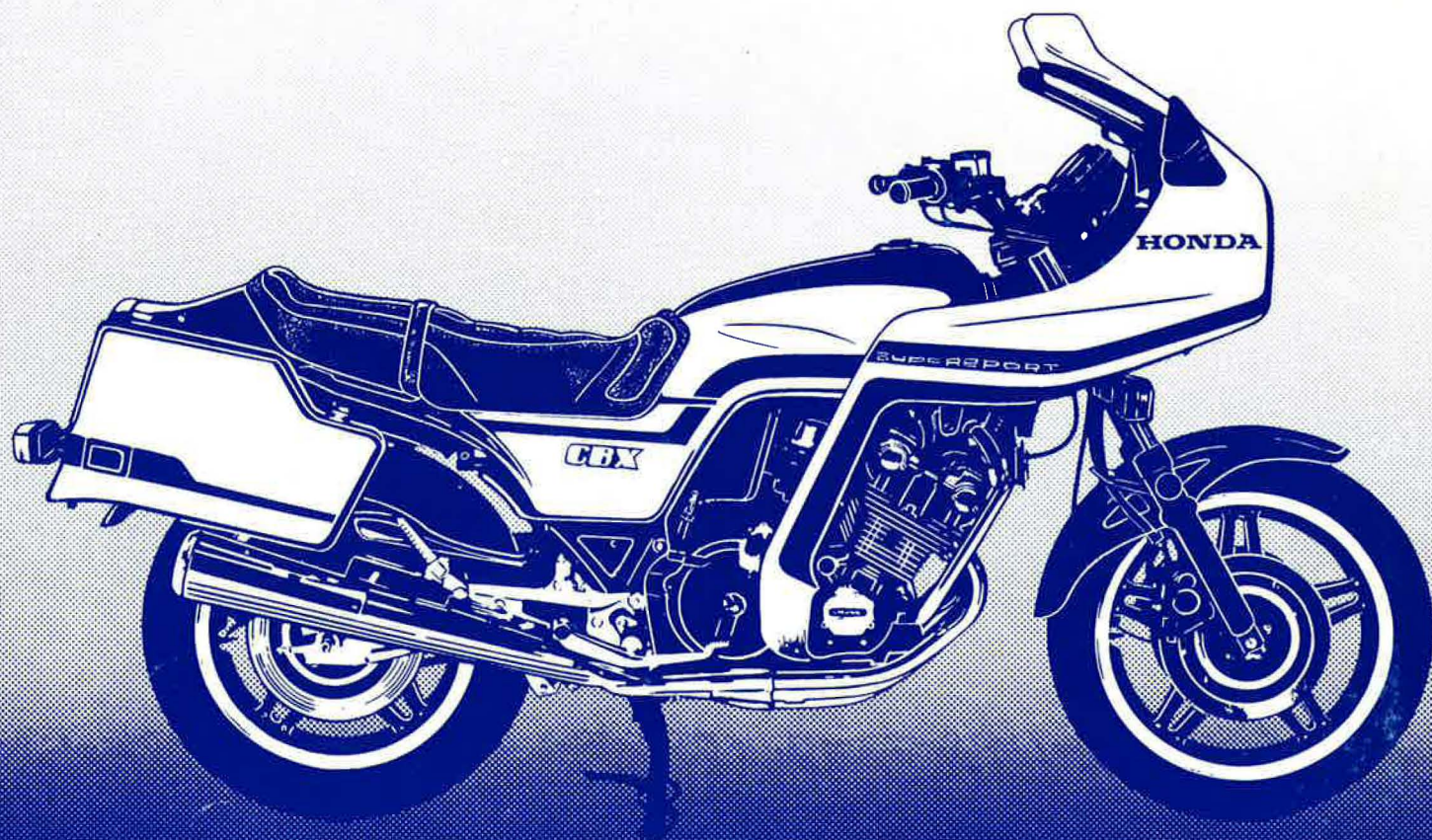


Official

HONDA

SHOP MANUAL

CBX



'81~'82

IMPORTANT SAFETY NOTICE



Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION:

Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains *some* warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda might be done or of the possible hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service method or tools selected.



HOW TO USE THIS MANUAL

Follow the Maintenance Schedule recommendations to ensure that the vehicle is in peak operating condition and the emission levels are within the U.S. Environmental Protection Agency standards. Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Sections 1 through 3 apply to the whole motorcycle, while sections 4 through 19 describe parts of the motorcycle, grouped according to location.

Find the section you want on this page, then turn to the table of contents on page 1 of that section.

Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedures.

If you are not familiar with this motorcycle, read the TECHNICAL FEATURES in section 20.

If you don't know the source of the trouble, go to section 21, TROUBLESHOOTING.

This Shop Manual is based on the 1981 model. Refer to Section 22 for 1982 service information.

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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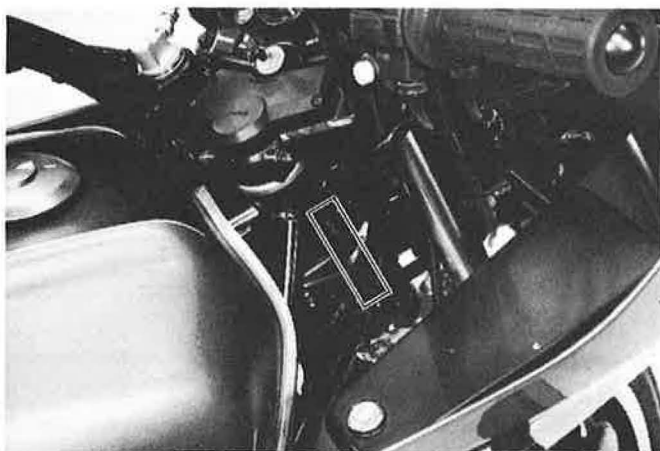
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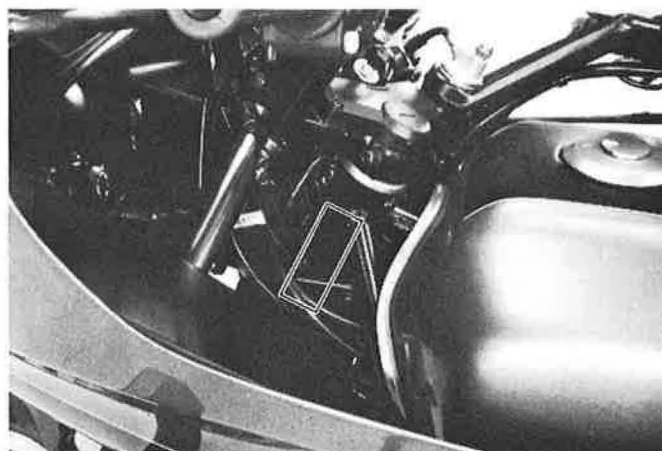
| | | |
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MODEL IDENTIFICATION



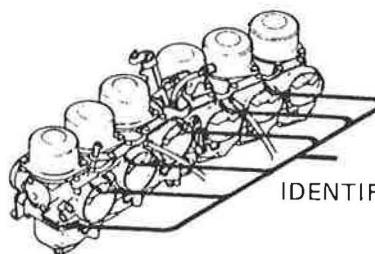
The frame serial number is stamped on the right side of the steering head.



The vehicle identification number (VIN) is on the left side of the steering head.



The engine serial number is stamped on the top of the crankcase.



IDENTIFICATION NUMBER

B422-08

The carburetor identification number is on the left of the carburetor body.



| | | | |
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GENERAL SAFETY

WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas.

WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.

WARNING

- *The battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.*
- *The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.*

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalent. Parts that do not meet HONDA's design specifications may damage the motorcycle.
2. Use the special tools designed for this product.
3. Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
4. When torquing bolts or nuts, begin with larger-diameter or inner bolt first, and tighten to the specified torque diagonally, unless a particular sequence is specified.
5. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
6. When installing a new oil seal, make sure that the sealing lip is lubricated with grease. If an oil seal and related parts have been washed, apply proper grease to the lip of the oil seal.
7. After reassembly, check all parts for proper installation and operation.
8. Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.



SPECIFICATIONS

| ITEM | | |
|------------|------------------------------|---|
| DIMENSIONS | Overall length | 2365 mm (93.1 in) |
| | Overall width | 780 mm (30.7 in) |
| | Overall height | 1360 mm (53.5 in) |
| | Wheelbase | 1535 mm (60.4 in) |
| | Seat height | 810 mm (31.9 in) |
| | Foot peg height | 335 mm (13.2 in) |
| | Ground clearance | 155 mm (6.1 in) |
| | Dry weight | 287 kg (633 lb) |
| FRAME | Type | Diamond |
| | Front suspension, travel | Telescopic air forks 160 mm (6.3 in) |
| | Rear suspension, travel | Swingarm 105 mm (4.1 in) |
| | Front tire size | 3.50V19 (4PR) |
| | Rear tire size | 130/90V18 |
| | Cold tire pressures | Up to 90 kg (200 lbs) load Front : 250 kPa (2.5 kg/cm ² , 36 psi) Rear : 250 kPa (2.5 kg/cm ² , 36 psi) |
| | | Up to vehicle capacity load Front : 250 kPa (2.5 kg/cm ² , 36 psi) Rear : 290 kPa (2.9 kg/cm ² , 41 psi) |
| | F. brake, lining swept area | Double disc brake, 22 cm ² x 4 (3.4 sqin x 4) |
| | R. brake, lining swept area | Single disc brake, 22 cm ² x 2 (3.4 sqin x 2) |
| | Fuel capacity | 22.0 liters (5.8 US gal) |
| | Fuel reserve capacity | 3.0 liters (0.8 US gal) |
| | Caster angle | 62°30' |
| | Trail | 120 mm (4.7 in) |
| | Front fork oil capacity | 345 cc (11.7 ozs) |
| ENGINE | Front fork air pressure | 70 ± 20 kPa (0.7 ± 0.2 kg/cm ² , 10 ± 3 psi) |
| | Rear suspension oil capacity | 618 cc (20.9 ozs) at disassembly |
| | Rear suspension air pressure | 200–400 kPa (2.0–4.0 kg/cm ² , 28–57 psi) |
| | Type | Air cooled 4-stroke |
| | Cylinder arrangement | Vertical parallel six |
| | Bore and stroke | 64.5 x 53.4 mm (2.54 x 2.10 in) |
| | Displacement | 1047 cc (63.89 cu in) |
| | Compression ratio | 9.3 : 1 |
| | Valve train | Chain driven DOHC 4 valve/cylinder |
| | Maximum horsepower | 100 BHP/9,000 rpm |
| | Maximum torque | 8.5 kg-m (60.8 ft-lb)/7,500 rpm |
| | Oil capacity | 5.5 liters (5.8 US qt) after disassembly 4.0 liters (4.2 US qt) after draining |
| | Lubrication system | Wet sump dual pump with oil cooler |
| | Air filtration | Paper |
| | Cylinder compression | 12.0 ± 1.0 kg/cm ² (170 ± 14 psi) |
| | Intake valve | Opens 5° (BTDC) at 1 mm lift, 78° (BTDC) at 0 lift Closes 35° (ABDC) at 1 mm lift, 110° (ABDC) at 0 lift |
| | Exhaust valve | Opens 40° (BBDC) at 1 mm lift, 94° (BBDC) at 0 lift Closes 5° (ATDC) at 1 mm lift, 71° (ATDC) at 0 lift |
| | Valve overlap | 149° |
| | Valve clearance (Cold) | IN: } 0.06–0.13 mm (0.002–0.005 in) EX: } |
| | Engine weight | 108 kg (238.1 lb) |
| | Idle speed | 900 ± 100 rpm |



| ITEM | | | | | | | |
|-------------|--|--|-----------------------------|-----------------------|-------------------|--------------------------------------|-----------------|
| CARBURETION | Carburetor type | VB 28 mm (1.1 in) venturi bore | | | | | |
| | Identification number | VB64A | | | | | |
| | Pilot screw | Refer to page 4-28 | | | | | |
| | Float level | 15.5 mm (0.61 in) | | | | | |
| DRIVE TRAIN | Clutch | Wet, multi-plate | | | | | |
| | Transmission | 5-speed constant-mesh | | | | | |
| | Primary reduction | 2.269 | | | | | |
| | Gear ratio I | 2.438 | | | | | |
| | Gear ratio II | 1.750 | | | | | |
| | Gear ratio III | 1.391 | | | | | |
| | Gear ratio IV | 1.200 | | | | | |
| | Gear ratio V | 1.037 | | | | | |
| | Final reduction | 2.333 (18/42) | | | | | |
| | Gear shift pattern | Left foot operated return system 1—N—2—3—4—5 | | | | | |
| ELECTRICAL | Ignition | Transistorized | | | | | |
| | Ignition timing "F" mark | 10° BTDC static | | | | | |
| | Full advance | 41° BTDC at 8,000 rpm | | | | | |
| | Firing order | 1—5—3—6—2—4 | | | | | |
| | Starting system | Electric starter | | | | | |
| | Alternator | Three phase Alternator 350 W/5,000 rpm | | | | | |
| | Battery capacity | 12V — 18AH | | | | | |
| | Spark plug | | | | | | |
| | () : <u>Canada Model</u> | | | | | | |
| | <u>USA Model with radio installed.</u> | | | | | | |
| | | For cold climate below 5° C, 41° F | | Standard | | For extended high speed riding | |
| | | ND | NGK | ND | NGK | ND | NGK |
| | | X22ES-U (X22ESR-U) | D7EA (DR7ES) | X24ES-U (X24ESR-U) | D8EA (DR8ES-L) | X27ES-U (X27ESR-U) | D9EA (DR8ES) |
| | Spark plug gap | 0.6—0.7 mm (0.024—0.028 in); | | | | | |
| LIGHTS | Headlight (high/low beam) | 60/55W H4 BULB (Philips 12342/99, or equivalent) | | | | | |
| | Tail/stoplight | 8/27W, 3/32 cp SAE NO. 1157 | | | | | |
| | Turn signal | Front | 8/23W, 3/32 cp SAE NO. 1034 | | | | |
| | | Rear | 23W, 32 cp SAE NO. 1073 | | | | |
| | Speedometer light | 3.4W, 2 cp SAE NO. 57 | | | | | |
| | Tachometer light | 3.4W, 2 cp SAE NO. 57 | | | | | |
| | Neutral indicator | 3.4W, 2 cp SAE NO. 57 | | | | | |
| | Turn signal indicator | 3.4W, 2 cp SAE NO. 57 | | | | | |
| | High beam indicator | 3.4W, 2 cp SAE NO. 57 | | | | | |
| | Rear suspension air pressure warning light | 3.4W, 2 cp SAE NO. 57 | | | | | |
| | Running light | 8W, 3 cp SAE NO. 1034 | | | | | |



TORQUE VALUES

• ENGINE

| Item | Q'ty | Thread Dia (mm) | Torque N.m (kg-m, ft-lb) | Remarks |
|------------------------|------|-----------------|--------------------------|---|
| Cylinder head cover | 8 | 6 | 8-12 (0.8-1.2, 6-9) | { Apply molybdenum disulfide base grease to threads and bottom of bolts |
| Cam holder | 32 | 6 | 12-16 (1.2-1.6, 9-12) | |
| Cylinder head | 12 | 10 | 33-35 (3.3-3.5, 24-25) | |
| Cylinder head | 4 | 8 | 19-21 (1.9-2.1, 14-15) | |
| Cam sprocket | 4 | 7 | 14-18 (1.4-1.8, 10-13) | |
| Spark plug | 6 | — | 12-16 (1.2-1.6, 9-12) | |
| Crankcase | — | 8 | 23-27 (2.3-2.7, 17-20) | |
| A.C. generator | 1 | 14 | 36-44 (3.6-4.4, 26-32) | |
| Primary shaft | 1 | 22 | 40-50 (4.0-5.0, 29-36) | |
| Mainshaft | 1 | 25 | 45-55 (4.5-5.5, 33-40) | |
| Drive sprocket | 1 | 10 | 50-54 (5.0-5.4, 36-39) | Apply THREE-BOND |
| Connecting rod nut | 12 | 8 | 30-34 (3.0-3.4, 22-25) | |
| Oil filter center bolt | 1 | 20 | 27-33 (2.7-3.3, 20-24) | |
| Oil pressure switch | 1 | — | 15-20 (1.5-2.0, 11-14) | |
| Neutral switch | 1 | 10 | 11-15 (1.1-1.5, 8-11) | |
| Oil drain bolt | 1 | 12 | 28-32 (2.8-3.2, 20-23) | |
| Oil pipe | 1 | 8 | 18-22 (1.8-2.2, 13-16) | |
| Oil pipe | 1 | 10 | 20-24 (2.0-2.4, 14-17) | |

• CHASSIS

| Item | Q'ty | Thread Dia (mm) | Torque N.m (kg-m ft-lb) | Remarks |
|-----------------------------------|------|-----------------|--------------------------|---|
| Steering stem nut | 1 | 24 | 80-120 (8.0-12.0, 58-87) | UBS "U" nut UBS "U" nut "U" nut |
| Steering handlebar | 2 | 8 | 28-32 (2.8-3.2, 20-23) | |
| Front fork bridge | 2 | 7 | 9-13 (0.9-1.3, 7-9) | |
| Front fork cap bolt | 2 | 34 | 15-30 (1.5-3.0, 11-22) | |
| Front axle nut | 1 | 12 | 55-65 (5.5-6.5, 40-47) | |
| Front/rear brake disc | 10 | 8 | 27-33 (2.7-3.3, 20-24) | |
| Brake hose bolt | 5 | 10 | 25-35 (2.5-3.5, 18-25) | |
| Rear axle | 1 | 18 | 85-105 (8.5-10.5, 62-76) | |
| Final driven sprocket | 5 | 12 | 80-100 (8.0-10.0, 58-72) | |
| Swingarm pivot nut | 1 | 16 | 80-110 (8.0-11.0, 58-80) | |
| Seat strap | 2 | 6 | 8-9.5 (0.8-0.95, 6-7) | |
| Engine hanger nut | 3 | 14 | 90-100 (9.0-10.0, 65-72) | |
| Air cleaner inlet duct | 2 | 5 | 3-6 (0.3-0.6, 2-4) | |
| Steering stem adjusting nut | 1 | 26 | 11-13 (1.1-1.3, 8-9) | |
| Rear suspension link bolt and nut | — | 10 | 40-50 (4.0-5.0, 29-36) | |

Torque specifications listed above are for important fasteners.
 Others should be tightened to the standard torque values below.

STANDARD TORQUE VALUES

| Type | Torque N.m (kg-m ft-lb) | Type | Torque N.m (kg-m, ft-lb) |
|-----------------|-----------------------------|------------------------|-----------------------------|
| 5 mm bolt, nut | 4.5-6.0 (0.45-0.6, 3.5-4.5) | 5 mm screw | 3.5-5.0 (0.35-0.5, 2.5-3.6) |
| 6 mm bolt, nut | 8-12 (0.8-1.2, 6-9) | 6 mm screw | 7-11 (0.7-1.1, 5-8) |
| 8 mm bolt, nut | 18-25 (1.8-2.5, 13-18) | 6 mm flange bolt, nut | 10-14 (1.0-1.4, 7-10) |
| 10 mm bolt, nut | 30-40 (3.0-4.0, 22-29) | 8 mm flange bolt, nut | 24-30 (2.4-3.0, 17-22) |
| 12 mm bolt, nut | 50-60 (5.0-6.0, 36-43) | 10 mm flange bolt, nut | 30-40 (3.0-4.0, 22-29) |
| 14 mm bolt, nut | 90-100 (9.0-10.0, 65-72) | | |



TOOLS

• SPECIAL

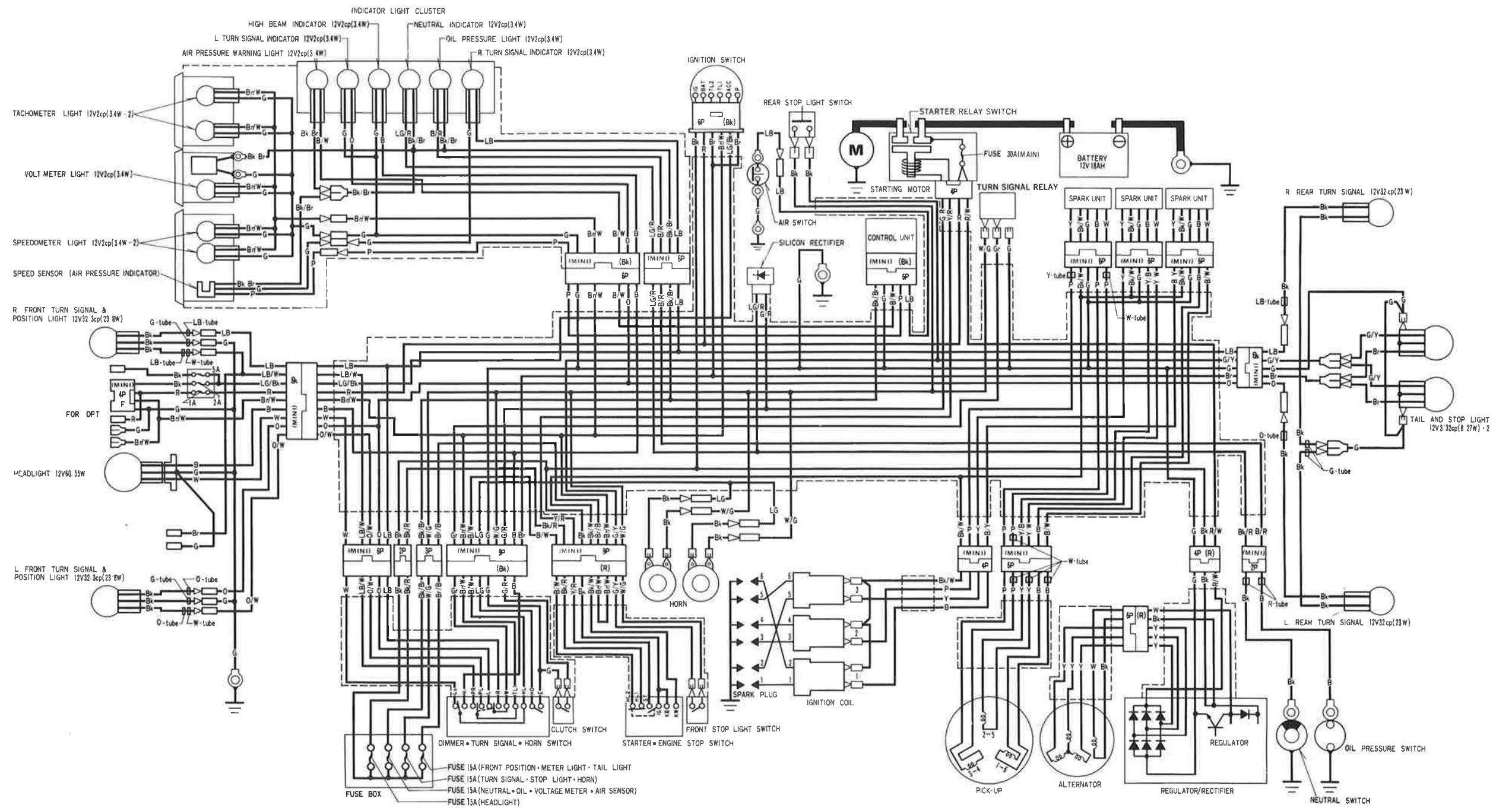
| Tool Name | Part No. | Q'ty | Ref. page |
|----------------------------------|---------------------------------------|------|--------------|
| Oil seal driver | 07965-MA10100 | 1 | 14-13 |
| Oil seal driver attachment | 07965-MA10200 | 1 | 14-13 |
| Seal driver | 07947-4630100 | 1 | 13-33 |
| Vacuum gauge set | 07504-0020000 | 1 | } 3-8 |
| | (H/C No. 47978) or M937B-021-XXXXX | 1 | |
| Oil pressure gauge | 07506-3000000 | 1 | 2-3 |
| Snap ring pliers | 07914-3230001 | 1 | 15-1, 14-14 |
| Steering stem socket | 07916-3710100 | 1 | 13-38 |
| 6 mm hollow set wrench | 07917-3230000 | 1 | 13-30 |
| Race bearing remover | 07946-3710500 | 1 | 13-37 |
| Steering stem driver | 07946-3710600 | 1 | 13-37 |
| Bearing driver attachment | 07946-3710700 | 1 | 13-38 |
| Piston base | 07958-2500000 | 1 | 7- 8 |
| Valve guide reamer (5.5 mm) | 07984-2000000 | 1 | 6-14, 6-16 |
| Oil pressure gauge attachment | 07510-4220100 | 1 | 2-3 |
| Carburetor throttle wrench | 07908-4220100 | 1 | 3-9, 4-14 |
| | 07908-4600000 | 1 | 3-9 |
| Carburetor pilot screw wrench | 07908-4220200 or | 1 | } 4-29 |
| | 07908-4220201 | 1 | |
| Lock nut wrench | 07916-4220000 | 1 | 8-4 |
| Primary gear holder | 07924-4250000 | 1 | 8-7 |
| Piston ring compressor | 07954-4220000 | 1 | 7-8 |
| Valve lifter holder | 07964-4220002 or | 1 | } 3-11, 3-12 |
| | M9501-277-94752 (USA only) | 1 | |
| Degree wheel | 07974-4220000 or | 1 | } 3-5 |
| | 07974-4220002 | 1 | |
| Lifter hole protector | 07999-4220000 | 1 | 6-12, 6-18 |
| Lock nut wrench | 07908-4690001 | 1 | 14-22 |
| Retainer wrench | 07910-4690100 or | 1 | 14-20 |
| | KS-HBA-08-469 (USA only) | 1 | |
| Bearing driver (needle bearing) | 07946-4690100 or | 1 | 14-19 |
| | 07946-3710300 | 1 | |
| Bearing driver (angular bearing) | 07946-4690200 | 1 | 14-20 |
| Dust seal driver | 07948-4690100 | 1 | 14-20 |
| Driver handle | 07949-3710000 | 1 | 14-18, 14-19 |
| Pin spanner, 55 mm | 07902-4220000 | 1 | 12-18 |
| Primary shaft holder | 07924-6340300 | 1 | 12-18 |
| Steering race remover | 07953-4250002 | 1 | 13-38 |



• COMMON

| Tool Name | Part No. | Q'ty | Alternate Tools (Common tool → Special tool) | Ref. Page |
|--|---------------|------|---|---|
| Float level gauge | 07401-0010000 | 1 | | 4-11 |
| Retainer wrench attachment | 07710-0010100 | 1 | 07910-2830000&07910-3600000 | 14-5, 14-8 |
| Retainer wrench attachment | 07710-0010300 | 1 | Bearing retainer wrench 07910-3230101 | 13-23, 13-26 13-23, 13-26 |
| Retainer wrench body | 07710-0010400 | 1 | | |
| Lock nut wrench socket (26 x 30 mm) | 07716-0020202 | 1 | | 13-26 |
| Extension bar | 07716-0020500 | 1 | Commercially available | 13-26 |
| Universal holder | 07725-0010101 | 1 | Flywheel holder 07923-0400000 | 8-3 |
| Valve guide remover (5.5 mm) | 07742-0010100 | 1 | Valve guide driver 07942-3290100 | 6-15, 6-16 |
| Attachment (32 x 35 mm) | 07746-0010100 | 1 | Bearing driver 07945-4150200 | 16-8, 16-9 |
| Attachment (37 x 40 mm) | 07746-0010200 | 1 | Bearing driver 07946-2860200 | 12-15, 16-9 |
| Attachment (42 x 47 mm) | 07746-0010300 | 1 | Bearing driver 07946-9350200 | 13-25 |
| Attachment (52 x 55 mm) | 07746-0010400 | 1 | Bearing driver 07946-9370100 | 12-15, 14-7 |
| Attachment (62 x 68 mm) | 07746-0010500 | 1 | Bearing driver 07946-3710200 | 14-7 |
| Driver | 07746-0030100 | 1 | Bearing driver 07946-3600000 | 11-3, 12-15 |
| Attachment (25 mm) | 07746-0030200 | 1 | | 12-15 |
| Attachment (30 mm) | 07746-0030300 | 1 | | 11-3 |
| Pilot (15 mm) | 07746-0040300 | 1 | | 13-25 |
| Pilot (20 mm) | 07746-0040500 | 1 | | 14-7 |
| Pilot (25 mm) | 07746-0040600 | 1 | | 12-14, 12-15, 14-7 |
| Driver (A) | 07749-0010000 | 1 | Driver 07949-6110000 | 12-14, 13-25, 14-7, 14-20, 16-8, 16-9 |
| Valve spring compressor | 07757-0010000 | 1 | Valve spring compressor 07957-3290001 | 6-12, 6-18 |

WIRING DIAGRAM



SWITCH CONTINUITY

| IGNITION SWITCH | | | | | | |
|-----------------|-----|----|-------|------|------|----|
| | BAT | IG | ACC | TL1 | TL2 | P |
| OFF | | | | | | |
| ACC | | | | | | |
| ON | | | | | | |
| P | | | | | | |
| COLOR | R | Bk | LG/Bk | Br/W | Br/W | Br |

| STARTER SWITCH | | | | |
|----------------|------|-----|----|-----|
| | HL1 | HL2 | IG | ST |
| FREE | | | | |
| PUSH | | | | |
| COLOR | Bk/R | B/W | Bk | Y/R |

| ENGINE STOP SWITCH | | |
|--------------------|----|------|
| | KB | KW |
| OFF | | |
| RUN | | |
| OFF | | |
| COLOR | Bk | Bk/W |

| TURN SIGNAL SWITCH | | | | | | |
|--------------------|----|----|---|------|------|-----|
| | R | W | R | L | P | PL |
| R | | | | | | |
| N | | | | | | |
| L | | | | | | |
| COLOR | Gr | LB | O | Br/W | LB/W | O/W |

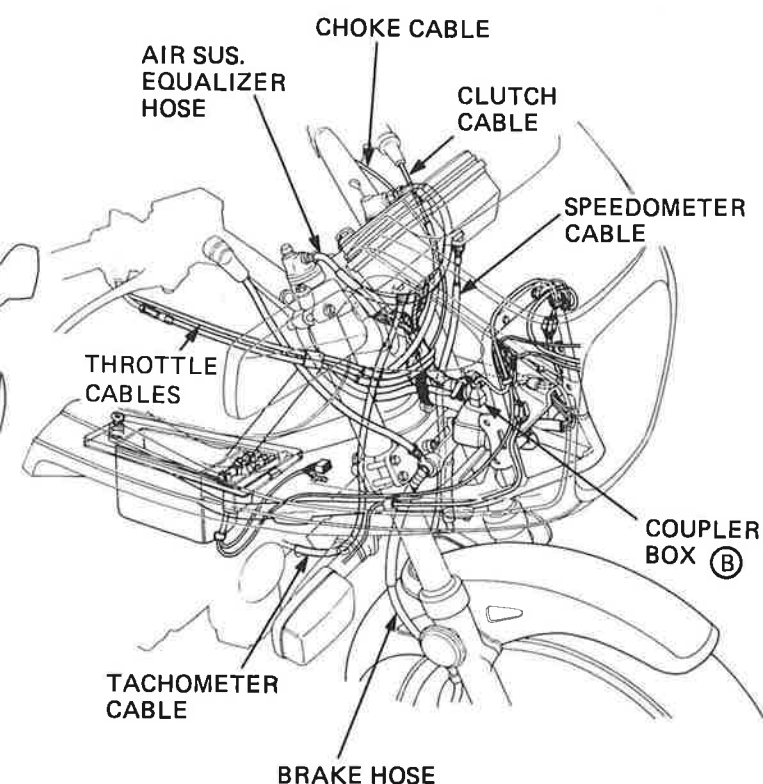
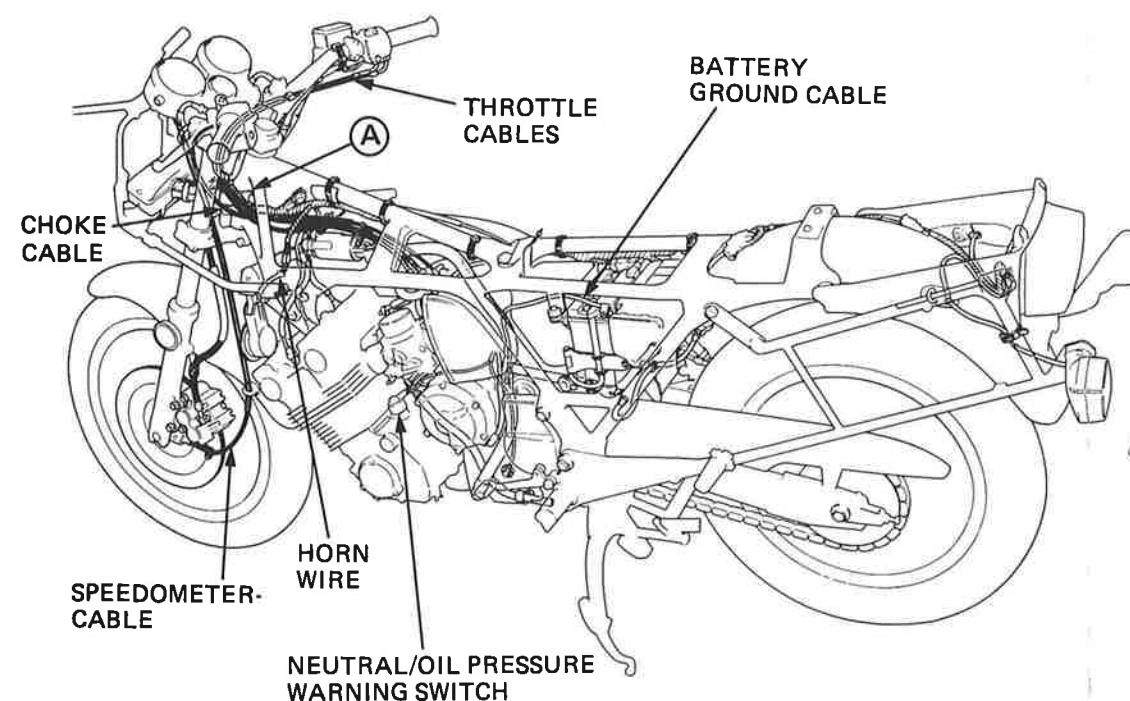
| DIMMER SWITCH | | | |
|---------------|-----|----|----|
| | HL | Lo | Hi |
| Lo | | | |
| (N) | | | |
| Hi | | | |
| COLOR | B/W | W | B |

| HORN SWITCH | | |
|-------------|----|---|
| | HO | E |
| FREE | | |
| PUSH | | |
| COLOR | LG | G |

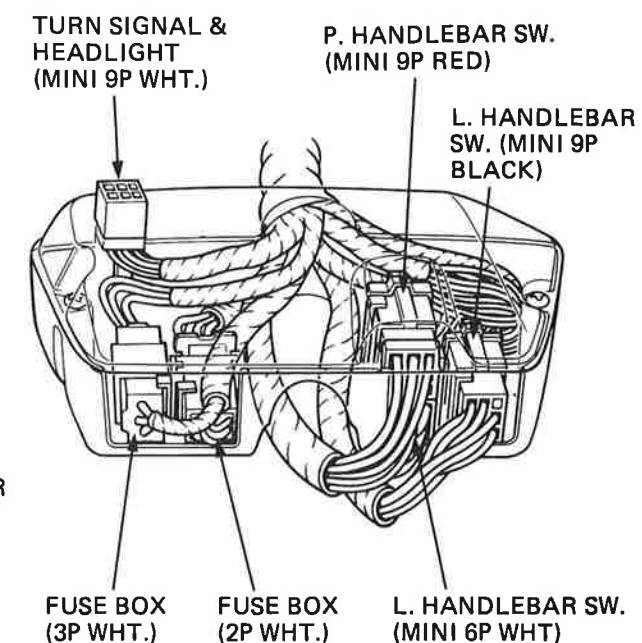
| | | | |
|----|-------------|----|------------|
| Br | Brown | Y | Yellow |
| Bk | Black | B | Blue |
| W | White | Gr | Grey |
| LG | Light Green | LB | Light Blue |
| R | Red | O | Orange |
| G | Green | P | Pink |

