

RICE HYDRO, INC.
MANUFACTURER'S OPERATING INSTRUCTIONS FOR THE
HP-Series PNEUMATIC HYDROSTATIC TEST PUMPS

FOR WARRANTY INFORMATION CALL: 1-800-245-4777

NOTE: Prior to testing any high pressure line, please check all connections, hoses, and fittings to assure that they are properly tightened and in good working order. No frays, tears, or cuts.

REQUIRED: Air Compressor capable of 100 PSI, up to 75 CFM.

CONNECTING THE PUMP:

1. Connect the high pressure hose provided, and an inlet water supply hose, unit must be fed with a pressurized water source. Position the Test Pump within 8 feet of the test environment.
2. Connect the air line from the compressor to the inlet fitting on the combination regulator/air filter.

NOTE: AIR FILTER SHOULD BE DRAINED OF ANY WATER OR DIRT PARTICLES BEFORE, AND AFTER USE. Drain valve is located on the bottom of filter body.

3. Check the in-line strainer for dirt and debris clean as necessary.

OPERATING THE PUMP:

1. Turn on the water.
2. Open the bleeder valve on the test line to bleed off excess air. NOTE: this should be done several times during the test cycle.
3. Start the compressor.
4. Once the compressor has reached operating pressure, open the outlet valve on the air compressor slowly, which will allow the air to flow to the Test Pump. Note: this outlet valve, or "shut-off valve" may come standard on your air compressor, however if it does not, a shut-off valve should be installed on your compressor for convenience & safety to the operator, prior to the testing process.
5. Set the inlet air pressure to 100 P.S.I. This will give maximum operating output pressure. To do this, adjust the air regulator, (a black knob located on the top of the inlet air filter assembly on the test pump). Pull up on the black knob and turn clockwise to increase pressure, or counter-clockwise to decrease pressure. Once the inlet air pressure is set, push down on the knob to lock it in place.
6. Start turning regulator clockwise, pressure will begin building as soon as air flows. When desired test pressure has been met, close the outlet needle valve to isolate test environment. To turn off pump while testing, turn regulator counter clockwise and decrease or stop air flow, or disconnect air compressor supply. If a pressure drop is indicated, check the following:

- a. Output hose connection at pump.
- b. Output hose connection at test line.
- c. Leaking test line or air in the test environment.

If the pressure gauge remains constant, turn off compressor and monitor gauge for your prescribed test time. When test is complete, turn off water supply, open the high pressure bleeder valve located beside the outlet port connection on the unit. Bleed off the water pressure. Repeat the above steps for multiple lines. Be sure the air pressure gauge reads zero before disconnecting the air line from pump.

TEMPERATURE CAPABILITIES - Air inlet side of pump can handle temperatures up to 140 degrees; hydraulic side of pump can handle up to 180 degrees.

CAUTION: Do not allow unit to sit with hydraulic side at or 140 degrees for a length of time that would drive air side above the 140 degree maximum.



