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SERVICE INFORMATION

GENERAL INSTRUCTIONS

A transistorized ignition system is used and no adjustments are to be made unless the pulse generator screws are loosened. If these screws are loosened, ignition timing for either the No. 1 or No. 6 cylinder must be adjusted. For spark plug information, see page 3-4.

SPECIFICATION

Spark plug		For cold climate (below 5°C)	Standard	For extended high speed riding
U.S.A. model (optional)	ND NGK	X22ES-U (X22ESR-U) D7EA (DR7ES)	X24ES-U (X24ESR-U) D8EA (DR8ES-L)	X27ES-U (X27ESR-U) D9EA (DR8ES)
Canada model	ND NGK	X22ESR-U DR7ES	X24ESR-U DR8ES-L	X27ESR-U DR8ES
Spark plug gap	0.6 – 0.7 mm (0.024 – 0.028 in)			
Ignition timing	At idle Partial advance/rpm Full advance/rpm		10° (BTDC) 23.5° (BTDC)/2500 rpm 31° (BTDC)/8000 rpm	
Ignition coil	3-point gap		6 mm (0.24 in) min.	
Firing order	1–5–3–6–2–4			



TROUBLESHOOTING

NOTE

The ignition system is broken down into three sub-systems; one for No. 1 and No. 6 cylinders, one for No. 2 and No. 5 cylinders and one for No. 3 and No. 4 cylinders. First localize the trouble to one of these sub-systems, then proceed to the more detailed tests as described below.

Engine cranks but will not start

- Engine stop switch OFF.
- No spark at plugs
- Faulty transistorized spark unit
- Faulty pulse generator

No spark at plug

- Engine stop switch OFF
- Poorly connected, broken or shorted wires
 - Between ignition switch and engine stop switch
 - Between spark unit and engine stop switch
 - Between spark unit and ignition coil
 - Between ignition coil and plug
 - Between spark unit and pulse generator
- Faulty ignition coil
- Faulty ignition switch
- Faulty spark unit
- Faulty pulse generator

Engine starts but runs poorly

- Ignition primary circuit
 - Faulty ignition coil
 - Loose or bare wire
 - Intermittent short circuit
- Secondary circuit
 - Faulty plug
 - Faulty high tension cord

Timing advance incorrect

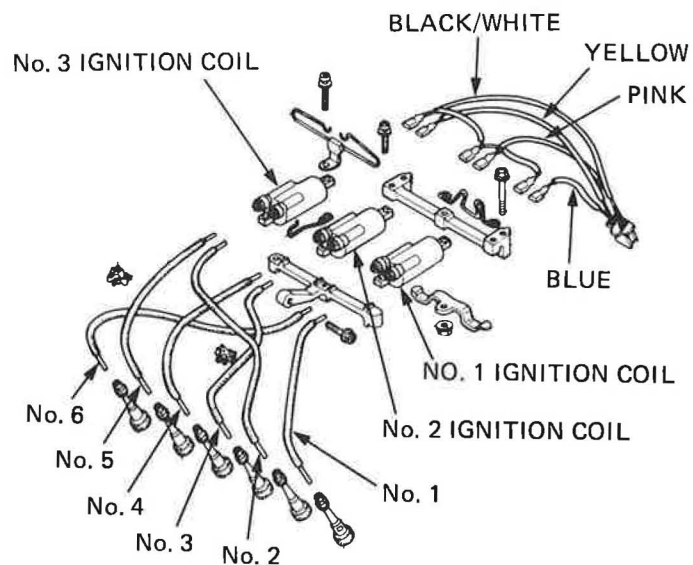
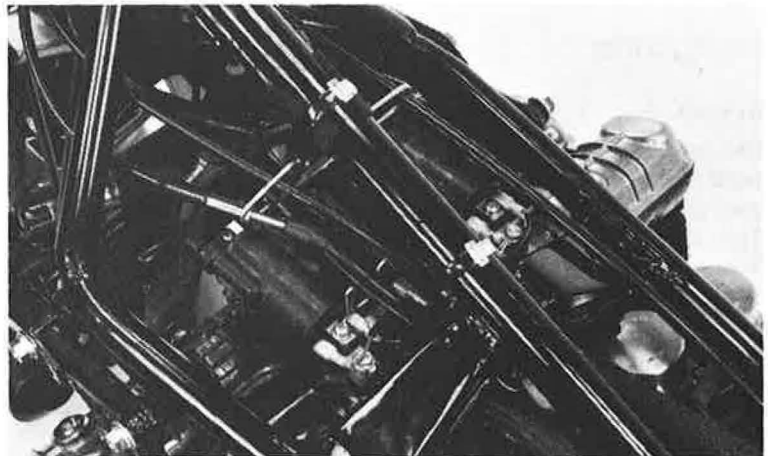
- Centrifugal advancer faulty



IGNITION COIL

REMOVAL

Remove the fuel tank.
Disconnect the wire leads.
Remove the coils by removing the attaching bolts.



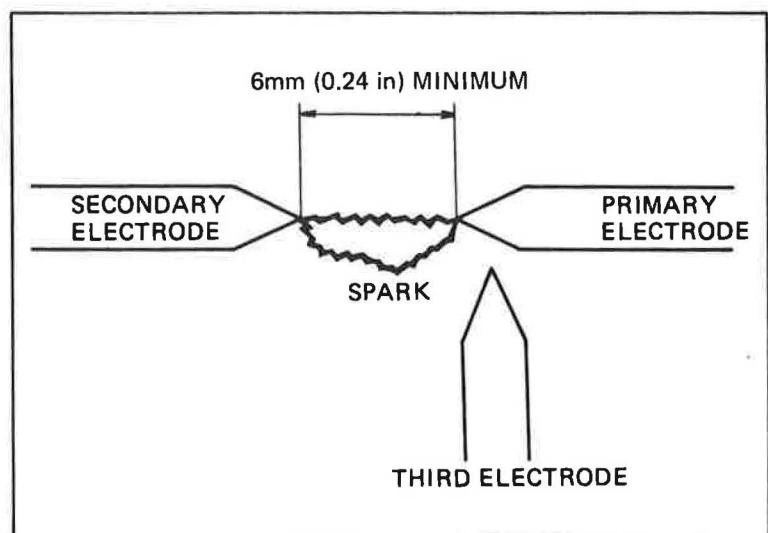
PERFORMANCE TEST

Perform the 3-point spark test with a coil tester.

SERVICE LIMIT: 6 mm (0.24 in) min

NOTE

For wire connection, follow the instructions supplied with the coil tester.





TRANSISTORIZED IGNITION SYSTEM

INSPECTION

System

Disconnect the No. 4,5 and 6 spark plugs.
Hold each plug against any convenient engine ground.

Turn the ignition switch on.

Remove the pulse generator cover.

Touch the end of a screwdriver to the rotor and one pulse generator steel core.

Repeat this operation several times.

A good spark to the plug means that the ignition system for that cylinder is in good shape.

Repeat the above for the other two pulse generators.

Pulse generator

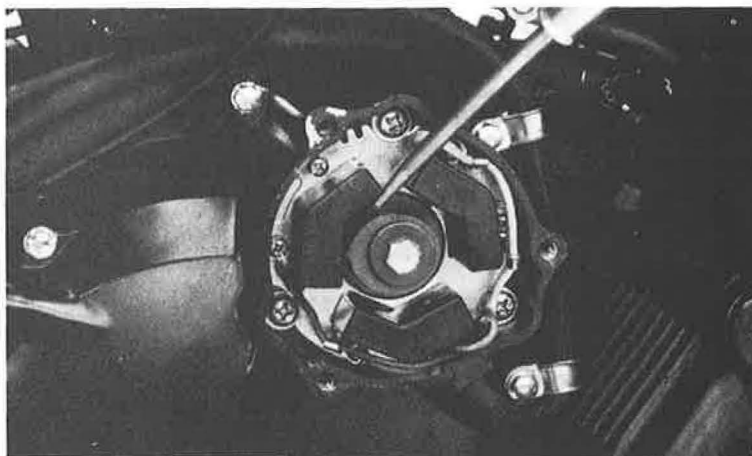
Measure the coil resistance.

COIL RESISTANCE: $530 \pm 50\Omega$ (20°C, 68°F)

Between pink leads (3,4 cylinders)

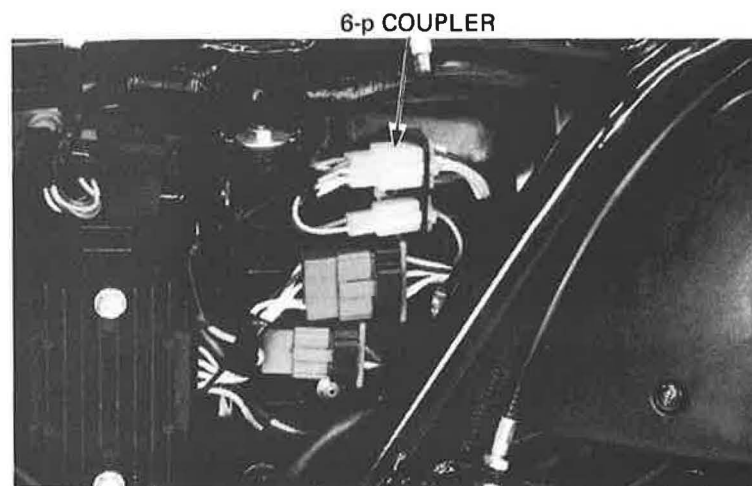
Between yellow leads (2,5 cylinders)

Between blue leads (1,6 cylinders)



Spark unit

Disconnect the 6-P (red pulse generator) coupler.
Turn the ignition switch ON. Set the voltmeter to the 0-25V DC.



6-p COUPLER

Touch the positive lead of the voltmeter to the blue/yellow wire of the 1-6 spark unit coupler. Ground the negative lead. The meter should read 12V (battery voltage).

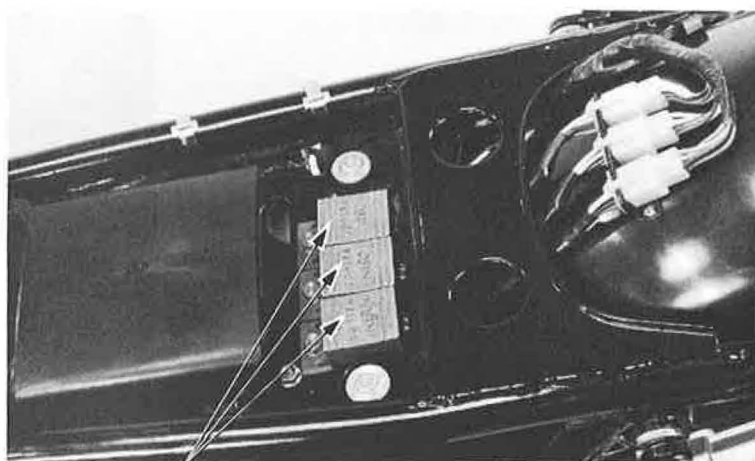
With the voltmeter leads in place, use a jumper wire to ground the blue wire of the spark unit 6-P coupler. Voltage should drop to 0-2 VDC.

Move the positive voltmeter lead to the pink wire of the 3-4 spark unit coupler. Voltage should be 12V.

Move the jump wire lead from blue wire to pink wire of the 3-4 spark unit coupler. Voltage should drop to 0-2 V DC.

Move the voltmeter lead from the pink wire to the yellow wire of the 2-5 spark unit coupler. Move the jump wire lead from the pink wire to the yellow/blue wire. Voltage should change from 12 V to 0-2V.

Replace the spark units if they are faulty.



SPARK UNITS

PULSE GENERATOR REPLACEMENT

If pulse generator replacement is necessary, loosen the two pulser base plate screws.

Replace the pulse generator assembly.

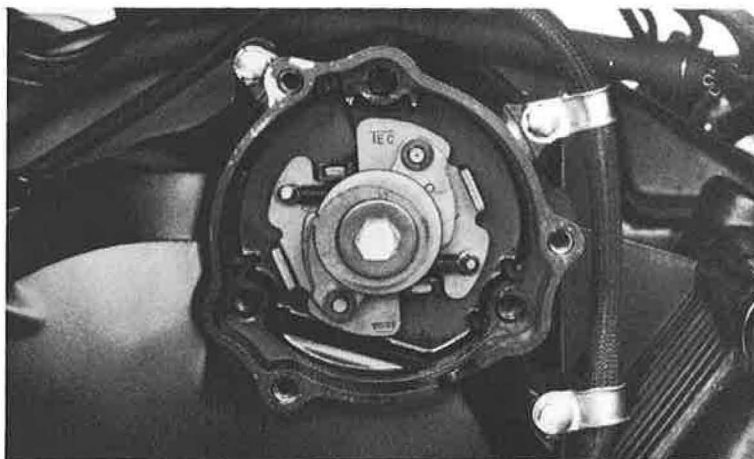
Adjust the ignition timing (Page 3-4).





ADVANCER VISUAL INSPECTION

Check the mechanical advancer cam for sticking. Lubricate the sliding surfaces, and check the spring for loss of tension and advancer pin for excessive wear if the advancer fails to return properly.



