Rear wheel wobbles	1. Distorted rim 2. Worn rear wheel bearings 3. Loose spoke 4. Defective tire	Replace Replace Adjust Retighten
Soft rear suspension	1. Loss of spring tension 2. Improper rear cushion adjuster adjustment	Replace Adjust
Hard rear suspension	Improper rear cushion adjuster adjustment	Adjust
Noisy rear suspension	1. Interference between cushion case and spring 2. Loose installation	Replace Retighten
Poor braking	1. Poor contact of brake shoe 2. Brake lining is contaminated with oil or grease 3. Loose brake cable or worn brake pedal shaft 4. Improper brake adjustment	Replace or repair Replace Repair or adjust Adjust
No adjusting allowance	1. Worn brake shoe 2. Worn brake shoe cam 3. Improperly engaged brake arm serration 4. Worn brake cam	Replace Replace Replace Replace
Brake squeals when applied	1. Worn brake shoe 2. Foreign matter sticking to brake shoe surface 3. Hardened brake shoe surface 4. Bent or twisted brake shoe	Replace Clean or replace Replace Replace

SERVICE PRECAUTIONS

1. Always replace new gaskets, O-rings and cotter pins whenever reassembling.
2. When tightening bolts or nuts for which sequences are not specified, begin on center or larger diameter bolts and tighten them in a criss-cross pattern to specified torque in two or more steps if necessary.
3. Use genuine HONDA parts and lubricants or those recommended by HONDA.
4. Use special service tool where use of such a tool is specified.
5. Clean engine parts in or with cleaning solvent upon disassembly. Apply lubricants to their sliding surfaces when reassembling.
6. Coat or pack parts with grease where so specified.
7. Upon assembling, check every possible part for proper installation and movement or operation.
8. A joint work of more than two must be carried out with mutual safety attention paid to each other.

NOTES:

1. The procedures for reassembling the engine and frame parts are, as a rule, not described. Follow the reverse of disassembling procedures carefully observing the titles "Reassembly points" in each section.
2. All the service data for each component are compiled toward the end of this manual.



INSPECTION AND ADJUSTMENT

This section describes the inspection and adjustment procedures for the important items or the periodical maintenance of the HONDA 175 Model XL 175 Motorcycle. Cross-refer to the PERIODICAL MAINTENANCE SCHEDULE on page 9. For the items other than those described in this section, refer to "Inspection" of each part in this manual.

1. TAPPET CLEARANCE

The tappet clearance adjustment should be made while the engine is cold.

1. Remove the intake and exhaust tappet cover.
2. Remove the generator cover.
3. Carefully rotate the generator rotor counterclockwise until the mark "T" on the rotor aligns with the index mark.

4. Make sure that the piston is at the top dead center on its compression stroke.

This can be determined by moving the tappets with fingers. If the tappets are free, it is an indication that the valves are closed and that the piston is on the compression stroke.

If the tappets are tight and the valves are open, rotate the generator rotor 360° and realign the "T" mark with the index mark.

5. Check the clearance of both valves by inserting a **0.05 mm (0.002 in.)** feeler gauge on intake, and a **0.08mm (0.003 in.)** gauge on exhaust, between the valve stem and adjusting screw.

To adjust, loosen the adjusting screw lock nut with a 9 mm wrench and turn the adjusting screw in or out to allow the gauge to pass through the clearance with slight resistance.

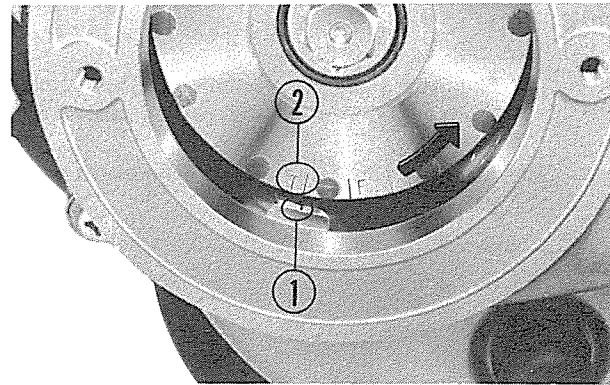


Fig. 2-1

- ① Index mark
② "T" mark

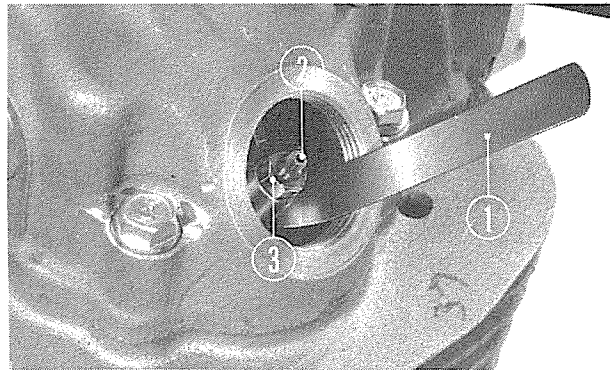


Fig. 2-2

- ① Feeler gauge
② Tappet adjusting screw
③ Lock nut

NOTE:

After completing the adjustment, tighten the lock nut firmly to secure the adjustment, and recheck the clearance.

6. Install the tappet and generator covers.

2. BREAKER POINT GAP AND IGNITION TIMING

Breaker point gap

1. Remove the generator and breaker point covers.
2. Make sure the point gap is **0.3 to 0.4 mm (0.012 to 0.016 in.)** at maximum point. To do this, rotate the generator rotor counterclockwise with a 14-mm box wrench.

Adjustment is made by loosening the breaker plate locking screws and turning the breaker point plate.

After the above steps have been completed, tighten the locking screws and recheck the gap.

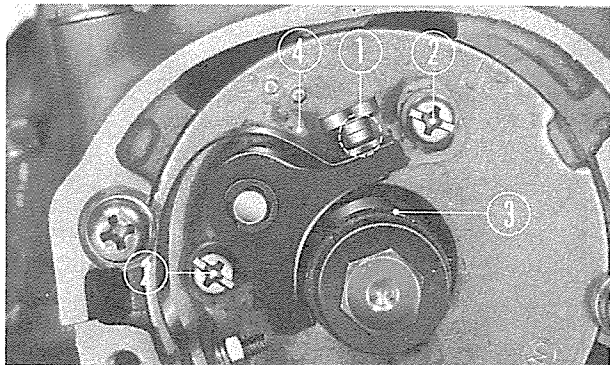


Fig. 2-3

- ① Breaker point
② Breaker plate locking screw
③ Point cam
④ Contact breaker point plate

Ignition timing

Before attempting to adjust ignition timing, make sure the contact breaker point gap is adjusted properly.

With timing light (Service Tester SRH500, Tool No. 07171-9990000).

1. Connect timing light to the system properly. Refer to the instructions furnished by the manufacturer.
2. Start the engine and allow it to idle at 1,200 rpm.
3. Direct the beam of light toward the index mark. The engine is timed when the index mark aligns with "F" mark.

To adjust ignition timing, loosen the locking screws at the base plate and rotate the plate as necessary.

Rotating the base plate clockwise advances the ignition, and rotating counterclockwise retards the ignition.

4. Raise the speed of the engine to 4,000 rpm. Again direct the beam of light toward the index mark. Timing is correct if the index mark is anywhere between two advance marks.

With test lamp

1. Connect one lead of the test lamp to the contact breaker spring, and the other to the engine (ground).
2. Turn on both the main and ignition switches.
3. Slowly turn the generator in a counterclockwise direction until the lamp is about to light. Timing is correct if the mark "F" is lined up with the index mark.
4. When adjustment is necessary, loosen the locking screw and rotate the base plate as necessary.

3. CARBURETOR

Make adjustments with the engine warmed up.

1. Close the throttle and adjust the throttle stop screw to have the engine run at an idle speed of 1,200 rpm.
Rotation of the stop screw in a clockwise direction increases the speed.
2. Turn the air screw in or out until the engine runs smoothly, or approximately $3/4$ to $1\ 1/2$ turns open.
3. If necessary, turn in or out the throttle stop screw to have the engine run at the specified idle speed.

Idle speed: 1,200 rpm

4. THROTTLE GRIP PLAY

1. Check the free play of the throttle grip. It should be held within 10° – 15° of the grip rotation. Adjustment is made by loosening the adjuster lock nut and turning the adjuster in or out as necessary. Tighten the lock nut firmly to secure the adjustment.
2. Check the rotation of the throttle grip. Turn the handlebar all the way between two extremes to see if the throttle cable is not twisting or rubbing against adjacent parts. The cable should also be routed properly.

Repair or, if necessary, replace the cable with a new one.

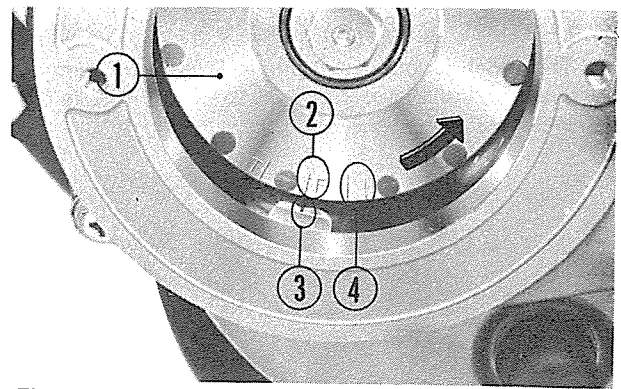


Fig. 2-4

- ① Generator rotor ③ Index mark
② "F" mark ④ Advance mark

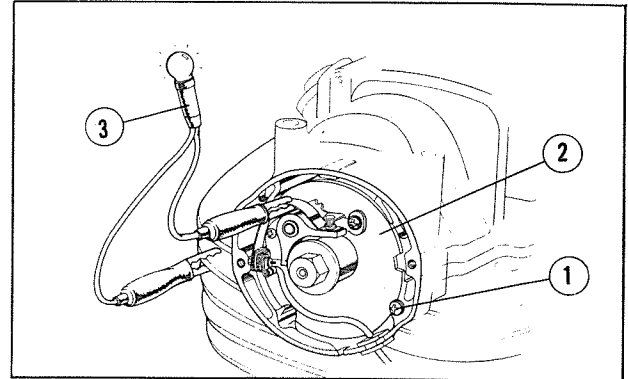


Fig. 2-5

- ① Base plate locking screw ③ Test lamp (6V-3W)
② Base plate

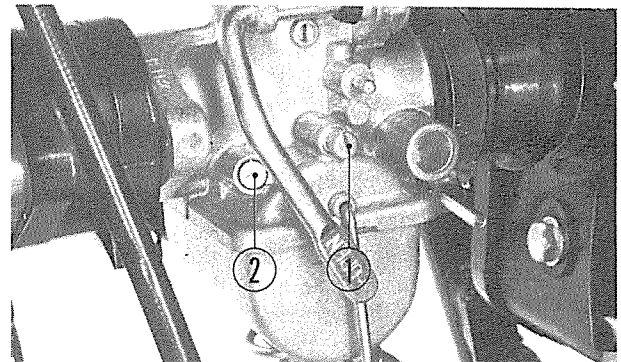


Fig. 2-6

- ① Throttle stop screw
② Air screw

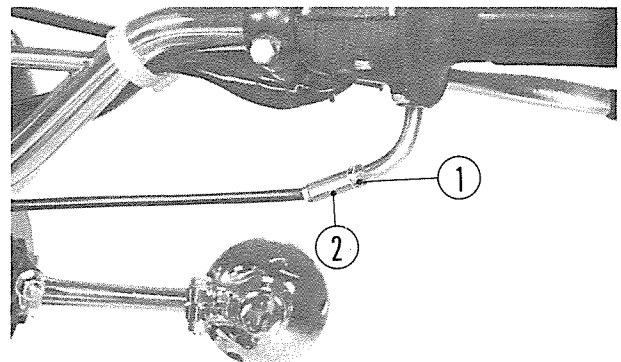


Fig. 2-7

- ① Lock nut
② Grip play adjuster

5. CLUTCH

1. The clutch requires attention to lever adjustment.
Correct clutch lever play is **10 to 20 mm (0.4 to 0.8 in.)** as measured at the lever tip.
2. To adjust lever play, loosen the clutch locking bolt and turn the adjuster in or out as necessary.
Rotation of the adjuster in a clockwise direction decreases the play, and rotating in a counterclockwise direction increases the play.
3. Minor adjustment can be made on adjusters, one on each side of the clutch cable. To adjust, loosen the lock nut and turn the adjusting bolt until the lever has the correct play. Turn the bolt in the direction "A" to increase the play, or out to decrease it.
4. After the adjustment has been made, check to see that the clutch is not slipping and that the clutch is properly disengaging.
 - 1) When the kick starter is used, the engine should easily start without the clutch slipping.
 - 2) After the engine starts, pull the clutch lever and shift into gear, and make sure that the engine does not stall, nor the motorcycle start to creep.
 - 3) Gradually release the clutch lever and open the throttle, the motorcycle should start smoothly and gradually accelerate.

6. CAM CHAIN

1. Stop the engine.
2. Remove the generator cover.
3. Bring the piston to the top dead center on its compression stroke; align the "T" mark on the generator rotor with the index mark on the stator.

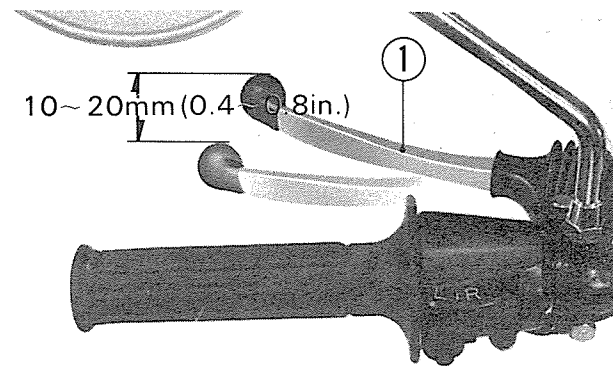


Fig. 2-8
① Clutch lever

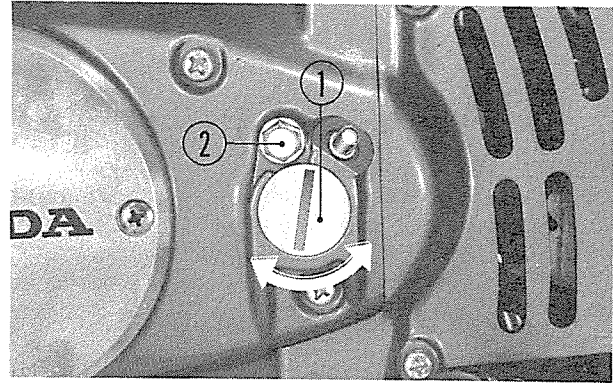


Fig. 2-9
① Adjuster
② Clutch locking bolt

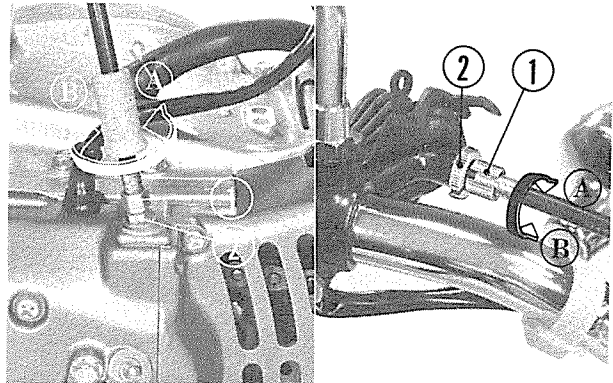


Fig. 2-10
① Adjusting bolt
② Lock nut

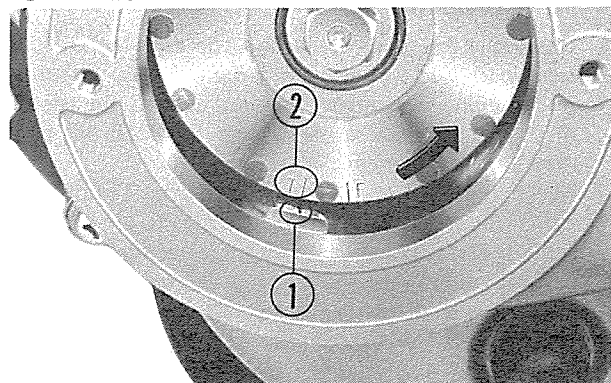


Fig. 2-11
① Index mark
② "T" mark

4. Loosen the cam chain adjusting lock nut.
5. Hold the generator rotor by hand to place the piston at T.D.C, loosen the cam chain adjuster.
The cam chain will be tensioned automatically.
6. Tighten the cam chain adjuster and lock the adjustment by means of the lock nut.

7. ENGINE OIL

Checking oil level

1. Place a suitable stand under the machine so that it is nearly horizontal.
2. Insert the oil level gauge into the oil filler opening. Do not screw it in. The gauge is marked to indicate the proper oil level. The oil level should be anywhere between the upper and lower level marks on the gauge. If necessary, refill the crankcase with the specified oil.

Changing oil

1. After warming up the engine, remove the oil filler cap.
2. Drain the oil thoroughly by removing the drain plug.
After the oil stops draining, operate the kick starter several times to drain any oil which may be left in the engine.
3. Replace the drain plug.
4. Fill the crankcase through the filler opening with the specified oil. Keep level as close to the "UPPER" mark as possible. Don't overfill.

Capacity: 1.5 liters (1.6 US qt)

Recommended oil:

Viscosity: General, all temperatures

SAE 10W-30 or SAE 10W-40

Alternate:

Above 15°C (59°F)	SAE 30
0°C (32°) to 15° (59°F)	SAE 20 or 20W
Below 0°C (32°F)	SAE 10W

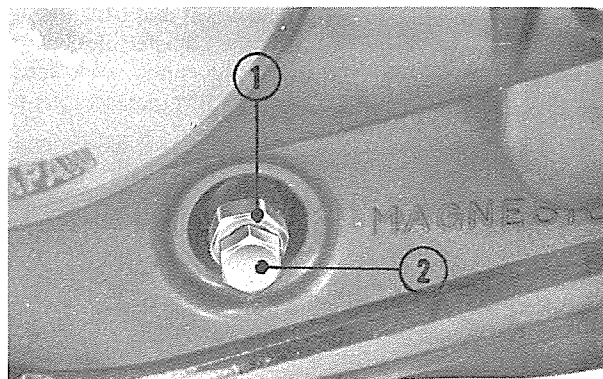


Fig. 2-12

- ① Cam chain adjuster lock nut
② Cam chain adjuster

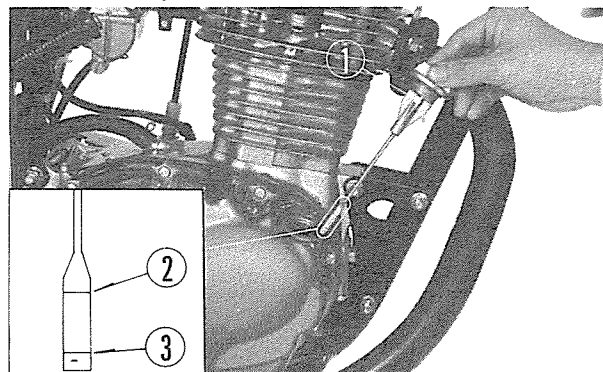


Fig. 2-13

- ① Oil level gauge ③ Lower level mark
② Upper level mark

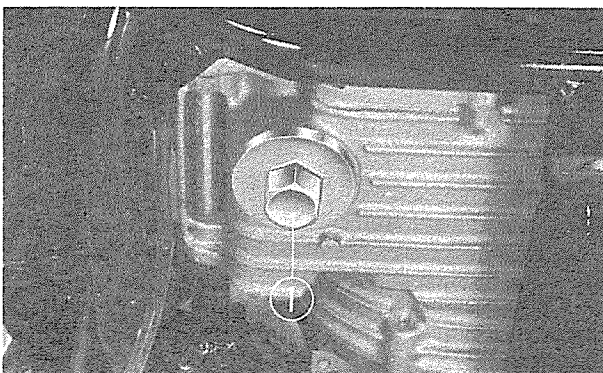


Fig. 2-14

- ① Drain plug

8. FRONT BRAKE

1. Check the brake lever for proper play. When the lever is in the full released position, the lever should have the following free travel before pressure is felt.
Standard lever play: 20-30 mm (0.8-1.2 in.)

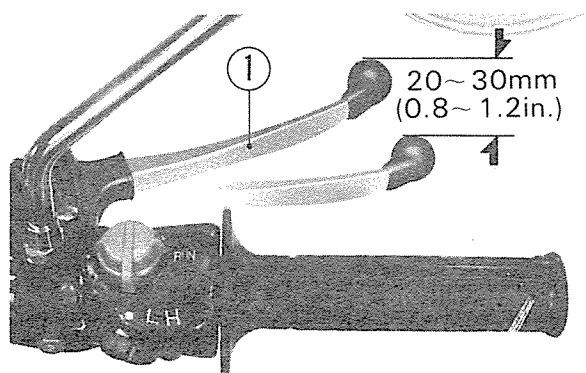


Fig. 2-15

- ① Front brake lever

2. To adjust the play, loosen the lock nut and turn the lower adjuster at the wheel. Turning the adjuster clockwise (in the direction "A") decreases the play, and rotating counterclockwise (in the direction "B") increases the play.

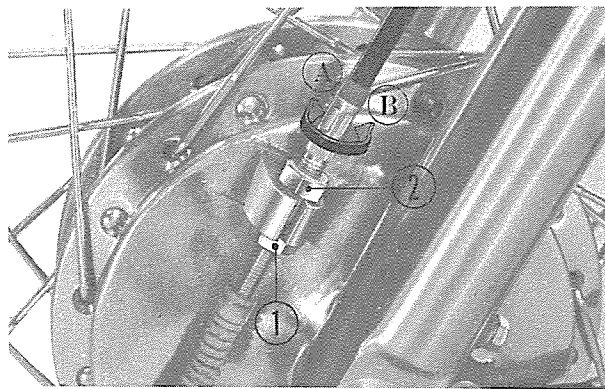


Fig. 2-16

- ① Lock nut
- ② Front brake adjusting nut

3. Minor adjustment can be made on the upper adjuster at the lever end of the brake cable. When adjusting, remove the dust cover and loosen the lock nut. Rotate in the direction "A" to decrease the play, and vice versa (in the direction "B").

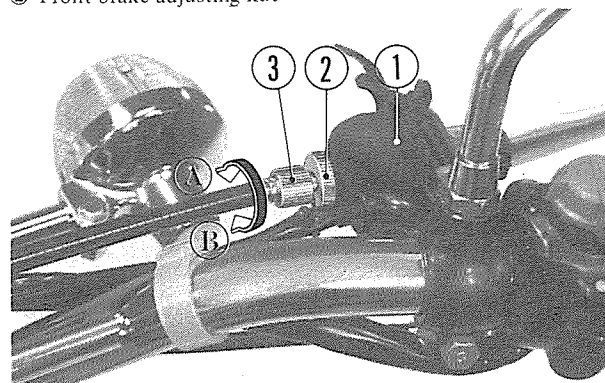


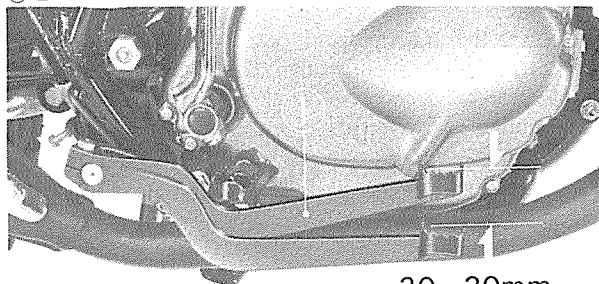
Fig. 2-17

- ① Dust cover
- ② Lock nut
- ③ Front brake cable adjuster

9. REAR BRAKE

1. To adjust the free-height of the rear brake pedal, loosen the lock nut and turn the adjusting bolt.
2. To adjust the free travel at the tip of the pedal, turn the adjusting nut.

Standard play: 20–30 mm (0.8–1.2 in.)



20~30mm
(0.8~1.2in.)

Fig. 2-18

- ① Rear brake pedal

3. Turning the nut clockwise (in the direction "A") will decrease the play, and vice versa (in the direction "B").

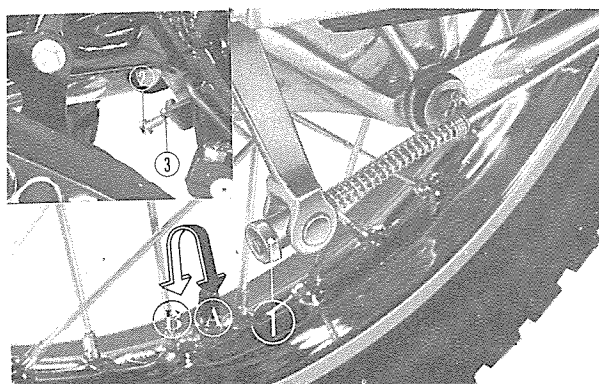


Fig. 2-19

- ① Rear brake adjusting nut
- ② Pedal stopper bolt
- ③ Lock nut

10. AIR CLEANER

1. Remove the right side cover.
2. Remove bolts and nuts securing the filter in place. Loosen the band connecting the filter to the carburetor.
3. Move the filter case assembly toward the front to facilitate removal of the filter cover; take out the cover.
4. Remove the filter element.
5. Clean the element in clean stoddard solvent (solvent) and allow to dry thoroughly.

WARNING :

Gasoline or low flash point solvents are highly flammable and must not be used to clean the filter element.

6. Soak the element in clean gear oil (SAE 80–90), and then squeeze out excess oil.
Amount of oil: 30 gr.
7. Replace the filter element.
8. Install the filter cover.
9. Install the filter case.

11. OIL FILTER

1. Drain the engine thoroughly by removing the drain plug.
2. Remove the muffler, kick starter and right foot rest.
3. Loosen off screws securing the right crankcase cover in place; take out the cover together with the gasket under the cover.
4. Pry off the snap ring and remove the filter cap from the filter rotor.
5. Wipe clean sediments from around center of the rotor using a lint-free cloth as shown.
6. Assemble all removed parts in the reverse order of the removal. Be sure to replace gasket.

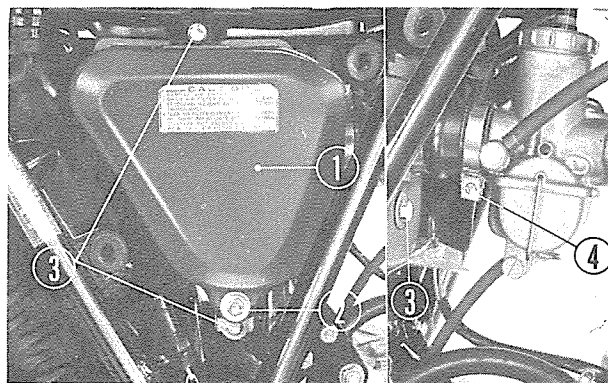


Fig. 2-20

- ① Air filter cover
- ② Filter cover attaching nut
- ③ Filter attaching bolt
- ④ Band screw

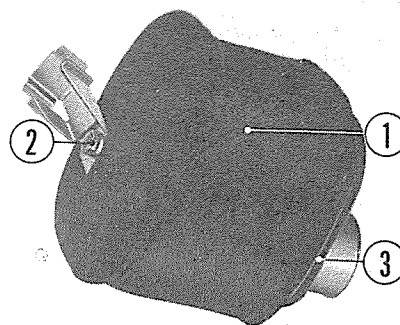


Fig. 2-21

- ① Air filter element
- ② Filter element attaching bolt
- ③ Filter element attaching band

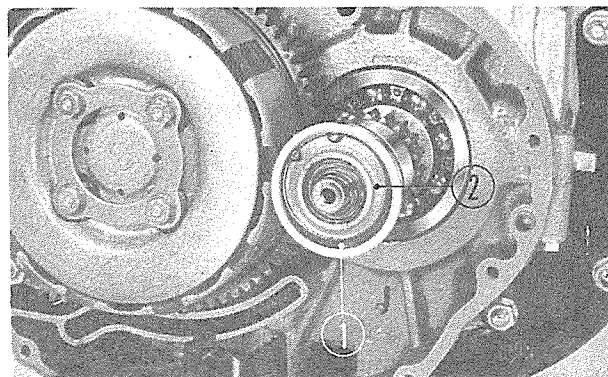


Fig. 2-22

- ① Snap ring
- ② Filter cap

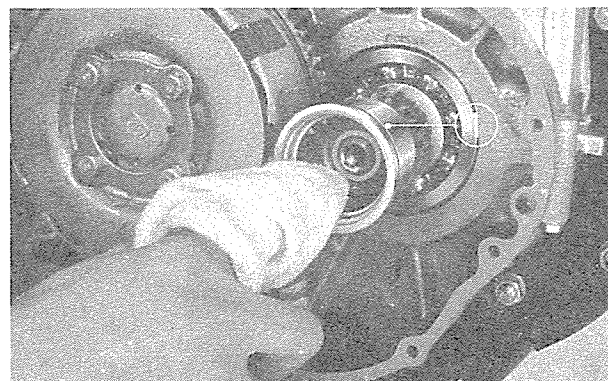


Fig. 2-23

- ① Oil filter rotor

NOTE:

When assembling the filter cap to the filter rotor, be sure that the ribs are lined up with the grooves in the rotor before installing the snap ring.

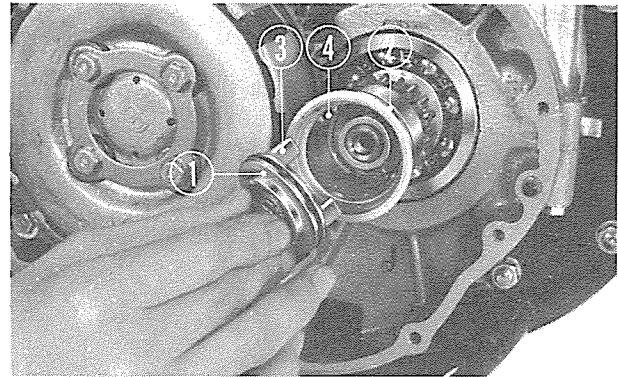


Fig. 2-24

- ① Oil filter cap ③ Rib
② Oil filter rotor ④ Groove

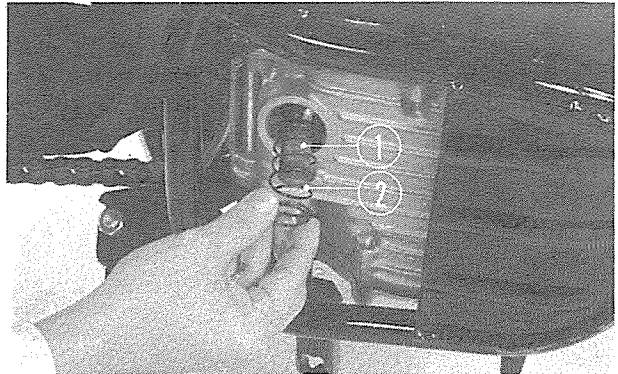


Fig. 2-25

- ① Filter screen
② Filter spring

12. FUEL FILTER

1. Turn the fuel valve to the "S" position.
2. Loosen the filter cap; take out the cap, O-ring and filter screen from the valve in this order.

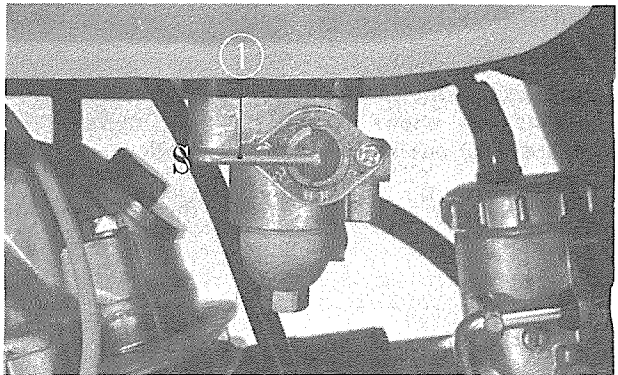


Fig. 2-26

- ① Fuel valve

3. Clean the screen and cap in solvent. Replace the screen and cap.
4. Turn the fuel valve to the "ON" position, making sure that fuel is not leaking past the gasketed surface.

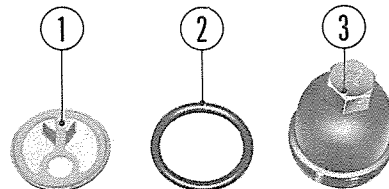


Fig. 2-27

- ① Filter screen ③ Filter cap
② O-ring

13. SPARK PLUG

1. Remove the spark plug cap from the spark plug. Unscrew the plug, using a spark plug wrench, and remove the spark plug.
2. Check the spark plug for deposits and electrode erosion. Spark plug with burned electrode or blistered insulator should be discarded.
If the electrodes are pitted or roughened, clean the plug, and dress the electrodes with a file, keeping the surfaces of both the center and side electrodes parallel. Bend the side electrode only.
3. Make sure that the gap falls within the following specifications:
Specified plug gap: 0.6–0.7 mm (0.024–0.028 in.)
4. Clean the plug seat in the cylinder head. Screw the plug into the threaded hole in the head in two steps; first, finger-tight, and then to the specified torque, using a suitable torque wrench. Install the spark plug cap on the spark plug.

