



**HYDRAULIC  
MOTOR**

**COMPONENT REPAIR MANUAL**



## INTRODUCTION

Melroe recommends that all service technicians attend either field or factory Bobcat Service Workshops for necessary information and education.

Workshops are held many times a year at various locations throughout the U.S. and Canada. Contact your District Service Manager or Melroe Service Office Gwinner, N.D. (701) 678-6165 for schedule.

This Component Repair Manual provides the Service Technician with information for servicing Hydrostatic Motors.

Make reference to the SERVICE MANUAL for your MODEL Loader to troubleshoot, test, remove and installation of the hydrostatic motor.

See the INDEX Page to find your MODEL Loader, S/N listing, Tab # and Manufacturer.

## SAFETY INSTRUCTIONS

We Care About Your Safety.

The Bobcat loader is designed to give maximum operator safety; but no machine design can prevent operator error or carelessness.



**! WARNING**

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-1285

## BEFORE YOU WORK ON THE HYDROSTATIC MOTOR

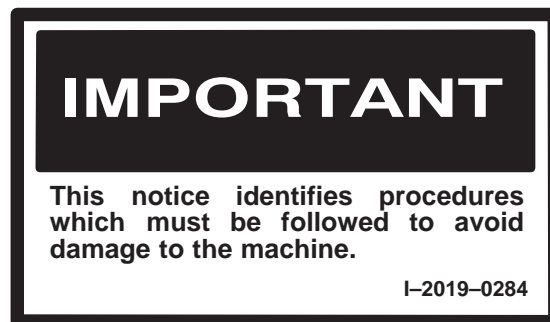
Read the complete sequence so you know the complete disassembly or assembly procedure before the work is actually started.



**! WARNING**

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause injury or death.

W-2044-1285



**IMPORTANT**

This notice identifies procedures which must be followed to avoid damage to the machine.

I-2019-0284

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**No need to wait.**

**Thanks for continuing to read the documentation.**

**Best wishes.**

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630	15376 & Above	1	B	Char-Lynn
631	All	1	B	Char-Lynn
632	15320 & Above	1	B	Char-Lynn
641, 642, 642B, 643	All	1	B	Char-Lynn
720, 721, 722	All	2	A	Vickers
730, 731, 732	All	1	C	Char-Lynn
741, 742, 743	17999 & Above	1	C	Char-Lynn
742B, 743B	18000 & Above	1	D	Char-Lynn
750 Series	All	1	D	Char-Lynn
7753	Early Models	1	C	Char-Lynn
7753	Later Models	1	D	Char-Lynn
753L	All	1	D	Char-Lynn
825	All	3	A	Cessna
843	All	1	C	Char-Lynn
853	All	1	C	Char-Lynn
943	All	4	A	Sundstrand
974, 975	All	4	B	Sundstrand
1213	All	1	C	Char-Lynn
1600	11999 & Below	3	B	Cessna
1600	12001 thru 12312	4	C	Sundstrand
1600	12313 & Above	4	D	Sundstrand
2000	All	3	B	Cessna
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Glossary of Terms	<b>TAB #5</b>			

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# CHAR-LYNN MOTOR

## PARTS IDENTIFICATION

MODEL: farmboy, 440, 443 . . . . .A-1

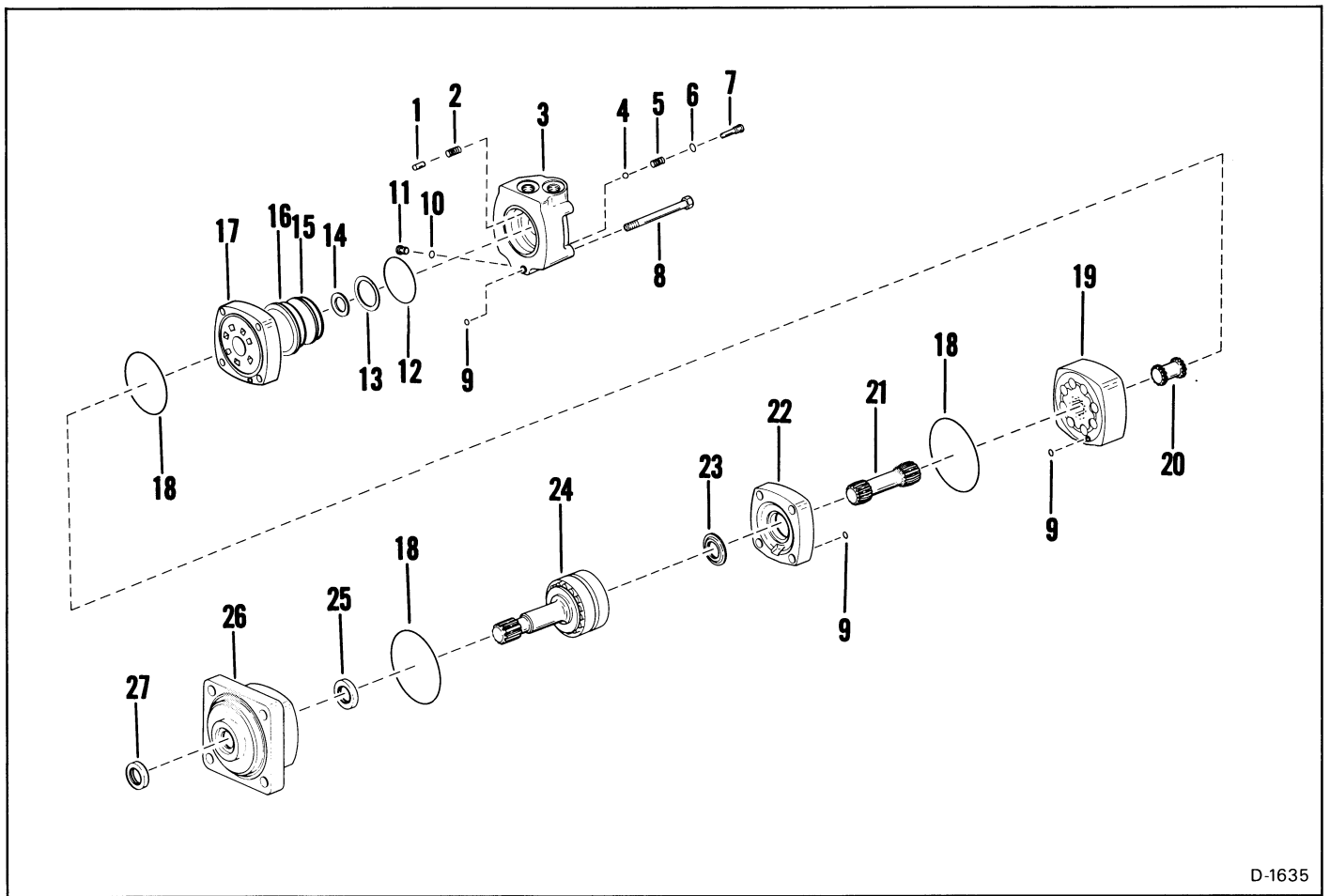
## HYDROSTATIC MOTOR

Disassembly and Assembly . . . . .A-2

Inspection . . . . .A-6

Timing the Hydrostatic Motor . . . . .A-7

## PARTS IDENTIFICATION



D-1635

MODEL: farmboy, 440, 443

Ref.	Description	Ref.	Description
1.	PIN	15.	PLATE, balancing
2.	*SPRING	16.	VALVE
3.	HOUSING	17.	PLATE, valve
4.	*BALL	18.	O-RING
5.	*SPRING	19.	GEROLER
6.	O-RING	20.	SHAFT
7.	PLUG	21.	SHAFT
8.	BOLT	22.	PLATE, wear
9.	O-RING	23.	SEAL
10.	O-RING	24.	SHAFT & BEARING ASSY
11.	PLUG	25.	SEAL
12.	O-RING	26.	HOUSING
13.	SEAL, outer	27.	SEAL
14.	SEAL, inner		

\* These parts will not be found on serial number loaders listed below.

farmboy (S/N 13098 & Above)

443 (S/N 11973 & Above)

## HYDROSTATIC MOTOR

### Disassembly and Assembly

The tool listed will be needed to do the following procedure:

MEL-1015 – Seal Tool

# IMPORTANT

When making repairs on hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I-2003-0284

Remove the four bolts from the motor **A**.

Assembly: Tighten the bolts to 37 ft.lbs. (50 Nm) torque.

Lift the valve housing straight up. If done carefully, the springs and balance plate will stay on the valve **B**.

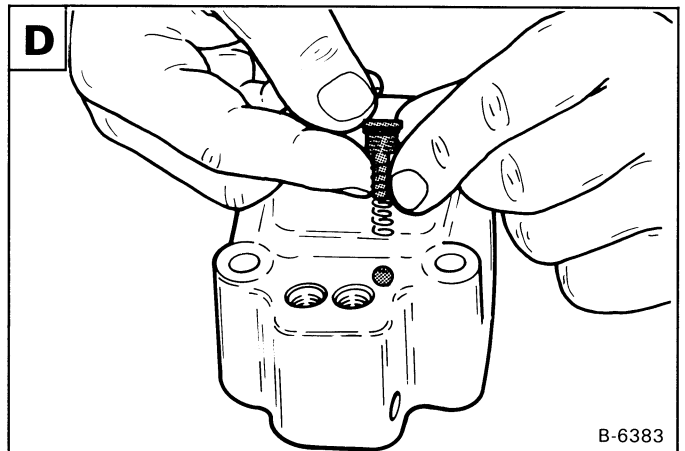
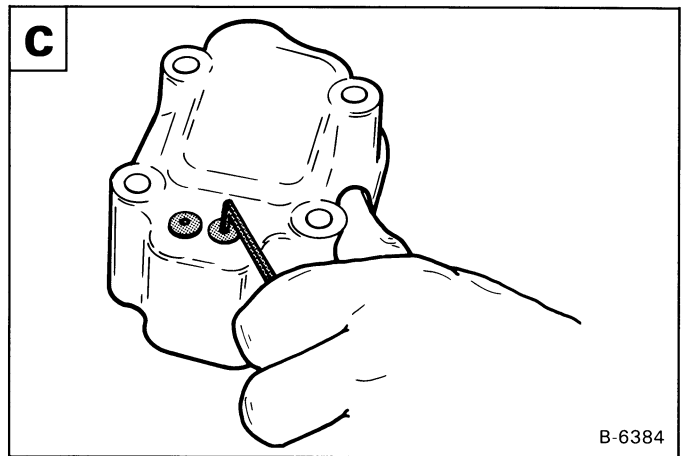
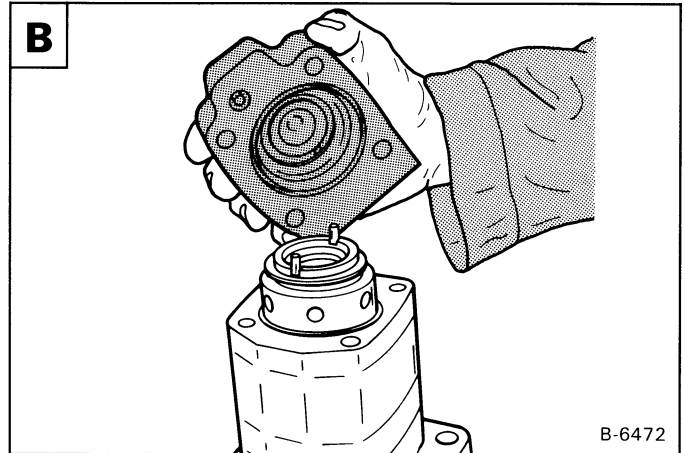
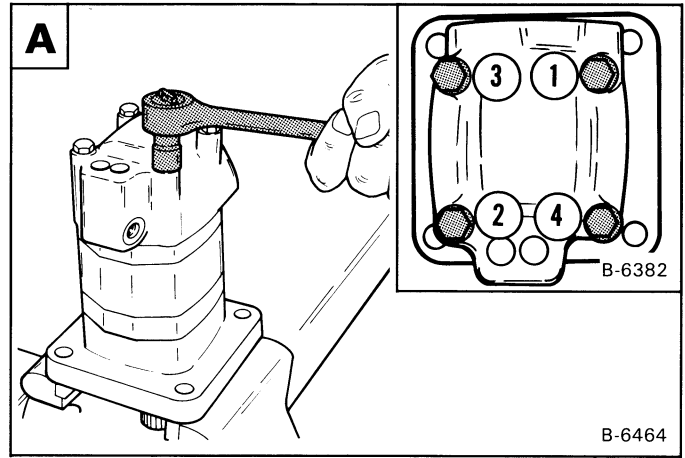
Remove the O-rings.

