

Hydraulic Motor

Repair Instructions

**MODEL
8HC**

Motors for Global[®]
External Hydraulic
Vibrators



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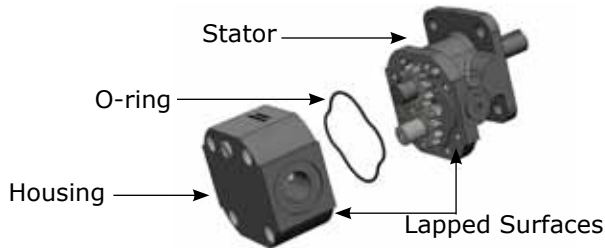
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Motor Seal Replacement

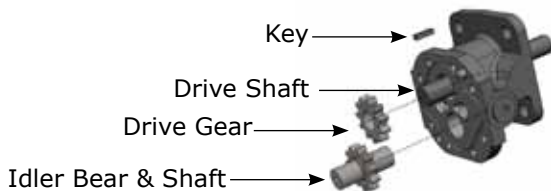
1. Remove motor from the vibrator.
2. Remove four 7/16 - 14 x 2.5" socket head cap screws from the motor housing using a 3/8" Hex Key.



3. Separate the housing from the stator. **Note: Do not damage the lapped surfaces of the housing and stator.** Do not damage the o-ring if not replacing. Discard used o-ring if new one is available.



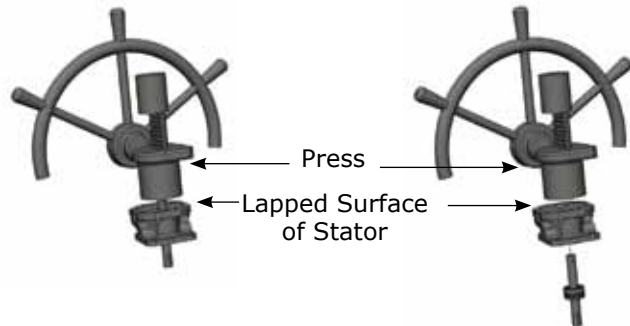
4. Remove the idler gear and shaft. Slide the drive gear off the shaft and remove the key.



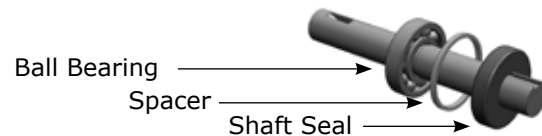
5. Turn the stator around and remove the retaining ring from the shaft seal bore using the retaining ring pliers.



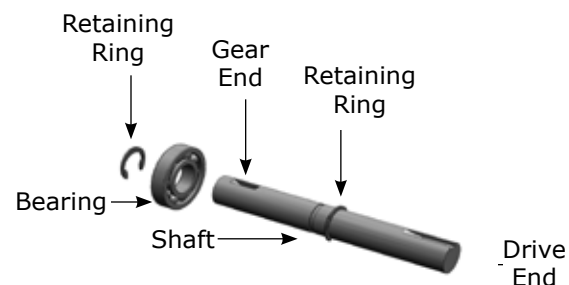
6. Support the stator on its flange and press the shaft out of the stator with an arbor press. **Note: Do not allow press to contact the lapped surface of the stator.** When the seal has been pressed out of the bore, the shaft and bearing should fall out of the stator. Discard damaged shaft seal.



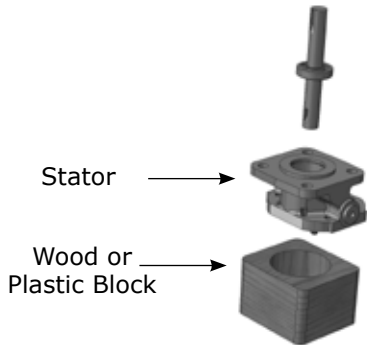
7. Slide the seal off the drive end of the shaft. To replace ball bearing, remove retaining ring. The ball bearing **must** be pressed off the **gear end** of the shaft to avoid scratching the shaft. Replace shaft if it is scratched.



