

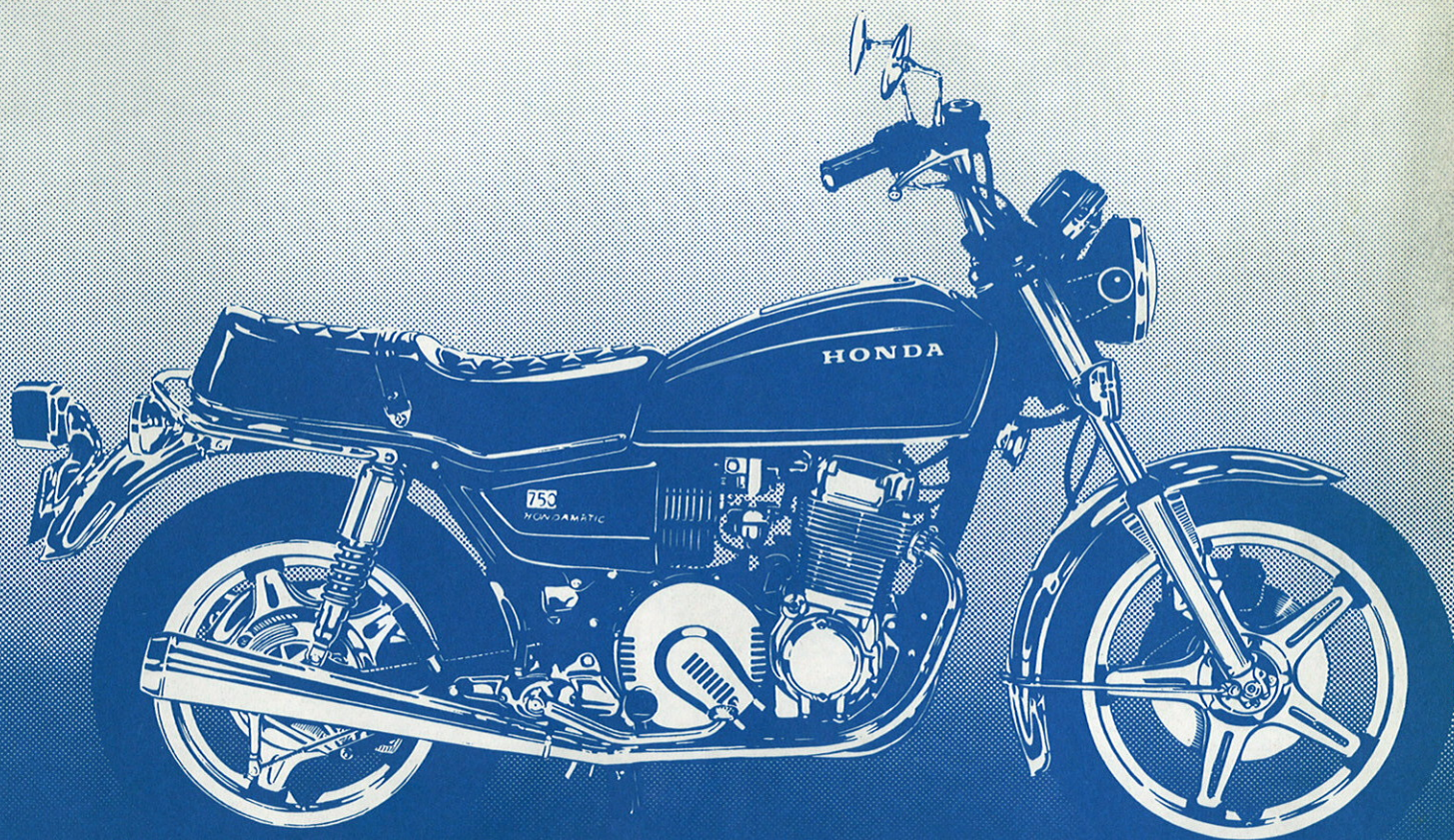
Official

HONDA

SHOP MANUAL

CB750A

HONDAMATIC



'76 - '78

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IMPORTANT SAFETY NOTICE

WARNING

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

CAUTION

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

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.



HONDA
CB750A

FOREWORD

This shop manual describes the technical features and service procedures for the HONDA CB750A.

This shop manual is divided into 18 sections.

The first page of each section has a Table of Contents that gives page references within the section.

Obvious or commonly known information is excluded as much as possible from the manual and written instructions are made as concise as possible.

Illustrations and explanations are closely interrelated and reader can grasp meaning rapidly and clearly.

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CB750A

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HONDA CB750A

1. SPECIFICATIONS

[] : '76 Model Frame No. CB750A-7000000-
 [] : '77 Model Frame No. CB750A-7100000-
 [] : '78 Model Frame No. CB750A-7200000-
 [] : '77 and '78 Models

	Item	Metric	English
Dimensions	Overall length	2,250 mm	88.6 in.
	Overall width	865 mm	34.1 in.
	Overall height	1,185 mm [1,190 mm]	46.7 in. [46.9 in.]
	Wheel base	1,480 mm	58.3 in.
	Seat height	820 mm [810 mm]	32.3 in. [31.9 in.]
	Foot peg height	330 mm [340 mm]	13.0 in. [13.4 in.]
	Ground clearance	135 mm [140 mm]	5.3 in. [5.5 in.]
	Dry weight	241 kg [242 kg] [245 kg]	531 lbs. [534 lbs.] [540 lbs.]
Frame	Type	Double cradle	
	Front suspension and travel	Telescopic fork 141.5 mm (5.6 in.)	
	Rear suspension and travel	Swing arm 91.5 mm (3.6 in.)	
	Front tire size and air pressure	3.50H 19 (4PR), 1.75 [2.0] / 2.0 kg/cm ² (25 [28] / 28 psi.)	
	Rear tire size and air pressure	4.50 H 17A (4PR), 2.25 [2.0] / 2.5 kg/cm ² (32 [28] / 36 psi.)	
	Front brake	Disc brake	
	Rear brake	Internal expanding shoe	
	Fuel capacity	19.5 lit.	5.1 U.S.gal., 4.2 Imp.gal.
	Fuel reserve capacity	4.0 lit.	1.1 U.S.gal., 0.9 Imp.gal.
	Caster angle	61.5° [62.5°]	
	Trail length	115 mm	4.5 in.
	Front fork oil capacity	145-155 cc	4.9-5.3 oz
		135-145 cc(After draining)	4.6-4.9 oz
Engine	Type	Air cooled, 4-stroke O.H.C. engine	
	Cylinder arrangement	4 cylinder in line	
	Bore and stroke	61 x 63 mm	2.402 x 2.480 in.
	Displacement	736 cc	44.9 cu.in.
	Compression ratio	8.6 : 1	
	Valve train	Chain drive over head camshaft	
	Oil capacity	5.5 lit.	5.8 U.S.qt., 4.8 Imp.qt.
		4.0 lit. (After draining)	4.2 U.S.qt., 3.5 Imp.qt.
	Lubrication system	Forced lubrication with wet sump	
	Lubrication check point	Hex head plug on right side of engine above ignition point cover (for oil pressure gauge adapter)	
	Cylinder head compression pressure	12 kg/cm ²	171 psi.
	Engine weight (dry)	97.0 kg	214 lbs.
	Intake valve	Opens 1 mm lift (0 mm lift)	At 5° (48°) (A.T.D.C.)
		Closes 1 mm lift (0 mm lift)	At 30° (121°) (A.B.D.C.)
	Exhaust valve	Opens 1 mm lift (0 mm lift)	At 40° (97°) (B.B.D.C.)
		Closes 1 mm lift (0 mm lift)	At 5° (63°) (B.T.D.C.)
	Valve tappet clearance	IN : 0.05 mm	IN : 0.002 in.
		EX : 0.08 mm	EX : 0.003 in.
	Idle speed	950 ± 100 rpm/"N" range	



SPECIFICATIONS

	Item	Metric	English
Carburetion	Type	Four piston valve type	
	Setting number	PD44A [PD44B] [PD43A]	
	Standard main jet	# 102 [# 108]	
	Standard slow jet	# 38	
	Air jet	# 150 [# 200]	
	Slow air jet	# 150	
	Idle mixture screw initial setting	1-1/4 [1] [1-1/8]	
	Float level height	14.5 mm [12.5 mm]	0.571 in. [0.492 in.]
	Standard needle position	3	
Power train	Transmission	2 speeds with torque converter	
	Primary reduction ratio	1.351 [1.349]	
	Gear ratio	2.263 N-L-D [N-1-2]	
		1.520	
	Final reduction ratio	2.824 (17 : 48) [2.800 (15 : 42)]	
	Gear shift pattern	Left foot operated return system	
Electrical	Ignition	Battery and ignition coil	
	Contact breaker point gap	0.3-0.4 mm	0.012-0.016 in.
	Ignition advance	"F" mark	10° (BTDC) static or idle speed
		Max. advance	33°-36°
		R.P.M. from "F" to max. advance	1,400-2,500 rpm
	Starting system	Starting motor or kick starter	
	Generator	THREE PHASE ALTERNATOR 12V, 0.29 kw/5,000 rpm	
	Battery capacity	12V-20AH	
	Spark plug	NGK D8ES-L, ND X24ES [NGK D8EA, NDX24ES-U] [⊗ NGK DR8ES-L, ND X24ESR-U]	
	Spark plug gap	0.6-0.7 mm	0.024-0.028 in.
	Dwell angle	235°-245°	
	Condenser capacity	0.24 μF	
Lights	Headlight (low/high beam)	12V-40/50W	
	Tail/stoplight	12V- 8/27W	12V- 3/32 CP (SAE TRADE No. 1157)
	Turn signal light (front)	12V-23W	12V-32 CP (SAE TRADE No. 1034)
	(Rear)	12V-23W	12V-32 CP (SAE TRADE No. 1073)
	Speedometer light	12V- 3.4W x 2	12V- 2 CP x 2 (SAE TRADE No. 57)
	Change indicator light	12V- 3.4W x 3	12V- 2 CP x 3 (SAE TRADE No. 57)
	Turn signal indicator light	12V- 3.4W x 2	12V- 2 CP x 2 (SAE TRADE No. 57)
	High beam indicator light	12V- 3.4W	12V- 2 CP
	Gear position light	12V- 8W x 2	12V- 3 CP x 2