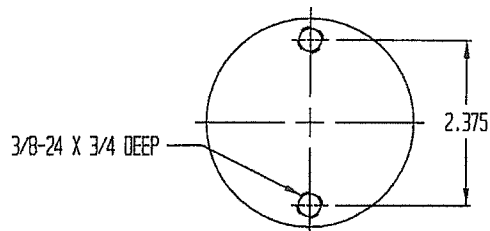
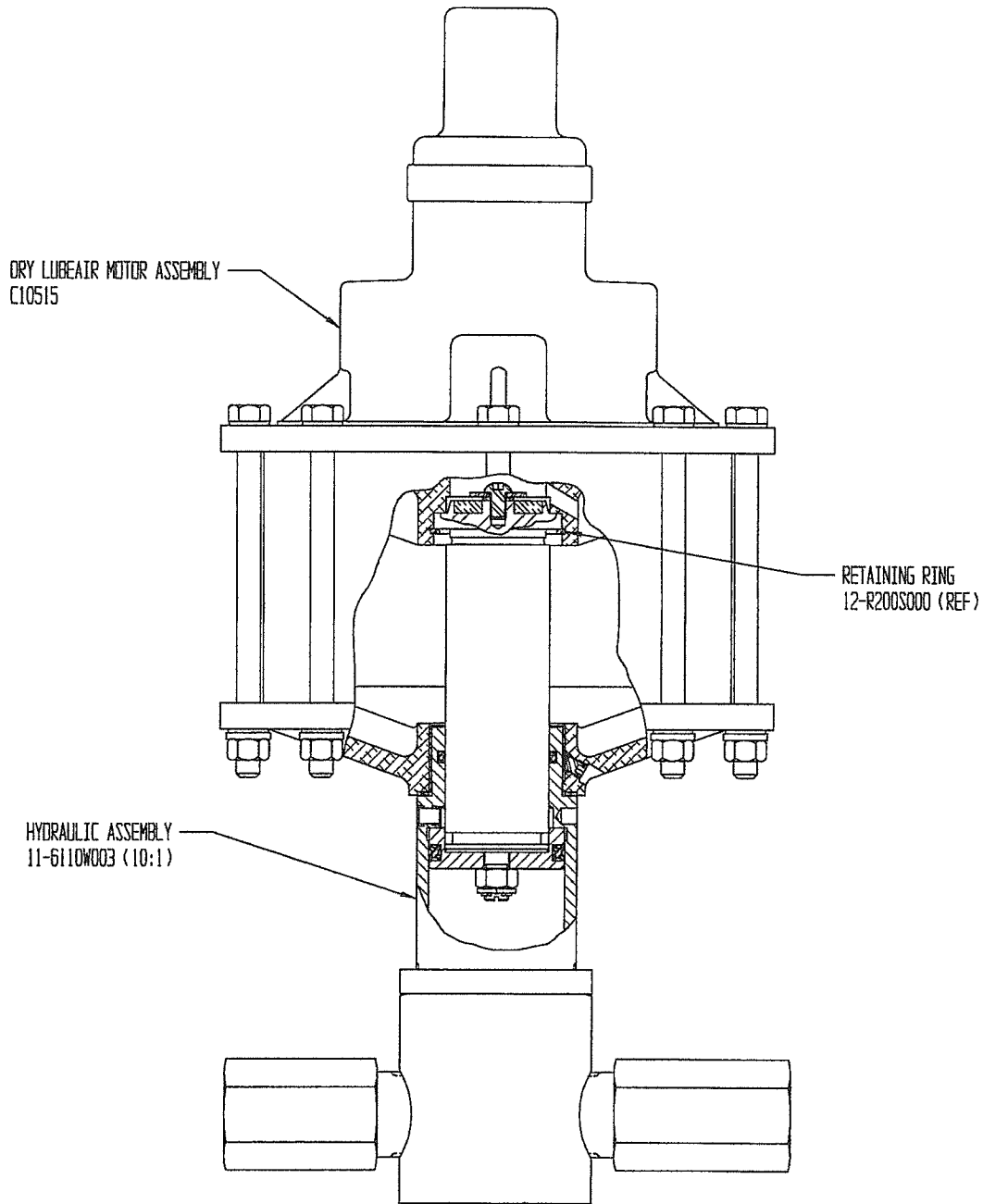
SOUTHERN CALIFORNIA HYDRAULIC ENGINEERING CORPORATION

DESIGNERS AND MANUFACTURERS OF HYDRAULIC & PNEUMATIC EQUIPMENT

1130 COLUMBIA STREET BREA, CALIFORNIA 92821

FORM D6000B10 REV 12/24/03

PUMP ASSEMBLY D6000B10



MOUNTING DIMENSIONS



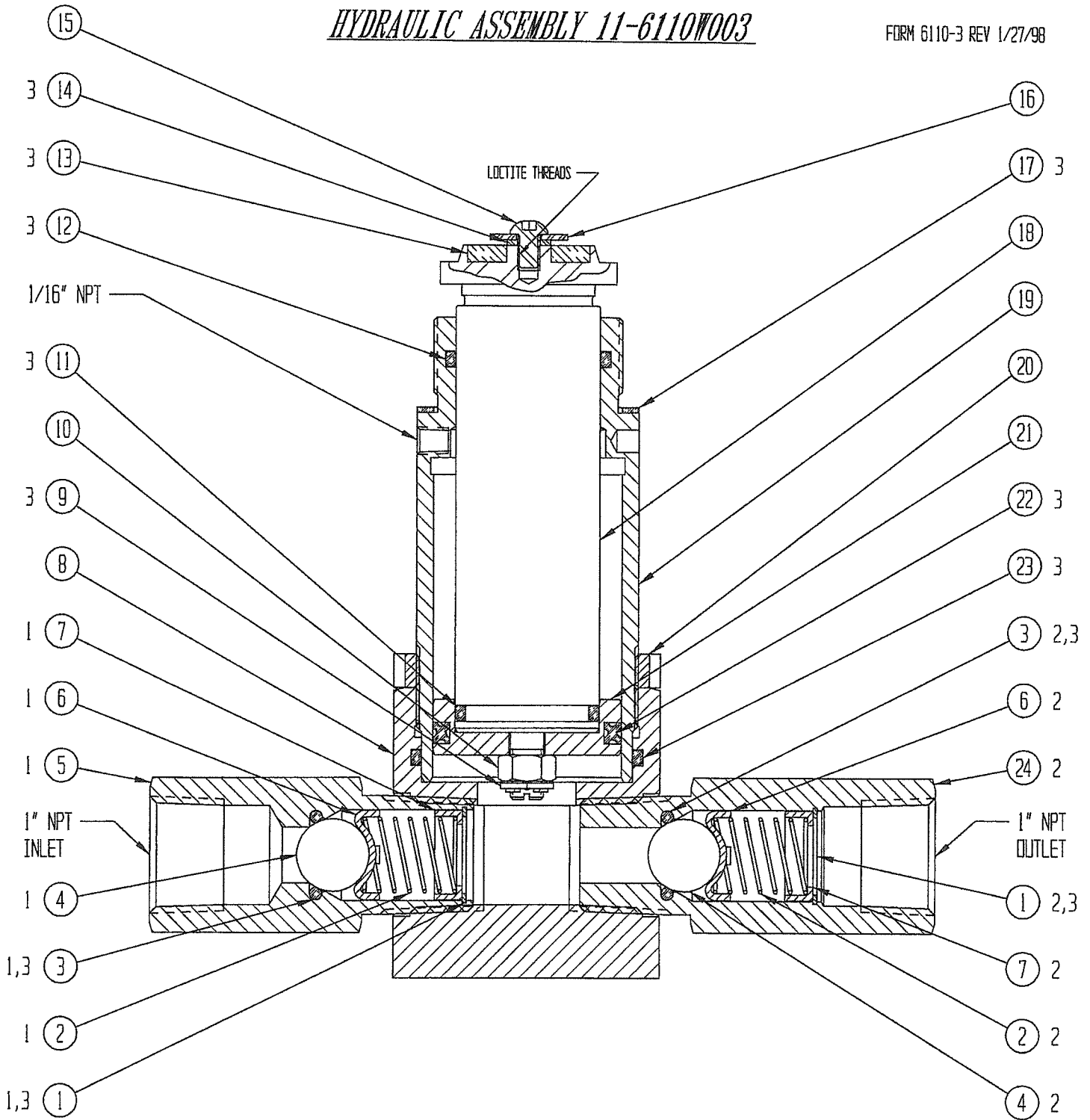
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1130 COLUMBIA STREET BREA, CALIFORNIA 92821