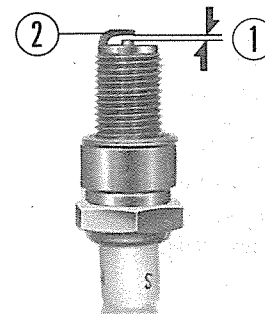


Fig. 2-28
① Spark plug gap
② Side electrode

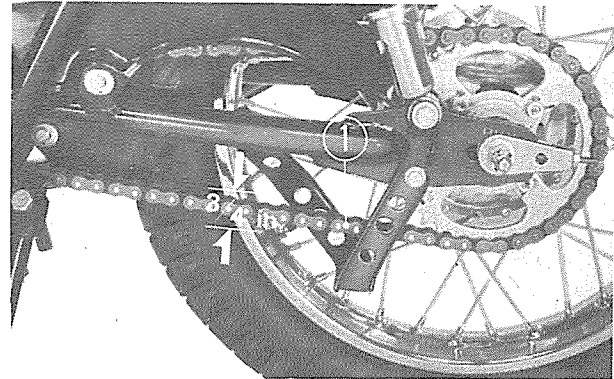


Fig. 2-29
① Drive chain

14. DRIVE CHAIN

Drive chain tension

1. Apply thumb pressure to the chain midway between sprockets.
Specified slack: 20 mm (3/4 in.)
2. To adjust chain tension, remove the cotter pin and loosen the rear axle nut. Correct tension can then be obtained by loosening the lock nuts and turning the adjusting bolts as required.
Be certain that markings on the chain adjuster align with reference markings equally on both rear forks.
3. Tighten the rear axle nut, install new cotter pin and secure with the lock nuts.
4. Recheck the chain tension and adjust as necessary.
5. Check the brake pedal free play and adjust as necessary.

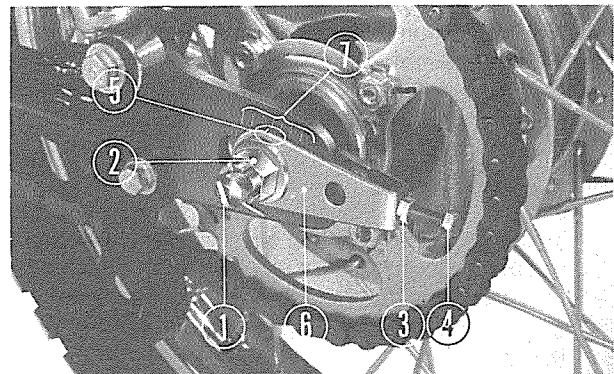


Fig. 2-30
① Cotter pin ③ Lock nut ⑥ Chain adjuster
② Rear axle nut ④ Adjusting bolt ⑦ Reference mark
⑤ Index mark

Drive chain lubrication

1. Using pliers, remove the retaining clip from the chain joint; remove the chain.
2. Wash clean in solvent and blow off with compressed air.
3. Check for excessive wear or damage to the chain and sprockets, replacing any part found with excessive wear or damage too badly beyond repair.
4. Apply a coating of lubricant to the chain.
5. Install the chain on the sprockets, with the closed end of the retaining clip pointing toward front.
6. Adjust the chain tension.

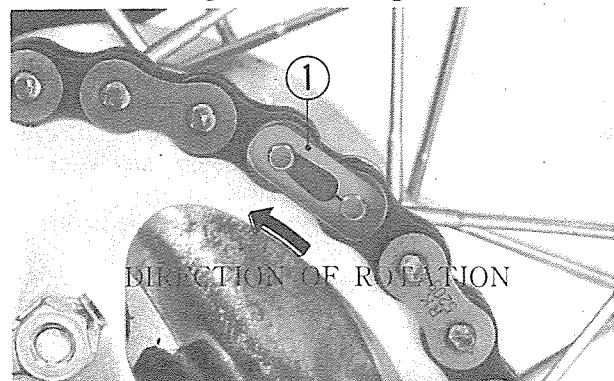


Fig. 2-31
① Retaining clip

15. FRONT SUSPENSION AND WHEEL

Inspection

1. With the front brake applied, check the action of the front shock absorbers by grasping the handlebar and jouncing the front forks up and down.
Check the entire fork assembly for signs of leaks, damage or bending.
Also, check the front wheel for wobble.
2. Check all bolts to determine that these are tight and secured in position. See Fig. 2-32.

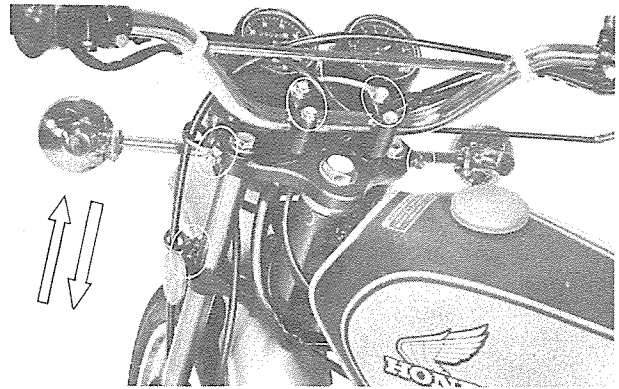


Fig. 2-32

Front fork oil change

1. Remove the drain plug at the lower end of each fork.
Grasp the handlebar and jounce the forks up and down until all oil is drained.
2. Install the drain plugs; raise the front of the motorcycle and support with a suitable stand under the engine.

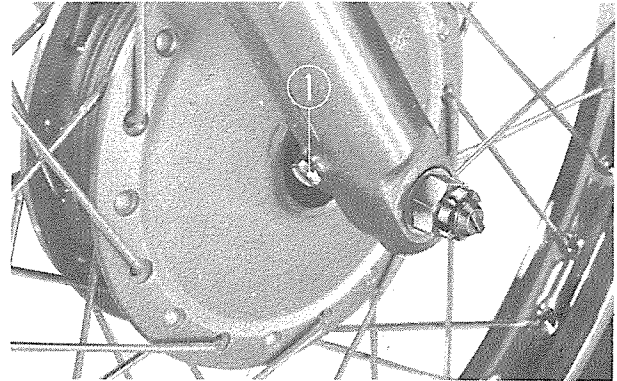


Fig. 2-33

① Front fork drain plug

3. Using a 17 mm wrench, remove the filler plugs at top of the fork assembly.
4. Pour the specified amount of premium quality automatic transmission fluid (ATF) in the shock absorbers through the holes made by removing the filler plugs.

Capacity: 130 cc (4.5 ozs.)

NOTE:

Specified amount of fluid will be required to fill one fork whenever disassembled.

Specified amount: 143-147 cc (4.9-5.0 ozs.)

5. Replace the filler plugs and remove the stand from under the engine.

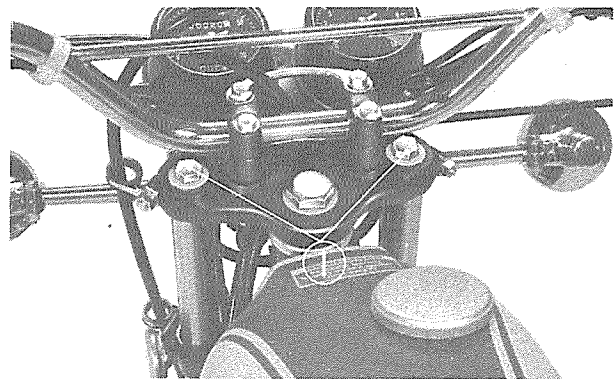


Fig. 2-34

① Oil filler plug

16. REAR SUSPENSION AND WHEEL

Inspection

1. Place a suitable stand under the engine to remove load from the rear wheel. Move the rear wheel sidewise with force to see if the fork bushings are worn. If worn excessively beyond use, replace.
2. Check the entire suspension assembly to see if it is securely mounted.
3. Check the rear wheel for wobble.

Rear suspension lubrication

Pump multipurpose grease, type NLGI No. 2, through the grease fitting at the right side of the rear fork pivot.

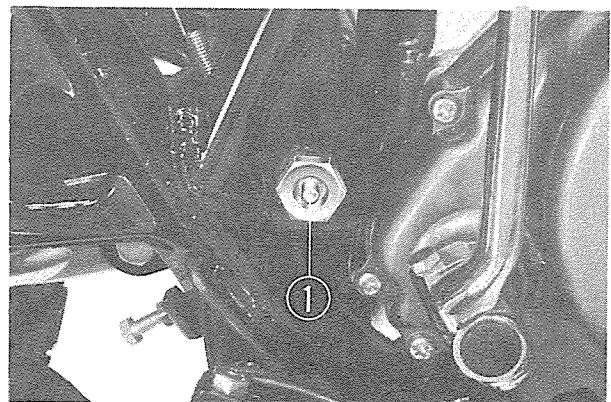


Fig. 2-35

① Grease fitting

17. BATTERY

Battery electrolyte replenishment

1. Remove the left side cover and check each battery cell for correct electrolyte level.
2. If the level is low, add distilled water up to the upper level mark after removing the filler caps.

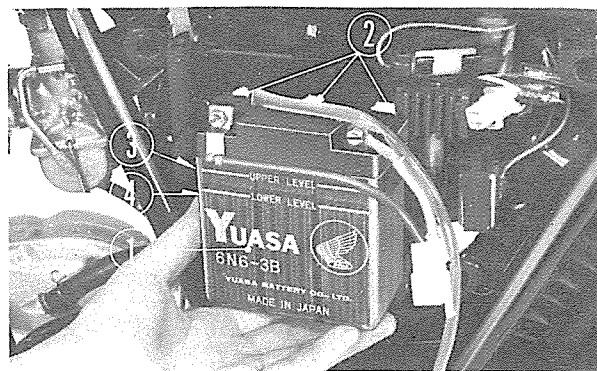


Fig. 2-36

- ① Battery ③ Upper level mark
② Filler cap ④ Lower level mark

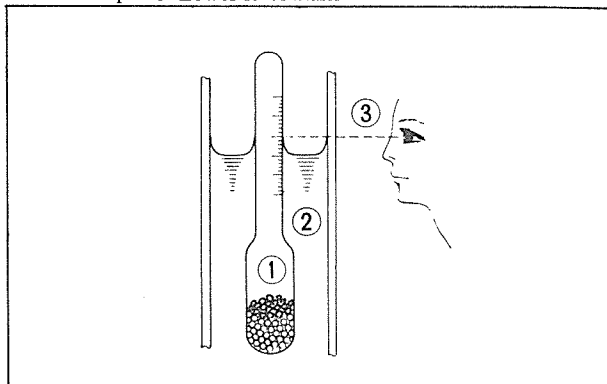


Fig. 2-37

- ① Hydrometer ③ Eye level
② Electrolyte

18. HEADLIGHT

Headlight aiming

1. Headlight case mounting bolts provide vertical adjustment.
2. To change horizontal adjustment, turn the adjusting screw in or out at the rim.

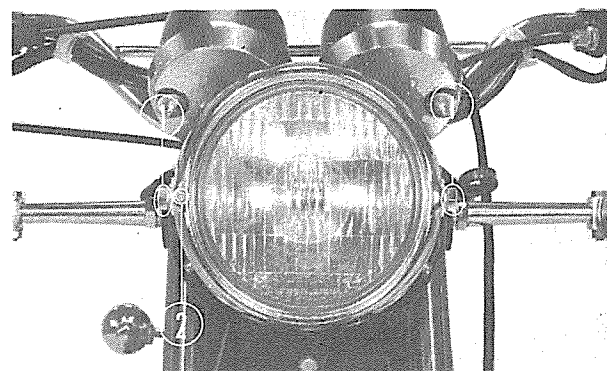


Fig. 2-38

- ① Headlight mounting bolt
② Adjusting screw

19. STOP LIGHT SWITCH

1. Set the main switch in the "ON" position.
2. Turn the adjusting nut in or out so that the light will go on when the brake pedal is depressed. Turning the nut clockwise (in direction "A") causes the light to go on earlier, and vice versa (in direction "B").
3. Check to see if the stop light goes on when the front brake pedal is applied.

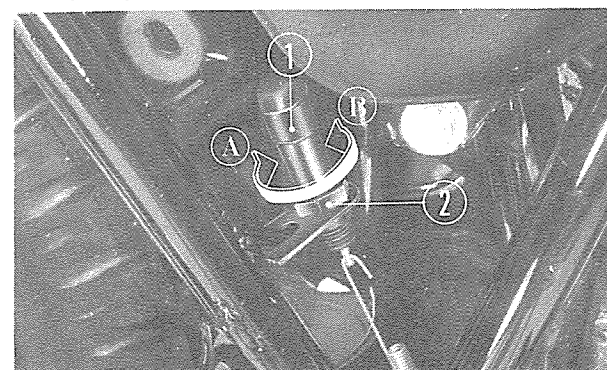


Fig. 2-39

- ① Stoplight switch
② Adjusting nut

ENGINE

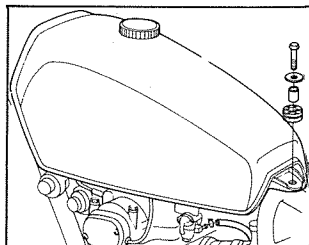
1. ON-FRAME SERVICING

Parts to be serviced	Ref. page	Parts to be serviced	Ref. page
Cylinder head, camshaft, cylinder and piston	25	Cam chain tensioner	42
Oil filter and oil screen	31	Carburetor	45
Clutch	34	Electrical system (generator and contact points)	65, 66
Gear shift mechanism	38		

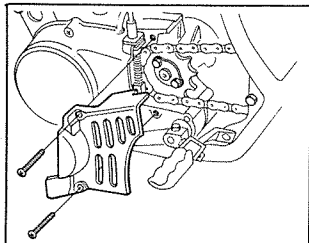
2. ENGINE REMOVAL AND INSTALLATION

Remove the engine in the order given below. To install, reverse the removal procedure.

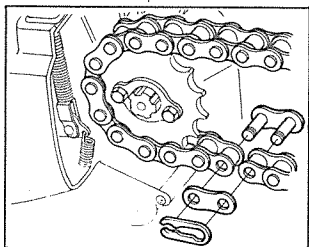
1. Fuel tank



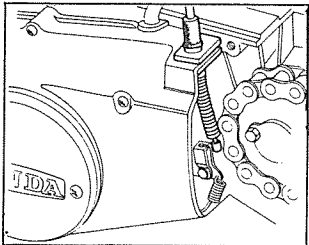
2. Left crankcase rear cover



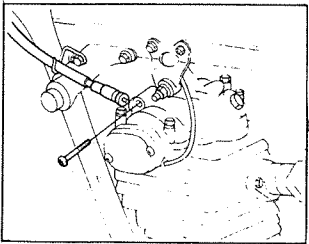
3. Drive chain



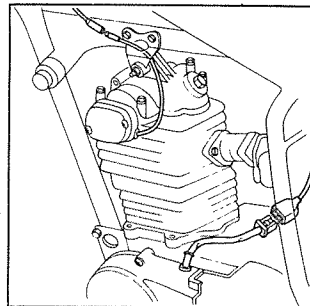
4. Clutch cable



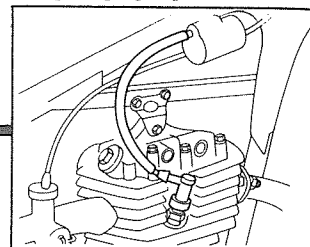
5. Tachometer cable



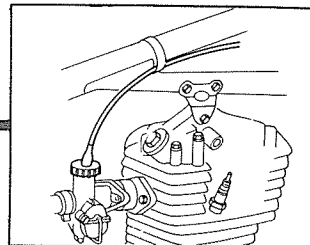
6. Ignition coil connector/wiring harness connector



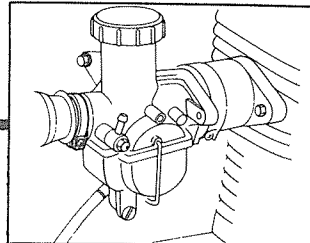
7. Spark plug cap



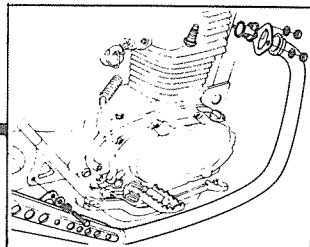
8. Throttle cable



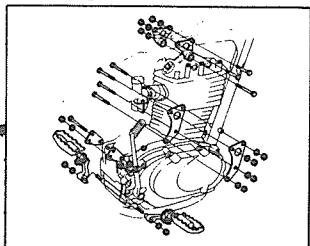
9. Carburetor inlet hose band



10. Muffler



11. Hanger bolt



NOTE: Hanger bolt nuts should be tightened equally on both sides (common to footrest)

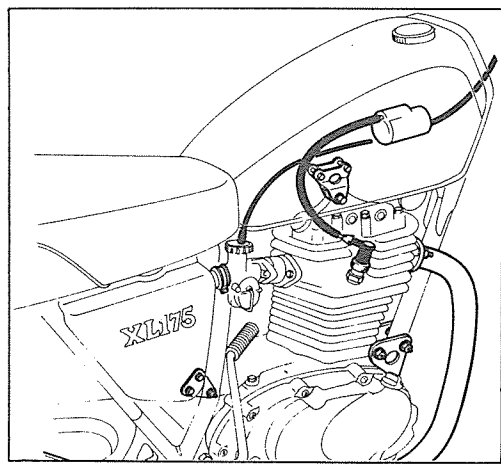
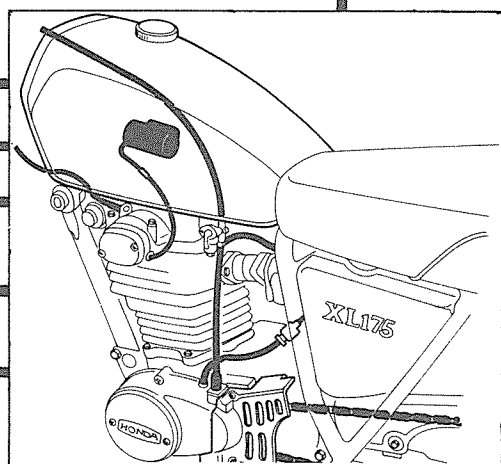
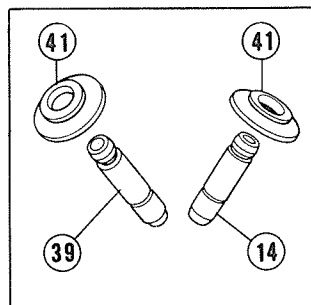


Fig. 3-1

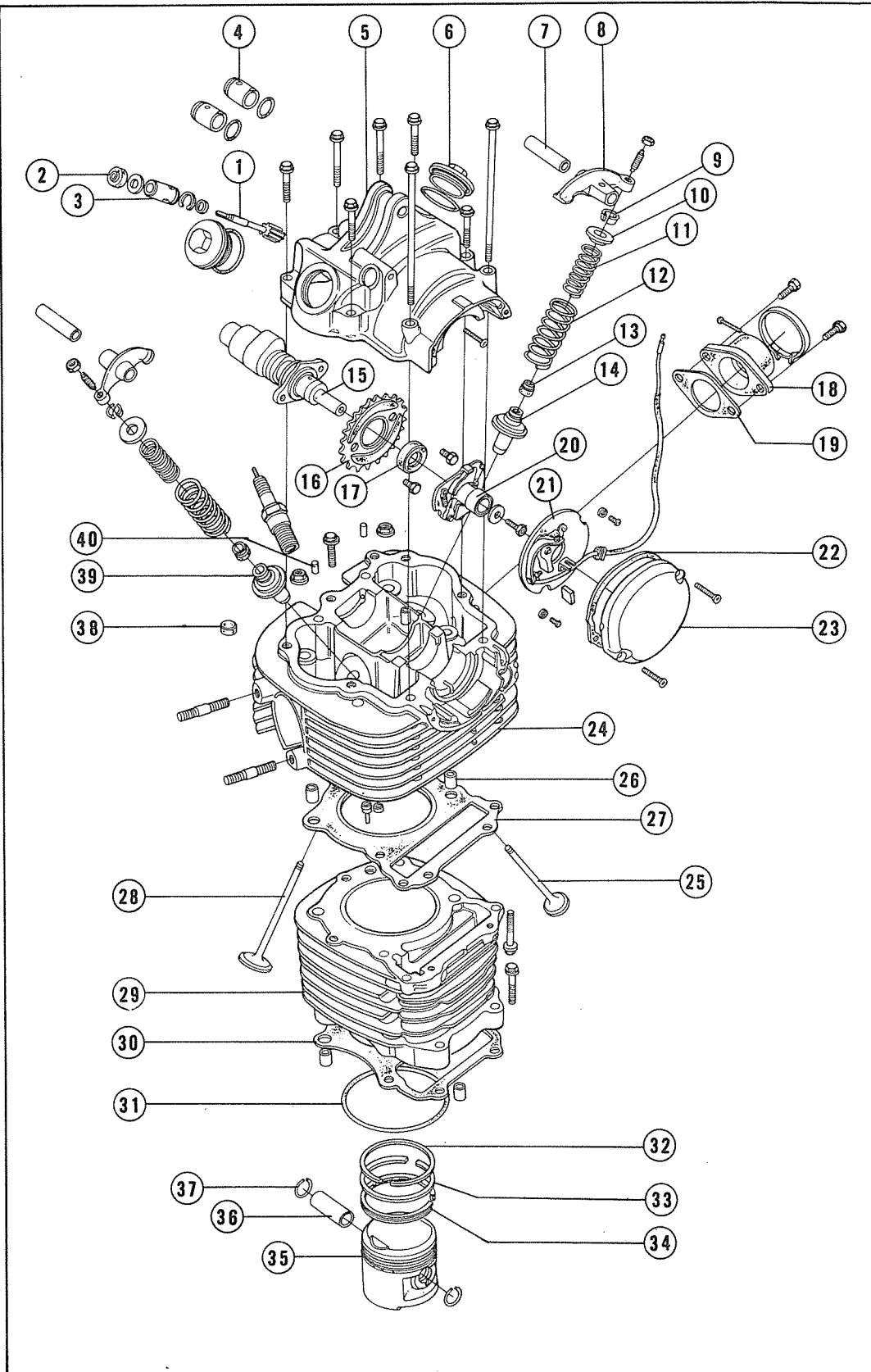
3. CYLINDER HEAD, CAMSHAFT, CYLINDER AND PISTON



From engine serial No.
XL175E-2008517 and
subsequent

Fig. 3-2

- ① Tachometer gear
- ② Oil seal
- ③ Tachometer gear collar
- ④ Rocker arm shaft plug
- ⑤ Cylinder head cover
- ⑥ Tappet adjusting hole cap
- ⑦ Rocker arm shaft
- ⑧ Rocker arm
- ⑨ Valve cotter
- ⑩ Valve spring retainer
- ⑪ Inner valve spring
- ⑫ Outer valve spring
- ⑬ Valve stem seal
- ⑭ Inlet valve guide
- ⑮ Camshaft
- ⑯ Cam sprocket
- ⑰ Oil seal
- ⑱ Carburetor insulator
- ⑲ Carburetor insulator gasket
- ⑳ Spark advancer
- ㉑ Contact breaker
- ㉒ Contact breaker cover gasket
- ㉓ Contact breaker cover
- ㉔ Cylinder head
- ㉕ Exhaust valve
- ㉖ Dowel pin
- ㉗ Cylinder head gasket
- ㉘ Inlet valve
- ㉙ Cylinder
- ㉚ Cylinder gasket
- ㉛ O-ring
- ㉜ Top ring
- ㉝ Second ring
- ㉞ Oil ring
- ㉟ Piston
- ㊱ Piston pin
- ㊲ Piston pin clip
- ㊳ Insert rubber
- ㊴ Exhaust valve guide
- ㊵ Dowel pin
- ㊶ Valve spring seat



Disassembly

1. Open the seat. Remove the fuel tank.
2. Remove the upper hanger brackets
3. Disconnect the tachometer cable.
4. Remove the ignition coils.
5. Remove the contact breaker cover.
6. Unscrew two screws to remove the contact breaker base plate; take out the plate.
7. Pull out the spark advancer from the camshaft after removing the attaching bolt.

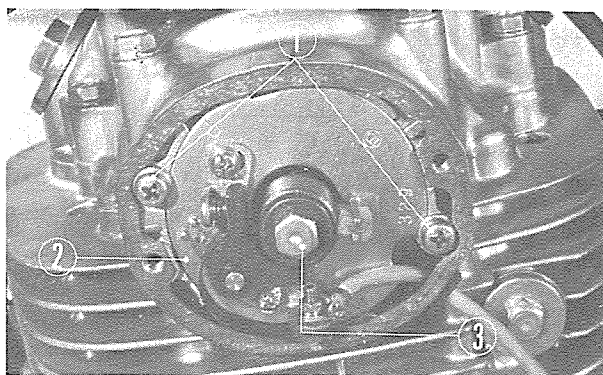


Fig. 3-3

- ① Screw ③ Bolt
② Contact breaker base plate

8. Remove the tappet adjusting hole caps from the cylinder head cover; loosen the rocker arm adjusting screws.
9. Remove a total of eight bolts and remove the cylinder head cover.
10. Disassembly of cylinder head cover
 - 1) Withdraw 6-mm dowels from the cover. Remove the rocker arm shaft plugs, rocker arm shaft and rocker arm.
 - 2) Pry off the snap ring and take out the tachometer gear, thrust washers, tachometer gear collar and oil seal from the cover.
11. Remove the muffler.
12. Separate the carburetor from the cylinder head.

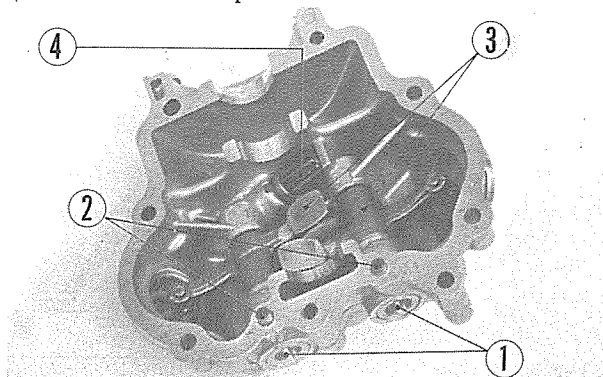


Fig. 3-4

- ① Rocker arm shaft plug ③ Rocker arm
② 6-mm dowel pin ④ Tachometer driven pinion

13. Unscrew bolts which hold the cam sprocket in position; remove the cam sprocket from the camshaft.

NOTE:

When removing, use care not to allow bolt to drop into the crankcase.

14. Remove the cam chain from the sprocket.
15. Remove the oil seal from the camshaft.
16. Remove the camshaft together with the cam sprocket.

NOTE:

Hold the cam chain with wire or the like to prevent the chain from falling in the crankcase.

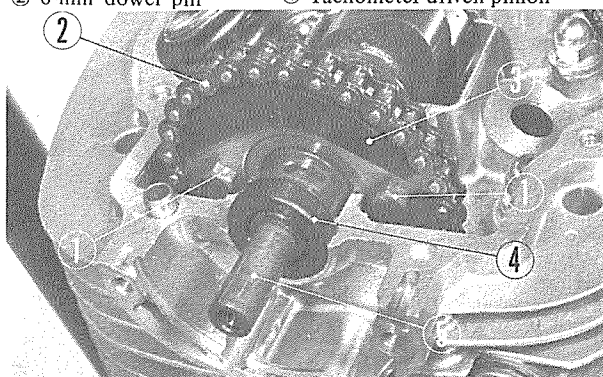


Fig. 3-5

- ① Cam sprocket bolt ③ Cam sprocket
② Cam chain ④ Oil seal
⑤ Camshaft

17. Remove the tensioner bolt.
18. Remove the spark plug.
19. Remove four cylinder head hold-down cap nuts and bolt; take out the cylinder head.
20. Remove the cylinder head gasket.

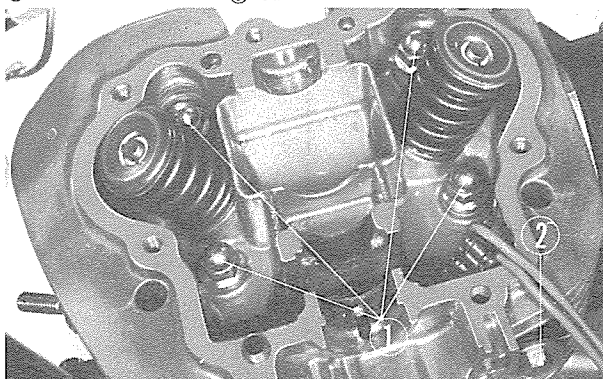


Fig. 3-6

- ① Cap nut
② Tensioner bolt

21. Removal of valves

- 1) Using "Valve Spring Compressor" (Tool No. 07957-3290000), compress the valve springs.
- 2) Remove the valve cotters, valve spring retainer and outer and inner valve springs. Remove the valve.

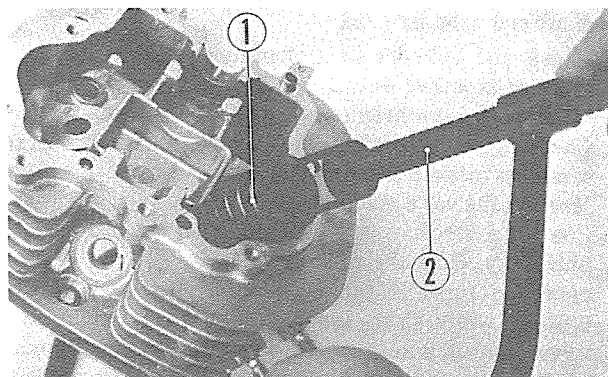


Fig. 3-7

- ① Valve spring
- ② Valve spring compressor

22. Removal of valve guide

- 1) With use of "Valve Guide Remover" (Tool No. 07942-3000000), drive out the guide from the cylinder mating side of the head.

23. Remove two bolts securing the cylinder and take out the cylinder.

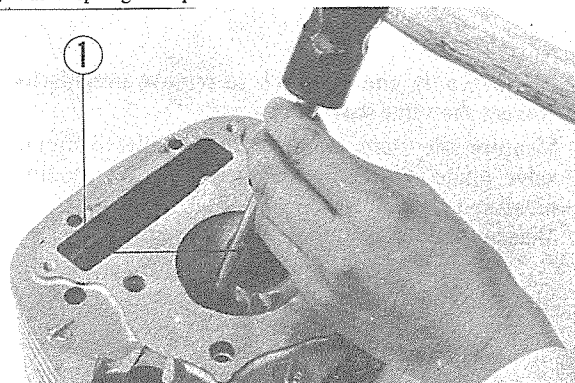


Fig. 3-8

- ① Valve guide remover

24. Pry the piston pin clip from the end of the piston pin hole with snap ring pliers; remove the piston.

NOTE:

Place rag under the lower end of the piston to prevent the clips from falling in the crankcase.

25. Remove the piston rings from around the piston.

NOTE:

Use a suitable piston ring expander to avoid damaging or distorting the rings.

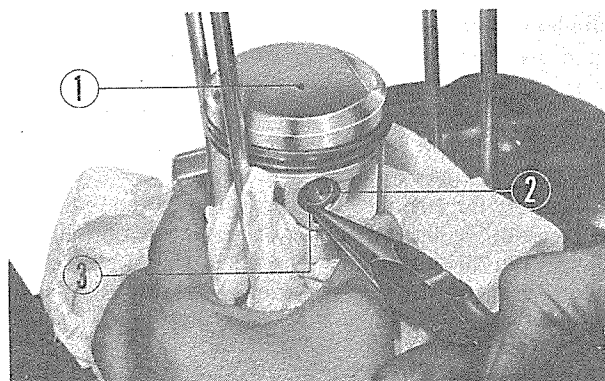


Fig. 3-9

- ① Piston
- ② Piston pin
- ③ Piston pin clip

Inspection

Cylinder head cover and rocker arm

* Refer to Service Data on page 6

1. Check the rocker arm for excessive wear or scratches on slipper surfaces.
2. Check the rocker arm-to-rocker arm shaft clearance.
3. Check the cylinder head cover camshaft bearing surfaces for scratches or excessive wear.

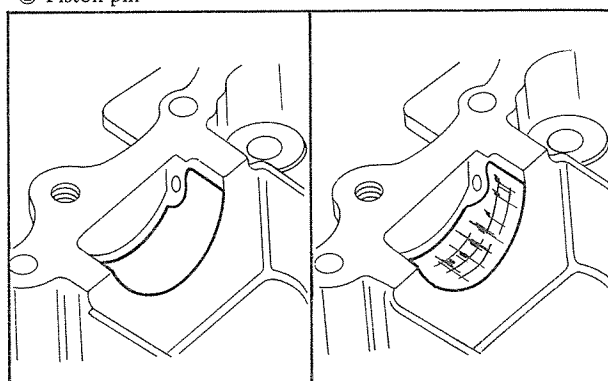


Fig. 3-10 Normal

Abnormal

Camshaft and cylinder head

1. Check the cylinder head camshaft bearing surfaces for score or excessive wear. See Fig. 3-10.
2. Measure the cam height.
3. Check the camshaft oil seal contacting surfaces for scratches or excessive or abnormal wear.
4. Measure the valve seat width.

Coat the valve seat with prussian blue lightly and uniformly. Hold the valve against the seat and rotate one complete turn. If the prussian blue shows a band of uniform width all the way around both seat and valve, the valve contact is normal. In case the contact is abnormal, lap the valve and recheck. If still defective, reface the valve seat with the valve seat grinder, Model GVS-27A, recommended by Honda.

NOTE:

Remove only enough stock to remove irregularities or to correct the valve seat runout.

5. Measure the stem diameter and inside diameter of the valve guide. Difference between the two readings is the measured clearance.
6. Measure the free length of the valve spring.