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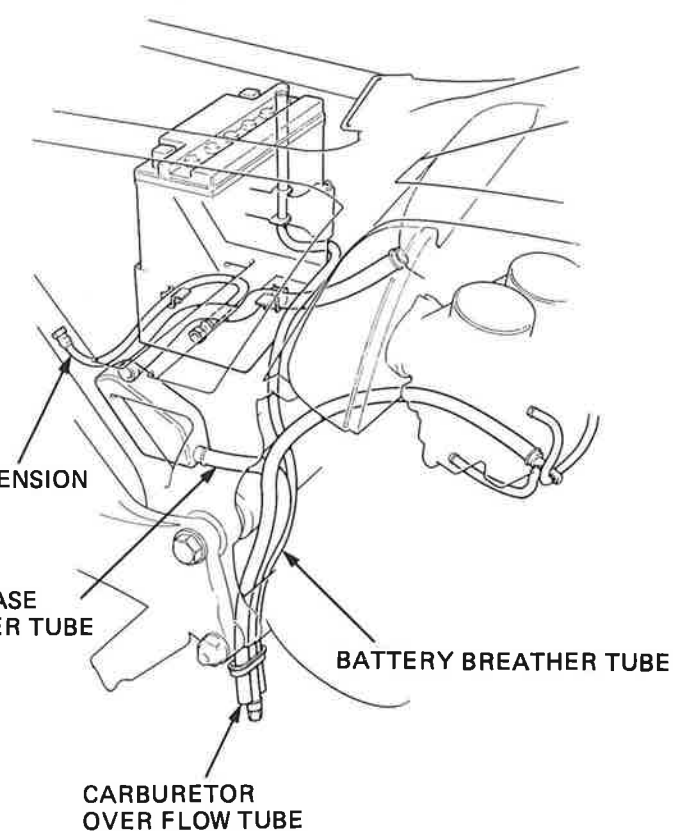
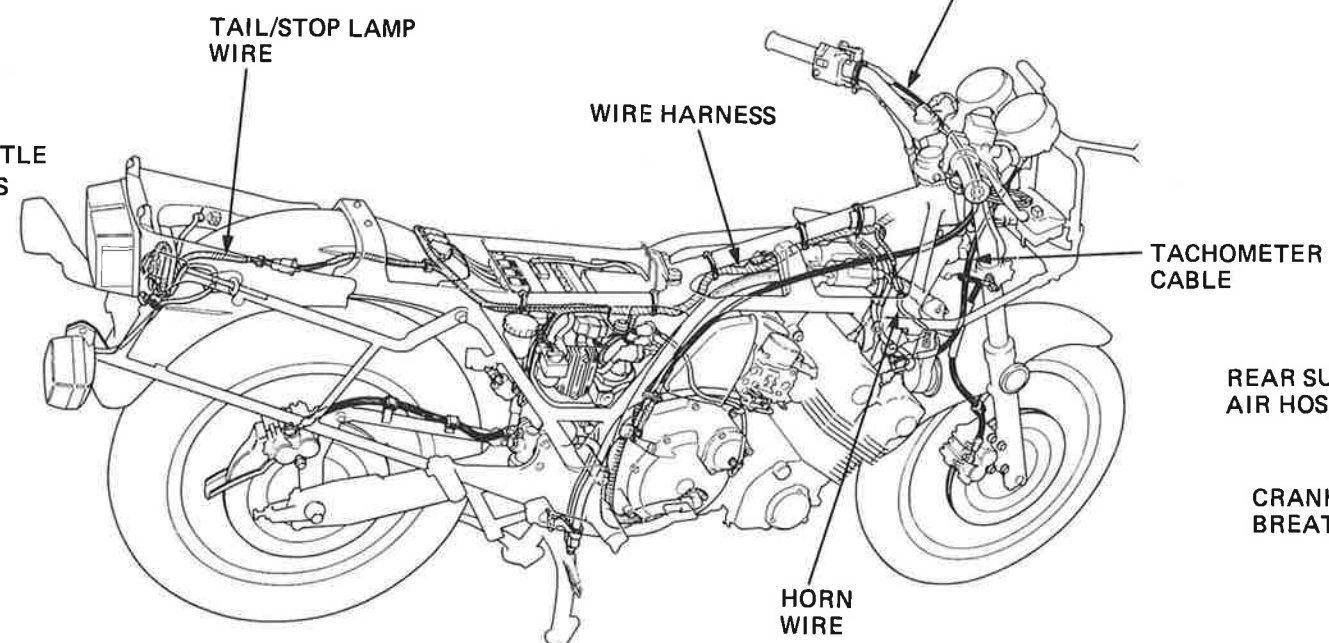
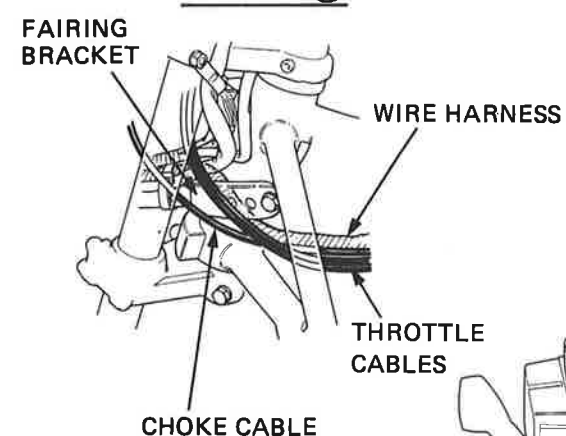
CABLE & HARNESS ROUTING

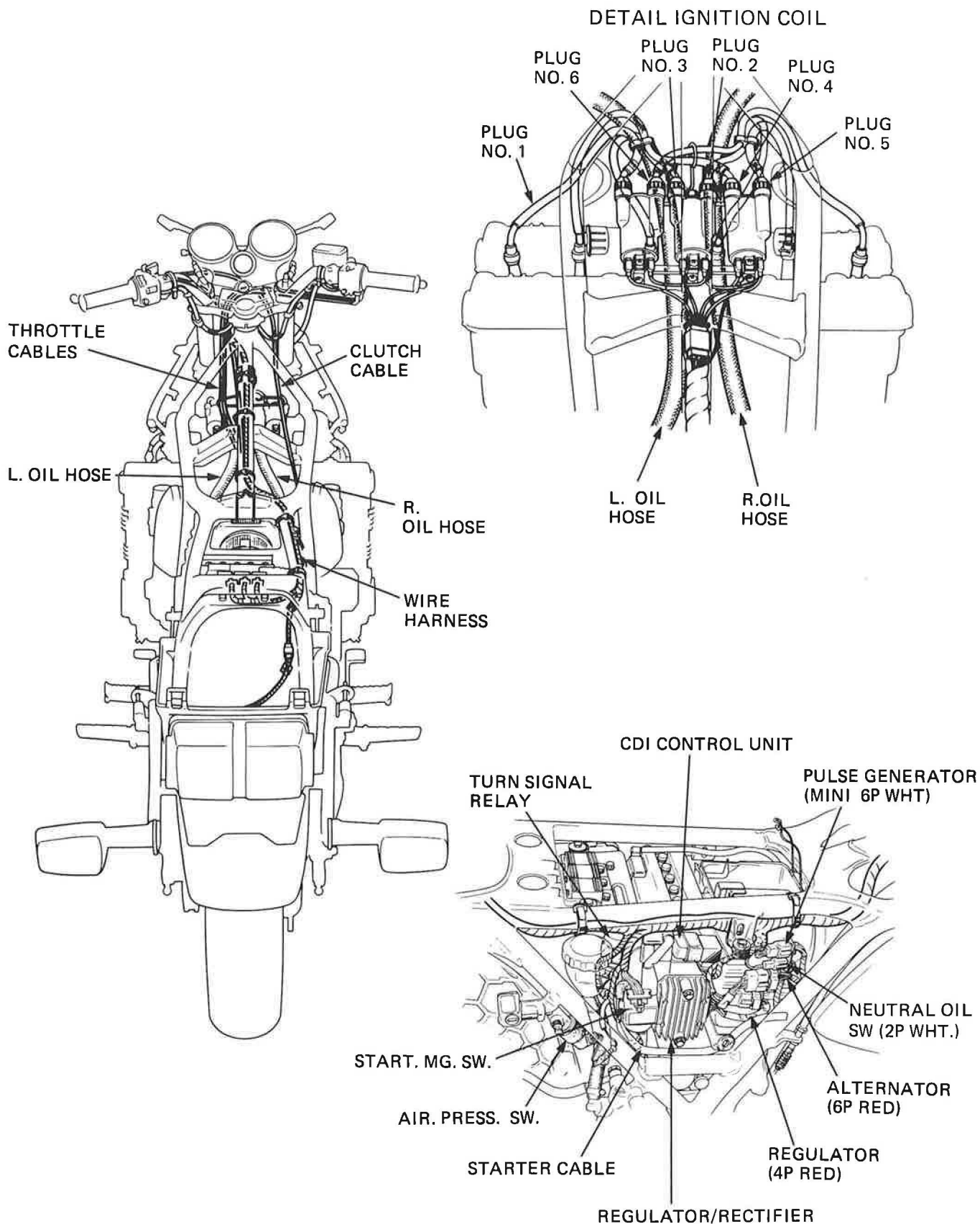


DETAIL ②



DETAIL ①







EMISSION CONTROL SYSTEM

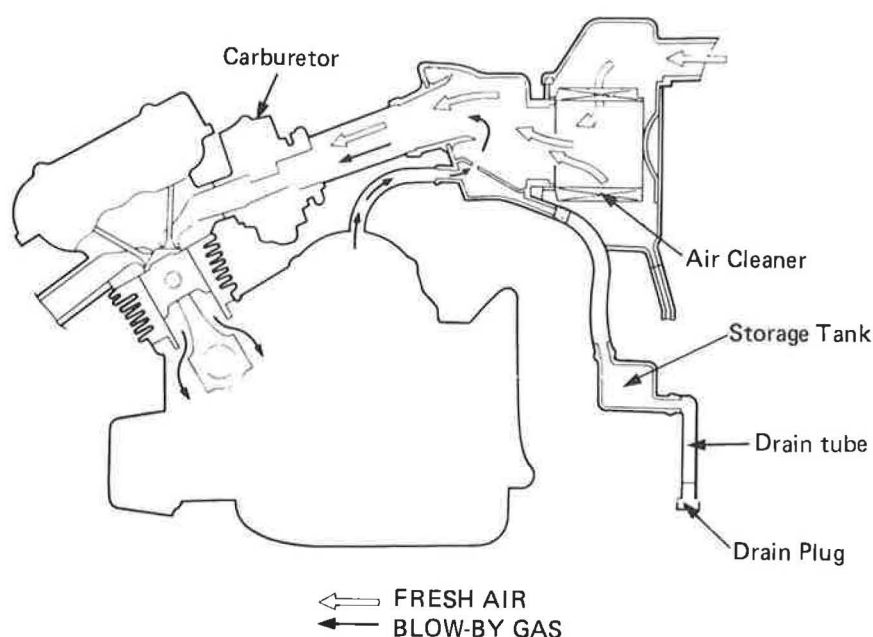
The CBX is equipped with two Emission Control Systems.

EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a factory pre-set carburetor. No. adjustment should be made except to the idle speed with the throttle stop screw.

CRANKCASE EMISSION CONTROL SYSTEM

The engine is equipped with a "Closed Crankcase System" to prevent crankcase emissions entering the atmosphere. Blow-by gas is returned to the combustion chamber through the air cleaner and carburetor. Liquids are collected in the drain tube.



EMISSION CONTROL INFORMATION LABEL

An Emission Control Information Label is located on the frame as shown. It contains basic tune-up specifications.

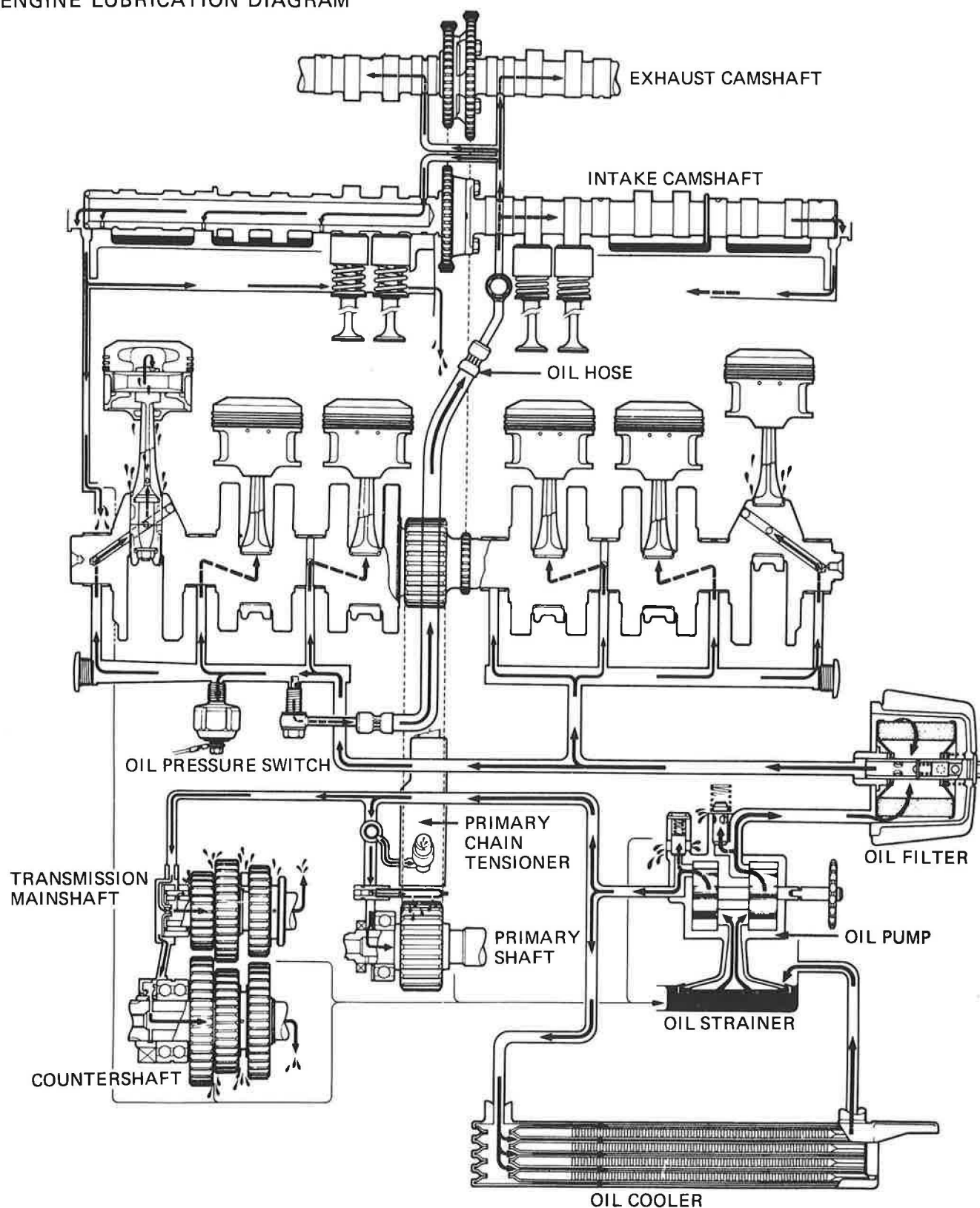


EMISSION CONTROL INFORMATION LABEL



MEMO

ENGINE LUBRICATION DIAGRAM





| | | | |
|------------------------------|-----|------------------------------|-----|
| SERVICE INFORMATION | 2-1 | OIL PRESSURE | 2-3 |
| TROUBLESHOOTING | 2-1 | OIL COOLER INSPECTION | 2-3 |
| ENGINE OIL LEVEL | 2-2 | OIL HOSE AND BOLT INSPECTION | 2-4 |
| ENGINE OIL & FILTER CHANGE | 2-2 | LUBRICATION POINTS | 2-5 |
| OIL STRAINER SCREEN CLEANING | 2-3 | DRIVE CHAIN | 2-5 |

SERVICE INFORMATION

GENERAL INSTRUCTIONS

Oil pump: See Section 11

Oil pressure relief valve: See Section 11

SPECIFICATIONS

| | | | |
|---------------------------------------|-------|---|---|
| Oil capacity | | Approximately 4.0 liter (4.2 US qt) at change 5.5 liter (5.8 U.S. qt) at engine assembly | |
| Recommended oil | | HONDA 4-stroke oil or equivalent General, all temperature −20°C to +35°C (68°F to 95°F) above −20°C (68°F) above −10°C (50°F) | API service classification-SE SAE 10W-40 SAE 10W-30 SAE 10W-40 SAE 20W-40, 20W-50 |
| Oil pump delivery | Right | 36.5 liters/min/4,000 rpm | (38.6 qt/min/4,000 rpm) |
| | Left | 27.0 liters/min/4,000 rpm | (28.5 qt/min/4,000 rpm) |
| Oil pressure (at oil pressure switch) | | 400-500 kPa (4.5-5.0 kg/cm ² , 64-71 psi)/4,000 rpm 80°C (176°F) | |

TOOLS

Special

| | |
|-------------------------------|---------------|
| Oil pressure Gauge | 07506-3000000 |
| Oil Pressure Gauge Attachment | 07510-4220100 |

TORQUE VALUES

| | | | |
|-----------------|---------------------------------------|--------------------------|---------------------------------------|
| Oil drain plug | 28-32 N·m (2.8-3.2 kg-m, 20-23 ft-lb) | Pressure switch | 15-20 N·m (1.5-2.0 kg-m, 11-14 ft-lb) |
| Oil filter bolt | 28-32 N·m (2.8-3.2 kg-m, 20-23 ft-lb) | Oil bolt (Cylinder head) | 18-22 N·m (1.8-2.2 kg-m, 13-16 ft-lb) |
| Oil pan bolt | 8-12 N·m (0.8-1.2 kg-m, 6-9 ft-lb) | Oil bolt (Crankcase) | 20-24 N·m (2.0-2.4 kg-m, 14-17 ft-lb) |

TROUBLESHOOTING

Oil Level Too Low

1. External oil leaks
2. Worn piston rings
3. Worn valve guide or seal

Oil Contamination

1. Oil or filter not changed often enough
2. Head gasket faulty
3. Worn piston rings

Low Oil Pressure

1. Oil level low
2. Pressure relief valve stuck open
3. Plugged oil pick-up screen
4. Oil pump worn
5. External oil leaks

High Oil Pressure

1. Pressure relief valve stuck closed
2. Plugged oil filter, gallery, or metering orifice
3. Incorrect oil being used

No Oil Pressure

1. Oil level low
2. Oil pump drive chain broken
3. Oil pump faulty
4. Internal oil leakage

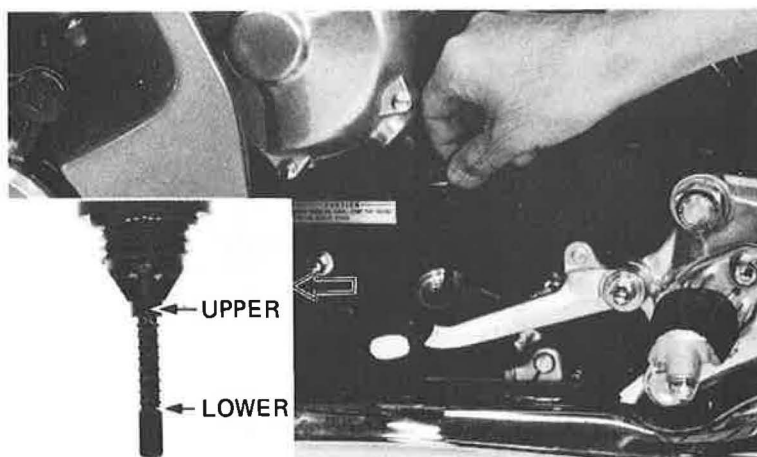


ENGINE OIL LEVEL

Run the engine and allow to idle for a few minutes. Stop the engine and place the motorcycle on its center stand. Check the oil level with the filler cap/dipstick after a few minutes. Do not screw in the cap when making this check. If the level is below the lower level mark on the dipstick, fill to the upper level mark.

Check the oil pressure warning light. This light should go off when the engine starts.

If it does not, check the oil pump operation and/or oil circuit.



ENGINE OIL & FILTER CHANGE

Warm the engine to normal operating temperature.

Stop the engine.

Place the motorcycle on its center stand.

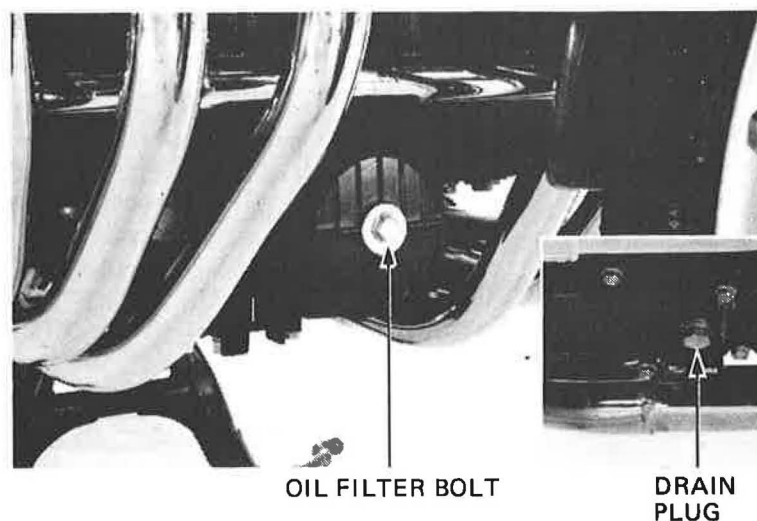
Remove the oil filler cap, drain plug and oil filter bolt and drain the oil.

Make sure that the sealing washer on the drain plug and the O-rings on the oil filter bolt and oil filter case are in good condition.

Replace the oil filter and install the oil filter bolt and drain plug.

CAUTION

Do not interchange the oil filter with those for other models as it has a greater rate of oil flow.



Fill the crankcase with 4.0 lit (4.2 US qt) of the recommended oil.

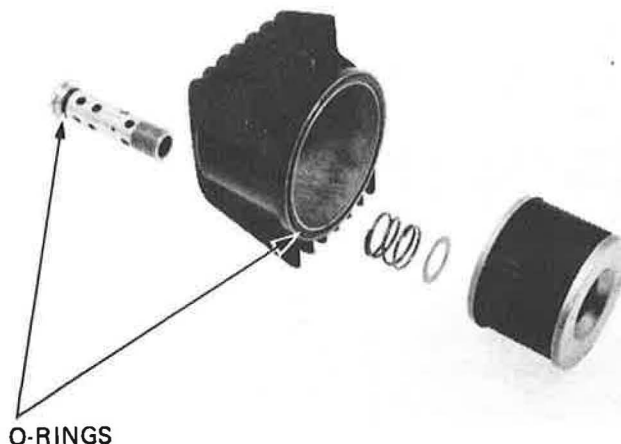
Reinstall the oil filler cap.

Start the engine and idle it for a few minutes.

Stop the engine.

Add the recommended oil to the upper level on the dipstick.

Make sure that there are no oil leaks.





OIL STRAINER CLEANING

NOTE

Perform this maintenance before filling the engine with oil.

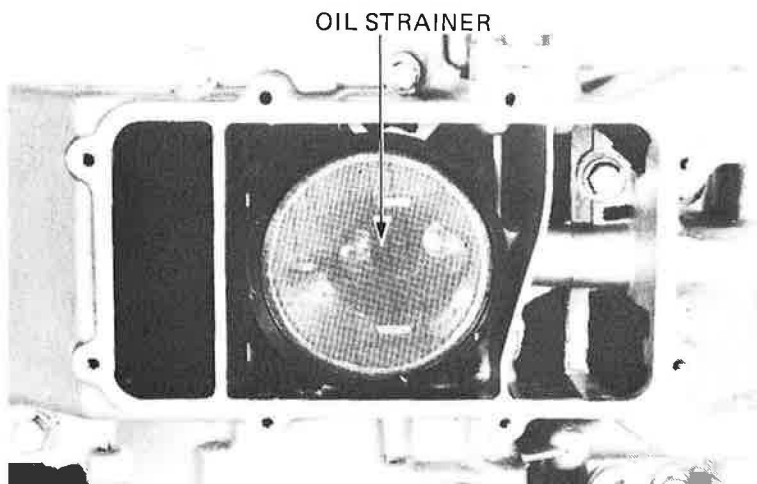
Remove the oil filler cap, drain plug and oil filter bolt.

Remove the oil pan bolts and oil pan.

Remove and clean the oil strainer.

Install a new oil pan gasket and install the oil strainer and oil pan.

Fill the crankcase with the recommended oil (Page 2-2).



OIL PRESSURE

Connect the oil pressure gauge.

Check the oil level.

Warm the engine up to normal operating temperature (approximately 80°C = 176°F).

Check the pressure at 4,000 rpm.

STANDARD:

450-500kPa (4.5-5.0 kg/cm², 64-71 psi)
at 4,000 rpm and 80°C (176°F)

NOTE

Before installing the pressure switch, apply a liquid sealant to the thread.



ATTACHMENT P/N 07510-4220100

Check that the oil pressure warning light goes out. If the oil pressure warning light stays on, stop the engine immediately and determine the cause.

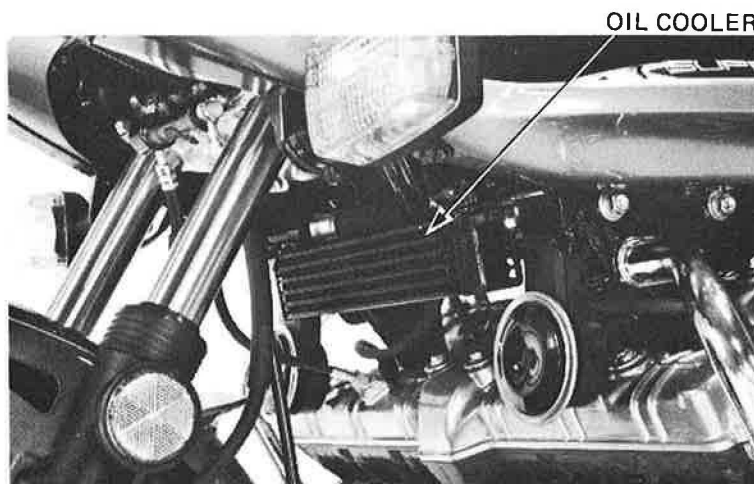
Also, touch the oil cooler.

It should be warm, indicating that oil is flowing through it from the auxiliary oil pump.

OIL COOLER INSPECTION

Check for damage to the oil cooler core.

Clean the core if necessary.



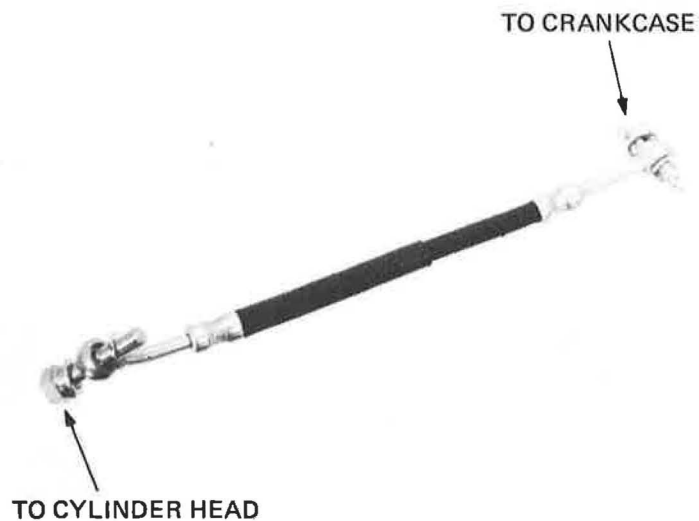


OIL HOSE AND BOLT INSPECTION

Check for oil leaks at hose connections.
Check the oil hoses for deterioration.

NOTE

- Install new sealing washers, if the hose is removed.
- Install the oil with the oil orifice on the crankcase side.

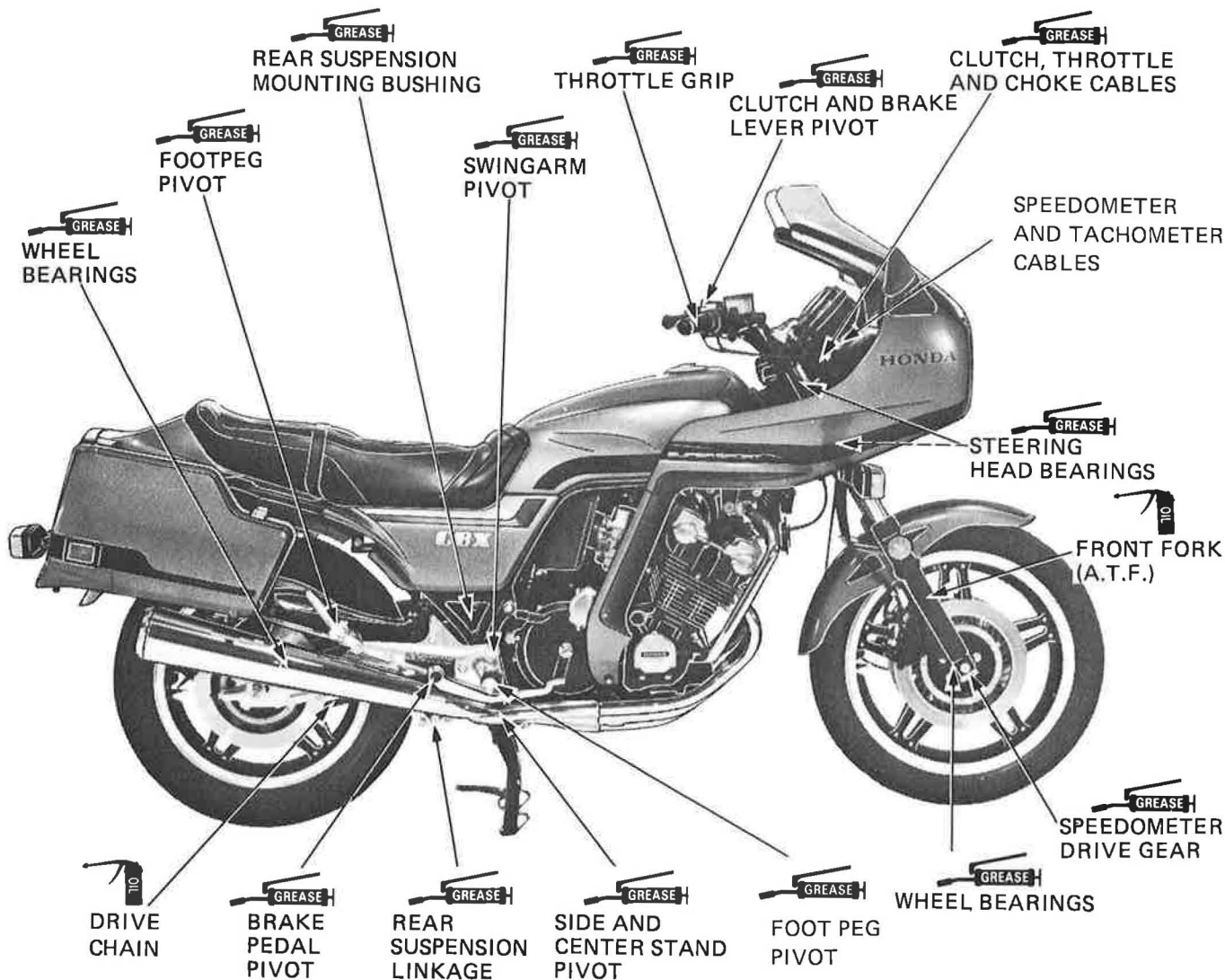


Check that the oil orifice is not clogged.





LUBRICATION POINTS



DRIVE CHAIN

Clean the drive chain with kerosene and wipe dry.

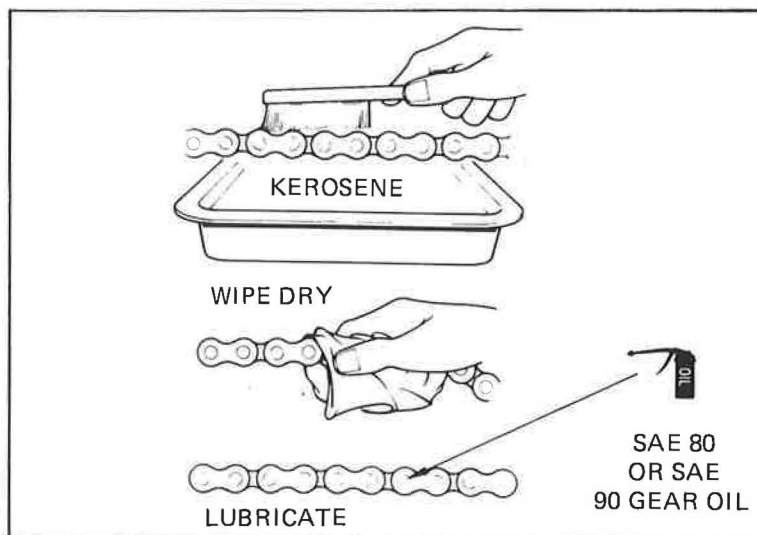
CAUTION

Do not use a steam cleaner, high pressure washers or solvents as these will damage the O-rings.

Lubricate the drive chain with SAE 80 or 90 gear oil.

CAUTION

Do not use commercial aerosol chain lubricants. They contain solvents which could damage the O-rings.





MEMO



| | | | |
|-----------------------------------|-------------|-----------------------------------|-------------|
| SERVICE INFORMATION | 3-1 | « CHASSIS » | |
| MAINTENANCE SCHEDULE | 3-2 | DRIVE CHAIN | 3-17 |
| « ENGINE » | | BATTERY | 3-18 |
| AIR CLEANER | 3-3 | BRAKE FLUID | 3-18 |
| CRANKCASE BREATHER | 3-4 | BRAKE PAD WEAR | 3-19 |
| FUEL LINES | 3-4 | BRAKE SYSTEM | 3-19 |
| SPARK PLUGS | 3-4 | BRAKELIGHT SWITCH | 3-20 |
| IGNITION TIMING CHECK | 3-5 | HEADLIGHT AIM | 3-20 |
| SPARK ADVANCER | 3-6 | HEADLIGHT BULB REPLACEMENT | 3-21 |
| THROTTLE OPERATION | 3-7 | CLUTCH FREE PLAY | 3-22 |
| CARBURETOR SYNCHRONIZATION | 3-8 | SIDE STAND | 3-23 |
| CHOKE MECHANISM | 3-10 | SUSPENSION | 3-24 |
| IDLE SPEED | 3-10 | WHEELS | 3-25 |
| VALVE CLEARANCE | 3-11 | STEERING HEAD BEARINGS | 3-25 |
| CAM CHAIN | 3-15 | NUTS, BOLTS, FASTENERS | 3-25 |
| COMPRESSION TEST | 3-16 | | |

SERVICE INFORMATION

GENERAL INSTRUCTIONS

| | |
|------------------------------|--------------|
| Engine oil level check | See page 2-2 |
| Engine oil change | See page 2-2 |
| Oil strainer screen cleaning | See page 2-3 |

SPECIFICATION

< ENGINE >

| | |
|-----------------|-----------------------------|
| Spark plug gap | 0.6–0.7 mm (0.024–0.028 in) |
| Spark plug type | |

U.S.A. model

| For cold climate below 5°C (41°F) | | Standard | | For extending high speed riding | |
|--------------------------------------|-----------------|-----------------------|-------------------|------------------------------------|-----------------|
| ND | NGK | ND | NGK | ND | NGK |
| X22ES-U (X22ESR-U) | D7EA (DR7ES) | X24ES-U (X24ESR-U) | D8EA (DR8ES-L) | X27ES-U (X27ESR-U) | D9EA (DR8ES) |

Type in parenthesis () for
CANADA model or U.S. model
with radio installed.