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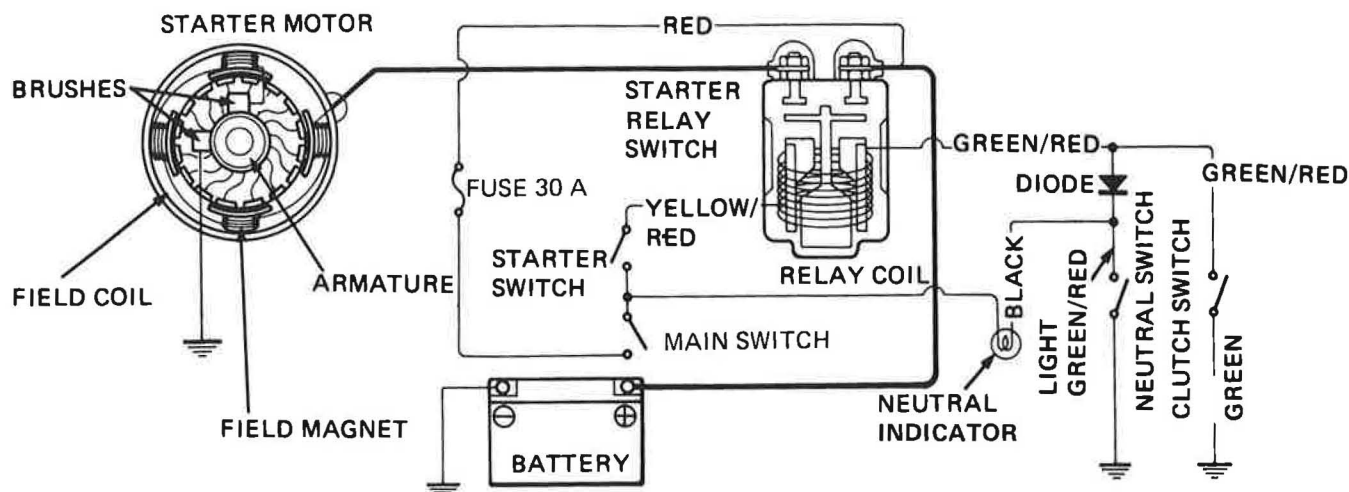
SERVICE INFORMATION

GENERAL INSTRUCTION

The starter motor can be removed with the engine in the frame.

SPECIFICATION

		STANDARD	SERVICE LIMIT
Starter motor	Brush spring tension	560 g—680 g (19.75—23.89 oz)	560 g (19.75 oz)
	Brush length	12.0—13.0 mm (0.47—0.51 in)	7.5 mm (0.03 in)



TROUBLESHOOTING

Starter Motor Will Not Turn:

- Battery discharged
- Faulty ignition switch
- Faulty start switch
- Faulty neutral switch
- Faulty starter magnetic switch
- Loosen or disconnected wire or cable
- Neutral diode open

Starter Motor Turns Engine Slowly

- Low specific gravity
- Excessive resistance in circuit
- Binding in starter motor

Starter Motor Turns, But Engine Does Not Turn:

- Faulty starter clutch
- Faulty starter motor gears
- Faulty starter motor or idle gear

Starter Motor and Engine Turns, But Engine Does Not Start

- Faulty ignition system
- Engine problems



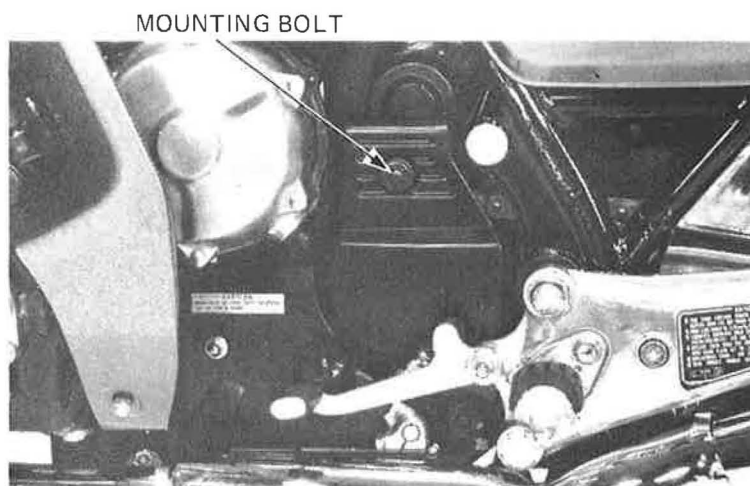
STARTER MOTOR

REMOVAL

WARNING

With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.

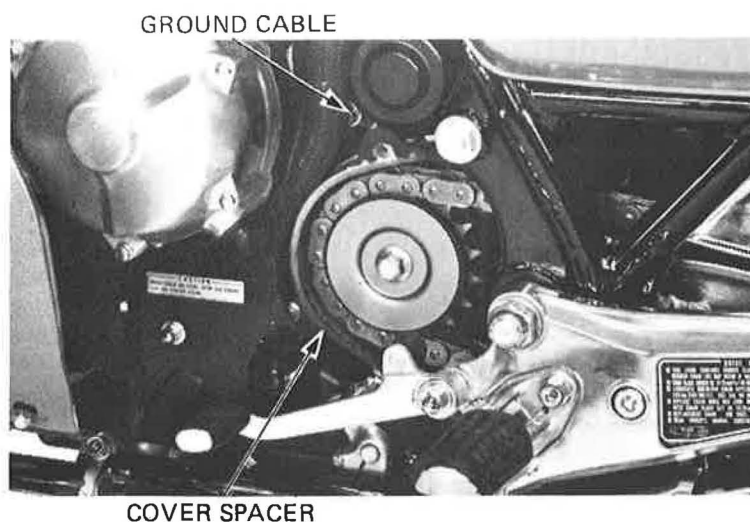
Loosen the drive sprocket cover mounting bolts.



Remove the drive sprocket cover, and pull back and to the right.



Remove the starter motor ground cable and the drive sprocket cover spacer.





Remove the right side cover and disconnect the starter cable at the relay switch.
Remove the starter motor.

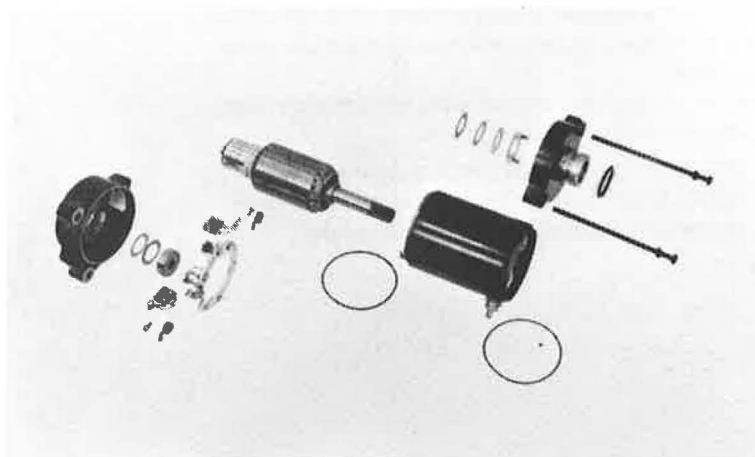
STARTER CABLE



STARTER RELAY SWITCH

STARTER MOTOR DISASSEMBLY

Remove the set bolts and disassemble the motor.



BRUSH INSPECTION

Remove the set bolts.
Remove the rear bracket.
Inspect the brushes and measure the brush length.
Measure the brush spring tension with a spring scale.

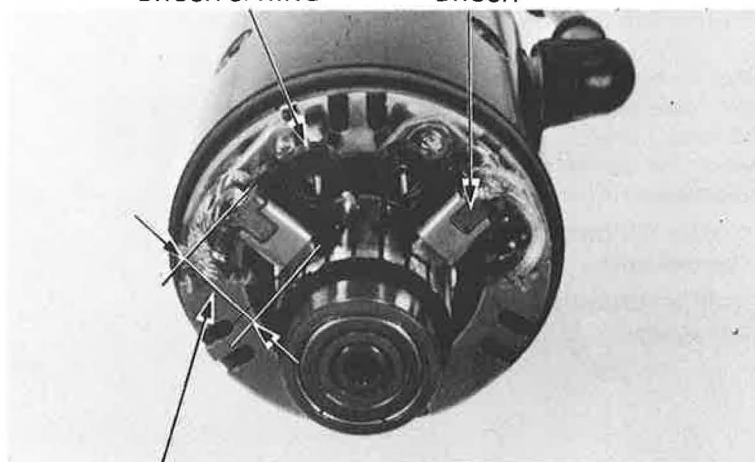
SERVICE LIMIT:

BRUSH LENGTH: 7.5 mm (0.30 in)

BRUSH SPRING TENSION: 560 g (19.75 oz)

BRUSH SPRING

BRUSH



BRUSH LENGTH



COMMUTATOR INSPECTION

Remove the starter motor case.

NOTE

Record the location and number of the thrust washers.

Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils.

NOTE

Do not use emery or sand paper on the commutator.

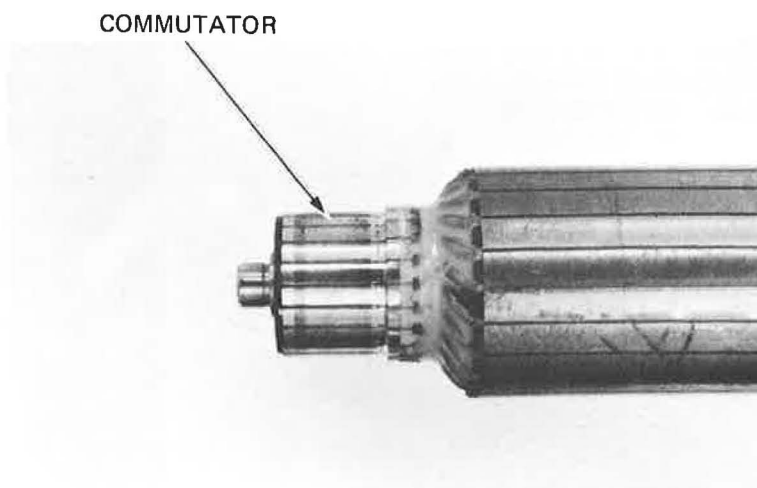
Check for continuity between pairs of commutator bars, and also between commutator bars and armature shaft.

Replace the starter motor if armature coils are open, or shorted to the armature shaft.

COMMUTATOR BAR PAIRS: continuity

COMMUTATOR-ARMATURE: No continuity

COMMUTATOR-SHAFT: No continuity



FIELD COIL INSPECTION

Check for continuity from the cable terminal to the motor case and from the cable terminal to the brush wire.

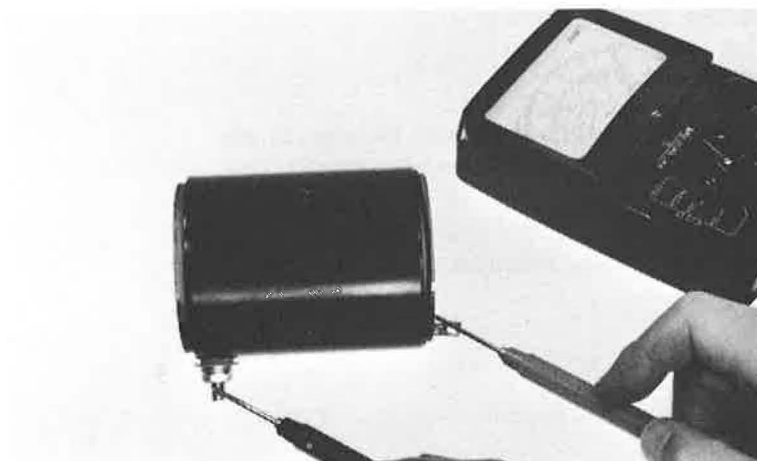
Replace the starter motor if the field coil is not continuous or if it is shorted to the motor case.

CABLE TERMINAL-MOTOR CASE:

No continuity

CABLE TERMINAL-BRUSH TERMINAL:

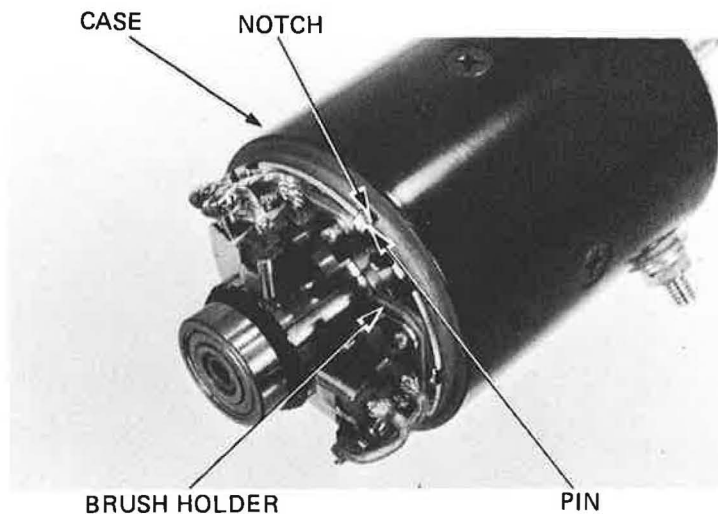
Continuity



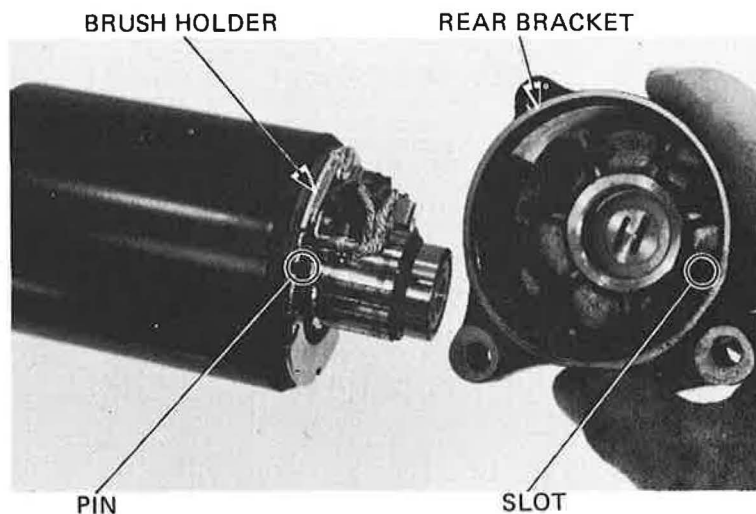


ASSEMBLY/INSTALLATION

Assemble the starter motor.
Align the case notch with the brush holder pin.



