

- Dirt / corroded terminals result in improper contact. The terminals should be cleaned carefully.
- Improper contact pressure between mating terminals disturbs the connectivity between them.
- Replace the damaged connector body to avoid exposure of the terminals in case of inadequate contact pressure.
- Ensure proper connection between the terminal to the wire. Rectify the loose connection by repairing / replacing the wire harness (Fig. 10).
- Worn out insulation of the wire may result in short circuit.
- Avoid water entering the connectors.

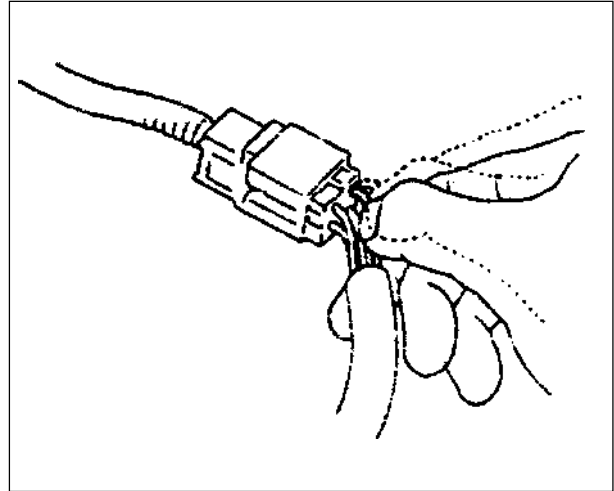


Fig. 10

Towing the Vehicle : (Fig. 11a & 11b).

- For towing a car, the best way is to use a wrecker. Alternatively use a rigid tow bar.
- Avoid using a flexible cable or rope as your car may crash into the car towing your car when it stops suddenly.
- Switch 'ON' the hazard warning signals of both the cars to warn other road users.
- Where possible, keep the engine idling so that power steering assistance and brake vacuum are available.
- Limit the speed to 20-30 Kmph.
- In case of brake failure, use the parking brake to control the car.



Fig. 11a

Rear Tow Hook :

- Boltable tow hook is provided in the toolkit.
- Remove cover on rear bumper.
- Bolt the tow hook (ensure proper fitment).
- Whenever tow hook is not required unscrew the tow hook and keep it in toolkit.
- Press the cover to close the hole for tow hook in rear bumper.

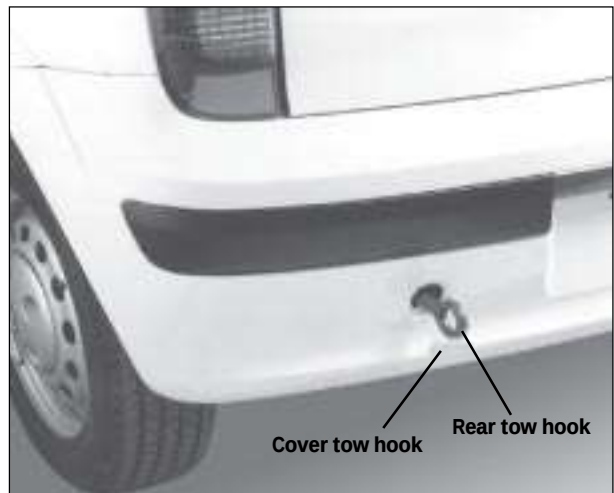


Fig. 11b



PRELIMINARY INSPECTION OF ENGINE :

Before proceeding to carry out actual overhauling of engine it is desirable to have a preliminary inspection of engine to ascertain whether an engine overhaul is necessary and to what extent.

Most common reasons for which engine is overhauled are :

1. Loss of power
2. Excessive engine oil consumption
3. Extremely low engine oil pressure
4. Mechanical failures

To know exact reason and general condition of engine, proceed as follows :

1. LOSS OF POWER

Loss of engine power may be due to :

- a. Defective Ignition system
- b. Defective Fuel system
- c. Clogged air cleaner/choked catalytic converter exhaust silencer
- d. Clutch slippage
- e. Brake binding
- f. Loss of engine compression

a. IGNITION SYSTEM

Check all the sensors for proper function by using diagnostic monitor. Replace defective sensors.

b. FUEL SYSTEM

Check condition of fuel filter. If found blocked replace fuel filter.

c. CLOGGED AIR CLEANER/CHOKED EXHAUST SILENCER

Check air filter element If found choked clean or replace.

d. CLUTCH SLIPPAGE

Clutch slipping can be confirmed by any of the following two methods :

Drive the car in 1st or 2nd gear at maximum speed corresponding to that gear. With accelerator pedal fully pressed, apply brake

gradually with left foot. If the engine stalls, it means that clutch does not slip.

OR

Drive the car with weight equal to GVW in 3rd gear on level ground and let the speed drop down to approximately 15 kmph. Now press accelerator pedal fully. With slipping clutch, the car speed will not pick up and also clutch burning smell will be noticed. If this does not occur and car picks up speed, it indicates that clutch does not slip.

e. BRAKE BINDING

During driving apply brake number of times and then shift the gear to neutral position Check brake drums for over-heating and if necessary jack up the car and check the wheels for free rotation.

f. CHECKING ENGINE COMPRESSION PRESSURE

If loss of power is not on account of defective fuel system, lack of air, choked exhaust silencer, clutch slipping and brake binding. check engine compression as follows :

1. Warm up engine preferably by road drive to get a temperature of about 75 to 85 °C.
2. Remove all spark plugs.
3. Remove air cleaner filter element.
4. Install Compression gauge (Range about 0 to 25 kg/cm²) into one of the spark plug hole.

Note :

Use adaptor which is available commercially to suit the size of the spark plug threads.

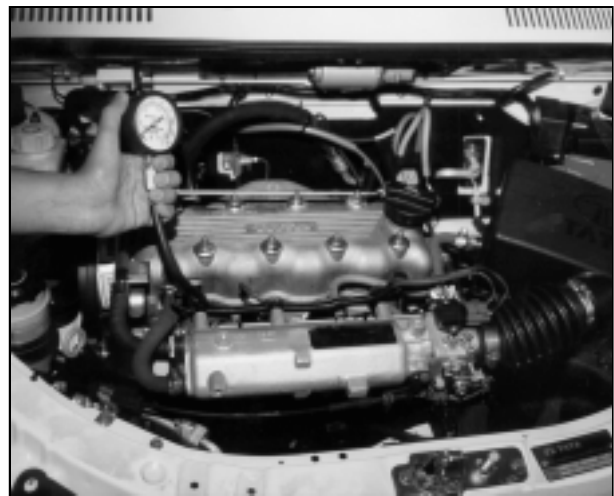


Fig. 50



TIMING BELT :

Removal :

Remove alternator and AC belt

Unscrew the mounting screws & remove front timing gear train cover Fig. 62.

