

Massey Ferguson®

1523 Compact Tractor

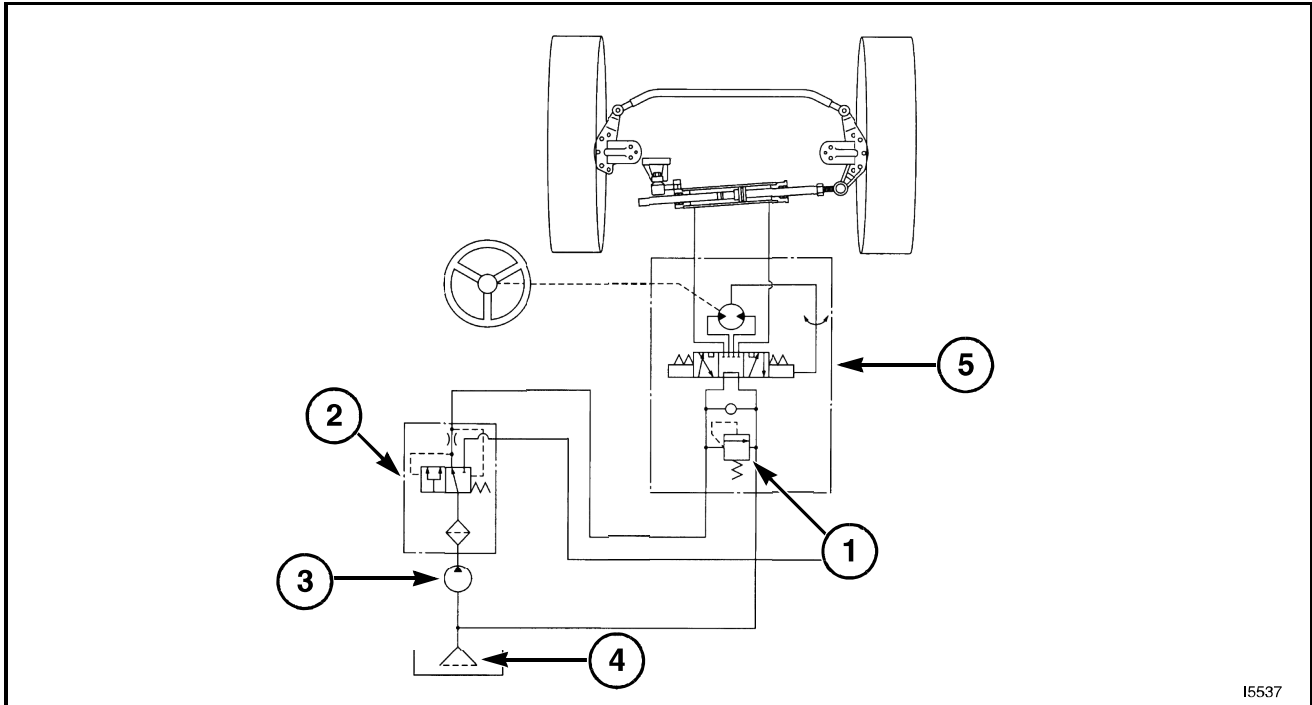
WORKSHOP SERVICE MANUAL 4283068M1

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GENERAL INFORMATION

CONSTRUCTION



I5537

FIG. 1

FIG. 1: The steering unit (mini-orbit roll) controls hydraulic power and activates the front wheels directly through the power steering cylinder. It features minimized vibration at the steering wheel because vibration of the front wheels is not directly transmitted to the steering wheel.

Hydraulic fluid divided into the system through the flow-divider valve is controlled by the orbit roll to activate the cylinder.

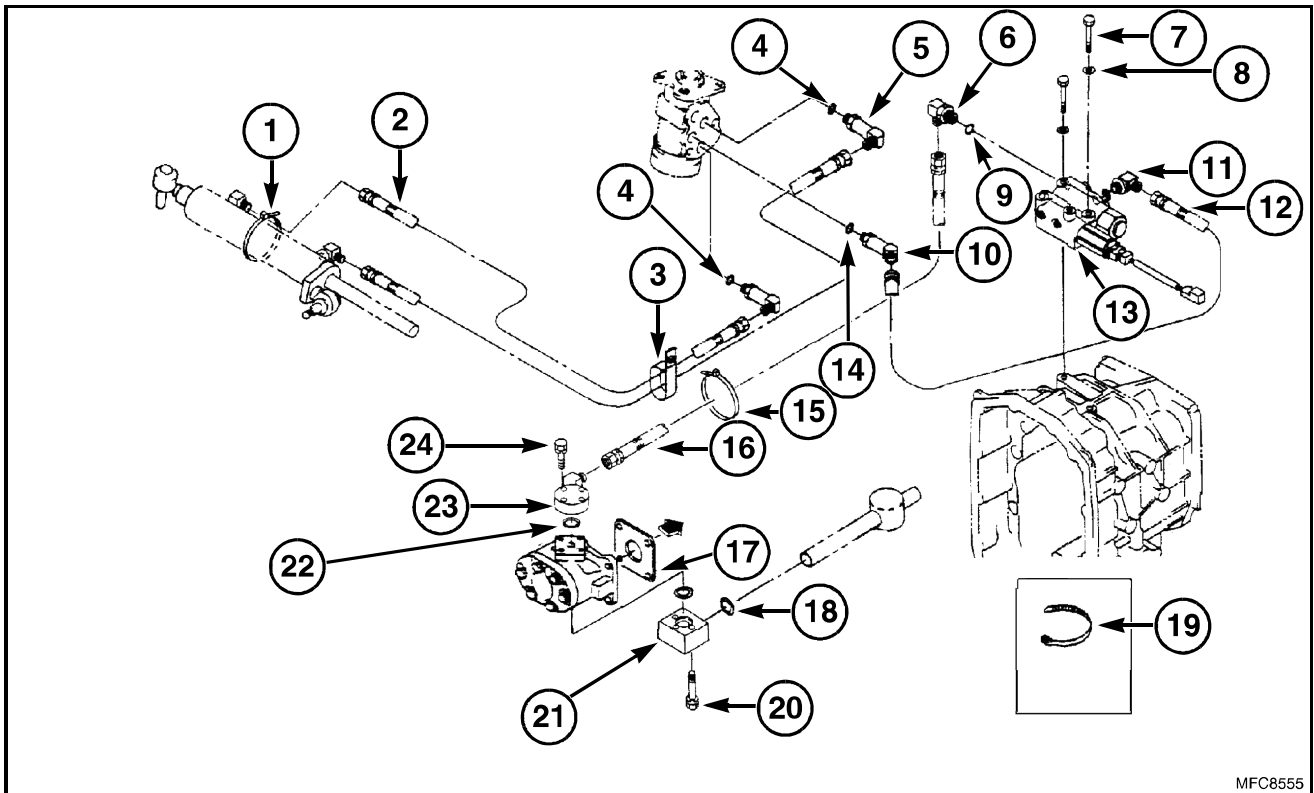
In accordance with the operation of the steering wheel, the rotary valve and metering device built in the orbit roll controls the direction and flow rate of the hydraulic fluid and activates the power-assisted steering system works.