⊗ : Canadian Model



HONDA
CB750A

2. TECHNICAL FEATURES

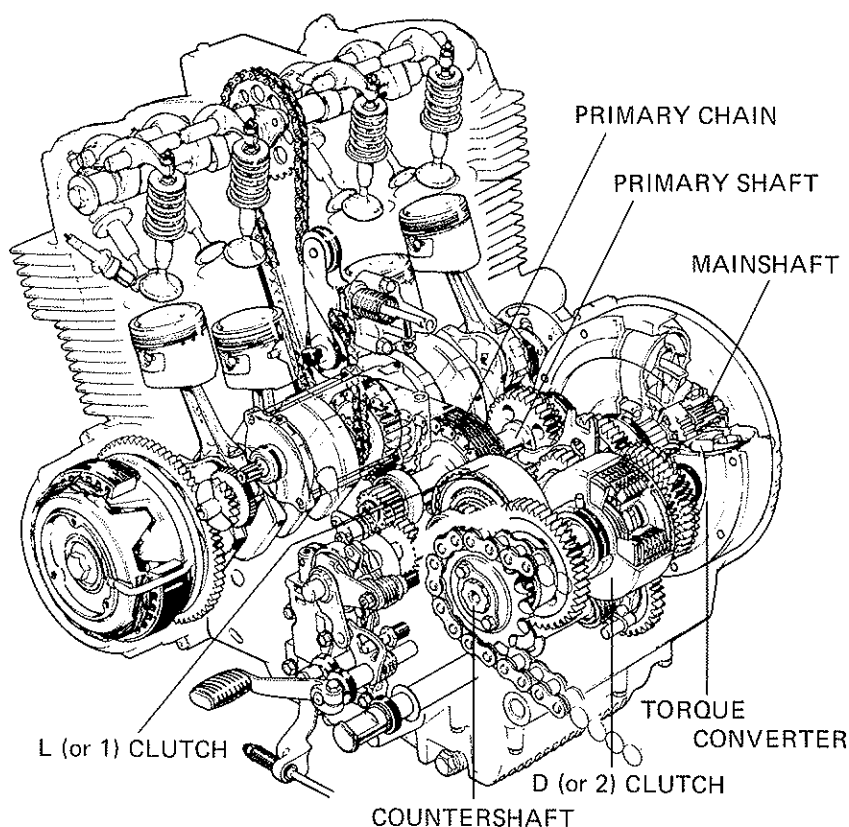
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● HONDAMATIC TRANSMISSION

1. POWER TRANSMITTING SYSTEM

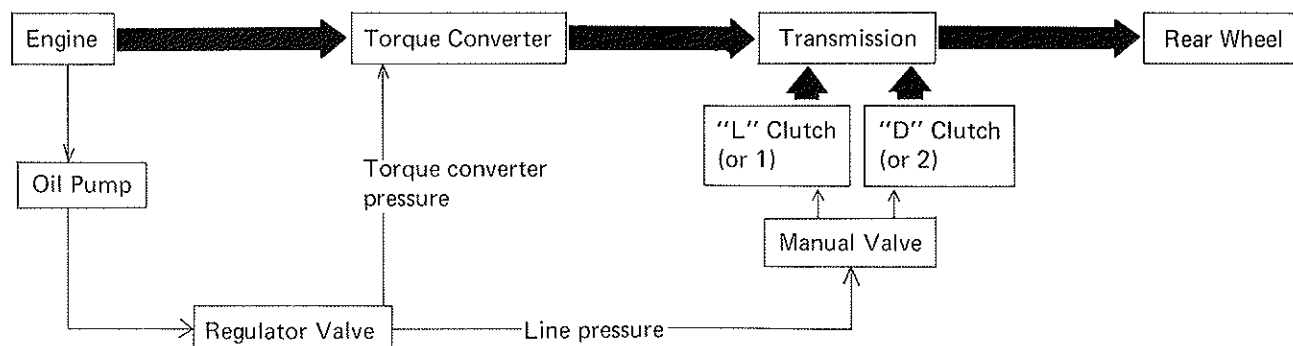
The Hondamatic consists of a torque converter, which replaces the conventional clutch, and a 2-speed forward constant-mesh transmission. The torque converter provides torque multiplication like a gear transmission with a large number of gearshift positions. It is driven by the primary gear train. The mainshaft is directly connected to the torque converter, using the 2-speed forward transmission. The transmission consists of a mainshaft, countershaft, "D" (or 2) and "L" (or 1) clutches, and a series of gears on those shafts. The clutches are a multi-plate hydraulic type, "D" (or 2) on the countershaft and "L" (or 1) on the mainshaft. The drive sprocket is attached to the left end of the countershaft.



2. CONFIGURATION OF OIL PRESSURE CONTROL SYSTEM

1. Oil pressure	Oil pump → Regulator valve → Line pressure ↳ Torque converter oil pressure
2. Pressure distribution	Manual valve → Line select
3. Operation	Torque converter pressure → Torque converter Clutch pressure → "L" (or 1) clutch or "D" (or 2) clutch

3. SCHEMATIC DIAGRAM

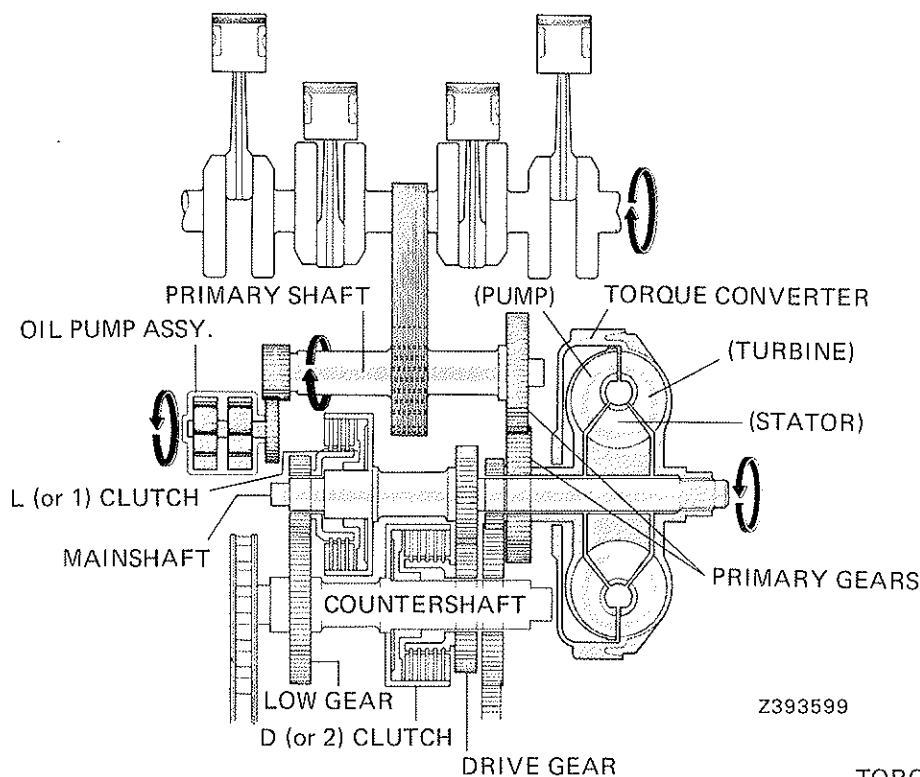




4. TRANSMISSION AND HYDRAULIC CIRCUITS

OPERATING IN "N" RANGE

As the engine is started, the oil pump supplies oil pressure to the torque converter. With the transmission in the "N" range, no oil is sent to either clutch, hence no power is transmitted from the mainshaft to the countershaft.

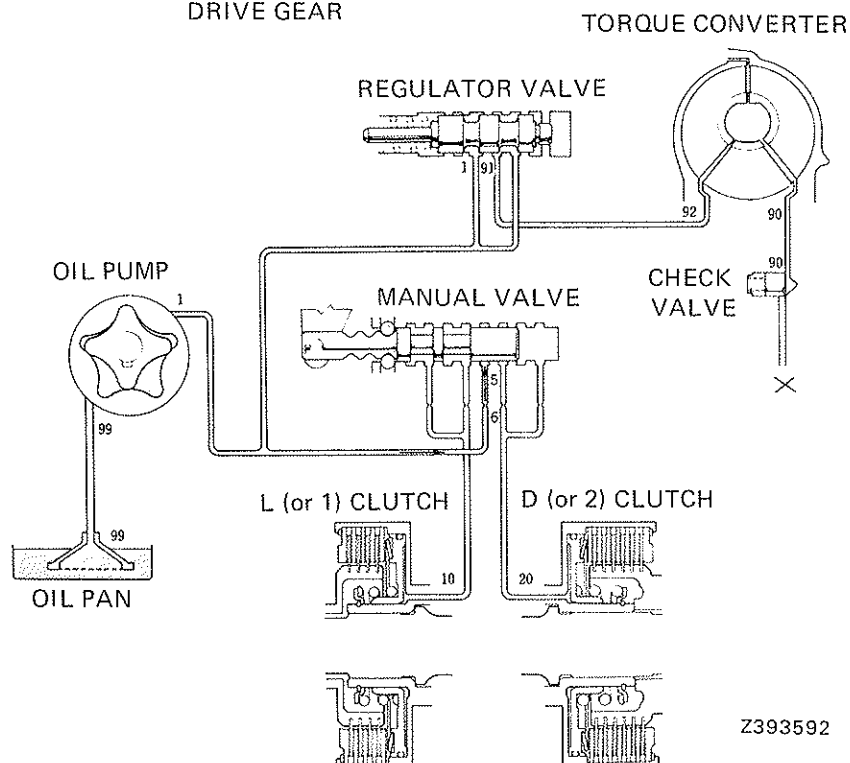


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Once the engine has started and the oil pump is rotated by the primary shaft, oil in the oil pan is sucked up by the pump. The oil is then transferred to the regulator valve (1) through the strainer (99). The oil is then controlled by the regulator valve, changing to the line pressure (1) for control of "L" (or 1) and "D" (or 2) clutches and then enters the torque converter (91).

