Fig. 133

Install the outer gerotor gear in the pump.

Fig. 134

Install the back-up plate over the pump gears.

Fig. 135

Place thrust washer over the shaft.

Fig. 136

Install snap rings in the groove.

Fig. 137

Install bearing on the pump shaft.

Fig. 138

Install the two "O" rings in the pump housing.

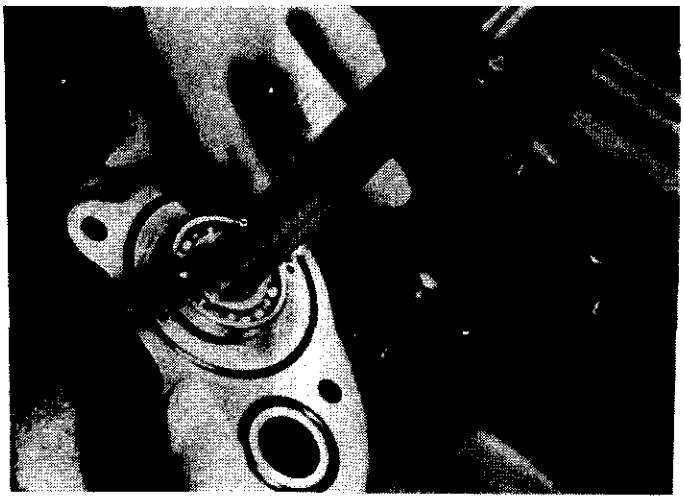

Fig. 139

Line up the two holes in the pump back-up plate with the two roll pins in the output housing.

Fig. 140

Bolt the pump assembly onto the case.

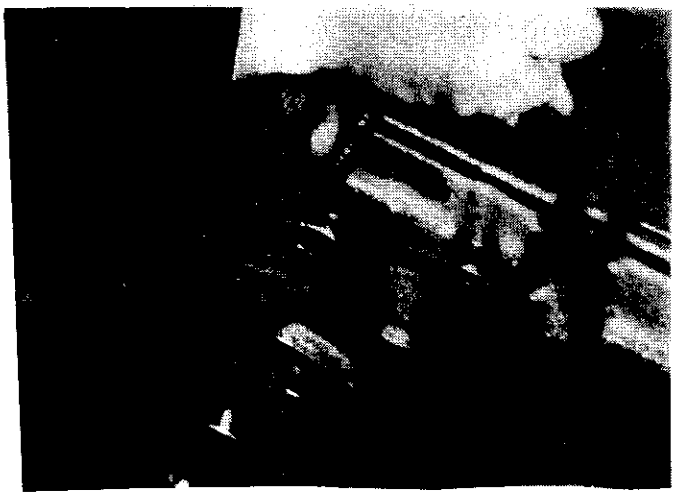

Fig. 141

Tighten all the pump bolts evenly.

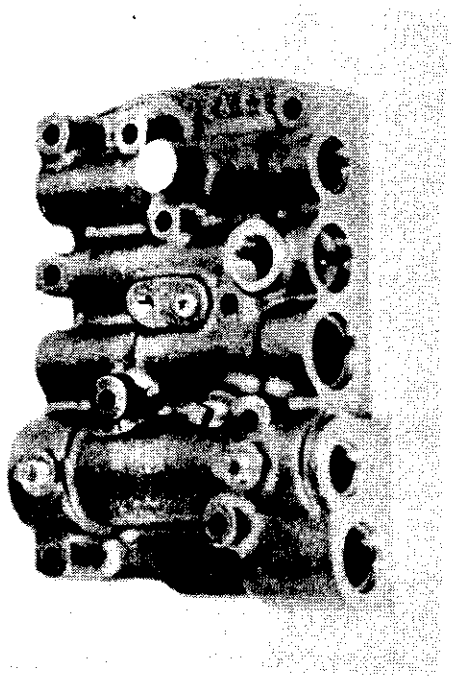

Fig. 146

This is the valve body housing.

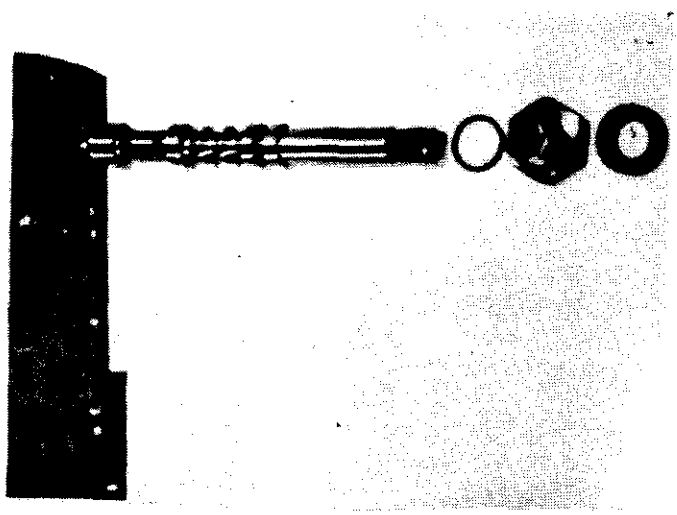

Fig. 147

Place the valve spool for the speed clutches in the top right hand port of the valve body. The retaining cap has an oil seal in the outer portion of it and an "O" ring on the threaded end.

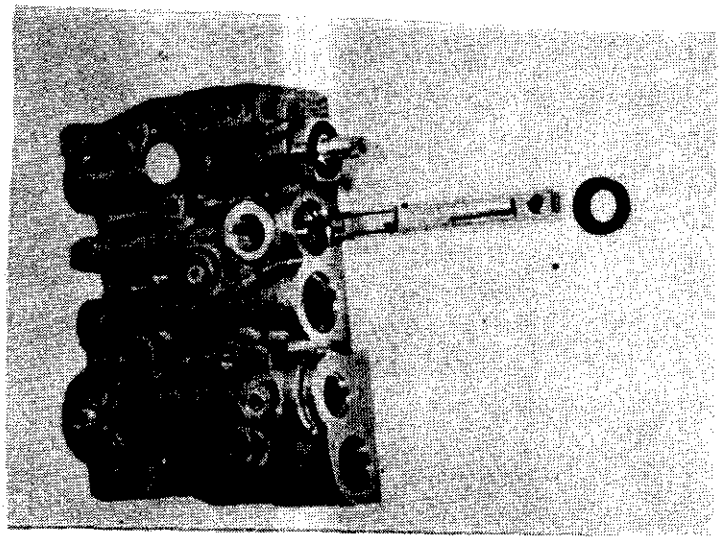

Fig. 148

The second valve spool is for the directional clutches. This slips in the housing and the oil seal is then pressed into the housing bore.

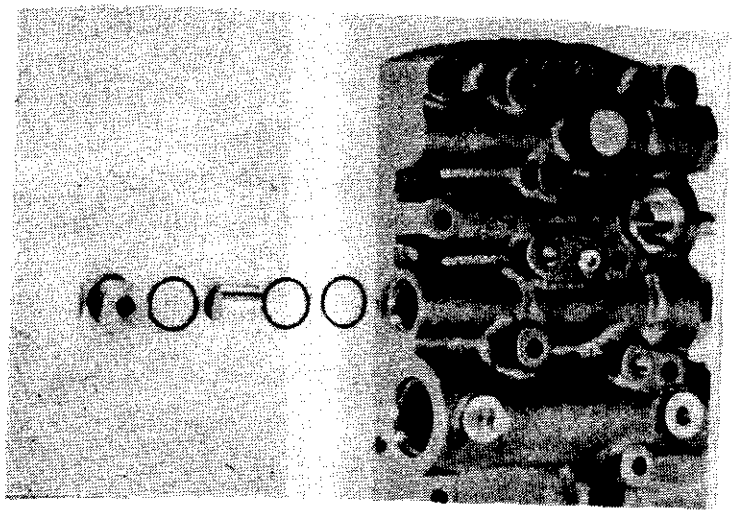

Fig. 149

On the upper left hand port instal two "0" rings in the grooves which are inside the bore then place the piston in the bore and install the retaining cap with an "0" ring on it.

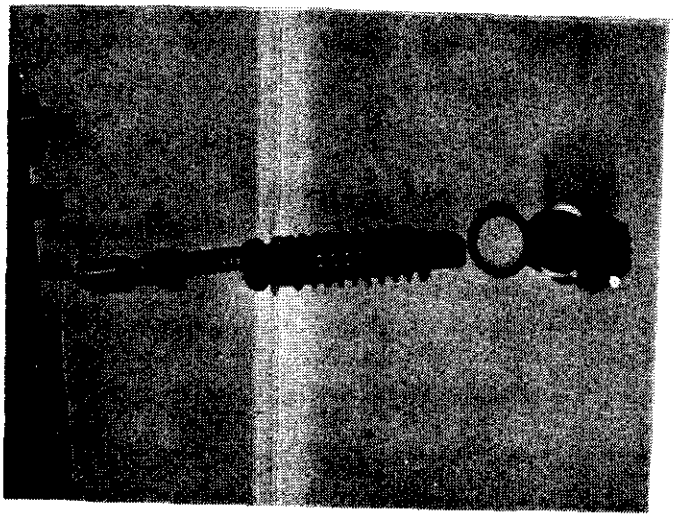

Fig. 150

In the same port on the right hand side the parts are installed as they are layed out in the picture. The stud goes in the feathering valve. The feathering valve spring goes inside the shifting spool and the return spring goes over the shifting spool. The retainer cap has an oil seal and an "0" ring on it.

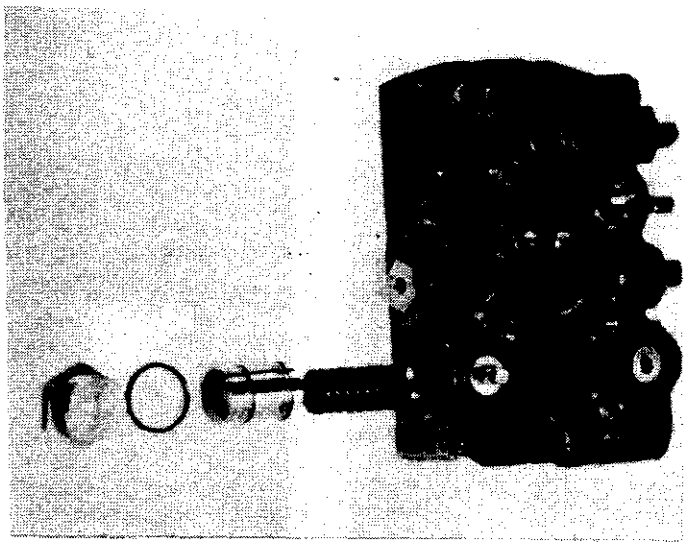

Fig. 151

In the bottom left hand port you have your accumulator spring, accumulator valve and the "0" ring which goes over the cap.

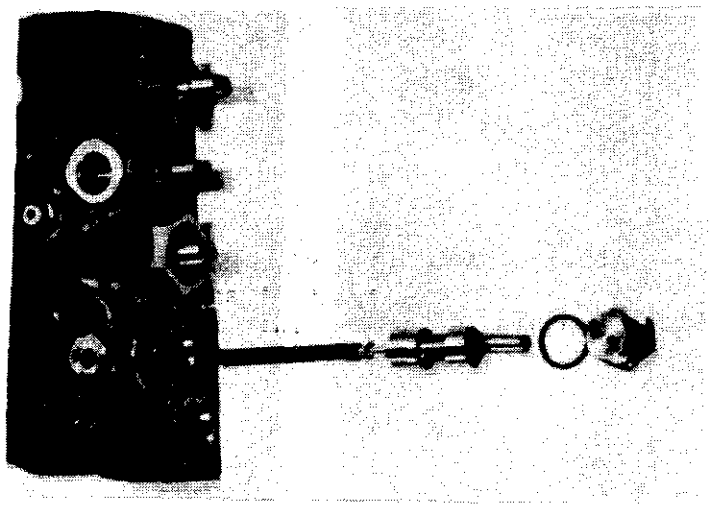

Fig. 152

The same port on the right hand side you have your main pressure spring, a shim, main pressure valve, and the stud which goes in the valve, then your "0" ring and the cap.

Fig. 153

Install the clip to the brake cutoff and the dowel pin for the directional spool.

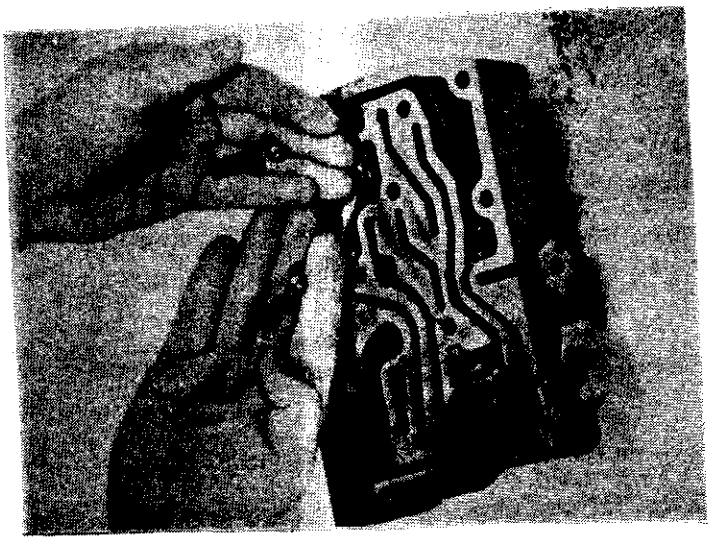

Fig. 154

Install two detent balls and springs.

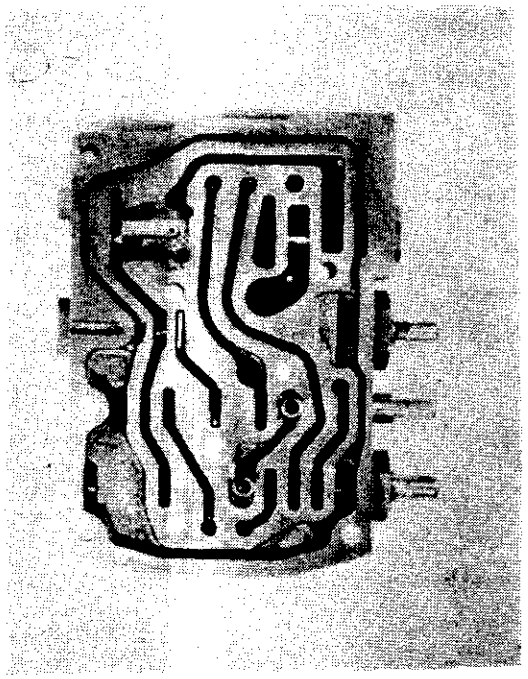

Fig. 155

This is the bottom side of the valve body showing the detent springs, the clip and the dowel pin.

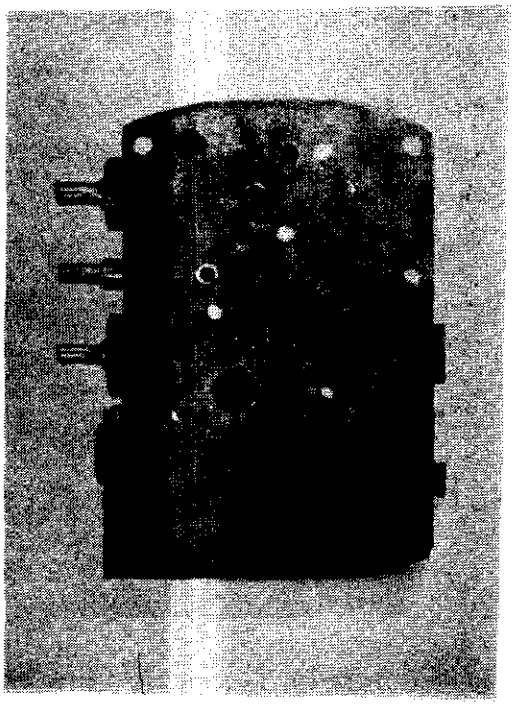

Fig. 156

The bottom side of the valve body with gasket installed.

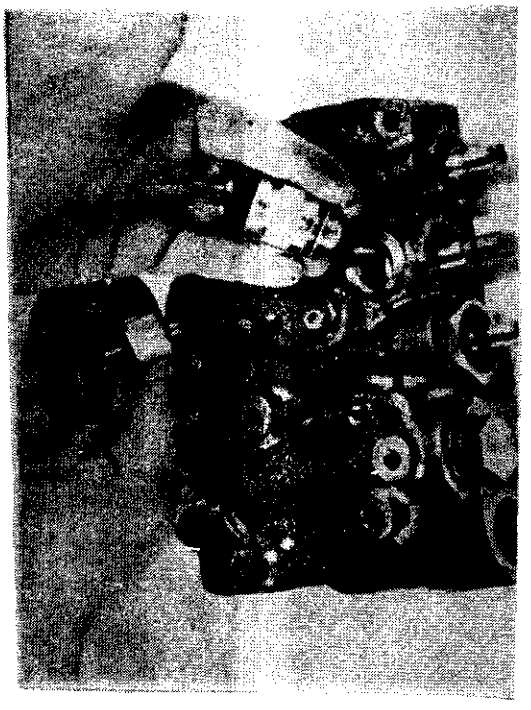

Fig. 157

Install reverse warning switch and the neutral start switch in the ports as shown.

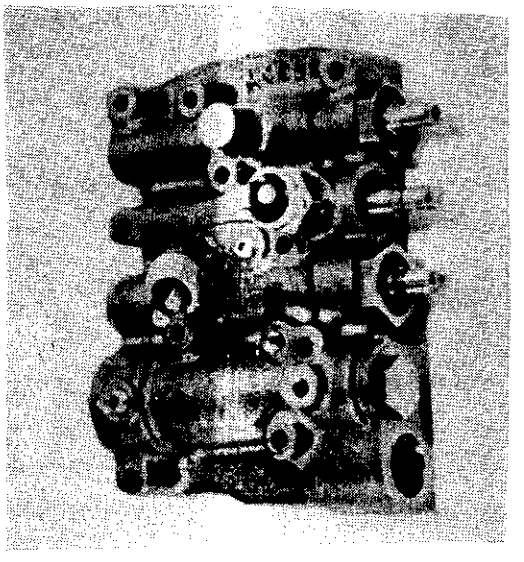

Fig. 158

This is the valve body with the reverse warning switch and neutral start switch installed.

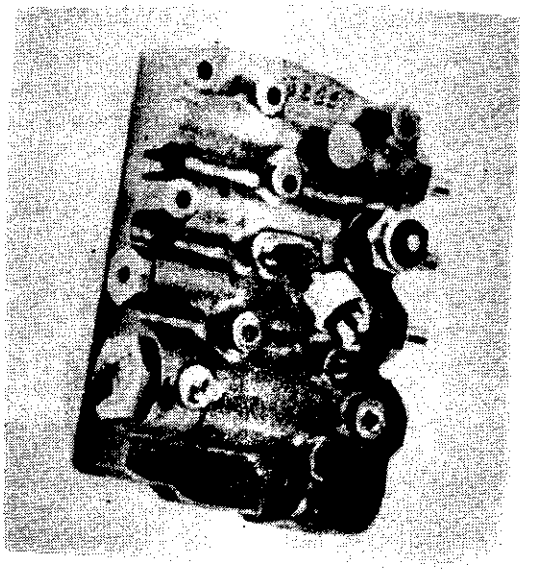

Fig. 159

A different view of the same valve body.

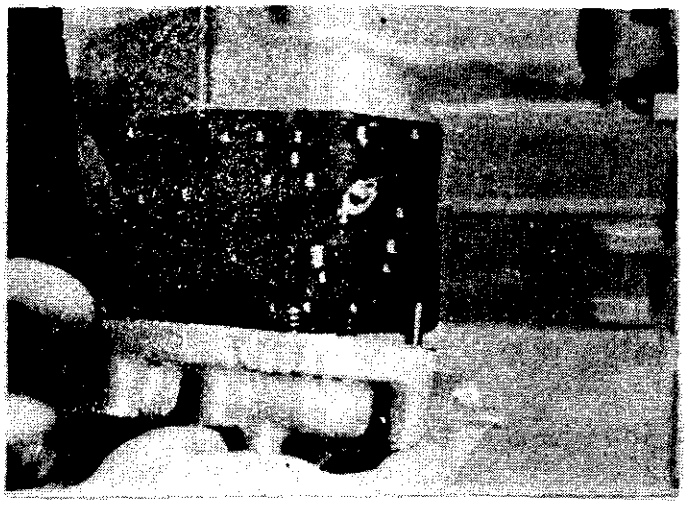

Fig. 160

Install valve body as shown starting with the bottom edge against the housing and then raising the top part of the valve into place. This way you do not lose the detent balls and springs.

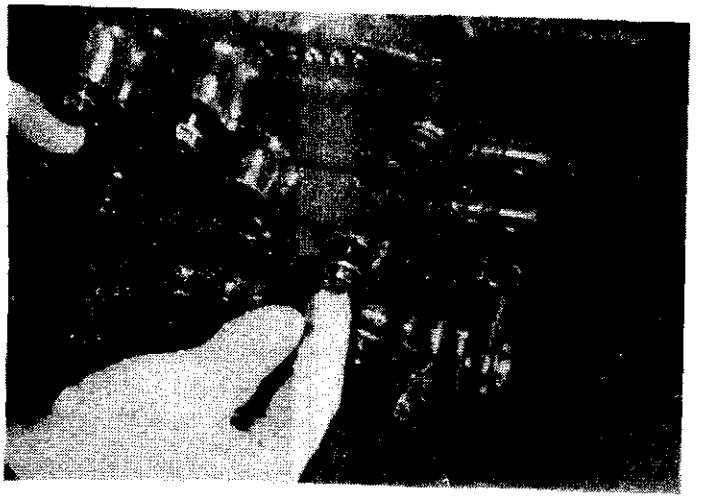

Fig. 161

Tighten all bolts on the valve body evenly.