NOTE: Hydro Transmission Schematic shown. Standard Transmission does not have a flow divider installed between the hydraulic pump and the steering orbitol.

- (1) Relief Valve 103 bar (1493 psi)
- (2) Flow Divider Valve
- (3) Hydraulic Pump
- (4) Strainer
- (5) Orbit Roll

General Information

Major Components



MFC8555

FIG. 2

FIG. 2: Overall view of major components.

- | | |
|---------------------------------------|-----------------------------------|
| (1) Wire Band 250 | (13) Valve Assembly |
| (2) Delivery Hose Assembly (2) | (14) O-ring |
| (3) Clamp 28x55 | (15) Wire Band 140 |
| (4) O-ring (2) | (16) Hydraulic Hose Assembly 1700 |
| (5) 90 degree Left Elbow Assembly (2) | (17) Oil Pump Gasket |
| (6) Assembly Adapter L/G1/4 | (18) O-ring (2) |
| (7) Bolt (3) | (19) Wire Band 140 (2) |
| (8) Lock Washer (3) | (20) Bolt (3) |
| (9) O-ring | (21) Flange |
| (10) 45 degree Elbow Assembly | (22) O-ring |
| (11) Assembly Adapter L/G1/4 | (23) Delivery Flange Assembly |
| (12) Hose Assembly 1350 | (24) Bolt |

Integral Orbit Roll

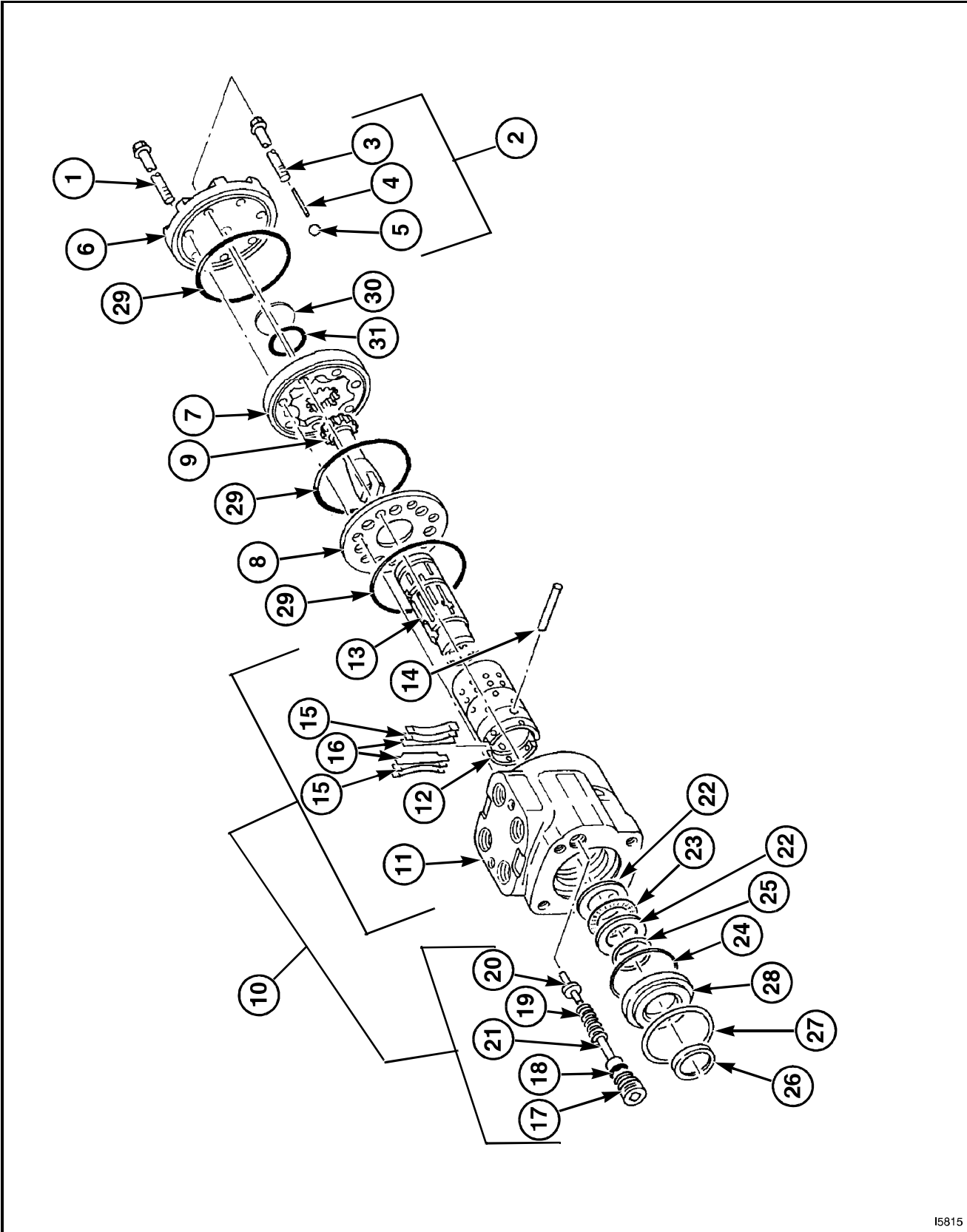


FIG. 3

15815

General Information

FIG. 3: Component listing:

- | | |
|-----------------------------|----------------------------|
| (1) Bolts (6) | (16) Flat Springs (2) |
| (2) Retainer Bolt Assembly | (17) Adjust Plug |
| (3) Retainer Bolt | (18) O-ring |
| (4) Spring Pin | (19) Spring |
| (5) Ball | (20) Poppet |
| (6) End Cap | (21) Collar |
| (7) Gerotor | (22) Bearing Races (2) |
| (8) Spacer Plate | (23) Thrust Needle Bearing |
| (9) Drive | (24) Seal |
| (10) Control Valve Assembly | (25) Oil Seal |
| (11) Housing | (26) Dust Seal |
| (12) Sleeve | (27) Retaining Ring |
| (13) Spool | (28) Seal Bushing |
| (14) Pin | (29) O-rings |
| (15) Centering Springs (4) | (30) Seal |
| | (31) O-ring |

Disassembly

- When repairing the steering unit, a clean workplace is essential.
- Before disconnecting piping, clean around the ports of the unit.
- Remove dust accumulating around the joint of the unit with a wire brush.

NOTE: The unit should be held in a vice during operation although almost of all the illustrations below for easy viewing show no vice.

Disassembly of Rotor Side

FIG. 4: Hold the unit with the rotor side turned upward in the vice, inserting copper plates or the like between the unit and vice, and tighten the unit softly.

Over tightening may damage the unit.

Remove six bolts and the retainer bolt assembly using a 5/16 inch socket wrench.

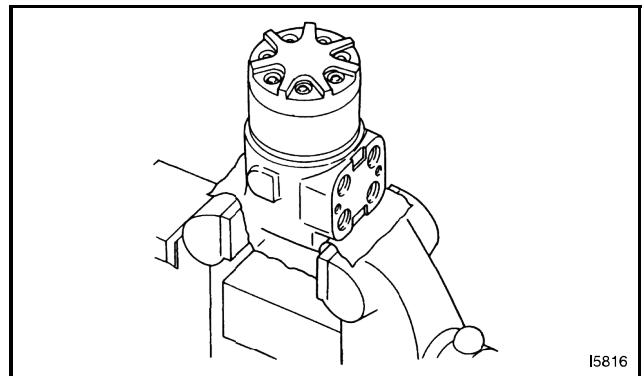


FIG. 4

FIG. 5: Remove the end cap.

Remove O-ring from end cap.

Remove seal, and O-ring, from gerotor.

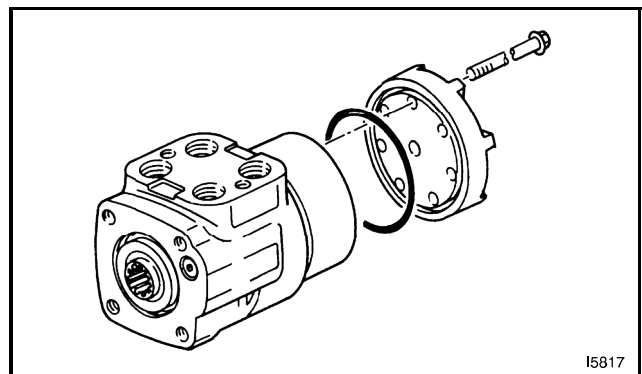


FIG. 5

FIG. 6: Remove gerotor taking care not to let the star rotor fall from it.

Remove O-ring, from the gerotor.

Remove drive.

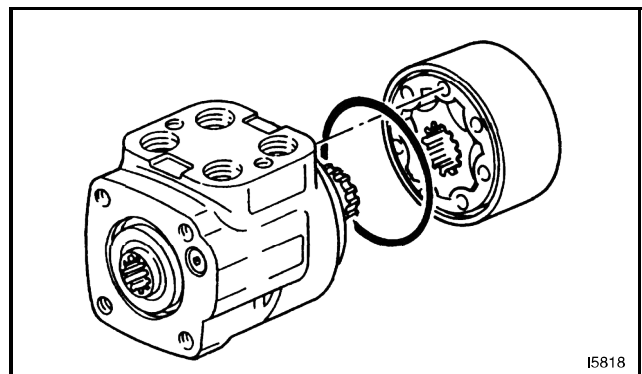


FIG. 6

General Information

FIG. 7: Remove spacer plate and then remove O-ring from housing.

Turn the housing upside down and remove ball taking care not to allow it to fall into a groove, a side hole, etc.

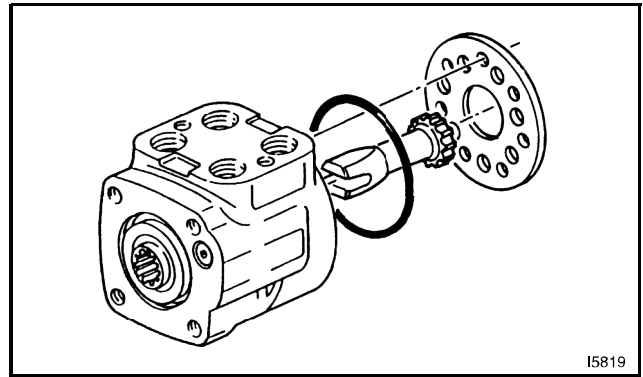


FIG. 7

Disassembly of Control Side

FIG. 8: Remove housing from the vice and place it on cloth.

Pry the end of retaining ring out of the groove using a small screwdriver and remove the ring from the housing.

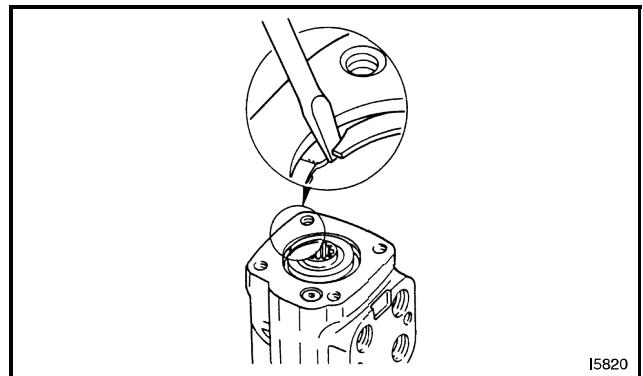


FIG. 8

FIG. 9: Turn spool and sleeve so that pin becomes level. Then push the spool and sleeve to remove seal bushing.