Manufacturer
ND: Nippondenso Co., Ltd.
NGK: NGK Spark Plug Co., Ltd.

| | |
|------------------------------|--|
| Ignition timing | Initial 10° BTDC (Static) |
| Valve clearance: IN. and EX. | 0.06–0.13 mm (0.0022–0.005 in) |
| Idle speed | 900 ± 100 rpm |
| Synchronization vacuum | Difference between each cylinder 40 mm Hg (1.6 in Hg) |
| Compression | 1200 ± 100 kPa (12 ± 1 kg/cm ² , 170 ± 14 psi) |
| Firing order | 1–5–3–6–2–4 |

TOOLS

| | |
|-----------------------|--|
| Special | |
| Valve lifter holder | 07964–4220002 or M9501–277–94052 (USA only) |
| Carb. throttle wrench | 07908-4220100 07908-4600000 |
| Degree wheel | 07974-4220001 |
| Vacuum gauge | 07404-0020000 or M937B–021–XXXXX (USA only) |

< CHASSIS >

| | |
|-----------------------|-----------------------|
| Drive chain free play | 15–25 mm (5/8 in) |
| Clutch free play | 10–20 mm (3/8–3/4 in) |

Tire

| | |
|--|--|
| Cold tire pressure kPa (kg/cm ² , psi) | Front 250 (2.5, 36) Rear 250 (2.5, 36) At maximum load 290 (2.9, 4.1) |
| Vehicle capacity load limit | 175 kg (385 lbs) |
| Tire size | Front 350-V19 (4PR) Rear 130/90V18 |
| Tire brand (Tubeless only) | Front GOLD SEAL F11 (DUNLOP) MAG. MOPUS-S706 (BRIDGESTONE) Rear GOLD SEAL K127 (DUNLOP) MAG. MOPUS-G508 (BRIDGESTONE) |

TORQUE VALUES

| | |
|-----------------------|--|
| Front axle holder nut | 18–25 N·m (1.8–2.5 kg·m, 13–18 ft·lb) |
| Rear axle nut | 85-105 N·m (8.5–10.5 kg·m, 62–76 ft·lb) |



MAINTENANCE SCHEDULE

Perform the PRE-RIDE INSPECTION in the Owner's Manual at each scheduled maintenance.

I: INSPECT AND CLEAN, ADJUST, LUBRICATE, OR REPLACE IF NECESSARY.

C: CLEAN A: ADJUST

R: REPLACE L: LUBRICATE

| | ITEM | FREQUENCY | WHICHEVER COMES FIRST | ODOMETER READING (NOTE 3) | | | | | | Refer to |
|----------------------------|--------------------------|-----------------------|-----------------------|-----------------------------|-------------------------|--------------------------|---------------------------|---------------------------|---------------------------|--------------------|
| | | | | 600 mi. (1,000 km) | 4,000 mi. (6,400 km) | 8,000 mi. (12,800 km) | 12,000 mi. (19,200 km) | 16,000 mi. (25,600 km) | 20,000 mi. (32,000 km) | |
| EMISSION RELATED ITEMS | * FUEL LINES | | EVERY | | I | I | I | I | I | Page 3-4 |
| | * THROTTLE OPERATION | | | I | I | I | I | I | I | Page 3-7 |
| | * CARBURETOR CHOKE | | | | I | I | I | I | I | Page 3-10 |
| | AIR CLEANER | NOTE 1 | | | | R | | R | | Page 3-3 |
| | CRANKCASE BREATHER | NOTE 2 | | | C | C | C | C | C | Page 3-4 |
| | SPARK PLUGS | | | | R | R | R | R | R | Page 3-4 |
| | * VALVE CLEARANCE | | | I | I | I | I | I | I | Page 3-11 |
| | * IGNITION TIMING | | | I | I | I | I | I | I | Page 3-5 |
| | ENGINE OIL | YEAR | | R | R | R | R | R | R | Pages 2-2 3-8 |
| | ENGINE OIL FILTER | YEAR | | R | R | R | R | R | R | Page 2-2 |
| | * ENGINE OIL SCREEN | | | | | | C | | | Page 2-3 |
| | * CAM CHAIN TENSION | | | A | A | A | A | A | A | Page 3-15 |
| | * CARBURETOR-SYNCHRONIZE | | | I | I | I | I | I | I | Page 3-8 |
| | * CARBURETOR-IDLE SPEED | | | I | I | I | I | I | I | Page 3-10 |
| NON-EMISSION RELATED ITEMS | DRIVE CHAIN | | | I, L EVERY 300 mi. (500 km) | | | | | | Pages 2-5, 3-17 |
| | BATTERY | MONTH | | I | I | I | I | I | I | Page 3-18 |
| | BRAKE FLUID | MONTH I 2 YEARS *R | | I | I | I | *R | I | I | Page 3-18 |
| | BRAKE PAD WEAR | | | | I | I | I | I | I | Page 3-19 |
| | BRAKE SYSTEM | | | I | I | I | I | I | I | Page 3-19 |
| | * BRAKE LIGHT SWITCH | | | I | I | I | I | I | I | Page 3-20 |
| | * HEADLIGHT AIM | | | I | I | I | I | I | I | Page 3-20 |
| | CLUTCH | | | I | I | I | I | I | I | Page 3-22 |
| | SIDE STAND | | | | I | I | I | I | I | Page 3-23 |
| | * SUSPENSION | | | I | I | I | I | I | I | Page 3-24 |
| | * NUTS, BOLTS, FASTENERS | | | I | I | I | I | I | I | Page 3-25 |
| | ** WHEELS | | | I | I | I | I | I | I | Page 3-25 |
| | ** STEERING HEAD BEARING | | | I | | I | | I | | Page 3-25 |

* SHOULD BE SERVICED BY AN AUTHORIZED HONDA DEALER, UNLESS THE OWNER HAS PROPER TOOLS AND SERVICE DATA AND IS MECHANICALLY QUALIFIED.

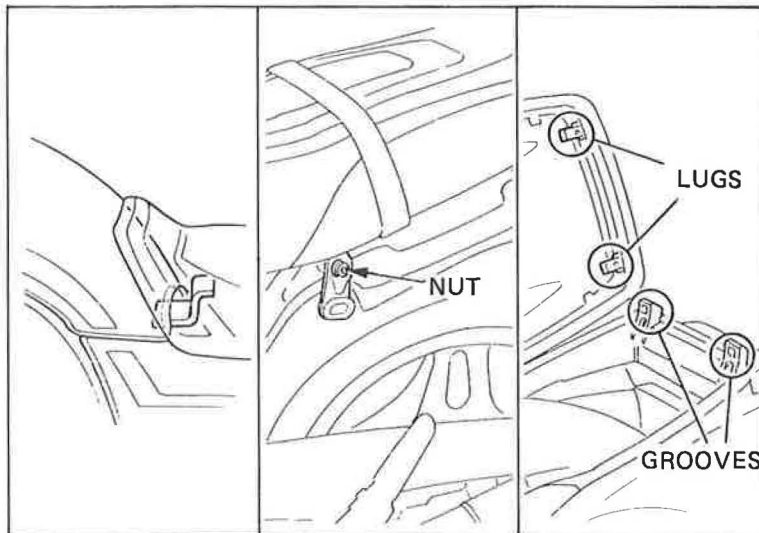
** IN THE INTEREST OF SAFETY, WE RECOMMEND THESE ITEMS BE SERVICED ONLY BY AN AUTHORIZED HONDA DEALER.

NOTES: 1. SERVICE MORE FREQUENTLY WHEN RIDING IN DUSTY AREAS.
 2. SERVICE MORE FREQUENTLY WHEN RIDING IN RAIN OR AT FULL THROTTLE (USA ONLY).
 3. FOR HIGHER ODOMETER READINGS, REPEAT AT THE FREQUENCY INTERVAL ESTABLISHED HERE.

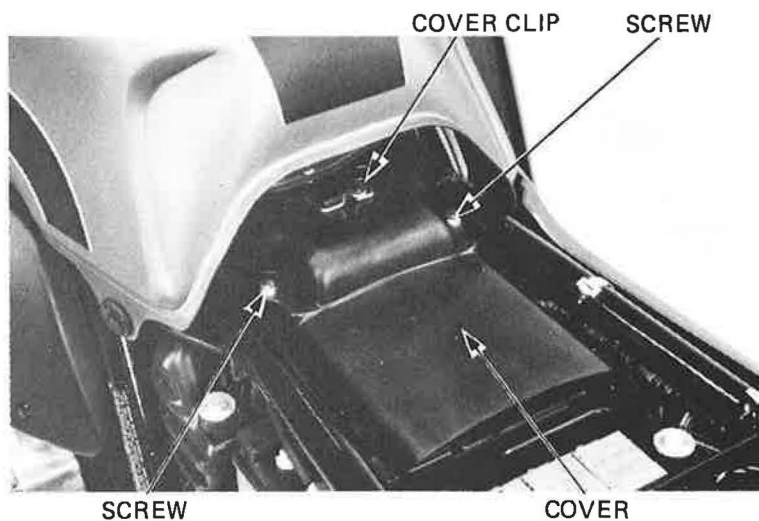


AIR CLEANER

Remove the seat by loosening the nuts on the sides of the seat and lifting the seat to the rear.



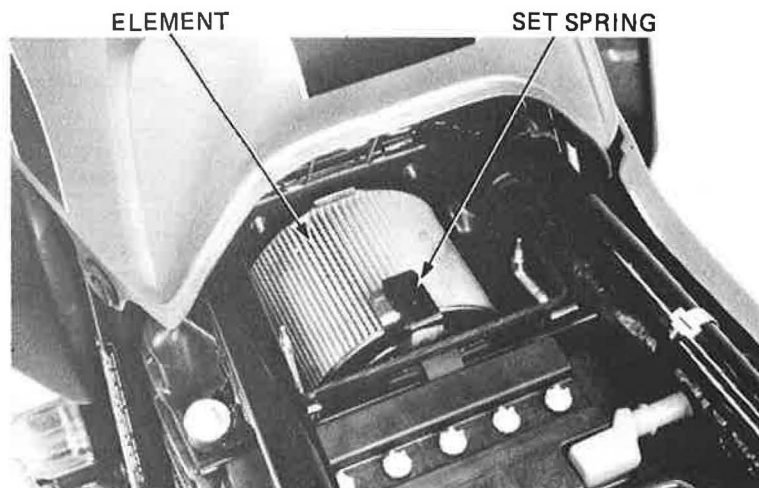
Lift the air cleaner cover clip up.
Remove the two air cleaner cover screws and the air cleaner cover.



Remove the air cleaner set spring.
Replace the element with a new one according to the maintenance schedule.
Install the holder, set spring and air cleaner cover.
When replacing the seat, align the grooves with the lugs and push down firmly. Install the nuts and tighten them to the recommended torque.

**Torque specification: 3-4 N·m
(3.0-4.0 kg-m, 22-29 ft-lbs)**

Lift the seat to make sure the latches are secure.





CRANKCASE BREATHER

For U.S.A. model

Remove the plug from the drain tube to empty any deposits.

Reinstall the drain plug.

NOTE

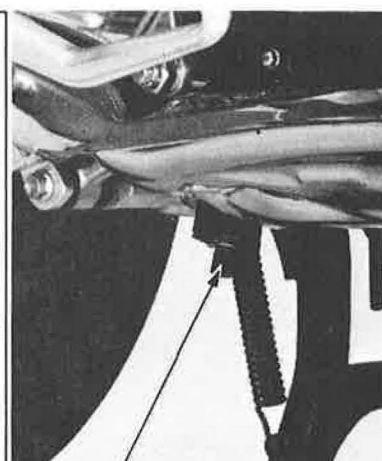
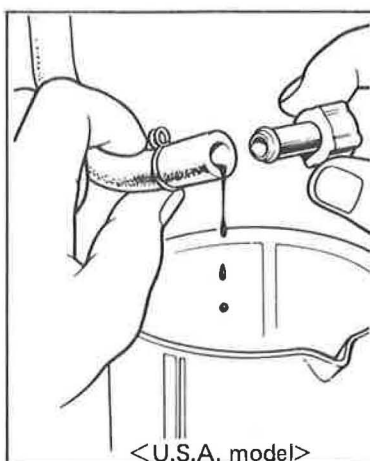
Service more frequently when ridden in rain or at fully throttle, or if the deposit level can be seen in the transparent section of the drain tube.

For Canada model

Squeeze to open the lower end of the drain tube. Remove any oil or water which may have accumulated.

CAUTION

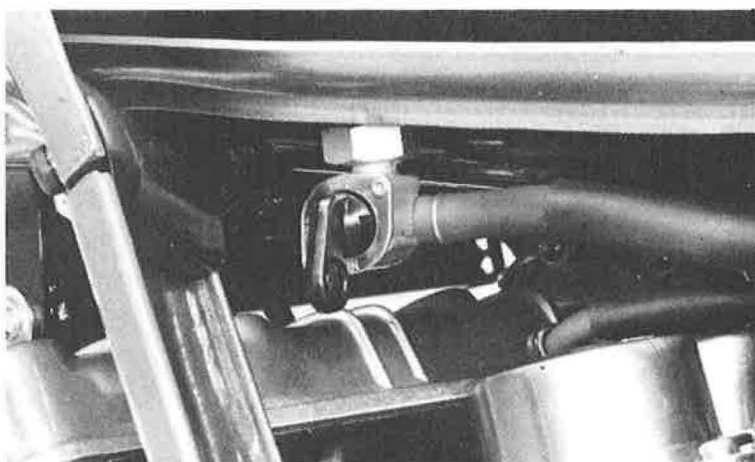
Check the drain tube for clogging and routing.



DRAIN
TUBE

FUEL LINES

Check the fuel lines for deterioration, damage, or leakage. Replace any parts which show deterioration, damage or leakage.



SPARK PLUGS

Disconnect the spark plug caps.

Clean any dirt from around the spark plug bases.

Remove and discard the spark plugs.

RECOMMENDED SPARK PLUG

() Canada model
US. optional

| For cold climate below 5°C (41°F) | | Standard | | For extending high speed riding | |
|--------------------------------------|-----------------|-----------------------|-------------------|------------------------------------|-----------------|
| ND | NGK | ND | NGK | ND | NGK |
| X22ES-U (X22ESR-U) | D7EA (DR7ES) | X24ES-U (X24ESR-U) | D8EA (DR8ES-L) | X27ES-U (X27ESR-U) | D9EA (DR8ES) |



Measure the new spark plug gaps using a wire-type feeler gauge.

SPARK PLUG GAP:

0.6–0.7 mm (0.024–0.028 in)

Adjust by bending the side electrode carefully.

With the plug washer attached, thread the new spark plugs in by hand to prevent crossthreading.

Tighten the spark plugs another 1/2 turn with a spark plug wrench to compress the plug washer.

TORQUE:

12–14 N·m (1.2–1.4 kg·m, 9–12 ft·lb)

Connect the spark plug caps.

NOTE

First tighten the spark plug finger tight, then tighten 1/2 turn with a spark plug wrench.

IGNITION TIMING CHECK**• DYNAMIC****NOTE**

Drain oil from engine for this inspection method. Place an oil drain pan under the right crankshaft end.

Remove all spark plug caps and either No. 6 spark plug or No. 1 spark plug.

Connect the removed plug with the spark plug cap and ground the plug to the cylinder head.

Remove the right crankshaft cap.

Connect a stroboscopic timing light to the grounded high tension wire.

Operate the starter motor while aiming the timing light at the right crankshaft end.

The "F" mark should align with the front crankcase mating surfaces.

ADJUSTMENT

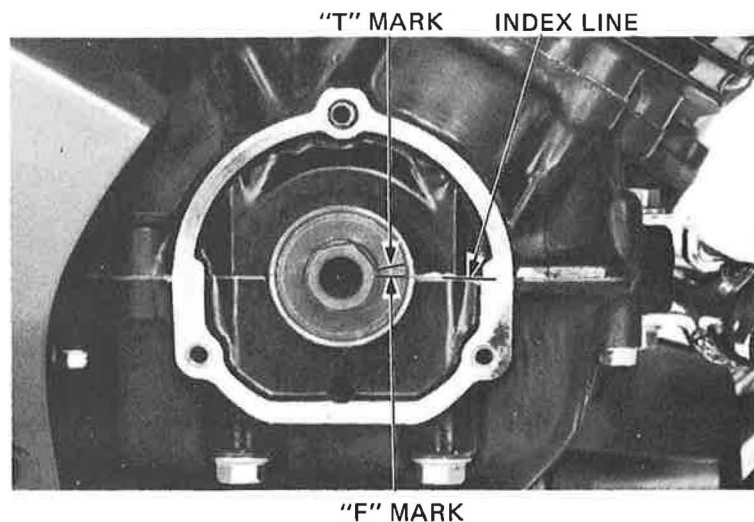
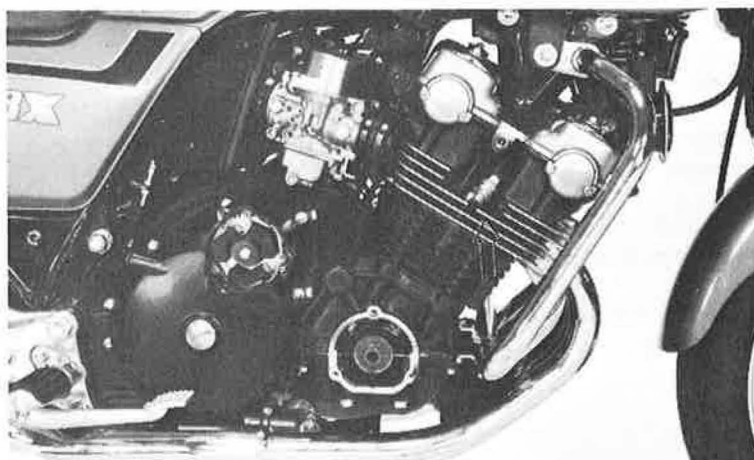
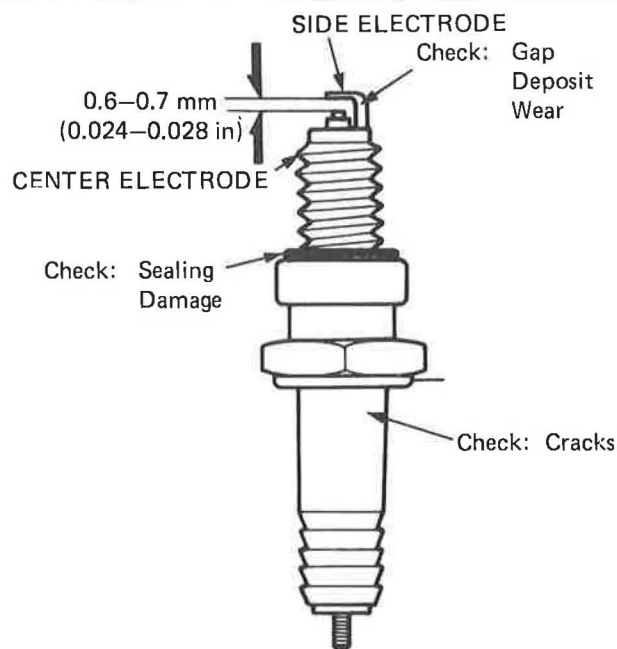
Remove the pulse generator cover.

Adjust by loosening the three pulse generator base plate locking screws and rotating the plate.

Turn the base plate counterclockwise to advance and turn it clockwise to retard the timing.

Tighten the base plate locking screws and recheck the timing.

Install the removed parts in the reverse order of disassembly. Add the correct amount of engine oil.





ALTERNATIVE METHOD

• STATIC

NOTE

This check can be done with oil in the engine.

Remove the right crankcase cap and pulse generator cover.

Rotate the crankshaft clockwise and align the "F" mark with the crankcase front upper and lower mating surface.

Either No. 6 or No. 1 piston must be near TDC of the compression stroke.

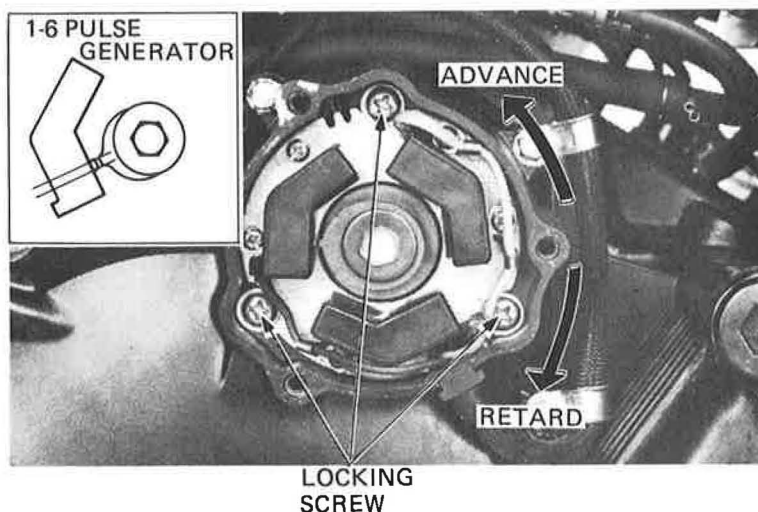
The timing is correct if the narrow projection of the 1,6 pulse generator is aligned with the rotor tooth.

If the ignition timing is incorrect, loosen the three pulse generator base plate locking screws. Rotating the base plate counterclockwise will advance the ignition timing.

Rotating the base plate clockwise will retard the ignition timing.

Tighten the base plate locking screws and recheck the ignition timing.

Install the removed parts in the reverse order of disassembly.



SPARK ADVANCER

NOTE

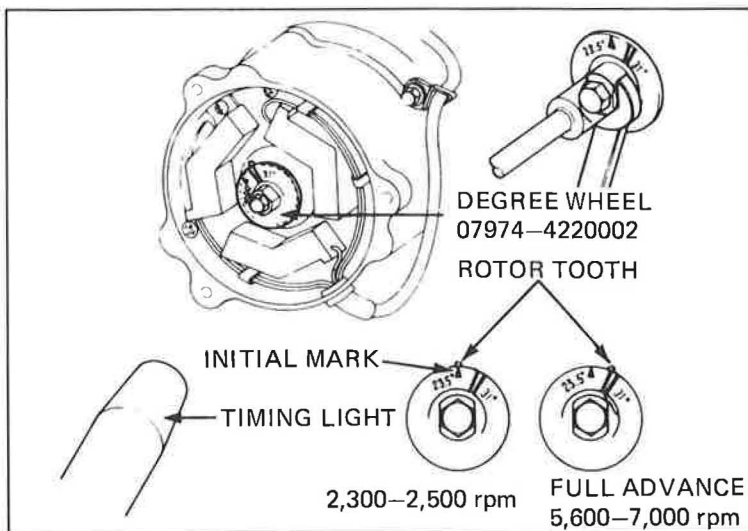
- Check the spark advancer only if engine performance difficulties occur.
- A high quality stroboscopic timing light designed for transistorized ignition systems must be used. It should also be capable of accurate operation at 9,000 rpm.

Remove the pulse generator cover.

Remove the rotor bolt and install the special degree wheel. (07974-4220002).

Align the initial mark on the degree wheel with the rotor tooth and tighten the rotor bolt.

Connect a timing light to the No. 6 high tension wire.





Start the engine.

Check that the initial mark remains aligned with the rotor tooth at idle.

Increase engine speed and check that the 23.5° mark aligns with the rotor tooth at 2,300–2,500 rpm.

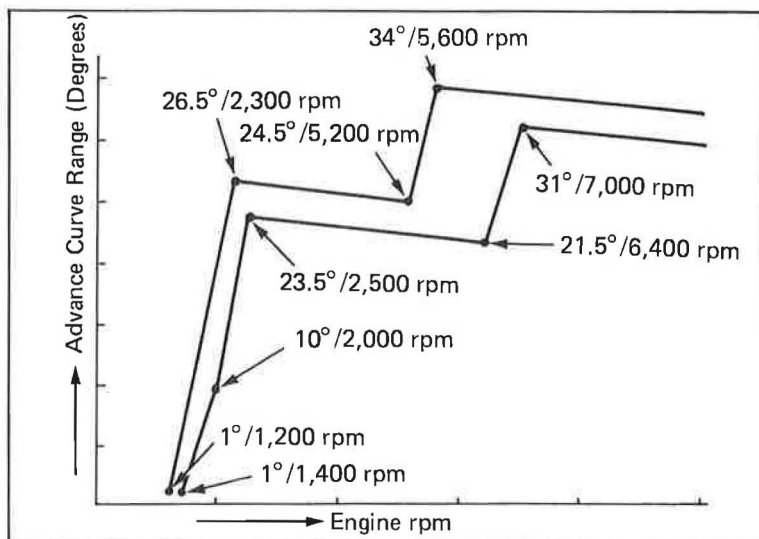
And then check that the 31° mark aligns with the rotor tooth at 5,600–7,000 rpm.

CAUTION

Do not allow engine speed to exceed 8,000 rpm or engine damage may result.

Replace the advancer assembly if it is not functioning properly.

Install the pulse generator cover.

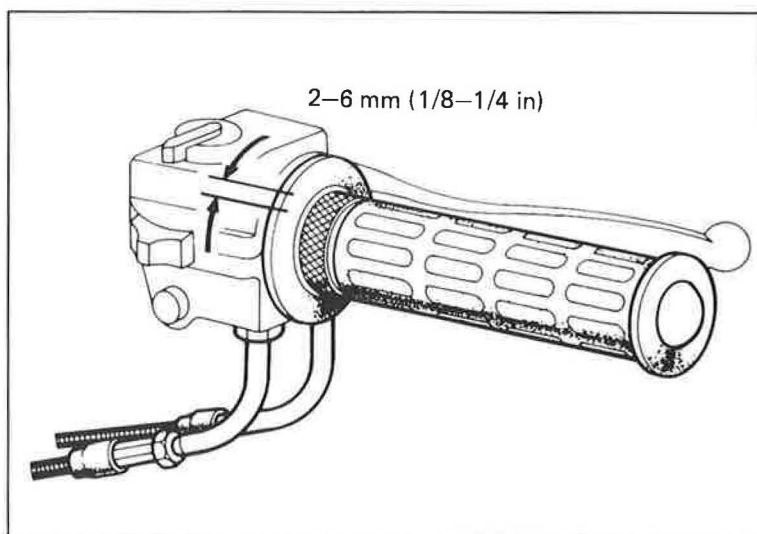


THROTTLE OPERATION

Make sure that there is no deterioration, damage, or kinks in the throttle cables, and that the throttle grip free play is 2–6 mm (1/8–1/4 in) on the outer edge of the throttle grip flange. Replace any damaged parts.

Check for smooth throttle grip rotation from fully closed to fully open in all steering positions and that it automatically returns to "fully closed" when released.

Adjust if necessary.



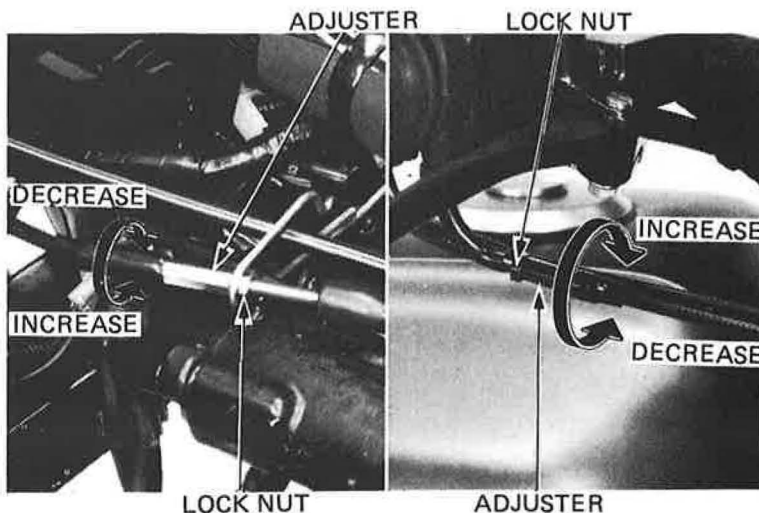
Major adjustments are made at the middle adjuster. Remove the fuel tank.

To adjust, loosen the grip play adjuster lock nut and turn the adjuster.

Tighten the lock nut.

Minor adjustments are performed at the upper adjuster.

Recheck throttle operation.





CARBURETOR SYNCHRONIZATION

NOTE

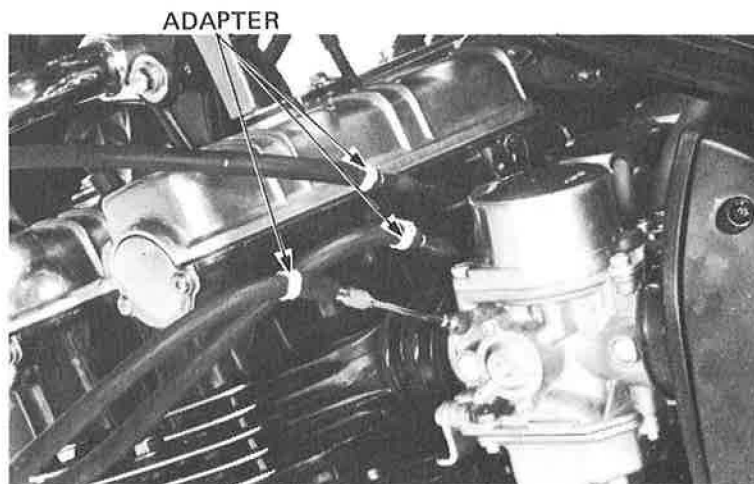
Perform carburetor synchronization with engine at normal operating temperature, transmission in neutral and motorcycle on the center stand.

Remove the legshield.

Remove the seat and air cleaner inlet duct.

Turn the fuel valve OFF and remove the fuel tube and fuel tank.

Prepare a longer fuel tube and reconnect it to the fuel tank and carburetor.



Position the fuel tank higher than its normal position.

Remove plugs from the carburetor intake parts (except No. 3 carburetor) and install long adapters to inner carburetors and short adapters to outer carburetors.

Connect vacuum gauges.

Start the engine and adjust the idle speed to 900 ± 100 rpm. Clip the vacuum tube for the fuel auto cock and disconnect the vacuum tube from the plug.

Remove the plug from carburetor 3 and install the long adapter, then connect the vacuum gauge.

Make sure that the maximum difference in vacuum readings is 40 mmHg (1.6 inHg) or less.



VACUUM GAUGE 07404-0020000 or
M937B-021-XXXXX (USA only)



ADJUSTMENT

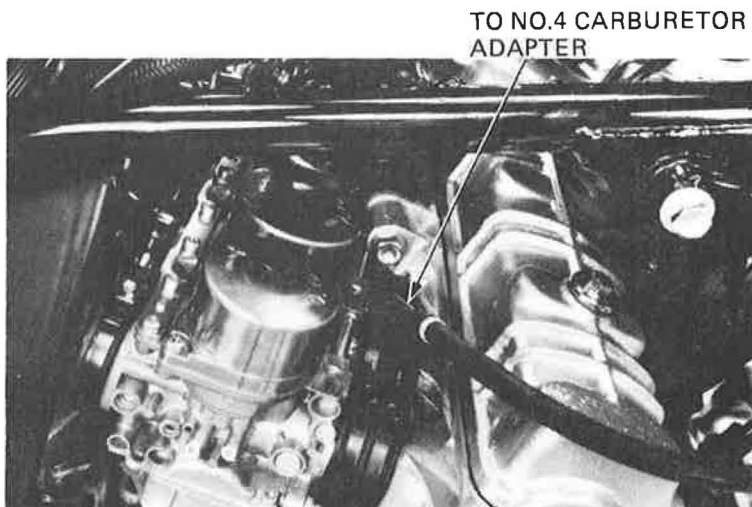
NOTE

The No.4 carburetor cannot be adjusted; it is the base carburetor.

Start the engine and adjust the idle speed.

IDLE SPEED: 900 ± 100 rpm

Make sure that the maximum difference in vacuum readings does not exceed 40 mm Hg (1.6 in Hg).



Adjust by loosening the locknuts and turning the adjusting screws with the special tool Carburetor Throttle Wrench. Adjust to a maximum difference in vacuum readings between carburetors of less than 40 mm Hg (1.6 in Hg).

Adjust in the following order:

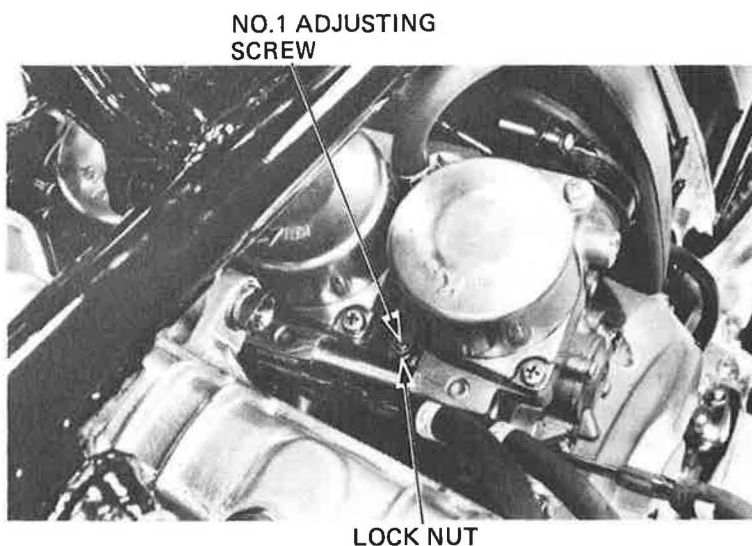
CARBURETOR

No. 5→No. 6→

No. 3→No. 2→No. 1

NOTE

Use carb. throttle wrench (07908-4600000) to adjust the No. 5 and No. 6 carburetors.



Hold the adjusting screws and tighten the lock nuts.

Recheck the idle speed and synchronization.

Install the removed parts in the reverse order of disassembly.





CHOKE MECHANISM

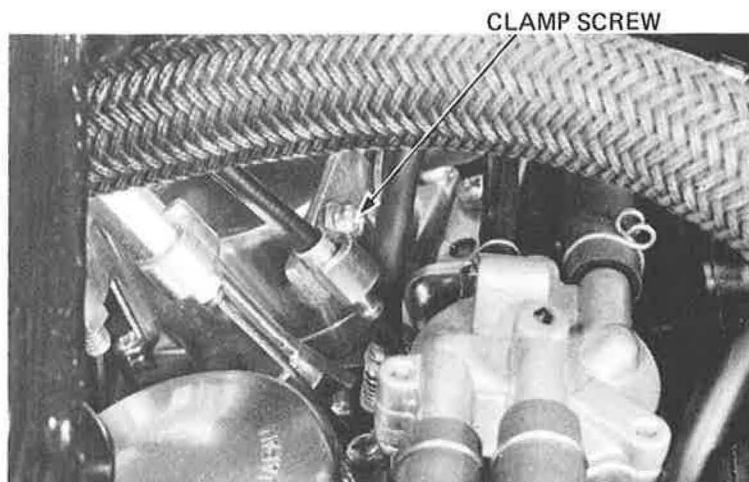
Operate the choke lever and check for smooth operation.

Pull the choke to "fully close" and make sure that the choke lever fully closed at the carburetors.

Adjust by loosening the choke cable clamp and moving the choke cable casing.

Retighten the clamp, holding the choke lever fully closed.

Push the choke lever down all the way to fully open. Make sure the choke valve is fully open by checking for free play in the cable between the lever and the cable casing.



IDLE SPEED

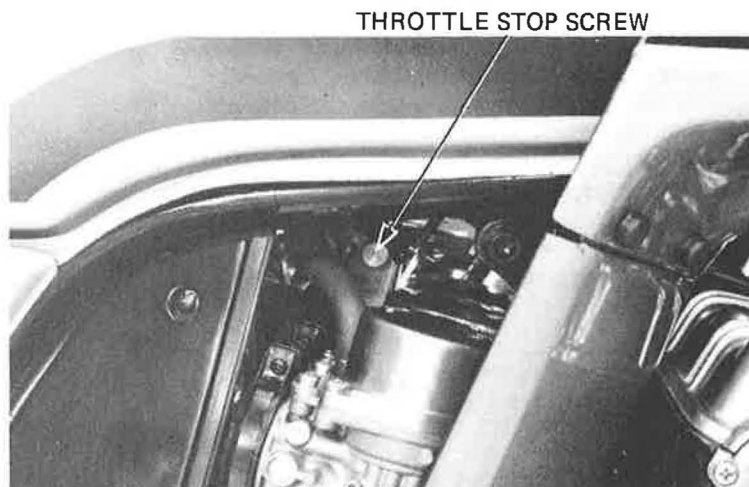
NOTE

Adjust idle speed after synchronizing carburetors. The engine must be warm for accurate idle adjustment. Ten minutes of stop-and-go riding is sufficient.

