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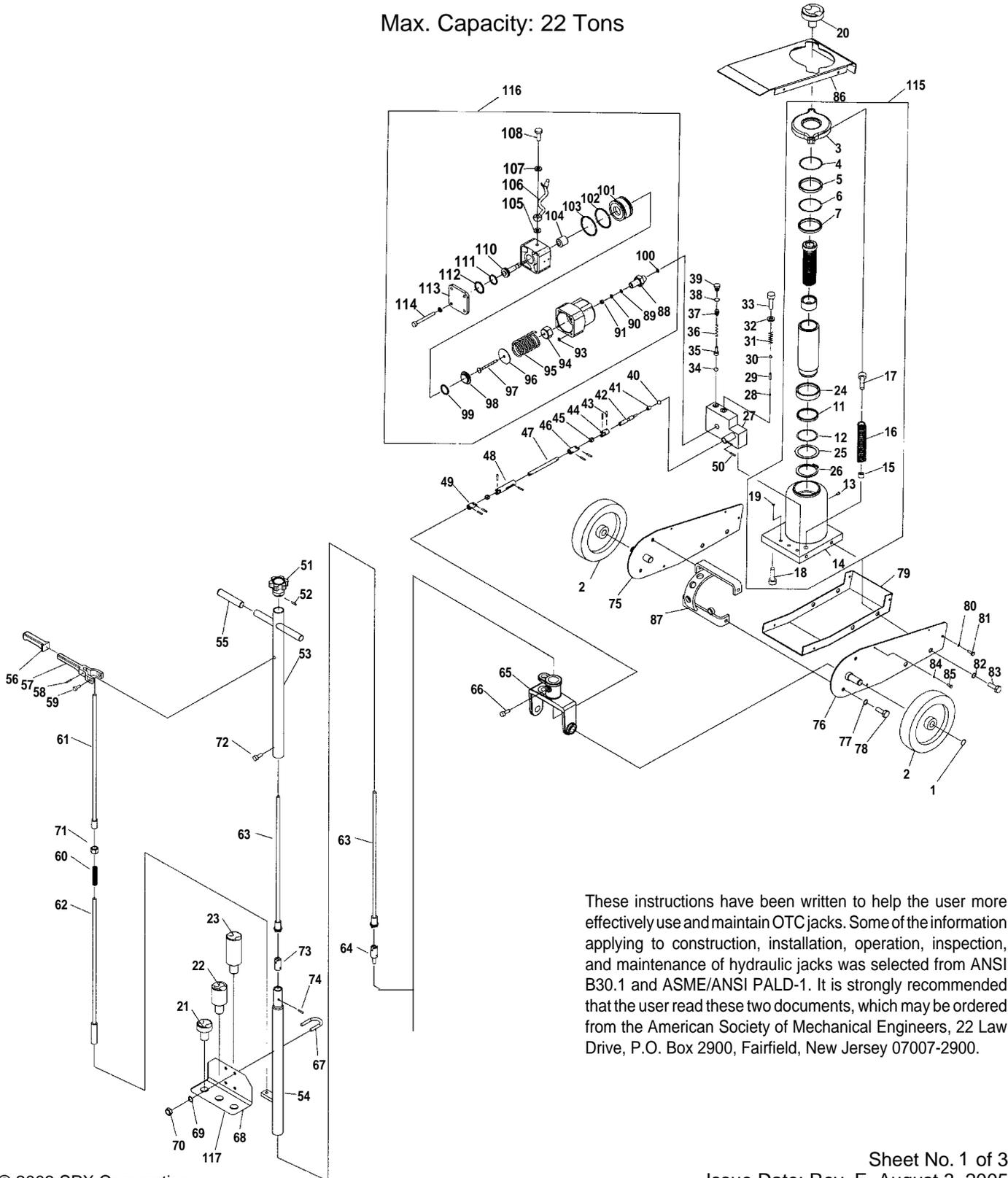
Parts List &
 Operating Instructions

for:

1788A

Air / Hydraulic Under Axle Jack

Max. Capacity: 22 Tons



These instructions have been written to help the user more effectively use and maintain OTC jacks. Some of the information applying to construction, installation, operation, inspection, and maintenance of hydraulic jacks was selected from ANSI B30.1 and ASME/ANSI PALD-1. It is strongly recommended that the user read these two documents, which may be ordered from the American Society of Mechanical Engineers, 22 Law Drive, P.O. Box 2900, Fairfield, New Jersey 07007-2900.