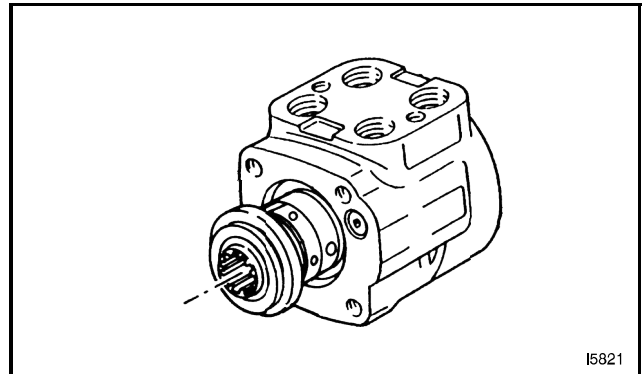


FIG. 9

FIG. 10: Remove oil seal from seal bushing.

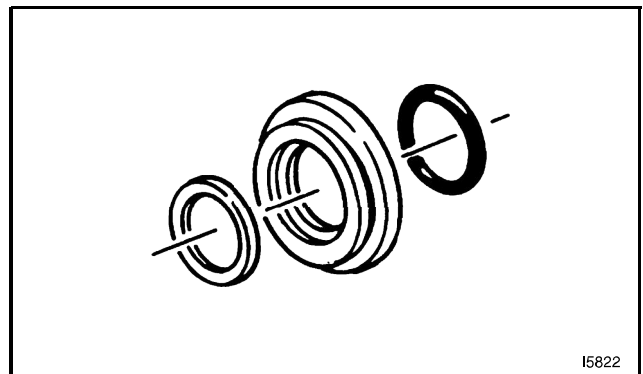


FIG. 10

General Information

FIG. 11: Remove dust seal with a screwdriver taking care not to damage the seal bushing.

Remove two bearing races and thrust needle bearing.

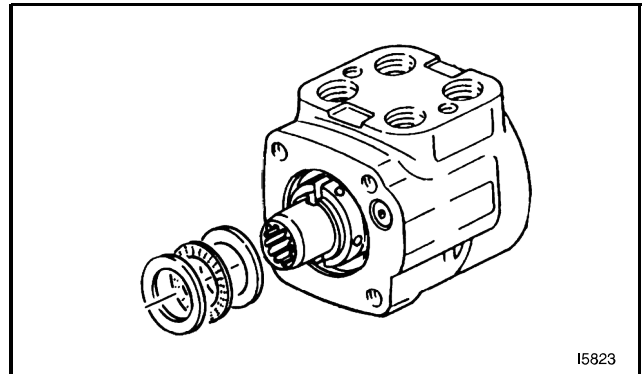


FIG. 11

FIG. 12: Pull off spool and sleeve from housing.

NOTE: Pull off the spool and sleeve assembly in the opposite direction of the flange while turning it right and left.

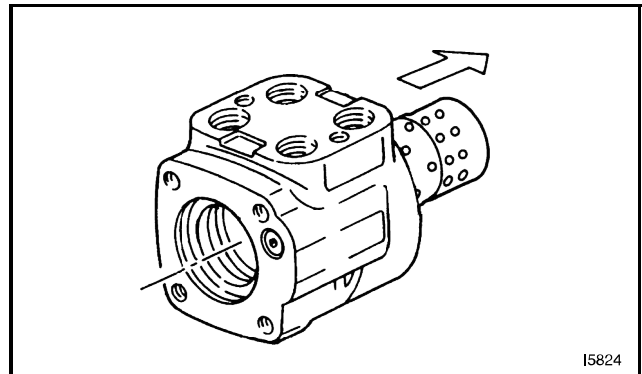


FIG. 12

FIG. 13: Pull off pin.

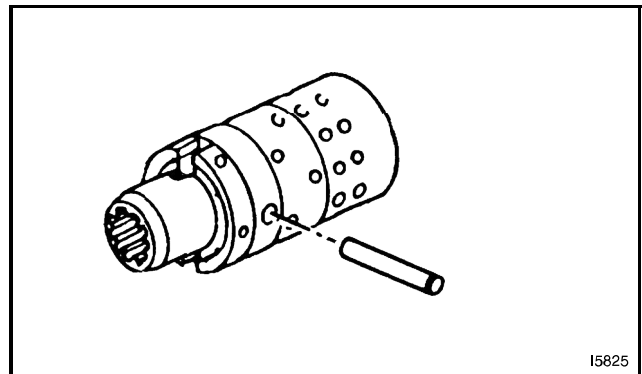


FIG. 13

FIG. 14: Push out spool a little and push off centering springs and flat springs.

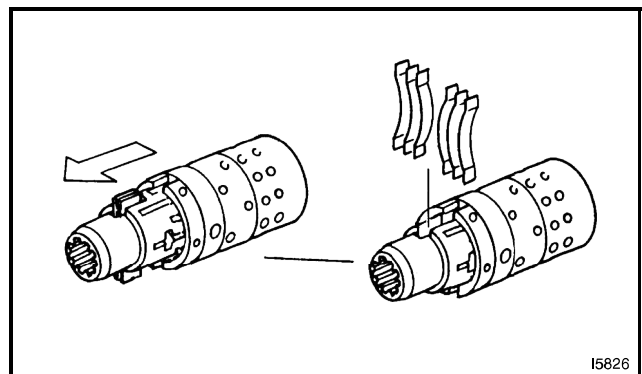


FIG. 14

General Information

FIG. 15: Pull off spool out of sleeve.

NOTE: Pull off the spool in the direction shown by the arrowhead while turning it right and left.