In the "N" range, the line pressure (1) is cut with the manual valve operation, causing no oil to enter any clutch, (10) or (20).

The clutches are then disengaged.

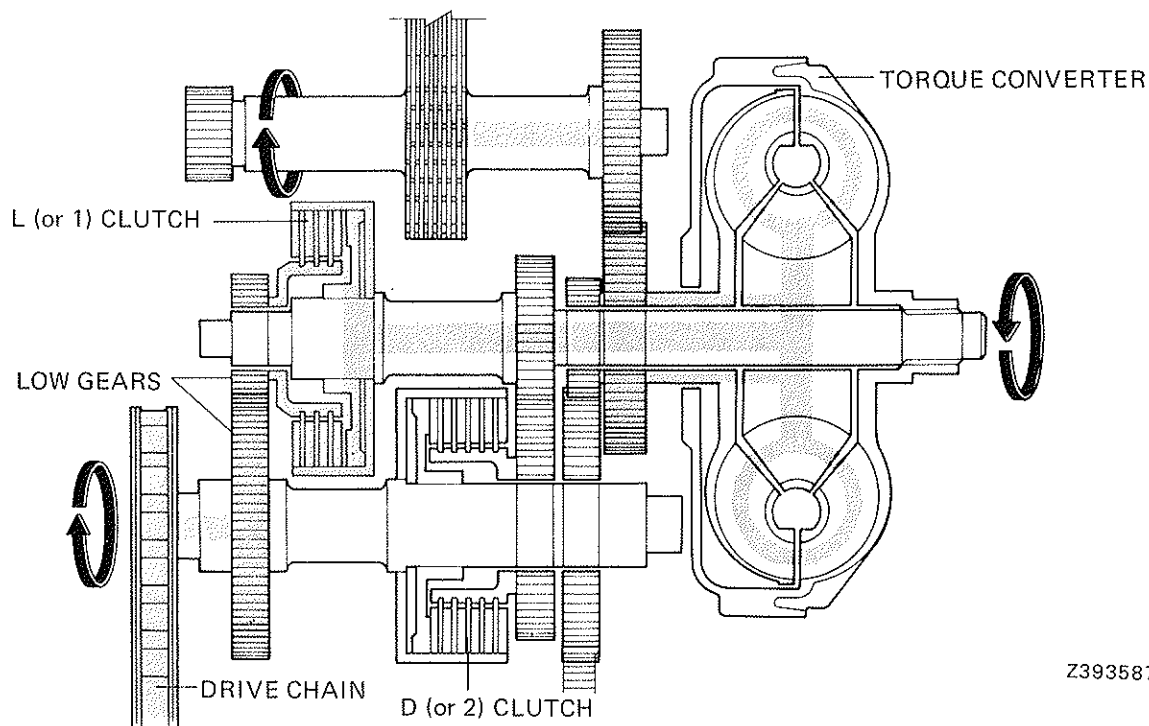


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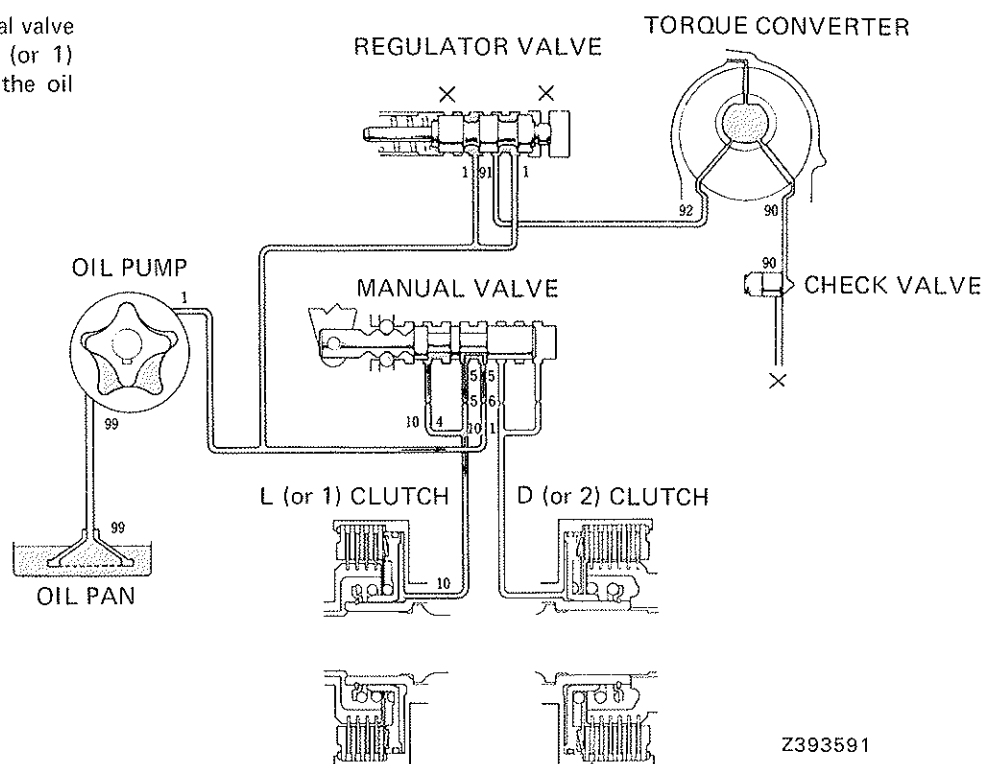
**OPERATING IN "L" (or 1) RANGE**

In the "L" (or 1) range, the "L" (or 1) clutch is engaged. The flow of power from the engine is as follows:

Torque converter → Mainshaft → L (or 1) clutch → Low gear → Countershaft → Final drive sprocket → Final drive chain.



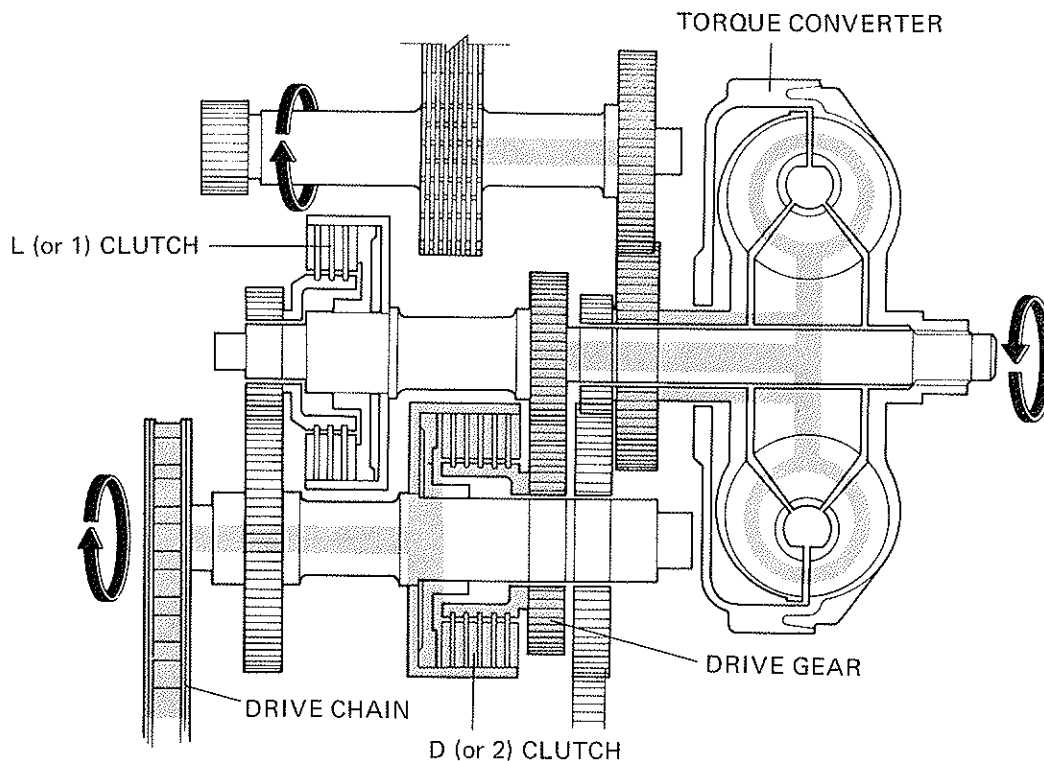
In the "L" (or 1) range, the manual valve admits the pressure into the "L" (or 1) clutch through the port (5) and the oil line (10).





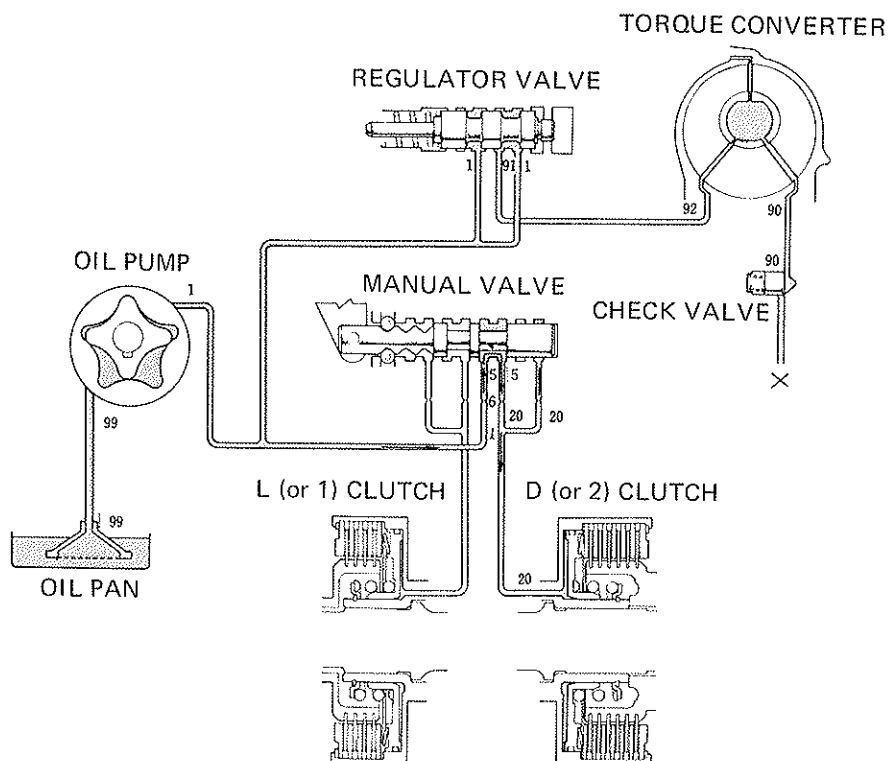
OPERATING IN "D" (or 2) RANGE

In the "D" (or 2) range, the "D" (or 2) clutch is engaged. Engine power is transmitted from the mainshaft to the countershaft.