**NOTE:** See Page A-1 - Tab 1 for the serial number to see if your motor has the check balls installed.

Remove the two check plugs **C**.

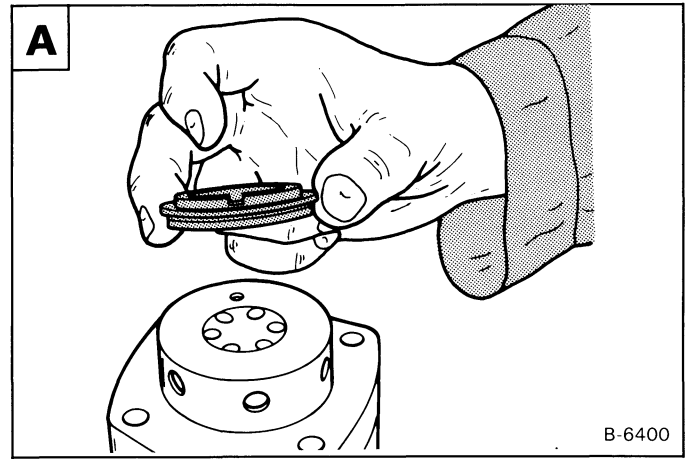
Remove the two springs and balls from the housing **D**.

Check the balls and spring and replace as needed.



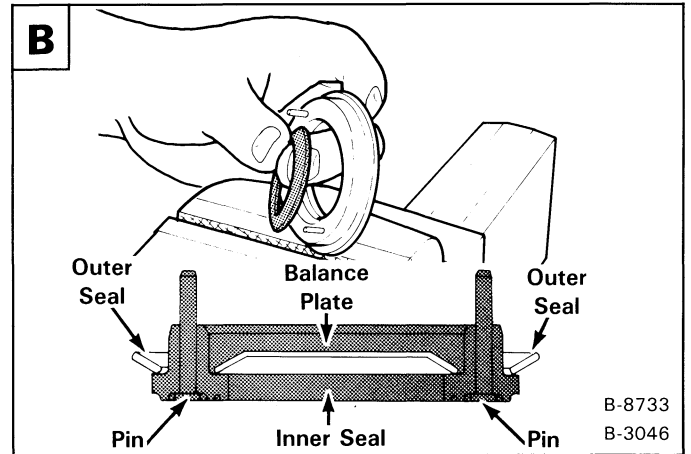
# HYDROSTATIC MOTOR (Cont'd)

Remove the balance plate **A**.



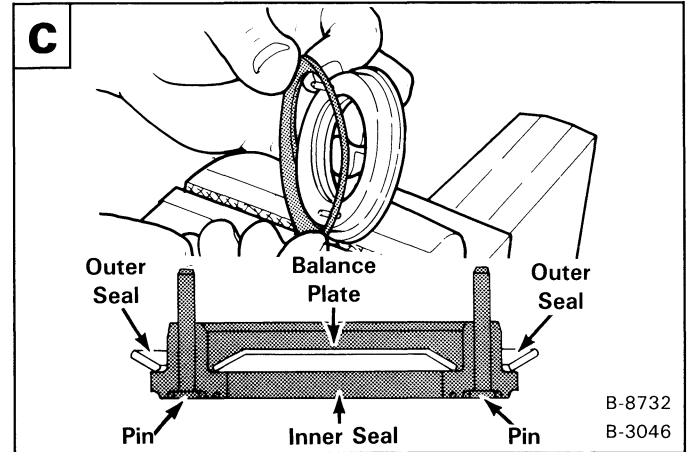
Remove the inner seal from the balance plate **B**.

Assembly: Put grease on the inner seal and install as shown **B**.

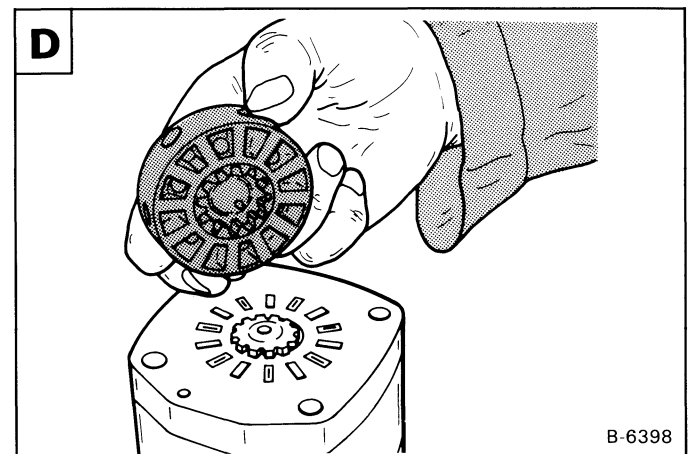


Remove the outer seal from the balance plate **C**.

Assembly: Put grease on the outer seal and install as shown **C**.



Remove the valve **D**.

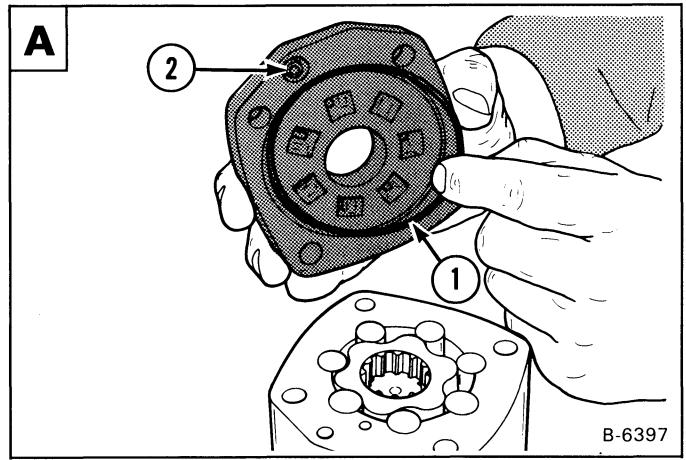


**HYDROSTATIC MOTOR (Cont'd)**

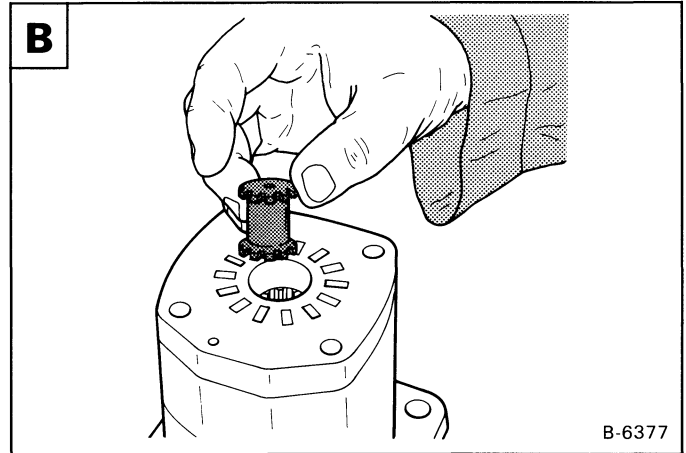
**NOTE:** See Page A-7 - TAB 1 for timing the motor when installing the valve, valve drive and geroller.

Remove the valve plate **A**.

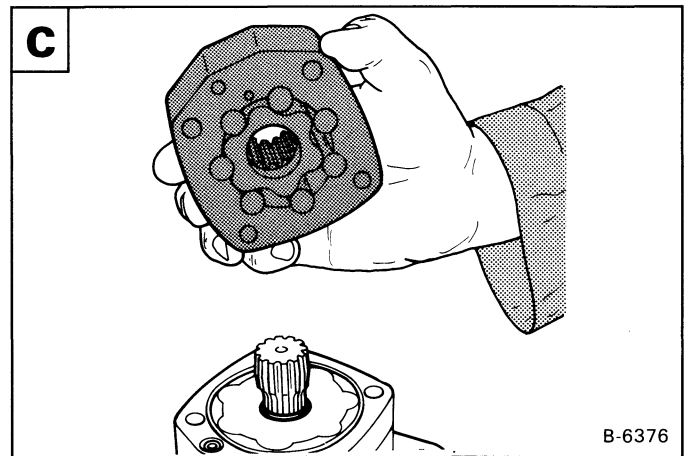
Remove the large O-ring (Item 1) and small O-ring (Item 2) **A**.



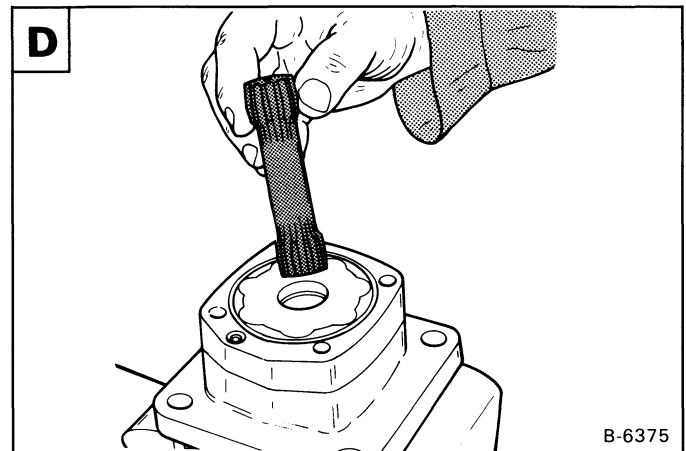
Remove the valve drive **B**.



Remove the geroller **C**.

