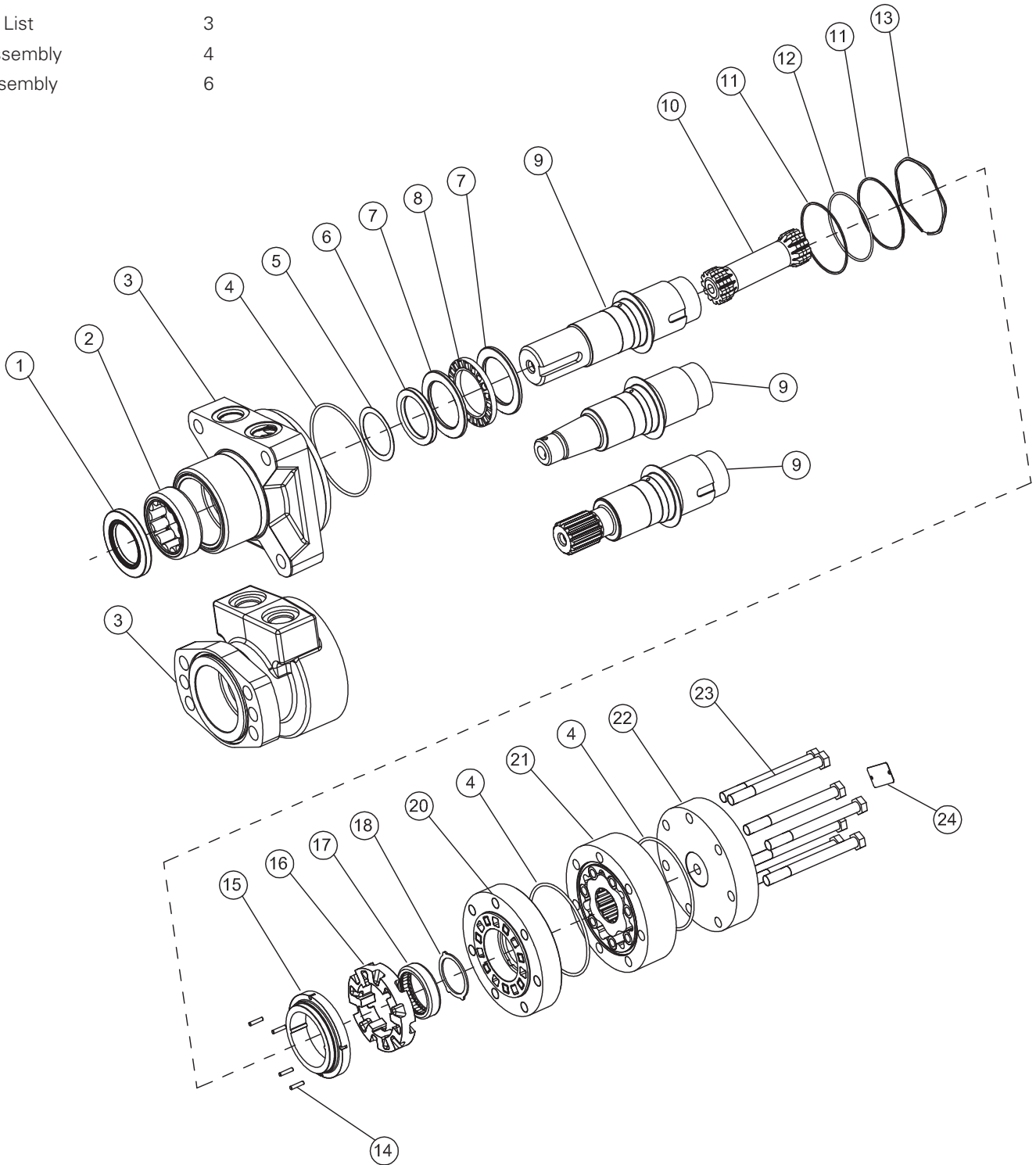


Parts

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Parts List

Ref	Part No.	Qty.	Description
1	5987016-001	1	Grease Seal
2	5986832-001	1	Bearing Shell
3	4999949-001	1	Housing (Wheel Mount, 4 Bolt, 7/8-14 SAE O-Ring Port)
	4999949-002	1	Housing (Wheel Mount, 4 Bolt, G 1/2 (BSP) Port)
	4999949-101	1	Housing (Standard Mount, 6 Bolt, 7/8-14 SAE O-Ring Port)
	4999949-102	1	Housing (Wheel Mount, 6 Bolt, G 1/2 (BSP) Port)
4	5986912-001	3	O-ring
5	6943-000	1	Back-up Washer
6	9057-012	1	Shaft Seal
7	4999849-001	2	Bearing Race
8	5986825-001	1	Thrust Bearing
9	4999967-001	1	Output Shaft (1-1/2 inch straight)
	4999967-002	1	Output Shaft (1-1/4 inch Tape)
	4999967-004	1	Output Shaft (1-1/4 inch Splined 14T)
10	—	1	Drive
11	5990003-001	2	Back-up Ring
12	112530-037	1	O-ring
13	5987176-001	1	Valve Spring
14	14416-001	4	Dowel Pin
15	4999900-001	1	Balancing Ring
16	4999904-001	1	Valve
17	5990407-001	1	Bearing
18	4998396-001	1	Thrust Bearing
20	4999898-001	1	Valve Plate
21	—	1	Gerolor Assembly
22	5986586-001	1	End Cap
23	—	7	Hex Head Screw
	14163-001	1	Nut, Slotted (Not Shown)
	14392-006	1	Key (Not Shown)
	14628-012		Slinger Seal
	9900436-000		Seal Kit-Contains Parts Indicated by '+'
	9900437-000		Seal Kit with Seal Guard-Contains Parts Indicated by '='

Tools Required

1. Screw driver
2. 9/16 SocketWrench
3. TorqueWrench
4. Shell Bearing Tool no. 606253
5. Grease Seal Tool no. 606254
6. Main Seal Tool no. 600421-2
7. Press
8. Shaft Bullet no. 606256
9. Loctite 277
10. Inside Bearing Toolno. 606252
11. Hammer
12. Modified Key
13. Modified Cotter Pin Puller

Displacement cm ³ / _r	in ³ / _r	Hex Head Screw	Length		Gerolor	Width		Drive	Length	
			mm	inch		mm	inch		mm	inch
113	6.9	14384-026	88.1	3.47	4999844-001	18.5	0.73	5986952-001	88.9	3.50
146	8.9	14384-026	88.1	3.47	4999844-002	24.1	0.95	5986952-002	94.2	3.71
198	12.1	14384-025	100.8	3.97	4999844-003	32.5	1.28	5986952-003	102.9	4.05
234	14.3	14384-025	100.8	3.97	4999844-004	38.6	1.52	5986952-004	109.0	4.29
252	15.4	14384-001	108.2	4.26	4999844-012	41.4	1.63	5986952-012	112.0	4.41
300	18.3	14384-025	100.8	3.97	4999844-005	38.6	1.52	5986952-005	108.7	4.28
347	21.2	14384-002	113.0	4.45	4999844-006	44.7	1.76	5986952-006	114.8	4.52
395	24.1	14384-002	113.0	4.45	4999844-007	50.8	2.00	5986952-007	121.2	4.77
470	28.7	14384-004	127.3	5.01	4999844-008	60.7	2.39	5986952-008	131.1	5.16
542	33.1	14384-007	138.4	5.45	4999844-009	69.9	2.75	5986952-009	140.5	5.53
649	39.6	14384-009	151.1	5.95	4999844-010	83.6	3.29	5986952-010	154.2	6.07
754	46.0	14384-012	164.6	6.48	4999844-011	99.6	3.92	5986952-011	167.9	6.61

Disassembly

Step 1

Cleanliness is extremely important when repairing hydraulic motors. Work in a clean area. Before disconnecting the hydraulic motor, thoroughly clean the exterior. Remove motor from application and drain the oil from the motor before disassembly.

