

MOTORS

Repair Instructions

D9 800 Series Orbital Motors



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Chapter 1

D9 800 Series Diagram

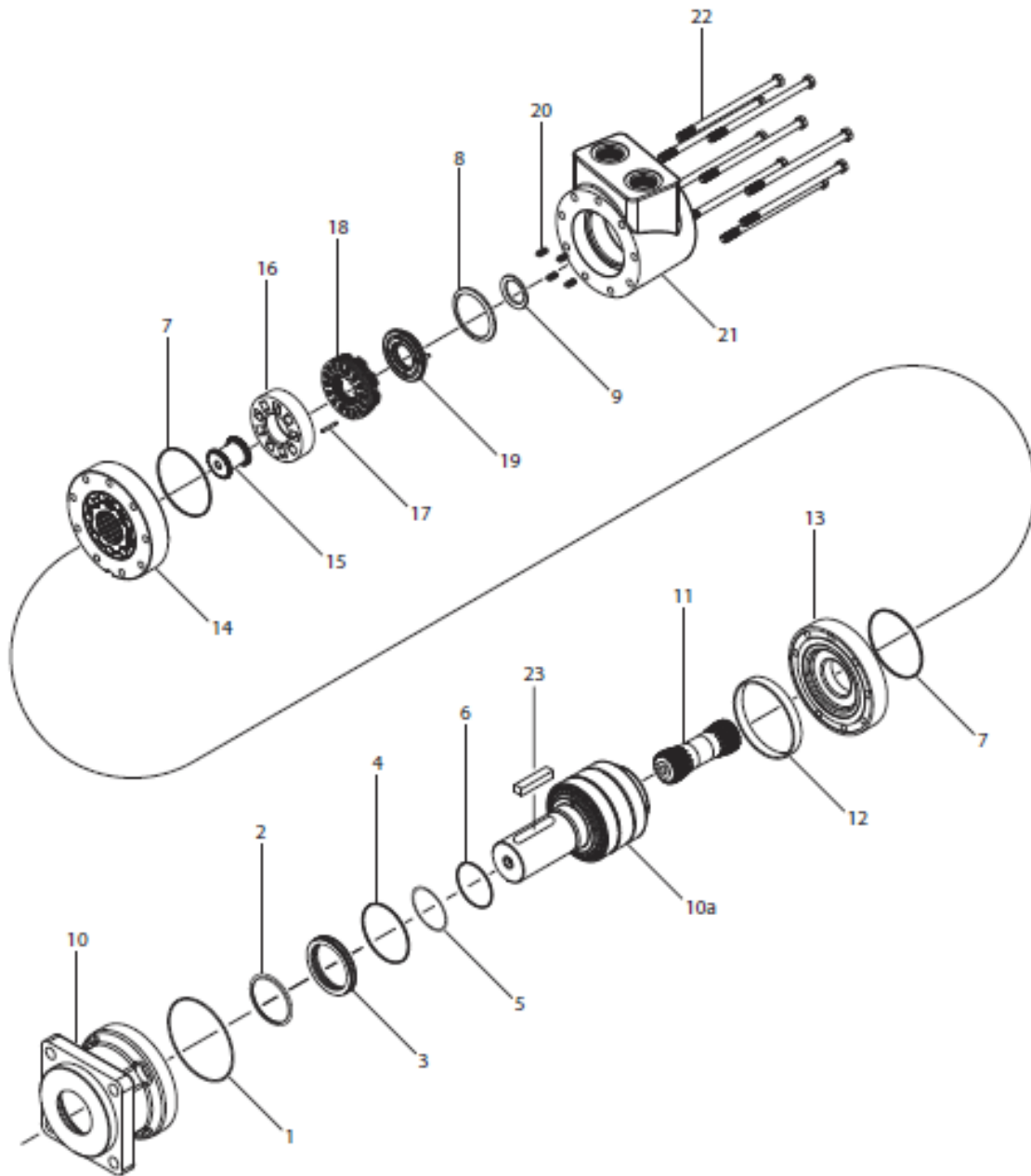


Figure 1: D9 800 & 801 Exploded view

| Description | Item Number |
|----------------------------------|-------------|
| Housing seal | 1 |
| Dust seal | 2 |
| Seal carrier insert | 3 |
| O-ring seal | 4 |
| Backup shim | 5 |
| Quad seal | 6 |
| Body seal | 7 |
| Large piston seal | 8 |
| Small piston seal | 9 |
| Housing/shaft assembly (housing) | 10 |
| Housing/shaft assembly (shaft) | 10a |
| Drive link | 11 |
| Bearing spacer | 12 |
| Wear plate | 13 |
| Rotor Assembly | 14 |
| Driver | 15 |
| Manifold | 16 |
| Pin | 17 |
| Commutator | 18 |
| Piston | 19 |
| Piston springs | 20 |
| End cover | 21 |
| Assembly bolt | 22 |
| Shaft key | 23 |

Table 1: D9 800 & 801 Components

Chapter 2

D9 800 Series Service Instructions

D9 800 Series Seal Kit Installation

1. To aid in reassembly of the motor, make a “V” shaped set of lines from the endcover to the housing using either paint or a marker. With the shaft facing down, secure the motor in a vise by clamping on the housing flange (10).
2. Loosen and remove nine bolts (22) holding the motor assembly together. Place an 11/64 x 2 ½” pin through the endcover (21) drain port and into the manifold. Remove the endcover assembly.

Note: If the pin is not used, the internal components of the endcover will fall out.

3. Flip the endcover assembly over. Remove the 11/64 x 2 ½” pin from the endcover (21) drain port. Remove the manifold (16), pin (17), commutator (18), piston (19) and springs (20) from the endcover. Place the piston (19) on a flat clean surface with piston seals (8 & 9) facing up. Remove the piston seals from the piston (19) and discard.
4. Remove driver (15), rotor set (14) and wear plate (13) from the motor. Remove all seals from components and discard. Remove seal (1) from housing and discard. Remove drive link (11) and spacer ring (12) from housing.

