

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.

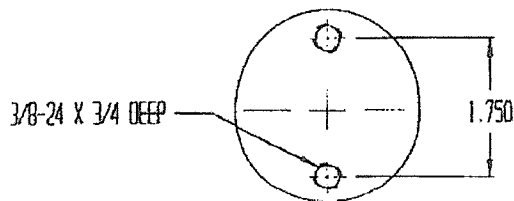
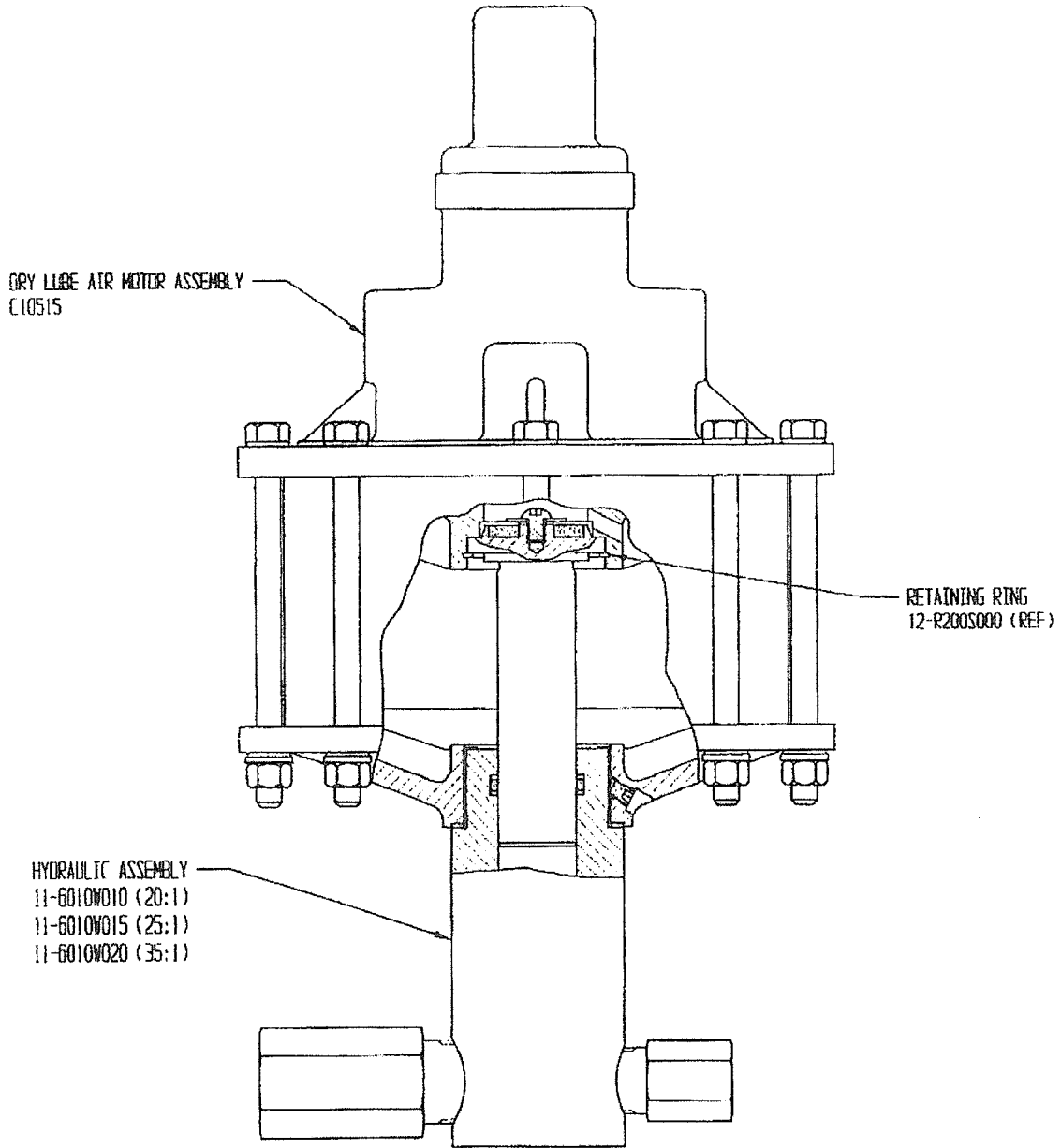


SOUTHERN CALIFORNIA HYDRAULIC ENGINEERING CORPORATION

DESIGNERS AND MANUFACTURERS OF HYDRAULIC & PNEUMATIC EQUIPMENT
1130 COLUMBIA STREET BREA, CALIFORNIA 92821 WWW.SCHYDRAULIC.COM