Install the rear bracket, aligning its slot with the brush holder pin.

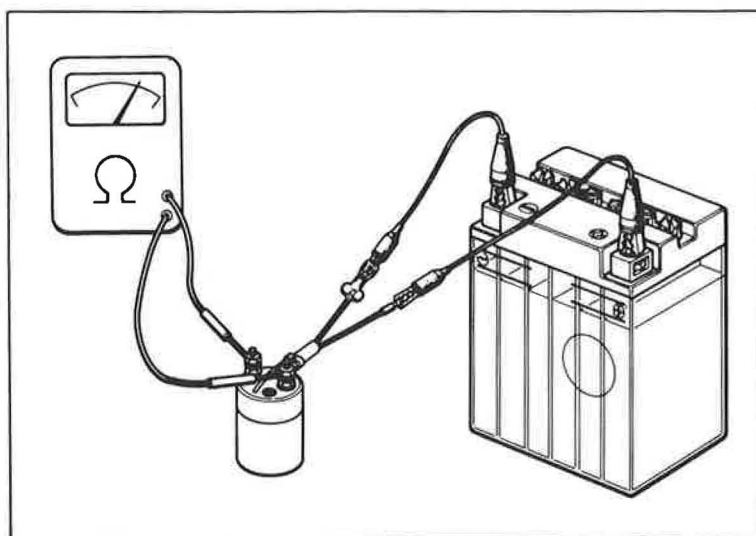


STARTER RELAY SWITCH

INSPECTION

Depress the starter switch button with the ignition ON.
The coil is normal if the magnetic switch clicks.

Connect an ohmmeter to the magnetic switch terminals.
Connect a 12 V battery to the switch cable terminals.
The switch is normal if there is continuity.





MEMO



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SERVICE INFORMATION

GENERAL INSTRUCTIONS

- All electrical wires and connectors are color-coded. When two or more different colored wires are connected, a colored tube that matches the significant color appears on the other wire near the connector. Observe the color codes before disconnecting any wires.
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.
- The following color codes used are indicated throughout this section and on the wiring diagram.

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

Br = Brown
O = Orange
Lb = Light Blue
Lg = Light Green
P = Pink
Gr = Gray

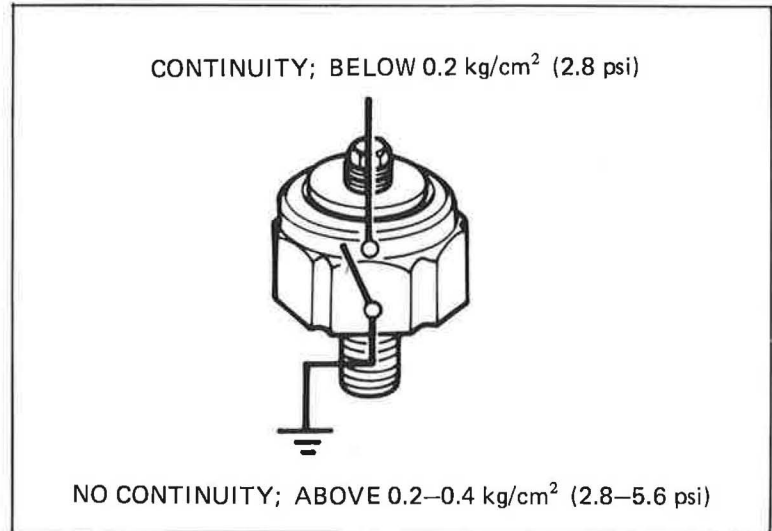
- In order to isolate an electrical failure, check the continuity of the electrical path through the part. A continuity check can usually be made without removing the part from the motorcycle — by simply disconnecting the wires and connecting a continuity tester or volt-ohmmeter to the terminals or connections.
- A continuity tester is useful when checking to find out whether or not there is an electrical connection between the two points. If the quality of the circuit is important, as when there is a specific coil resistance involved, or when checking for high resistance caused by corroded connections, an ohmmeter is needed.



OIL PRESSURE WARNING SWITCH

Check for continuity while applying pressure to the switch.

Replace the switch if necessary.

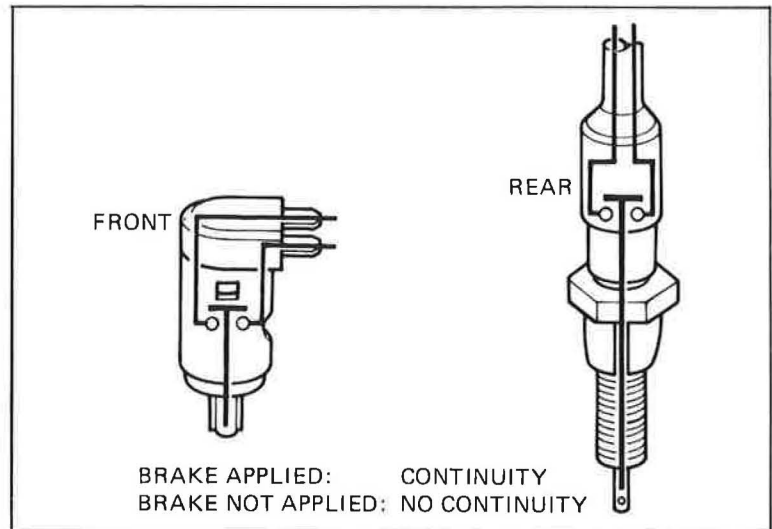


BRAKE SWITCHES

Check the rear brakelight switch for continuity with the rear brake applied.

Check the front brakelight switch for continuity with the front brake applied.

Replace the switches if necessary.



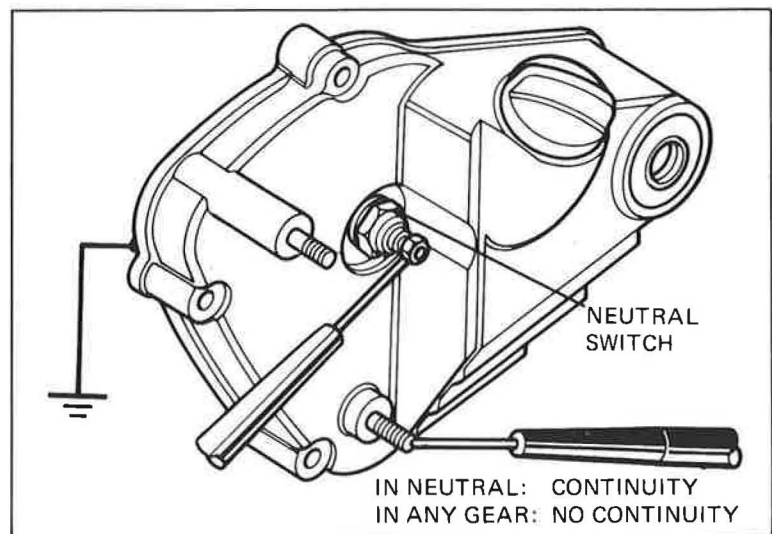
NEUTRAL SWITCH

Check the switch for continuity between the switch terminal (wire removed) and ground with the transmission in neutral and with the transmission in any gear.

NOTE

To replace the neutral switch, remove the left muffler and oil hose cover.

Replace the neutral switch if necessary.

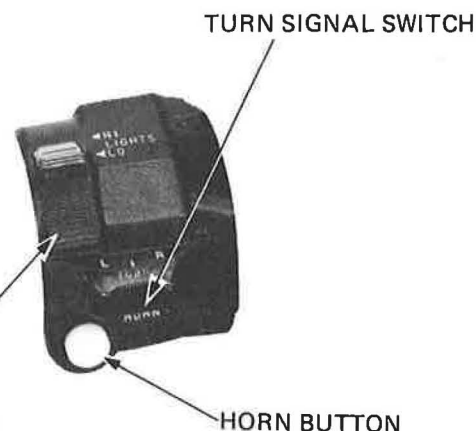




HANDLEBAR SWITCHES

The handlebar cluster switches (lights, turn signals, horn, start and stop) must be replaced as assemblies. Continuity tests for the components of the handlebar cluster switches follow:

Continuity should exist between the color coded wires on each chart.



HEADLIGHT HI-LOW SWITCH

LO: L/W to W
MIDDLE (N): L/W to L to W
HI: L/W to L

Headlight Hi-Low Switch

	HI	Lo	Hi
Lo			
(N)			
Hi			
Code color	L/W	W	L

TURN SIGNAL SWITCH

RIGHT: Gr to Lb, Br/W to O/W
OFF: Br/W to O/W to Lb/W
LEFT: Gr to O, Br/W to Lb/W

Turn Signal Switch

	W	R	L	P	PR	PL
RIGHT						
OFF						
LEFT						
Code color	Gr	Lb	O	Br/W	Lb/W	O/W

HORN BUTTON

Lg to G with button depressed
No continuity with button released

B/R to L/W with button released
B to Y/R with button depressed

Horn Button

	Ho	E
FREE		
PUSH		
Code color	Lg	G

Starter Button

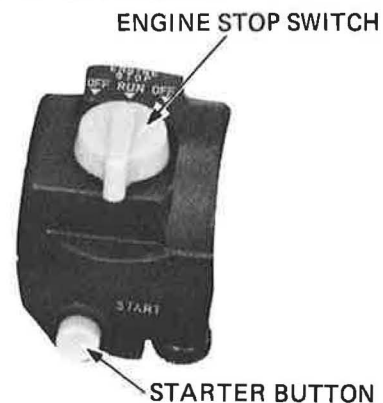
	HL1	HL2	1G	ST
FREE				
START				
Code color	B/R	L/W	B	Y/R

ENGINE STOP SWITCH

RUN: B to B/W
OFF: No continuity

Engine Stop Switch

	KB	KW
OFF		
RUN		
OFF		
Code color	B	B/W





IGNITION SWITCH

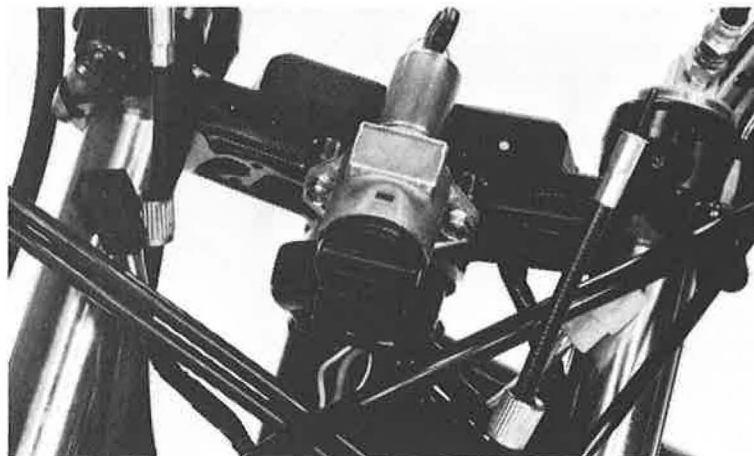
Remove the instrument cluster and disconnect the plug.

Remove the ignition switch.

NOTE

Identify the wire colors at the connector.
There are no colors on the switch.

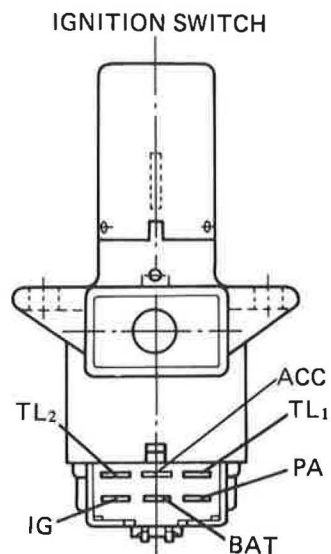
Check continuity of terminals on the ignition switch in each switch position.



