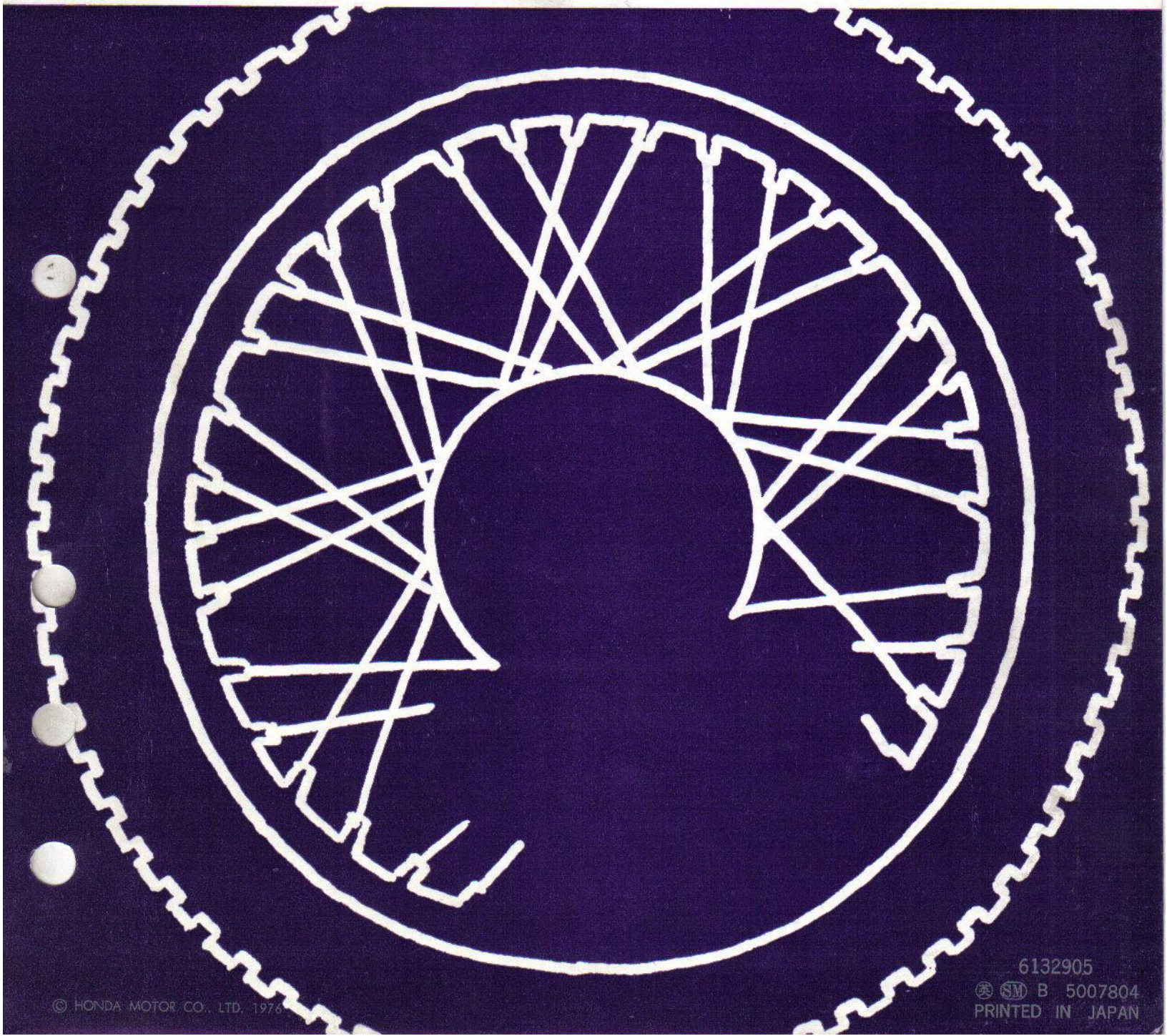
SHOP MANUAL

HONDA

XL250·350



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PREFACE

This Shop Manual is issued to provide key information necessary for disassembling, inspecting and assembling the HONDA XL250 and XL250K1. Strict adherence to the instructions given in this manual will result in the longer life of your machine.

This publication is based on the XL250 manual with additional information on the XL350.

To remove the electrical parts for MOTOCROSS riding, refer to the "MOTOCROSS RIDING" section.

Special Tools, Specifications, Torque Specifications and Service Data are listed at the end of the manual.

This shop manual is compiled on the basis of machines produced as of Novenber 1973. The following are the initial serial numbers of each model:

XL250	Frame No. 1000001~
XL250K1	Frame No. 2000001~
XL350	Frame No. 1000001~

HONDA MOTOR CO, LTD.

Service Publications Office

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION WHATEVER.

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CONTENTS

1. ENGINE 1
   1. DISASSEMBLY WORK 1
   2. REMOVAL OF ENGINE 1
   3. CYLINDER HEAD COVER AND ROCKER ARM SHAFTS 2
   4. CAMSHAFT AND CYLINDER HEAD 2
   5. CAM CHAIN AND CAM CHAIN TENSIONER 5
   6. CYLINDER AND PISTON 6
   7. LUBRICATING OIL CIRCUIT 7
   8. OIL FILTER SCREEN 8
   9. CENTRIFUGAL OIL FILTER 8
   10. OIL PUMP 9
   11. CLUTCH 9
   12. KICK STARTER 11
   13. CRANKSHAFT AND CONNECTING ROD 11
   14. TRANSMISSION 12
   15. GEAR SHIFT MECHANISM 13
   16. BREATHER 14
   17. CARBURETOR 14
   18. THROTTLE VALVE AND JET NEEDLE 15
   19. FLOAT, MAIN JET AND SLOW JET 16
2. CHASSIS 17
   1. FRONT BRAKE AND FRONT WHEEL 17
      FRONT WHEEL 17
      ADJUST FRONT BRAKE 18
      FRONT BRAKE 18
   2. REAR BRAKE AND REAR WHEEL 20
      BRAKE LINING INDICATOR 20
      REAR WHEEL 21
      ADJUST BRAKE PEDAL 22
      ADJUST DRIVE CHAIN 22
   3. STEERING SYSTEM 23
      STEERING HANDLE 23
      STEERING STEM 24
      CLUTCH LEVER ADJUSTMENT 26
      THROTTLE GRIP ADJUSTMENT 26
      ROUTING OF THROTTLE, CHOKE AND CLUTCH CABLES 26
   4. FRONT SUSPENSION 27

Date of Issue: Sept. 1, 1977
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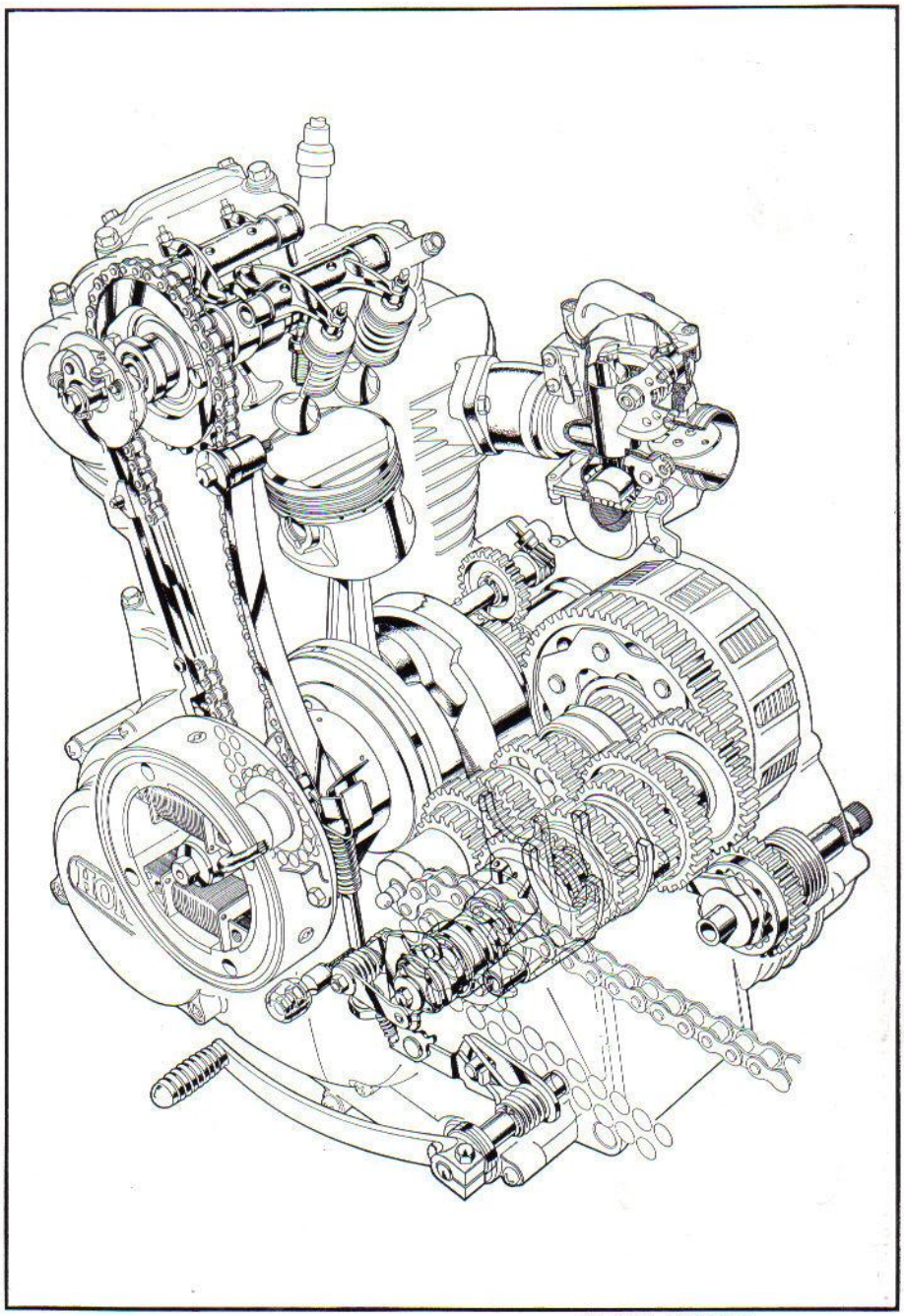
5. REAR SUSPENSION 29
REAR SHOCK ABSORBERS 29
SWING ARM 30
6. FRAME 31
AIR CLEANER ELEMENT 33
3. ELECTRICAL SYSTEM 34
1. PRECAUTIONS FOR SERVICE WORK 34
2. GENERAL DESCRIPTION 34
3. IGNITION SYSTEM 35
4. CHARGING SYSTEM 38
4. MAJOR MODIFIED POINTS OF XL 350 45
1. AIR-CUT VALVE 45
2. COMPARATIVE SPECIFICATIONS BETWEEN XL 250, XL 250 K1 and XL 350 48
3. DRIVE CHAIN SERVICING 50
5. TROUBLE SHOOTING 51
6. MOTOCROSS RIDING 56
7. SPECIAL TOOLS 59
8. MAINTENANCE SCHEDULE 60
9. SPECIFICATIONS 61
10. TORQUE SPECIFICATIONS 63
11. SERVICE DATA 64
12. WIRING DIAGRAM 67
13. SUPPLEMENT TO XL 250 K2, XL 350 K1 70
14. SUPPLEMENT TO XL 250 K3, 350 K2 '76 75
15. SUPPLEMENT TO XL 350 K3 '77 87

Date of Issue: Sept. 1, 1977
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PRECAUTIONS FOR YOUR SERVICE JOBS

Following are precautions and safe practices recommended by HONDA to complete service jobs better and safer:

1. Use genuine **HONDA or HONDA-recommended parts** and lubricants when servicing your machine.
2. Be sure to use **special tool(s)** where designed.
3. **Replace** packings, gaskets, O-rings, cotter pins, tongued washers, etc. when reassembling.
4. When torquing bolts or nuts, begin with the **larger-diameter or inner bolt** first, and tighten them to the specified torque in a **criss-cross pattern.**
5. Wash engine and transmission parts after disassembling. Coat their sliding surfaces with a **high-quality lubricant** when reassembling.
6. **Grease parts** by coating or filling where specified.
7. After reassembling, **check that** each part is securely tightened.



(XL 250, XL250K1)

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1. ENGINE

1. DISASSEMBLY WORK

(to be performed with the engine installed)

	Part	Page
1	Camshaft and cylinder head (XL 250 only)	2
2	Cylinder and piston (XL 250 only)	6
3	Cam chain tensioner	5
4	Oil filters and oil pump	8
5	Clutch and gear shift mechanism	9
6	Kick starter	11
7	Electrical parts (generator, contact point, etc.)	—

(XL 250, XL 350)

	Part	Page
1	Oil filters and oil pump	8
2	Clutch and gear shift mechanism	9
3	Kick starter	11
4	Electrical parts (generator, contact point, etc.)	—

(XL 250 K1)

2. REMOVAL OF ENGINE

Remove engine in numerical order.

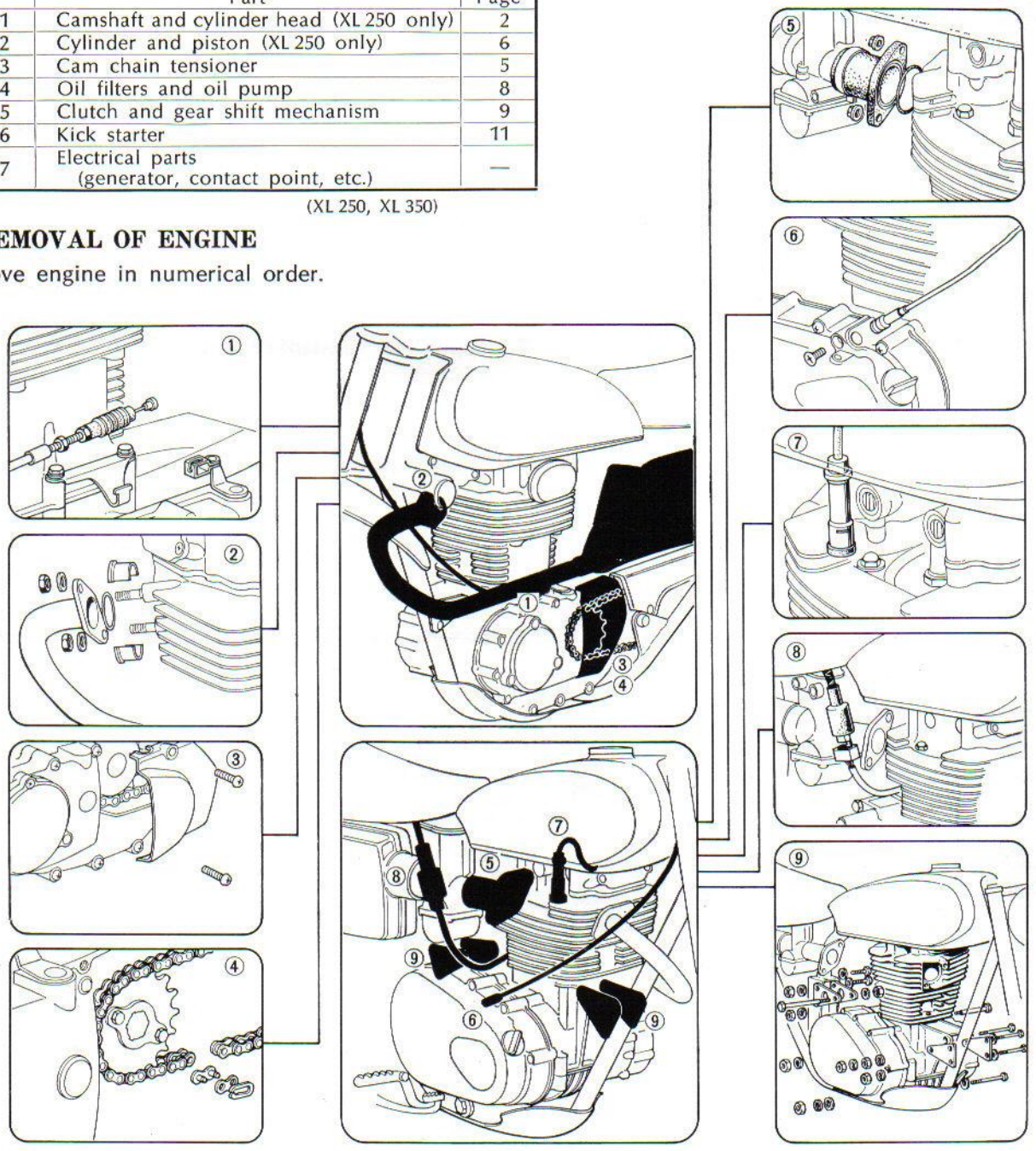


Fig. 1-1

① Clutch cable ② Exhaust pipe muffler ③ Drive sprocket cover ④ Drive chain
⑤ Carburetor insulator ⑥ Tachometer cable ⑦ Spark plug cap ⑧ Wire connector ⑨ Hanger bolt

After reinstalling the engine, the following adjustments should be made:

- Clutch lever free play
- Drive chain tension

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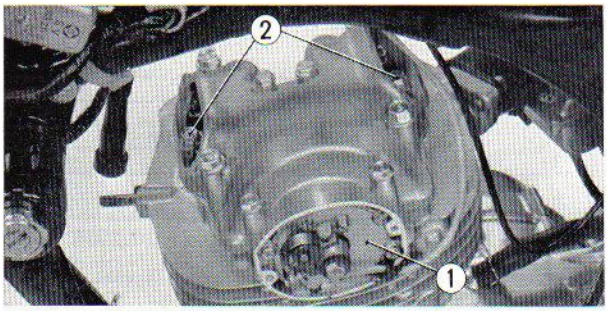


Fig. 1-2 ① Contact point base plate
② 6mm bolts

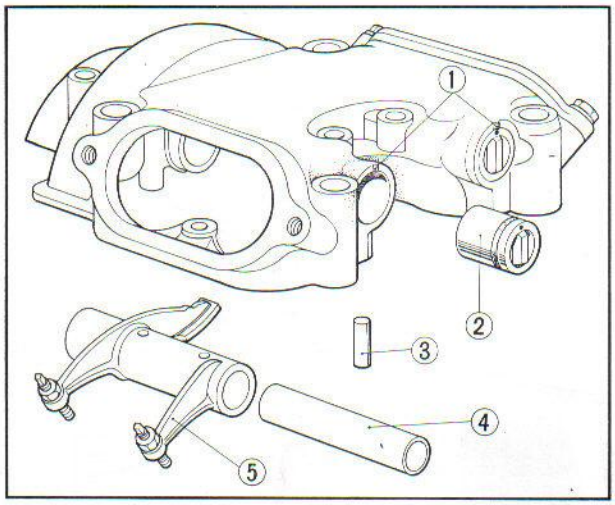


Fig. 1-3 ① Matching marks
② Rocker arm shaft plug
③ Dowel pin (two pieces)
④ Rocker arm shaft
⑤ Rocker arm

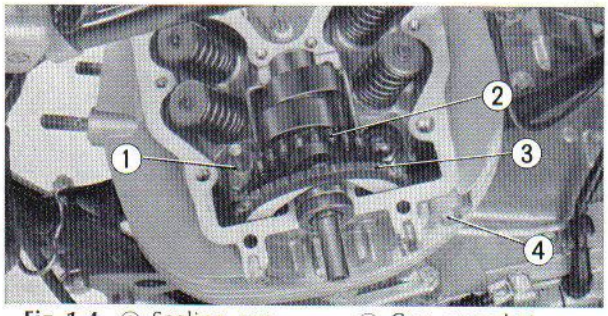


Fig. 1-4 ① Sealing cap ③ Cam sprocket
② Cam chain ④ Tensioner bolt

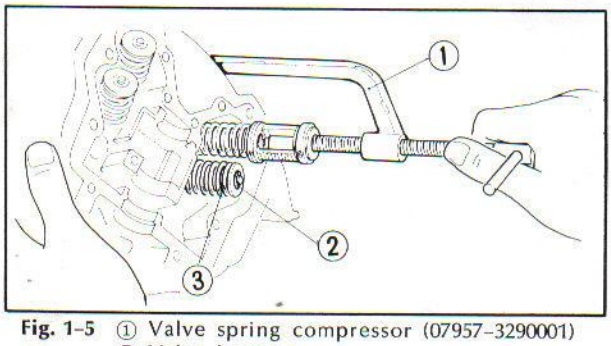


Fig. 1-5 ① Valve spring compressor (07957-3290001)
② Valve keepers
③ Valve spring

3. CYLINDER HEAD COVER AND ROCKER ARM SHAFTS

Disassembly

1. Remove contact point assembly and spark advancer.
2. Remove tappet adjusting hole covers and 6mm bolts.
3. Remove 6mm dowel pins and rocker arm shaft plugs.

Inspection

1. Inspect for excessive wear or other defects on rocker arm contact surfaces.
2. Measure rocker arm-to-shaft clearance.

Assembly

1. Align matching marks on cylinder head cover and rocker arm shaft plugs and installation of **6mm** dowel pins.
2. Apply heat resistant sealant on head cover attaching surfaces.

NOTE:
Wipe off excess sealant inside the head cover.

3. Engage spark advancer dowel pin hole and camshaft dowel pin.

4. CAMSHAFT AND CYLINDER HEAD

Disassembly

1. Remove cam sprocket attaching bolts (two) and sprocket.

NOTE:
Place a cloth around the cylinder to prevent bolts from dropping into the crankcase.
Hold the cam chain and cam sprocket with a wire to prevent them from dropping into the crankcase.

2. Remove the cam chain and camshaft.

NOTES:
- **Place removed cam chain to the right side of the cam sprocket to facilitate removal of the camshaft.**
- **Hold the cam chain with a wire to prevent from dropping into the crankcase.**

3. Remove tensioner bolt.
4. Remove cylinder head assembly.

NOTE:
Be sure to remove the 10mm nut from under the sealing cap and remove the head attaching nuts (four) from between the head fins to facilitate the removal of the cylinder head.

5. Remove cylinder head gasket.
6. Compress valve springs and remove valve keepers, valves and valve springs.

NOTE:
When compressing valve springs, use valve spring compressor (Tool No. 07957-3290001).

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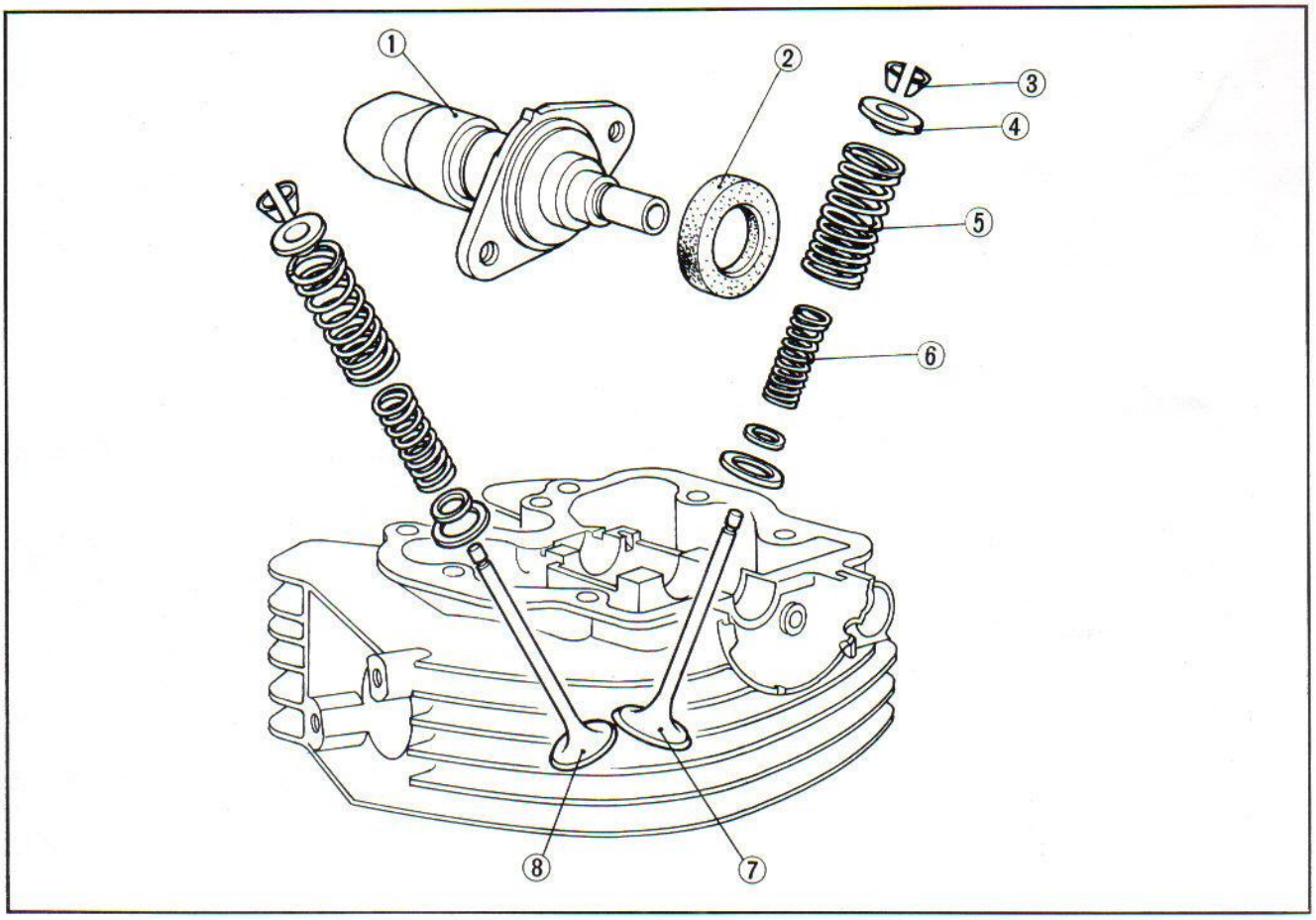


Fig. 1-6

① Camshaft ② Oil seal ③ Valve keepers ④ Valve spring retainer ⑤ Outer valve spring ⑥ Inner valve spring ⑦ Intake valve ⑧ Exhaust valve

Inspection

1. Inspection of valve seat contact.
   Apply a thin coat of prussian blue or similar paste to the valve seat. Press the valve against the seat and rotate it to the check for proper contact. If improper, lap the valve and seat and recheck. If still improper, reface the valve seat with a valve seat grinder.
   After refacing, relap the valve and seat until the proper seat contact width **0.7–1.0 mm (0.028–0.039 in.)** is obtained.

CAUTION:
Use the valve seat grinder to correct the valve seat width and contact from the following serial number:
ENo, SL 250 SE–1056788
Carefully read the instructions provided with the valve seat grinder.

2. Measure valve stem OD.
3. Measure valve-to-guide clearance.
4. Replace valve guides.
   When replacing a valve guide, be sure to use a new O-ring **10×1.6 mm.** To drive the valve guide out, use the valve guide remover (Tool No. 07942-3290100) and to install, use valve guide driver (Tool No. 07942-3290200).

NOTE:
To aid the removal of the valve guides, the cylinder head may be heated to 80–100°C (176–212°F).

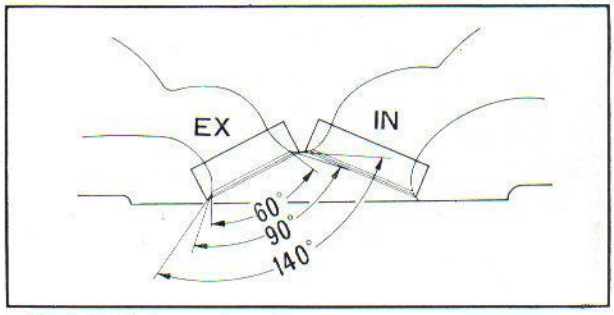


Fig. 1-7 Valve seat angle

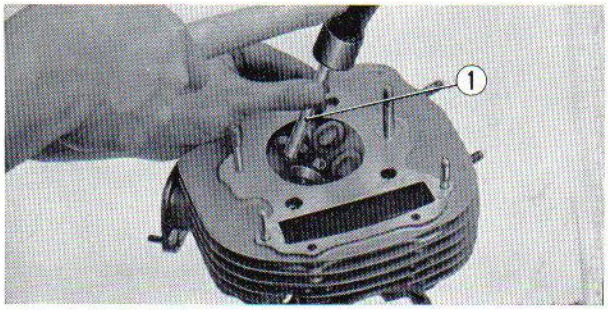


Fig. 1-8 ① Valve guide remover

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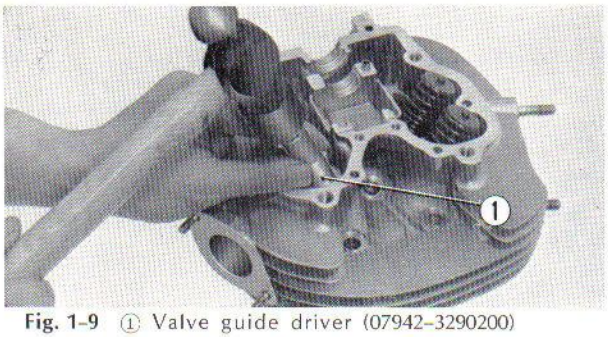


Fig. 1-9 ① Valve guide driver (07942-3290200)

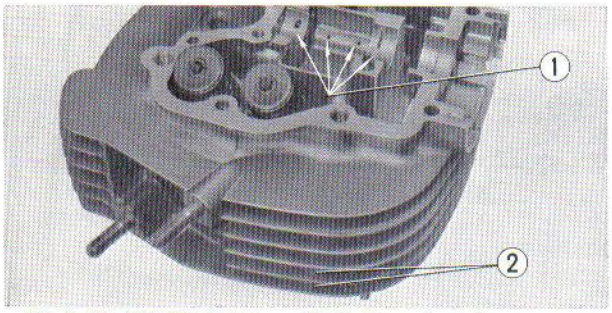


Fig. 1-10 ① Oil holes ② Rubber inserts

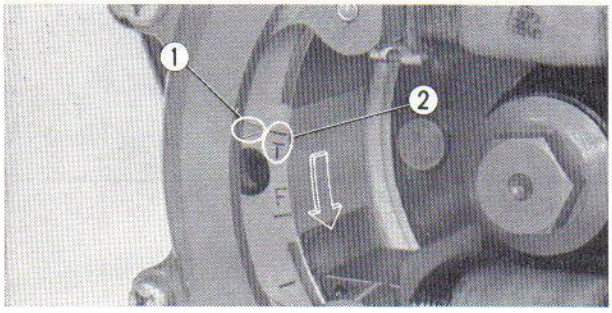


Fig. 1-11 ① Index mark ② "T" mark

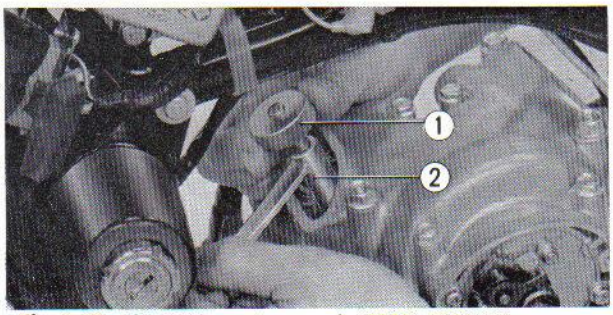


Fig. 1-12 ①, ② Tappet wrench (07908-3290000)

NOTE:
After installing a new valve guide, be sure to finish its inside surface with a reamer (Tool No. 07984-2000000).

Assembly

1. Installation of the valve springs.
   Install valve springs on valves with their smaller pitch sides facing the valve head, since the valve springs are progressively wound.
2. Installation of the cylinder head gasket.
   Install the cylinder head gasket in the right place; otherwise internal gases may leak.
3. Inspection of the oil holes.
   Make sure all oil holes (one in each camshaft bearing and two in oil sump) are not clogged.
4. Inspection of rubber inserts.
   Make sure all rubber inserts are inserted in place, since they are provided to prevent resonance.

NOTE:
Tighten the cylinder block and head bolts slowly in a criss-cross pattern. Tighten them to the specified torque.

Adjustment of Tappets

Excessive tappet clearance may cause noisy tappet operation, and insufficient clearance may cause valve damage and power loss. Tappet clearance should be properly maintained.

1. Remove the intake and exhaust tappet covers.
2. Remove the generator cover.
3. Hand-rotate the generator rotor counterclockwise while watching the movement of the intake tappets. Stop rotating the rotor when the index mark ① is aligned with the "T" mark ② with the piston at TDC (Top Dead Center) position on the compression stroke. The intake and exhaust valves should now be in the fully closed position.
4. Check the tappet clearance by inserting a feeler gauge between the valve stem and the tappet adjusting screw. If the clearance is correct, there will be a slight drag or resistance as the gauge is inserted. The standard tappet clearances are:

   Intake: **0.05 mm (0.002 in.)**
   Exhaust: **0.08 mm (0.003 in.)** (cold condition)

5. Adjust the clearance by loosening the lock nut and turning the tappet adjusting screw. Use tappet wrench set (Tool No. 07908-3290000). The tappet wrench set consists of tappet wrench A and B.

NOTE:
Make sure the adjustment has not been disturbed while tightening the lock nut.

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Alignment of Valve Timing

1. Align the "T" mark on the flywheel with matching mark on the LH (Left Hand) crankcase cover. If the flywheel has been removed, face the woodruff key upward as shown.
2. Align the matching line on the cam sprocket with the upper end face of the cylinder head with the camshaft dowel pin facing upward as shown.

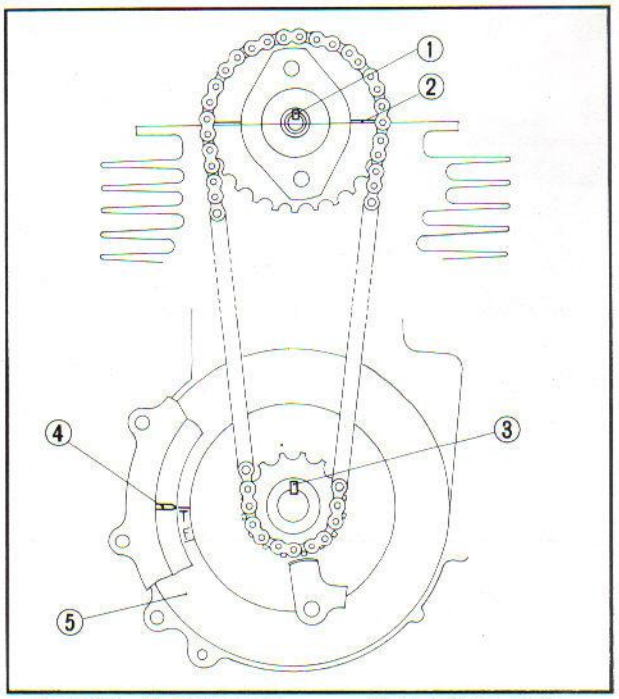


Fig. 1-13 ① Dowel pin ② Matching line ③ Woodruff key ④ Matching mark ⑤ Flywheel

5. CAM CHAIN AND CAM CHAIN TENSIONER

The cam chain slider is made up of spring steel-backed heat-resistant synthetic rubber coated with teflon to provide greater durability.

Disassembly

1. Remove the cam chain tensioner and cam chain guide.

Assembly

1. Installation of cam chain set plate.
   Install the cam chain set plate so that it does not come in contact with the cam chain.
2. Setting of tensioner set bar.
   Set the tensioner set bar while it is fully lowered.
3. Setting of cam chain tensioner.
   Set cam chain tensioner on tensioner set bar concave head.
4. Install cam chain.

NOTE:
After installing the cam chain, properly adjust the chain tension.

Adjustment of Cam Chain

Loosen the tensioner set nut with the piston at TDC position on the compression stroke. Slightly rotate the timing sprocket counterclockwise to apply a tension to the chain guide and loosen the tensioner set bolt. Proper chain tension will then be obtained. After adjusting, retighten the tensioner set bolt and nut.

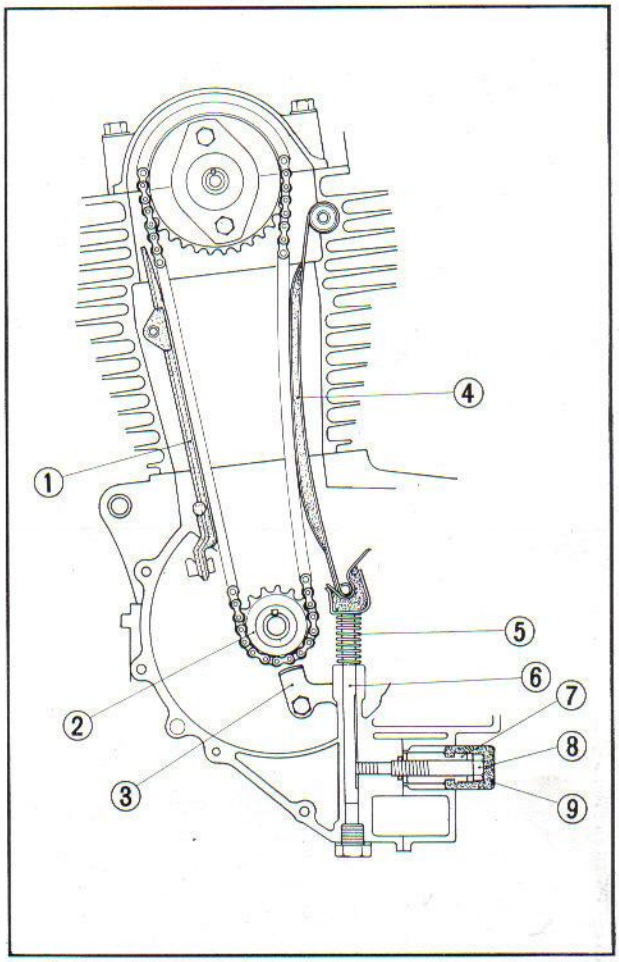


Fig. 1-14 ① Cam chain guide ② Timing sprocket ③ Cam chain set plate ④ Cam chain tensioner ⑤ Tensioner spring ⑥ Tensioner set bar ⑦ Tensioner set nut ⑧ Tensioner set bolt ⑨ Tensioner set bolt cap

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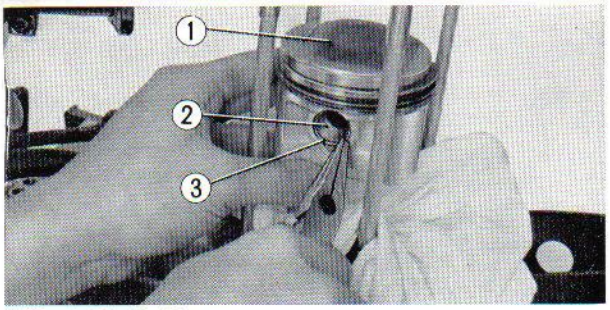


Fig. 1-15 ① Piston
② Piston pin
③ Piston pin clip

6. CYLINDER AND PISTON

Disassembly

1. Remove cylinder.

Before removing the cylinder, remove dirt and dust from around it.

2. Remove piston pin clips, piston pin and piston.

When removing piston pin clips, place a cloth under the piston to prevent the clips from dropping into the crankcase.

3. Remove piston rings.

Do not damage the piston.

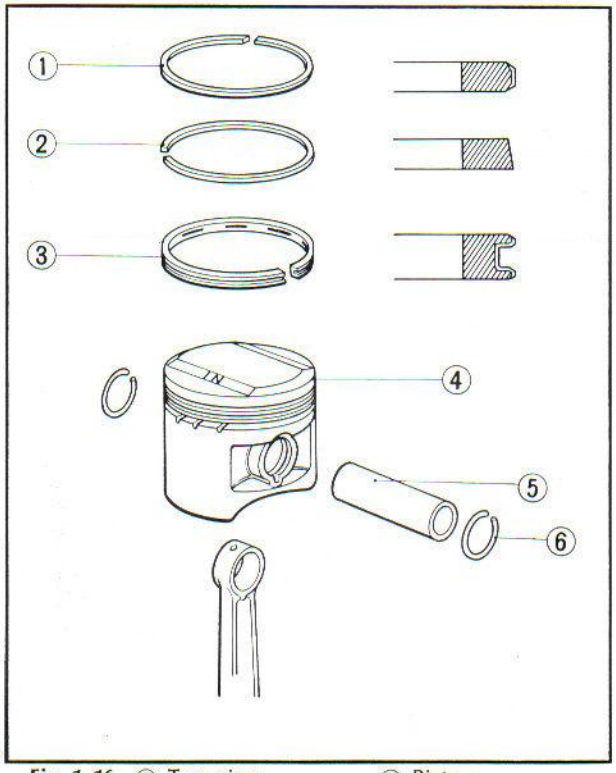


Fig. 1-16 ① Top ring
② Second ring
③ Oil ring
④ Piston
⑤ Piston pin
⑥ Piston pin clip

Inspection

1. Measure piston OD and piston pin hole dia.
2. Measure piston pin OD.
3. Measure piston ring-to-groove clearance.
4. Measure piston ring gap.
5. Measure cylinder bore diameter.

Assembly

1. Installation of piston rings.
   1) The marks on the piston rings should face upwards when the rings are installed. The product markings are :
      N·····NIHON piston ring
      R·····RIKEN piston ring
      T·····TEIKOKU piston ring

NOTE:
Be sure to use piston rings of the same product in a set.

   2) When using new rings, first install them into ring grooves and then rotate the rings or piston with either held to check for proper fit. If the rings or piston rotates smoothly without any binding, it indicates the rings fit in their grooves properly.
   3) The ring gaps should be aligned 120° apart with each other.
2. Installation of piston.
   Note the installation direction. If piston has an arrow mark on its crown, it should be installed with the mark facing the front. If mark "IN" is stamped on piston, the mark should face inlet valves.
3. Installation of cylinder.
   Apply a coat of oil to the bottom of cylinder sleeve. Press the cylinder down while pressing the piston rings in the ring grooves.

NOTE:
1. Check to be sure that the 10 rubber inserts are in place.
2. At the time of initial inspection, retighten cylinder 8mm stud bolts to a specified torque of 2-2.5kg-m (14.5-18.1 ft-lb).

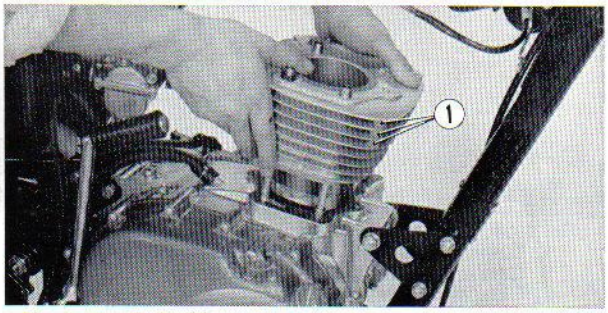
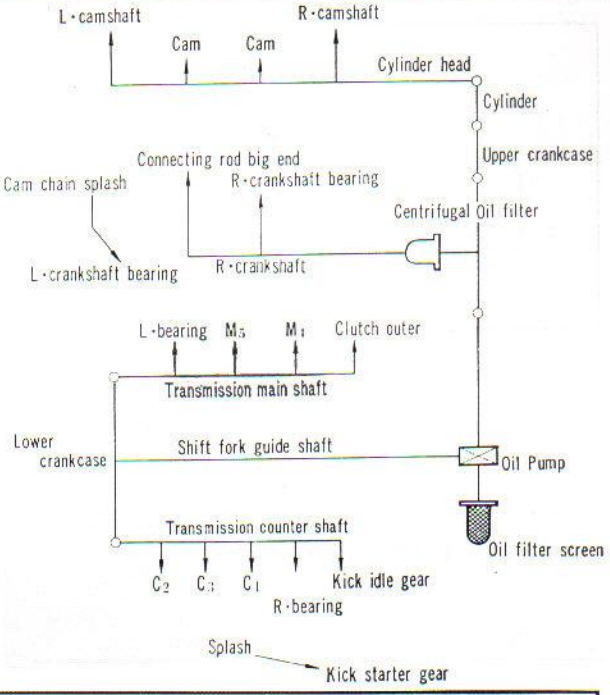


Fig. 1-17 ① Rubber inserts

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7. LUBRICATING OIL CIRCUIT

The oil circuit is schematically illustrated below. The lubricating system is a pressure-feed type using a trochoid type pump. The oil pump which is driven by the kick starter gear sucks the oil from the lower crankcase through the oil filter screen and delivers it under pressure to each component within the engine. Some amount of oil is then distributed through the centrifugal oil filter to the crankcase.



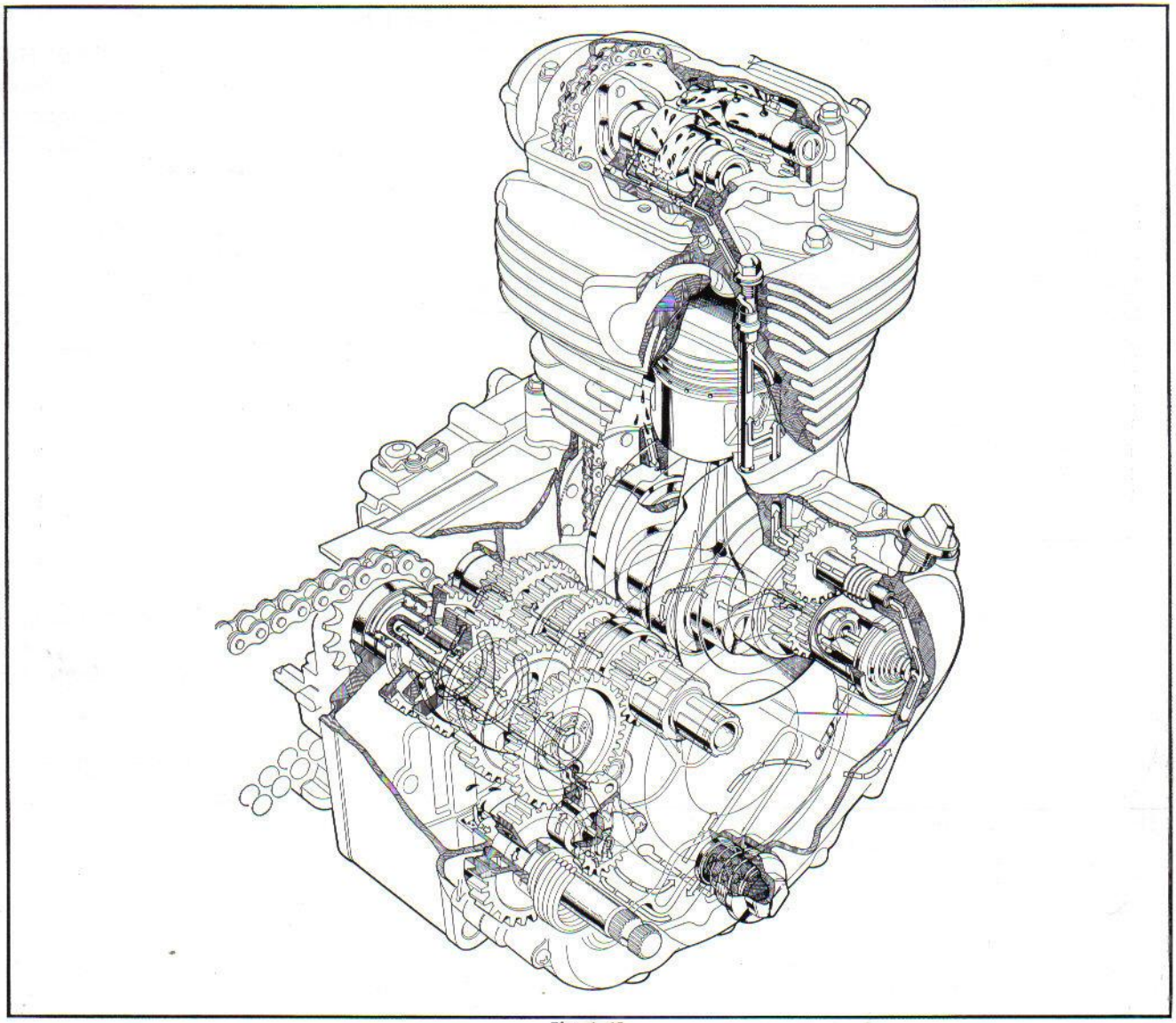


Fig. 1-18

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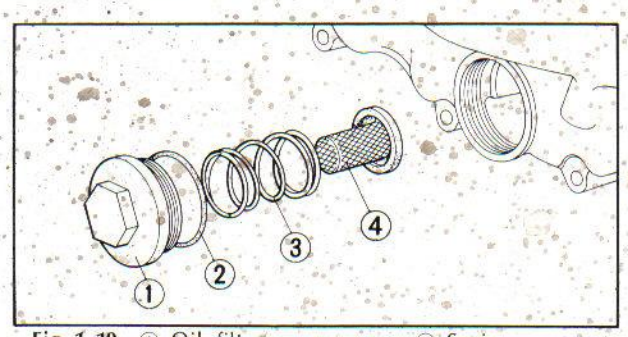


Fig. 1-19 ① Oil filter screen cap ③ Spring
② O-ring ④ Oil filter screen

8. OIL FILTER SCREEN

Disassembly

1. Removal of oil filter screen.
   To remove the oil filter screen without draining the engine oil, tilt the machine to the left more than 20°. If the machine is placed on the side stand during this operation the oil will drain out.