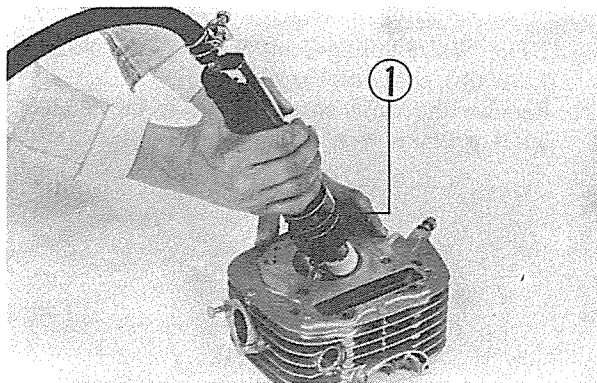


Fig. 3-11 ① Valve seat grinder

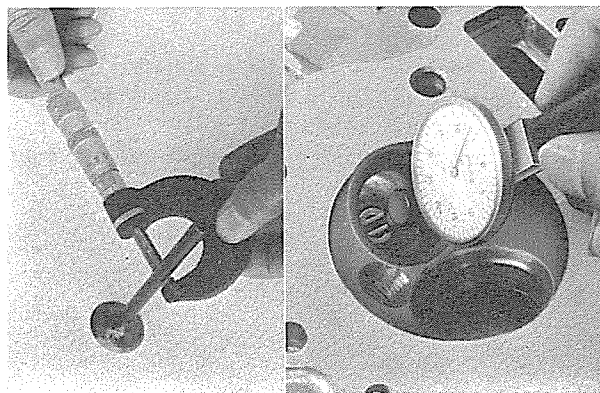


Fig. 3-12 Measuring stem-to-guide clearance

Cylinder and piston

1. Measure the cylinder bore with an inside reading micrometer to determine taper, out of round, or worn condition. Measurements should be made at the top, center and bottom, in parallel (X) with, and at right angle (Y) to, the center line of the cylinder.
2. Measure the outside diameter of the piston at its skirt.
3. Measure the inside diameter of the piston pin hole.
4. Measure the outside diameter of the piston pin.
5. Check the piston ring-to-piston ring groove clearance.

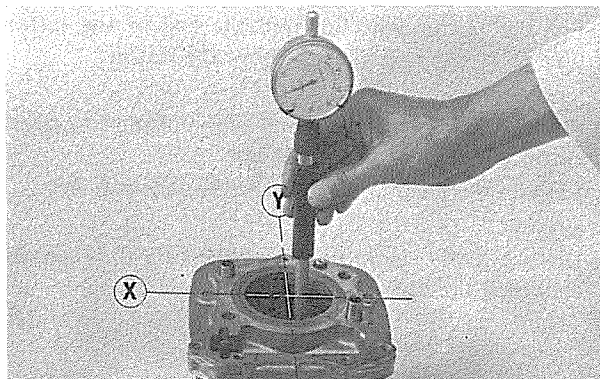


Fig. 3-13 Measuring cylinder bore

6. Check the piston ring end gap. To do this, push the ring down into the cylinder bore from the bottom making sure that the ring is square with the cylinder wall. Use a feeler gauge and check the gap between the ends of the ring.

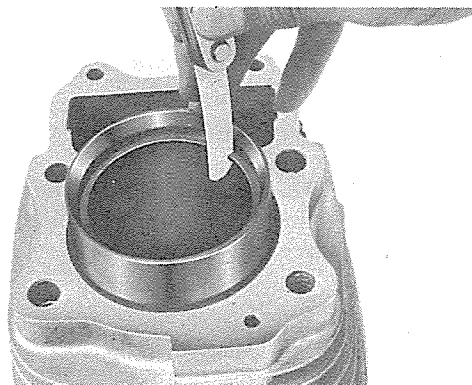


Fig. 3-14 Measuring piston ring end gap

Reassembly

Piston ring

1. Use the piston rings of the same make in a set. Install the rings to the piston with their markings facing upward.

Marking	Manufacturer
N	Nihon piston ring
R	Riken piston ring
T	Teikoku piston ring

2. When a new ring is used, check it for proper fit in the ring groove. The ring should slide freely around the entire ring circumference without binding.
3. Install the rings so that the gaps are staggered 120°, each being apart from the direction at right angle to the piston pin.

Do not mix the top and second rings.

Piston

Install the piston with the arrow mark on the piston head toward the front (exhaust side) or "IN" mark toward the rear (intake side) of the engine.

Cylinder

1. Apply a coating of clean engine oil to the piston rings. Place the cylinder over the piston-and-ring assembly and gradually lower it until all the piston rings enter the cylinder. Compress the rings into their grooves while lowering the cylinder.
2. Check the oil control orifice for freedom from rusting before installation.

Cylinder head

1. When installing a new valve guide, drive it in using "Valve Guide Remover" (Tool No. 07942-3000000) and ream to the desired size with "Reamer" (Tool No. 07984-5900000).
2. Install the valve springs so that the narrow-pitch ends are on the valve spring seat side.
3. The cylinder head should be installed with greatest care. The gasket and gasketed surface of the cylinder head should be protected from scores, scratches or other damage. The gasket and dowel pins should be positioned properly, which otherwise would result in blowing or burning of the gasket.

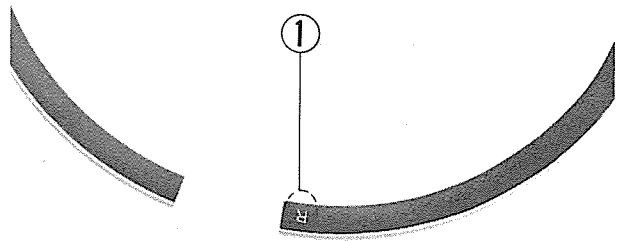


Fig. 3-15

① Ring marking

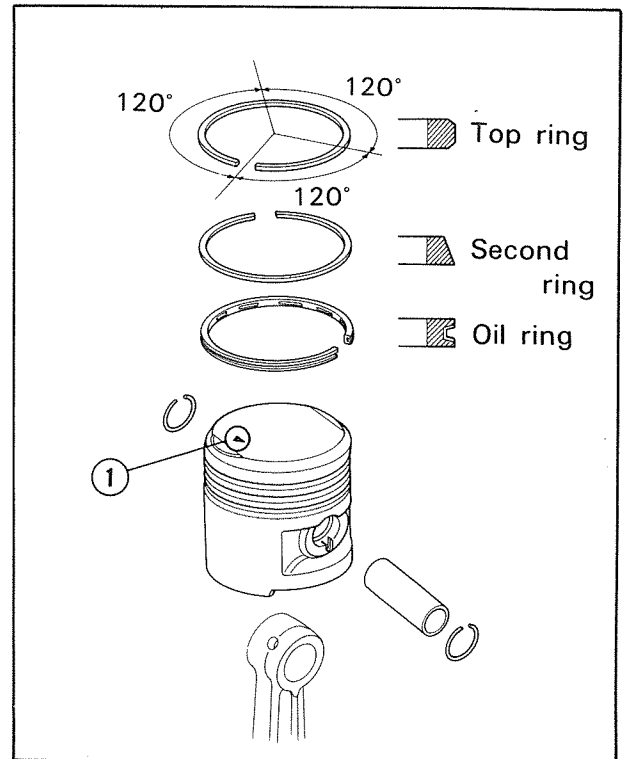


Fig. 3-16

① Piston marking

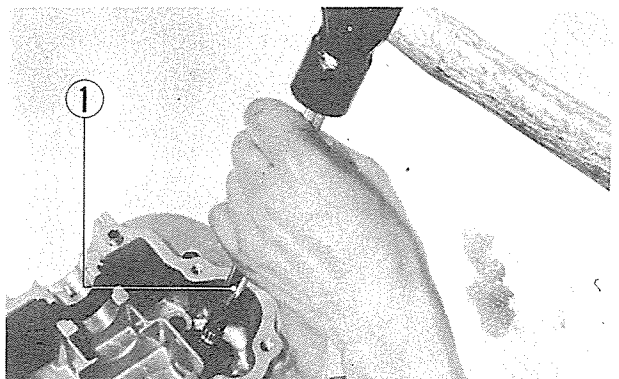


Fig. 3-17

① Valve guide remover

Valve timing

1. Rotate the crankshaft so that the mark "T" on the generator rotor aligns with the index mark on the left crankcase cover. In case the generator rotor has been removed off the engine, line up the crankshaft woodruff key with the camshaft.
2. Install the cam chain to the cam sprocket so that the matching lines on the sprocket will be aligned with the upper surface of the cylinder head.
3. With the camshaft knock pin facing upward, align the matching lines on the cam sprocket with the upper surface of the cylinder head. Install and tighten the cam sprocket hold-down bolts.

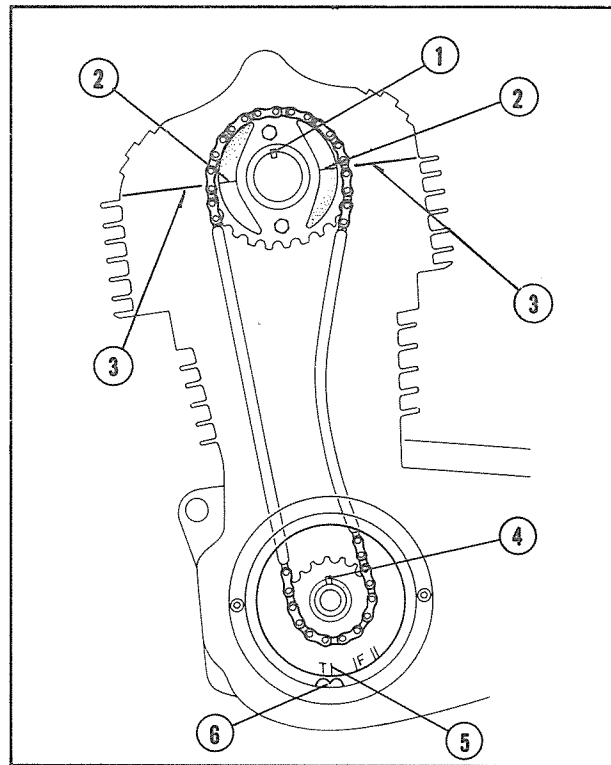


Fig. 3-18

- | | |
|----------------------------------|----------------|
| ① Knock pin | ④ Woodruff key |
| ② Match marks | ⑤ "T" mark |
| ③ Upper surface of cylinder head | ⑥ Index mark |

Cylinder head cover

1. Install the rocker arm shaft plug so that the plug is in line with the match marks on the cylinder head cover. Install the 6-mm knock pin.
2. Apply a sealing agent to the cylinder head cover gasket groove.

NOTE:

Wipe off excess amount of sealing agent from the cover and bearing area.

3. Line up the knock pin groove in the spark advancer with the camshaft knock pin.

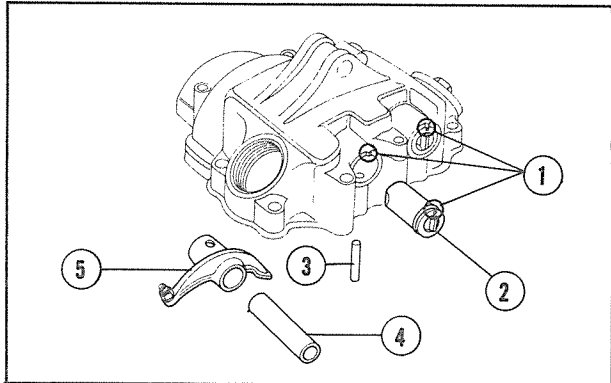


Fig. 3-19

- | |
|-------------------------|
| ① Match mark |
| ② Rocker arm shaft plug |
| ③ 6-mm knock pin |
| ④ Rocker arm shaft |
| ⑤ Rocker arm |

4. OIL PUMP AND OIL FILTERS

The oil pump is a trochoid pump driven by the kick starter gear. It supplies oil under pressure to all components of the engine lubricating system through a filter. A centrifugal filter provides further protection for the crankshaft and its associated parts including the crankshaft and connecting rod big end bearing.

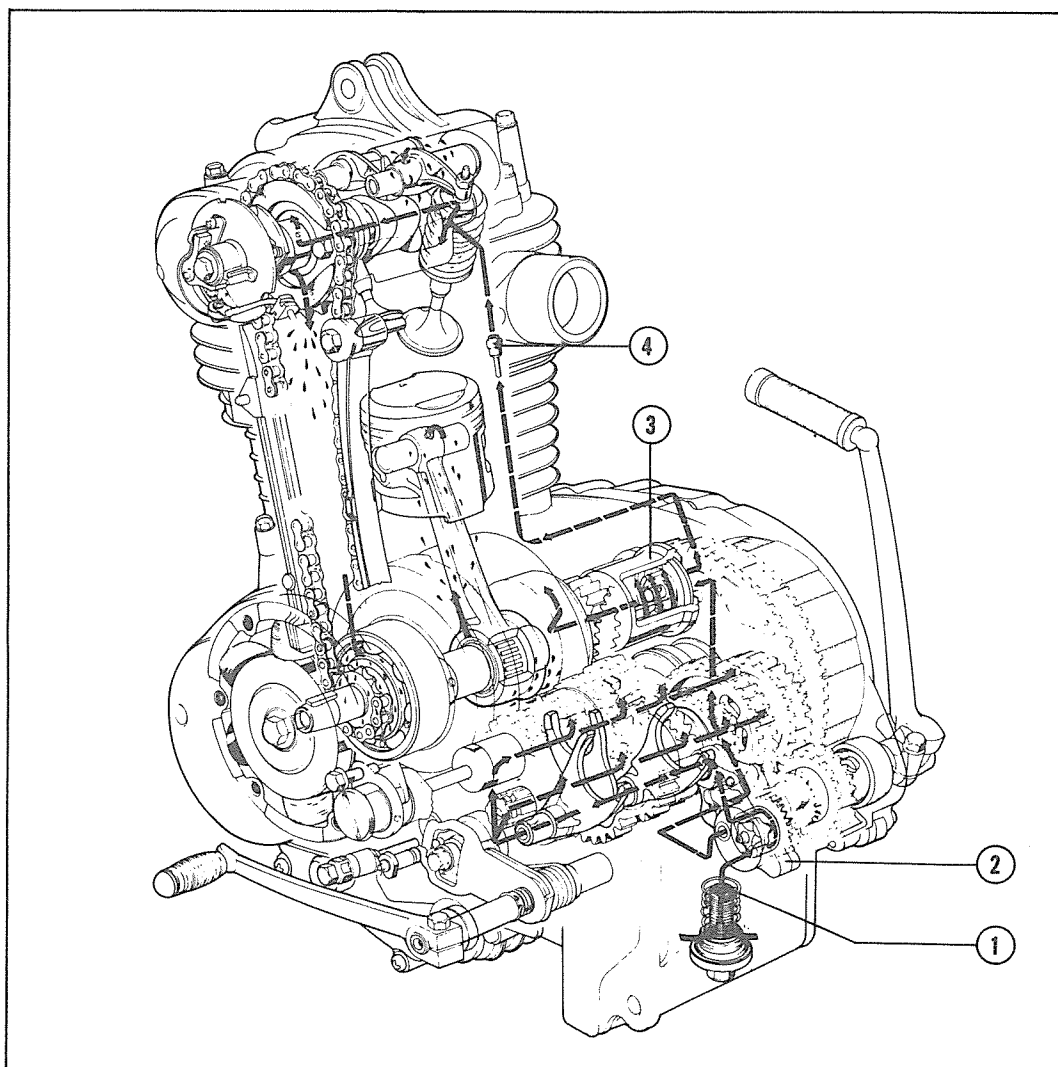
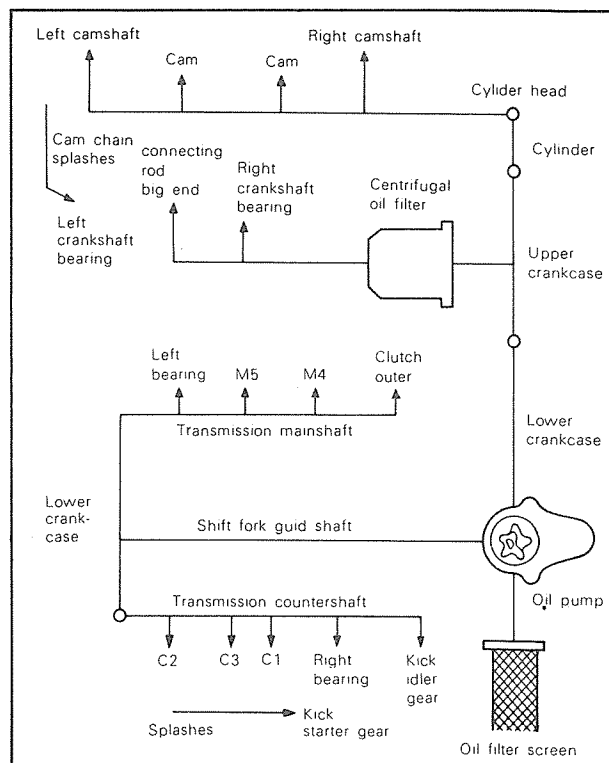


Fig. 3-20

- ① Oil screen filter
- ② Oil pump
- ③ Centrifugal oil filter
- ④ Oil control orifice valve

Disassembly

Oil screen filter

1. Drain oil from the engine crankcase by removing the drain plug. Remove the filter spring and screen filter.

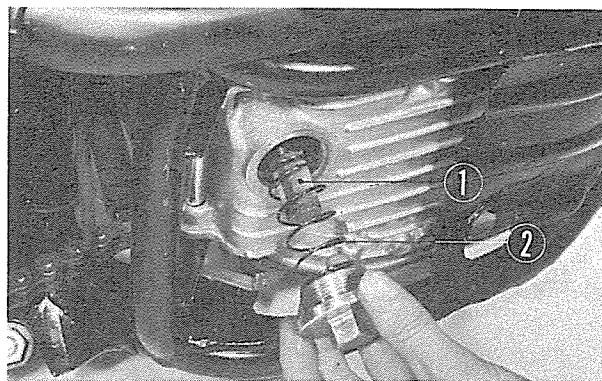


Fig. 3-21

- ① Oil screen filter
② Filter spring

Centrifugal oil filter

1. Drain the engine crankcase.
2. Remove the right foot rest, kick starter pedal and muffler.
3. Remove the right side crankcase cover.
4. Remove the snap ring and remove the oil filter cap from the oil filter rotor.
5. Straighten the tab of the lock washer and remove the lock nut by means of "special tool" (Tool No. 07086-2830100).

Take out the oil filter rotor.

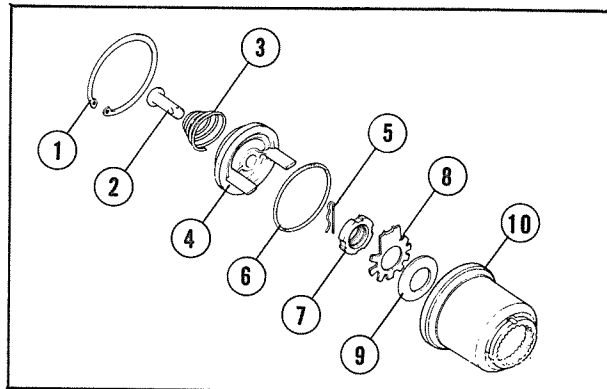


Fig. 3-22

- ① Snap ring
② Oil filter through
③ Spring
④ Oil filter cap
⑤ Lock pin
⑥ O-ring
⑦ Lock nut
⑧ Lock washer
⑨ Washer
⑩ Filter rotor

Oil pump

1. Remove the engine from the frame.
2. Drain the crankcase.
3. Remove the cylinder head, cylinder and cam chain guide.
4. Remove the kick starter pedal and right side crankcase cover.
5. Remove the clutch lock bolt, gear change pedal and cam chain adjuster cap in the order listed. Take out the left crankcase cover.
6. Remove the chain tensioner and chain.
7. Remove the oil filter, clutch case and drive gear.
8. Remove a total of 15 bolts, 7 at lower and 8 at upper, to remove the upper crankcase.
9. Remove the kick starter spindle.
10. Remove 2 bolts and take out the oil pump.
11. Disassemble the oil pump by removing the screw.

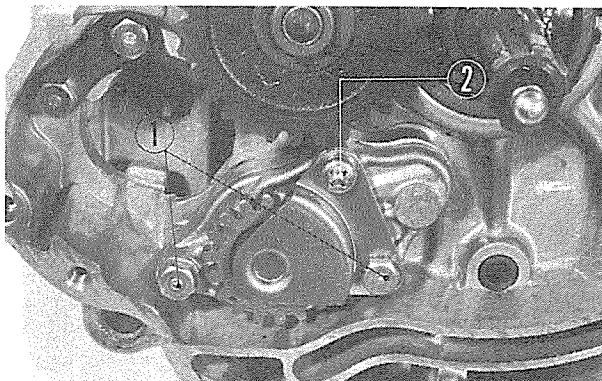


Fig. 3-23

- ① Bolt
② Screw

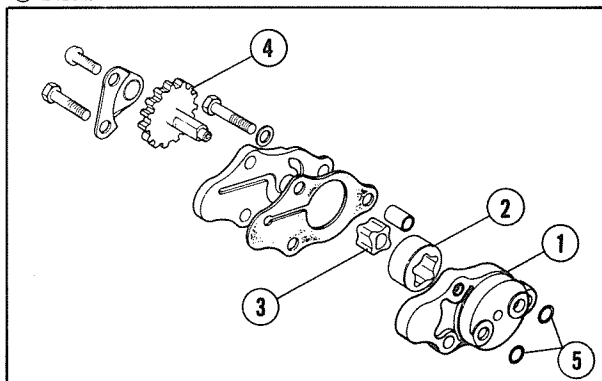


Fig. 3-24

- ① Oil pump body
② Outer rotor
③ Inner rotor
④ Oil pump drive gear
⑤ O-ring

Inspection

* Refer to Service Data on page 6.

1. Check the out rotor-to-pump body clearance.
2. Check the inner rotor-to-outer rotor clearance.

Reassembly

1. Be sure to install O-rings in their proper locations as shown.

Centrifugal oil filter

1. Install the washer so that the marking "OUTSIDE" is facing outside.
2. Check the oil through pipe for smooth operation.

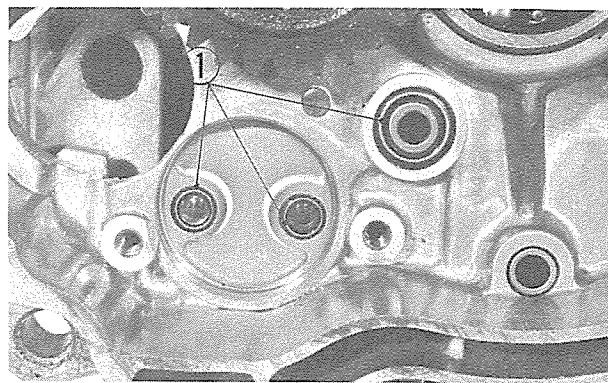


Fig. 3-25
① O-ring

CLUTCH

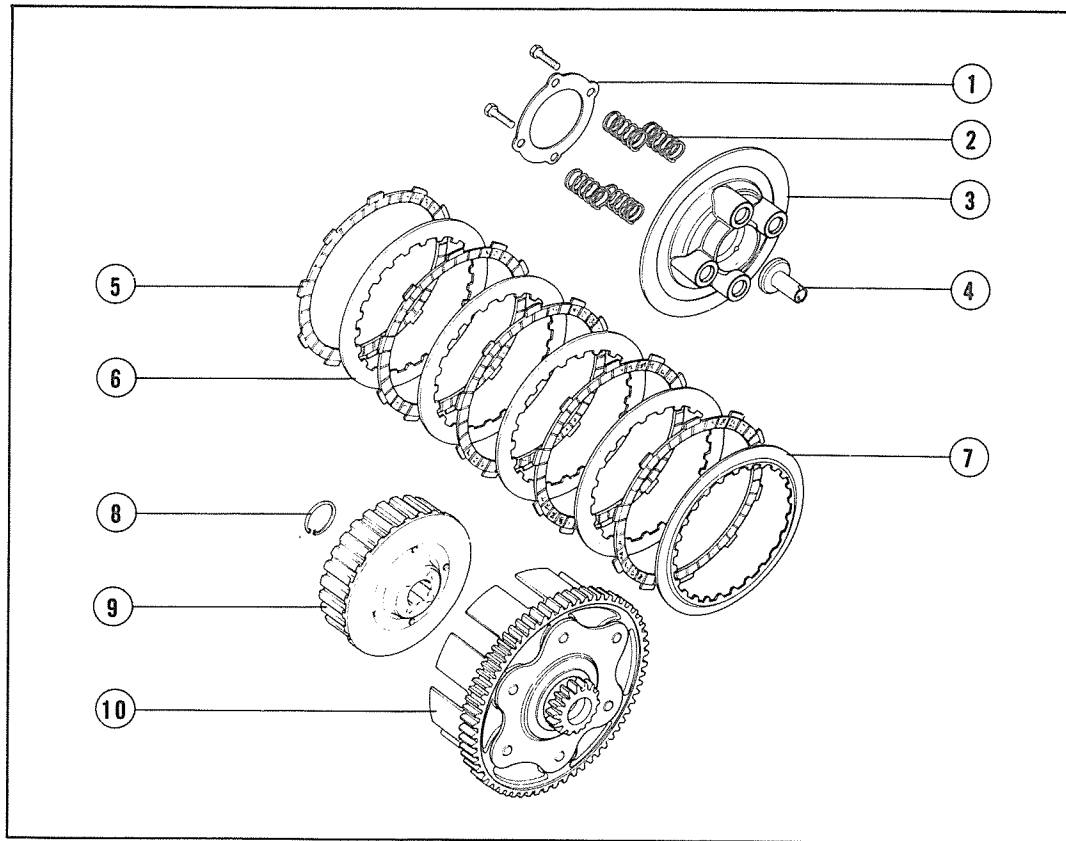


Fig. 3-26

- ① Clutch lifter plate
- ② Clutch spring
- ③ Clutch pressure plate
- ④ Clutch lifter joint piece
- ⑤ Clutch friction disc
- ⑥ Clutch plate A
- ⑦ Clutch plate B
- ⑧ Snap ring
- ⑨ Clutch center
- ⑩ Clutch outer

Disassembly

1. Drain oil from the crankcase.
2. Remove the muffler, right-hand side foot rest and kick starter pedal. Remove the right-hand side crankcase cover.
3. Remove the centrifugal oil filter and primary drive gear.
4. Remove the bolts and disassemble the clutch spring retaining plate, clutch springs, pressure plate, friction discs, clutch plates, clutch lifter joint piece and clutch lifter rod.
5. Pry off the snap ring; take out the clutch center and clutch outer.
6. Remove the clutch locking bolt, gear change pedal and cam chain adjuster cap. Remove the left-hand side crankcase cover.
7. Remove the lock plate, clutch adjuster, spring, clutch lever and steel ball. (See page 35, Fig. 3-30)

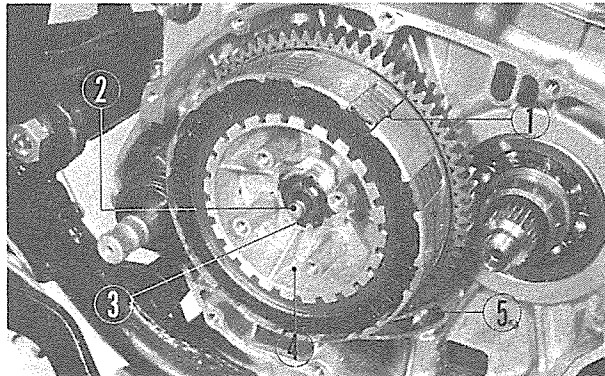


Fig. 3-27

- ① Clutch plates and friction discs
- ② Lifter rod
- ③ Snap ring
- ④ Clutch center
- ⑤ Clutch outer

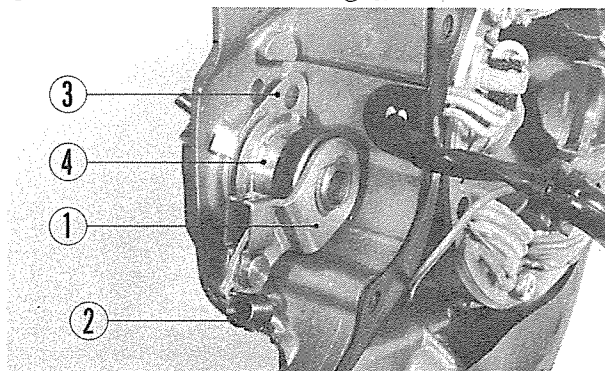


Fig. 3-28

- ① Clutch lever
- ② Spring
- ③ Lock plate
- ④ Clutch adjuster

Inspection

- * Refer to Service Data on page 6
- 1. Measure the thickness of the friction disc.
- 2. Check the clutch plate for distortion or warpage.
- 3. Measure the free length of the clutch spring.
- 4. Check backlash in the splines of the clutch center and mainshaft.

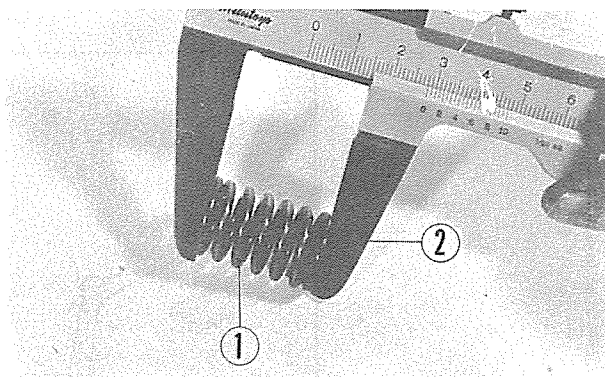


Fig. 3-29

- ① Clutch spring
- ② Slide caliper

Assembly

- 1. Fill the clutch lever steel ball hole and its screw end with grease.
- 2. After installing the snap ring, check the operation of the clutch center. It should rotate freely without binding.
- 3. Adjust the clutch properly.

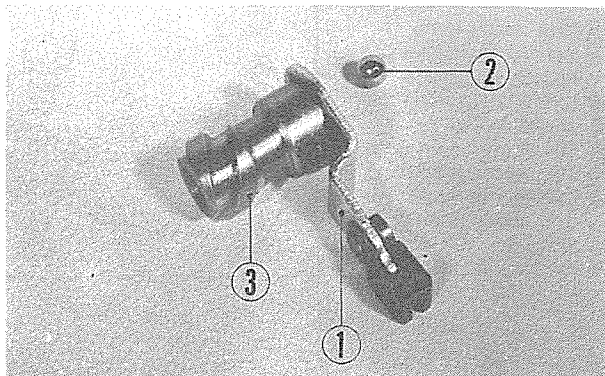


Fig. 3-30

- ① Clutch lever
- ② Steel ball
- ③ Screw end

MEMO

KICK STARTER

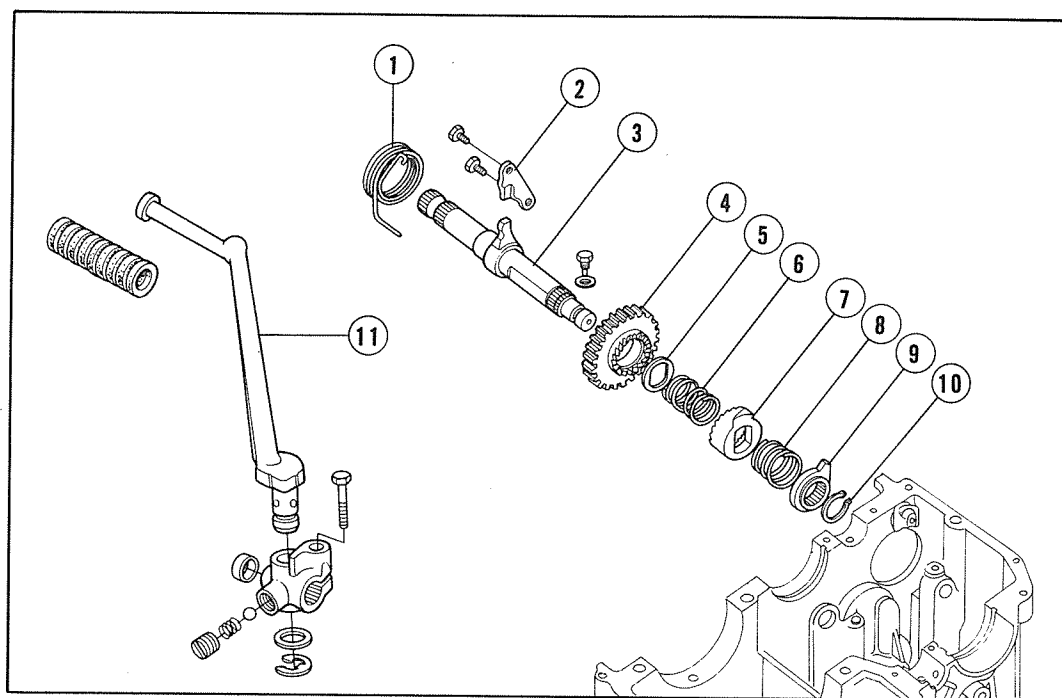


Fig. 3-31

- ① Kick starter spring
- ② Ratchet guide plate
- ③ Kick starter spindle
- ④ Kick starter pinion
- ⑤ Thrust washer
- ⑥ Starter pinion set spring
- ⑦ Kick starter ratchet
- ⑧ Kick starter ratchet spring
- ⑨ Kick starter retainer
- ⑩ Snap ring
- ⑪ Kick starter arm

Disassembly

1. Remove the engine from the frame.
2. Drain the crankcase.
3. Remove the kick starter arm and take out the right-hand side crankcase cover.
4. Remove the clutch locking bolt, gear change pedal, and cam chain adjuster cap; take out the left-hand side crankcase cover.
5. Remove the chain tensioner and chain.
6. Remove the oil filter, drive gear and clutch.
7. Remove the cylinder head cover, cylinder head, cylinder and chain guide.
8. Remove the upper crankcase by loosening off a total of 15 bolts, 8 at top and 7 at bottom.
9. Remove the kick starter spring; unscrew the stopper bolt. Take out the kick starter as an assembled unit.
10. Remove 2 bolts and take out the ratchet guide plate.
11. Remove the snap ring. The kick starter can then be disassembled.