Warm up the engine, shift to NEUTRAL, and place the motorcycle on its center stand.

Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 900 ± 100 rpm



NOTE

Pilot screws are factory pre-set. Do not adjust the pilot screw unless the carburetors are overhauled.



VALVE CLEARANCE

NOTE

- Inspect and adjust valve clearance while the engine is cold. (Below 35°C. 95°F).
- Lean the motorcycle right and left to drain residual oil from the cylinder head.

Remove the seat and leg shield.

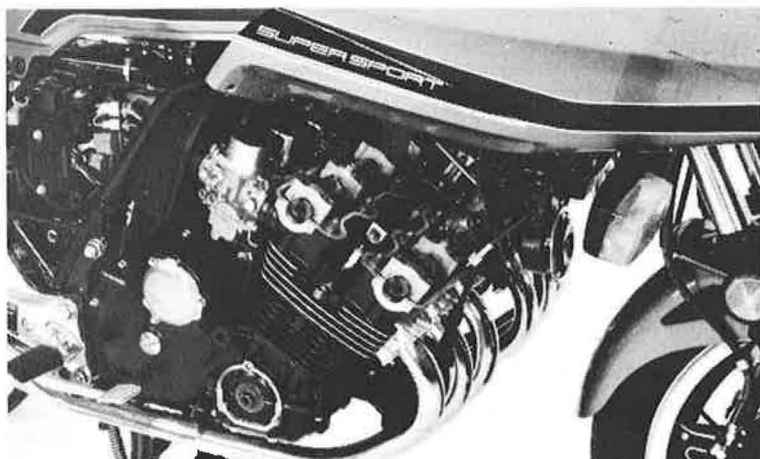
Turn the fuel valve OFF and remove the fuel tube and fuel tank.

Remove the No. 1 and No. 6 spark plugs.

Remove the cylinder head brackets.

Remove the tachometer cable.

Remove the tachometer gear cap and tachometer driven gear.

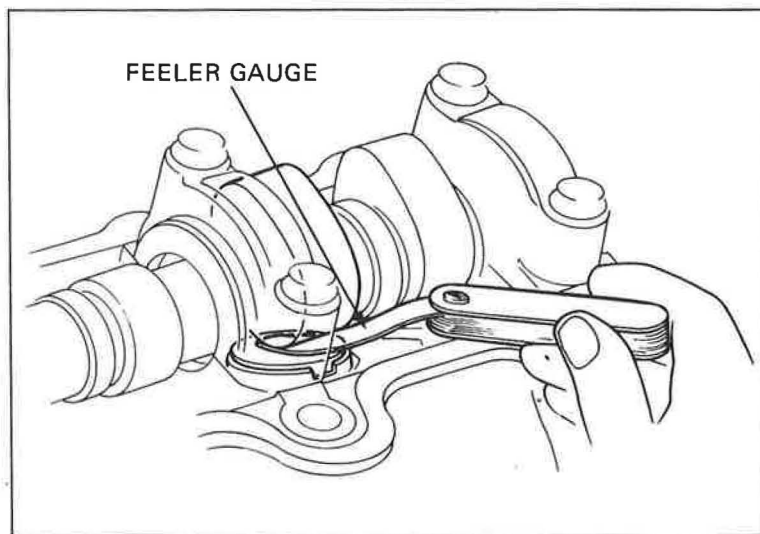


CAUTION

The tachometer driven gear must be removed to prevent No. 4 camshaft holder breakage when the camshafts are rotated. Camshaft holder breakage necessitates cylinder head assembly replacement.

Remove the four cylinder head side covers.

Remove the eight cylinder head cover mounting bolts and cylinder head cover.



NOTE

- Do not allow engine oil to enter the combustion chambers when the cylinder head cover is removed.
- Make sure the torque of the camshaft holder mounting bolts (32 bolts) is 12–14 N·m (1.2–1.4 kg·m, 104–122 in·lb).

Remove the right crank cap.

INSPECTION

Measure intake and exhaust valve clearances by inserting a feeler gauge between the camshaft and valve lifter shim.

VALVE CLEARANCE:

0.06–0.13 mm (0.002–0.005 in)

Rotate the crankshaft clockwise and measure the valve clearances in the following sequence:

Open No. 2 Ex. Valves to maximum and Measure No. 2 In., No. 1 Ex., No. 3 Ex. clearance
 Open No. 4 Ex. Valves to maximum and Measure No. 4 In., No. 5 Ex., No. 6 Ex. clearance
 Open No. 2 In. Valves to maximum and Measure No. 1 In., No. 3 In., No. 5 In. clearance
 Open No. 5 Ex. Valves to maximum and Measure No. 6 In., No. 2 Ex., No. 4 Ex. clearance

Record the valve clearances.



ADJUSTMENT

NOTE

Adjustment shims are available in 0.05 mm increments, from 2.30 to 3.50 mm.

Select a replacement shim to achieve the specified valve clearance, using the following procedures.

Turn the valve lifter notch toward the spark plug hole.

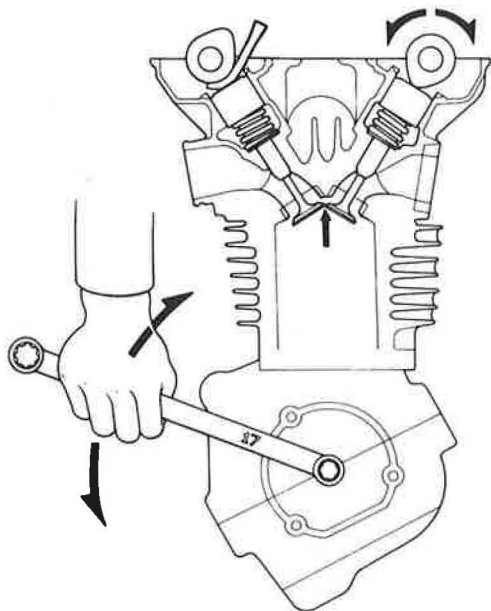
Rotate the crankshaft so that the valve being adjusted is at maximum lift.

Insert the special tool (Valve Lifter Holder) between the camshaft and adjacent lifter.

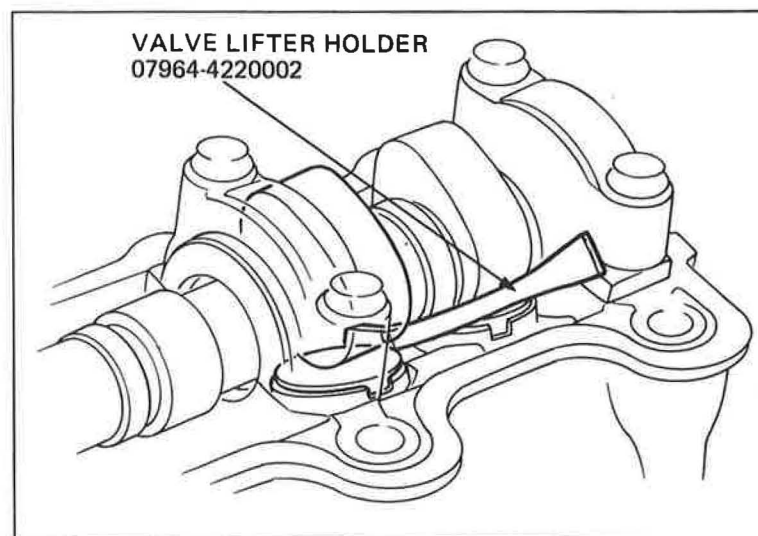
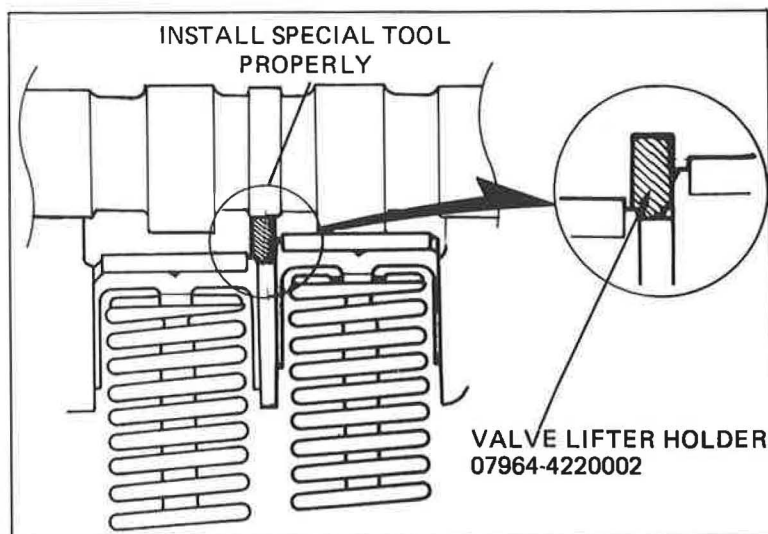
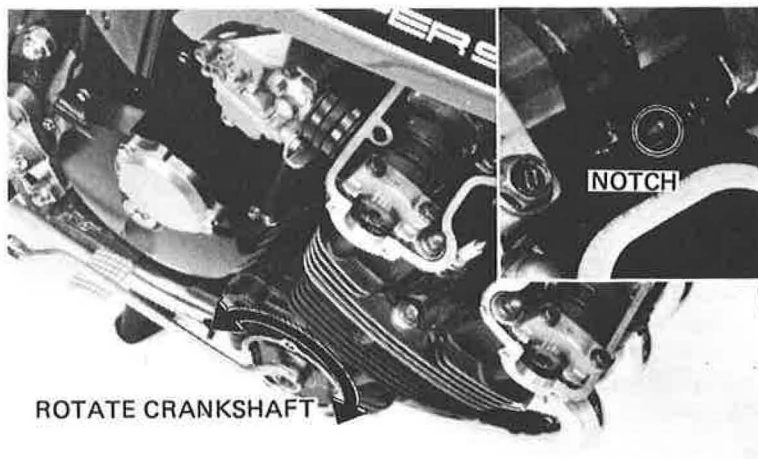
CAUTION

Do not rotate the crankshaft too far or in the wrong direction when the Valve Lifter Holder is depressing a pair of Valves. To do so will cause the intake and exhaust valves to strike and damage each other.

VALVE LIFTER HOLDER
07964-4220002

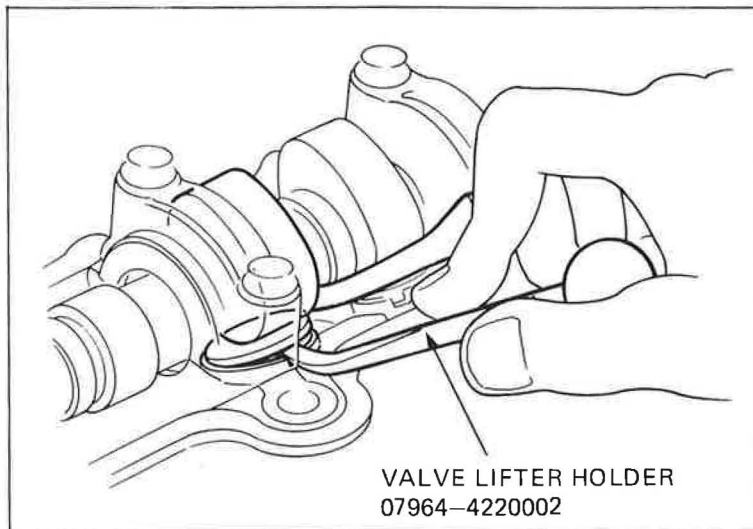


Rotate the crankshaft clockwise until there is enough clearance to remove the shim.

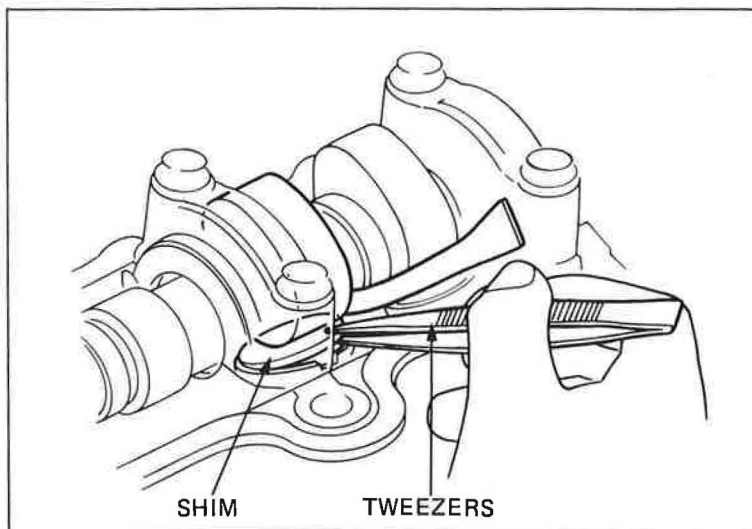




Begin removal of the shim by prying it off with the valve lifter.



Then remove the shim with tweezers.



Measure the thickness of the used shim with a micrometer.

Select a replacement shim using the chart on Page 3-13.

Insert the replacement shim.

CAUTION

Make sure the opposite pair of valves does not open. The valves could be bent or damaged if the crankshaft is rotated incorrectly.

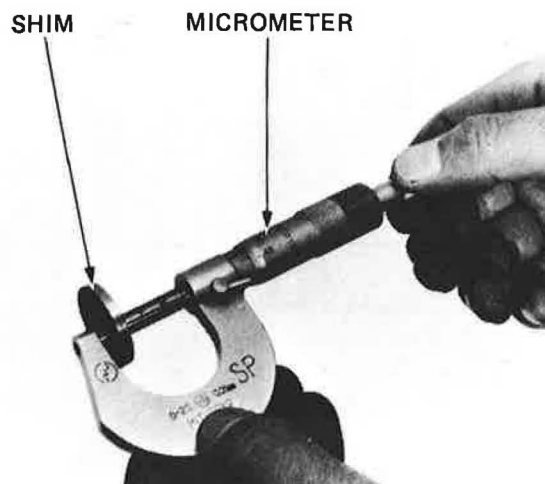
Rotate the crankshaft in the correct direction until the valves being adjusted are at maximum lift.

Remove the special tool "Valve Lifter Holder".

Rotate the crankshaft 2-3 revolutions to fully seat the replacement shim.

Recheck the valve clearance.

Install the removed parts in the reverse order of disassembly.



EXAMPLE: 1. Measure valve clearance = 0.16 mm 3. Refer to chart. (See shaded columns)
 2. Measure present shim size = 2.50 mm 4. Replacement shim size = 2.55 mm

| | | VALVE SHIM SELECTION CHART | | | | | | | | | | | | | STANDARD VALVE CLEARANCE = 0.06 – 0.13 mm | | | | | | | | | | | | |
|--------------------|------|----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|------|------|------|------|------|--|
| | | PRESENT SHIM SIZE mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | EX ↓ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SHIM mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | |
| VALVE CLEARANCE mm | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.01–0.05 | | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | |
| 0.06–0.13 | | SPECIFIED CLEARANCE | | | | | | | | | | | | | NO CHANGE REQUIRED | | | | | | | | | | | | |
| 0.14–0.16 | EX → | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | |
| 0.17–0.21 | | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | |
| 0.22–0.26 | | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | |
| 0.27–0.31 | | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | |
| 0.32–0.36 | | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | |
| 0.37–0.41 | | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | |
| 0.42–0.46 | | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | |
| 0.47–0.51 | | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | |
| 0.52–0.56 | | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | |
| 0.57–0.61 | | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | |
| 0.62–0.66 | | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | |
| 0.67–0.71 | | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | |
| 0.72–0.76 | | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | |
| 0.77–0.81 | | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | |
| 0.82–0.86 | | 3.05 | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | |
| 0.87–0.91 | | 3.10 | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | | |
| 0.92–0.96 | | 3.15 | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | | | |
| 0.97–1.01 | | 3.20 | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | | | | |
| 1.02–1.06 | | 3.25 | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | | | | | |
| 1.07–1.11 | | 3.30 | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | | | | | | |
| 1.12–1.16 | | 3.35 | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | | | | | | | |
| 1.17–1.21 | | 3.40 | 3.45 | 3.50 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.22–1.26 | | 3.45 | 3.50 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.27–1.31 | | 3.50 | | | | | | | | | | | | | | | | | | | | | | | | | |

REPLACE WITH THIS SHIM

NOTE

- (1) Measure the valve clearance while the engine is cold.
- (2) For shim replacement, see page 3–12.
- (3) Measure old and new shims with a micrometer.
- (4) The chart is for reference purpose only. After installing new shims, recheck the valve clearance. Before rechecking, rotate the camshafts several times to seat the shims in the lifters.
- (5) If the shim thickness required exceeds 3.5 mm, there is carbon build-up on the valve seat. Remove the carbon and reface the seat.

NOTE

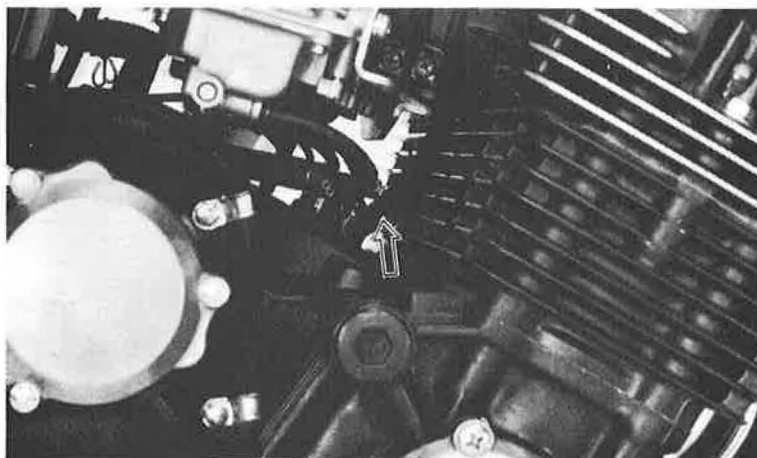
- (1) Measure the valve clearance while the engine is cold.
- (2) For shim replacement, see page 3–12.
- (3) Measure old and new shims with a micrometer.
- (4) The chart is for reference purpose only. After installing new shims, recheck the valve clearance. Before rechecking, rotate the camshafts several times to seat the shims in the lifters.
- (5) If the shim thickness required exceeds 3.5 mm, there is carbon build-up on the valve seat. Remove the carbon and reface the seat.





CAM CHAIN

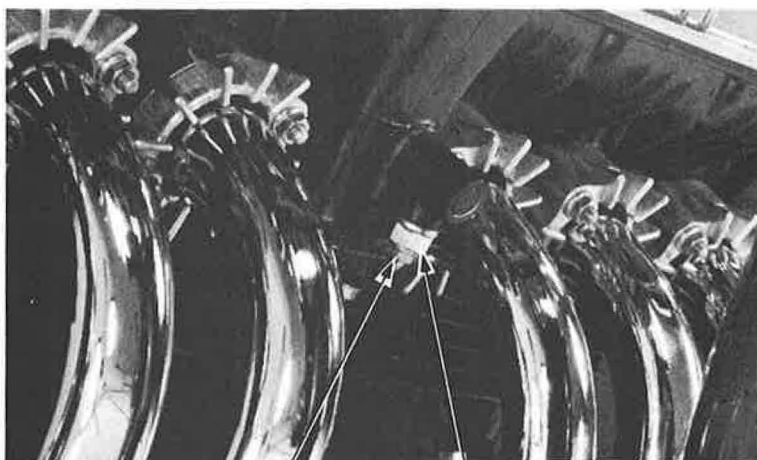
Start the engine and allow it to idle.
Loosen the rear cam chain tensioner lock nut and bolt at the rear of the cylinder head.
Tighten the bolt and lock nut.



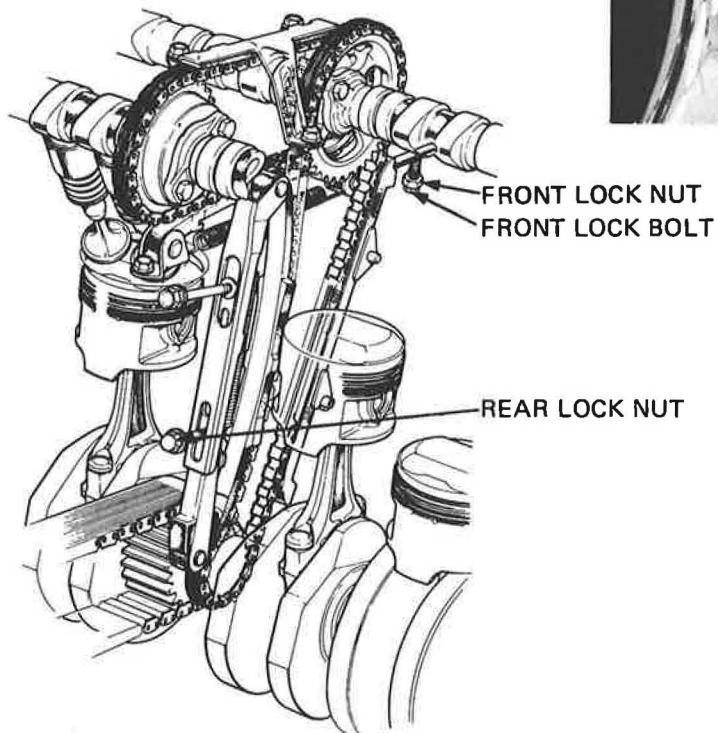
Loosen, then tighten, the front cam chain tensioner lock nut and bolt at the front of the cylinder.

NOTE

With engine running at idle, the tensioner will automatically position itself to provide the correct tension.



TENSIONER BOLT LOCK NUT





COMPRESSION TEST

NOTE

The battery must be fully charged for this test.

Warm up the engine.

Remove all spark plugs.

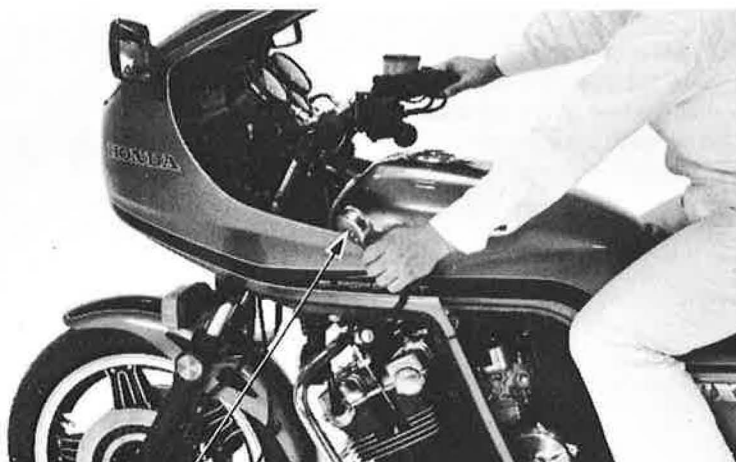
Insert the compression gauge.

Open the choke and throttle valves fully.

Crank the engine with the starter motor.

NOTE

Crank the engine until the gauge reading stops rising. The maximum reading is usually reached in several seconds.



COMPRESSION GAUGE

COMPRESSION PRESSURE:

$1200 \pm 100 \text{ kPa}$ ($12 \pm 1 \text{ kg/cm}^2$, $170 \pm 14 \text{ psi}$)

If compression is low, check the following:

- Leaky valves
- Improper valve clearance
- Leaking cylinder head gasket
- Worn piston/rings/cylinder

If compression is high, it indicates that carbon deposits have accumulated on the combustion chamber wall or on the piston crown.



DRIVE CHAIN

NOTE

Perform the following with the ignition switch "OFF".

Place the vehicle on its center stand and shift the transmission into neutral.
Inspect the drive chain midway between the sprockets on the lower chain run.

FREE PLAY: 15–25 mm (5/8–1 in)
SERVICE LIMIT: 40 mm (1.5 in)

Adjust as follows:

Remove the rear axle cotter pin and loosen the nut.
Loosen the adjuster bolt lock nuts.
Turn the adjuster bolts an equal number of turns to obtain the specified free play.

CAUTION

Be sure that the index mark aligns with the same graduation of the scale on both sides.

Tighten the adjuster bolt lock nuts.
Tighten the axle nut securely.
Recheck free play and free wheel rotation.
Lubricate the drive chain (Page 2-5).

AXLE NUT TORQUE:
85-105 N·m, (8.5-10.5 kg·m, 61-76 ft·lb)

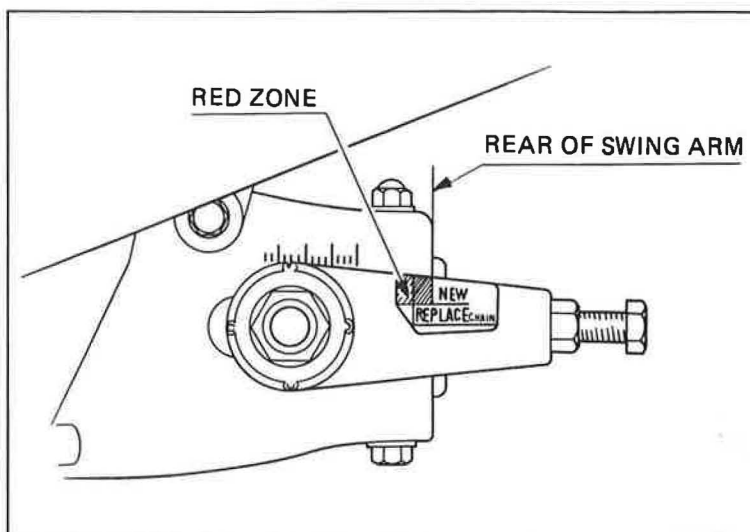
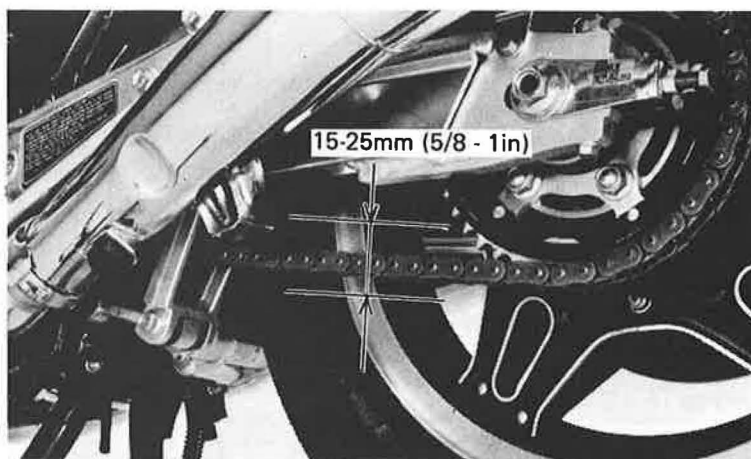
Replace the drive chain when the red zone on the label aligns with the rear of the swing arm with a chain free play of 20 mm (3/4 in).

Replacement chain: DID 50ZL, RK 50LO

Inspect the sprocket teeth for excessive wear or damage.
Replace if necessary.

NOTE

Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition or the replacement chain or sprockets will wear rapidly.





BATTERY

Remove the right and left side covers.
 Disconnect the ground cable at the battery terminal.
 Disconnect the positive cable at the magnetic switch terminal.
 Remove the battery.

Inspect the battery fluid level.
 When the fluid level nears the lower level, refill with distilled water to the upper level.

NOTE

Add only distilled water. Tap water will shorten the service life of the battery.

WARNING

The battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and call a doctor if electrolyte gets in your eyes.

Replace the battery, if sulfation forms or sediments accumulate on the bottom.

CAUTION

- To prevent damage to the battery, do not tap it with a hammer during installation.
- Do not grease the battery.

BRAKE FLUID

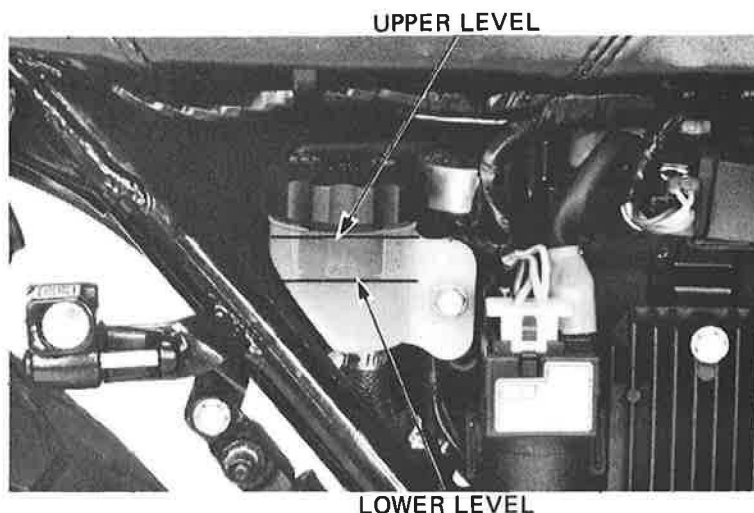
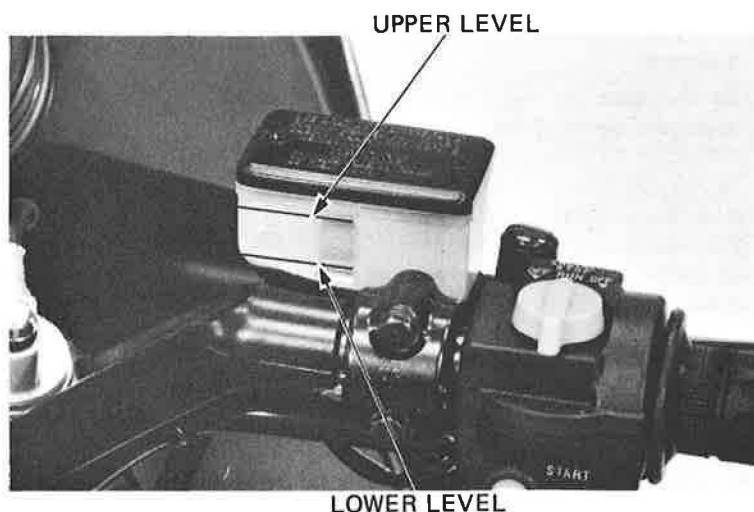
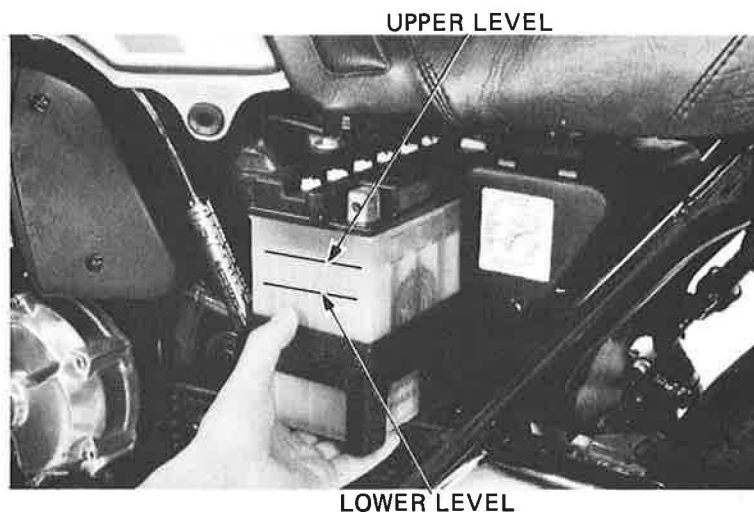
Check that the front and rear brake fluid reservoirs are filled to the upper level mark.

If the level nears the lower level mark, fill the reservoir with DOT-3 BRAKE FLUID to the upper level mark.

Check the entire system for leaks, if the level is low.

CAUTION

- Do not mix different brands of fluid as they may not be compatible.
- Do not remove the cap until the handlebar has been turned full right so that the reservoir is level.
- Avoid operating the brake lever with the removed.
 Brake fluid will squirt out if the lever is pulled.



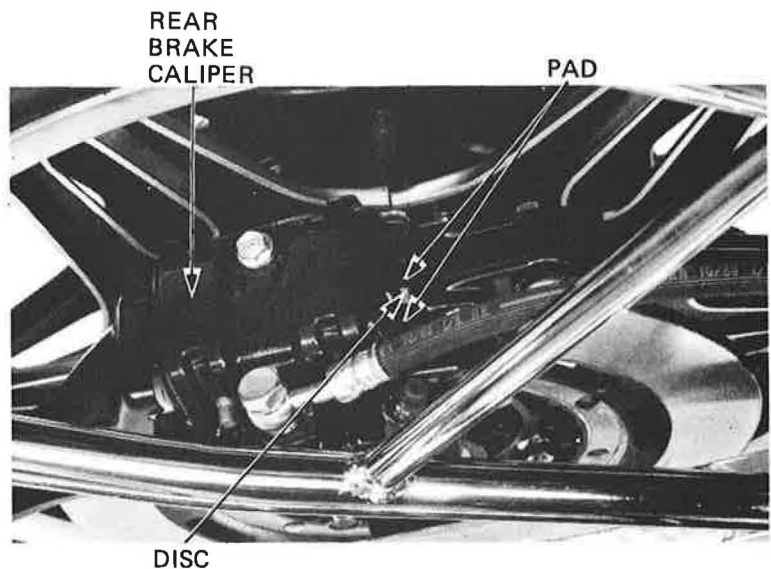
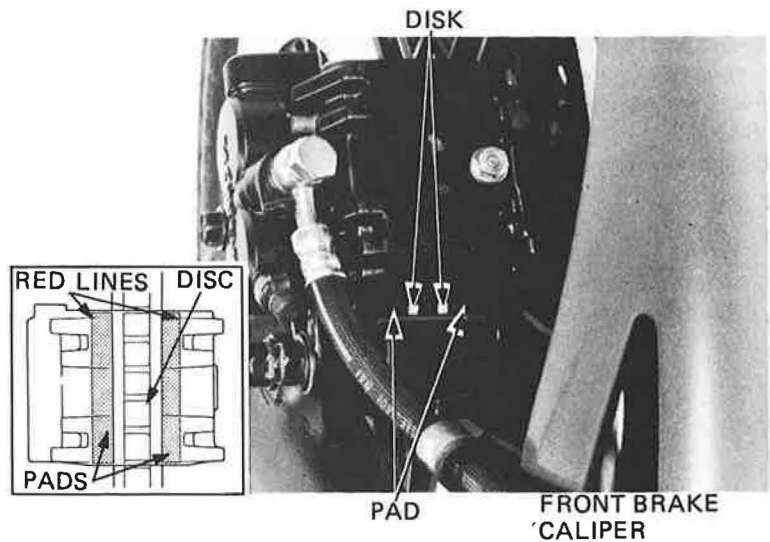


BRAKE PAD WEAR

Check for brake pad wear.
Replace the brake pads if the red line on the top of the pads reaches the edge of the brake disc.
(Refer to Section 12).

CAUTION

Always replace the brake pads in pairs to assure even disc pressure.



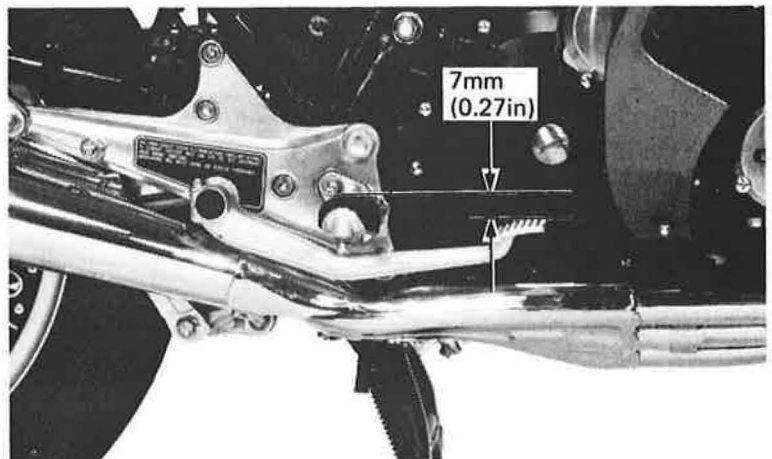
BRAKE SYSTEM

REAR BRAKE PEDAL HEIGHT

Adjust the pedal height so that the distance between the pedal and upper face of the footpeg is 7 mm (0.27 in).