SWITCH POSITION

LOCK: No continuity
 OFF: No continuity
 ON: BAT to 1G to ACC, TL1 to TL2
 PARK: BAT to ACC to P

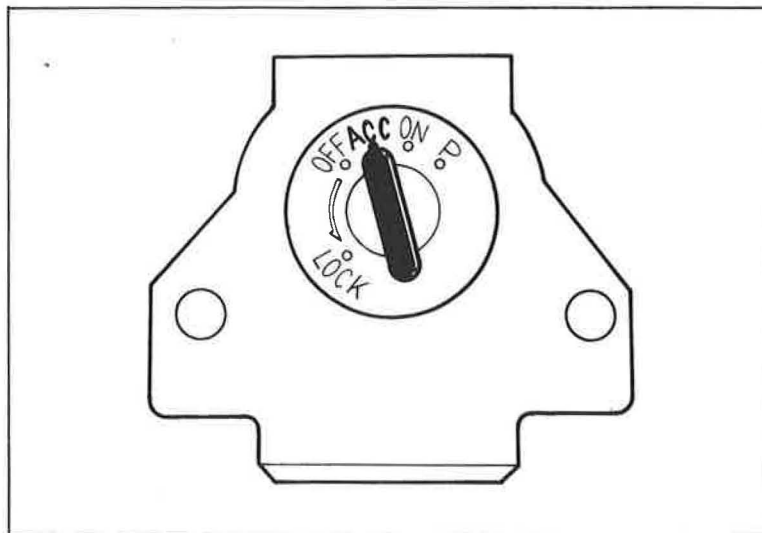
Terminal Position	BAT	1G	ACC	TL1	TL2	P
LOCK						
OFF						
ACC	○	—	○			
ON	○	○	○	○	○	
PARK	○		○			○



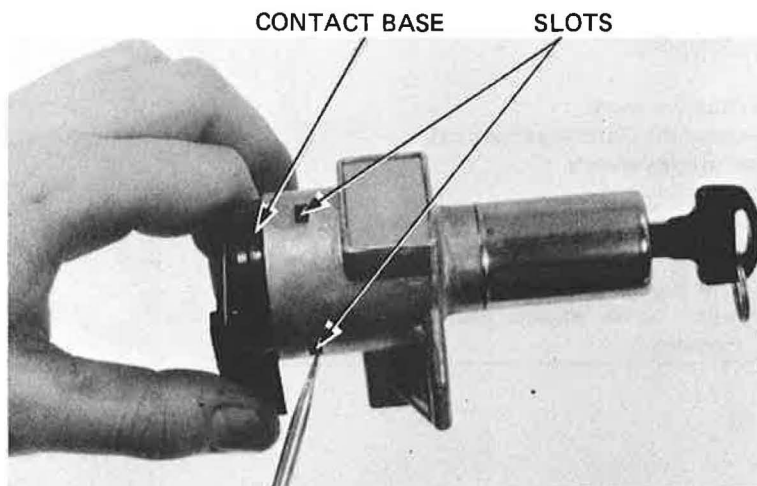


IGNITION SWITCH CONTACT BASE REPLACEMENT

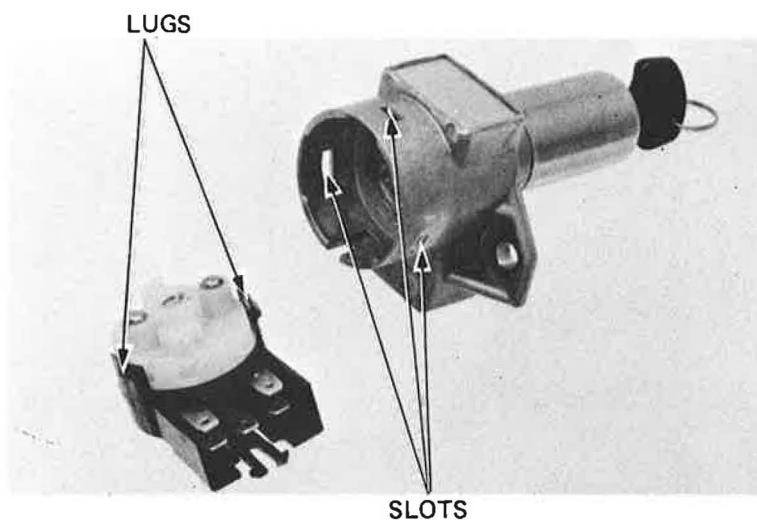
Remove the ignition switch, see page 19-4.
Insert the key and turn it the ACC positions.



Push the lugs from the slots and remove the contact base.



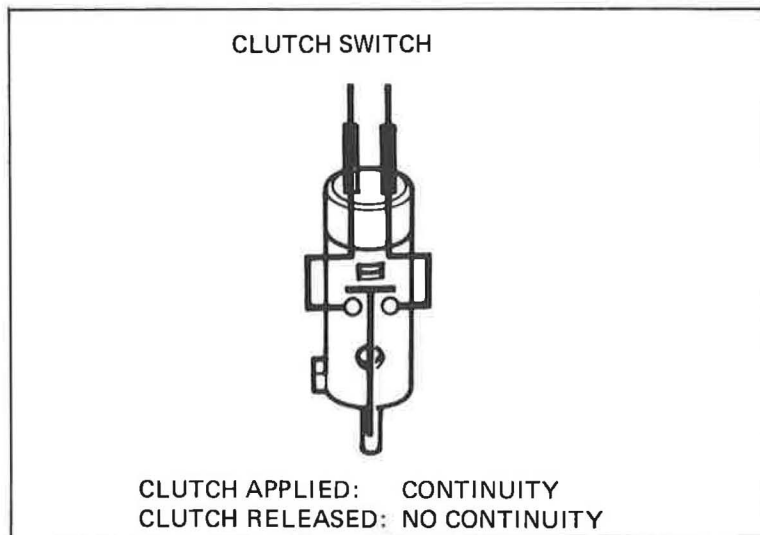
Assembly is the reverse of removal.





CLUTCH SWITCH

Check continuity of the clutch lever (safety) switch with the clutch released and applied.
Replace if necessary.

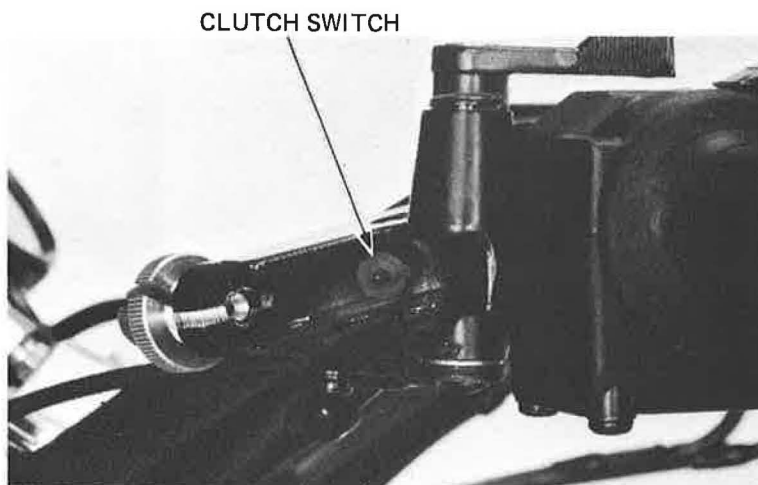


REMOVAL

Unplug the wires.
Remove the clutch lever and cable.
Remove the switch.

NOTE

The switch case has a small protrusion that must point toward the handlebar when installed.





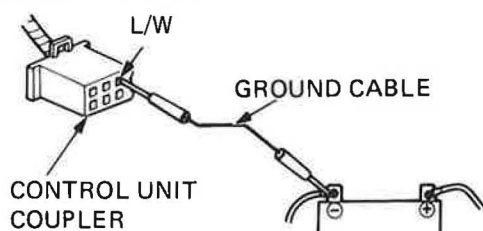
REAR SUSPENSION WARNING SYSTEM

TROUBLESHOOTING

The rear suspension air pressure warning light will light during running if there are certain abnormalities in the system. If this happens, observe the following:

Stop the motorcycle, support it on the side stand and turn the ignition switch OFF. Again turn the ignition switch ON to see if the warning lamp will light.

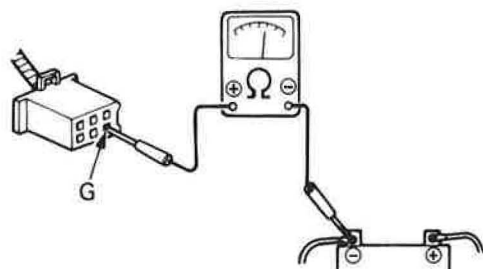
A. If warning lamp still remains OFF, disconnect coupler from control unit and connect L/W terminal to battery negative (–) terminal with a ground cable.



If lamp fails to come ON:

- Blown bulb
- Blown fuse
- Loose or damaged connector
- Open circuit in wire harness (between coupler and bulb, and fuse and bulb)

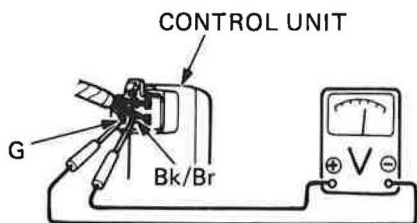
If lamp comes ON: Check continuity between terminal G and battery negative (–) terminal.



No Continuity:

- Loose or damaged connector
- Open circuit in wire harness (between terminal G and battery negative (–) terminal)

Continuity: Connect coupler to control unit and check voltage across terminal G and Bk/Br terminal.



Below 8V:

- Loose or damaged connector
- Open circuit in wire harness (between B/Br and fuse)

Over 8V: Replace control unit.

B. If lamp lights, but goes OUT within 3 seconds, replace control unit.

C.D.



→ C. If lamp lights, but goes OUT after 3-7 seconds:

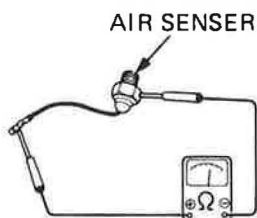
Support motorcycle on main stand and check air pressure in rear shock absorbers.

AIR PRESSURE: 2.0–4.5 kg/cm² (28–64 psi)

Disconnect air sensor connector, adjust air pressure and check switch operation. Replace if faulty.

→ **Compression is Low**

- Leaky air hoses or connectors.
- Faulty shock absorber.



→ **Below 2.0 (28 psi):**

Continuity

Above 3.2 (45 psi):

No continuity

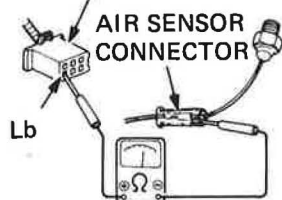
- Faulty air pressure sensor

Below 2.0 kg/cm² (28 psi): No continuity

Above 3.2 kg/cm² (45 psi): Continuity

Disconnect coupler from control unit and check for continuity between Lb terminal and air sensor terminal.

CONTROL UNIT COUPLER



→ **No continuity:**

- Loose or damaged connector
- Open circuit in wire harness (between terminal Lb and air sensor)

If there is continuity: Disconnect P wire connector at back of speedometer.

Disconnect air sensor Lb terminal wire.

Ground Lb terminal wire to frame ground.

Measure time required for lamp to come on after disconnecting ground.



→ **Replace control unit if lamp comes ON within 4 seconds.**

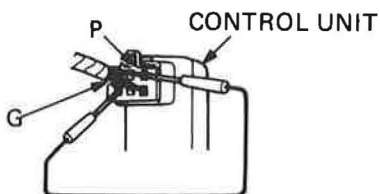
Replace air sensor if lamp comes ON after 4-8 seconds.

D



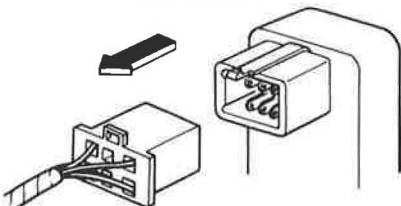
→ D. If lamp is kept ON:

Connect control unit coupler P and G terminals with a jumper cable.



If lamp remains ON: Disconnect control unit coupler.

DISCONNECT



→ Lamp OFF: Replace control unit;

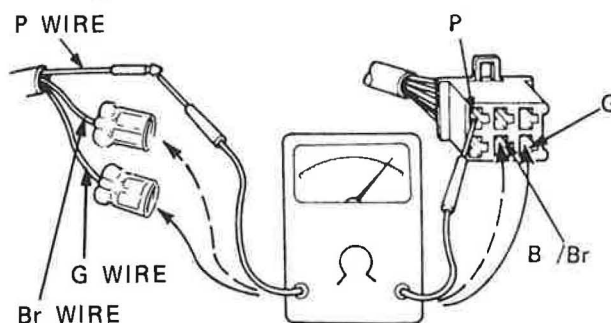
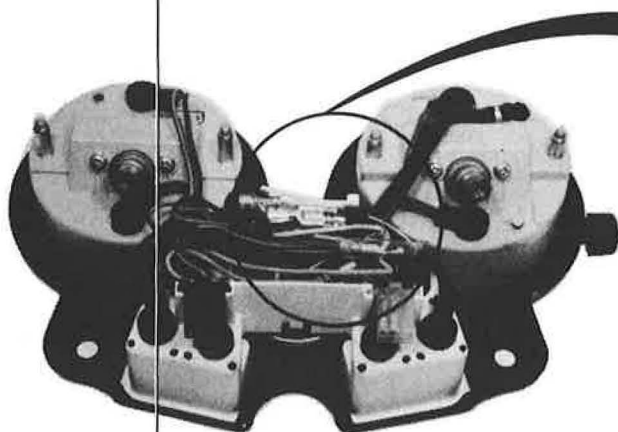
Lamp ON: Open circuit in wire harness (between lamp and B/W terminal)

→ Lamp goes OUT within 8 seconds:

Remove cover from back of meter cluster and disconnect P, B/Br and G wire connectors from speedometer, and check for continuity between terminals: Control unit coupler P terminal and meter harness P terminal