Note: Do not allow rolls to drop from rotor assembly when removing rotor assembly from motor.

5. To aid in the reassembly of the shaft sub-assembly make a “V” shaped set of line across the rear of the housing and the bearing locking nut on the shaft assembly using either paint or a marker. Remove the housing (10) from the vise and flip over.
6. Remove any shaft hardware, using a press, press the shaft assembly (10a) out of the rear of the housing (10). Remove the seal carrier insert (3). Remove the dust seal (2), o-ring seal (4), backup shim (5), and quad seal (6) and discard all seals.

Note: At this point all parts should be cleaned in an oil-based solvent and dried using compressed air (for safety, observe OSHA safety guidelines). All new seals should be lightly coated in clean oil prior to installation.

7. Place new dust seal (2) into seal carrier insert (3) with the lip facing up. Place new o-ring seal (4) into outer groove of the seal carrier insert (3). Insert back up shim (5) then quad seal (6) into seal carrier insert (3). With dust seal (2) facing down, press seal carrier insert into housing bottom bore. Press the shaft assembly (10a) into housing (10) lining up the “V” set of lines on the bottom of the housing and shaft assembly.
8. Insert drive link (11) into shaft assembly (10a) and place bearing spacer (12) into housing (10).
Note: If a "V" shaped set of lines was drawn on the motor prior to disassembly, use them as a guide for reassembly to insure proper positioning of components.

9. Install the housing seal (1) in the groove on the housing (10).
10. Install the wear plate (13) with the counter bore towards the housing (10).
11. Place body seals (7) in grooves on both sides of rotor set (14). Place rotor set (14) onto wear plate (13) with I.D. spline chamfer facing wear plate. See below for rotor assembly timing.