CAUTION

Improper brake pedal height adjustment can cause brake drag.




Adjust as follows:

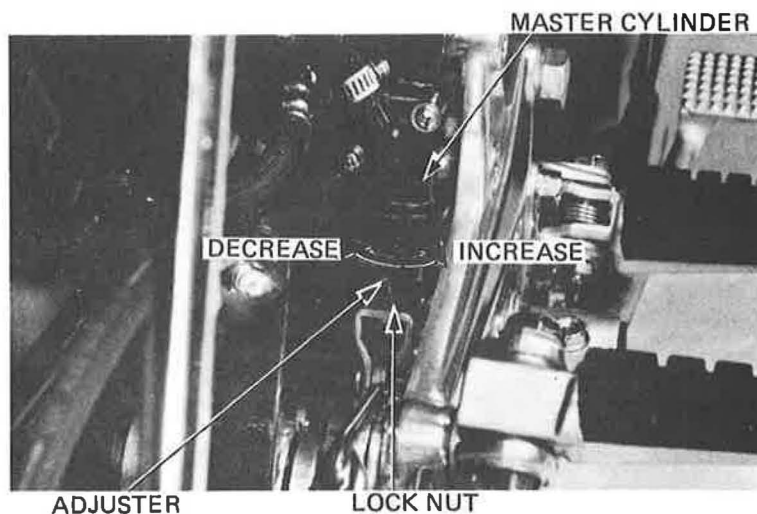
Loosen the lock nut.

Turn the adjuster until the correct pedal height is obtained.

Tighten the lock nut securely.

NOTE

After adjusting pedal height, adjust the brakelight switch.



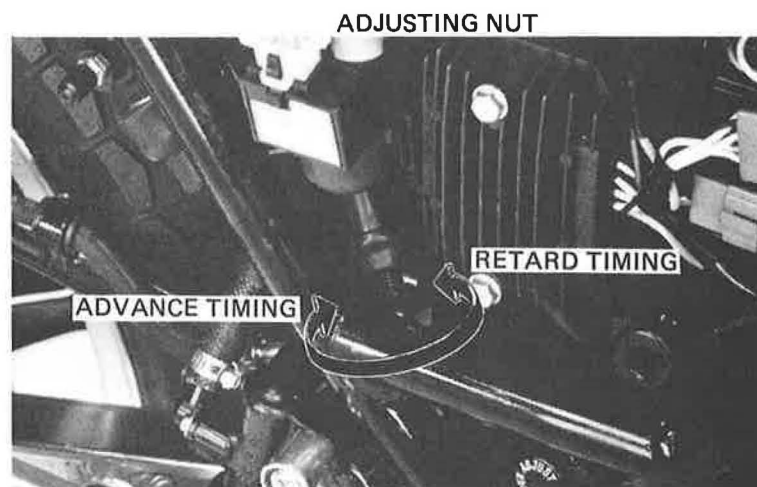
BRAKELIGHT SWITCH

Adjust the brakelight switch so that the brakelight will light when the brake pedal is depressed and the brake begins engagement.

Adjust by turning the switch adjusting nut as shown.

NOTE

- Do not turn the switch body.
- The front brakelight switch does not require adjustment.



HEADLIGHT AIM

VERTICAL BEAM

The headlight beam can be raised or lowered by turning the vertical beam adjusting knob.





HORIZONTAL BEAM

Remove the headlight cover from the rubber seal in the fairing.

Adjust horizontally by turning the adjusting screw on the headlight rim.

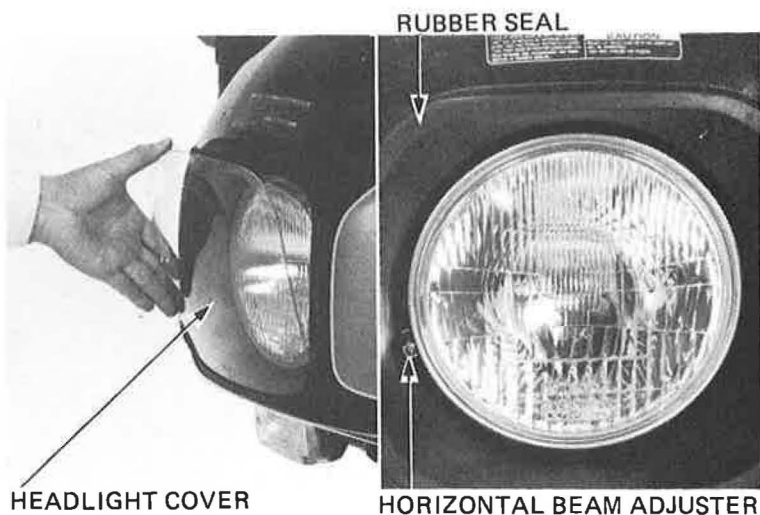
Turn the adjusting screw clockwise to direct the beam toward the right side of the rider.

NOTE

Adjust the headlight beam as specified by local laws and regulations.

WARNING

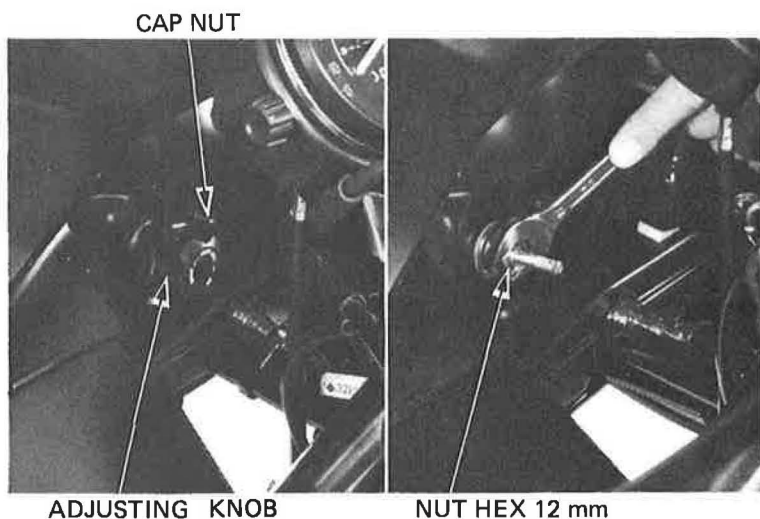
An improperly adjusted headlight may blind oncoming drivers, or it may fail to light the road for a safe distance.



HEADLIGHT BULB REPLACEMENT

Loosen the screw attached to the headlight adjusting knob.

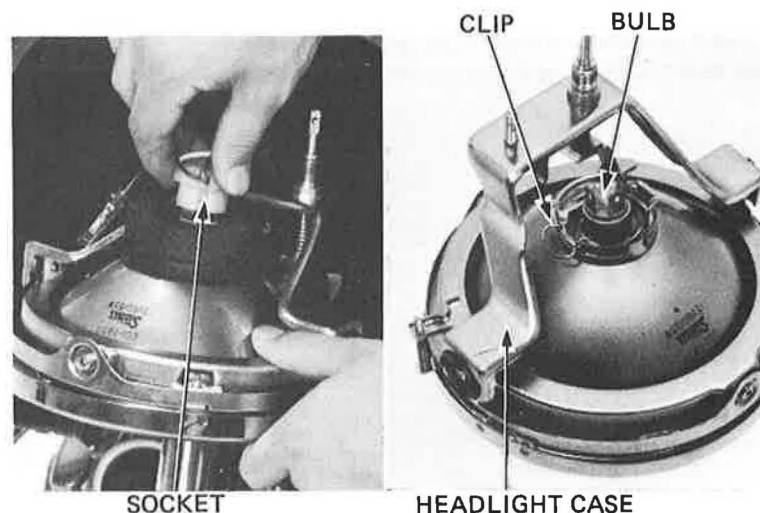
Remove the adjusting knob, nut and washers.
Remove the crown nut.



Remove the headlight cover from the fairing.
Pull out the headlight case and replace the bulb.
Reinstall the bulb clip.

CAUTION

- Do not touch the glass of a halogen bulb, or early bulb failure will occur.
- If you do touch the bulb, wipe it clean with a cloth moistened with alcohol.

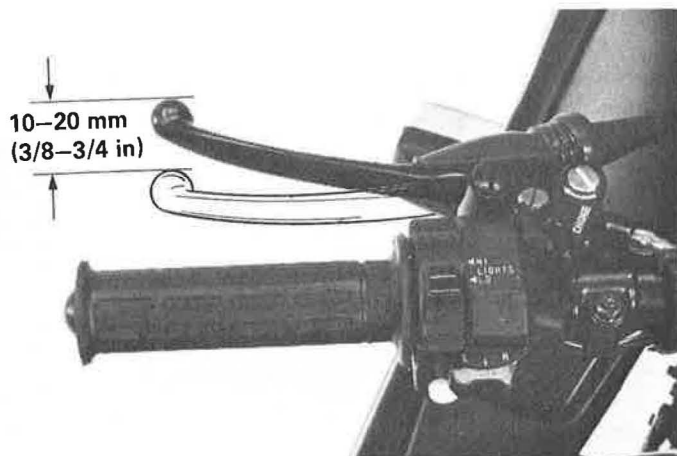




CLUTCH FREE PLAY

Inspect the clutch lever free play at the end of the lever.

FREE PLAY: 10–20 mm (3/8–3/4 in)



ADJUSTMENT

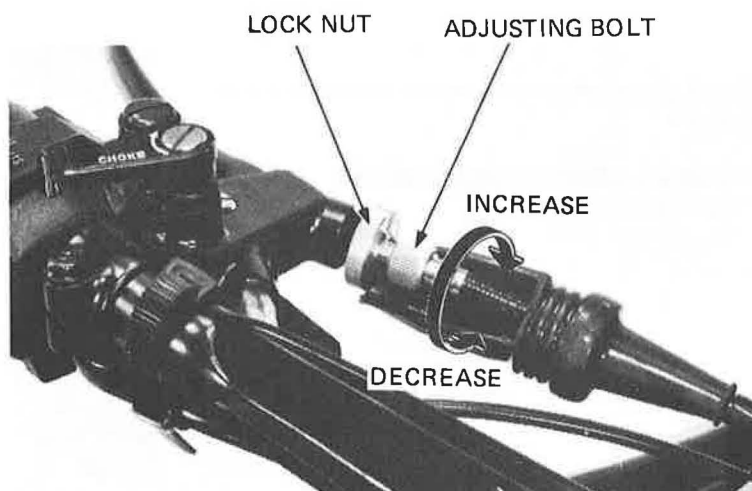
Loosen the upper adjusting bolt's lock nut and turn the adjusting bolt until the correct free play is obtained.

Tighten the lock nut.

NOTE

Do not expose the adjusting bolt threads more than 8 mm (3/4 in).

If adjustment cannot be made with the clutch lever adjusting bolt, screw the adjusting bolt all the way in. Adjustment must be made at the clutch housing.



Loosen the lower clutch cable adjusting lock nut and turn the adjusting nut all the way in.



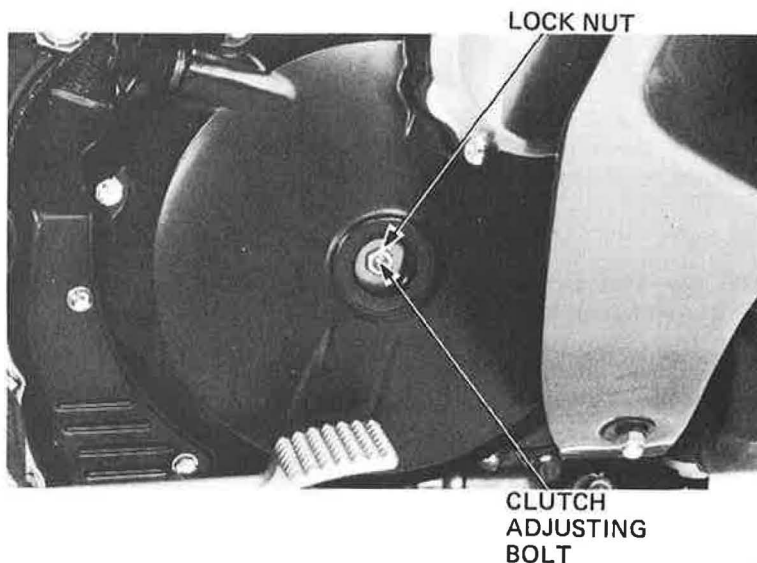


Remove the clutch lifter cap and loosen the clutch lifter lock nut. Turn the adjusting screw in until a slight resistance is felt. From this position, turn the clutch adjusting screw counterclockwise 1 turn, and tighten the lock nut.

Turn the clutch cable lower adjusting nut so that there is 10–20 mm (3/8–3/4 in) of free play at the end of the clutch lever. Tighten the lock nut. Any minor adjustment can be obtained with the adjusting bolt and lock nut at the clutch lever.

After adjustment, be sure all lock nuts are tightened securely.

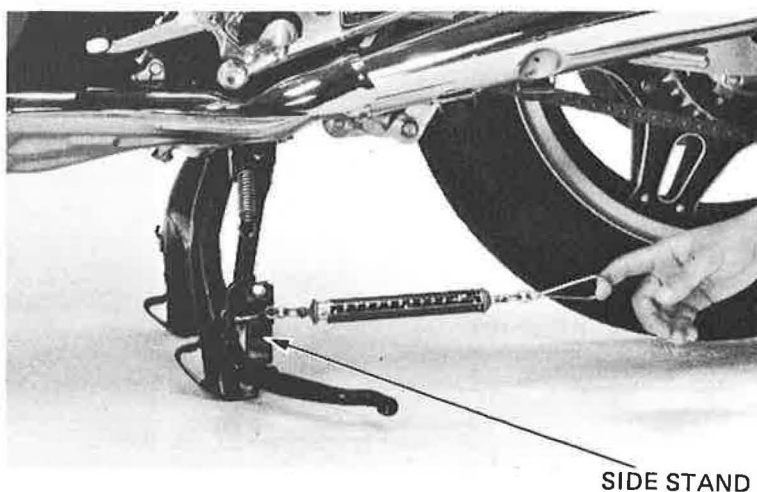
Check to see that the clutch is not slipping and is properly disengaging.



SIDE STAND

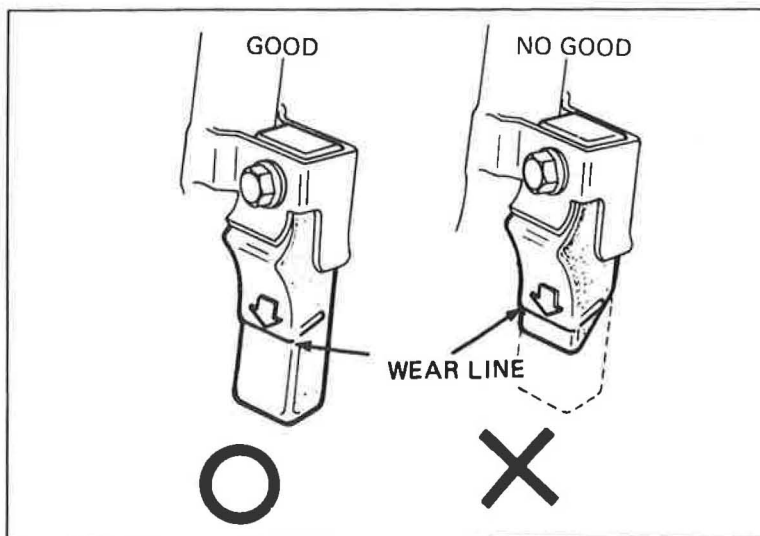
Check the rubber pad for deterioration or wear. Replace if any wear extends to the wear line as shown.

Check the side stand spring for damage and loss of tension, and the side stand assembly for freedom of movement and bending.



NOTE

When replacing, use a rubber pad with the mark "OVER 260 lbs ONLY". Spring tension is correct if the measurements fall within 1.5–2.5 kg (3.3–5.5 lb) when pulling the side stand lower end with a spring scale.





SUSPENSION

WARNING

Do not ride a vehicle with faulty suspension. Loose, worn or damaged suspension parts impair vehicle stability and rider control.

FRONT

With the front brake applied, pump the front forks up and down several times.

Place the motorcycle on the center stand.

Measure the air pressure.

STANDARD:

70 ± 20 kPa (0.7 ± 0.2 kg/cm², 10 ± 3 psi)

CAUTION:

- Use only a hand operated air pump to fill the fork tubes. Do not use compressed air.
- Maximum pressure is 300 kPa (3 kg/cm², 43 psi). Do not exceed this or fork tube component damage may occur.

Check the entire fork assembly for leaks or damage. Replace any components which cannot be repaired. Tighten all nuts and bolts.

REAR

Place the motorcycle on its center stand

Move the rear wheel sideways forcefully to see if the swing arm bushings are worn.

Replace if excessively worn.

Check the entire suspension assembly to see if it is securely mounted, and not damaged or distorted.

Tighten all nuts and bolts.

Lubricate the swing arm bushings.

Measure the air pressure.

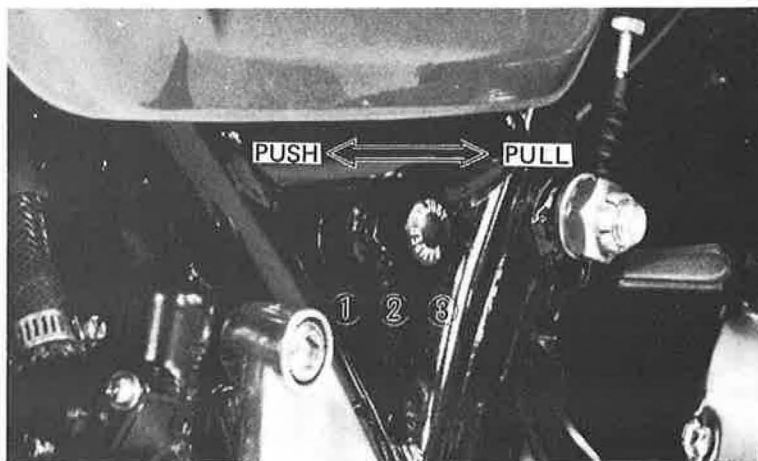
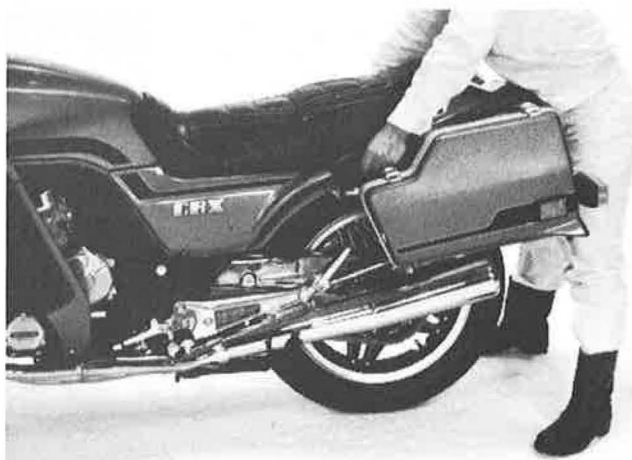
STANDARD:

200–400 kPa (2.0–4.0 kg/cm², 28–57 psi)

Adjust the rebound damping according to the following chart.

Recommended Rear Suspension Adjustment:

| Rear Air Pressure | Rider/Load | REBOUND DAMPING ADJUSTER | RIDING CONDITIONS |
|---|--|--------------------------|--------------------------------|
| 200 kPa (2.0 kg/cm ² , 28 psi) | One ↑ ↓ Up to vehicle capacity load | 1 | General or around town riding. |
| ↓ | | 2 | Highway or winding road riding |
| 400 kPa (4.0 kg/cm ² , 57 psi) | | 3 | Rough road riding |



Rebound damping adjuster



WHEELS

TIRE PRESSURE

NOTE

Tire pressure should be checked when tires are **COLD**.

Check the tire for cuts, imbedded nails, or other sharp objects.

Recommended tire pressure and tire size:

| | | |
|---|------------------|--|
| Cold tire pressure kPa (kg/cm ² , psi) | Front | 250 (2.5, 36) |
| | Rear | 250 (2.5, 36) |
| | Max load | 290 (2.9, 41) |
| Vehicle capacity load limit | 175 kg (385 lbs) | |
| Tire size | Front | 3.50V19-4PR |
| | Rear | 130/90 V18 |
| Tire brand Tubeless only | Front | GOLD SEAL F11 (DUNLOP) MaG. MOPUS-706 (BRIDGESTONE) |
| | Rear | GOLD SEAL K127 (DUNLOP) MaG. MOPUS-G508 (BRIDGESTONE) |

Check the front and rear wheels for trueness (page 14-5).

STEERING HEAD BEARINGS

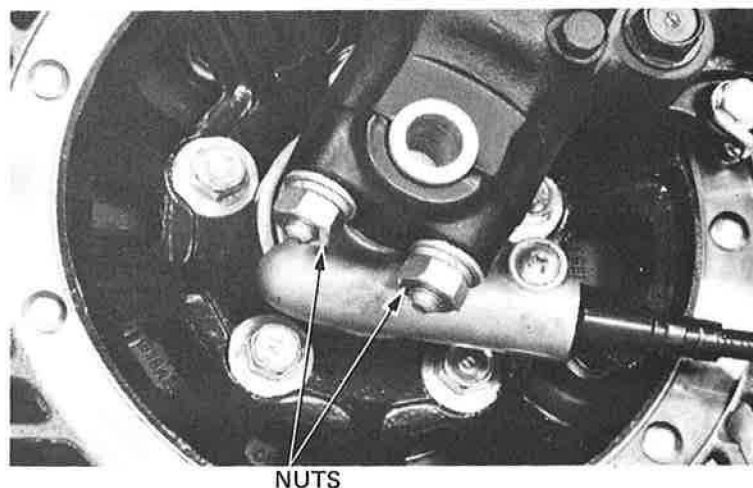
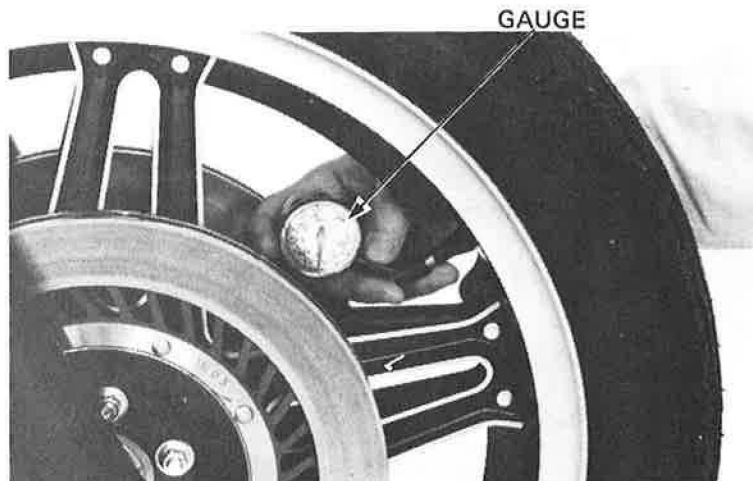
NOTE

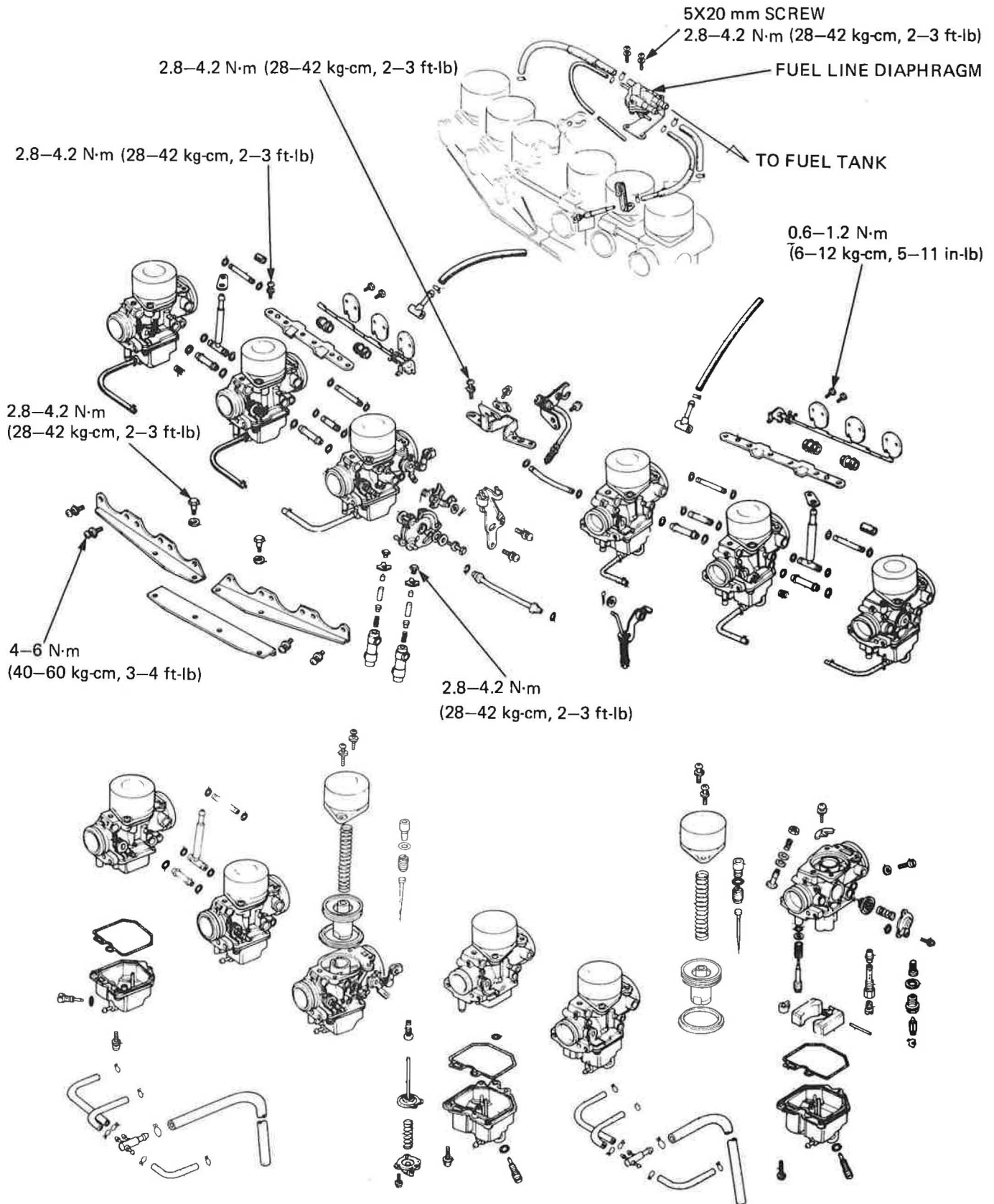
Check that the control cables do not interfere with the handlebar rotation.

Raise the front wheel off the ground.
Check that the handlebar rotates freely.
If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut with a pin spanner. (page 13-27).

NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to correct torque values.
Check all cotter pins, safety clips and all other fasteners.







| | | | |
|------------------------------|------|-----------------------------|------|
| SERVICE INFORMATION | 4-1 | FLOAT LEVEL ADJUSTMENT | 4-11 |
| TROUBLESHOOTING | 4-2 | CARBURETOR SEPARATION | 4-11 |
| CARBURETOR REMOVAL | 4-3 | LINKAGE DISASSEMBLY | 4-16 |
| FUEL LINE DIAPHRAGM | 4-5 | CARBURETOR ASSEMBLY | 4-17 |
| VACUUM CYLINDER DISASSEMBLY | 4-7 | ACCELERATOR PUMP ADJUSTMENT | 4-27 |
| FLOAT CHAMBER DISASSEMBLY | 4-8 | PILOT SCREW ADJUSTMENT | 4-28 |
| AIR CUTOFF VALVE | | LIMITER CAP INSTALLATION | 4-29 |
| DISASSEMBLY | 4-9 | HIGH ALTITUDE ADJUSTMENT | 4-30 |
| ACCELERATOR PUMP DISASSEMBLY | 4-10 | FUEL TANK | 4-31 |
| COMPONENT ASSEMBLY | 4-10 | AIR CLEANER CASE | 4-31 |

GENERAL INFORMATION

GENERAL INSTRUCTIONS

- Use caution when working with gasoline. Always work in a well-ventilated area and away from sparks or open flames.
- When disassembling fuel system parts, note the locations of the O-rings. Replace with new ones on re-assembly.
- The float bowls have drain plugs that can be loosened to drain residual gasoline.
- The carburetors are equipped with a fuel line diaphragm. After carburetor overhaul, it is necessary to crank the engine for 2-3 seconds, three times with the throttle fully closed to fill the float chambers.
- The pilot screw is factory pre-set and should not be removed unless the carburetor is overhauled.

TOOLS

Common

Float level gauge 07401-0010000

Special

Carburetor Throttle Wrench 07908-4220100
(for No. 1, 2, 3 and 4)
07908-4600000
(for No. 5 and 6)

Carburetor Pilot Screw Wrench 07908-4220200 or 07908-4220201

TORQUE VALUES

Front bracket 4-6 N·m (40-60 kg-cm, 35-52 in-lb)
Rear bracket 2.8-4.2 N·m (28-42 kg-cm, 24-36 in-lb)
Choke valve 0.6-1.2 N·m (6-12 kg-cm, 5-11 in-lb)
Front and rear brackets between three carburetors 2.8-4.2 N·m (28-42 kg-cm, 24-36 in-lb)
Throttle joint holding nut 2.8-4.2 N·m (28-42 kg-cm, 24-36 in-lb)

SPECIFICATIONS

| | |
|-------------------------|--------------------------------|
| Venturi dia. | 28 mm (1.1 in) |
| Setting mark | VB64A |
| Float level | 15.5 mm (0.61 in) |
| Main jet | # 105 |
| Idle speed | 900 ± 100 rpm |
| Throttle grip free play | 2-6 mm (0.08-0.24 in) |
| Fast idle | 2,000 ± 500 rpm after break-in |
| Pilot screw | See page 4-28 |



TROUBLESHOOTING

Engine Cranks but Won't Start

1. No fuel in tank
2. No fuel to carburetor
 - Fuel line diaphragm vent tube clogged
 - Fuel line diaphragm vacuum tube clogged
 - Clogged fuel line diaphragm
 - Clogged fuel line diaphragm check valve
3. Engine flooded with fuel
4. No spark at plug (ignition malfunction)
5. Air cleaner clogged
6. Intake air leak
7. Improper choke operation
8. Improper throttle operation

Hard Starting or Stalling after Starting

1. Improper choke operation
2. Ignition malfunction
3. Fast idle speed incorrect
4. Carburetor malfunction
5. Fuel contaminated
6. Intake air leak
7. Idle speed incorrect

Rough Idle

1. Ignition malfunction
2. Idle speed incorrect
3. Incorrect carburetor synchronization
4. Carburetor malfunction
5. Fuel contaminated

Misfiring during Acceleration

1. Ignition malfunction
2. Faulty air cutoff valve or accelerator pump

Backfiring

1. Ignition malfunction
2. Carburetor malfunction
3. Faulty air cutoff valve or accelerator pump

Poor Performance (Driveability) and Poor Fuel Economy

1. Fuel system clogged
2. Ignition malfunction
3. Faulty accelerator pump

Lean Mixture

1. Clogged fuel jets
2. Piston stuck closed
3. Faulty float valve
4. Float level low
5. Fuel cap vent blocked
6. Fuel strainer clogged
7. Restricted fuel line
8. Air vent tube clogged
9. Intake air leak

Rich Mixture

1. Clogged air jets
2. Faulty float valve
3. Float valve too high
4. Choke stuck closed
5. Stuck closed air cutoff valve
6. Clogged air cleaner



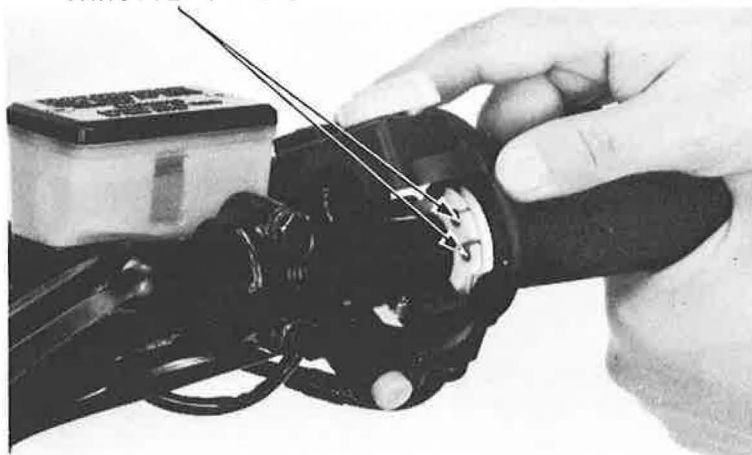
CARBURETOR REMOVAL

NOTE

To remove the carburetors, the engine must be tilted.
Refer to Section 5 "ENGINE REMOVAL AND INSTALLATION".

Remove the front fairing and leg shields.
Disconnect the throttle cables at the throttle housing before tilting the engine.
Remove the choke cable at the left handlebar switch housing.

THROTTLE CABLES



Loosen the carburetor manifold bands.
Remove the carburetor assembly with the chamber.

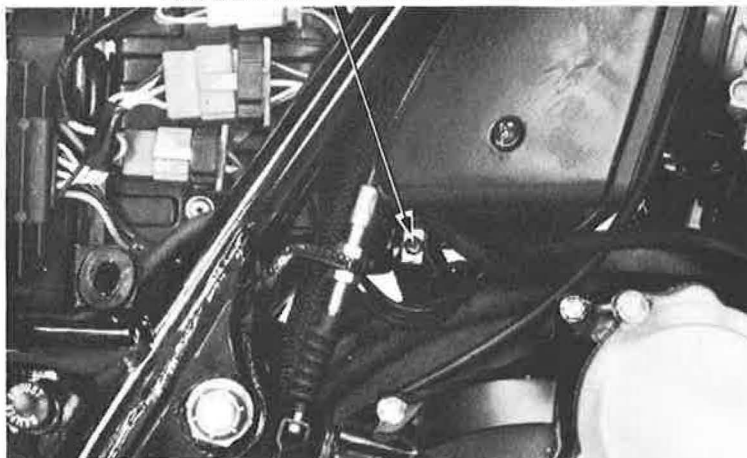
NOTE

For easy removal, loosen the cylinder head side bands.

CAUTION

Apply equal force to each carburetor.

AIR CLEANER CONNECTING BAND



Loosen the air cleaner connecting band.
(For more information, refer to Section 5).

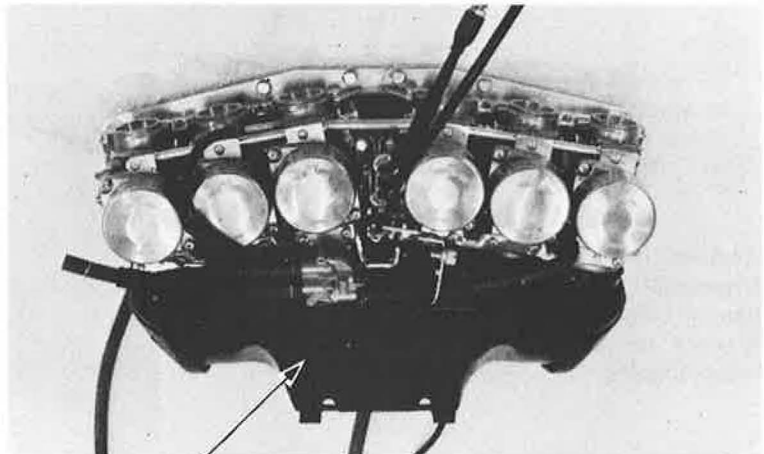
Tilt the engine.