Replacement Parts

| Item No. | Qty. | Description | Item No. | Qty. | Description |
|----------|------|--------------------------|----------|------|---------------------------|
| 1 | 2 | Snap Ring | 60 | 1 | Spring |
| 2 | 2 | Wheel | 61 | 1 | Control Rod A |
| 3 | 1 | Spring Hanger | 62 | 1 | Control Rod B |
| 4 | 1 | Snap Ring | 63 | 2 | Convey Rod |
| 5 | 1 | Bushing | 64 | 1 | Rod Joint |
| 6 | 1 | O-ring | 65 | 1 | Handle Socket |
| 7 | 1 | Bushing | 66 | 1 | Bolt |
| 11 | 1 | Washer | 67 | 2 | U-bolt |
| 12 | 1 | O-ring | 68 | 1 | Fix Board |
| 13 | 1 | Oil Filler Plug | 69 | 4 | Spring Washer |
| 14 | 1 | Oil Cylinder Assembly | 70 | 4 | Nut |
| 15 | 2 | Nut | 71 | 1 | Nut |
| 16 | 2 | Spring | 72 | 1 | Screw |
| 17 | 2 | Bolt | 73 | 1 | Rod Joint |
| 18 | 3 | Bolt | 74 | 1 | Pin |
| 19 | 3 | O-ring | 75 | 1 | Frame Left |
| 20 | 1 | 20 mm Extension Adapter | 76 | 1 | Frame Right |
| 21 | 1 | 20 mm Extension Adapter | 77 | 4 | Washer |
| 22 | 1 | 60 mm Extension Adapter | 78 | 4 | Bolt |
| 23 | 1 | 100 mm Extension Adapter | 79 | 1 | Bed |
| 24 | 1 | Piston Ring | 80 | 4 | Washer |
| 25 | 1 | Washer | 81 | 4 | Bolt |
| 26 | 1 | Snap Ring | 82 | 4 | Washer |
| 27 | 1 | Valve Block | 83 | 4 | Bolt |
| 28 | 1 | Steel Ball | 84 | 4 | Washer |
| 29 | 1 | Pin | 85 | 4 | Bolt |
| 30 | 1 | Steel Ball | 86 | 1 | Cover Board |
| 31 | 1 | Spring | 87 | 1 | Bracket |
| 32 | 1 | Copper Washer | 88 | 1 | Cylinder Pump |
| 33 | 1 | Bolt | 89 | 1 | Y-Sealing Washer |
| 34 | 1 | Steel Ball | 90 | 1 | Nylon Washer |
| 35 | 1 | Ball Seat | 91 | 1 | Copper Washer |
| 36 | 1 | Spring | 93 | 1 | O-ring |
| 37 | 1 | Screw | 94 | 1 | Hex Nut |
| 38 | 1 | Sealing Washer | 95 | 1 | Spring |
| 39 | 1 | Valve Plug Screw | 96 | 1 | Washer |
| 40 | 1 | Steel Ball | 97 | 1 | Pump Plunger |
| 41 | 1 | Sealing Washer | 98 | 1 | Washer |
| 42 | 1 | Release Valve Rod | 99 | 1 | O-ring |
| 43 | 8 | Rivet | 100 | 1 | Copper Washer |
| 44 | 1 | Universal Joint A | 101 | 1 | Piston |
| 45 | 2 | Block | 102 | 1 | O-ring |
| 46 | 1 | Universal Joint B | 103 | 1 | O-ring |
| 47 | 1 | Rod | 104 | 1 | Sealing Washer |
| 48 | 1 | Universal Joint C | 105 | 1 | Copper Joint Ring |
| 49 | 1 | Universal Joint D | 106 | 1 | Air Hose (with Air Valve) |
| 50 | 1 | Pin | 107 | 1 | Washer |
| 51 | 1 | Knob | 108 | 1 | Bolt |
| 52 | 1 | Pin | 110 | 1 | Release Air Rod |
| 53 | 1 | Rear Handle | 111 | 1 | O-ring |
| 54 | 1 | Front Handle | 112 | 1 | O-ring |
| 55 | 2 | Handle Sleeve | 113 | 1 | Cylinder Cover |
| 56 | 1 | Sleeve | 114 | 4 | Bolt |
| 57 | 1 | Lock Lever | 115 | 1 | Power Unit Assembly |
| 58 | 1 | Pin | 116 | 1 | Air Pump Assembly |
| 59 | 2 | Bolt | 117 | 3 | Hairpin Clip |