Keep crank shaft rotating with socket spanner simultaneously pressing camshaft timing pin till it locks camshaft Fig. 63.

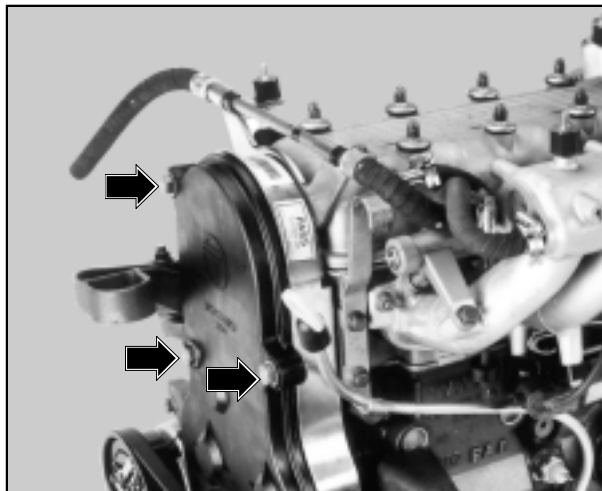


Fig. 62

Check at this position whether timing pin 2702 5890 0605 in crankcase locks the flywheel or not Fig. 64.

Remove timing pin locking the camshaft & now ensure that flywheel is in locked position.



Fig. 63

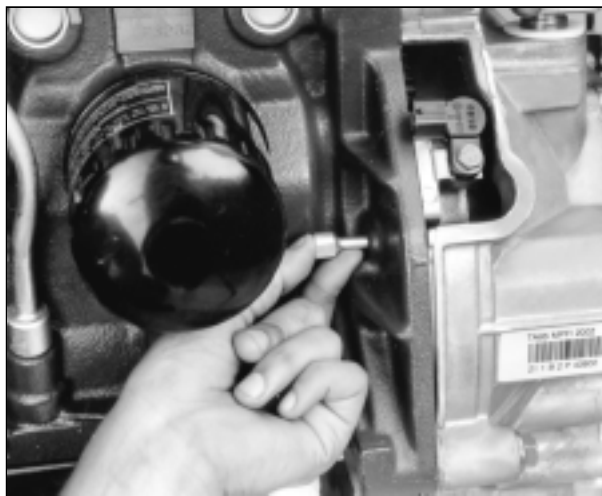


Fig. 64



- Rotate the crankshaft by one rotation in the clockwise direction and insert the flywheel locking pin.
- Adjust the valve clearances of cylinder No. 3 & 4 on inlet valves and cylinder No. 2 & 4 on exhaust valves Fig. 120