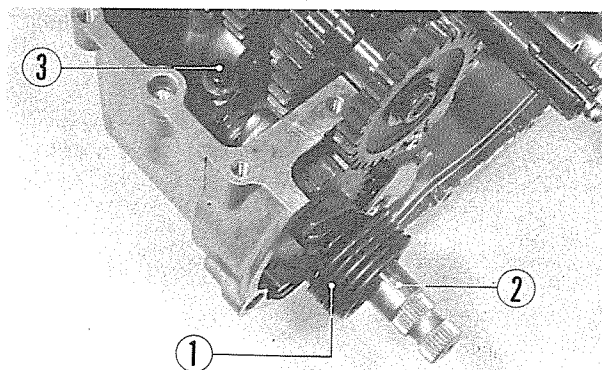


Fig. 3-32

- ① Kick starter spring
- ② Kick starter spindle
- ③ Stopper bolt

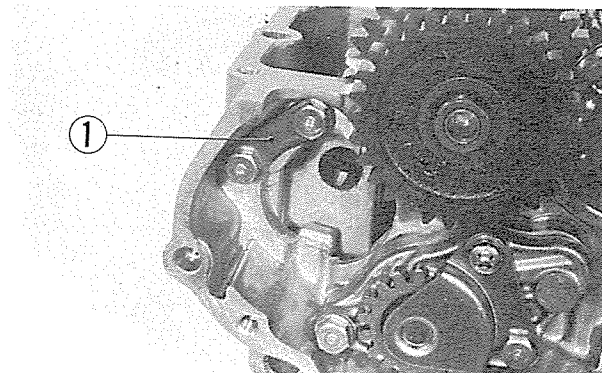


Fig. 3-33

- ① Ratchet guide plate

Inspection

1. Inspect the operation of the starter drive ratchet.
2. Check the starter spindle and starter pinion for uneven wear on their sliding surfaces.

Reassembly

1. Install the kick starter retainer so that the straight face of the pawl aligns with the punch mark on the spindle.
2. The kick starter retainer pawl should also be rested against the crankcase stopper.

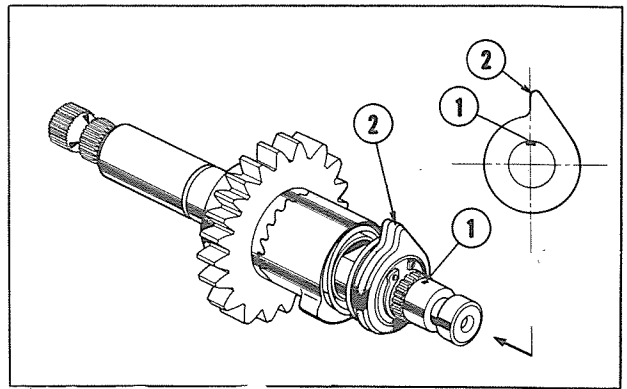
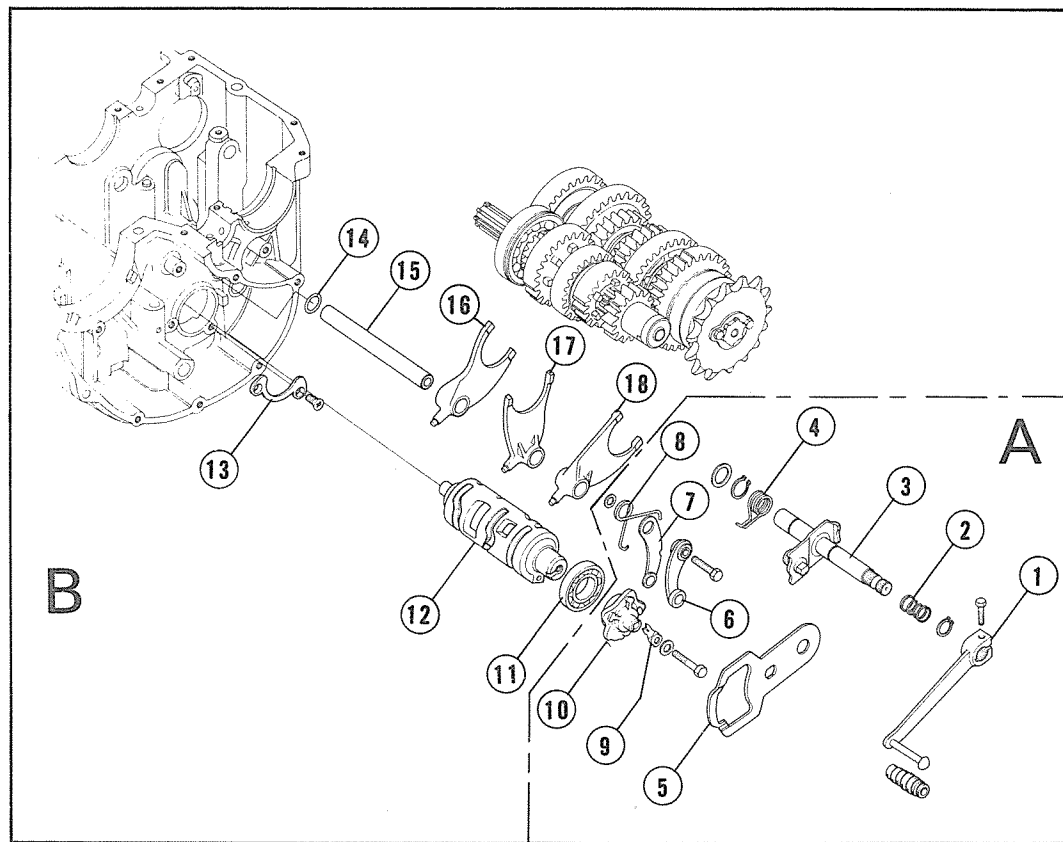


Fig. 3-34

- ① Punch mark
- ② Straight face of kick starter retainer pawl

GEARSHIFT MECHANISM



Disassembly

Group A

1. Drain the crankcase.
2. Remove the chain cover, clutch cable, clutch locking bolt, gear change pedal, and cam chain adjuster cap; take out the left-hand side crankcase cover.
3. Remove the gearshift spindle as an assembled unit.
4. Pry the snap rings out of place from grooves in the gearshift spindle. Remove the snap rings.
Take out the spring, gearshift plate and return spring.

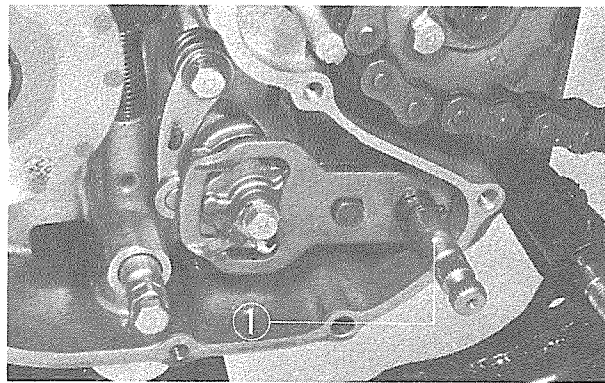


Fig. 3-36

① Gearshift spindle

5. Remove bolt and remove the neutral stopper arm, gearshift drum stopper, washer and spring.
6. Take out the gearshift cam from the gearshift drum.

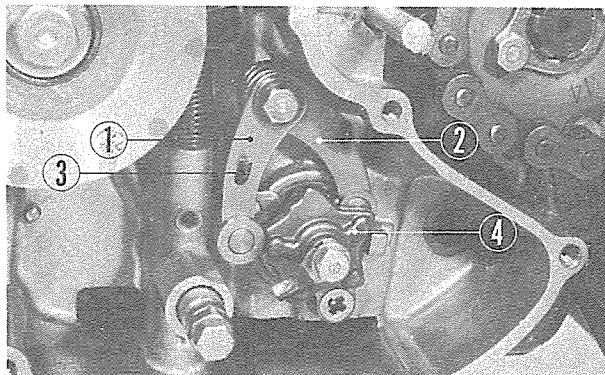


Fig. 3-37

① Gearshift drum stopper ③ Shift drum stopper spring
 ② Neutral stopper arm ④ Gearshift cam

Group B

1. Remove the engine from the frame. Follow the steps 1 thru 6 above.
2. Remove the cylinder head, cylinder, cam chain guide and right-hand side crankcase cover.
3. Remove the oil filter and clutch drive gear.
4. Remove the generator rotor, chain tensioner, chain and timing sprocket.
5. Separate the upper crankcase from the lower crankcase.
6. Remove the main and countershaft assemblies.
7. Remove the kick starter spindle and oil pump.
8. Withdraw the shift fork guide shaft; remove the right, left and center gear shift forks.
9. Remove the bearing set plate by removing two bolts.
10. Pull out the gearshift drum.

Inspection

* Refer to Service Data on page 6

1. Measure the gearshift drum-to-shift fork clearance.
2. Measure the shift fork guide shaft-to-shift fork clearance.
3. Measure the width of the gearshift fork finger.

Reassembly

1. Install the gearshift drum and gears in the neutral position.
2. The gearshift forks should be installed properly. Do not mix. The identification marks "R", "C" and "L" are provided on the right gearshift fork, center gearshift fork and left gearshift fork, respectively.
3. Check the stopper arm is in its proper position, and also check for operation.
4. Move the gearshift spindle to check each related part for smooth operation.

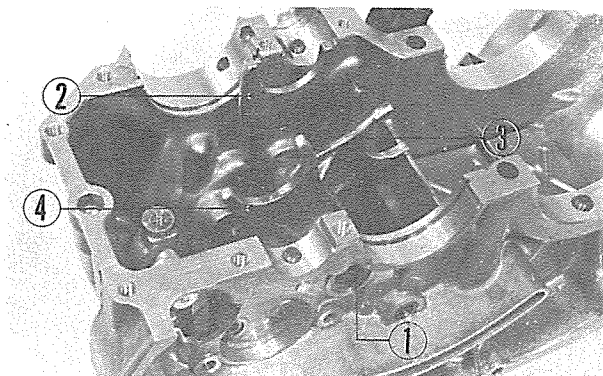


Fig. 3-38

- ① Shift fork guide shaft
- ② L. gearshift fork
- ③ Center gearshift fork
- ④ R. gearshift fork

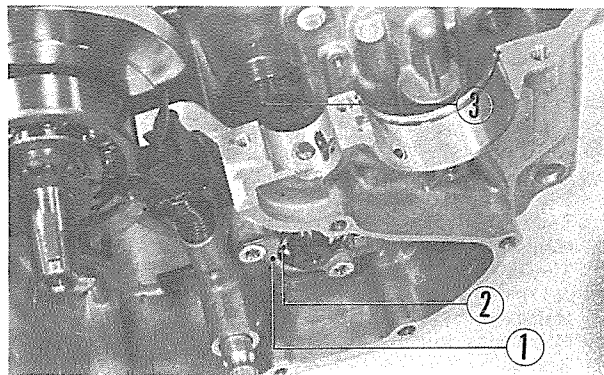


Fig. 3-39

- ① Bearing set plate
- ② Ball bearing
- ③ Gearshift drum

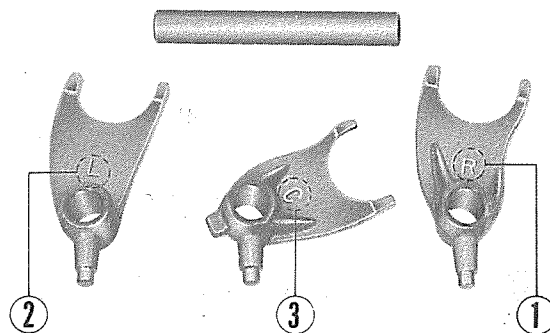


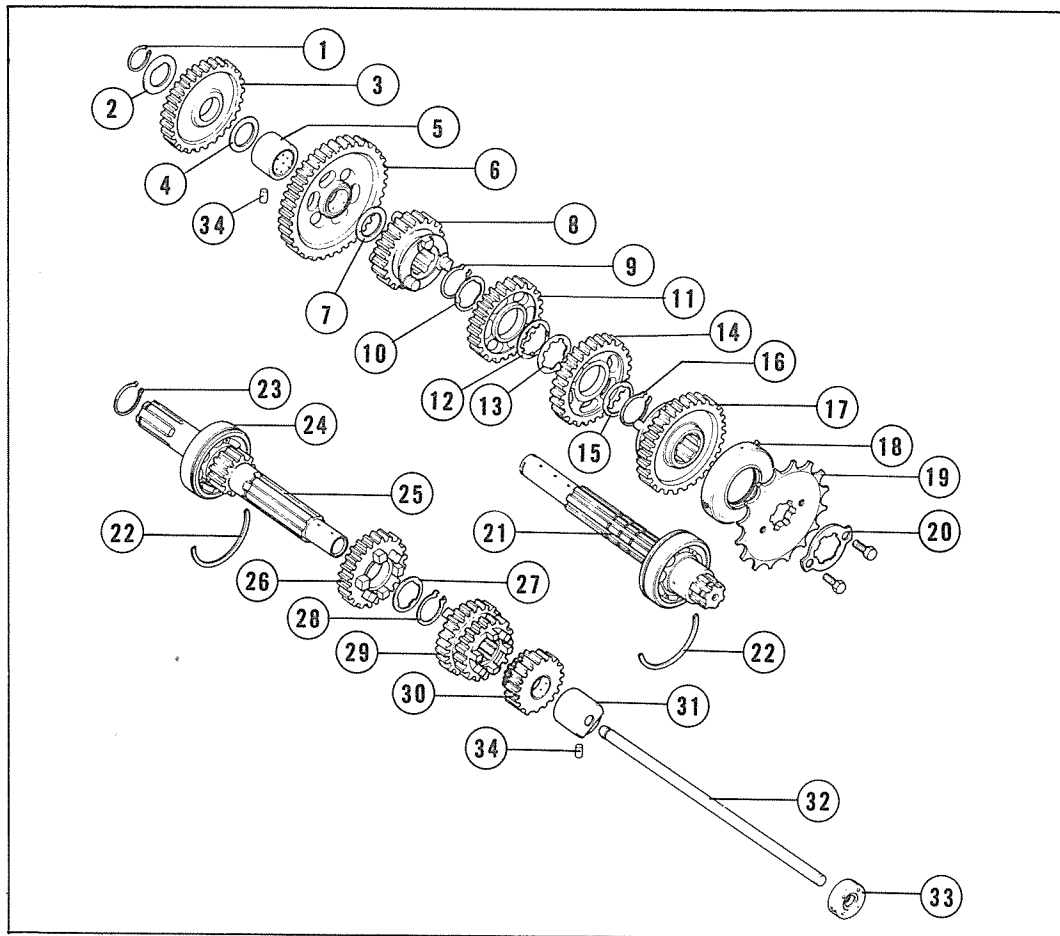
Fig. 3-40

- ① "R" mark
- ② "L" mark
- ③ "C" mark

TRANSMISSION

Fig. 3-41

- ① Snap ring
- ② Thrust washer
- ③ Kick starter idle gear
- ④ Thrust washer
- ⑤ Bearing bushing "B"
- ⑥ Countershaft first gear
- ⑦ Thrust washer
- ⑧ Countershaft fifth gear
- ⑨ Set ring
- ⑩ Thrust washer
- ⑪ Countershaft fourth gear
- ⑫ Lock washer
- ⑬ Thrust washer
- ⑭ Countershaft third gear
- ⑮ Thrust washer
- ⑯ Set ring
- ⑰ Countershaft second gear
- ⑱ Oil seal
- ⑲ Drive sprocket
- ⑳ Drive sprocket fixing plate
- ㉑ Transmission countershaft
- ㉒ Ball bearing set ring
- ㉓ Snap ring
- ㉔ Ball bearing (6304HS)
- ㉕ Transmission mainshaft
- ㉖ Mainshaft fifth gear
- ㉗ Thrust washer
- ㉘ Set ring
- ㉙ Mainshaft shifting gear
- ㉚ Mainshaft second gear
- ㉛ Bearing bushing "A"
- ㉜ Clutch lifter rod
- ㉝ Oil seal
- ㉞ Knock pin



Disassembly

1. Follow the steps 1 thru 5 in Para. "Disassembly" Group B under GEARSHIFT MECHANISM.
2. Remove the mainshaft and countershaft from the lower crankcase.
3. Remove the oil seal, bearing bushing "A", second gear, shifting gear, snap ring, thrust washer and fifth gear from the mainshaft in the order listed.
4. Remove the ball bearing from the mainshaft.
5. Remove the bearing bushing "B", first gear, thrust washer, fifth gear, lock washer, thrust washer, third gear, thrust washer, set ring, second gear, ball bearing, fixing plate, drive sprocket and oil seal from the mainshaft in this written order

Inspection

* Refer to Service Data on page 6

1. Check the gears for backlash as shown in Fig. 3-43.
2. Replace any gear if its dogs are excessively worn or damaged. Also check the gears for smooth sliding on the shaft splines.

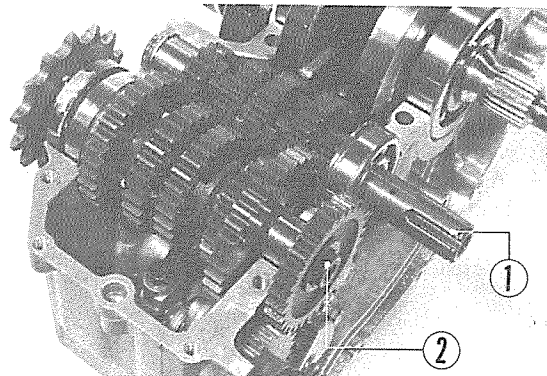


Fig. 3-42

- ① Mainshaft
- ② Countershaft

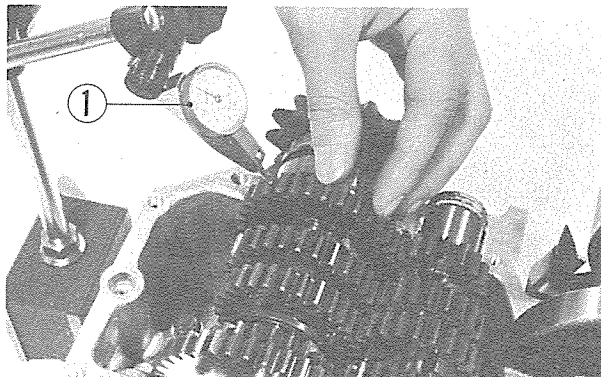


Fig. 3-43

- ① Dial indicator

Reassembly

Mainshaft

1. Position the mainshaft on the lower crankcase with the set ring fitted in the grooves in the ball bearing and crankcase.
2. Install the bearing bushing "A" with its pin hole fitted with the 6-mm knock pin.

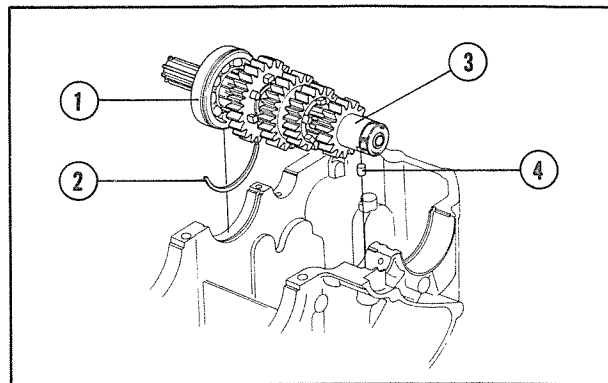


Fig. 3-44

- ① Ball bearing ③ Bearing bushing "A"
② Set ring ④ 6 mm knock pin

Countershaft

1. Install the bearing bushing "B" with its pin hole fitted with the 6-mm knock pin in the lower crankcase.
2. Install the ball bearing with its ring groove fitted with the set ring installed in the groove in the lower crankcase.
3. Install the oil seal with its dowel fitted into the groove in the lower crankcase.

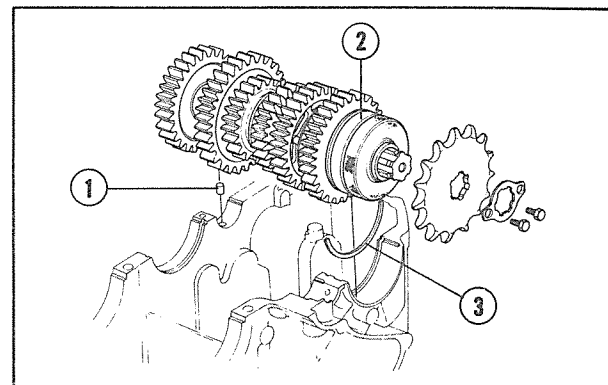


Fig. 3-45

- ① 6 mm knock pin
② Ball bearing
③ Set ring

CAM CHAIN TENSIONER

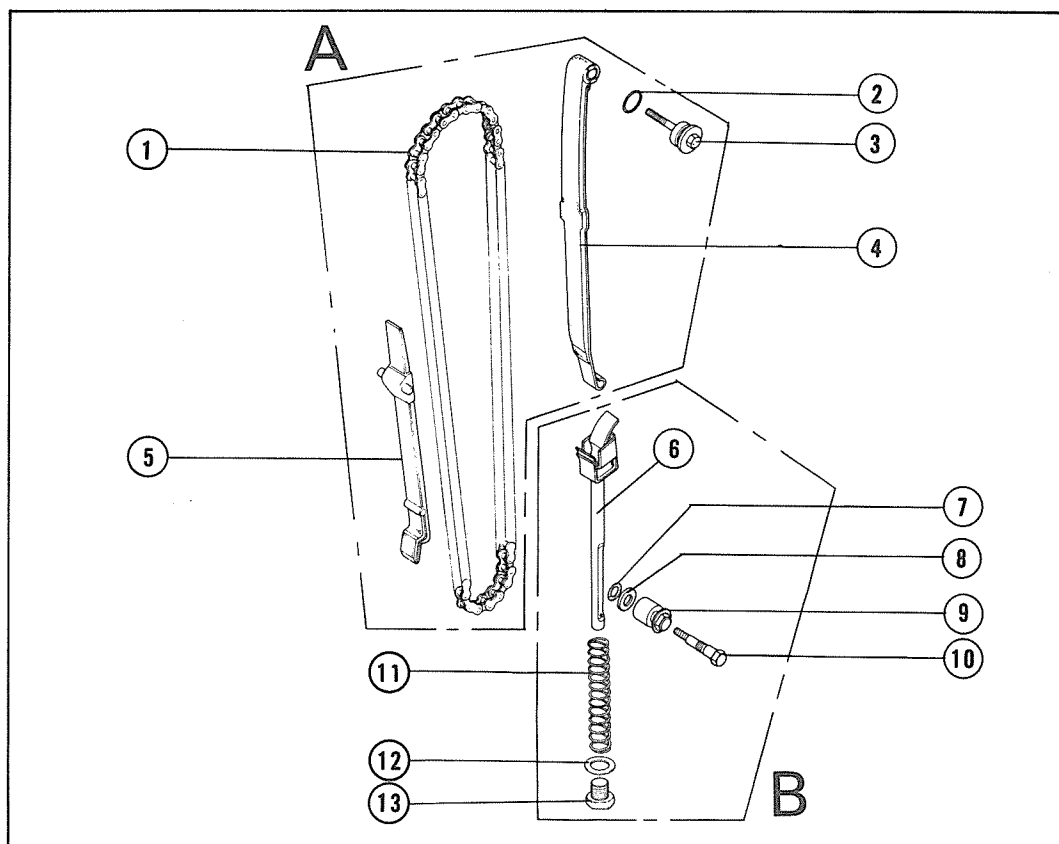


Fig. 3-46

Group A: On-vehicle servicing

Group B: On-work stand servicing

- ① Cam chain
- ② O-ring
- ③ Tensioner bolt
- ④ Cam chain tensioner
- ⑤ Cam chain guide
- ⑥ Tensioner set bar
- ⑦ O-ring
- ⑧ Plain washer
- ⑨ Tensioner nut
- ⑩ Tensioner bolt
- ⑪ Tensioner spring
- ⑫ Drain bolt washer
- ⑬ Drain bolt

Disassembly

Group A

1. Remove the cylinder head cover, cylinder head and cylinder. Remove the cam chain guide and tensioner.

Group B

1. Separate the upper and lower crankcase halves.
2. Remove the tensioner set bar and tensioner spring.

Inspection

1. Check the cam chain guide and chain tensioner for wear.

Reassembly

1. Press the tensioner set bar into place in the crankcase with fingers and secure with the set bolt.
2. Install the cam chain set plate, being sure that it is not interfering with the cam chain.
3. The chain tensioner should be installed so that it will not interfere with the cylinder. Neglecting this caution would result in noisy cam chain.

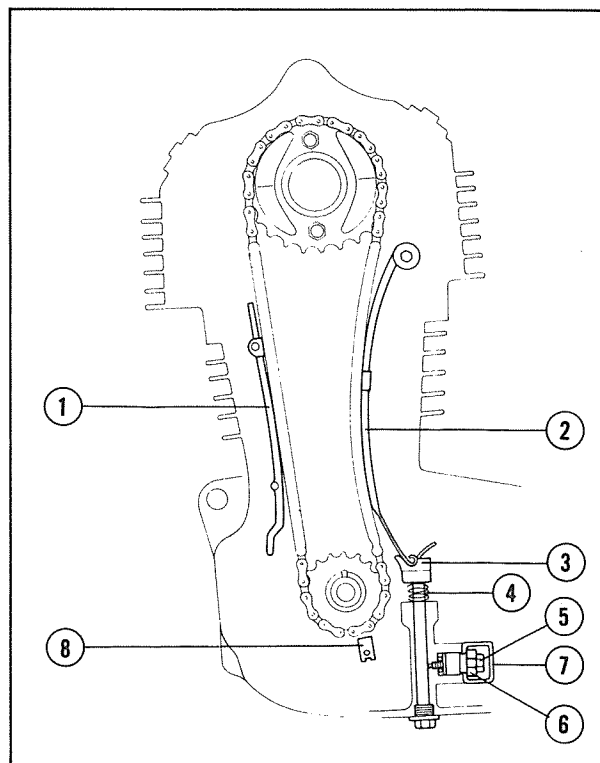


Fig. 3-47

- ① Cam chain guide
- ② Cam chain tensioner
- ③ Tensioner set bar
- ④ Tensioner spring
- ⑤ Tensioner bolt
- ⑥ Tensioner nut
- ⑦ Tensioner bolt cap
- ⑧ Cam chain set plate

10. CRANKSHAFT AND CONNECTING ROD

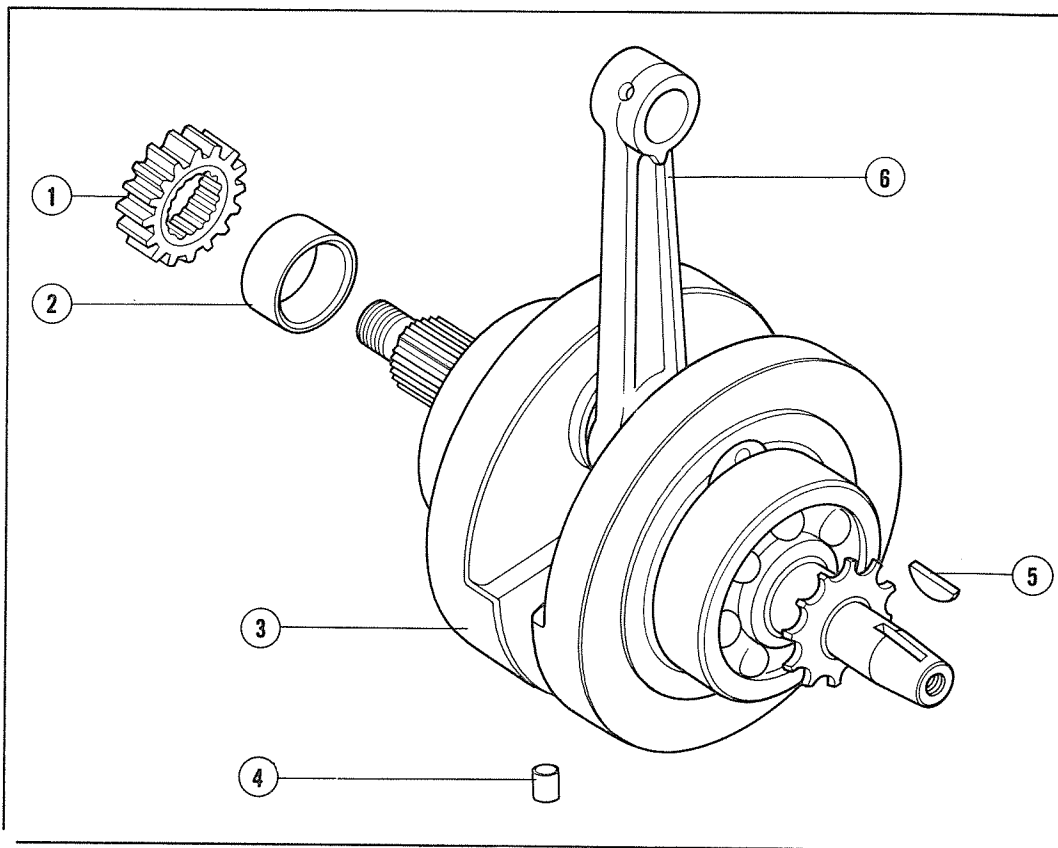


Fig. 3-48

- ① Primary drive gear
- ② Drive gear distance collar
- ③ Crankshaft assembly
- ④ Dowel pin
- ⑤ Woodruff key
- ⑥ Connecting rod

Disassembly

1. Remove the cylinder head, cylinder and piston.
2. Separate the upper crankcase from the lower one.
3. Remove the crankshaft from the lower crankcase.

Inspection

* Refer to Service Data on page 6

1. Measure the inside diameter of the connecting rod small end bore.
2. See if the connecting rod big end bearing is not worn. To do this, place the needle of a dial indicator against the big end and move the rod up and down.
3. Check the crankshaft bearing play.
4. Check the side clearance of the connecting rod big end.

Reassembly

1. Install the crankshaft bearing with its dowel hole fitted with the dowel on the lower crankcase.
2. Apply a coat of sealing agent to the mating surfaces of the crankcases evenly.
3. Do not forget to install the tensioner set bar when installing the upper crankcase to the lower one.

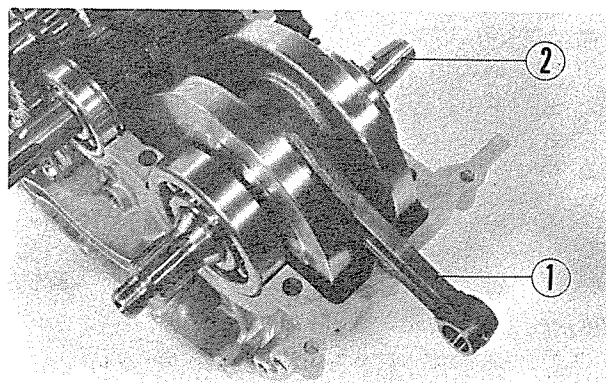


Fig. 3-49

- ① Connecting rod
- ② Crankshaft

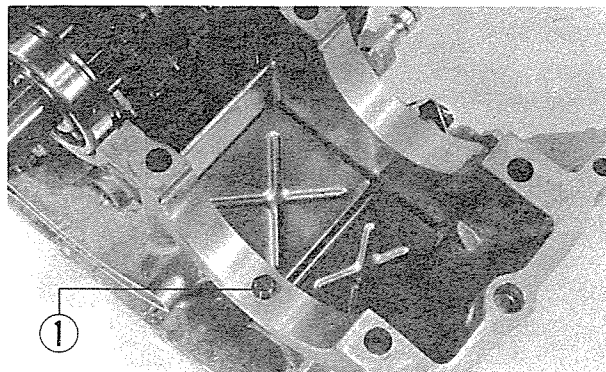


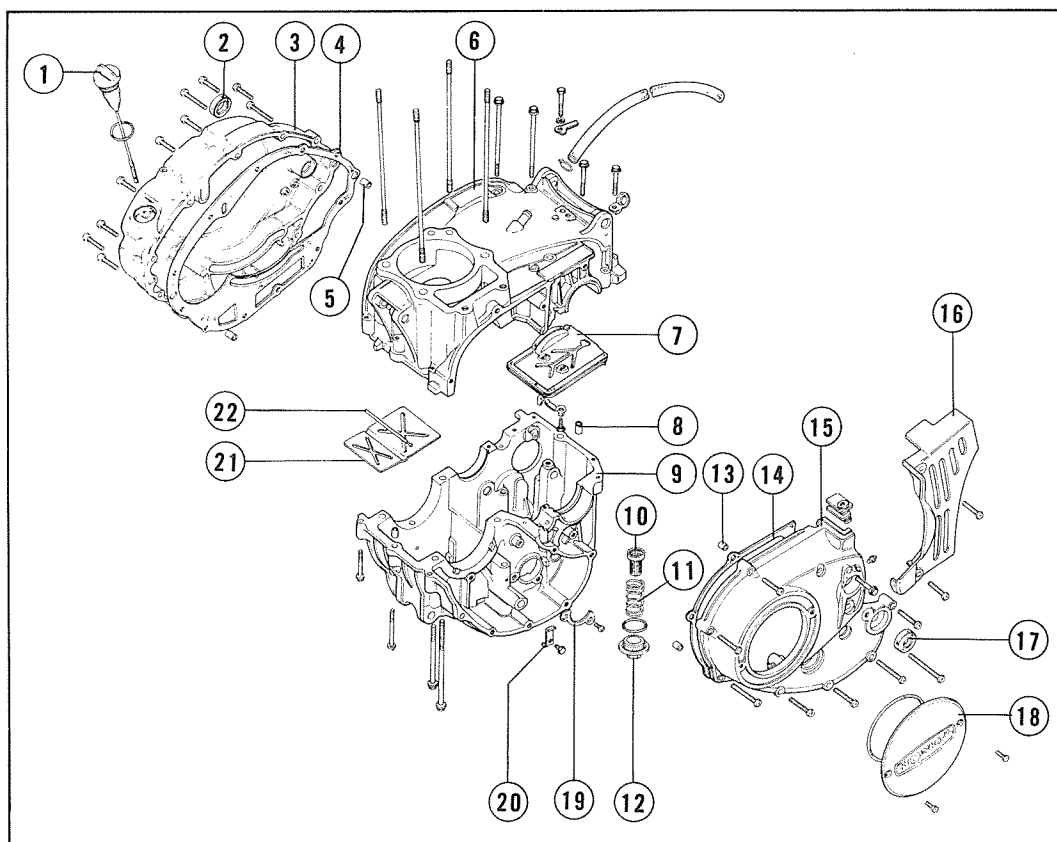
Fig. 3-50

- ① Bearing knock pin

CRANKCASE

Fig.3-51

- (1) Oil level gauge
- (2) Oil seal
- (3) R. crankcase cover
- (4) R. crankcase cover gasket
- (5) Dowel pin
- (6) Upper crankcase
- (7) Breather plate
- (8) Dowel pin
- (9) Lower crankcase
- (10) Oil filter screen
- (11) Oil filter screen spring
- (12) Drain bolt
- (13) Dowel pin
- (14) L. crankcase cover gasket
- (15) L. crankcase cover
- (16) L. crankcase rear cover
- (17) Oil seal
- (18) Dynamo cover
- (19) Bearing set plate
- (20) Cam chain plate
- (21) Oil separator
- (22) Oil separator set bar



Disassembly

1. Separate the upper and lower crankcases from each other; remove the crankshaft, mainshaft, countershaft, gearshift drum, shift forks and kick starter.
2. Remove the oil separator and set bar from the lower crankcase by depressing the separator.
3. Straighten the lug of the lock washer and unscrew the bolts to remove the breather plate from the upper crankcase.