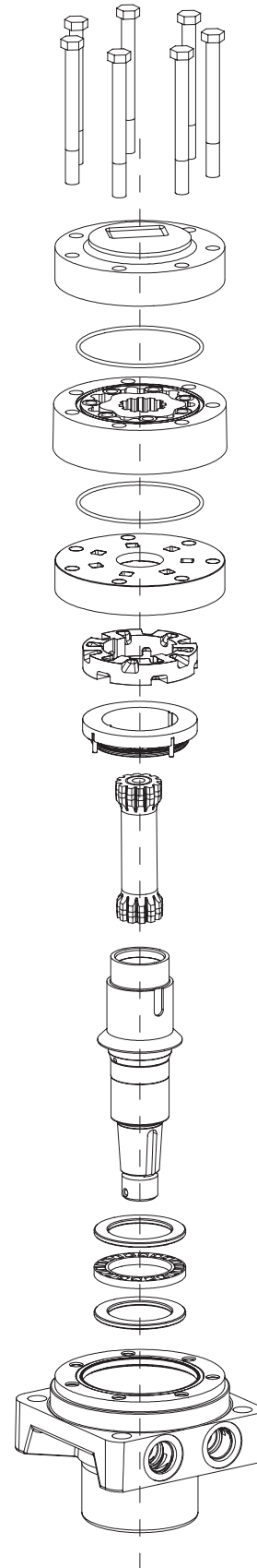
Important Note: All seals should be replaced when the motor is disassembled. Front shell bearing should be replaced only when shaft is to be removed.

Step 2

Remove the seven bolts and disassemble the motor in a vertical position as shown. As the dowel pins are glued in during assembly, they may or may not come loose.

Step 3

Examine condition of bearing in the valve plate. Replace the bearing only if signs of wear and/or contamination are visible. If necessary remove the bearing from valve plate by tapping it with a hammer and a screwdriver.

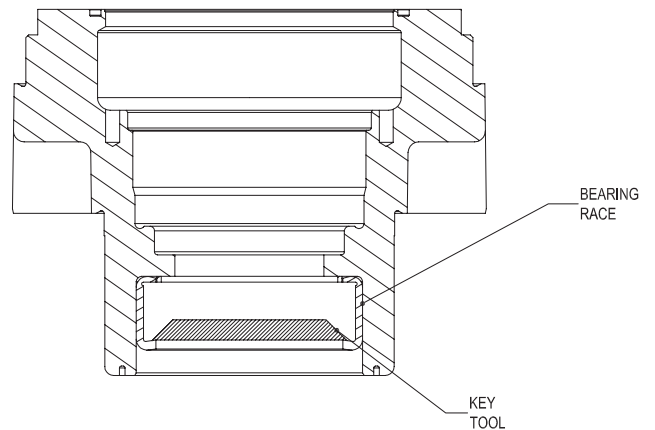


Disassembly

(Conti...)

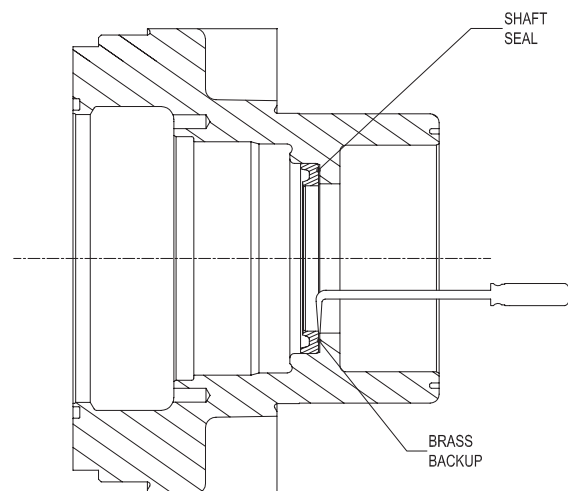
Step 4

Remove grease seal by wedging it out with a screwdriver. Remove the shell bearing by prying the bearing cage open. Remove the rollers and insert key (.25" key stock, 2.2" long, 45° recess) horizontally in between the races. Press the key to remove the bearing from the housing.



Step 5

Insert flat point of a modified cotter pin puller (with tip ground to a flat point) between housing and brass backup. Wiggle up and down to begin to dislodge the seal and work the point deeper in. Work all the way round the seal. Some locations work better than others, some seals come out easier than others.



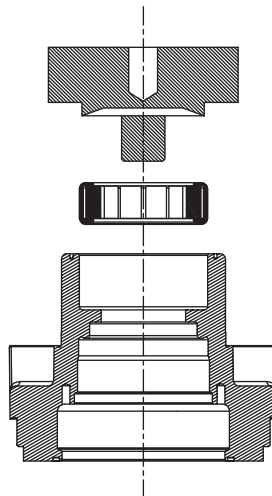
Step 6

Check all mating surfaces. To reduce the chance of leakage, replace any parts that have scratches or burrs. Wash all metal parts in clean solvent. Blow them dry with pressurized air. Do not wipe parts dry with paper towels or cloth, as lint in a hydraulic system will cause damage.

Reassembly

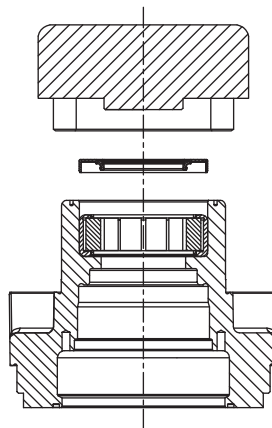
Step 1

Position the housing in the vertical position on a clean smooth surface, use shell bearing tool No. 606253 and press the shell bearing into position in the housing. The lettering on the bearing race denotes the side to be contacted by the tool.



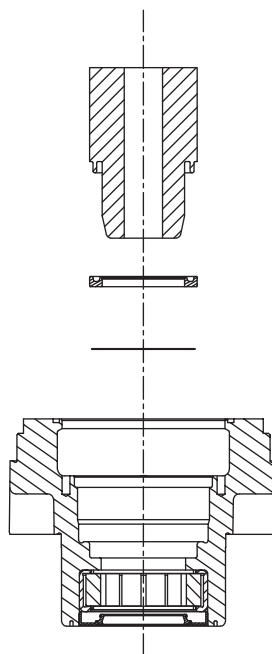
Step 2

Lubricate the grease seal with Mobilux EP 111 and press it into position in the housing with tool No. 606254.



Step 3

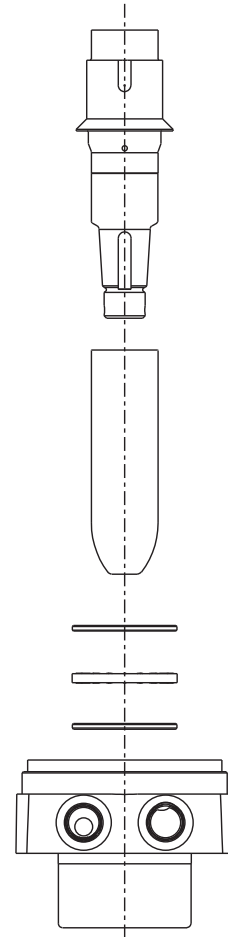
Flip housing. Install back-up washer into interior bore of the housing. Lubricate the shaft seal lip with Mobilux EP 111, place on assembly tool No. 600421-2 and press it into the interior bore of the housing.



Reassembly (Conti...)

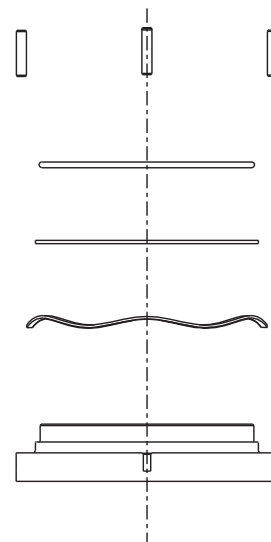
Step 4

Place a bearing race, then a thrust bearing, and then the second bearing race into interior bore of the housing. Place shaft bullet No. 606256 over output end of shaft and install into the bearing housing.