	INLET	EXHAUST
Specified	0.20	0.30

Assemblies

- Spark plug. Fig. 121
- Exhaust manifold Fig. 122

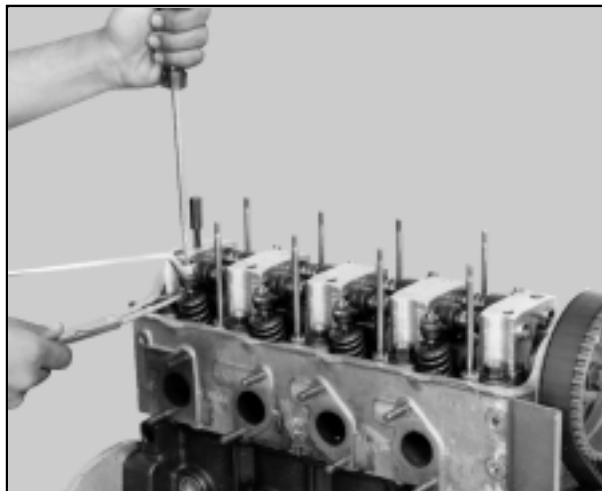


Fig. 120

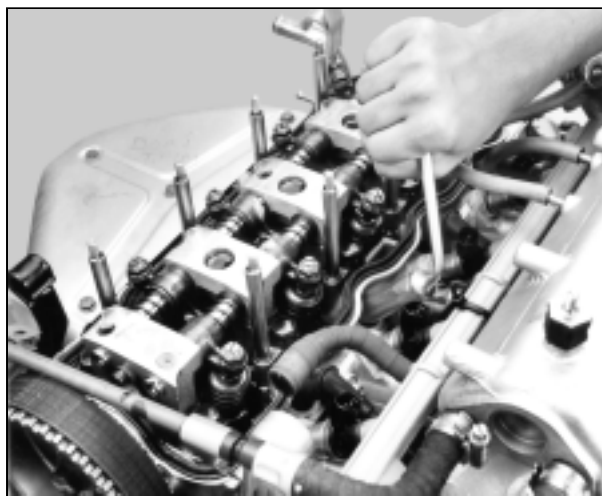


Fig. 121

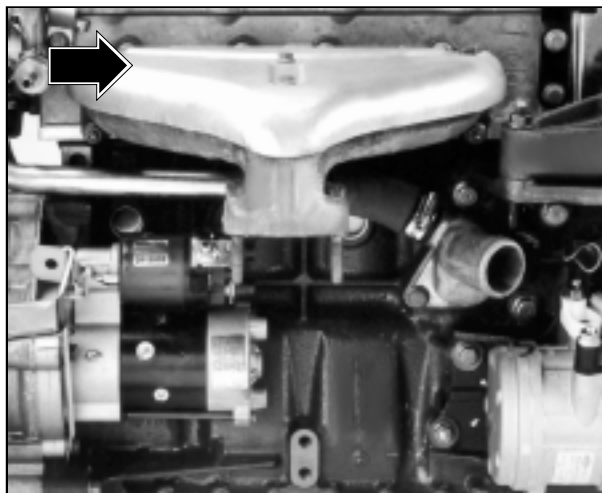


Fig. 122



ENGINE

ASSY. FOOT CONTROL

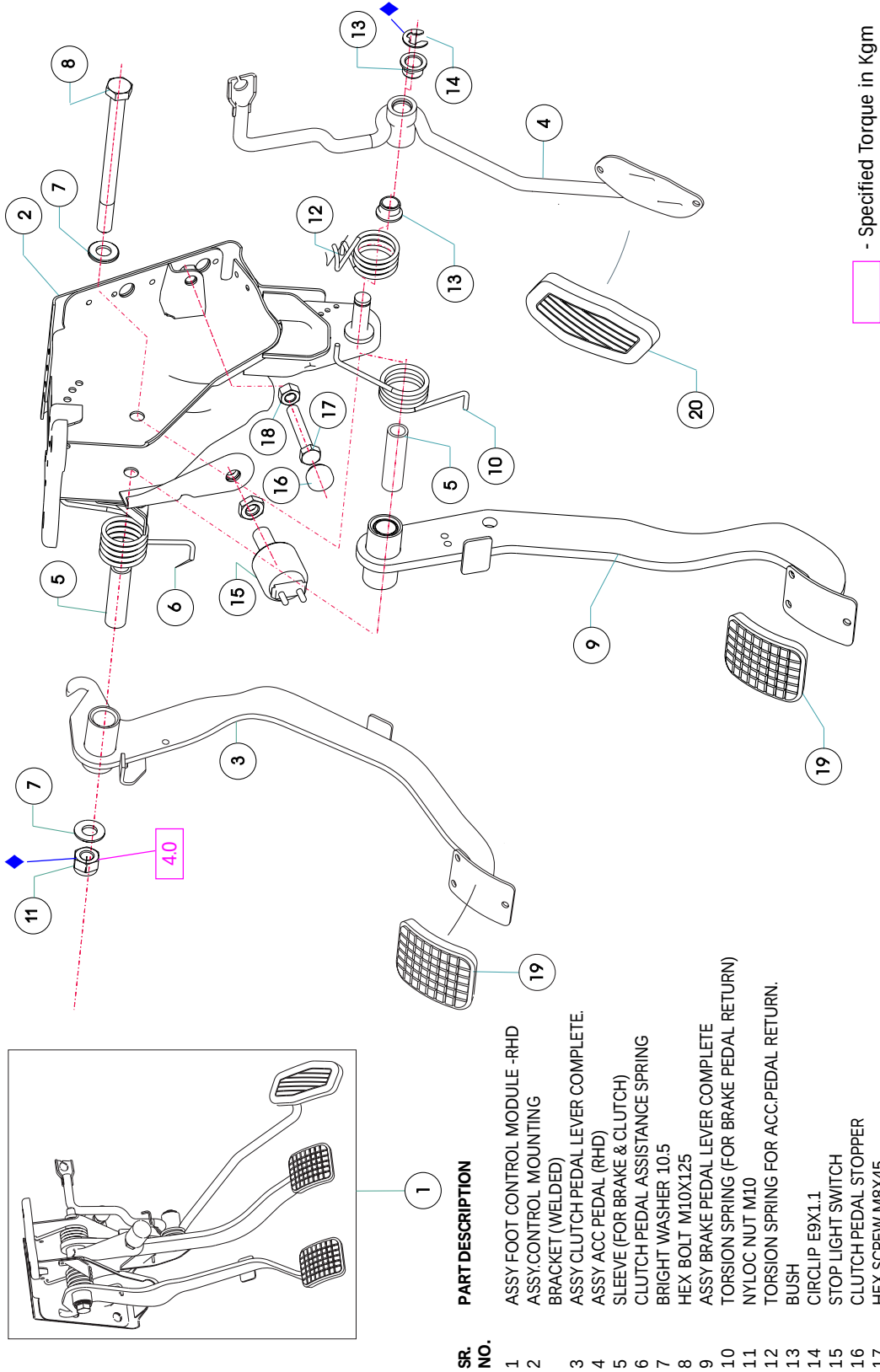


Fig. 185

Sr. No.	Part Description
1	ASSY FOOT CONTROL MODULE -RHD
2	ASSY CONTROL MOUNTING BRACKET (WELDED)
3	ASSY CLUTCH PEDAL LEVER COMPLETE.
4	ASSY ACC PEDAL (RHD)
5	SLEEVE (FOR BRAKE & CLUTCH)
6	CLUTCH PEDAL ASSISTANCE SPRING
7	BRIGHT WASHER 105
8	HEX BOLT M10X125
9	ASSY BRAKE PEDAL LEVER COMPLETE
10	TORSION SPRING (FOR BRAKE PEDAL RETURN)
11	NYLOC NUT M10
12	TORSION SPRING FOR ACC. PEDAL RETURN.
13	BUSH
14	CIRCLIP E9X1.1
15	STOP LIGHT SWITCH
16	CLUTCH PEDAL STOPPER
17	HEX SCREW M8X45
18	HEX NUT M8
19	RUBBER COVER (PEDAL PLATE)
20	RUBBER COVER (ACC. PEDAL)



7. Fix the outer race of differential side bearing in the housing (front half) by using drift part no. 2654 5890 3507. Fig. 29

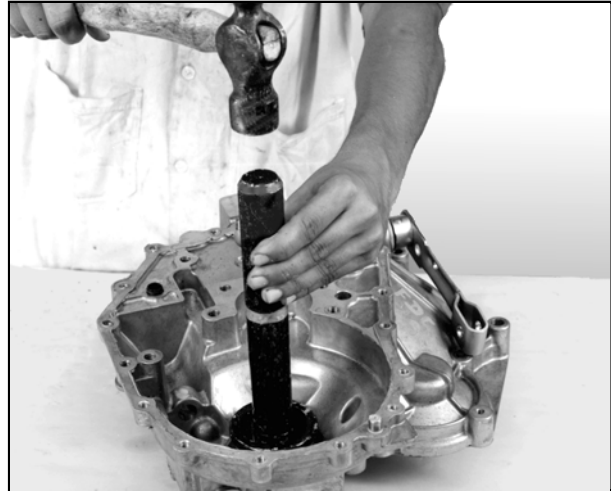


Fig. 29

Fit oil seal in Housing front half using drift part No. 2702 5890 2601 Fig. 30

8. Place assembly differential in front half housing. Ensure that the dowel sleeve should be there on front half before the intermediate plate assembly.



Fig. 30

9. Assemble intermediate plate along with stopper plate (reverse idler gear by means of mounting bolts). Tighten the bolts to 3.2 to 3.8 mkg torque. Fig. 31

CAUTION :

BOLT NEAR THE IDLER SHAFT HOLE OF STOPPER PLATE IS SHORTER, M10X20.