Inspection

1. Check the oil holes in the crankcases for clogging.

Reassembly

1. Apply a coat of sealing agent to the mating surfaces of the crankcases.
2. Tighten a total of 15 bolts, 8 at upper and 7 at lower, in criss-cross fashion to prevent distorted crankcases. See Fig. 3-53.
3. Do not mix the bolts.

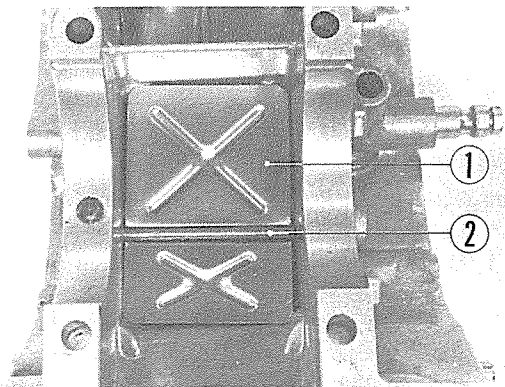


Fig. 3-52

- ① Oil separator
- ② Set bar

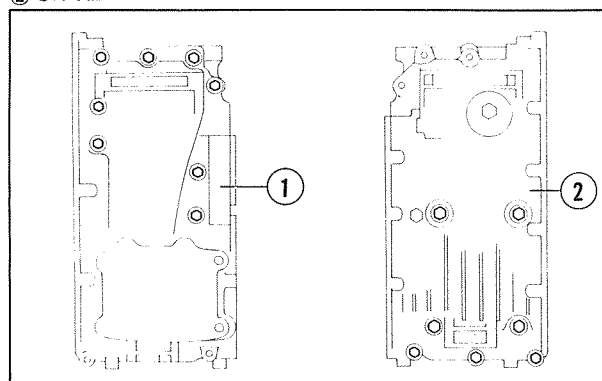


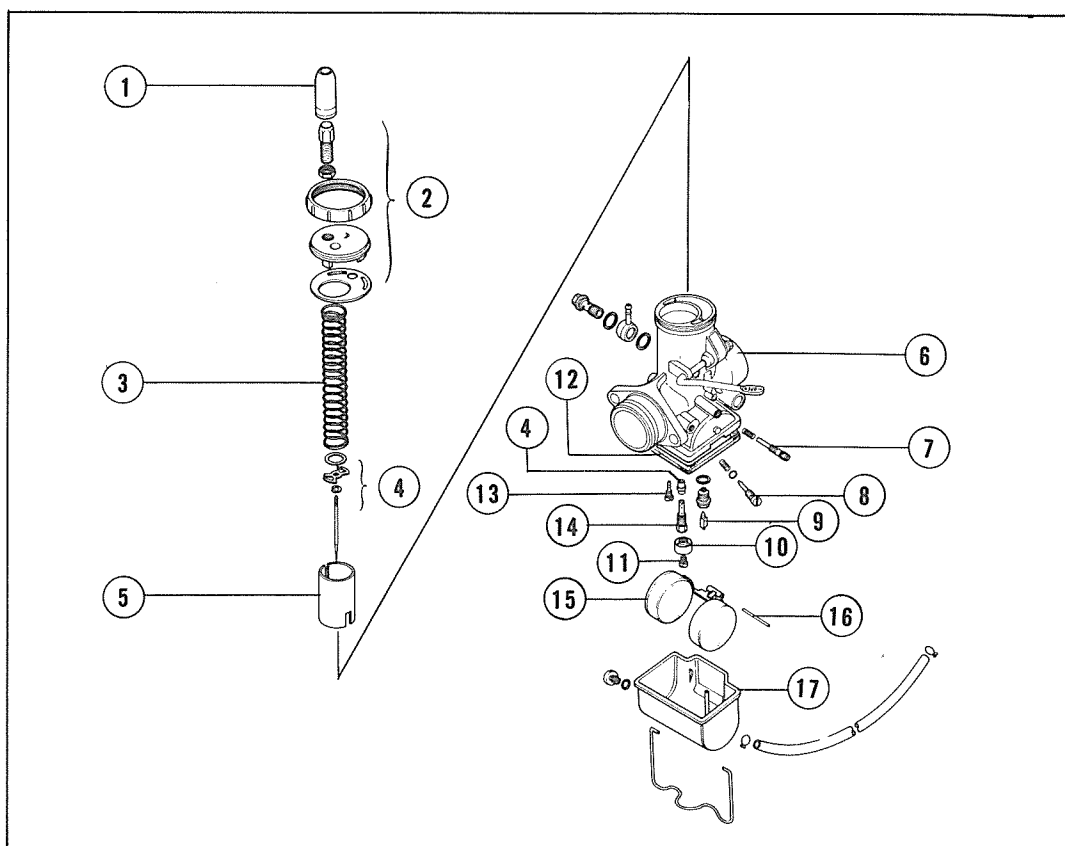
Fig. 3-53

- ① Upper crankcase
- ② Lower crankcase

12. CARBURETOR

Fig. 3-54

- ① Rubber cap
- ② Top set
- ③ Throttle valve spring
- ④ Jet needle set
- ⑤ Throttle valve
- ⑥ Carburetor body
- ⑦ Throttle stop screw
- ⑧ Air screw
- ⑨ Float valve
- ⑩ Jet holder
- ⑪ Main jet
- ⑫ Gasket
- ⑬ Slow jet
- ⑭ Needle jet holder
- ⑮ Float
- ⑯ Float arm pin
- ⑰ Float chamber



Disassembly

1. Remove the carburetor assembly from the machine.
2. Remove the float chamber from the carburetor.
3. Remove the slow and main jets.
4. Withdraw the float arm pin; take out the float.
5. Remove the float valve seat.

Inspection

1. Check the throttle valve for damage.
2. Check the jet needle for wear.
3. Blow the main and slow jets to determine that these are not clogged.
4. Check the float valve for proper contact with the valve seat.
5. Adjusting fuel level.

Hold the carburetor with its main bore in a vertical position, so the float arm tang will just close the float valve, without compressing the spring loaded plunger in the end of the valve. Measure float height with a float level gauge.

Float height (distance between the carburetor body and the opposite edge of the float) should be 22.5 mm (0.886 in.) when the float valve just closes.

If adjustment is needed, carefully bend the float arm tang toward or away from the float valve until the specified float height is obtained. Replace any damaged or leaking float.

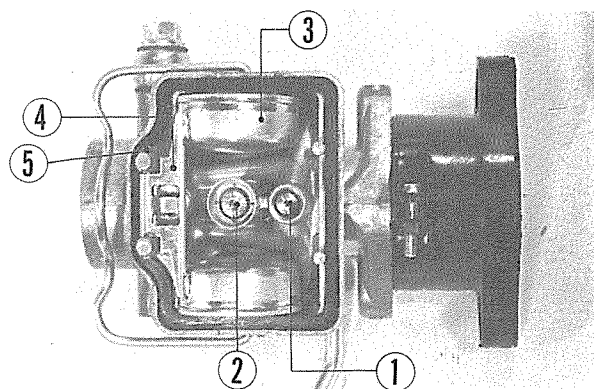


Fig. 3-55

- ① Slow jet
- ② Main jet
- ③ Float
- ④ Float arm
- ⑤ Float arm pin

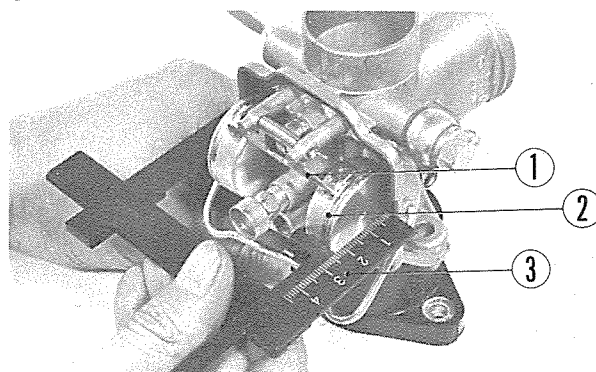


Fig. 3-56

- ① Float arm
- ② Float
- ③ Float level gauge

Reassembly

- 1. In assembling the carburetor, use added care to avoid scratching the carburetor jets.
- 2. Install the throttle valve so that the cutaway is facing toward the choke valve.

Carburetor Setting Table

Item		
Setting number		697A
Main jet	Standard	# 110
	Optional	# 100, 105, 115, 120
Slow jet	Standard	# 40
	Optional	# 35, 38, 42, 45
Jet needle setting		 ← 2nd groove (standard)
Air screw opening		1-1/8 ± 3/8
Float height		22.5 mm (0.886 in.)

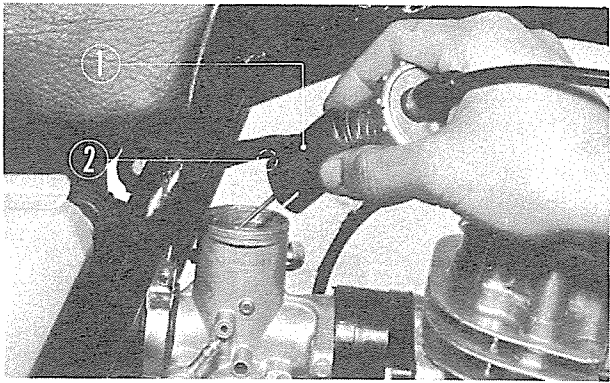


Fig. 3-57
① Throttle valve
② Valve cutaway

FRAME

1. FRONT WHEEL AND FRONT BRAKE

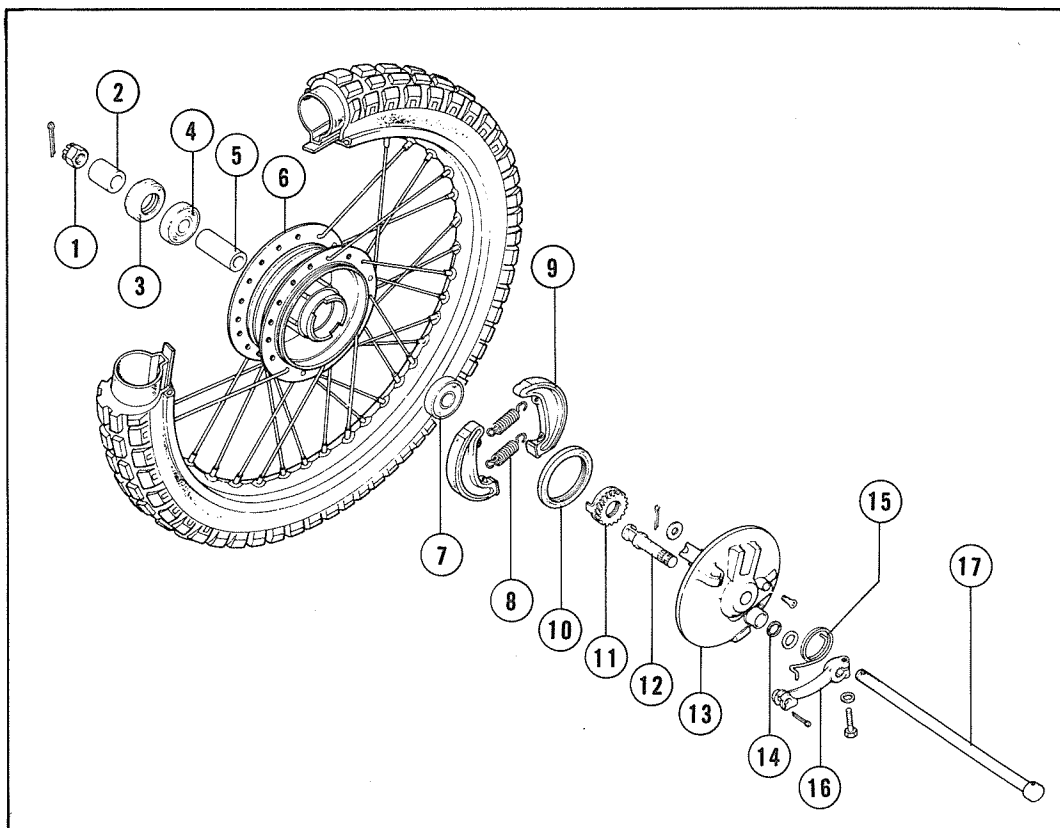


Fig. 4-1

- ① Castle nut
- ② Front wheel collar
- ③ Oil seal
- ④ Ball bearing (6302)
- ⑤ Front axle spacer collar
- ⑥ Front wheel hub
- ⑦ Ball bearing (6302)
- ⑧ Front brake shoe spring
- ⑨ Front brake shoe
- ⑩ Oil seal
- ⑪ Speedometer gear
- ⑫ Front brake cam
- ⑬ Front brake panel
- ⑭ Brake cam dust seal
- ⑮ Brake arm return spring
- ⑯ Front brake arm
- ⑰ Front wheel axle

Disassembly

1. Using a jack under the engine, raise the front wheel off the ground.
2. Remove the screw and disconnect the speedometer cable.
3. Remove the cotter pin and free the brake cable from the brake arm.
4. Loosen the lock nut and remove the cable from the brake panel.
5. Pry off the cotter pin to permit removal of the castle nut; Slide off the axle from the front wheel and forks.
6. Remove the wheel side collar from the right-hand side of the front wheel.
7. Remove the brake panel from the wheel as an assembled unit.
8. Unscrew the brake arm lock bolt and take out the brake arm with the return spring.
9. Remove the teflon washer and dust seal from the brake cam.

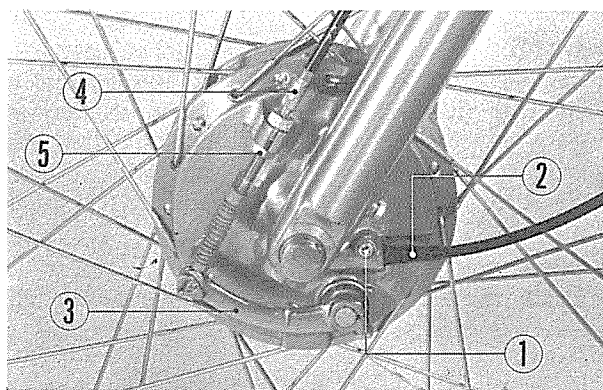


Fig. 4-2

- ① Screw
- ② Speedometer cable
- ③ Brake arm
- ④ Brake cable
- ⑤ Lock nut

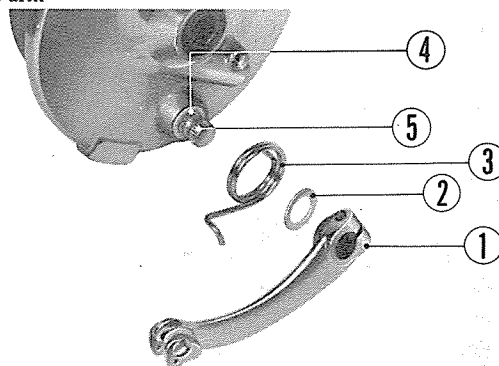


Fig. 4-3

- ① Brake arm
- ② Teflon washer
- ③ Return spring
- ④ Dust seal
- ⑤ Brake cam

10. Pry out the cotter pin and remove the washer; take out the brake shoes and brake cam from the brake panel.
11. Pull out the speedometer gear from the brake panel.
12. Remove the oil seal from the front wheel hub. Take out the wheel bearings and spacer collar.

Inspection

* Refer to Service Data on page 7.

1. Check the front axle for bending along its entire length.
2. Check the wheel bearing for play.
3. Check the front wheel rim for face runout.
(Before disassembling)
4. Check the spokes for looseness, bend, or any other defects.
5. Check the tire pressure.
Tire pressure specification: 1.5 kg/cm² (21 psi)
6. Check the oil seal for wear or damage.
7. Check the tire for cracks, excessive wear or any other damage.
8. Check the tube valve for air leaks.
9. Check the brake drum for scores, scratches, damage or any other defects which might interfere with proper brake operation.
10. Measure the thickness of the brake linings.
11. Check the brake panel for cracks or damage.

Reassembly

1. Hand-pack the cavities of the wheel bearings and wheel hub with the recommended grease. Drive the bearing into place in the wheel hub, using "Bearing Driver Attachment" (Tool No. 07945-3330100) and "Driver Handle" (Tool No. 07949-6110000). Do not forget to install the spacer collar.

NOTE:

Install the bearings with the seal end facing outside, exercising care not to angle the spacer collar while installation.

2. Drive the oil seal until it is flush with the hub end from the right side of the front wheel hub.
3. Install the brake cam so that the punch mark on the spline end will be pointed downward.
4. Coat the brake cam and anchor pin with approx. 1 g (0.035 oz) of grease before installing the brake shoes.
5. Avoid greasy or oily substances getting on the brake linings.
6. When installing the brake arm, make sure the marking on the arm aligns with that on the brake cam.
7. Align the lug of the speedometer drive gear with the cutout in the front hub and install the brake panel while pressing on the brake arm toward the released side.
8. Install the wheel side collar so that the groove end will face the outside on the right side of the wheel.
9. After the above steps have been completed, adjust the brake system.

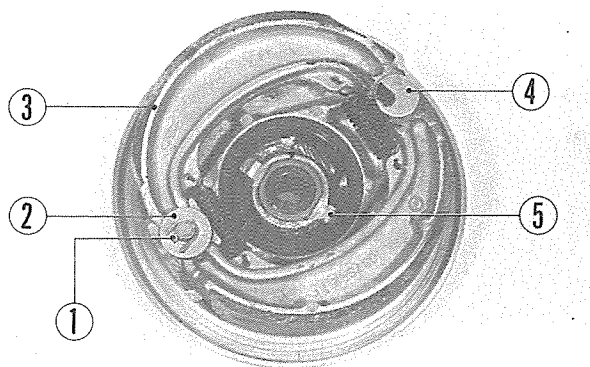


Fig. 4-4

- | | |
|---------------|--------------------|
| ① Cotter pin | ④ Brake cam |
| ② Washer | ⑤ Speedometer gear |
| ③ Brake shoes | |

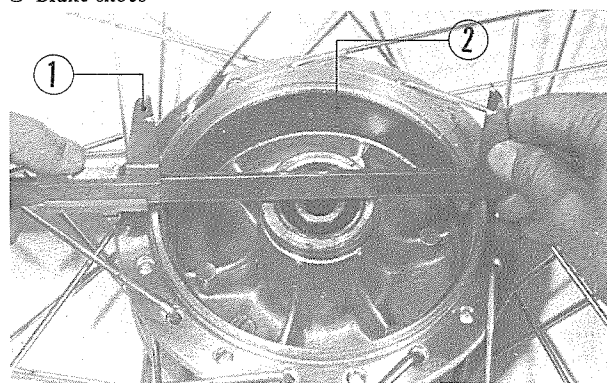


Fig. 4-5

- | |
|--------------------------------|
| ① Slide caliper |
| ② Brake drum (front wheel hub) |

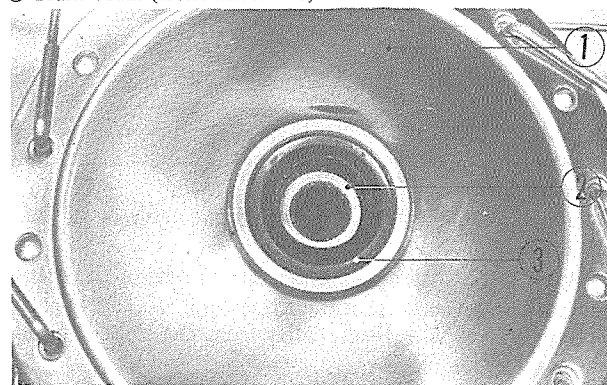


Fig. 4-6

- | |
|---------------------------|
| ① Front wheel hub (right) |
| ② Ball bearing |
| ③ Oil seal |

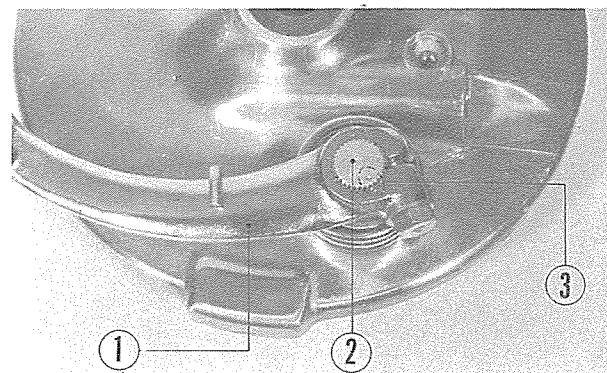


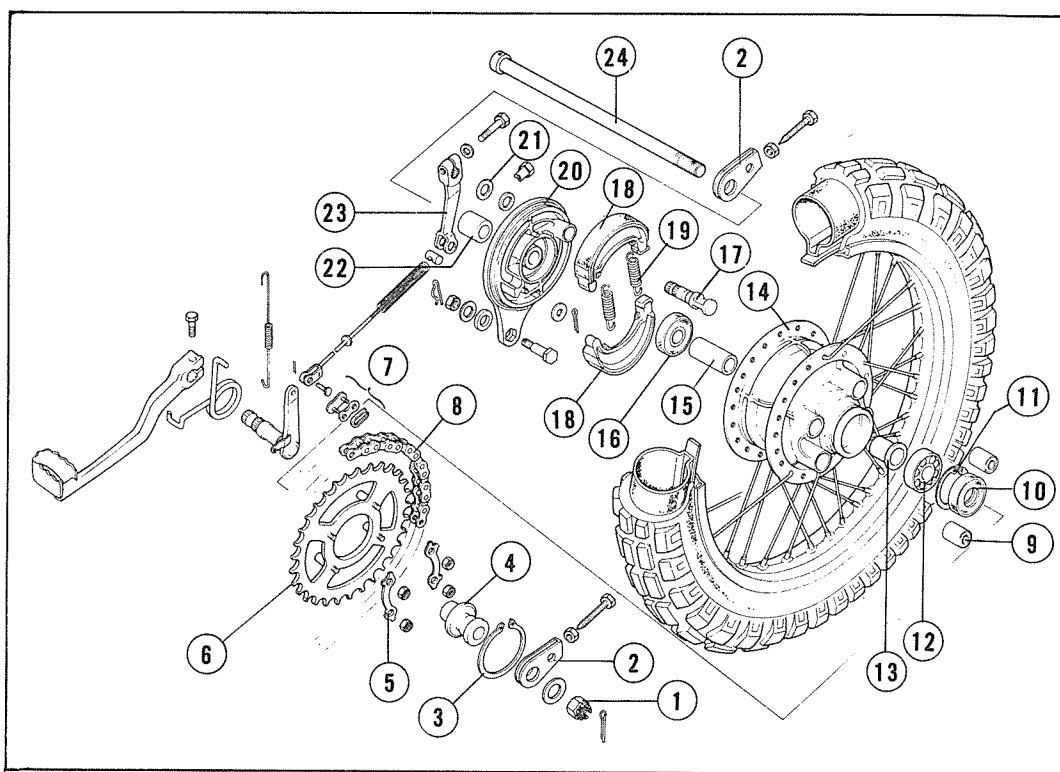
Fig. 4-7

- | | |
|-------------|--------------|
| ① Brake arm | ③ Punch mark |
| ② Brake cam | |

2. REAR WHEEL AND REAR BRAKE

Fig. 4-8

- ① Castle nut
- ② Chain adjuster
- ③ Snap ring
- ④ Rear axle side collar
- ⑤ Lock washer
- ⑥ Final driven sprocket
- ⑦ Drive chain joint
- ⑧ Drive chain
- ⑨ Rear wheel damper bushing
- ⑩ Oil seal
- ⑪ Snap ring
- ⑫ Ball bearing (6303)
- ⑬ Rear axle spacer collar B
- ⑭ Rear wheel hub
- ⑮ Rear axle spacer collar A
- ⑯ Ball bearing (6302)
- ⑰ Rear brake cam
- ⑱ Rear brake shoe
- ⑲ Rear brake shoe spring
- ⑳ Rear brake panel
- ㉑ Brake cam dust seal
- ㉒ Wheel side collar
- ㉓ Rear brake arm
- ㉔ Rear wheel axle



Disassembly

1. Remove the rear brake stopper arm from the rear brake panel.
2. Unscrew the brake adjusting nut; disconnect the brake rod from the brake arm.
3. Loosen the drive chain adjusting bolt and lock nut at each side. Pry out the cotter pin and take out the castle nut.
4. Remove the drive chain from the final driven sprocket. Take off the rear wheel axle and remove the rear wheel and chain adjusters.

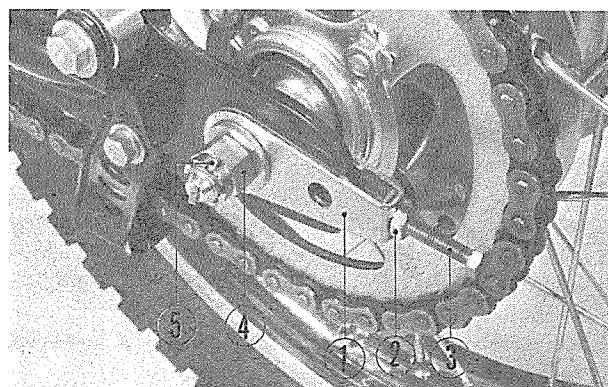


Fig. 4-9

- | | |
|------------------------|--------------|
| ① Drive chain adjuster | ④ Castle nut |
| ② Lock nut | ⑤ Cotter pin |
| ③ Adjusting bolt | |

5. Remove the rear wheel side collar
6. Remove the snap ring and final driven sprocket in the order listed. The lock washer need not be removed.

NOTE:

Always use a new lock washer whenever it is removed.

7. Remove the rear brake panel assembly.

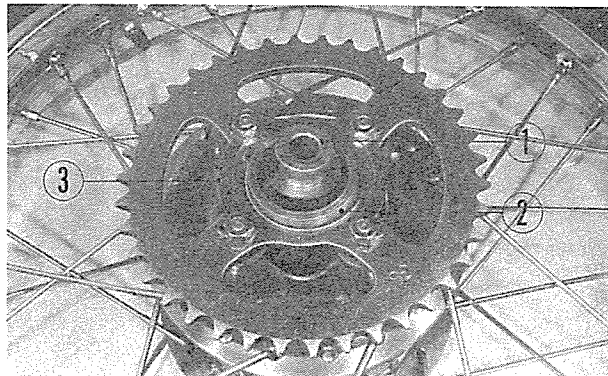


Fig. 4-10

- | | |
|--------------------------|---------------|
| ① Rear wheel side collar | ③ Lock washer |
| ② Snap ring | |

8. Take out the oil seal, ball bearings, rear axle and spacer collar from the rear wheel hub.
9. Remove and rear brake arm from the rear brake panel and then remove the teflon washer and dust seal.
10. Pry off the cotter pin; take out the brake shoes, brake cam and return spring.

Inspection

* Refer to Service Data on page 7.

1. Check the rear wheel axle for bend.
2. Check the ball bearing for excessive play.
3. Check the rim for face runout.
4. Check the spokes for looseness, bend or any other damage.
5. Check the final driven sprocket for wear or any other damage.
6. Check the drive chain for wear, elongation or any other defect.
7. Check the tire for cracks, excessive wear or any other damage.
8. Check the tire pressure.
Tire pressure specification: 1.5 kg/sq. cm (21 psi)
9. Check the brake lining for excessive wear.
10. Check the brake drum for scores, scratches or any other imperfection.
11. Check the brake panel for cracks or damage.
12. Check the oil seal for wear or damage.

Reassembly

1. Hand pack cavities of the wheel bearing and wheel hub with the recommended grease. Drive the ball bearing into place in the wheel hub through the spacer collar. Use "Bearing Driver Attachment" (Tool No. 07945-3330100) and "Driver Handle" (Tool No. 07949-6110000) to drive in the bearing.
2. Drive the oil seal just enough to make it flush with the hub end. Be sure to drive it squarely.
3. Install the driven sprocket to the pivot bushing of the wheel hub and secure it with the snap ring.

5. Apply a coating of grease to the brake cam and anchor pin before installing the brake shoes (approx. 1g/0.0035 oz).

NOTE:

Avoid oily or greasy substances getting on the brake lining.

6. Align the serration on the brake arm with that on the brake cam; install the brake arm on the cam.
7. Adjust the drive chain and brake.

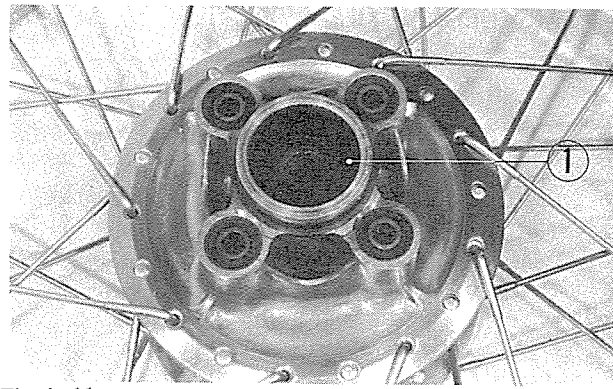


Fig. 4-11
① Oil seal

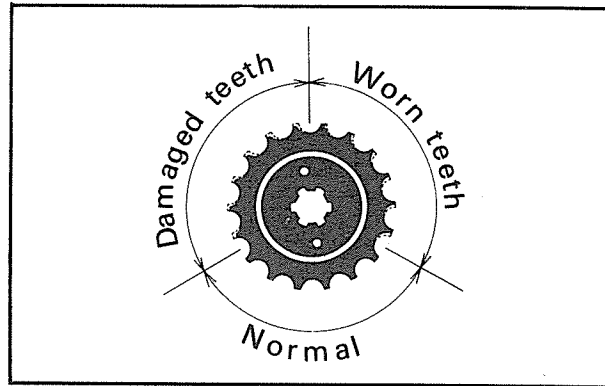


Fig. 4-12 Wear on final driven sprocket

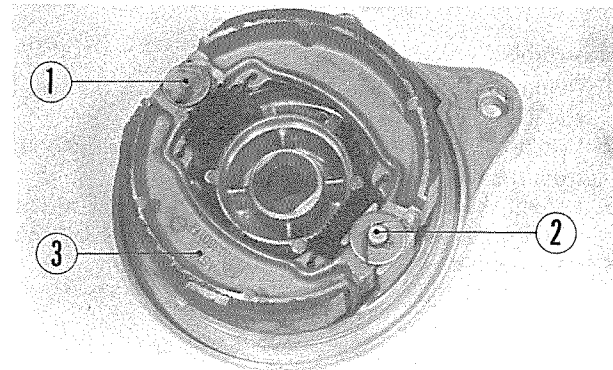


Fig. 4-13
① Brake cam
② Anchor pin
③ Brake shoe

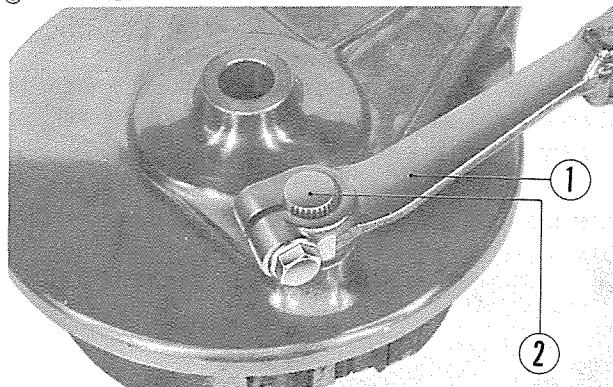
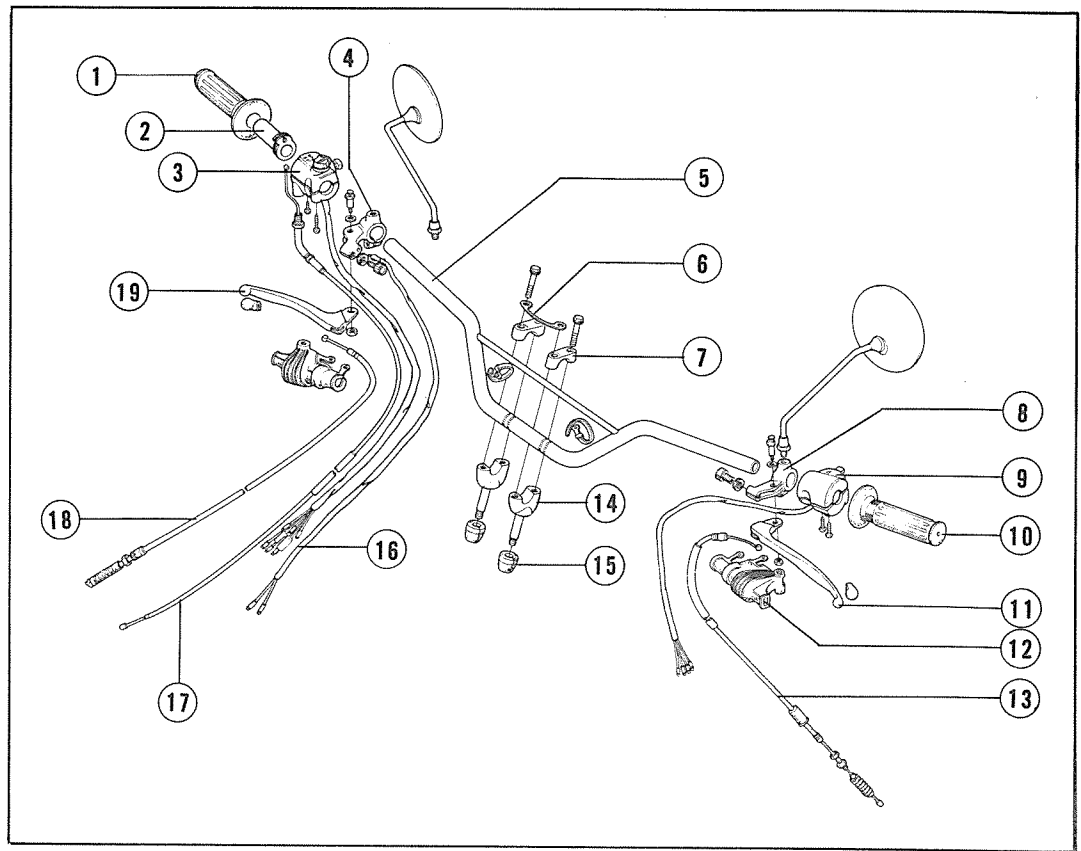


Fig. 4-14
① Rear brake arm
② Rear brake cam

3. STEERING HANDLEBAR

Fig. 4-15

- ① Right handle grip
- ② Throttle grip pipe
- ③ Lighting, dimmer and ignition switch assembly
- ④ R. handle lever bracket
- ⑤ Steering handle pipe
- ⑥ Cable holder
- ⑦ Upper holder
- ⑧ L. handle lever bracket
- ⑨ Turn signal and horn switch assembly
- ⑩ L. handle grip
- ⑪ Clutch lever
- ⑫ L. handle lever cover
- ⑬ Clutch cable
- ⑭ Under holder
- ⑮ Handle pipe cushion
- ⑯ Front stop switch
- ⑰ Throttle cable
- ⑱ Front brake cable
- ⑲ Front brake lever



Disassembly

1. Disconnect the clutch cable at the clutch lever.
2. Free the brake cable from the brake lever.
3. Remove the screws securing the turn signal and horn switches to the handlebar; remove the switches.
4. Unscrew the screws securing the ignition switch in place. Remove the switch. Disconnect the throttle cable from the throttle grip pipe.