BAND



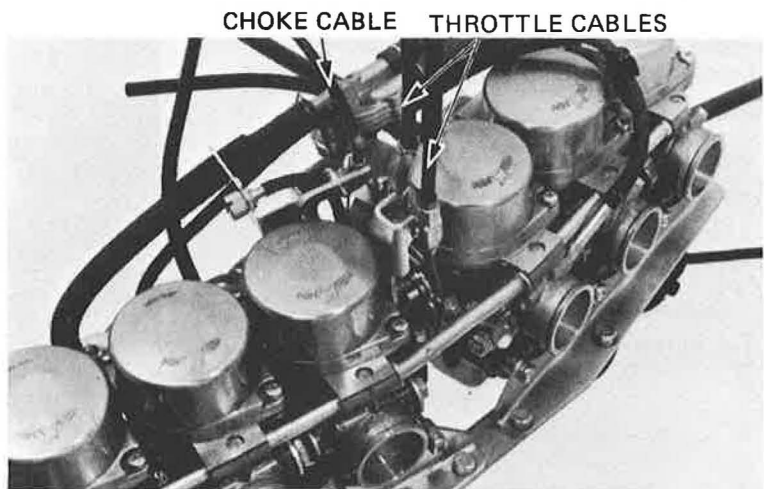


Remove the air chamber from the carburetor.



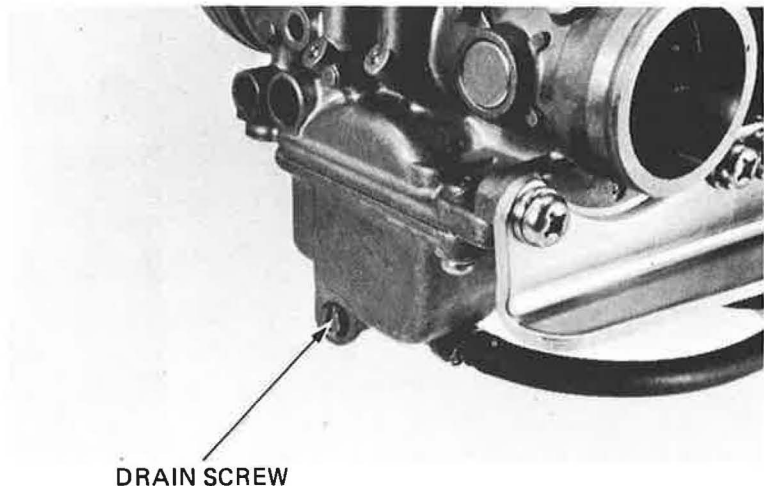
AIR CHAMBER

Disconnect the throttle and choke cables.



CHOKE CABLE THROTTLE CABLES

Drain the fuel by loosening each drain screw.



DRAIN SCREW

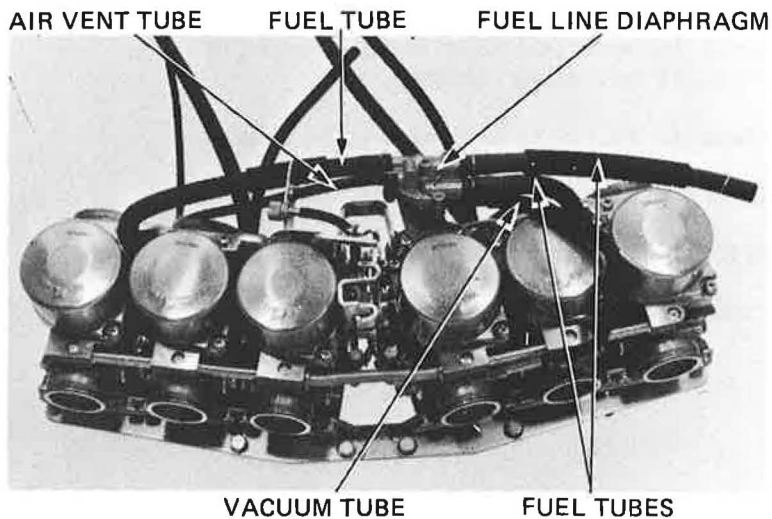


FUEL LINE DIAPHRAGM

Disconnect the fuel tubes, vacuum tubes and air vent tube.

Unscrew the screws attaching the fuel line diaphragm to the carburetors.

Remove the fuel line diaphragm.



INSPECTION

Remove the fuel line diaphragm (see above).

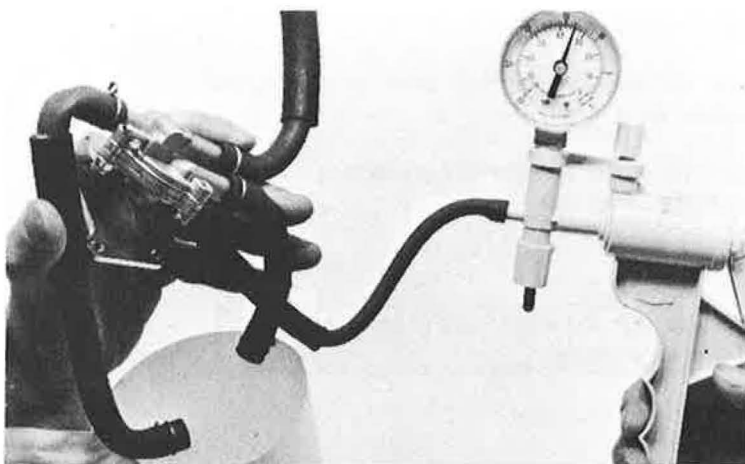
Disconnect the inlet fuel tube from the diaphragm, and connect a longer tube to the fuel tank.

Place a suitable drainage container under the outlet fuel tubes.

Turn the fuel valve on. Fuel should not flow from the outlet tubes.

Connect a vacuum gauge to the diaphragm vacuum outlet. Fuel should flow out from the outlet tubes when 10–20 mm Hg (0.4–0.8 in Hg) of vacuum is applied.

If the flow is restricted, check the diaphragm for clogged fuel or air passages and the diaphragm itself for tears.



DISASSEMBLY

Disassemble the upper body, spacer, spring and lower body by removing the screws shown.

Disassemble the spacer, being careful not to damage the diaphragm.

SCREWS

SCREW



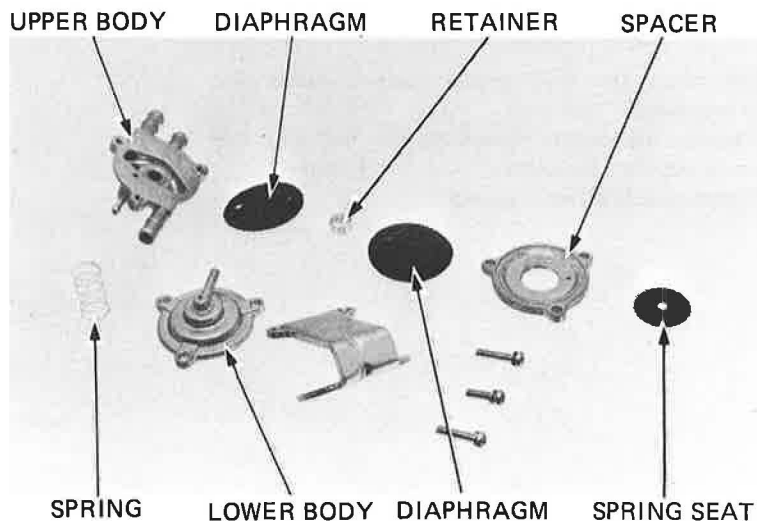
Check the upper and lower bodies for signs of damage to the diaphragm contacting faces.

Check the diaphragms for damage, cracks or other faults.

Check the bodies and spacer for clogged vent holes.

Check the diaphragm seal for damage.

Check for clogged fuel or air passages.



ASSEMBLY

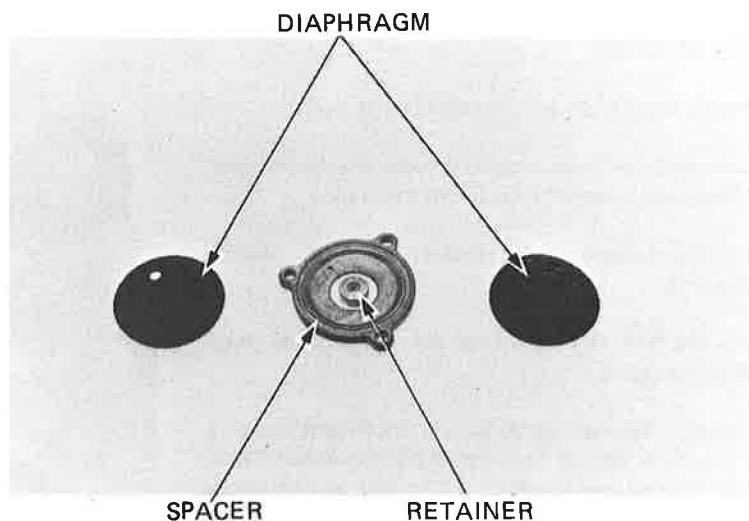
Clean all the disassembled parts in solvent and allow to dry.

Install the spacer and diaphragm retainer.

Install the spring seat.

NOTE

Check that the diaphragm is installed in the retainer properly.



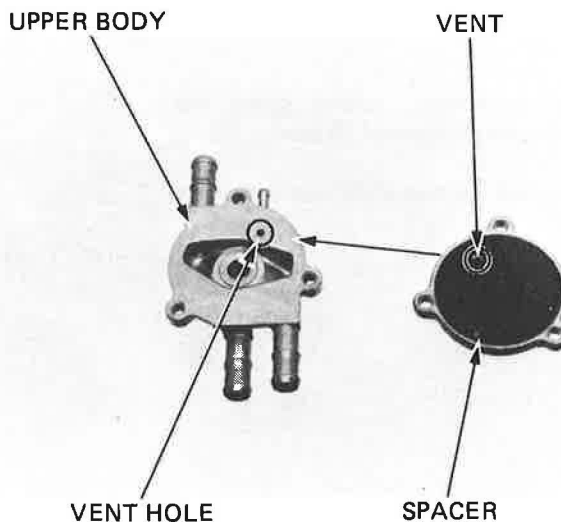
Install the spacer on the upper body.

NOTE

Align the air vent hole in the body with the air passage in the spacer.

Install the diaphragm spring and lower body.

Install the bracket and tighten the screws.





VACUUM CYLINDER DISASSEMBLY

Remove the vacuum cylinders from the carburetor bodies.

Carefully lift the vacuum piston out with the needle and compression spring.

NOTE

Inspect the vacuum piston and cylinder for wear, nicks, scratches or other damage. Make sure that the piston and jet needle move up and down freely in the cylinder.

Remove the full open stopper.

Remove the needle set screw.

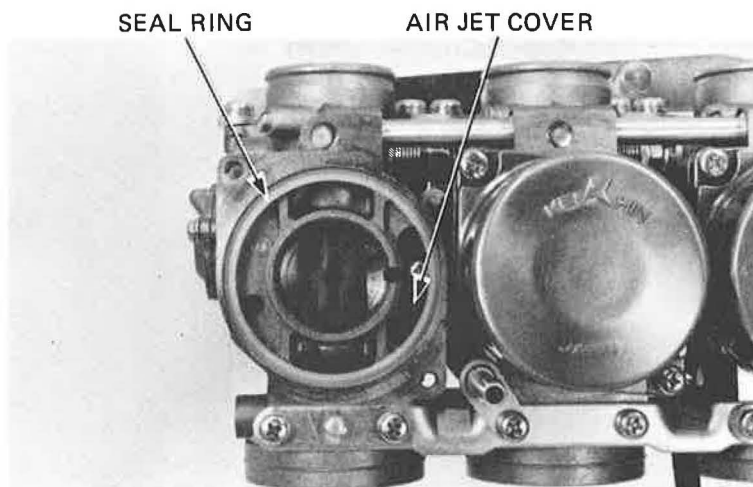
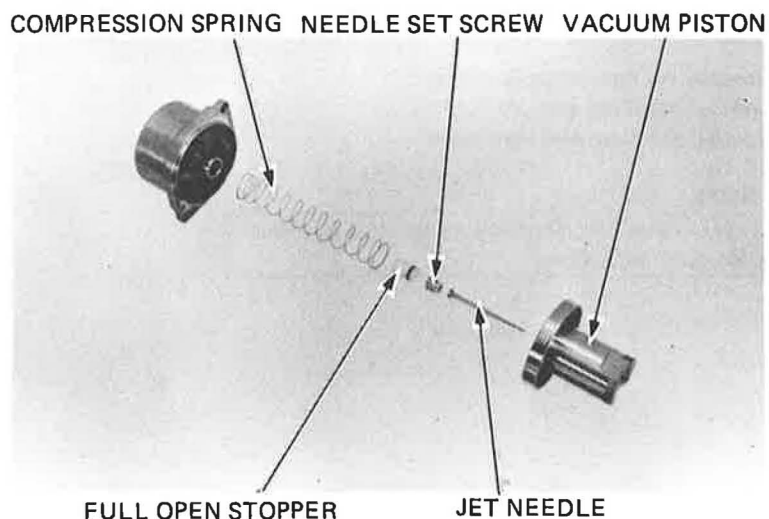
Separate the jet needle from the piston.

NOTE

Inspect the needle and seat for deposits, bending, grooves, or other damage.

Carefully lift the seal ring off the carburetor body.

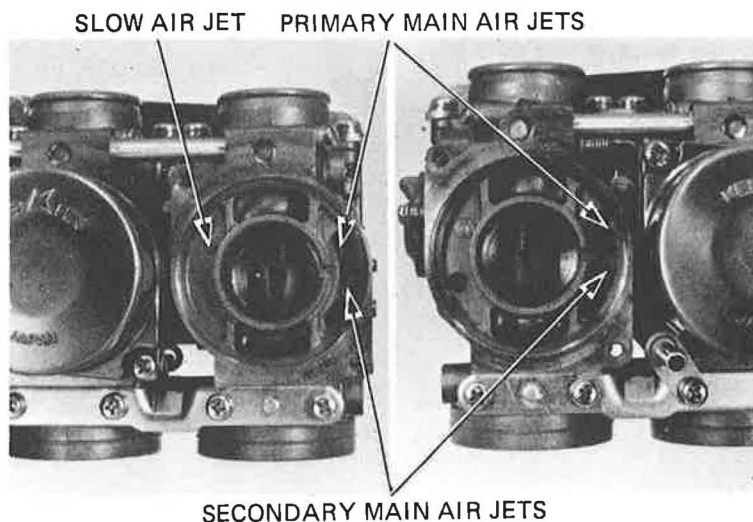
Remove the air jet cover.



Blow open the primary main air jet, secondary main air jet and slow air jet with compressed air.

NOTE

Never clean carburetor jets with wire or drills. This will enlarge the openings and result in excessive fuel consumption.



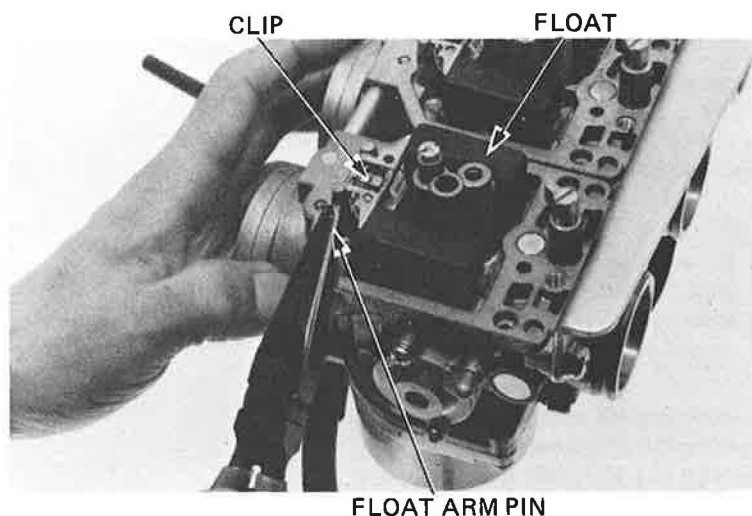


FLOAT CHAMBER DISASSEMBLY

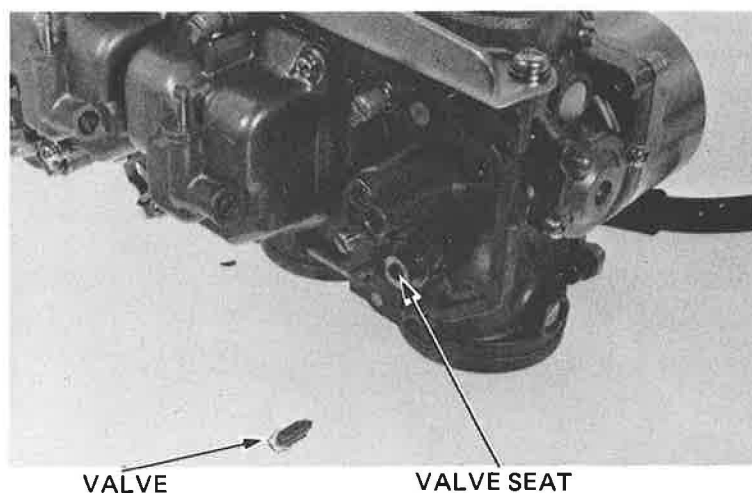
Remove the float chamber body.
Remove the float arm pin.
Remove the float and float valve.

NOTE

Remember the direction of the clip to ensure correct reassembly.



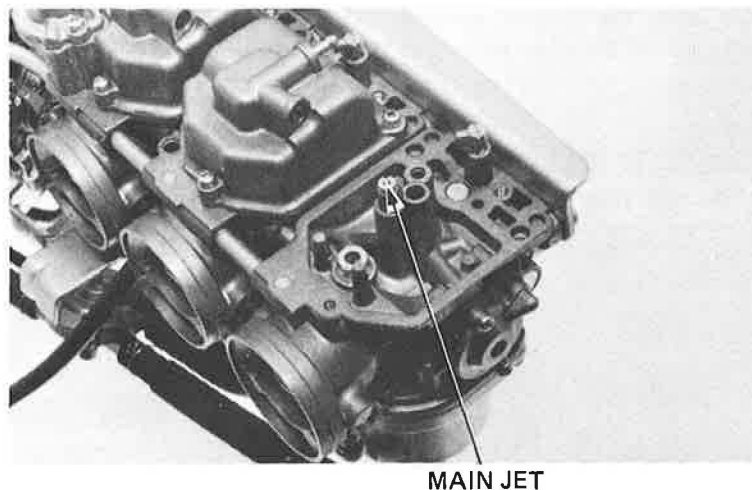
Inspect the float valve and seat for grooves, nicks or deposits.
Inspect the float valve for operation.



Remove the secondary main jet.
Remove the primary main jet.
Remove the slow jet plug.

NOTE

The slow jet is a press fit. It cannot be removed.

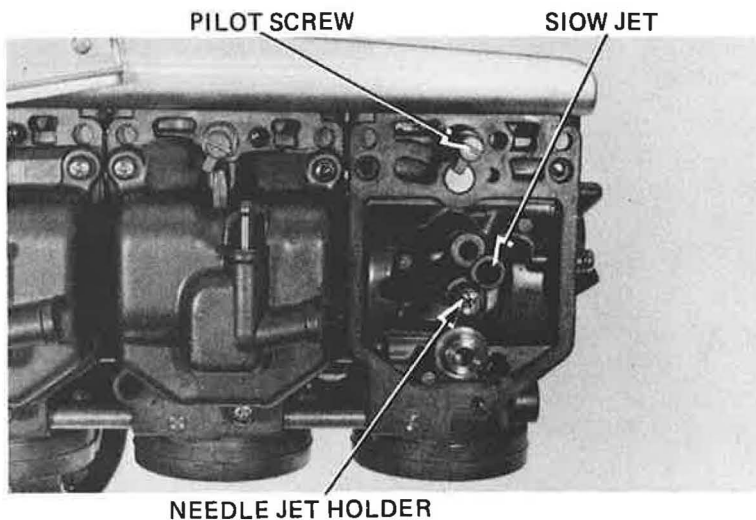




Remove the needle jet holder.
Tilt the carburetor to remove the needle jet.
Blow all jets and body passages with compressed air.

NOTE

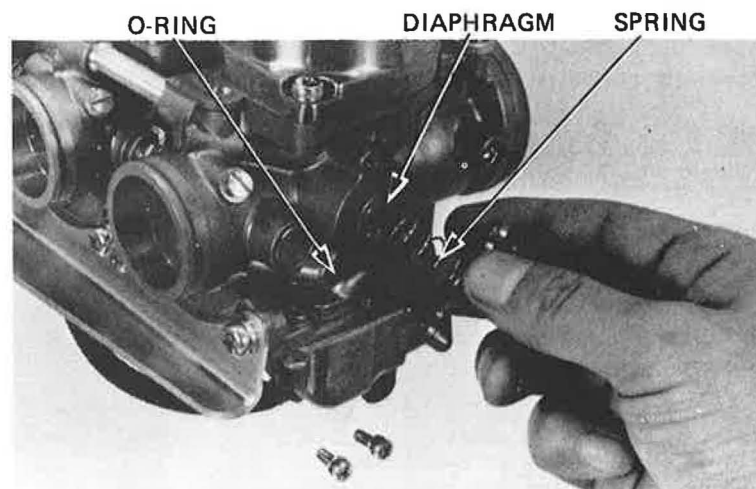
- If the needle jet is difficult to remove, carefully press the needle jet from the cylinder side with a wooden stick.
- Before removing the pilot screw, record the number of turns until it seats. Do not damage the pilot screw threads when removing the plain washer and O-ring.

**AIR CUTOFF VALVE DISASSEMBLY**

Remove the air cutoff valve cover and spring.

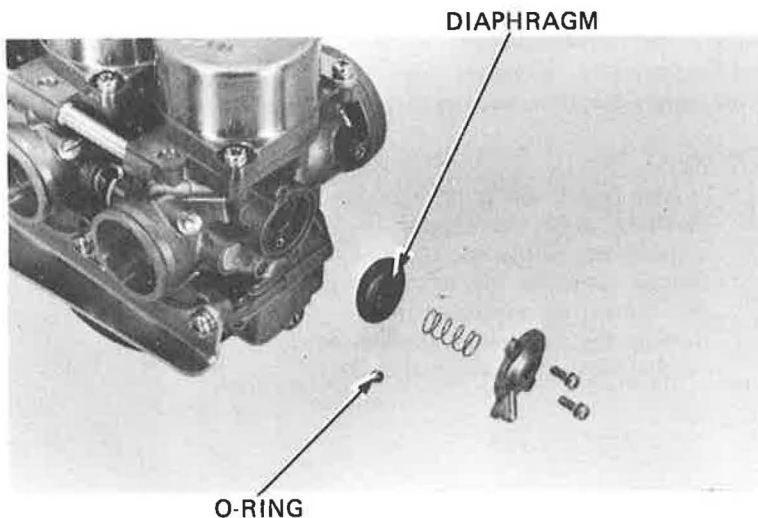


Remove the diaphragm and O-ring.



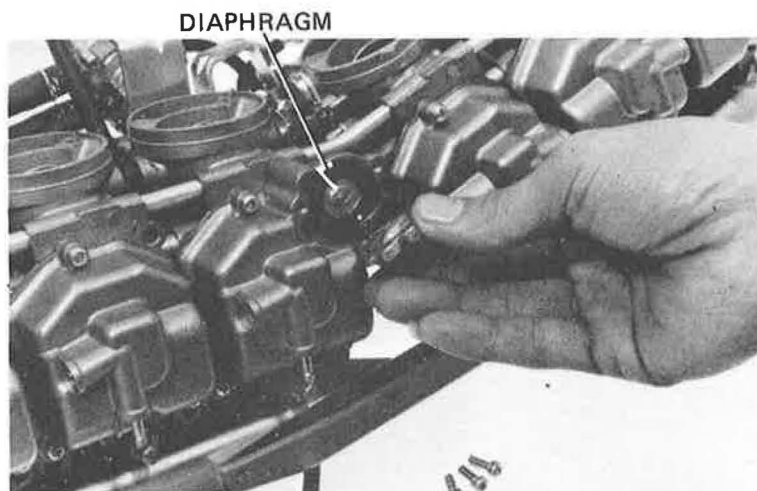


Inspect the diaphragm and valve for cracks and brittleness.



ACCELERATOR PUMP DISASSEMBLY

Remove the accelerator pump cover and spring.



Remove the diaphragm.
Inspect the diaphragm for cracks and brittleness.

NOTE

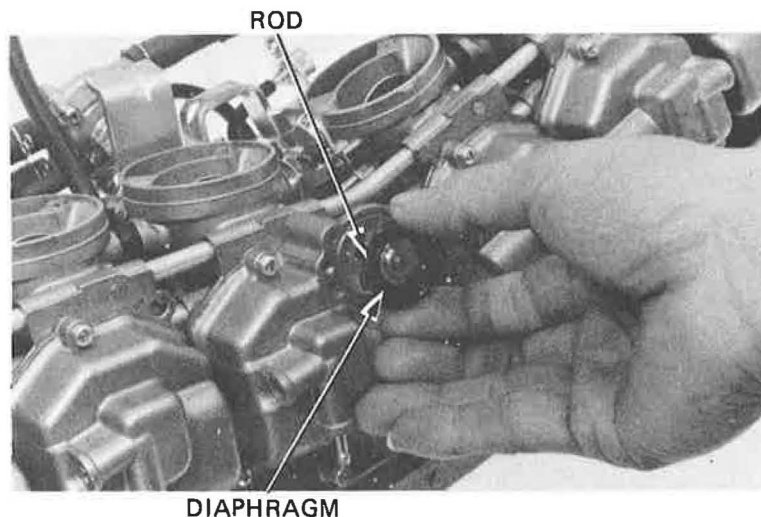
Be sure the rod is not bent.

COMPONENT ASSEMBLY

To assemble the accelerator pump, air cutoff valve, float chamber and vacuum cylinder, reverse the disassembly procedure.

NOTE

When installing the air cutoff valve O-ring, make sure the flat surface is toward the body.





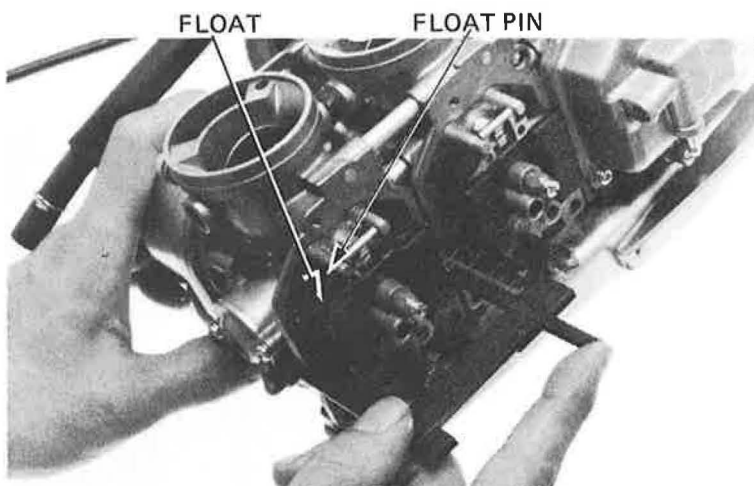
FLOAT LEVEL ADJUSTMENT

Adjust the float level by bending the float arm carefully until the float tip just contacts the float valve.

FLOAT LEVEL: 15.5 mm (0.61 in)

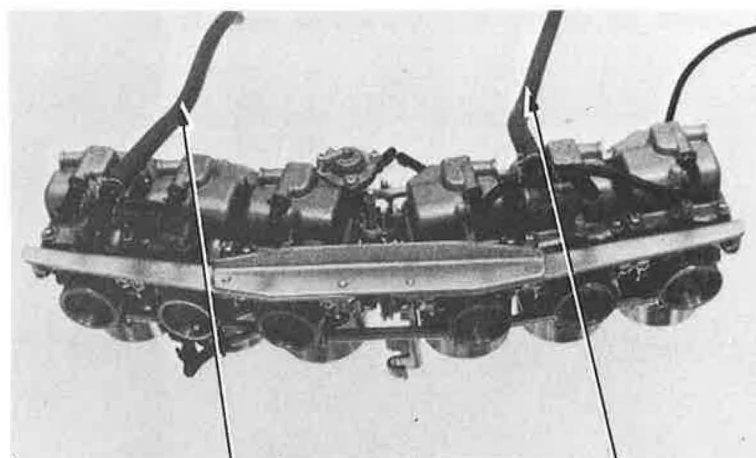
NOTE

Before adjusting, remove the adjacent chambers.



CARBURETOR SEPARATION

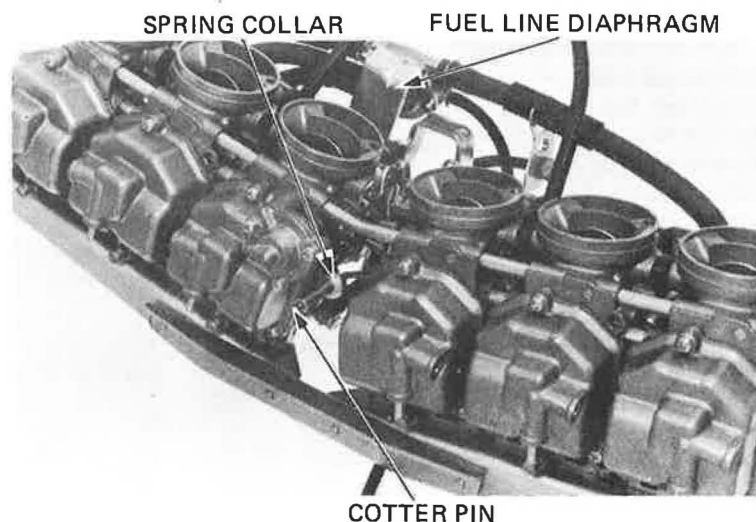
Disconnect the overflow tubes from the float chambers.



Remove the cotter pin from the accelerator pump rod.

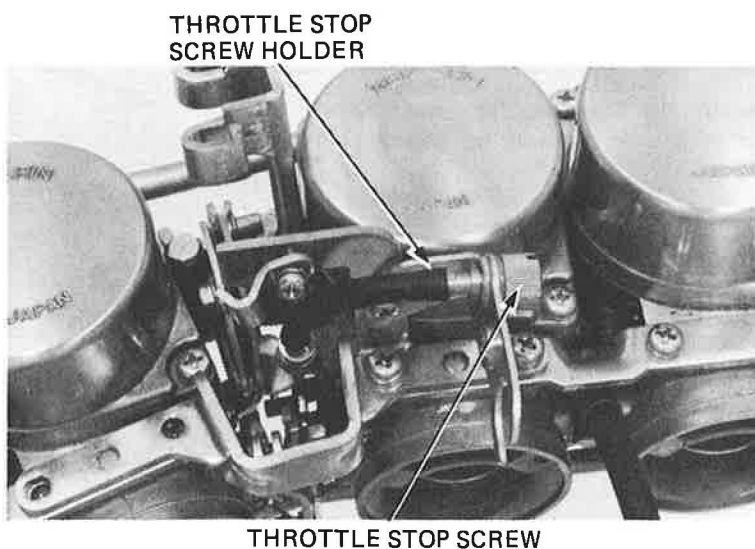
Remove the plain washer, spring and spring collar.

Remove the fuel line diaphragm (page 4-5).

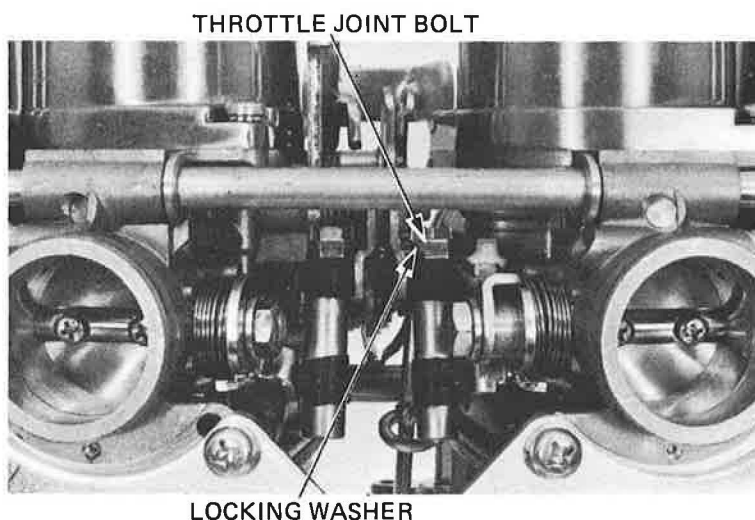




Remove the throttle stop screw holder.
Turn the throttle stop screw out.



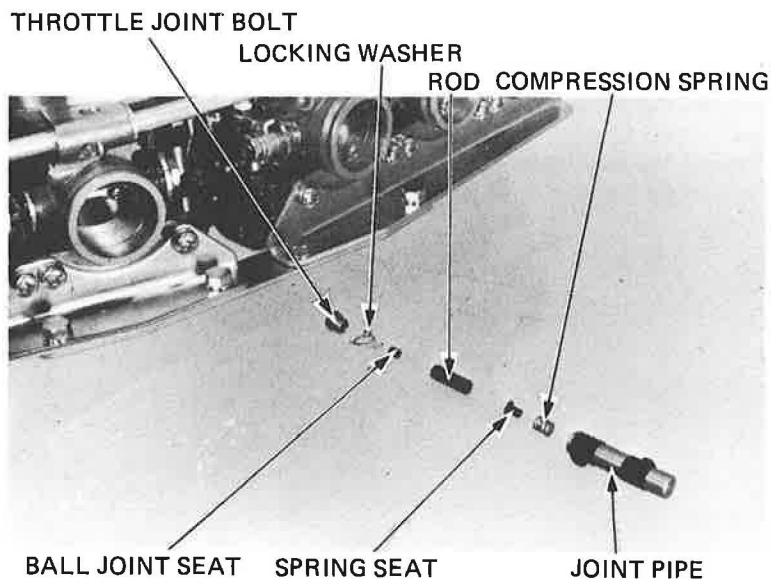
Straighten the throttle joint bolt locking washer tabs.



Loosen the throttle joint bolt.
Remove the locking washer and ball joint seat.
Disconnect the ball joint of the throttle link from the throttle joint pipe.
Remove the rod.
Disconnect the throttle joint pipe from the No. 3 carburetor throttle linkage.
Note each parts location to insure original assembly.

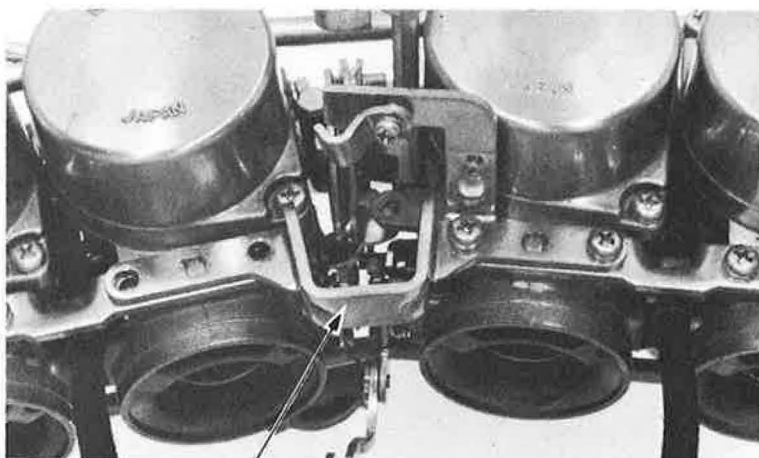
NOTE

For easy removal, hold the joint pipe and turn the throttle link.