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In the "D" (or 2) range, the pressure (1) is directed through the port (5) and oil line (20) into the "D" (or 2) clutch.



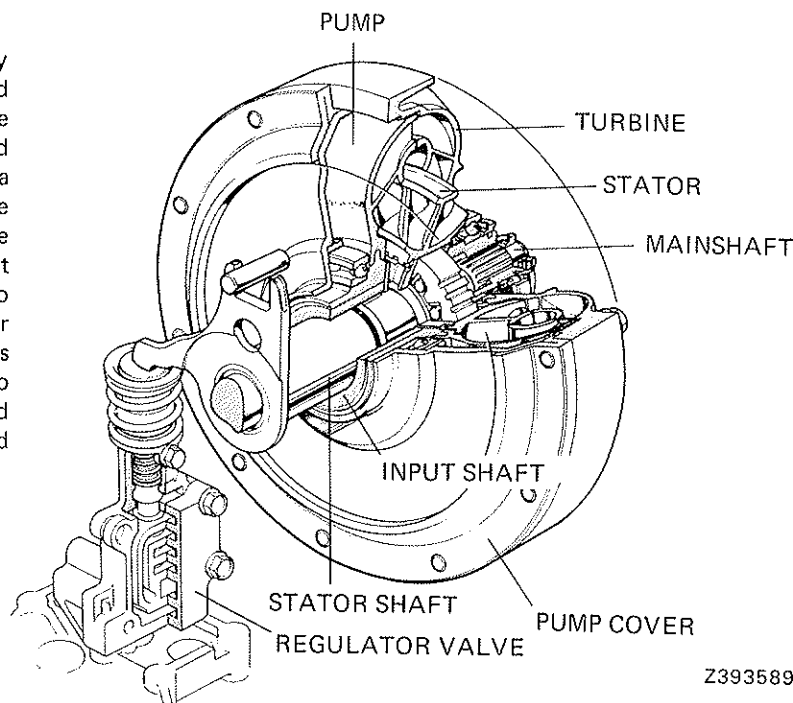
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5. TORQUE CONVERTER

The torque converter offers torque multiplication by providing varying drive ratios between the driving and driven members. However, it no longer enters into the torque converter action as driven member speed approaches driving member speed. It then acts as a coupling fluid. The principal parts of the torque converter are the turbine, pump, stator and the one-way clutch. The pump is splined to the input shaft, the stator to the stator shaft and the turbine to the mainshaft. The mainshaft transmits the power output to the transmission. The stator shaft controls the line pressure with the regulator valve according to the stator shaft reaction generated by the speed and/or torque differences between the pump and turbine.

Operation of the regulator valve is dependent upon reaction caused by the stator shaft. The stator is held stationary when there is a difference in pump and turbine speeds. There is always a reaction force at the stator shaft so that, in effect, it compresses the reaction and regulator springs until an equilibrium is reached between the oil pressure and the spring force. (Refer to Page. 2—9 for operation of the regulator valve).



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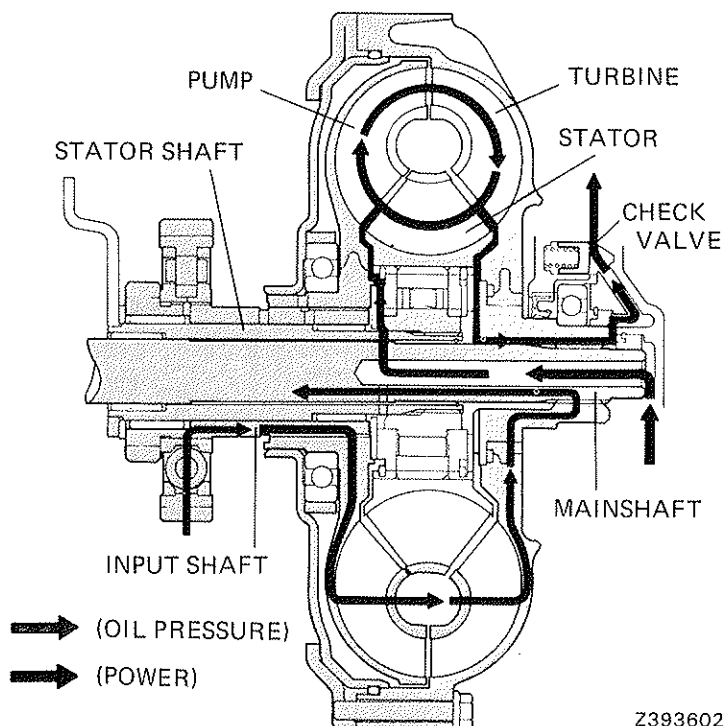
Line pressure control by the stator shaft reaction

The torque converter is filled inside with oil pressurized by the oil pump.
The oil pump is rotated by the input shaft.
The oil supply for the torque converter is:

Oil pump → regulator valve → oil passage in the torque converter → center of the case → mainshaft.

As the pump rotates, centrifugal force is generated, causing circulation from the pump and turbine to the stator.

Oil flows from the clearance between the bearing cap and the mainshaft.

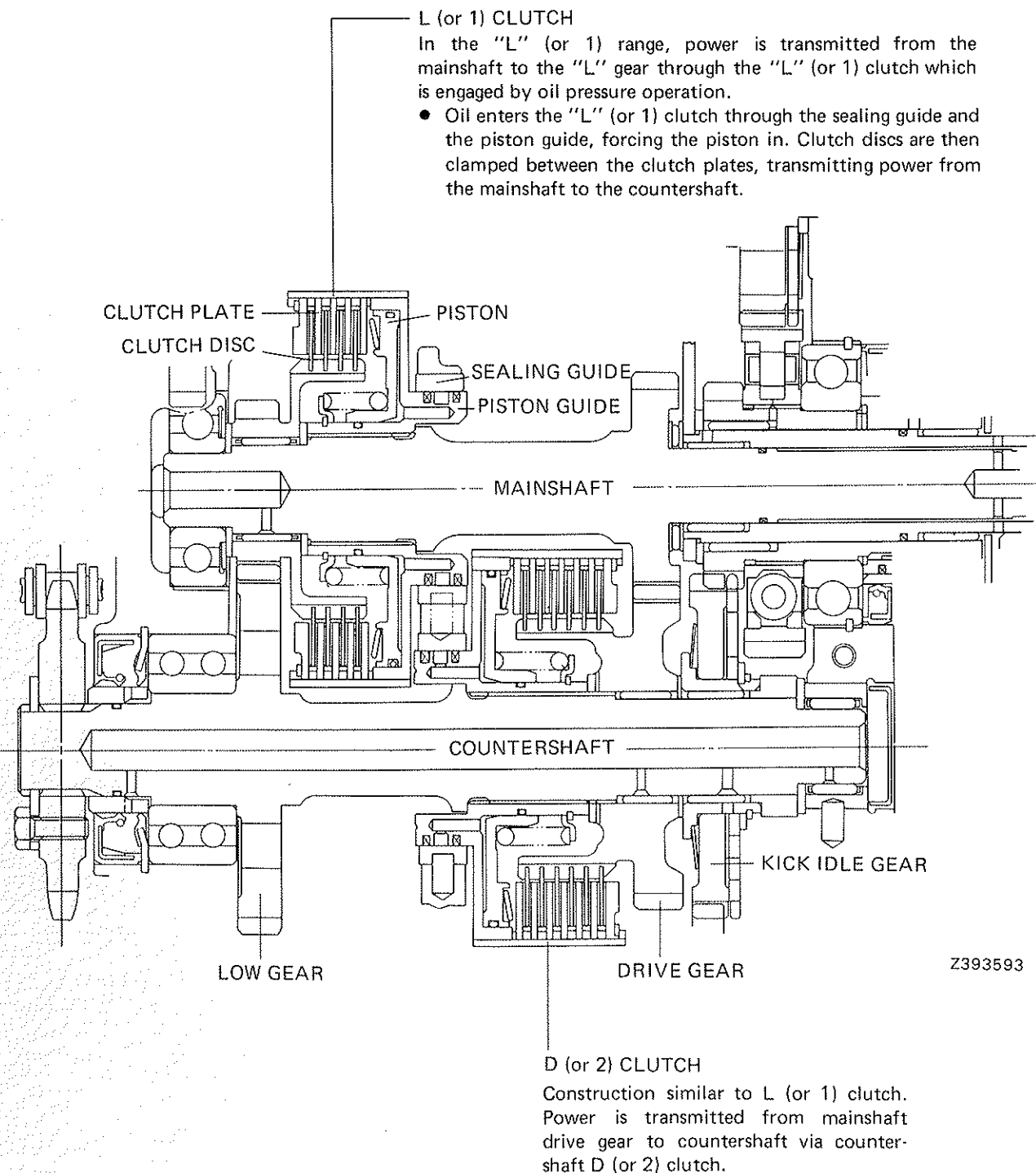


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6. TRANSMISSION/CLUTCH

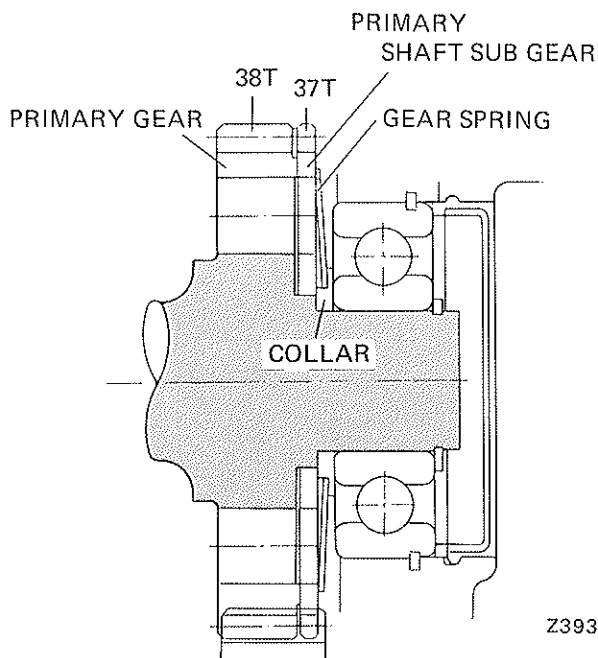
The transmission is a 2-speed forward constant mesh type. The "D" (or 2) range is for all normal and high-speed driving. The "L" (or 1) range is for starting, ascending or descending steep slopes, etc. Control of this transmission is achieved by two built-in hydraulic clutches and shift pedal.