5. Remove the bolts and take out the upper handle holder and steering handlebar.

Inspection

1. Check the steering handlebar for twist or any other damage.
2. Check each wiring for breakage or any other damage.
3. Check each cable for damage.

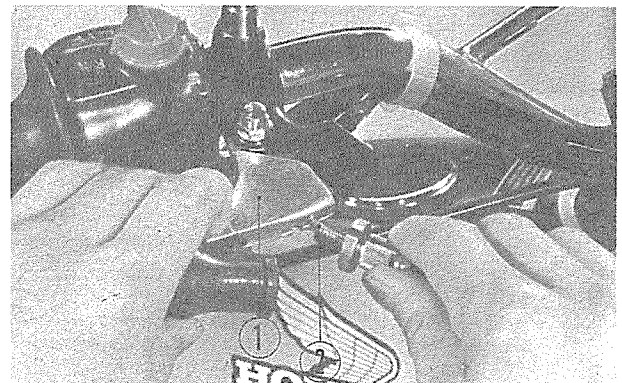


Fig. 4-16

- ① Brake lever
- ② Brake cable

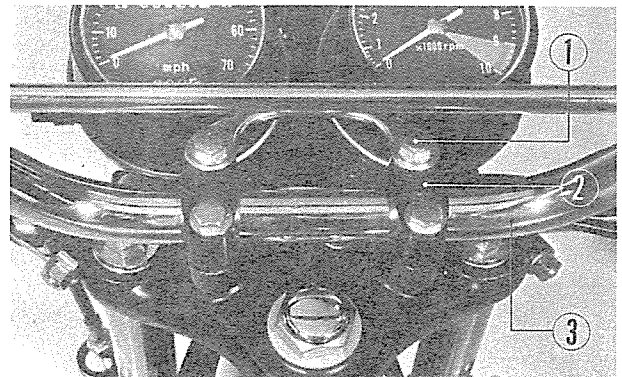


Fig. 4-17

- ① Bolt
- ② Upper holder
- ③ Steering handlebar

Reassembly

1. Install the handlebar, aligning the punch marks on the handlebar with the mating edges of the holder and fork top bridge.

NOTE:

When tightening the upper holder to the fork top bridge, tighten the bolts at the front first and then the ones at the rear. The punch marks should be pointed toward the front of the machine.

Specified tightening torque:

180–250 kg. cm (13.1–18.1 lbs-ft)

2. Align the punch marks at the rear of the handlebar with the mating edges of the switch covers.

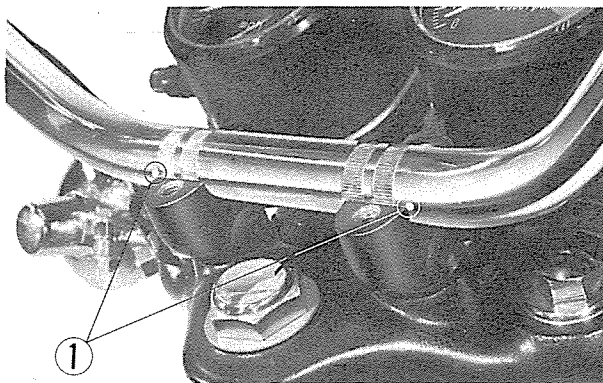


Fig. 4-18
① Punch mark

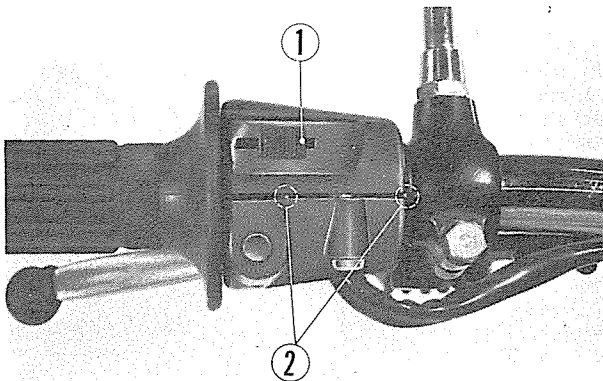


Fig. 4-19
① Switch
② Punch mark

3. Install each cable and wiring so that it is free from twisting.

NOTE:

Check to be sure that each wiring and cable is free from binding or twisting when turning the steering handlebar fully to either left or right side.

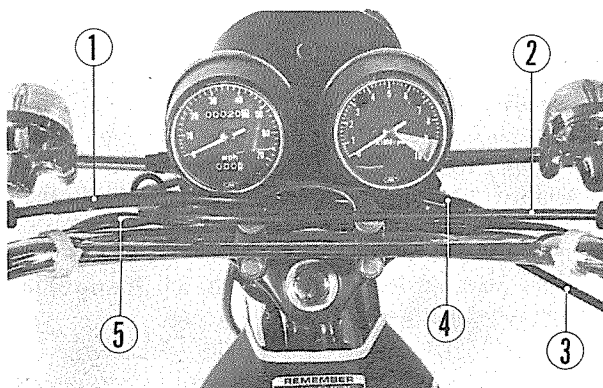
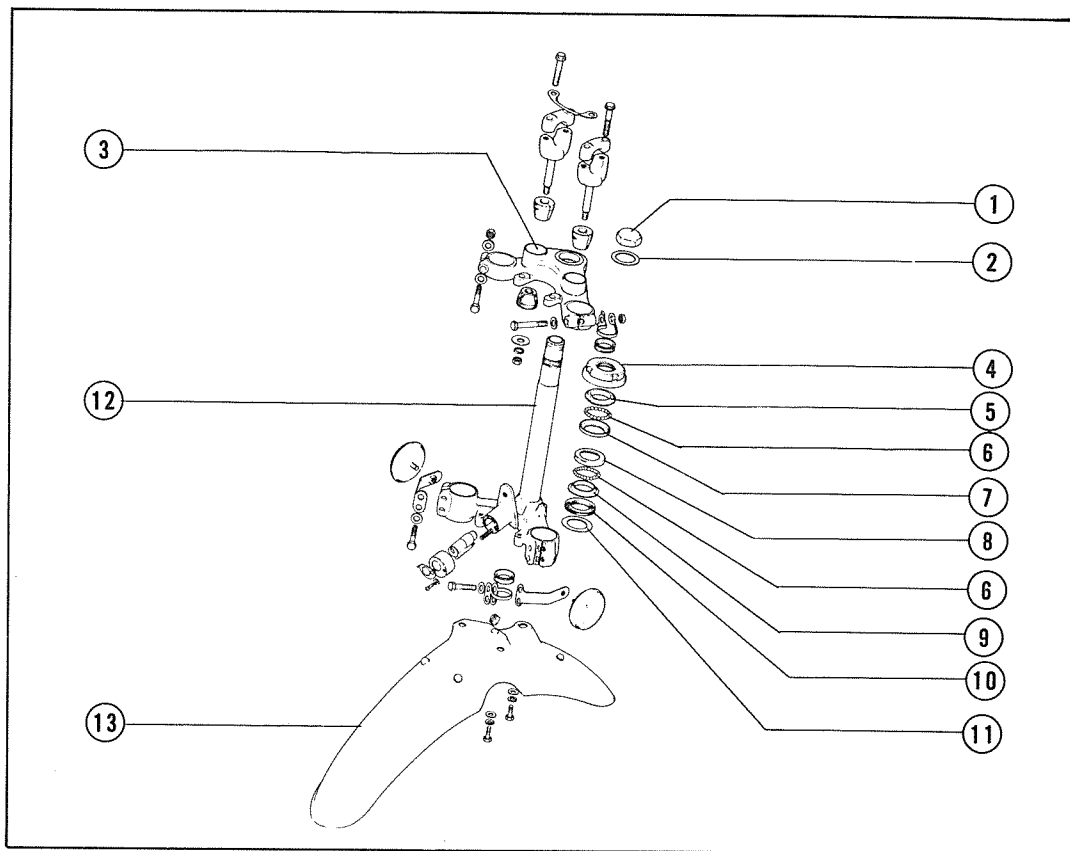


Fig. 4-20
① Clutch cable
② Brake cable
③ Throttle cable
④ Lighting switch wire
⑤ Turn signal and horn wire

4. STEERING STEM

Fig. 4-21

- ① Steering stem nut
- ② Steering stem nut washer
- ③ Fork top bridge
- ④ Steering top thread
- ⑤ Steering top corn race
- ⑥ # 8 steel ball
- ⑦ Steering top ball race
- ⑧ Steering bottom ball race
- ⑨ Steering bottom corn race
- ⑩ Steering head dust seal
- ⑪ Steering head dust seal washer
- ⑫ Steering stem
- ⑬ Front fender



Disassembly

1. Remove the front wheel.
2. Remove the steering handlebar.
3. Remove the headlight unit from the headlight case by loosening off two screws. Disconnect the wiring at the harness in the case.
4. Then remove the case from the steering stem by removing two bolts.

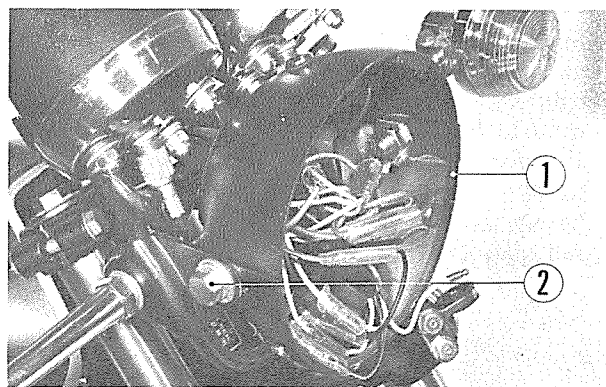


Fig. 4-22

- ① Headlight case
- ② Headlight mounting bolt

5. Disconnect the tachometer and speedometer cables at the meter sides.
6. Remove the nuts and take out the speedometer and tachometer.
7. Remove the bolt and remove the turn signal lamps.

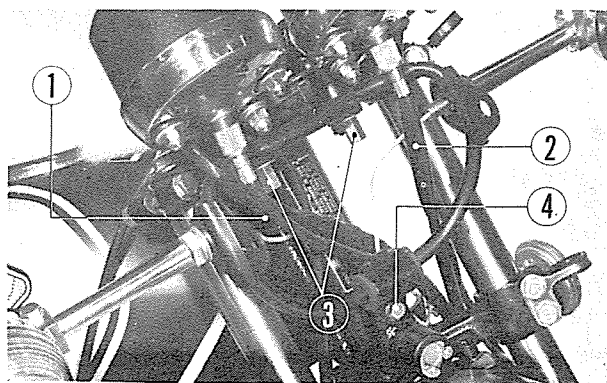


Fig. 4-23

- ① Tachometer cable
- ② Speedometer cable
- ③ Meter attaching nut
- ④ Bolt

8. Unscrew a total of 6 bolts and remove the front forks.
9. Remove the bolts and take out the front fender from the steering stem.
10. Remove the steering stem nut and take out the fork top bridge.

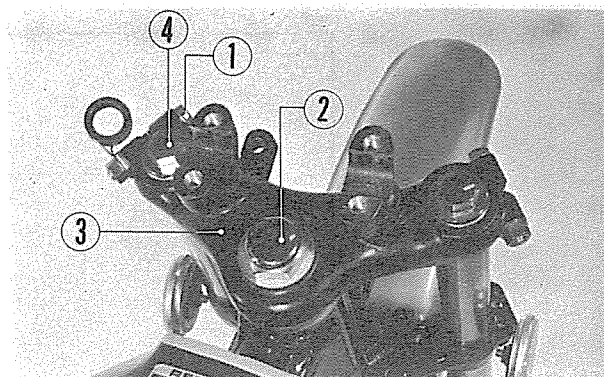


Fig. 4-24

- | | |
|------------------------|-------------------|
| ① Front fork lock bolt | ③ Fork top bridge |
| ② Steering stem nut | ④ Front fork |

11. Remove the steering head top thread to remove the steering stem; pull the steering stem out of position toward down.

NOTE:

Keep the steel balls in a parts rack to prevent it from being scattered and lost.

Inspection

1. Check the steering stem for bend or any other defects.
2. Check the steel balls for wear or damage.
3. Check the steering top and bottom cone races for damage or abnormal wear.
4. Check the steering head dust seal for wear.

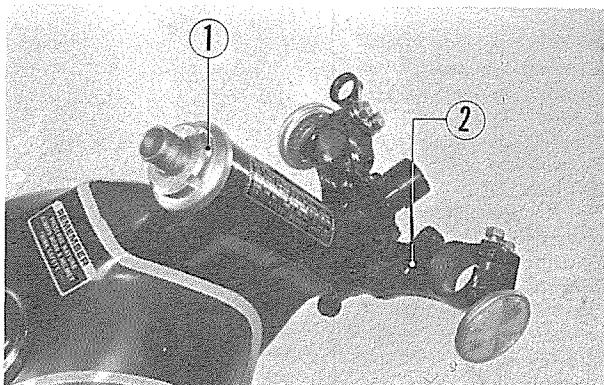


Fig. 4-25

- | | |
|----------------------------|-----------------|
| ① Steering head top thread | ② Steering stem |
|----------------------------|-----------------|

Reassembly

1. Install #8 steel balls (on both upper and lower) to each race properly. While rotating the steering stem, hand-tighten the head top thread so that it rotates freely without rattle. Any slightest amount of play in axial direction cannot be tolerated here.

NOTE:

Be sure to clean the cone races, ball races and steel balls, and apply a coating of grease before reassembly.

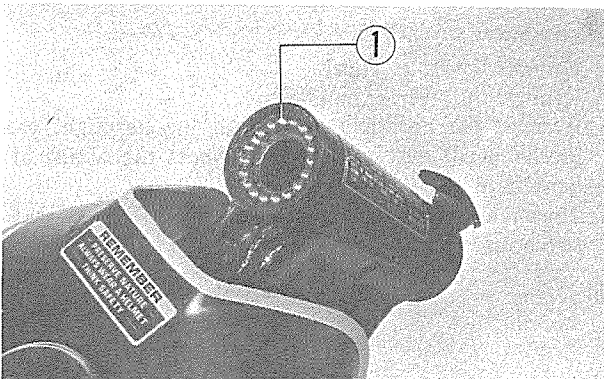


Fig. 4-26

- | |
|-----------------------|
| ① Steel ball (18 pcs) |
|-----------------------|

2. The steering stem nut should be tightened after temporarily installing the front fork.

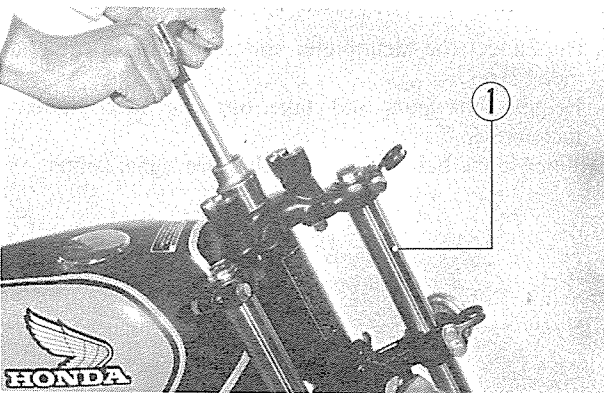


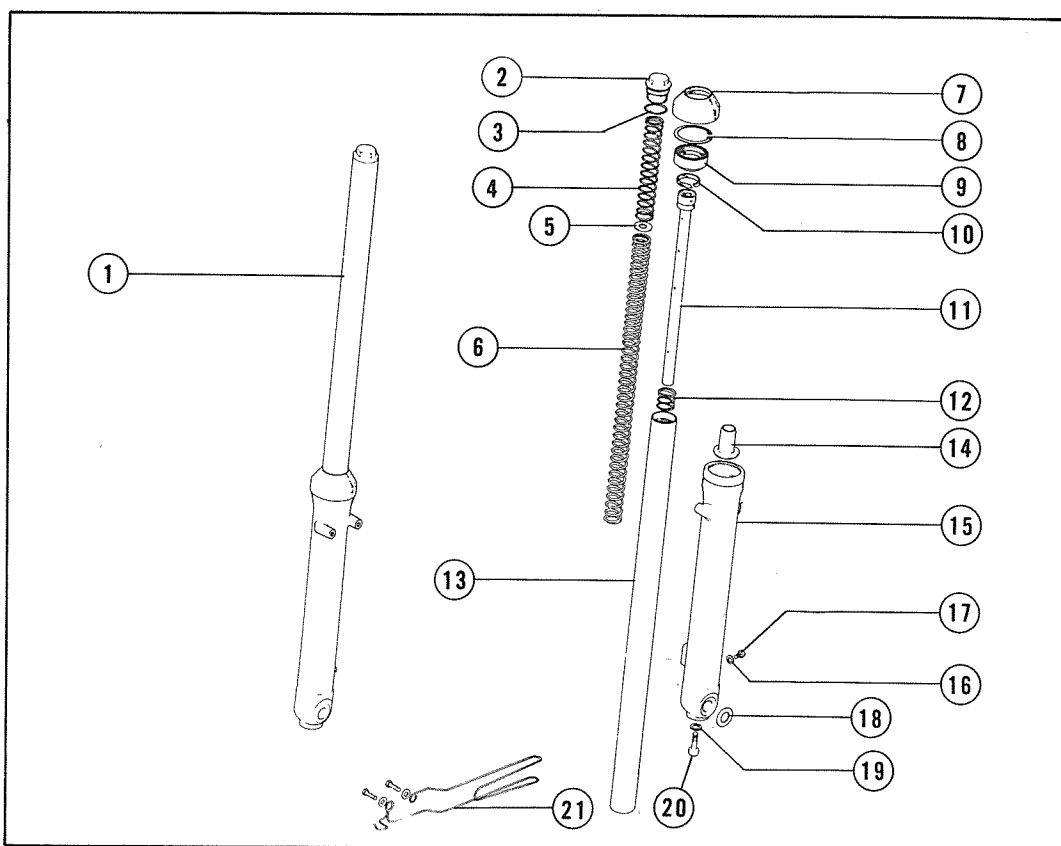
Fig. 4-27

- | |
|--------------|
| ① Front fork |
|--------------|

5. FRONT SUSPENSION

Fig. 4-28

- ① Front fork assembly
- ② Front fork bolt
- ③ O-ring
- ④ Front shock absorber spring A
- ⑤ Spring joint plate
- ⑥ Front shock absorber spring B
- ⑦ Front fork dust seal
- ⑧ Snap ring
- ⑨ Oil seal
- ⑩ Piston ring
- ⑪ Seat pipe
- ⑫ Front cushion rebound spring
- ⑬ Front fork pipe
- ⑭ Oil lock piece
- ⑮ Front fork bottom case
- ⑯ Drain bolt gasket
- ⑰ Drain bolt
- ⑱ Washer
- ⑲ Special washer
- ⑳ Socket bolt
- ㉑ Speedometer cable clamp



Disassembly

1. Remove the front wheel.
2. Loosen the 8 mm bolts at the steering stem bridge and at the fork top bridge, which secure the front fork assembly.

NOTE:

Before loosening the above bolts, make the front fork bolts loose.

3. Remove the front fork by pulling it toward down bottom.
4. Remove the drain plug to drain oil from the shock absorber.
5. Remove rust on the front fork pipe, if any, with fine emery cloth.

6. Remove the 8 mm socket bolt at the bottom of the fork bottom case using "Allen Head Wrench" (Tool No. 07917-3230000).

The front fork pipe can then be removed from the bottom case.

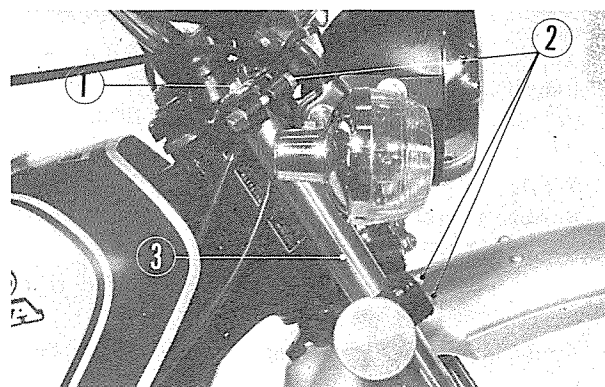


Fig. 4-29

- ① Fork bolt
- ② 8 mm bolt
- ③ Front fork

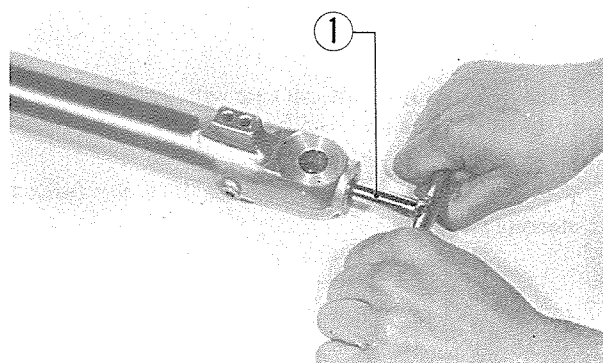


Fig. 4-30

- ① Allen head wrench

7. Remove the front fork bolt on top of the fork pipe to remove the bottom pipe and springs from the fork pipe.
8. To remove the oil seal, take off the bottom case cover and snap ring.

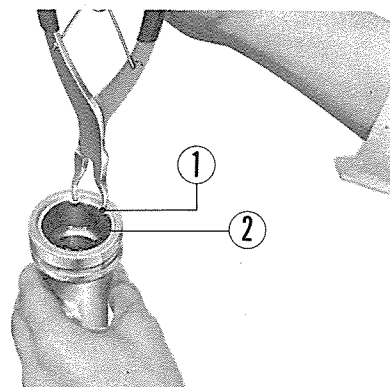


Fig. 4-31

① Snap ring ② Oil seal

Inspection

* Refer to Service Data on page 7.

1. Measure the free length of the front shock absorber spring.
2. Check the front fork piston ring for wear.
3. Check the bottom case for wear or damage.
4. Check the oil seal for scratches or any other damage.
5. Check the fork pipe sliding surface for damage.

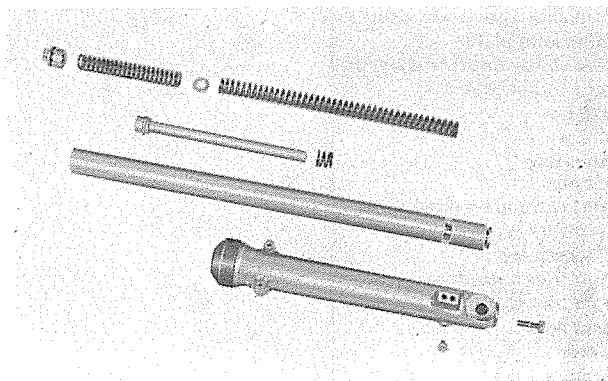


Fig. 4-32

Reassembly

1. Wash all parts in clean solvent and dry with compressed air.
2. Apply a coating of ATF (premium quality automatic transmission fluid) to around and inside the oil seal before installing it to the bottom case. Press-fit the seal using "Front Fork Seal Driver" (Tool No. 07947-3550000).

NOTE:

Be sure to install the snap ring in place. Replace the oil seal with a new one at reassembly.

3. Install the front fork pipe to the bottom case.

NOTE:

Apply locking sealant to the thread of the 8 mm socket bolt.

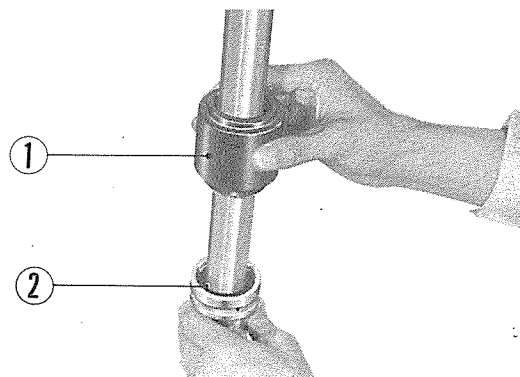


Fig. 4-33

① Fork seal driver ② Oil seal

4. Fill each front fork bottom case with good quality of ATF of 143 to 147 cc (4.9 to 5.0 ozs).

NOTE:

Fill the bottom cases before installing the forks to the steering stem.

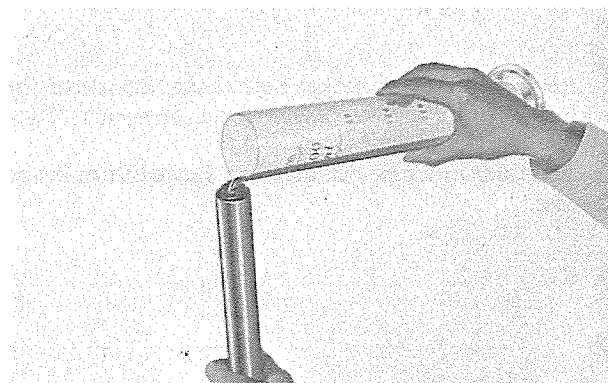
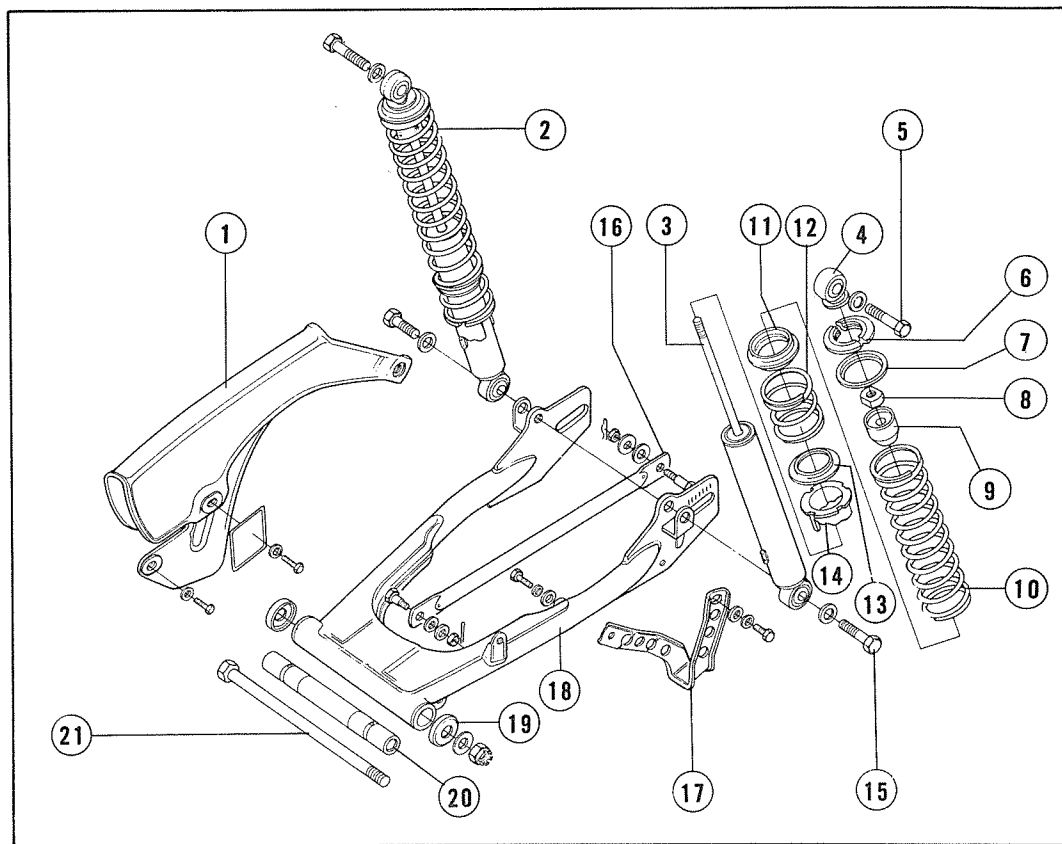


Fig. 4-34 Pouring ATF

6. REAR SUSPENSION

Fig. 4-35

- ① Drive chain case
- ② Rear shock absorber
- ③ Rear damper
- ④ Upper joint
- ⑤ Bolt
- ⑥ Spring seat stopper
- ⑦ Rear shock absorber spring seat
- ⑧ Lock nut
- ⑨ Stopper rubber
- ⑩ Rear shock absorber spring B
- ⑪ Rear shock absorber spring joint
- ⑫ Rear shock absorber spring A
- ⑬ Under spring seat
- ⑭ Spring adjuster
- ⑮ Bolt
- ⑯ Rear brake stopper arm
- ⑰ Chain guide
- ⑱ Rear fork
- ⑲ Dust seal cap
- ⑳ Rear fork center collar
- ㉑ Rear fork pivot bolt



Disassembly

Rear suspension

1. Using a suitable wrench, loosen off the bolts at top and bottom of the shock absorber. Remove the shock absorber.
2. Using tool "Rear Shock Absorber Compressor" (Tool No. 07959-3290000), compress the spring. Without disturbing the above setup, remove the spring seat stopper. Then, take out the spring seat, rear shock absorber spring, rear shock absorber spring joint, under spring seat and spring adjuster.

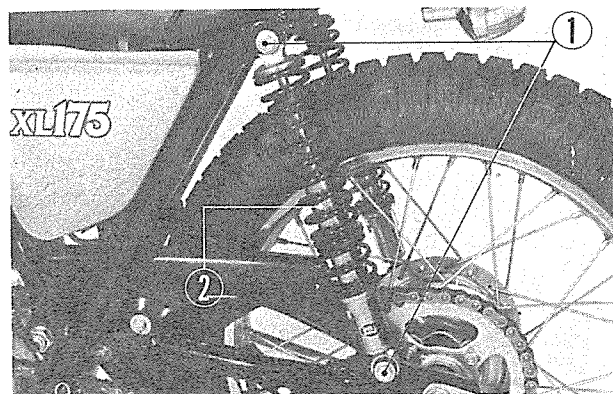


Fig. 4-36

- ① 10 mm bolt
- ② Rear shock absorber

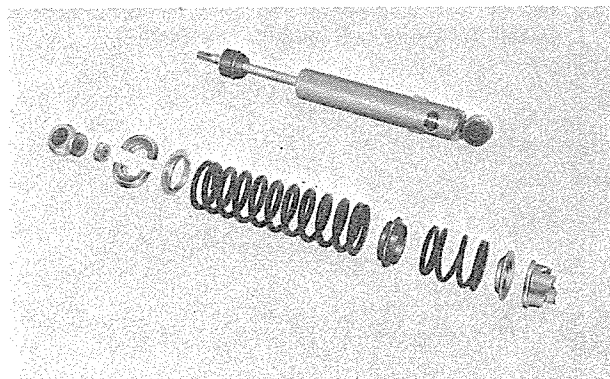


Fig. 4-37

Rear fork

1. Remove the rear wheel.
2. Take out the rear shock absorber.
3. Remove the drive chain case by unscrewing the bolts.
4. Remove the stop light switch spring.
5. Remove the self-locking nut to remove the fork pivot bolt. Pull out the pivot bolt.
6. Separate the rear fork from the frame.
7. Remove the rear brake stopper arm from the rear fork.