HYDRAULIC ASSEMBLY 11-6110W003

FORM 6110-3 REV 1/27/98



3 INCLUDED IN 11-6099N005 HYDRAULIC REPAIR KIT

2 INCLUDED IN 11-6065S000 OUTLET CHECK VALVE ASSEMBLY

1 INCLUDED IN 11-5031S000 INLET CHECK VALVE ASSEMBLY



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1130 COLUMBIA STREET BREA, CALIFORNIA 92821 - (714) 257-4800 - FAX (714) 257-4810 WWW.SCHYDRAULIC.COM

| ITEM NO | QTY | PART NO | DESCRIPTION | REFERENCE NO |
|---------|-----|----------------|----------------------------|--------------|
| 1 | 2 | P10202-100 | RETAINING RING | 12-R100S000 |
| 2 | 2 | 11-5033S000 | SPRING | 10-450-33 |
| 3 | 2 | P11003-210 | O-RING | 12-6227N015S |
| 4 | 2 | 12-0440S812 | CHECK BALL | |
| 5 | 1 | 11-5035S000 | SEAT-INLET | 10-450-35 |
| 6 | 2 | 11-5034S003 | BALL GUIDE | 10-450-34-3 |
| 7 | 2 | 11-5032S000 | SPRING GUIDE | 10-450-32 |
| 8 | 1 | 11-6111B001 | END-HYDRAULIC | 10-550-111-1 |
| 9 | 1 | P10224-075 | COTTER PIN | 12-0625S750 |
| 10 | 1 | 12-90029A031 | CASTLE NUT | |
| 11 | 1 | P11000-220 | O-RING | 12-6227N025 |
| 12 | 1 | P11015-223 | O-RING | 12-6230T001 |
| 13 | 1 | 11-5051P000 | PISTON BUMPER | 10-450-51 |
| 14 | 1 | P10212-025 | HELICAL SPRING LOCK WASHER | 12-5001C407 |
| 15 | 1 | 12-25F37SBC45Z | BUTTON HEAD CAP SCREW | |
| 16 | 1 | 12-25N87WF1Z | FENDER WASHER | |
| 17 | 1 | 11-5028N000 | GASKET | 10-450-28 |
| 18 | 1 | 11-6064S000 | PISTON ROD-HYDRAULIC | 10-550-64 |
| 19 | 1 | 11-6114B000 | CYLINDER-HYDRAULIC | 10-550-114 |
| 20 | 1 | 11-6113B000 | LOCK NUT | 10-550-113 |
| 21 | 1 | 11-6112S000 | PISTON HEAD-HYDRAULIC | 10-550-112 |
| 22 | 1 | 12-4327N000 | QUAD RING | Q4327 |
| 23 | 1 | P11000-229 | O-RING | 12-6230N007 |
| 24 | 1 | 11-6031S000 | SEAT-OUTLET | 10-550-31 |

Where Used 10-6000W005
Pump Assemblies D60E0S10
 D6000B10



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600 SERIES PUMP LUBRICATED AND DRY LUBE APA VALVE AIR MOTOR ASSEMBLIES
DOC NO. 15138
REV. N/C 04-06-09 M.E.
PAGE 1 OF 4