Inspection

1. Inspection of oil filter screen.
   If necessary, wash oil filter screen or replace a damaged oil filter screen.

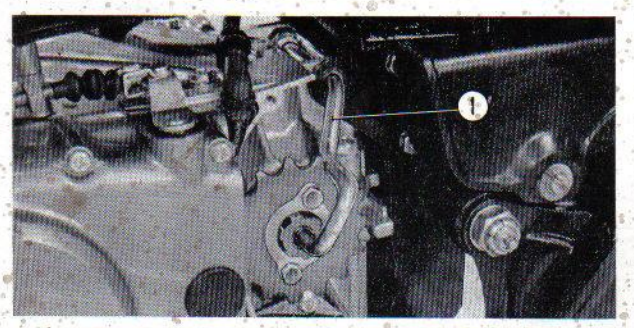


Fig. 1-20 ① Drive sprocket holder (07922-3290000)

9. CENTRIFUGAL OIL FILTER

Disassembly

1. Drain the engine oil and remove of RH crankcase cover.
2. Remove **45mm** circlip and oil filter cap.
3. Remove the oil filter rotor.
   Straighten the locking lug of the lock washer. Hold the drive sprocket with the drive sprocket holder (Tool No. 07922-3290000) and remove the lock nut with a box wrench (Tool No. 07916-2830000). The oil filter rotor can then be removed.

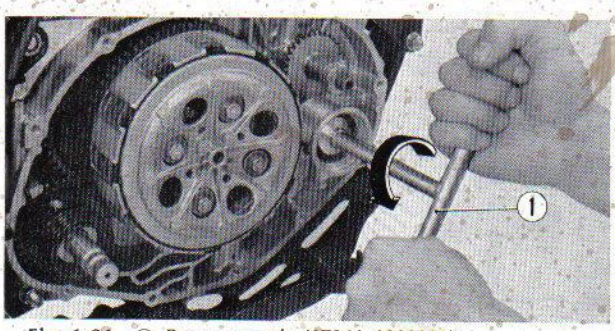


Fig. 1-21 ① Box wrench (07916-2830000)

Inspection

1. Inspection of the filter rotor.
   Remove any foreign substances from the inside of the rotor.

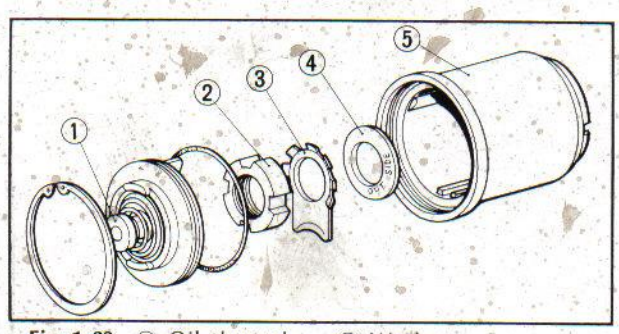


Fig. 1-22 ① Oil through ④ Washer
② Lock nut ⑤ Oil filter rotor
③ Lock washer

Assembly

1. Installation of washer.
   The mark "OUTSIDE" should face to the outside.
2. Installation of lock nut.
   The side which is roughly chamfered should face the bottom side of the rotor.
3. Installation of oil through.
   After installing, make sure oil through moves smoothly without any binding.

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10. OIL PUMP

Disassembly

1. Remove RH crankcase cover, kick starter spindle and clutch outer.
2. Remove the two **6 mm** bolts and oil pump assembly.
3. Remove the two **6 mm** screws and disassembly of the oil pump.

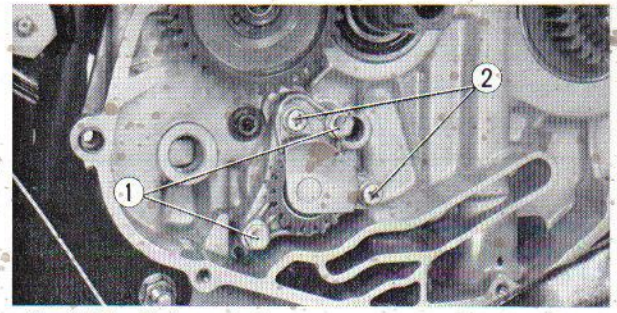


Fig. 1-23 ① 6mm bolts
② 6mm screws

Inspection

1. Measure inner rotor and outer rotor-to-pump body side clearances.
   Standard valve: 0.15~0.21 mm (0.006~0.008 in.)
   Service limit: 0.3 mm (0.012 in.)
2. Measure inner rotor-to-outer rotor clearance.
   Service limit: 0.15 mm (0.006 in.)

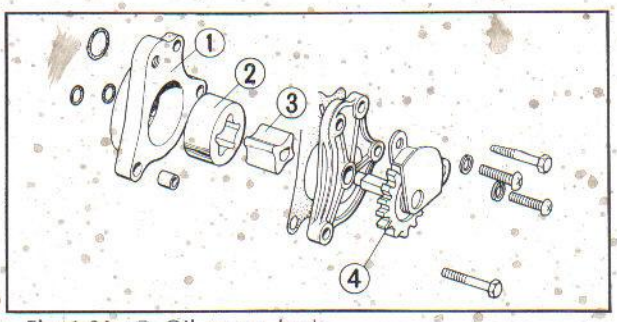


Fig. 1-24 ① Oil pump body
② Outer rotor
③ Inner rotor
④ Oil pump drive gear

Assembly

1. Be sure to install the O-rings and packing.

Checking the Oil Flow

Remove the **10 mm** cap nut from the cylinder head cover. If oil comes out within approximately 12 seconds after the engine is started (at about 1000 rpm and oil temperature of 20°C or 68°F), it indicates that the oil pressure is normal. If not, it indicates a defective oil pump, clogging of oil lines or oil leakage. Check and repair if necessary.
In cold weather, the oil flow may be slower due to higher oil viscosity.

NOTE:
After inspecting, tighten the cap nut to a specified torque of 3.0-3.6 kg-m (21.7-26.0 ft-lb).

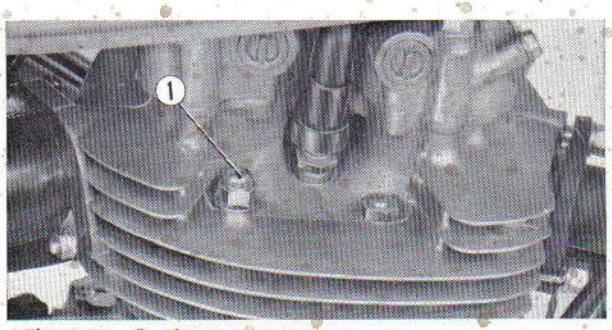


Fig. 1-25 ① 10mm cap nut

11. CLUTCH

Disassembly

1. Drain engine oil.
2. Remove the tachometer cable, kick starter pedal, RH foot peg and RH crankcase cover.
3. Remove the four **6 mm** bolts and friction disks.
4. Remove the centrifugal oil filter and clutch outer.

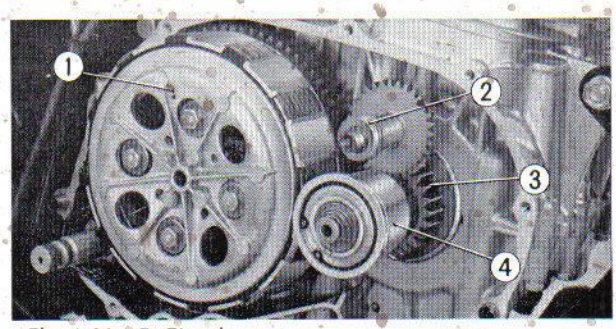


Fig. 1-26 ① Clutch
② Tachometer drive gear
③ Drive gear
④ Centrifugal oil filter

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Inspection

1. Measure friction disc thickness.
2. Measure clutch plate face runout.
3. Inspect clutch spring.

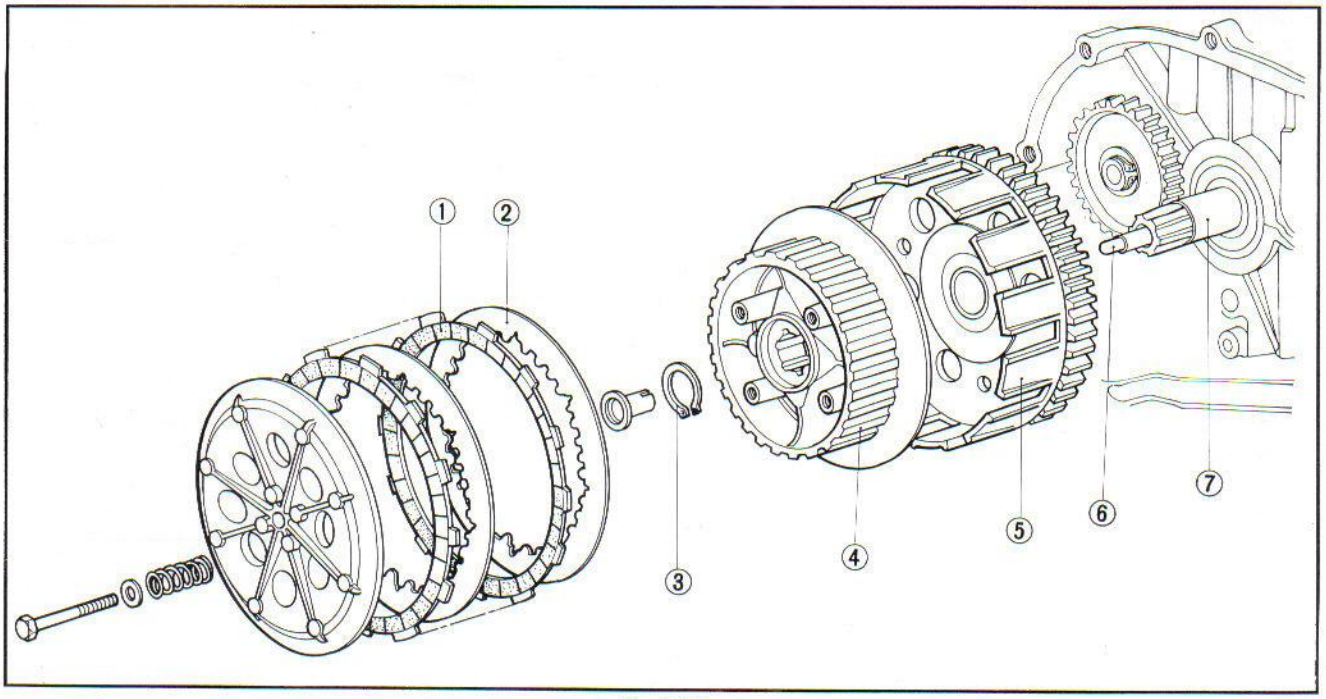


Fig. 1-27

① Friction disc
② Clutch plate
③ 25mm circlip
④ Clutch center
⑤ Clutch outer
⑥ Clutch lifter rod
⑦ Main shaft

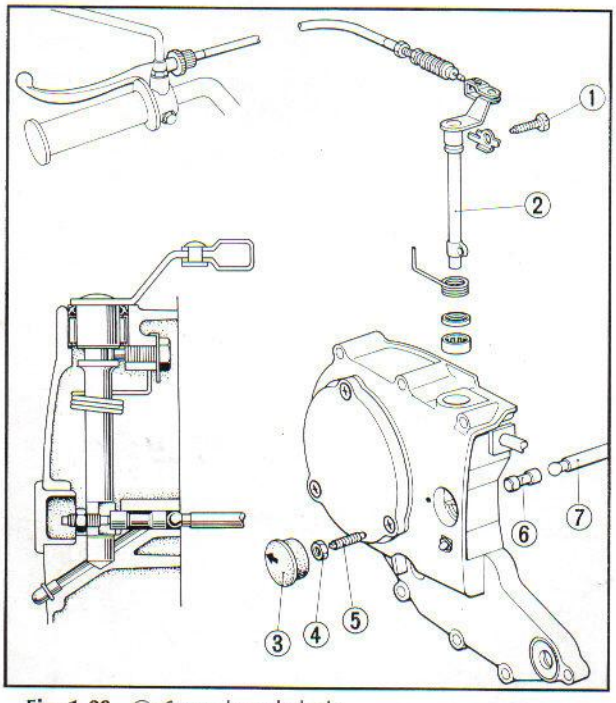


Fig. 1-28

① 6mm knock bolt
② Clutch lever
③ Clutch adjusting cap
④ Lock nut
⑤ Adjusting screw
⑥ Clutch lifter rod end piece
⑦ Clutch lifter rod

Assembly

1. Installation of clutch outer.
   After installing, make sure that the spline backlash is between **0.02-0.09 mm (0.00079-0.00354 in.).**
2. Inspection of clutch plates and friction discs:
   No. of clutch plates: 6
   No. of friction discs: 7
3. Installation of **25 mm** circlip.
   After installing, make sure clutch rotates smoothly without draging.

Clutch Lever

The clutch lever is installed inside the LH crankcase cover and its movement is transmitted to the clutch through the clutch lifter rod.

Clutch Adjustment

Remove the clutch adjusting cap and loosen the lock nut. Turn the adjusting screw in until it no longer turns and then turn it out about 1/2 turn. Tighten the lock nut. Align the arrow mark on the clutch adjusting cap with the mark (•) on the LH crankcase cover and install the cap.

NOTE:

To adjust the clutch, adjust it first with the adjusting screw and then with the cable end or clutch lever adjusting nut.

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12. KICK STARTER

The kick starter is a primary kick type, which makes it possible to crank the engine regardless of the transmission gear position.
The starter is operated by a ratchet mechanism. When the kick starter arm is not depressed, the pawl is in contact with the stopper bolt to placing the gear in the disengaged position as shown in Fig. 1-29 [A]. When the arm is depressed, the pawl engages in the internal gear groove to allow the gear to be driven as shown in Fig. 1-29 [B]. The gear then rotates the crankshaft through the crankshaft drive gear.

Inspection

1. Inspect for excessive wear on starter pawl.
2. Inspect for looseness of stopper bolt.

Assembly

1. Installation of spring retainer.
   The spring retainer should face upward when the starter pawl comes in contact with the stopper bolt.
2. Inspection of movement of starter pawl.
   If the kick starter gear lightly rotates when the starter pawl comes in contact with the stopper bolt and it does not rotate in any other position of the starter pawl, it is an indication that the pawl is in good condition.

NOTE:
Be sure to install the 17 mm thrust washer.

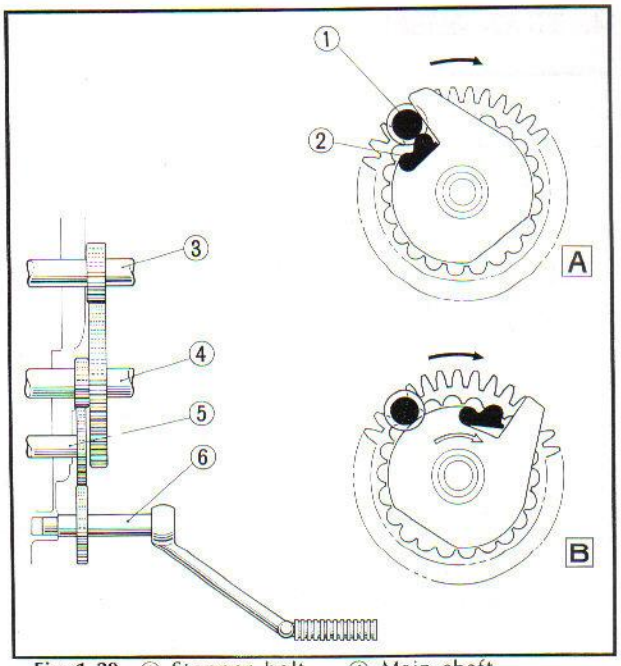


Fig. 1-29 ① Stopper bolt ② Starter pawl ③ Crankshaft ④ Main shaft ⑤ Countershaft ⑥ Kick starter spindle

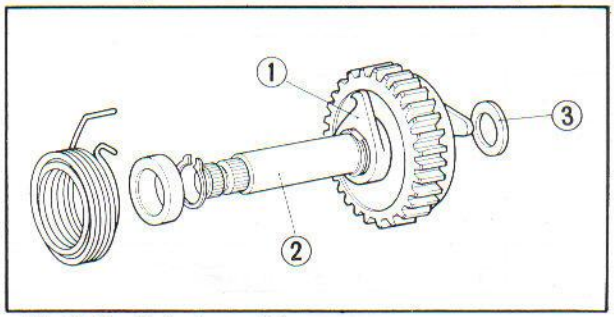


Fig. 1-30 ① Spring retainer ② Kick starter spindle ③ 17 mm thrust washer

13. CRANKSHAFT AND CONNECTING ROD

Disassembly

1. Remove the piston pin clip and pull the piston pin out, and remove the piston.
2. Remove the crankshaft assembly.

Inspection

1. Measure connecting rod small end ID.
2. Measure crankpin-to-connecting rod big end clearance.
3. Measure looseness of crankshaft bearings.
4. Measure side clearances of connecting rod big end.
5. Inspect clogging of oil holes in RH and LH bearings.

Assembly

1. Installation of crankshaft bearings.
   To install, securely fit crankshaft bearing pins in the locating holes in the lower crankcase.
2. Installation of upper crankcase.
   When installing the upper crankcase, apply a thin coat of sealant to the case attaching part.

NOTE:
To facilitate installation, set the tensioner bar in the fully lowered position.

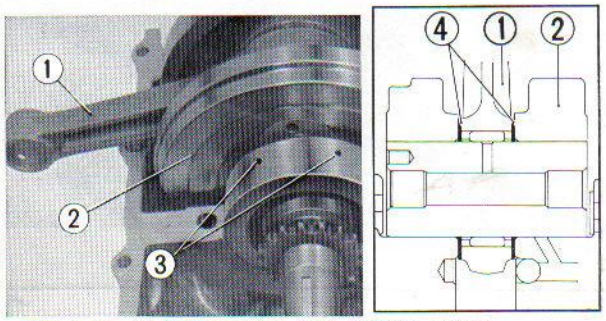


Fig. 1-31 ① Connecting rod ② Crankshaft ③ Oil holes ④ Side plate washer

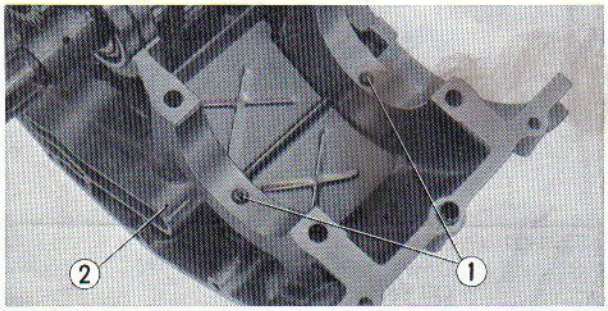


Fig. 1-32 ① Bearing pins ② Lower crankcase

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14. TRANSMISSION

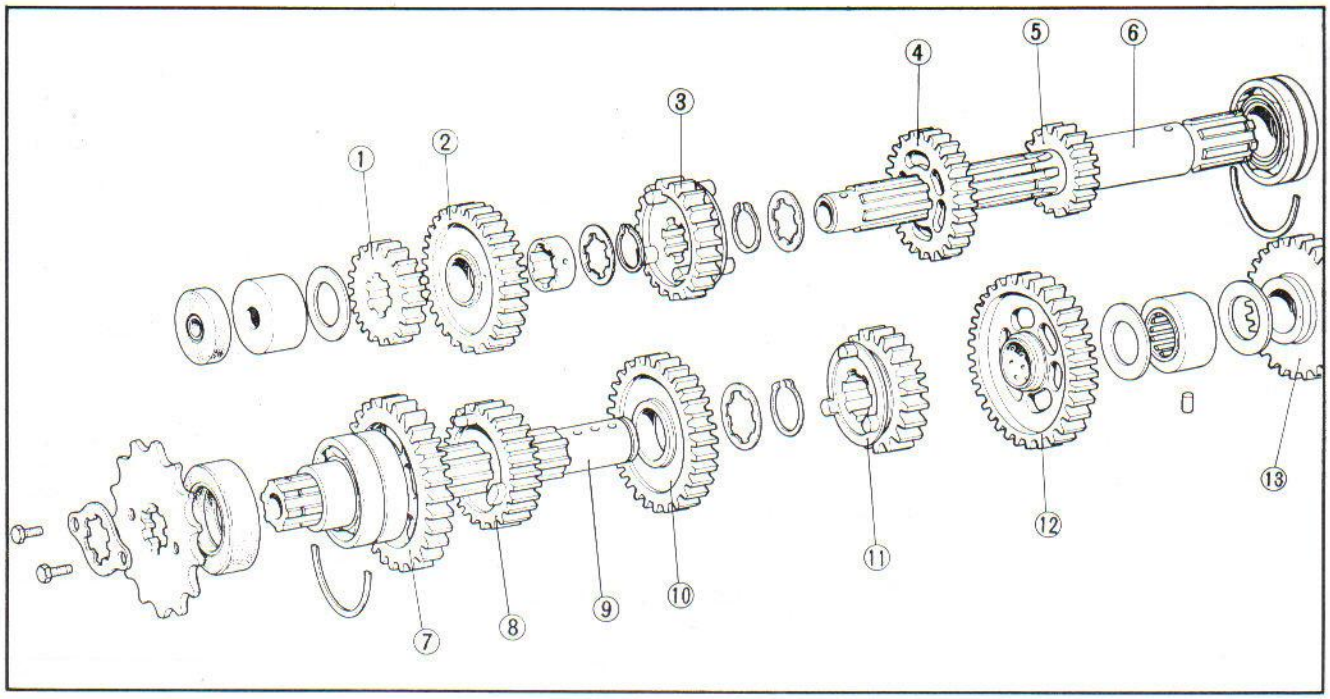


Fig. 1-33

No.	Name	gear teeth		No.	Name	gear teeth	
		XL250, K1	XL 350			XL250, K1	XL 350
①	Main shaft second gear	21	21	⑧	Countershaft top gear	25	24
②	Main shaft top gear	31	32	⑨	Countershaft	—	—
③	Main shaft third gear	25	25	⑩	Countershaft third gear	32	31
④	Main shaft fourth gear	28	29	⑪	Countershaft fourth gear	28	27
⑤	Main shaft low gear	17	16	⑫	Countershaft low gear	40	40
⑥	Main shaft	—	—	⑬	Idle gear	36	36
⑦	Countershaft second gear	35	35				

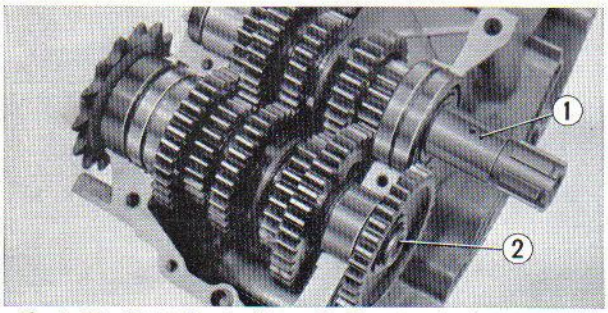


Fig. 1-34 ① Main shaft ② Countershaft

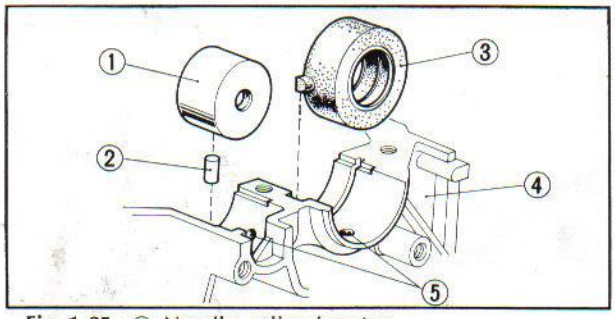


Fig. 1-35 ① Needle roller bearing
② Dowel pin
③ Oil seal
④ Lower crankcase
⑤ Oil holes

Inspection

1. Measure gear backlash.
2. Inspect gear lugs.
   When a lug is worn excessively (more than **2.5 mm** or **0.098 in.**), replace the gear. Check if the gears move smoothly on the shaft splines.

Assembly

1. Installation of the countershaft oil seal.
   When installing the countershaft oil seal, fit the lug of the oil seal properly in the mating groove in the lower crankcase. Oil is delivered through the hole in the oil seal from the lower crankcase to countershaft. Therefore, improper installation will result in a clogged oil hole and the gears may seize on the countershaft.

NOTE:

When new countershaft idle gear and 20 mm thrust washer are installed and the idle gear-to-washer side clearance exceeds 0.76 mm (0.03 in.), proceed as follows: Add a 20 mm (0.79 in.) × 0.7 mm (0.028 in.) thrust washer so as to obtain a side clearance of 0.06–0.75 mm (0.002–0.03 in.). Usually, a thrust washer 1.0 mm (0.039 in.) thickness is used.

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2. Installation of main shaft needle roller bearing.
   Properly install the needle roller bearing to the lower crankcase with a dowel pin. Improper installation may cause a sticking main shaft and gears.

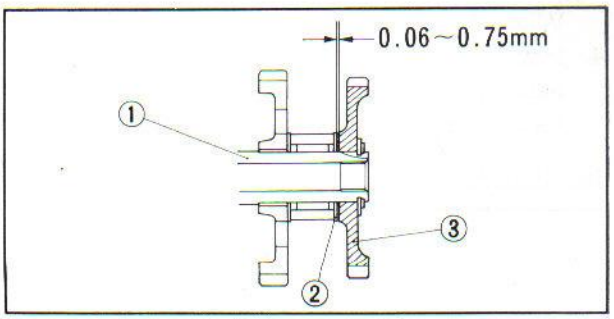


Fig. 1-36 ① Countershaft ② Thrust washer ③ Idle gear

15. GEAR SHIFT MECHANISM

As shown in Fig. 1-37, the gear shift drum is parallel to the RH and LH gear shift forks, resulting in a decreased overall width of the transmission.

Disassembly

1. Lower engine and separate upper and lower crankcases.
2. Remove the main shaft and countershaft.
3. Remove RH and LH gear shift forks.
   To facilitate removal of the shift forks, pull the shift guide shaft out toward the right side.
4. Remove bearing set plate and gear shift drum.

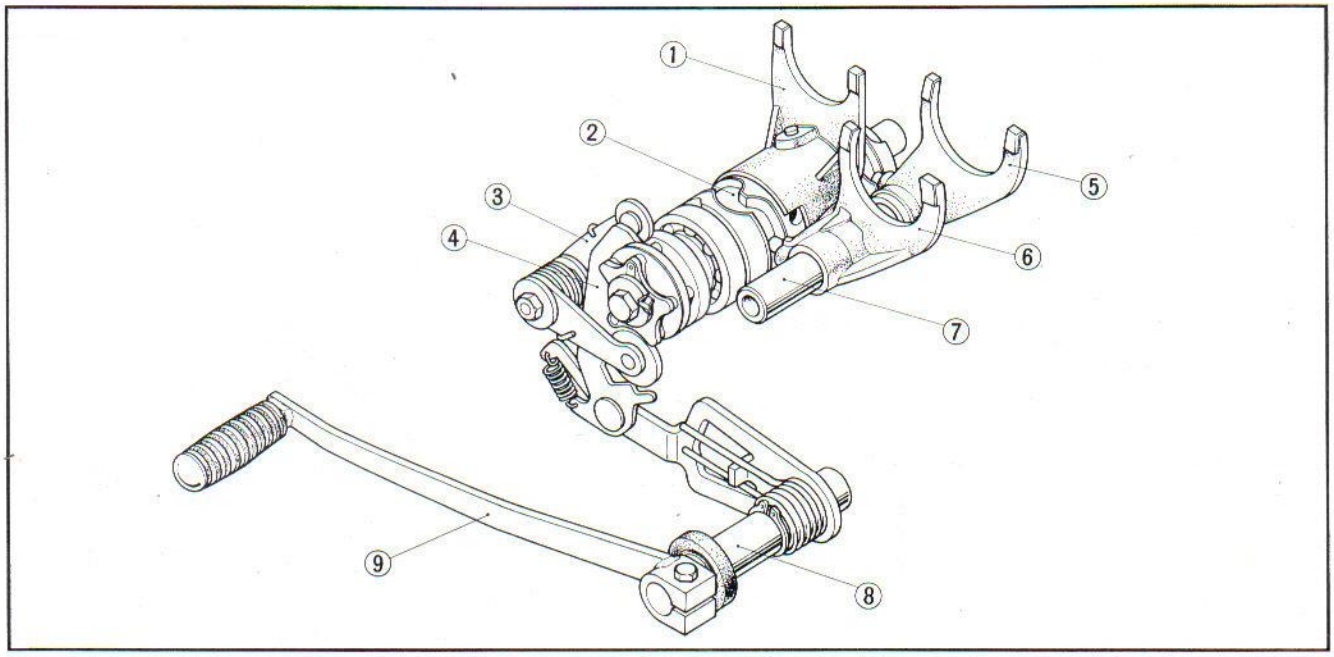


Fig. 1-37

① Center gear shift fork ② Gear shift drum ③ Neutral stopper arm ④ Shift drum stopper ⑤ RH gear shift fork ⑥ LH gear shift fork ⑦ Shift fork guide shaft ⑧ Gear shift spindle ⑨ Gear change pedal

Inspection

1. Measure gear shift drum-to-shift fork clearance.
2. Measure shift fork guide shaft-to-shift fork clearance.
3. Measure shift fork pawl thickness.

Assembly

1. Installation of gear shift fork guide pin.
   Install guide pin to the center gear shift fork by the guide pin clip with its groove facing upward.
2. Install RH and LH gear shift forks.

NOTE:

The marks "R" and "L" are stamped on the gear shift forks for indentification.

3. Install gear shift spindle and gear change pedal.

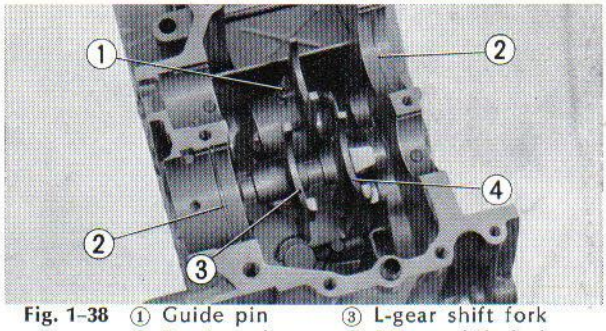


Fig. 1-38 ① Guide pin ② Bearing clip ③ L-gear shift fork ④ R-gear shift fork

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When installing, align the matching mark on the spindle with the punch mark on the pedal.

4. Inspection of movement of gear shift mechanism.
   After installing all parts subassemble the lower and upper crankcases and check to make sure the shift forks operate at each gear position without binding.

16. BREATHER

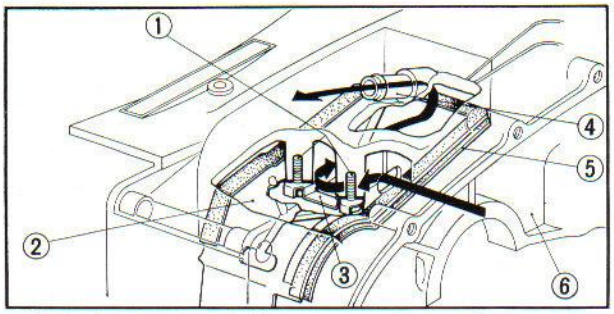


Fig. 1-39 ① 6 mm bolts ④ Breather pipe
② Breather plate ⑤ Seal rubber
③ Tongued washer ⑥ Upper crankcase

Assembly

1. Install the breather plate.

NOTE:

Ensure that there is no clearance between the seal rubber and the upper crankcase. Improper installation of the breather plate may cause oil to flow from the breather tube.

2. Tighten the **6 mm** bolts and bend the twin tongued washer.

CAUTION:

Securely tighten the bolts and lock them with the washer. A dropped bolt may be clogged between the teeth of a transmission gear.

17. CARBURETOR

1. Description

The carburetor is of a piston valve type. This type of carburetor assures unrestricted air bleeding into the fuel jets even when the throttle is fully closed.

The installation of main jet and the valve seat is made in a spigot fashion using O-rings for improved serviceability.

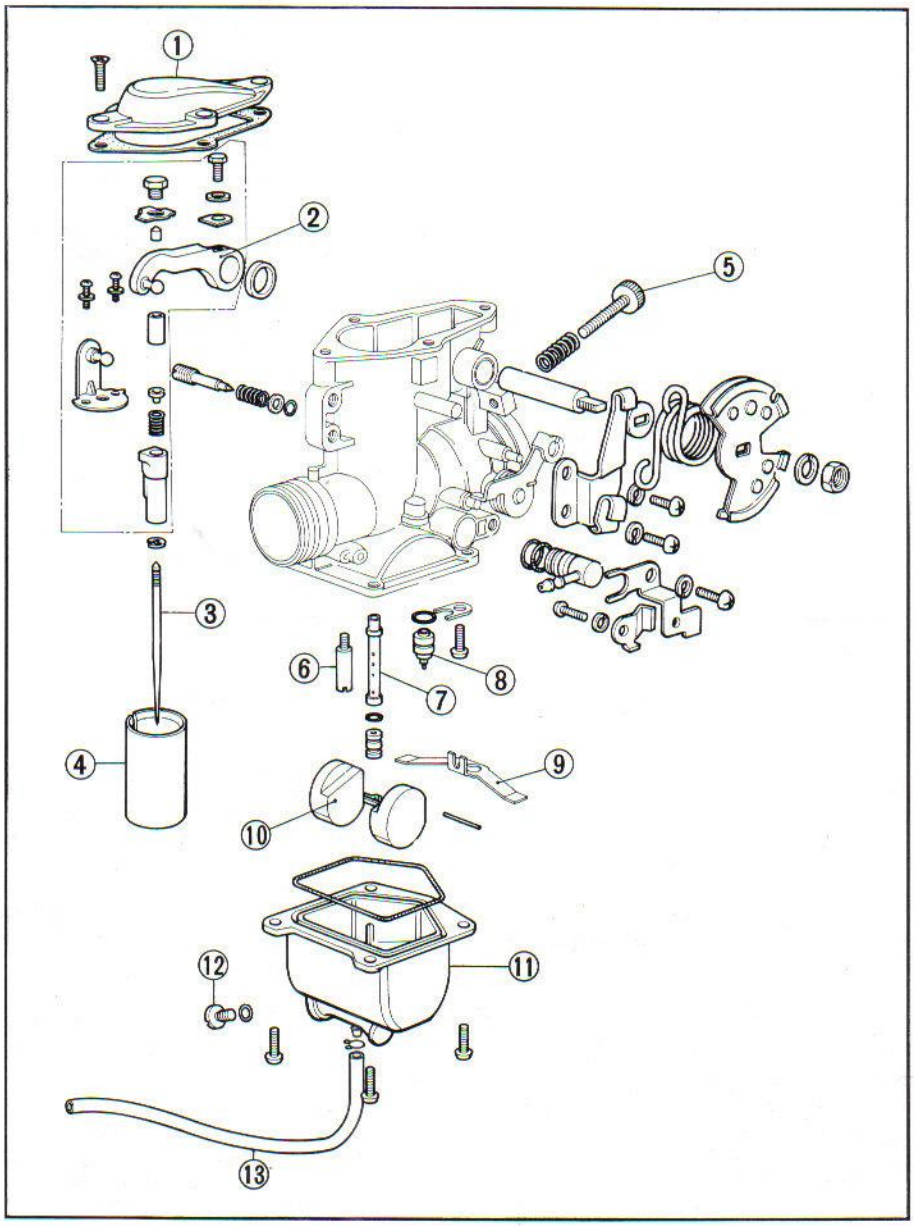


Fig. 1-40
① Top cover
② Link arm
③ Jet needle
④ Throttle valve
⑤ Throttle stop screw
⑥ Slow jet
⑦ Needle jet
⑧ Float valve
⑨ Leaf spring
⑩ Float
⑪ Float chamber
⑫ Drain screw
⑬ Over flow tube

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Starting circuit

When the choke valve is closed, negative pressure is produced within the throttle bore and fuel is fed to the throttle opening from the low-speed and main circuit.

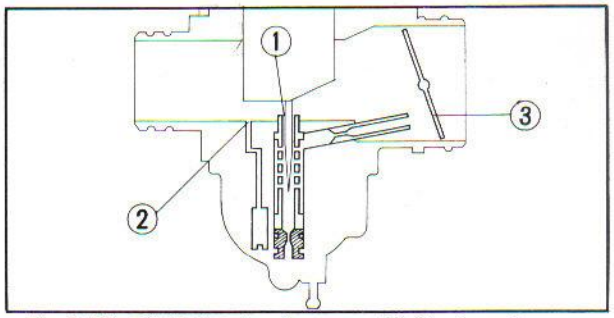


Fig. 1-41 ① Main circuit ② Low-speed circuit ③ Choke valve

Low-speed circuit

The low-speed circuit is provided to supply the proper amount of mixture to the engine at idle and extremely low speeds. The fuel metered by slow jet is mixed with the air bled by the slow air jet and flows into the throttle opening.

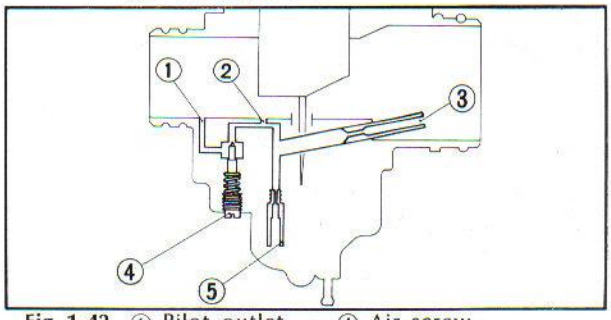


Fig. 1-42 ① Pilot outlet ② Bypass ③ Slow air jet ④ Air screw ⑤ Slow jet

Main circuit

The main circuit is provided for middle and high speed engine operation. The fuel metered by the main jet is mixed with the air bled by the air jet. This mixture flows into the jet needle.

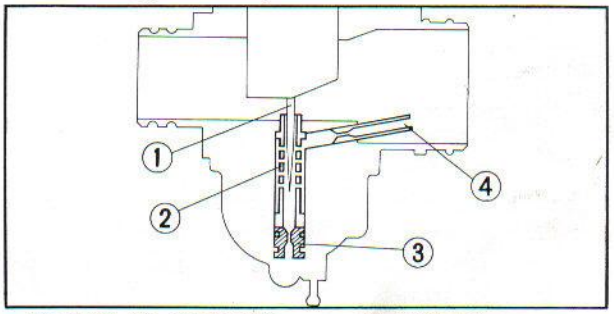


Fig. 1-43 ① Jet needle ② Needle jet ③ Main jet ④ Air jet

Float chamber

When the fuel flows into the float chamber through the clearance between the valve seat and valve, the float becomes buoyant. The valve is pushed up by the float arm and comes in contact with the valve seat. The fuel flow is then stopped to maintain the fuel level constant. If the fuel level is elevated due to excessive tilting of the machine, the extra fuel flows out through the over-flow pipe.

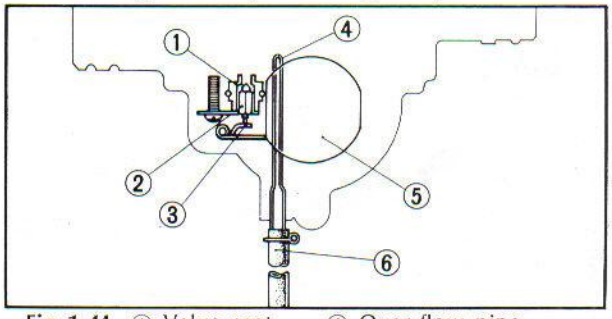


Fig. 1-44 ① Valve seat ② Valve ③ Float arm ④ Over-flow pipe ⑤ Float ⑥ Over-flow tube

18. THROTTLE VALVE AND JET NEEDLE

Disassembly

1. Remove the screws and carburetor top.
2. Straighten the two lock washers and remove the two bolts.
3. Remove the 13 mm nut (located at throttle shaft side) and throttle shaft.
4. Remove the valve plate.
   Remove two 3 mm screws. Turn the valve plate to fit the lug of the plate in the side hole in the throttle valve, permitting the plate to be removed.
5. Remove the jet needle from throttle valve.

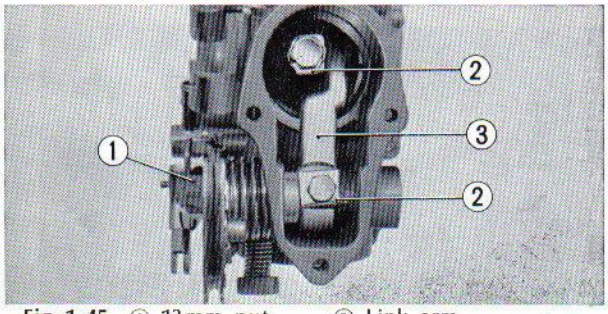


Fig. 1-45 ① 13 mm nut ② Tongued washer ③ Link arm

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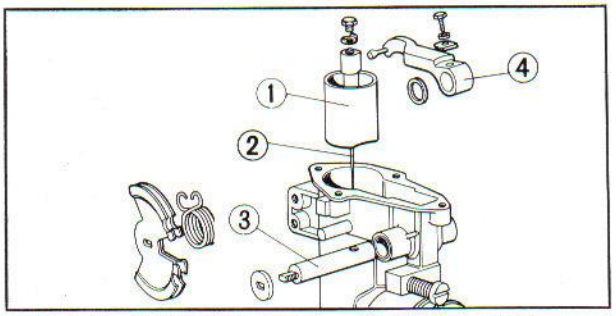


Fig. 1-46 ① Throttle valve ③ Throttle shaft
② Jet needle ④ Link arm

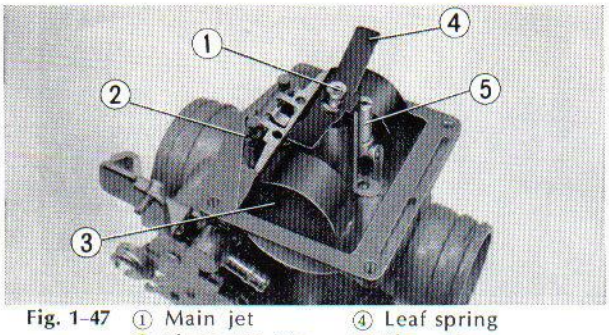


Fig. 1-47 ① Main jet ④ Leaf spring
② Float arm pin ⑤ Slow jet
③ Floot

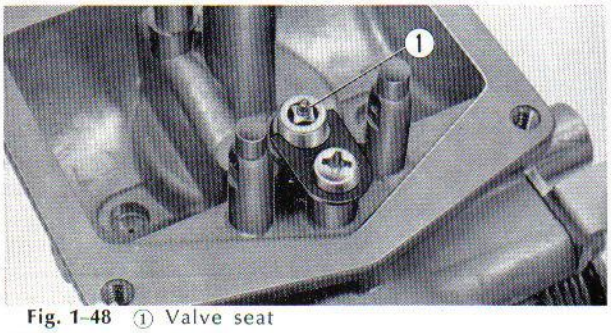


Fig. 1-48 ① Valve seat

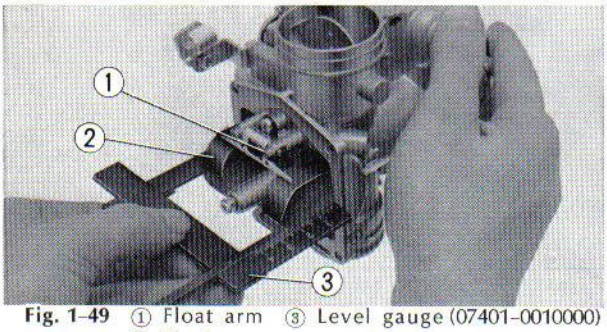


Fig. 1-49 ① Float arm ③ Level gauge (07401-0010000)
② Float

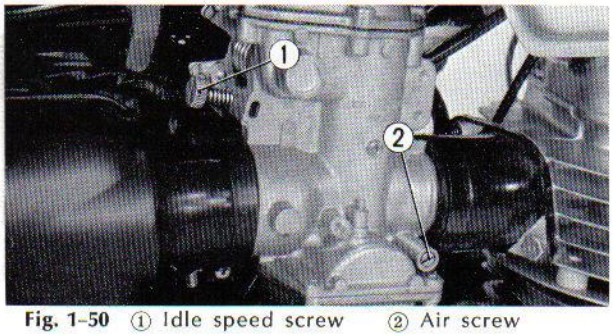


Fig. 1-50 ① Idle speed screw ② Air screw

Inspection

1. Inspect for damage to throttle valve.
2. Inspect for wear on jet needle.

Assembly

1. Installation of throttle valve.
   Install the throttle valve to the carburetor body with its cutaway side facing the choke valve.
2. Install carburetor top and throttle shaft.

CAUTION:
Make sure there is no a clearance around carburetor top and throttle shaft.

19. FLOAT, MAIN JET AND SLOW JET

Disassembly

1. Remove the float chamber.
2. Remove the leaf spring and main jet.
3. Remove the slow jet.
   To remove, use a screwdriver.
4. Remove the clip plate and valve seat.

Inspection

1. Inspect for clogging of main and slow jets.
2. Inspect the float valve and seat.

Assembly

1. Install leaf spring.
2. Check for wear of main and slow jets.

CAUTION:
Handle the jets carefully.