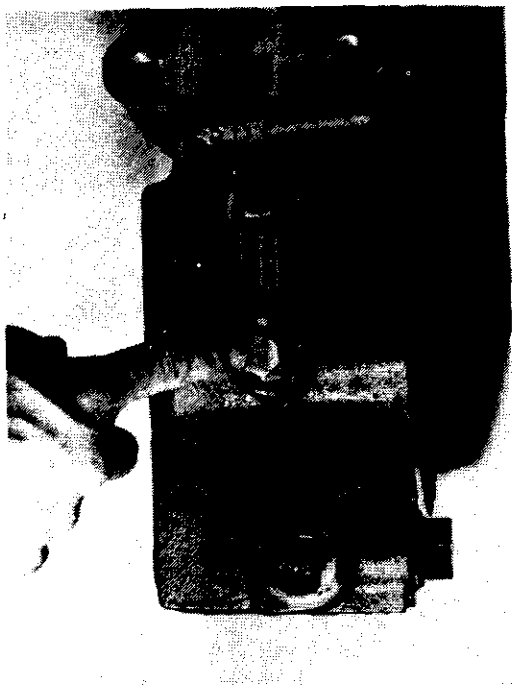

Fig. 162

Install the oil level sight gauge in the output housing.

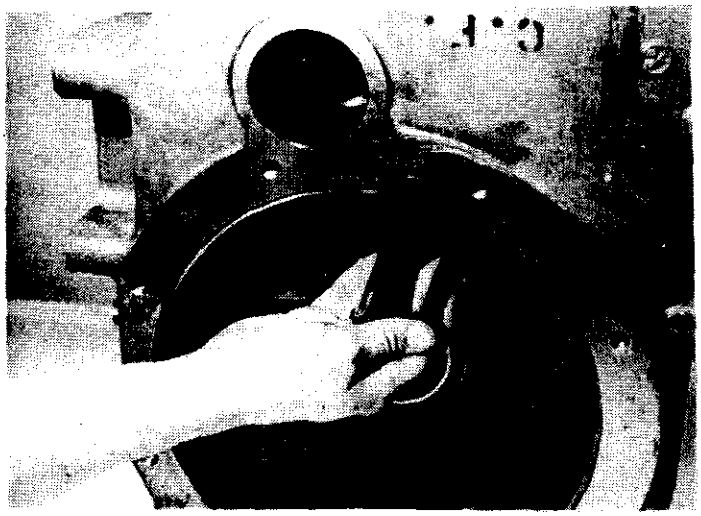

Fig. 163

Install the three capscrews inside the output housing which bolts the output and input housings together.

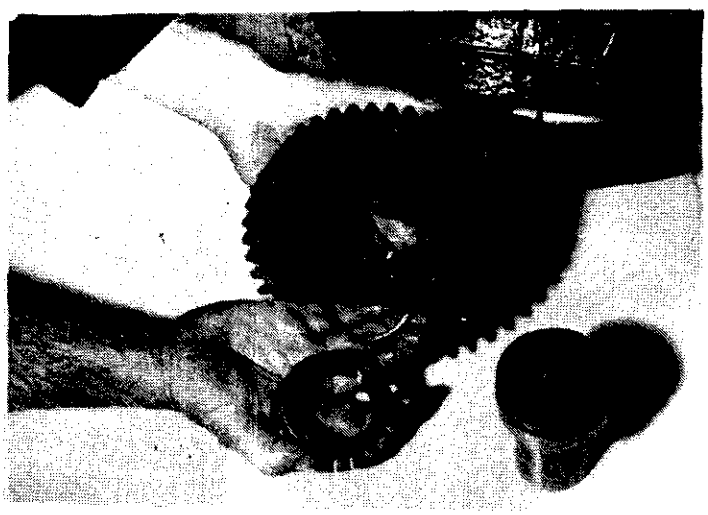

Fig. 164

Press the bearing cups in the idler gear and place the bearing cones and spacer in the gear.

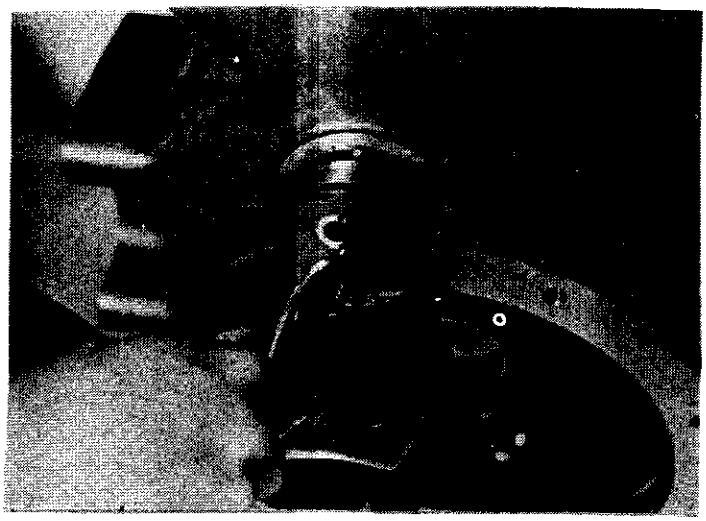

Fig. 165

Place the idler gear in the housing and install the idler shaft with the "O" ring on it into the case.

Fig. 166

Install the capscrew with dyna-seal washer through the idler shaft.

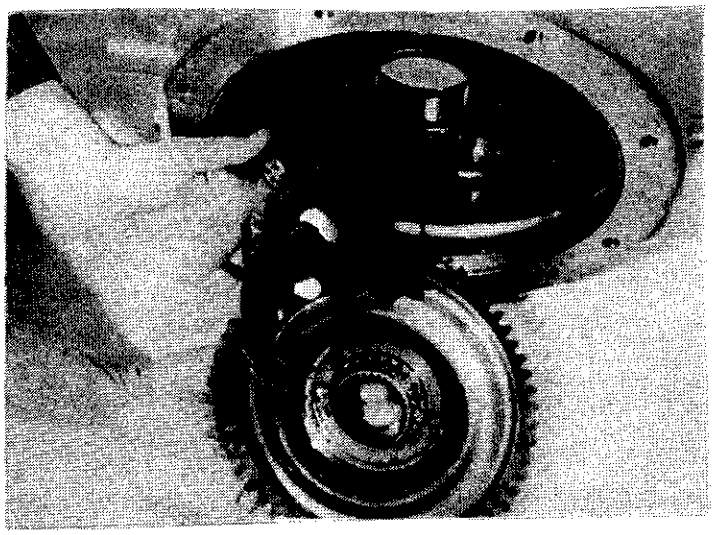

Fig. 167

Install the bearing in the bore of the output gear. Place the two nylon clips on the shifter fork. Place the fork in the shift groove of the gear and install them together in the case. The shifter shaft will extend through the front of the case.

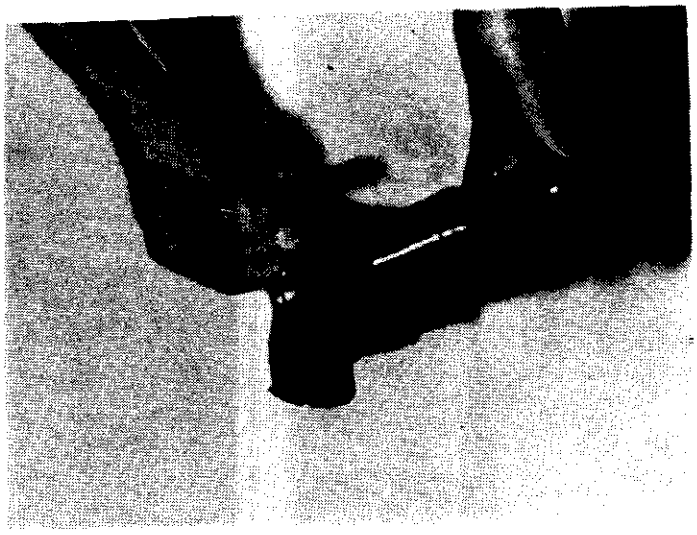

Fig. 168

Place the rubber seal on the output shaft.

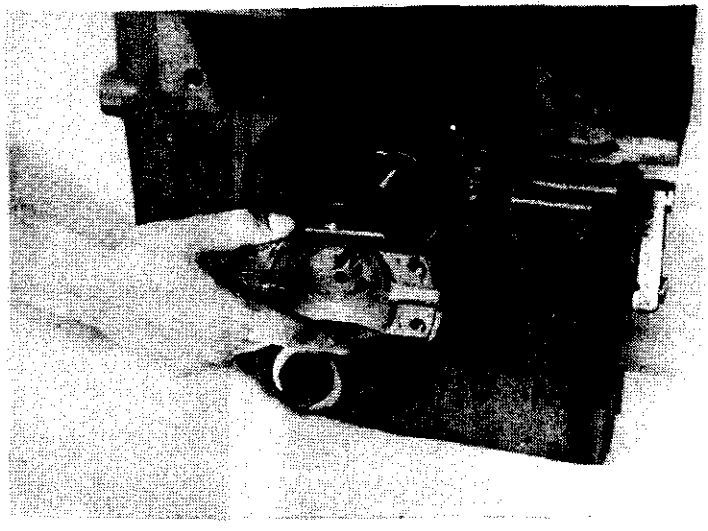

Fig. 169

Install output shaft through the housing and output gear.

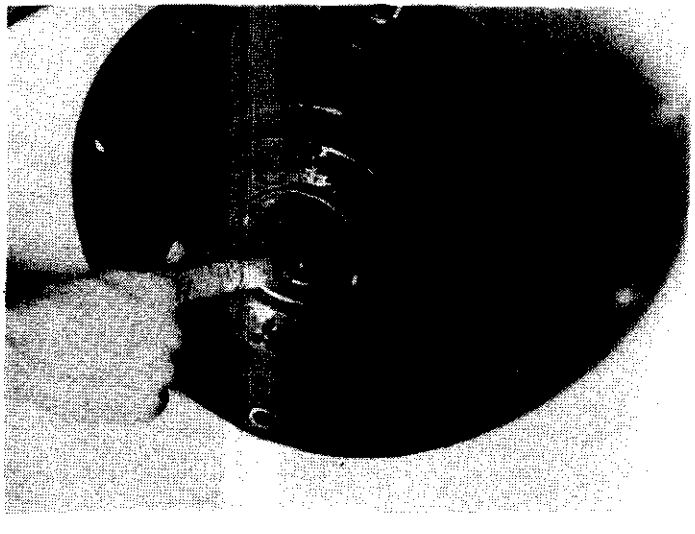

Fig. 170

Install the bearing and oil seal in the output retainer.

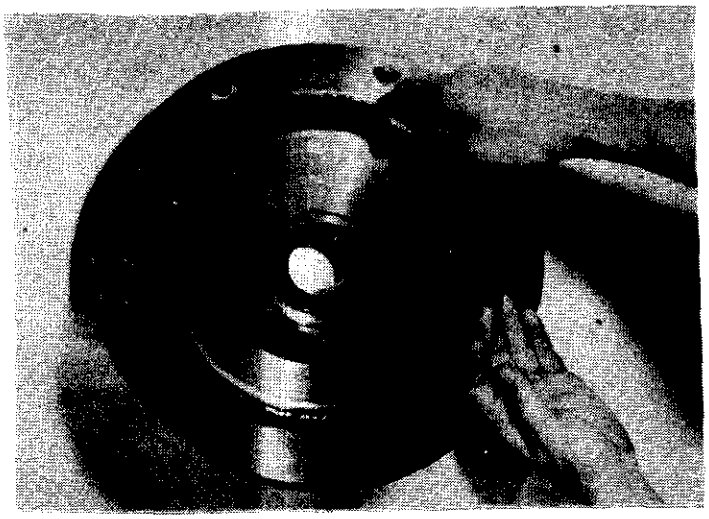

Fig. 171

Install "0" ring on the output retainer.

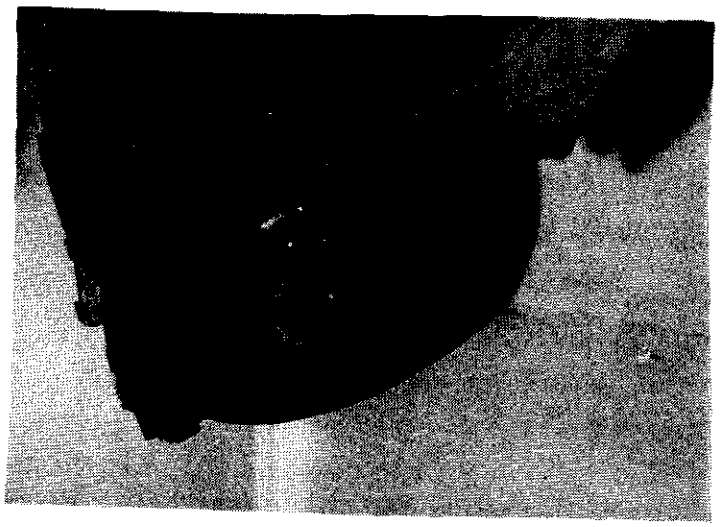

Fig. 172

Install the output retainer and install the capscrews

Fig. 173

Install the detent ball, plunger, spring and allen head plugs in the side of the case. This is the detent for the disconnect shaft.

Fig. 174

Install the brake mounting bracket.

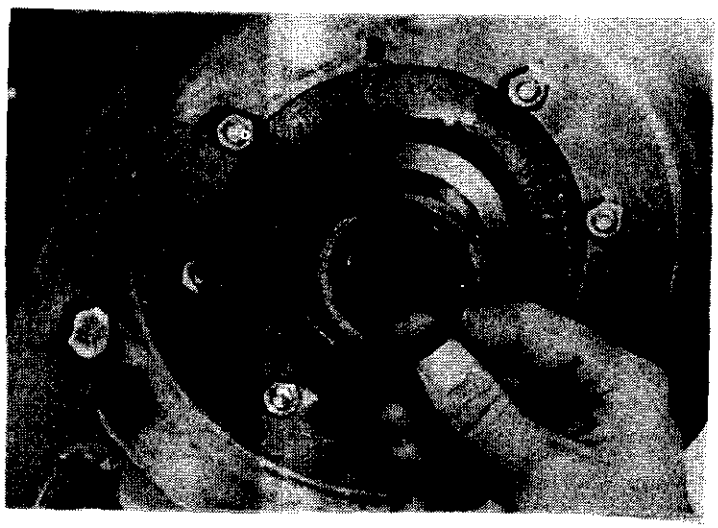

Fig. 175

Install the rubber seal on the disk flange.

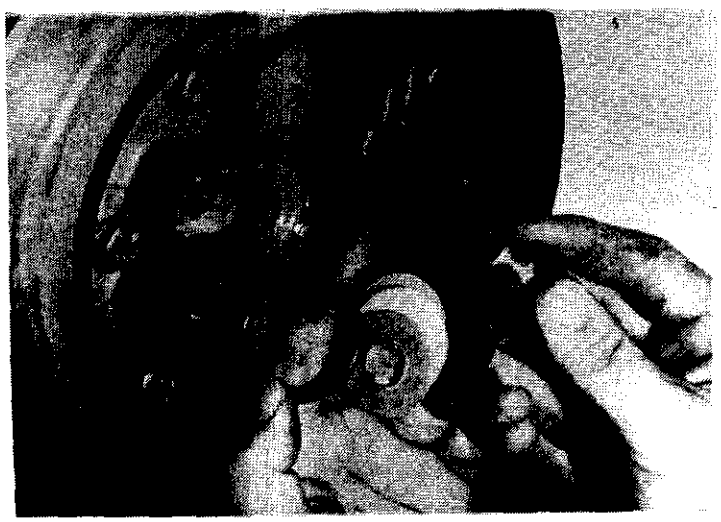

Fig. 176

Place the disk on the shaft and install the "O" ring, shims, retainer washer and place bolt.

Fig. 177

Place the disk caliper assembly on the bracket and install the two pins.

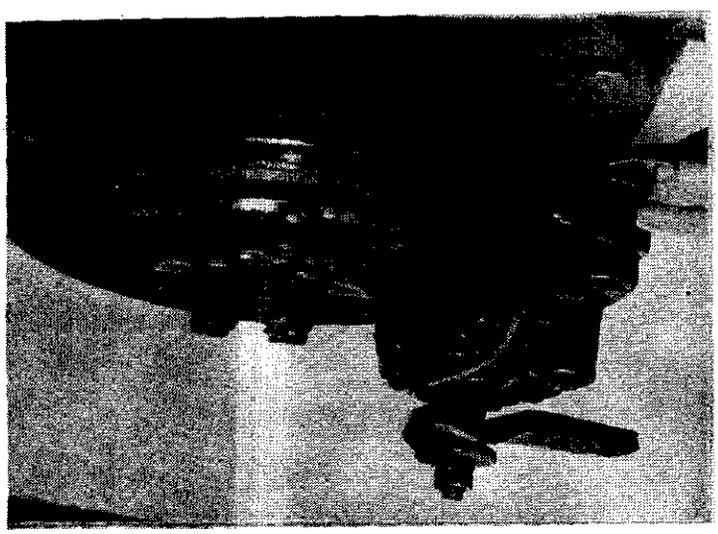

Fig. 178

The pins are retained with cotter keys.

DISASSEMBLY INSTRUCTIONS

FOR THE

4000 SERIES TRANSMISSION

Figure 1

Front view of transmission.
(Input side)

Figure 2

Rear view of transmission.

(Output side)

Figure 3

Right side of transmission.

Figure 4

Left side of transmission.

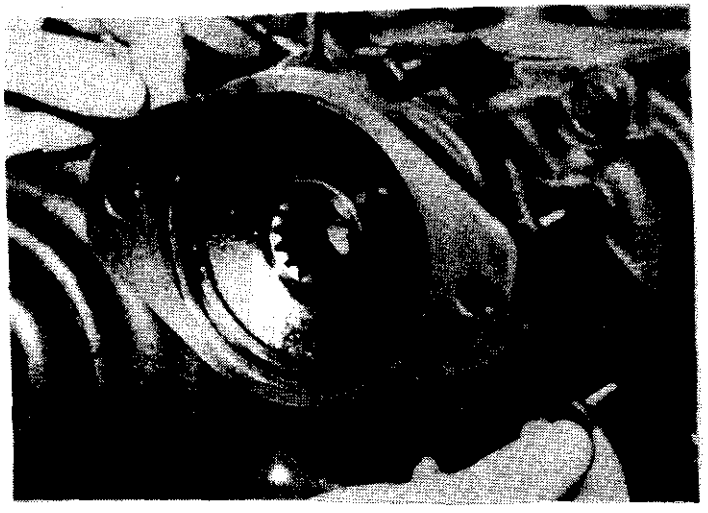

Figure 5

Remove cap screws from charge pump. This charge pump assembly is also an auxiliary pump drive.

Figure 6

Remove the charge pump assembly by pulling it straight out.

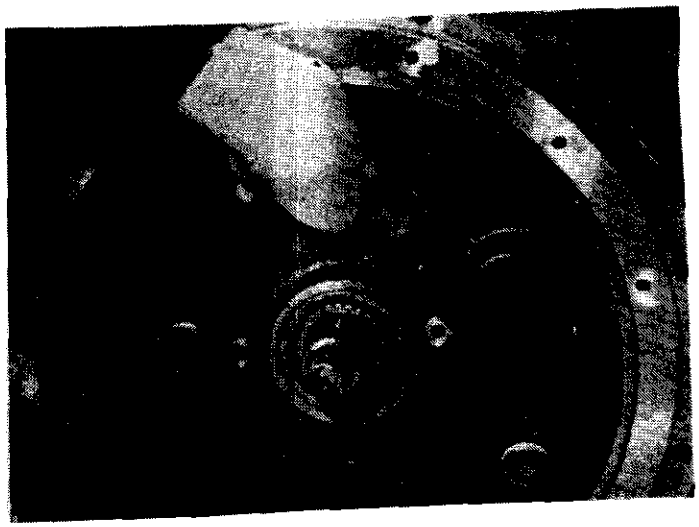

Figure 7

The drive gear for the pump shaft is on the input side of the transmission. Remove the capscrews and pry the housing away from the case.

Figure 8

The stator tube and pump drive gear can be removed together.

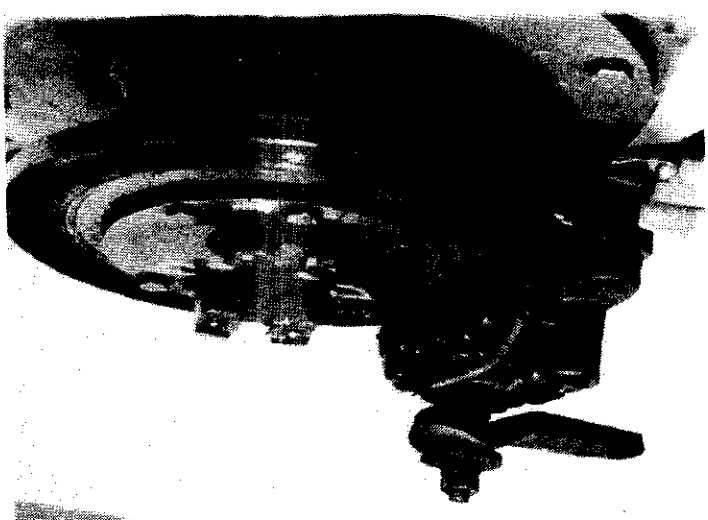

Figure 9

Remove the cotter pins from the caliper assembly.