LUBRICATED AIR MOTOR ASSEMBLY 11-6094A000 DRY LUBE AIR MOTOR ASSEMBLY 11-6094ADL0 AND C10515 (SEE PAGE 2 & 3 FOR DRY LUBE AIR MOTOR ASSEMBLY 11-6094ADL0 AND C10515)

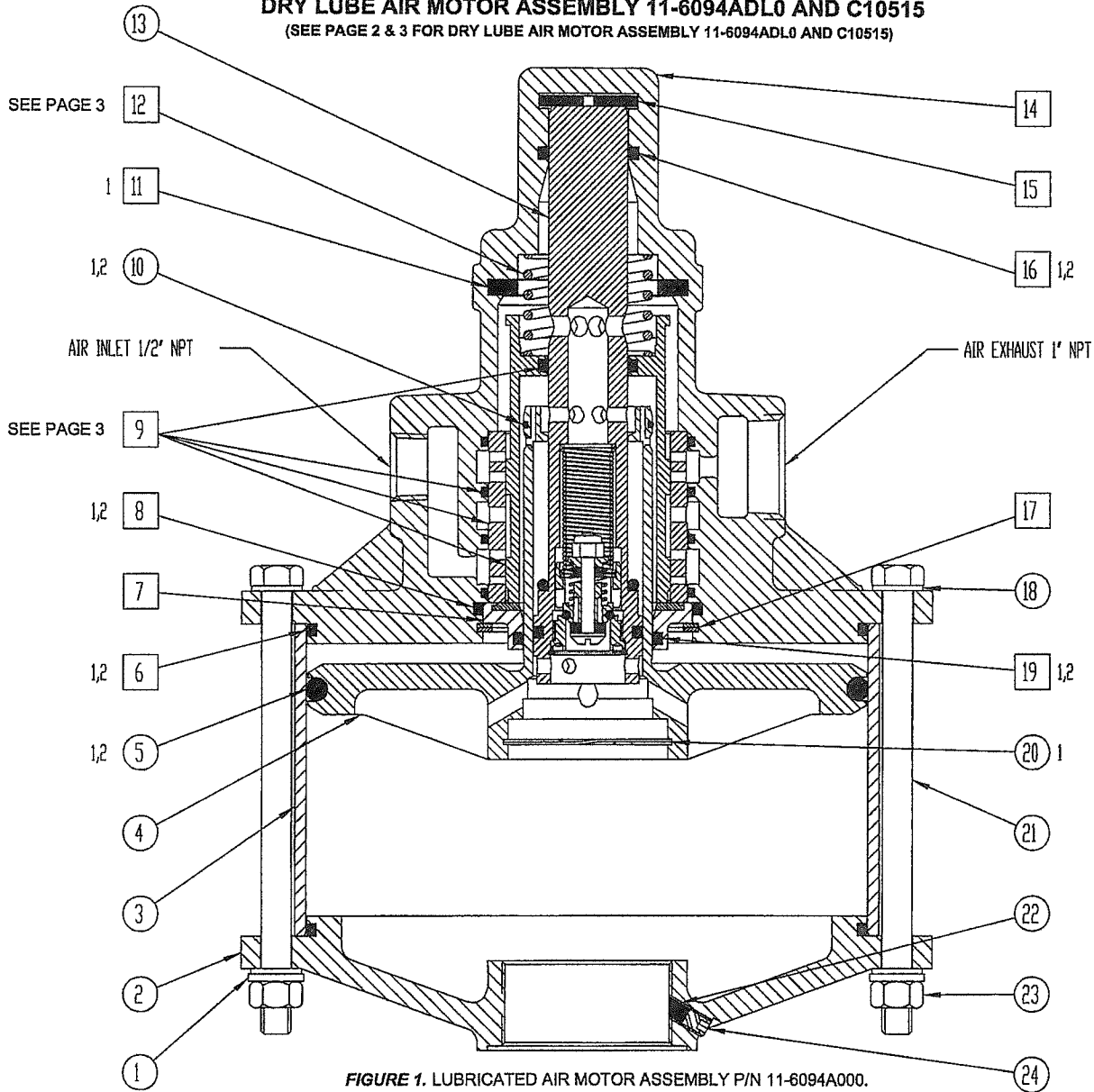


FIGURE 1. LUBRICATED AIR MOTOR ASSEMBLY P/N 11-6094A000.
SEE PAGE 2 & 3 FOR DRY LUBE AIR MOTOR ASSEMBLY P/N 11-6094ADL0 AND C10515.

- 1 INCLUDED IN 11-6100N000 AIR MOTOR REPAIR KIT
- 2 INCLUDED IN 11-6130N000 AIR MOTOR PACKING SET

- 1 INCLUDED IN R10104 AIR MOTOR REPAIR KIT
- 2 INCLUDED IN R10105 AIR MOTOR PACKING SET

XX INCLUDED IN 11-6128A000 HEAD ASSEMBLY

XX INCLUDED IN C10516 HEAD ASSEMBLY

NOTE: USE WITH AIR MOTOR ASSEMBLY P/N 11-6094A000.
P/N 11-6100N000 AND 11-6130N000 INCLUDE SAME PARTS
AS R10104 AND R10105 RESPECTIVELY.