Replacement Kits

| Item No. | Qty. | Description |
|----------|------|-------------|
|----------|------|-------------|

Adapter 1 — No. 520712:
 20 1 Extension Adapter
 (20 mm x 68.5 mm dia.)
 117 1 Hairpin Clip

Adapter 2 — No. 520713:
 21 1 Extension Adapter
 (20 mm x 48 mm dia.)
 117 1 Hairpin Clip

Adapter 3 — No. 520714:
 22 1 Extension Adapter
 (60 mm x 48 mm dia.)
 117 1 Hairpin Clip

Adapter 4 — No. 520715:
 23 1 Extension Adapter
 (100 mm x 48 mm dia.)
 117 1 Hairpin Clip

**Adapter Rack Assembly
 No. 520711:**
 67 2 U-bolt
 68 1 Fix Board
 69 4 Spring Washer
 70 4 Nut

**Air Block Assembly
 No. 520708:**
 18 3 Bolt
 19 3 O-ring
 27 1 Valve Block
 28 1 Steel Ball
 29 1 Pin
 30 1 Steel Ball
 31 1 Spring
 32 1 Copper Washer
 33 1 Bolt
 34 1 Steel Ball
 35 1 Ball Seat
 36 1 Spring
 37 1 Screw
 38 1 Sealing Washer
 39 1 Valve Plug Screw
 50 1 Pin

**Air Hose Kit
 No. 520703:**
 105 1 Copper Joint Ring
 106 1 Air Hose (w/ air valve)
 107 1 Washer
 108 1 Bolt

**Air Pump Hardware
 No. 520730:**
 88 1 Cylinder Pump
 94 1 Hex Nut
 95 1 Spring
 96 1 Washer
 97 1 Pump Plunger
 101 1 Piston
 110 1 Release Air Rod
 113 1 Cylinder Cover
 114 4 Bolt

| Item No. | Qty. | Description |
|----------|------|-------------|
|----------|------|-------------|

**Air Pump Kit
 No. 520702:**
 116 1 Air Pump Assembly

**Air Seal Kit
 No. 520700:**
 89 1 Y-sealing Washer
 90 1 Nylon Washer
 91 1 Copper Washer
 93 1 O-ring
 98 1 Washer
 99 1 O-ring
 100 1 Copper Washer
 102 1 O-ring
 103 1 O-ring
 104 1 Sealing Washer
 105 1 Copper Joint Ring
 111 1 O-ring
 112 1 O-ring

**Frame Kit
 No. 521987:**
 75 1 Frame Left
 76 1 Frame Right
 87 1 Bracket

**Handle Kit
 No. 520704:**
 51 1 Knob
 52 1 Pin
 53 1 Rear Handle
 54 1 Front Handle
 55 2 Handle Sleeve
 56 1 Sleeve
 57 1 Lock Lever
 58 1 Pin
 59 2 Bolt
 60 1 Spring
 61 1 Control Rod A
 62 1 Control Rod B
 63 2 Convey Rod
 64 1 Rod Joint
 71 1 Nut
 72 1 Screw
 73 1 Rod Joint
 74 1 Pin

**Handle Pivot Kit
 No. 520706:**
 65 1 Handle Socket

**Handle Retaining Screw
 No. 520710:**
 66 1 Bolt

**Hardware Kit
 No. 521988:**
 77 4 Washer
 78 4 Bolt
 80 4 Washer
 81 4 Bolt
 82 4 Washer
 83 4 Bolt
 84 4 Washer
 85 4 Bolt

| Item No. | Qty. | Description |
|----------|------|-------------|
|----------|------|-------------|

**Hydraulic Seal Kit
 No. 520699:**
 4 1 Snap Ring
 5 1 Bushing
 6 1 O-ring
 7 1 Bushing
 11 1 Washer
 12 1 O-ring
 13 1 Oil Filler Plug
 19 3 O-ring
 24 1 Piston Ring
 25 1 Washer
 26 1 Snap Ring