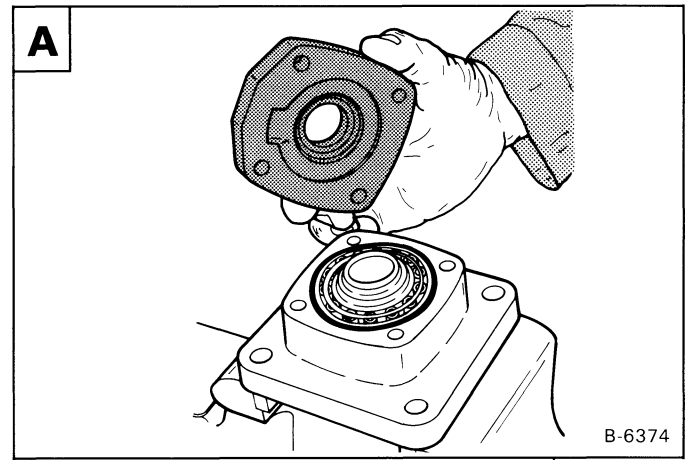


Remove the drive shaft **D**.

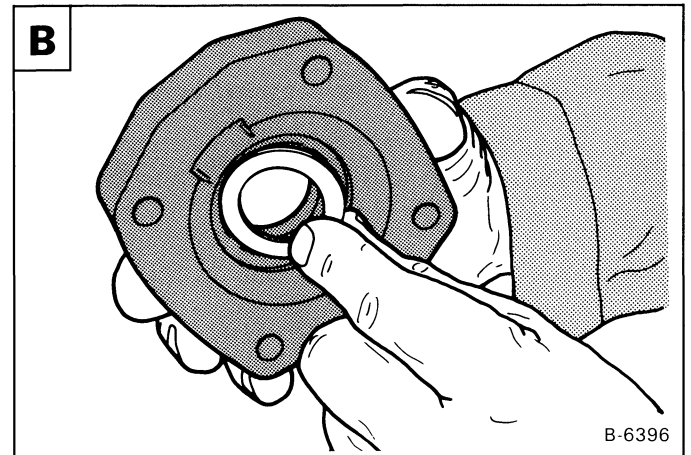


## HYDROSTATIC MOTOR (Cont'd)

Remove the wear plate **A**.

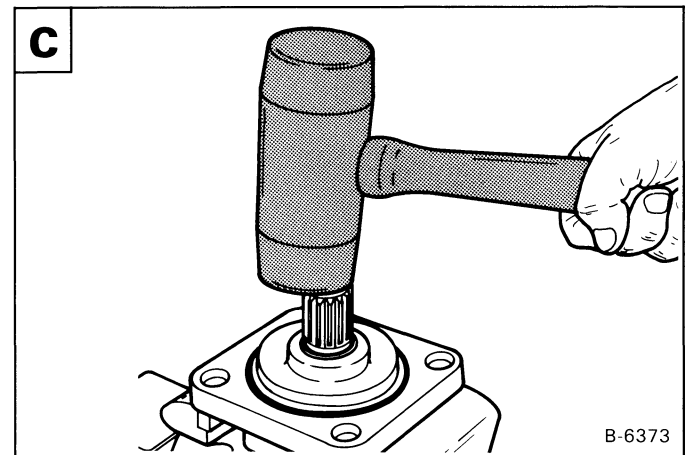


Remove the shaft face seal from the wear plate **B**.



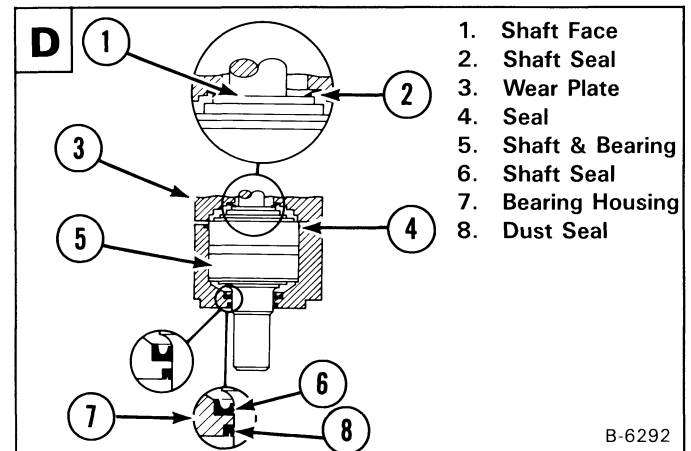
Remove the shaft and bearing assembly from the housing **C**.

**NOTE:** The shaft and bearing assembly are not sold as individual parts. Replace as a complete unit.



Remove the dust seal and shaft seal from the housing **D**.

Assembly: Install a new shaft seal and dust seal as shown **D**. Use a press to install the bearing and shaft assembly.



## HYDROSTATIC MOTOR (Cont'd)

Assembly: When installing the balance plate in the end housing, put your finger through the hole and hold it in position until the housing is in position **A**.

**NOTE:** Always use new O-rings, gaskets and seals when assembling the hydrostatic motor.

### Inspection

Clean all the parts in solvent and use air pressure to dry them. DO NOT use cloth or paper because small pieces of material can get into the system and cause damage.

Before the motor is assembled, check the following items:

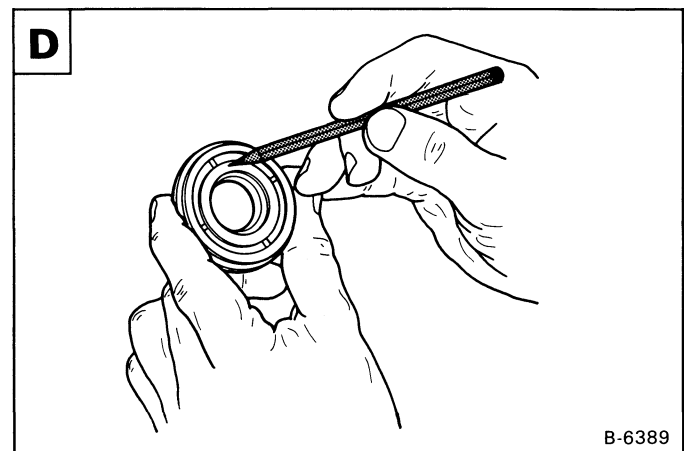
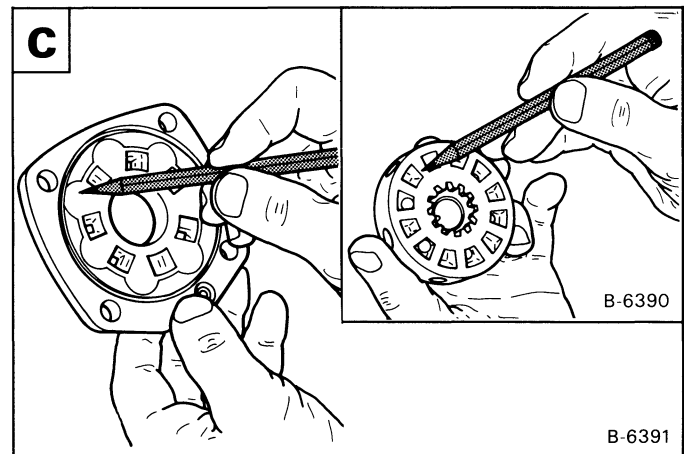
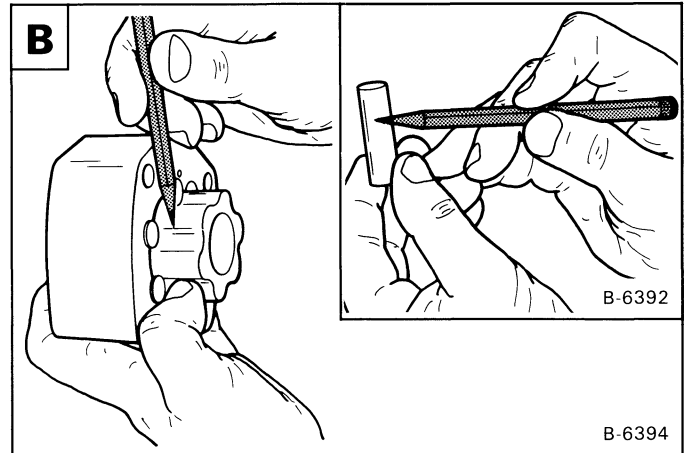
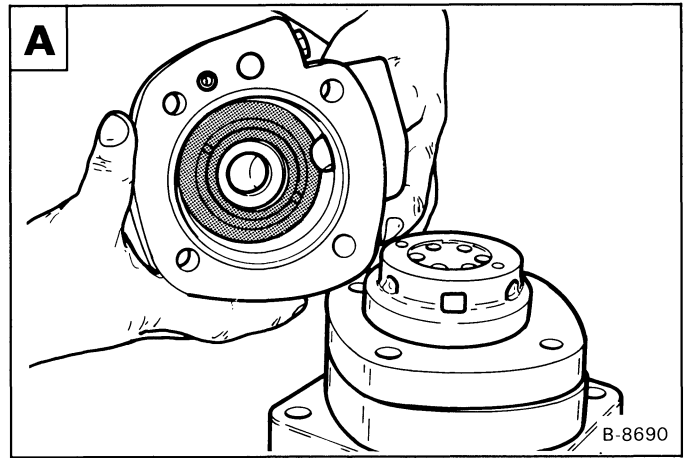
Check the geroler roller and rotor for wear and scratches **B**.

**NOTE:** Put all the rollers back in their original position.

Check the valve plate for scratches **C**.

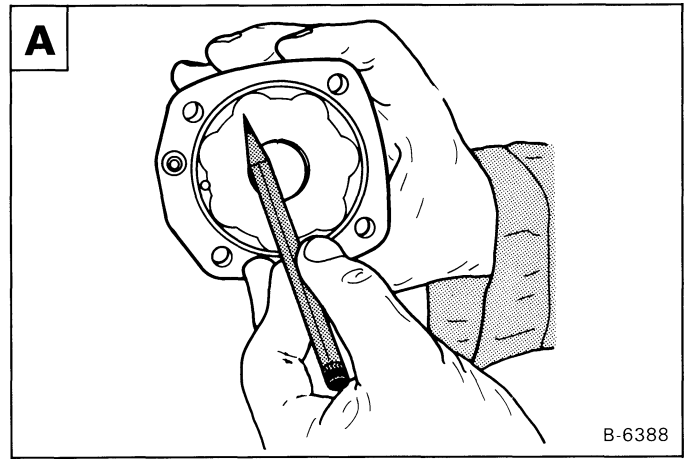
Check the balance plate for scratches **D**.

Check the valve drive and main drive for wear.



## HYDROSTATIC MOTOR (Cont'd)

Check the end plate surface for scratches **A**.



### Timing the Hydrostatic Motor

The timing of the motor controls the direction of rotation of the drive shaft of the motor. The timing parts are as follows:

1. Geroller (Item 1) **B**.
2. Valve Drive (Item 2) **B**.
3. Valve Plate (Item 3) **B**.
4. Valve (Item 4) **B**.

Find the largest opening between the geroller star and the geroller ring. Mark the outside of the geroller ring at that point **B**.