NOTE: USE WITH AIR MOTOR ASSEMBLY P/N 11-6094ADL0
AND C10515. P/N 11-6100N000 AND 11-6130N000 INCLUDE
SAME PARTS AS R10104 AND R10105 RESPECTIVELY.



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600 SERIES PUMP LUBRICATED AND DRY LUBE APA VALVE AIR MOTOR ASSEMBLIES

A. LUBRICATED AIR MOTOR ASSEMBLY P/N 11-6094A000 (REFER TO ITEM 9A & 12A)

B. DRY LUBE AIR MOTOR ASSEMBLY P/N 11-6094ADL0 AND C10515 (REFER TO ITEM 9B & 12B)

DOC. NO. 15138, REV. N/C, 04-06-09

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| ITEM NO | QTY | PART NO | DESCRIPTION | REFERENCE NO |
|---------|-----|-------------|---|---------------|
| 1 | 8 | P10212-038 | WASHER-LOCK | |
| 2 | 1 | 11-6002A000 | END | 10-550-2 |
| 3 | 1 | 11-6151P000 | CYLINDER-AIR | 10-550-151 |
| 4 | 1 | 11-6025A000 | PISTON-AIR | 10-550-25 |
| 5 | 1 | P11000-439 | O-RING | 12-6227N066 |
| 6 | 2 | P11000-261 | O-RING | 12-6230N039 |
| 7 | 1 | 11-5047N000 | BEARING ASSEMBLY | 10-450-47 |
| 8 | 1 | P11000-231 | O-RING | 12-6230N009 |
| 9A * | 1 | 11-6152A000 | LUBRICATED APA VALVE ASSEMBLY (SEE PAGE 3) | 10-550-152 |
| 9B * | 1 | 11-6152ADL0 | DRY LUBE APA VALVE ASSEMBLY (SEE PAGE 3) | 10-550-152DL |
| 10 | 1 | P11000-028 | O-RING | 12-8775N028 |
| 11 | 1 | 11-5057P000 | BUMPER | 10-450-57 |
| 12A * | 1 | 11-5005M001 | SPRING, RETURN (USE WITEM No. 9A, SEE PAGE 3) | 10-450-5-1 |
| 12B * | 1 | 11-5005M002 | SPRING, RETURN (USE WITEM No. 9B, SEE PAGE 3) | 10-450-5-2 |
| 13 | 1 | 11-6027A000 | PILOT VALVE ASSEMBLY | 10-550-27 |
| 14 | 1 | 11-6092A000 | HEAD | 10-550-92 |
| 15 | 1 | 11-5012N000 | BUMPER | 10-450-12 |
| 16 | 1 | P11000-214 | O-RING | 12-6227N019 |
| 17 | 1 | 12-R262S000 | RETAINING RING | RRT-262 |
| 18 | 16 | P10214-038 | WASHER-FLAT | |
| 19 | 1 | P11000-223 | O-RING | 12-6230N001 |
| 20 | 1 | 12-R200S000 | RETAINING RING | RRT-200 |
| 21 | 8 | P10230 | BOLT-HEX | |
| 22 | 1 | 11-5172N000 | PLUG | 10-450-172 |
| 23 | 8 | 12-37CNFH1Z | NUT-HEX | |
| 24 | 1 | P10238 | SET SCREW-HEX SOCKET | 12-25C313CPSS |

* ITEM 9A - LUBRICATED APA VALVE ASSEMBLY P/N 11-6152A000. SEE PAGE 3 FOR DETAILS.

| ITEM NO | QTY | PART NO | DESCRIPTION | REFERENCE NO |
|---------|-----|-------------|-------------|--------------|
| 9A.1 | 1 | P11000-214 | O-RING | |
| 9A.2 | 1 | 11-6153A000 | PISTON, APA | 10-550-153 |
| 9A.3 | 1 | 11-6126A000 | SLEEVE, APA | 10-550-126 |
| 9A.4 | 4 | P11000-144 | O-RING | |

* ITEM 9B - DRY LUBE APA VALVE ASSEMBLY P/N 11-6152ADL0 AND C10526. SEE PAGE 3 FOR DETAILS.

| ITEM NO | QTY | PART NO | DESCRIPTION | REFERENCE NO |
|---------|-----|------------|----------------|--------------|
| 9B.1 | 1 | P11000-214 | O-RING | |
| 9B.2 | 1 | P10263-193 | RETAINING RING | |
| 9B.3 | 1 | D10684 | SEAL, DRY LUBE | |
| 9B.4 | 1 | P11000-135 | O-RING | |
| 9B.5 | 1 | D10817 | PISTON, APA | |
| 9B.6 | 2 | P11003-137 | O-RING | |
| 9B.7 | 1 | D10263 | SLEEVE, APA | |
| 9B.8 | 4 | P11000-144 | O-RING | |