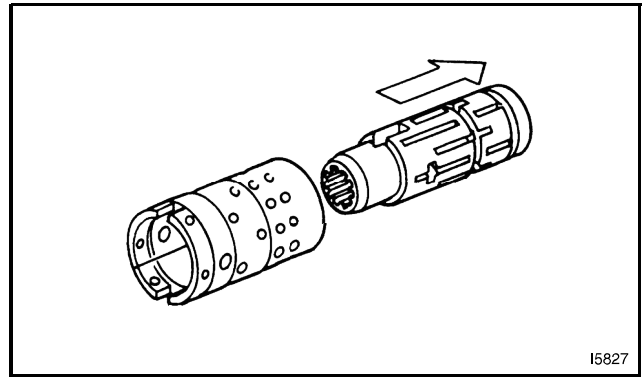


FIG. 15

FIG. 16: Remove O-ring from housing.

NOTE: Never adjust the relief valve. When it is defective, replace control valve assembly.

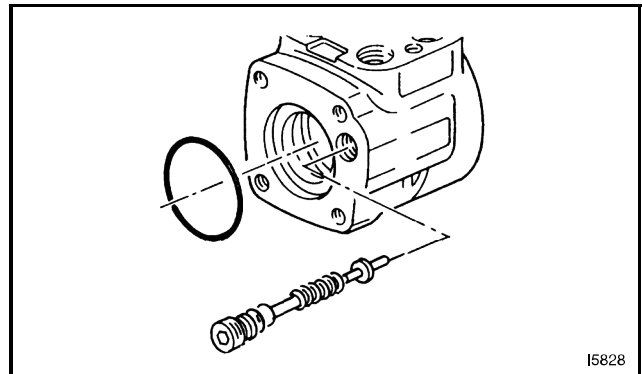


FIG. 16

Inspection

Check the contact surfaces of all components. Replace defective ones. Wash all metal parts in clean solvent and dry them with pressurized air.

Do not dry them with cloth or paper, or lint and paper waste contaminate the hydraulic system, which will lead to system trouble. Never file parts or polish them with coarse sandpaper.

NOTE: Apply fresh grease to O-rings ahead of time.

We recommend used O-rings and seals be replaced with new ones whenever possible

Assembly

Assembly of Control Side

FIG. 17: Insert the spool into sleeve while turning the spool slowly.

NOTE: Make sure that the spool that turns smoothly by holding the spool's splined part.

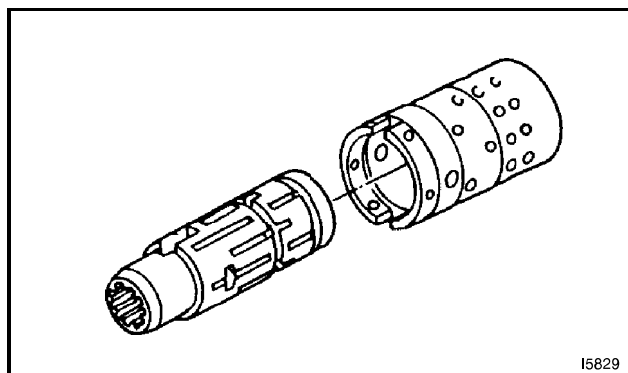


FIG. 17

FIG. 18: Align the spring grooves of the spool and sleeve and insert centering springs and flat springs. Set the spring ends flush with the sleeve circumference.

NOTE: Set four centering springs and two flat springs together with the cut-away parts turned downward.

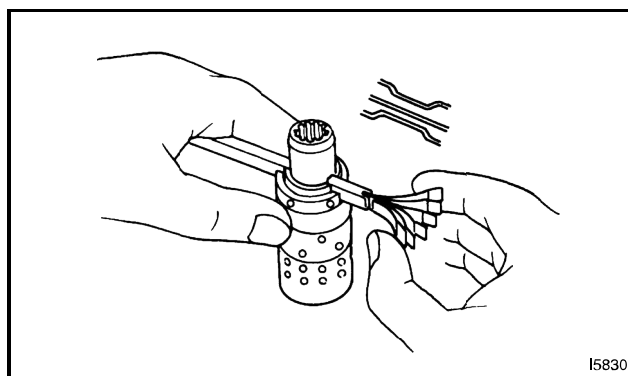


FIG. 18

FIG. 19: Insert pin into the holes of the sleeve and spool and set both pin ends flush with the circumference of the sleeve.

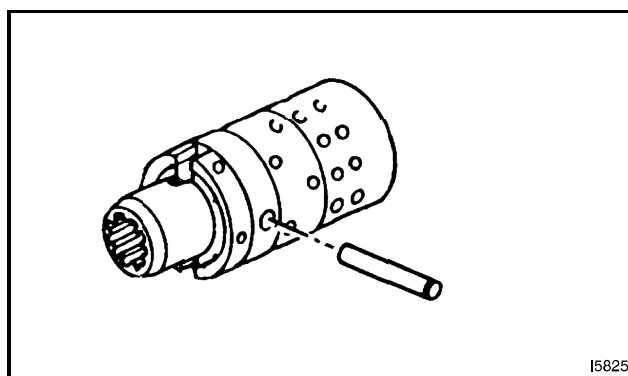


FIG. 19

FIG. 20: Insert the assembly of spool and sleeve from back of housing.

NOTE: Insert the spool/sleeve assembly carefully without jamming, turning it right. Make sure that the assembly turns smoothly.

Place housing, on a clean level surface and insert O-ring.

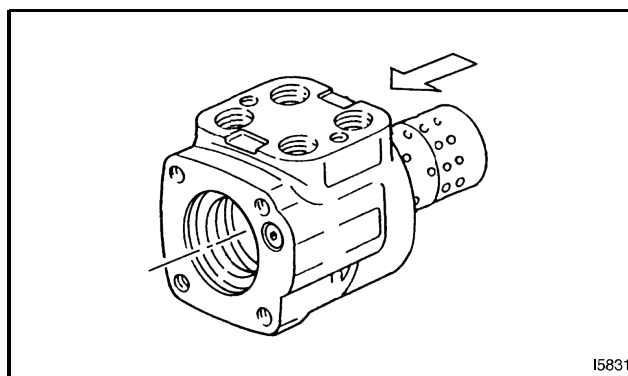


FIG. 20

General Information

FIG. 21: Insert two bearing races, and thrust needle bearing.