Align the two drain holes and the three pressure holes in the geroller ring with the same holes in the mounting flange. Then install the geroller assembly.

Install new O-rings.

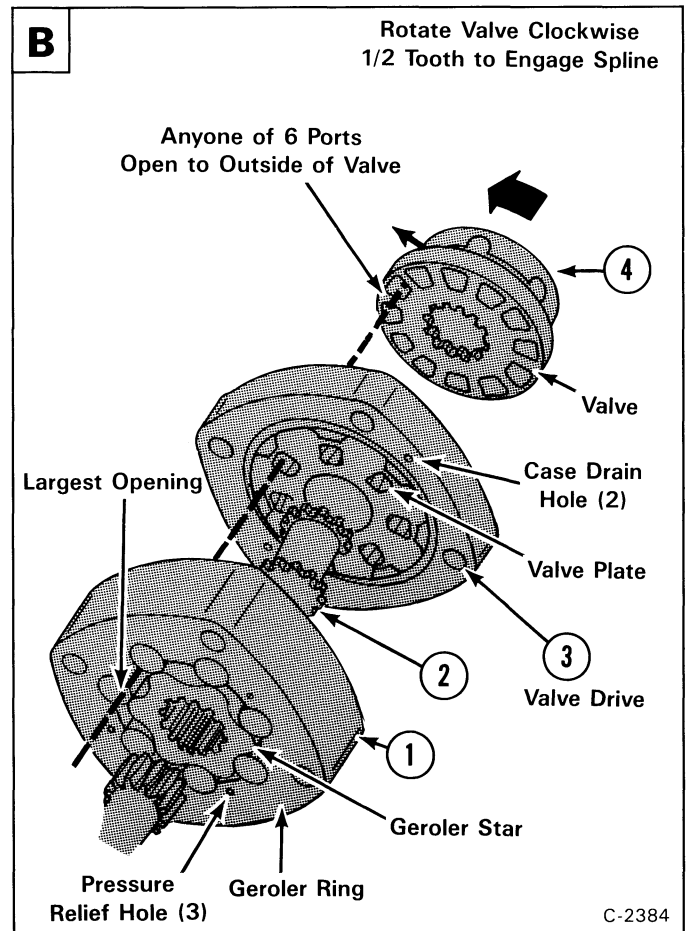
Install the valve drive **B**.

Align the drain hole in the valve plate with the drain hole in the geroller. Install valve plate with the O-ring toward the geroller. Make sure the slot opening of the valve plate is in alignment with the largest opening of the geroller.

Install the valve plate.

Install the valve on the valve plate. Make alignment with one of the side openings with the mark on the geroller. Turn the valve **clockwise** a small amount until the teeth on the valve drive engage.

Continue with the rest of the assembly procedure.



# CHAR-LYNN MOTOR

## PARTS IDENTIFICATION

MODEL: 109-1052-004

109-1052-005

540, 543 (S/N 12001 & Above)

630 (S/N 15376 & Above)

631 (S/N All)

632 (S/N 15320 & Above)

641, 642, 643 .....B-1

MODEL: 109-1052-006

540, 543 (S/N 12001 & Above)

630 (S/N 15376 & Above)

631 (S/N All)

632 (S/N 15320 & Above)

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## SPLINED SHAFT

540 (S/N 13072 & Above)

543 (S/N 13082 & Above)

641 (S/N 13346 & Above)

642 (S/N 13941 & Above)

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## HYDROSTATIC MOTOR

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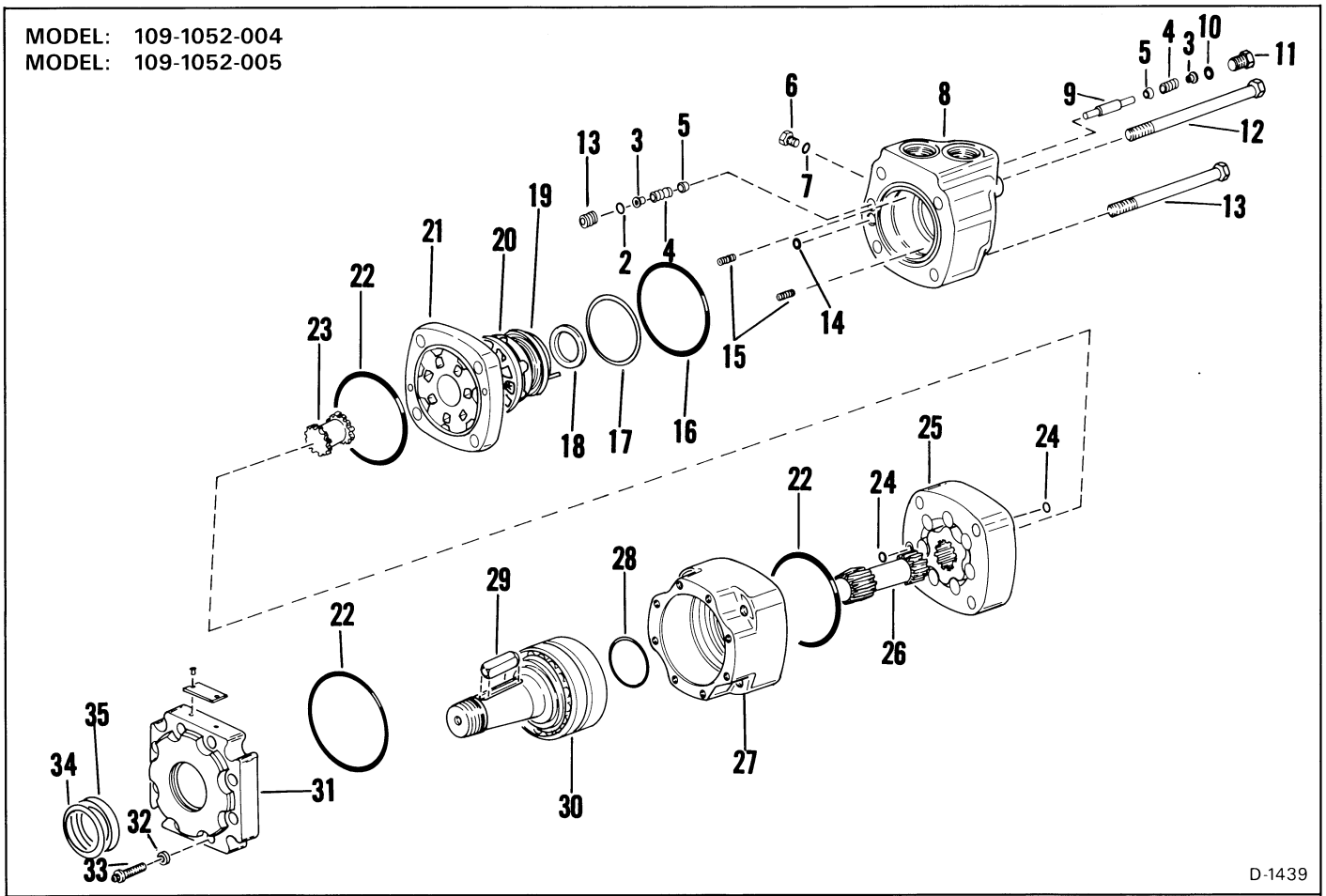
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Section B

# PARTS IDENTIFICATION

MODEL: 109-1052-004  
 MODEL: 109-1052-005



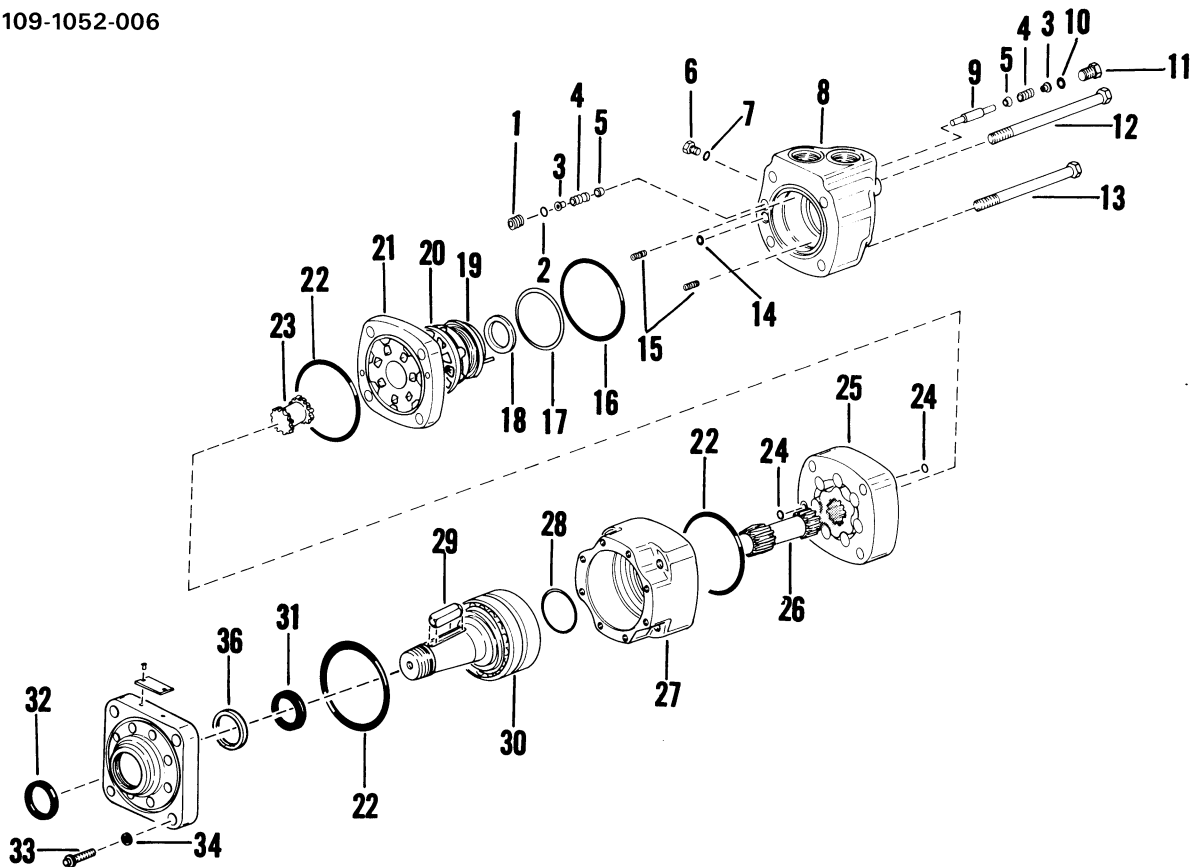
D-1439

MODEL:  
 540, 543 (S/N 12001 & Above)  
 630 (S/N 15376 & Above)  
 631 (S/N All)  
 632 (S/N 15320 & Above)  
 641, 642, 643