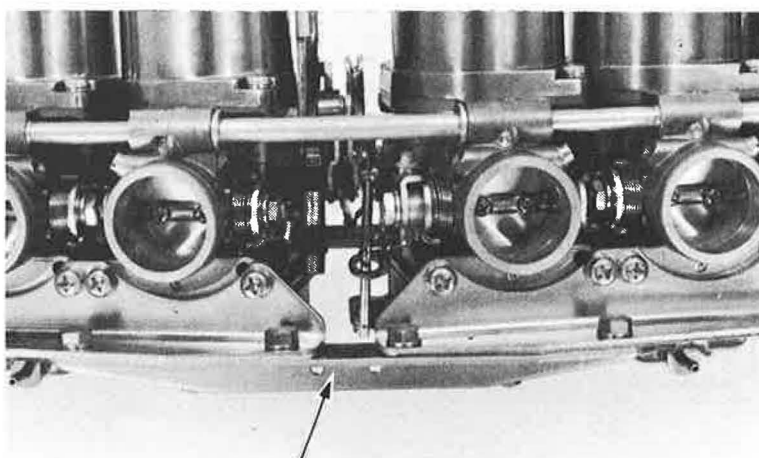


Remove the rear bracket.



REAR BRACKET

Remove the front bracket.

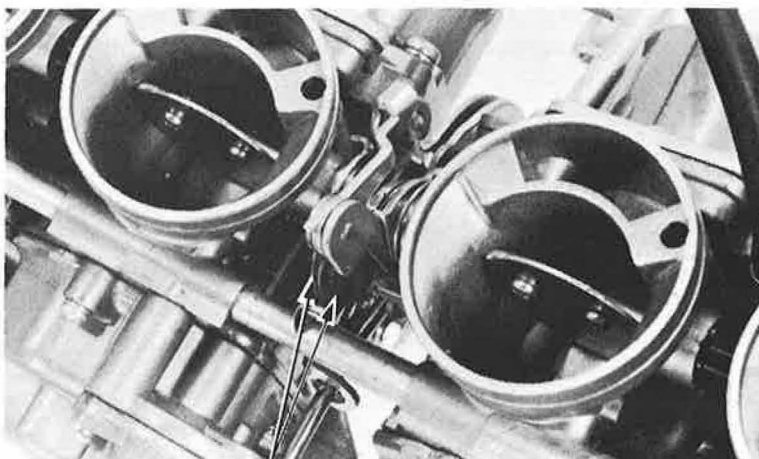


FRONT BRACKET

Carefully separate the carburetors.

CAUTION

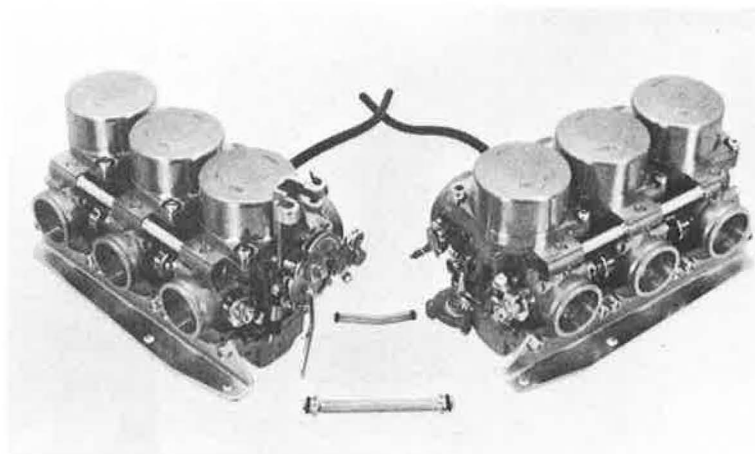
- *Separate the carburetor horizontally to prevent damage to the fuel and air joint pipes and choke link. Then, tilt the right carburetor assembly to clear the accelerator pump rod.*
- *Do not bend the accelerator pump rod.*



CHOKE LINKS



Blow the air and fuel passages with compressed air.



NOTE

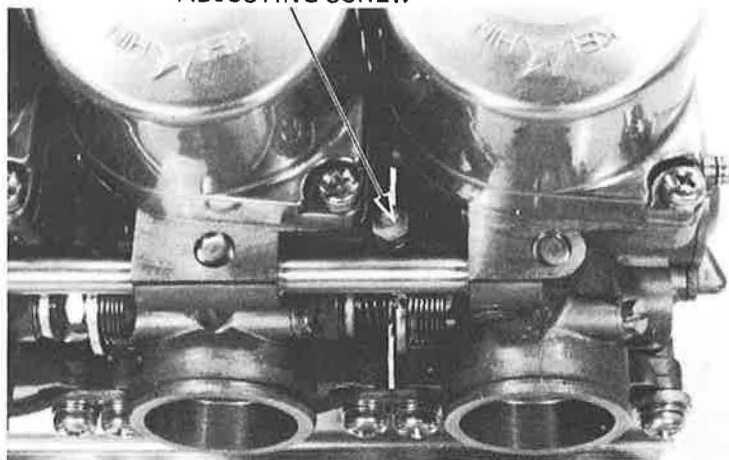
The separation of the No. 1, 2 and 3 carburetors is given here. The procedure is similar for No. 4, 5 and 6 carburetors.

Loosen the synchronization adjusting screw lock nuts and adjusting screw with the carburetor throttle wrench until there is no tension.

NOTE

Turn the synchronization screws in until they seat and note the number of turns to ensure correct repositioning.

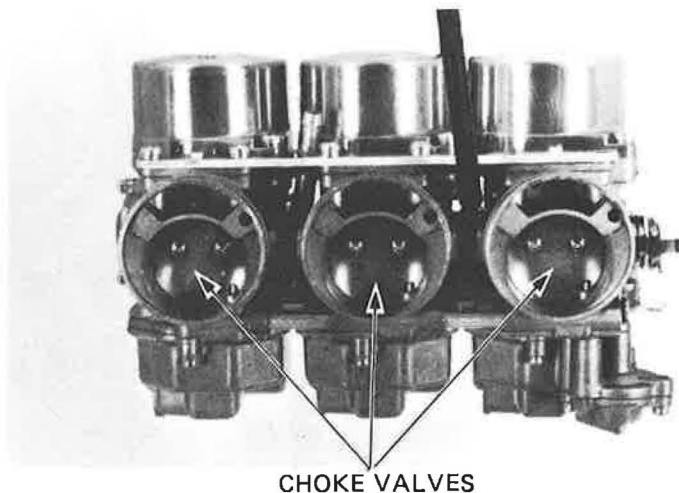
SYNCHRONIZATION
ADJUSTING SCREW



Cut off the staked ends of the choke valve screws. Remove the choke valves.

NOTE

Do not allow filings to enter the carburetors.



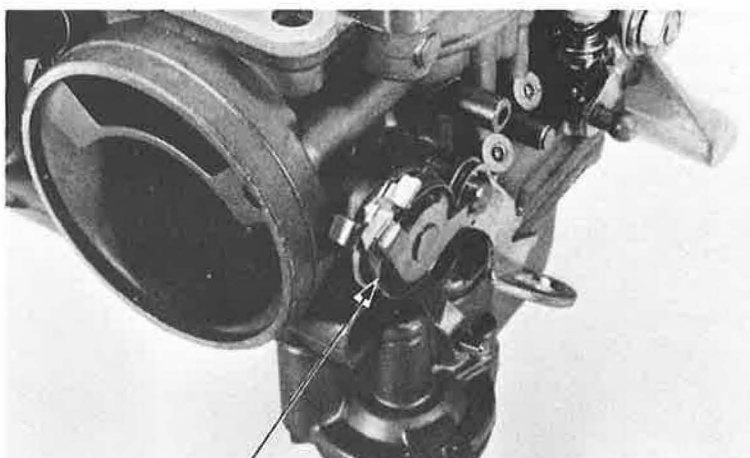
CHOKE VALVES



Remove the choke relief spring from the choke link and pull the choke shaft out.

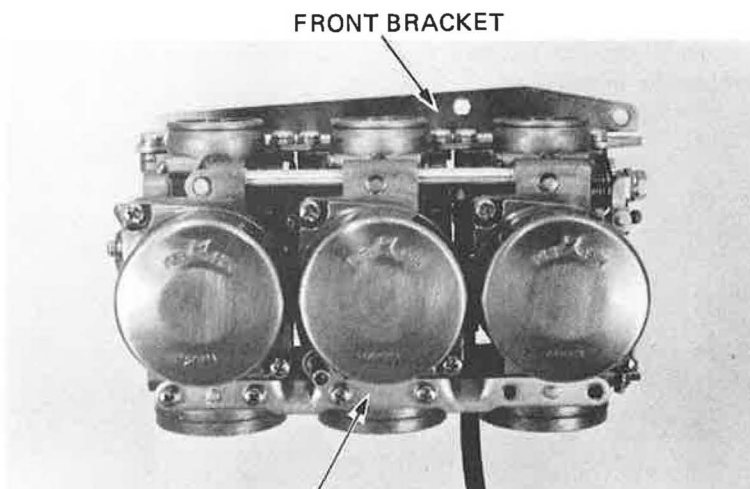
CAUTION

Do not reuse the choke shaft, choke valves and screws.



RELIEF SPRING

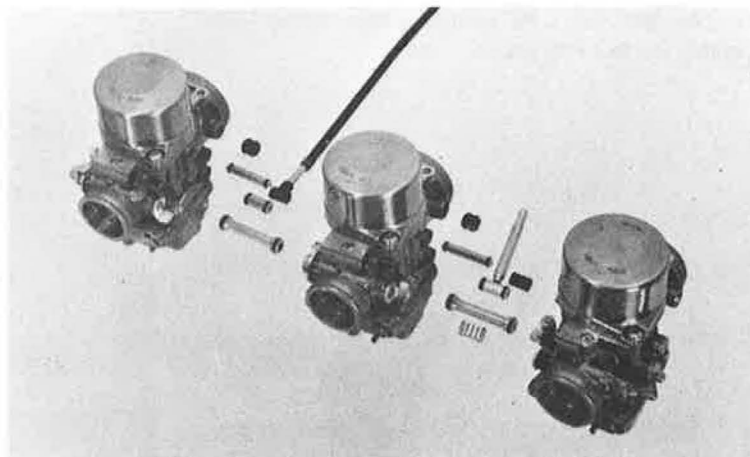
Remove the rear and front brackets.



FRONT BRACKET

REAR BRACKET

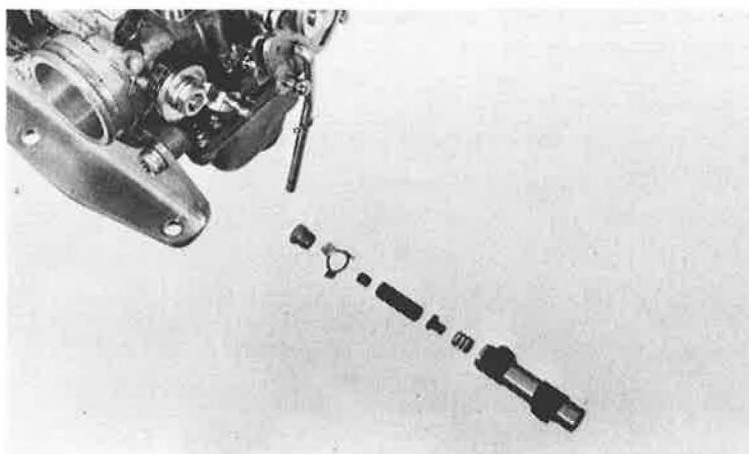
Carefully separate the carburetors.
Blow the air and fuel joint pipes with compressed air.





LINKAGE DISASSEMBLY

Remove the right throttle joint, using the same procedure as for the left throttle joint.



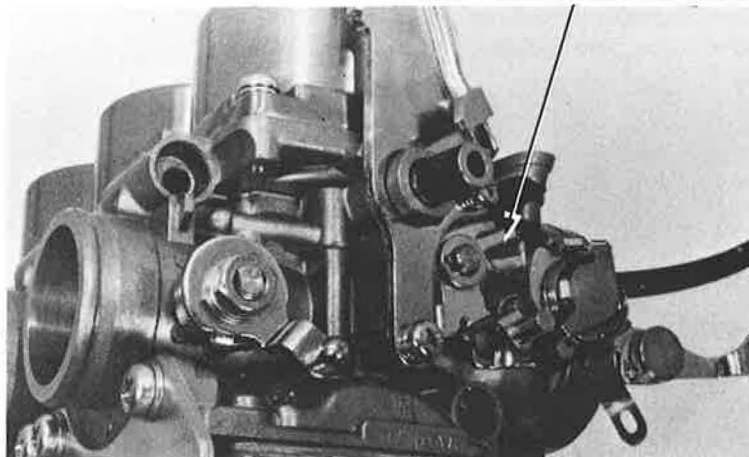
Remove the throttle link bolt.
Remove the throttle link.

THROTTLE LINK



Remove the fast idle adjusting arm cotter pin.
Remove the fast idle adjusting arm.

FAST IDLE ADJUSTING ARM





CARBURETOR ASSEMBLY

NOTE

- Assemble one set of three carburetors at a time.
- No. 1, 2 and 3 carburetor assembly is shown here. The procedure is similar for the No. 4, 5 and 6 carburetors.

Install new O-rings on the air and fuel joint pipes securely.

Install the air cutoff valve joint, fuel joint, accelerator pump joint and air vent pipes on the No. 3 carburetor.

Install the choke dust tube.

NOTE

Apply a thin coating of oil to the O-rings.

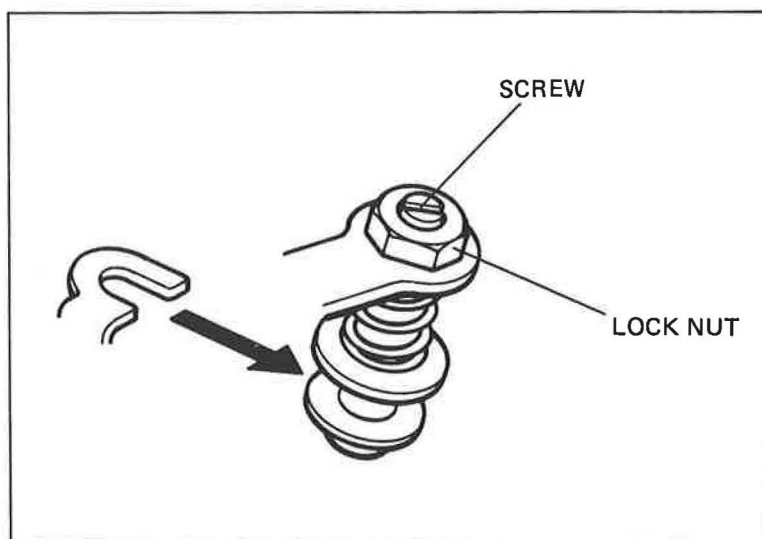
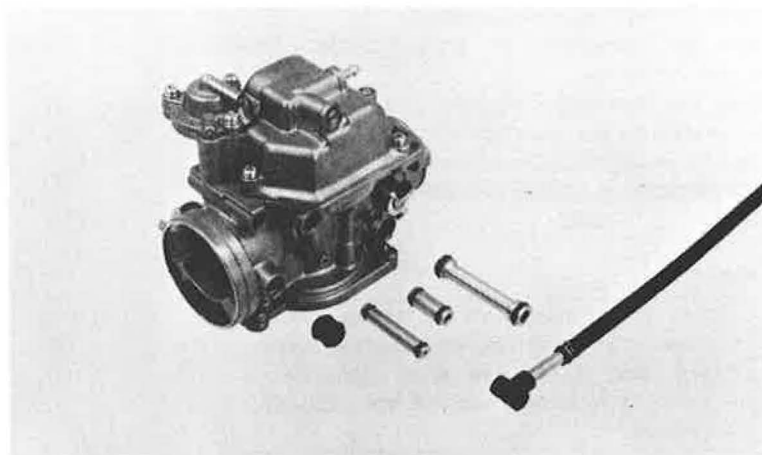
Loosen the synchronization adjusting screw until there is no tension.

Insert the No. 3 carburetor throttle link between the plain washers.

Assemble the No. 2 and No. 3 carburetors, pressing them together carefully.

NOTE

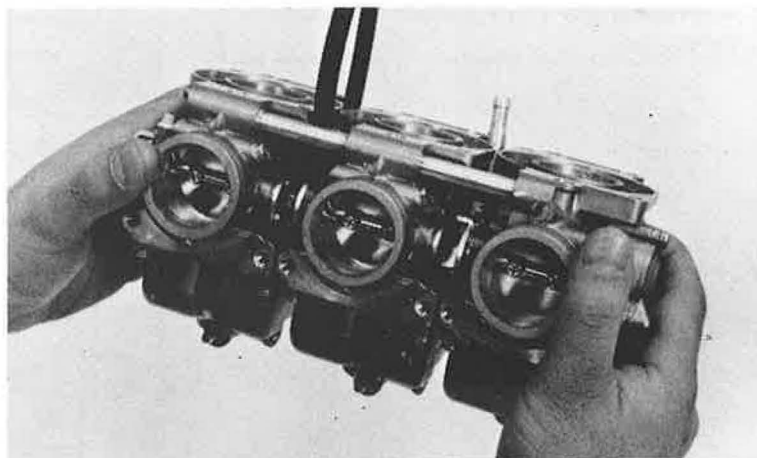
The large washer should be positioned on the spring side.



Attach the No. 1 carburetor to the No. 2 carburetor, pressing them together carefully.

NOTE

Check the condition of the O-rings and choke dust tubes.





Install the front bracket loosely.

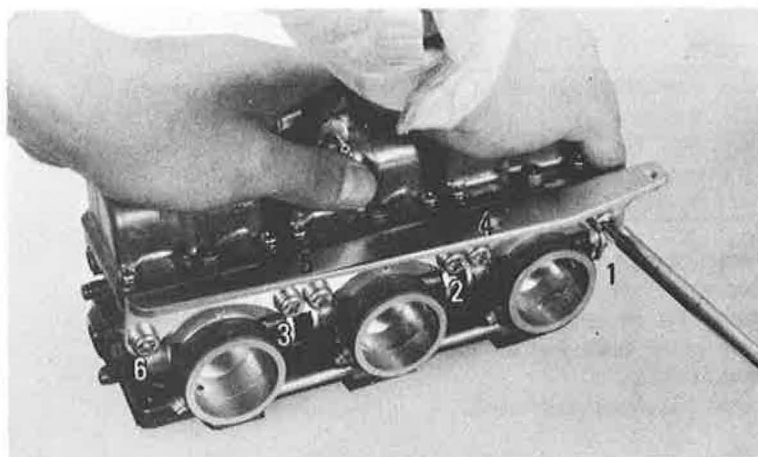
Place the carburetors on a flat surface with the float chamber up.

Press the carburetors together equally and tighten the screws in the sequence shown in two or more steps to prevent carburetor misalignment.

TORQUE: 4–6 N·m (40–60 kg-cm, 35–52 in-lb)

NOTE

Insert the choke shaft to ensure correct carburetor alignment before tightening screws. Check that the choke shaft operation is smooth. If it is not, recheck the carburetor alignment.

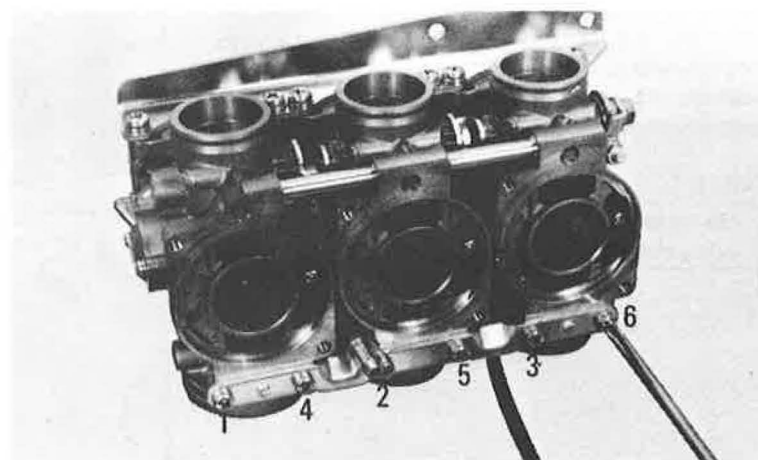


Install the rear bracket using the same procedure as for the front bracket.

TORQUE: 2.8–4.2 N·m (28–42 kg-cm, 24–36 in-lb)

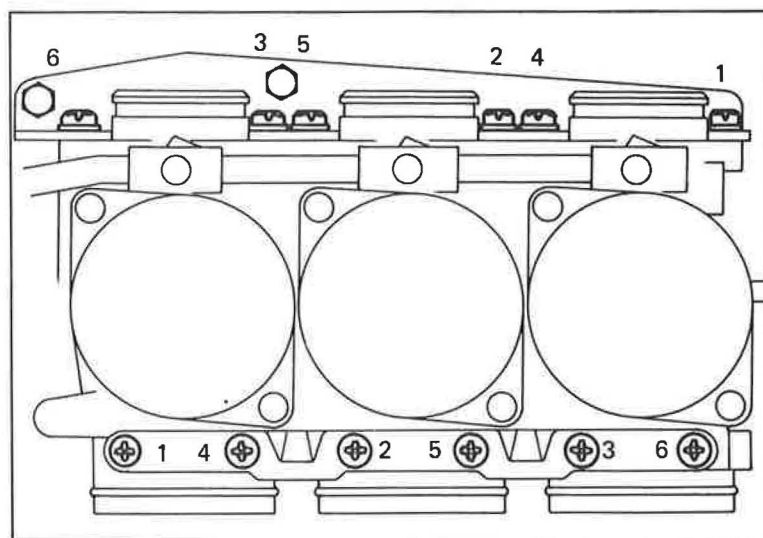
NOTE

No. 3 and No. 4 carburetors require 5 x 16 mm screws. The other carburetors require 5 x 12 mm screws.



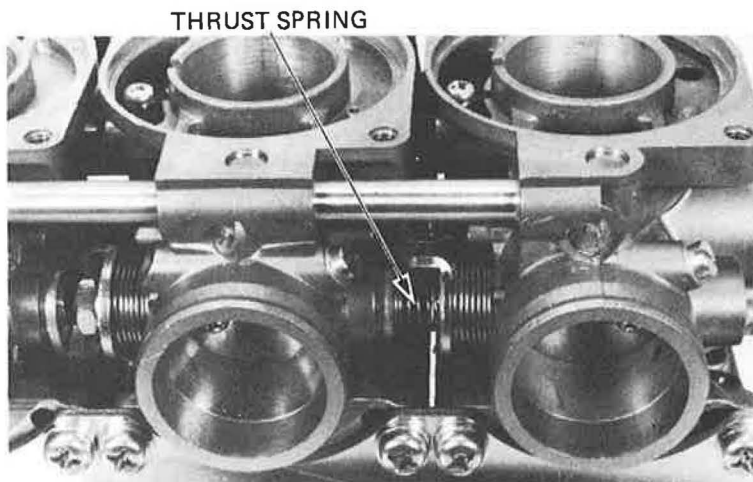
NOTE

Right carburetor screw tightening sequence is shown here.





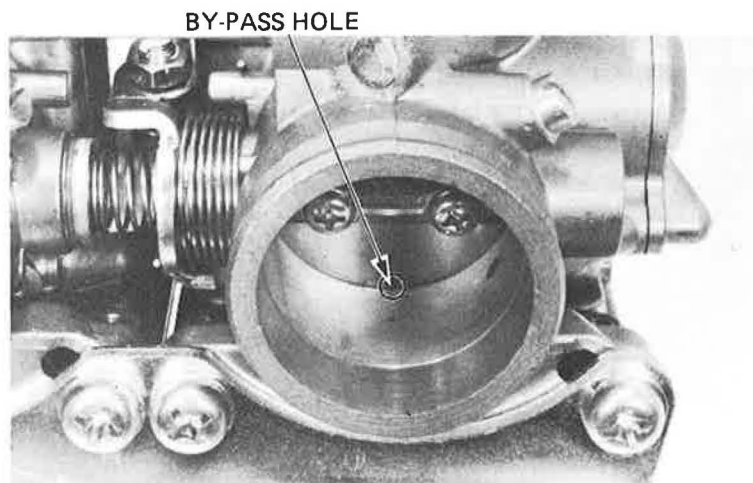
Install the thrust spring between the No. 1 and No. 2 carburetor throttle valve links.



Turn each synchronization adjusting screw to its original position as noted during disassembly.

NOTE

Make each distance between the by-pass hole in the carburetor body and throttle valve equal when assembling new carburetors.

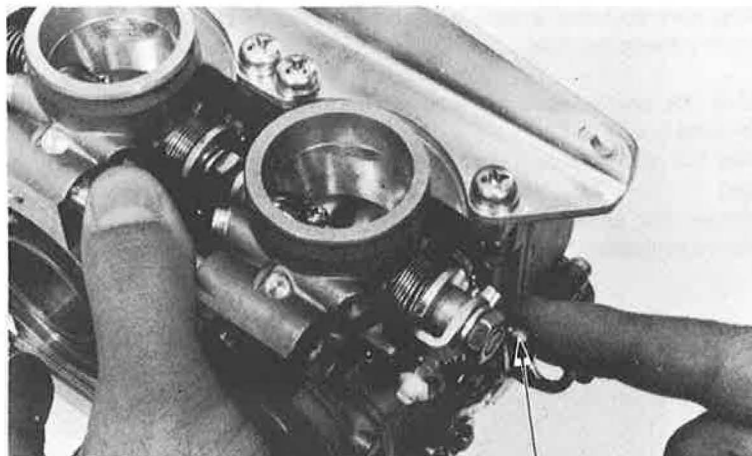


Inspect throttle operation as described below:

- Open the throttle slightly by pressing the No. 3 carburetor ball joint. Then release the throttle.
- Make sure that it returns smoothly.
- Make sure that there is no drag when opening and closing the throttle.

Install a new choke shaft.

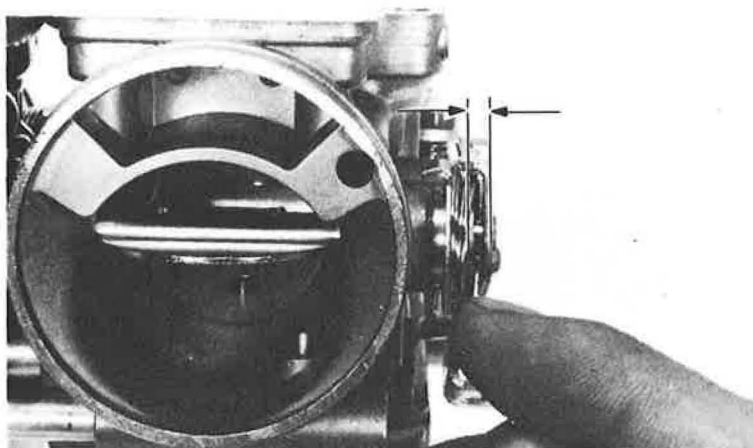
Check that choke shaft operation is smooth and it does not bind during installation. If it binds, the carburetors may not be properly aligned or the shaft may be bent.





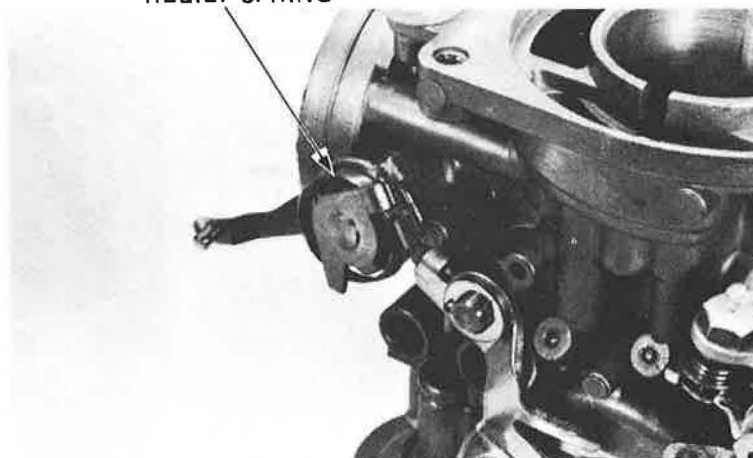
Slide the choke relief spring over the choke shaft.
Install the choke shaft.

Install the choke valve, but do not tighten the bolts.
Make sure that the clearance between the choke
shaft lever and carburetor body is approximately
1 mm (0.04 in).



Attach the choke relief spring to the choke link and
choke shaft lever.

RELIEF SPRING

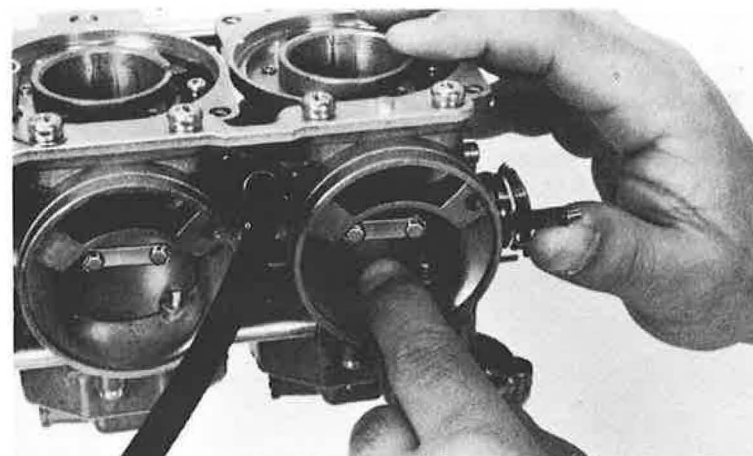


Make sure that choke valve operation is smooth by
moving the choke link.

Close the choke valve by turning the choke link.
Hold the choke link.

Press the choke valve end to the fully opened posi-
tion.

Release the choke valve, then make sure that it
returns smoothly.





Tighten the choke valve bolts.

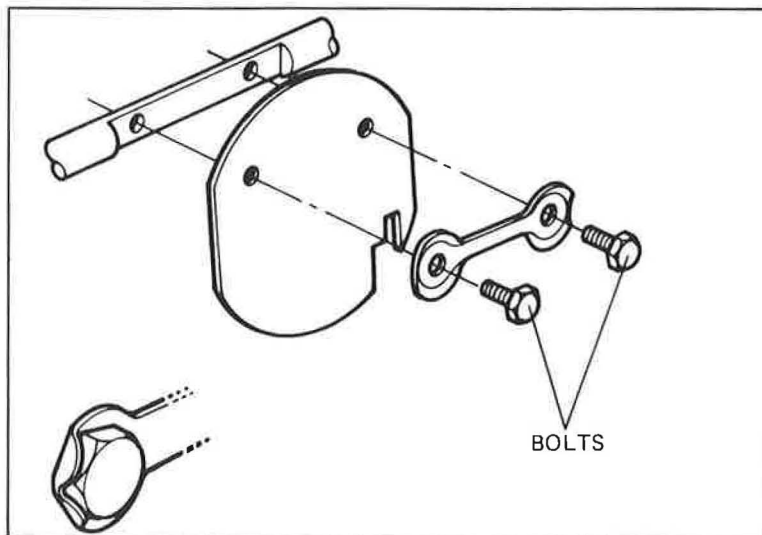
TROUBLE: 0.6–1.2 N·m (6–12 kg·cm, 5–11 in·lb)

Fold the tabs of the lock washer up.

Recheck the throttle and choke operation.

NOTE

The choke valve bolts and lock washer are for rebuilding assembly only. The original assembly uses staked screws.

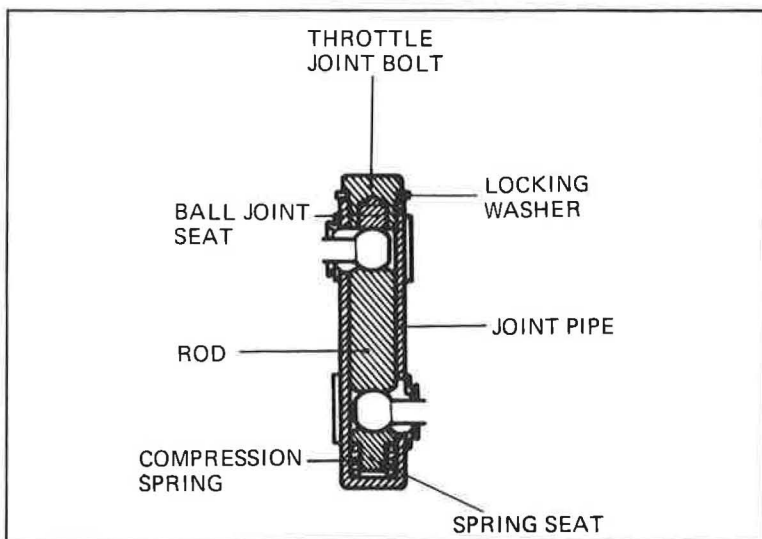


Loosen the No. 3 and No. 4 carburetor rear bracket screws.

Connect the throttle joint to the throttle link.

CAUTION

- Do not damage the ball joints and rubber grommets.
- Do not allow dust in the throttle joint pipe.
- Use a new locking washer.



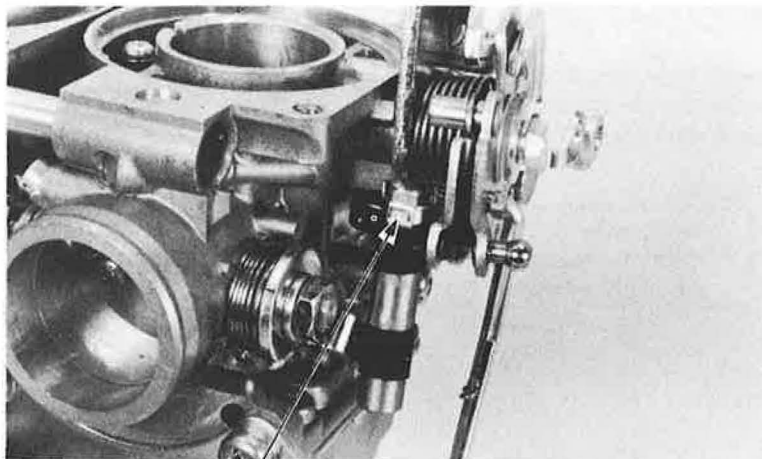
Tighten the throttle joint bolt.

TORQUE: 2.8–4.2 N·m (28–42 kg·cm, 24–36 in·lb)

Secure the bolt by bending the tabs of the locking washer.

NOTE

- Bend the two small tabs up against the bolt head.
- Bend the center tab over the throttle joint flat.



LOCKING WASHER



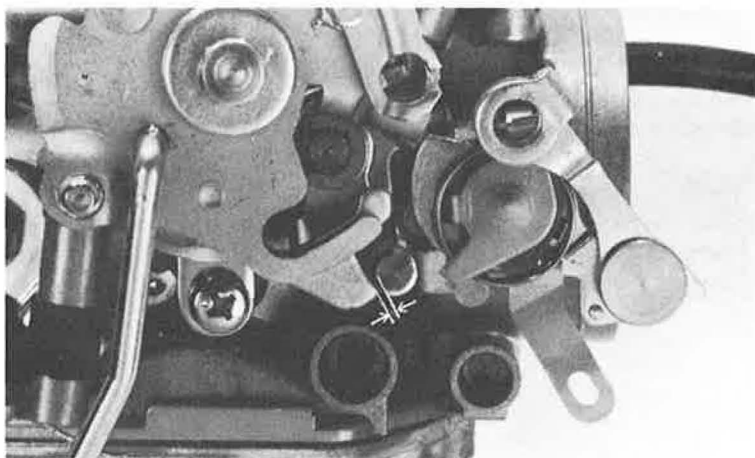
FAST IDLE ADJUSTMENT

FAST IDLE: 2000 \pm 500 rpm (after break-in)

Close the throttle valve and open the choke valve. Measure the clearance between the throttle link and fast idle adjusting arm pin.