Step 5

Install four dowel pins into the blind holes on the balancing ring using sufficient Loctite 277 to hold the pins. Install one backup ring, then the o-ring onto the balance ring. Install the wave spring with sufficient petroleum jelly to keep it in place.



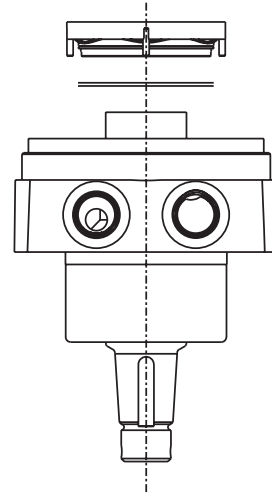
Reassembly

(Conti...)

Step 6

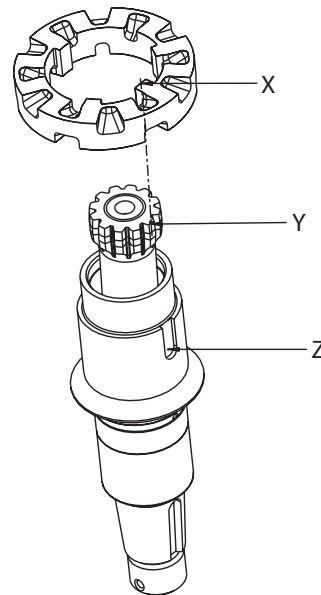
Install the second backup ring into the housing. Invert the balance ring and place into the housing making sure to align the dowel pins with the holes in the housing.

Important Note: Press on the balance ring and verify that it springs back when released. This ensures that the ring has not been pinched.



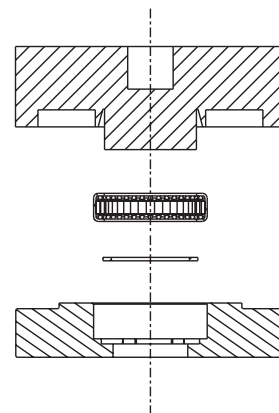
Step 7

Install the valve into the housing with the shaft notch lining up with the longest tang of the valve. Insert button end of the drive into the shaft and mark the spline tooth that lines up with the notch in the shaft. This marked tooth is critical in the timing of the motor.



Step 8

Insert the thrust bushing in the valve plate aligning its tabs. Press bearing into valve plate with Tool No. 606252 with the lettering on the bearing contacting the tool. Place valve plate assembly into the housing aligning the bolt holes.



Reassembly (Conti...)

Step 9

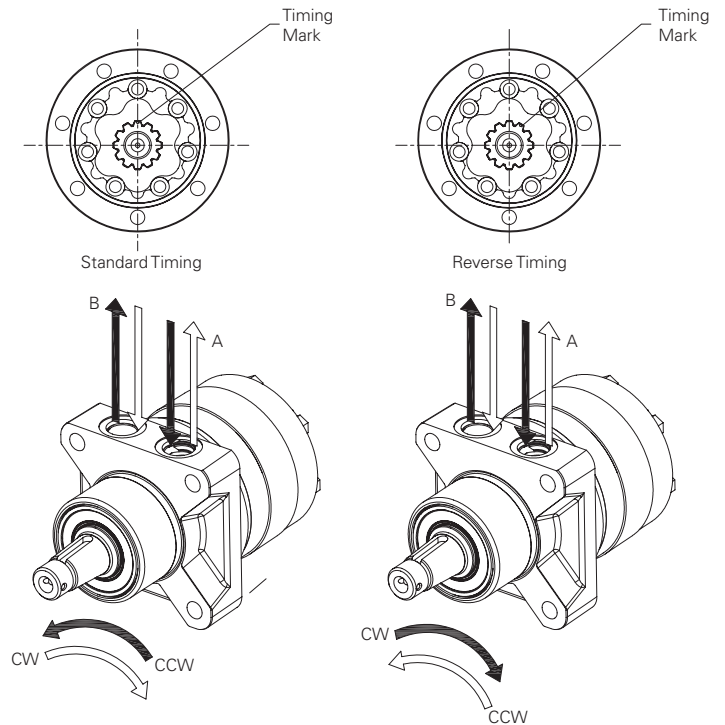
Install two greased seals into the Geroler®. Install the Geroler onto the drive with splined end away from the housing. Align star according to rotation preference as outlined in the timing procedure. Timing procedure is given below.

a. Standard Timing

Align the marked spline of the drive with star tip. This produces CCW rotation when the A port is pressurized.

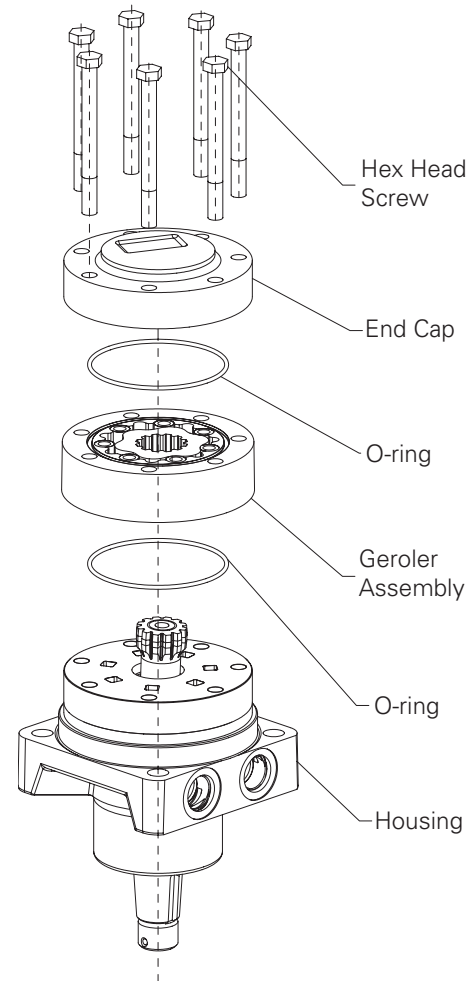
b. Reverse Timing

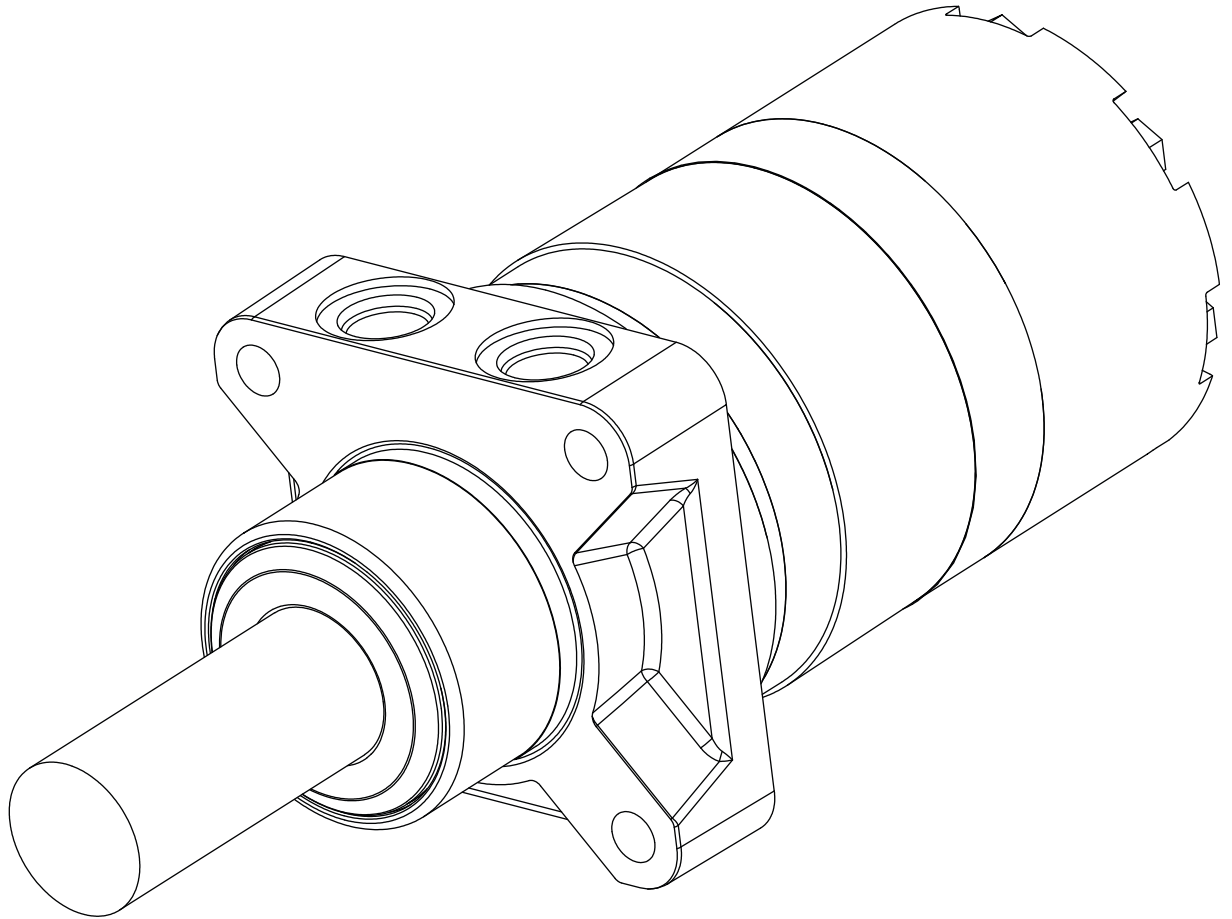
Align the marked spline of the drive with star valley. This produces CW rotation when the A port is pressurized.