Control unit coupler B/Br terminal and meter harness B/Br terminal

Control unit coupler G terminal and meter harness G terminal



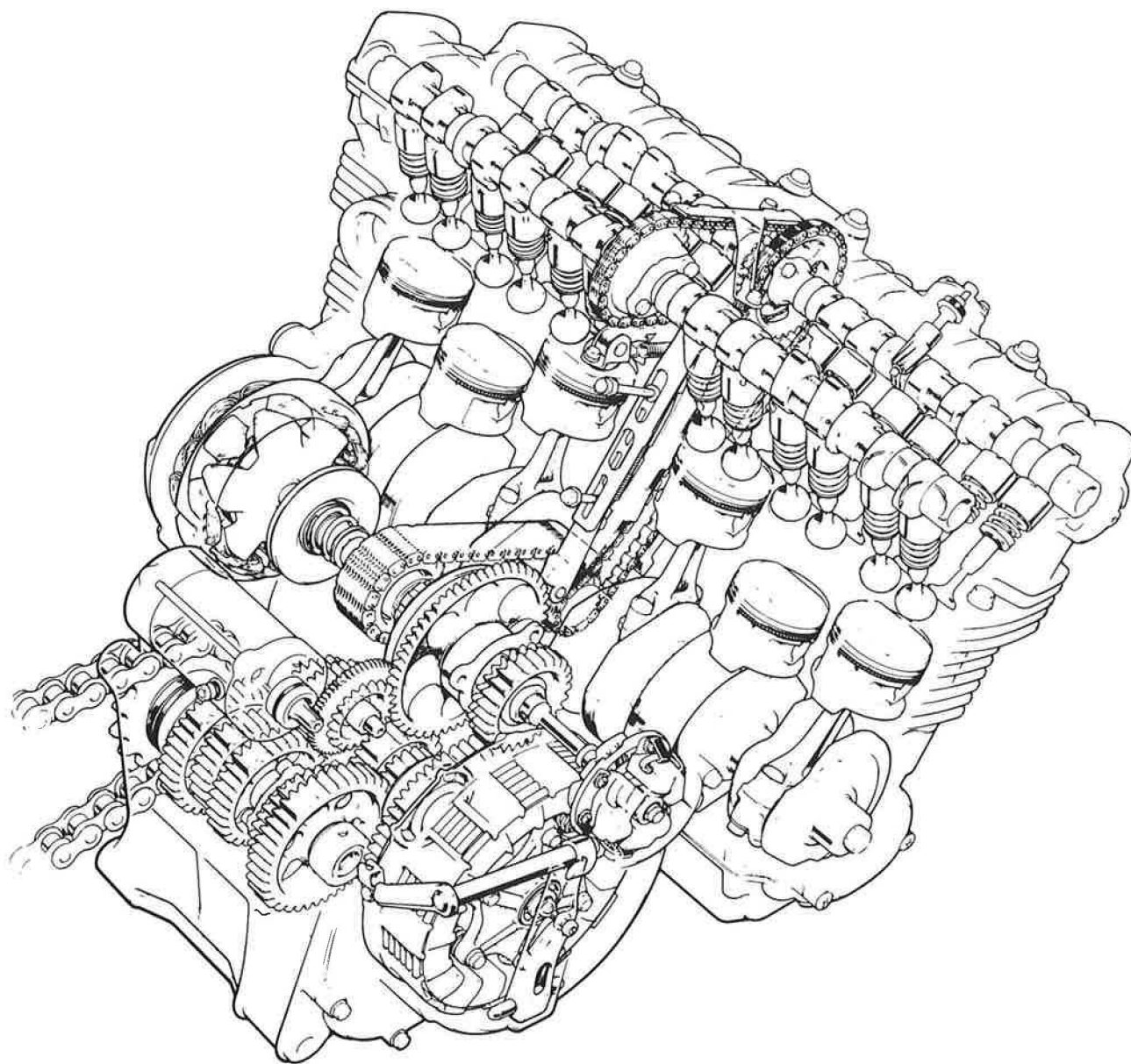
Continuity: Replace speedometer

→ No continuity:

- Loose or damaged connector
- Open circuit



ENGINE CONSTRUCTION





DUAL CAM CHAINS

Dual cam chains drive the camshafts. Drive is transmitted from the crankshaft to the exhaust camshafts and from there to the intake camshafts. This eliminates a diagonal chain path through the rear of the engine, reducing the distance between the carburetors and cylinders.

The narrow air cleaner and canted carburetors eliminate interference with the rider's legs.

The cam chains are durable silent type.

Each chain has a guide. Chain tensioners are the slipper type.

24 VALVES, SEPARATED CAMSHAFTS

Each cylinder has two intake and two exhaust valves. The arrangement insures effective breathing at high speed without valve float. Four valves instead of two allow a large overall port area with a low reciprocating weight for each valve spring.

The camshafts are of a two-piece forging. The separated shafts provide rigidity with more even valve lift. The joint at the center compensates for any misalignment between the shafts.

PRIMARY SHAFT

The primary shaft is located high above the crankcase mating faces near the cylinder.

The alternator and ignition pulser assembly are also mounted on the primary shaft. This makes the engine exceptionally short and narrow with all the proven benefits of the in-line 6-cylinder engine. Its physical size is equal to the standard in-line 4-cylinder motorcycles in its cc class.

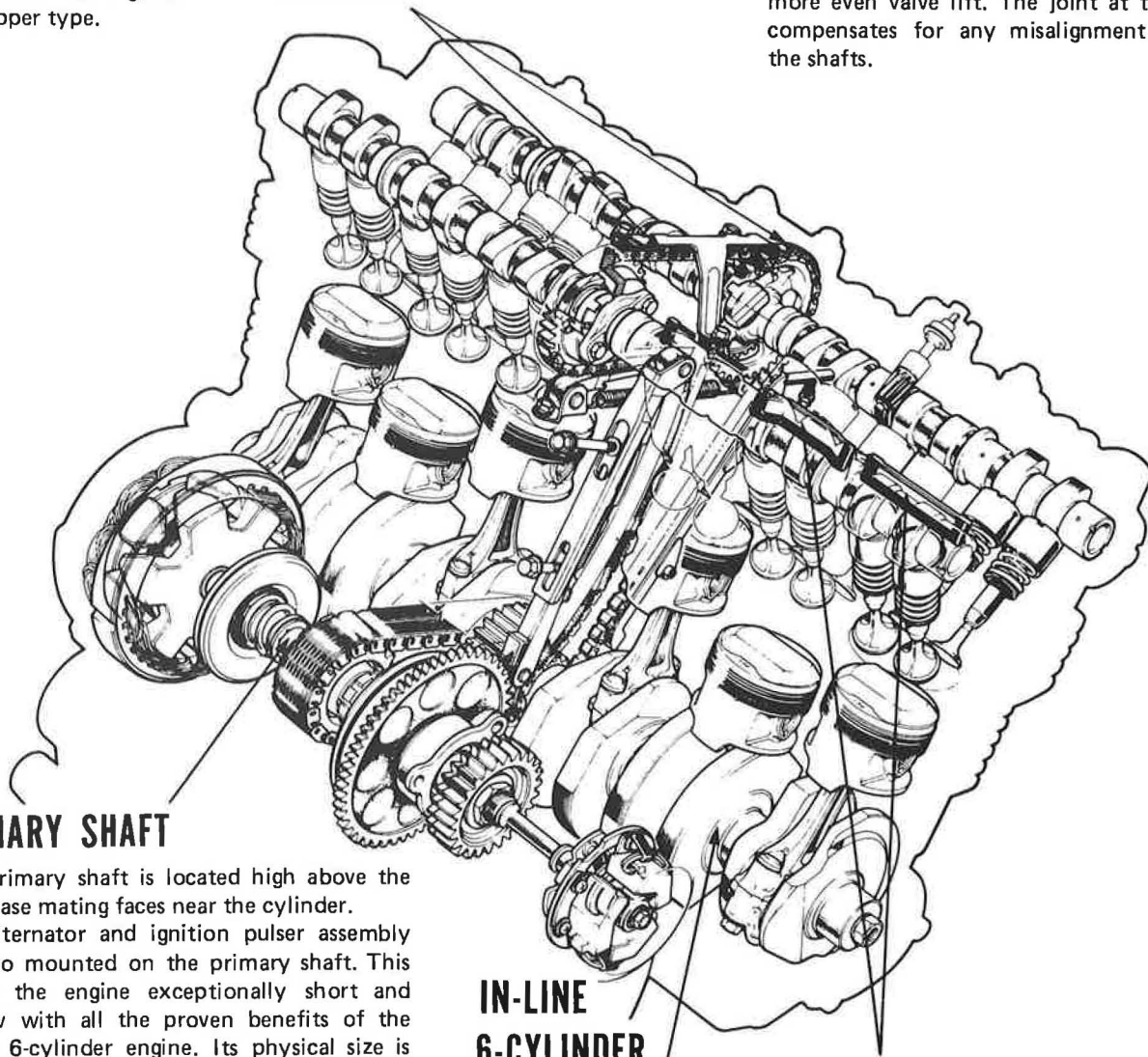
IN-LINE 6-CYLINDER ARRANGEMENT

The in-line ultra short 53.4 mm stroke 6-cylinder arrangement reduces the vehicle's height. It also reduces piston speed and minimizes wear.

CAMSHAFT OIL POOL PLATES

The engine oil is collected in the camshaft troughs by oil pool plates for positive lubrication of the valve lifters and cams.

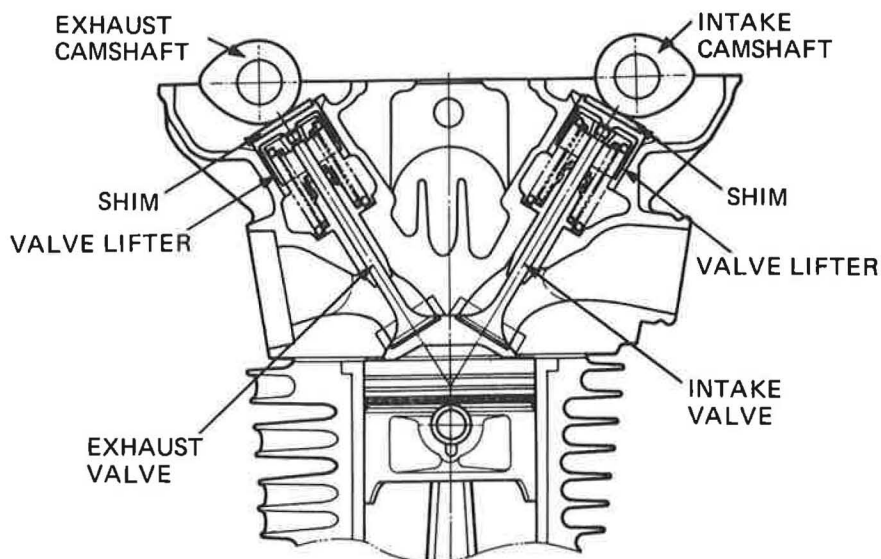
The plates also contribute to quieter valve operation.





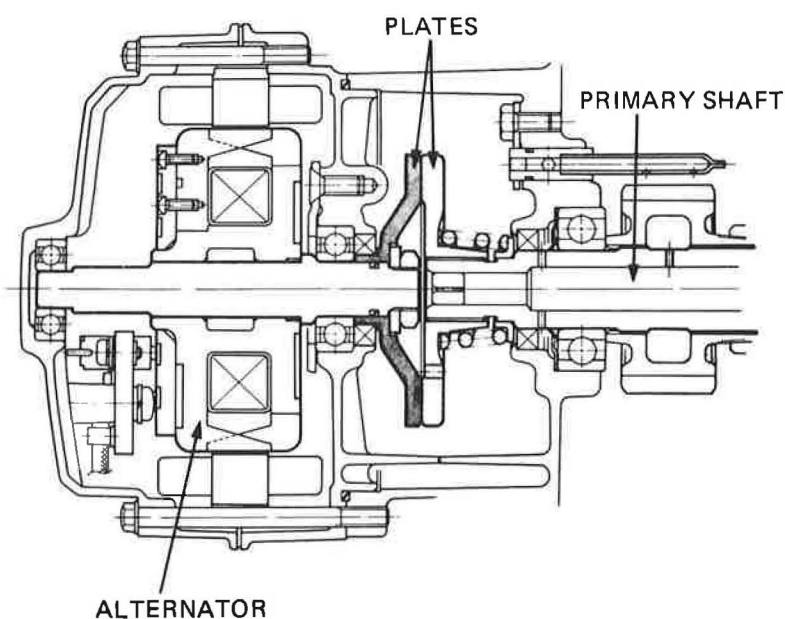
VALVE MECHANISM

The valves are operated by the cams through the valve lifters. The shims can be removed and installed easily without removing the camshafts by pushing down on the lifters with a special tool.



ALTERNATOR COUPLING

Power from the primary shaft is transmitted to the alternator through a frictional coupling. The coupling consists of two steel discs pressed against each other by a spring. Relative movement between the discs prevents excessive inertia from being transmitted directly from the alternator to the primary chain when snapping the throttle.



OIL COOLER, OIL PUMP

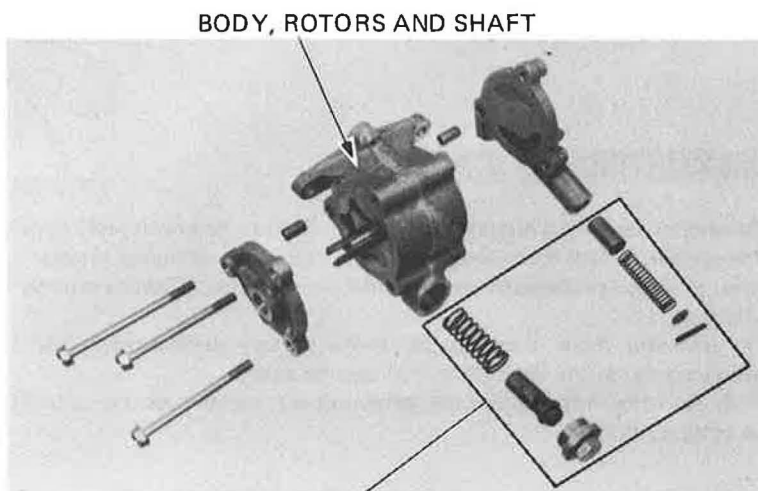
The lubricating system uses a wet sump with the sump at the crankcase bottom. The oil is cooled by an oil cooler.



OIL COOLER

A tandem trocoid pump supplies oil to the bearings and other moving parts of the engine. Oil from the oil sump is forced by the main pump into the crankshaft and cylinder head.