PUMP ASSEMBLY D6000B20 THRU B35

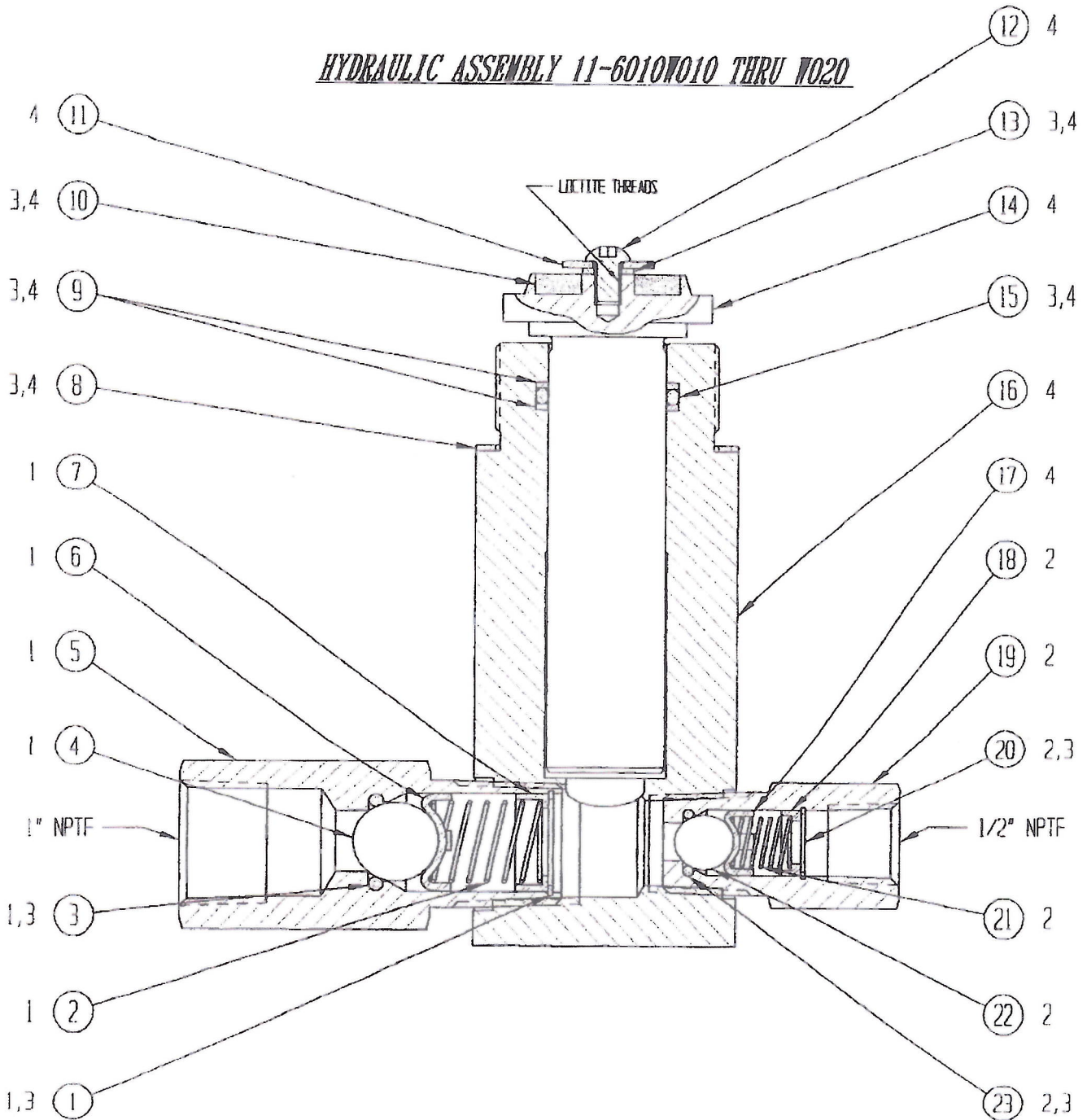
FORM D6000B20-35 REV 00/00/03



MOUNTING DIMENSIONS



HYDRAULIC ASSEMBLY 11-6010W010 THRU W020



4 INCLUDED IN 11-6011WXXX* PISTON & CYLINDER ASSEMBLY

3 INCLUDED IN 11-6099NXXX* HYDRAULIC REPAIR KIT

2 INCLUDED IN 11-5023S000 OUTLET CHECK VALVE ASSEMBLY