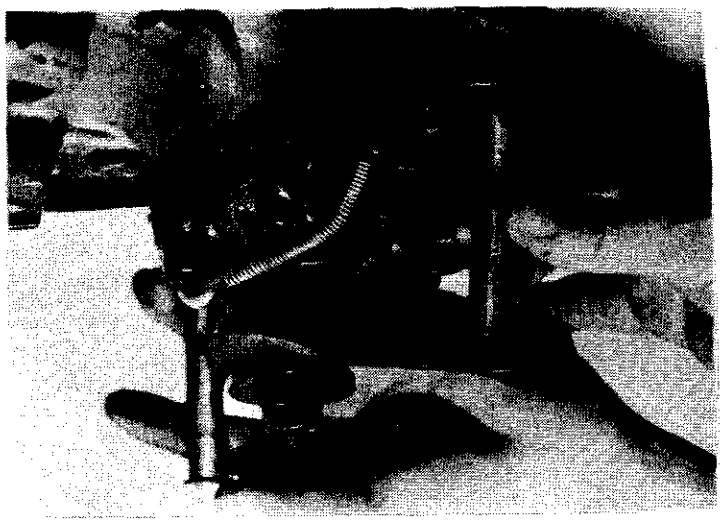

Figure 10

Remove the two pins and the caliper assembly will slip out.

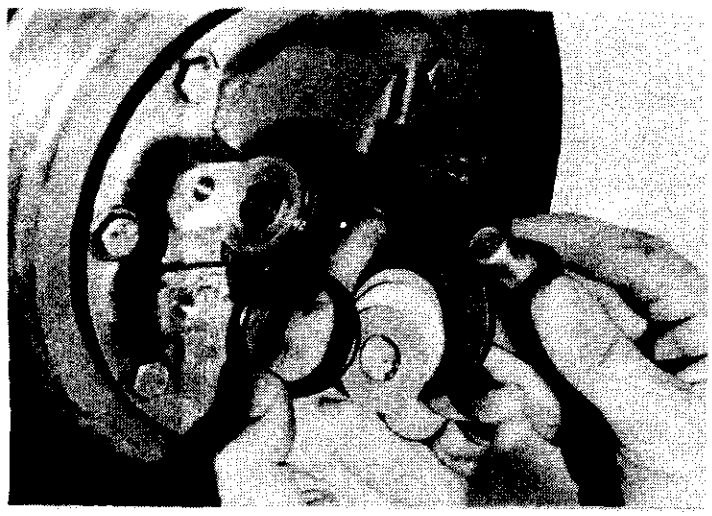

Figure 11

Remove the place bolt, retainer washer shims and "O" ring from the output disc.

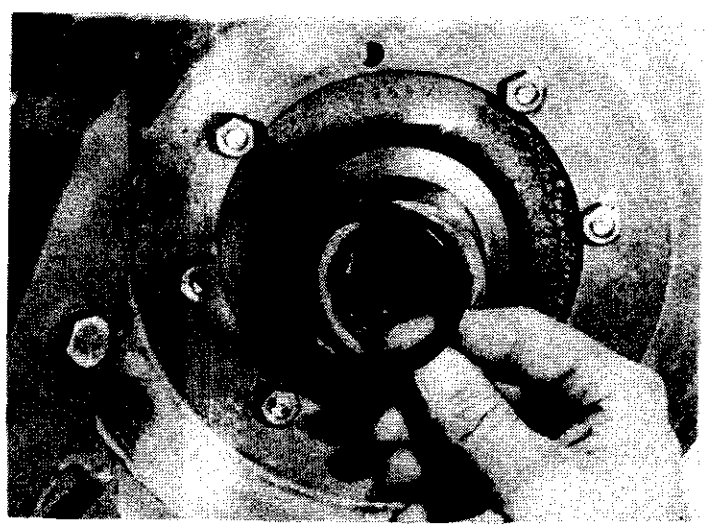

Figure 12

The output flange and disk will pull straight out and them remove the rubber seal from the flange.

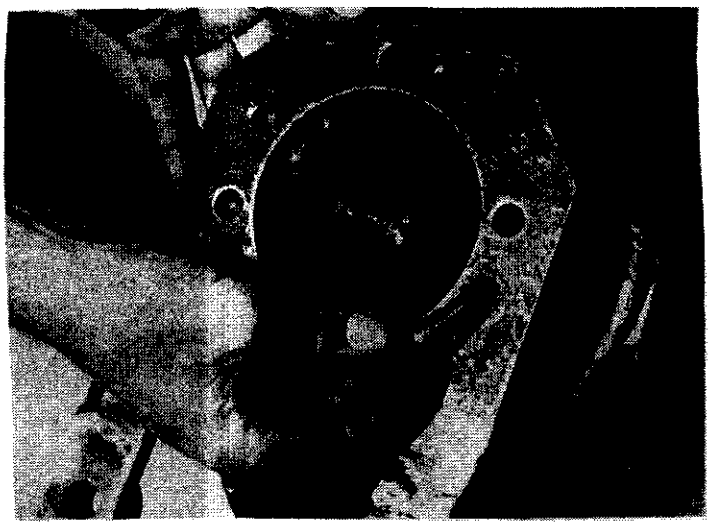

Figure 13

Remove the brake bracket.

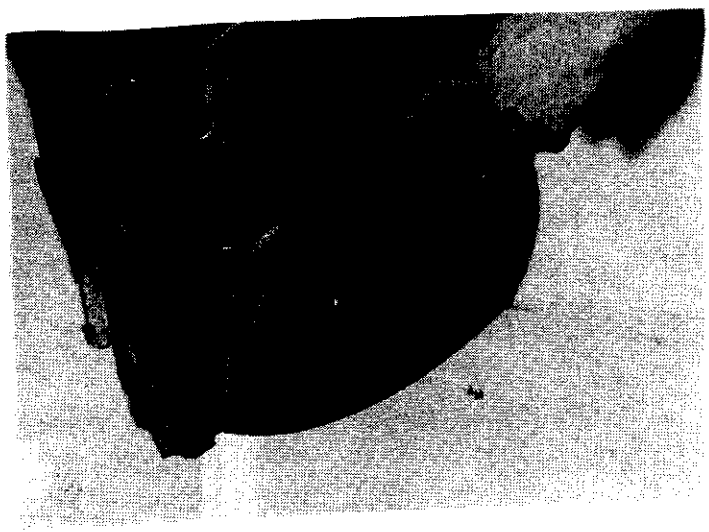

Figure 14

Remove the output retainer.

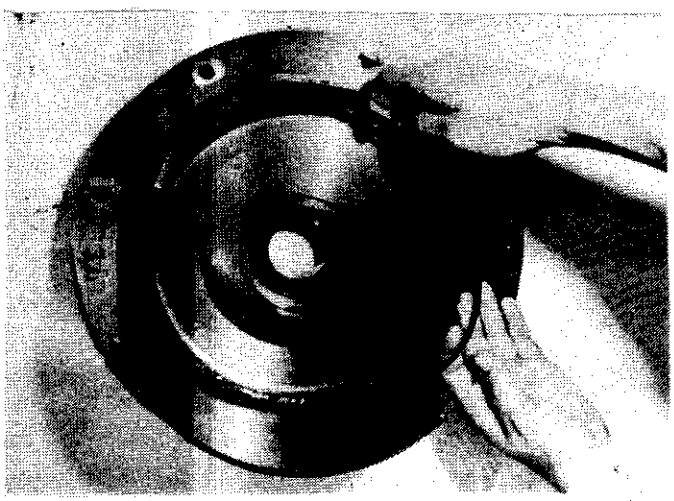

Figure 15

Remove the "O" ring.

Figure 16

Remove the oil seal and bearing from the retainer.

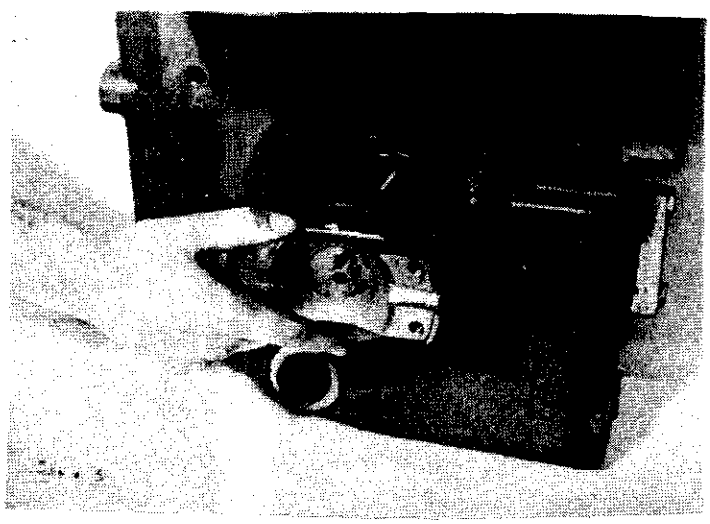

Figure 17

The output shaft is removed from the front side of the case.

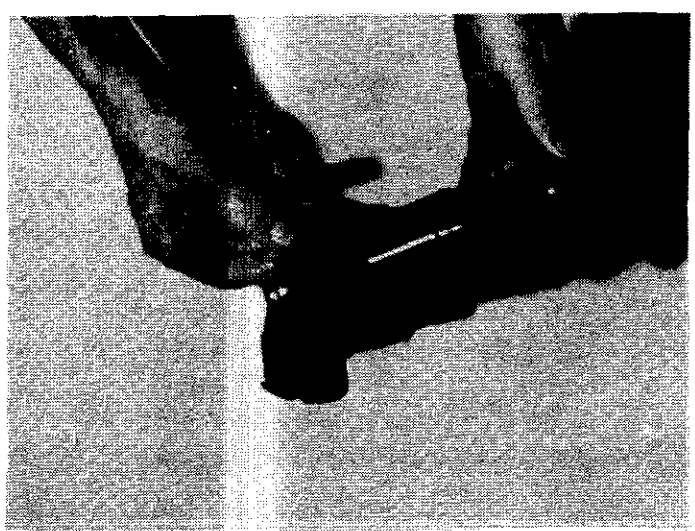

Figure 18

Remove the rubber seal from output shaft.

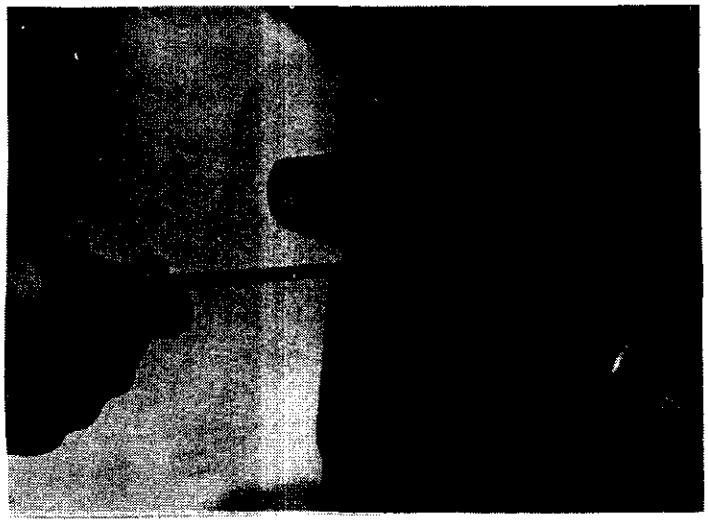

Figure 19

Remove the allen head screw from the left side of case. This is the detent assembly.

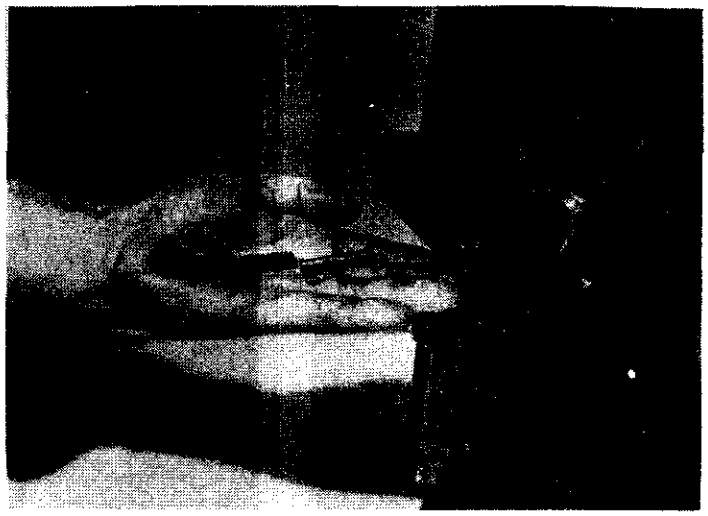

Figure 20

The detent ball, plunger, spring and allen head screws.

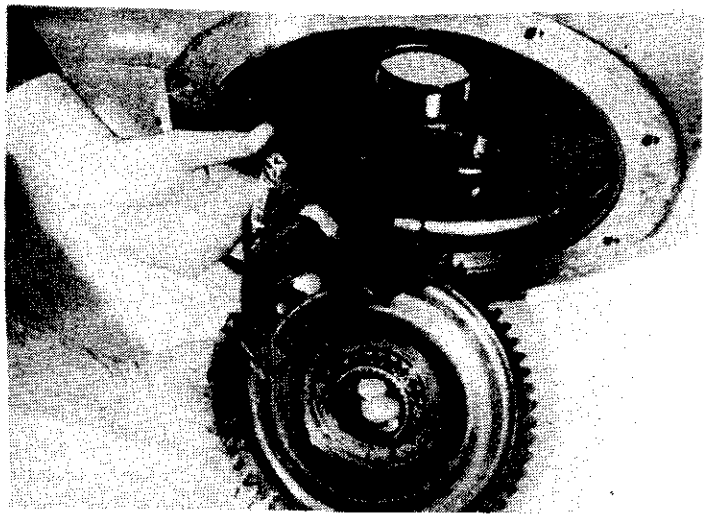

Figure 21

The output gear and shifter fork must be removed together.

Figure 22

Remove the capscrew and dynaseal washer from the idler shaft.

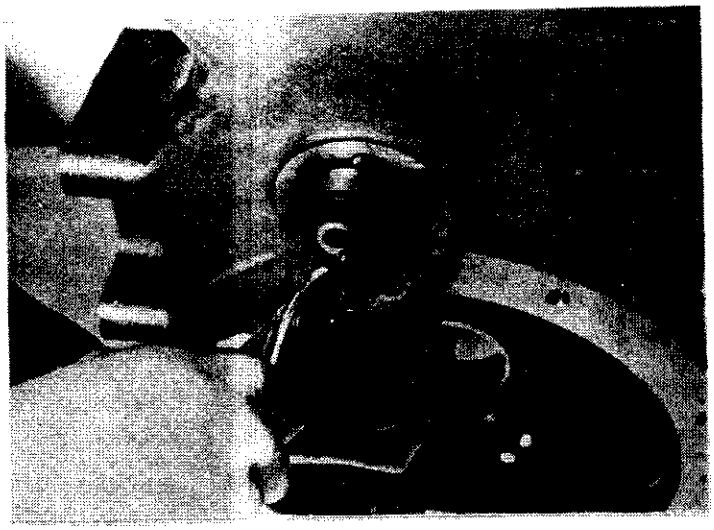

Figure 23

Pull the idler shaft and "O" ring out of case while holding up on the idler gear.

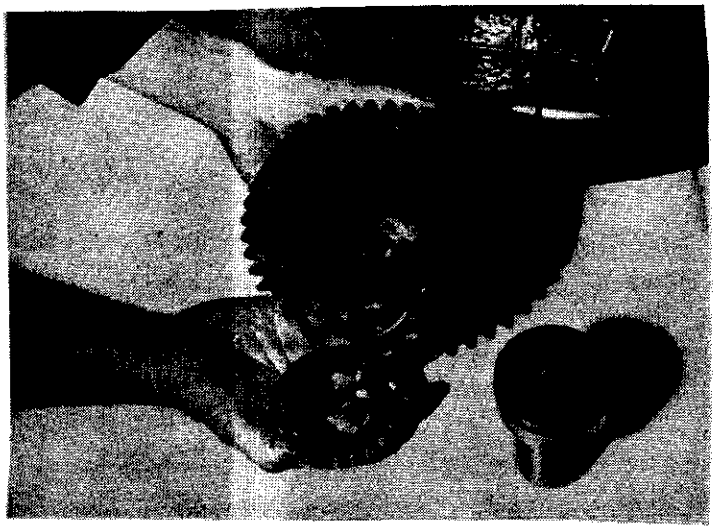

Figure 24

The idler gear bearings and spacer removed from the case.

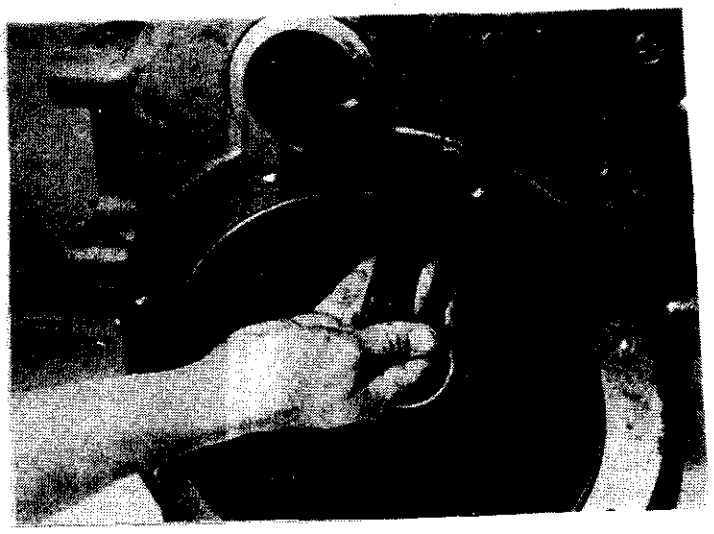

Figure 25

Remove the three capscrews from inside the housing. These hold the bottom of the input housing to the output housing.

Figure 26

Remove the oil level assembly and drain plugs.

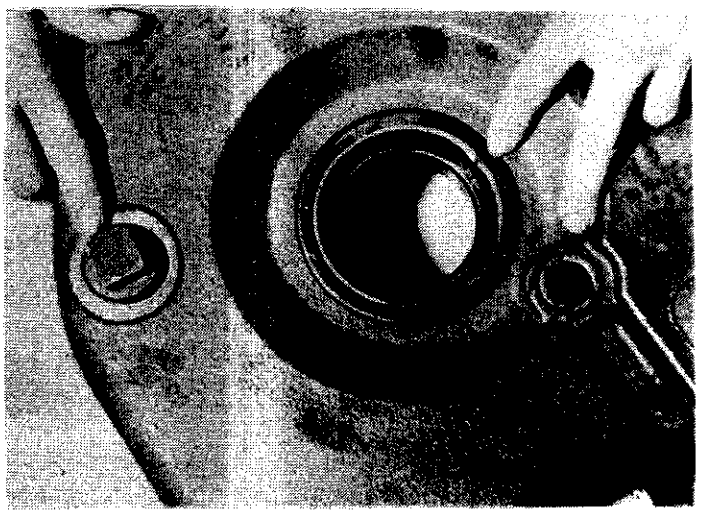

Figure 27

Remove the output seal, bearing, and the disconnect seal.

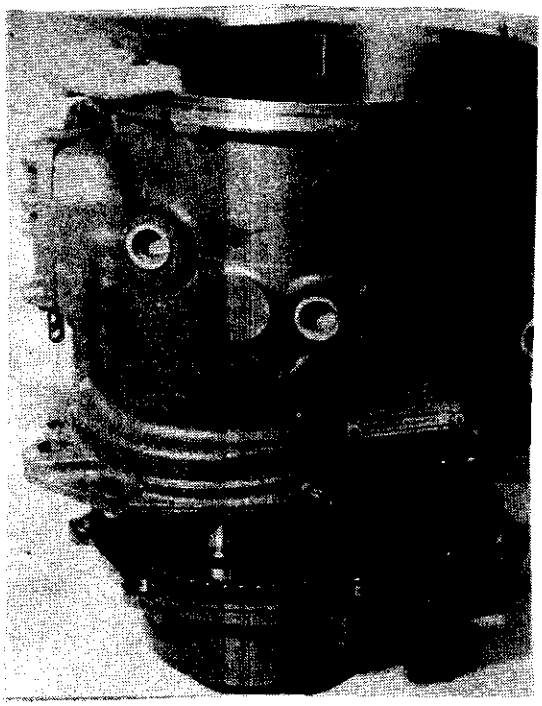

Figure 28

Lay the transmission on its back with the converter housing pointing up. Remove the remaining capscrews which bolt the two housings together. Lift the input housing straight up. The clutch stacks will remain in the output housing.

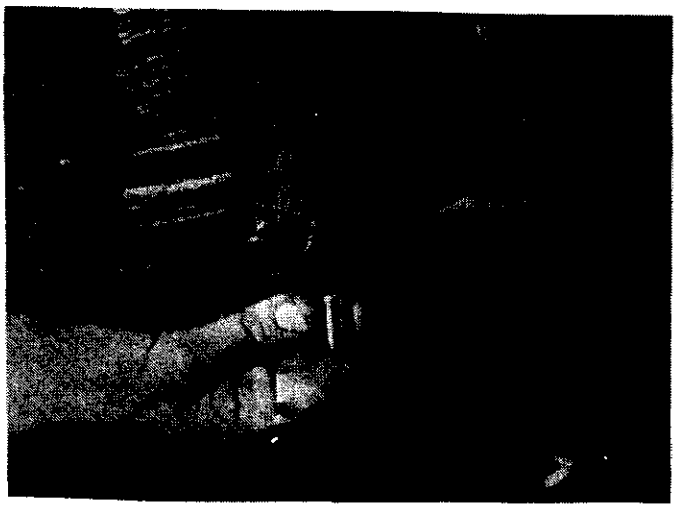

Figure 29

Remove the two hollow studs from the housings.