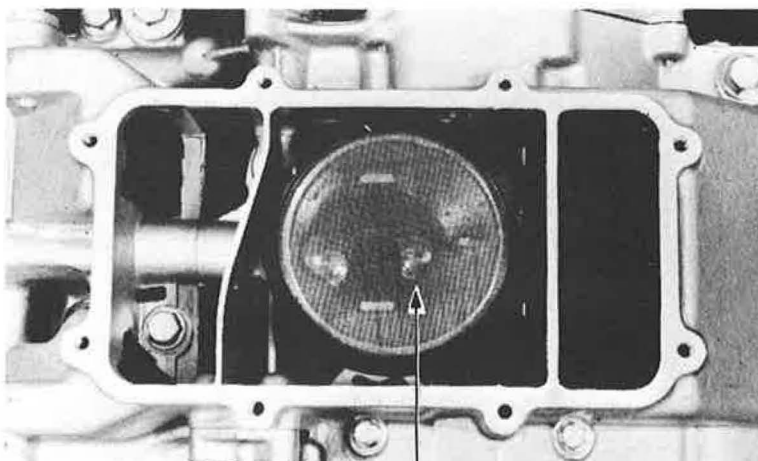
The auxiliary pump feeds oil to the primary shaft and transmission. The oil cooler is in the auxiliary pump circuit and cools the oil drawn from the sump by the auxiliary pump. The oil damper in the primary chain receives oil from this pump circuit.



BODY, ROTORS AND SHAFT

OIL PRESSURE
RELIEF VALVES

Oil from the sump must pass through a strainer before it enters the pumps.

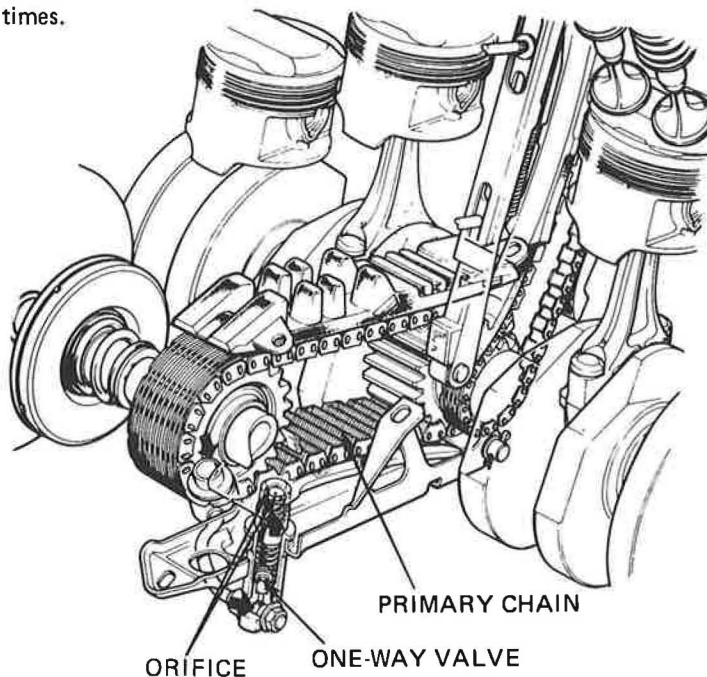


OIL STRAINER



OIL DAMPER TYPE PRIMARY CHAIN TENSIONER

Primary chain tension is controlled by an oil dampened chain tensioner. It consists of a one-way check valve using a steel ball, a spring and a tension bar. The bar has an oil chamber with small orifices at its end. Oil in the chamber compensates for cavitation, assuring positive damper action at all times.

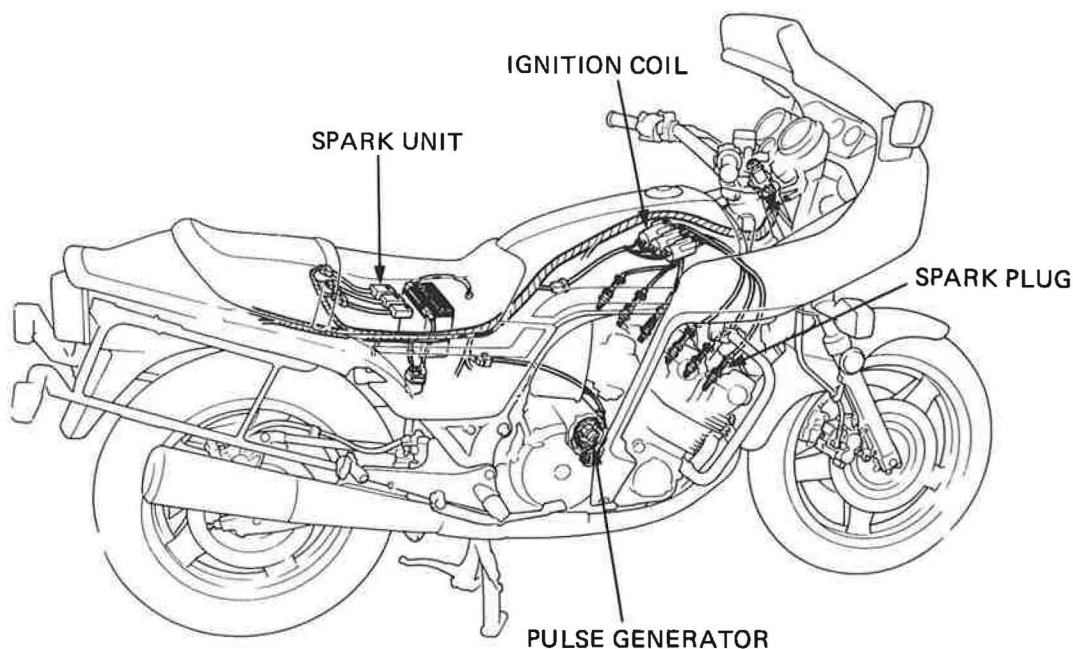


TRANSISTORIZED IGNITION

The engine uses a transistorized ignition. A pulse generator and transistorized spark unit supply current to the primary circuit. The system is free from problems that occur in mechanical breaker systems. It produces stable secondary energy and eliminates periodic adjustments and maintenance services. There are three independent systems; one for 1 & 6, 2 & 5, and 3 & 4 cylinders.

The generator rotor is connected to the primary shaft so they turn as a unit as the shaft rotates. Three generating coils are spaced evenly on the base plate, 120 degrees apart.

When the rotor turns, pulses are generated as it passes over the coils. Adjusting timing for 1 & 6 cylinders automatically adjusts the other cylinders.





FRONT AIR FORKS

The front forks uses air and a coil spring. The air chamber is inside each fork tube connected with equalizer tube to an air valve at the fork cap bolt.

EQUALIZER-TYPE AIR VALVE

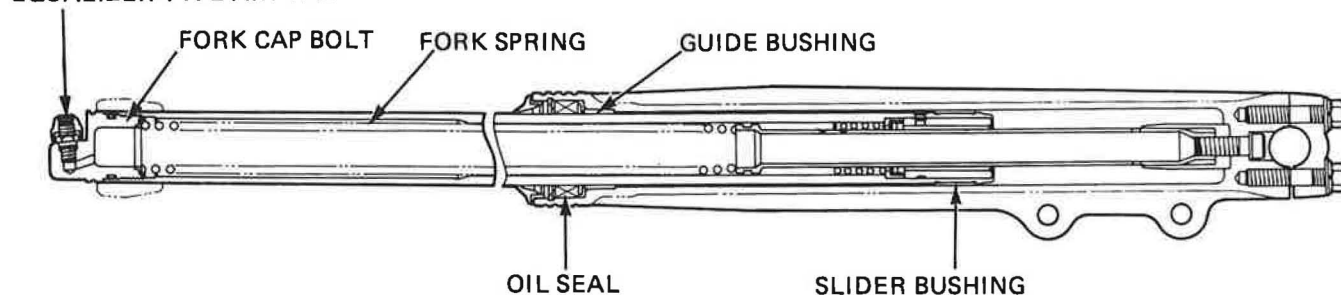
FORK CAP BOLT

FORK SPRING

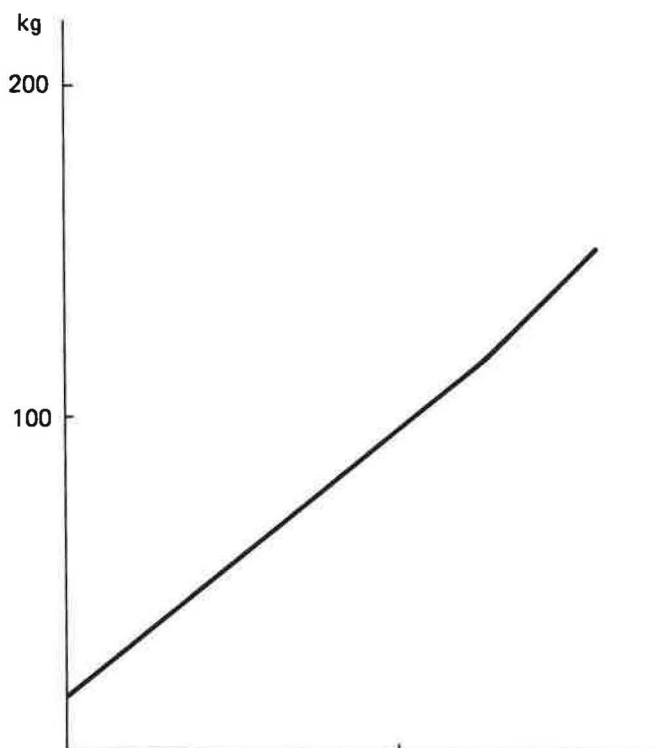
GUIDE BUSHING

OIL SEAL

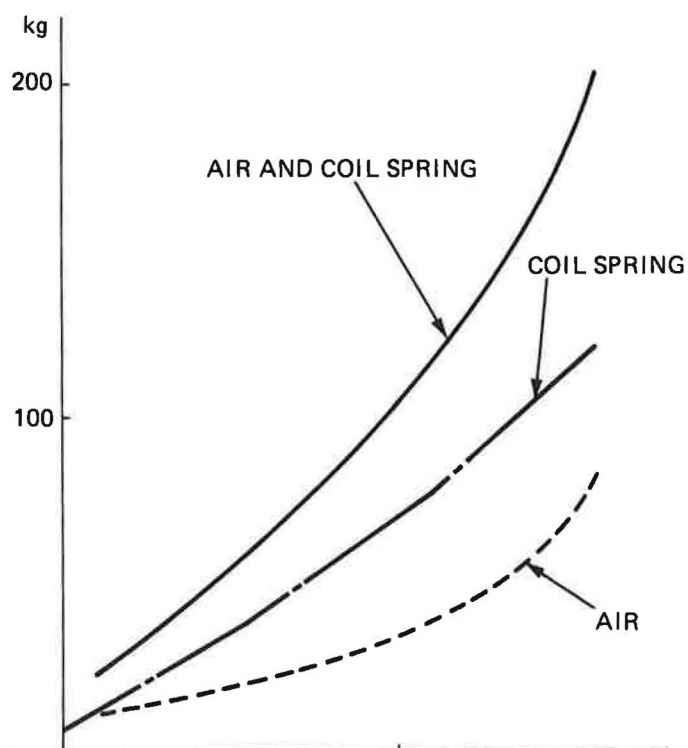
SLIDER BUSHING



When adjusted correctly, the air fork system provides a more progressive compression than a conventional fork. The air fork system can be adjusted to each individual's preference to compensate for load and riding conditions.