1 INCLUDED IN 11-5031S000 INLET CHECK VALVE ASSEMBLY

* REPRESENTS HYDRAULIC ASSEMBLY MODEL NUMBER



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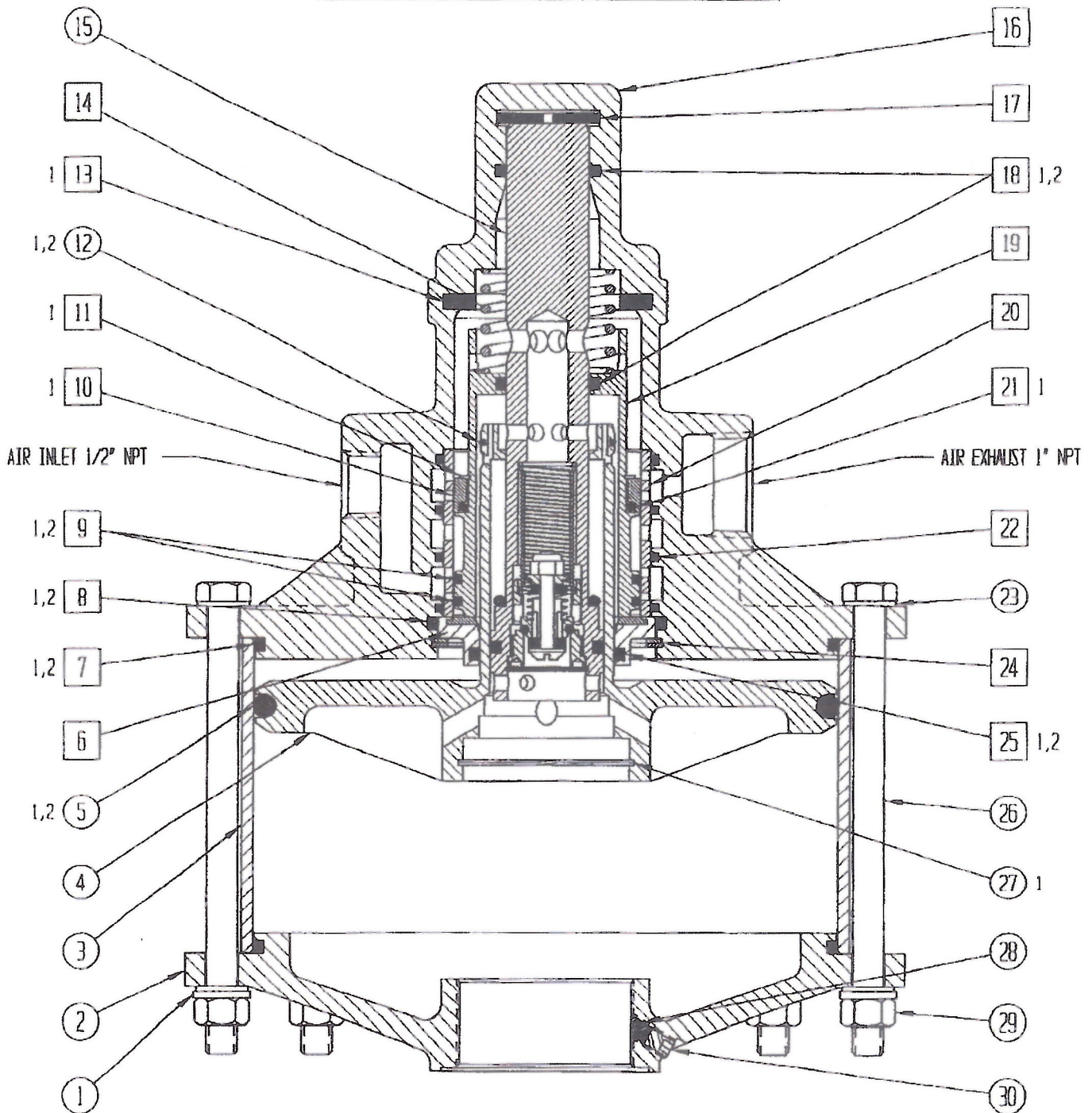
1130 COLUMBIA STREET BREA, CALIFORNIA 92621 - (714) 257-4800 - FAX (714) 257-4810 WWW.SCHYDRAULIC.COM