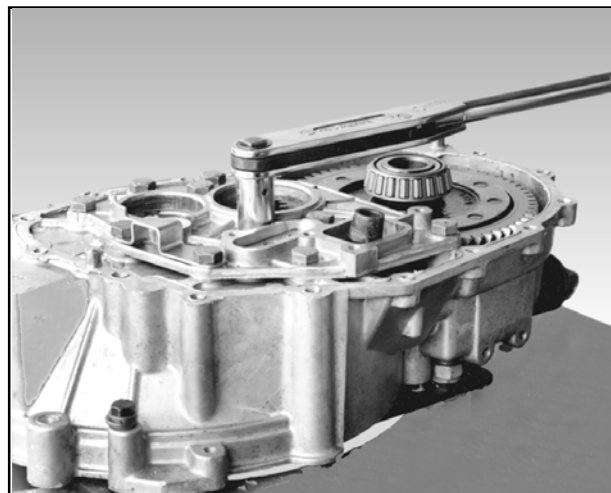


Fig. 31



4. Separate the housing assembly from the seal at large diameter as shown in Fig. 10. Slide the seal away from the joint along axle shaft.

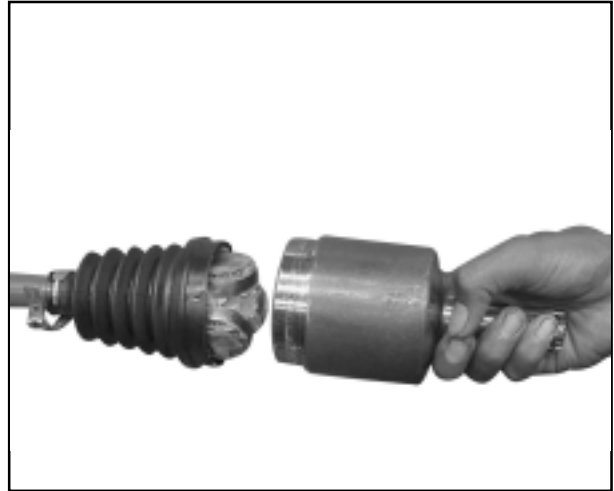


Fig. 10

5. Remove the spider assembly retainer ring by using plier as shown in Fig. 11 and discard the retaining ring.



Fig. 11

6. Remove the tripod spider assembly from the axle shaft as shown in Fig. 12. If required tap the spider assembly gently using a nylon mallet.

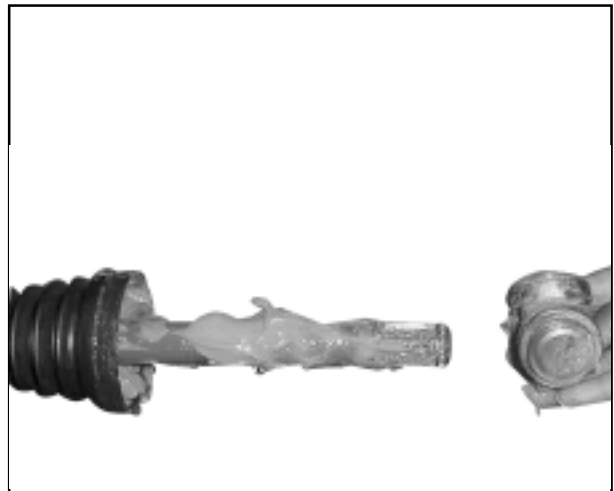


Fig. 12

SUSPENSION LEi & LSi

INSPECTION

1. Check the taper roller bearings and the bearing seating in the hub and check the spindle.
2. Check the contact surface for the radial seal on the spacer.
3. Check the trust washer if necessary replace it.
4. Generally bearing can be reused if the running surface and rollers show no visible damage or wear. For perfect judgement bearings should be cleaned in gasoline or trichloro-ethylene until all contamination's are washed out of bearings. Bearing does not bind when rotated manually if it is free of any contamination. For judging silent running of bearings apply few drops of engine oil to clean bearing and rotate.
5. Bearings should not be cleaned with kerosene / cotton waste.

ASSEMBLY

Absolute cleanliness is required during bearing assembly in order to avoid entry of dirt, dust and foreign particle.

1. Clean hub, bearings, spacer tube, shims, thrust washer, and spindle diameter with gasoline.
2. Fit inner taper roller bearing outer race, using drift part No. 2702 5890 35 04.
3. Pack roller cage of inner bearing race with recommended wheel bearing grease. Grease quantity 5gm.
4. Fit inner race of inner taper roller bearing.
5. Fit outer race of outer Taper roller bearing using drift Pt No. 2651 5890 46 02. Fig. 36
6. Press new oil seal with drift part no. 2702 5890 35 05 Fig. 37a. Coat the contact surface of oil seal lip with recommended grease. The oil seal should be pressed in the hub such that sealing lip and the spring faces towards the bearing Fig. 37. Whenever bearings are removed / replaced use new oil seal and new grease.



Fig. 36

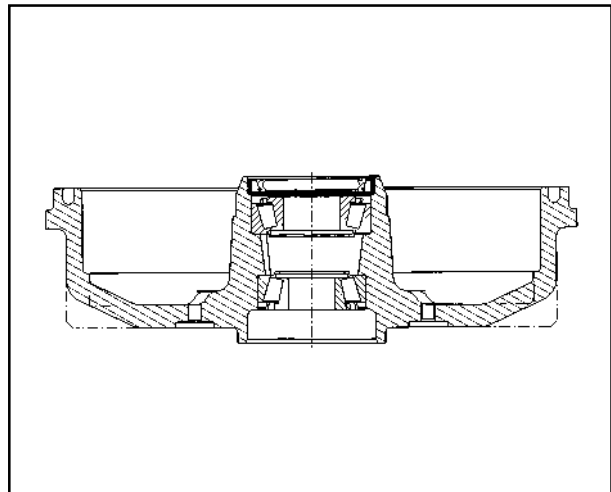


Fig. 37



Fig. 37a



REAR HUB-DISMANTLING AND ASSEMBLY

DISMANTLING

1. Pry out rear oil seal.
2. Take out inner race of inner taper roller bearing.
3. Remove spacer tube along with the shims.
4. Remove inner taper roller bearing outer race, using puller part No. 2702 5890 3502. Fig. 34
5. Remove outer race of outer taper roller bearing using puller part No. 2702 5890 3503. Fig. 35
6. Remove old grease completely from hub bearing etc.