CONVENTIONAL SUSPENSION



AIR SUSPENSION

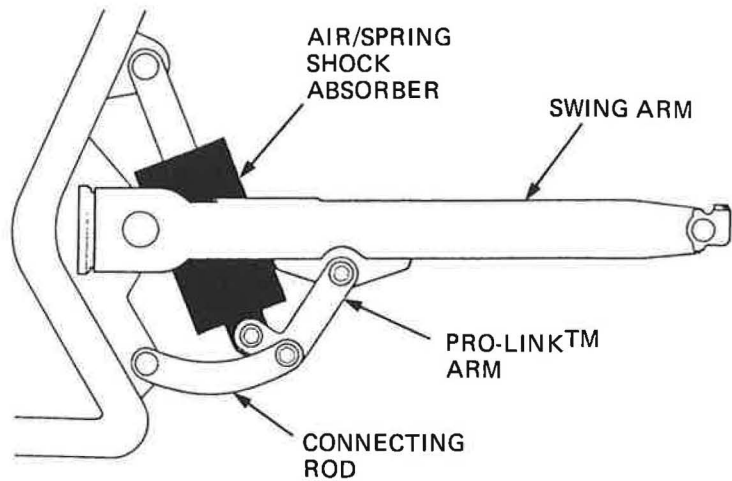


PRO-LINK (PROGRESSIVE LINKAGE) STREET REAR SUSPENSION

INTRODUCTION

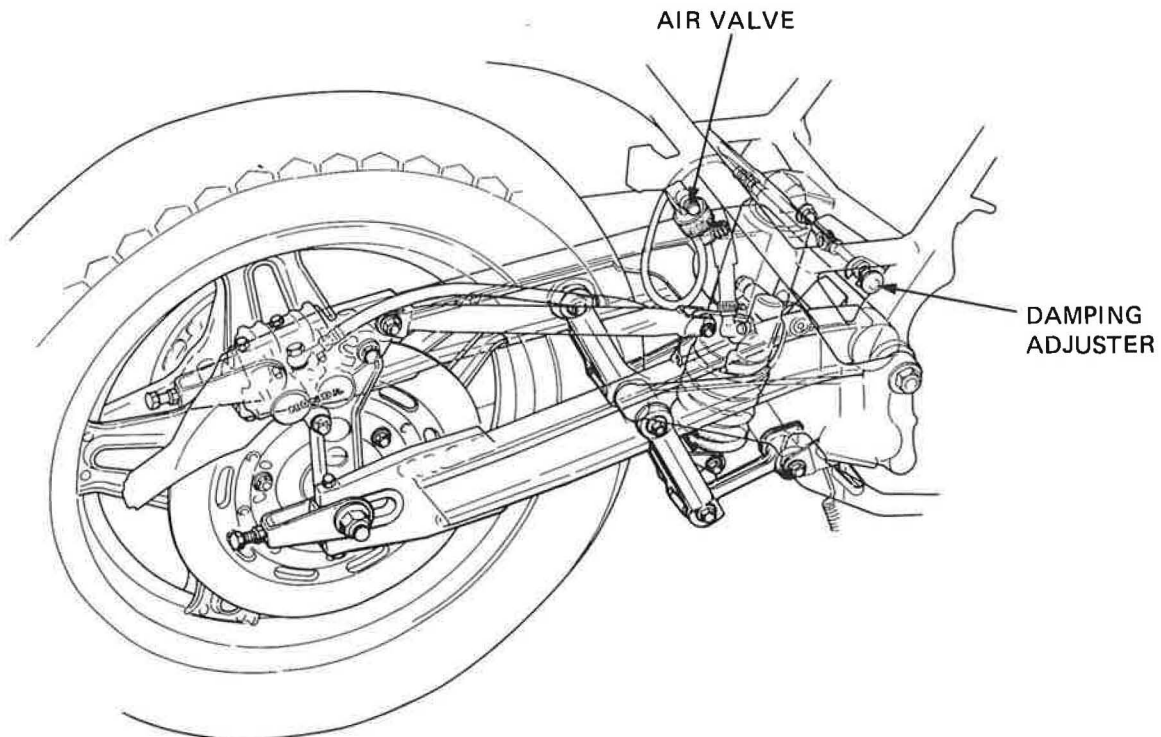
This motorcycle has the Pro-Link Street Rear Suspension System with a two-way adjustable air/spring shock absorber to provide the desired ride under various road conditions and rider/cargo combinations. This system gives good bottoming resistance and at the same time, provides acceptably soft initial travel for smaller bumps.

Low air pressure settings provide a softer ride and are for light loads and smooth road conditions. High air pressure settings provide a firmer ride and are for heavy loads and rough road conditions.



The action of the street system is not as progressive as that of the competition system. Also, the shock absorber position in the street version is considerably lower than in the dirt system, in order to keep the center of gravity of the motorcycle as low as possible, and to allow room above the shock absorber for the battery and other electrical components.

Shock absorbers used in the street Pro-Link™ systems are of the air/spring type; this gives good bottoming resistance, and at the same time, provides acceptably soft initial travel for smaller bumps.

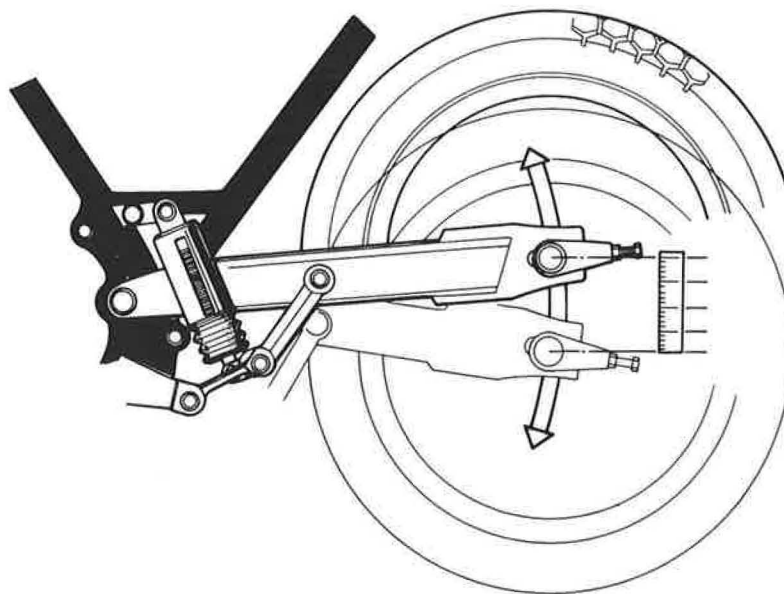




OPERATION

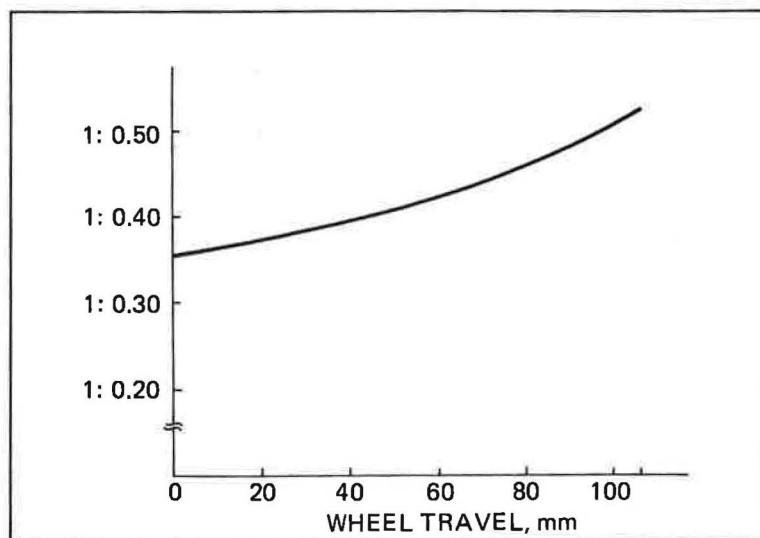
As the wheel and swingarm are driven up by bumps, the shock absorber is compressed by the shock arm which is held in a precise arc by the shock link. As wheel travel increases the shock arm rises above the swingarm proportionately, increasing absorber compression.

This provides the required progressive rise rate; the shock absorber moves only about one-fourth of wheel travel at the beginning and moves about one-third of wheel travel near the end.



This graph shows the wheel travel/shock travel ratio through the entire stroke of a CBX Pro-Link system.

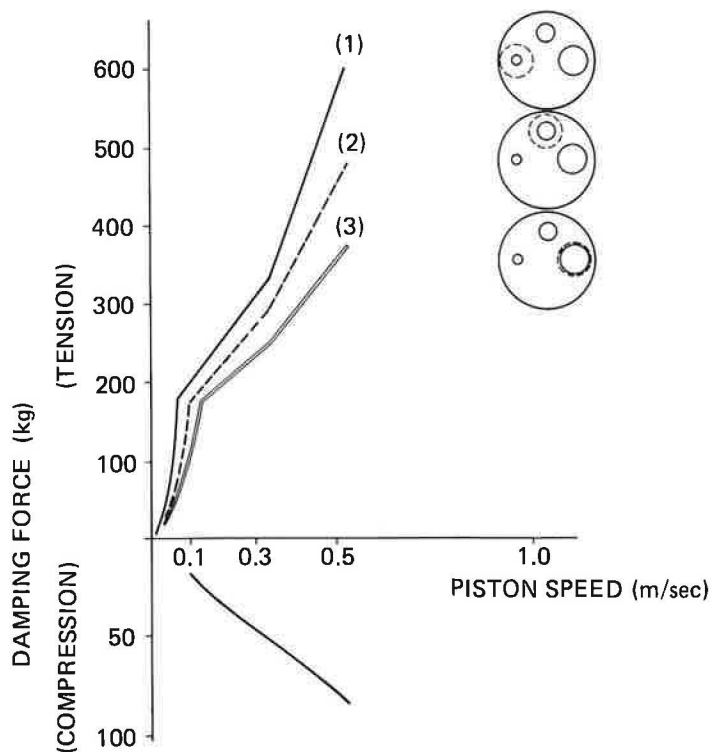
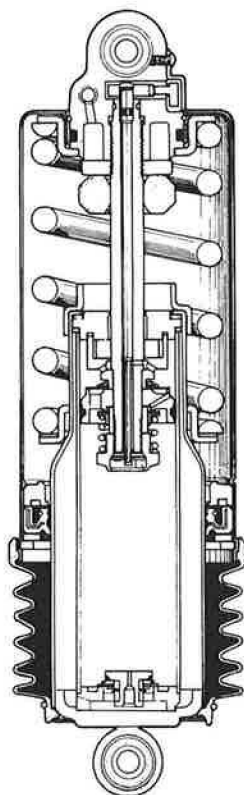
WHEEL TRAVEL/SHOCK TRAVEL RATIO



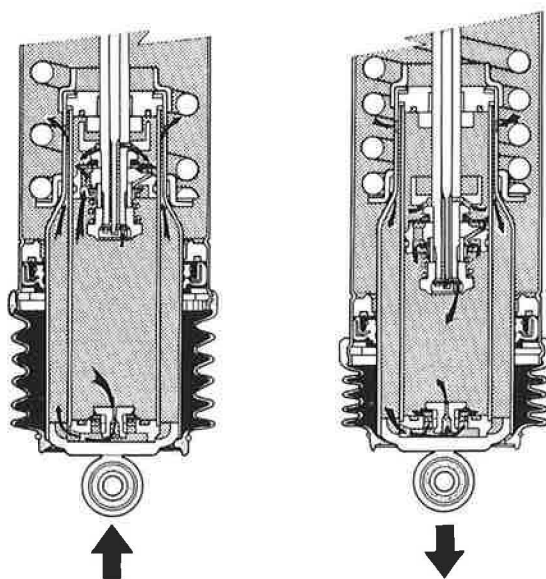


The CBX shock absorber has provision for three stages of damping adjustment:

DAMPING FORCE CHARACTERISTICS

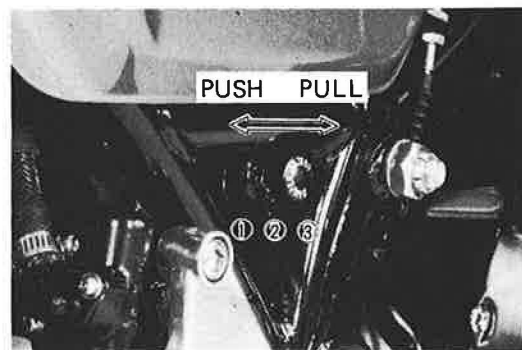


OIL FLOW CHART



COMPRESSION

REBOUND



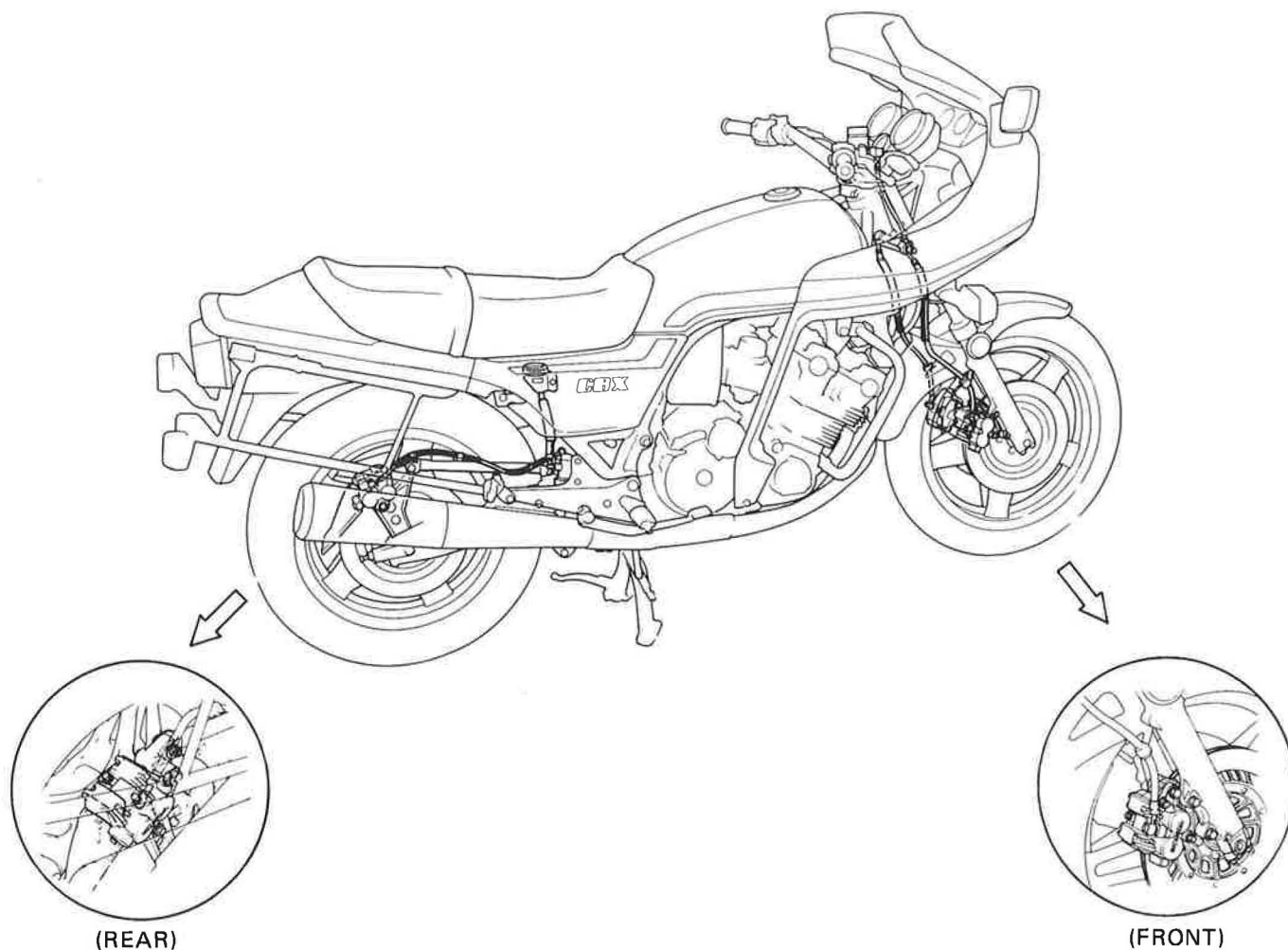
(1) Recommended Rear Suspension Adjustment:

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
400 kPa (4.0 kg/cm ²) 57 psi		2	Highway or winding road riding
		3	Rough road riding



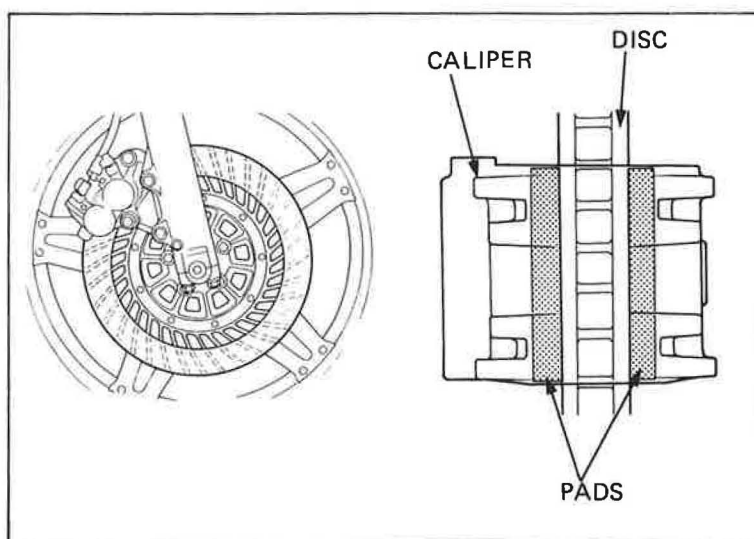
TRIPLE DISC BRAKE SYSTEM

The CBX uses a triple hydraulic brake system: a ventilated dual disc brake for the front and a single disc brake for the rear. Each brake caliper contains two pistons to force the brake pads against the disc.



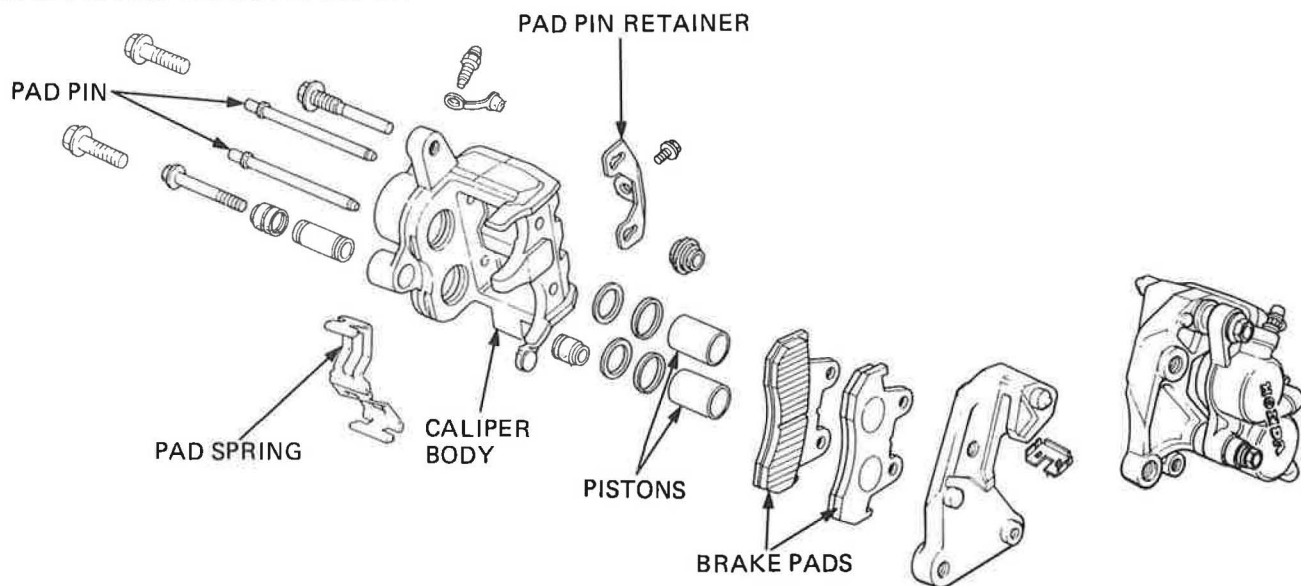
VENTILATED FRONT BRAKE DISCS

The hollow construction allows more heat to be dissipated to the air when the brake is applied, ensuring safer, faster stopping with the least possible fading.





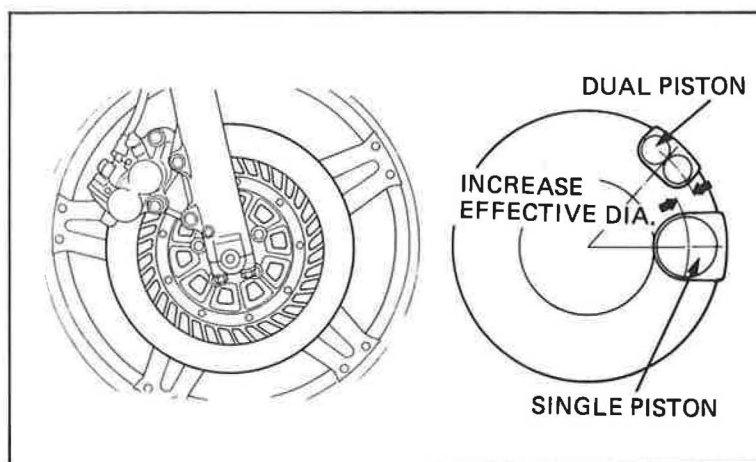
DUAL PISTON BRAKE CALIPER



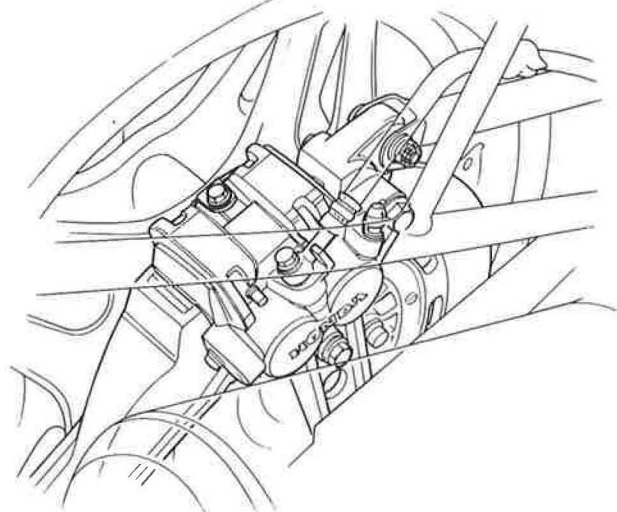
The advantages inherent in the use of two pistons in a single caliper can be added to the long list of many features built into the CBX.

Among the advantages is greater stopping power, and locating the pistons nearer the edge of the disc allows the same pad pressure with up to 30% less lever effort.

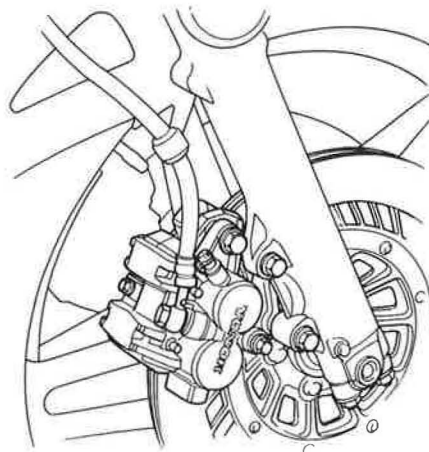
Another result of this design is a lighter, stronger caliper to withstand a greater load encountered by the caliper when the brake is applied.



[REAR]



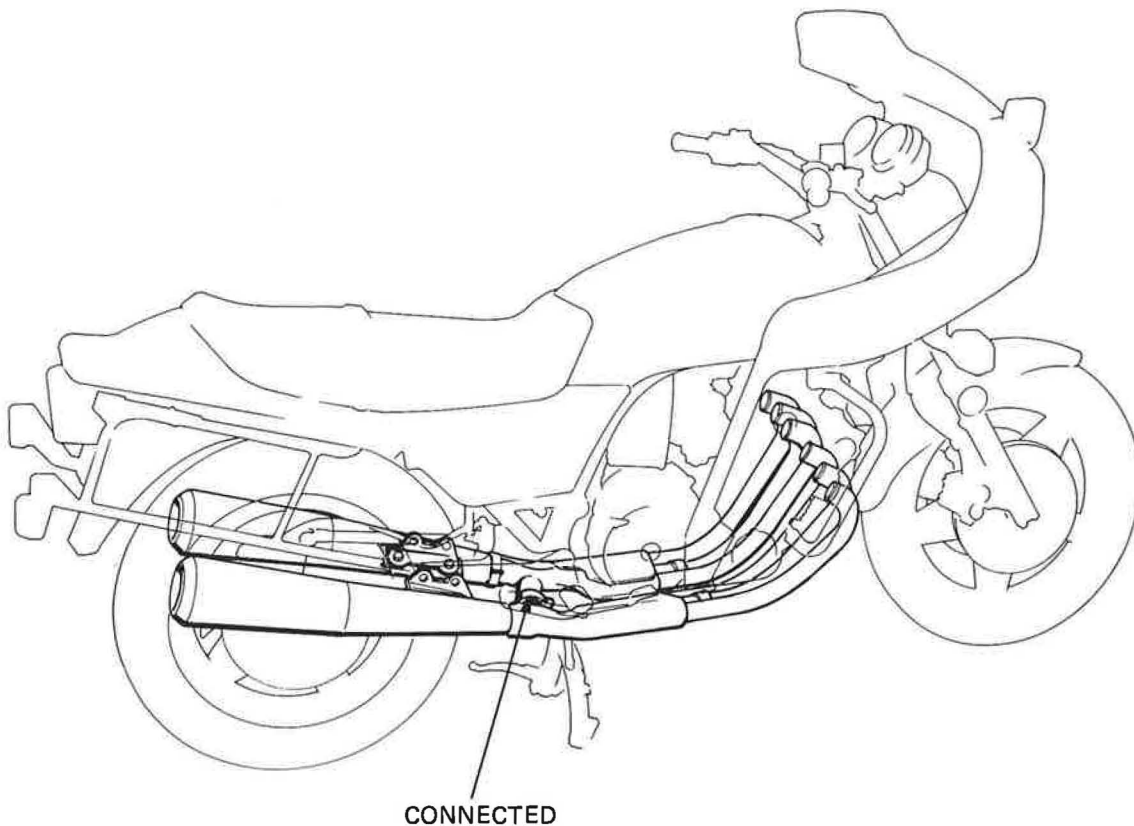
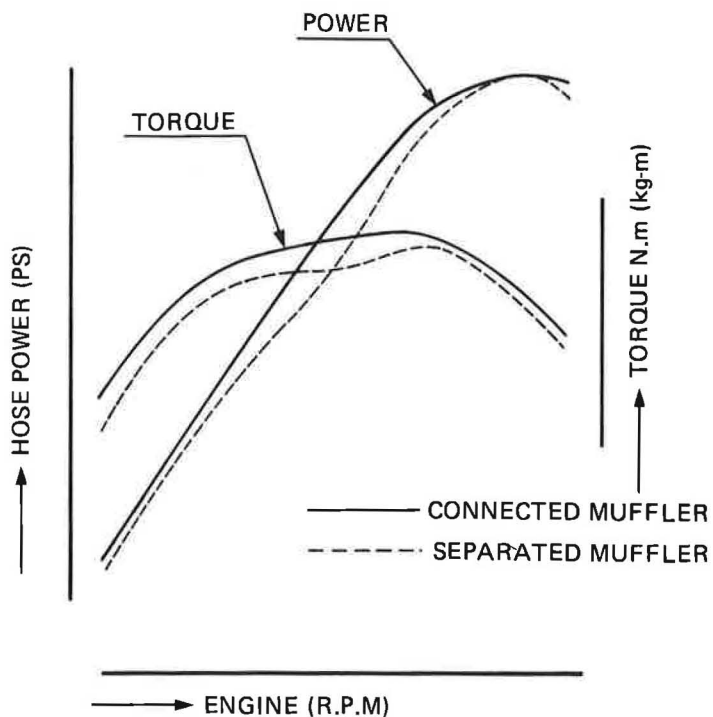
[FRONT]





EXHAUST MUFFLERS

The right and left mufflers are internally connected to give a desired acoustic properties and still offer low resistance to gas flow for more output per liter of fuel consumed.





FUEL LINE DIAPHRAGM

The fuel line diaphragm depends upon a negative crankcase pressure and a spring loaded diaphragm, allowing fuel to flow from fuel tank to the carburetor to the engine only when the engine is operating.

With the engine off the diaphragm is held against the fuel outlet within the diaphragm body; no fuel can flow through the fuel tank to the carburetor.

As the engine is cranked, negative vacuum pressure pulls the diaphragm down against diaphragm spring tension. This opens the fuel outlet allowing fuel to flow to the carburetor.

When the engine is stopped, the diaphragm is pushed back against the fuel outlet to block the fuel flow.