| 11-6010 | | | REVISION: 09/12/02 | | | | |
|--|-------------|-------------|--------------------|-----|--------------------|----------------------------|---------------|
| BILL OF MATERIALS FILE: 10-550-010.XLS | | | | | | | |
| DRAWING NUMBER & DESCRIPTION: 11-6010W010 THRU W020 HYDRAULIC ASSEMBLY | | | | | | | |
| W010 (20:1) | W015 (25:1) | W020 (35:1) | ITEM NO | QTY | PART NO | DESCRIPTION | REFERENCE NO |
| • | • | • | 1 | 1 | P10202-100 | RETAINING RING | 12-R100S000 |
| • | • | • | 2 | 1 | 11-5033S000 | SPRING | 10-450-33 |
| • | • | • | 3 | 1 | P11003-210 | O-RING | 12-6227N015S |
| • | • | • | 4 | 1 | 12-0440S812 | CHECK BALL | |
| • | • | • | 5 | 1 | 11-5035S000 | SEAT-INLET | 10-450-35 |
| • | • | • | 6 | 1 | 11-5034S003 | BALL GUIDE | 10-450-34-3 |
| • | • | • | 7 | 1 | 11-5032S000 | SPRING GUIDE | 10-450-32 |
| • | • | • | 8 | 1 | 11-5028N000 | GASKET | 10-450-28 |
| • | • | • | 9 | 2 | P11227-221 | BACK UP | 12-8774T026 |
| • | • | • | 9 | 2 | P11227-219 | BACK UP | 12-8774T024 |
| • | • | • | 9 | 2 | P11227-216 | BACK UP | 12-8774T021 |
| • | • | • | 10 | 1 | 11-5051P000 | PISTON BUMPER | 10-450-51 |
| • | • | • | 11 | 1 | 12-25N87WF1Z | FENDER WASHER | |
| • | • | • | 12 | 1 | 12-25F37SBC45Z | BUTTON HEAD CAP SCREW | |
| • | • | • | 13 | 1 | P10212-025 | HELICAL SPRING LOCK WASHER | 12-5001C407 |
| • | • | • | 14 | 1 | 11-6008S010 (20:1) | HYDRAULIC PISTON | 10-550-8-1 |
| • | • | • | 14 | 1 | 11-6008S015 (25:1) | HYDRAULIC PISTON | 10-550-8-1.50 |
| • | • | • | 14 | 1 | 11-6008S020 (35:1) | HYDRAULIC PISTON | 10-550-8-2 |
| • | • | • | 15 | 1 | P11000-221 | O-RING | 12-6227N026 |
| • | • | • | 15 | 1 | P11000-219 | O-RING | 12-6227N024 |
| • | • | • | 15 | 1 | P11000-216 | O-RING | 12-6227N021 |
| • | • | • | 16 | 1 | 11-6009B010 (20:1) | HYDRAULIC CYLINDER | 10-550-9-1 |
| • | • | • | 16 | 1 | 11-6009B015 (25:1) | HYDRAULIC CYLINDER | 10-550-9-1.50 |
| • | • | • | 16 | 1 | 11-6009B020 (35:1) | HYDRAULIC CYLINDER | 10-550-9-2 |
| • | • | • | 17 | 1 | 11-5034S002 | BALL GUIDE | 10-450-34-2 |
| • | • | • | 18 | 1 | 11-5017S000 | SPRING GUIDE | 10-450-17 |
| • | • | • | 19 | 1 | 11-5020S000 | SEAT-OUTLET | 10-450-20 |
| • | • | • | 20 | 1 | P10202-068 | RETAINING RING | 12-R068S000 |
| • | • | • | 21 | 1 | 11-5013S000 | SPRING | 10-450-13 |
| • | • | • | 22 | 1 | 12-0440S562 | CHECK BALL | |
| • | • | • | 23 | 1 | P11003-112 | O-RING | 12-6227N010S |

Where Used 10-6000W010-W020
 Pump Assemblies D6000B20-B35



D6 DRY LUBE AIR MOTOR ASSEMBLY C10515



2 INCLUDED IN R10105 AIR MOTOR PACKING SET

1 INCLUDED IN R10104 AIR MOTOR REPAIR KIT

XX INCLUDED IN C10516 HEAD ASSEMBLY



SOUTHERN CALIFORNIA HYDRAULIC ENGINEERING CORPORATION

Designer and Manufacturers of Hydraulic & Pneumatic Equipment

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BILL OF MATERIALS FILE: C10515.XLS