7. PRIMARY GEAR DAMPER

The damper consists of a sub gear and a dish spring with the gear held tight against the side of the main gear. The sub gear has one less tooth than the main gear. The spring allows movement of the sub gear to fill in backlash as the main and driven gears mesh so that smooth, quiet running results.



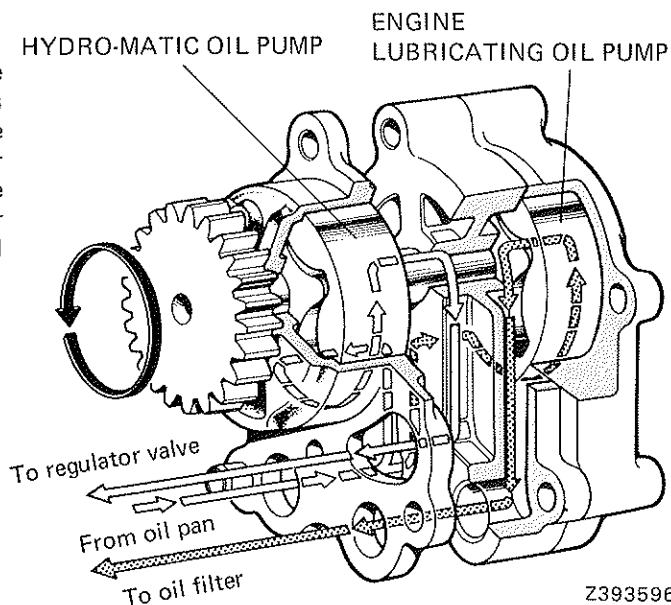
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8. KICK IDLE GEAR DAMPER

The construction is similar to the primary gear damper in that the "fill in" takes place between the input shaft and the kick idle gear. The number of gear teeth is increased by one as compared to that of the idle gear as it works on the driven side. Idle gear: 39T; Sub gear: 40T

9. OIL PUMP

A tandem trochoid rotor pump furnishes pressure to circulate oil through the engine and the Hydro-matic system. It is located on the left side of the crankcase and is driven by the pump drive gear mounted on the primary shaft. The inner rotor is integral with the drive shaft, making a line contact with the outer rotor. The outer and inner rotor are eccentric. The outer rotor rotates at $4/5$'s the speed of the inner rotor, furnishing oil under pressure each time it passes over the discharge port.

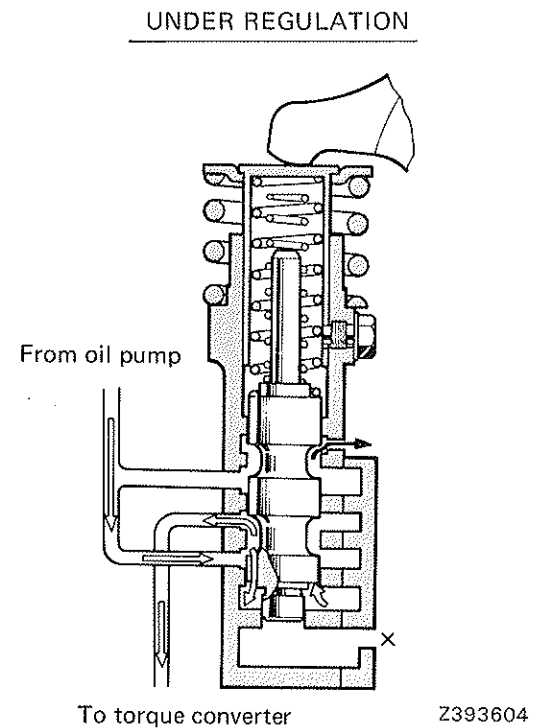
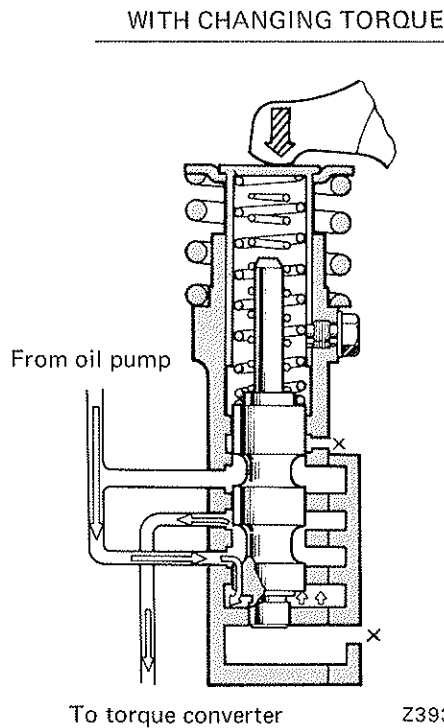
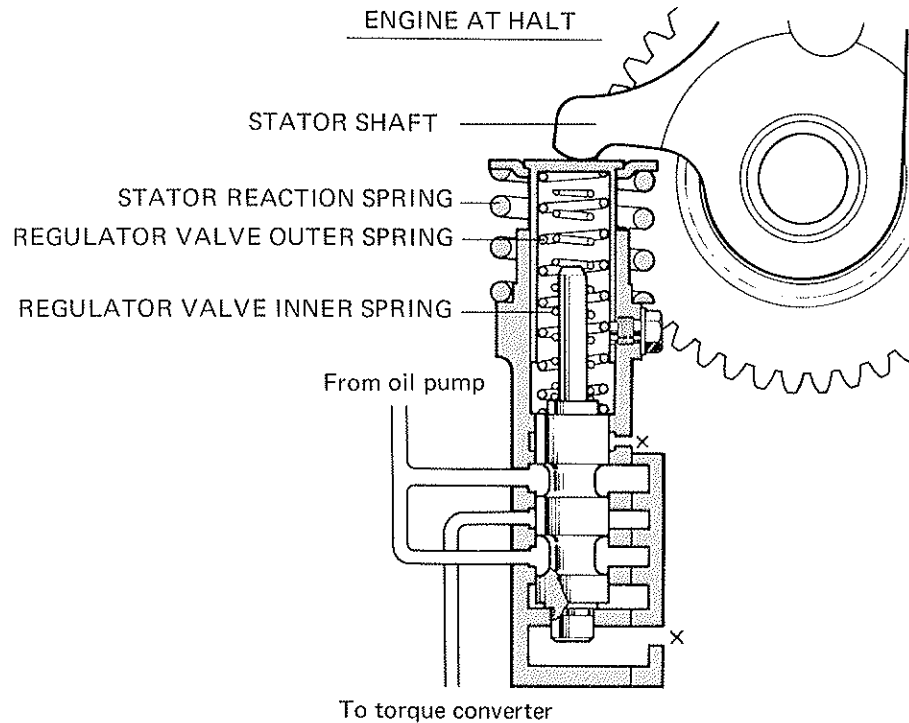


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10. REGULATOR VALVE

The valve maintains constant line pressure regardless of changes in engine speed and engine load. It consists of two springs and a spool.

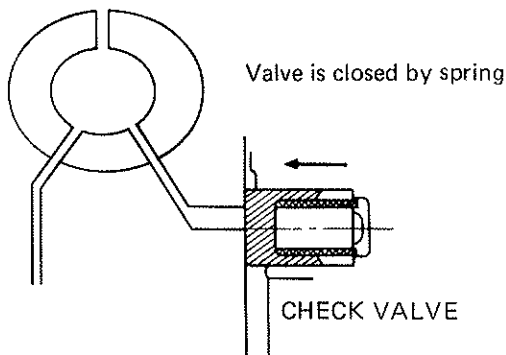


**11. TORQUE CONVERTER CHECK VALVE**

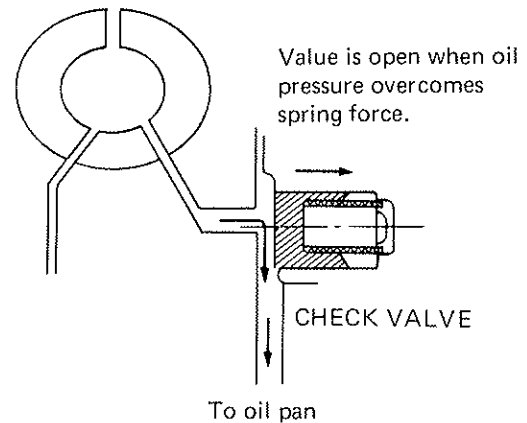
This check valve maintains constant torque converter pressure and prevents the converter to empty while the engine is running. When the oil pressure is low, this valve will close. When the oil pressure is above 1.0 kg/cm^2 , the valve allows the excess oil to flow out.