Adjustment of Float Level

Slowly tilt the float so that the closed valve is placed in the open position. The float arm is slightly separated from the open position. When the float arm is slightly separated from the tip of the valve, measure the float height with the level gauge (No. 07401-0010000). The specified level is 24 mm (0.94 in.) for the XL 250 and 18 mm (0.71 in.) for the XL 350. If the level is out of specification, adjust it by bending the float arm.

Adjustment of Carburetor

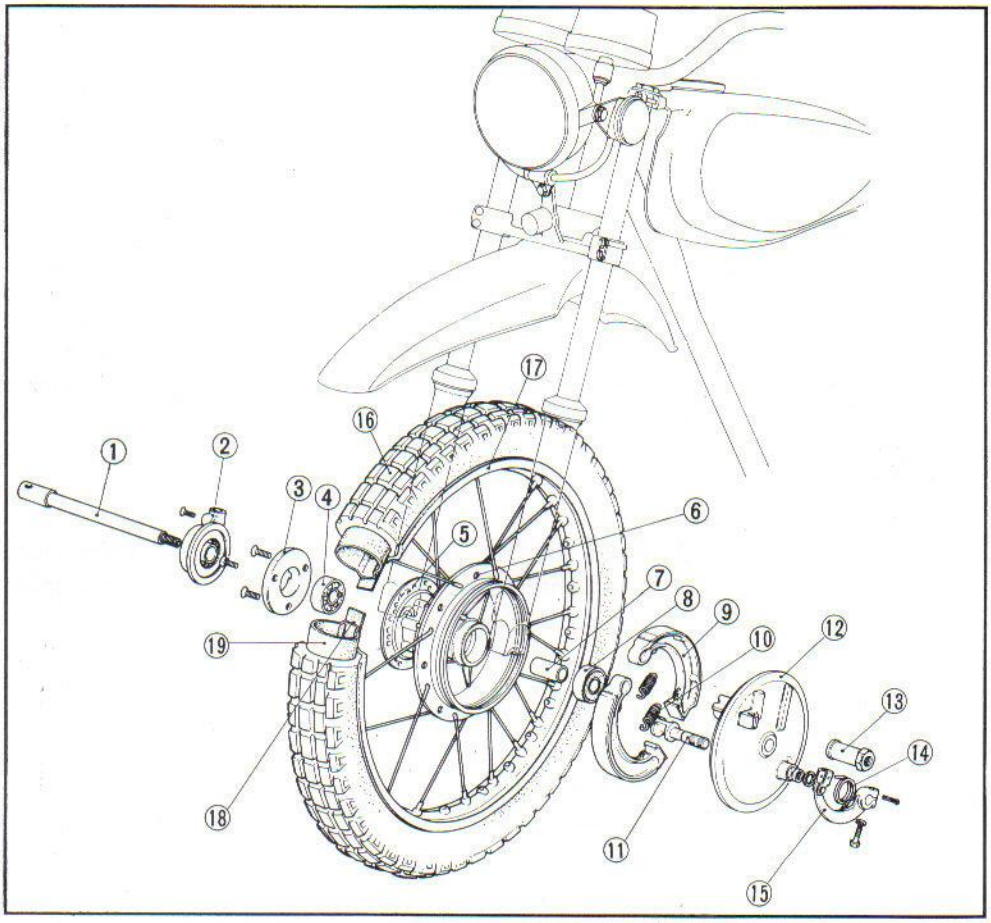
The engine should be warmed up thoroughly before the carburetor is adjusted. To adjust, proceed as follows:

1. Adjust idle speed screw ① until the engine idles at approximately 1,200 rpm. Turn the idle speed screw clockwise to increase the idle speed or counterclockwise to decrease the idle speed.
2. Turn air screw ② clockwise until the engine misses or decreases in speed, then counterclockwise until the engine again misses or decreases in speed. Set the air screw exactly between these two extreme positions. Usually the correct setting (between extremes of richness and leanness) will be found to be $^{7}/_{8}$–$1^{5}/_{8}$ turns open from a fully closed position.
3. If the idle speed changes after adjusting the fuel mixture, readjust the idle speed screw.

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2. CHASSIS

1. FRONT BRAKE AND FRONT WHEEL



① Front wheel axle
② Speedometer gear box
③ Bearing retainer
④ 6302 ball bearing
⑤ Front spoke flange
⑥ Front wheel hub
⑦ Front axle distance collar
⑧ 6302 ball bearing
⑨ Brake shoe
⑩ Brake shoe spring
⑪ Brake cam
⑫ Brake panel
⑬ Axle nut
⑭ Brake arm return spring
⑮ Brake arm
⑯ Tire
⑰ Wheel rim

Fig. 2-1

The front wheel rim is made of aluminium alloy. The wheel hub is of a single hub type to provide improved self-cleaning action during operation.

FRONT WHEEL

Disassembly

1. Place stands as in Fig. 2-2 and raise the front wheel off the ground to remove.

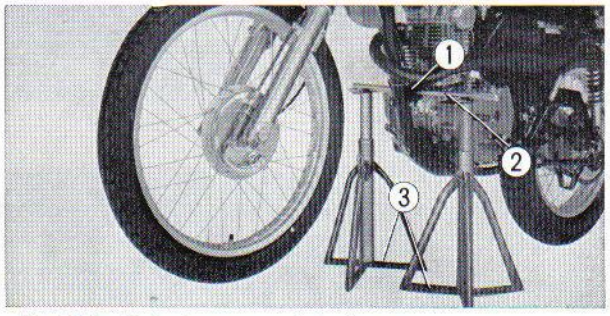


Fig. 2-2 ① Engine mounting flange
② Steel shaft
③ Rigid rack

Inspect for:

1. Bending of front axle.
2. Wear (preload) on bearing.
3. Runout of wheel rim.
4. Looseness, behding or breakage of spokes.
5. Tire inflation pressure [**1.5 kg/cm² (21 psi)**].
6. Wear or other damage of oil seal.
7. Cracking or other damage of tires.
8. Leakage from tube or valve stem.

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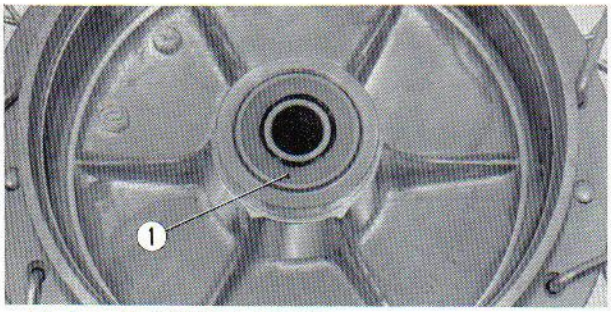


Fig. 2-3 ① 6302 ball bearing

Assembly

1. Coat the ball bearings and the inside of the wheel hub with grease, then insert distance collar and drive the bearings in.

NOTE:

Distance collar must be inserted in place.

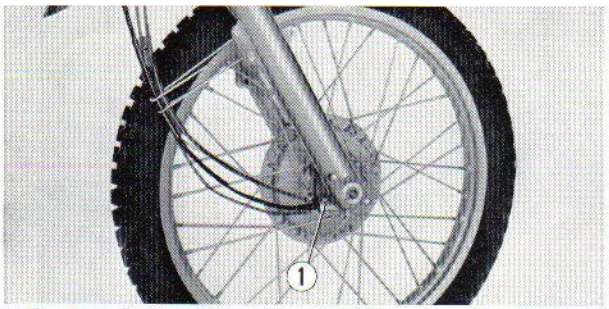


Fig. 2-4 ① Speedometer gear box

2. Install the brake panel and the speedometer gear box on the front wheel. Install the front axle and tighten it with the axle nut.

NOTE:

Failure to install speedometer gear box correctly will result in a binding fork. With this in mind, position the box at an angle that permits easy installation of the speedometer cable and then tighten it with an axle nut.

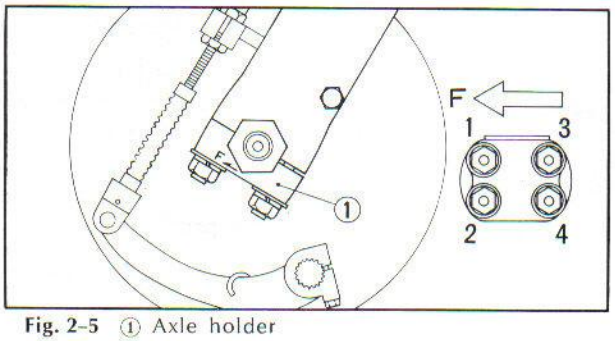


Fig. 2-5 ① Axle holder

3. Place the "F" mark of the axle holder at the front and tighten the front nut first in the numerical order shown in Fig. 2-5.

NOTE:

When tightened, the matching face of the front fork and the axle holder must have no gap at the front.

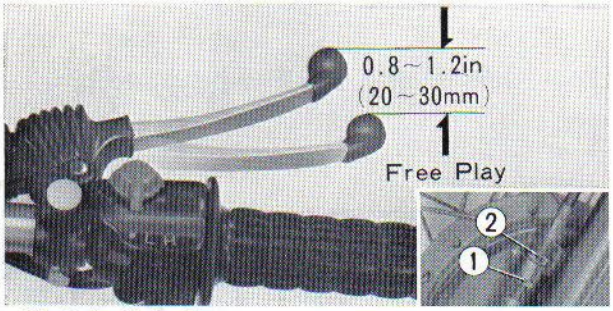


Fig. 2-6 ① Lock nut
② Adjust nut

FRONT BRAKE ADJUSTMENT

Loosen the adjusting nut and adjust the brake to allow from **20** to **30** cm (0.8-1.2 in.) free play at the hand lever end. Use the lever adjusting nut for fine adjustment.

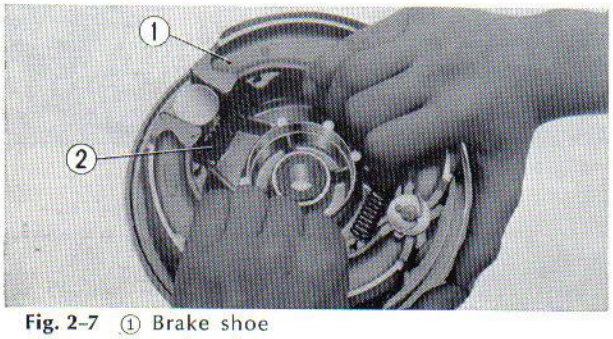


Fig. 2-7 ① Brake shoe
② Brake shoe spring

FRONT BRAKE

Disassembly

1. Remove the brake arm, expand brake shoes by hand and remove the brake shoe springs and brake shoes.

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Inspect for:

1. Wear or damage to brake drum.
2. Thickness of brake lining.
3. Cracking or damage of brake panel.

Assembly

1. Attach the brake shoe cam to the brake panel, then hook the brake shoe springs to the brake shoes and position the shoes on the brake panel.

NOTES:

1. **Hook the brake shoe springs in the direction shown in Fig. 2-8.**
2. **Coat the brake cam and anchor pin with grease.**
3. **Do not put oil on the brake lining.**

2. Attach the brake panel firmly to the front wheel hub.
3. The punch marks must be matched when attaching the brake arm.

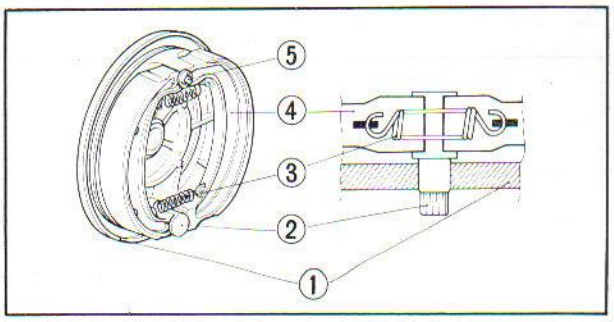


Fig. 2-8 ① Front brake panel ④ Brake shoe
② Brake cam ⑤ Anchor pin
③ Brake shoe spring

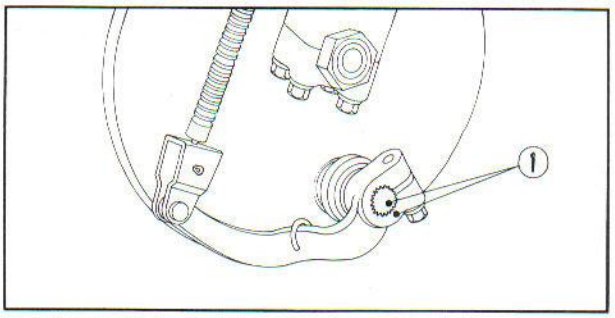


Fig. 2-9 ① Punch marks

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2. REAR BRAKE AND REAR WHEEL

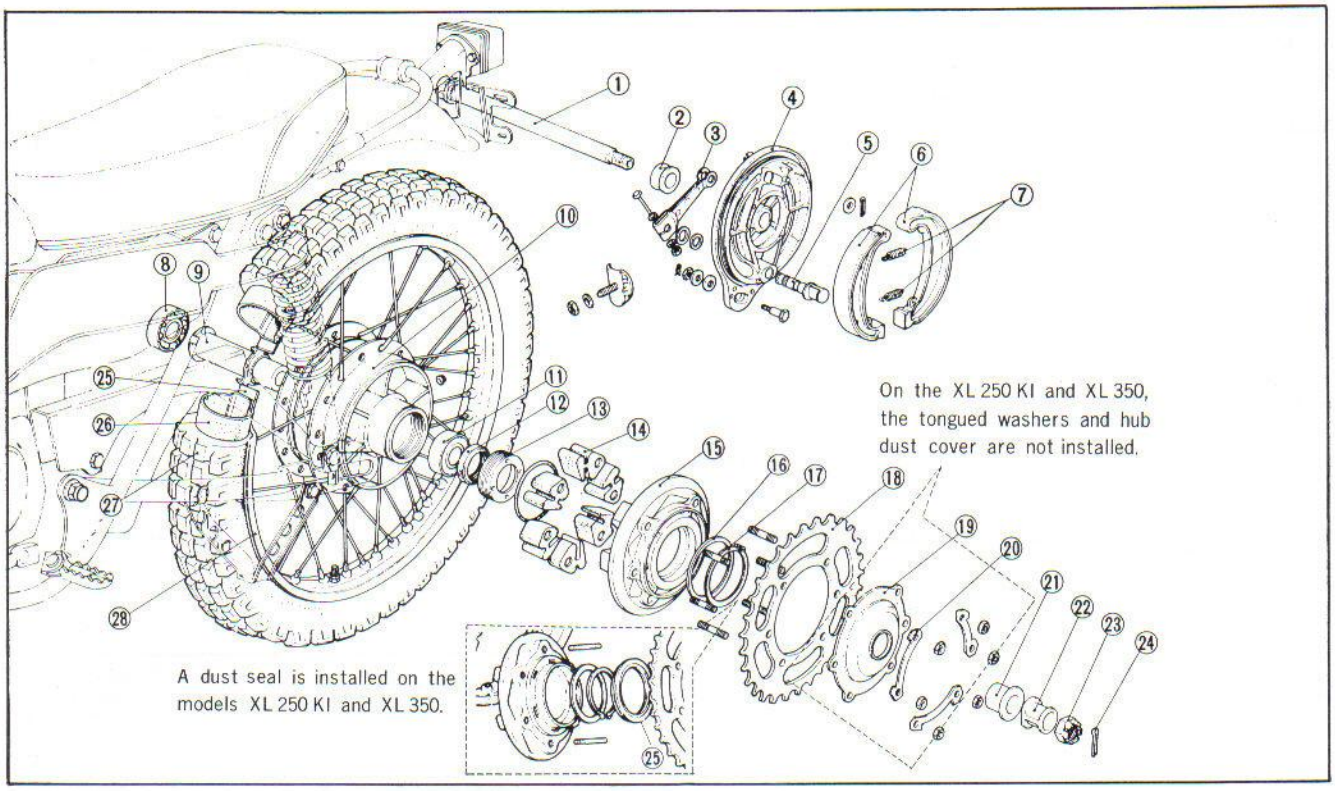


Fig. 2-10

① Rear axle
② Brake panel side collar
③ Brake arm
④ Brake panel
⑤ Brake cam
⑥ Brake shoes
⑦ Brake shoe springs
⑧ 6204 ball bearing
⑨ Distance collar
⑩ Wheel hub
⑪ 6034 ball bearing
⑫ Dust seal
⑬ Bearing retainer
⑭ Wheel damper
⑮ Final driven flange
⑯ 66 mm washer
⑰ 65 mm circlip
⑱ Driven sprocket
⑲ Hub dust cover
⑳ Tongued washer
㉑ Wheel side collar
㉒ Axle collar
㉓ Axle nut
㉔ Cotter pin
㉕ Tire flap
㉖ Tube
㉗ Tire
㉘ Rim

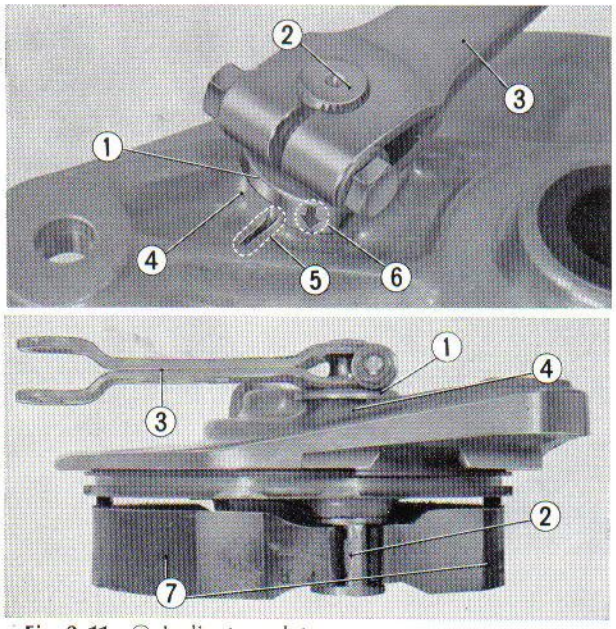


Fig. 2-11 ① Indicator plate
② Brake cam
③ Brake arm
④ Brake panel cam boss
⑤ "Wear limit" mark
⑥ Arrow
⑦ Brake shoe

Brake Lining Indicator (XL250K1, XL350 TYPE)

1. Description

The brake lining wear indicator is provided to check the wear condition of the brake linings visually from outside. As shown in the Fig. 2-11, the indicator plate is attached to the brake cam. When the brake lining wears, the brake cam will move. The movement of the cam is noted by the arrow on the periphery of the indicator. The brake panel cam boss is provided with the "wear limit" mark to make it possible to check the service limit (replacement time) of the lining easily with the panel installed.

- The brake lining indicators are incorporated into both the front and rear brakes of the XL 350 model. Frame serial No. of the model begins with 1021820.

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REAR WHEEL

Disassembly

1. Raise the rear wheel off the ground.
2. Remove the master link and the drive chain.

NOTE:
Remove the drive chain from the drive sprocket.

3. Loosen the chain adjusting bolt, remove the cotter pin and the axle nut.

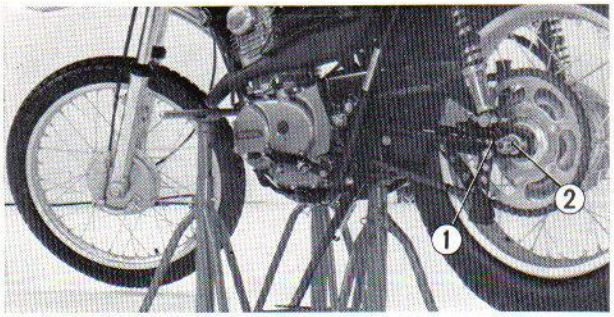


Fig. 2-12 ① Chain adjusting bolt
② Axle nut

4. Remove the rear brake in the same manner as the front brake.
5. Straighten the tongued washer lugs, and remove the rear wheel hub dust cover and the driven sprocket.

NOTE:
On the XL 250 K1 and XL 350 models, remove the rear wheels by removing the UBS nuts. Tongued washers are not used on those models.

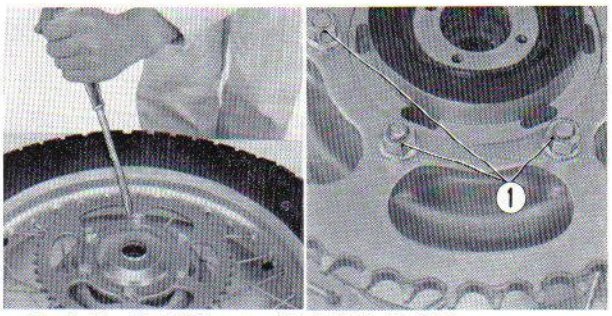


Fig. 2-13 ① UBC nuts (XL 250 K1, XL 350)

6. Remove the 65 mm circlip, the driven flange and the rear wheel damper.
7. Remove the bearing retainer with the retainer wrench (Tool No. 07910-3290000) and remove the ball bearing and the distance collar.

When the XL 250 and XL 350 rear wheels are disassembled, apply a coat of bearing grease to the sliding surfaces of the oil seal and bearing retainers for reassembly.



Fig. 2-14 ① Retainer wrench (07910-3290000)

Inspect for:

1. Bending of rear axle.
2. Bearing wear.
3. Runout of rim.
4. Looseness, bending or breakage of spokes. Torque the spokes to **0.2 to 0.45 kg-m (1.4-3.3 lb-ft)**.
5. Cracking or damage of brake panel.
6. Wear or damage of driven sprocket.
7. Wear or damage of drive chain.
8. Cracking or damage of final driven flange.
9. Damage of rear wheel damper.
10. Damage or wear of tires.
11. Air leakage from the tube and valve stem.
12. Tire inflation pressure [**1.5 kg/cm² (21 psi)**].

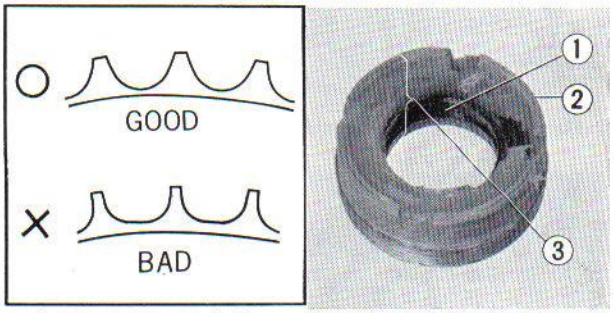


Fig. 2-15 Wear of driven sprocket
① Oil seal
② Bearing retainers
③ Bearing grease

Assembly

1. Attach driven sprocket.

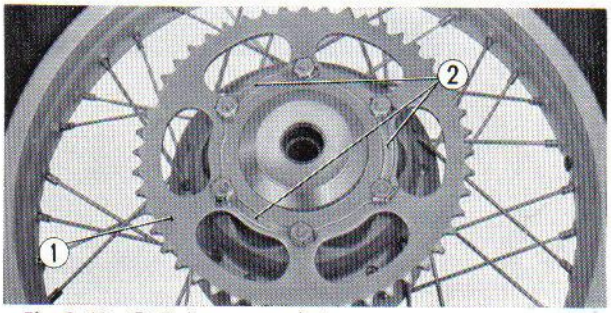


Fig. 2-16 ① Driven sprocket
② Tongued washer

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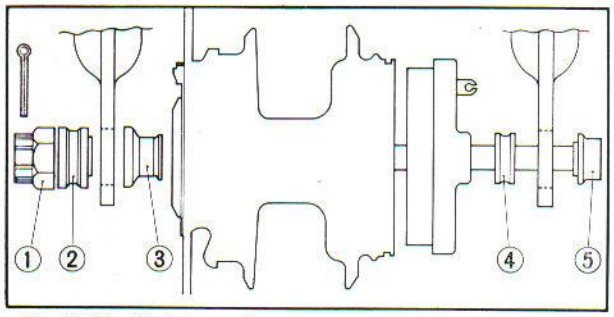


Fig. 2-17 ① Axle nut
② Rear axle collar
③ Rear wheel side collar
④ Rear brake panel side collar
⑤ Rear wheel axle

2. Attach each collar as shown in Fig. 2-17 and install the rear axle in the swing arm.
3. To connect the drive chain, position the clip open end of the main link clip opposite the direction of the chain rotation.

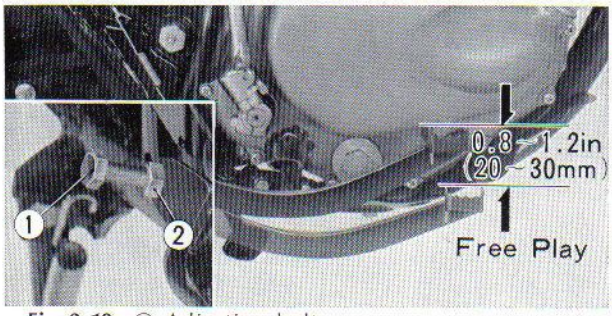


Fig. 2-18 ① Adjusting bolt
② Lock nut

ADJUST BRAKE PEDAL

1. Properly adjust the brake pedal height with the adjusting bolt. Check the brake pedal free play.

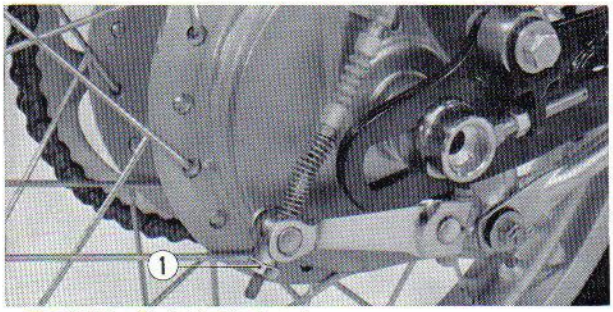


Fig. 2-19 ① Adjusting nut

2. Adjust the brake pedal with the adjusting nut to allow **20 to 30 mm (0.8-1.2 in.)** play at the top end of the brake pedal.

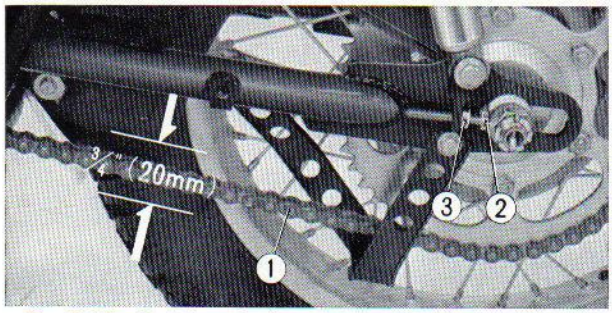


Fig. 2-20 ① Drive chain
② Adjusting bolt
③ Lock nut

ADJUST DRIVE CHAIN

1. Adjust the drive chain to allow a **20 mm (3/4 in.)** slack.
2. Loosen the axle nut.
3. Position the index notches on the right and left adjusters at the same position and adjust the drive chain to normal slack with adjusting bolts.
4. After the adjustment, don't forget to tighten the lock nuts and the axle nut.

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3. STEERING SYSTEM

Brake and clutch levers are made up of tough cast aluminium alloy. For off the road riding, headlight, speedometer and tachometer can easily be removed. The handle bar levers are equipped with dust covers to prevent the entry of dust or dirt.

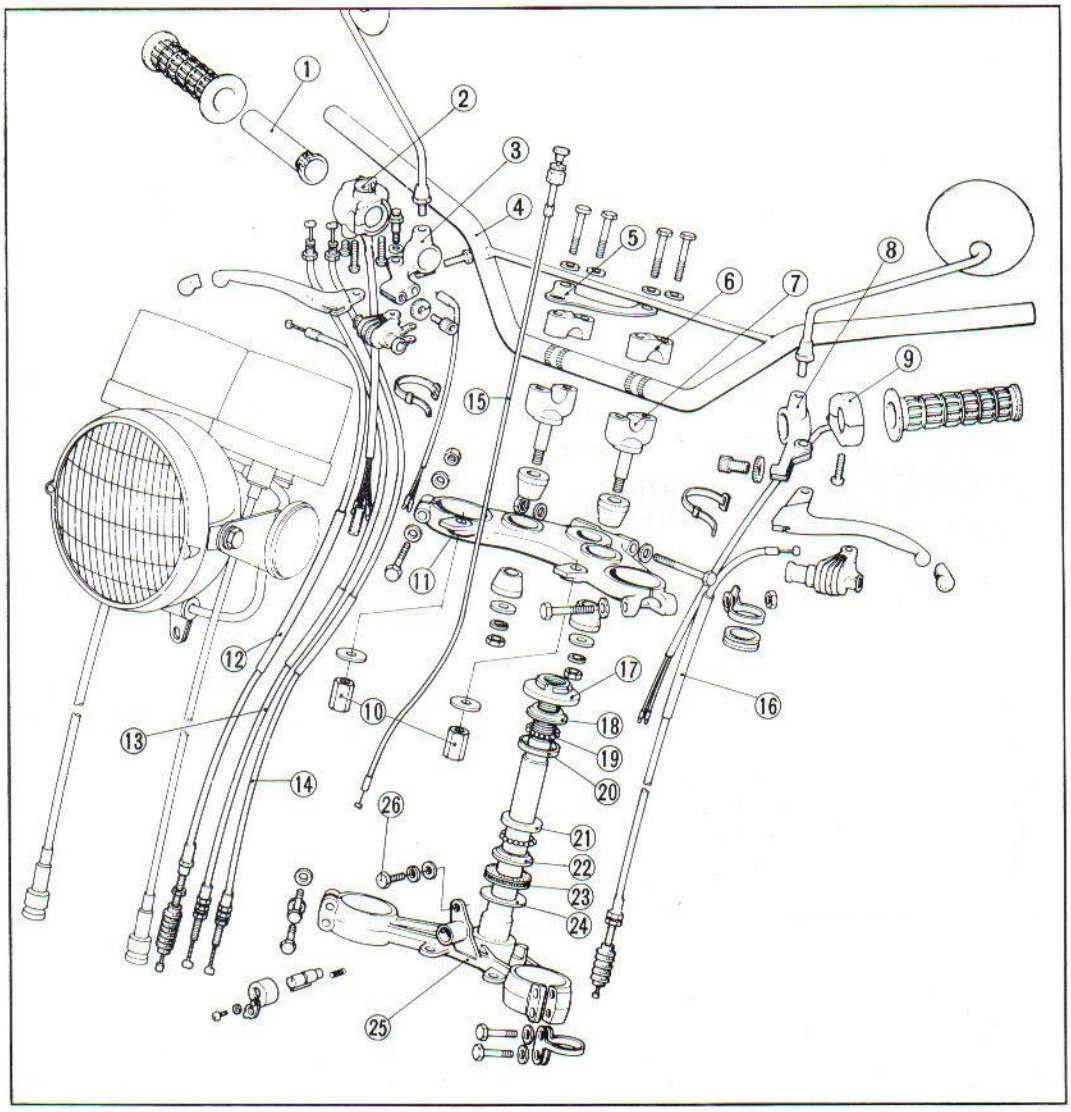


Fig. 2-21
① Throttle grip pipe
② Switch housing
③ Handle lever bracket
④ Handle bar
⑤ Cable holder
⑥ Handlebar clamp (upper)
⑦ Handlebar clamp (lower)
⑧ Handle lever bracket
⑨ Horn switch
⑩ Nut
⑪ Fork top bridge
⑫ Front brake cable
⑬ Throttle cable A
⑭ Throttle cable B
⑮ Choke cable
⑯ Clutch cable
⑰ Fork top thread
⑱ Top bearing race
⑲ Steel balls
⑳ Top ball race
㉑ Bottom ball race
㉒ Bottom bearing race
㉓ Dust seal
㉔ Dust seal washer
㉕ Steering stem

HANDLEBAR

Disassembly

1. Remove brake and clutch cables at the position shown in Fig. 2-22. Remove the boots.

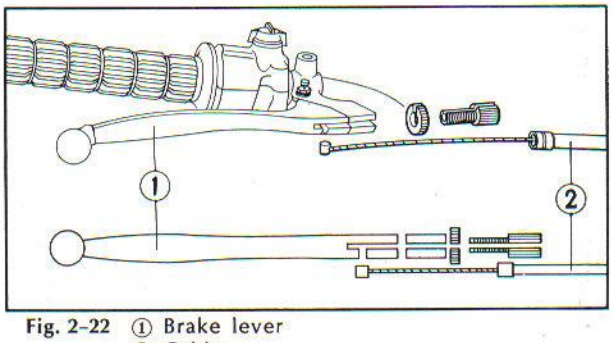


Fig. 2-22 ① Brake lever
② Cable

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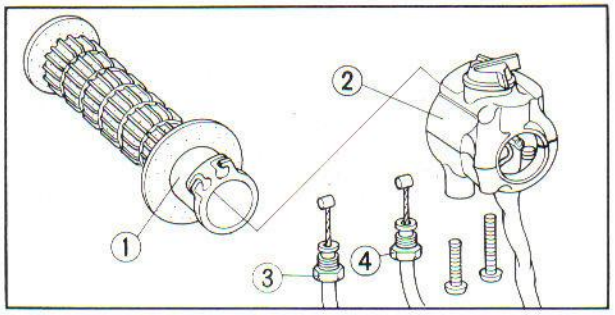


Fig. 2-23 ① Throttle grip pipe
② Emergency switch ass'y
③ Throttle cable A
④ Throttle cable B

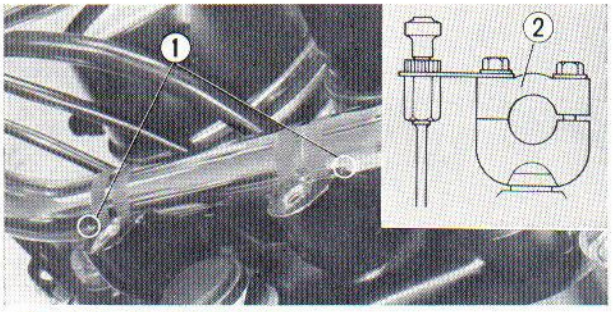


Fig. 2-24 ① Punch marks
② Handle upper holder

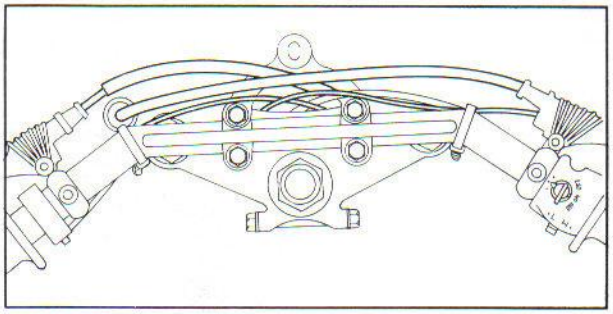


Fig. 2-25

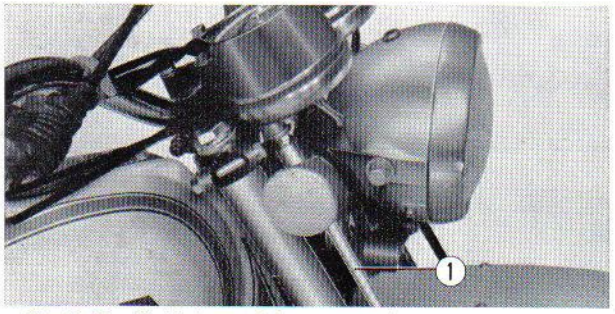


Fig. 2-26 ① Universal box wrench

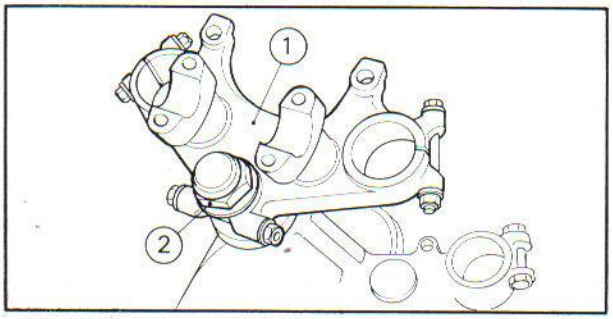


Fig. 2-27 ① Fork top bridge ② Steering stem nut

2. Separate the emergency switch assembly and remove the throttle cable from the throttle grip pipe.
3. Remove the upper handlebar holder and the handlebar.

Inspect for:

1. Broken or frayed cables and housings.
2. Bent handlebars.

Assembly

1. Align the punch marks on the handlebar with the sides of the lower holders.

NOTE:
Tighten the handlebar holder at the front first.

2. Route each cable and electrical wire correctly and attach the hand levers.

NOTE:
Be sure that all of the cables and electrical wires have enough slack to permit the handlebar to be moved from the extreme right to the extreme left without binding the cables or wires.

STEERING STEM

Disassembly

1. Separate wire harnesses A and B, remove headlight stay and remove headlight assembly, speedometer and tachometer as a unit using the **6 mm** universal box wrench.
2. Remove the front wheel and the front fork.
3. Remove the steering stem nut and the fork top bridge tightening bolts and remove the fork top bridge.
4. Remove the steering head top nut and pull the steering stem out from the bottom.

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Inspect for:

1. Damage or wear on the ⌀8 steel ball.
2. Damage or wear on the contact surfaces between the top and the bottom bearing races.
3. Wear of the steering head dust seal.

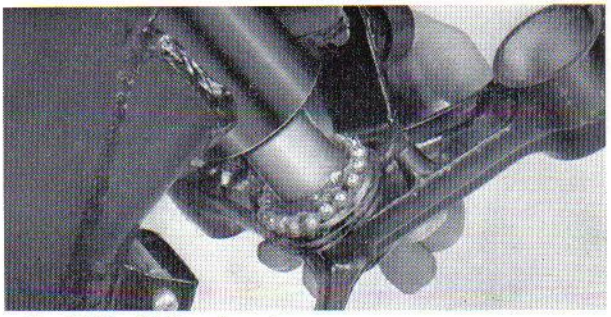


Fig. 2-28 ① Steering stem
② ⌀8 steel ball

Assembly

1. Coat the ball race with grease, place 18 ⌀8 steel balls in and insert the steering stem. Tighten the top bearing race and the steering head top nut all the way then loosen them until the steering stem can be smoothly moved from side to side.

NOTE:
Clean the bearing race, ball race and ⌀8 steel balls and repack with grease.

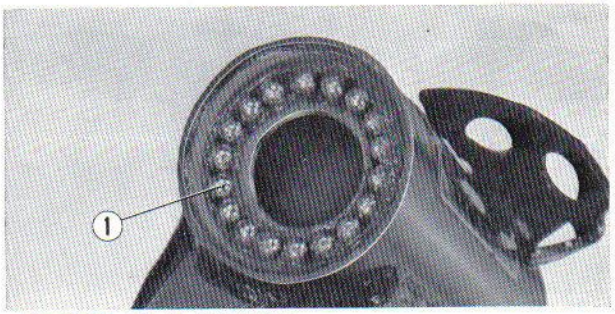


Fig. 2-29 ① ⌀8 steel ball

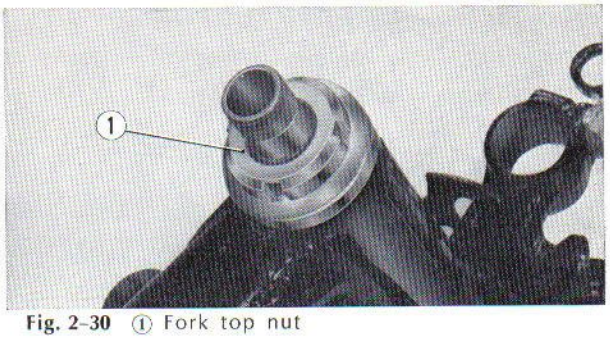


Fig. 2-30 ① Fork top nut

2. Temporarily attach the front fork and tighten the steering stem nut.

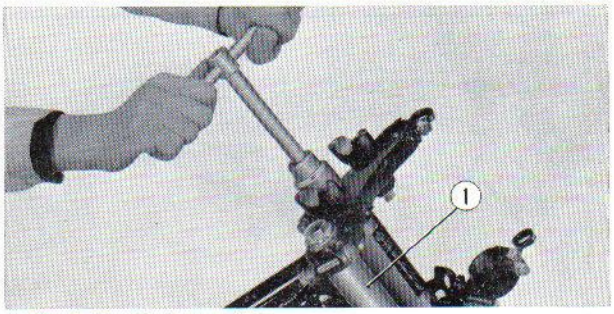


Fig. 2-31 ① Front fork

3. Attach the front fork as shown in Fig. 2-32.

NOTE:
Check the rear cushion attaching positions and the attaching positions of the right and left rear cushions.
This adjustment is made on the XL250 model only.

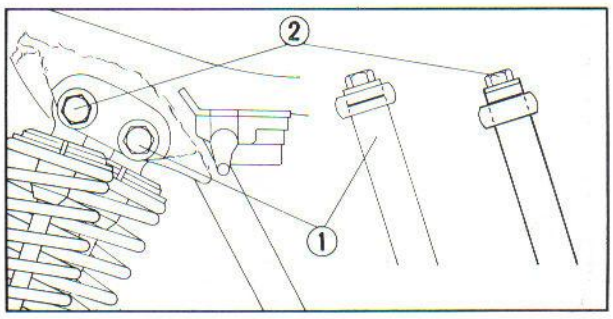


Fig. 2-32 ① Standard position
② High position

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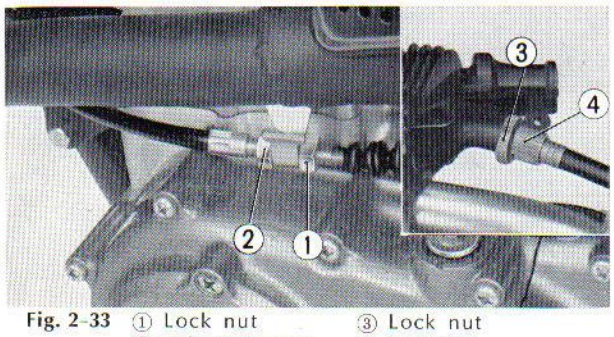


Fig. 2-33 ① Lock nut ③ Lock nut
② Adjusting nut ④ Adjuster

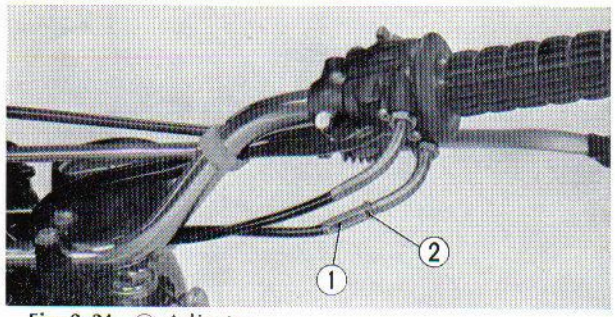


Fig. 2-34 ① Adjuster
② Lock nut

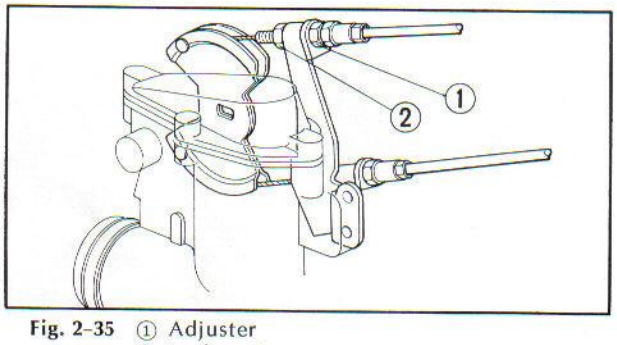


Fig. 2-35 ① Adjuster
② Lock nut

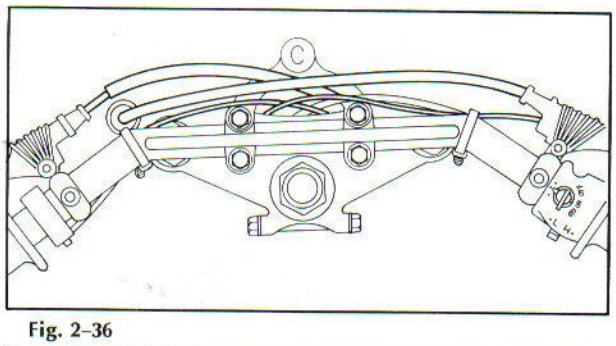


Fig. 2-36

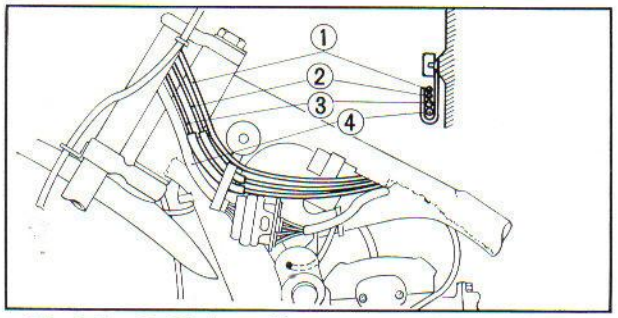


Fig. 2-37 ① Choke cable ③ Throttle cable B
② Throttle cable A ④ Wireing harness

CLUTCH LEVER ADJUSTMENT

1. Adjust to allow a **10** to **20** mm **(0.4–0.8 in.)** free play at the lever end with the adjusting nut.

NOTE :

Adjust the nut on the engine side first.

THROTTLE GRIP ADJUSTMENT

1. To allow 10° to 15° of throttle grip free play, turn both adjusters of the handlebar and the carburetor.

THROTTLE, CHOKE AND CLUTCH CABLES ROUTING

1. See Fig. 2-35, 2-36, 2-37.
2. Attach throttle cables, A, B without mistake.

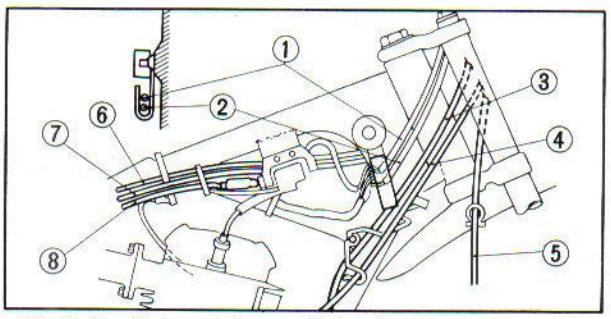


Fig. 2-38 ① Front stop switch wire
② Emergency switch wire
③ Clutch cable
④ Tachometer cable
⑤ Speedometer cable
⑥ Choke cable
⑦ Throttle cable A
⑧ Throttle cables B

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4. FRONT SUSPENSION

The front fork is adjustable for ground clearance. The front suspension can be adjusted for both general touring and off road riding.