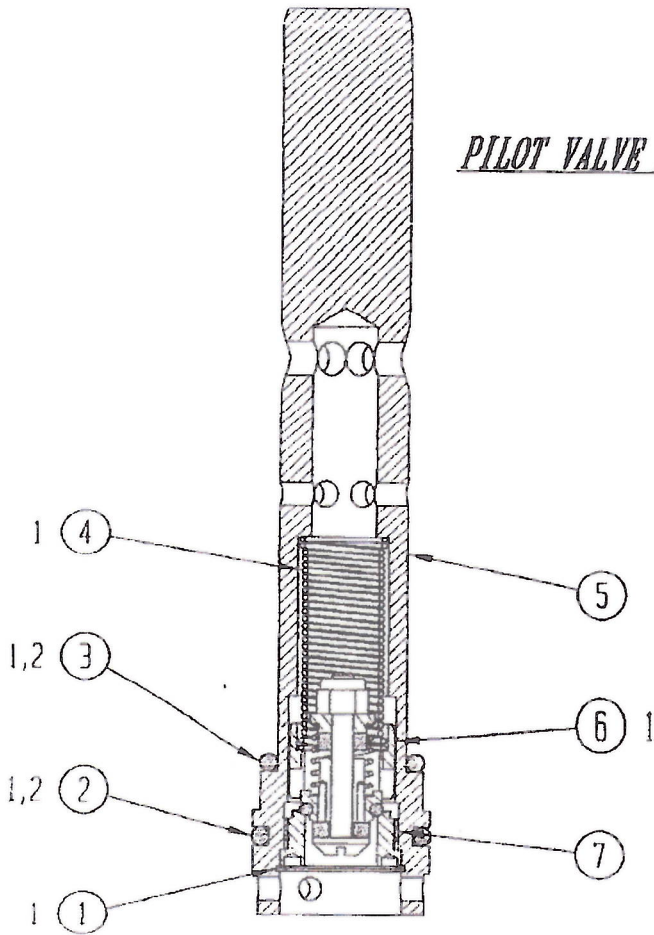
DRAWING NUMBER & DESCRIPTION: C10515 D6 DRY LUBE AIR MOTOR ASSEMBLY

REVISION: 07/24/06

| 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 | 1 | 11-5047N000 | BEARING ASSEMBLY | 10-450-47 |
| 7 | 2 | P11000 261 | O-RING | 12-6227N039 |
| 8 | 1 | P11000-231 | O-RING | 12-6227N009 |
| 9 | 2 | P11003-137 | O-RING | |
| 10 | 1 | D10684 | SEAL-DRY | |
| 11 | 1 | P10263-193 | RETAINING RING | |
| 12 | 1 | P11000-028 | O-RING | 12-8775N028 |
| 13 | 1 | 11-5057P000 | BUMPER | 10-450-57 |
| 14 | 1 | 11-5005M002 | SPRING | 10-450-5-2 |
| 15 | 1 | 11-6027A000 | PILOT VALVE ASSEMBLY | 10-450-27 |
| 16 | 1 | 11-6092A000 | HEAD | 10-550-92 |
| 17 | 1 | 11-5012N000 | BUMPER | 10-450-12 |
| 18 | 2 | P11000-214 | O-RING | 12-6227N019 |
| 19 | 1 | D10817 | PISTON-APA | |
| 20 | 1 | D10263 | SLEEVE-APA | |
| 21 | 1 | P11000-135 | O-RING | |
| 22 | 4 | P11000-144 | O-RING | 12-8775N144 |
| 23 | 16 | P10214-038 | WASHER-FLAT | |
| 24 | 1 | 12-R262S000 | RETAINING RING | RRT-262 |
| 25 | 1 | P11000 223 | O-RING | 12-6230N001 |
| 26 | 8 | P10230 | BOLT-HEX | |
| 27 | 1 | 12-R200S000 | RETAINING RING | RRT-200 |
| 28 | 1 | 11-5172N000 | PLUG | 12-450-172 |
| 29 | 8 | 12-37CNFH1Z | NUT-HEX | |
| 30 | 1 | P10238 | SET SCREW-HEX SOCKET | 12-25C313CPSS |



PILOT VALVE ASSEMBLY 11-6027A000

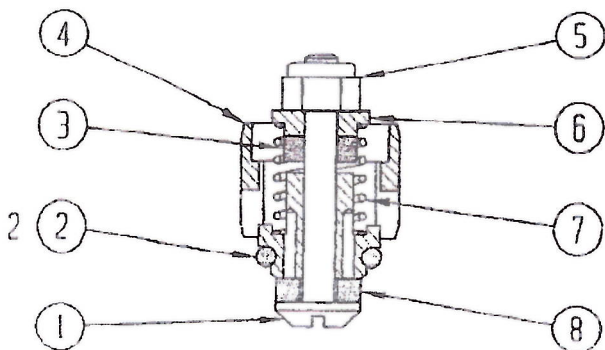


| | | | | |
|----------|-----|-------------|----------------|-------------|
| 7 | 1 | 11-5024A403 | SEAT | 10-403-24 |
| 6 | 1 | 11-6032X403 | AIR CHECK ASSY | 10-403-32-1 |
| 5 | 1 | 11-6023A000 | VALVE BODY | 10-550-23 |
| 4 | 1 | 11-5016M001 | SPRING | 10-450-16-1 |
| 3 | 1 | P11000-214 | O-RING | 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 R10105 AIR MOTOR PACKING SET