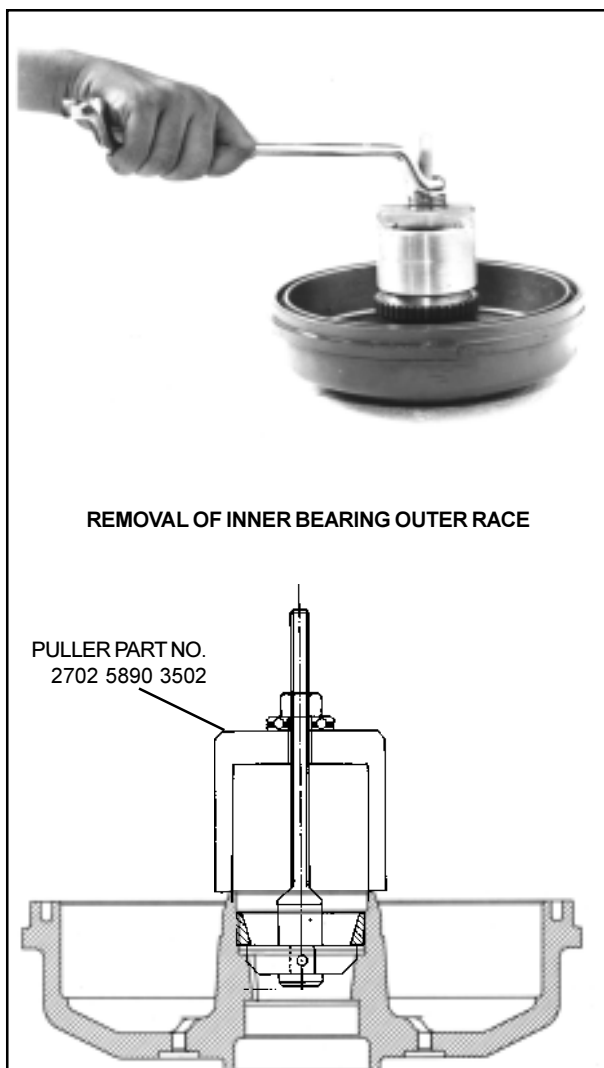


Fig. 34

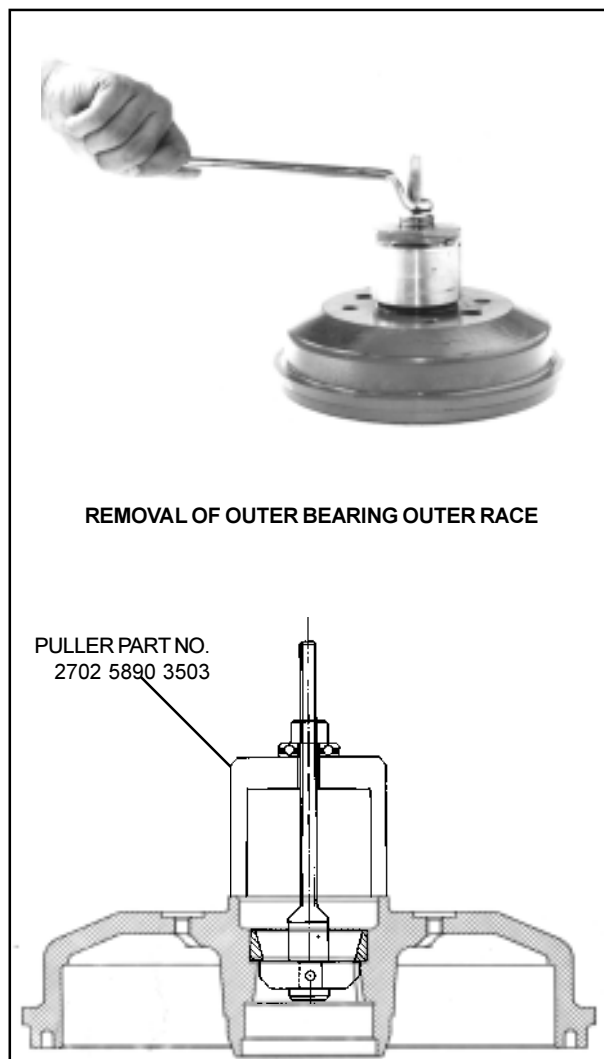


Fig. 35



INSTALLATION OF WHEEL CYLINDERS :

Install the wheel cylinder assembly on to the backplate and with the set screw and the washers.

Tighten the wheel cylinder mounting screws to a torque specified.

Fit the bleed screw and tighten to the torque specified. Remove the rubber band from the wheel cylinder.

Refit the brake shoes as described under "FITTING SHOES". Connect bundy pipe / hose to the inlet port.

Refit the drum and wheel.

INSTALLATION OF BRAKE BACK PLATE :

Clean the back plate. Fit the wheel cylinder to the brake back plate as specified in the installation of wheel cylinder.

Lightly smear high melting point graphite grease to the back plate back pads and abutment, contact faces of the strut, hand brake lever, quadrant lever etc Fig. 40

Keep the grease away from the brake shoe lining.

Position the leading shoe on to the back plate, position the trailing shoe with the hand brake lever on the back plate.

Position the strut and the quadrant assembly between the leading and trailing shoe web. Two slots are milled on the either end of the struts. One end of the strut is fitted with quadrant.

Ensure that the strut return spring LH is fitted properly. The quadrant side of the strut should be located in the leading shoe slot. Fit the spring. Fig. 41

Hook the spring at the abutment end (bottom) of the shoe and the spring towards the wheel cylinders end of the shoe.

Connect the strut return spring to the trailing shoe and strut.

Now fit the shoe hold down pin and the clip on both the shoes.

Ensure the correct fitment of the clip by moving either side.

Connect the hand brake cable to the hand brake lever in the reverse order of removal.

Do not handle linings more then it is necessary and be sure that they are completely free from oil or grease.

Centralise the brake shoe relative to the back plate before fitting the drum by lightly tapping in the required direction.