Step 10

Place the end cap on the Geroler and align the bolt holes. Lubricate and insert seven bolts and torque them to 500 ± 50 lbf-in (42 ± 4 lbf-ft, 56 ± 5 Nm) in a crisscross pattern.

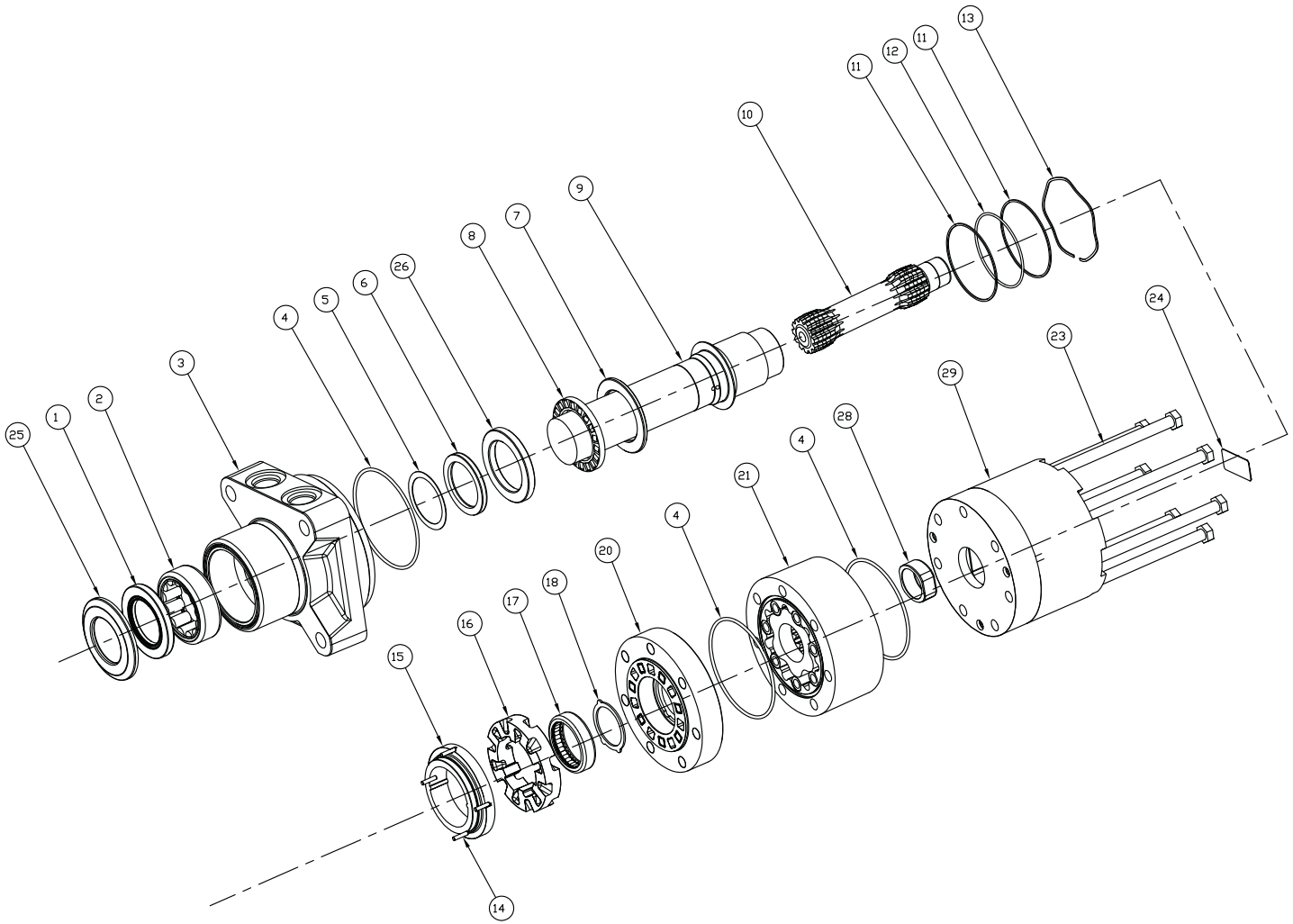




Delta motor with brake parts

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Delta motor with brake parts list