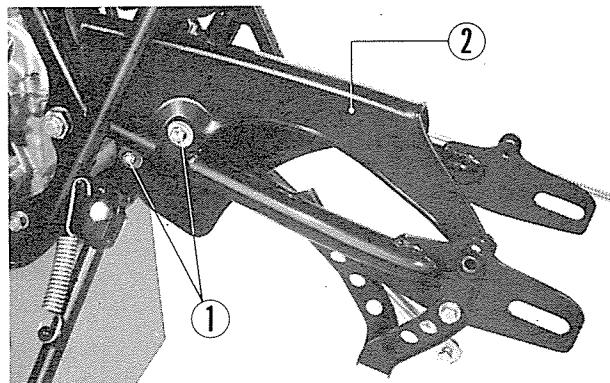


Fig. 4-38

① Bolt ② Drive chain case

Inspection

* Refer to Service Data on page 7.

1. Measure the free length of the rear shock absorber spring.
2. Check the rear dumper for distortion or sign of leaks.
3. Check the stop rubber for damage or any other defects.
4. Measure the rear fork center collar-to-bushing clearance.
5. Check the rear fork swing arm for bending along its entire length.

Reassembly

1. Apply a coating of grease to the rear fork center collar and then install the rear fork to the frame.
2. Press the rear fork pivot bolt into place in its hole from the right side; install the self-locking nut on the end and tighten to specified torque.

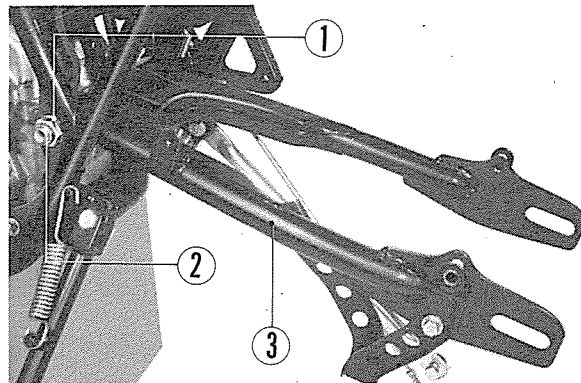


Fig. 4-39

① Self-locking nut ③ Rear fork
② Rear fork pivot bolt

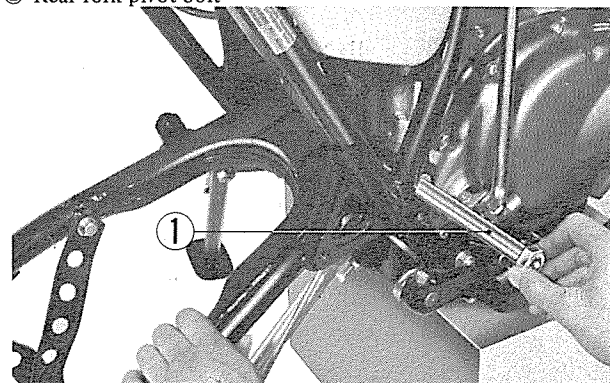


Fig. 4-40

① Rear fork pivot bolt

3. Set the spring adjuster to the rider's preference. Compress the spring with "Rear Shock Absorber Compressor" (Tool No. 07959-3290000) and pull up the upper joint to install the spring seat stopper in place.

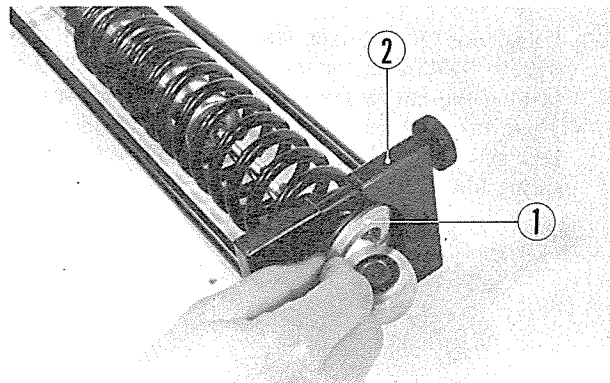


Fig. 4-41

① Spring seat stopper
② Rear shock absorber compressor

7. FRAME BODY

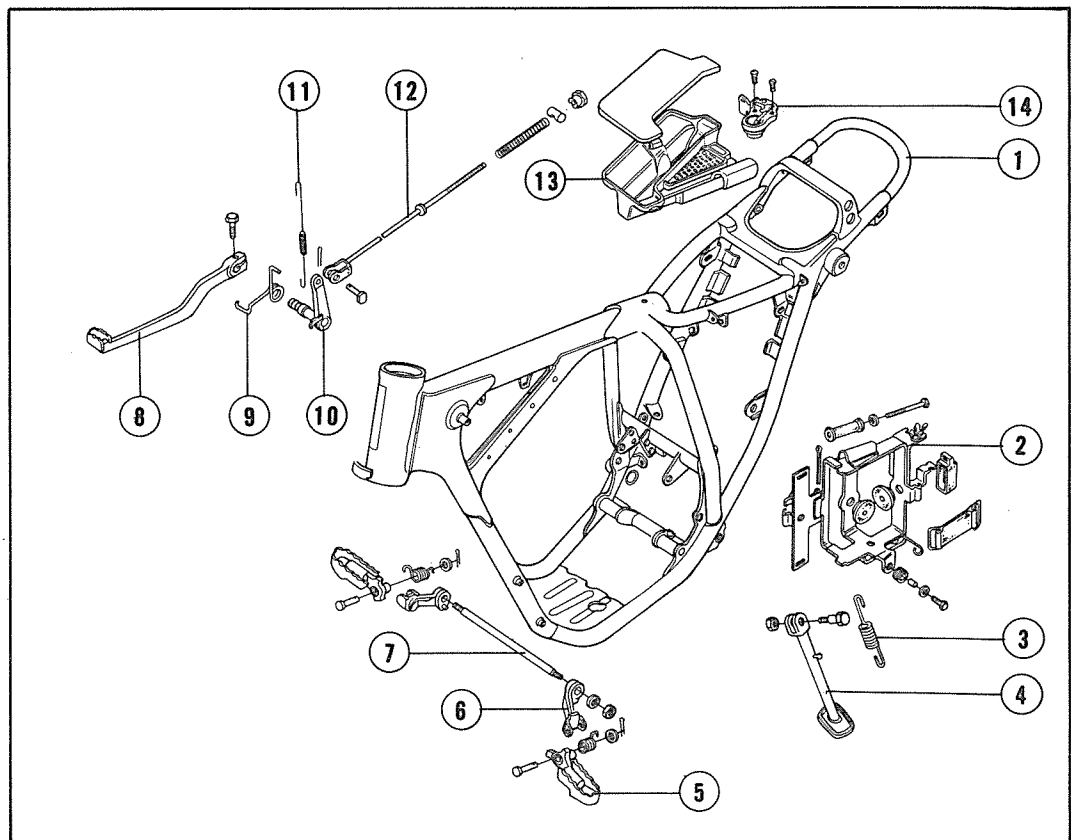


Fig. 4-42

- ① Frame body
- ② Battery box
- ③ Side stand spring
- ④ Side stand
- ⑤ Step arm
- ⑥ Step bar
- ⑦ Rear engine hanger bolt
- ⑧ Brake pedal
- ⑨ Brake pedal spring
- ⑩ Rear brake pivot shaft
- ⑪ Stop switch spring
- ⑫ Rear brake rod
- ⑬ Tool tray
- ⑭ Seat lock

Disassembly

1. Remove the seat.
2. Remove the fuel tank.
3. Dismount the engine.
4. Remove the front wheel, steering handlebar, steering stem and front fork.
5. Remove the rear wheel, rear shock absorber and rear fork.
6. Remove the lock bolt which secures the brake pedal in place; remove the brake pedal, brake pedal return spring and brake pedal shaft.
7. Remove the stop light switch.
8. Remove the left side cover, disconnect the battery cable at the connector and take out the battery.
9. Disconnect each wiring harness at the connector. Loosen off the bolts securing the battery box in place. Remove the battery box.
10. Remove the right side cover, tool box and air filter case.

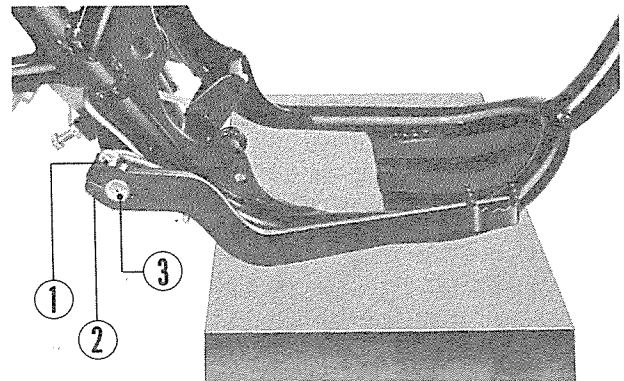


Fig. 4-43

- ① Lock bolt
- ② Brake pedal
- ③ Brake pedal shaft

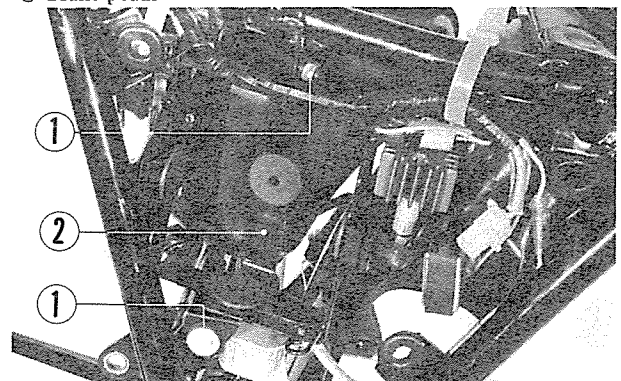


Fig. 4-44

- ① Bolt
- ② Battery box

11. Disconnect the wire leads of the rear tail light. Remove the light by unscrewing the attaching bolts.
12. Disconnect the wire leads of the right and left turn signal lights. Remove the lights after loosening off the attaching bolts.
13. Unscrew the bolts which secure the rear fender.
14. Remove the ignition coil, main switch and horn.
15. Remove the stand by unscrewing the attaching bolt and spring.
16. Disconnect the wiring harness.

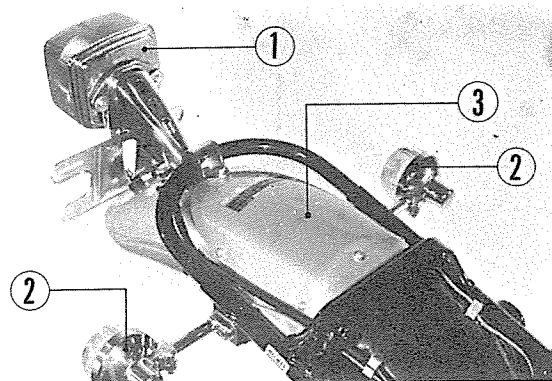


Fig. 4-45

- ① Tail light
② Turn signal light ③ Rear fender

17. Remove the top and bottom races from the steering head pipe using "Ball Race Remover" (Tool No. 07946-3290200).

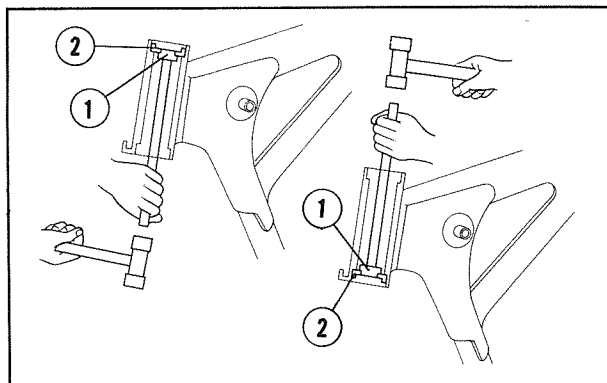


Fig. 4-46

- ① Ball race remover ② Ball race

Inspection

1. Check the entire frame body for bend, cracks, deformation or any other defects.
2. Check the steering head pipe for misalignment or deformation.
3. Check the wire harness and connector for breakage, proper connection or any other defects.
4. Check the O-ring of the fuel cock drain and strainer cup for deterioration or any other damage.
5. Check the fuel hose for deterioration or any other damage.
6. Check the fuel filler cap hole for clogging.
7. Check the fuel tank for deformation, cracks or otherwise signs of leak. Also check the interior and, if necessary, clean.

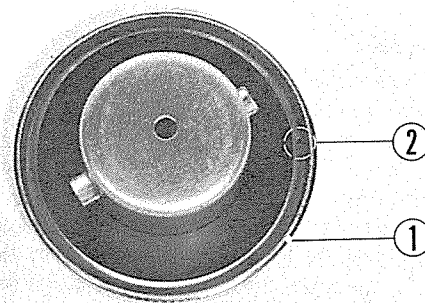


Fig. 4-47

- ① Fuel filler cap ② Fuel filler cap hole

Reassembly

1. With use of the service tool "Ball Race Driver" (Tool No. 07946-3290000), drive the top and bottom ball races into the steering head pipe.

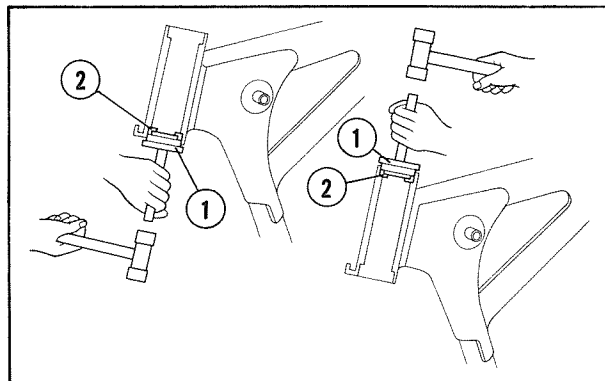


Fig. 4-48

- ① Ball race driver ② Ball race

2. Connect the wire harness. Route the wirings and secure them with clips.
3. Install the air cleaner case. Remove any dust from the case before installation.

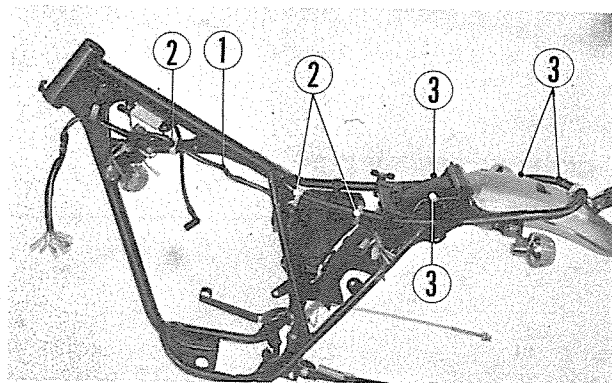


Fig. 4-49

- ① Wire harness ③ Clip
② Harness band

4. Install the battery. Be sure to route the battery overflow tube properly.

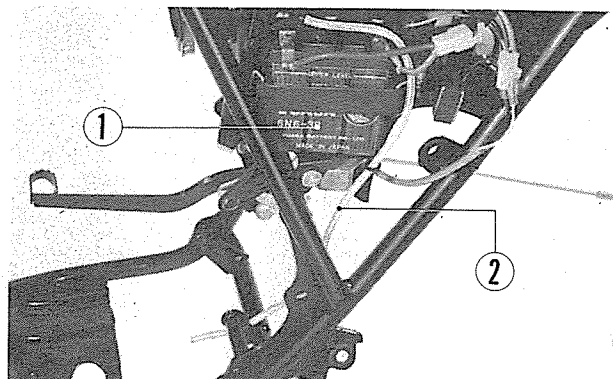


Fig. 4-50

- ① Battery ② Overflow tube

5. Install the main switch and horn as per the instruction given in Fig. 4-51.

NOTE:

Be sure to tighten the ground cable of the wire harness together with the switch and horn.

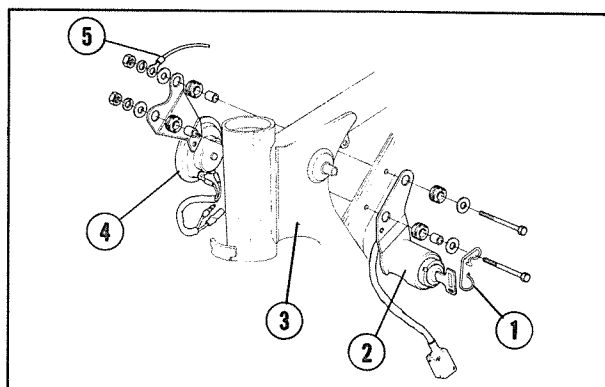


Fig. 4-51

- ① Wire clamp ④ Horn
② Main switch ⑤ Ground cable of wire harness
③ Frame

6. Install the side stand.

NOTE:

Install the side stand spring with its longer hook part upward.

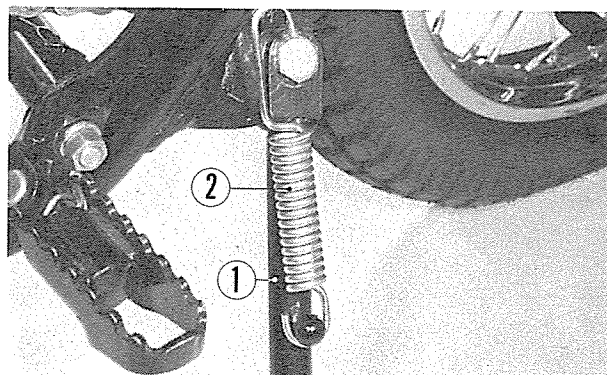
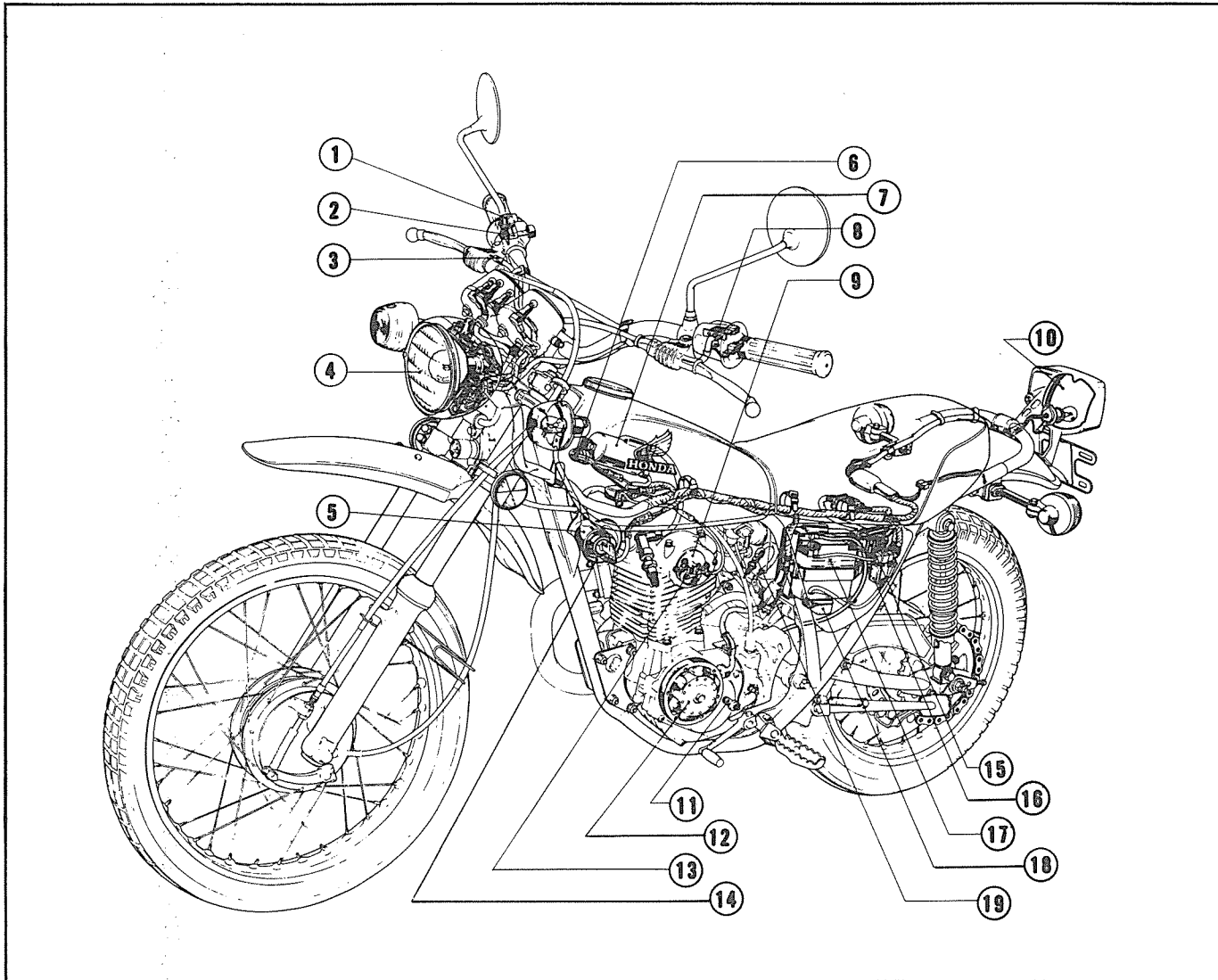


Fig. 4-52

- ① Side stand ② Side stand spring

ELECTRICALS

1. GENERAL DESCRIPTION



- ① Ignition switch
- ② Lighting switch
- ③ Front brake stop switch
- ④ Headlight
- ⑤ Main switch
- ⑥ Condenser
- ⑦ Ignition coil

- ⑧ Turn signal and horn switch
- ⑨ Contact breaker
- ⑩ Tail and stoplight
- ⑪ Neutral switch
- ⑫ A.C. generator
- ⑬ Spark advancer
- ⑭ Horn

- ⑮ Silicon diode rectifier
- ⑯ Flasher relay
- ⑰ Battery
- ⑱ Regulator
- ⑲ Rear brake stop switch

Fig. 5-1

2. IGNITION SYSTEM

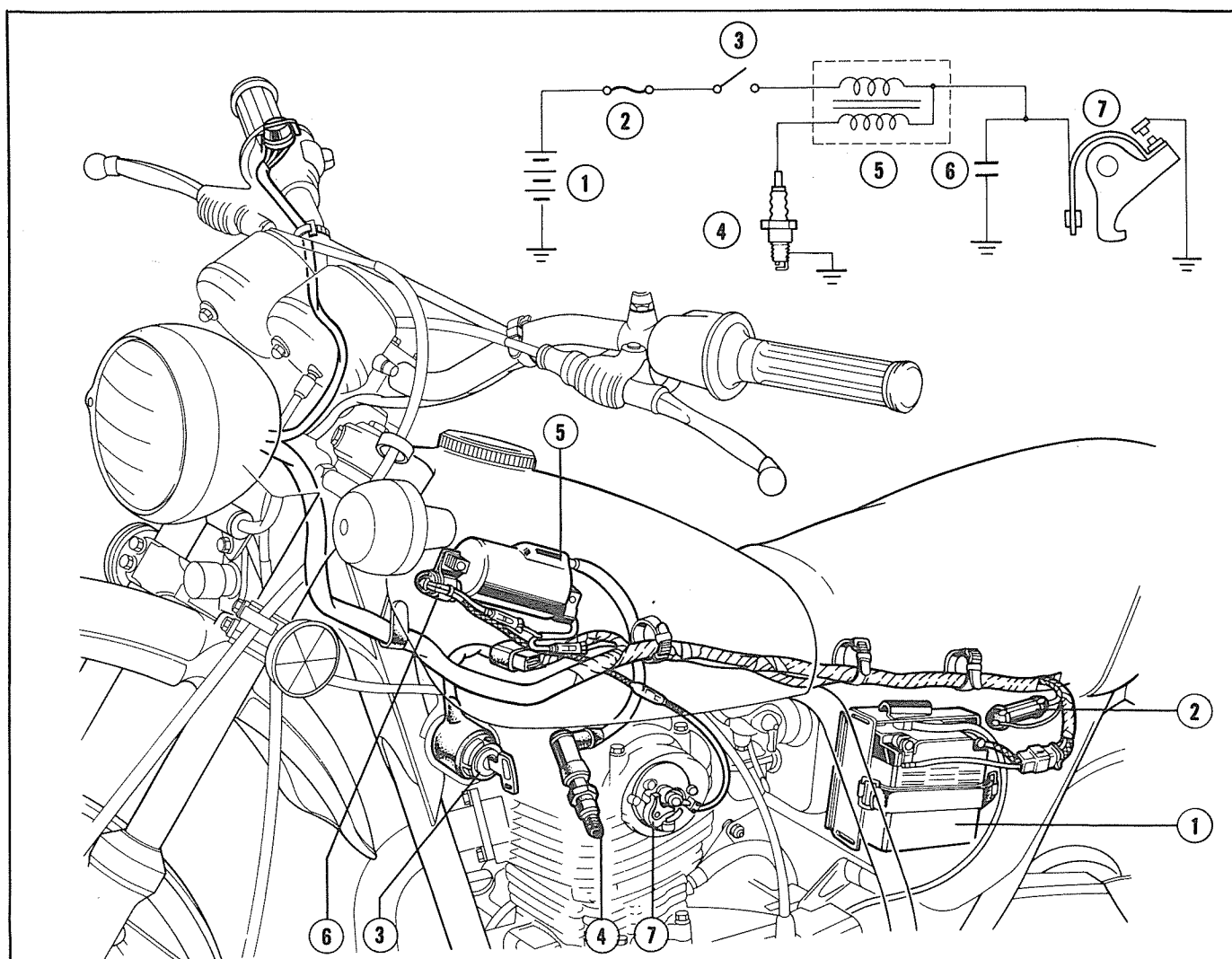


Fig. 5-2

- | | |
|---------------|-------------------|
| ① Battery | ⑤ Ignition coil |
| ② Fuse | ⑥ Condenser |
| ③ Main switch | ⑦ Contact breaker |
| ④ Spark plug | |

Ignition coil	3 point spark gap opening	7 mm (0.27 in), min.
Spark plug	Type Plug gap	B8ES (NGK), W22ES (DENSO) 0.6-0.7 mm (0.024-0.028 in.)
Contact breaker	Spring force Point gap	700-900 gr. (1.54-1.98 lbs) 0.3-0.4 mm (0.012-0.016 in.)
Condenser	Capacitance Insulation resistance	0.25 μ F 10M Ω (1,000V with a megger)
Spark advancer	Start of advance End of advance	1,950 rpm 3,800 rpm

Ignition coil

Inspection

1. Continuity test

1) Primary coil

Check for continuity between the blue lead of the ignition coil and black/white lead of the ignition coil with a radio tester.

2) Secondary coil

Check for continuity between the blue lead and high-tension lead using the same tester.

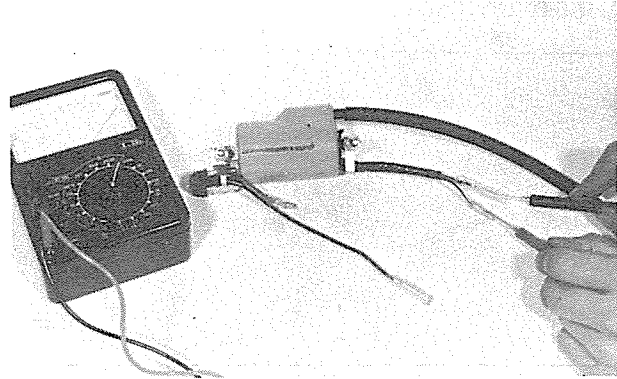


Fig. 5-3 Checking igniton coil for continuity

2. Performance test

1) Condenser

Test for reduced capacity of leak by connecting the test probes of a radio tester as shown. Discard the condenser if the insulation is leaking or its condenser is reduced.

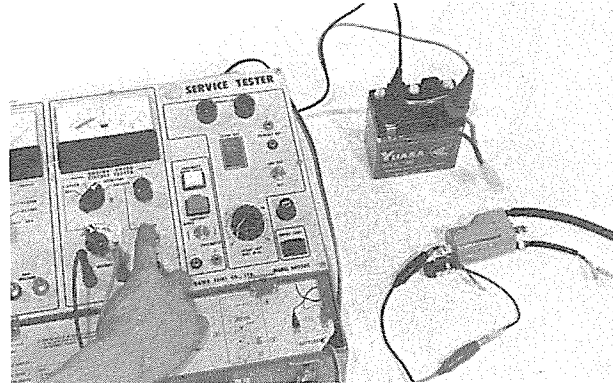


Fig. 5-4 Checking condenser

2) Ignition coil

Even though continuity is ensured, an ignition coil may provide poor performance after a long period of use. To test the coil, connect the tester power supply wire to a fully charged 6 V battery. Make other connections of the tester following the instructions furnished by the tester manufacturer. Turn the service tester selector knob to IGNITION TEST and measure the maximum distance where sparks jumps across the gap regularly.

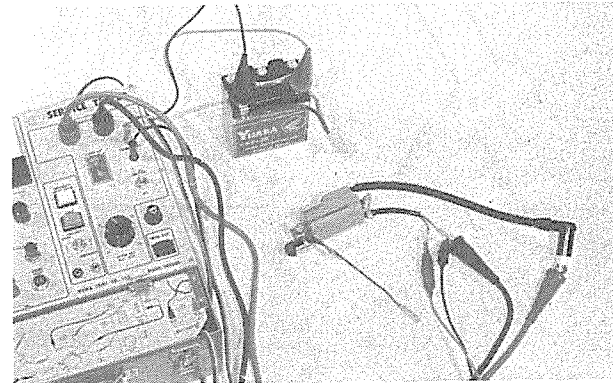


Fig. 5-5 Checking igniton coil

NOTE:

Re-connect the high tension wires in reverse if sparks appear as B in Fig. 5-6. Sketch A shows normal test condition.

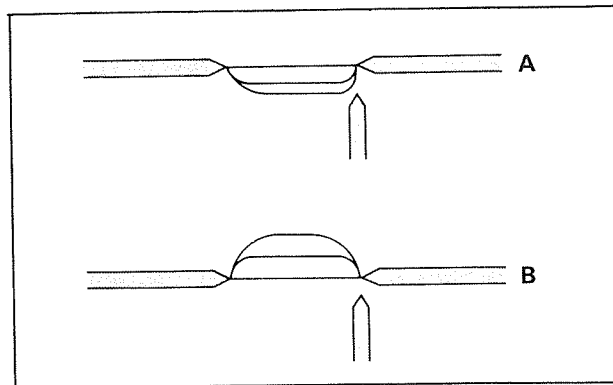


Fig. 5-6 3-point spark tester

Spark Plug

Inspection

1. Check the spark plug for worn or pitted electrodes, excessive gap or damaged insulator.

- 1) Cold fouling or carbon deposits can be cleaned in a spark plug cleaner or with a brittle brush.

- 2) After cleaning, the electrodes should be filed and the gap adjusted by bending the side electrode.

Gap specification: 0.6–0.7 mm (0.024–0.028 in.)

- 3) If the insulator or gasket is damaged or distorted, replace the spark plug with a new one.

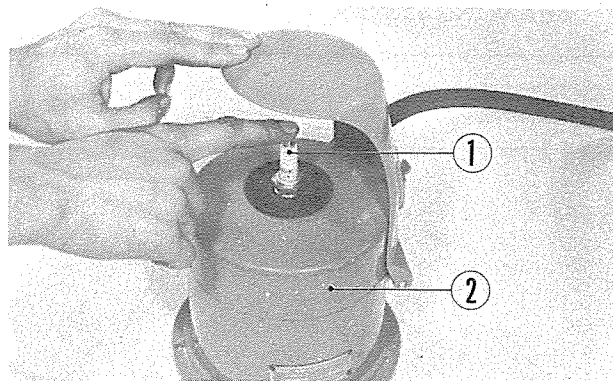


Fig. 5-7

① Spark plug

② Spark plug cleaner

Contact breaker

For adjustment procedures of the contact breaker point and ignition timing, see “INSPECTION AND ADJUSTMENT.”