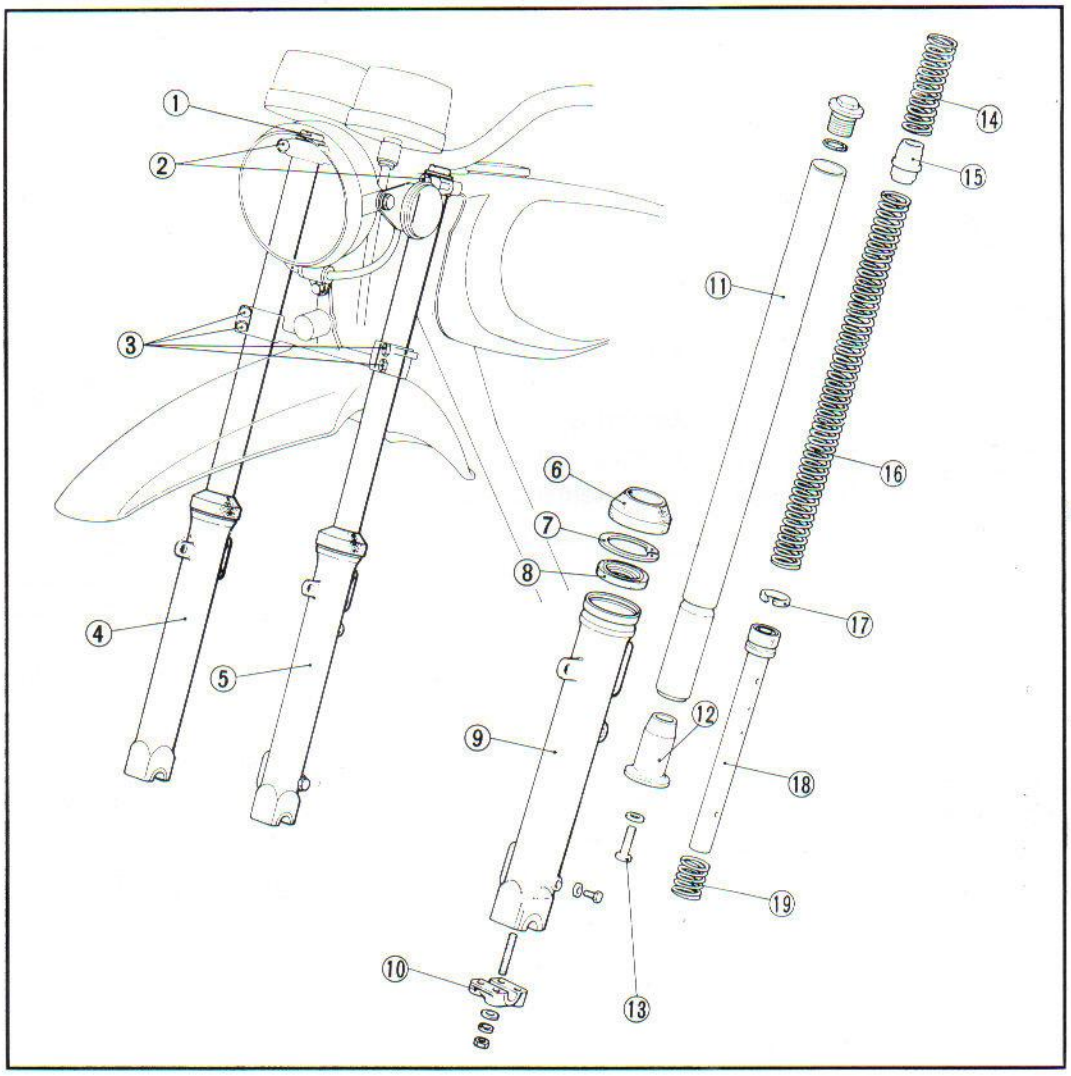


Fig. 3-39
① Front fork bolt
② 8mm bolt
③ 8mm bolt
④ Right fork bottom case
⑤ Left fork bottom case
⑥ Dust seal
⑦ Circlip
⑧ Oil seal
⑨ Fork bottom case
⑩ Front axle holder
⑪ Fork pipe
⑫ Oil lock piece
⑬ 8mm socket bolt
⑭ Front shock absorber spring A
⑮ Spring joint piece
⑯ Front shock absorber spring B
⑰ Piston ring
⑱ Bottom pipe
⑲ Fork rebound spring

Disassembly

1. Before disassembling the front fork, loosen the 8mm bolts.
2. Drain the shock absorber fluid.

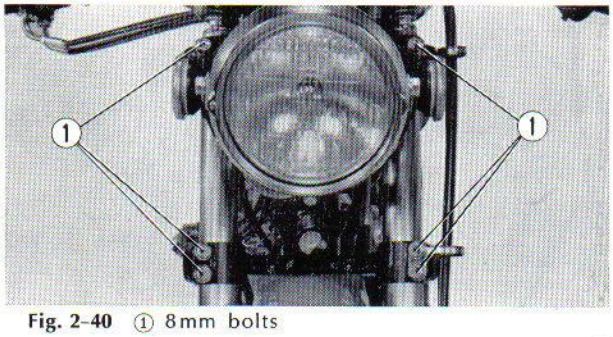


Fig. 2-40 ① 8mm bolts

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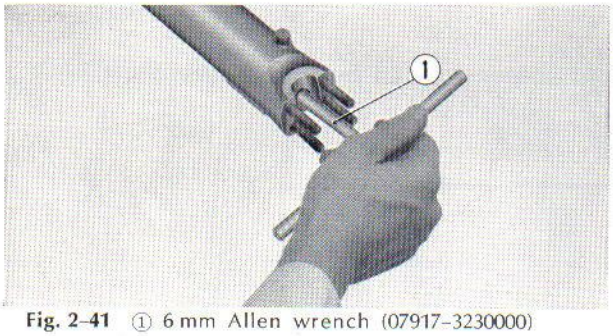


Fig. 2-41 ① 6 mm Allen wrench (07917-3230000)

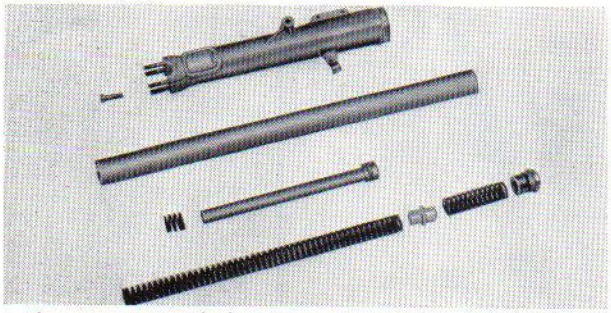


Fig. 2-42 Front fork Components

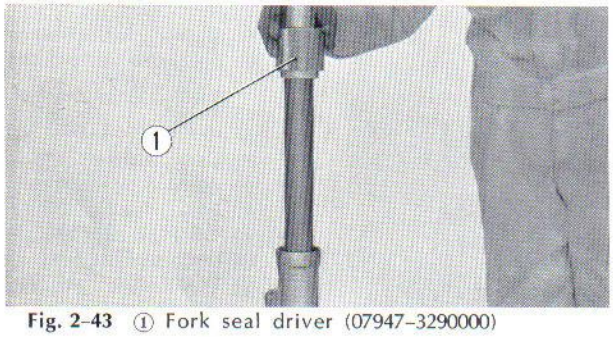


Fig. 2-43 ① Fork seal driver (07947-3290000)

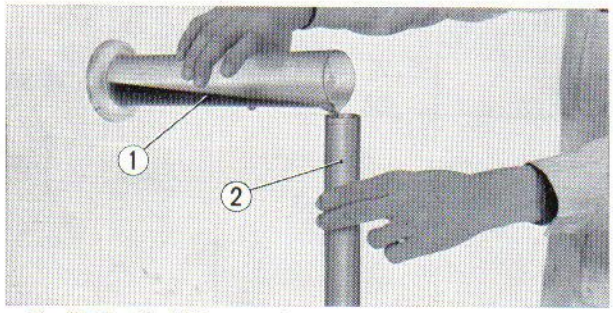


Fig. 2-44 ① ATF
② Front fork tube

3. Remove the Allen head screw with a 6 mm Allen wrench (Tool no. 07917-3230000). Remove the bottom fork case from the fork tube.
4. Remove the dust seal and the circlip. Remove the oil seal from the bottom fork case.
5. Remove the filler plug. Remove the fork tube from the steering bridge. Remove the springs and the bottom tube through the top of the fork tube.

Inspect for:

- Piston wear.
- Damper spring free length.
- Bottom case wear.
- Oil seal damage.
- Scratched or bent fork tube.

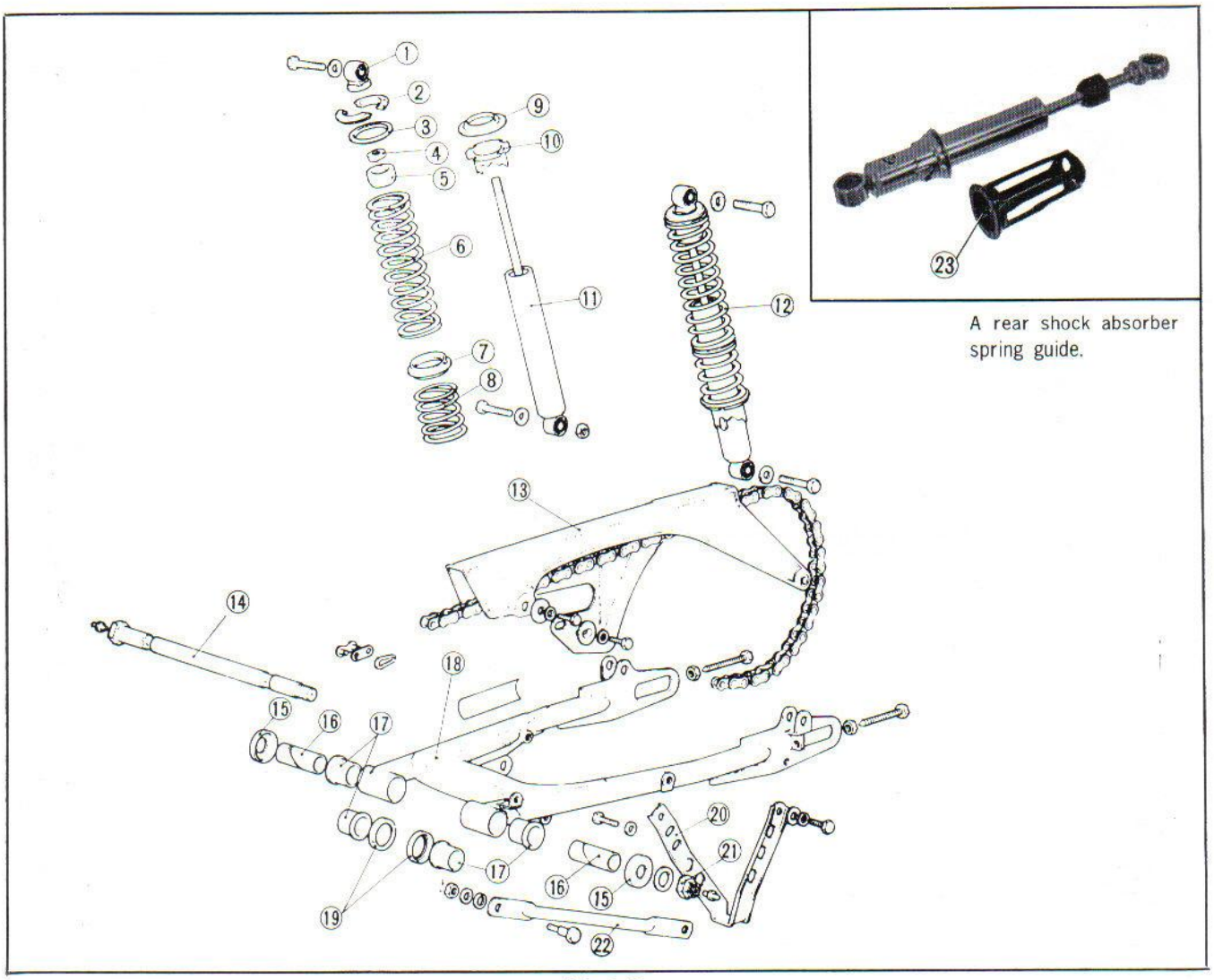
Assembly

1. Clean all parts. Lubricate the oil seal lips with ATF (Automatic Transmission Fluid).
2. Position the oil seal on the bottom fork case. Insert the fork tube into the bottom fork case to guide the fork seal driver (Tool no. 07947-3290000), and seat the oil seal into the bottom fork case. Remove the fork tube, and install the circlip and the dust cover.
3. Insert the fork tube into the bottom fork case. Insert the rebound spring, bottom tube, spring B, joint piece, and spring A into the fork tube.
4. Place the washer on the Allen screw, and coat the screw with a thread-locking solution (Loctite). Install the Allen screw in the bottom fork case and tighten securely.
5. Install the front fork assembly in the steering bridge.
6. Fill the fork tube with the correct amount of ATF.

FRONT FORK FLUID CAPACITY	XL 250	XL 250 K1, XL 350
Volume required to fill dry assembly	160 cc (5.4 ozs) each fork leg	170 cc (5.7 ozs) each fork leg
Volume required to fill after draining	145 cc (4.9 ozs) each fork leg	150 cc (5.1 ozs) each fork leg

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5. REAR SUSPENSION



A rear shock absorber spring guide.

Fig. 2-45

① Upper joint
② Spring retainer
③ Spring seat
④ Lock nut
⑤ Retainer rubber
⑥ Spring B
⑦ Spring spacer
⑧ Spring A
⑨ Lower spring seat
⑩ Spring adjuster
⑪ Rear shock
⑫ Rear shock absorber assembly
⑬ Drive chain case
⑭ Rear fork pivot bolt
⑮ Dust seal rubber
⑯ Rear fork center collar
⑰ Fork pivot bushing
⑱ Rear fork
⑲ Dust seal cap
⑳ Chain guide
㉑ Self-lock nut
㉒ Rear brake stopper arm
㉓ Rear shock absorber spring guide

The rear cushions are provided with 5 load settings for precise suspension adjustment. Choice of two rear cushion mounting positions also enables the rider to vary the ground clearance of the machine to suit different riding conditions.

REAR SHOCK ABSORBER

Disassembly

1. Compress the rear shock absorber springs using the rear shock absorber service tool (Tool no. 07959-3290000). With the springs compressed, remove the spring seat stoppers.
2. Release pressure on the cushion springs and remove them from the damper assembly.

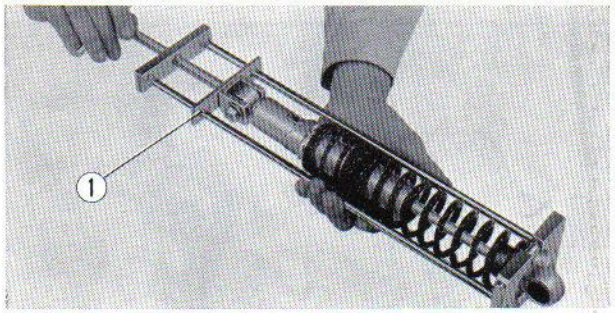


Fig. 2-46 Rear shock absorber service tool (07959-3290000)

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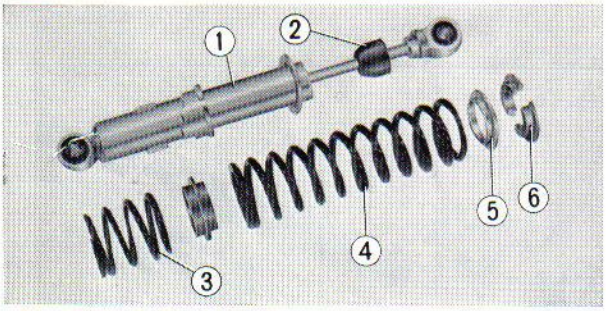


Fig. 2-47 ① Rear shock
② Stopper rubber
③ Rear shock spring A
④ Rear shock spring B
⑤ Rear shock spring seat
⑥ Spring seat stopper

Inspect for:

1. Free length or load of shock absorber springs.
2. Deformation or oil leakage of rear shock absorber.
3. Breakage of rear shock absorber stopper rubber.

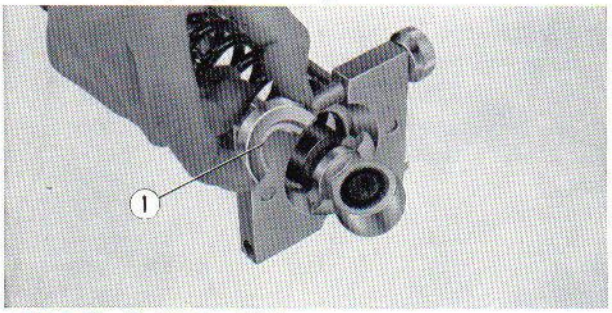


Fig. 2-48 ① Upper joint

Assembly

1. Compress the rear shock absorber spring with the rear shock absorber service tool, raise the upper joint and set the rear shock absorber with the stopper.

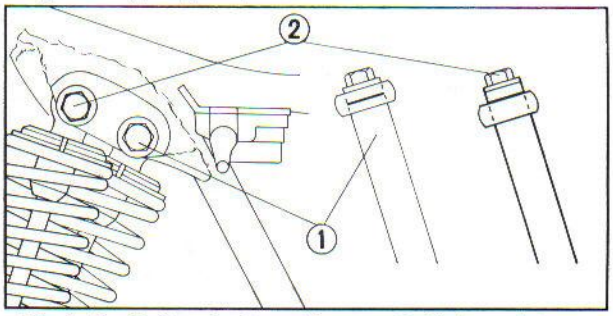


Fig. 2-49 ① Standard position ② High position

2. When attaching the rear shock absorber assembly for normal riding, attach it to the rear mainting hole of the two located on the top bracket.

This adjustment is made on the XL 250 model only.

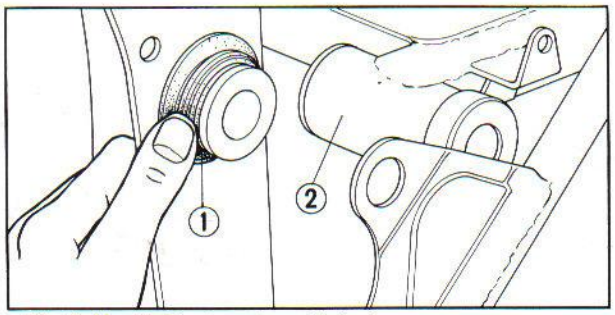


Fig. 2-50 ① Dust seal ② Swing arm

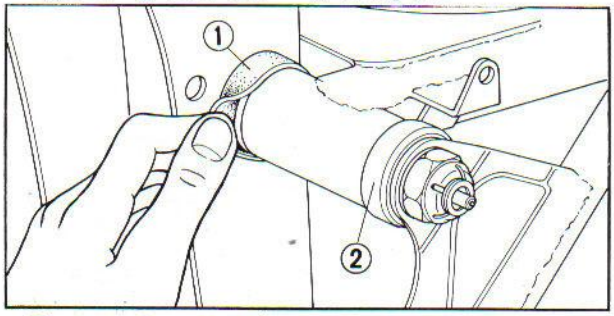


Fig. 2-51 ① Dust seal ② Swing arm

SWING ARM

Disassembly

1. Remove the swing arm pivot nut, pull the swing arm pivot bolt out and remove the swing arm.

Inspect for:

1. Rear fork center collar-to-bushing clearance.
2. Bent swing arm.

Assembly

1. Attach the oil seal lip of the dust seal cap as shown, the lip can easily be attached without folding.
2. Coat the swing arm center collar with grease and install it in pivot bushing.

On the XL 250K1 and XL 350 models, the swing arm is not equipped with a grease fitting. When they are disassembled, apply a coat of grease to the outside of the center collars before reassembly.

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6. FRAME

The frame is of a semi-double cradle type using steel plates and steel tubes for main parts. It is light and resistant to torsional stress for improving durability with both pressed frame and a tube frame, features for off road riding conditions.

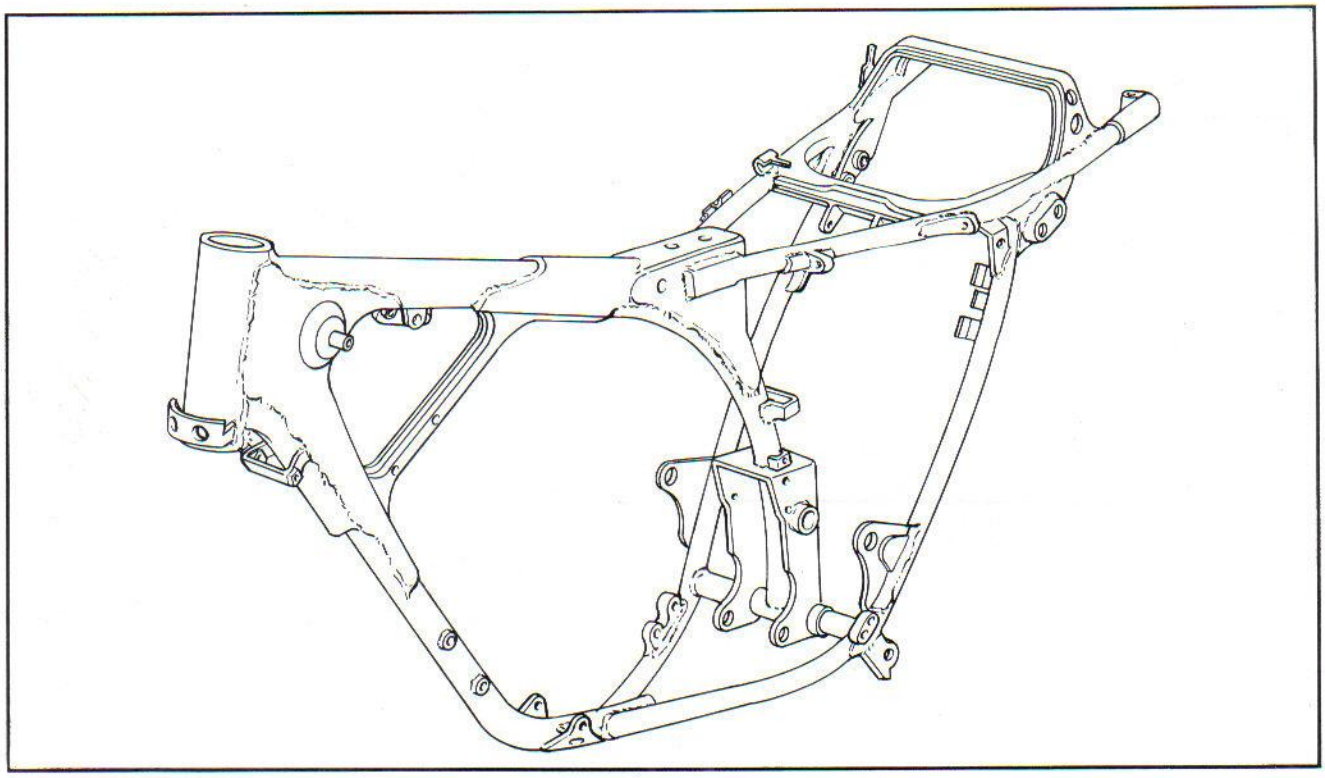


Fig. 2-52

Disassembly

1. Remove the engine.
2. Remove the seat assembly.
3. Disconnect the wiring harness and remove the battery.
4. Remove the rear fender.

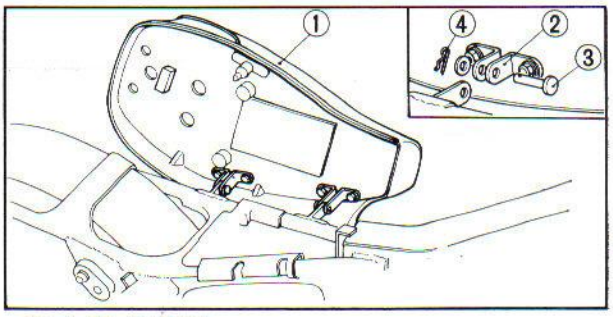


Fig. 2-53 ① Seat
② Seat hinge
③ Seat hinge pin
④ Lock pin

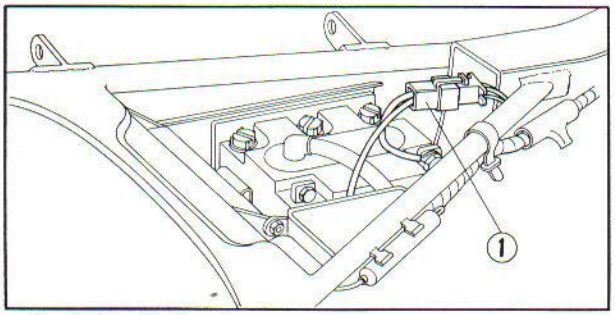


Fig. 2-54 ① Coupler

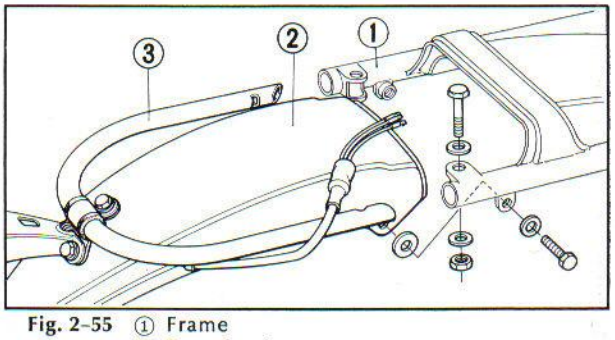


Fig. 2-55 ① Frame
② Rear fender
③ Number bracket stay

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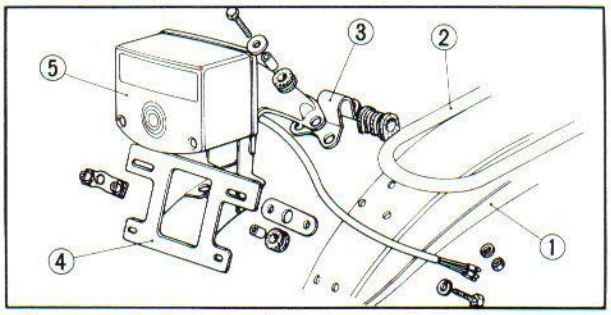


Fig. 2-56 ① Rear fender ④ Number bracket
② Number bracket stay ⑤ Tail light
③ Stay

4. Remove the tail and stop light, and the rear fender.

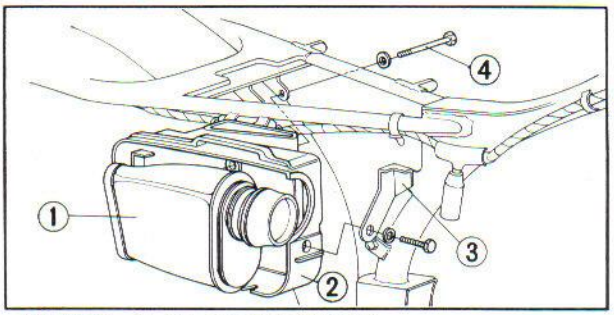


Fig. 2-57 ① Air cleaner element
② Air cleaner inner case
③ Air cleaner stay A
④ Common tightening bolt

5. Remove the air cleaner and the air cleaner inner case.

NOTE:

1. Removal of the carburetor is unnesessary.
2. Remove the air cleaner case and the battery box mounting bolt.

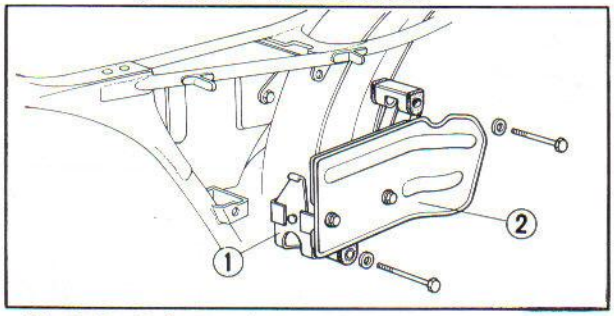


Fig. 2-58 ① Battery box
② Battery protector

6. Battery box and battery protector can be removed as a unit.

NOTE:

Remove exhaust muffler in advance.

7. Remove side stand. Remove spring with a screwdriver and remove the side stand pivot screw.

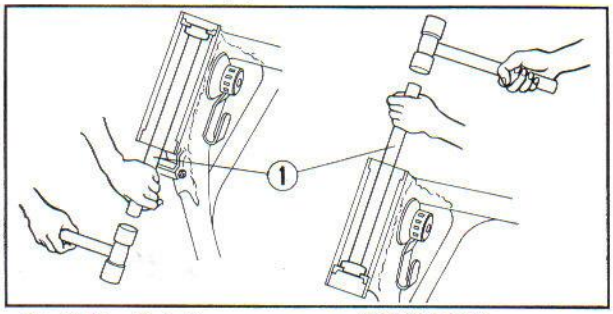


Fig. 2-59 ① Ball race remover (07048-32905)

8. Remove the top and bottom ball races from the steering head with the ball race remover (Tool No. 07048-32905).

Visual inspection

1. Overall bending, damage, deformation or cracking of frame.
2. Angle and deformation of head pipe.
3. Breakage of exhaust pipe gasket and scoring scratches or breakage of exhaust muffler.
4. Contact condition, damage or breakage of wire harnesses, electrical connectors and couplers.
5. Clogging of fuel filler cap hole.
6. Wear or damage of drain valve packing and strainer cap packing.
7. Aging and breakage of fuel line.

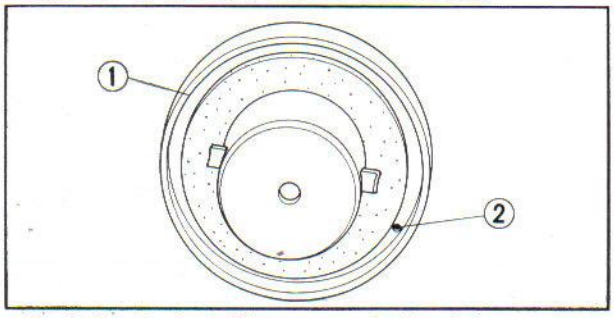


Fig. 2-60 ① Fuel filler cap ② Cap hole

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Assembly

1. Place wire at the front for regulator assembly.
2. Place wire at the rear for ignition coil.
3. Be sure that electrical wires are not damaged due to contact with the frame or other parts.
4. Attach the wire harness as shown in Fig. 2-61 and attach it with a wire harness band.

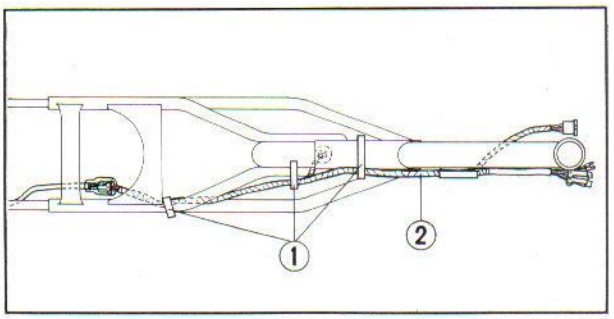


Fig. 2-61 ① Wire harness band
② Wire harness

5. Attach the main switch bracket as shown in Fig. 2-62.

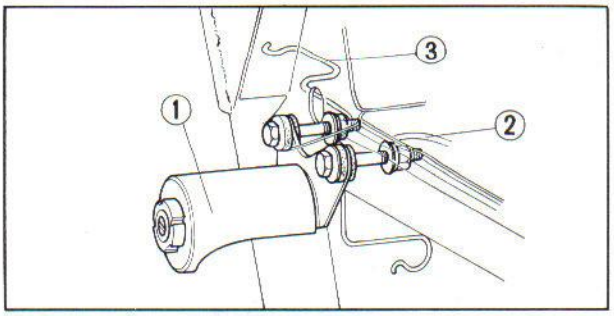


Fig. 2-62 ① Main switch bracket
② Ground (earth) cord
③ Throttle cable clip

6. Hook side stand spring as shown in Fig. 2-63.

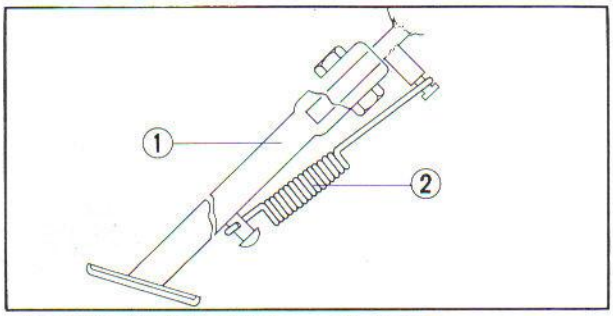


Fig. 2-63 ① Side stand ② Spring

7. Drive in ball race with the driver handle (Tool No. 07949-6110000) the ball race driver attachment (Tool No. 07946-3290000).

NOTE:
Draive in the races evenly.

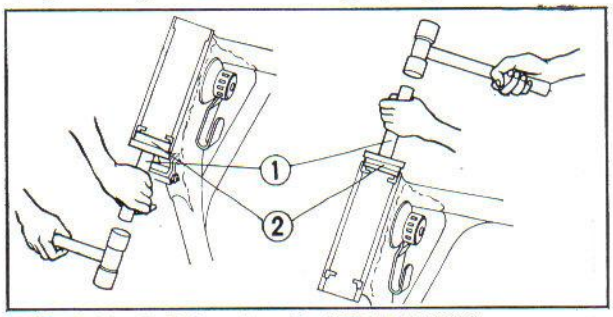


Fig. 2-64 ① Driver handle (07949-6110000)
② Ball race driver attachment (07946-3290000)

AIR CLEANER ELEMENT

1. Remove the air cleaner element. Wash in cleaning solvent and dry it thoroughly.
2. Place it in clean gear oil (No. 80~No. 90), and squeeze it tightly.
   Oil capacity: About 40 grams (1.4 ozs)

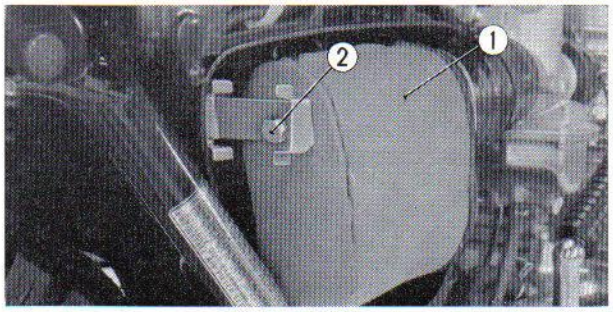


Fig. 2-65 ① Air cleaner element
② 6 mm bolt

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3. ELECTRICAL SYSTEM

1. PRECAUTIONS FOR SERVICE WORK

1) Use the wiring diagrams in section 12 to diagnose any electrical problems.
2) Inspect circuits for open or short conditions. Check wire leads for chafing or other defects.
3) Check to see if the fuse is burnt out. It the fuse is burnt out determine the cause and replace it with a proper rated fuse
4) Check for loose or missing battery terminal bolts. Check for dirty terminals or wire ends. Also check the electrolyte level and the specific gravity of battery electrolyte.
5) It will be necessary to periodically charge the battery when riding at night or during storage. Be sure to remove the negative terminal first when removing the battery, and install the positive terminal first when installing the battery.
6) The battery breather tube must be installed in accordance with the direction on the label.
7) Inspect electrical components or parts after checking that the wiring and power source are in good condition.

2. GENERAL DESCRIPTION

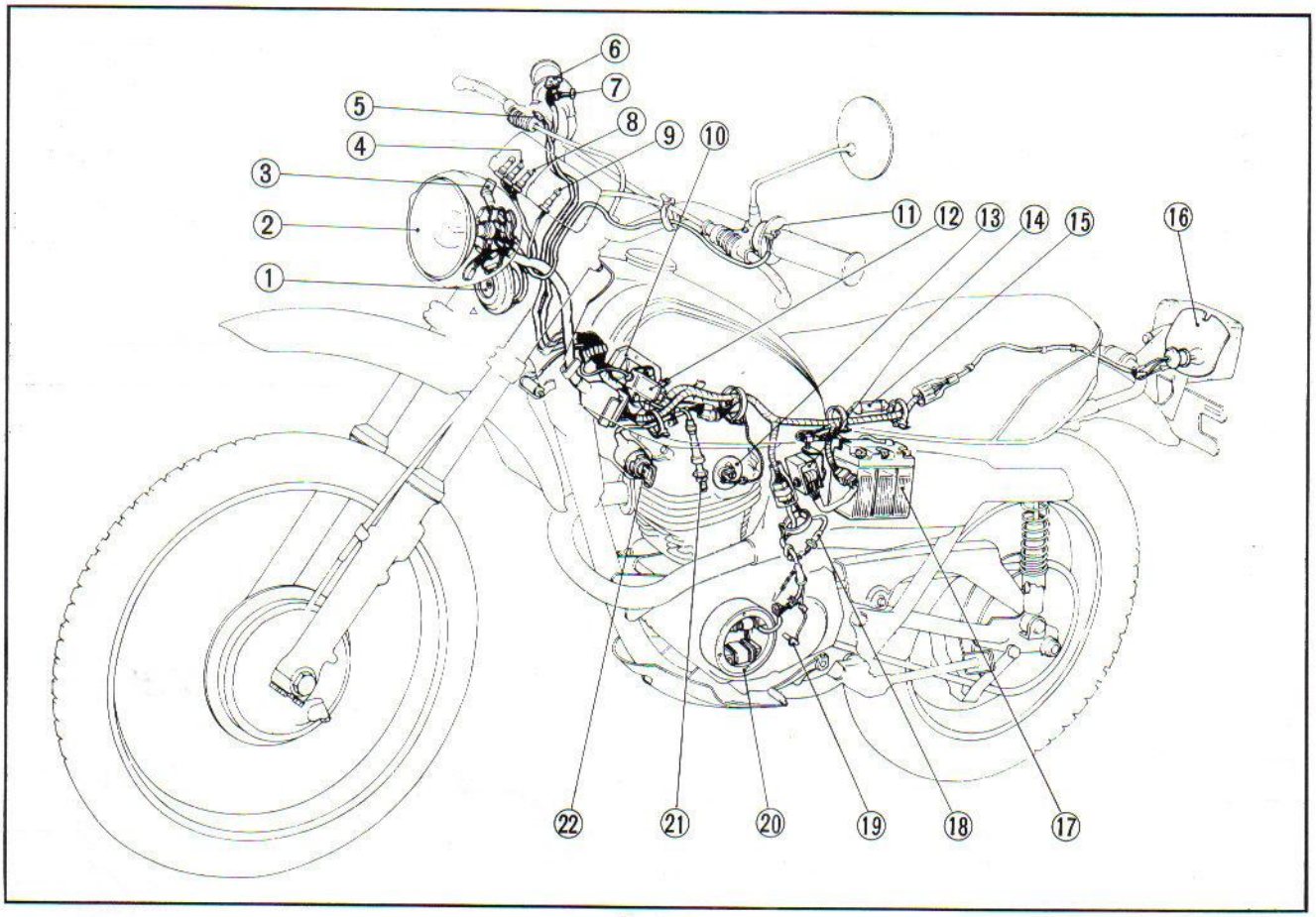


Fig. 3-1

① Horn
② Head lamp
③ High beam pilot lamp
④ Tachometer pilot lamp
⑤ Front brake stop switch
⑥ Emergency switch
⑦ Light switch
⑧ Neutral light
⑨ Speedometer pilot lamp
⑩ Ignition coil
⑪ Horn button
⑫ Current limiter
⑬ Contact breaker assembly
⑭ Silicon rectifier
⑮ Fuse holder
⑯ Tail/stop light
⑰ Battery
⑱ Rear brake light switch
⑲ Neutral switch
⑳ AC generator
㉑ Spark plug
㉒ Main switch

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3. IGNITION SYSTEM

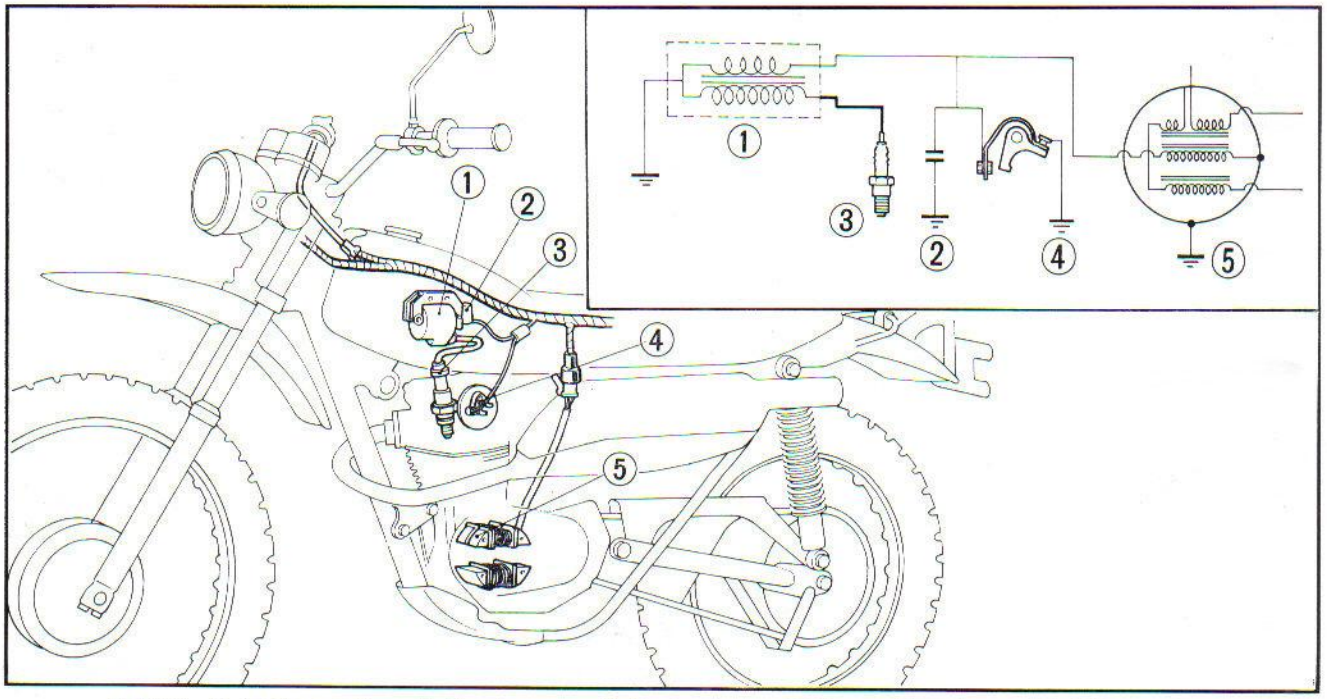


Fig. 3-2 ① Ignition coil ② Condenser ③ Spark plug ④ Contact breaker ⑤ AC generator

The ignition system consists essentially of an A.C generator, an ignition coil, a condenser, a contact breaker, a spark advancer and a spark plug.
Referring to the schematic diagram above, the A.C generator is built in to the flywheel.
The ignition coil is a step up transformer which has its primary circuit broken at regular intervals by a set of contacts operated by a cam mounted on the camshaft. Opening and closing this circuit causes the field to expand and contract, inducing a high voltage in the secondary winding. This high voltage is fed to the spark plug and causes it to spark and ignite the fuel-air mixture. The ignition timing can be varied by moving the contact point base.
The spark advancer is a centrifugal type governor, and is provided to automatically change the cam phase in relation to the camshaft (the valve timing) to cause the plug to emit a "well timed spark" at all speeds.

Specifications

Ignition coil 3 point spark gap opening	7 mm (0.27 in) min. at 500 rpm
Spark plug Type Plug gap	 D8ESL (NGK) 0.6~0.7 mm (0.023~0.027 in)
Contact breaker Point gap Spring force	 0.35 mm (0.014 in) ±0.05 mm (0.0002 in) 800 g (1.76 lb) ±100 g (0.22 lb)
Condenser Capacity Insulation resistance	 0.25 μF 10 MΩ (1,000 MV)
Spark advancer Advance angle 1 deg. spark advance rpm Full advance	 8.5±1.5° 1,100±100 rpm (at camshaft) 2,000±100 rpm

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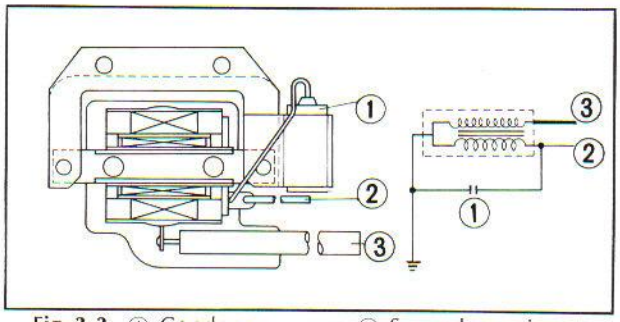


Fig. 3-3 ① Condenser ② Primary wire ③ Secondary wire

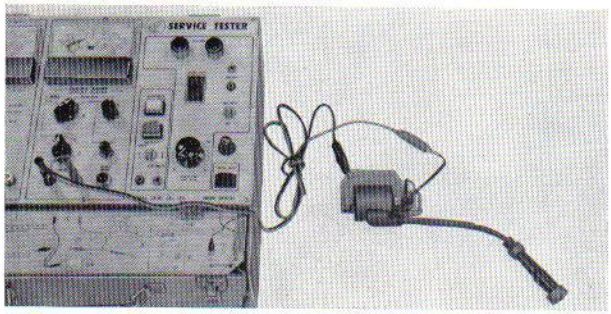


Fig. 3-4 Checking for continuity of primary coil

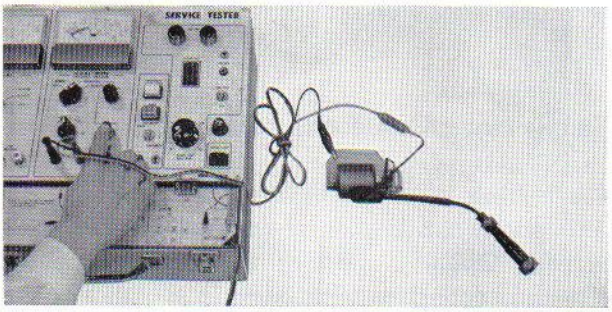


Fig. 3-5 Measuring the condenser

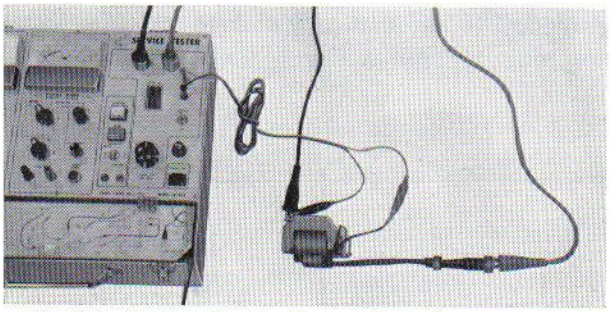


Fig. 3-6 Testing the ignition coil performance

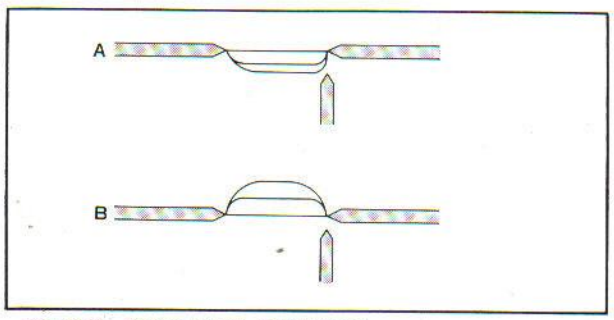


Fig. 3-7 Three-point spark test

1) Ignition coil

The ignition coil consists of a primary coil with 160 turns of copper wire wound around an iron core of laminated silicon steel sheets and of a secondary coil with 11,000 turns of copper wire wound around a bobbin which covers a primary coil.

The coil's performance is improved by forming a closed magnetic circuit connecting both ends of a center core with a shunt core.

Inspection

Ignition coil continuity test.