**Hydraulic Unit Kit
 No. 520701:**
 82 4 Washer
 83 4 Bolt
 115 1 Power Unit Assembly

**Inspection Plate
 No. 520729:**
 84 4 Washer
 85 4 Bolt
 86 1 Cover Board

**Release Screw Assembly
 No. 520707:**
 40 1 Steel Ball
 41 1 Sealing Washer
 42 1 Release Valve Rod
 43 8 Rivet
 44 1 Universal Joint A
 45 2 Block
 46 1 Universal Joint B
 47 1 Rod
 48 1 Universal Joint C
 49 1 Universal Joint D
 50 1 Pin

**Return Spring Assembly
 No. 520709:**
 3 1 Spring Hanger
 15 2 Nut
 16 2 Spring
 17 2 Bolt

**Skid Plate
 No. 520827:**
 79 1 Bed
 80 4 Washer
 81 4 Bolt

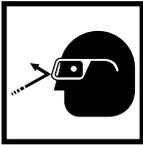
**Wheel Kit
 No. 520705:**
 1 1 Snap Ring
 2 1 Wheel

Safety Precautions

⚠ WARNING: Failure to heed the following warnings can result in personal injury and / or equipment damage. These warnings cannot cover every situation, so have safety foremost in your mind when setting up a job.



- Read, understand, and follow safety precautions and operating instructions. If the operator cannot read these instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.



- Wear eye protection that meets the requirements of ANSI Z87.1 and OSHA.

- Inspect the jack before each use; do not use the jack if it is damaged, altered, or in poor condition.

- To prevent tipping, set up the jack on a hard, level surface.

- The load must not exceed the rated lifting capacity of the jack. Lift only dead weight.

- Center the load on the jack saddle; off-center loads can damage the seals and cause hydraulic failure.



- Use the jack for lifting purposes only. This jack is designed to LIFT loads, not support loads. Immediately support a lifted load with jack stands.

- Stay clear of lifted loads.

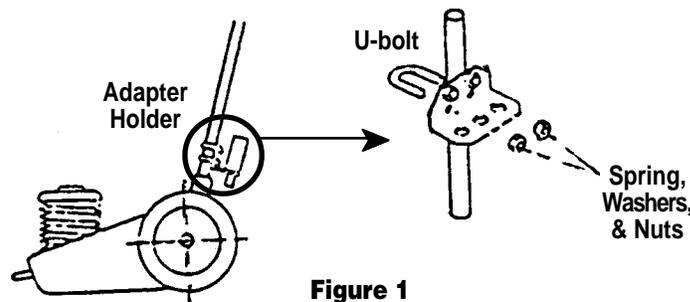
- The safety valve is set at the factory; no further adjustment is needed.

- Use only approved hydraulic fluid, such as Chevron AW Hydraulic Oil MV or equivalent.

Setup Instructions

1. Add 1/2 oz. clean lubricating oil to the air inlet, and connect the air supply. **IMPORTANT:** To prevent damage to the air pump, the air supply must be clean and dry.

2. Assemble the adapter holder to the handle using U-bolts, nuts, and spring washers provided. See Figure 1. **NOTE:** When not using the adapters, store them on the holder. Lock each adapter in place with a hitch pin.



Operating Instructions

1. Tightly close the release valve knob (located on top of the "T" handle) by turning it clockwise.
2. Center the load on the jack saddle. Connect the air supply, and squeeze the air valve lever to raise the load. Release the air valve lever to stop movement.
3. Transfer the load to support stands.
4. To lower the jack, open the release valve knob by SLOWLY turning it counterclockwise.

NOTE: To adjust the handle, pull up and then release the lever to lock it in one of three positions.

Bleeding the Jack

Air bubbles can become trapped inside the hydraulic system, reducing the efficiency of the jack. Purge air from the system as needed by following these steps:

1. With the jack sitting on its base and the ram retracted, bleed air by opening the release valve.
2. Pump for 10 seconds.