Spark advancer

Inspection

1. Wipe off any foreign matter from the sliding surfaces and check for smooth operation.
2. Check the advancer pin for excessive wear.
3. Check ignition timing

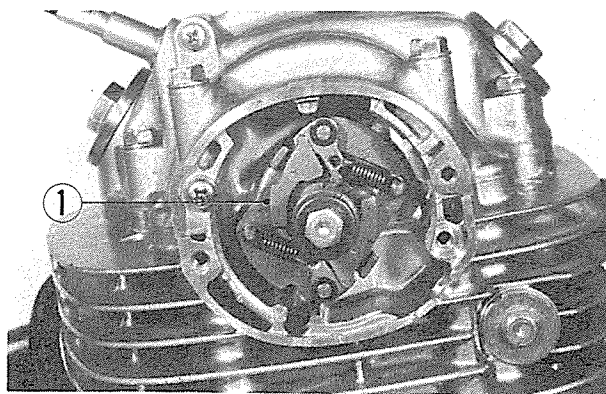


Fig. 5-8

① Spark advancer

CHARGING SYSTEM

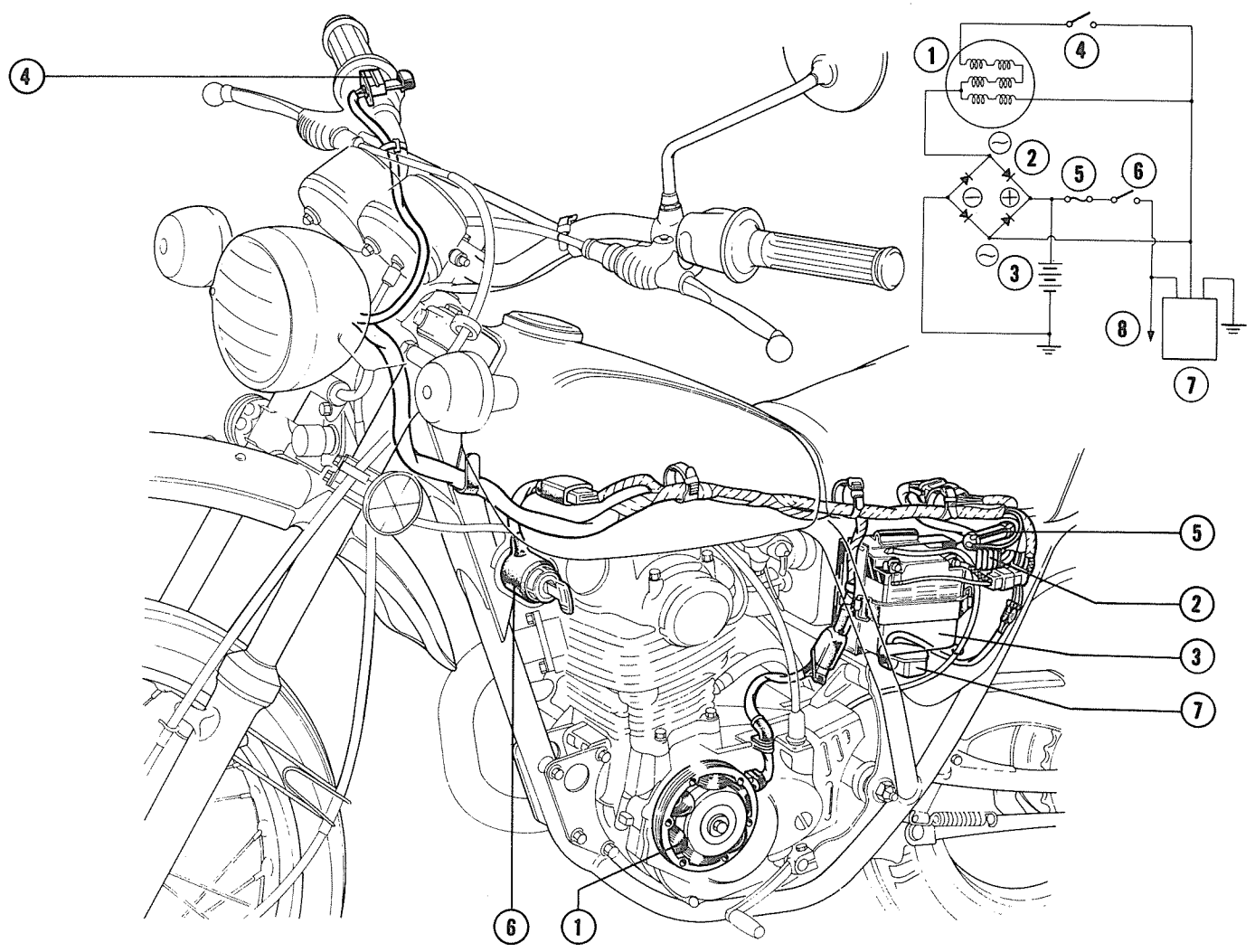


Fig. 5-9

- | | |
|---------------------|------------------------|
| ① AC generator | ⑤ Fuse |
| ② Silicon rectifier | ⑥ Main switch |
| ③ Battery | ⑦ Point-less regulator |
| ④ Lighting switch | ⑧ To load |

The charging system consists of an A-C generator, silicon diode rectifier, voltage regulator and storage battery. The A-C generator has a rotor which is directly driven by the engine crankshaft.

Silicon rectifier is used to convert the A-C current into D-C current to charge the battery. The voltage regulator limits the output voltage.

Charging test

1. Use a fully charged battery for the test. (The specific gravity of the electrolyte in each cell must be 1.260-1.280 at 20°C or 68°F)
2. Connect the negative probe of an ammeter to the positive terminal of the battery, and the positive probe to the harness.
3. Connect the probes of a voltmeter to the battery terminals in similar polarity.
4. Run the engine under the condition of NIGHT AND DAYTIME RIDING, and take the meter readings.
If the readings are out of the charging characteristics as specified on next page, check the generator, battery and rectifier for condition.

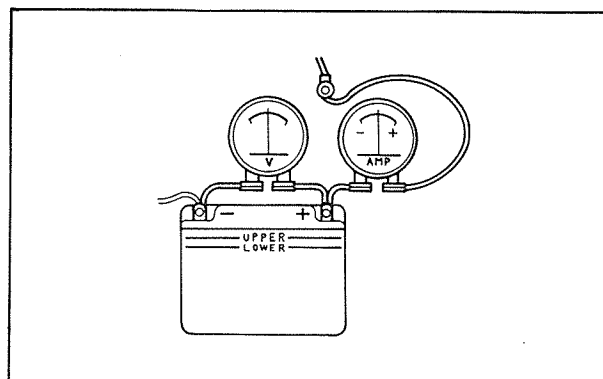
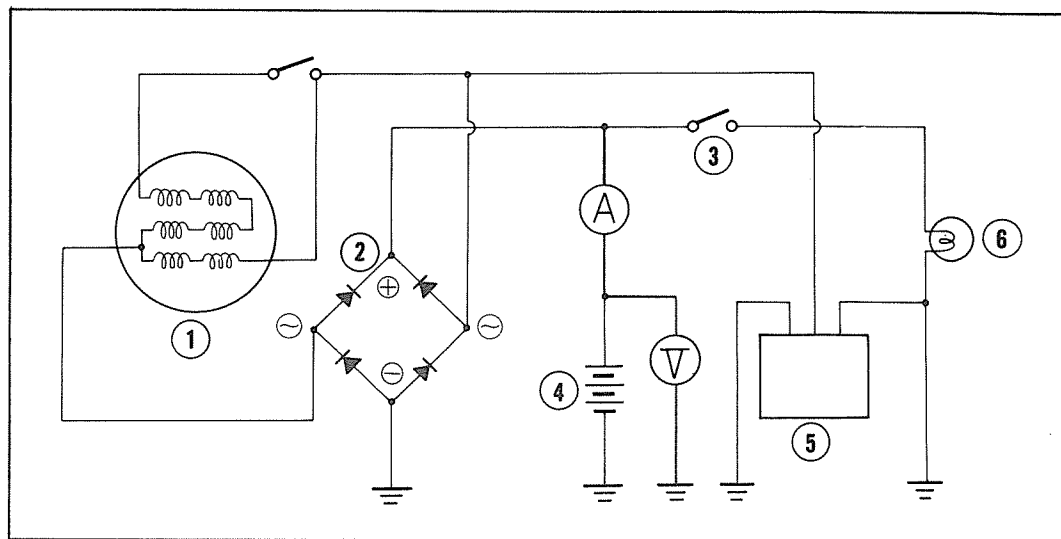


Fig. 5-10 Charging test

Fig. 5-11

Charging test circuit

- ① A-C generator
- ② Silicon diode rectifier
- ③ Lighting switch
- ④ Battery
- ⑤ Regulator
- ⑥ Load



Charging characteristics

	Load	Start of charging	5,000 rpm	10,000 rpm
Daytime riding	• Ignition coil • Battery	VB: 6.8V min. 1,000 rpm	VB: 7.8V min. 1.3A min.	VB: 8.8V max. 2.2A max.
Nighttime riding	• Ignition coil • Battery • Headlight 35W • Light 5.3W (2 ea.)	VB: 6.8V min. 3,500 rpm max.	VB: 7.2V min. 0.2A min.	VB: 8.8V max. 1.5A max.
	• Ignition coil • Battery • Headlight 25W • Light 5.3W • Light 1.5W	VB: 6.8V min. 2,200 rpm max.	VB: 7.8V min. 1.3A min.	VB: 8.8V max. 2.5A max.

A-C generator

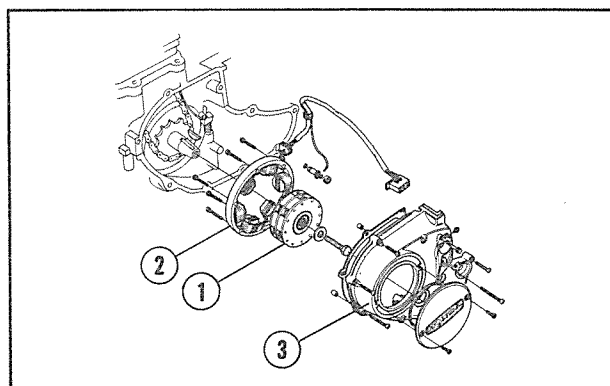


Fig. 5-12

- ① Generator rotor
- ② Stator
- ③ L. crankcase

Inspection

1. Continuity test

Test for continuity between the three leads of the stator coil (pink, white/yellow and yellow) with a radio tester. If continuity exists, it indicates that the coil is in good condition.

2. Insulation test

Check for continuity between the yellow lead and ground (stator body). If there is continuity, it is an indication of possible "shorted" stator coil or other internal problem. Visually inspect for damage or any other defects.

NOTE:

Do not place the stator on steel plate or any other conductive material.

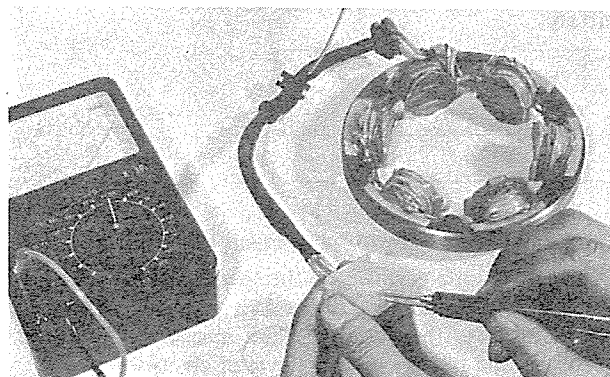


Fig. 5-13 Stator coil continuity checking

Silicon diode rectifier

Check each diode for continuity with a radio tester in high-reading range. If current flows in forward direction (from cathode to anode) only, the diode is normal. Current flow in both directions or no current is a sign of the malfunction of the diode.

To determine if the rectifier is in good condition, follow the instructions given below. Connect the negative probe of the tester to the terminal ① (green), and positive probe to the terminal ② (red/white), ③ (yellow) or ④ (pink). If the needle swings, it is an indication that the diode is normal. In like manner as above, connect the positive probe to the terminal ② (red/white), and negative probe to the terminal ①, ② or ③. The diode is correct if continuity exists. Continuity should not exist between any terminals or combinations other than those described above.

NOTE:

- 1. Do not use a megger for this test as the megger will generate high voltage to damage the diode.
- 2. Make sure of proper battery polarity when connecting. Connection in reverse polarity will shorten the battery service life or cause a high current flow throughout the electrical system, resulting in damage to the diodes or burning up the harness.

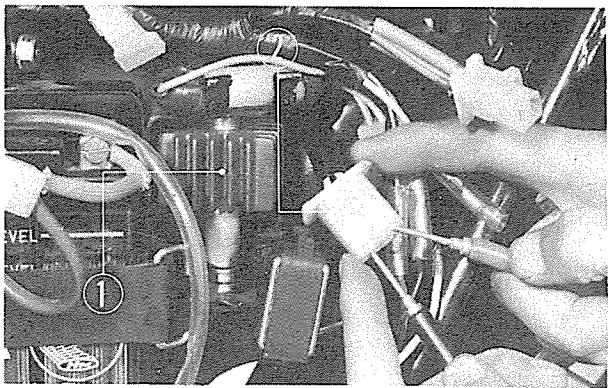


Fig. 5-14
① Silicon diode rectifier ② Coupler

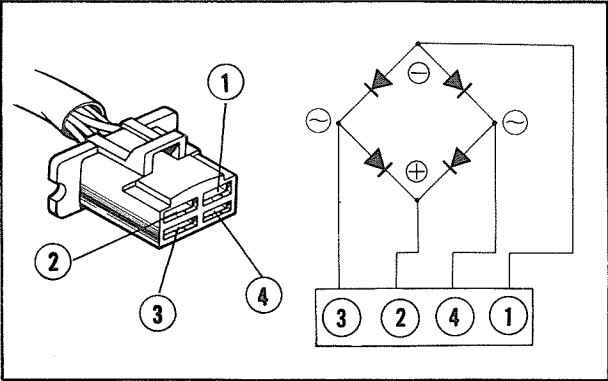


Fig. 5-15
① Green lead ③ Yellow lead
② Red and white lead ④ Pink lead

Regulator

Inspection

Connect ammeter leads and voltmeter leads as shown in Fig. 5-16, and gradually increase the charging voltage by turning the adjusting knob. Voltmeter reading should be between 7-8 V. If below the above values, chances are that there is internal problem. If the meter does not swing at all, it is a signal that there is an open-circuit, calling for replacement of the regulator.

Adjusting voltage: 7-8 V

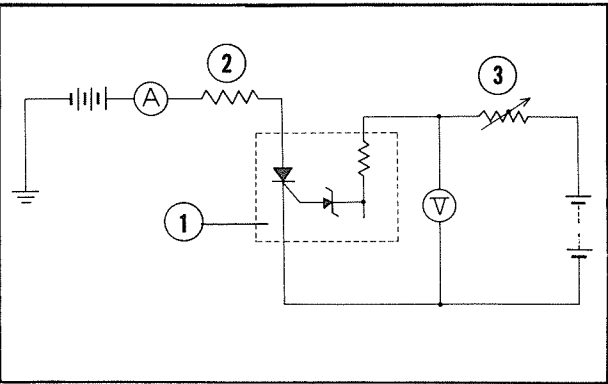


Fig. 5-16
① Regulator
② Resistance (to keep current below 3A)
③ Variable resistance

Battery

Type	6N6-3B
Voltage	6V
Capacity	6AH

Measuring specific gravity of electrolyte

Using a hydrometer, measure the specific gravity of electrolyte in each cell. When the reading taken is below 1.200 at 20°C or 68°F, recharge the battery. When measuring, hold the gauge vertically and take the highest level of electrolyte.

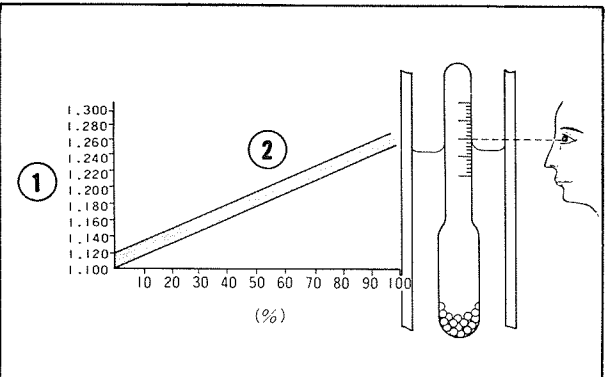
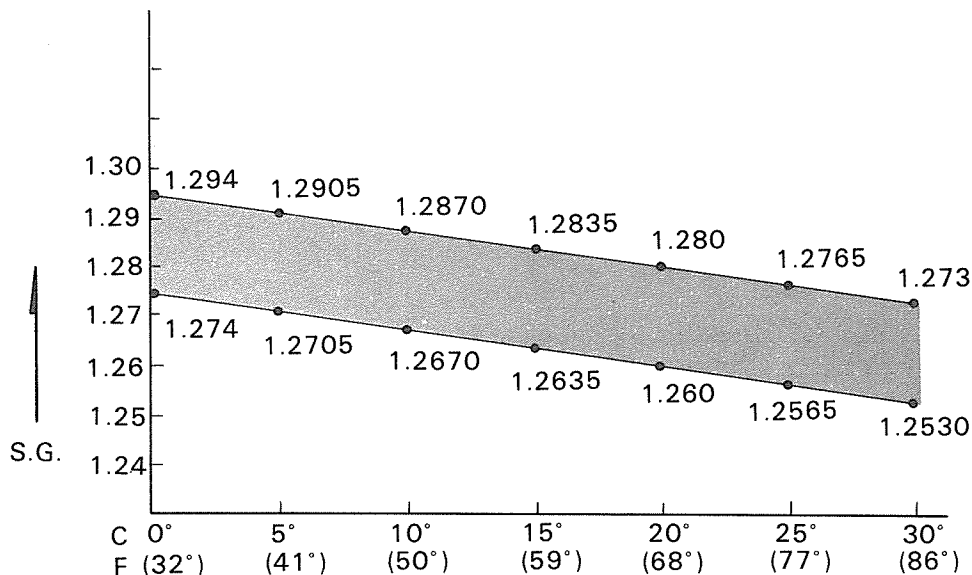


Fig. 5-17
① Specific gravity
② Relation between specific gravity and residual charge



Relationship between atmospheric temperature and specific gravity

Inspection

1. Check each battery cell for correct electrolyte level semi-monthly or monthly. If the level is low, add distilled water up to the upper level.
2. When the electrolyte decreases rapidly, check the charging system. After adding distilled water, charge the battery by operating the engine, and then check the specific gravity.
3. Check the battery terminal for corrosion. Check for separated battery plate and for sulfation. These defects are the symptoms of a run-down battery.

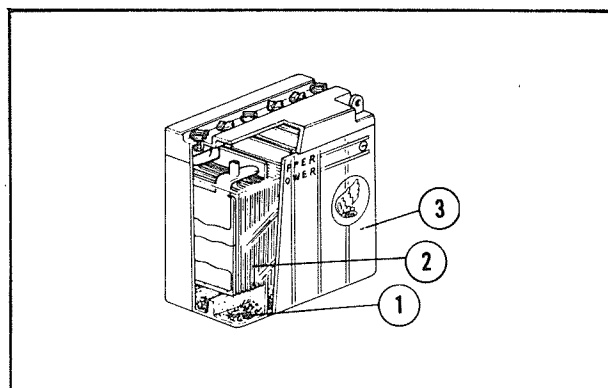


Fig. 5-18

- ① Sediment ③ Battery case
② Plate

Charging battery

1. It is advisable that the battery be charged as slowly as possible since quick charging is the sure way of shortening the battery service life. Where the battery has to be charged quickly, the charging current should be held to 2.0 A maximum.
2. Hydrogen gas is produced during charging operation. Keep away from fire.
3. After charging, flush the battery clean and grease the terminals.

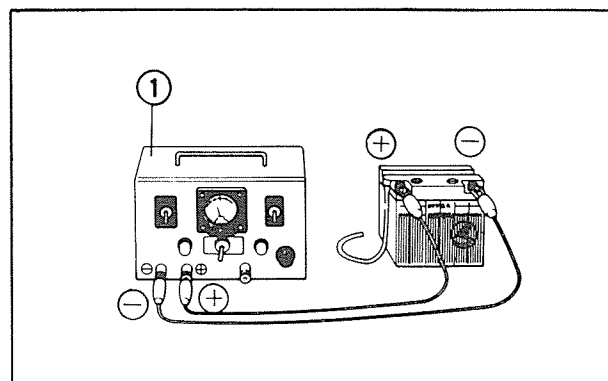


Fig. 5-19

- ① Battery charger

ELECTRICAL EQUIPMENT

Main switch

With the key in either ON or OFF, check the main switch for continuity. If there is continuity in the circuit (0–0), the switch is in good condition. If there is no continuity or if there is any continuity in other circuits shown below, the switch is at fault.

Terminal		BAT	IG	TL1	TL2
Lead color		Red	Black	Brown/ white	Brown
Key position	OFF				
	I	○	○	○	○
	II	○			○

Front stop switch

Put the tester probes on the terminals of the front stop switch leads (black, green/yellow). The stop light should come on when the brake lever is moved 10–20 mm (0.4–0.8 in.), as measured at the tip of the lever.

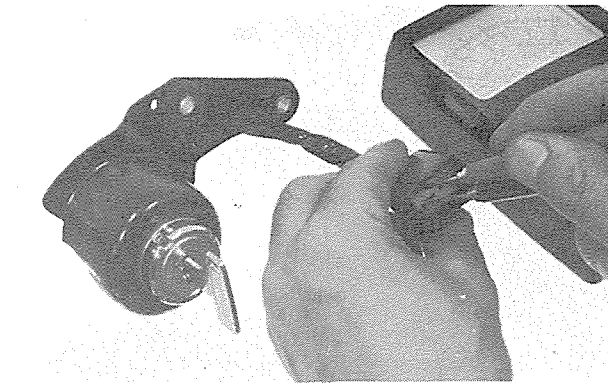


Fig. 5–20 Checking main switch

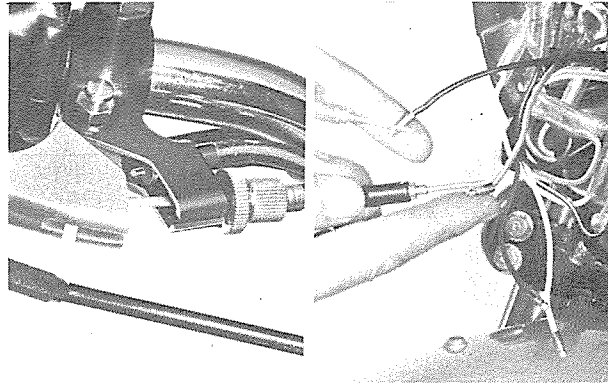


Fig. 5–21 Checking front stop switch

Rear stop switch

With the switch spring pulled to the stroke end of the switch, check for continuity between the terminals of the rear stop switch (black, green/yellow). If there is no continuity, discard the switch. Adjustment is made by turning the adjusting nut.

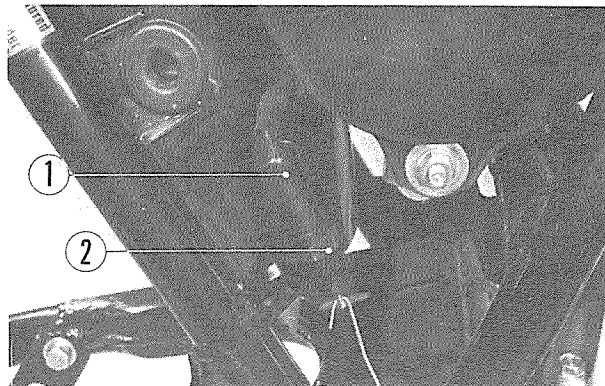


Fig. 5–22

① Rear stop switch ② Adjusting nut

Horn

Disconnect the wire leads of the horn and connect the leads to the positive and negative terminals of the battery.

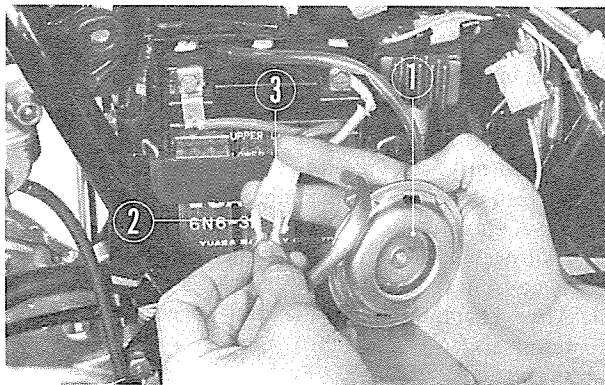


Fig. 5–23

① Horn
② Light green lead (negative)
③ Black lead (positive)

Horn button

Test for continuity between the wire lead (light green) of the horn button in the head light case and handlebar after disconnecting the lead. Continuity should exist only when the button is depressed. A roughened or pitted switch point may be corrected by grinding with an oil stone. Discard if the switch has an open- or short-circuit.

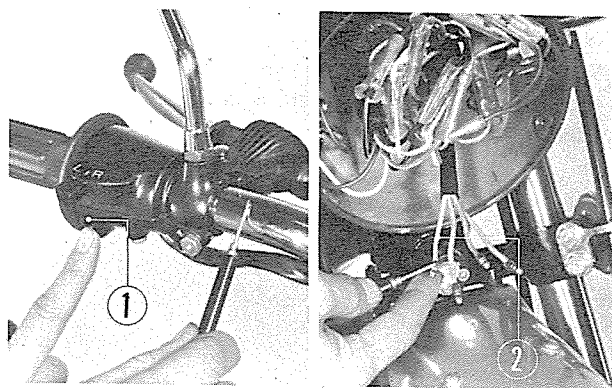


Fig. 5-24

- ① Horn button
- ② Light green lead

Turn signal control switch

Disconnect the leads of the turn signal control switch in the head light case. Check for continuity between the terminals of the gray and orange leads (left turn signal) and between those of the gray and blue leads (right turn signal). The switch is in good condition if there is continuity in these circuits (0-0).

Terminal	BAT	R	L
R		○	
OFF			
L		○	○
Lead color	Blue	Gray	Orange

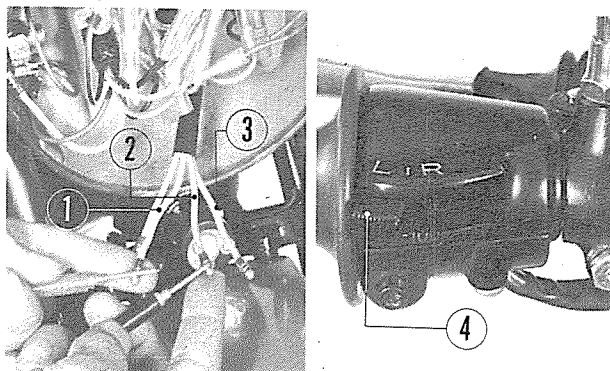


Fig. 5-25

- ① Blue lead
- ② Gray lead
- ③ Orange lead
- ④ Turn signal control switch

Headlight control switch

Disconnect the wire leads of the headlight switch lead. Check for continuity between the respective terminals of the switch lead in the head light case. The switch is in good condition if there is continuity in the circuits (0-0) with the switch selector knob set in each position. Any continuity in other circuits shown below is the symptom of malfunction of the switch.

Terminal	1G	HB	LB	TL	DY	SE
OFF						
H	○	○	○	○	○	○
(N)	○	○	○	○	○	○
L	○	○	○	○	○	○
Lead color	Black	Blue	White	Brown/white	White/yellow	Yellow

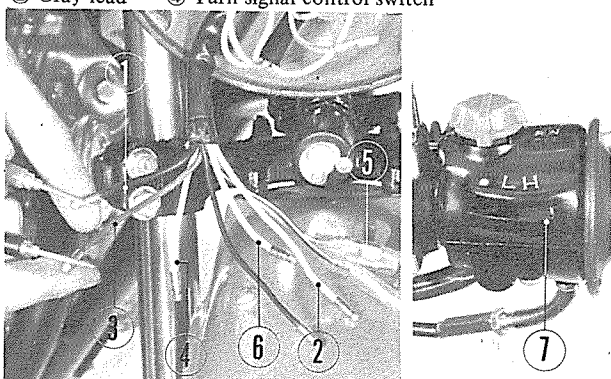


Fig. 5-26

- ① Black lead
- ② White/yellow lead
- ③ Blue lead
- ④ White lead
- ⑤ Brown/white lead
- ⑥ Yellow lead
- ⑦ Lighting switch

Ignition switch

Disconnect the wire leads of the ignition switch. Check for continuity between the respective terminals of the switch wire leads. Any continuity in other circuits shown below indicates malfunction of the switch.

Terminal	KW	KB
OFF		
RUN	○	○
OFF		
Lead color	Black/white	Black

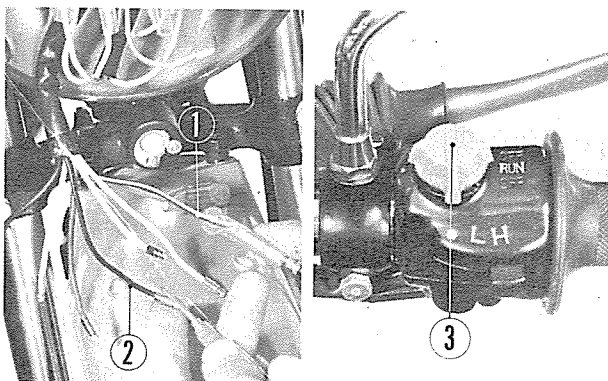


Fig. 5-27

- ① Black/white
- ② Black
- ③ Ignition switch

Neutral switch

With the transmission gears in neutral, check for continuity between the switch lead and engine. the switch is normal if there is continuity.

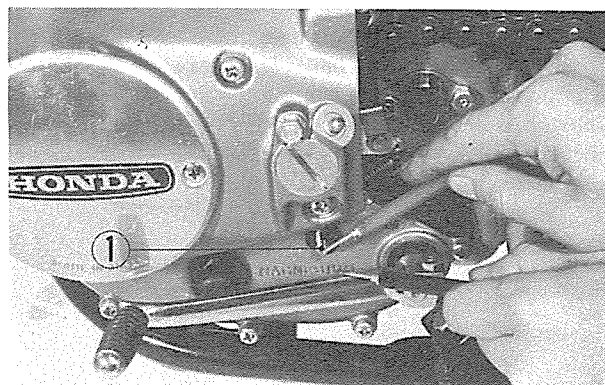
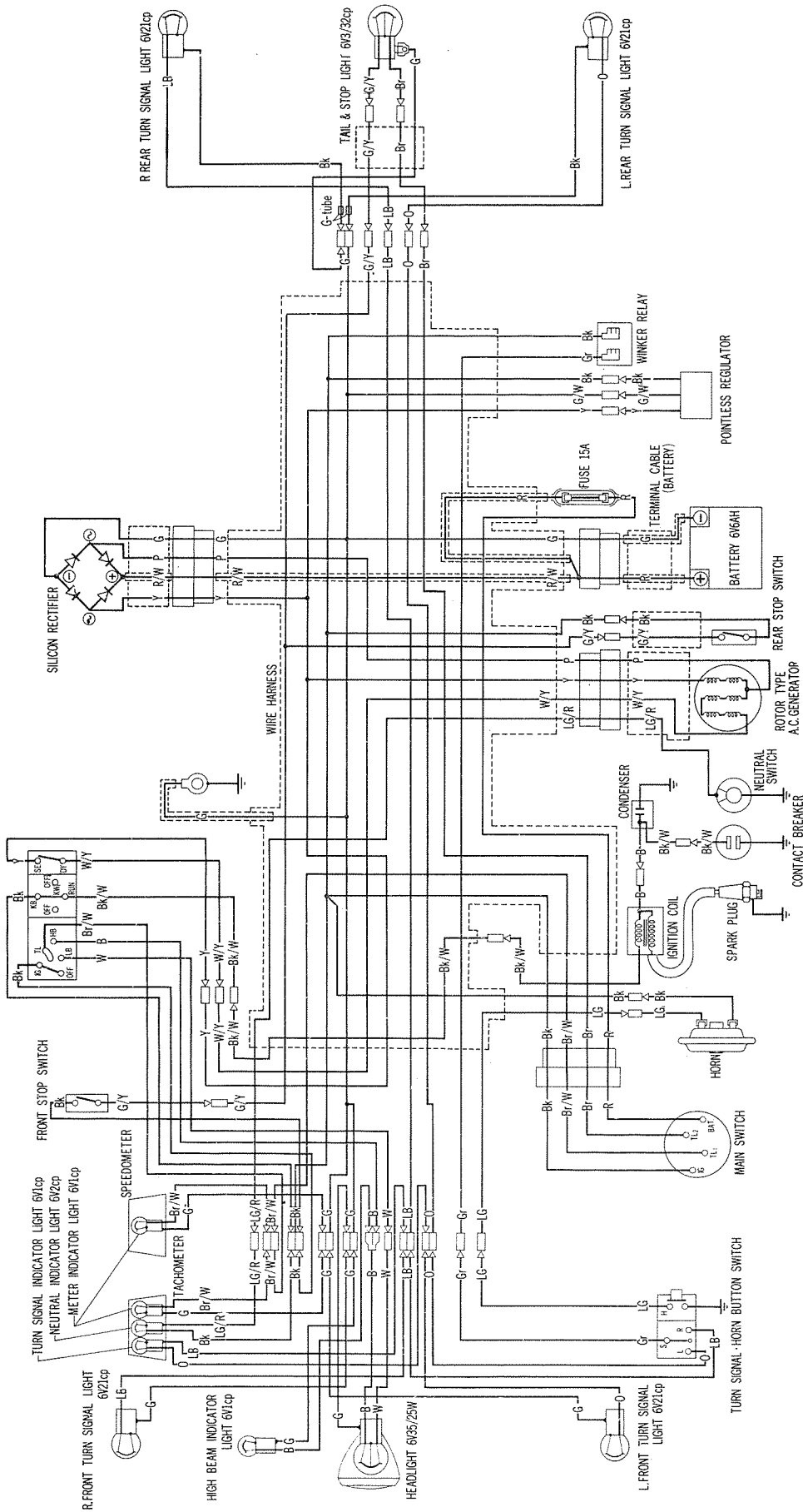


Fig. 5-28

① Neutral switch

HEADLIGHT BEAM CONTROL - EMERGENCY SWITCH



HEADLIGHT BEAM CONTROL - EMERGENCY SWITCH ARRANGEMENT									
TERMINAL POSITION	IG	HB	LB	TL	DY	SE	TERMINAL POSITION	KB	KW
OFF							OFF		
H							RUN		
(N)							OFF		
L									
WIRE COLOR	Bk	Bk	W	Br/W	W/Y	Y	WIRE COLOR	Bk	Bk

MAIN SWITCH ARRANGEMENT				
TERMINAL POSITION	BAT.	IG	TL ₁	TL ₂
OFF				
1				
2				
WIRE COLOR	R	Bk	Br/W	Br

TURN SIGNAL - HORN BUTTON SWITCH ARRANGEMENT				
TERMINAL POSITION	S	R	L	H
FREE				
PUSH				
WIRE COLOR	Gr	LB	O	LG

- Bk.....Black
- W.....White
- LG.....Light Green
- Y.....Yellow
- LB.....Light Blue
- Br.....Brown
- P.....Pink
- B.....Blue
- Gr.....Gray
- G.....Green
- R.....Red
- O.....Orange