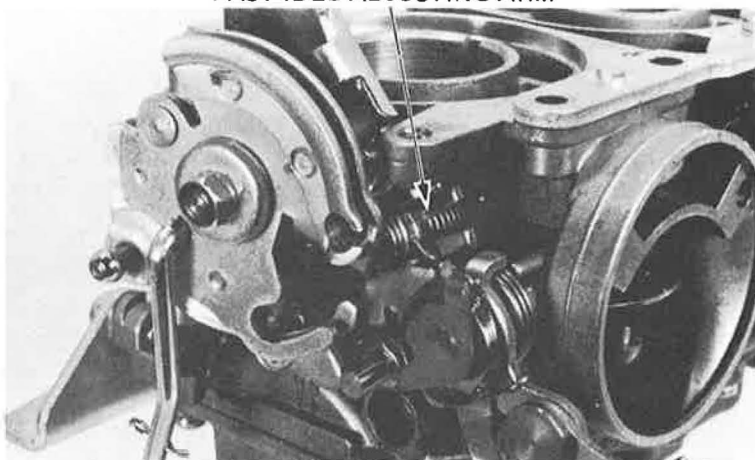
SPECIFIED CLEARANCE:

0.7–1.0 mm (0.003–0.04 in)



Adjust by opening and closing the fork end of the fast idle adjusting arm.

FAST IDLE ADJUSTING ARM

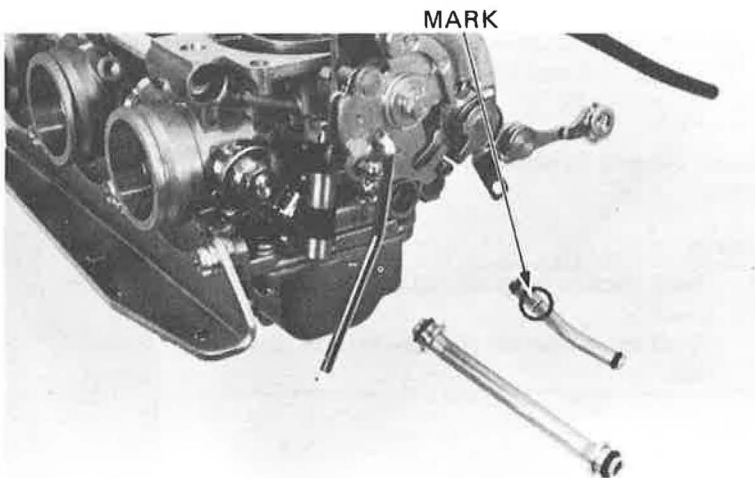


INSTALLATION

Install new O-rings on the air and fuel joint pipes. Install the air cutoff valve joint pipe and accelerator pump joint pipe on the No. 4 carburetor.

NOTE

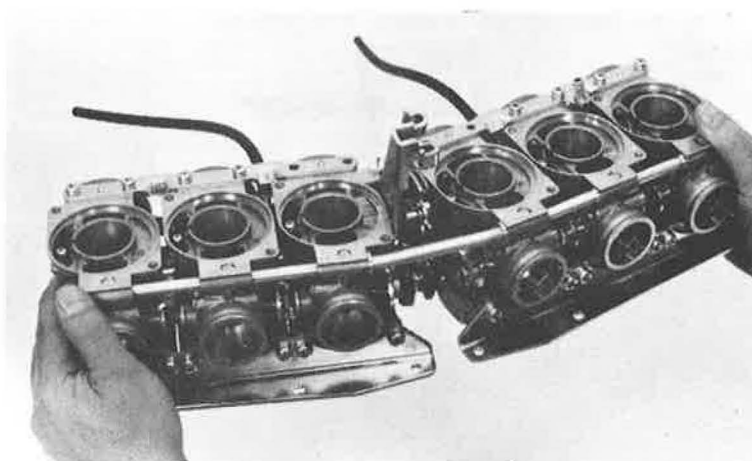
- Apply a thin coating of oil to the O-rings.
- Install the accelerator pump joint pipe with the mark toward the No. 4 carburetor.



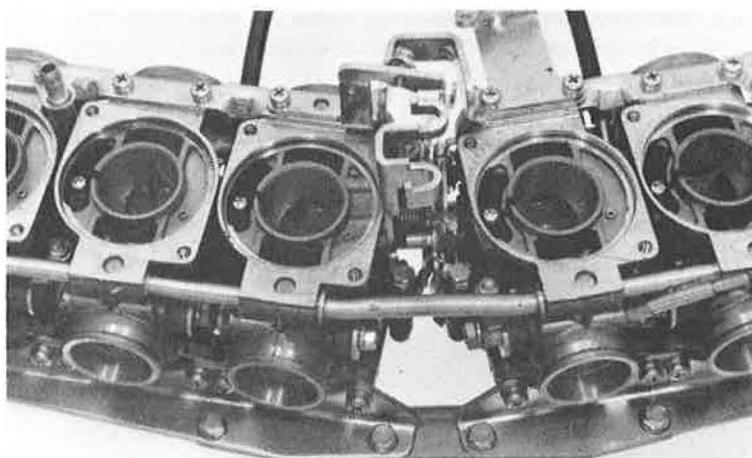


Insert the accelerator pump rod.
Position the right and left carburetor assemblies properly, aligning the pipes and choke link.

Press the assemblies together carefully.



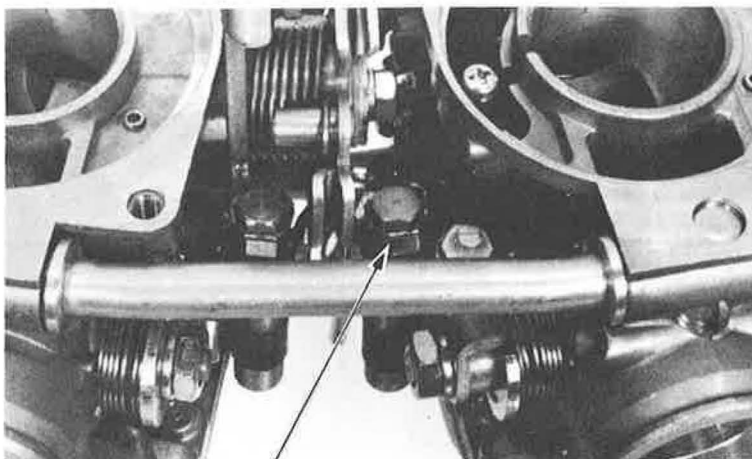
Install the diaphragm bracket, front and rear brackets loosely.



Connect the other throttle joint to the throttle link.
Tighten the throttle joint bolt.
Secure the bolt by bending the tabs of the locking washer as for the previous throttle joint.

TORQUE

2.8–4.2 N·m (28–42 kg·cm, 24–36 in·lb)

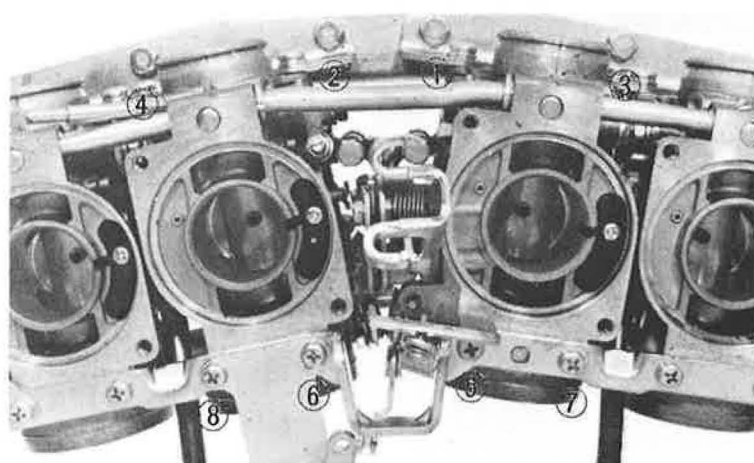


LOCKING WASHER

Tighten the front and rear brackets in the sequence shown.

TORQUE:

2.8–4.2 N·m (28–42 kg·cm, 24–36 in·lb)

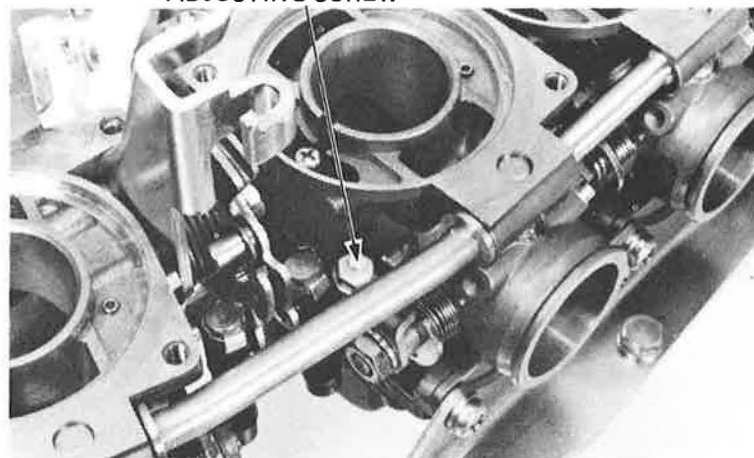


Turn the synchronization adjusting screw on the No. 3 carburetor so that all throttle valve positions are equal.

Move the throttle link to check throttle operation.

Move the choke link to check choke operation and synchronization.

**SYNCHRONIZATION
ADJUSTING SCREW**



Install the accelerator pump rod spring, washer, collar and cotter pin.

Install the throttle stop screw.

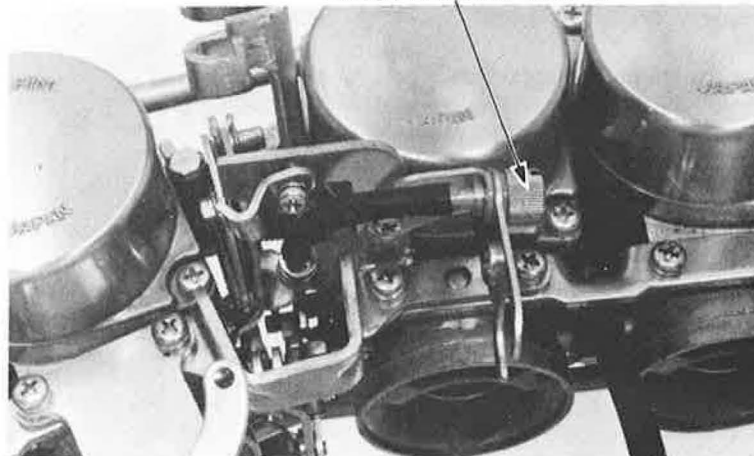
Install the vacuum cylinder components.

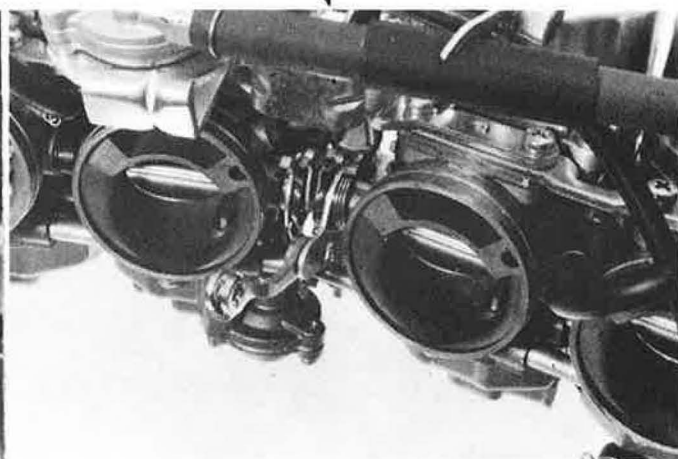
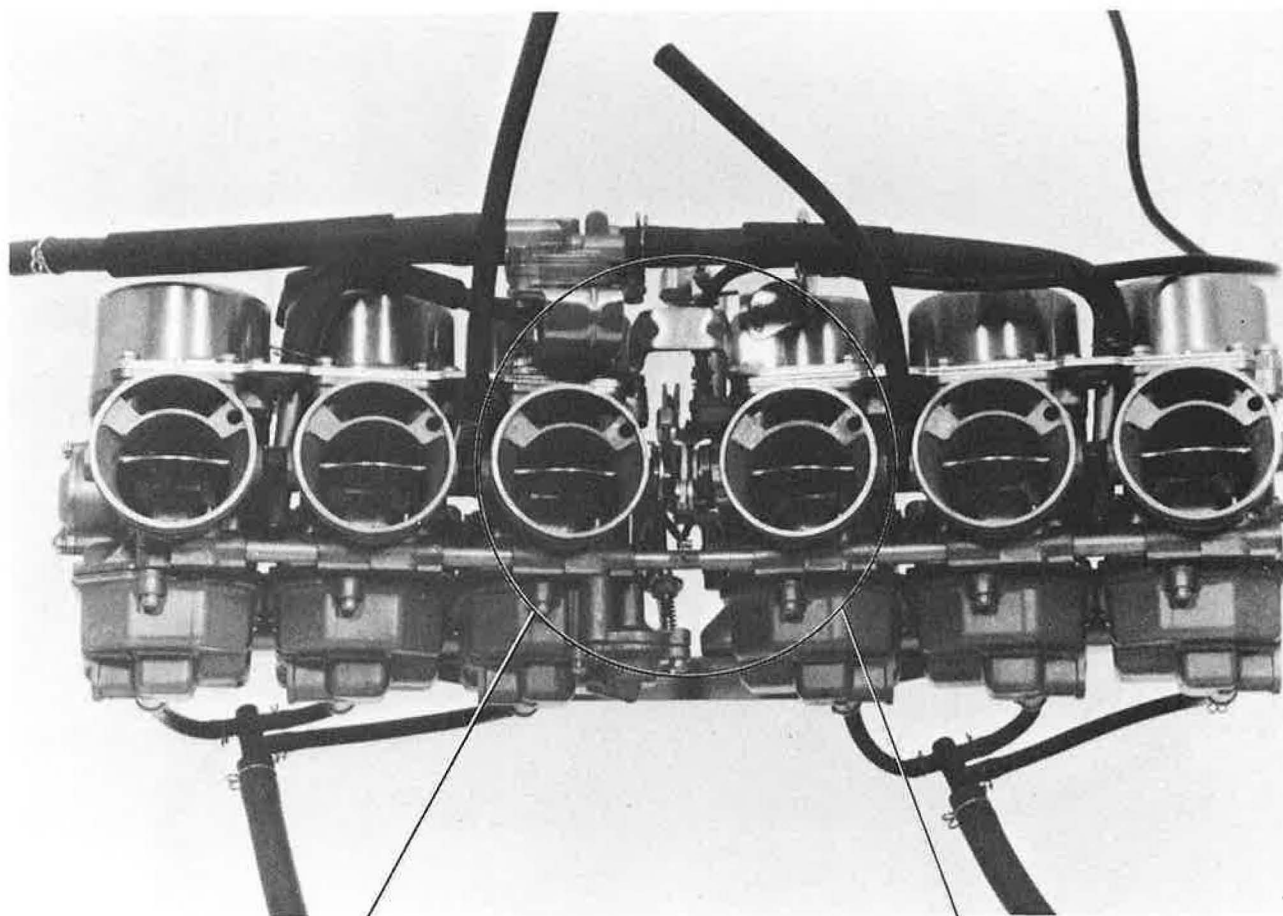
Install the overflow tubes.

Remove the diaphragm bracket and assemble the fuel line diaphragm.

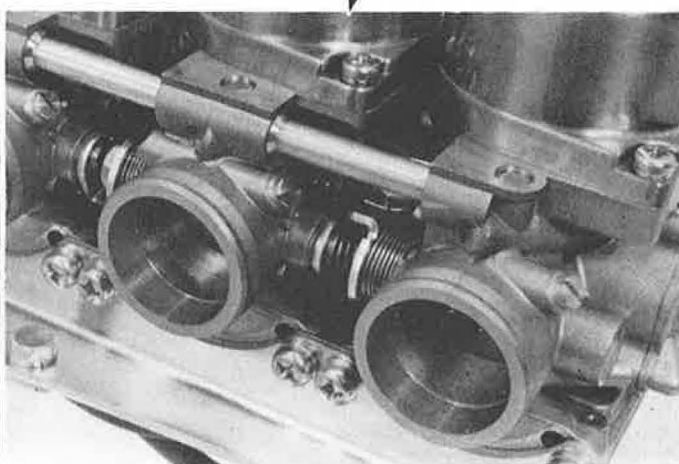
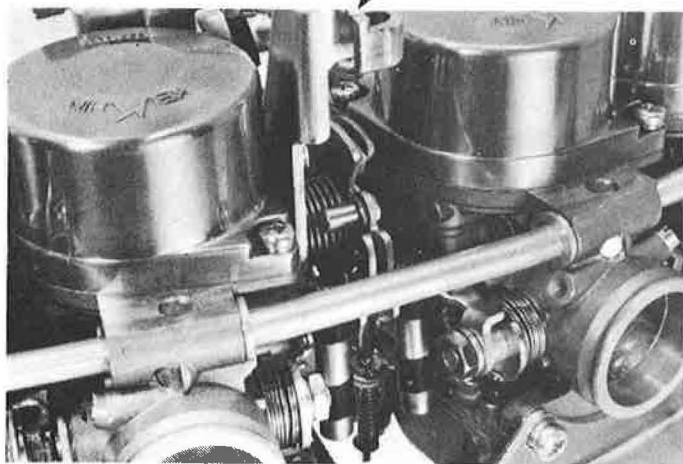
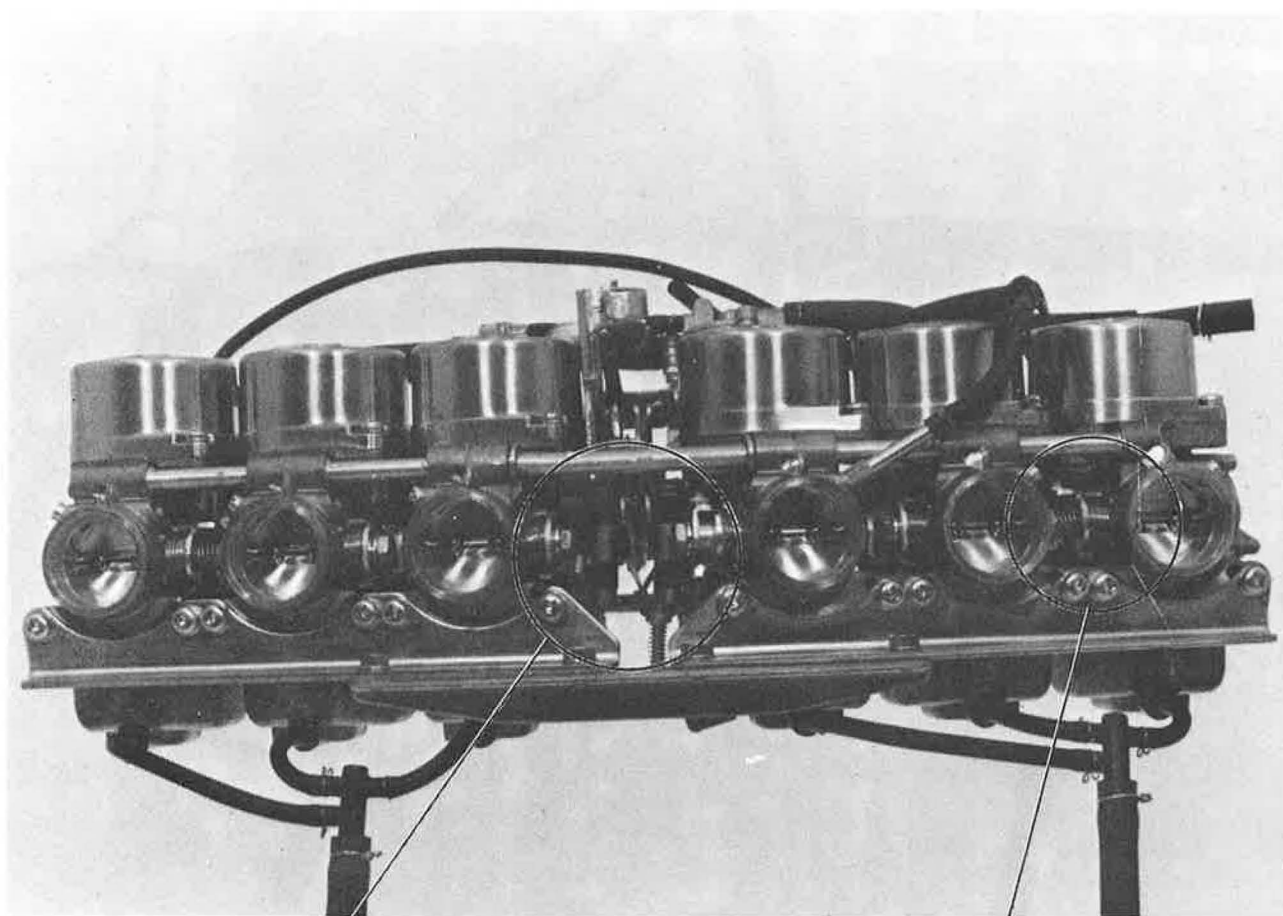
Reinstall the fuel line diaphragm.

THROTTLE STOP SCREW





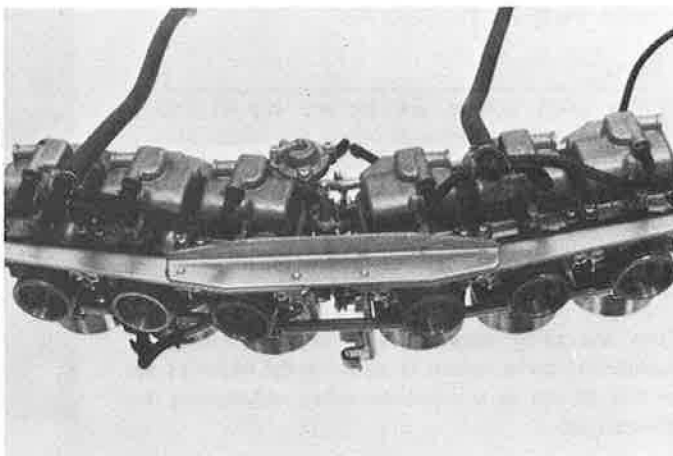
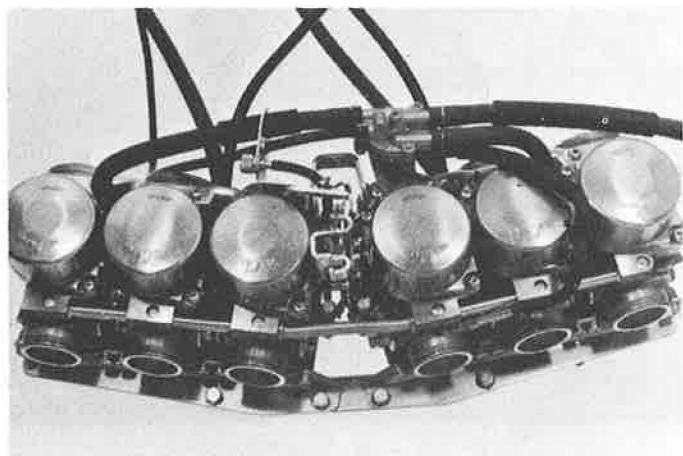
These photographs here and on the nex page show the details of the carburetor linkage.





TUBE ROUTING

Route the carburetor tubes as shown.

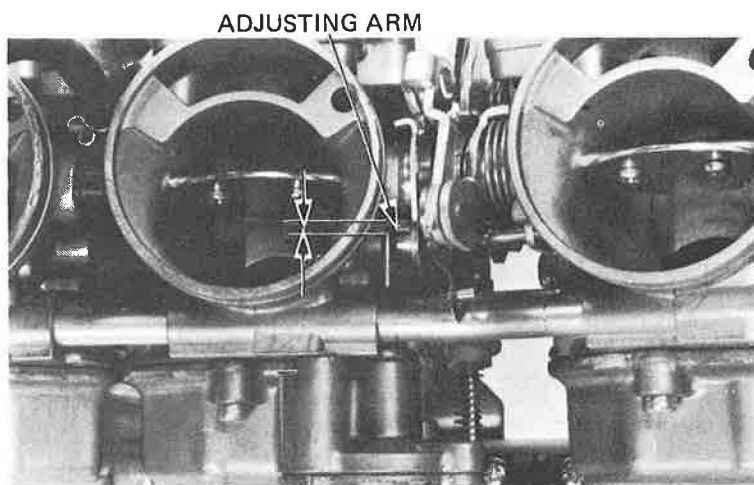


ACCELERATOR PUMP ADJUSTMENT

Measure the clearance between the accelerator pump rod and adjusting arm with the throttle valve close.

CLEARANCE: 0–0.04 mm (0–0.0016 in)

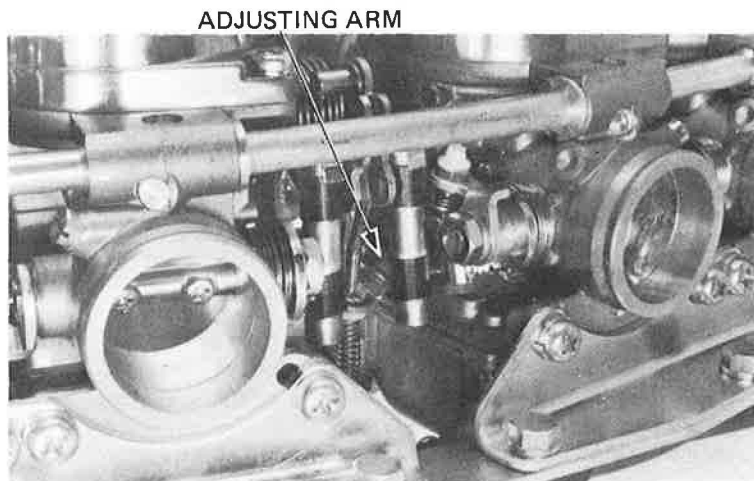
Adjust by bending the adjusting arm.



Measure the clearance between the adjusting arm and stopper on the carburetor body.

CLEARANCE: 3.1–3.3 mm (0.12–0.13 in)

Adjust by bending the adjusting arm.





PILOT SCREW ADJUSTMENT

PILOT SCREW REMOVAL

NOTE

The pilot screws are factory pre-set and should not be removed unless the carburetor is overhauled.

Remove the carburetors. (Page 4-3).

Remove the float chambers (Page 4-6).

Turn the pilot screw in and carefully count the number of turns before it seats lightly. Make a note of this to use as a reference when reinstalling the pilot screw.

CAUTION

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

Remove the pilot screw.

Inspect the pilot screw and replace if worn or damaged.

Install the pilot screw and return it to its original position as noted during removal. Perform pilot screw adjustment if a new pilot screw is installed (below).

NOTE

Do not install limiter caps on new pilot screws until after adjustment has been made (below).

PILOT SCREW ADJUSTMENT

NOTE

- The pilot screws are factory pre-set and no adjustment is necessary unless the pilot screw is replaced (See removal above).
- Use a tachometer with graduations of 50 rpm or smaller and that will accurately indicate a 50 rpm change.

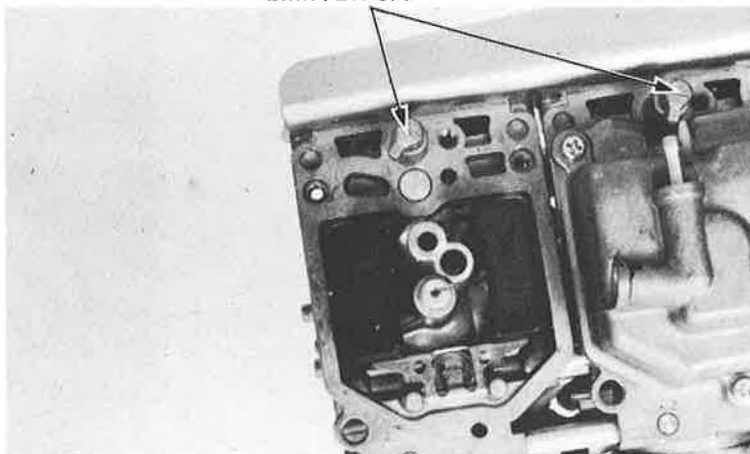
1. Turn each pilot screw clockwise until it seats lightly and back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.

INITIAL OPENING: 1-1/4 turns out

PILOT SCREW WITH LIMITER CAP



PILOT SCREW WITH LIMITER CAP

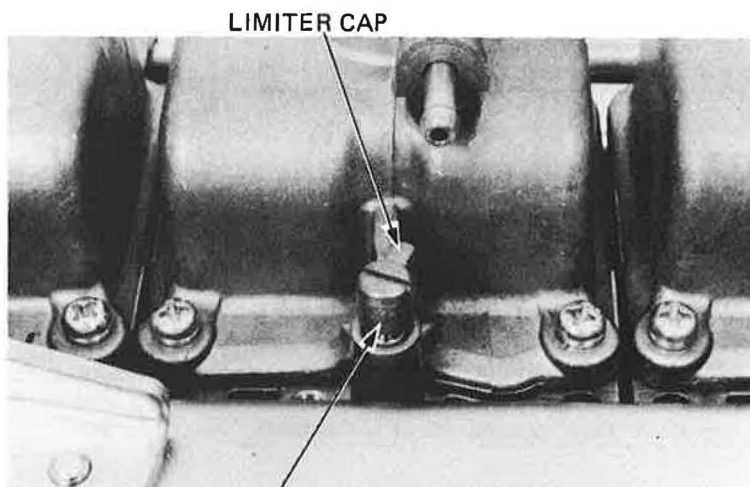




CAUTION

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

2. Warm up the engine to operating temperature. Stop and go driving for 10 minutes is sufficient.
3. Attach a tachometer.
4. Adjust the idle speed with the throttle stop screw.
IDLE SPEED: 900 rpm
5. Turn each pilot screw in or out to obtain the highest engine speed with a carburetor pilot screw wrench.
6. Adjust the idle speed with the throttle stop screw.
7. Turn the No. 1 carburetor pilot screw in until it seats lightly and record the number of turns.
8. Turn the No. 2 carburetor pilot screw in until the engine speed drops 50 rpm.
9. Turn the No. 2 carburetor pilot screw 1/2 turn out from the position obtained in Step 8.
10. Perform Steps 8 and 9 for the No. 3, 4, 5 and 6 carburetor pilot screws.
11. Turn the No. 1 pilot screw the number of turns recorded in step 7.
12. Turn the No. 6 pilot screw in until it seats lightly, recording the number of turns.
13. Perform Steps 8 and 9 for the No. 1 carburetor pilot screw.
14. Turn the No. 6 pilot screw out the number of turns recorded in Step 12.
15. Adjust the idle speed with the throttle stop screw.



PILOT SCREW

LIMITER CAP INSTALLATION

If the pilot screw is replaced, a new limiter cap must be installed after pilot screw adjustment is completed.

After adjustment, cement the limiter cap over the pilot screw, using LOCTITE ® 601 or equivalent. The limiter cap should be placed against its stop, preventing further adjustment that would enrich the fuel mixture (limiter cap position permits clockwise rotation and prevents counterclockwise rotation).

NOTE

A pilot screw limiter cap must be installed. It prevents misadjustment that could cause poor performance and increase exhaust emissions.



HIGH ALTITUDE ADJUSTMENT (USA only)

When the vehicle is to be operated continuously above 2,000 m (6,500 feet) the carburetor must be readjusted as follows to improve driveability.

Warm up the engine to operating temperature. Stop and go driving for 10 minutes is sufficient. Turn each pilot screw clockwise 1/2 turn. Adjust the idle speed to 900 ± 100 rpm with the throttle stop screw.

NOTE

These adjustment must be made at high altitude to ensure proper high altitude operation.

Attach the Vehicle Emission Control Information Update label onto the left frame as shown (see Service Letter No. 132).

NOTE

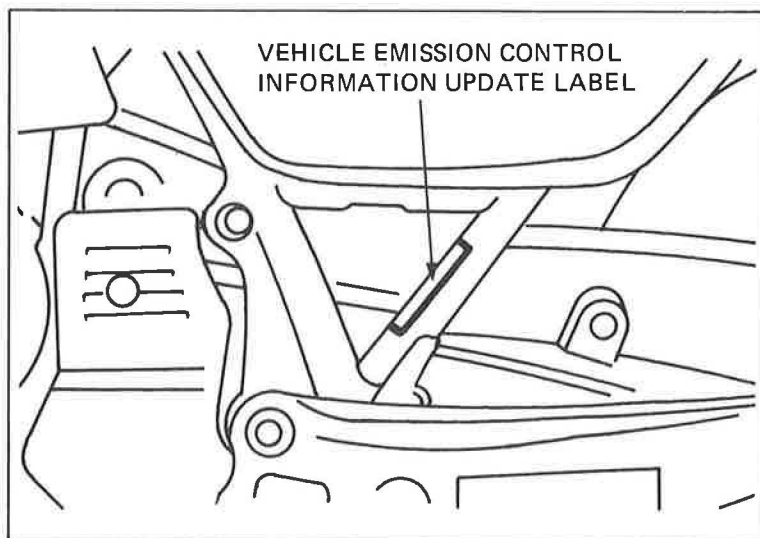
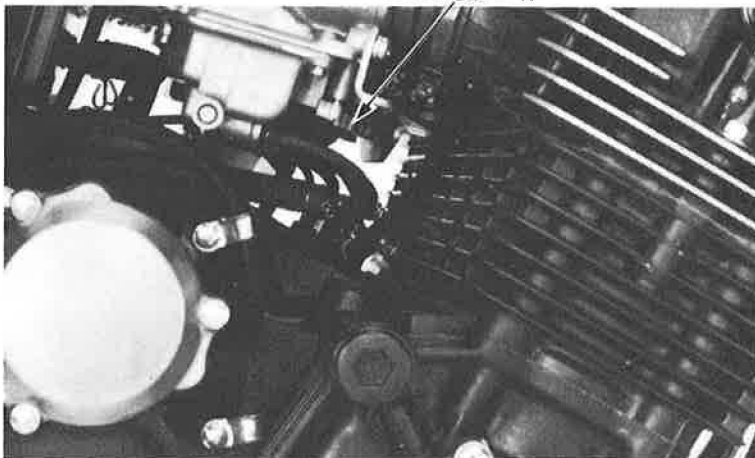
Do not attach the label to any part that can be easily removed from the vehicle.

WARNING

Operation at an altitude lower than 1,500 m (5,000 feet) with the carburetors adjusted for high altitudes may cause the engine to idle roughly and stall.

When the vehicle is to be operated continuously below 1,500 m (5,000 feet), turn each pilot screw counterclockwise to its stop and adjust the idle speed to 900 ± 100 rpm. Be sure to do these adjustments at low altitude.

PILOT SCREW



VEHICLE EMISSION CONTROL
INFORMATION UPDATE LABEL



FUEL TANK

WARNING

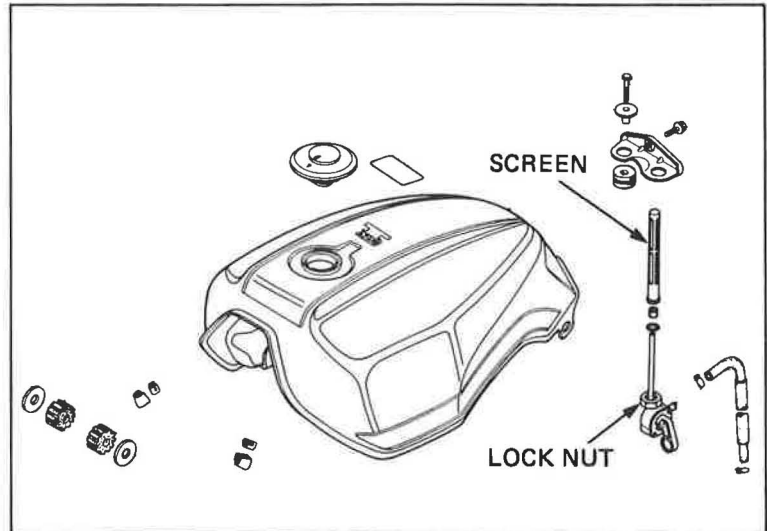
*Do not allow flames or sparks near gasoline.
Wipe up spilled gasoline at once.*

Check the vent hole of the filler cap for blockage.
Check that fuel is flowing out of the fuel valve freely.
If the fuel flow is restricted, clean the fuel strainer.

NOTE

Do not overtighten the fuel valve lock nut.

Make sure there are no fuel leaks.



AIR CLEANER CASE

AIR CLEANER CASE/CHAMBER

Check the air cleaner case and chamber for cracking or deterioration.

CRANKCASE VENTILATION SYSTEM

Check that the breather tube is not restricted.