Primary coil

Check for continuity between an attaching stay and a primary coil (Black/white lead) using the resistance range of a service tester.

Secondary coil

Check for continuity between the stay and a high tension wire by using a continuity tester. If there is no continuity, the coil must be replaced.

Condenser

Check the condenser by using a service tester. If the capacity or insulation resistance is less than the specified value, ignition coil must be replaced.

Ignition coil performance test

Continuity is not the only criteria for getting a general idea of whether or not the ignition coil is in good condition. This is why the coil must be checked by using a service tester.

To test, proceed as follows :

Connect the power lead of the service tester to a 6-V battery; the primary wire lead and secondary wire lead to a coil stay, and the others as instructed by the service tester. Adjusting the three-point spark test knob, measure the spark gap while it is sparking steadily.

The coil is in good condition when the spark gap is greater than **7 mm (0.27 in.)** at 500 rpm engine speed.

NOTE :

Measure the spark gap, making a spark condition as shown in Fig. 3-7 (A).

If the spark appears as in B, reverse the lead so that it results in the A condition

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2) Spark plug

Removal

(1) Use compressed air to remove dirt around the spark plug.
(2) Remove the spark plug with a plug wrench.

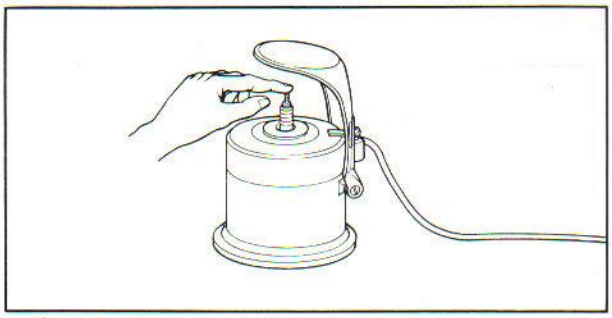


Fig. 3-8 Spark plug cleaning

Inspection

Inspect the spark plug for worn electrodes, excessive gap, fouled condition and damaged porcelain insulator.
(1) Clean the spark plug with a plug cleaner or wire brush.
(2) Measure the electrode gap with a feeler gauge and, if necessary, adjust to the specified gap.
Standard gap : **0.6–0.7 mm (0.023–0.028 in.)**
(3) Replace the spark plug if the porcelain insulator is damaged, and replace the washer if it is damaged or distorted.
Standard spark plug : D8ES-L(NGK)

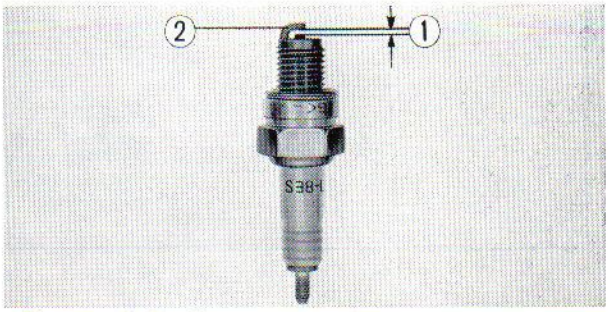


Fig. 3-9 ① Spark gap ② Side electrode

Reinstallation

(1) Finger-tighten the spark plug and then torque it to specification with the spark plug wrench.
Torque : **1.5–2.0 kgm (11–14 ft-lb)**

NOTE :
1. **Do not drop the plug washer.**
2. **A loose plug will not dissipate the heat properly and may result in an engine malfunction.**

3) Spark advancer

Inspection

(1) Clean dust and other foreign matter from the friction surfaces, and apply heat and weather resisting grease. Check if spark advancer is operating smoothly.
(2) Visual inspection of wear on the advancer pin.
If the wear is excessive, replace the advancer pin.

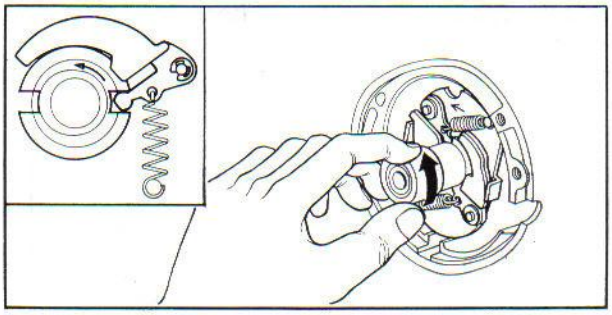


Fig. 3-10 Checking the spark advancer

Assembly

(1) Installation of advancer.
Install the advancer to the camshaft by aligning camshaft pin with the groove in the advancer.
(2) Installation of contact breaker.
Install contact breaker by following the reverse of the removal procedure.

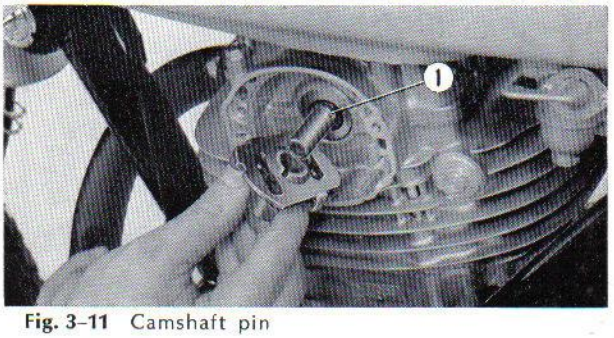


Fig. 3-11 Camshaft pin

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4. CHARGING SYSTEM

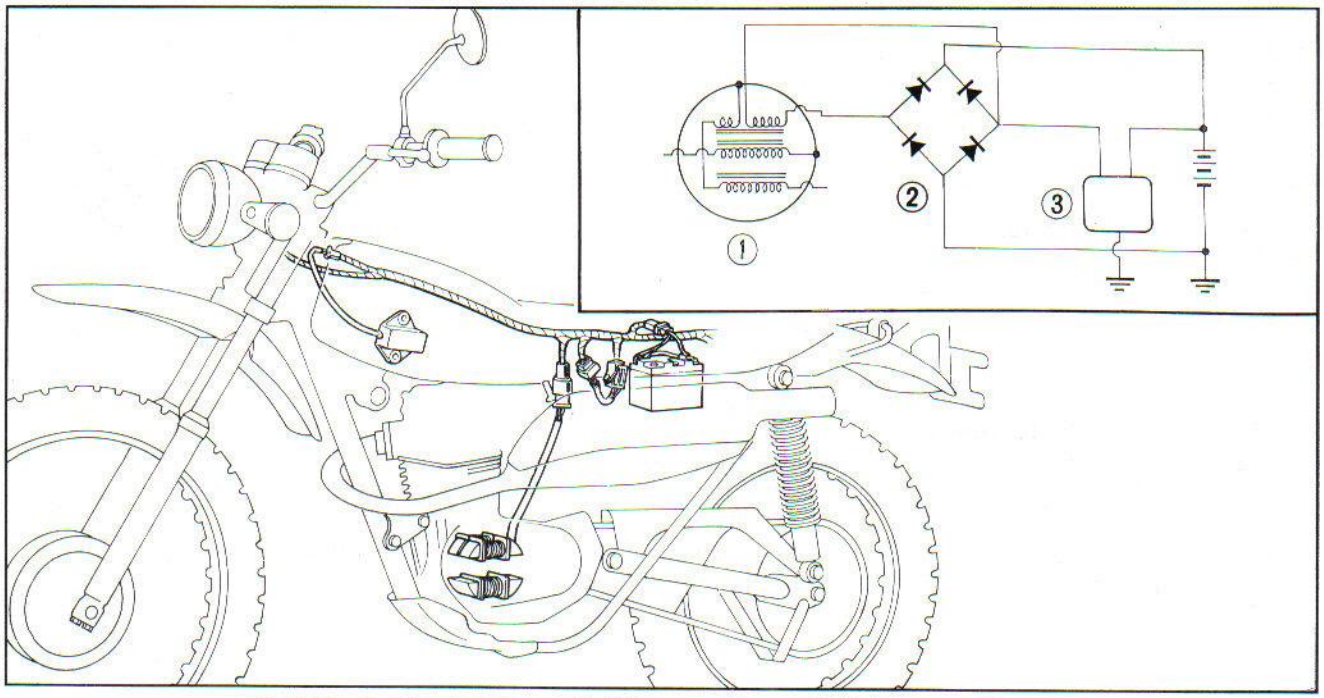


Fig. 3-12 ① AC generator ② Silicon rectifier ③ Voltage regulator

The charging system for the XL 250, XL 250 K1 and XL 350 models consists essentially of a flywheel type AC generator (ACG), a silicon rectifier and a current limiter. Alternating current from the ACG installed to the crankshaft is converted into direct current (DC) by a bridge-type silicon rectifier and is then fed to the battery. When the battery voltage reaches 7.5±0.5 V, the regulator begins to actuate in order to bypass a surplus current, reducing the amount of charging current, to prevent the battery from being overcharged. At night, the head lamp is powered by the AC generator.

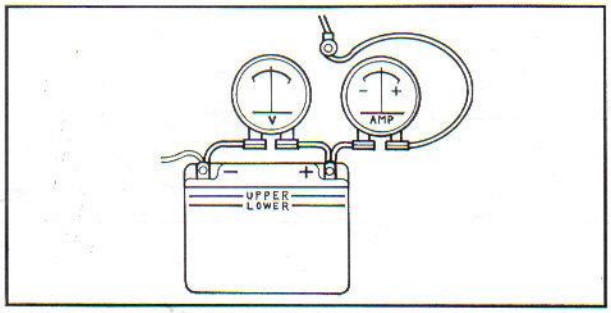


Fig. 3-13 Checking charging current and voltage

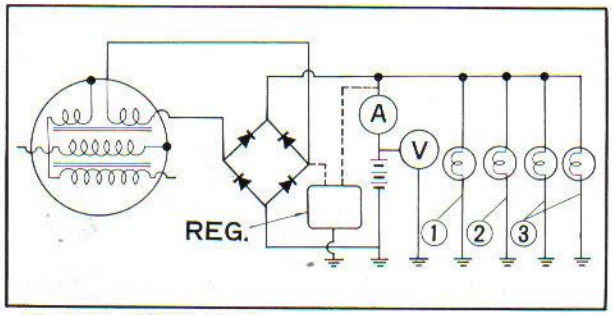


Fig. 3-14 ①②③ Loads

Charging test

1) Check the charging current and voltage by means of voltmeter and ammeter.
2) Use a fully-charged 6N6-3B battery.
   If the specific gravity is lower than 1.26 (at 20°C or 68°F), recharge the battery so that the specific gravity is up to 1.27±0.01 (at 20°C or 68°F).
3) Disconnect the battery cable from the ⊕ terminal of the battery, and connect it to the ⊕ side of ammeter. Connect the ⊖ side of the ammeter to the ⊕ terminal of the battery. Next, connect the ⊖ side of the voltmeter to the ⊖ terminal of the battery and consequently the ⊕ side to the ⊖ terminal as shown in Fig. 3-13.
4) Check a reading of the ammeter and voltmeter during night riding with light and in the day time without light in accordance with the specifications given below:

NOTE:
When checking, disconnect the regulator cable.

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Charging characteristics (without regulator)

Start of charging, rpm		Charging current	
		at 5000 rpm	at 8000 rpm
Light powered Battery voltage	1,000 max.	1.5 A, min.	4 A, max.
	6.3 V	8.0 V	8.9 V
Not powered Battery voltage	2,500 max.	1.2 A, min.	1.3 A, max.
	6.3 V	7.5 V	8.3 V

NOTE: If the meter readings do not meat the specifications, check the AC generator. If the battery is subjected to discharge even if the AC generator is in normal condition, check the regulator.

AC generator

Specifications

Manufacturer	DENSO
Output	80 W
Battery voltage	6 V
Polarity	Negative ground

1) Disassembly

(1) Remove LH side cover.
(2) Remove stator coil.
(3) Remove generator rotor.

NOTE:
Use the generator rotor puller (Tool No. 07933-3290000) and drive sprocket holder (Tool No. 07922-3290000).

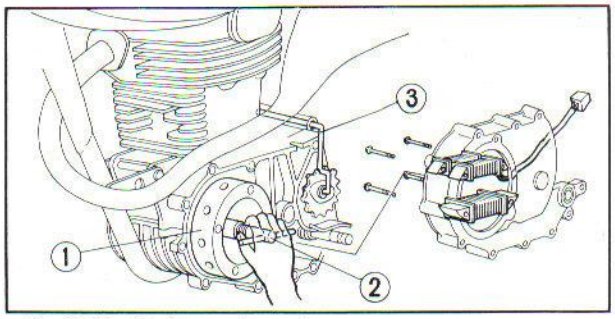


Fig. 3-15 ① Generator rotor
② Generator rotor puller (07933-3290000)
③ Drive sprocket holder (07922-3290000)

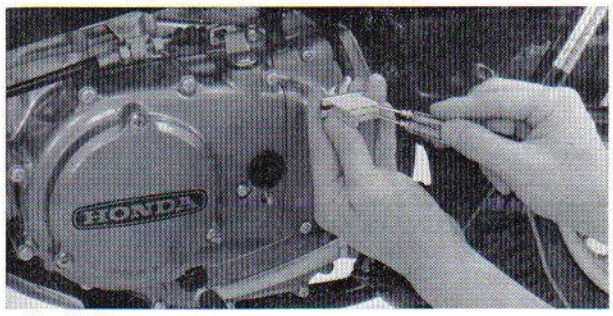


Fig. 3-16



Fig. 3-17

2) Inspection

(1) Inspect resistance and continuity of stator

Inspection point	Resistance	Temperature
Black/white lead and stator	2.29 Ω	at 20°C or 68°F
White/yellow lead and stator	0.36 Ω	
Pink lead and yellow lead	0.57 Ω	

Regulator

Type and manufactures	RS 2113 KOKUSAN ELECTRIC CO., LTD.
Voltage	7.5 V ± 0.5 V

1) Inspection

Connect the circuit as shown in Fig. 3-18 and increase the voltage by controlling a variable resistor. If the ammeter needle shows that the voltage is between **7-8 V**, it meets the requirements. If the needle shows low voltage, it is an indication that the SCR (Silicon controled regulator) is defective. When the needle does not indicate even if voltage is increased normally, there is an open circuit. Replace the regulator.

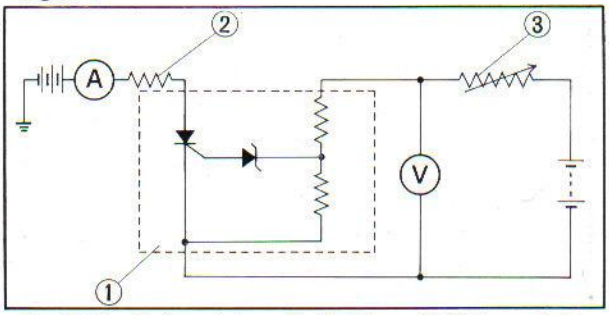


Fig. 3-18 ① Regulator ② Resistor ③ Slide resistor

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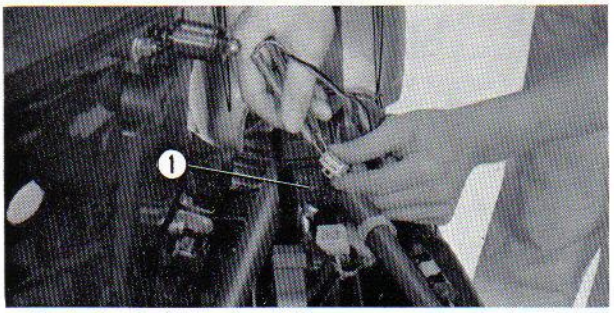


Fig. 3-19 ① Silicon rectifier

Silicon rectifier

Specifications

Maximum rectifier current	14 V, 5 A
Inverse directional leakage current	0.5 mA (at 50 Hz, 200 V)

1) Inspection

(1) Inspect for normal and reverse directional rectifying function of the four commutators.
(2) Test for normal and reverse continuity between each lead listed below.

NOTE:
Use kΩ range of resistance meter.
Resistance meter should show current flow in one direction only. If the current flows in both directions the rectifier is defective.

Inspection point	1. Red/white lead and pink lead
	2. Pink lead and green lead
	3. Green lead and yellow lead
	4. Yellow lead and red/white lead

NOTES:
1. **Do not use a megger for the test since the high voltage will damage the silicon diodes.**
2. **Observe the polarity of the battery. Connecting the battery terminals in reverse will shorten battery life as well as cause a large amount of current to flow through the electrical system, causing damage to the silicon rectifier and the wire harness.**
3. **Do not operate the generator at a high speed with the "P" terminal (red/white lead from the magnetic switch) of the silicon rectifier disconnected. The high voltage generated may damage the silicon recifier.**
4. **When charging the battery while mounted on the motorcycle from an external charging device with high charge rate such as a "quick charge", the wiring to the silicon rectifier should be disconnected at the coupler to prevent damage.**

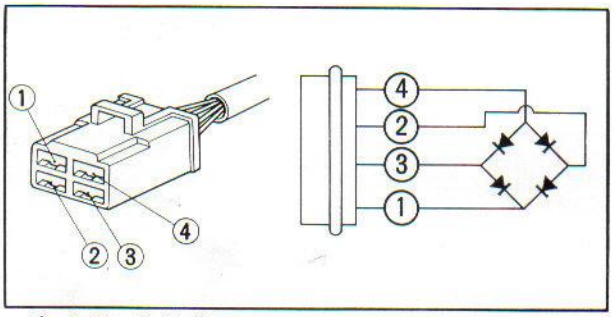


Fig. 3-20 ① Yellow
② Red/white
③ Green
④ Pink

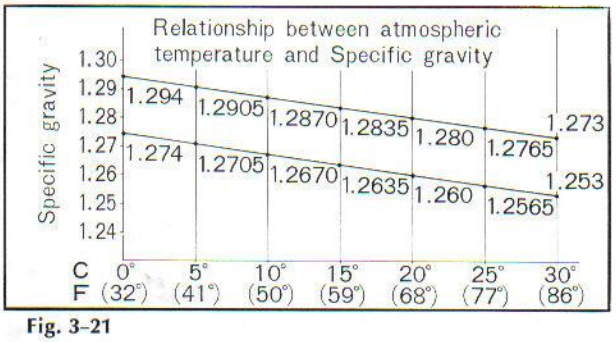


Fig. 3-21

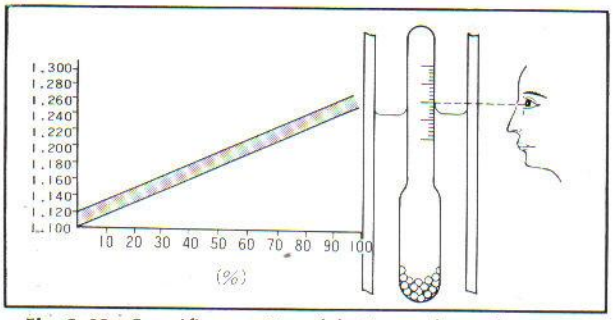


Fig. 3-22 Specific gravity of battery electrolyte

Battery

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

1) Checkup of battery charged state

The specific gravity of the battery electrolyte determines the battery charged condition. When the specific gravity is below 1.20 (20°C or 68°F), the battery should be recharged. When reading the hydrometer, it should be held vertical at eye level with the electrolyte liquid level. The valve on the floating scale should be read at the point where the liquid separates from the stem of the float as shown in Fig. 3-21.

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2) Inspection and replenishment

(1) Electrolyte in each cell of the battery should be inspected every 15 days or one month. Add distilled water to bring the level up to the upper mark whenever the electrolyte level is below the level mark.
(2) Whenever there is rapid lowering of the electrolyte level, the charging system should be inspected.
(3) Periodically measure the specific gravity. After adding distilled water, allow the battery to be charged by operating the engine or riding the motorcycle.
(4) Most battery failures are due to corrosion of the connectors and terminals causing poor contact; lack of battery paste; and sulfation (battery which is left in a discharged condition for a long period of time will have lead sulfate formed on the cell plates and recharging will not restore it to its normal condition), therefore, inspection should be performed periodically.

NOTE:
When sediment has formed at the bottom of the battery as shown in the Fig. 3-23, the battery should be replaced.

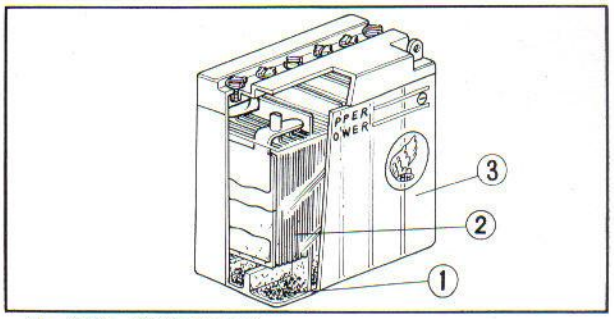
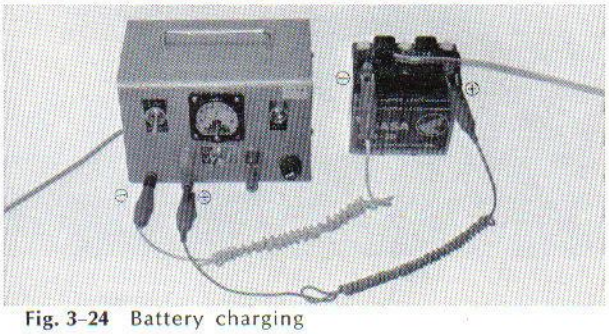


Fig. 3-23 ① Sediment
② Plates
③ Battery

3) Notice on battery charging

(1) Refrain from charging the battery at a fast rate (quick charge) or it will shorten battery life. When rapid charging is necessary, limit the charging current to 1.0 A.
(2) Hydrogen gas is generated during the charging process, therefore, keep fire away from the battery.
(3) After battery charging is completed, wash the battery with water to remove spilled electrolyte, and apply grease to the terminals.


Fig. 3-24 Battery charging

Inspection for other electrical equipments

1) Main switch

Disconnect the coupler and check that the continuity in the chart below works with the switch in either the ON or OFF position. Any condition other than that listed in the table indicates a defective switch.

Wire color		BAT Red	TL Black	IG Black/ white	E Green
Key position	ON	○——	——○		
	OFF			○——	——○

(XL 250, XL 250 K1)

Wire color		IG Black/ white	HO Black	BAT Red	E Green
Key position	ON	○——	——	——	——○
	OFF			○——	——○

(XL 350)

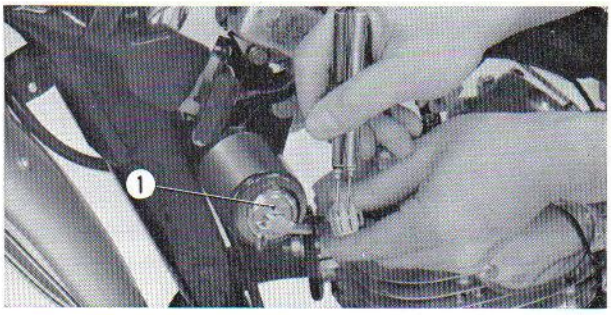


Fig. 3-25 ① Main switch

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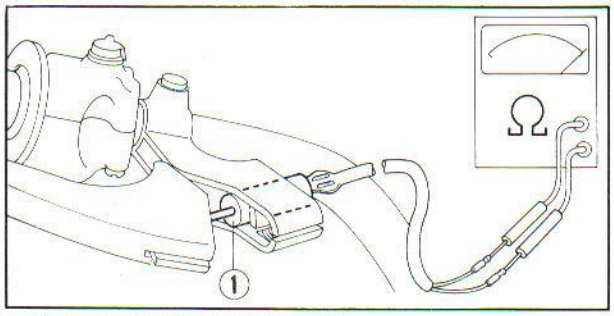


Fig. 3-26 ① Front stop switch

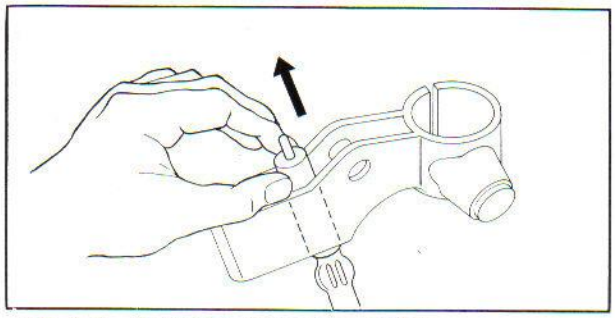


Fig. 3-27 Replacing front stop switch

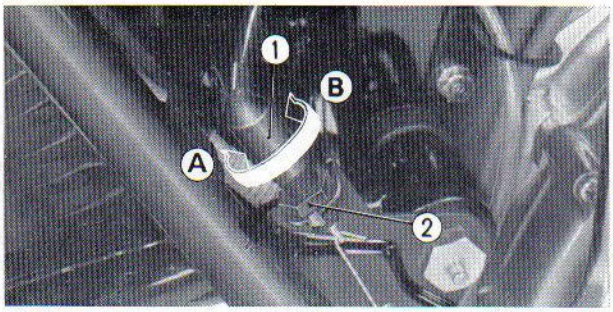


Fig. 3-28 ① Rear stop switch ② Adjusting nut

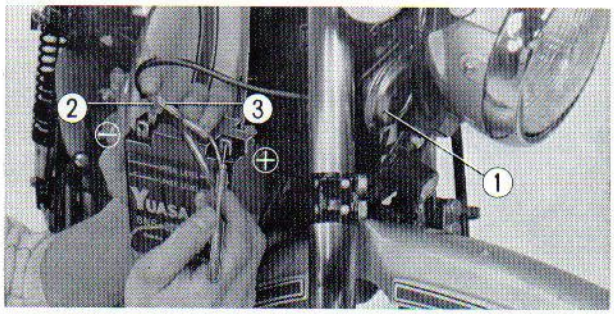


Fig. 3-29 ① Horn ② Black ③ Light green

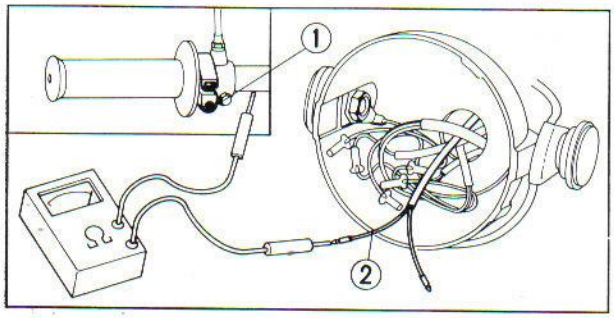


Fig. 3-30 ① Horn button ② Light green

2) Front stop switch

After adjusting the front brake, with the brake lever pulled 10-20mm (0.4-0.8 in.) at the extreme right end, check for continuity between the black lead and the green/yellow lead. When replacing the stop switch, remove the brake lever and push the wire-side of the switch to allow it to be held by fingers, and then pull out.

When assembling, install the wire to the switch and assemble it by reversing the disassembly procedure. Be sure to align the protrusion of the switch with the groove in lever holder.

3) Rear stop switch

Making sure that the stop switch spring is fully pulled to its stroke end, check for continuity between the black lead and green/yellow lead for normal operation. Adjust timing of the rear stop light by depressing the brake pedal. Turn the adjusting nut clockwise to advance the timing, and counterclockwise to retard timing.

4) Horn

Disconnect the horn leads, and connect the black lead to the ⊕ terminal and the light green lead to the ⊖ terminal of a fully charged **6 V** battery. If it is in normal condition, check horn button switch.

5) Horn button switch

Connect tester lead probes with the light green wire terminal within the head light case and with the handlebar for a continuity test. Service tester should register continuity only when the button is pressed. If no continuity or intermittent continuity exists, clean or grind the switch point by using an oil stone. If the wire is broken or open, replace it.

6) Lighting switch

Check for a broken wire and defective contact between the respective switch wires. Continuity between the different cords should exist in accordance with the switching position table shown on page 43. If continuity exists, the switch is defective.

Date of Issue: Sept. 1, 1977
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Wire color		LB White	HB Blue	DY White/ yellow	TL Brown/ white	HO Black
ON	L	○—		—○		
	(N)	○—	—○	—○	○—	—○
	H		○—	—○		
OFF						

(XL 250, XL 250 K1)

Wire color		HB Blue	LB white	CI White/ yellow	TL Brown/ Green yellow	HO Black/ Light green
ON	L		○—	—○	○—	—○
	(N)	○—	—○	—○	○—	—○
	H	○—		—○	○—	—○
OFF						

(XL 350)

7) Emergency switch

Disconnect the emergency switch leads within the headlight case, and check for continuity between the respective switch leads in accordance with the following table:

Wire color	Black/white	Green
ON		
OFF	○—	—○

(XL 250, XL 250 K1, XL 350)

8) Neutral switch

Check for continuity between the neutral wire and engine with the transmission in the neutral position. The continuity should exist only when the transmission is in the neutral position.

Braker point gap and ignition timing adjustment

1. Adjustment of contact breaker point gap

1) Rotate the crankshaft so that the cam top faces the slipper of the contact breaker. Measure the point gap with a feeler gauge. Standard point gap : **0.3–0.4 mm (0.012–0.016 in.).**

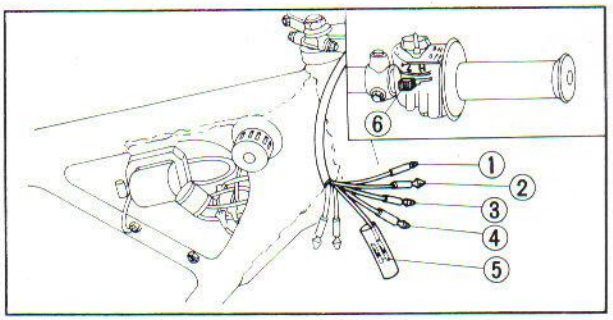


Fig. 3-31 ① White ② Blue ③ White/yellow ④ Brown/white ⑤ Black ⑥ Lighting switch

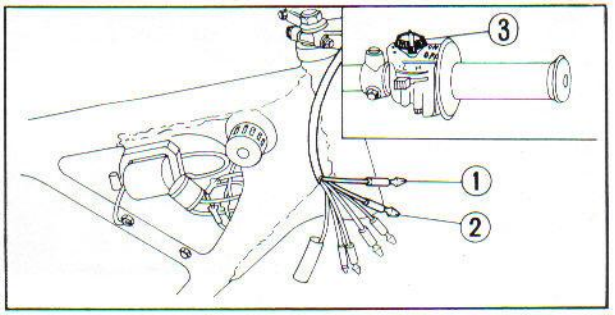


Fig. 3-32 ① Black/white ② Green ③ Emergency switch

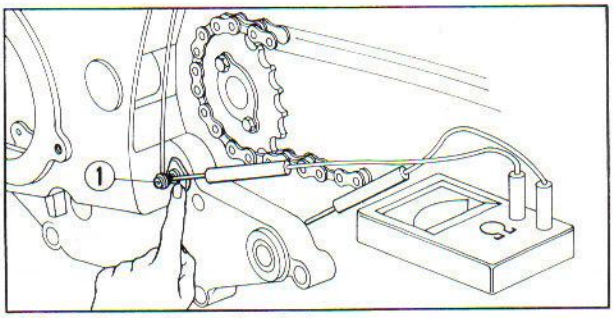


Fig. 3-33 ① Neutral switch

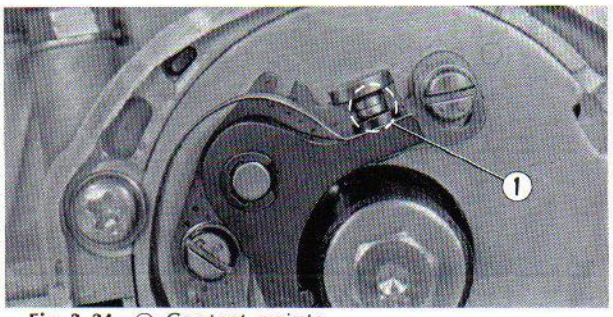


Fig. 3-34 ① Contact points

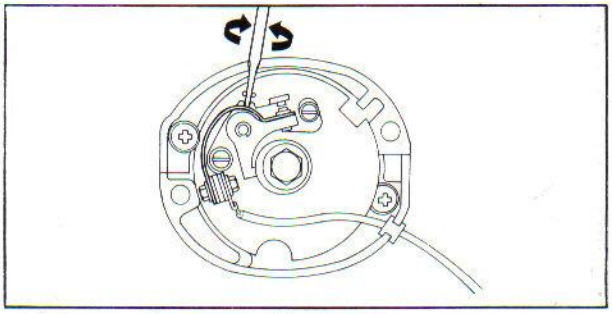


Fig. 3-35 Adjustment of point gap

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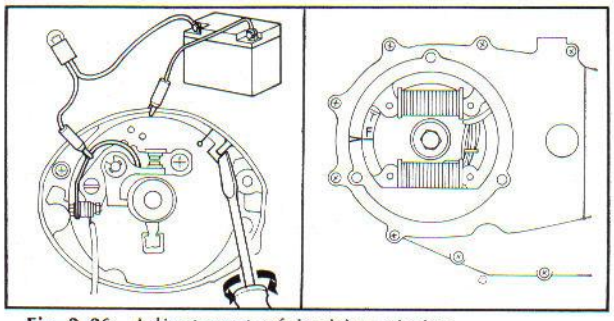


Fig. 3-36 Adjustment of ignition timing

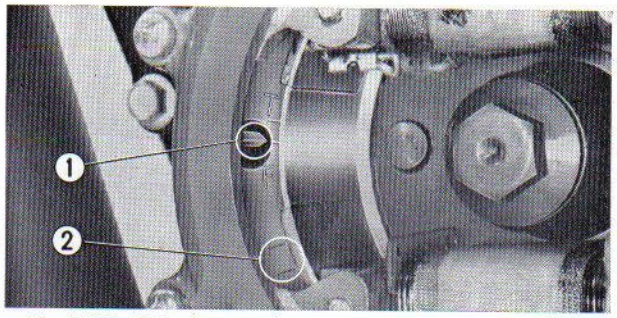


Fig. 3-37 ① Index mark
② Full advance marks

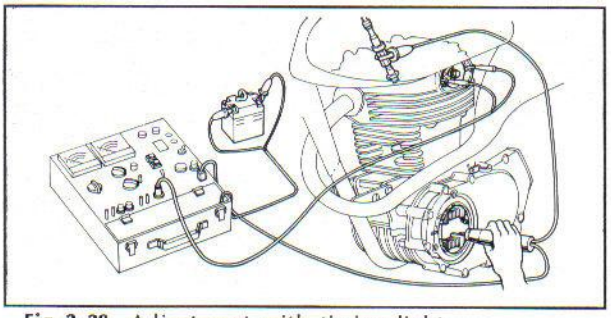


Fig. 3-38 Adjustment with timing light

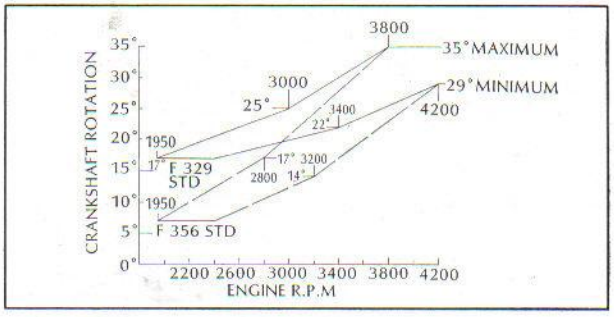


Fig. 3-39

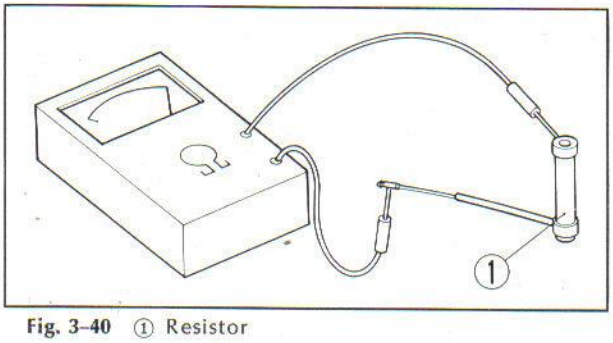


Fig. 3-40 ① Resistor

2) When setting the gap, loosen the screws and adjust the breaker assembly with a screwdriver as shown in Fig. 3-35.

NOTE:
Clean the point surface with a point file or oil stone if it is dirty or rough. After cleaning, be sure to wipe off with a dry lint free cloth.

2. Adjustment of ignition timing

1) Adjustment with light
   a. Connect the **6 V** battery and the **6 V-3 W** light as shown in Fig. 3-36.
   b. See if the light flickers when the "F" mark of the flywheel aligns with the index mark while the crankshaft is rotating slowly.
   c. When adjusting the timing, loosen the screws and adjust the base plate so that the light flickers when the "F" mark aligns with the index mark. Tighten the screws.

2) Adjustment with timing light
   a. Insert the plug or the timing light wiire into the jack of the timing light.
   b. Remove the spark plug cap, and connect timing attachment between the spark plug and cap.
   c. Connect the high tension voltage wire of the timing light to the timing attachment. Set the control knob on the meter to "TIMING", and start the engine.
   d. See if the "F" mark aligns with the index mark by directing the timing light beam to the index mark. Index mark should be positioned between the full advance marks adjacent to "F" mark, with the engine operating at **3800~4200 rpm,** for normal ignition timing when advanced angle is maximum.

NOTE:
The most accurate method is to use a timing strobe light.

3. Inspection of low beam lighting resistor

a. Measure the resistance of the resister as shown in Fig. 3-40. Replace it if the measured value is beyond service value shown below
   Serviceable value: 3.4~3.8Ω

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4. MAJOR MODIFIED POINTS OF XL 350

1. AIR-CUT VALVE

An air-cut valve is used on all XL 350 models. The unit eliminates the possibility of engine misfire when the throttle is closed quickly to decelerate.

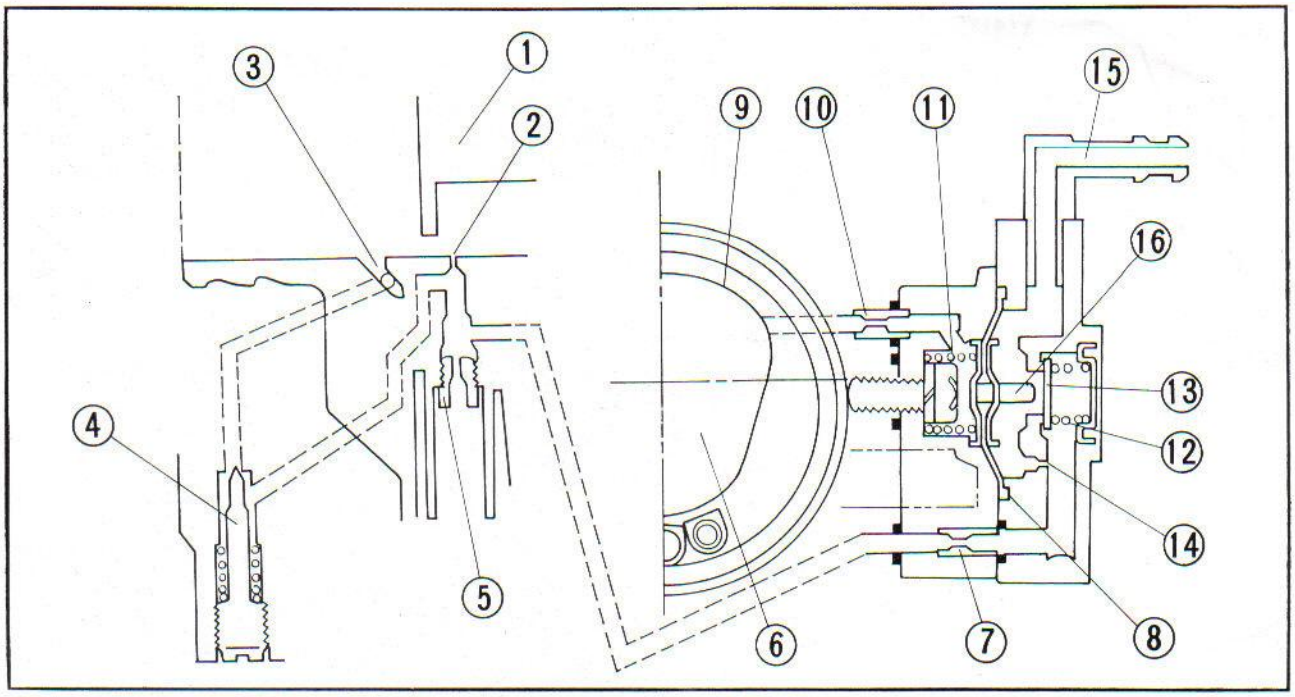


Fig. 4–1 ① Throttle valve
② Bypass
③ Pilot outlets
④ Pilot screw
⑤ Slow jet
⑥ Main bore
⑦ Slow air jet
⑧ Diaphragm
⑨ Vacuum intake tap
⑩ Boost jet
⑪ Spring A
⑫ Spring B
⑬ Plate
⑭ Leak hole
⑮ Air intake
⑯ Rod
⑰ Air-cut valve assembly

(General)

Combustion may take place in the exhaust pipe. This condition could be due to an excessively lean fuel mixture delivered to the cylinder (caused by a rapid returning of the throttle to the fully closed position). To prevent such misfiring, the carburetor is equipped with an air-cut valve.

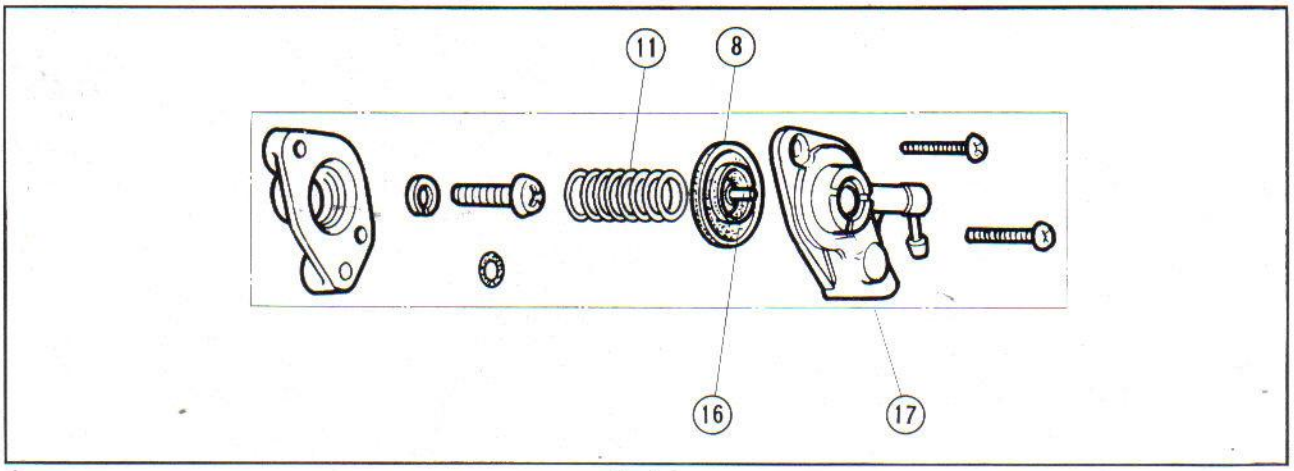


Fig. 4–2

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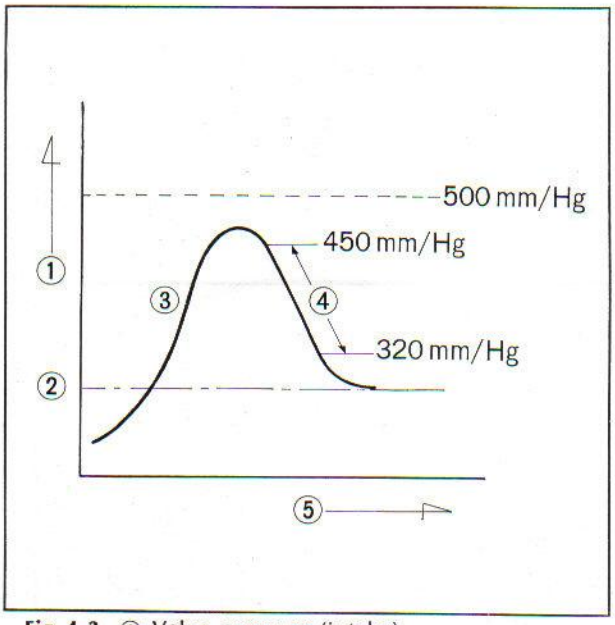


Fig. 4-3 ① Valve pressure (intake)
② Vaccum pressure idling
③ Valve operating range
④ Time

1. If the throttle is closed rapidly to its full close position, the carburetor supplies fuel to the engine through the slow-speed circuit. Thus, there is an excessively lean mixture entering the engine cylinder.
2. If the mixture is too lean, it is difficult for the mixture to be ignited in the cylinder; i.e., the mixture is carried into the exhaust pipe without burning.
3. The mixture could accumulate in the exhaust pipe and may be rich enough to cause misfiring. The air-cut valve restricts the supply of air to the carburetor during deceleration. With this unit installed, the mixture is rich enough for good firing and no longer circulates into the exhaust pipe without burning.

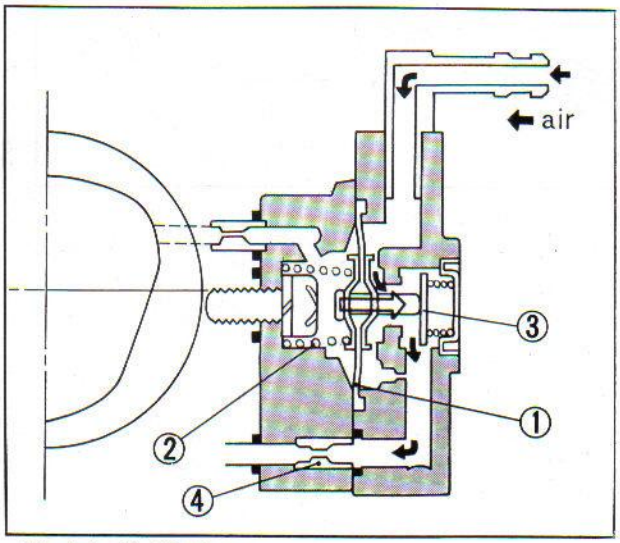


Fig. 4-4 ① Diaphragm
② Diaphragm spring
③ Plate
④ Slow Jet

(Operation)

The air-cut valve is essentially a vacuum-operated diaphragm that restricts the air flow through the slow-speed circuit.

Normal Riding

Adequate amounts of air mix with fuel for partial and full throttle operations. Under those conditions, the vacuum created will not exceed that at which the valve operates **(320-450 mm/Hg).** Note that the lowest vacuum is as low as **275 mm/Hg** at idling speed. See Fig. 4-3. The diaphragm is deflected in the arrow (⇨) direction by the tension of the diaphragm spring, which in turn forces the plate off its normal position. This indicates that adequate air flow is delivered to the carburetor slow jet.

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Deceleration

When the throttle is closed rapidly from the fully open to the fully closed position, there will be a high vacuum on the diaphragm (approx. **500 mm**/Hg). The vacuum created flows through the boost jet to the diaphragm, deflecting the diaphragm in the arrow (⇨) direction, Fig. 4–5, and opposing the force of the diaphragm spring.