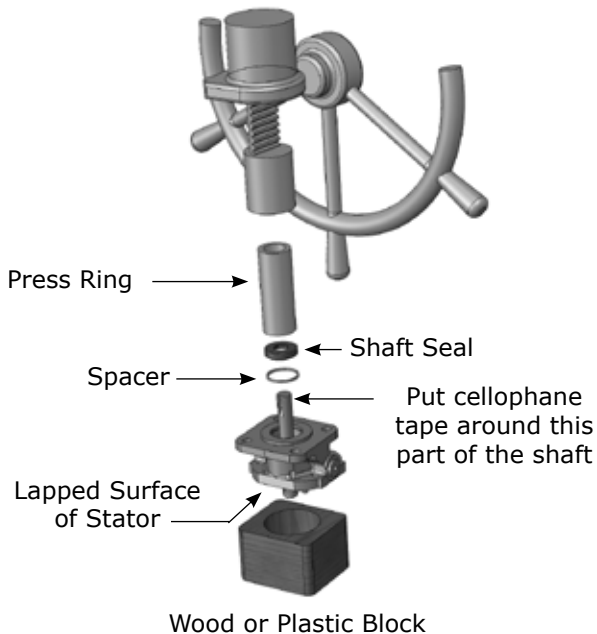
8. Install a retaining ring in the groove nearest the drive end. The ball bearing **must** be pressed onto the shaft from the **gear end**. **Be careful not to scratch shaft especially seal area. (Even the smallest scratch can cause a leak under high pressure.)** Press only against the inner race of the bearing, using a 5/8" ID X 3" long pipe.



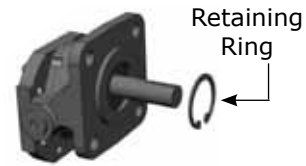
9. Support the lapped surface of the stator with a block of soft material. Slide the shaft and ball bearing into the stator. This is a close fit and may require a very light press.



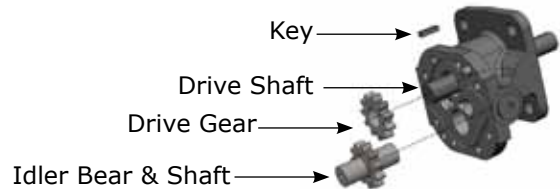
10. The shaft seal is **very delicate** and if damaged the motor will leak. Thoroughly clean the shaft and bore in the stator. **Wrap thin cellophane tape around the end of the shaft completely covering the keyway (this is very important because the keyway can nick the shaft seal if not covered)**. Spread a little oil around the lip of the seal and slide the seal down the shaft. Use a 1 3/8" OD X 2" long pipe to press the seal into the bore deep enough so that the retaining ring can be installed.



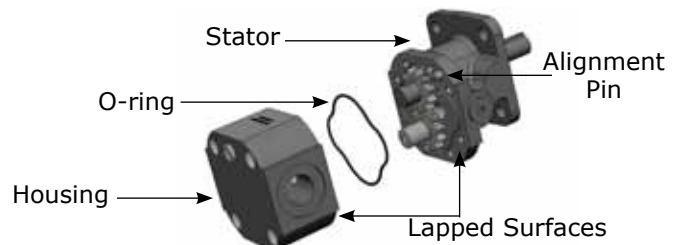
11. Install a retaining ring in the bore of the shaft seal.



12. Place the key in the drive shaft and slide the drive gear on to the shaft. Install the idler gear and shaft.



13. Carefully place o-ring onto lapped surface of housing or stator.

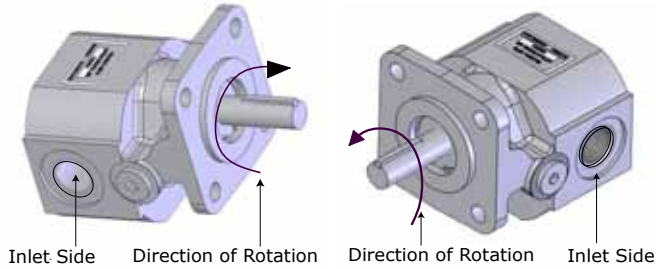


14. Place the housing on the stator using the alignment pins for alignment. Insert the four socket cap screws into the housing and tighten to 50 ft. lbs. (68 N-m) in a crisscross pattern. If the screws are too tight the gears will bind, and if the screws are too loose oil will leak around the gears.

15. Attach the motor to the cover and reassemble the vibrator.

Bidirectional Motors

The motors of the Design Series vibrators are bidirectional; therefore the eccentric weight rotation can be reversed by changing the hose connections. (Change the inlet to the outlet and the outlet to the inlet.)