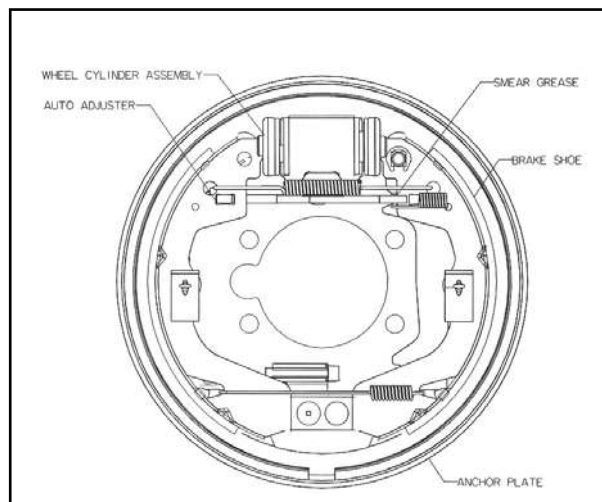


Fig. 40

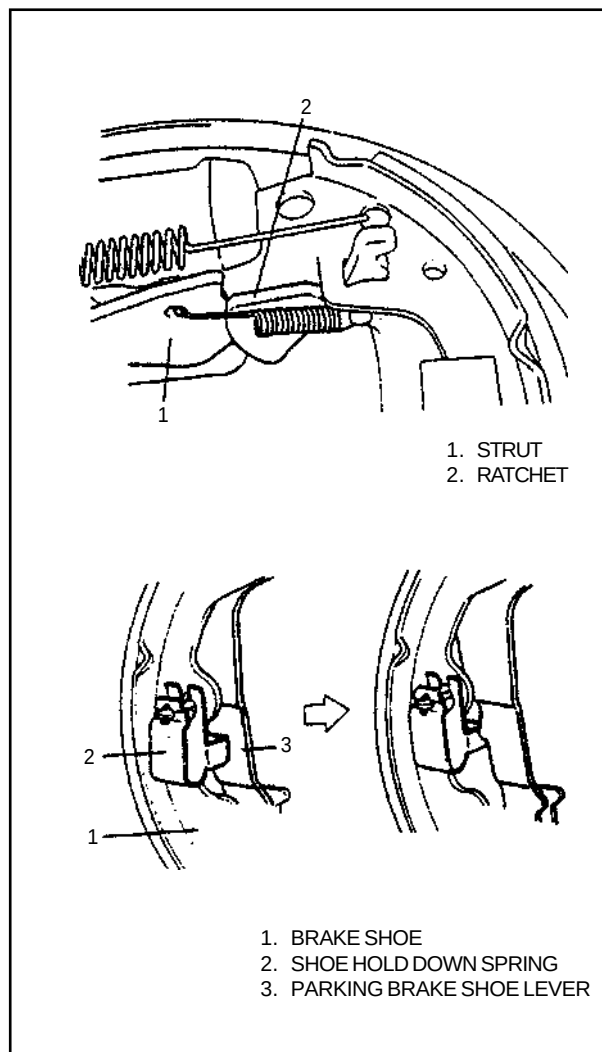


Fig. 41



REPLACING THE NON RETURN VALVE

Before removing the non-return valve note the angle of the same in relation to the front shell so that the new valve can be fitted in the same position.

The non-return valve fitted is a push-in type valve. To remove this valve insert a flat bladed screwdriver between the rubber grommet and valve collar, lever the valve from the grommet.

Then remove the grommet from the front shell and make sure that even by mistake you do not drop the same into the vacuum chamber.

Fit the new grommet.

Lubricate the ribs of the new non-return valve with castor oil and push fully into the grommet.

INSTALLATION OF THE BOOSTER

Assemble the booster to the control-mounting bracket through firewall panel.

Ensure that booster push rod stand out dimension is **115 ± 0.5 mm**. Fig. 61

Install the input rod pin (smear pin with molykote grease) clevis to the brake pedal with the split pin.

Ensure that clevis pin is free to rotate.

Tighten the booster mounting nuts from both sides to the specified torque. Fig. 60 Assemble master cylinder on to booster. Ensure correct orientation of ports & NRV. Tighten the nuts to the specified torque. (Refer table Page 2)

Connect the vacuum hose to the booster and fill the master cylinder reservoir with recommended brake fluid.

Bleed the system - refer brake bleeding procedure.