As a result, the plate is moved by the plate spring to close the passage through which the air normally flows into the slow jet. Thus, only a small amount of air can pass through a leak hole into the slow jet, and this will cause a richer fuel mixture to be delivered to the engine.

As the vacuum is lowed, the diaphragm and plate will be returned to their original positions. Correct fuel mixture richness for partial and full throttle operations will be secured when the vacuum falls below **320 mm/Hg.**

- Air is first metered as it passes through the slow air jet. It then mixes with fuel flowing from the slow jet, and is discharged into the carburetor air horn through the bypass and pilot outlet.

The mixture richness can be adjusted by turning the pilot screw at the carburetor.

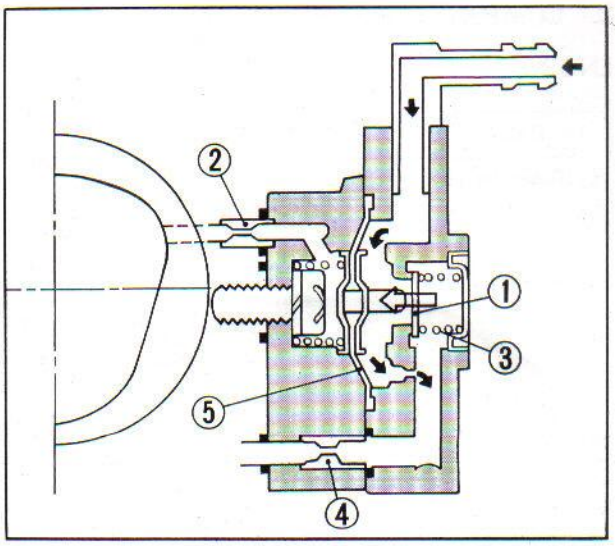
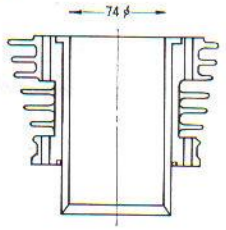
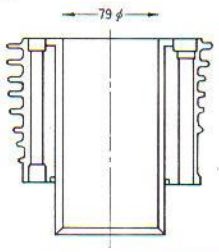
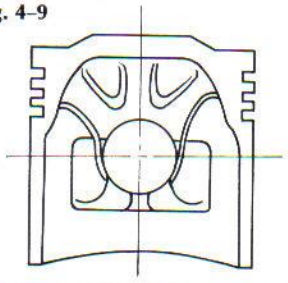
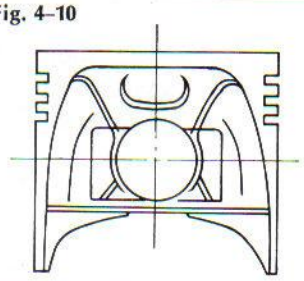
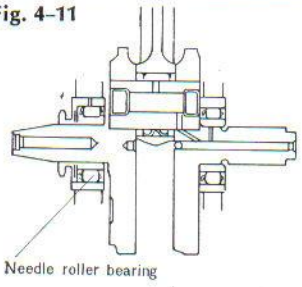


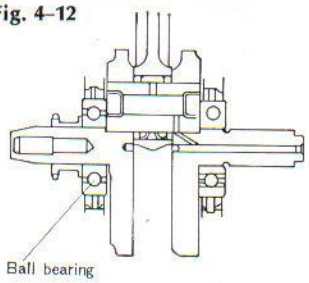
Fig. 4–5 ① Plate
② Boost jet
③ Plate spring
④ Slow jet
⑤ Diaphragm

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2. COMPARATIVE SPECIFICATIONS BETWEEN XL 250, XL 250 K1 AND XL 350

ENGINE

<table>
<tr><th>Unit</th><th>XL 250, XL 250 K1</th><th>XL 350</th><th>Remarks</th></tr>
<tr><td>Cylinder bored up</td><td>Fig. 4–7

</td><td>Fig. 4–8

</td><td>Cylinders have been bored up from 74 mm to 79 mm (2.9 to 3.1 in.).
In addition to the above modification, the overall height has also been increased from 87 mm to 94.7 mm (3.42 to 3.70 in.).</td></tr>
<tr><td>Piston sized up</td><td>Fig. 4–9

<table><tr><td>Bore</td><td>74</td></tr><tr><td>Weight</td><td>264</td></tr><tr><td>Piston pin hole</td><td>19ϕ</td></tr></table></td><td>Fig. 4–10

<table><tr><td>79</td></tr><tr><td>262</td></tr><tr><td>21ϕ</td></tr></table></td><td>O.D. of each piston has been increased from 74 mm to 79 mm (2.9 to 3.1 in.) due to increase in cylinder bore size.</td></tr>
<tr><td>Crankshaft</td><td>Fig. 4–11


<table><tr><td>Bearing</td><td>Needle roller bearing</td></tr><tr><td>No. of needle rollers</td><td>24</td></tr><tr><td>Crankpin O.D.</td><td>34</td></tr><tr><td>Weight O.D. (R. crankshaft)</td><td>136</td></tr><tr><td>Weight O.D. (L. crankshaft)</td><td>136</td></tr></table></td><td>Fig. 4–12


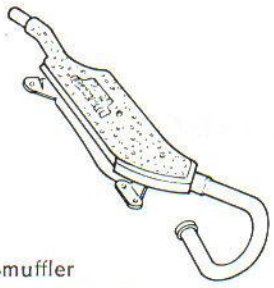
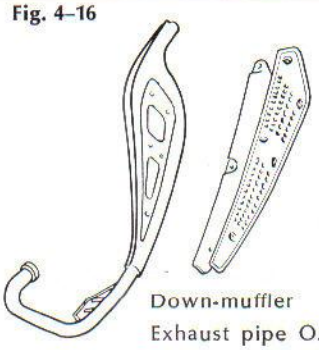
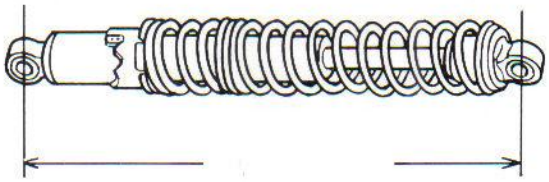
<table><tr><td>Ball bearing</td></tr><tr><td>26</td></tr><tr><td>37</td></tr><tr><td>143</td></tr><tr><td>143</td></tr></table></td><td>Crankshaft bearing changed from needle to roller bearing</td></tr>
<tr><td>Fuel Tank</td><td>Fig. 4–13


Tank capacity: 8.0l (2.1 U.S. gal.)</td><td>Fig. 4–14


Tank capacity: 8.3l (2.2 U.S. gal.)</td><td>Fuel tank capacity has been enlarged from 8.0l to 8.3l (2.1 to 2.2 U.S. gal.)
The fuel tank design has also been revised.</td></tr>
</table>

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FRAME

Unit	XL 250, XL 250 K1	XL 350	Remarks
Exhaust Muffler	Fig. 4–15  UP-muffler Exhaust pipe O.D.: 38.1 mm (1.5 in.)	Fig. 4–16  Down-muffler Exhaust pipe O.D.: 42.7 mm (1.7 in.)	
Rear cushion Assy	Fig. 4–17  Rod. O.D.: 10 mm (0.39 in.) Damping force: Extension 110 kg (243 lbs) Compression 30 kg (66 lbs)	Rod O.D.: 11 mm (0.43 in.) Damping force: Extension 120 kg (265 lbs) Compression 30 kg (66 lbs)	
Front shock absorber Assy	Damping force: 20 kg (44 lbs) Fluid capacity: 160 cc (5.4 ozs) Fig. 4–18 	Damping force: 25 kg (55 lbs) Fluid capacity: 170 cc (5.7 ozs) (XL 250 K1, XL 350)	
Drive chain	Fig. 4–19  clip type (XL 250 only)	Fig. 4–20  endless type (XL 250 K1, XL 350)	

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3. DRIVE CHAIN SERVICING

In order to service the special endless chain used on the XL 250 and XL 350, it is necessary to cut and stake the chain with the special chain tool HC 47882 (Part No. 07975-3930000). Carefully follow the directions supplied with the tool.

COMPARATIVE SPECIFICATIONS BETWEEN XL 250, XL 250 K1 AND XL 350

UNIT	PART	XL 250, XL 250 K1			XL 350
TRANSMISSION	Low speed gear main shaft	Primary reduction		3.125	3.125
	Mainshaft gear 1st	1st		2.352	2.500
	2nd	2nd		1.666	1.666
	3rd	3rd		1.280	1.240
	4th	4th		1.000	0.931
	5th	5th		0.806	0.750
	Countershaft gear	Final reduction		3.200	3.000
	1st				
	2nd				
	3rd				
	4th				
	5th				
CAMSHAFT	Camshaft	IN	Opens	5° BTDC	10° BTDC
		IN	Closes	30° ABDC	40° ABDC
		EX	Opens	35° BBDC	40° BBDC
		EX	Closes	5° ATDC	10° ATDC
	Valve lift	IN	7.42		7.98
		EX	7.28		8.05
	Valve dia.	IN	28.5 mm		30 mm
		EX	25 mm		26.5 mm

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5. TROUBLE SHOOTING

Trouble	Probable cause	Remedy
Engine will not start	1. Insufficient compression pressure	
	1) Incorrect tappet adjustment	Adjust
	2) Worn valve guide or improper valve seating	Replace or repair
	3) Incorrect valve timing	Adjust
	4) Worn piston rings	Replace
	5) Worn cylinder	Replace
	2. No sparking at spark plug and contact point	
	1) Dirty spark plug	Clean
	2) Wet spark plug	Clean
	3) Dirty contact breaker point	Clean
	4) Improper point gap	Adjust
	5) Incorrect ignition timing	Adjust
	6) Defective ignition coil	Replace
	7) Disconnection or short circuit of ignition wire	Replace
	8) Short circuit in condenser	Replace
	3. Fuel does not flow to carburetor	
	1) Clogged vent hole in tank cap	Clean
	2) Clogged fuel valve	Clean
	3) Defective carburetor float valve	Replace
	4) Clogged fuel feed pipe	Clean
Engine stalls	1. Dirty spark plug	Clean
	2 Dirty contact breaker point	Clean
	3. Incorrect ignition timing	Adjust
	4. Clogged fuel feed pipe	Clean
	5. Clogged carburetor jet	Clean
	6. Incorrect tappet adjustment	Adjust
Noisy engine	1. Noisy tappet	
	1) Large tappet clearance	Adjust
	2) Loss of valve spring tension	Replace
	2. Piston knocking	
	1) Worn piston ring or cylinder	Replace
	2) Carbon accumulated in combustion chamber	Clean
	3) Worn piston pin or connecting rod small end	Replace
	3. Cam chain	
	1) Stretched cam chain	Replace, or adjust cam chain tensioner
	2) Worn cam sprocket or timing sprocket	Replace
	4. Noisy clutch	
	1) Loose clutch center spline	Replace
	2) Excessive clearance between clutch friction disc and teeth of clutch outer housing	Replace
	3) Warped friction disc or clutch plate	Replace or repair
	5. Crankshaft	
	1) Worn crankshaft bearing	Replace
	2) Worn connecting rod big end	Replace
	6. Noisy gear	
	1) Worn transmission gear or interference between gears	Replace
	2) Worn spline	Replace

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Trouble	Probable cause	Remedy
Noisy engine	3) Worn primary gear or interference between gears	Replace
	7. Improper clutch adjustment (no play in clutch lever).	Adjust
	8. Weak clutch pressure plate spring	Replace
	9. Worn or warped pressure plate	Replace
	10. Warped clutch plate	Replace
	11. Worn or warped friction disc	Replace
Clutch slips	1. Improper clutch adjustment (no play at the clutch lever)	Adjust clutch lever
	2. Weak or non-uniform tension of clutch springs	Replace weak spring
	3. Warped clutch plate	Replace
Clutch will not disengaged	1. Deformed shift drum stopper	Repair or replace
	2. Broken gear shift drum	Replace
	3. Deformed gear shift fork	Repair or replace
Difficult gear shifting	1. Broken gear shift return spring	Repair or replace
	2. Interference between transmission case and gear shift spindle	Repair
Jumps out of gear	1. Worn shifting gears on main shaft and counter-shaft	Replace
	2. Worn or bent gear shift fork	Repair or replace
	3. Weak shift drum stopper spring	Replace
Engine idle is unstable	1. Improper tappet adjustment	Adjust
	2. Improper seating of cylinder head valve	Replace
	3. Defective valve guide	Replace
	4. Incorrect ignition timing	Adjust
	5. Faulty contact breaker point	Repair
	6. Excessive spark plug gap	Repair
	7. Weak ignition spark (defective capacitor or ignition coil)	Replace
	8. Improper carburetor float level	Adjust
	9. Incorrect carburetor air screw adjustment	Adjust
Engine high speed running is not stable	1. Weak valve spring	Replace
	2. Incorrect valve timing	Adjust
	3. Insufficient spark plug gap	Adjust
	4. Retarded ignition timing (faulty automatic advancer)	Adjust
	5. Weak point arm spring	Replace
	6. Defective ignition coil	Replace
	7. Improper carburetor float level adjustment (low level)	Adjust
	8. Clogged air cleaner element	Clean.
	9. Insufficient fuel in carburetor	Clean or supply fuel
Exhaust smoke from muffler	1. Excessive engine oil	Adjust oil level Check level
	2. Worn cylinder and piston rings	Replace
	3. Worn valve guide	Replace
	4. Defective cylinder	Replace
Loss of power	1. Incorrect tappet adjustment	Adjust
	2. Loss of valve spring tension	Replace
	3. Incorrect valve timing	Adjust

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Trouble	Probable cause	Remedy
Loss of power	4. Worn cylinder and piston	Replace
	5. Improper valve seating	Replace
	6. Incorrect ignition timing	Adjust
	7. Defective contact breaker point	Repair or replace
	8. Incorrect spark plug gap	Repair
	9. Clogged carburetor main or slow jet nozzle	Clean
	10. Improper float level adjustment	Adjust
	11. Clogged air cleaner	Clean
Engine overheating	1. Heavy carbon deposit on cylinder head	Remove carbon
	2. Insufficient engine oil	Supply to normal level
	3. Defective oil pump, or clogged oil passage	Clean
	4. Too lean gas mixture	Adjust
	5. Advanced ignition timing (knocking)	Adjust
Hard steering	1. Over-tightened steering stem	Adjust
	2. Damaged steering stem steel balls	Replace
	3. Bent steering stem	Replace
	4. Low tire inflation pressure	Adjust
	5. Over-tightened steering cone race	Adjust
Motorcycle pulls to one side	1. Unequal tension of left and right cushion springs	Replace
	2. Bent front fork	Repair or replace
	3. Bent front axle, or incorrect alignment of wheel	Replace or repair
Front wheel wobbles	1. Deformed rim	Replace
	2. Worn front wheel bearings	Replace
	3. Loose spoke	Retighten
	4. Defective tire	Replace
	5. Loose front axle	Retighten
Soft front suspension	1. Loss of spring tension	Replace
	2. Insufficient damper oil	Add oil
Hard front suspension	1. High viscosity of damper oil	Change
	2. Excessive damper oil	Adjust
Noisy front suspension	1. Interference between cushion case and spring	Replace
	2. Damaged cushion stopper rubber	Replace
	3. Insufficient damper oil	Adjust
	4. Loose cushion	Retighten
Rear wheel wobbles	1. Distorted rim	Replace
	2. Worn rear wheel bearings	Replace
	3. Loose spoke	Adjust
	4. Defective tire	Retighten
Soft rear suspension	1. Loss of spring tension	Replace
	2. Improper rear cushion adjuster adjustment	Adjust
Hard rear suspension	Improper rear cushion adjuster adjustment	Adjust
Noisy rear suspension	1. Interference between cushion case and spring	Replace
	2. Loose installation	Retighten
Poor braking	1. Poor brake shoe contact	Replace or repair
	2. Brake lining is contaminated with oil or grease	Replace
	3. Loose brake cable or worn brake pedal shaft	Repair or adjust
	4. Improper brake adjustment	Adjust
No adjusting allowance on brakes	1. Worn brake shoe	Replace
	2. Worn brake shoe cam	Replace

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Trouble	Probable cause	Remedy
No adjusting allowance on brakes	3. Improperly engaged brake arm serration. 4. Worn brake cam.	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
No or poor sparking	1. Defective ignition coil. 2. Defective spark plug.	Replace Replace
Burned contact breaker point	Defective condenser.	Replace
Spark plug electrode fouled with carbon.	1. Too rich gas mixture. 2. Poor quality of gasoline. 3. Clogged air cleaner. 4. Use of cold spark plug.	Adjust carburetor Change Clean Use proper heat range plug
Spark plug electrode fouled with oil	1. Worn piston rings. 2. Worn piston or cylinder. 3. Excessive clearance between valve guide and valve.	Replace rings Replace piston or cylinder Replace
Spark plug electrode overheated or burned	1. Use of hot spark plug. 2. Engine overheating. 3. Incorrect ignition timing. 4. Loose spark plug. 5. Too lean gas mixture.	Use proper heat range plug Adjust Retighten Adjust carburetor
No charging	1. Broken wire or shorted or loose connection. 2. Defective generator coil due to short circuit, grounding, or broken. 3. Defective silicon diode. 4. Shorted or broken lead wire of regulator 5. Regulator voltage at no load is too low	Repair or replace Replace Replace Repair or replace Readjust
Insufficient charging	1. Wiring · Broken or shorted wire, or loose connection 2. Generator · Shorting across layer in stator coil · Open circuit in stator coil · Defective silicon diode 3. Regulator · Voltage below specified value at no load · Dirty or pitted points · Coil or resistor internally shorted 4. Battery · Low electrolyte level · Defective battery plates	 Repair or retighten Replace Replace Replace Readjust Polish and clean Replace Add distilled water to normal level
Excessive charging	1. P terminal circuit and F terminal circuit shorted 2. Battery internally shorted 3. Regulator · Excessive voltage at no load · Improper grounding · Broken coil lead wire	Replace Repair Repair Ground properly Repair or replace
Unstable charging voltage	1. Bare wire shorting intermittently under vibration	Repair or replace

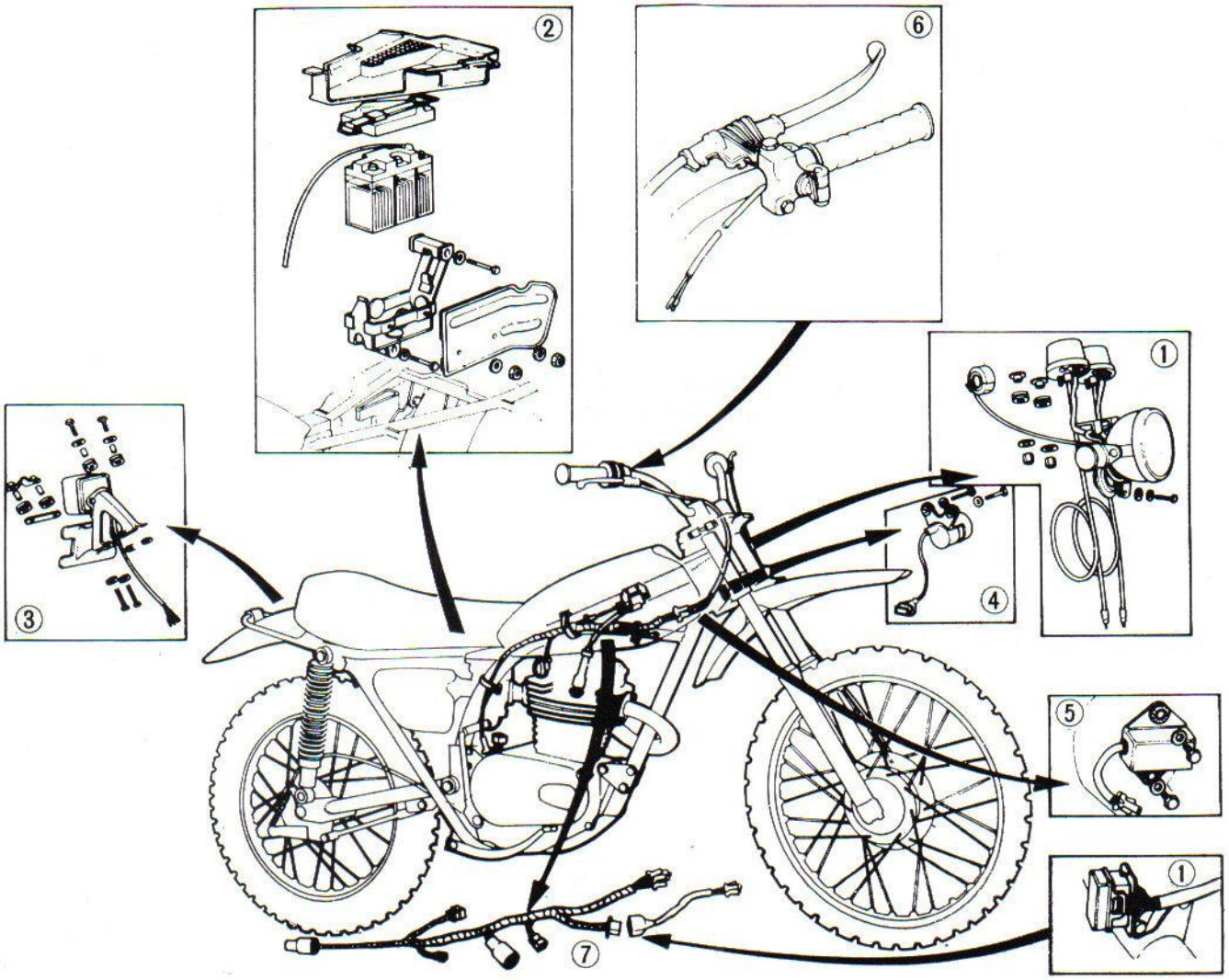
Date of Issue: Sept. 1, 1977
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Trouble	Probable cause	Remedy
Unstable charging voltage	2. Generator layer shorting 3. Regulator · Intermittent open circuit in coil · Improperly adjusted voltage · Defective key switch	Repair or replace Repair or replace Readjust Replace
Sulfation (Electrode plates are covered with white lay or spots.)	1. Charging rate is either too small or excessively large. 2. Specific gravity or amount of electrolyte is improper. 3. Battery left in discharging condition for many hours (left with switch turned on) 4. Exposed to excessive vibration due to improper installation 5. Motorcycle stored during cold season with battery connected	1. Recharge battery once a month even when motorcycle is unused 2. Check electrolyte periodically and always maintain the proper level
Self-discharge (Battery discharges by itself in addition to that caused by a connected load.)	1. Dirty battery case and contact area 2. Impurities in electrolyte or excessively concentrated electrolyte	1. Always keep the exterior clean 2. Handle replenishing electrolyte with care 3. Never add electrolyte to a used battery
Large discharge rate Specific gravity gradually lowers and horn will be inoperative around 1.100 (S.G).	1. Fuse and wiring are satisfactory, but loads such as horn and winker do not function. In this condition motorcycle will operate, but with longer use, ⊕ and ⊖ plates will react with sulfuric acid to form lead sulfide deposits (sulfation), making it impossible to recharge.	1. Recharge battery immediately when specific gravity drops below 1.200 (20°C : 68°F) 2. When battery becomes discharged frequently while operating at normal speeds, check generator output at specified engine rpm. 3. If battery discharges under normal charge output, it is an indication of overloading. Remove some of the excess load.
High charging rate Electrolyte level drops rapidly, but charge is always maintained at 100%. Thus condition appears satisfactory. (Specific gravity over 1.260).	1. Deposit will accumulate at the bottom, causing internal shorting and battery damage.	1. Check rated charging current
Specific gravity drops. Electrolyte evaporates.	1. Short circuit 2. Insufficient charging 3. Distilled water oversupplied 4. Contaminated electrolyte	1. Check specific gravity.

Date of Issue: Sept. 1, 1977
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6. MOTOCROSS RIDING

Removal of Electrical Parts (XL 250 only)



Some electrical parts must be removed in for MOTOCROSS riding to reduce the overall weight for improved riding.

1. Removal of head lamp
   1) Separate wire harnesses from the lower left side of the tank by removing the couplers. (Cover up coupler located at the frame side.)
   2) Remove the horn switch by loosening the screw.
   3) Disconnect the meter cables from the front wheel and engine.
   4) Remove the bracket with the head light and horn installed by loosening the three bolts and nuts.
2. Removal of battery and battery box
   1) Remove the battery coupler and remove the battery. Remove battery box.
3. Removal of tail light
   1) Raise operator's seat and disconnect the taillight wires. Expand the tail pipe clip and remove the taillight wire.
   2) Loosen the rear fender number bracket attaching bolts and remove the taillight with the bracket.
4. Removal of main switch
   1) Remove the tank and the main switch coupler and separate the main switch from the wire harness.
   2) Loosen the two bolts holding the bracket to the frame and remove the main switch with the bracket.

Date of Issue: Sept. 1, 1977
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5. Removal of regulator
   1) Disconnect the regulator wire from the wire harness with tank removed.
   2) Remove the regulator by loosening the two bolts.
6. Replacement of lighting switch
   When removing the head light, replace the lighting switch by exclusive ignition switch and throttle housing.
   1) Disconnect the lighting switch wire from the wire harness with the tank removed.
   2) Remove the two screws from under the lighting switch and install exclusive ignition switch on front of the brake lever holder. (Install throttle cable and throttle clip in throttle housing and adjust.) Connect the wire to the same color wire and position as in lighting switch.
7. Replacement of wire harness
   When removing or replacing parts 1) through 6) above, replace wire harnesses with new ones.
   1) With the tank removed, expand clips and remove wire harnesses.
   2) Connect OP wire harness and lock it with a clip. Generator, ignition coil, contact breaker and ignition switch harnesses must be connected securely, noting of color identification.
   3) Install tank so that harnesses do not interfere with the tank.

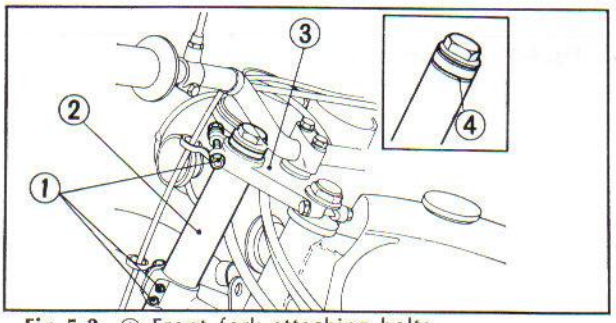


Fig. 5-2 ① Front fork attaching bolts
② Front fork pipe
③ Fork top bridge
④ Alignment mark

Increasing minimum ground clearance

1. Loosen the three front fork attaching bolts ① and lower the front fork pipe ② until its upper surface is flush with the fork top bridge ③.

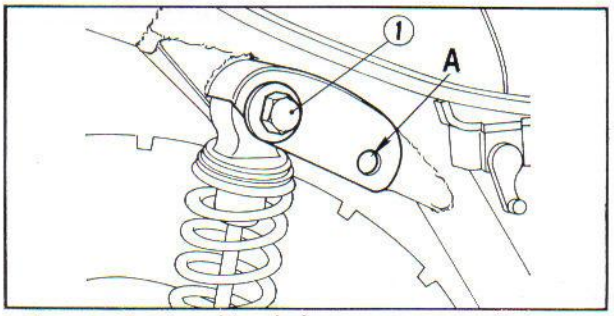


Fig. 5-3 ① Attaching bolt

2. Retighten the front fork attaching bolts firmly.
3. Remove the attaching bolt ① at the top of each rear shock absorber and rebolt the absorber through hole A. Tighten the bolt firmly.

NOTE:
When returning the front fork legs to the normal position, align the alignment marks ④ with the upper surface of the fork top bridge.

Replacing final drive and driven sprockets:

When replacing the drive sprocket and the driven sprocket, the drive chain and the rear brake anchor arm ① and the rear axle ⑦ should be installed in the combination shown in the following table.

	No. of drive sprocket teeth	No. of driven sprocket teeth	No. of drive chain links	Brake anchor and axle position
Standard	15	48	98	A
Option I	15	51 (option)	100 (option)	A
Option II	14 (option)	48	98	A
Option III	14 (option)	51 (option)	100 (option)	A

Date of Issue: Sept. 1, 1977
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Wheel base may be extended by moving the rear axle and brake anchor to position B when using the following sprocket and drive chain combinations:

No. of drive sprocket teeth	No. of driven sprocket teeth	No. of drive chain links	Brake anchor and axle position
15	48	100	B
14	48	100	B

1. Take the drive chain clip and the master link off, and remove the drive chain from the sprockets.
2. Remove the crankcase rear left cover and the two 6 mm bolts ② so that the drive sprocket ③ can be removed.
3. Remove the rear wheel from the frame according to instructions on pages 20–21. Straighten the lock tabs of the tongued washers ④, and loosen the six lock nuts ⑤ securing the driven sprocket ⑥. Remove the driven sprocket.
4. The drive sprocket and driven sprocket should be installed in the reverse order of steps 1 through 3. Make sure that all lock tabs of the tongued washers are bent over the nuts after the nuts are tightened.

NOTE:

Install the rear axle ⑦ in position A when using the sprocket and drive chain combinations shown on page 57. Install the rear axle in position B if extending the wheelbase, using the sprocket and drive chain combinations shown in the table at the top of this page.

If the correct drive chain adjustment requires the rear axle to be moved back farther than the applicable positions indicated in the tables on pages 57 and 58, then the drive chain is excessively worn and should be replaced. For example, if the table specifies axle position A for your sprocket and drive chain combination, then the chain should be considered excessively worn when it becomes necessary to move the rear axle to position B.

Similarly, if the table specifies axle position B, then the chain should be considered excessively worn when it becomes necessary to move the rear axle to position C.

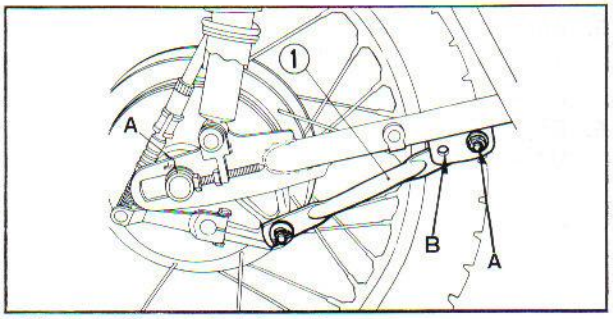


Fig. 5-4 ① Rear break anchor arm

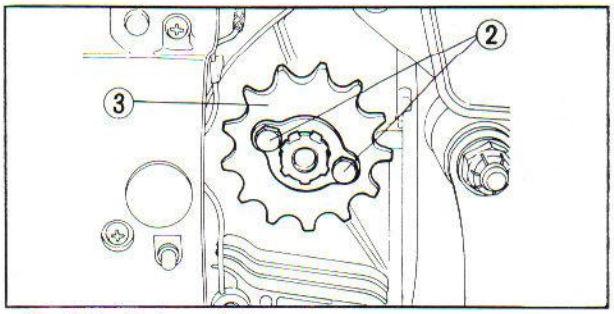


Fig. 5-5 ② 6 mm bolts
③ Drive sprocket

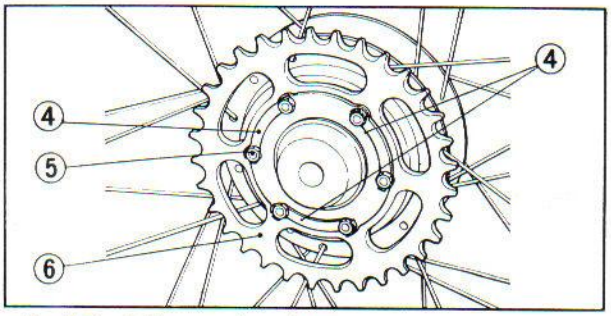


Fig. 5-6 ④ Tongued washers
⑤ Lock nuts
⑥ Driven sprocket

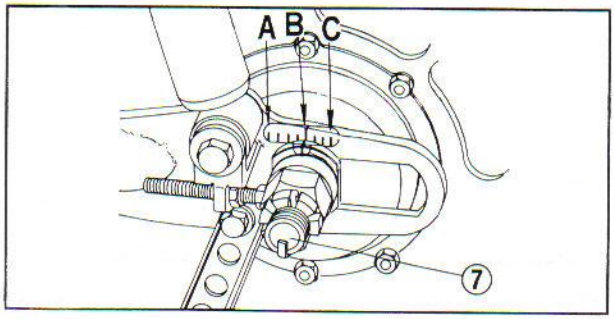
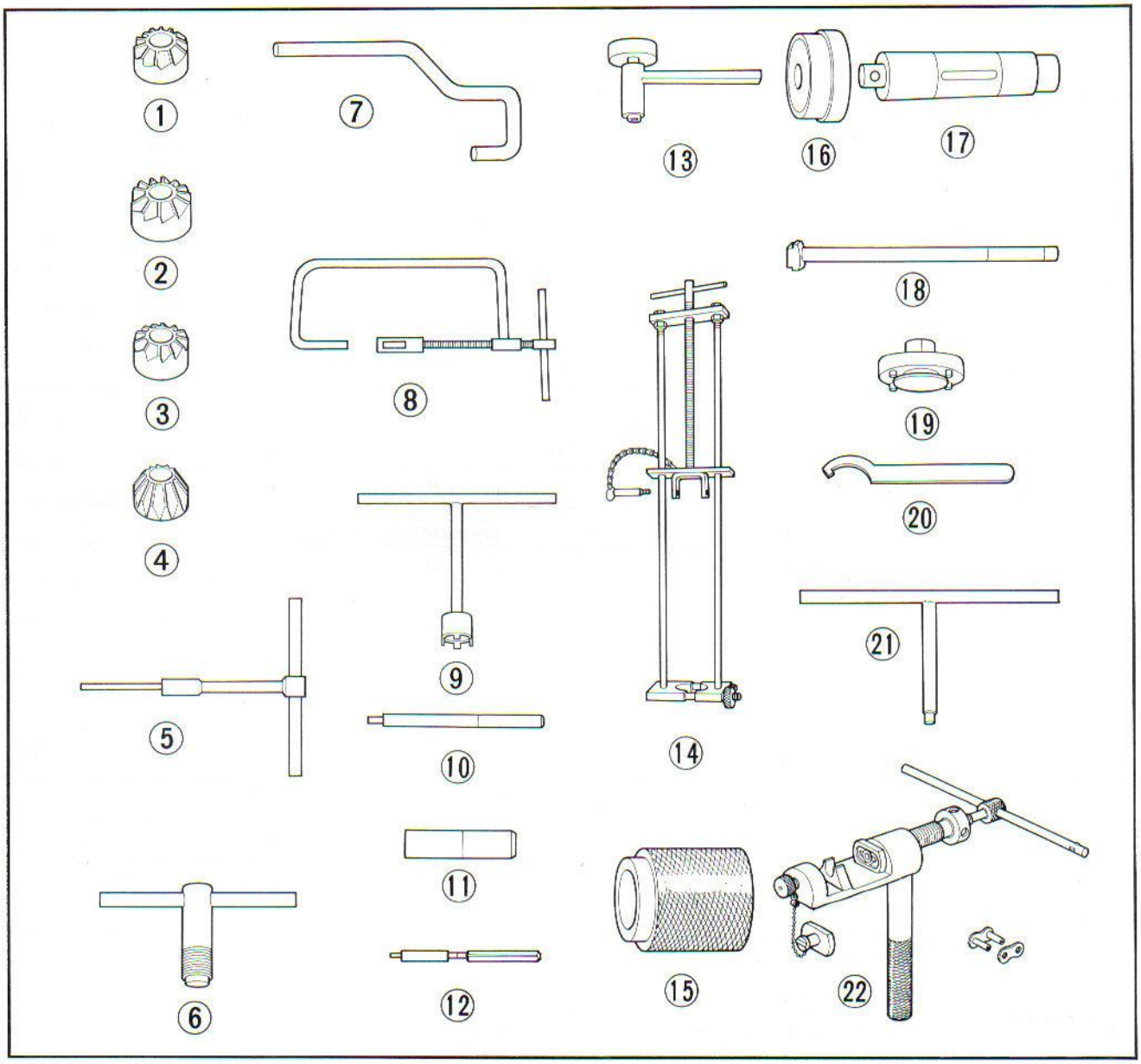


Fig. 5-7 ⑦ Rear axle

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7. SPECIAL TOOLS



Ref. No	Tool	Description	Ref. No.	Tool	Description
①	07980-1070100	Valve seat 90 cutter	⑬	07908-3290000	Tappet wrench set
*②	07980-3290300	Intake valve seat flat cutter	⑭	07959-3290000	Rear cushion service tool
*③	07980-3290400	Exhaust valve seat flat cutter	○⑮	07947-3290000	Front fork seal driver
*④	07980-3290500	Valve seat interior cutter	○⑯	07946-3290000	Ball race driver attachment
*⑤	07981-3290000	Valve seat cutter holder	○⑰	07949-6110000	Driver handle
○⑥	07933-3290000	Generator rotor puller	○⑱	07946-3290200	Ball race remover
○⑦	07922-3290000	Drive sprocket holder	⑲	07910-3290000	Retainer wrench
○⑧	07957-3290000	Valve spring compressor	●⑳	07902-2400000	Pin spanner, 46 mm
○⑨	07916-2830000	Lock nut wrench, 16 mm	㉑	07917-3230000	Allen wrench, 6 mm
⑩	07942-3290100	Valve guide remover	㉒	07975-3000001	Drive chain connector & disconnector unit
○⑪	07942-3290200	Valve guide driver			
○⑫	07984-2000000	5.5 mm valve guide reamer			

Tools marked with a (*) are for models XL 250 and XL 250 K1.
Tools marked with a (○) are commonly used for models XL 250, XL 250 K1 and XL 350.
Tools marked with a (●) are for model XL 350 only.
Tools with no marks can be used for models in addition to the ones listed above.

Date of Issue: Sept. 1, 1977
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8. 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.			
Month		1	3	6	12
Mile	500	500	1,500	3,000	6,000
Km	1,000	1,000	2,500	5,000	10,000
ENGINE OIL—Change	●		○		
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	●			○	
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.				○	
SPARK ARRESTOR—Purge			○		
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 tool and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.

** Initial service period 300 km (200 miles).

*** Initial service period 2,500 km (1,500 miles).

Date of Issue: Sept. 1, 1977
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9. SPECIFICATIONS

		XL 250 〔XL 250 K1〕	XL 350
Dimensions	Overall length	2,120 mm (83.5 in) 〔2,150 mm (84.6 in)〕	2,140 mm (84.3 in)
	Overall width	840 mm (33.1 in)	860 mm (33.9 in)
	Overall height	1,125 mm (44.3 in)	←
	Wheelbase	1,385 mm (54.53 in) 〔1,410 mm (55.5 in)〕	1,405 mm (55.3 in)
	Min. ground clearance	190 mm (7.5 in)	←
Weight	Dry (excl. oil, fuel)	126 kg (277.7 lb) 〔129 kg (284.1 lb)〕	137 kg (302 lb)
	Wet (incl. oil, fuel)	135 kg (297.6 lb) 〔139 kg (303.6 lb)〕	146 kg (321.2 lb)
Tires	Front	2.75–21 (4 PR) Inflation pressure 21 Psi 〔3.00–21 (4 PR)〕	3.00–21 (4 PR)
	Rear	4.00–18 (4 PR) Inflation pressure 21 Psi	←
Engine	Type	Gasoline, air-cooled, 4-cycle	←
	Cylinder arrangement	Single cylinder, tilted forward 10°	←
	Valve arrangement	Overhead type	←
	Bore×stroke	74.0×57.8 mm (2.91×2.73 in)	79.0×71.0 mm (3.110×2.795 in)
	Displacement	248 cc (15.13 cu.in)	348 cc (21.2 cu. in)
	Compression ratio	9.1 : 1	8.3 : 1
	Compression pressure	14.0 kg/cm² (199.13 Psi)—(Using kick starter)	12.0 kg/cm² (170.4 Psi)—(by kick)
	Max. horsepower	20 HP/8,000 rpm	30 HP/7,000 rpm
	Max. torque	1.95 kgm (14.1 lb-ft)/6,500 rpm (SAE)	2.59 kgm (21.7 lb-ft)/6,000 rpm
	Weight (wet)	39 kg (86 lb)	43 kg (95 lb)
	Idling speed	1200^{+0}_{-200} rpm 〔1200 rpm〕	1200 rpm
	Starting method	Primary kick	←
Valves	Intake Opens	At 5° (Before top dead center)	At 10° (Before top dead center)
	Intake Closes	At 30° (After bottom dead center)	At 40° (After bottom dead center)
	Exhaust Opens	At 35° (Before bottom dead center)	At 40° (Before bottom dead center)
	Exhaust Closes	At 5° (After top dead center)	At 10° (After top dead center)
	Valve clearances Intake	0.05 mm (0.002 in cold setting)	←
	Valve clearances Exhaust	0.08 mm (0.003 in cold setting)	←
Ignition system	Method	Magneto ignition	←
	Timing	15° (Before top dead center)/2200 rpm (at crankshaft)	
	Plug	D-8ESL (NGK) 〔D-8ESL (NGK) X-24ES (ND)〕	D-8ESL (NGK) X-24ES (ND)
Fuel system	Air cleaner	Urethane, wet type	←
	Tank capacity	8.0 *l* (2.1 U.S. gal)	8.3 *l* (2.2 U.S. gal)
	Carburetor type	PW–28	PW–32
Carburetor setting	Main jet	# 120	# 130
	Air jet	# 100	# 50

Date of Issue: Sept. 1, 1977
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		XL 250 (XL 250 K1)	XL 350
Carburetor setting	Slow jet	#45	#48
	Air screw	1-1/4±3/8	←
	Fuel level	24 mm (0.94 in)	18 mm (0.72 in)
Lubrication system	Method	Wet sump and pressure-feed	←
	Oil pump	Trochoid type	←
	Oil filter	Centrifugal and mesh type	←
	Lubricant capacity	1.8 *l* (0.47 U.S. gal)	←
Battery	Type	6N6-3B	←
	Voltage and capacity	6 V, 6 AH	←
Generator	Type	AC type	←
	Voltage and output	6 V, 80 W (at 5,000 rpm)	←
	Overcharge regulator	Pointless type	←
Transmission system	Crankshaft-to-transmisson reduction ratio	3.125	←
	Transmission-to-rear shaft reduction ratio	3.200 (via chain)	3.000 (via chain)
	Clutch type	Wet, multi-disc (7 discs)	←
	Reduction ratio 1st	2.352	2.500
	2nd	1.666	←
	3rd	1.280	1.240
	4th	1.000	0.931
	5th	0.806	0.750
Steering system	Caster	59.5°	←
	Trail	140 mm (5.51 in)	145 mm (5.7 in)
	Steering angle	45° (right), 45° (left)	←
Brakes	Type	Wire type (Front), Leading trailing (Rear)	←
Suspension	Front	Telescopic type	←
	Rear	Swing arm type	←
Frame	Type	Semi-double cradle	←

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10. TORQUE SPECIFICATIONS

	Tightening point	Torque, kg-m (lb-ft)	Bolts, mm
1. Frame	Steering stem nut	8.0–12.0 (57.84–86.76)	23
	Front fork top bridge	1.8–2.3 (13.014–16.629)	8
	Handle holder	1.8–2.3 (13.014–16.629)	8
	Front fork bottom bridge	1.8–2.3 (13.014–16.629)	8
	Spoke	0.2–0.45 (1.446–3.2535)	
	Rear fork pivot bolt	5.5–7.0 (39.765–50.610)	14
	Front wheel axle shaft nut	5.5–6.5 (39.765–46.995)	12
	Front axle holder	1.8–2.3 (13.014–16.629)	8
	Engine hanger bolt	5.0–6.0 (36.16–43.39)	10
		2.8–3.3 (20.25–23.87)	8
	Rear axle	8.0–10.0 (57.84–72.30)	18
	Driven sprocket	1.8–2.3 (13.014–16.629)	8
	Brake arm	0.8–1.1 (5.784–7.953)	6
	Front brake torque link	1.8–2.3 (13.014–16.629)	8
	Rear brake torque link	1.8–2.3 (13.014–16.629)	8
	Rear cushion, upper/lower	3.0–4.0 (21.69–28.92)	10
	Step bar	1.8–2.3 (13.014–16.629)	8
		3.0–4.0 (21.69–28.92)	10
	Change pedal	0.8–1.2 (5.784–8.676)	6
	Kick arm	1.8–2.3 (13.014–16.629)	8
	Seat band	0.8–1.2 (5.784–8.676)	6
2. Engine	Crankcase cover	0.7–1.1 (5.061–7.953)	6
	Cylinder head	3.0–3.6 (21.690–26.028)	10
	Carburetor insulator	0.8–1.2 (5.784–8.676)	6
	Cam sprocket	1.8–2.2 (13.014–15.906)	7
	Flywheel	6.0–7.0 (43.380–50.610)	12
	Oil filter rotor	4.5–5.5 (32.535–39.765)	16
	Tappet adjusting nut	0.7–1.1 (5.061–7.953)	5
	Upper crankcase	2.4–3.0 (17.352–21.690)	10
	Lower crankcase	2.4–3.0 (17.352–21.690)	10
	Cylinder 8 mm stud bolt	2.0–2.5 (14.460–18.075)	8

Parts other than those specified above should be tightened in accordance with the following specifications:

Bolts	Torque, kg-m (lb-ft)
6 mm (0.24 in) machine screw	0.7–1.0 (5.061–7.230)
6 mm (0.24 in) hex. bolt	0.8–1.2 (5.784–8.676)
8 mm (0.31 in) hex. bolt	1.8–2.5 (13.014–18.075)
10 mm (0.39 in) hex. bolt	3.0–4.0 (21.690–28.920)
6 mm (0.24 in) flange bolt	1.0–1.4 (7.230–10.122)
8 mm (0.31 in) flange bolt	2.3–3.0 (17.352–21.690)
10 mm (0.39 in) flange bolt	3.0–4.0 (21.690–28.920)

Date of Issue: Sept. 1, 1977
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11. SERVICE DATA