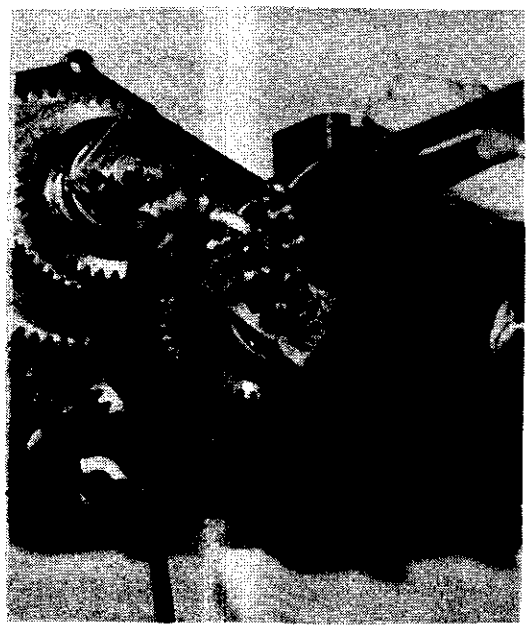

Figure 30

Both clutch stacks must be removed together. The lower clutch stack has a press fit bearing in the bottom of the housing and must be pryed up while removing the clutch stack assembly.

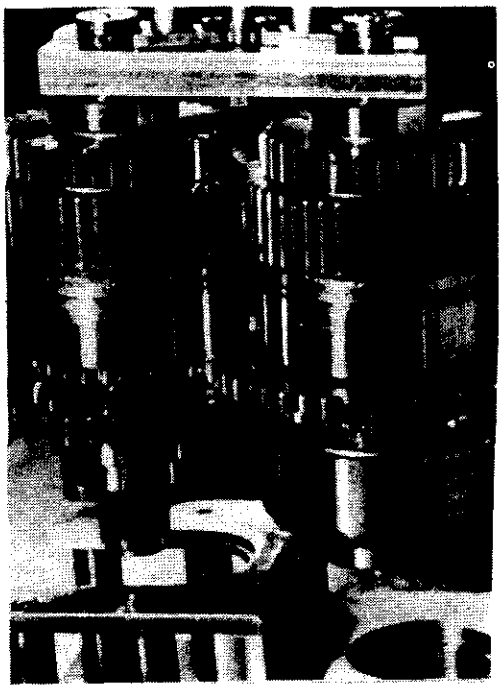

Figure 31

The clutch stacks are different lengths so you must block up under the shortest one to remove the lift bracket.

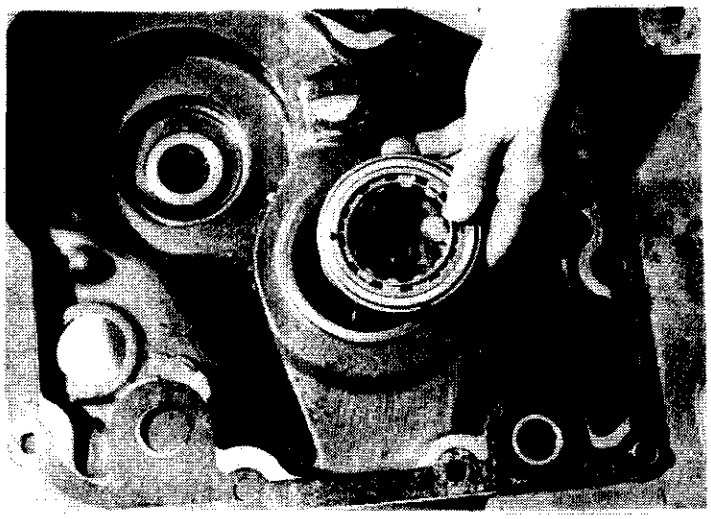

Figure 32

Remove the roller bearing from the case bore. The inner race for this bearing is pressed on the lower clutch shaft.

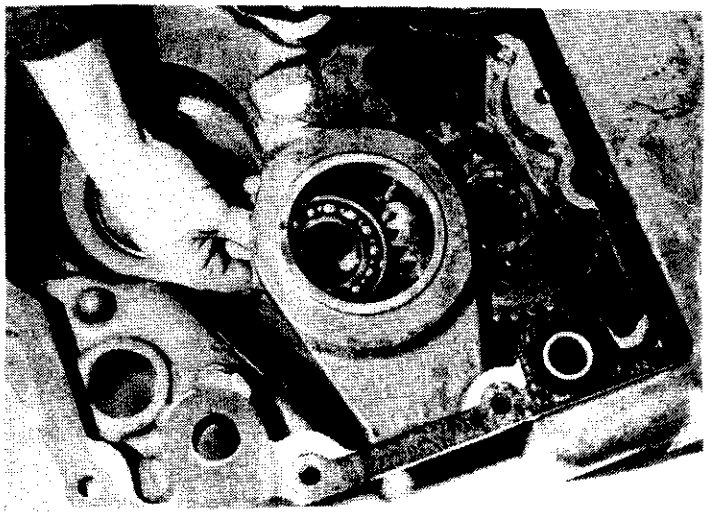

Figure 33

Remove the drive gear and lower bearing from the case.

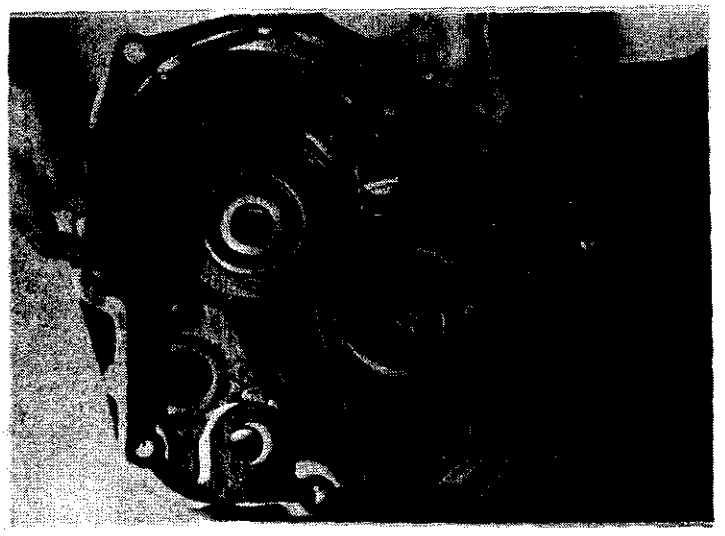

Figure 34

Remove the housing gasket.

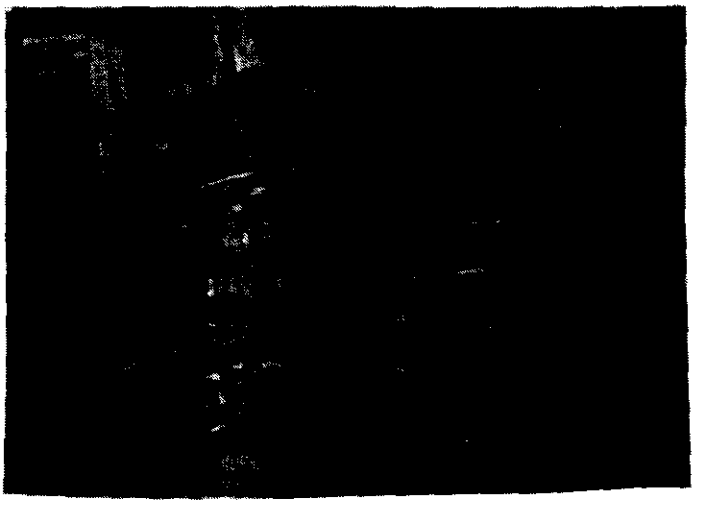

Figure 35

Remove the cap screws holding the valve body on the input housing.

Figure 36

To remove the valve body, hold the bottom part of the valve against the case and pull the top of the valve body out and down. This way you do not lose the two detent balls and springs.

Figure 37

The valve body pad on the input housing.

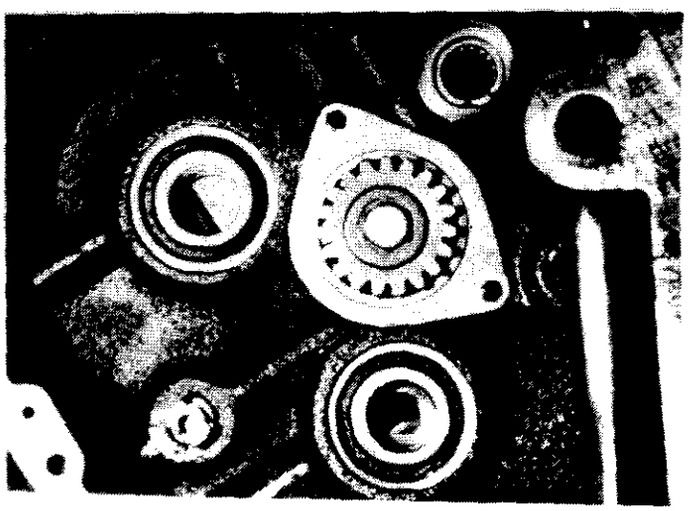

Figure 38

Internal view of the input housing.

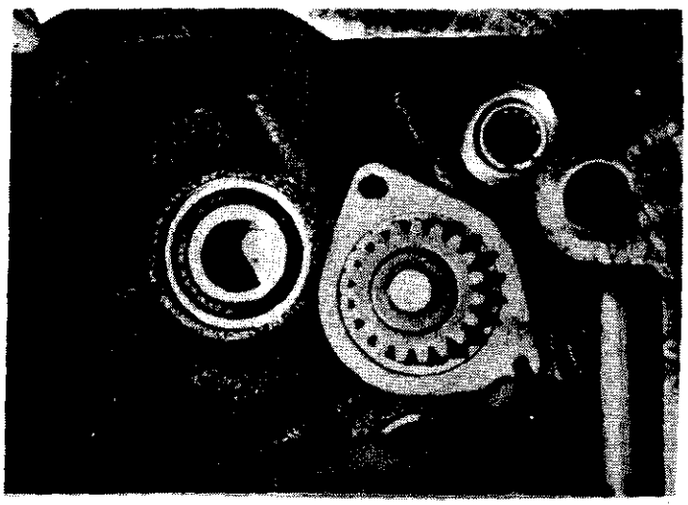

Figure 39

To remove the input shaft, remove the two capscrews from the retainer.

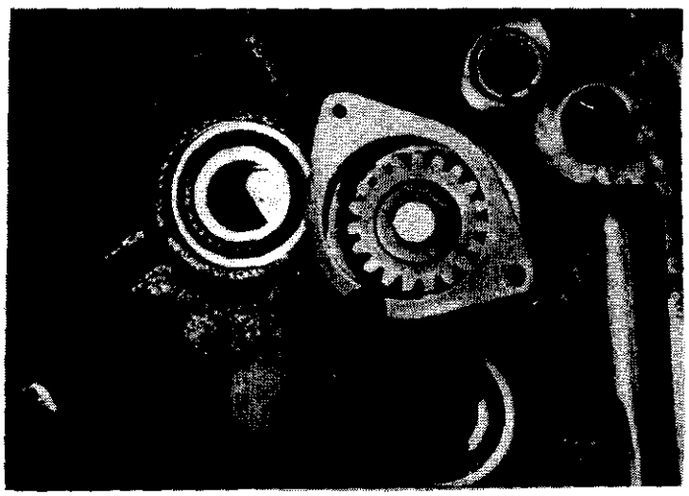

Figure 40

Lift the retainer off of the input gear.

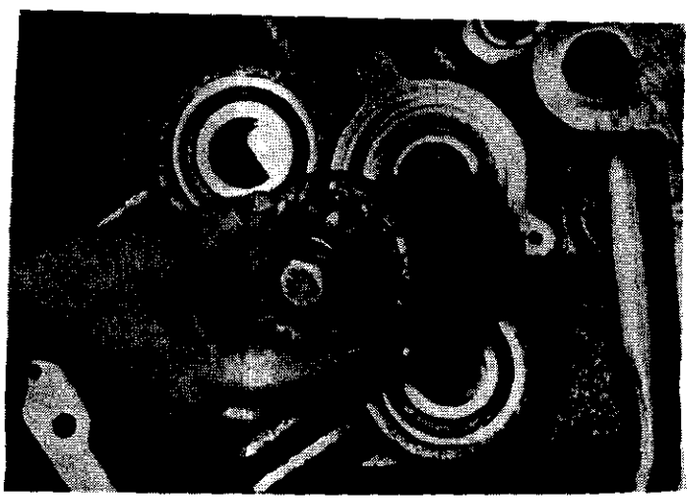

Figure 41

Pull the input shaft out of the input housing.

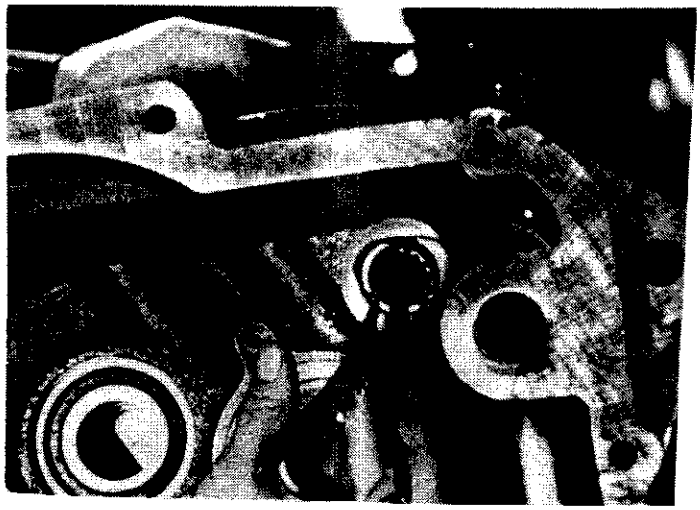

Figure 42

Remove the snap ring from the pump shaft support bearing.

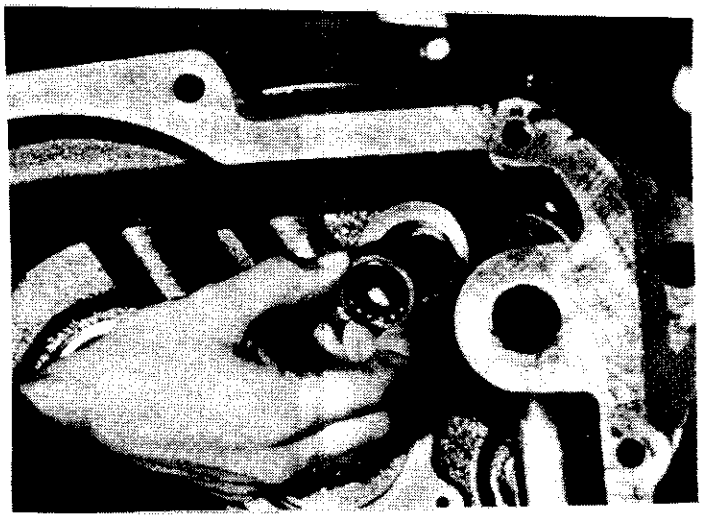

Figure 43

The bearing is a slip fit in the bore and can be slipped out with your fingers.

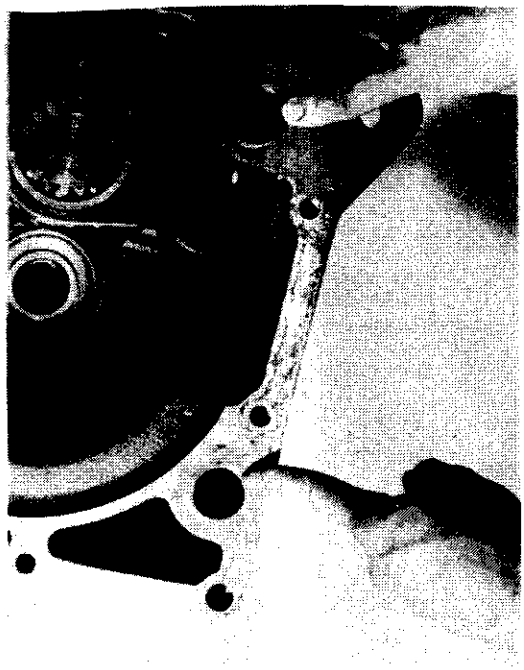

Figure 44

The upper suction tube is swaged into the housing and is not to be removed.

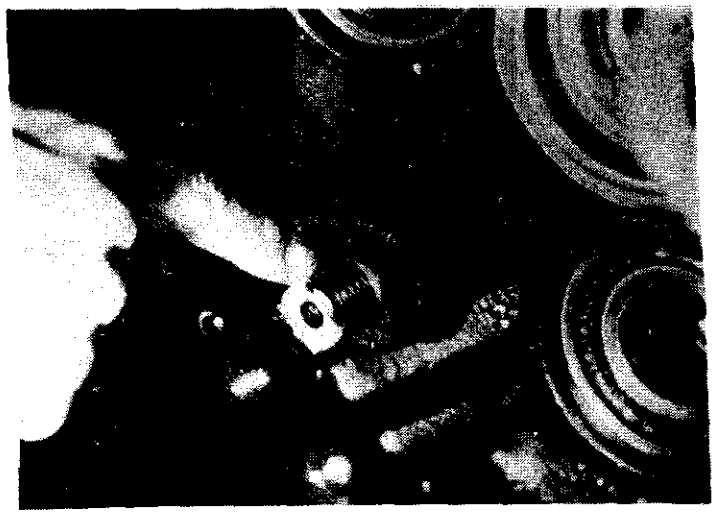

Figure 45

The converter bypass valve is located in the input housing.

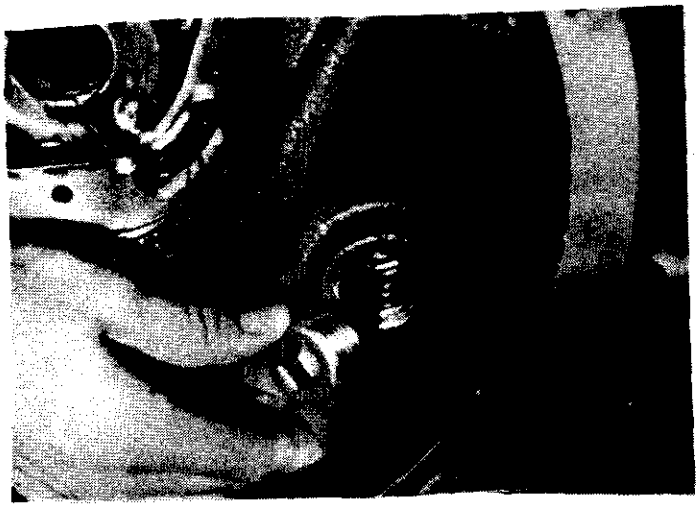

Figure 46

Remove the one inch allen head pipe plug from the front side of the input housing.

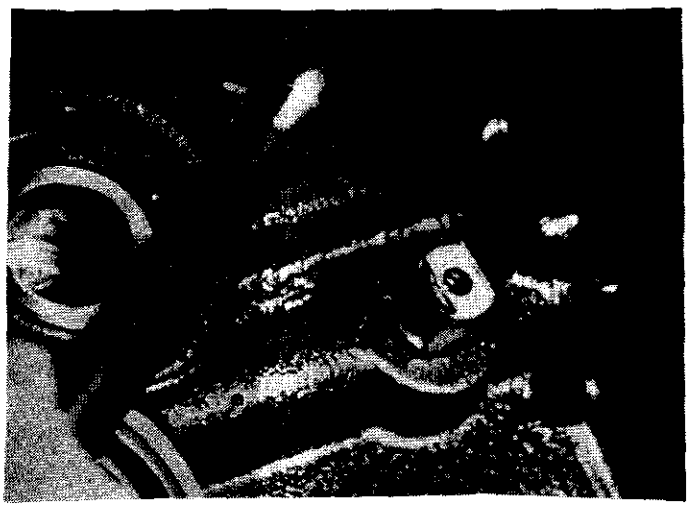

Figure 47

With the pipe plug removed, lightly tap the converter bypass valve on the back side until it is loose.

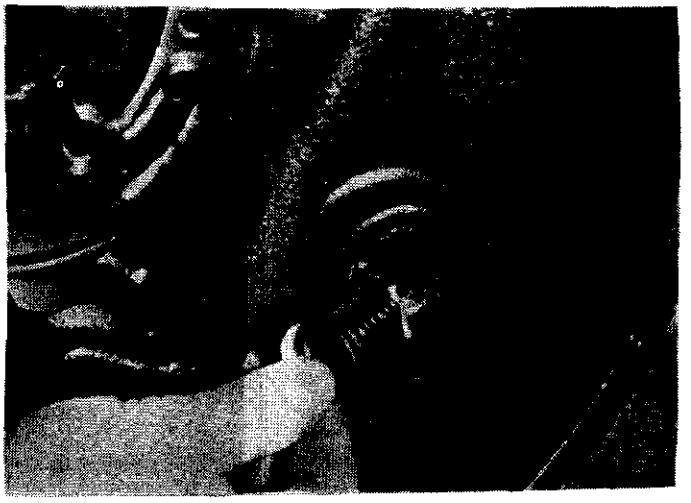

Figure 48

Remove the converter bypass valve from the front side of the input housing.

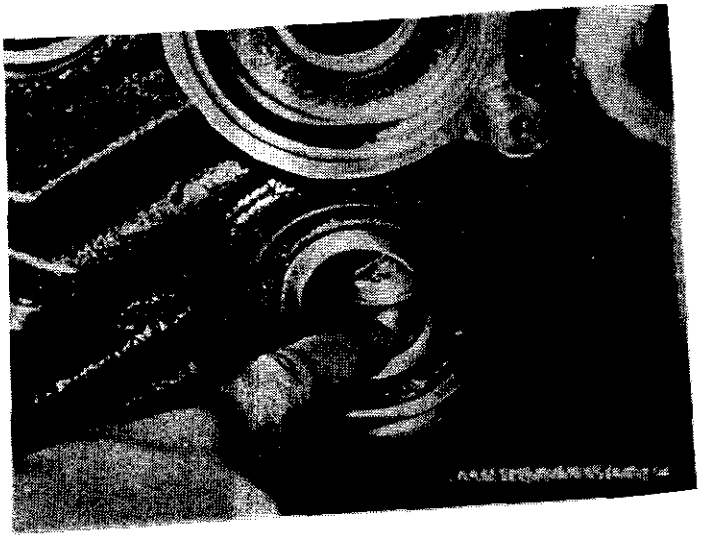

Figure 49

Check the seal ring bores for wear and scratches.