Pipes & Hose Sizes

Use an inlet hose that is the same size or larger in diameter as the inlet port of the vibrator. Use a short, flexible hose between the vibrator and the main hydraulic line if the main line is metal to avoid strain on the vibrator motor ports. Allow a loose bend of 9" to 16" (23 cm to 41 cm) to be formed by the hose to prevent cracking from vibration. Use a return hose at least one size larger than the inlet hose. Using a larger hose will minimize back pressure which can blow the shaft seal. In applications where the vibrator hoses are frequently disconnected, use in-line filters to keep contaminants out of the vibrators.

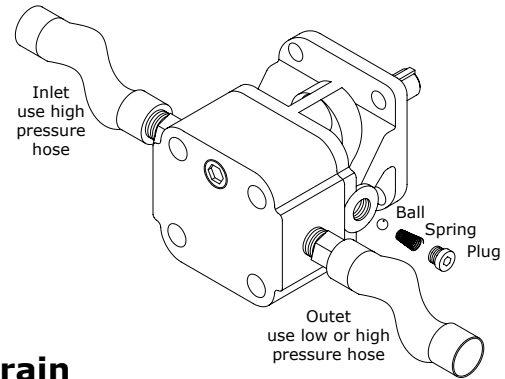
Important!

Overrunning Condition

The heavy eccentric weights act like a fly wheel that continue rotating the motor shaft when the hydraulic flow is shut off. It is important to allow the vibrator to wind down slowly to prevent damage to the motor and to prolong the life of the vibrator. This can be done by removing the ball and spring (check valve) on the return side (outlet) of the motor. For clockwise rotation remove the plug from the return side of the motor as shown in the diagram below using a 3/16" allen wrench. Remove the ball and spring and replace the plug. For counter clockwise rotation remove the ball and spring from the opposite side and switch the inlet and return hoses. **A check valve must always be installed on the inlet side of the motor.**

When the outlet check valve is removed, the motor is not bi-rotational. If the vibrator must be run in the opposite direction, the inlet check valve (ball & spring) must be moved to the opposite

side, so that, there is always a check valve on the inlet side.

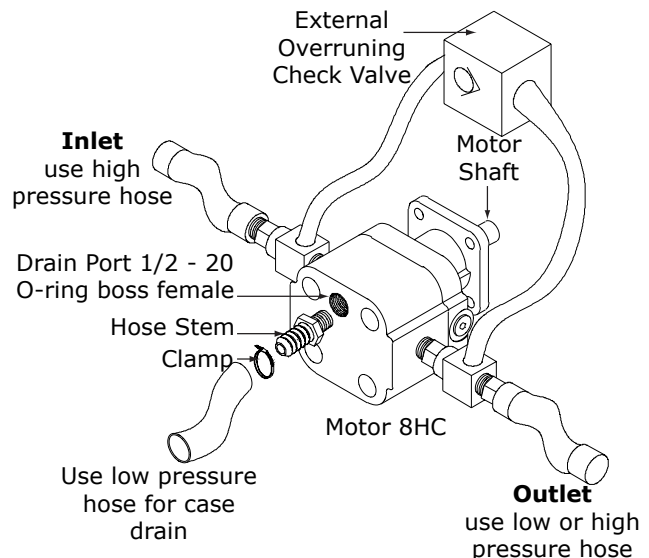


Case Drain

In most applications a case drain is not required, because the case pressure is relieved through the check valve connected to the outlet port. However, the VITON shaft seal in the motor will fail if the case pressure exceeds 400 psi. If the case pressure exceeds 400 psi, the back pressure on the seal will exceed 400 psi and the seal will blow. The seal is rated for a maximum back pressure of 400 psi. Therefore, if the back pressure or pressure spikes at the outlet port exceed 400 psi a case drain must be run back to the tank.

We often find the motor has been given too much flow (GPM), which causes the motor seal to blow. Check the inlet flow and adjust accordingly.

To install case drain, remove the case drain plug and install a hose stem that has 1/2 - 20" threads and an o-ring. Clamp a low pressure hose to the stem and run it directly back to the tank. **Do not remove either of the check valves when a case drain is installed.** Instead install an external overrunning check valve to allow the vibrator to wind down slowly.