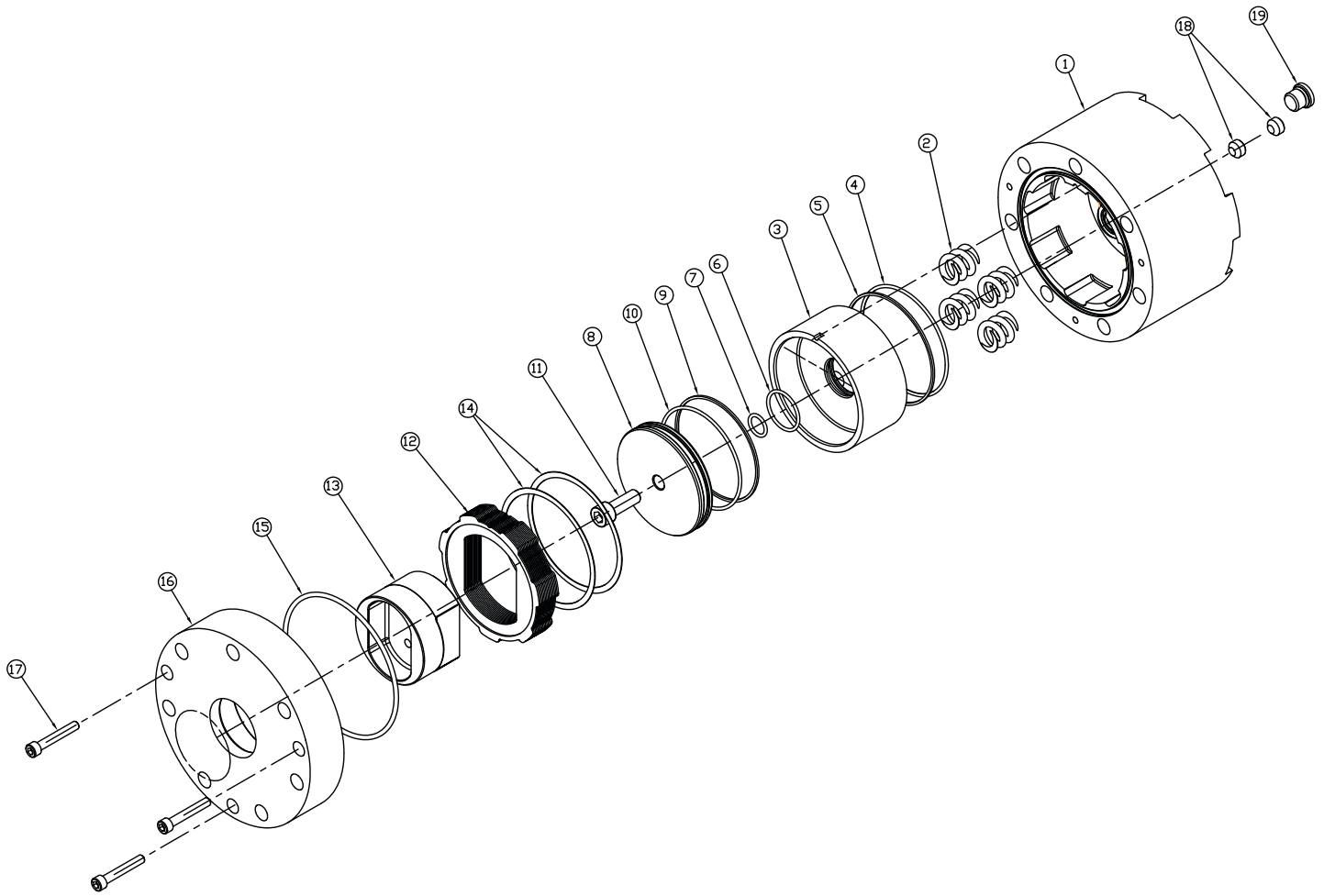
Ref	Part No.	Qty.	Description
=, + 1	5987016-001	1	Grease Seal
=, + 2	5986832-001	1	Bearing Shell
3	4999949-001	1	Housing
=, + 4	5986912-001	3	O-ring
=, + 5	6943-000	1	Back-up Washer
=, + 6	9057-012	1	Shaft Seal
7	4999849-001	2	Bearing Race
8	5986825-001	1	Thrust Bearing
9	4999967-002	1	Output Shaft
10	—	1	Drive
=, + 11	5990003-001	2	Back-up Ring
=, + 12	112530-037	1	O-ring
13	5987176-001	1	Valve Spring
14	14416-001	4	Dowel Pin
15	4999900-001	1	Balancing Ring
16	4999904-001	1	Valve
17	5990407-001	1	Bearing
18	4998396-001	1	Thrust Bearing
20	4999898-001	1	Valve Plate
21	—	1	Gerolor Assembly
23	—	7	Hex Head Screw
26	4999849-002	1	Race bearing
28	6041953-001	1	Drive collar
* 29	6041950-001	1	Brake assembly
-	14163-001	1	Nut, Slotted (Not Shown)
	14392-006	1	Key (Not Shown)
=	14628-012		Slinger Seal
	9901368-000		Seal Kit-Contains Parts Indicated by '+'
—	9900439-000		Seal Kit with Seal Guard-Contains Parts Indicated by '='
	6041950-001		7-pad configuration for 18 to 46 CID motor
* -			For 6.9 to 15 CID 5- pad(6041950-002)

Tools Required

1. Screw driver
2. 9/16 SocketWrench
3. Torque Wrench
4. Shell Bearing Tool no. 606253
5. Grease Seal Tool no. 606254
6. Main Seal Tool no. 600421-2
7. Press
8. Shaft Bullet no. 606256
9. Loctite 277
10. Inside Bearing Tool no. 606252
11. Hammer
12. Modified Key
13. Modified Cotter Pin Puller
14. 2 Washers (Approx thickness .35" and ID .195")
15. 2 bolts(#10-24X1.25)
16. 1/4" Series Hexagon Key
17. 5/32" Series Hexagon Key

Displacement cm ³ / _r	in ³ / _r	Hex Head Screw	Length		Gerolor	Width		Drive	Length	
			mm	inch		mm	inch		mm	inch
113	6.9	14384-008	146.1	5.75	4999844-001	18.5	0.73	6041934-001	114.3	4.50
146	8.9	14384-009	152.4	6.0	4999844-002	24.1	0.95	6041934-002	119.6	4.71
198	12.1	14384-020	162.1	6.38	4999844-003	32.5	1.28	6041934-003	128.3	5.05
234	14.3	14384-012	165.2	6.51	4999844-004	38.6	1.52	6041934-004	134.4	5.29
252	15.4	14384-042	167.6	6.6	4999844-012	41.4	1.63	6041934-012	137.4	5.41
300	18.3	14384-021	174.8	6.88	4999844-005	38.6	1.52	6041934-005	134.1	5.28
347	21.2	14384-013	179.3	7.06	4999844-006	44.7	1.76	6041934-006	140.2	5.52
395	24.1	14384-014	184.7	7.27	4999844-007	50.8	2.00	6041934-007	146.6	5.77
470	28.7	14384-015	193.8	7.63	4999844-008	60.7	2.39	6041934-008	156.5	6.16
542	33.1	14384-038	205.5	8.09	4999844-009	69.9	2.75	6041934-009	165.9	6.53
649	39.6	14384-022	211.1	8.31	4999844-010	83.6	3.29	6041934-010	179.6	7.07
754	46.0	14384-032	228.6	9.0	4999844-011	99.6	3.92	6041934-011	193.3	7.61

Delta brake parts



Delta brake parts list

Sr. No.	Part No.	Qty.	Description
1	6041936-001	1	Brake housing
2	6041937-001	4	Spring, compression
3	6041939-001	1	Piston
4	6043741-001	1	O-ring
5	6041956-001	1	Back-up ring
6	14502-020	1	O-ring
7	14502-013	1	O-ring
8	6041940-001	1	Static plate
9	104170-036	1	Back-up ring
10	14502-036	1	O-ring
11	16147-507	1	Cap screw
12	6041954-XXX	1	Brake pad assembly
13	6041945-001	1	Brake shaft
14	6041944-000	Use as required	Shim
15	5986912-001	1	O-ring
16	6041949-001	1	Wear plate assembly
17	10358	3	Cap screw
18	16041-604	2	Set screw
19	9072-003	1	Plug

Note: * 6041954-001 is for 7-pad configuration form 18 to 46 CID motor
 6041954-002 is for 5-pad configuration form 6.9 to 15 CID motor

Disassembly of delta motor with brake

Step 1

Cleanliness is extremely important. When repairing hydraulic motors. Work in a clean area. Before disconnecting the hydraulic motor, thoroughly clean the exterior. Remove motor from application and drain the oil from the motor before disassembly.