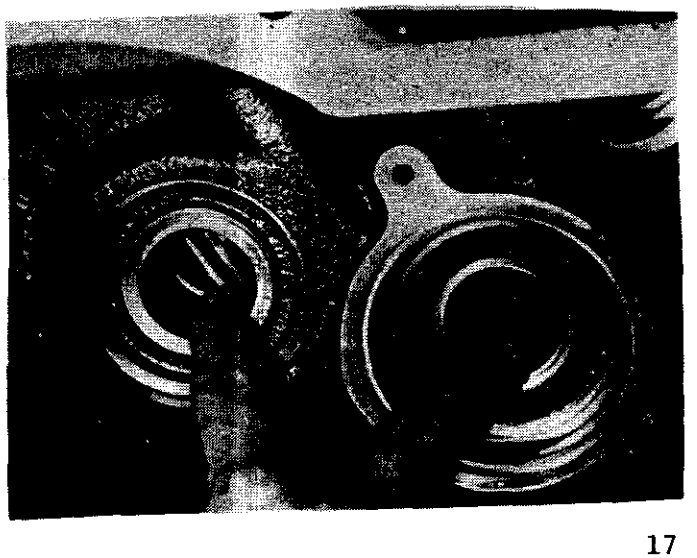

Figure 50

Check the seal ring bores for seal and scratches.

Figure 51

Remove the place bolt, retaining washer, and shim from the input shaft.

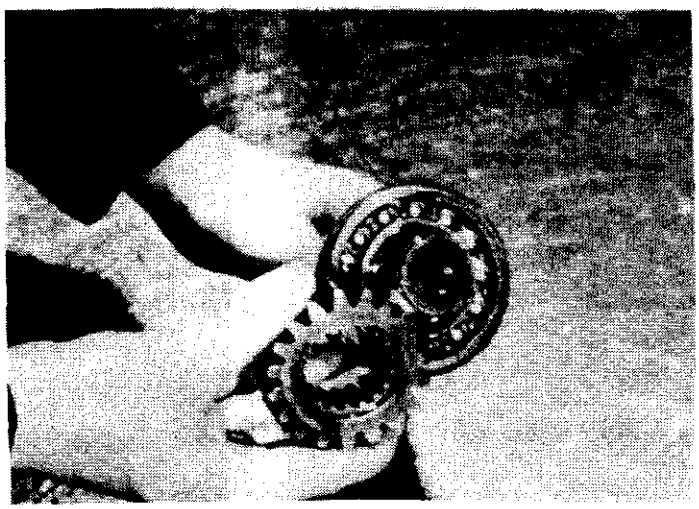

Figure 52

Slip the input gear off of the input shaft.

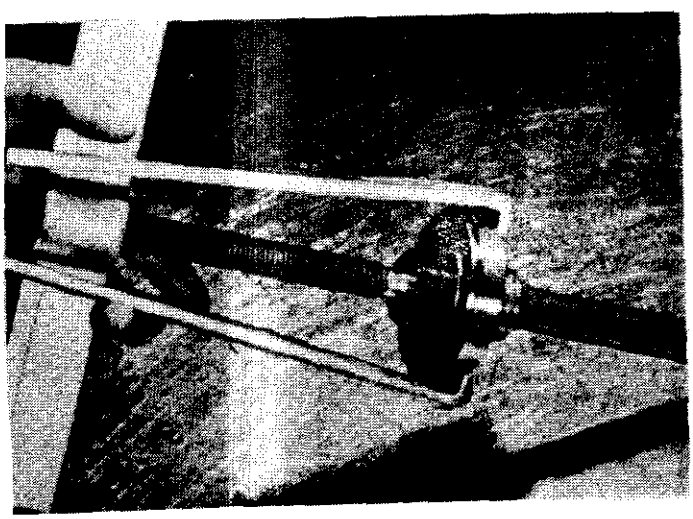

Figure 53

Use gear pullers or a press to remove the bearing from the input shaft.

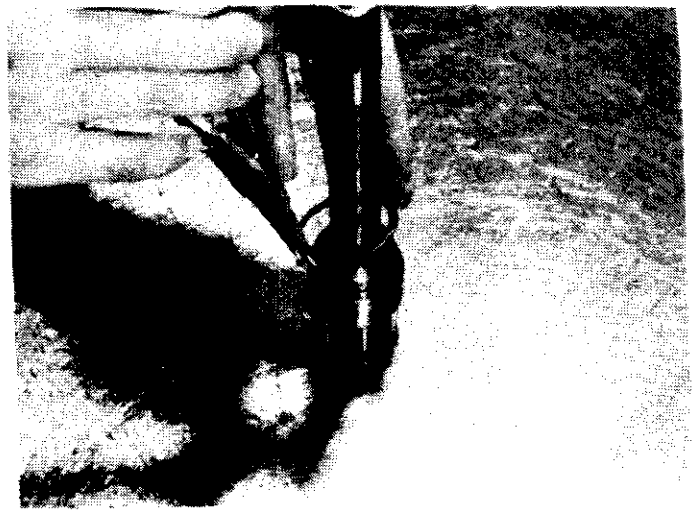

Figure 54

Remove the snap ring from shaft.

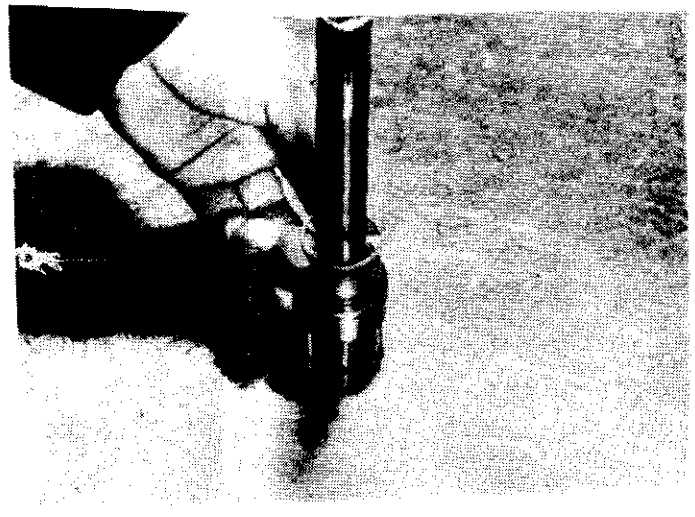

Figure 55

Remove seal ring from shaft.

Figure 56

Remove "O" ring and spacer from the pump shaft drive housing.

Figure 57

Remove "O" ring, stator tube, and drive gear from housing.

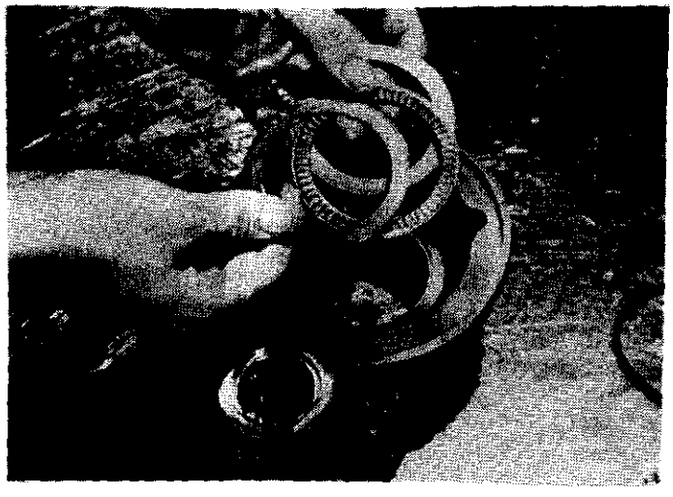

Figure 58

Remove the thrust bearing and both spacers from the housing.

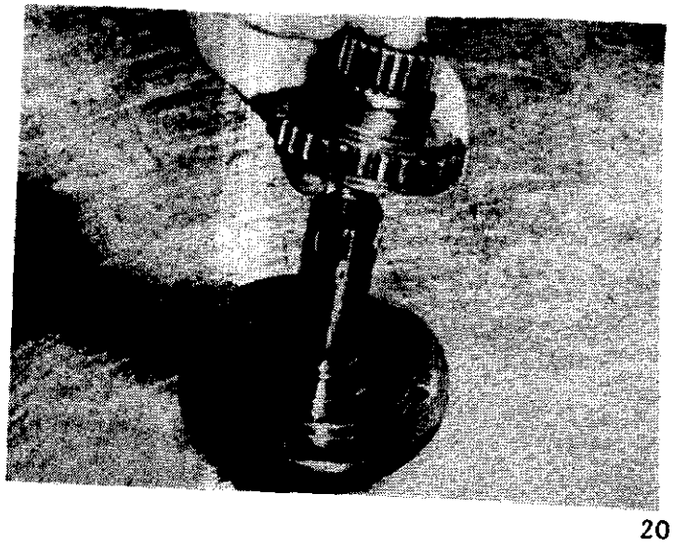

Figure 59

Lift drive gear off of the stator tube.

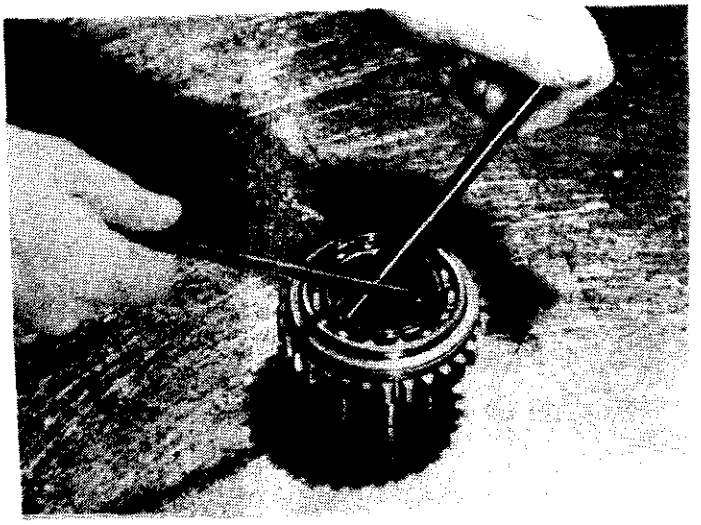

Figure 60

Remove pilot bearing from the drive gear.

Figure 61

Remove seal ring from drive gear.

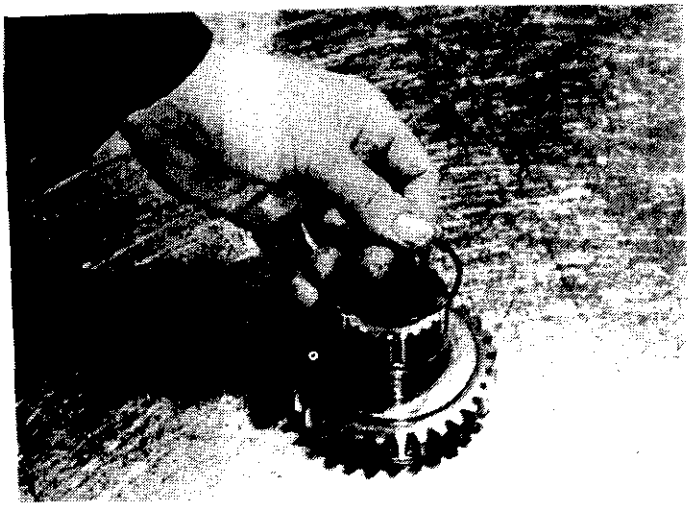

Figure 62

Remove "0" ring from drive gear.

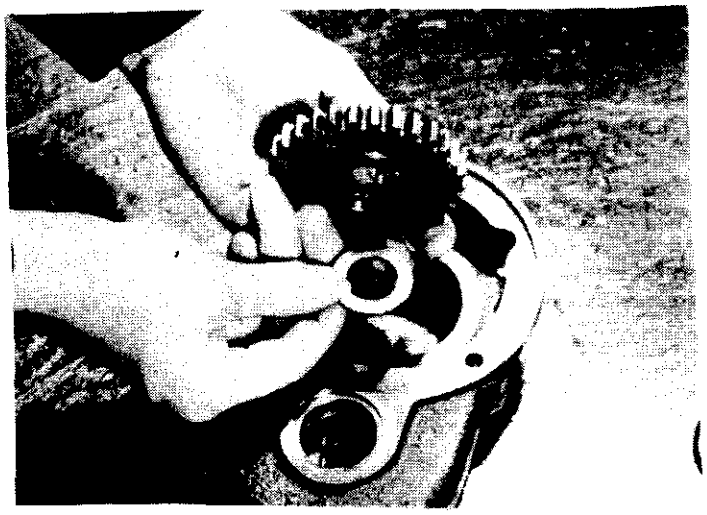

Figure 63

Remove the driven gear and the spacer from the housing.

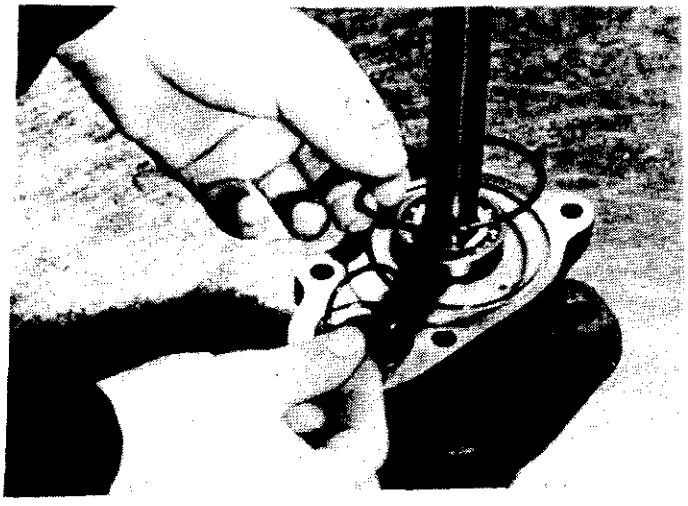

Figure 64

Remove both "O" rings from the charge pump housing.

Figure 65

Use a bearing puller to remove the bearing from the pump drive shaft.

Figure 66

Remove the snap ring from the shaft.

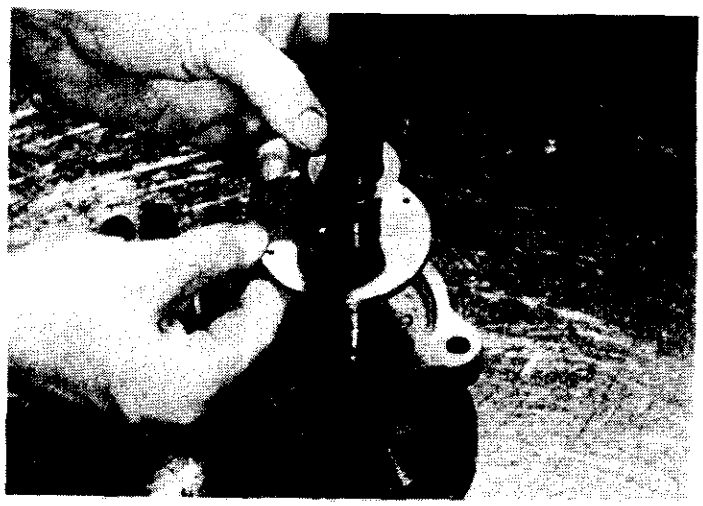

Figure 67

Remove the spacer washer and back-up plate from the pump.

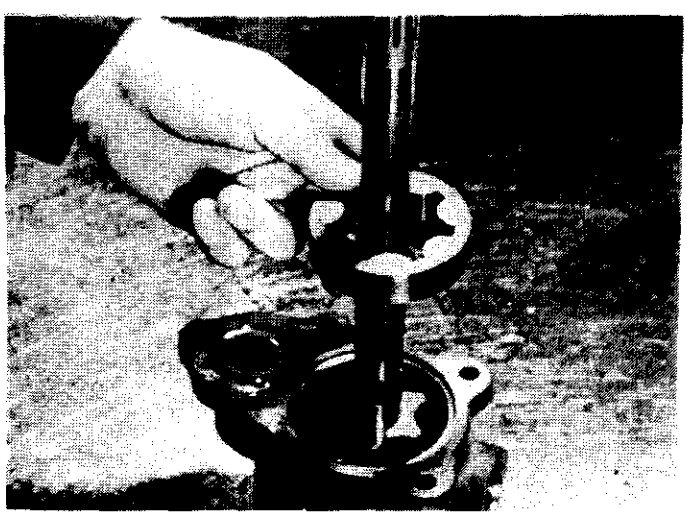

Figure 68

The outer gerotor gear will lift out of the pump housing.

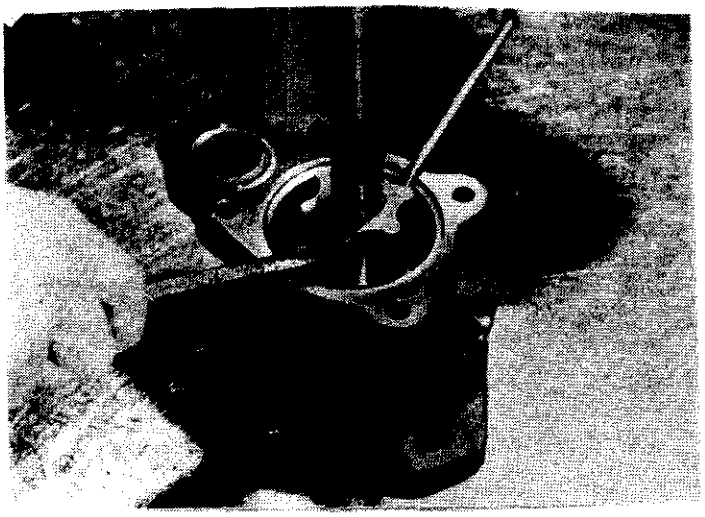

Figure 69

The inner gerotor gear may need to be pryed up for removal. Be careful not to damage housing or gear when removing.

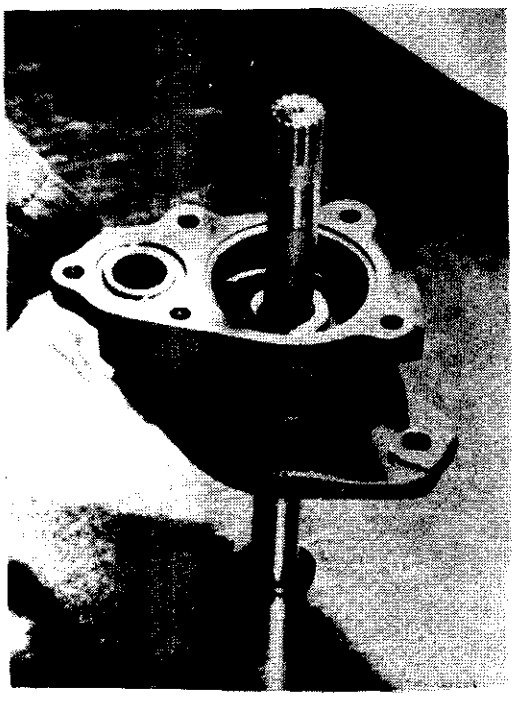

Figure 70

After removing the key from the pump shaft the housing will lift off of the pump shaft.

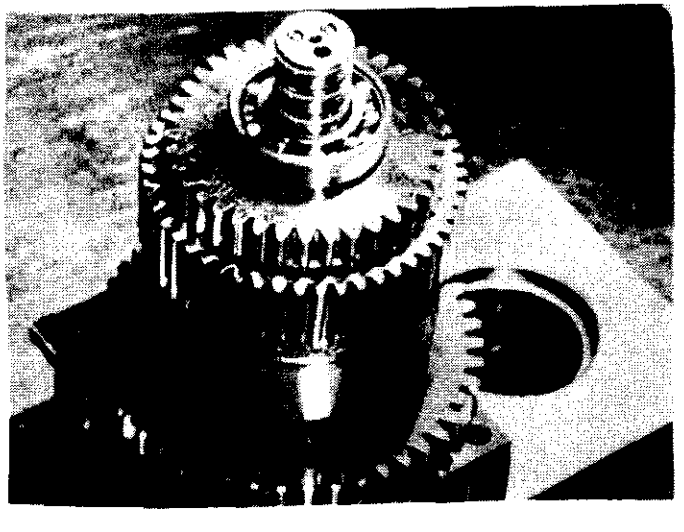

Figure 71

The top part of this clutch stack assembly is reverse and the bottom part is second gear.

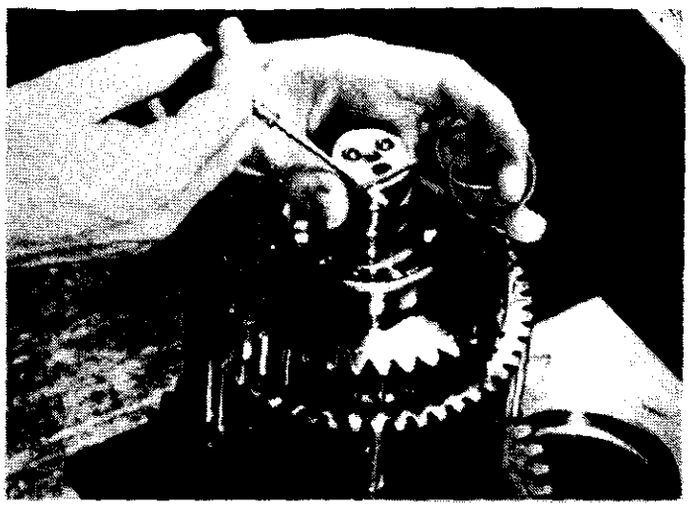

Figure 72

Start the disassembly by removing the three seal rings.