Performance Charts - Vibrator and Hydraulic Motor

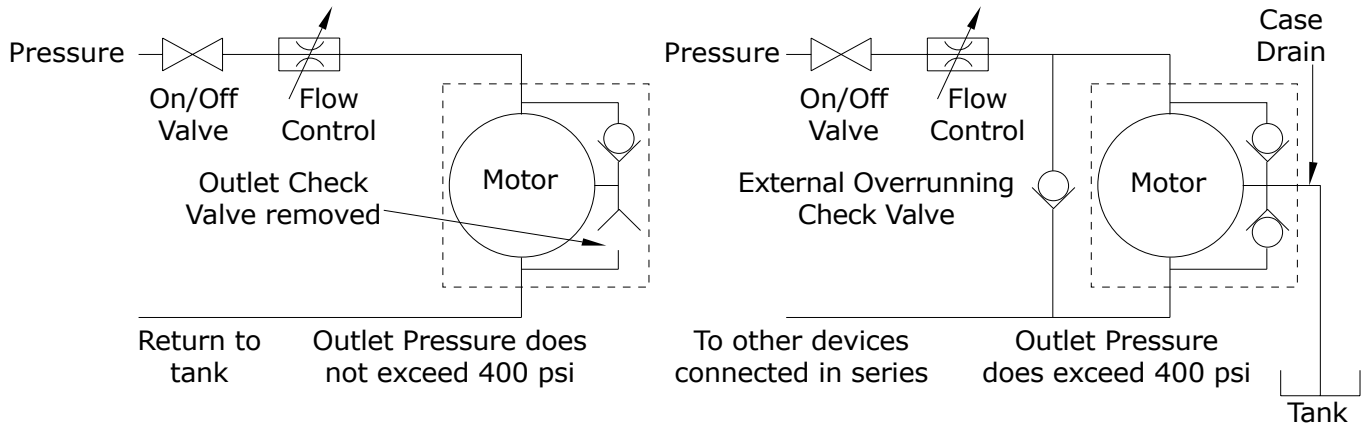
D7 & CC7 Hydraulic Design Series Vibrator Performance Data

Model	Unbalance lb-in	Start PSI	Speed RPM	Flow GPM	Force Pounds	Speed	Flow GPM	Force Pounds	Speed	Flow GPM	Force Pounds
	Unbalance kG-MM	Start BAR		LPM	KN		LPM	KN		LPM	KN
D7-12-8HC CC7-12-8HC	12.0	120	3,000	9.1	3,070	4,000	12.1	5,450	5,000	15.1	8,520
	1383	8.3		34	13.7		46	24.2		57	37.9
D7-18-8HC CC7-18-8HC	18.0	180	3,000	9.1	4,600	4,000	12.1	8,180	5,000	15.1	12,780
	2074	12.4		34	20.5		46	36.4		57	56.8
D7-25-8HC CC7-25-8HC	25.0	250	3,000	9.1	6,390	4,000	12.1	11,360	5,000	15.1	17,750
	2880	17.2		34	28.4		46	50.5		57	79.0
D7-50-8HC CC7-50-8HC	50.0	490	3,000	9.1	12,780	4,000	12.1	22,720	5,000	15.1	35,500
	5761	33.8		34	56.8		46	101.1		57	157.9