1 INCLUDED IN R10104 AIR MOTOR REPAIR KIT

AIR CHECK ASSEMBLY 11-6032X403



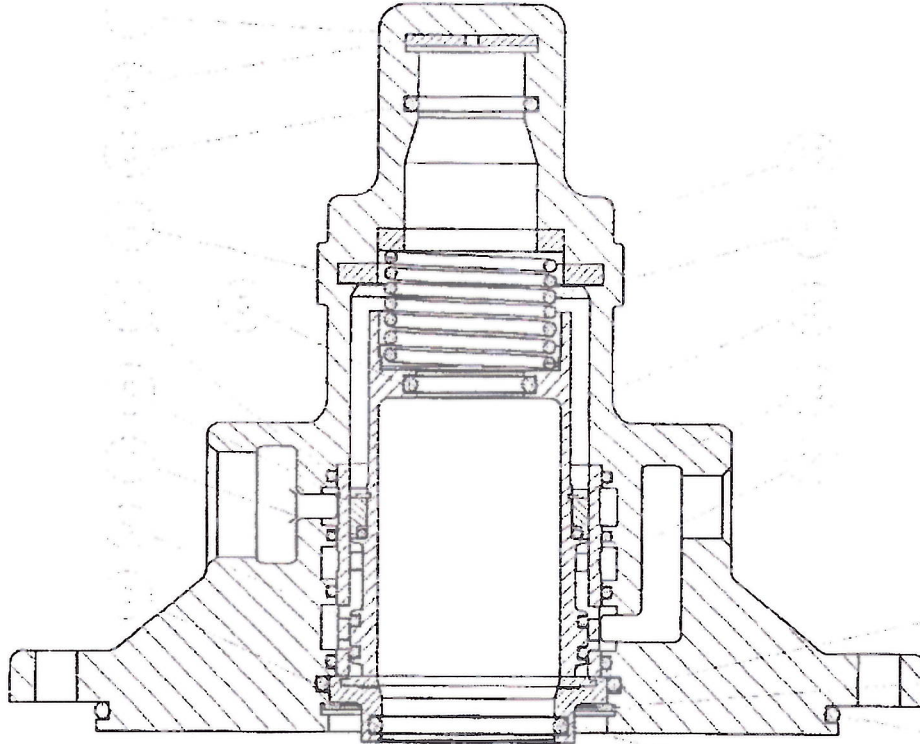
| | | | | |
|----------|-----|--------------|-------------|--------------|
| 8 | 1 | 11-5025M403 | WASHER | 10-403-25 |
| 7 | 1 | 11-5015M000 | SPRING | 10-450-15 |
| 6 | 1 | 11-5039S000 | RETAINER | 10-450-39 |
| 5 | 1 | 12-2104A4008 | NUT | |
| 4 | 1 | 11-5171X001 | VALVE BODY | 10-450-171-1 |
| 3 | 1 | 11-5043N000 | WASHER | 10-450-43 |
| 2 | 1 | P11000-111 | O-RING | 12-6227N009 |
| 1 | 1 | 11-5056A000 | SCREW | 10-450-56 |
| ITEM NO. | QTY | PART NO. | DESCRIPTION | REF NO. |



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HEAD ASSEMBLY (D6 DRY LUBE) - C10516