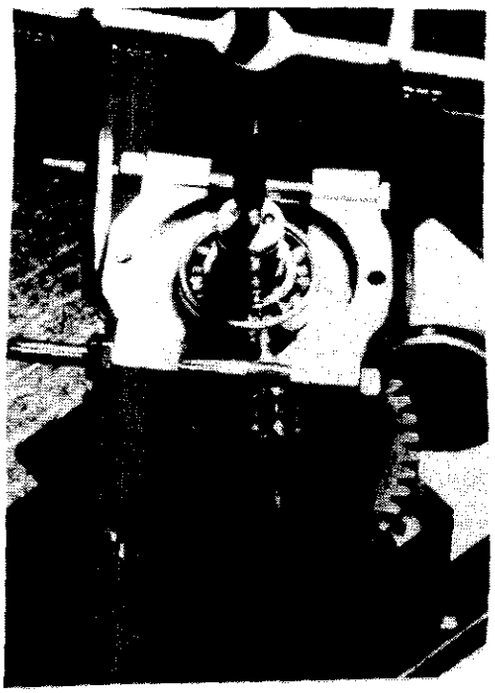

Figure 73

Use a bearing puller to remove the pilot bearing.

Figure 74

Remove the bearing and thrust washer.

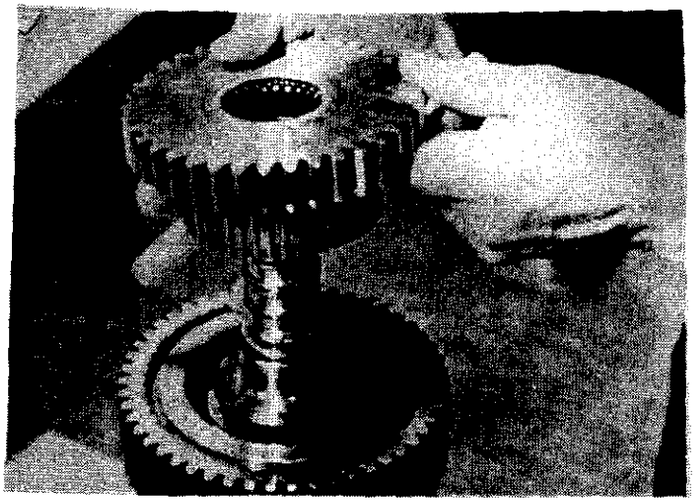

Figure 75

Lift the clutch hub off. The hub bearing can be pressed out of the hub.

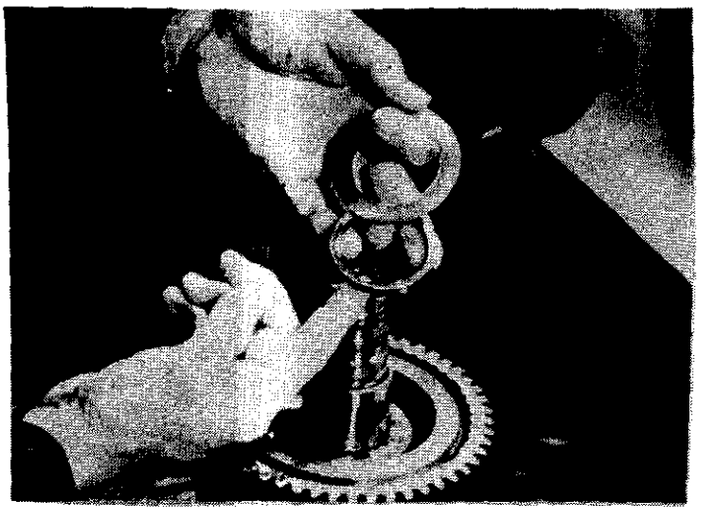

Figure 76

Remove the thrust washer and spacer ring.

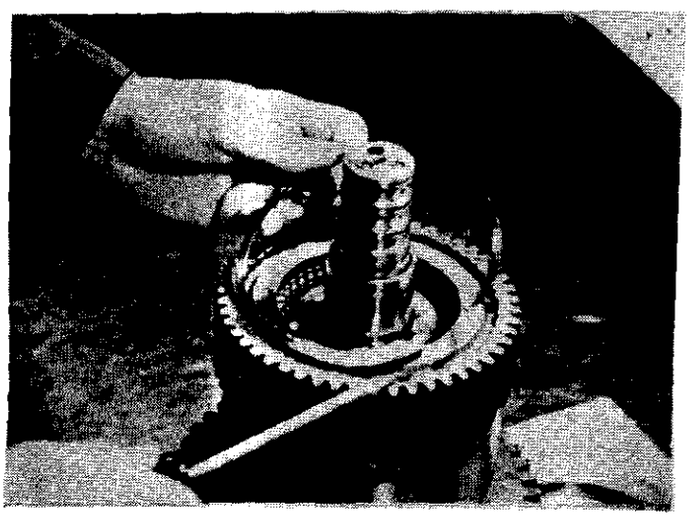

Figure 77

Remove the large internal snap ring.

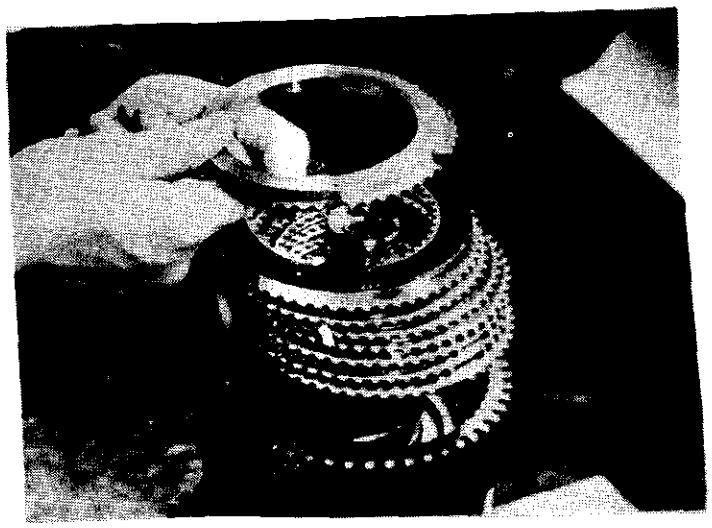

Figure 78

Remove the retainer plate, clutch plates, and separator plates.

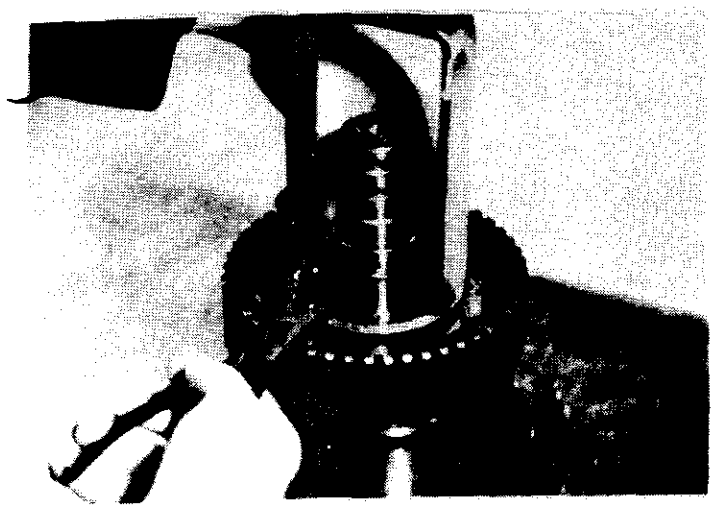

Figure 79

Use a press and spring compressor tool to hold the spring retainer down while removing the snap ring.

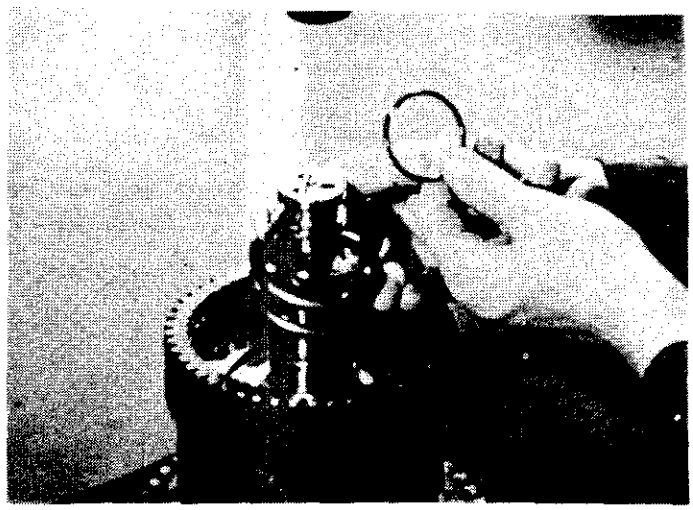

Figure 80

Let the tension off of the spring and remove it and the spring retainer.

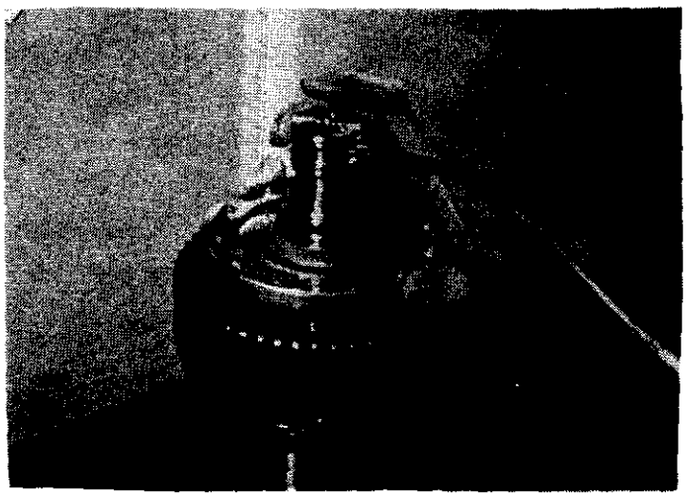

Figure 81

Use air to pop the piston up by blowing in the pressure port of the clutch stack assembly.

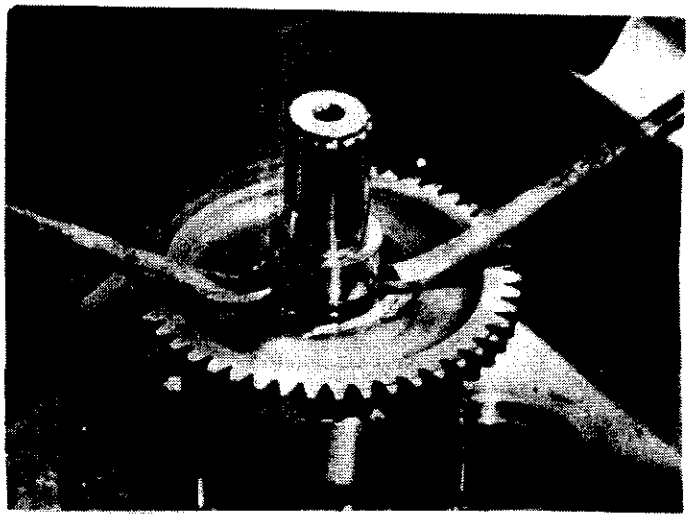

Figure 82

Pry the inner bearing race off of the output shaft.

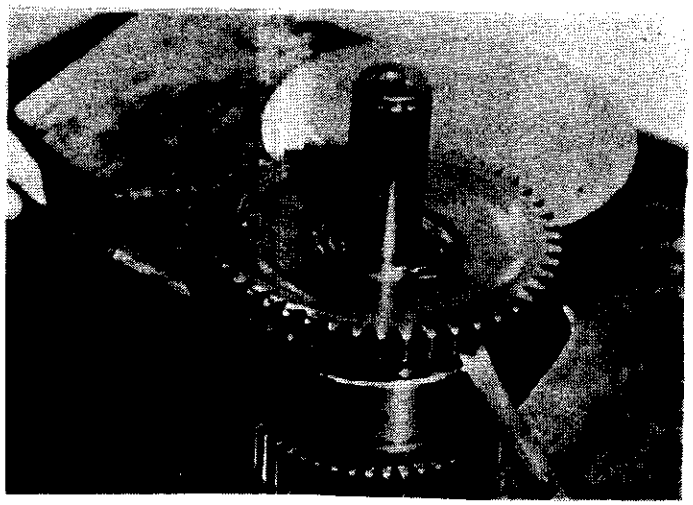

Figure 83

The output shaft and second gear hub is one solid piece and must be pryed off from second gear clutch assembly.

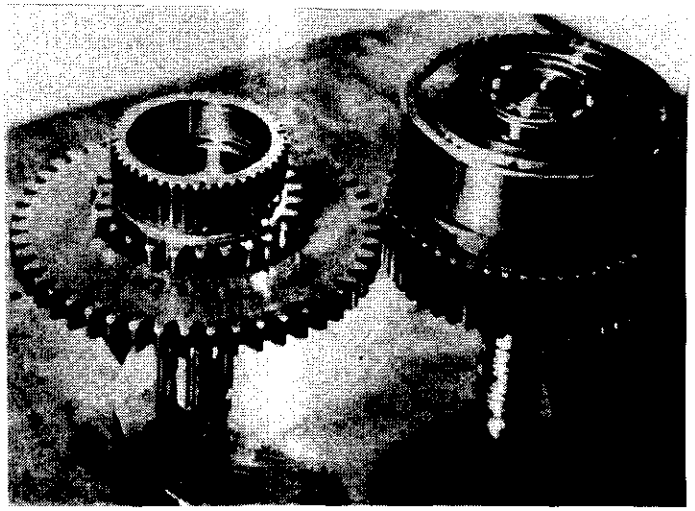

Figure 84

The clutch stack assembly will then be in two pieces as shown.

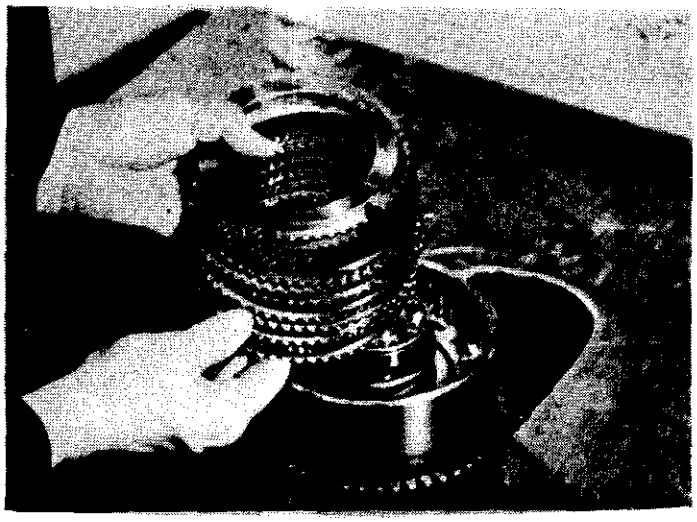

Figure 85

Remove the internal snap ring and lift the retainer plate, clutch plates, and separator plates out of the cylinder.

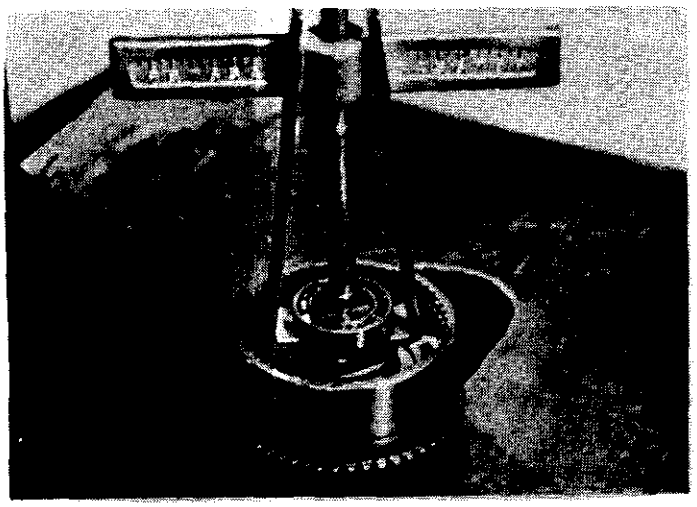

Figure 86

Use a bearing puller to remove the bearing from the shaft.

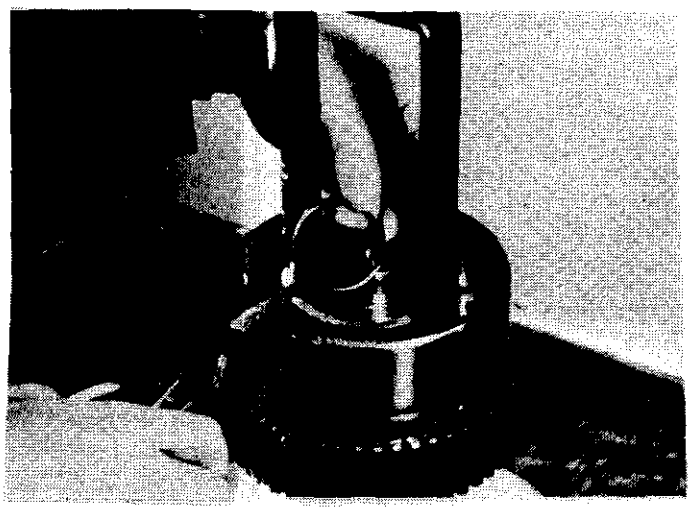

Figure 87

Compress the spring retainer and remove the snap ring.

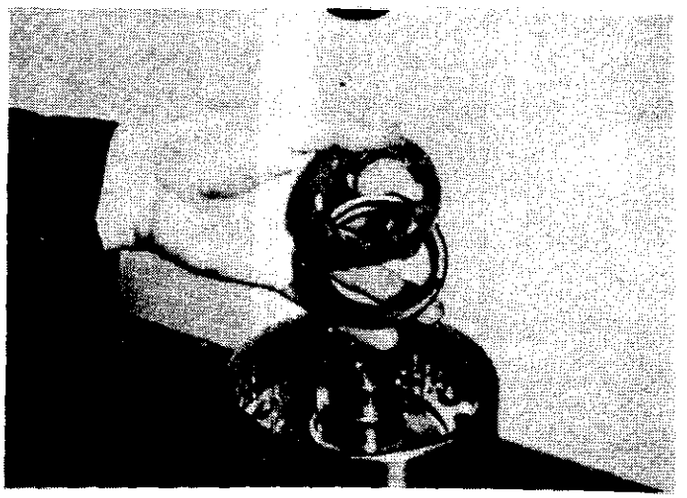

Figure 88

Remove the retainer and clutch spring.

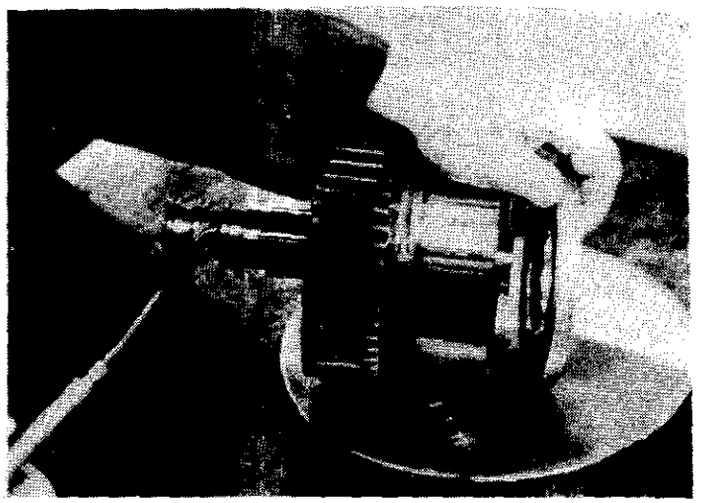

Figure 89

Use air in the pressure port to remove the piston.

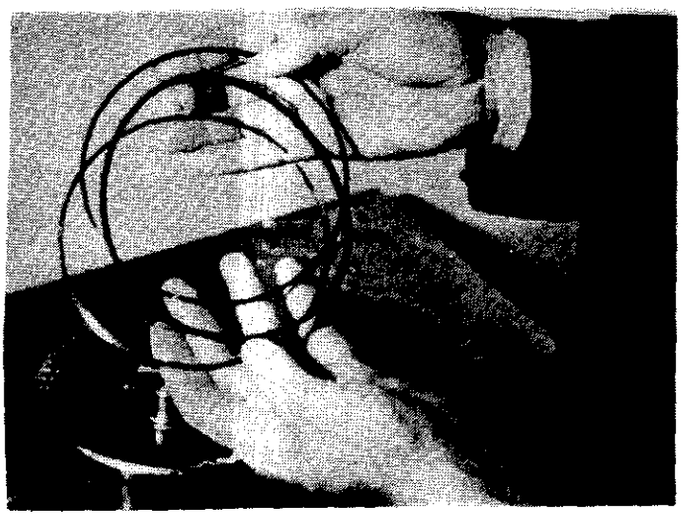

Figure 90

Remove the inner piston seal and the outer piston seal. The outer seal has a retaining ring on each side of it.

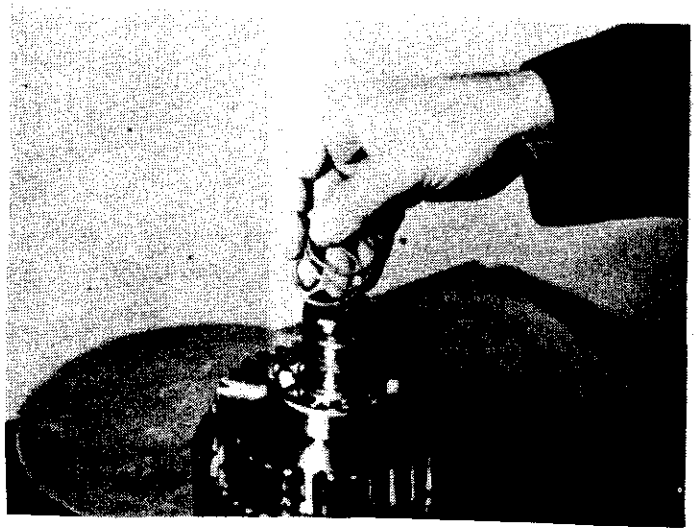

Figure 91

Remove the three seal rings from the top of the other clutch stack assembly.