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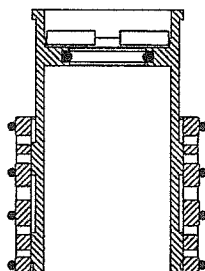


FIGURE 2. LUBRICATED APA VALVE ASSEMBLY
P/N 11-6152A000

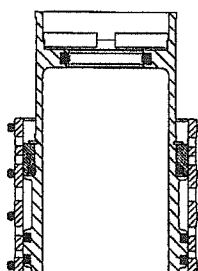


FIGURE 3. DRY LUBE APA VALVE ASSEMBLY
NEW P/N 11-6152ADL0 AND C10526

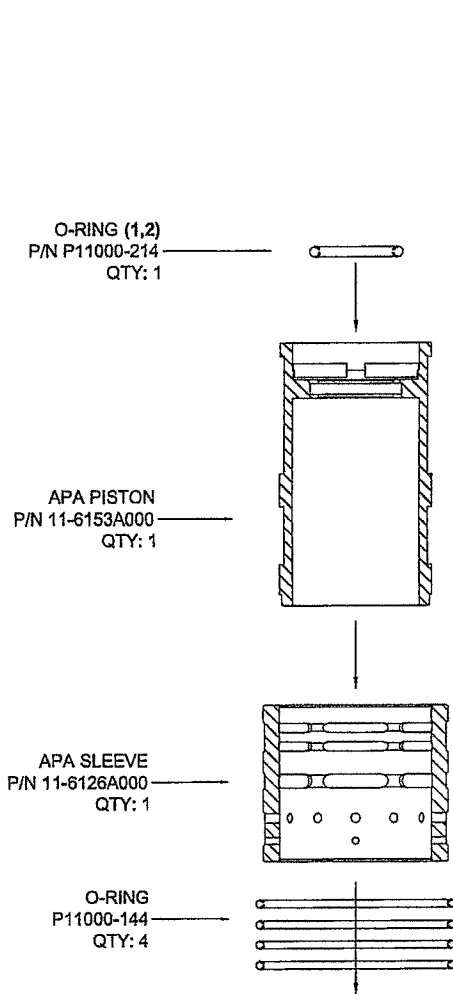


FIGURE 4. LUBRICATED APA VALVE PART CONFIGURATION.

USE APA VALVE ASSEMBLY P/N 11-6152A000.
USE APA VALVE RETURN SPRING P/N 11-5005M001.
USE AIR MOTOR P/N 11-6094A000
REFER TO ITEMS 9A AND 12A

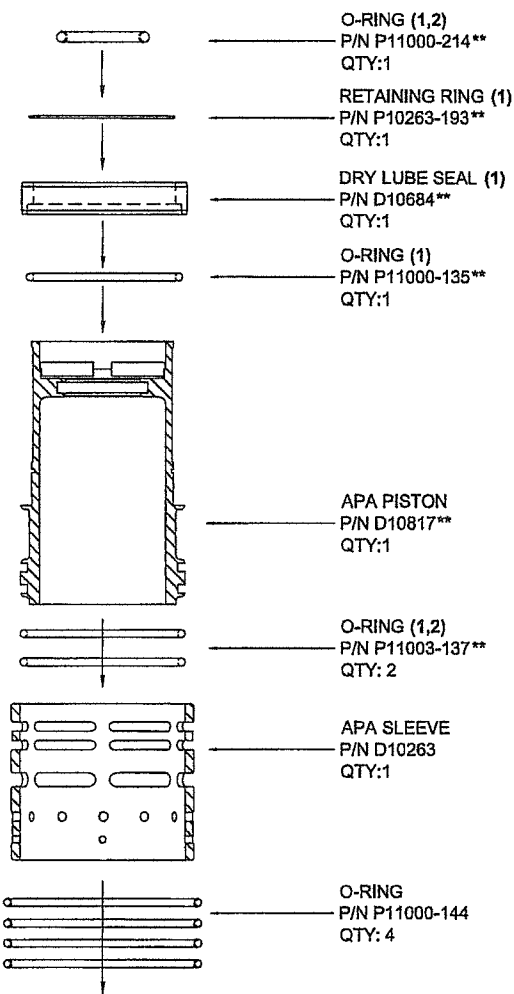


FIGURE 5. DRY LUBE APA VALVE PART CONFIGURATION.