XL 250, K1
ENGINE

Item		Unit	Standard value	Service limit
Rocker arm-to-shaft clearance		mm (in)	0.016–0.052 (0.0006–0.0020)	0.090 (0.0035)
Camshaft journal OD	RH	mm (in)	21.939–21.960 (0.8637–0.8646)	21.92 (0.8630)
	LH (two places)		23.939–23.960 (0.9425–0.9433)	23.92 (0.9417)
Cam height	IN	mm (in)	6.260 (0.2465) *base circle 30 (1.1811)	6.142 (0.2418)
	EX		6.150 (0.2421) *base circle 30 (1.1811)	6.025 (0.2372)
Valve stem OD	IN	mm (in)	5.480–5.490 (0.2157–0.2161)	5.465 (0.2151)
	EX		5.460–5.470 (0.2149–0.2154)	5.445 (0.2144)
Valve stem-to-guide clearance	IN	mm (in)	0.010–0.030 (0.00039–0.00118)	0.06 (0.00236)
	EX		0.030–0.050 (0.00118–0.00197)	0.07 (0.00276)
Valve spring free length	INNER	mm (in)	36.5 (1.43)	36.0 (1.41)
	OUTER		40.7 (1.60)	39.7 (1.56)
Valve spring tension	INNER	kg/mm (lb/in)	14.5/22 (6.6/0.87)	13.48–15.52/22 (6.1–7.0/0.87)
	OUTER		34/26.4 (15.42/1.04)	31.62–36.38/26.4 (14.3–16.5/1.04)
Cylinder bore diameter		mm (in)	73.99–74.01 (2.913–2.914)	74.11 (2.918)
Piston OD		mm (in)	73.97–73.99 (2.912–2.913)	73.88 (2.909)
Piston pin hole diameter		mm (in)	19.002–19.008 (0.7481–0.7483)	19.08 (0.7512)
Piston pin OD		mm (in)	18.994–19 (0.7478–0.7480)	18.96 (0.7465)
Piston ring-to-groove clearance	TOP	mm (in)	0.03–0.06 (0.0012–0.0024)	0.18 (0.007)
	SECOND		0.015–0.045 (0.0006–0.0018)	0.165 (0.006)
	OIL		0.03–0.045 (0.0012–0.0018)	0.17 (0.007)
Piston ring gap	TOP	mm (in)	0.15–0.35 (0.0059–0.0138)	0.75 (0.029)
	SECOND		0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
	OIL		0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
Connecting rod small end ID		mm (in)	19.020–19.041 (0.7488–0.7496)	19.07 (0.751)
Connecting rod big end radial clearance		mm (in)	—	0.05 (0.00197)
Connecting rod big end axial clearance		mm (in)	0.12–0.38 (0.00472–0.01496)	0.60 (0.02362)
Radial clearance of RH and LH crankshaft bearing		mm (in)	—	0.05 (0.00197)
Oil pump delivery flow		ℓ(U.S. gal)/rpm	4.2 (1.11)/5,000 80°C (176°F)	3.4 (0.90)/5,000 80°C (176°F)
Axial clearance of oil pump inner and outer rotors		mm (in)	0.02–0.08 (0.00079–0.00315)	0.1 (0.004)
Clutch friction disc thickness		mm (in)	2.7 (0.106)	2.3 (0.091)
Clutch plate face runout		mm (in)	0.15 (0.006)	0.30 (0.012)
Clutch spring free length		mm (in)	35.5 (1.40)	34.2 (1.35)
Clutch spring tension		kg/mm (lb/in)	23.8/23 (10.8/0.91)	21.8/23 (9.89/0.91)
Transmission gear backlash		mm (in)	—	0.2 (0.0079)
Gear shift fork drum OD		mm (in)	35.950–35.975 (1.4153–1.4163)	35.9 (1.4133)

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Item	Unit	Standard value	Service limit
Center gear shift fork ID	mm (in)	36.0–36.025 (1.4173–1.4183)	36.075 (1.4203)
Shift fork guide shaft OD	mm (in)	12.968–12 984 (0.5106–0.5112)	12.9 (0.5079)
RH and LH gear shift fork ID	mm (in)	13.0–13.018 (0.5118–0.5125)	13.05 (0.5138)
Shift fork thickness	mm (in)	4.93–5 (0.1941–0.1969)	4.6 (0.1811)

FRAME

Item	Unit	Standard value	Service limit
Drive chain length (No. of links: 98)	mm (in)	1555.75 (61.25)	1586 (62.44)
Free length of A and B front cushion springs	mm (in)	481.1 (18.94)	470 (18.50)
Free length of A and B rear cushion springs	mm (in)	236.4 (9.31)	230 (9.06)
Fork pipe OD	mm (in)	24.75–25 (0.9744–0.9843)	24.70 (0.9724)
Fork bottom case ID	mm (in)	35.0–35.039 (1.3780–1.3795)	35.18 (1.3850)
Front wheel axle bend	mm (in)	0.01 (0.0004)	0.2 (0.008)
6302 ball bearing axial offset	mm (in)	0.07 (0.0028)	0.1 (0.004)
6302 ball bearing radial offset	mm (in)	0.03 (0.0012)	0.05 (0.002)
Front wheel rim (face runout)	mm (in)	0.5 (0.020)	2.0 (0.08)
Front wheel rim offset	mm (in)	0.5 (0.020)	2.0 (0.08)
Front brake drum ID	mm (in)	160–160.3 (6.2992–6.3110)	161 (6.339)
Front brake shoe thickness	mm (in)	5.0 (0.197)	2.5 (0.098)
Rear wheel axle bend	mm (in)	0 01 (0.00039)	0.2 (0.0079)
Rear fork pivot bushing ID	mm (in)	20–20.052 (0.7874–0.7894)	20.18 (0.7945)
Rear fork center collar OD	mm (in)	19.927–19.960 (0.7845–0.7858)	19.85 (0.7815)
Axial offset of 6204 and 6304 ball bearings	mm (in)	0.07 (0.00276)	0.10 (0.0039)
Radial offset of 6204 and 6304 ball bearings	mm (in)	0.03 (0.0012)	0.05 (0.0020)
Rear wheel rim (face runout)	mm (in)	0.5 (0.020)	2.0 (0.08)
Rear brake drum ID	mm (in)	140.0–140.3 (5.5118–5.5236)	141 (5.5512)
Rear brake shoe thickness	mm (in)	4.5 (0.177)	2.5 (0.098)

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XL 350
ENGINE

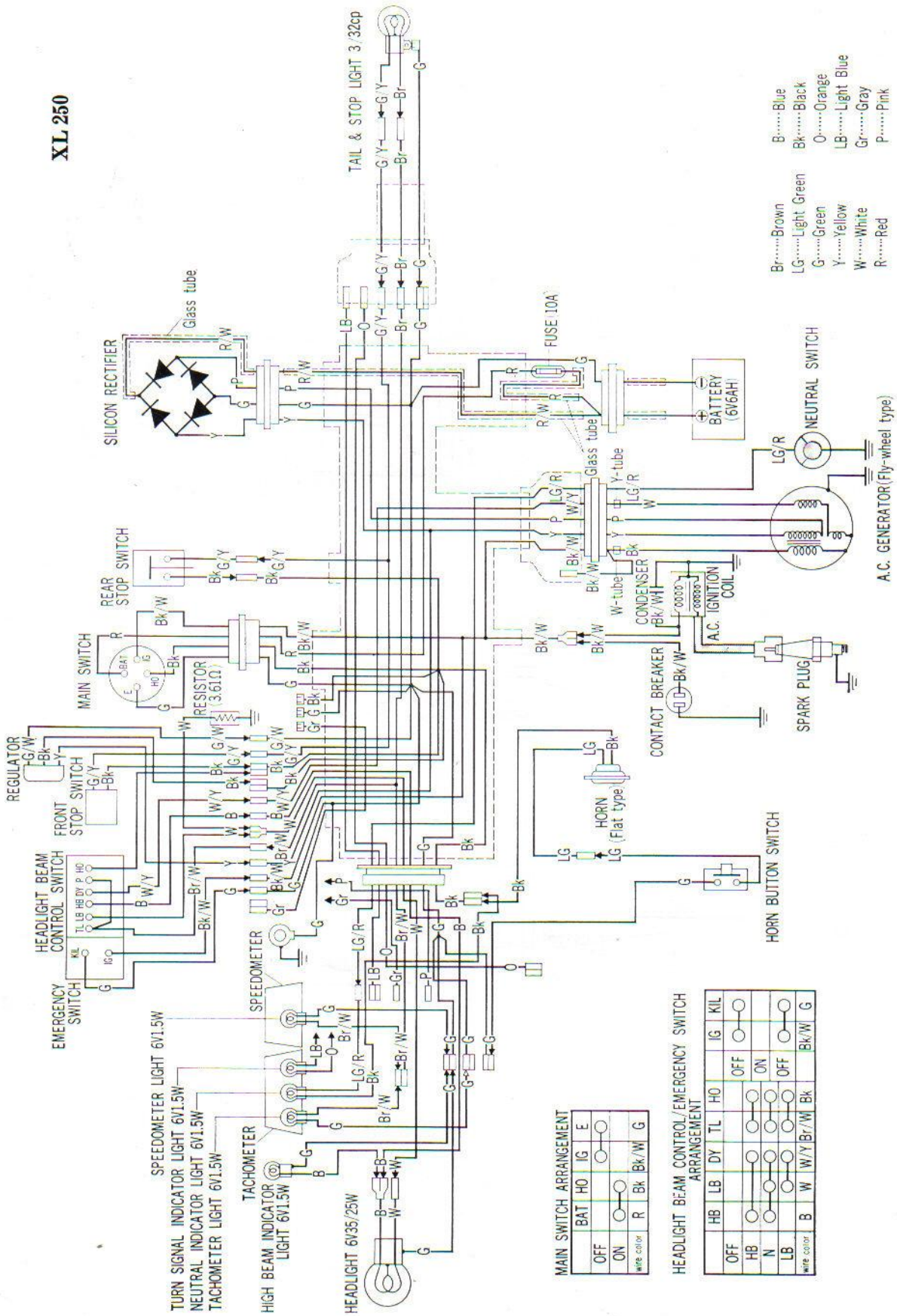
Item		Unit	Standard value	Service limit
Cylinder bore diameter		mm (in)	78.99–79.01 (3.1098–3.1106)	79.11 (3.1146)
Piston OD		mm (in)	78.97–79.01 (3.1091–3.1106)	78.90 (3.1063)
Piston pin hole diameter		mm (in)	21.002–21.008 (0.8268–0.8271)	21.980 (0.8654)
Piston pin OD		mm (in)	20.994–21.000 (0.8265–0.8268)	20.960 (0.8252)
Piston ring-to-groove clearance	TOP	mm (in)	0.030–0.06 (0.0012–0.0024)	0.18 (0.007)
	SECOND		0.015–0.045 (0.0006–0.0018)	0.165 (0.006)
	OIL		0.005–0.120 (0.0002–0.0047)	0.24 (0.0095)
Piston ring gap	TOP	mm (in)	0.20–0.40 (0.0079–0.0158)	0.80 (0.031)
	SECOND		0.20–0.40 (0.0079–0.0158)	0.80 (0.031)
	OIL		0.20–0.90 (0.0079–0.0354)	1.30 (0.0512)
Connecting rod small end ID		mm (in)	21.020–21.041 (0.8276–0.8284)	21.08 (0.8299)
Connecting rod big end radial clearance		mm (in)	0.006–0.016 (0.0002–0.0006)	0.03 (0.0012)
Connecting rod big end axial crearance		mm (in)	0.06–0.44 (0.0024–0.0173)	0.94 (0.0370)

FRAME

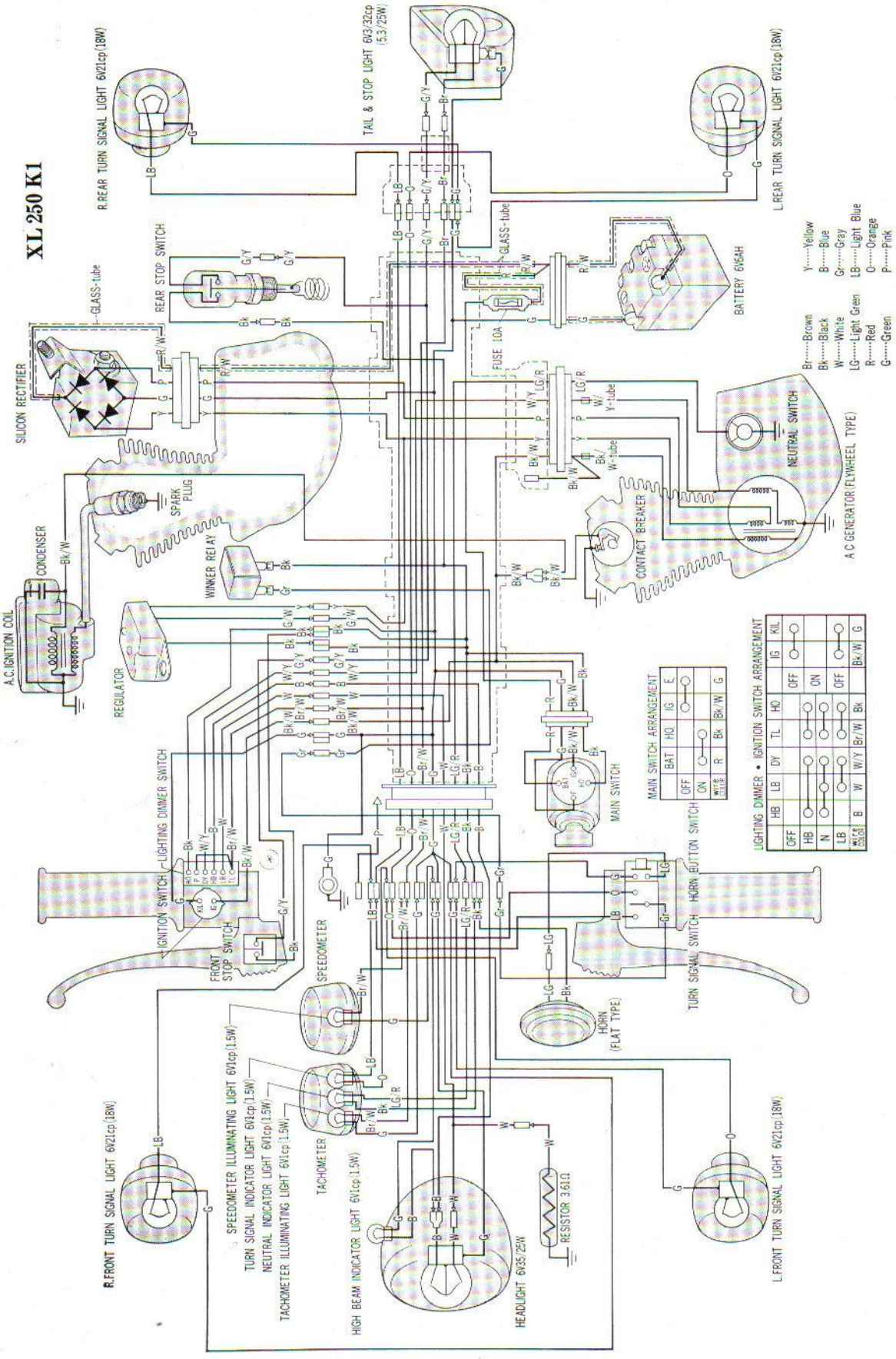
Item	Unit	Standard value	Service limit
Free length of A and B front cushion springs	mm (in)	493.5 (19.4287)	48.34 (19.03)
Free length of A and B rear cushion springs	mm (in)	236.4 (9.31)	230 (9.06)
Fork pipe OD	mm (in)	34.00–34.98 (1.3386–1.3772)	34.77 (1.3649)
Fork bottom case ID	mm (in)	35.025–35.064 (1.3790–1.3805)	35.24 (1.3874)

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12. WIRING DIAGRAM



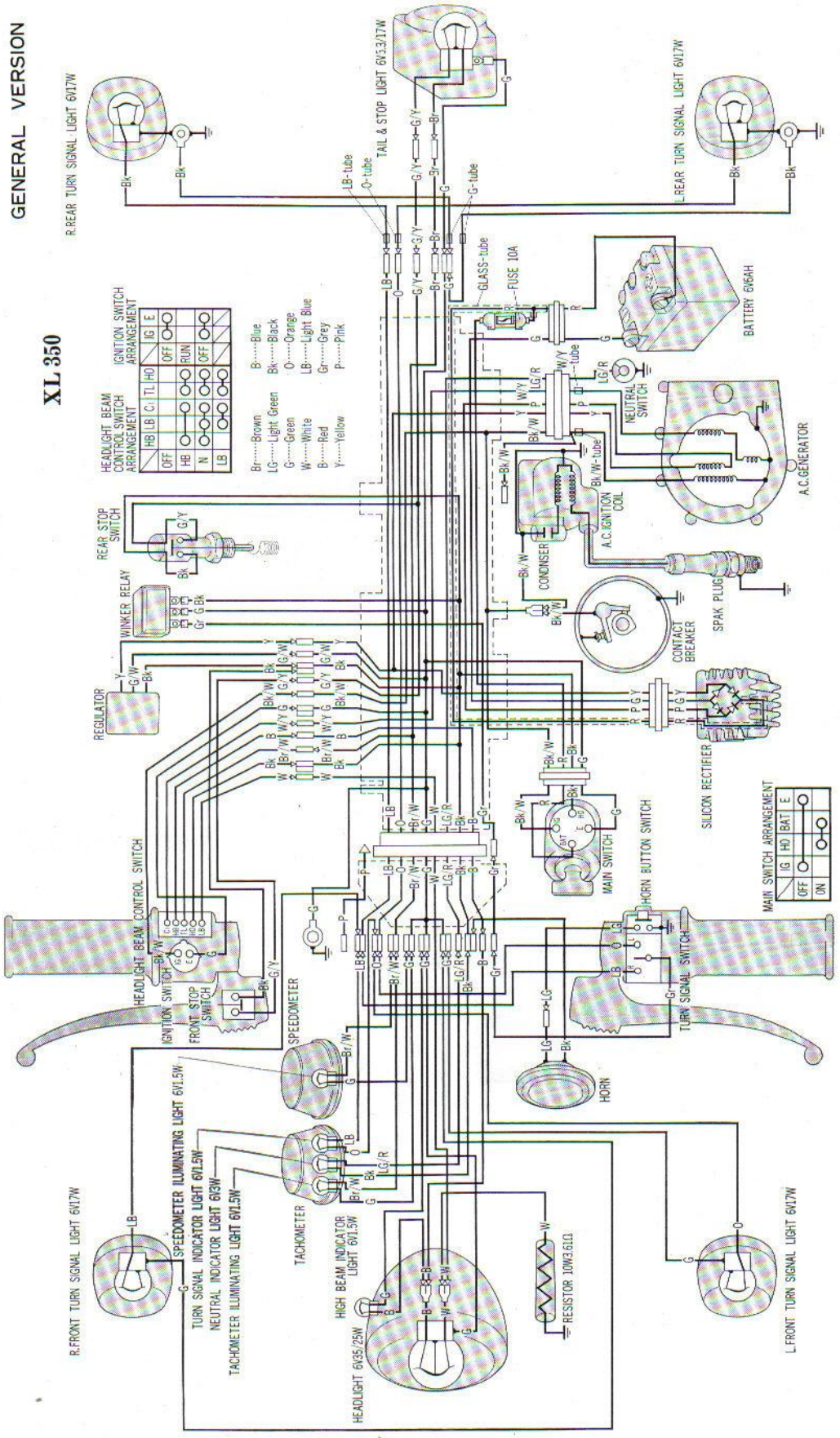
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GENERAL VERSION

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13. SUPPLEMENT TO XL250K2, XL350K1

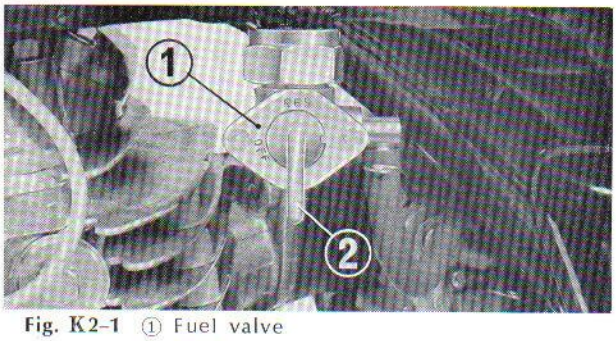


Fig. K2-1 ① Fuel valve
② Lever

1. FUEL VALVE

The indication marks and their positions on the fuel valve were changed to a new type.

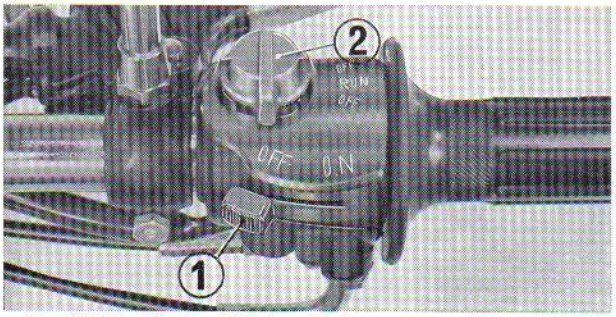


Fig. K2-2 ① Headlight switch
② Engine stop switch

2. HEADLIGHT AND ENGINE STOP SWITCHES

The dimmer switch, previously located on the switch housing at the right side of the steering handlebar, is now located on the left switch housing. This also necessitated changes in the switch housing design.

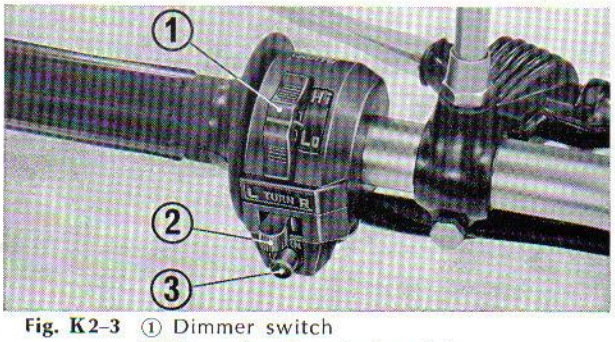


Fig. K2-3 ① Dimmer switch
② Turn signal control switch
③ Horn switch

3. TURN SIGNAL, HORN AND DIMMER SWITCHES

A new dimmer switch was added to the turn signal and horn switch housing on the left side of the handlebar.

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4. SIDE STAND

The side stand was changed to a new type with a shock absorbing rubber pad.
The stand must be inspected periodically to determine its condition.

Inspection

1. Check the entire stand assembly (side stand bar, bracket and rubber pad) for installation, deformation or excessive damage.
2. Check the spring for damage or other defects.

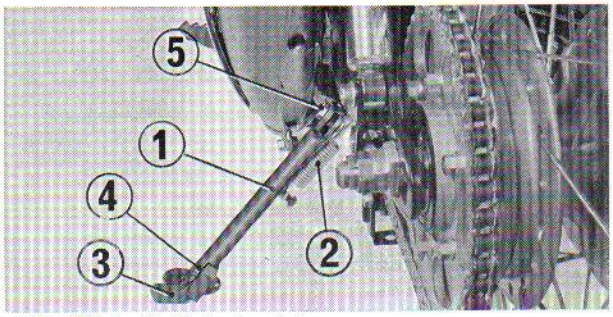


Fig. K2-4 ① Side stand bar
② Spring
③ Rubber pad
④ 6mm bolt
⑤ Side stand pivot bolt

3. Check the side stand for proper return operation:
   a. With the stand applied, tilt the machine so that it clears the ground.
   b. Attach a spring scale to the lower end of the stand and measure the force with which the stand is returned to its original position.
   c. The stand condition is correct if the measurement falls within **2–3 kg (4.4–6.6 lbs.).**
   If the stand requires force exceeding the above limit, this may be due to neglected lubrication, overtightened side stand pivot bolt, worn stand bar or bracket, or excessive tension. Repair as necessary.

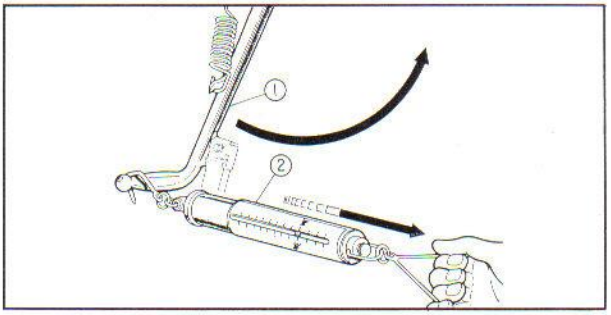


Fig. K2-5 ① Side stand bar
② Spring scale

4. Check the rubber pad for deterioration or wear. When the rubber pad is excessively worn down to the wear line, replace it with a new one.

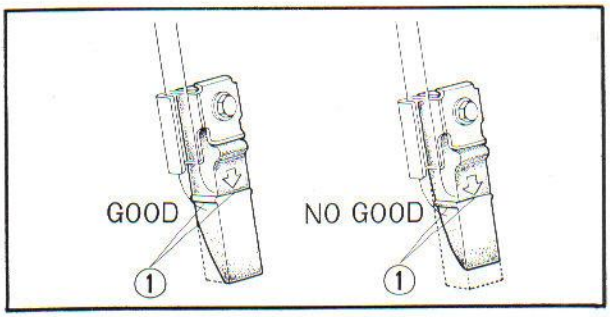


Fig. K2-6 ① Wear line

Rubber pad replacement

1. Remove the **6 mm** bolt. Separate the rubber pad from the bracket at the side stand.
2. After installing the collar, put a new rubber pad in place in the bracket with the arrow mark out.
   NOTE:
   Use rubber pad having the mark "OVER 260 lbs ONLY".
3. Secure the rubber pad with the 6 **mm** bolt.

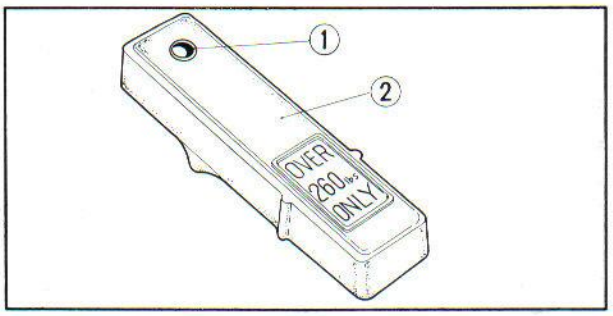


Fig. K2-7 ① Collar
② Rubber pad

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5. MAINTENANCE SCHEDULE

Additions to the MAINTENANCE SCHEDULE are shown below:

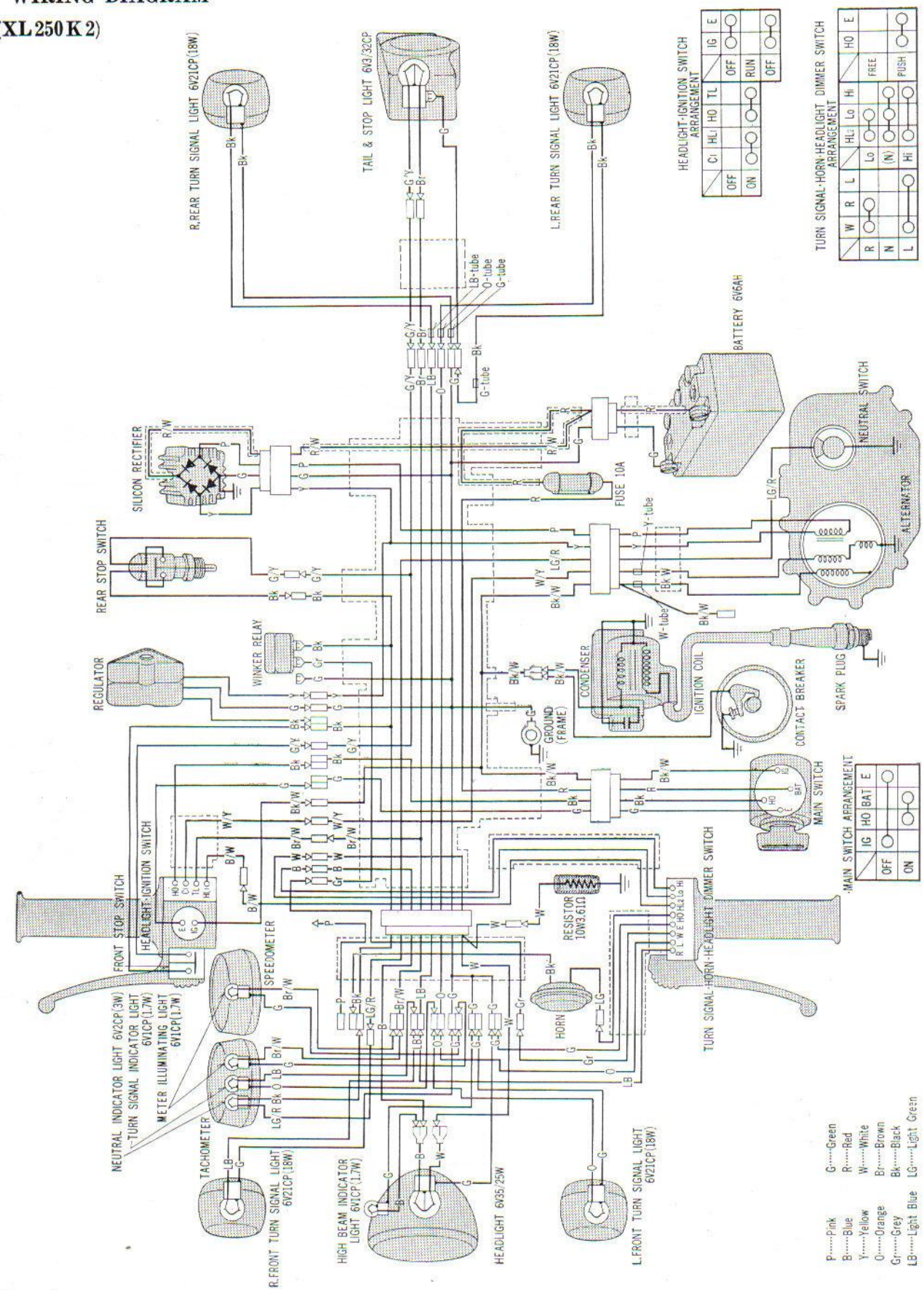
MAINTENANCE SCHEDULE This maintenance schedule is based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.	INITIAL SERVICE PERIOD	REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval, whichever occures first.			
		1 month	3 months	6 months	12 months
	500 miles	500 miles	1,500 miles	3,000 miles	6,000 miles
	1,000 km	1,000 km	2,500 km	5,000 km	10,000 km
*SIDE STAND—Check installation, operation, deformation, damage and wear.				○	

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.

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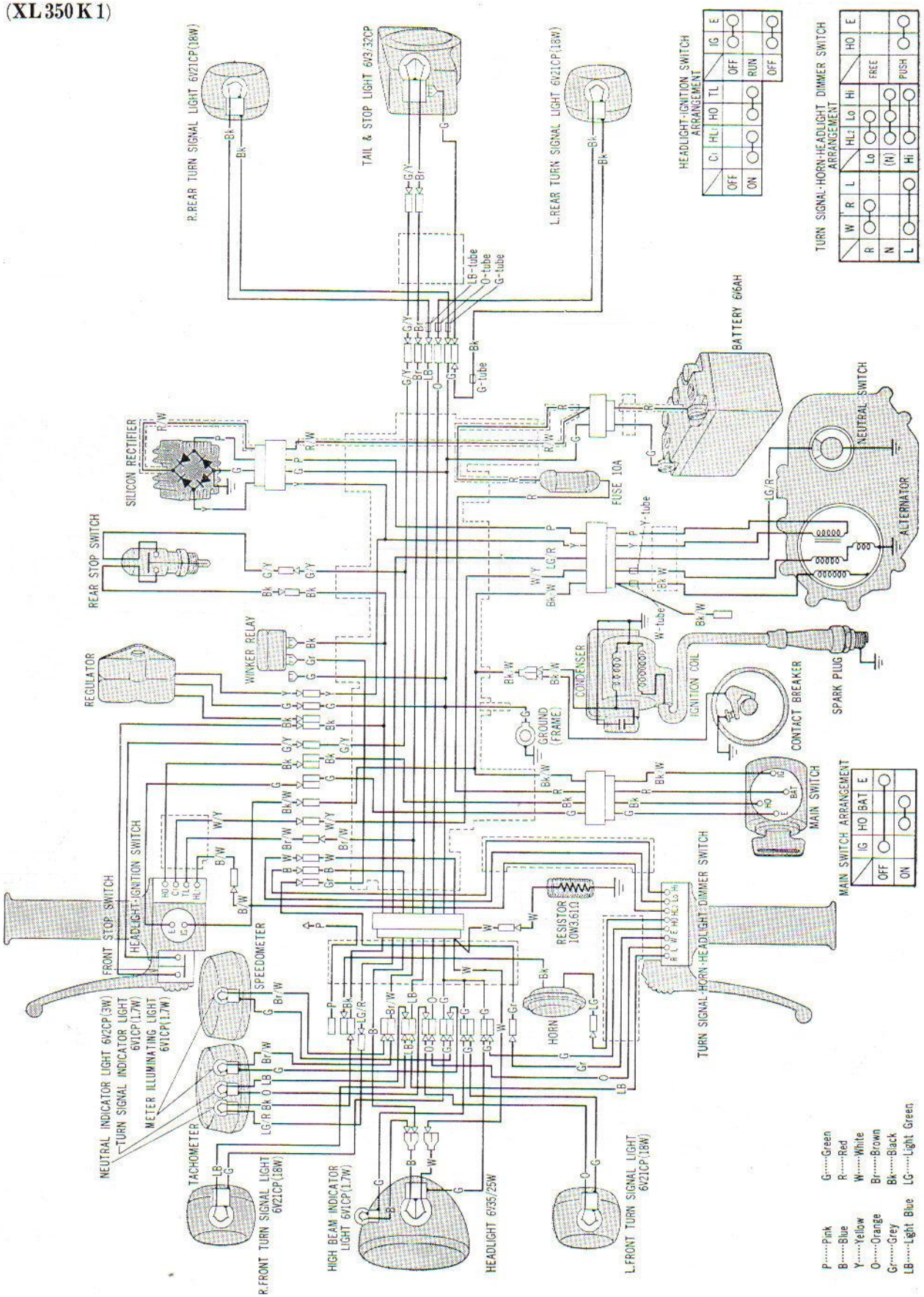
6. WIRING DIAGRAM

(XL 250 K 2)



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(XL 350 K 1)



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14. SUPPLEMENT TO XL 250 K3, 350 K2 '76

Engine No. XL 250 E—4000001 and subsequent
Frame No. XL 250—4000001 and subsequent
Engine No. XL 350 E—3000001 and subsequent
Frame No. XL 350—3000001 and subsequent

1. PISTON RINGS

The oil control ring was changed to a new, three piece type.

A. Inspection

1. Piston ring-to-groove clearance

	Standard value	Service limit
Top:	0.03–0.06 mm (0.0012–0.0024 in.)	0.18 mm (0.007 in.)
Second:	0.015–0.045 mm (0.0006–0.0018 in.)	0.165 mm (0.006 in.)
Oil:	———	———

2. Piston ring end gap

	Standard value	Service limit
Top:	XL 250–0.15–0.35 mm (0.0059–0.0138 in.)	0.75 mm (0.029 in.)
	XL 350–0.20–0.40 mm (0.0079–0.0157 in.)	0.80 mm (0.031 in.)
Second:	0.20–0.40 mm (0.0079–0.0157 in.)	0.80 mm (0.031 in.)
Oil:	XL 250–0.20–0.40 mm (0.0079–0.0157 in.)	0.80 mm (0.031 in.)
	XL 350–0.20–0.90 mm (0.0079–0.0354 in.)	1.30 mm (0.0512 in.)

B. Assembly

1. To install the oil ring, first place the spacer and then the rails in position. Be certain that none of the rail and spacer gaps are lined up and are staggered **10–15 mm (0.4–0.6 in.)** apart from each other.
2. Install the second and top rings in that order on the piston with their markings facing upward.

NOTES:

a. Do not mix top and second rings.

b. After installing all of the rings on the piston, rotate them by hand and check to be sure that they move smoothly without any signs of binding.

3. The ring gaps must be staggered 120 degrees and must not face the direction of the piston pin or be at right angles to the pin.

NOTE:

To check the gap of the three-piece type oil ring, refer to the spacer.

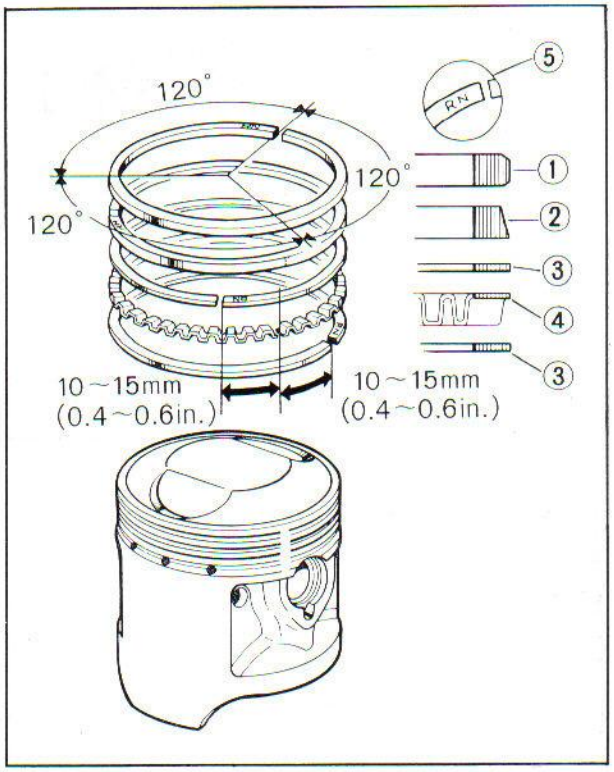


Fig. K3-1 ① Top ring
② Second ring
③ Rail
④ Spacer
⑤ Piston ring mark

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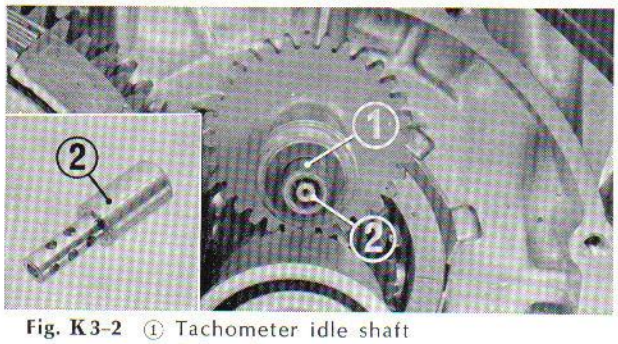


Fig. K3-2 ① Tachometer idle shaft
② Oil orifice

2. OIL ORIFICE

A new oil orifice was added in the tachometer idler shaft.

A. Inspection

Remove tachometer idler shaft and orifice and clean them in solvent. Make sure they are not clogged.

B. Installation

Install the orifice into the tachometer idler shaft so that its small diameter is facing out (crankcase cover side).

3. KICK STARTER SPINDLE

A 22 mm thrust washer and an 18 mm washer were added to the kick starter spindle as shown in Fig. K3-3. The spring collar, previously installed on the kick starter spindle, was eliminated.

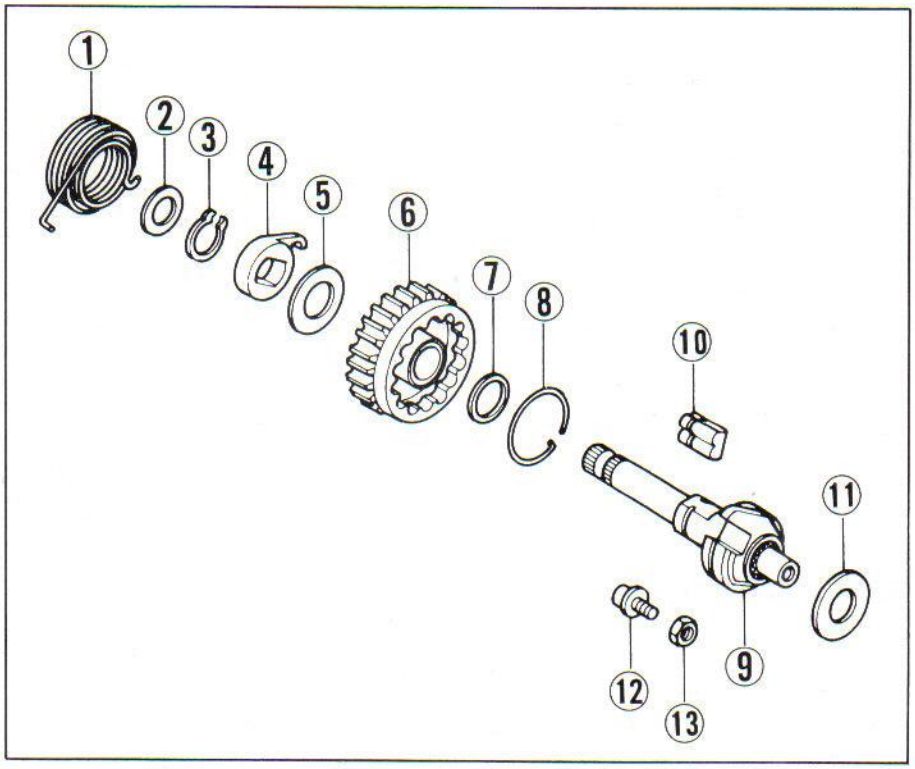


Fig. K3-3
① Kick starter spring
② 18 mm washer
③ 22 mm snap ring
④ Spring retainer
⑤ 22 mm thrust washer
⑥ Kick starter pinion
⑦ 22 mm thrust washer
⑧ Ratchet spring
⑨ Kick starter spindle
⑩ Kick starter pawl
⑪ 16 mm washer
⑫ Kick stopper pin
⑬ 10 mm nut

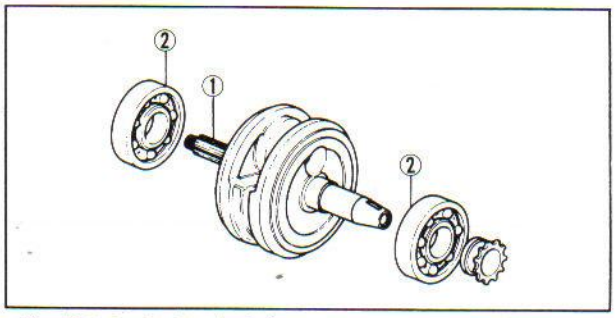


Fig. K3-4 ① Crankshaft
② Ball bearing (6306)

4. CRANKSHAFT (XL 250 K3)

Crankshaft bearings on the XL 250 were changed from a roller bearing to a ball bearing.

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5. KICK STARTER IDLE GEAR

The kick starter idle gear and its installation has been changed.

A. Disassembly

1. Loosen the 6 mm screws through the idle gear access holes and remove the set plate.

NOTE:
It is not necessary to remove the set plate when the crankcase has been separated.

2. Slide the idle gear off the countershaft.

B. Assembly

1. After installing the idle gear and set plate, make sure that the set plate is properly seated in the gear groove and the idle gear rotates freely without binding.
2. With a punch, stake each screw head in two places into the grooves in set plate.

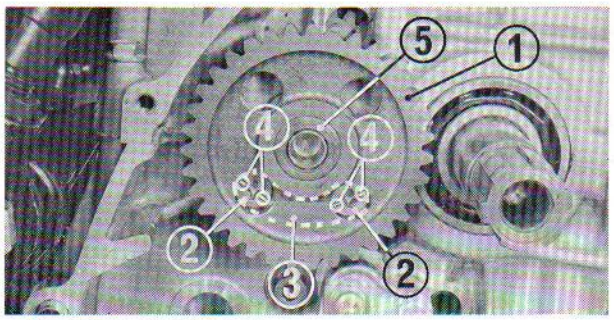
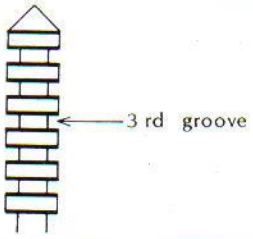
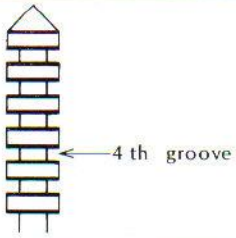


Fig. K3-5 ① Idle gear
② Screw (6×14 mm)
③ Set plate
④ Stake
⑤ Countershaft

6. CARBURETOR SETTING

	XL 250 K 3	XL 350 K 2
Setting number	074A	075A
Main jet	#125	#125
Slow jet	#45	#48
Jet needle setting		
Pilot screw opening	1 1/4	1 3/4
Float level (gauge)	24 mm (0.945 in.)	18 mm (0.709 in.)
Idle speed	1,200 rpm	1,200 rpm

7. REAR BRAKE

A new brake arm return spring was added between the brake arm and the brake panel.

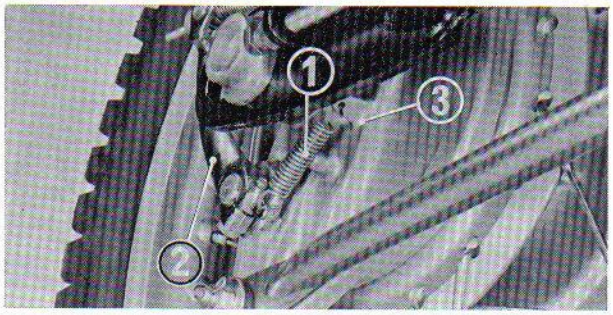


Fig. K3-6 ① Return spring
② Brake arm
③ Brake panel

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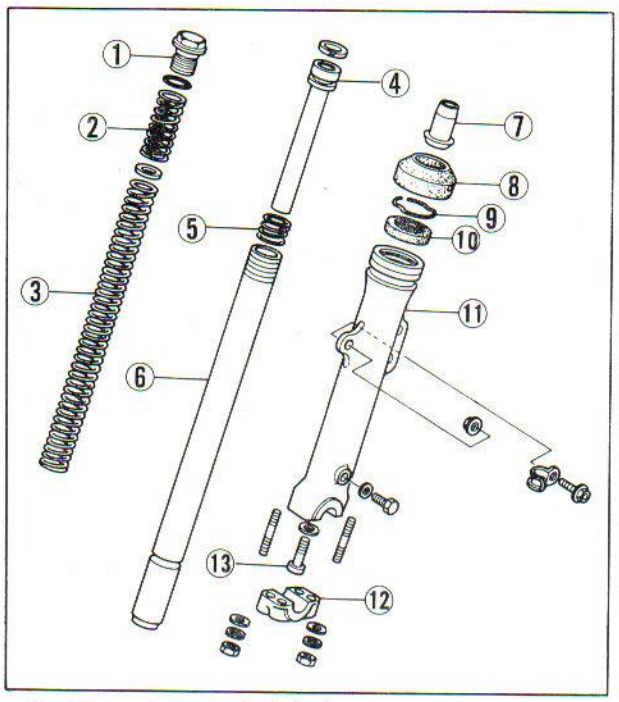


Fig. K3-7 ① Front fork bolt
② Shock absorber spring A
③ Shock absorber spring B
④ Bottom tube
⑤ Rebound spring
⑥ Front fork tube
⑦ Oil lock piece
⑧ Dust seal
⑨ Oil seal stop ring
⑩ Oil seal (35×48×11 mm)
⑪ Bottom case
⑫ Front axle holder
⑬ Socket bolt (8 mm)

8. FRONT SUSPENSION

A. Inspection

1. Front shock absorber spring free length.

	Standard value	Service limit
Spring A :	53.5 mm (2.11 in.)	52.5 mm (2.07 in.)
Spring B :	431 mm (16.97 in.)	420 mm (16.54 in.)

2. Front fork bottom case I.D.
   Standard value: 35.000–35.039 mm (1.3780–1.3795 in.)
   Service limit: 35.18 mm (1.3850 in.)
3. Front fork tube O.D.
   Standard value: 34.75–35.00 mm (1.3681–1.3780 in.)
   Service limit: 34.70 mm (1.3661 in.)

B. Front fork oil capacity

Volume required to fill dry assembly:
165 cc (5.6 ozs.)
Volume required to fill after draining:
150~155 cc (4.9~5.3 ozs.)