VALVE CLOSED

TORQUE CONVERTER

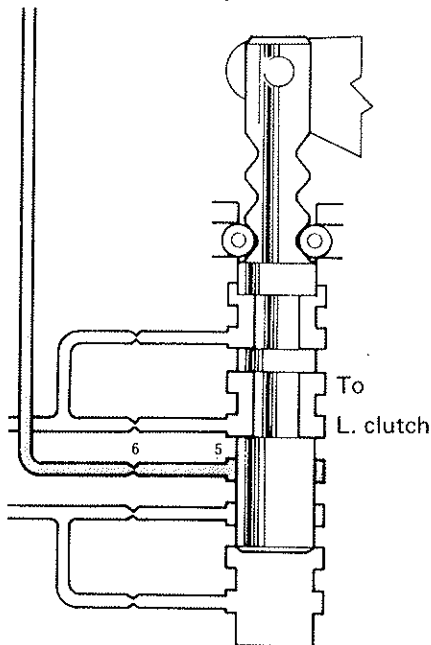
VALVE OPENED

TORQUE CONVERTER

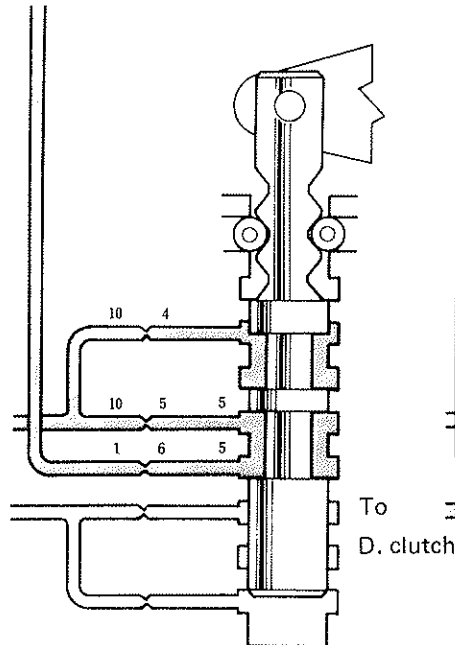
**12. MANUAL VALVE**

This valve provides hydraulic clutch operation. It is linked to the shift pedal to shift the transmission into "N", "D" (or 2) or "L" (or 1) range, depending on pedal operation.

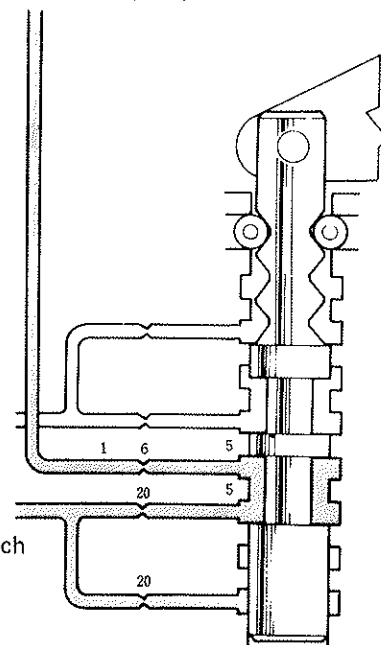
N. RANGE



L. (or 1) RANGE



D. (or 2) RANGE





● AUTOMATIC NEUTRAL RETURN SYSTEM

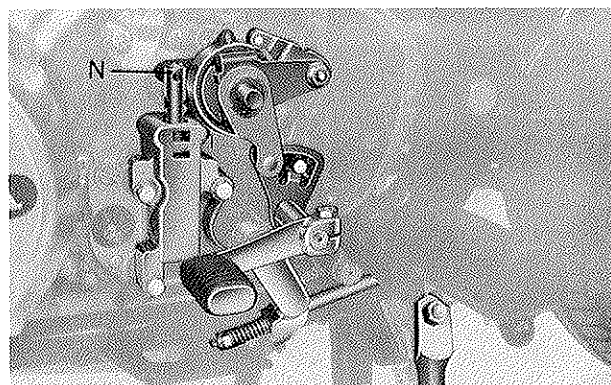
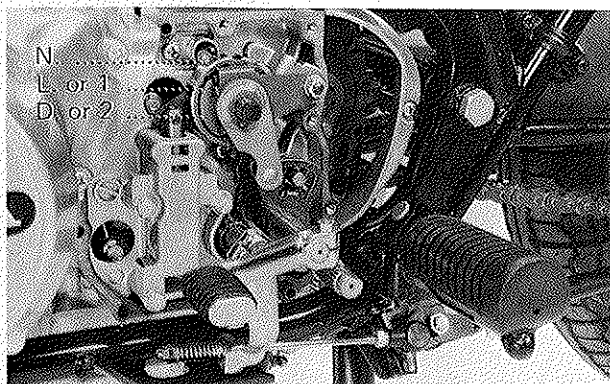
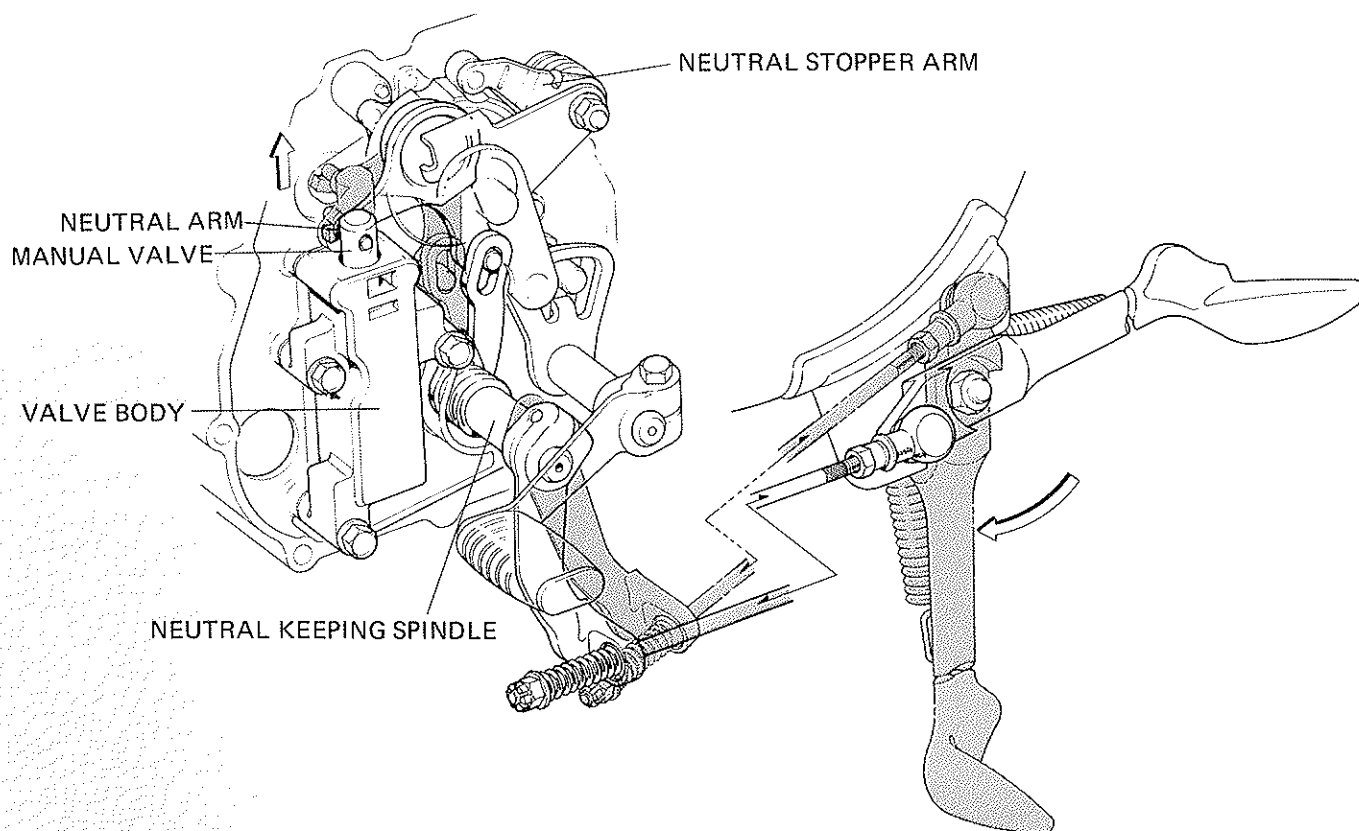
Operation of the automatic neutral return system is dependent upon application of the sidestand. As long as the sidestand is applied, the gearshift mechanism will remain in neutral. This prevents unintentional starts. Starting can be made safely, immediately after returning the sidestand.

- Neutral (sidestand down)

The neutral arm prevents the manual valve from shifting, keeping the gearshift mechanism in neutral.

- Sidestand raised

Neutral arm is lowered, allowing shifting.

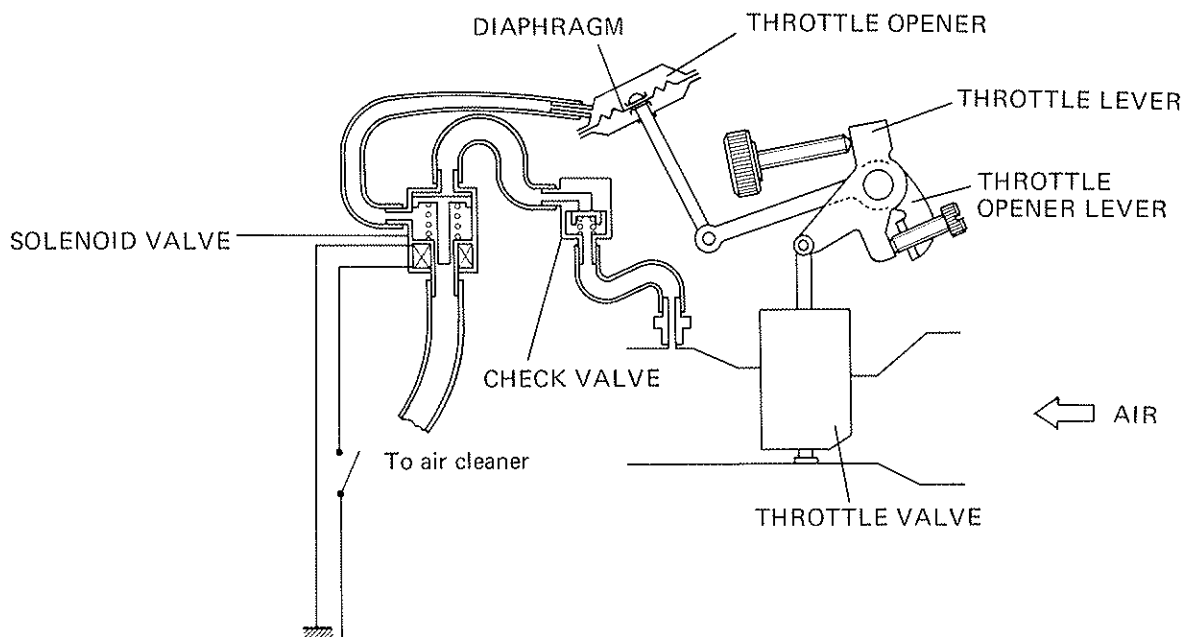




● CARBURETOR THROTTLE OPENER

CB750A ('76 model)