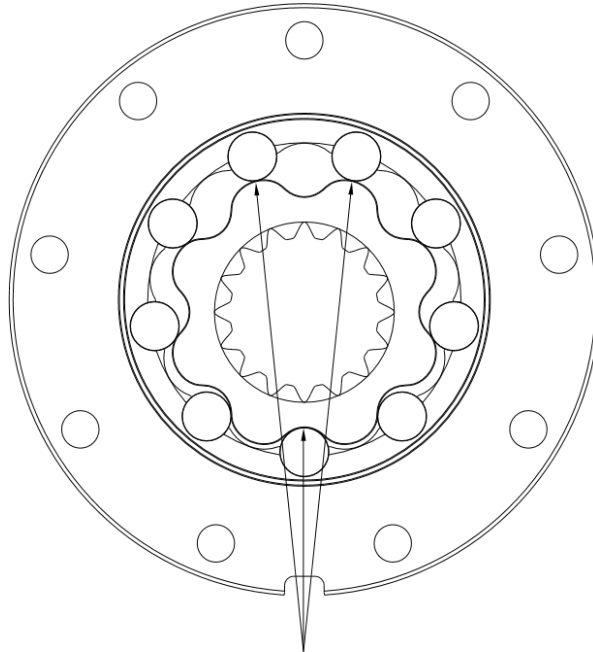


Figure 2: D9 Rotor Assembly Timing Position

12. Place the endcover (21) on a flat clean surface with cavity facing up. Place four springs (20) into holes in the bottom of the cavity.
13. Install the O.D. and I.D. piston seals (8 & 9) onto the piston (19). The seals are cone shaped. The I.D. of the outer seal and the O.D. of the inner seal should be installed towards the piston. The opposite edges should be coming out away from the piston. See below for proper installation of the piston seals.

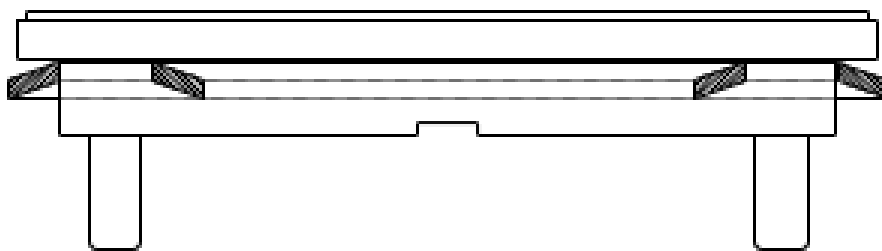


Figure 3: D9 Piston Seal Orientation

14. Install the piston (19) into the endcover (21). The two alignment pins in the piston (19) should be inserted into the two holes in the bottom of the endcover (21).
15. Install the commutator (18) into the endcover (21) with the I.D. splines facing up. The commutator must be timed correctly. There are two notches on the O.D. of the commutator (18). One of the notches is aligned with a pin closer to the I.D. of the commutator. This notch is to be aligned with the small, drilled hole on the I.D. land of the endcover (21). See below for timing the commutator correctly.