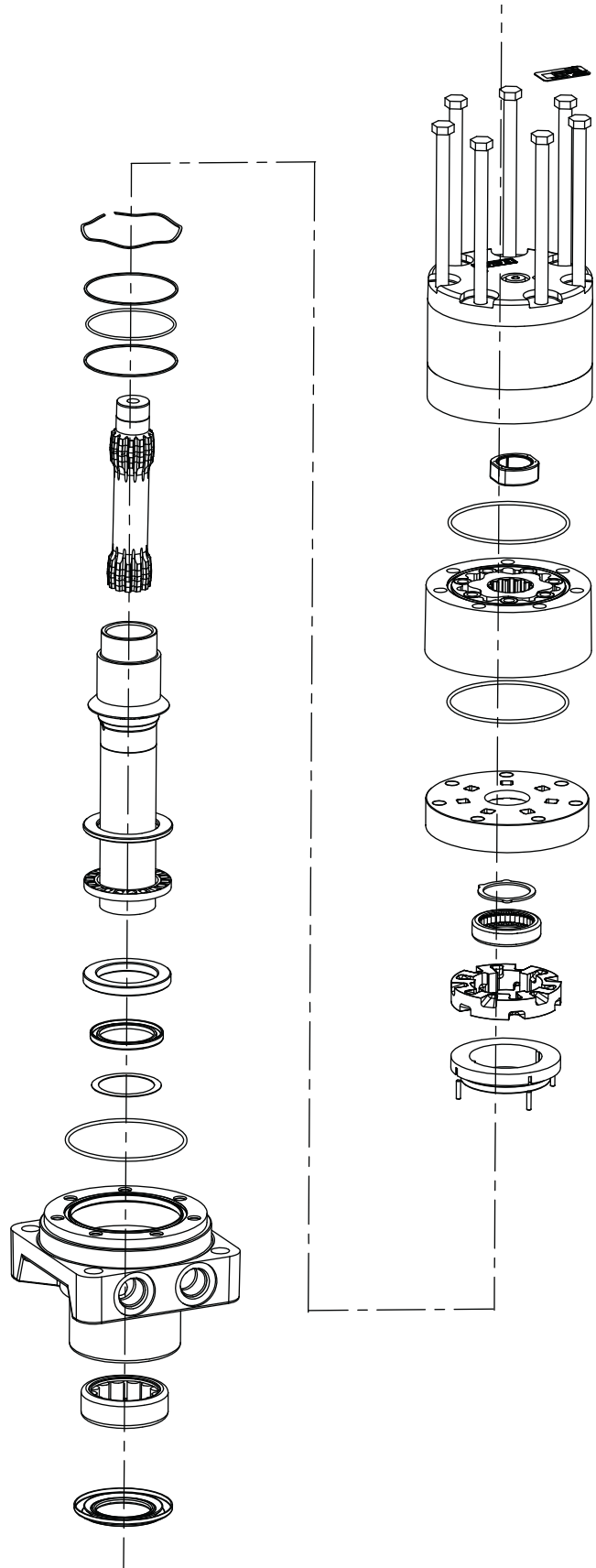
Important Note: All seals should be replaced when the motor is disassembled. Front shell bearing should be replaced only when shaft is to be removed.

Step 2

Remove the seven bolts and disassemble the motor in a vertical position as shown. As the dowel pins are glued in during assembly, they may or may not come loose.

Step 3

Repeat **step-3** to **step-6** from motor section to disassemble the motor.

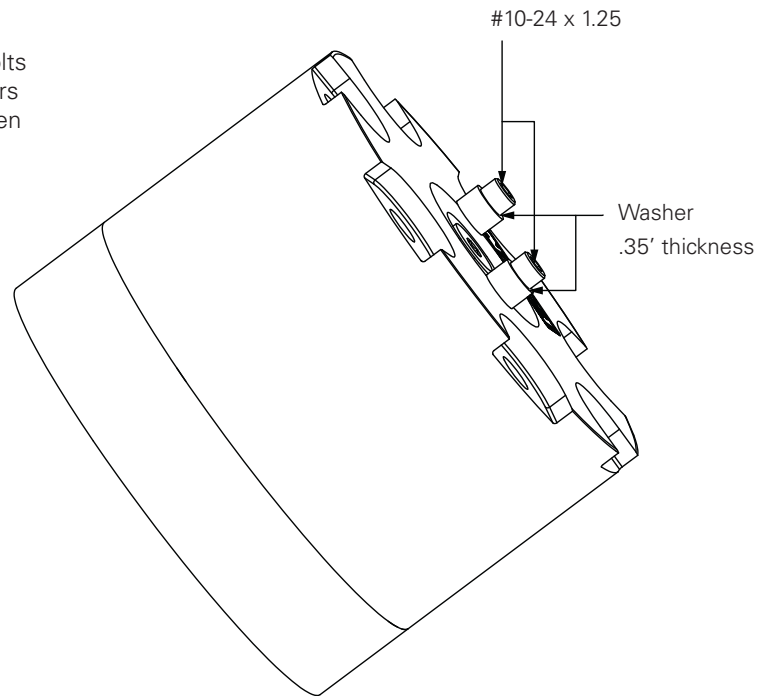


Disassembly of delta brake

Step 1

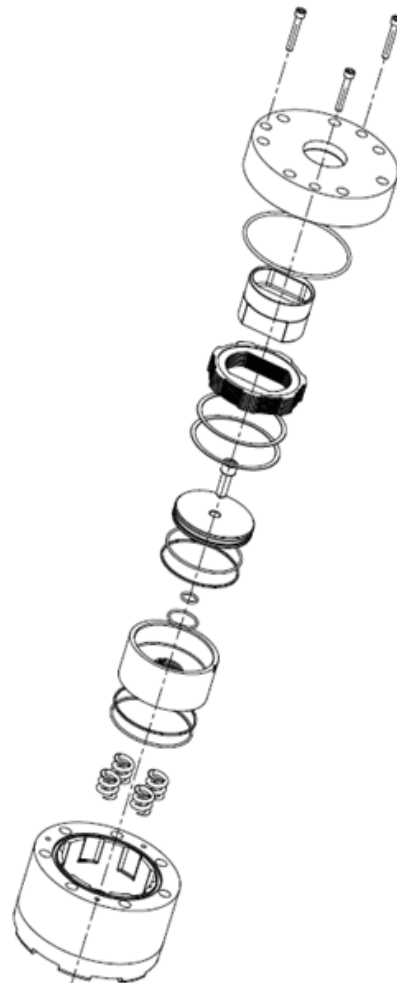
Remove both manual release set screws from brake. Use 2 bolts (10358- #10-24 bolt with 1.25 inch length). With help of washers to manually, release the brake. Use crisscross method to tighten the bolts (not more than 1 rotation at a time).

Important Note: Washer thickness .35 inch



Step 2

Remove three bolts and disassemble the brake in a vertical position as shown. Do not misplace shims.



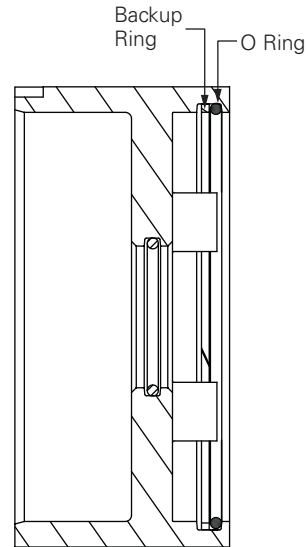
Step 3

Examine condition of bearing in the wear plate. Replace the bearing only if signs of wear and/or contamination are visible. If necessary remove the bearing from wear plate by tapping it with a hammer and a screwdriver.

Reassembly of delta brake

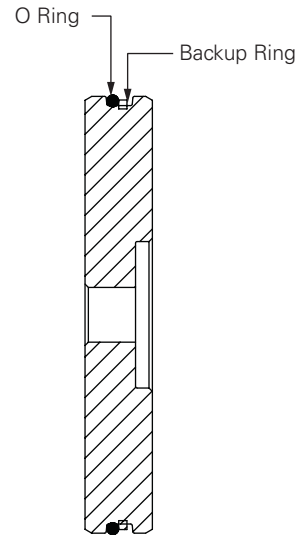
Step 1

Lubricate and install a 2.596" I.D. back-up ring, then 2.489" I.D. O-ring into the piston. Proper care should be taken regarding orientation of back-up ring and O-ring. Lubricate and install other 0.864" I.D. O-ring into piston.



Step 2

Lubricate and install a 2.445" I.D. back-up ring, then 2.364" I.D. O-ring onto the static plate with flat side facing up. Proper care should be taken regarding orientation of back-up ring and O-ring.



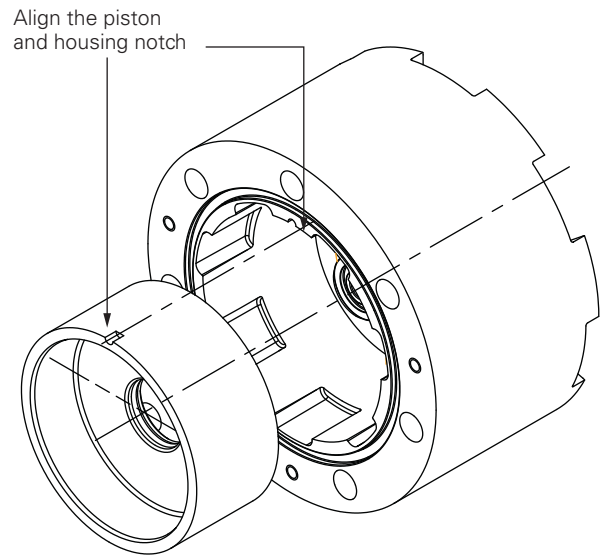
Step 3

Lubricate and install a 0.426" I.D. O-ring into the brake housing inner boss. Install four springs in four blind holes of brake housing.