Ref.	Description	Ref.	Description
1.	PLUG	19.	PLATE, balancing
2.	O-RING	20.	VALVE
3.	SHUTTLE	21.	PLATE, valve
4.	SPRING	22.	O-RING
5.	POPPET	23.	SHAFT
6.	PLUG	24.	O-RING
7.	O-RING	25.	GEROLER
8.	HOUSING	26.	SHAFT
9.	PISTON	27.	HOUSING, bearing
10.	O-RING	28.	SEAL
11.	PLUG	29.	KEY
12.	BOLT	30.	SHAFT & BEARING
13.	BOLT	31.	COVER, front
14.	O-RING	32.	WASHER
15.	SPRING	33.	BOLT
16.	O-RING	34.	WASHER
17.	SEAL, outer	35.	RING, quad
18.	SEAL, inner		

# PARTS IDENTIFICATION

MODEL: 109-1052-006



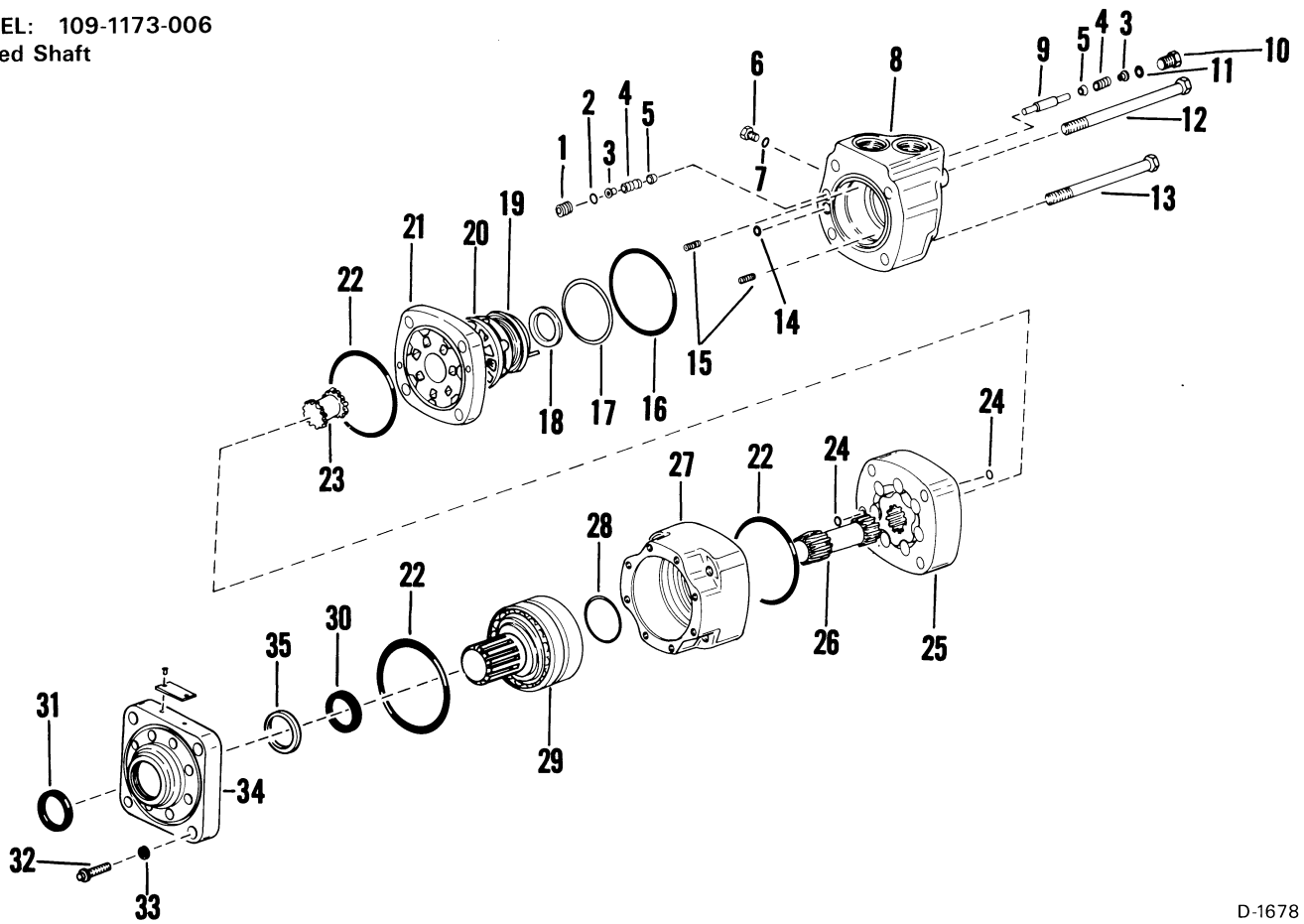
D-1650

**MODEL:**  
**540, 543 (S/N 12001 & Above)**  
**630 (S/N 15376 & Above)**  
**631 (S/N All)**  
**632 (S/N 15320 & Above)**  
**641, 642, 643**

Ref.	Description	Ref.	Description
1.	PLUG	19.	PLATE, balancing
2.	O-RING	20.	VALVE
3.	SHUTTLE	21.	PLATE, valve
4.	SPRING	22.	O-RING
5.	POPPET	23.	SHAFT
6.	PLUG	24.	O-RING
7.	O-RING	25.	GEROLER
8.	HOUSING	26.	SHAFT
9.	PISTON	27.	HOUSING, bearing
10.	O-RING	28.	SEAL
11.	PLUG	29.	KEY
12.	BOLT	30.	SHAFT & BEARING
13.	BOLT	31.	SEAL, shaft
14.	O-RING	32.	SEAL, dust
15.	SPRING	33.	BOLT
16.	O-RING	34.	WASHER
17.	SEAL, outer	35.	COVER, front
18.	SEAL, inner	36.	RING, brass

# PARTS IDENTIFICATION

MODEL: 109-1173-006  
Splined Shaft



D-1678

MODEL:  
540 (S/N 13072 & Above)  
543 (S/N 13082 & Above)  
641 (S/N 13346 & Above)  
642 (S/N 13941 & Above)  
643 (S/N 13620 & Above)

Ref.	Description	Ref.	Description
1.	PLUG	19.	PLATE, balancing
2.	O-RING	20.	VALVE
3.	SHUTTLE	21.	PLATE, valve
4.	SPRING	22.	O-RING
5.	POPPET	23.	SHAFT
6.	PLUG	24.	O-RING
7.	O-RING	25.	GEROLER
8.	HOUSING	26.	SHAFT
9.	PISTON	27.	HOUSING, bearing
10.	PLUG	28.	SEAL
11.	O-RING	29.	SHAFT & BEARING
12.	BOLT	30.	SEAL, shaft
13.	BOLT	31.	SEAL, dust
14.	O-RING	32.	BOLT
15.	SPRING	33.	WASHER
16.	O-RING	34.	COVER, front
17.	SEAL, outer	35.	RING, brass
18.	SEAL, inner		

## HYDROSTATIC MOTOR

THE ILLUSTRATIONS MAY NOT SHOW EXACTLY THE SAME MOTOR THAT YOU ARE WORKING ON, BUT THE PROCEDURE IS THE SAME.

### Disassembly and Assembly

The tools listed will be needed to do the following procedure:

MEL-1187 – Socket  
MEL-1015 – Seal Tool

# IMPORTANT

When making repairs on hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I-2003-0284

**NOTE:** Before you begin to disassembly the motor, use a puller and remove the sprocket from the tapered shaft.

Put a mark across the motor sections for correct assembly **A**.

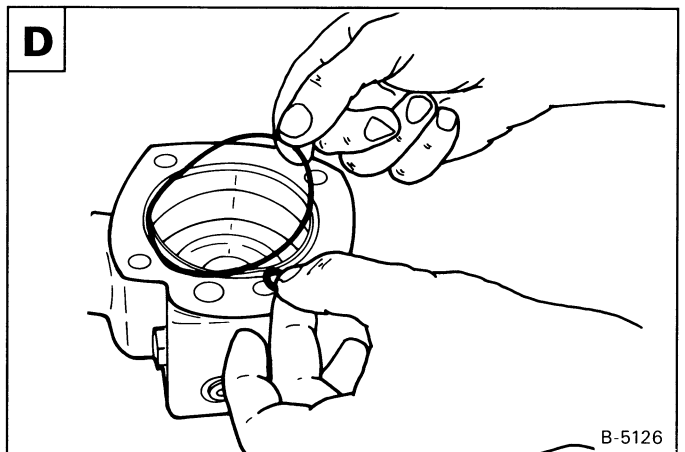
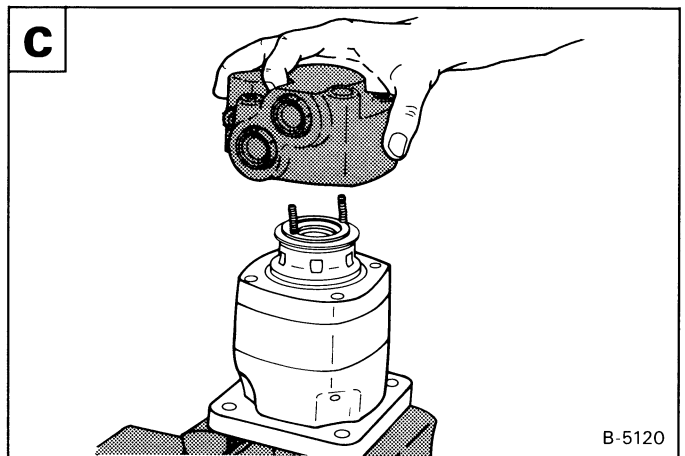
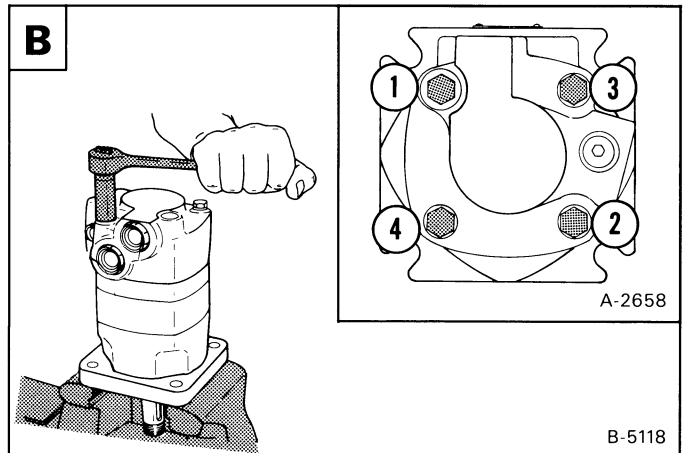
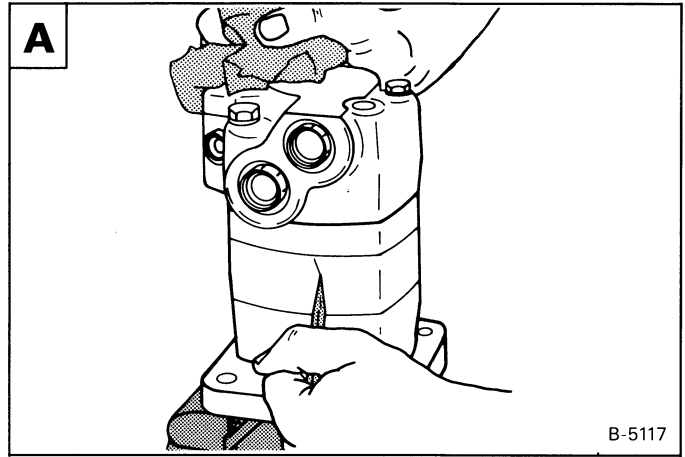
Remove the four bolts from the motor **B**.