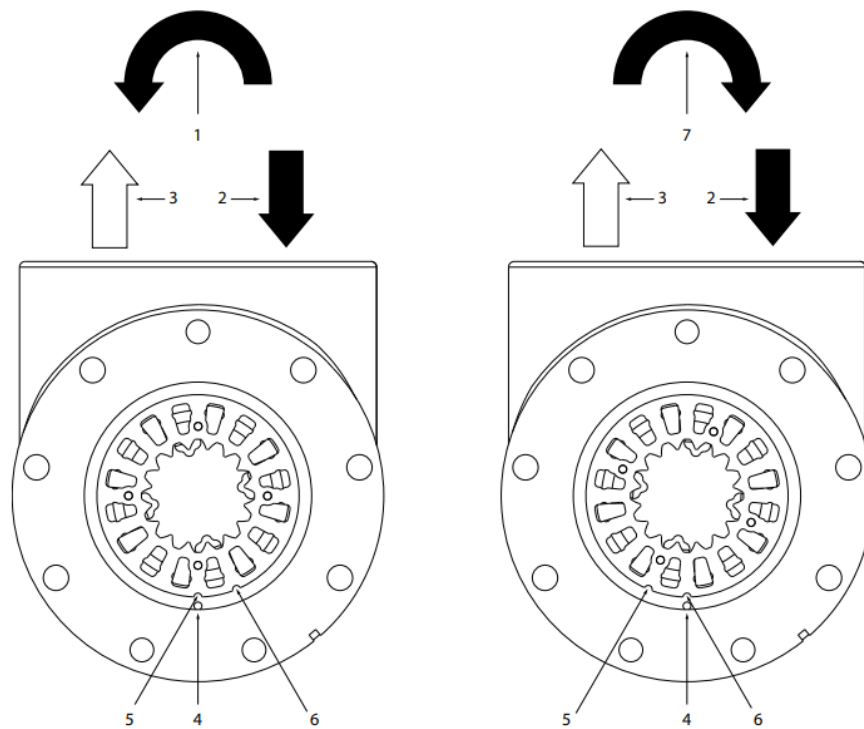



Figure 4: Commutator Timing

1. D9 800 series motor rotation as viewed from shaft end
 2. Inlet pressure
 3. Return line
 4. Pin
 5. Commutator notch 1
 6. Commutator notch 2
 7. D9 801 series motor rotation as viewed from shaft end
16. Install the manifold dowel pin (17) into the end cover. Install the manifold (16) into the end cover with the large openings facing up and the slot on the O.D. aligned with the dowel pin (17).
 17. Install a 11/64 x 2 1/2" pin (or similar) into the drain port of the end cover (21) and into the manifold (16)

Note: If the pin is not used, the internal components of the end cover will fall out. The end cover contents may need to be compressed to be able to insert the pin (or similar) through the drain port and into the manifold.
 18. Install the driver (15) into the rotor set (14). Place the end cover (21) onto the rotor set (14) aligning the driver (15) into the commutator (18).

 **Caution:** Make sure to visually align bolt holes before the driver is in the commutator. If the commutator spins during installation, the motor will run in the reverse direction.
 19. Install nine assembly bolts (22) into end cover and pre-torque to 13.6 Nm [10 ft. lb.]. Final torque all bolts to 69.8 ± 7.5 Nm [51.5 ± 5.5 ft. lb.].

Chapter 3

D9 800 Series Parts Listing

D9 800 Series Replacement Kits

Refer to *D9 Exploded View* for item numbers.

| Description | Exploded View Item Number | Qty. In Kit | Order Number |
|---------------------|---------------------------|-------------|---------------------------------------|
| Housing seal | 1 | 1 | 800888200 (Includes item numbers 1-9) |
| Dust seal | 2 | 1 | |
| Seal carrier insert | 3 | 1 | |
| O-ring seal | 4 | 1 | |
| Backup shim | 5 | 1 | |
| Quad seal | 6 | 1 | |
| Body seal | 7 | 2 | |
| Large piston seal | 8 | 1 | |
| Small piston seal | 9 | 1 | |

Table 2: Seal kit(s)

| Description | Exploded View Item Number | Qty. In Kit | Order Number |
|-----------------------|---------------------------|-------------|--------------|
| Spacer ring | 12 | 1 | 800018012 |
| Wear plate | 13 | 1 | 800012000 |
| Driver | 15 | 1 | 800014000 |
| Manifold | 16 | 1 | 800015000 |
| Manifold pin | 17 | 1 | 800018009 |
| Commutator | 18 | 1 | 800012001 |
| Endcover piston | 19 | 1 | 800018004 |
| Piston spring | 20 | 4 | 800018007 |
| 2000 PSI relief valve | Not shown | 1 | 800018039 |
| 2500 PSI relief valve | Not shown | 1 | 800018047 |
| 3000 PSI relief valve | Not shown | 1 | 800018028 |

Table 3: Miscellaneous Kit(s)

| Exploded View Item Number | 14 | 14 | 11 | 22 |
|---------------------------|--------------------|--------------------|----------------|------------------|
| Displacement | Standard Rotor Kit | Freeturn Rotor Kit | Drive Link Kit | Bolt Set Kit (7) |
| 260 | 800000260 | 800001260 | 800014013 | 800885260 |
| 300 | 800000300 | 800001300 | 800014014 | 800885300 |
| 375 | 800000375 | 800001375 | 800014015 | 800885375 |
| 450 | 800000450 | 800001450 | 800014016 | 800885450 |
| 525 | 800000525 | 800001525 | 800014017 | 800885525 |
| 625 | 800000625 | 800001625 | 800014018 | 800885625 |
| 735 | 800000735 | 800001735 | 800014019 | 800885735 |
| 910 | 800000910 | 800001910 | 800014020 | 800885910 |
| 1K0 | 8000001K0 | 8000011K0 | 800014021 | 8008851K0 |