NOTE: The thrust needle bearing should be located between the bearing races.

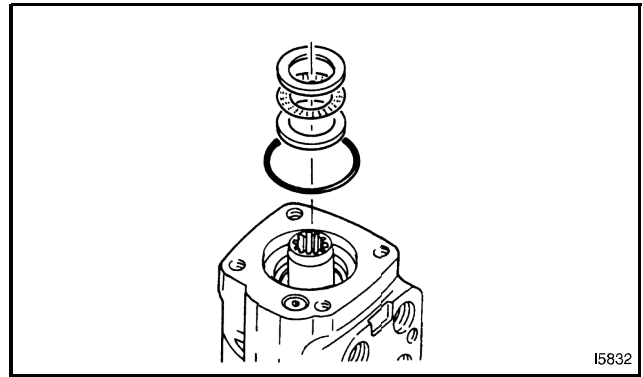


FIG. 21

FIG. 22: Set dust seal, into seal bushing.

NOTE: Install the dust seal with the flat surface turned toward the bushing.

Push oil seal, into seal bushing securely by pushing it with your fingers.

Insert seal bushing into spool while turning the bushing.

NOTE: Drive the bushing into the spool securely using a plastic hammer.

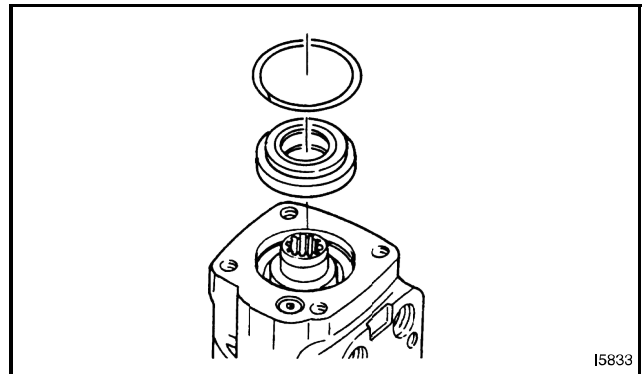


FIG. 22

FIG. 23: Insert retaining ring into the groove of housing.

NOTE: Push open the retaining ring with a screwdriver so that it is seated completely and fully expanded in the groove.

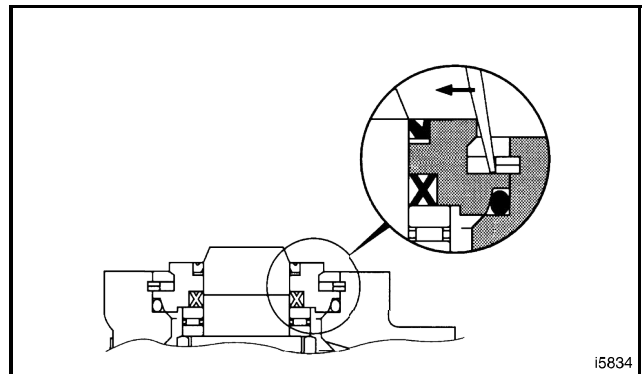


FIG. 23

Assembly of Gerotor Side

FIG. 24: Insert ball into the bolt hole and make sure that the ball is seated in the proper position.

NOTE: Make sure that the spool/sleeve assembly is deformed a little when the ball is installed.

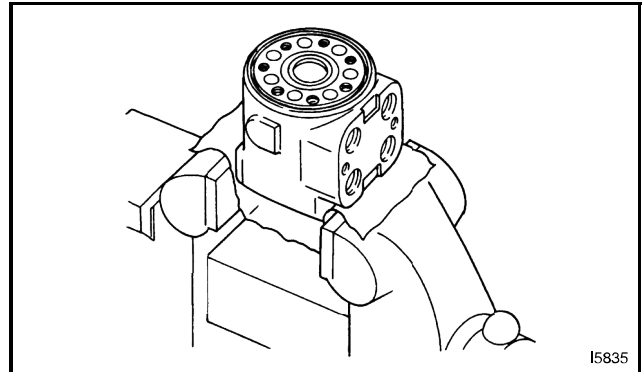


FIG. 24

FIG. 25: Insert O-ring into housing.

Place spacer plate as shown and align the oil holes.

NOTE: The bolt hole and oil holes are different.

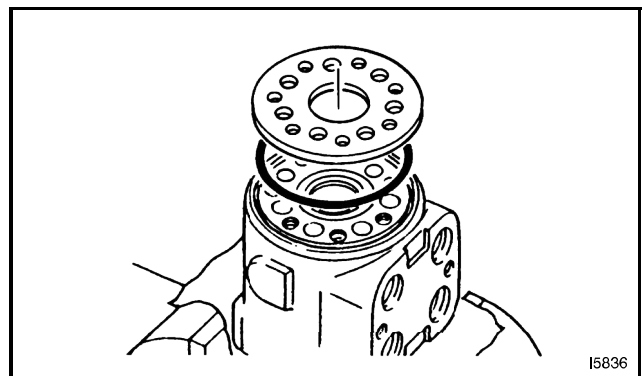


FIG. 25

FIG. 26: Insert drive.

NOTE: Provide a guide line on the drive end face parallel with the pin axis with a felt pen for correct installation.

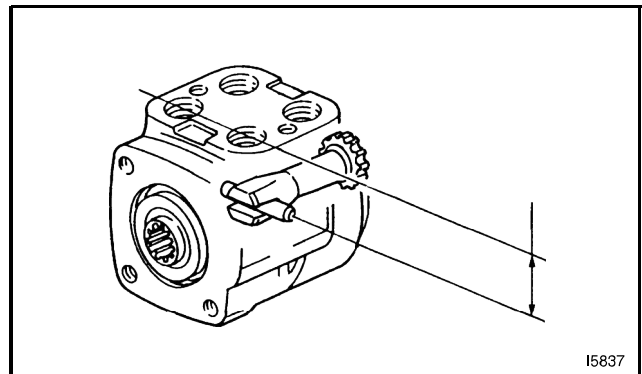


FIG. 26

FIG. 27: Insert O-ring on gerotor.