Reassembly of delta brake

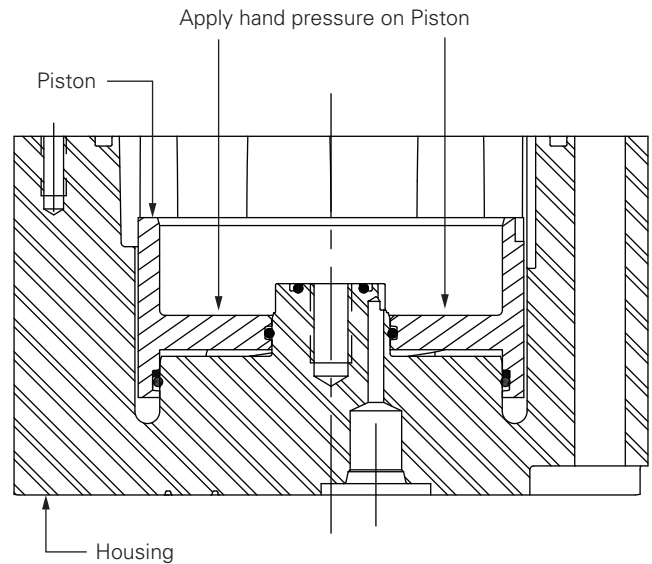
Step 4

Place the brake housing on to the flat plate, Apply PTFE grease on backup ring and O-rings (already assembled with piston). Install piston inside brake housing by aligning the piston OD notch with notch inside brake housing



Step 5

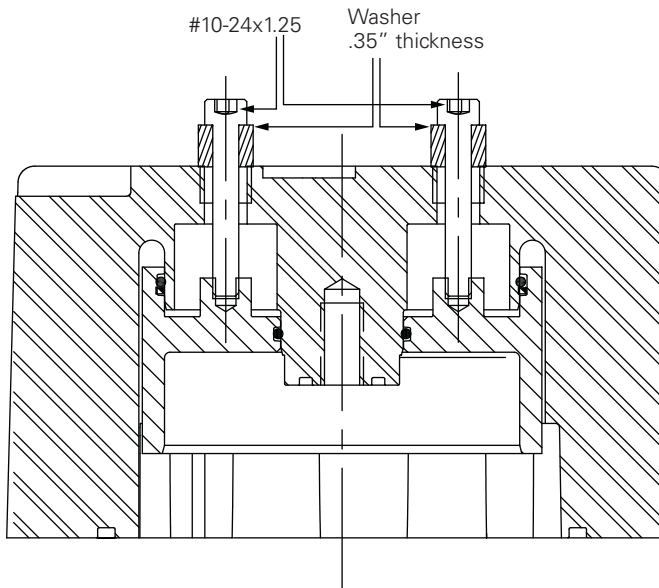
Hand press the piston into housing. Visually inspect seals for damage to the outside lip, proper seating of the seal. If any damage is noted, remove and replace with the proper seal. DO NOT use contaminated grease.



Reassembly of delta brake

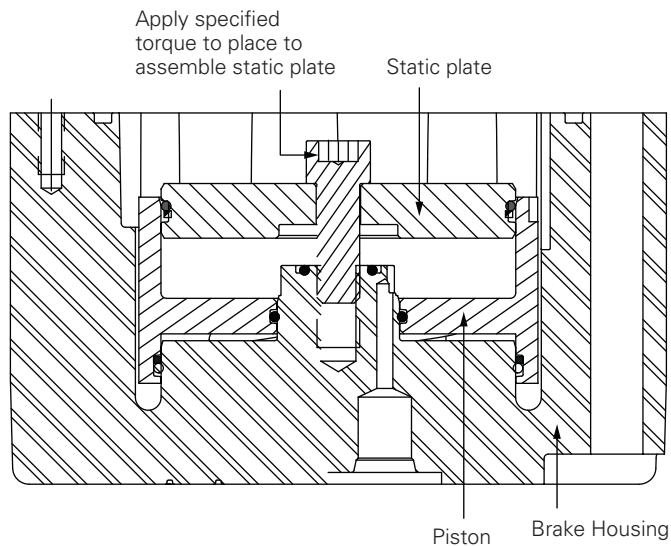
Step 6

Place the brake upside down and pull piston using 2 bolts(#10-24X1.25) with help of washers as shown. Use criss-cross method to tighten the bolts (not more than 1 rotation at a time).



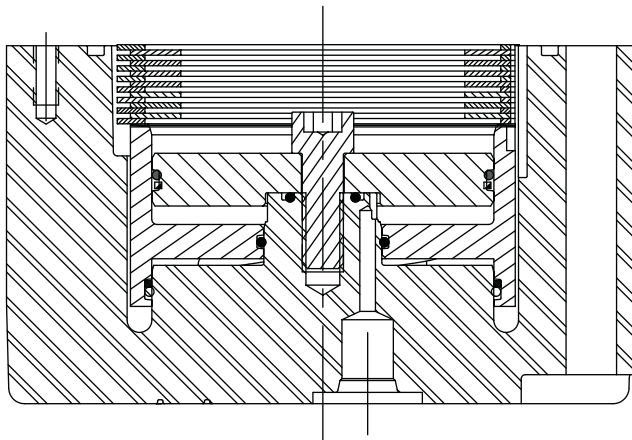
Step 7

Apply PTFE grease on backup ring and O-ring (already assembled with static plate). Place static plate with flat side facing up into piston. Dip the bolt in DTE 26 or equivalent oil and place into static plate center hole which goes into threaded blind hole of brake housing boss. Torque bolt with 264 +/- 24 lbf-in [29 +/- 3 N-m]. Applying torque on bolt will place the static plate at its correct position. Visually inspect seals for damage to the outside lip, proper seating of the seal. If any damage is noted, remove and replace with the proper seal. Do NOT use contaminated grease.



Step 8

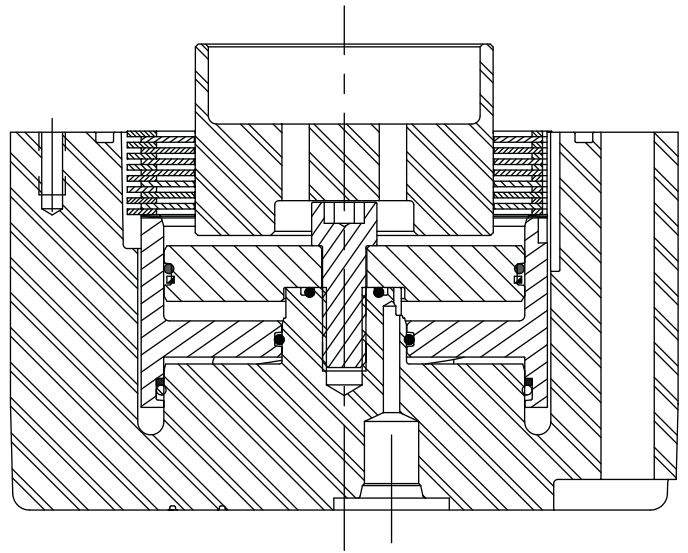
Place shims on top of piston. use same shim. Don't interchange or replace the shim. Align stationary and rotating pads notch with brake housing notch as shown in figure. With the tabs aligned, push the stationary pad down so that it lies flat on selected Shim set. Verify pads are alternatively in the following order, start with stationary pad then rotating pad and so on. Ensure first and last one should be stationary pad.