(Sheet 1 of 1) REV.14JUN02,D.MACH

| HEAD ASSEMBLY - C10516, D6 DRY LUBRICATED | | | | |
|---|---------------|-------------|-----|----------------------|
| ITEM | DESCRIPTION | PART NUMBER | QTY | REPLACEMENT PART NO. |
| 1 | HEAD ASSEMBLY | C10516 | 1 | |
| 2 | PISTON RING | PI-8012R000 | 1 | |
| 3 | PISTON RING | PI-8012R000 | 1 | |
| 4 | PISTON RING | PI-8012R000 | 1 | |
| 5 | PISTON RING | PI-8012R000 | 1 | |
| 6 | PISTON RING | PI-8012R000 | 1 | |
| 7 | PISTON RING | PI-8012R000 | 1 | |
| 8 | PISTON RING | PI-8012R000 | 1 | |
| 9 | PISTON RING | PI-8012R000 | 1 | |
| 10 | PISTON RING | PI-8012R000 | 1 | |
| 11 | PISTON RING | PI-8012R000 | 1 | |
| 12 | PISTON RING | PI-8012R000 | 1 | |
| 13 | PISTON RING | PI-8012R000 | 1 | |
| 14 | PISTON RING | PI-8012R000 | 1 | |
| 15 | PISTON RING | PI-8012R000 | 1 | |
| 16 | PISTON RING | PI-8012R000 | 1 | |
| 17 | PISTON RING | PI-8012R000 | 1 | |
| 18 | PISTON RING | PI-8012R000 | 1 | |
| 19 | PISTON RING | PI-8012R000 | 1 | |
| 20 | PISTON RING | PI-8012R000 | 1 | |
| 21 | PISTON RING | PI-8012R000 | 1 | |
| 22 | PISTON RING | PI-8012R000 | 1 | |
| 23 | PISTON RING | PI-8012R000 | 1 | |
| 24 | PISTON RING | PI-8012R000 | 1 | |
| 25 | PISTON RING | PI-8012R000 | 1 | |
| 26 | PISTON RING | PI-8012R000 | 1 | |
| 27 | PISTON RING | PI-8012R000 | 1 | |
| 28 | PISTON RING | PI-8012R000 | 1 | |
| 29 | PISTON RING | PI-8012R000 | 1 | |
| 30 | PISTON RING | PI-8012R000 | 1 | |
| 31 | PISTON RING | PI-8012R000 | 1 | |
| 32 | PISTON RING | PI-8012R000 | 1 | |
| 33 | PISTON RING | PI-8012R000 | 1 | |
| 34 | PISTON RING | PI-8012R000 | 1 | |
| 35 | PISTON RING | PI-8012R000 | 1 | |
| 36 | PISTON RING | PI-8012R000 | 1 | |
| 37 | PISTON RING | PI-8012R000 | 1 | |
| 38 | PISTON RING | PI-8012R000 | 1 | |
| 39 | PISTON RING | PI-8012R000 | 1 | |
| 40 | PISTON RING | PI-8012R000 | 1 | |
| 41 | PISTON RING | PI-8012R000 | 1 | |
| 42 | PISTON RING | PI-8012R000 | 1 | |
| 43 | PISTON RING | PI-8012R000 | 1 | |
| 44 | PISTON RING | PI-8012R000 | 1 | |
| 45 | PISTON RING | PI-8012R000 | 1 | |
| 46 | PISTON RING | PI-8012R000 | 1 | |
| 47 | PISTON RING | PI-8012R000 | 1 | |
| 48 | PISTON RING | PI-8012R000 | 1 | |
| 49 | PISTON RING | PI-8012R000 | 1 | |
| 50 | PISTON RING | PI-8012R000 | 1 | |

PARTS BREAKDOWN FOR MODEL HP30/25
RICE HYDRO, INC.

| REF#.. | PART NUMBER.. | DESCRIPTION.. | QTY.. |
|---------------------|-------------------|----------------------------|-------|
| HYDRAULIC ASSEMBLY: | | | |
| 1 | SC-P10202-100 | RETAINING RING | 1 |
| 2 | SC-11-5033S000 | SPRING | 1 |
| 3 | SC-P11003-210 | O-RING | 1 |
| 4 | SC-12-0440S812 | CHECK BALL | 1 |
| 5 | SC-11-5035S000 | SEAT-INLET | 1 |
| 6 | SC-11-5034S003 | BALL GUIDE | 1 |
| 7 | SC-11-5032S000 | SPRING GUIDE | 1 |
| 8 | SC-11-5028N000 | GASKET | 1 |
| 9 | SC-P11227-216 | BACK UP | 2 |
| 10 | SC-11-5051P000 | PISTON BUMPER | 1 |
| 11 | SC-12-25N87WF1Z | FENDER WASHER | 1 |
| 12 | SC-12-25F37SBC45Z | BUTTON HEAD CAP SCREW | 1 |
| 13 | SC-P10212-025 | HELICAL SPRING LOCK WASHER | 1 |
| 14 | SC-11-6008S020 | HYDRAULIC PISTON | 1 |
| 15 | SC-P11000-216 | O-RING | 1 |
| 16 | SC-11-6009B020 | HYDRAULIC CYLINDER | 1 |
| 17 | SC-11-5034S002 | BALL GUIDE | 1 |
| 18 | SC-11-5017S000 | SPRING GUIDE | 1 |
| 19 | SC-11-5020S000 | SEAT-OUTLET | 1 |
| 20 | SC-P10202-068 | RETAINING RING | 1 |
| 21 | SC-11-5013S000 | SPRING | 1 |
| 22 | SC-12-0440S562 | CHECK BALL | 1 |
| 23 | SC-P11003-112 | O-RING | 1 |