Install O-ring and seat on gerotor.

A line from a bottom land of the rotor to the opposite bottom land.

Guide line for the pin axis

Pin axis

Port surface

A, B, and C should be parallel to each other.

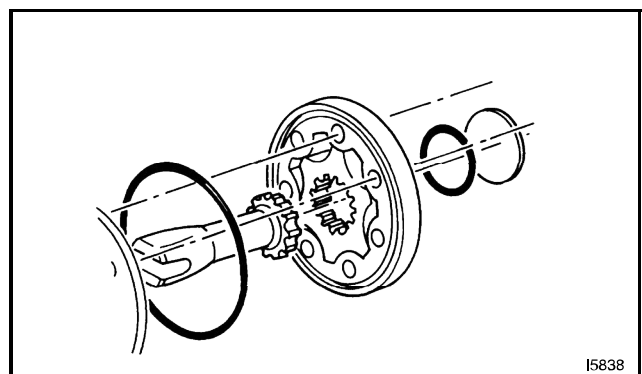


FIG. 27

General Information

FIG. 28: Turn O-ring on gerotor toward spacer plate and install the gerotor on the drive by aligning the bottom land to bottom land line of the gerotor with the guide line on the drive.

NOTE: When the bolt holes of the gerotor and spacer plate do not align to each other, turn the gerotor housing alone.

Insert O-ring on end cap.

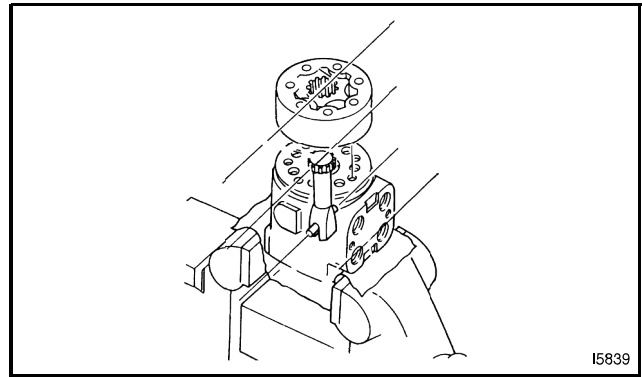


FIG. 28

FIG. 29: Place end cap on gerotor and align bolt holes.

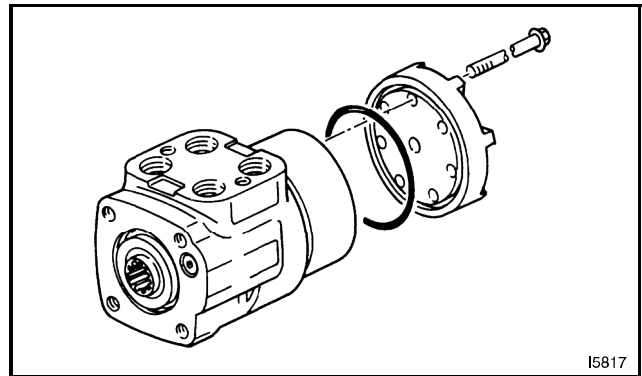


FIG. 29

FIG. 30: Apply oil to the threads of retainer bolt assembly and bolts ahead of time. Then insert them into end cap.

NOTE: Make sure that there is no pinching of the O-ring and tighten the bolts in the sequence mentioned above to the specified torque.

Temporary tightening torque.	10.85 Nm (8.0 lbf ft)
Final tightening torque.	20.33 Nm (15 lbf ft)

NOTE: Set a handle to the spool and make sure that the spool turns smoothly.