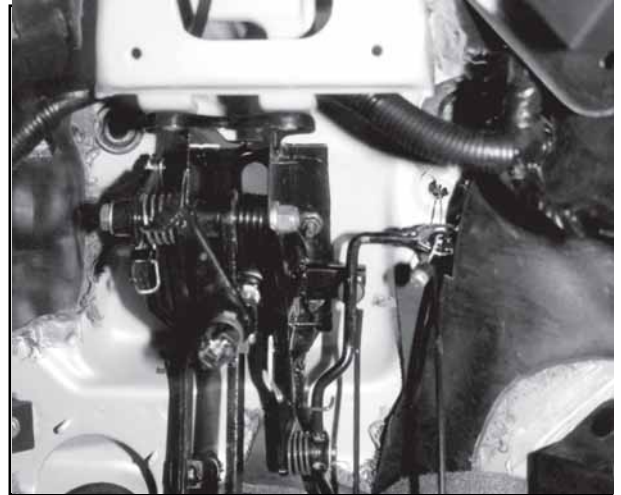


Fig. 60

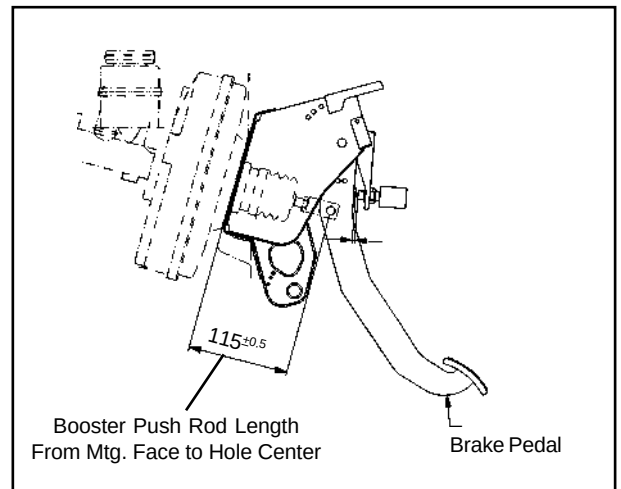


Fig. 61

BRAKE



DISASSEMBLY OF RACK & PINION

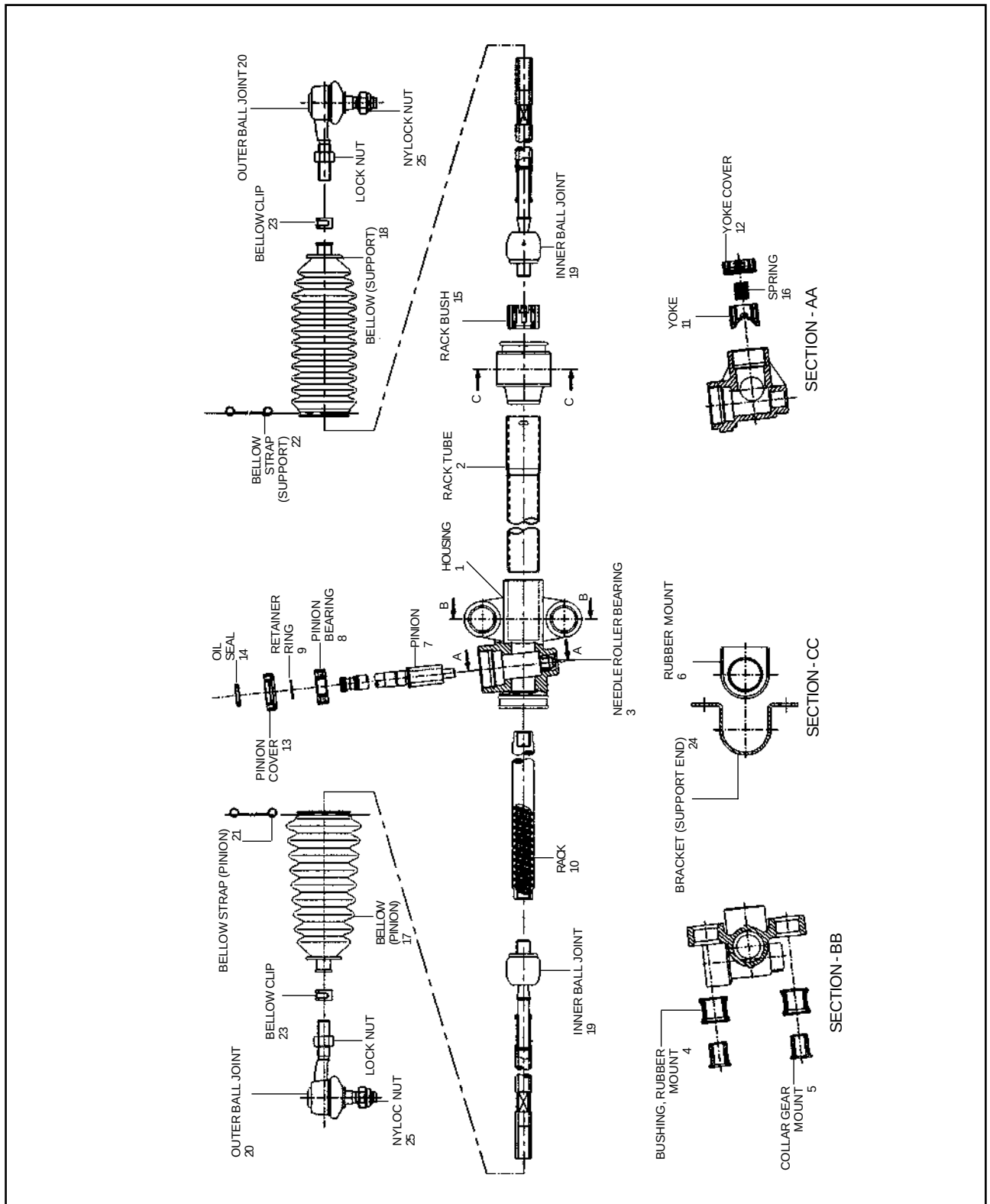


Fig. 16 Exploded view of steering gear (Rack and Pinion)

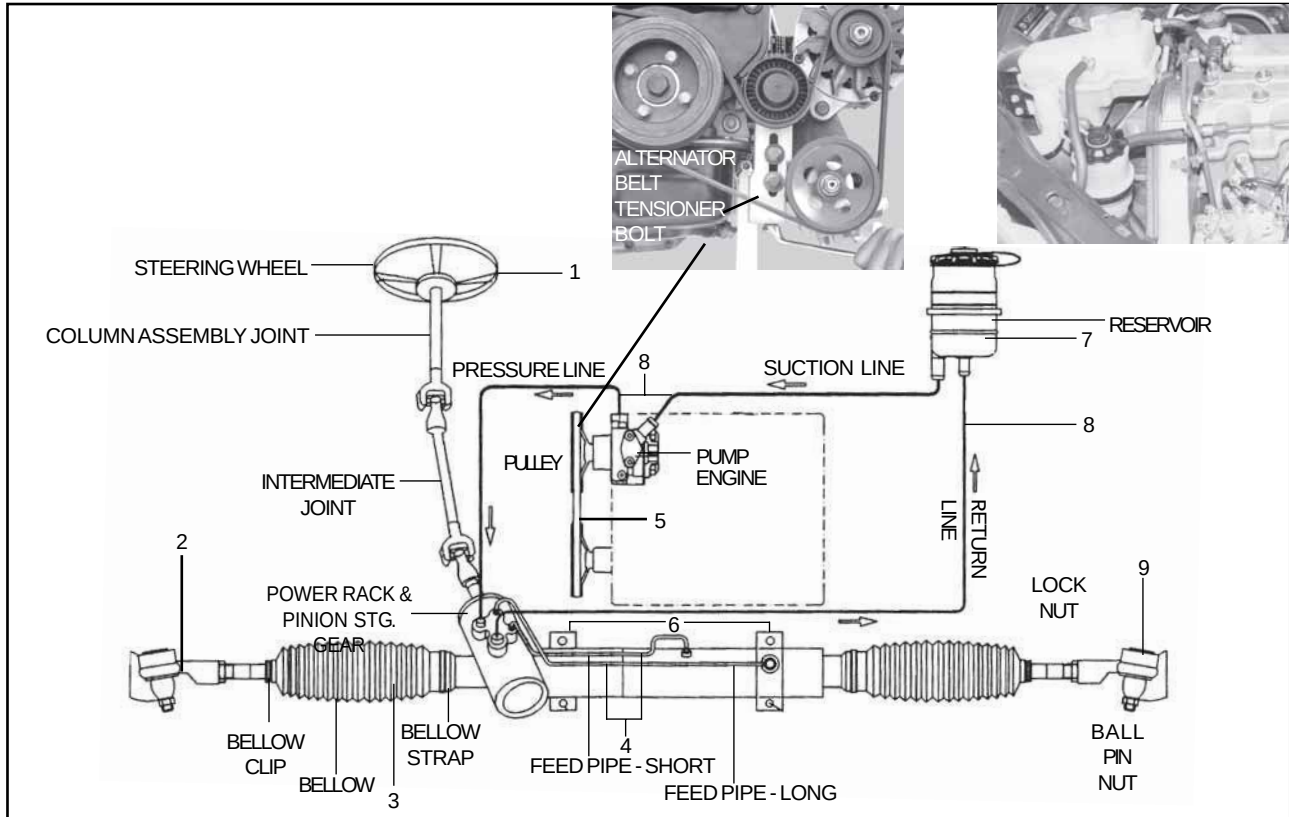


Fig. 2 Schematic layout of a typical belt driven power steering system

POWER RACK & PINION STEERING SYSTEM

GENERAL DESCRIPTION Fig. 2

The Hydraulic Power Steering reduces the driver's effort needed to turn the steering wheel. This is achieved by utilising the hydraulic pressure generated by the hydraulic pump which is driven by the engine.