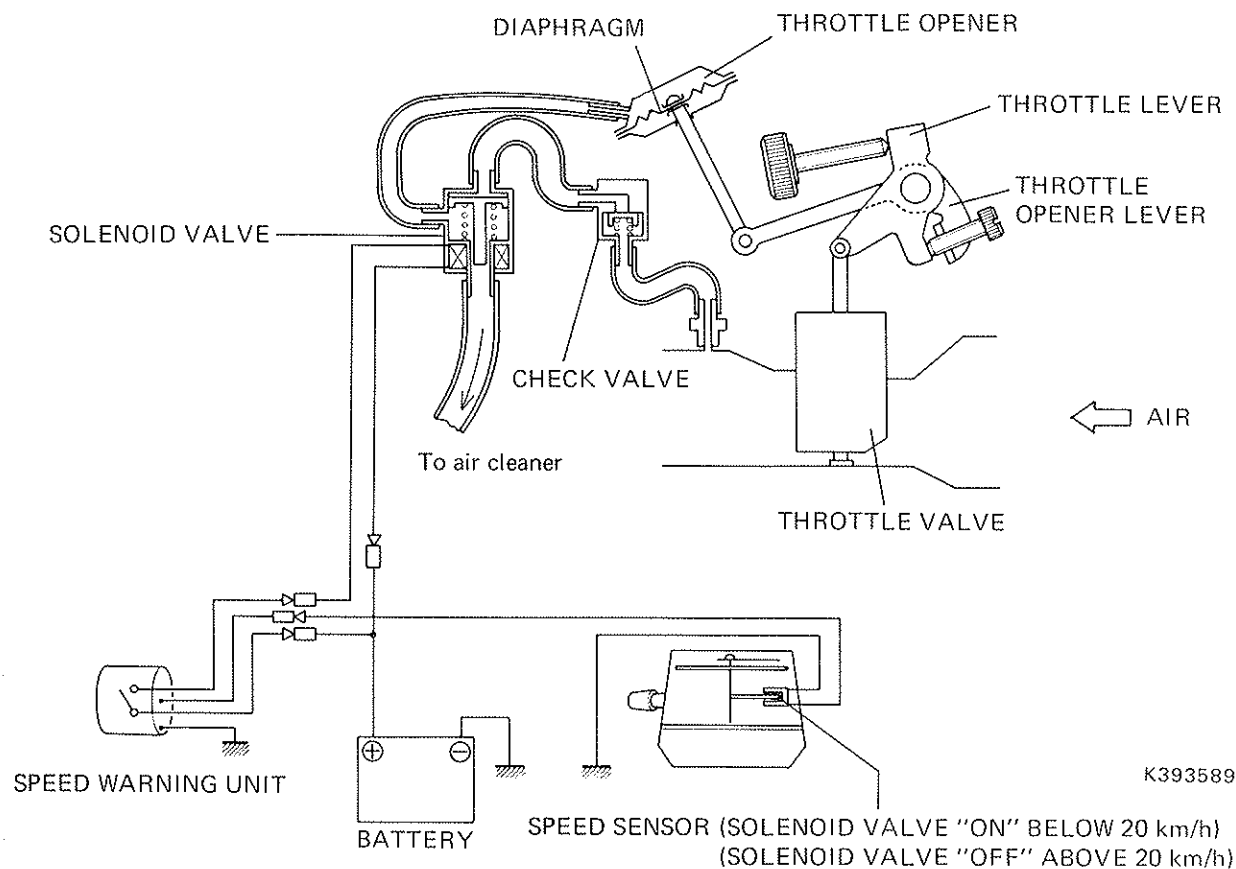
The purpose of the throttle opener which is essential for stable engine idling, is to provide an additional fuel mixture to compensate for changes in torque when shifting from neutral to the "D" (or 2) or "L" (or 1) positions.



When the transmission is shifted from Neutral to "D" (or 2) or "L" (or 1) position, the change switch is turned on. This energizes the solenoid valve, causing the circuit between the opener and carburetor outlet side to open. Negative pressure at the carburetor airhorn acts on the diaphragm, causing it to move upward. Since the opener lever is attached to the diaphragm by a rod, the lever pulls the throttle lever up; supplying fuel and air to the engine cylinders. Returning the gearshift pedal to neutral causes the change switch to turn off. In the "N" range, the upper chamber of the throttle opener is open to the air cleaner. The specified idling is regained by the throttle opener returning to its original position.



('77 and '78 models)



Speed warning unit and sensor are added for '77 and '78 models.

Operation of the throttle opener is the same as that for '76 model.

As the engine speed goes over 20 km/h, the speed sensor in the speedometer is turned off (solenoid valve is also turned off). The throttle opener lever is returned to the original position as the vacuum chamber now communicates with the air cleaner.

If the speed falls below 20 km/h, the speed sensor is turned on and diaphragm is pulled up, causing the carburetor to supply additional air-fuel mixture to the engine. The same sequence of events takes place within the system to maintain engine idle speed.

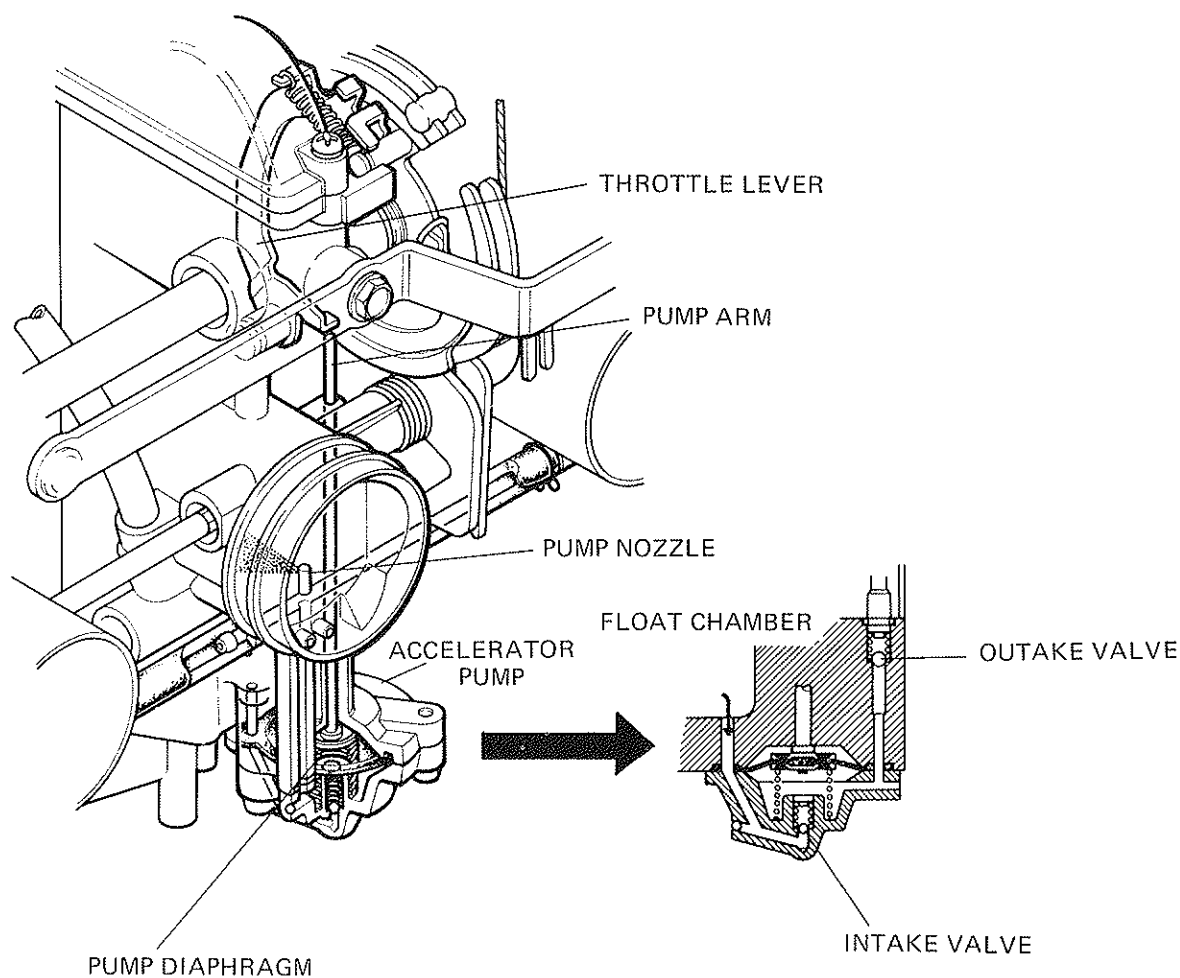


● ACCELERATOR PUMP

The accelerator pump supplies additional fuel to keep the fuel mixture strength correct or slightly rich when the throttle is opened quickly.

When the pump arm is at the top of its stroke, the pump diaphragm is charged with fuel from the float chamber through the intake valve. As the throttle is opened, the chamber is pressurized by the pump arm and discharges a stream of fuel through the outtake valve into the air stream through the pump nozzle in the individual carburetors.

When the throttle is closed, pressure in the chamber drops according to the pump arm returning up and the outtake valve closes. The diaphragm chamber is charged again with the fuel flowing from the float chamber.