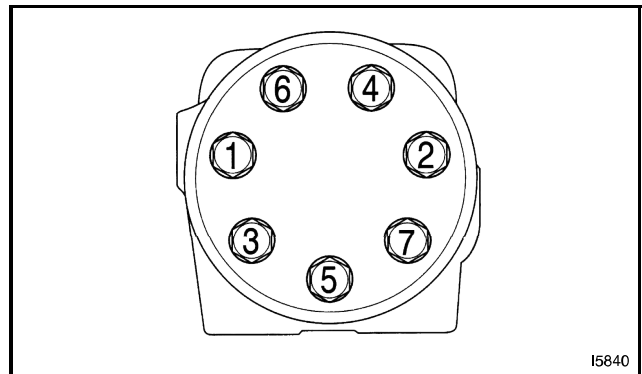


FIG. 30

Flow Control Valve Assembly

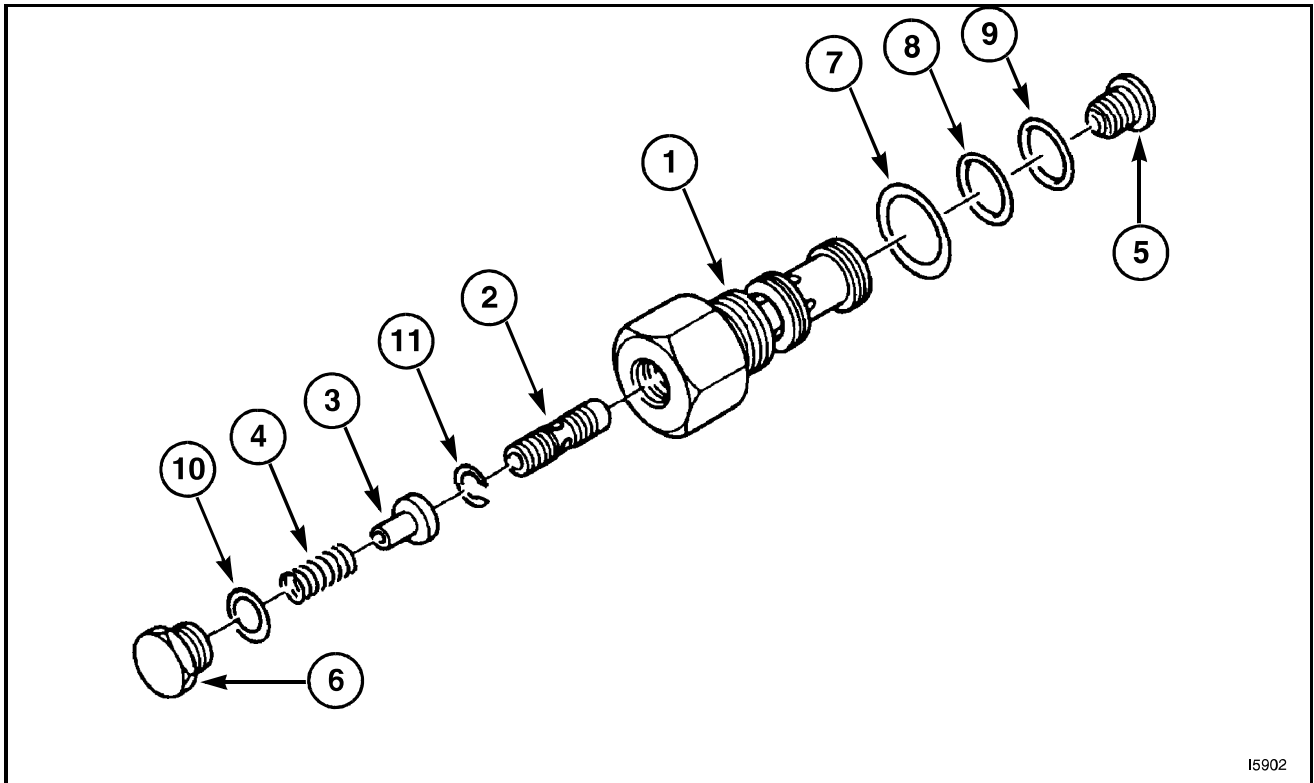


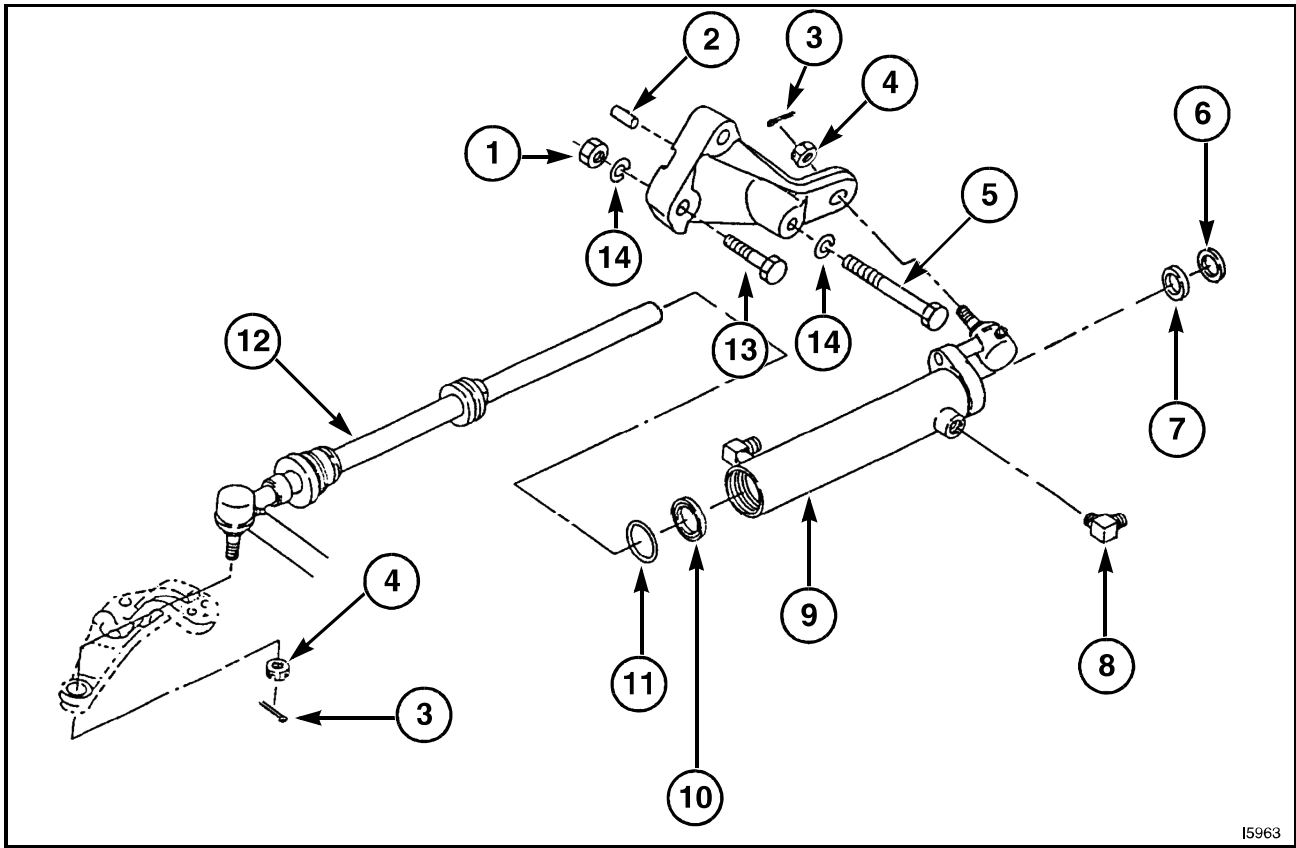
FIG. 31

FIG. 31: Flow control valve assembly (flow divider).

- (1) Body
- (2) Spool
- (3) Spring Guide
- (4) Spring
- (5) Spool Stopper
- (6) Plug
- (7) O-ring
- (8) O-ring
- (9) O-ring
- (10) O-ring
- (11) Filter

General Information

Cylinder System



I5963

FIG. 32

FIG. 32: Steering cylinder components.

- (1) Nut
- (2) Pin (2)
- (3) Cotter Pin (2)
- (4) Slotted Nut (2)
- (5) Bolt
- (6) Dust Seal
- (7) Packing Rod
- (8) Connector
- (9) Cylinder Assembly
- (10) Piston Seal
- (11) O-ring
- (12) Piston Rod
- (13) Reamer Bolt M10x35
- (14) Lock Washer (2)

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