Operating Instructions

Pump Prime Instructions

The air/hydraulic pump may lose its prime during shipment or after long periods without use. To prime the pump, follow these steps:

1. Remove the upper cover.
2. Loosen the hex socket bolt one-half turn. See Figure 2.
3. Close the release valve.
4. Operate the air pump while repeatedly tightening and loosening the bolt.
5. When the piston begins to rise, tighten the bolt. Verify the piston can rise to the maximum height position.

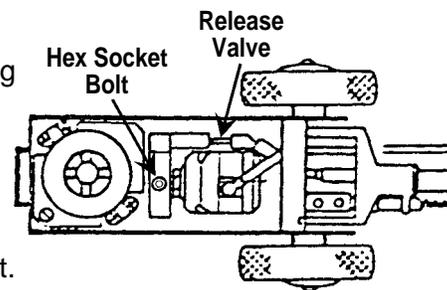


Figure 2

Preventive Maintenance

IMPORTANT: Dirt is the greatest single cause of failure in hydraulic units. Keep the jack clean and well lubricated to prevent foreign matter from entering the system. If the jack has been exposed to rain, snow, sand, or grit, it must be cleaned before it is used.

1. When the jack is not in use, keep the piston and pump rods fully retracted. Store the jack on its base and in a well protected area where it will not be exposed to corrosive vapors, abrasive dust, or any other harmful elements.
2. Maintain the oil level. If it's necessary to add oil, remove the filler plug, and fill the reservoir with Chevron AW Hydraulic Oil MV or equivalent.
3. Visually inspect the jack before each use. Take corrective action if any of the following problems are found:
 - a. Cracked or damaged housing
 - b. Excessive wear, bending, or other damage
 - c. Leaking hydraulic fluid
 - d. Scored or damaged piston rod
 - e. Incorrectly functioning swivel heads or adj. screw
 - f. Loose hardware
 - g. Modified or altered equipment

Troubleshooting Guide

Repairs must be performed in a dirt-free environment by qualified personnel who are familiar with this equipment.

| Trouble | Cause | Solution |
|---|---|---|
| Erratic Action | <ol style="list-style-type: none"> 1. Air in system 2. Viscosity of oil too high 3. Ram sticking or binding 4. Internal leakage in ram | <ol style="list-style-type: none"> 1. With jack sitting on its base and ram retracted, bleed air by opening release valve. Pump 10 seconds. 2. Change to a lower viscosity oil. 3. Look for dirt, gummy deposits, leaks, misalignment, worn parts, or defective packings. 4. Replace worn packings. Look for excessive contamination or wear. |
| Ram does not advance | <ol style="list-style-type: none"> 1. Release valve is open 2. Low/no oil in reservoir 3. Air locked system 4. Load is above capacity of system 5. Pump lost its prime | <ol style="list-style-type: none"> 1. Close release valve located on top of "T" handle. 2. Fill with oil & bleed system. 3. With jack sitting on its base and ram retracted, open release valve, run pump for 10 seconds. 4. Use correct equipment. 5. Follow "Pump Prime Instructions." |
| Ram only extends partially | <ol style="list-style-type: none"> 1. Low oil level in reservoir 2. Piston rod is binding | <ol style="list-style-type: none"> 1. Fill reservoir with oil; bleed system. 2. Look for dirt, gummy deposits, leaks, misalignment, worn parts, or defective packings. |
| Ram advances slowly | <ol style="list-style-type: none"> 1. Low air pressure 2. Pump not working correctly 3. Leaking seals | <ol style="list-style-type: none"> 1. Adjust air pressure to 90–145 psi. 2. Rework pump. 3. Replace seals. |
| Ram advances but doesn't hold pressure | <ol style="list-style-type: none"> 1. Release valve is open 2. Ram seals are leaking 3. Pump check valve not working 4. Overload valve leaking / not adjusted | <ol style="list-style-type: none"> 1. Close release valve located on top of "T" handle. 2. Replace seals. 3. Clean / replace check valve. 4. Replace / adjust overload valve. |
| Jack leaks oil | <ol style="list-style-type: none"> 1. Worn or damaged seals | <ol style="list-style-type: none"> 1. Replace seals. |
| Ram will not retract, or retracts slowly | <ol style="list-style-type: none"> 1. Release valve is closed 2. Reservoir too full 3. Ram damaged internally | <ol style="list-style-type: none"> 1. Open release valve. 2. Drain oil to correct level. 3. Take jack to authorized service center for repair. |