USE APA VALVE ASSEMBLY P/N 11-6152ADL0
USE APA VALVE RETURN SPRING P/N 11-5005M002
USE AIR MOTOR ASSEMBLY P/N 11-6094ADL0 AND C10525
**PARTS INCLUDED IN APA PISTON ASSEMBLY P/N C10544
REFER TO ITEMS 9B AND 12B



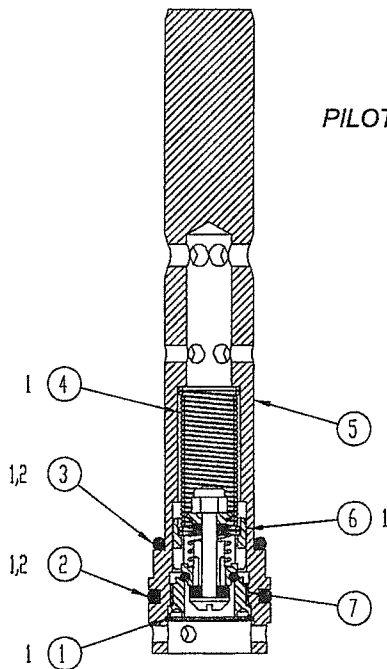
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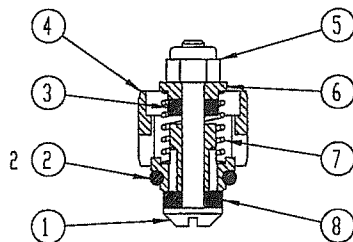
PILOT VALVE ASSEMBLY 11-6027A000

| 7 | 1 | 11-5024A403 | SEAT | 10-403-24 |
|----------|-----|-------------|----------------|-------------|
| 6 | 1 | 11-6032X403 | AIR CHECK ASSY | 10-403-32-1 |
| 5 | 1 | 11-6023A000 | VALVE BODY | 10-550-23 |
| 4 | 1 | 11-5016M001 | SPRING | 10-450-16-1 |
| 3 | 1 | P11000-214 | O-RING | 12-6227N019 |
| 2 | 1 | P11000-216 | O-RING | 12-6227N021 |
| 1 | 1 | 12-R093S000 | RETAINING RING | RRT-93 |
| ITEM NO. | QTY | PART NO. | DESCRIPTION | REF NO. |

2 INCLUDED IN 11-6130N000 AND R10105 AIR MOTOR PACKING SET

1 INCLUDED IN 11-6100N000 AND R10104 AIR MOTOR REPAIR KIT

AIR CHECK ASSEMBLY 11-6032X403



| 8 | 1 | 11-5025V403 | WASHER | 10-403-25V |
|----------|-----|--------------|-------------|--------------|
| 7 | 1 | 11-5015M000 | SPRING | 10-450-15 |
| 6 | 1 | 11-5039S000 | RETAINER | 10-450-39 |
| 5 | 1 | 12-2104A4D08 | NUT | |
| 4 | 1 | 11-5171X001 | VALVE BODY | 10-450-171-1 |
| 3 | 1 | 11-5043V000 | WASHER | 10-450-43V |
| 2 | 1 | P11000-111 | O-RING | 12-6227N009 |
| 1 | 1 | 11-5056A000 | SCREW | 10-450-56 |
| ITEM NO. | QTY | PART NO. | DESCRIPTION | REF NO. |

PARTS BREAKDOWN FOR MODEL HP-7/10
RICE HYDRO, INC.

| REF#.. | PART NUMBER.. | DESCRIPTION.. | QTY |
|--|-------------------|----------------------------|-----|
| <u>HYDRAULIC ASSEMBLY: #SC-11-6010W030</u> | | | |
| 1 | SC-P10202-100 | RETAINING RING | 2 |
| 2 | SC-11-5033S000 | SPRING | 2 |
| 3 | SC-P11003-210 | O-RING | 2 |
| 4 | SC-12-0440S812 | CHECK BALL | 2 |
| 5 | SC-11-5035S000 | SEAT-INLET | 1 |
| 6 | SC-11-5034S003 | BALL GUIDE | 2 |
| 7 | SC-11-5032S000 | SPRING GUIDE | 2 |
| 8 | SC-11-6111B001 | END-HYDRAULIC | 1 |
| 9 | SC-P10224-0075 | COTTER PIN | 1 |
| 10 | SC-12-90029A031 | CASTLE NUT | 1 |
| 11 | SC-P11000-220 | O-RING | 1 |
| 12 | SC-P11015-223 | O-RING | 1 |
| 13 | SC-11-5051P000 | PISTON BUMPER | 1 |
| 14 | SC-P10212-025 | HELICAL SPRING LOCK WASHER | 1 |
| 15 | SC-12-25F37SBC45Z | BUTTON HEAD CAP SCREW | 1 |
| 16 | SC-12-25N87WF1Z | FENDER WASHER | 1 |
| 17 | SC-11-5028N000 | GASKET | 1 |
| 18 | SC-11-6064S000 | PISTON ROD-HYDRAULIC | 1 |
| 19 | SC-11-6114B000 | CYLINDER-HYDRAULIC | 1 |
| 20 | SC-11-6113B000 | LOCK NUT | 1 |
| 21 | SC-11-6112S000 | PISTON HEAD-HYDRAULIC | 1 |
| 22 | SC-12-4327N000 | QUAD RING | 1 |
| 23 | SC-P11000-229 | O-RING | 1 |
| 24 | SC-11-6031S000 | SEAT-OUTLET | 1 |