Assembly: Tighten the bolts to 50 ft.lbs. (68 Nm) torque.

Lift the valve housing straight up **C**. If done carefully, the springs and balance plate will stay on the valve.

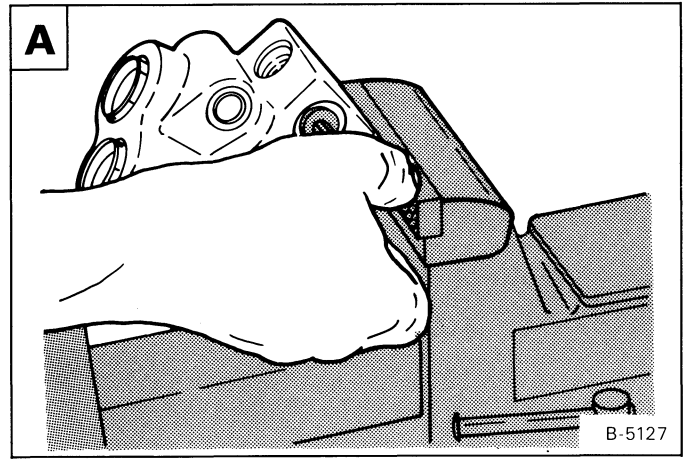
**NOTE:** See Page B-12 - TAB 1 for the correct installation of the housing and the balance plate.

Remove the large and small O-rings **D**.

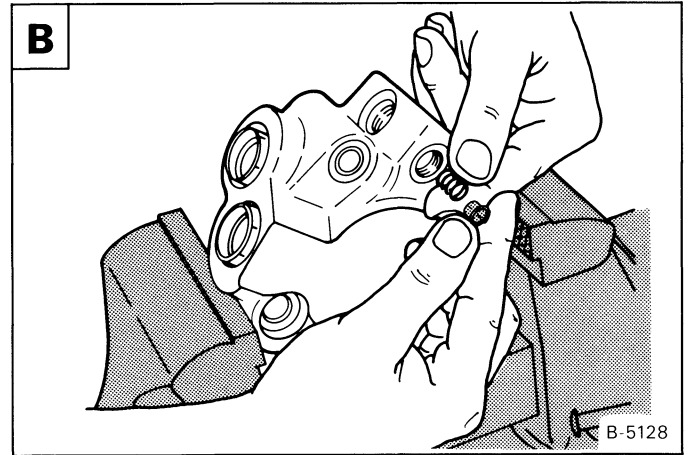


### HYDROSTATIC MOTOR (Cont'd)

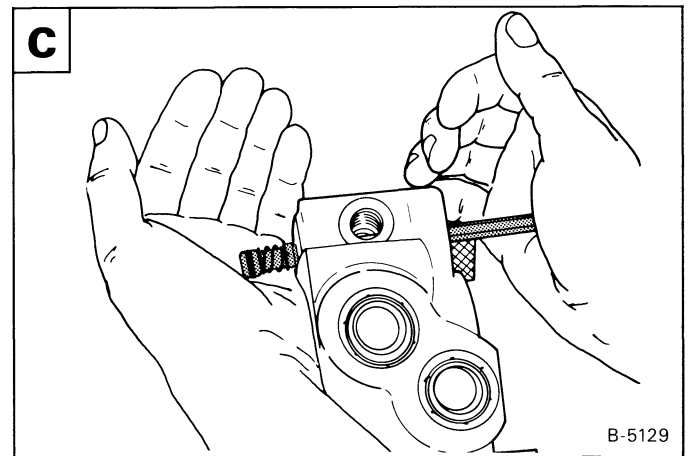
Remove the plug at the valve housing **A**.



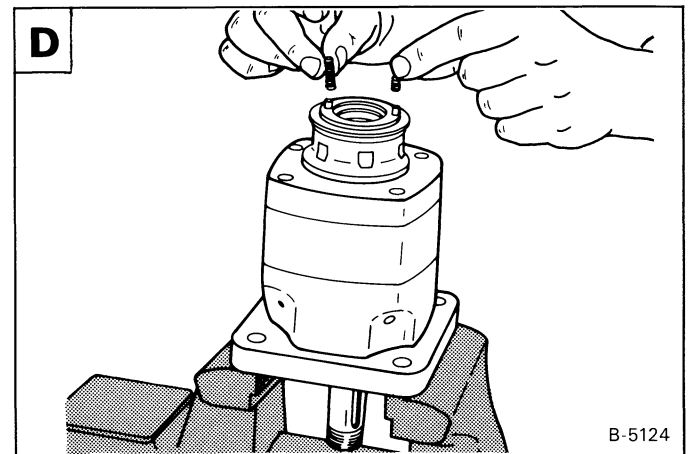
Remove the spring, shuttle and poppet **B**.



Use a punch, remove the poppet, spring, O-ring, shuttle and plug **C**.



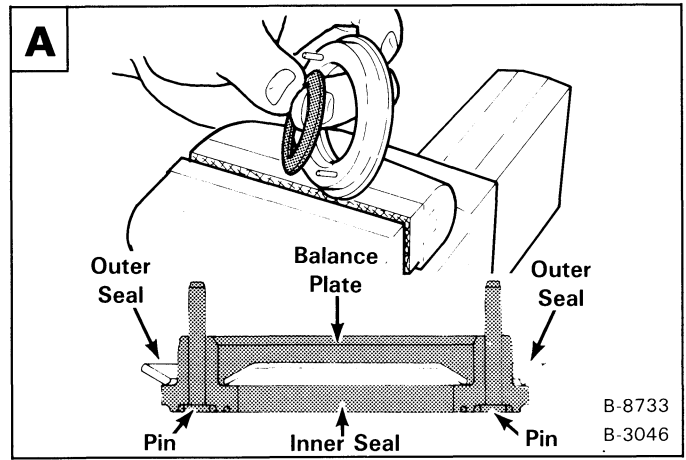
Remove the two springs from the balance plate **D**.



## HYDROSTATIC MOTOR (Cont'd)

Remove the inner seal from the balance plate **A**.

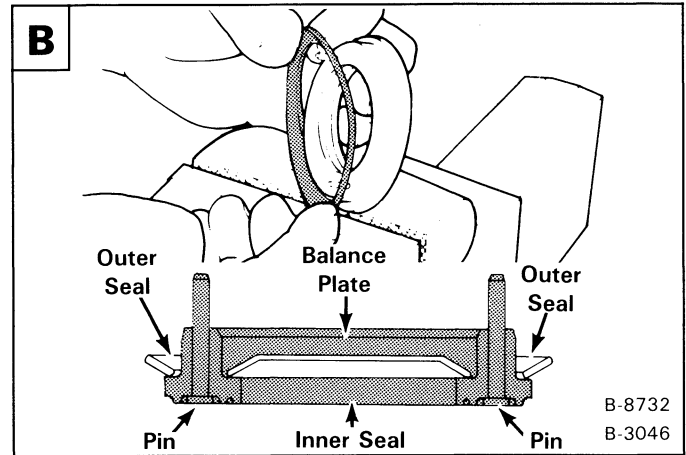
Assembly: Put grease on the inner seal and install as shown **A**.



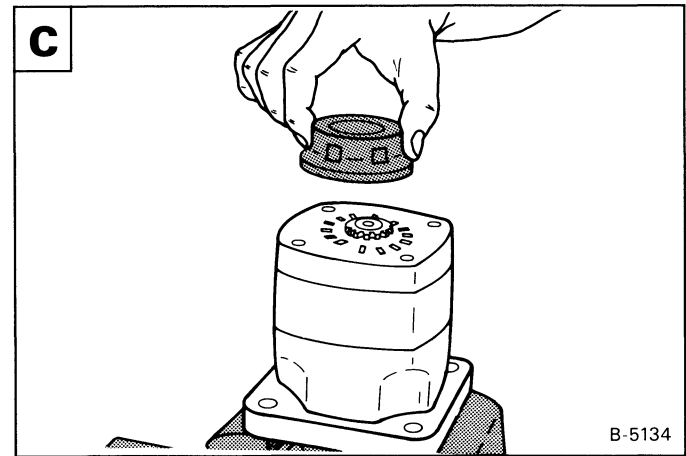
Remove the outer seal from the balance plate **B**.

Assembly: Put grease on the outer seal and install as shown **B**.

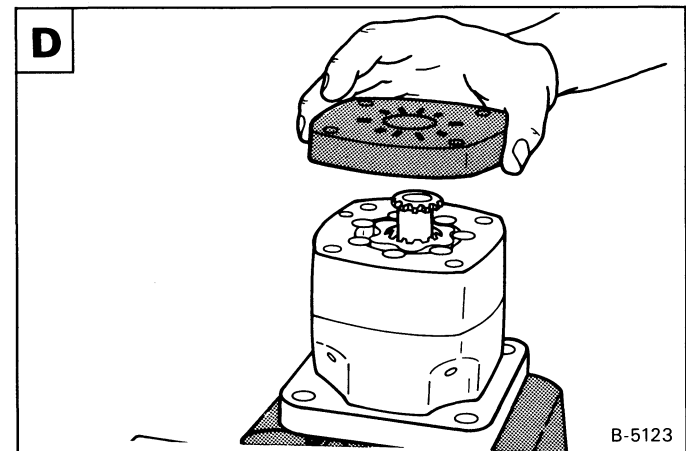
**NOTE:** See Page B-12 - TAB 1 for timing the motor when installing the valve, valve drive and geroler.



Remove the valve **C**.

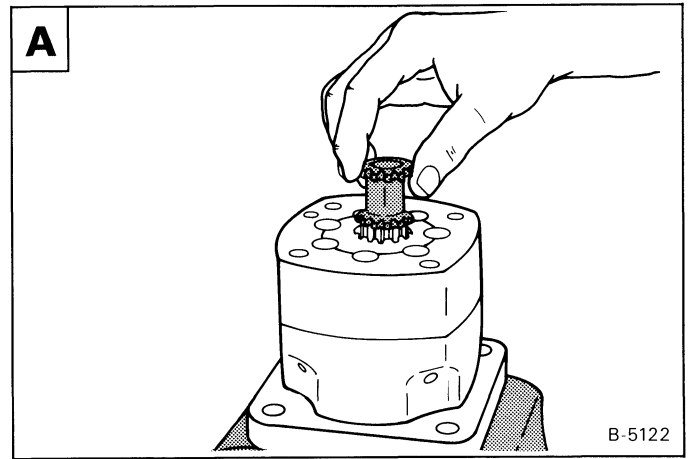


Remove the valve plate **D**.