Reassembly of delta brake

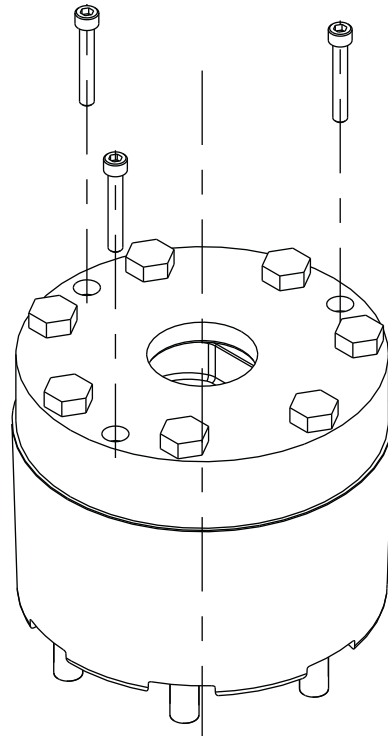
Step 9

Install brake shaft into brake housing such that tang of brake shaft should slide over all rotating pads.



Step 10

Install an 3.346" I.D. O-ring into brake housing. Grease may be used to retain seal. Place the wear plate on brake housing with flat side facing up. The O.D. of the brake shaft should slide into the bushing smoothly. Align three smaller holes of wear plate with brake housing tapped blind holes. Insert 7 main motor bolts and then insert three bolts for brake assembly. Dip brake assembly bolts in DTE 26 or equivalent oil and then torque to 60 +/- 7 lbf-in [6.78 +/- 0.8 N-m].

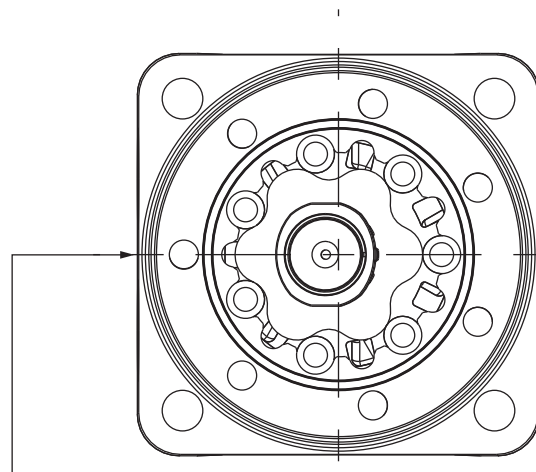


Reassembly of delta motor with brake

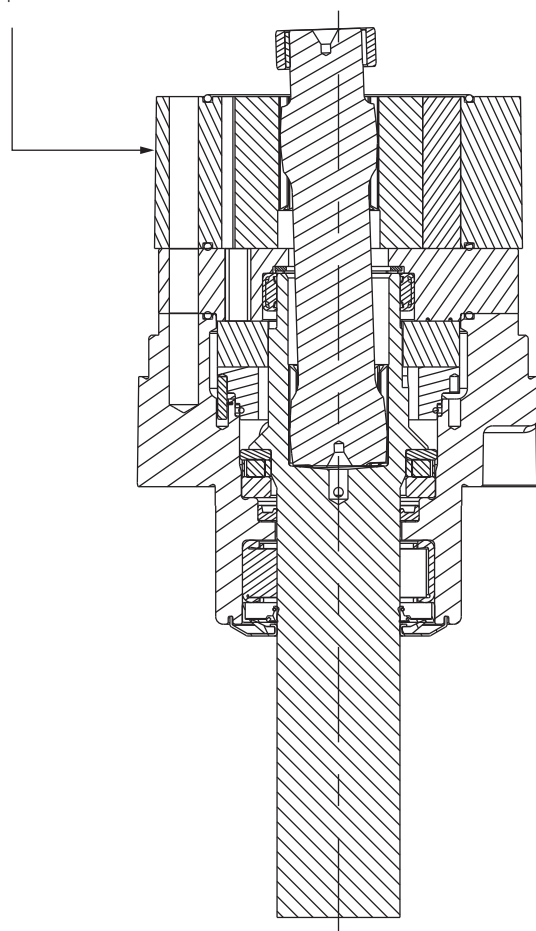
Repeat steps 1-9 from motor assembly section.

Step 10

Lubricate I.D. of drive collar assembly with oil and place over drive extension. The collar should slide over the extension smoothly and turn freely on the extension.



Slide the geroler assembly only in the direction shown below such that drive places itself parallel to motor axis



Step 11

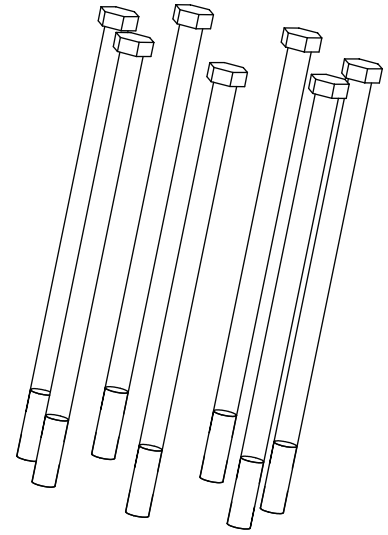
Slide the geroler assembly in the direction as shown such that brake drive places itself parallel to motor axis.

Reassembly of delta motor with brake

Step 12

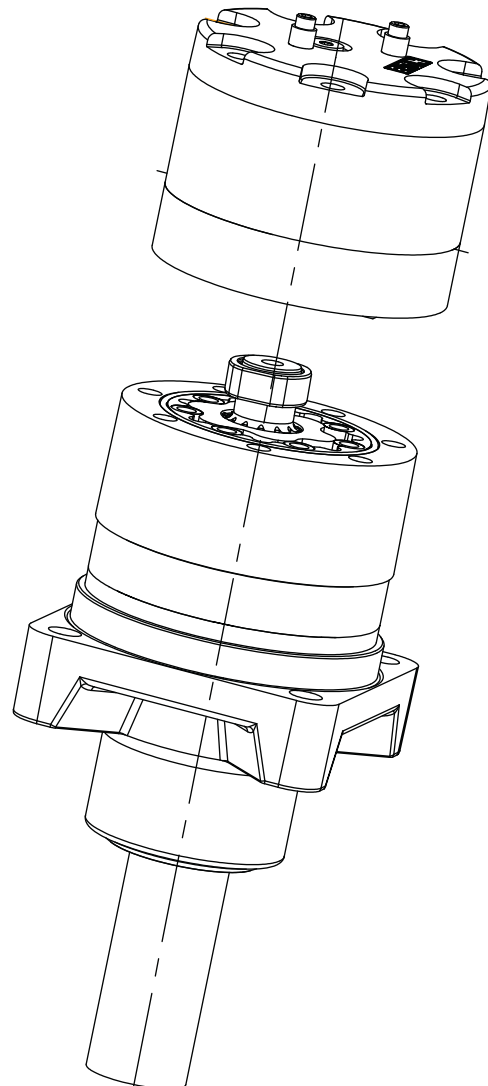
Place the brake assembly on top of the geroler over drive collar, being sure to mate flat sides of the collar with the flat sides of the inner form on the brake shaft and align the bolt holes.

CAUTION: Do not disturb the alignment of the timing mark during installation of brake housing. Lubricate the threads on 7 screws and install. Torque to 500 ± 50 lbf-in using criss-cross pattern or simultaneous method.



Step 13

Remove bolt holes used to manually release the brake. Install 2 grub screws on manual release bolt holes and torque to 120 ± 12 lbf-in [13.6 ± 1.4 N-m].



Eaton
Hydraulics Group USA
14615 Lone Oak Road
Eden Prairie, MN 55344
USA
Tel: 952-937-9800
Fax: 952-294-7722
www.eaton.com/hydraulics

Eaton
Hydraulics Group Europe
Route de la Longeraie 7
1110 Morges
Switzerland
Tel: +41 (0) 21 811 4600
Fax: +41 (0) 21 811 4601

Eaton
Hydraulics Group Asia Pacific
Eaton Building
4th Floor, No. 3 Lane 280 Linhong Rd.
Changning District
Shanghai 200335
China
Tel: (+86 21) 6387 9988
Fax: (+86 21) 6335 3912