Table 4: Rotorset, Drive link and Bolt Kit(s)

| Exploded View Item Number | 10/10a | 18 | Not Shown | Not Shown | Not Shown |
|---------------------------|-------------------|-----------|-----------|-----------|------------|
| Description | Housing/Shaft Kit | Key Kit | Nut Kit | Bolt Kit | Washer Kit |
| C8 Housing/40 Shaft | 800130101 | 700669105 | N/A | 700669305 | 700669306 |
| C8 Housing/33 Shaft | 800130102 | N/A | N/A | N/A | N/A |
| C8 Housing/41 Shaft | 800130103 | 700669102 | N/A | N/A | N/A |
| C8 Housing/42 Shaft | 800130105 | N/A | N/A | N/A | N/A |
| C8 Housing/36 Shaft | 800130106 | 700669104 | N/A | N/A | N/A |
| C8 Housing/30 Shaft | 800130107 | 50072459 | N/A | N/A | N/A |
| C8 Housing/23 Shaft | 800130109 | N/A | N/A | N/A | N/A |
| C8 Housing/32 Shaft | 800130115 | 700669106 | N/A | N/A | N/A |
| E8 Housing/40 Shaft | 800130401 | 700669105 | N/A | 700669305 | 700669306 |

| | | | | | |
|---------------------|-----------|-----------|-----------|-----------|-----------|
| E8 Housing/33 Shaft | 800130402 | N/A | N/A | N/A | N/A |
| E8 Housing/41 Shaft | 800130403 | 700669102 | N/A | N/A | N/A |
| E8 Housing/42 Shaft | 800130405 | N/A | N/A | N/A | N/A |
| E8 Housing/36 Shaft | 800130406 | 700669104 | N/A | N/A | N/A |
| E8 Housing/30 Shaft | 800130407 | 50072459 | N/A | N/A | N/A |
| E8 Housing/23 Shaft | 800130409 | N/A | N/A | N/A | N/A |
| E8 Housing/32 Shaft | 800130415 | 700669106 | N/A | N/A | N/A |
| D8 Housing/38 Shaft | 800130204 | 800018017 | 800018000 | N/A | N/A |
| D8 Housing/45 Shaft | 800130208 | 700669103 | 700669303 | N/A | N/A |
| D8 Housing/47 Shaft | 800130210 | 700669105 | N/A | 700669305 | 700669306 |
| D8 Housing/68 Shaft | 800130211 | 700669102 | N/A | N/A | N/A |
| D8 Housing/72 Shaft | 800130213 | 800018026 | 800018025 | N/A | N/A |
| D8 Housing/51 Shaft | 800130214 | 700669107 | 700669303 | 700669306 | N/A |
| W8 Housing/38 Shaft | 800130304 | 800018017 | 800018000 | N/A | N/A |
| W8 Housing/45 Shaft | 800130308 | 700669103 | 700669303 | N/A | N/A |
| W8 Housing/47 Shaft | 800130310 | 700669105 | N/A | 700669305 | 700669306 |
| W8 Housing/68 Shaft | 800130311 | 700669102 | N/A | N/A | N/A |
| W8 Housing/72 Shaft | 800130313 | 800018026 | 800018025 | N/A | N/A |
| W8 Housing/51 Shaft | 800130314 | 700669107 | 700669303 | 700669306 | N/A |

Table 4: Housing/Shaft and Related Component Kit(s)

| Description | Standard End cover Kit | Valve Cavity Kit End cover Kit | Internal Drain End cover Kit | Valve Cavity & Internal Drain End cover Kit |
|-------------|------------------------|--------------------------------|------------------------------|---|
| 0 | 800016001 | N/A | N/A | N/A |
| 7 | 800016003 | N/A | N/A | N/A |
| 8 | 800016002 | N/A | N/A | N/A |
| 9 | 800016000 | 800016004 | N/A | N/A |

Table 5: Endcover Kits (Exploded View Item Number 21)



White Drive Motors & Steering, LLC
110 Bill Bryan Blvd, Hopkinsville, Kentucky, 42240

White Drive Motors and Steering sp. z o.o.
ul. Logistyczna 1, Bielany Wrocławskie, 55-040 Kobierzyce

whitedriveproducts.com