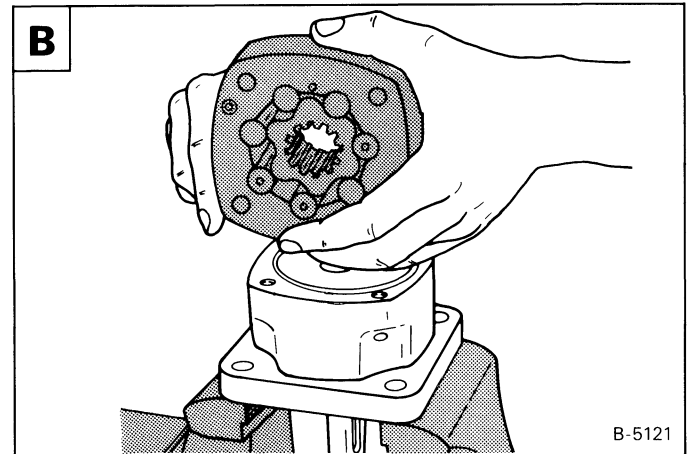
## HYDROSTATIC MOTOR (Cont'd)

Remove the valve drive **A**.

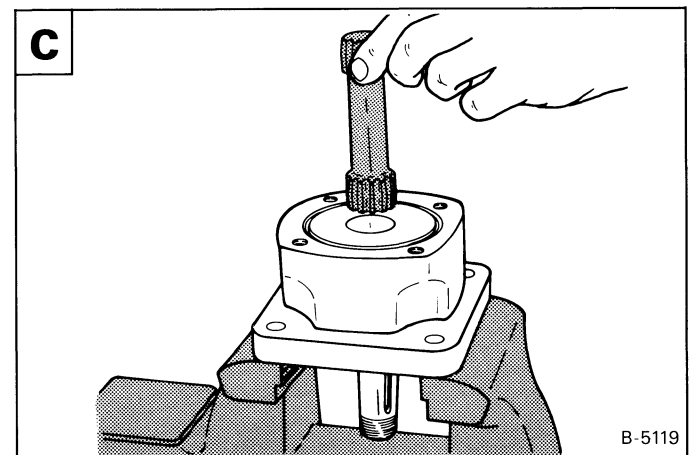


Remove the geroler **B**.

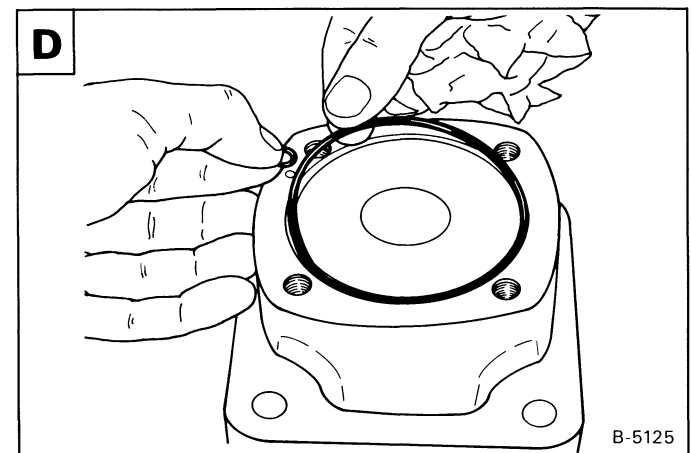
Make sure the rollers are kept in the geroler.



Remove the drive shaft **C**.



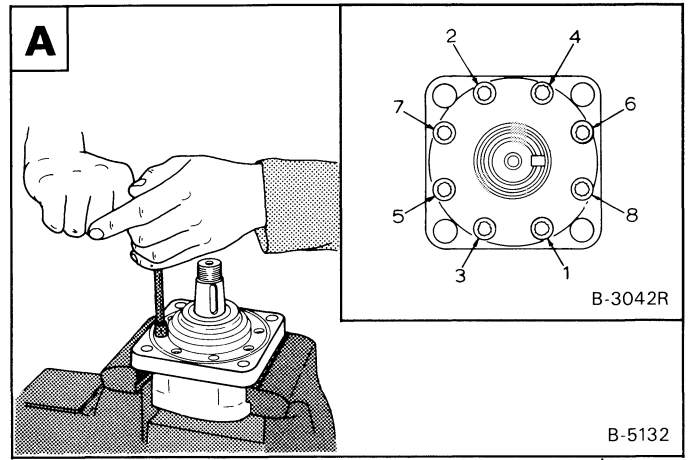
Remove the O-rings (large and small) from the bearing housing **D**.



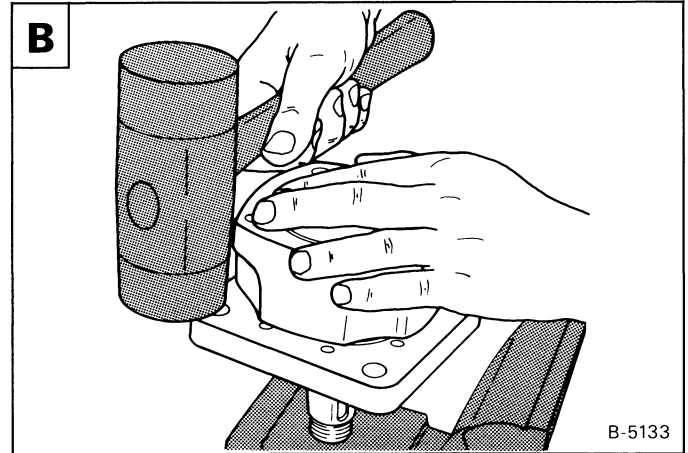
## HYDROSTATIC MOTOR (Cont'd)

Remove the eight bolts at the bearing housing **A**.

Assembly: Tighten the bolts to 20 ft.lbs. (27 Nm) torque.

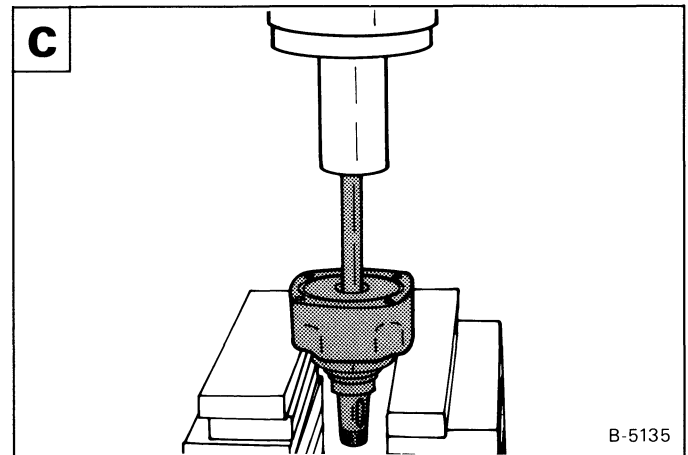


Remove the mounting flange from the housing **B**.

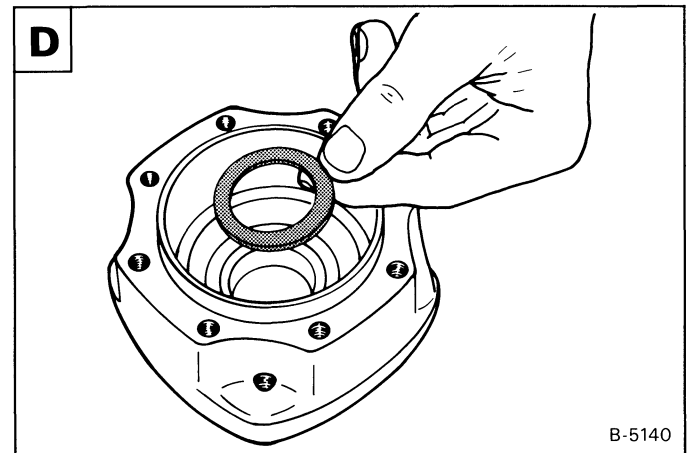


Use a press, remove the shaft and bearing assembly **C**.

**NOTE:** If there is any wear or damage to the shaft or bearing assembly, you must replace the complete unit.



Remove the seal from the bearing housing **D**.



## HYDROSTATIC MOTOR (Cont'd)

Assembly: Put the bearing housing on a smooth surface with the largest opening up **A**. Take the largest diameter half of the seal tool and lubricate the inside.

Install the seal tool into the bearing housing **A**.

Install the shaft face seal (with the inside edge up) into the seal tool.

Install the small diameter of the seal tool and push the seal into position **B**.

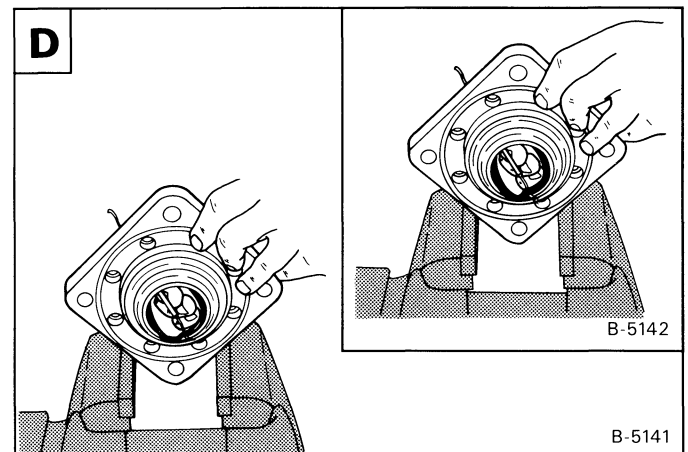
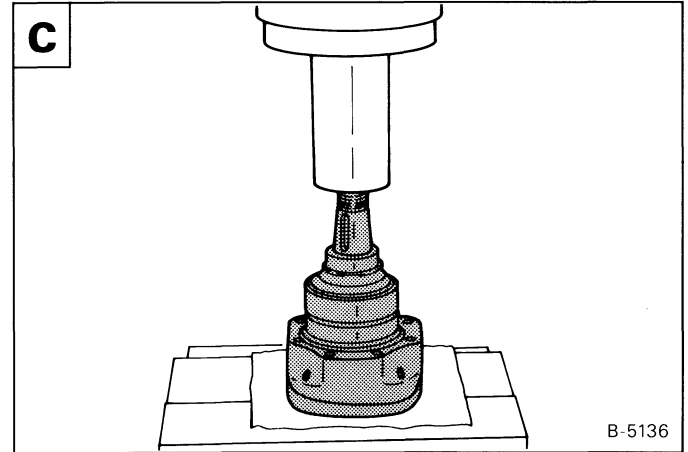
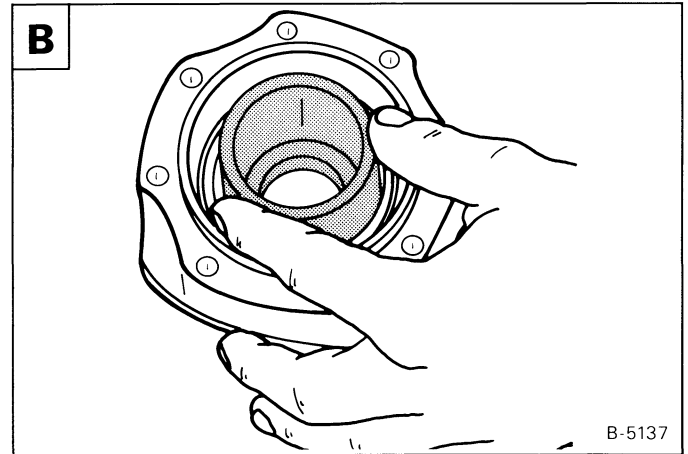
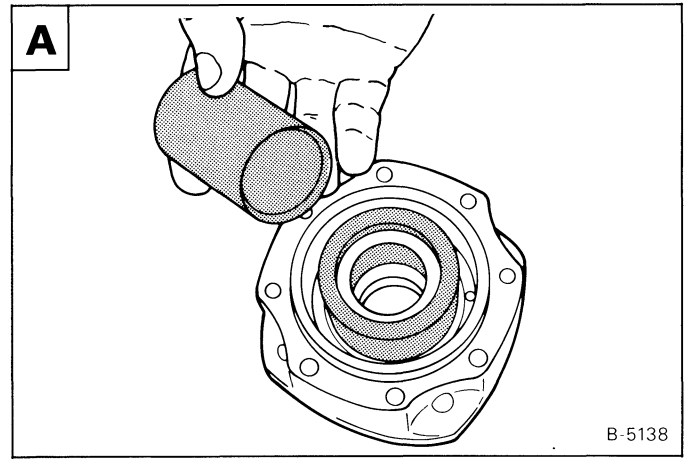
Press the shaft and bearing assembly into the bearing housing **C**.