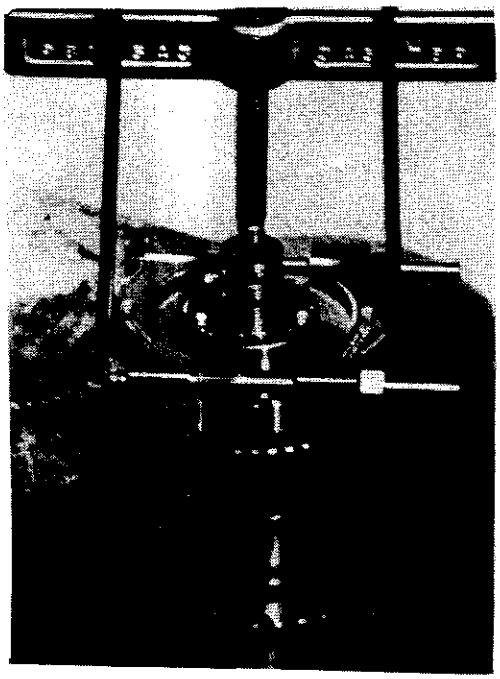

Figure 92

Pull the pilot bearing off.

Figure 93

Remove the thrust washer which is below the bearing.

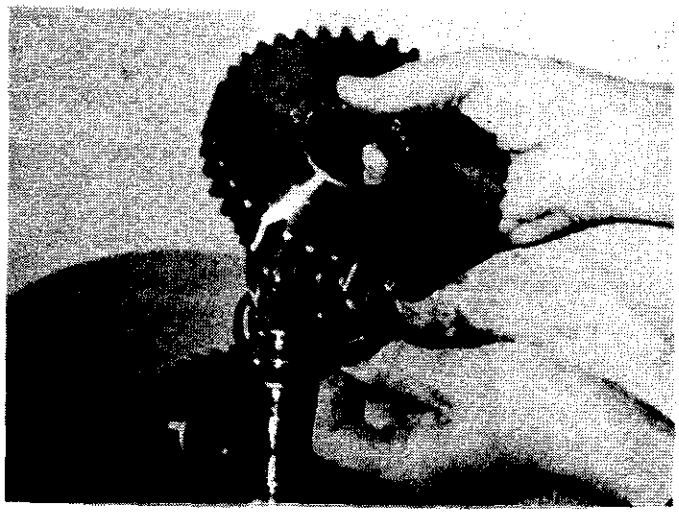

Figure 94

Remove the forward hub, thrust washer, and spacer ring.

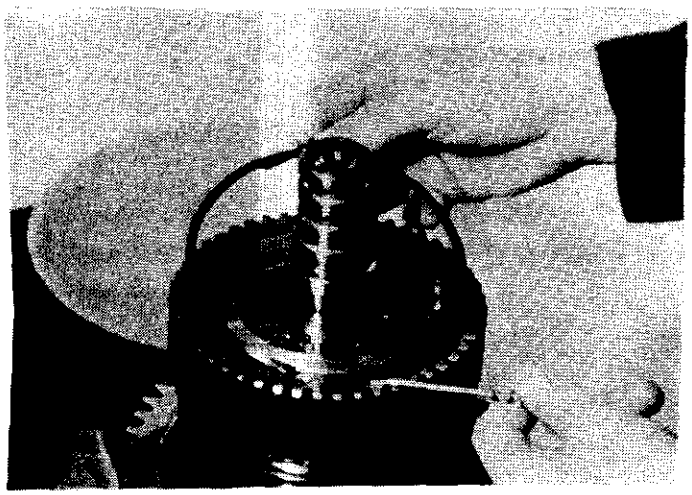

Figure 95

Remove the internal snap ring.

Figure 96

Remove the retainer plate, clutch plates, and separator plates.

Figure 97

Compress the spring retainer and remove the snap ring.

Figure 98

Remove the spring retainer and piston spring.

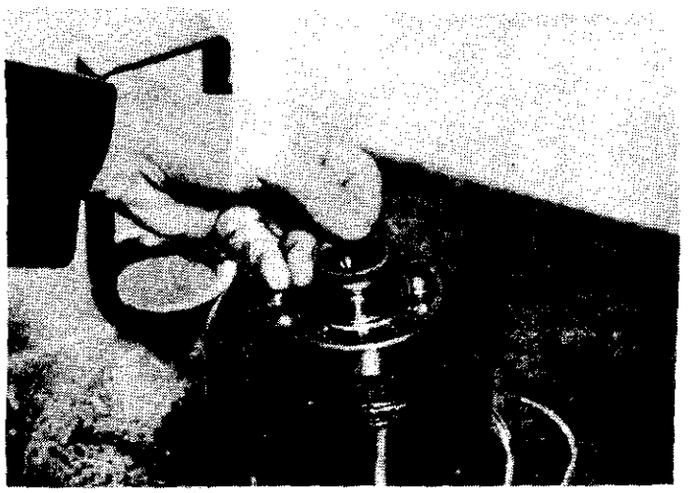

Figure 99

Turn the clutch stack assembly over and remove the seal ring.

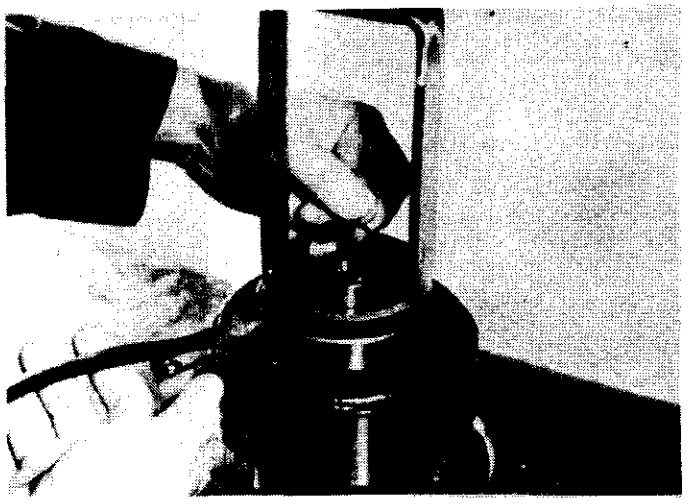

Figure 100

Compress the cylinder while supporting the clutch stack assembly and remove the snap ring.

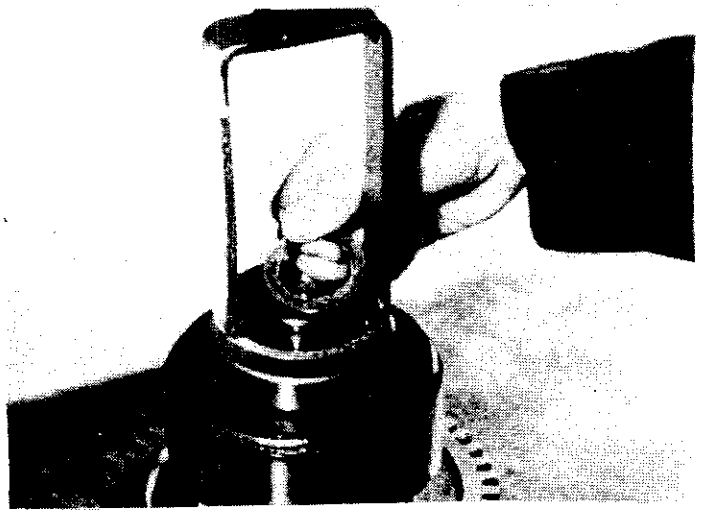

Figure 101

Remove the retainer washer.

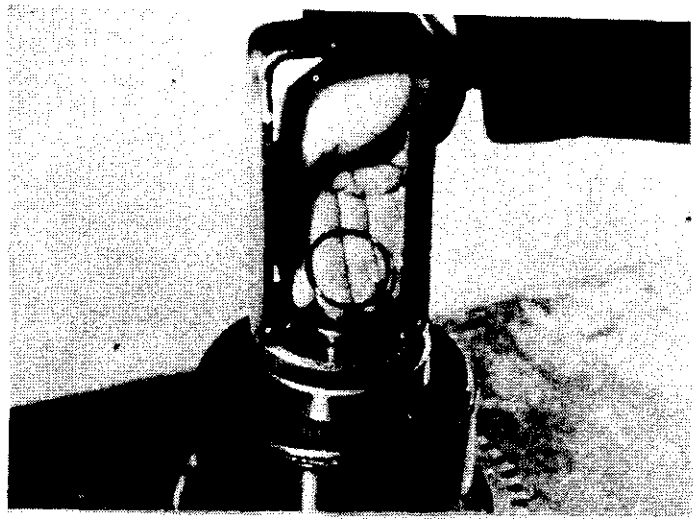

Figure 102

Remove the "0" ring which is sealing around the shaft and cylinder bore.

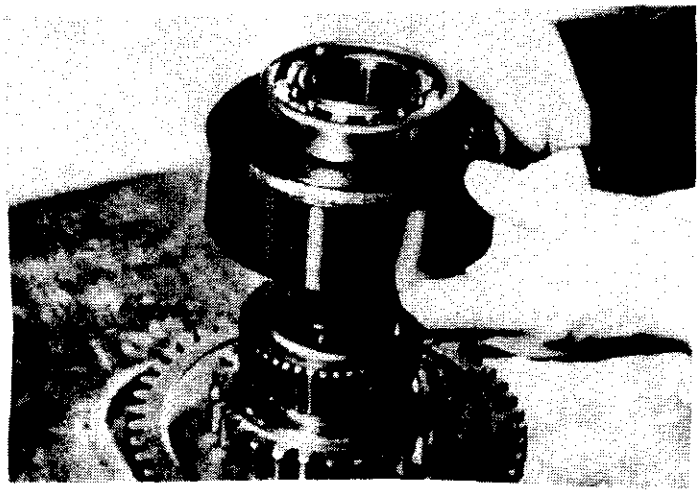

Figure 103

Release the tension on the cylinder and remove the cylinder and bearing together.

Figure 104

Remove piston spring, "0" ring, and spring retainer.

Figure 105

Remove snap ring.

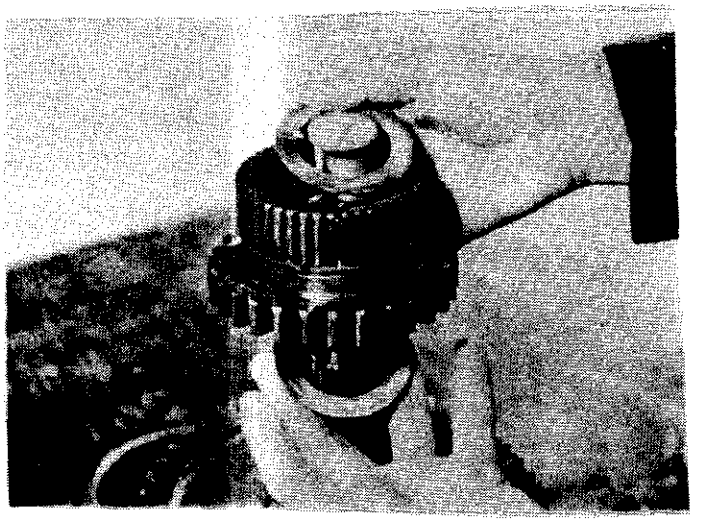

Figure 106

Lift the low gear hub and both thrust washers off of the shaft.

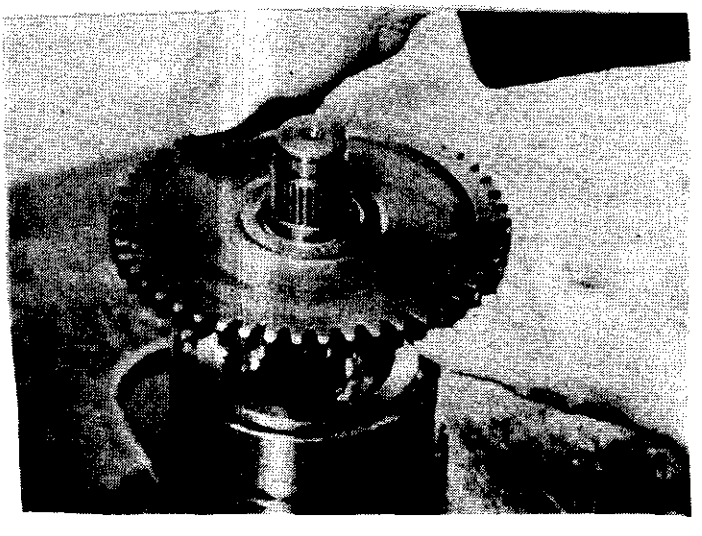

Figure 107

Lift hi gear and hub assembly off of shaft.

Figure 108

Remove the bottom thrust washer.

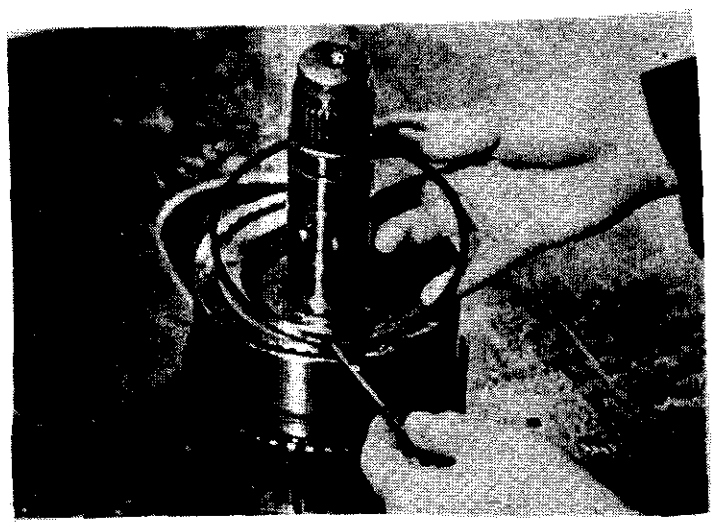

Figure 109

Remove the internal snap ring.

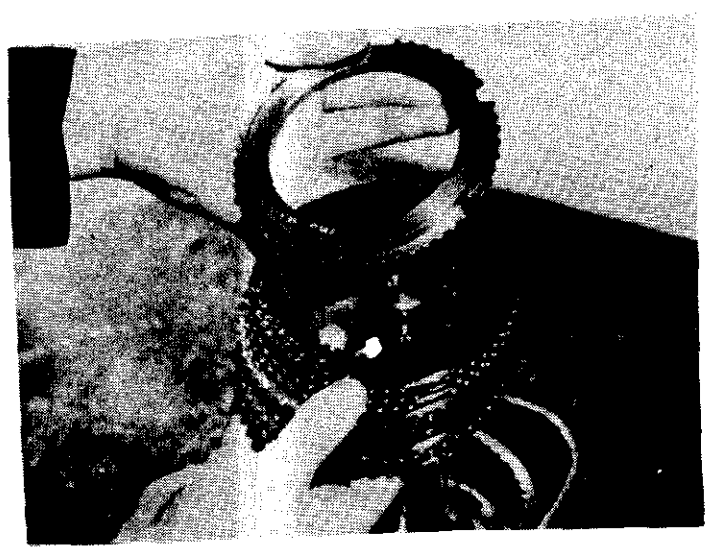

Figure 110

Remove retainer plate, clutch plates, and separator plates.

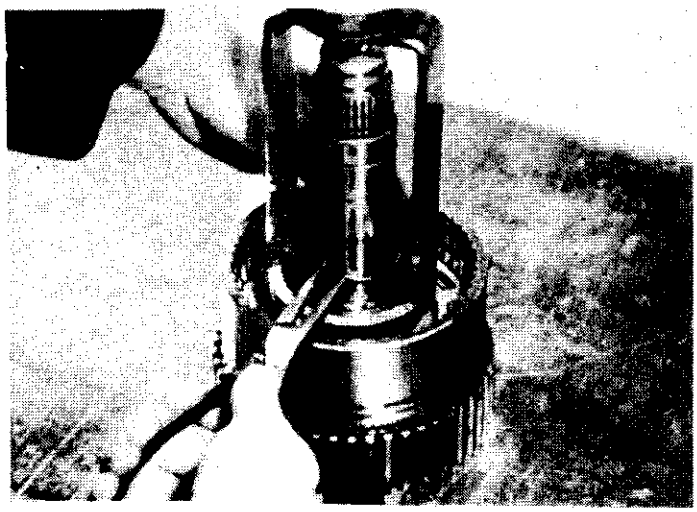

Figure 111

Compress spring and remove snap ring.

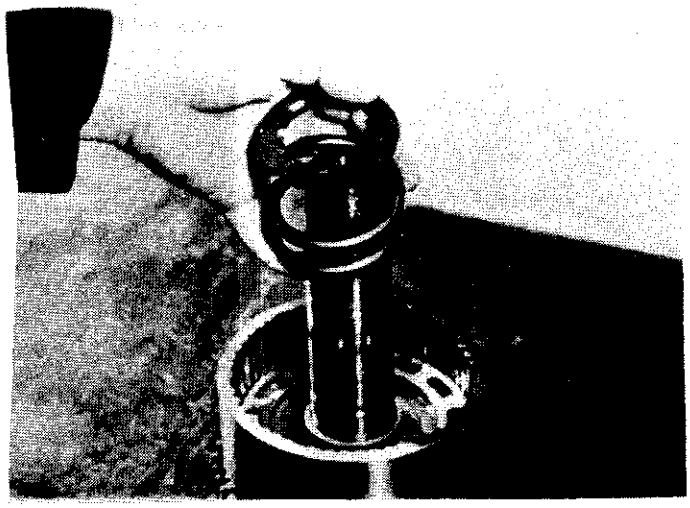

Figure 112

Remove spring retainer and piston spring.

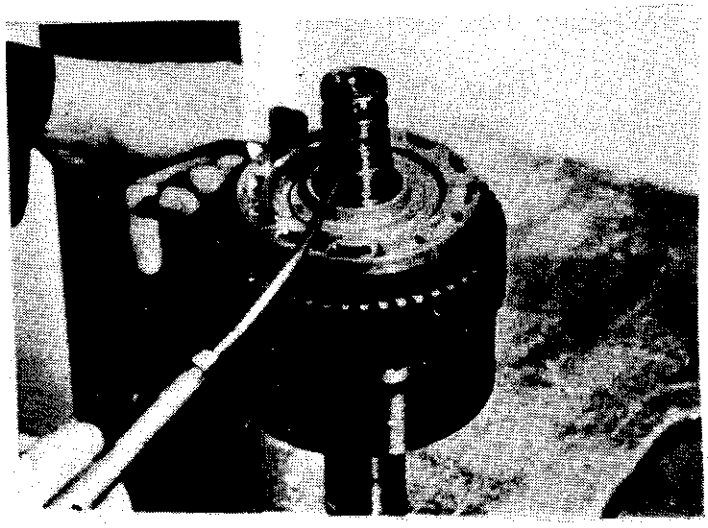

Figure 113

Use air in the pressure ports to remove pistons.

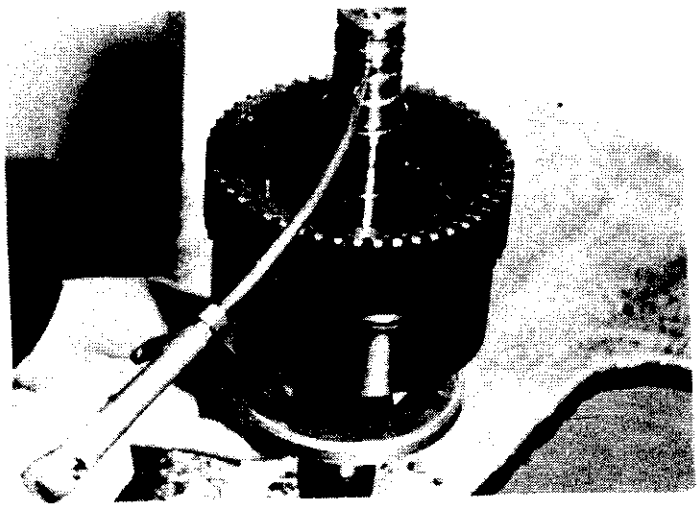

Figure 114

Use air in the press parts to remove pistons.

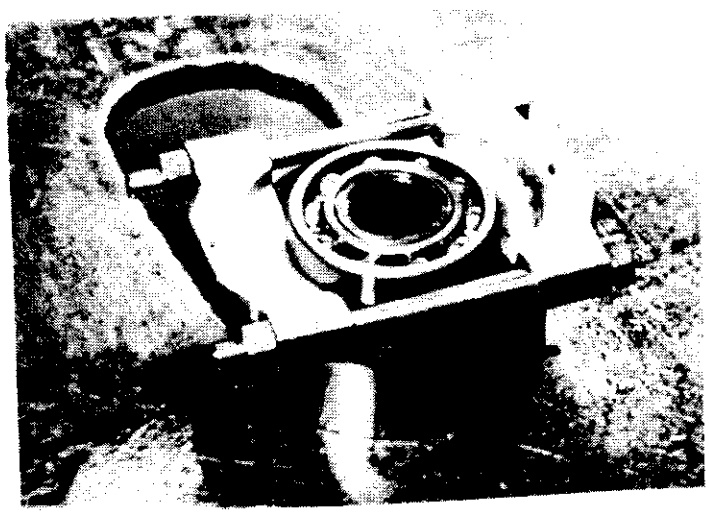

Figure 115

Remove bearing from the low clutch cylinder.

Figure 116

Turn the cylinder over and remove the internal snap ring.