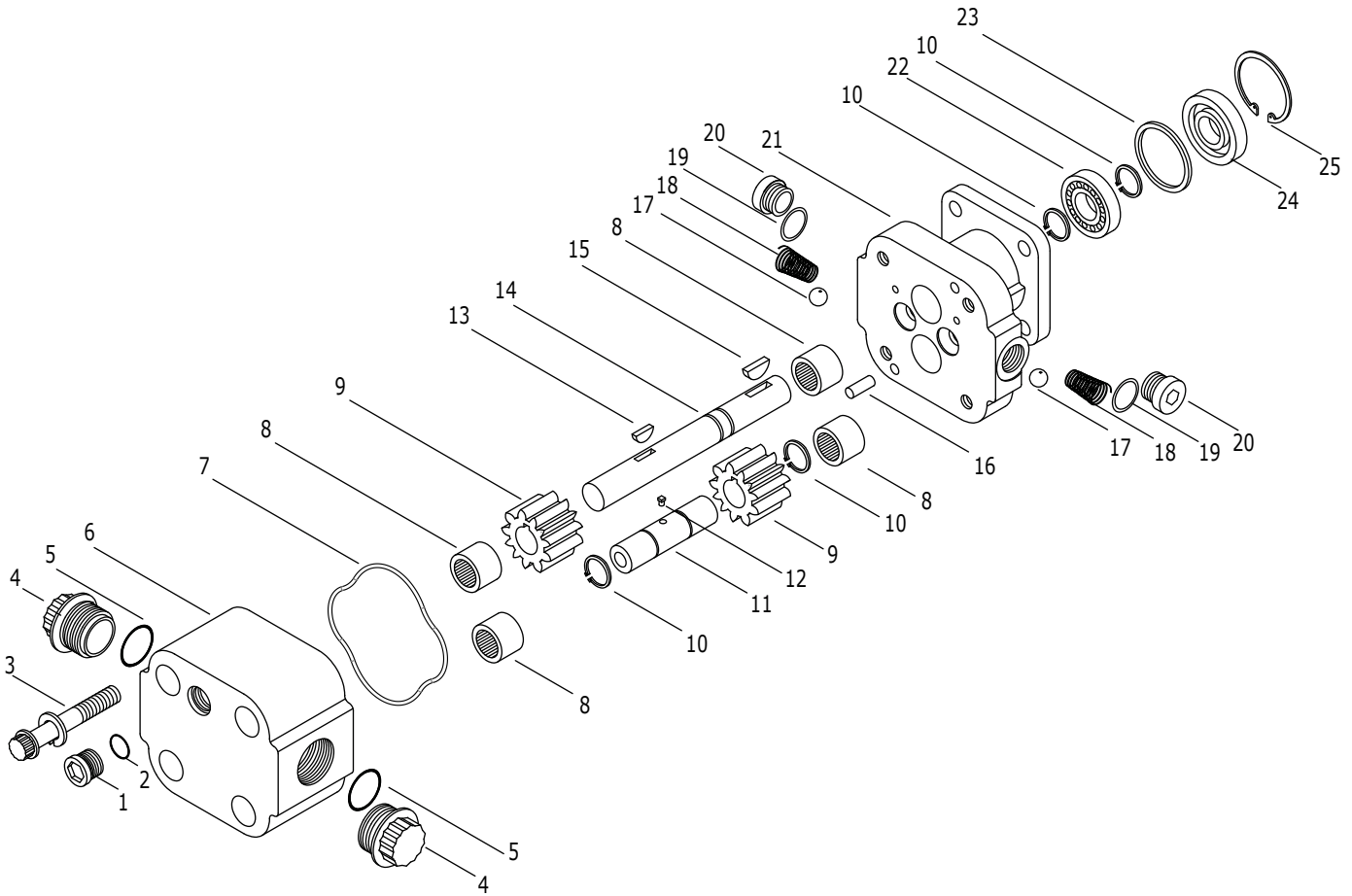
Hydraulic Motor Performance Data - 8HC

Port Size Inlet and Outlet	Minimum Hose Size	Displacement Per Revolution	Maximum Speed	Flow Rate at Maximum Speed	Maximum Continuous Pressure	Maximum Intermittent Pressure	Maximum Back Pressure
3/4" - 14 SAE	3/4" I.D.	.698 cu. in.	5,000	15.1 GPM	2000 psi	3000 psi	400 psi
		11.4 cc.		69 LPM	138 bar	207 bar	27 bar

Plumbing Diagram



8HC Hydraulic Motor Parts Explosion



Parts List for 8HC Hydraulic Motor (pn 251082)

#	Description	Part #		Description	Part #	Qty	
1	Steel Plug Hex 1/2 - 20"	N/A	1	14	Drive Shaft	N/A	1
2	O-Ring	N/A	1	15	Key - 505 Woodruff	N/A	1
3	Screw 3/8 - 16 x 2 1/2"	N/A	4	16	Pin, Shear	N/A	2
4	Plug, Plastic 7/8 - 14" SAE	N/A	2	17	Ball, .312 Diameter Steel	N/A	2
5	O-Ring	N/A	2	18	Spring	N/A	2
6	Gear Housing	N/A	1	19	Copper Gasket	N/A	2
7	O-Ring	K1	1	20	Cap	N/A	2
8	Bearing, Needle	K1	4	21	Stator	254088	1
9	Gear	N/A	2	22	Ball Bearing	K1	1
10	Retaining Ring, External	N/A	4	23	Spacer	N/A	1
11	Idler Shaft	N/A	1	24	Oil Seal	K1 or 254080	1
12	Drive Pin	N/A	1	25	Retaining Ring, Internal	347137	1
13	Key - 404 Woodruff	N/A	1	K1	Repair Kit	251180	1