The power steering offers the following advantages :-

- Reduces steering effort and driver fatigue
- Provides precise steering control.
- Absorbs steering shocks, hydraulically preventing them from being transmitted to the steering wheel.
- Provides absolute control and greater safety, quickly & effortlessly in demanding emergencies like sudden tyre failures or car pull due to malfunctioning brakes.

RESERVOIR

Hydraulic oil for the Power steering system is stored in the Reservoir. The Reservoir generally is located at a higher level above Pump to ensure feed by gravitational flow.

POWER STEERING PUMP

Pump is driven by engine 5PK poly 'V' belt.

The Power Steering Pump provides the hydraulic assistance for the Power Steering Gear to operate.

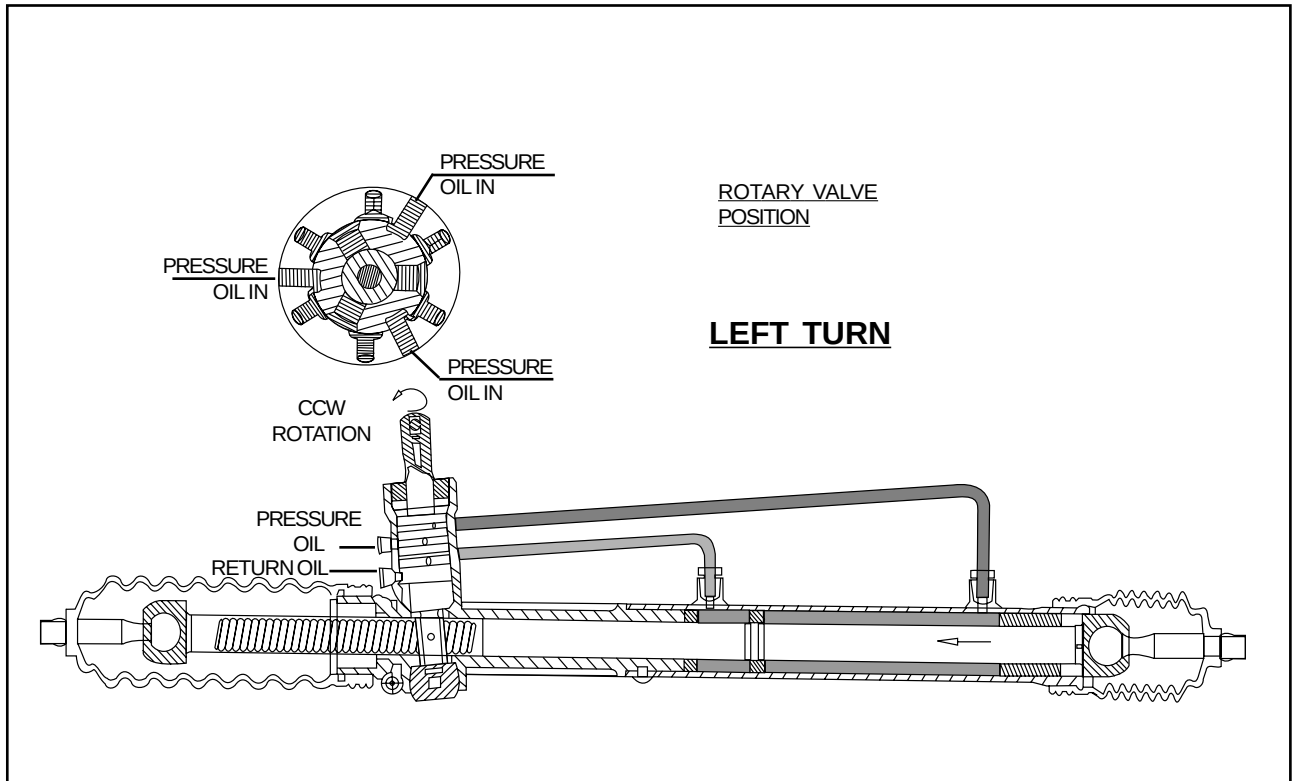


Fig. 6

This resistance offered by the steered wheels on the Pinion, leads to a definite twist on the Torsion bar depending on the input torque level.

The Torsion bar twist disturbs the neutral position of the Rotary Control Valve (input shaft and valve sleeve).

The disturbed Rotary Control Valve directs the oil flow from the pump to the appropriate side of the cylinder.

The Piston Rack pressurised by the oil, moves in the required direction overcoming the resistance offered by the steered wheels and produces the steering action.

The resistance in the rotation direction of Pinion is relieved by movement of Piston Rack by hydraulic force and the reaction of Torsion bar returns the rotary valve to its neutral position.

The oil flow diagram in neutral, right turn and left turn positions of the steering gear are shown in. Fig. 4, 5 & 6.



STARTING AND IGNITION

PETROL MPFI ENGINE - ELECTRICAL ITEMS

Fault	Possible Causes	Remedial Action
Engine not cranking at all	1) Starter motor terminals loose 2) 4 pole connector from Cabin W/H to Front W/H loose 3) Black-white wire terminal in 4 pole connector from Cabin W/H to Front W/H loose 4) Ignition switch faulty	Tighten starter motor terminals Fix the connector properly Fix the connector properly Replace ignition switch
Engine cranking, but not starting	1) Starter motor terminals loose 2) Battery discharged (Check alternator charging system) 3) Starter motor solenoid not working properly 4) Starter motor faulty	Tighten starter motor terminals Recharge battery. Replace battery if battery is dead Replace starter motor Replace starter motor

FUEL GAUGE/FUEL METER :

Fault	Possible Causes	Remedial Action
Fuel gauge not working	1) Connectors loose at the instrument cluster 2) 18 pole connector from Cabin W/H to Floor W/H loose	Fix the connectors properly Fix the connectors properly