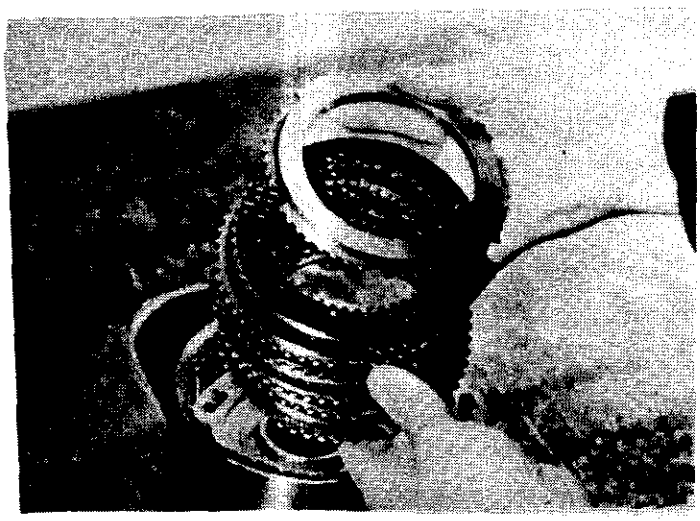

Figure 117

Remove retainer plate, clutch plates, and separator plates.

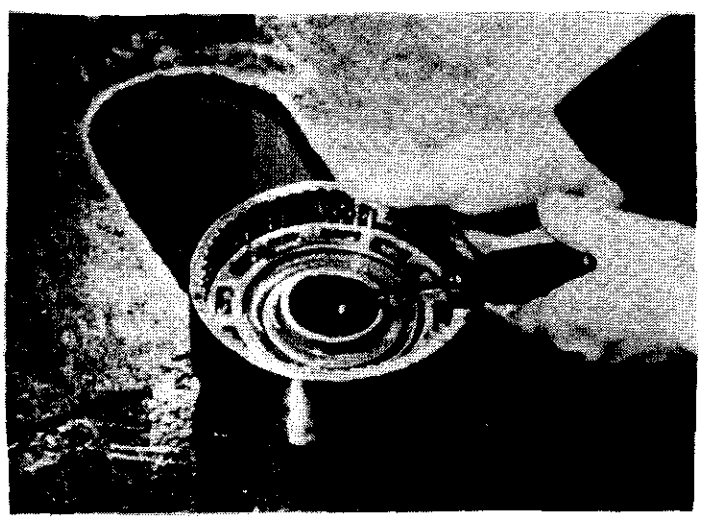

Figure 118

The piston must be pryed out of the cylinder. Be careful not to score the piston seal surfaces.

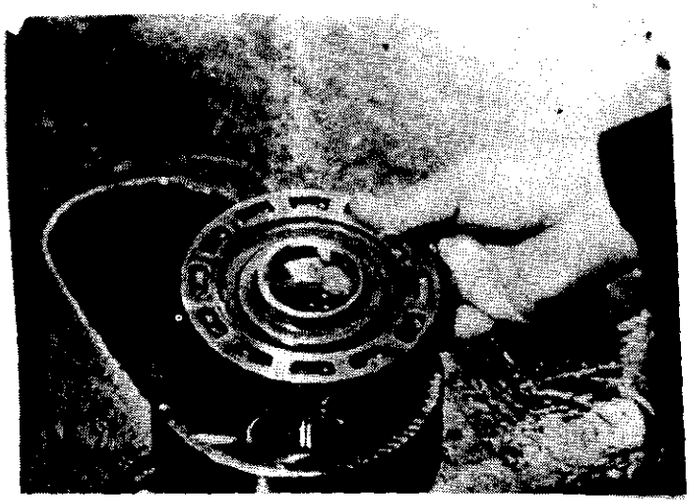

Figure 119

Remove the piston and check the inside bore and outer seal surface for damage.

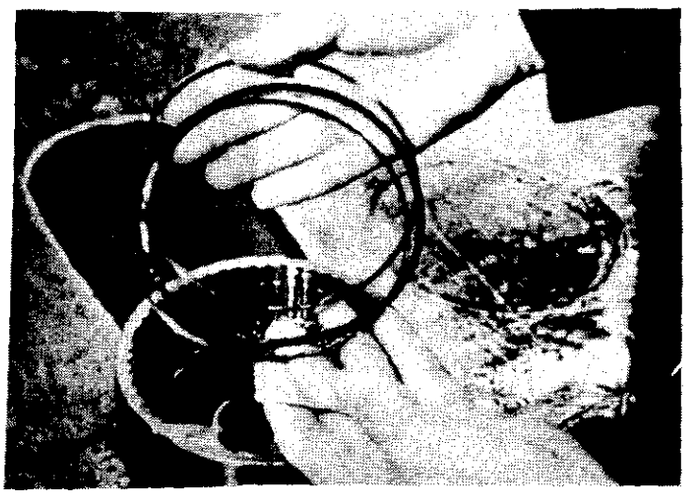

Figure 120

Remove the piston seal and both retaining rings from the cylinder.

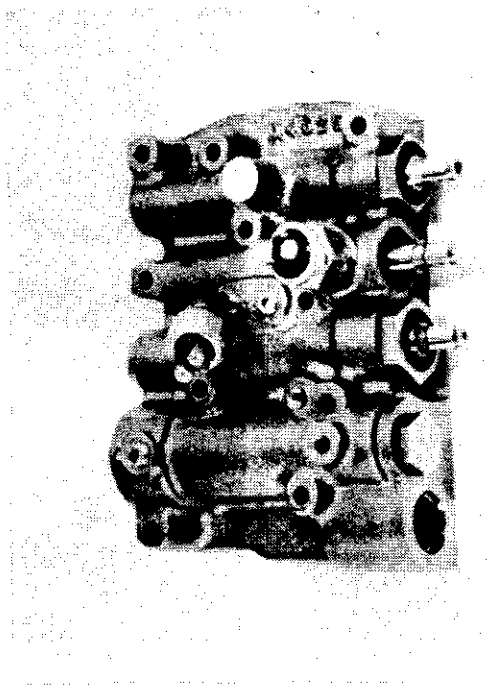

Figure 121

Different view of the valve body assembly.

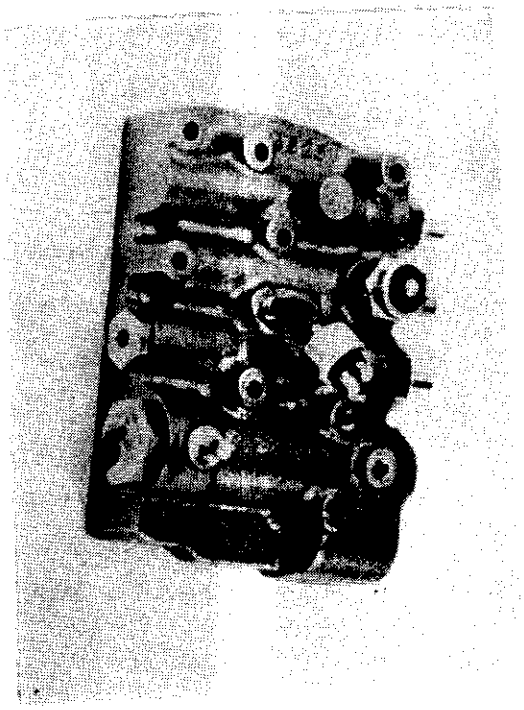

Figure 122

Different view of the valve body assembly.

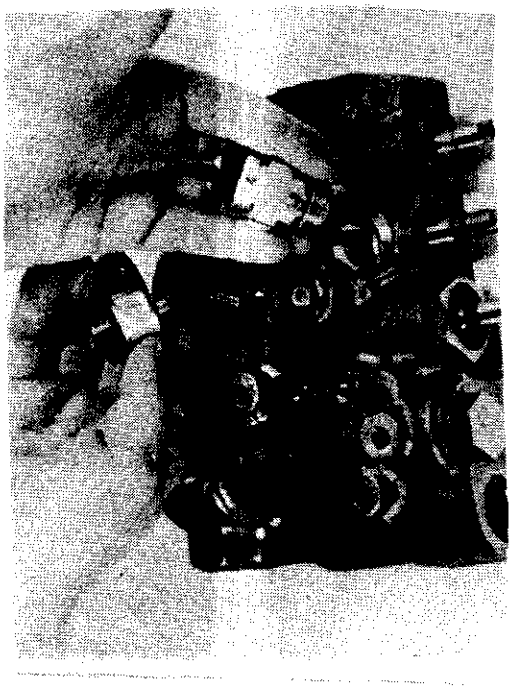

Figure 123

Remove the neutral start switch and reverse warning switch from the valve body.

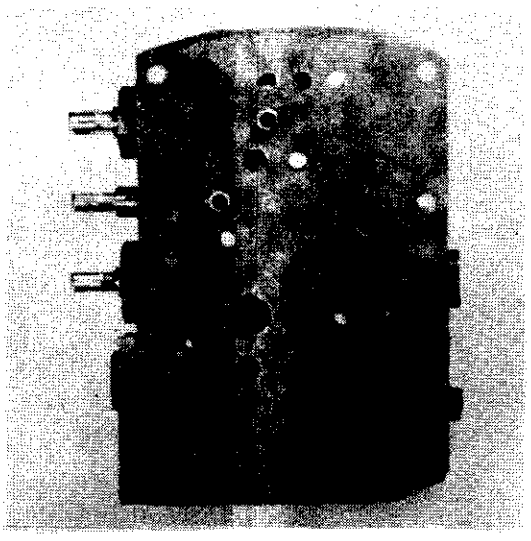

Figure 124

This is the bottom side of the valve body with the gasket on it.

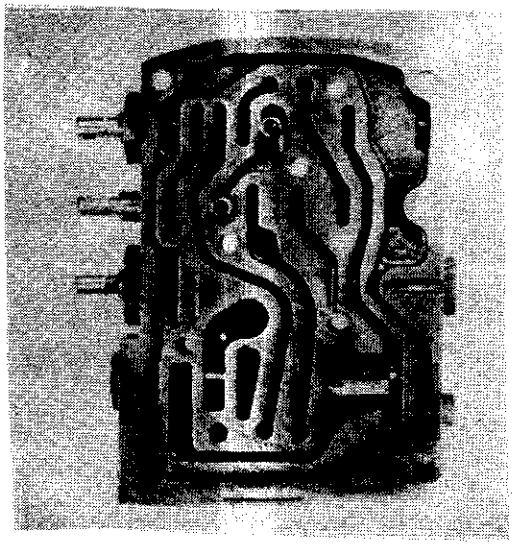

Figure 125

Bottom view of valve body with gasket removed.

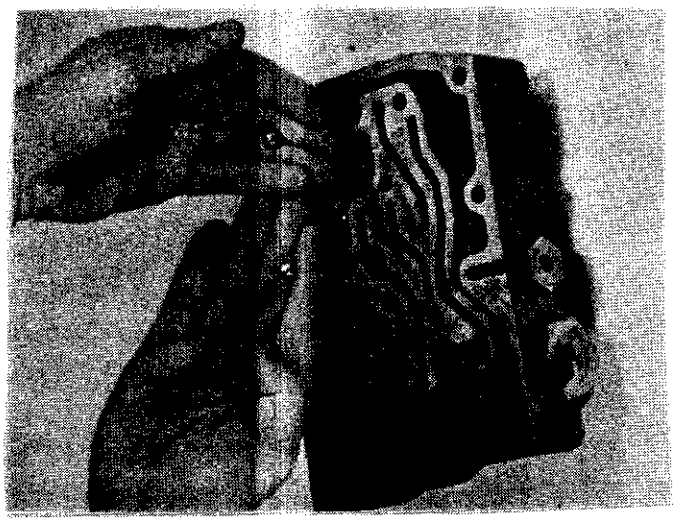

Figure 126

Remove the two detent balls and springs.

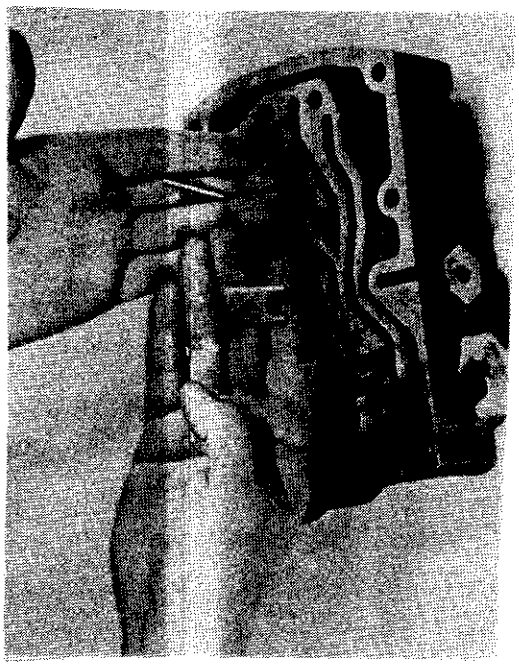

Figure 127

Remove the dowel pin which is the stop for the directional valve stem and remove the fork stop for the brake cutoff and inching valve.

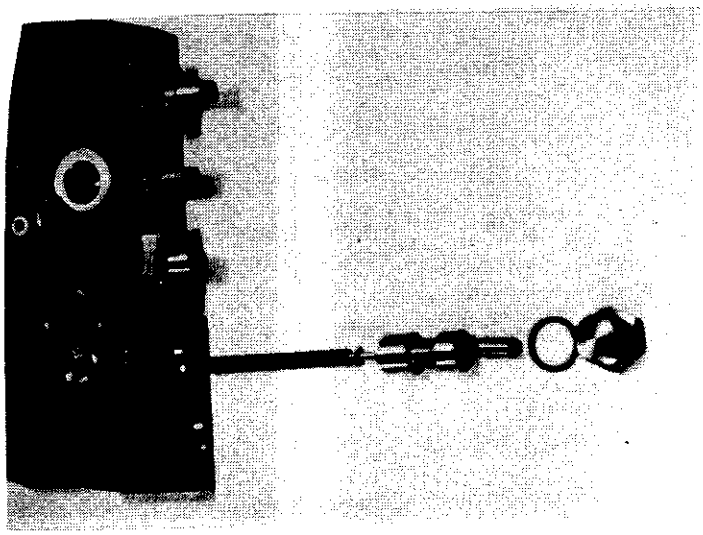

Figure 128

Remove the bottom valve cap on the right-hand side. Then remove the main pressure valve and spring.

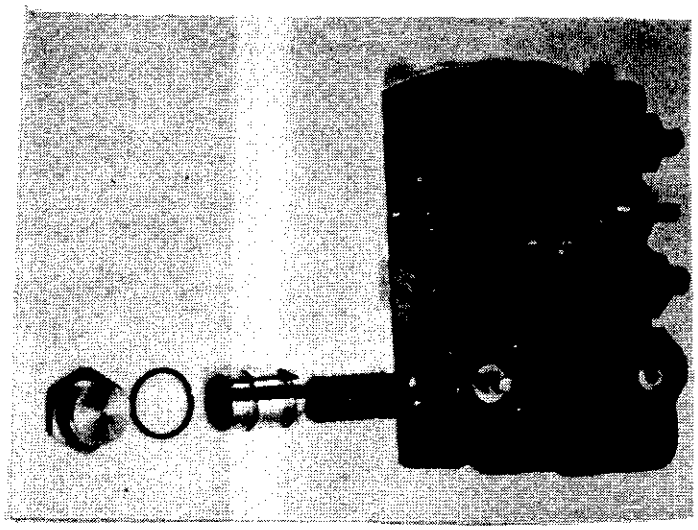

Figure 129

Remove the bottom valve cap on the left-hand side to remove the accumulator valve and spring.

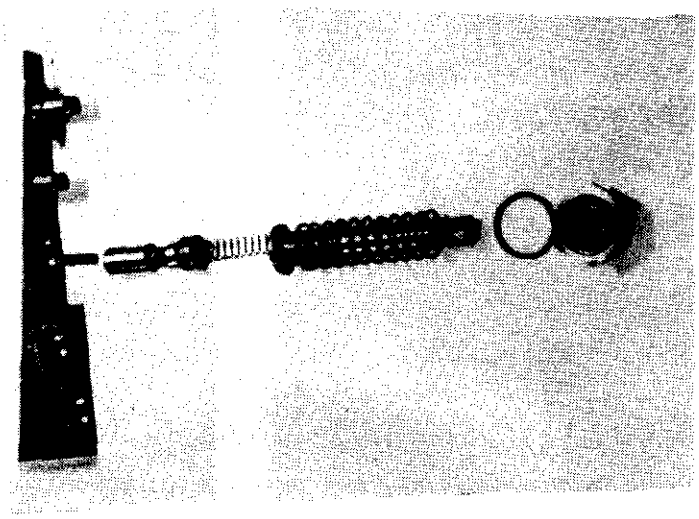

Figure 130

The bottom shifting spool is the inching valve control. Remove the cap and take out the return spring, the valve stem, the inching valve spring, and the inching valve and stud.

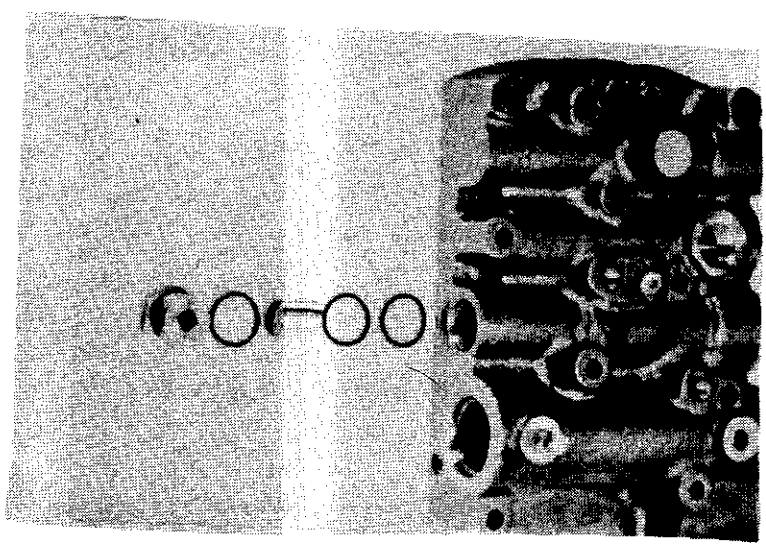

Figure 131

On the top left-hand side is the brake cut-off port. Remove this cap and take the brake cut-off piston and the two "O" rings out.

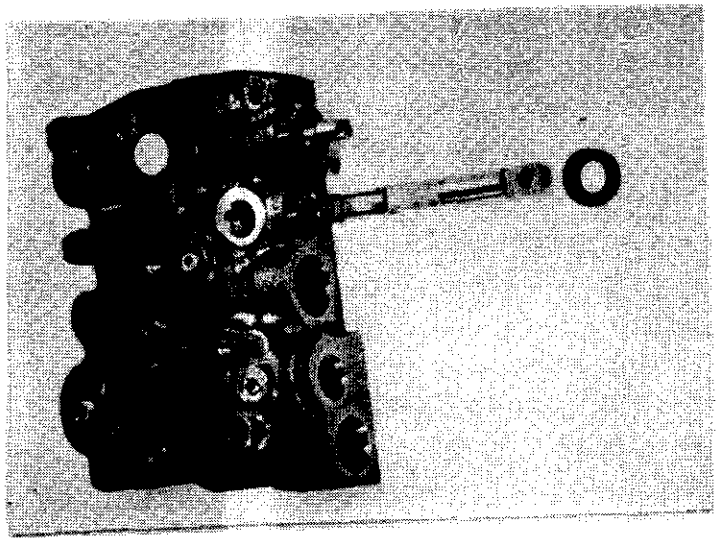

Figure 132

The second shift spool from the top is the directional valve stem. This will pull out after removing the oil seal and the dowel pin which was shown in picture 116.

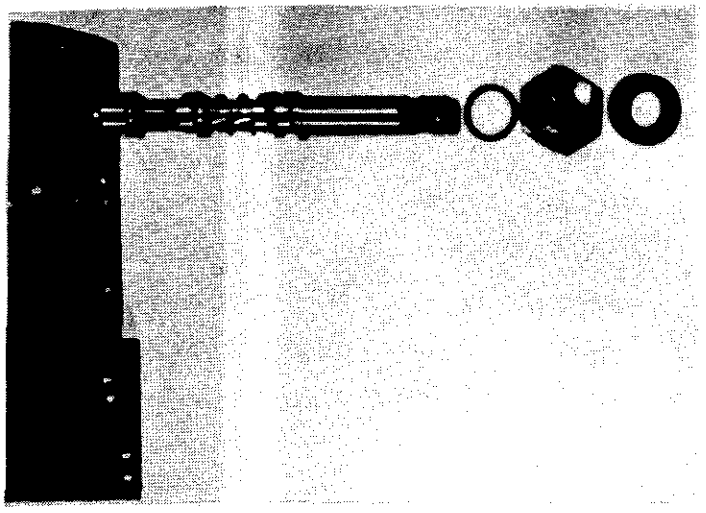

Figure 133

The top shift spool is the speed valve stem. Remove the valve cap and it will pull straight out.

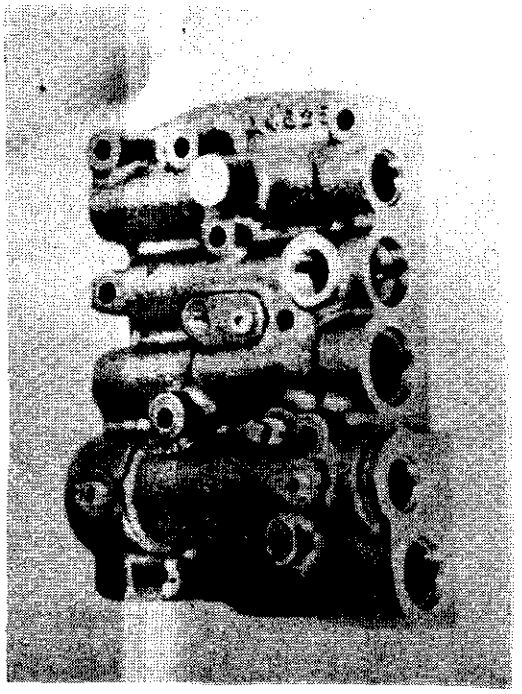

Figure 134

This is the valve body casting.