Be careful not to damage the shaft seal. Turn the shaft several times to make sure that the shaft turns freely.

### MODEL: 109-1052-005

Remove the back-up washer and seal from the mounting flange **D**.

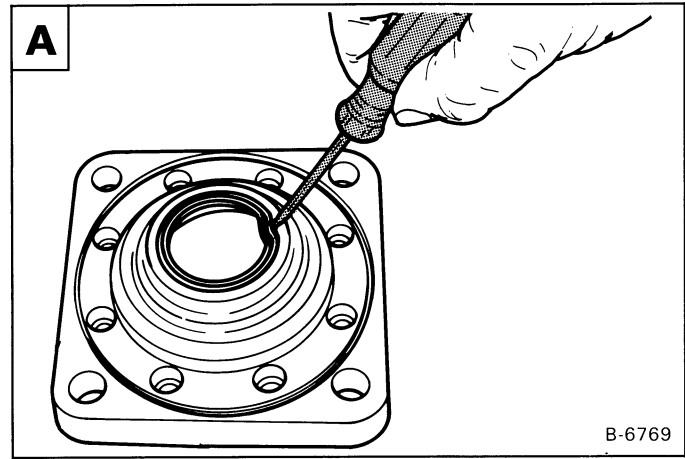
Assembly: Use the correct size seal driver tool and install the back-up washer and seal.



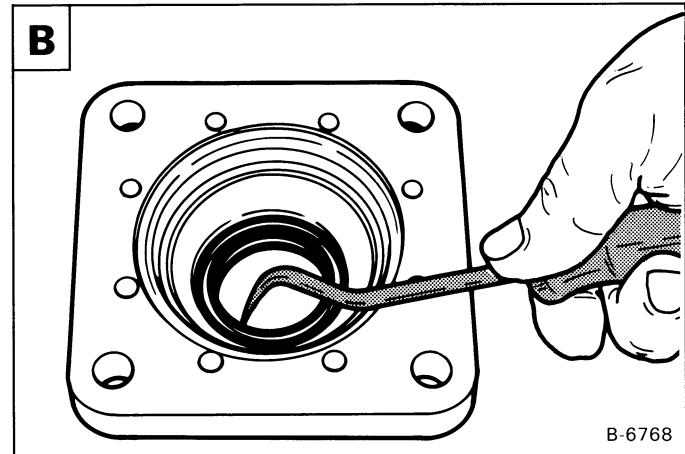
**HYDROSTATIC MOTOR (Cont'd)**

**MODEL: 109-1052-006 & Above**

Remove the dust seal from the mounting flange **A**.

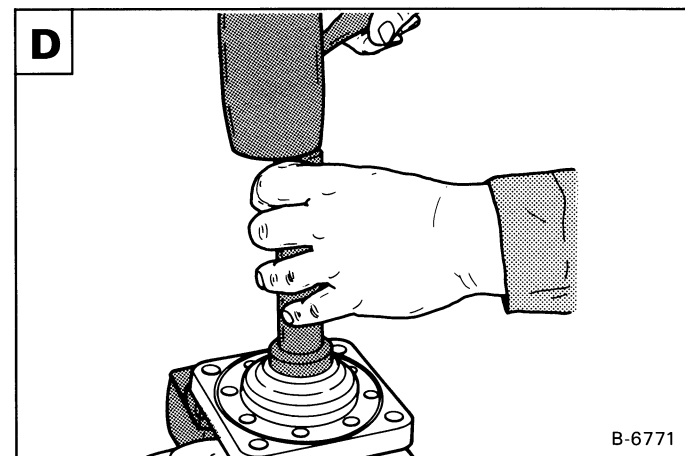
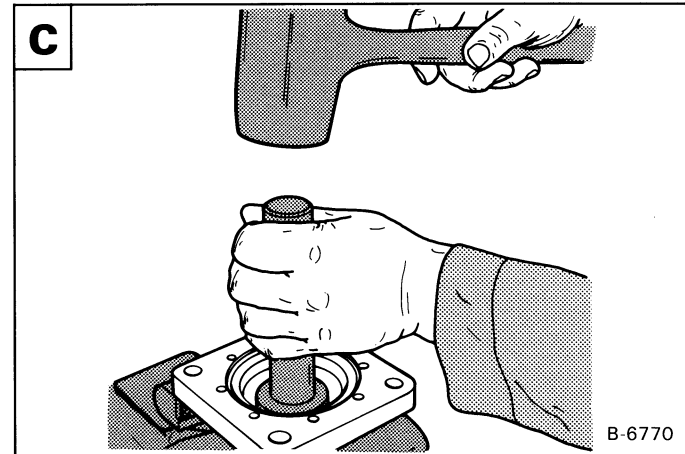


Remove the shaft seal and brass back-up ring **B**.



Assembly: Use the correct size seal driver tool and install the shaft seal and the dust seal **C** **D**.

**NOTE: Always use new O-rings, gaskets and seals when assembling the hydrostatic motor.**





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## HYDROSTATIC MOTOR (Cont'd)

### Inspection

Clean all the parts in solvent and use air pressure to dry them. DO NOT use cloth or paper because small pieces of material can get into the system and cause damage.

Before the motor is assembled, check the following items:

Check the geroler roller and rotor for wear and scratches **A**.

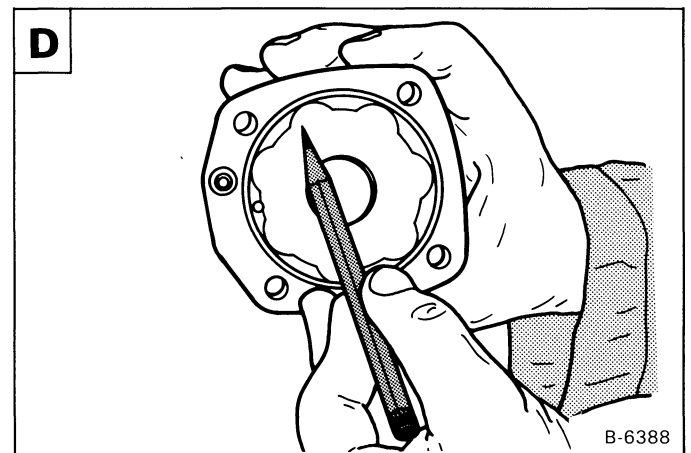
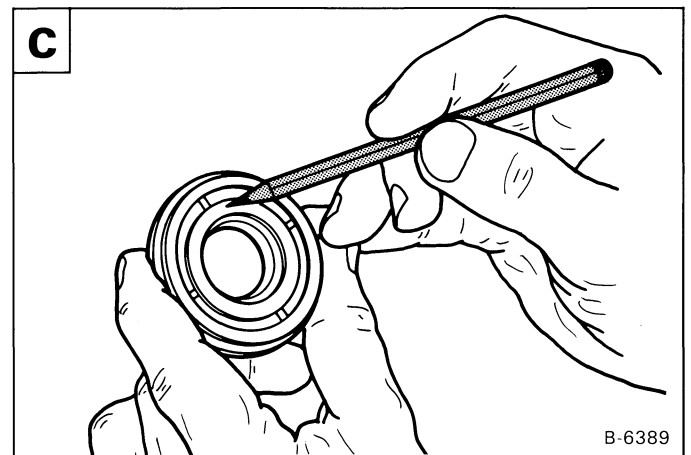
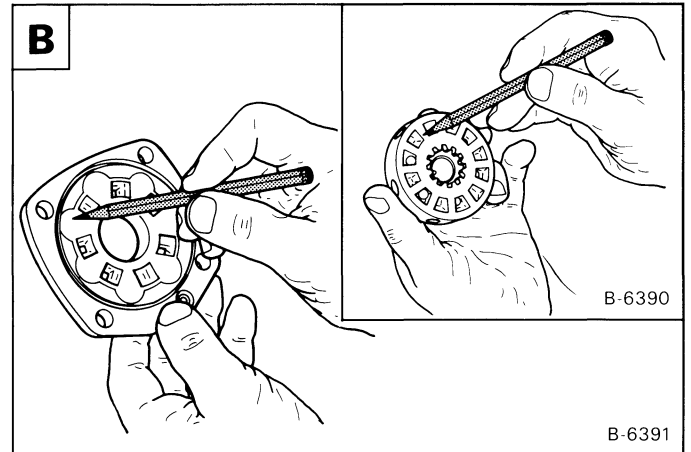
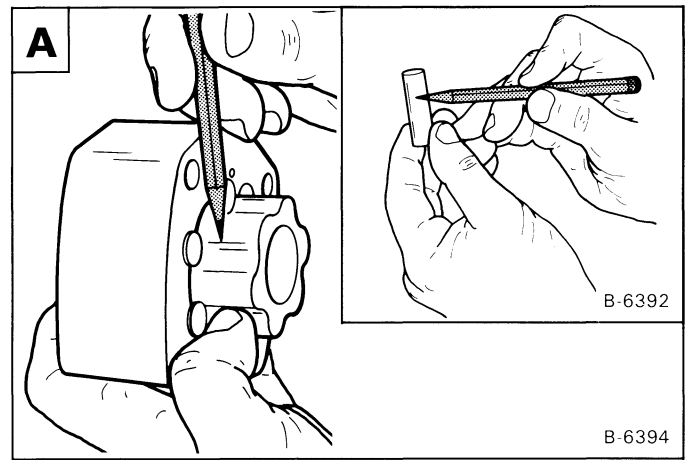
**NOTE:** Put all the rollers back in their position.

Check the valve plate for scratches **B**.

Check the balance plate for scratches **C**.

Check the valve drive and main drive for wear.

Check the end plate surface for scratches **D**.



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