AIR MOTOR ASSEMBLY: #SC-11-6094ADL0

| | | | |
|----|----------------|-------------------------|----|
| 1 | SC-P10212-038 | WASHER-LOCK | 8 |
| 2 | SC-11-6002A000 | END | 1 |
| 3 | SC-11-6151P000 | CYLINDER-AIR | 1 |
| 4 | SC-11-6025A000 | PISTON-AIR | 1 |
| 5 | SC-P11000-439 | O-RING | 1 |
| 6 | SC-P11000-261 | O-RING | 2 |
| 7 | SC-11-5047N000 | BEARING ASSEMBLY | 1 |
| 8 | SC-P11000-231 | O-RING | 1 |
| 9 | SC-11-6152ADL0 | DRY LUBE VALVE ASSEMBLY | 1 |
| 10 | SC-P11000-028 | O-RING | 1 |
| 11 | SC-11-5057P000 | BUMPER | 1 |
| 12 | SC-11-5005M002 | SPRING | 1 |
| 13 | SC-11-6027A000 | PILOT VALVE ASSEMBLY | 1 |
| 14 | SC-11-6092A000 | HEAD | 1 |
| 15 | SC-11-5012N000 | BUMPER | 1 |
| 16 | SC-P11000-214 | O-RING | 1 |
| 17 | SC-12-R262S000 | RETAINING RING | 1 |
| 18 | SC-P10214-038 | WASHER-FLAT | 16 |
| 19 | SC-P11000-223 | O-RING | 1 |
| 20 | SC-12-R200S000 | RETAINING RING | 1 |
| 21 | SC-P10230 | BOLT-HEX | 8 |
| 22 | SC-11-5172N000 | PLUG | 1 |
| 23 | SC-12-37CNFH1Z | NUT-HEX | 8 |
| 24 | SC-P10238 | SET SCREW-HEX SOCKET | 1 |

PILOT VALVE ASSEMBLY #SC-11-6027A000

| | | | |
|---|----------------|----------------|---|
| 1 | SC-12-R093S000 | RETAINING RING | 1 |
| 2 | SC-P11000-216 | O-RING | 1 |
| 3 | SC-P11000-214 | O-RING | 1 |
| 4 | SC-11-5016M001 | SPRING | 1 |
| 5 | SC-11-6023A000 | VALVE BODY | 1 |
| 6 | SC-11-6032X403 | AIR CHECK ASSY | 1 |
| 7 | SC-11-5024A403 | SEAT | 1 |

PARTS BREAKDOWN FOR MODEL HP-7/10
RICE HYDRO, INC.

| REF#.. | PART NUMBER.. | DESCRIPTION.. | QTY |
|---|-----------------|---------------|-----|
| <u>AIR CHECK ASSEMBLY #SC-11-6032X403</u> | | | |
| 1 | SC-11-5056A000 | SCREW | 1 |
| 2 | SC-P11000-111 | O-RING | 1 |
| 3 | SC-11-5043V000 | WASHER | 1 |
| 4 | SC-11-5171X001 | VALVE BODY | 1 |
| 5 | SC-12-2104A4D08 | NUT | 1 |
| 6 | SC-11-5039S000 | RETAINER | 1 |
| 7 | SC-11-5015M000 | SPRING | 1 |
| 8 | SC-11-5025V403 | WASHER | 1 |

KITS & ASSEMBLIES:

| | | |
|----------------|-------------------------|---|
| SC-11-6100NDLO | AIR MOTOR REPAIR KIT D6 | 1 |
| SC-11-6099N005 | HYDRAULIC REPAIR KIT | 1 |
| SC-11-5031S000 | INLET CHECKVALVE ASSY | 1 |
| SC-11-6065S000 | OUTLET CHECKVALVE ASSY | 1 |

MISC SECTION:

| | | |
|-------------------|--|---|
| HOSE-1/2X8-RH | 1/2" X 8 FT OUTLET HOSE | 1 |
| COUPLERBODY-1/2 | FEMALE CONNECT OUTLET HOSE | 1 |
| COUPLERPLUG-1/2 | MALE PUMP OUTLET PIPING | 1 |
| LINESTRAINER-1/2 | MXM 100 MESH LINESTRAINER | 1 |
| BALLVALVE-BR-1/2 | BALLVALVE BRASS 1/2" | 1 |
| GAUGE-1500 | 0-1500 PSI LIQUID FILLED | 1 |
| MUFFLER-HP-1" | 1" MUFFLER | 1 |
| FILTER-PARKER-1/2 | FILTER REGULATOR W/ GAUGE | 1 |
| PUMP-D6000B10 | PNEUMATIC PUMP | 1 |
| | | |
| FITTING-1/2MPIPE | MALE PIPE RIGID | 1 |
| FITTING-1/2-MPX | MALE PIPE SWIVEL | 1 |
| HOSE-1/2-2500XFT | CUSTOM LENGTHS AVAILABLE CUSTOMER CAN SPECIFY | |

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

REV. DATE 02/20/15

PAGE 2 OF 2