| | | | |
|---------------------|----------------|----------------------|----|
| AIR MOTOR ASSEMBLY: | | | |
| 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-11-5047N000 | BEARING ASSEMBLY | 1 |
| 7 | SC-P11000-261 | O-RING | 2 |
| 8 | SC-P11000-231 | O-RING | 1 |
| 9 | SC-P11003-137 | O-RING | 2 |
| 10 | SC-D10684 | SEAL-DRY | 1 |
| 11 | SC-P10263-193 | RETAINING RING | 1 |
| 12 | SC-P11000-028 | O-RING | 1 |
| 13 | SC-11-5057P000 | BUMPER | 1 |
| 14 | SC-11-5005M002 | SPRING | 1 |
| 15 | SC-11-6027A000 | PILOT VALVE ASSEMBLY | 1 |
| 16 | SC-11-6092A000 | HEAD | 1 |
| 17 | SC-11-5012N000 | BUMPER | 1 |
| 18 | SC-P11000-214 | O-RING | 2 |
| 19 | SC-D10817 | PISTON - APA | 1 |
| 20 | SC-D10263 | SLEVE - APA | 1 |
| 21 | SC-P11000-135 | O-RING | 1 |
| 22 | SC-P11000-144 | O-RING | 4 |
| 23 | SC-P10214-038 | WASHER-FLAT | 16 |
| 24 | SC-12-R262S000 | RETAINING RING | 1 |
| 25 | SC-P11000-223 | O-RING | 1 |
| 26 | SC-P10230 | BOLT-HEX | 8 |
| 27 | SC-12-R200S000 | RETAINING RING | 1 |
| 28 | SC-11-5172N000 | PLUG | 1 |
| 29 | SC-12-37CNFH1Z | NUT - HEX | 8 |
| 30 | SC-P10238 | SET SCREW-HEX SOCKET | 1 |

PARTS BREAKDOWN FOR MODEL HP30/25

| REF#.. | PART NUMBER.. | DESCRIPTION.. | |
|---|----------------|----------------|---|
| 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 |

AIR CHECK ASSEMBLY #SC11-6032X403

| | | | |
|---|-----------------|------------|---|
| 1 | SC-11-5056A000 | SCREW | 1 |
| 2 | SC-P11000-111 | O-RING | 1 |
| 3 | SC-11-5043N000 | 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-11-5025N403 | WASHER | 1 |

HEAD ASSEMBLY (D6DRY LUBE) - #C10516

| | | | |
|----|----------------|------------------|---|
| 1 | SC-11-6092A000 | HEAD | 1 |
| 2 | SC-11-5012N000 | BUMPER | 1 |
| 3 | SC-P1000-214 | O-RING | 2 |
| 4 | SC-11-5057P000 | BUMPER | 1 |
| 5 | SC-P11000-144 | O-RING | 4 |
| 6 | SC-D10684 | SEAL - DRY | 1 |
| 7 | SC-P11000-135 | O-RING | 1 |
| 8 | SC-P11000-137 | O-RING | 2 |
| 9 | SC-P11000-231 | O-RING | 2 |
| 10 | SC-D11062 | SPACER | 1 |
| 11 | SC-11-5005M002 | SPRING | 1 |
| 12 | SC-D10817 | PISTON - APA | 1 |
| 13 | SC-P10263-193 | RETAINING RING | 1 |
| 14 | SC-D10263 | SLEEVE - APA | 1 |
| 15 | SC-11-5047N000 | BEARING ASSEMBLY | 1 |
| 16 | SC-12-R262S000 | RETAINING RING | 1 |
| 17 | SC-P11000-261 | O-RING | 1 |
| 18 | SC-911000-223 | O-RING | 1 |

MISC SECTION:

| | |
|--------------------|-------------------------------|
| BALLVALVE-7250X3/8 | 3/8 BALLVALVE |
| LINESTRAINER-1/2 | MXM 100 MESH |
| GAUGE-3000 | 3000 PSI LIQUID FILLED GAUGE |
| HOSE-3/8X8-RH | 3/8 X 8 FT OUTLET HOSE |
| COUPLERBODY-S-3/8 | FEMALE CONNECT TO OUTLET HOSE |
| COUPLERPLUG-S-3/8 | MALE PUMP OUTLET PIPING |
| HOSESWIVEL-1/2 | 1/2 X 3/4 HOSE SWIVEL |
| NEEDLEVALVE-1/4 | BLEED VALVE |
| FILTER-PARKER-1/2 | FILTER REGULATOR W/GAUGE |
| MUFFLER-HP-1" | MUFFLER |
| PUMP-D6000B25 | PNEUMATIC PUMP |