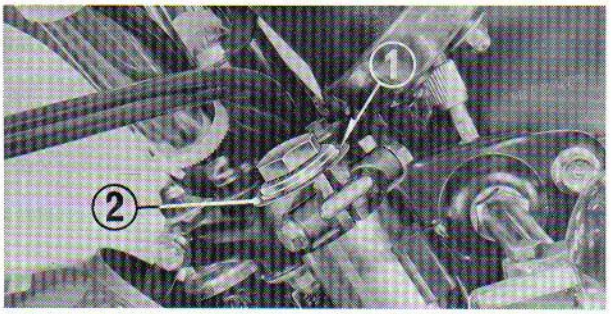


Fig. K3-8 ① Lower chamfered edge on front fork
② Fork top bridge upper surface

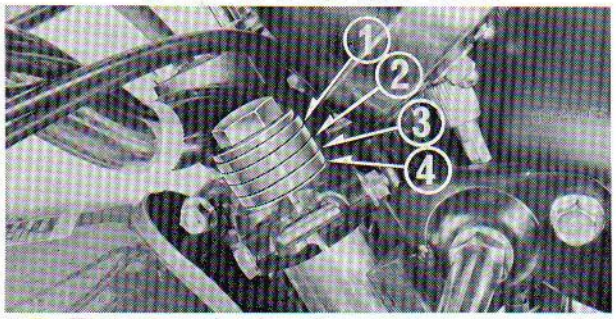


Fig. K3-9 ① 1st level mark
② 2nd level mark
③ 3rd level mark
④ 4th level mark

C. Installation

Install each front fork so that the lower chamfered edge on top of the front fork tube is flush with the top face of the fork top bridge (standard).

NOTE:
For quicker steering response, the fork tube can be adjusted to the 4th level mark from the fork top bridge equally on both front fork legs.

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9. REAR SUSPENSION

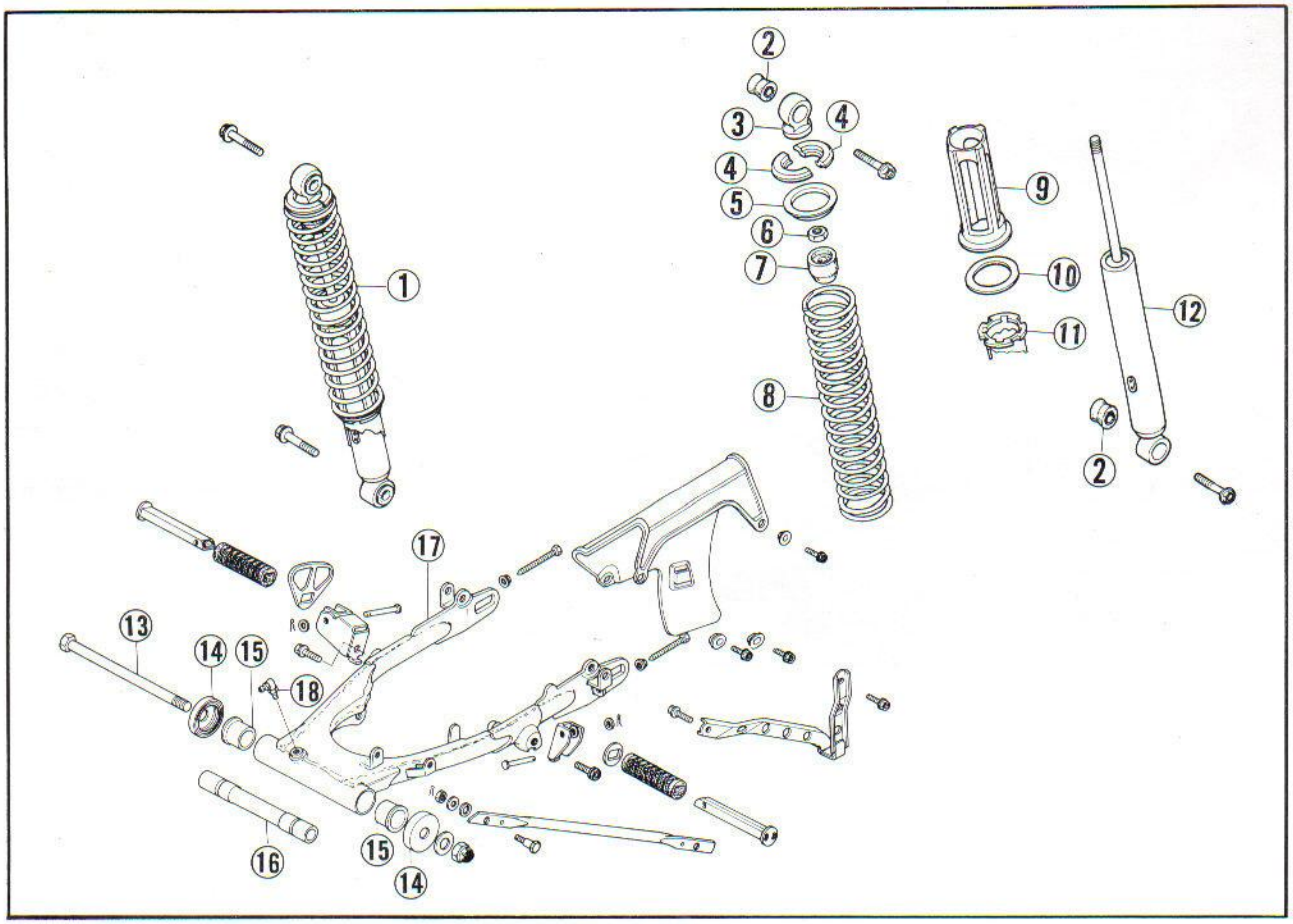


Fig. K3-10

① Rear shock absorber assembly
② Damper bushing
③ Upper joint
④ Spring seat stopper
⑤ Spring upper seat
⑥ Nut (11 mm)
⑦ Stopper rubber
⑧ Rear shock absorber spring
⑨ Spring guide
⑩ Spacer
⑪ Spring adjuster
⑫ Rear damper
⑬ Rear fork pivot bolt
⑭ Dust seal cap
⑮ Pivot bushing
⑯ Center collar
⑰ Rear fork
⑱ Grease nipple

A. Inspection

1. Rear shock absorber spring free length.
   Standard value: 264.7 mm (10.42 in.) STD.
   266.1 mm (10.51 in.) OP.
   Service limit: 262 mm (10.32 in.) STD.
   260 mm (10.24 in.) OP.
2. Rear fork pivot bushing I.D.
   Standard value: 21.500–21.552 mm (0.8465–0.8486 in.)
   Service limit: 21.7 mm (0.8543 in.)
3. Rear fork center collar O.D.
   Standard value: 21.427–21.460 mm (0.8436–0.8449 in.)
   Service limit: 21.35 mm (0.8406 in.)

10. FUEL FILLER CAP

A new breather tube was incorporated in the fuel filler cap.

After fueling, be sure to tighten the fuel filler cap firmly and insert the breather tube into the steering stem nut.

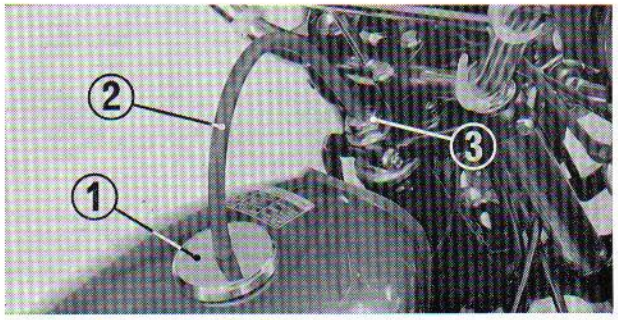


Fig. K3-11 ① Fuel filler cap
② Breather tube
③ Steering stem nut

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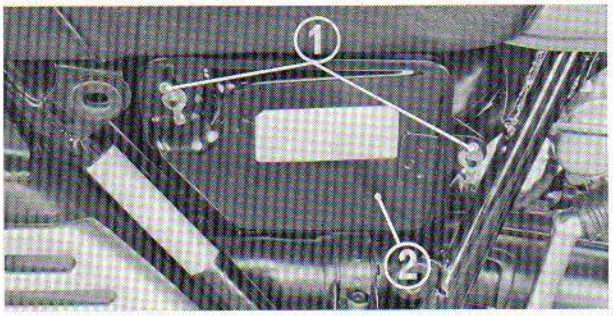


Fig. K3-12 ① Wing nut
② Air cleaner cover

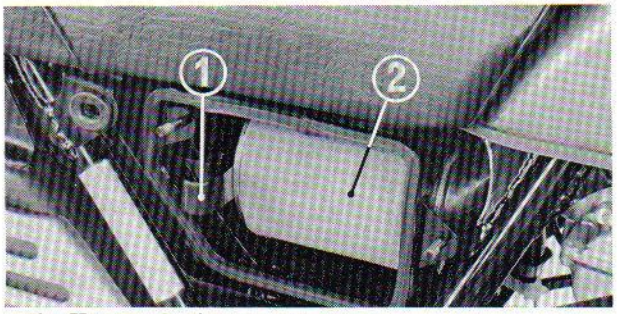


Fig. K3-13 ① Element set spring
② Air cleaner element

11. AIR CLEANER

A. Element cleaning

1. Remove the right side cover.
2. Remove the two wing nuts and air cleaner cover.
3. Remove the air cleaner element set spring and element.
4. Wash the air cleaner element in clean stoddard solvent and allow to dry throughly.
5. Soak the air cleaner element in clean gear oil **(SAE 80-SAE 90)** until saturated, then squeeze out excess oil.

WARNING:
Gasoline or low flash point solvents are explosive and highly flammable and must not be used to clean the air cleaner element. Fire or explosion could result.

6. Install the element, set spring, cover and wing nuts.

12. EXHAUST MUFFLER

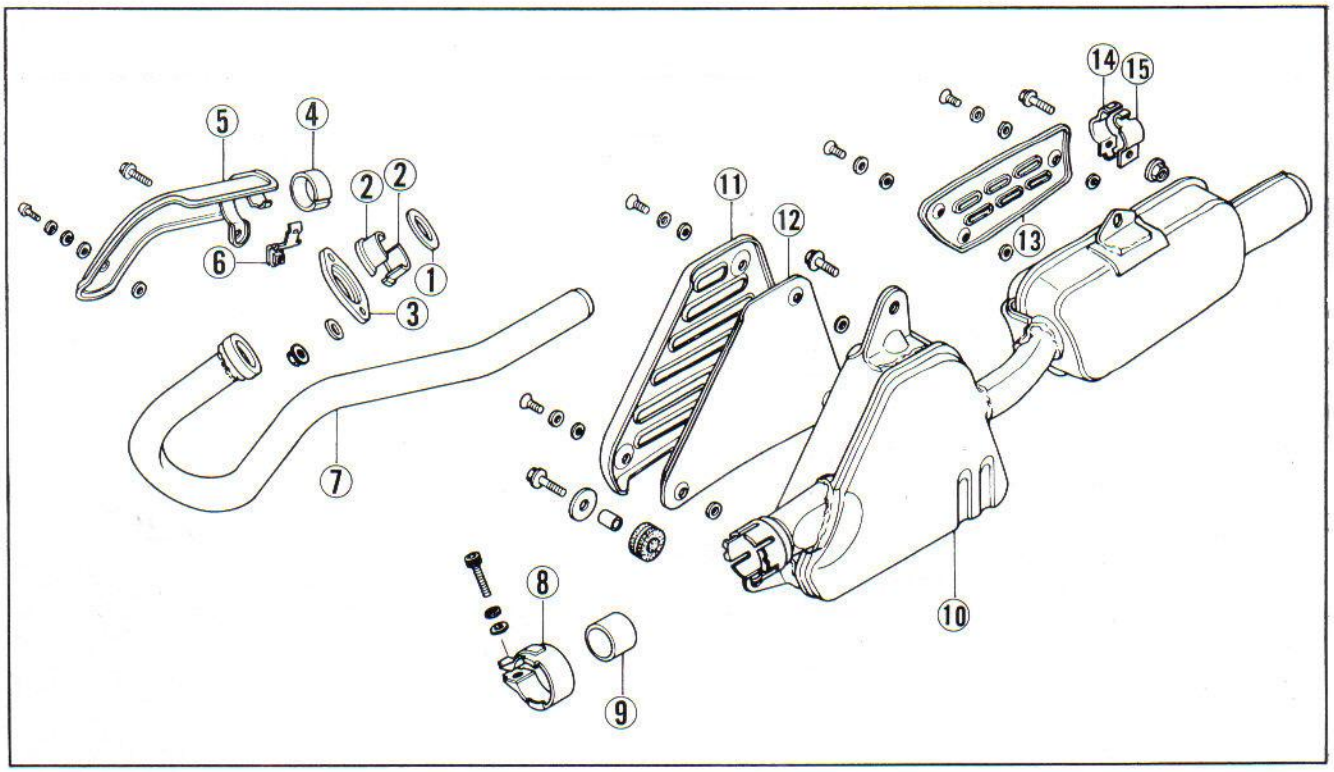


Fig. K3-14

① Exhaust pipe gasket
② Exhaust pipe joint collar
③ Exhaust pipe joint
④ Protector band packing
⑤ Exhaust pipe protector
⑥ Exhaust pipe band
⑦ Exhaust pipe
⑧ Muffler band
⑨ Muffler gasket
⑩ Muffler
⑪ Muffler protector
⑫ Muffler protector B
⑬ Sub muffler protector
⑮ Skid plate stay A
⑭ Skid plate stay B

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A. Spark arrestor cleaning

1. Remove the two 6mm bolts and the spark arrestor from the exhaust pipe.
2. Start the engine and rev approximately twenty times.

NOTES:

a. Do not perform this operation immediately after the engine has been run because the exhaust system becomes very hot.

b. Because of the increased fire hazard make sure that there are no combustible materials in the area when purging the arrestor.

c. Perform this operation only in a well ventilated area.

d. Wear eye protection.

3. Prior to installing the spark arrestor, coat its circumference with a heat-resistant liquid sealant as shown in Fig. K3-16.

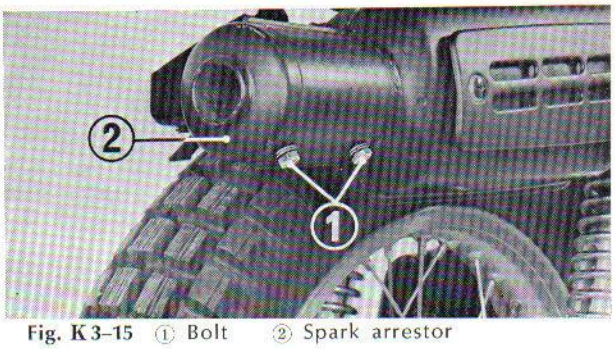


Fig. K3-15 ① Bolt ② Spark arrestor

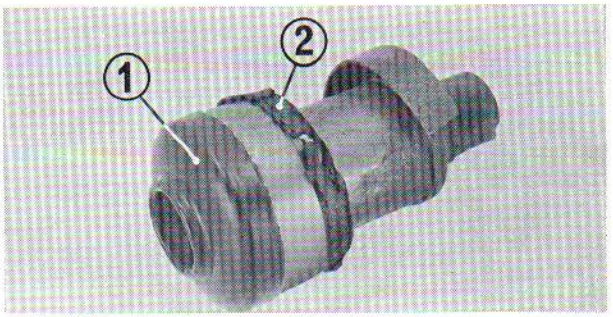


Fig. K3-16 ① Spark arrestor
② Liquid sealant

B. Muffler removal and installation

1. Loosen the muffler clamp securing bolt.
2. Remove the 8mm securing nuts and the exhaust pipe.



Fig. K3-17 ① Clamp
② 8mm nut
③ Exhaust pipe

3. Remove the right rear shock absorber.
4. Loosen the three 8mm flanged bolts and remove the muffler.

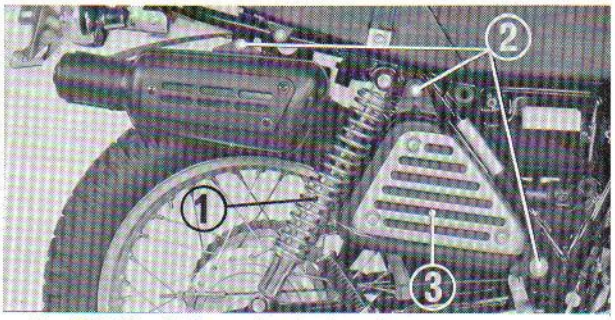


Fig. K3-18 ① Rear shock absorber
② 8mm flanged bolt
③ Muffler

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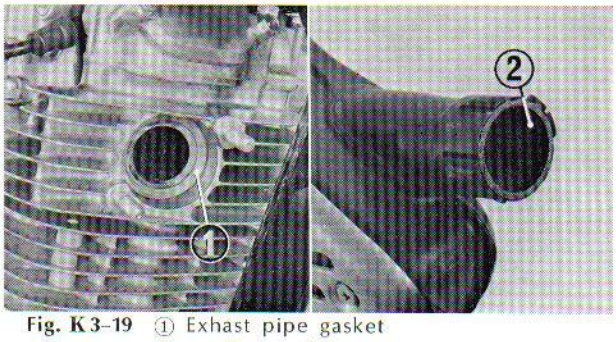


Fig. K 3-19 ① Exhast pipe gasket
② Muffler gasket

5. To install, reverse the removal procedure.

NOTES:

a. **Inspect the exhaust pipe gasket and muffler gasket for damage or any defects and replace it if necessary.**
b. **Tighten the muffler clamp bolt to specification.**
Specified torque: 180–250 kg-cm (13.0–18.0 lbs-ft)

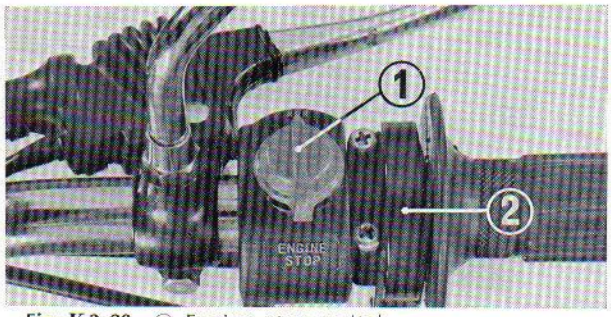


Fig. K 3-20 ① Engine stop switch
② Throttle housing

13. ENGINE STOP SWITCH AND THROTTLE HOUSING

1. The headlight switch, previously installed on the right switch housing, has been elminated.
2. The throttle grip was changed to a new, separated type.

14. OPTIONAL PARTS

A. Drive sprocket
Standard: 15T
Optional: 14T

B. Rear shock absorber

	Spring Wire dia. × I.D. × Free length —No of active coil	Damper oil capacity
Standard:	7 × 47 × 264.7 mm–16.5 (0.267 × 1.85 × 10.26 in.–16.5)	63 cc (3.85 cu. in.)
Optional:	7.5 × 45 × 266.1 mm–15.25 (0.295 × 1.77 × 10.48 in.–15.25)	95 cc (5.80 cu. in.)

15. SPECIFICATIONS

		XL 250 K 2	XL 350 K 2
Dimensions	Overall length	2,165 mm (85.2 in)	←
	Overall width	880 mm (34.7 in)	←
	Overall height	1,130 mm (44.5 in)	←
	Wheelbase	1,410 mm (55.5 in)	←
	Min. ground clearance	235 mm (9.3 in)	←
Weight	Dry (excl. oil, fuel)	136 kg (302.2 lb)	142 kg (313 lb)
	Wet (incl. oil, fuel)	148 kg (328.9 lb)	153 kg (340 lb)
Tires	Front	3.00–21 (4 PR) Inflation pressure 1.5 kg/cm² (21.3 psi)	←
	Rear	4.00–18 (4 PR) Inflation pressure 1.5 kg/cm² (21.3 psi)	←

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		XL 250 K 2	XL 350 K 2
Engine	Type	Gasoline, air-cooled, 4-cycle	←
	Cylinder arrangement	Single cylinder, tilted forward 10°	←
	Valve arrangement	Overhead type	←
	Bore×stroke	74.0×57.8 mm (2.91×2.28 in)	79.0×71.0 mm (3.11×2.80 in)
	Displacement	248 cc (15.1 cu. in)	348 cc (21.2 cu. in)
	Compression ratio	9.1 : 1	8.5 : 1
	Compression pressure	14.0 kg/cm² (199.13 psi)—(Using kick starter)	12.0 kg/cm² (170.4 psi)—(by kick)
	Weight (wet)	39 kg (86 lb)	43 kg (95 lb)
	Idling speed	1200 rpm	←
	Starting method	Primary kick	←
Valves	Intake Opens Closes	At 5° (Before top dead center) At 30° (After bottom dead center)	At 10° (Before top dead center) At 40° (After bottom dead center)
	Exhaust Opens Closes	At 35° (Before bottom dead center) At 5° (After top dead center)	At 40° (Before bottom dead center) At 10° (After top dead center)
	Valve clearances Intake Exhaust	0.05 mm (0.002 in) cold setting 0.08 mm (0.003 in) cold setting	←
Ignition system	Method	Magneto ignition	←
	Timing	15° (Before top dead center)/2200 rpm (at crankshaft)	5° (Before top dead center)/2200 rpm (at crankshaft)
	Plug	D-8 ESL (NGK), X-24 ES (ND)	←
Fuel system	Air cleaner	Urethane, wet type	←
	Tank capacity	9.5 (2.5 US gal., 2.1 Imp. gal.)	←
Lubrication system	Method	Wet sump and pressure-feed	←
	Oil pump	Trochoid type	←
	Oil filter	Centrifugal and mesh type	←
	Lubricant capacity	1.9 *l* (2.0 US qt., 1.7 Imp. qt.)	←
Battery	Type	6N6-3B	←
	Voltage and capacity	6 V-6 AH	←
Generator	Type	AC type	←
	Voltage and output	6 V, 80 W (at 5,000 rpm)	←
	Overcharge regulator	Pointless type	←
Transmission system	Crankshaft-to-transmission reduction ratio	3.125	←
	Transmission-to-rear shaft reduction ratio	3.200 (Via chain)	3.000 (via chain)
	Clutch type	Wet, multi-disc (7 discs)	←
	Reduction 1st 2nd 3rd 4th 5th	2.352 1.666 1.280 1.000 0.806	2.500 ← 1.240 0.931 0.750
Steering system	Caster	58°50′	←
	Trail	140 mm (5.51 in)	←
	Steering angle	45° (right), 45° (left)	←
Brakes	Type	Internal expanding shoe	←
Suspension	Front	Telescopic type	←
	Rear	Swing arm type	←
Frame	Type	Semi-double cradle	←

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16. TORQUE SPECIFICATIONS

Engine

Tightening point	Thread dia. (mm)	Torque kg-m (lbs-ft)
Cylinder head	10	3.0–3.8 (21.7–27.5)
Cylinder head cover	6 8	0.7–1.1 (5.1–8.0) 2.0–2.5 (14.5–18.1)
Flywheel	12	6.5–8.0 (47.0–57.8)
Oil filter rotor	16	4.5–6.0 (32.5–43.4)
Crankcase	8	2.2–2.8 (15.9–20.2)

Frame

Tightening point	Thread dia. (mm)	Torque kg-m (lbs-ft)
Steering stem nut	23	7.0–9.0 (50.6–65.1)
Front fork top bridge	7	0.9–1.3 (6.5–9.4)
Handle holder	8	1.8–2.5 (13.0–18.1)
Front fork bottom bridge	8	1.8–2.5 (13.0–18.1)
Front wheel axle	12	5.5–6.5 (39.8–47.0)
Front wheel axle holder	8	1.8–2.5 (13.0–18.1)
Engine hanger bolt	10	4.5–6.0 (32.5–43.4)
Rear wheel axle nut	18	8.0–10.0 (57.8–72.3)
Final driven sprocket	8	2.7–3.3 (19.5–23.8)
Rear brake torque link	8	1.8–2.5 (13.0–18.1)
Rear shock absorber	10	3.0–4.0 (21.7–28.9)
Step bar	10	3.0–4.0 (21.7–28.9)
Gear change pedal	6	0.8–1.2 (5.8–8.7)
Kick starter pedal	8	2.5–3.5 (18.1–25.3)
Muffler band	8	1.8–2.5 (13.0–18.0)

17. SERVICE DATA

Engine

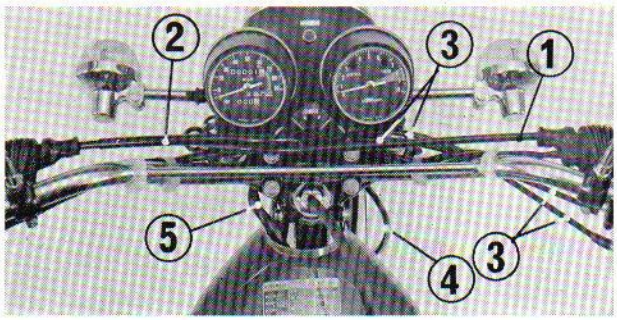
Item			Unit	Standard value	Service limit
Piston ring end gap	(XL 250)	TOP	mm (in.)	0.15–0.35 (0.0059–0.0138)	0.75 (0.029)
		SECOND	mm (in.)	0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
		OIL	mm (in.)	0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
	(XL 350)	TOP	mm (in.)	0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
		SECOND	mm (in.)	0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
		OIL	mm (in.)	0.20–0.90 (0.0079–0.0354)	1.30 (0.0512)
Piston ring-to-groove clearance		TOP	mm (in.)	0.03–0.06 (0.0012–0.0024)	0.18 (0.007)
		SECOND	mm (in.)	0.015–0.045 (0.0006–0.0018)	0.165 (0.006)
		OIL	mm (in.)	—	—

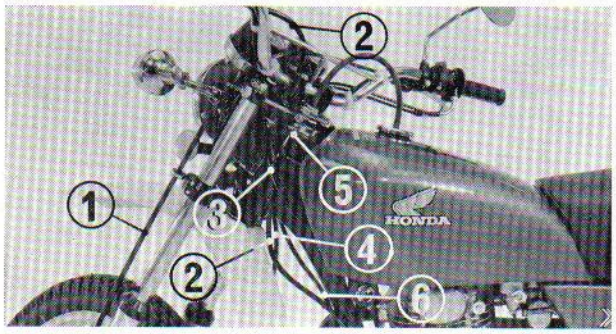
Frame

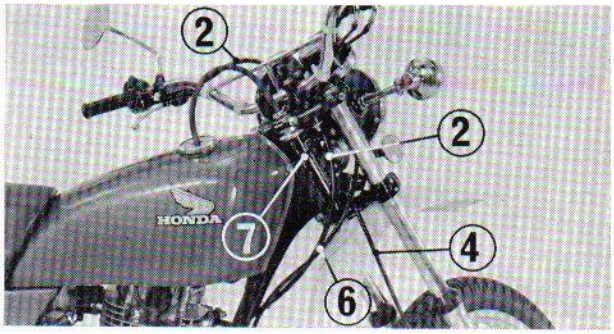
Item		Unit	Standard value	Service limit
Front shock absorber spring free length	SPRING A	mm (in.)	53.5 (2.11)	52.5 (2.07)
	SPRING B	mm (in.)	431 (16.97)	420 (16.54)
Front fork bottom case I.D.		mm (in.)	35.000–35.039 (1.3780–1.3795)	35.18 (1.3850)
Front fork pipe O.D.		mm (in.)	34.75–35.00 (1.3681–1.3780)	34.70 (1.3661)
Rear shock absorber spring free length	STANDARD	mm (in.)	264.7 (10.42)	262 (10.32)
	OPTIONAL	mm (in.)	266.1 (10.51)	260 (10.24)
Rear fork pivot bushing I.D.		mm (in.)	21.500–21.552 (0.8465–0.8486)	21.7 (0.8543)
Rear fork center collar O.D.		mm (in.)	21.427–21.460 (0.8436–0.8449)	21.35 (0.8406)

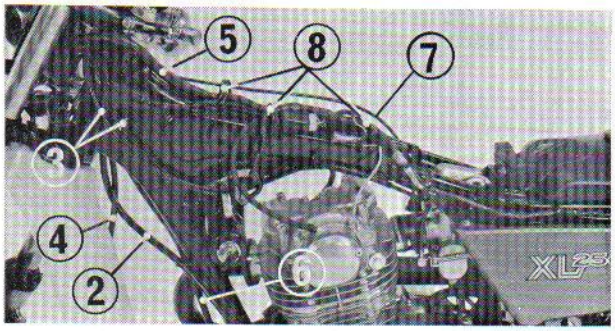
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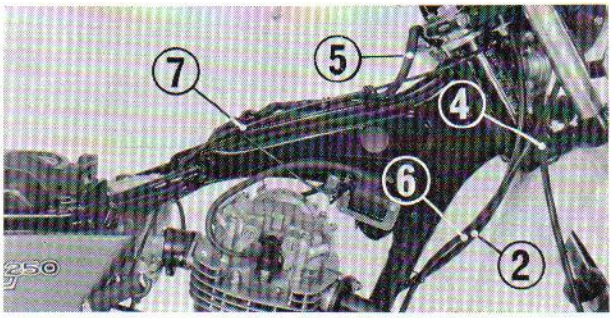
18. CABLE AND WIRE ROUTING









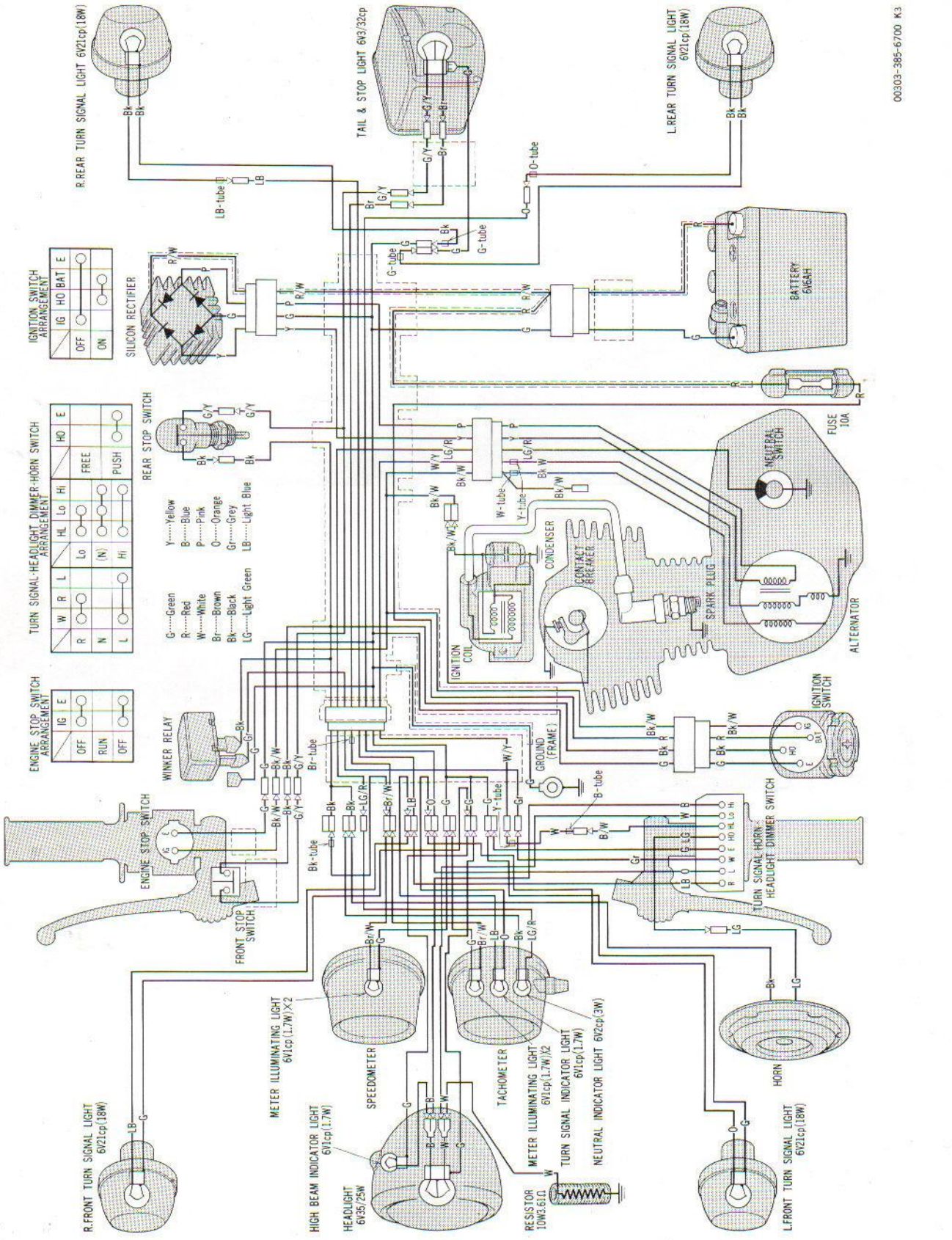


① Brake cable
② Clutch cable
③ Throttle cable
④ Speedometer cable
⑤ Harness
⑥ Tachometer cable
⑦ Choke cable
⑧ Clamp

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19. WIRING DIAGRAM

(XL 250 K 3, XL 350 K 2)



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15. SUPPLEMENT TO XL 350 K3 '77

Engine No. XL 350 E—3100001 and subsequent

Frame No. XL 350—3100001 and subsequent

1. FUEL FILTER

A. Cleaning

1. Turn the fuel valve lever to the "OFF" position and disconnect the fuel tube at the fuel valve. Remove the fuel tank.
2. Fill the fuel tank with gasoline or cleaning solvent and shake the tank to clean the fuel tank and fuel filter screen.
3. Drain the gasoline or cleaning solvent through the fuel filler hole. If the gasoline or cleaning solvent is soiled, replace the fuel filter screen. If mixture is clean, refill the tank with gasoline or cleaning solvent and turn the fuel valve lever to the "ON" position and determine the fuel flow through the fuel valve. If the flow is not normal, replace the fuel filter screen with a new one. If the fuel flow is normal, shake and drain the fuel tank.

B. Fuel filter replacement

1. Loosen the fuel valve fixing nut and remove the fuel valve and fuel filter screen from the fuel tank.
2. Check the rubber gasket for damage. Replace with a new one, if necessary.
3. Install a new filter screen and fuel valve in the fuel tank. Install the fuel tank on the frame and connect the fuel tube.
4. Fill the fuel tank with fuel and check the fuel valve for leakage with the lever in its various positions.

2. ROCKER ARM SHAFT

A. Disassembly

1. Remove the cylinder head cover.
2. Pull out the 6 mm dowel pins and remove the rocker arm shafts and rocker arms.

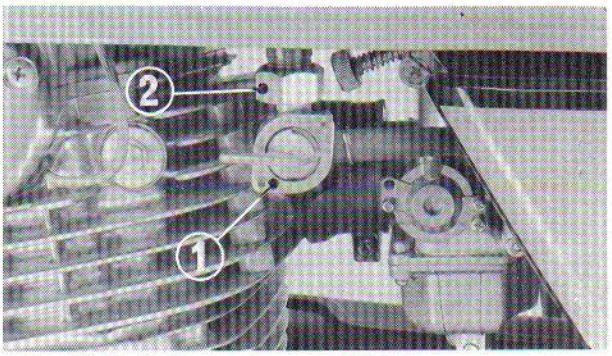


Fig. K3-1 ① Fuel valve ② Nut

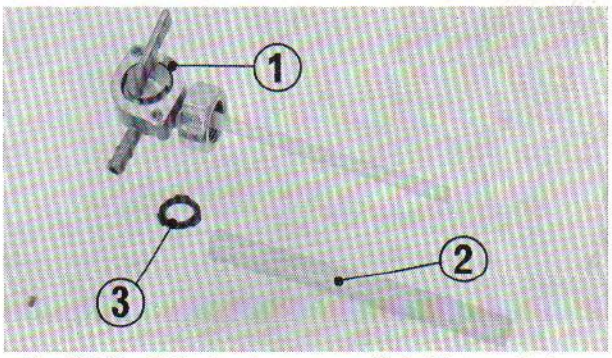


Fig. K3-2 ① Fuel valve ② Fuel filter screen ③ Rubber gasket

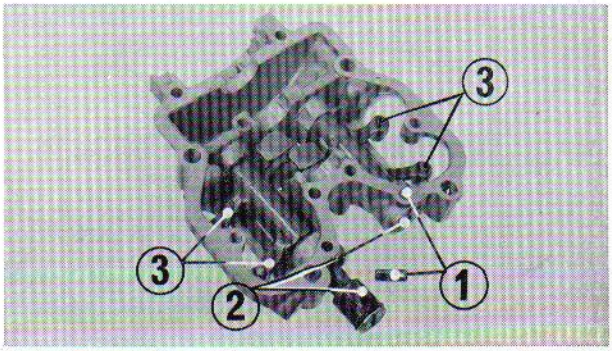


Fig. K3-3 ① 6 mm dowel pin ② Rocker arm shaft ③ Rocker arm

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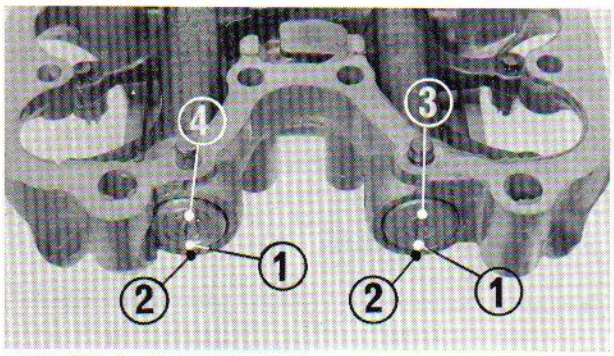


Fig. K3-4 ① Punch mark
② Index mark
③ Intake rocker arm shaft
④ Exhaust rocker arm shaft

B. Assembly

When installing the dowel pin, the punch mark on the rocker arm shaft should be aligned with the index mark on the cylinder head cover.

NOTE:

Do not interchange the intake and exhaust rocker arm shafts.

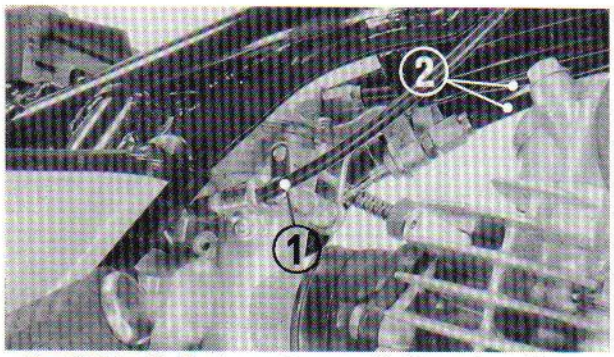


Fig. K3-5 ① Choke cable ② Throttle cable

3. CARBURETOR

A. Disassembly

1. Turn the fuel valve lever to the "OFF" position and disconnect the fuel tube at the fuel valve.
2. Remove the seat and fuel tank.
3. Remove the choke cable and throttle cable from each cable holder and disconnect them from each lever.

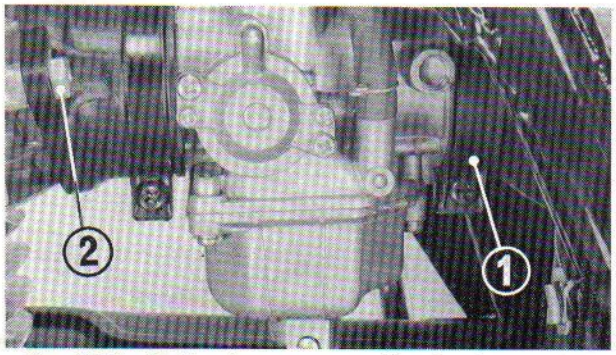


Fig. K3-6 ① Air cleaner connecting band
② Hex bolt

4. Loosen the air cleaner connecting band and the two hex bolts. Remove the carburetor.
5. Remove the carburetor insulator, drain tube, fuel tube and cable holder from the carburetor.

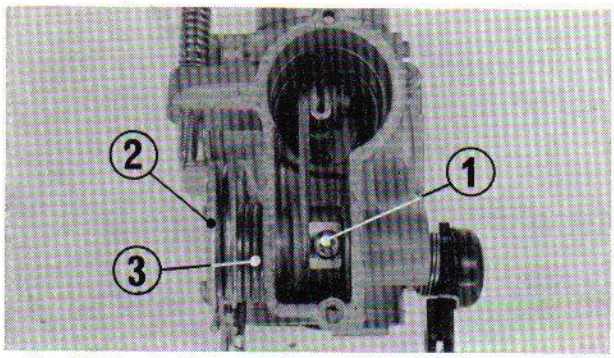


Fig. K3-7 ① Link arm fixing screw
② Link arm shaft
③ Throttle return spring

Throttle valve and jet needle:

1. Remove the carburetor top by loosening the two screws.
2. Loosen the link arm fixing screw and pull the link arm shaft out with the throttle return spring.

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3. Remove the link arm and throttle valve assembly from the carburetor body.
4. Remove the throttle valve and jet needle from the link arm.

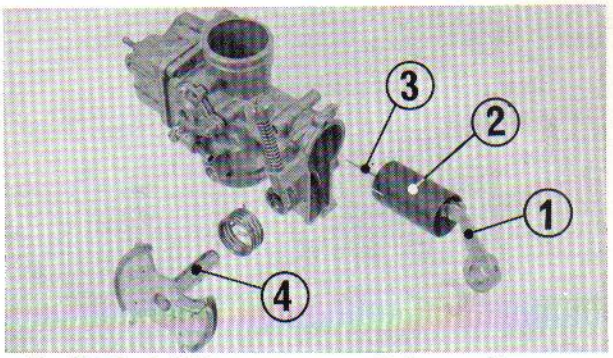


Fig. K3-8 ① Link arm ③ Jet needle
② Throttle valve ④ Link arm shaft

Float, float valve, and main jet:

1. Remove the float chamber body by loosening the three screws.
2. Remove the main jet.
3. Pull the float arm pin out and remove the float.

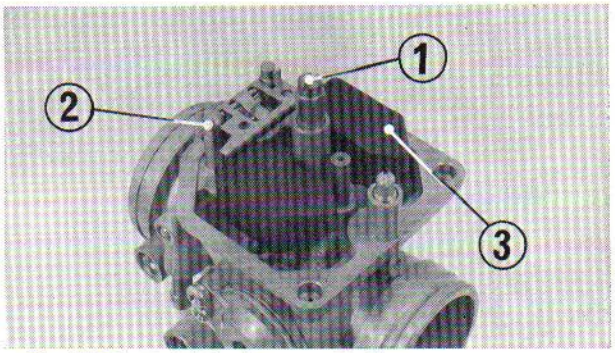


Fig. K3-9 ① Main jet ③ Float
② Float arm pin

4. Remove the float valve.

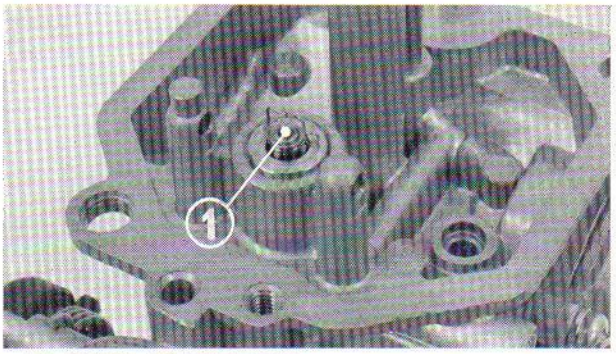


Fig. K3-10 ① Float valve

B. Assembly

To assemble, reverse the disassembly procedure.

NOTE:

Install the carburetor insulator to the carburetor so that the carburetor insulator groove aligns with the projecting point on the carburetor.

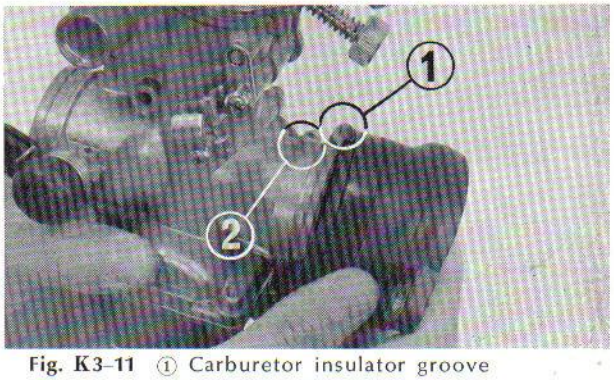


Fig. K3-11 ① Carburetor insulator groove
② Projecting point

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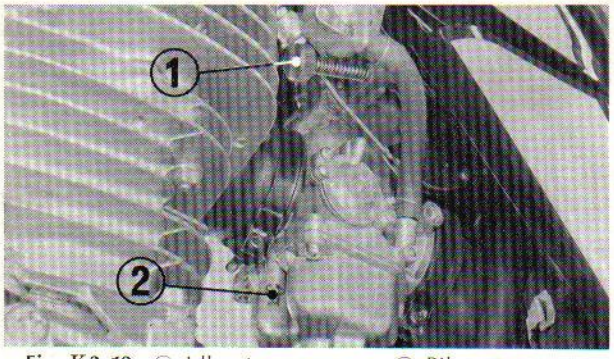


Fig. K3-12 ① Idle stop screw ② Pilot screw

C. Carburetor Adjustment

Make the adjustment after warming up the engine.

1. Turn the idle stop screw to allow the engine to run at the idle speed of 1,200 rpm.
2. Turn the pilot screw in or out to obtain the highest idle speed.
   Standard pilot screw opening: 1 3/4 turns
3. Adjust the idle stop screw until the engine idles at 1,200 rpm.
4. Turn the pilot screw to obtain the highest idle speed.
5. Repeat the step 3 to 4 several times.
6. Adjust the idle stop screw to allow the engine to run at the specified idle speed.

D. Carburetor setting table

Item	
Setting mark	PD 01A
Main jet	#115
Slow jet	#45
Jet needle setting (std.)	4th groove
Float height	14.5 mm (0.571 in.)

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4. MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE		INITIAL SERVICE PERIOD	REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval, whichever occurs first.			
	Month	—	1	3	6	12
	Mile	500	500	1,500	3,000	6,000
	Km	1,000	1,000	2,500	5,000	10,000
ENGINE OIL		R		R		
OIL FILTER SCREEN		C				C
SPARK PLUG					I	
*CONTACT BREAKER POINTS		I			I	
*IGNITION TIMING		I			I	
*VALVE TAPPET CLEARANCE		I			I	
*CAM CHAIN TENSION		I			I	
POLYURETHANE FOAM AIR FILTER ELEMENT		(service more frequently if operated in dusty areas.)		C		
*CARBURETOR		I			I	
THROTTLE OPERATION		I			I	
*FUEL FILTER SCREEN					C	
FUEL LINES					I	
*CLUTCH		I			I	
DRIVE CHAIN		**I & L	I & L			
SPARK ARRESTOR				C		
*BRAKE SHOES					I	
BRAKE CONTROL LINKAGE		I			I	
*WHEEL RIMS AND SPOKES		I			I	
TIRES		I	I			
FRONT FORK OIL		*** R				R
FRONT AND REAR SUSPENSION		I			I	
REAR FORK BUSHING					I & L	
*STEERING HEAD BEARINGS						I
*SIDE STAND					I	
BATTERY		I		I		
LIGHTING EQUIPMENT		I	I			
NUTS, BOLTS (TIGHTEN)		I	I			

I—Inspect, clean, adjust or replace if necessary R—Replace C—Clean L—Lubricate

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

** Initial service period 300 km (200 miles).

*** Initial service period 2,500 km (1,500 miles).

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