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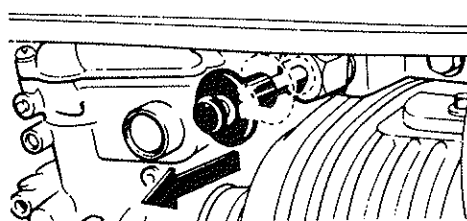


● PARKING BRAKE

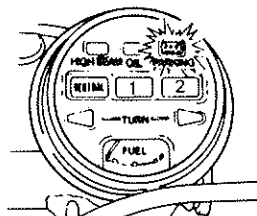
The parking brake is used to prevent creeping when the motorcycle is stopped with the engine running.

● Using Parking Brake

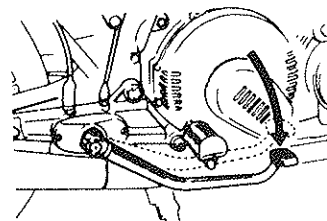
● Locking Pull knob.



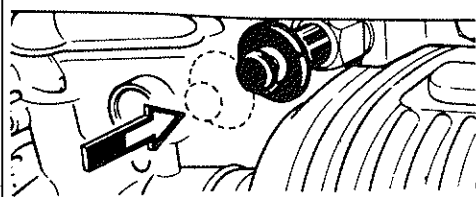
Make sure "PARKING" light comes on.



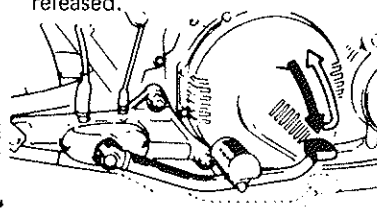
Depress brake pedal. Check rear wheel is locked.



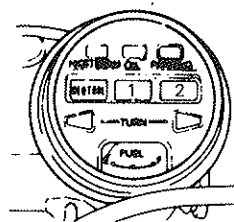
● Unlocking Push knob by pushing center button.



Depress brake pedal. Next make sure brake pedal is released.

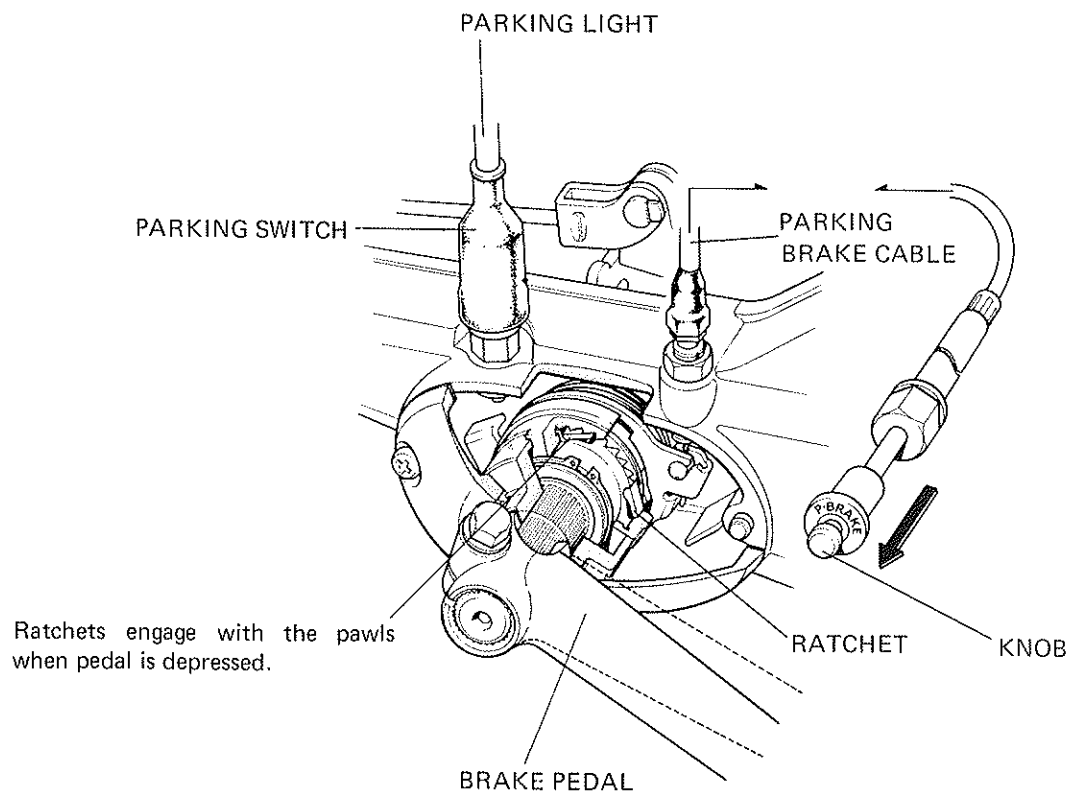


Make sure "PARKING" light goes out.

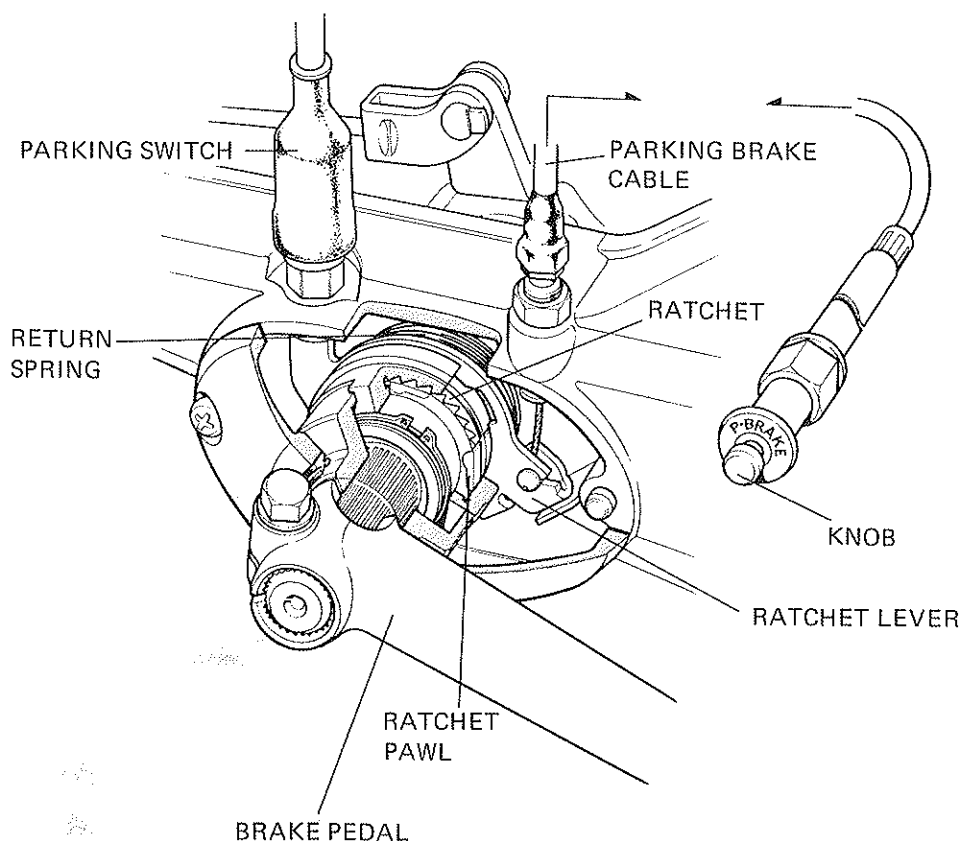


Sketches are based on '78 model. On '76 and '77 models, shift indicator lamps have "L" and "D" lenses instead of "1" and "2".

● CONSTRUCTION



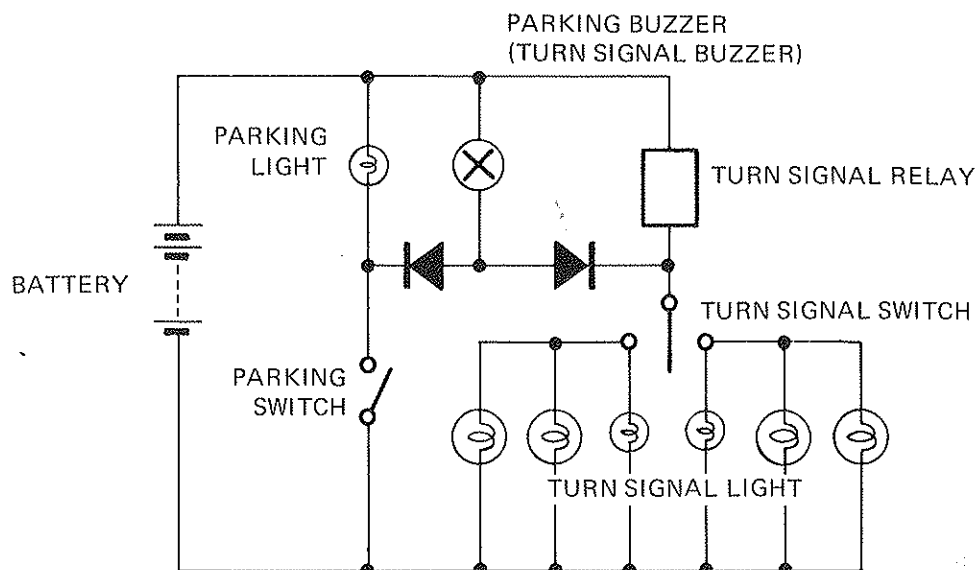
Z393627



- (1) Ratchet assembly is actuated by parking cable. Ratchet lever rotates over ratchet pawls when cable knob is pulled out.

Z393623

- (2) Under normal condition, the pawls are held in place in their respective notches by the ratchet lever. As the lever is rotated, the pawls can engage with ratchet teeth.
- (3) With the lever rotated, when the pedal is depressed, the pedal is held down by the engagement of the ratchets and pawls.
- (4) To release, return the parking cable so that the ratchet lever can be returned to the original position by means of the return spring. Depressing the pedal again removes friction between the ratchet pawls and ratchet case. The ratchet lever then returns to its normal position pressing the ratchet pawls down into their positions. And then the warning light goes out by the ratchet lever pushing the parking switch contact.



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