

CENTRAL HYDRAULICS® **AIR/OVER HYDRAULIC 20 TON**

JACK

Model 96147

ASSEMBLY AND OPERATING INSTRUCTIONS



Due to continuing improvements, actual product may differ slightly from the product described herein.

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**HARBOR FREIGHT
TOOLS**



3491 Mission Oaks Blvd., Camarillo, CA 93011

Visit our Web site at <http://www.harborfreight.com>

**TO PREVENT SERIOUS INJURY, READ AND UNDERSTAND
ALL WARNINGS AND INSTRUCTIONS BEFORE USE.**

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For technical questions and replacement parts, please call 1-800-444-3353

SPECIFICATIONS

Capacity	20 Ton Maximum
Height	10-3/8" Minimum 20-1/4" Maximum (with screw extended)
Ram	2.12" Diameter x 6-1/2" travel
Air Inlet Fitting	1/4" NPT
Weight	37 Pounds
Base Dimensions	9-7/8" L x 6-1/2" W
Air Hose	3/8" x 46-1/8" L with crimped hose fittings
Air Pressure	70 - 150 PSI

Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

SAFETY WARNINGS AND PRECAUTIONS

WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

Read all instructions before using this tool.

1. **Do not overload this equipment.** Know the weight of the item being lifted.
2. **Use Jack for lifting only.** Do not use this equipment for any other purpose. Immediately after lifting, support the load with appropriate supporting equipment.
3. **Place Jack correctly.** Only use this equipment on a surface that is stable, level, clean and dry, and capable of sustaining the load.
4. **Stabilize load.** Ensure that the load remains stable at all times. Do not attempt to shift a load while it is on the Jack.
5. **When lifting a vehicle, apply the emergency brake, and block all wheels.**
6. **Do not work under a load while it is being supported by the Jack.**
7. **Keep work area clean.** Cluttered areas invite injuries.
8. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lit.
9. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines or tools.
10. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.

11. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. Do not use a tool for a purpose for which it was not intended.
12. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
13. **Use eye and ear protection.** Always wear ANSI approved impact safety goggles. Wear an ANSI approved dust mask or respirator when working around metal, wood, and chemical dusts and mists.
14. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
15. **Maintain tools with care.** Keep tool clean for better and safer performance. Follow instructions for lubricating and changing accessories. The handles must be kept clean, dry, and free from oil and grease at all times.
16. **Remove adjusting keys and wrenches.** Check that keys and adjusting wrenches are removed from the tool or machine work surface before plugging it in.
17. **Be alert.** Watch what you are doing and use common sense when operating a power tool. Do not use a power tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools can result in serious personal injury.
18. **Check for damaged parts.** Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician.
19. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty.
20. **Not to be used for any aircraft purposes.**

Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

UNPACKING

When unpacking, check to make sure the all parts are included. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

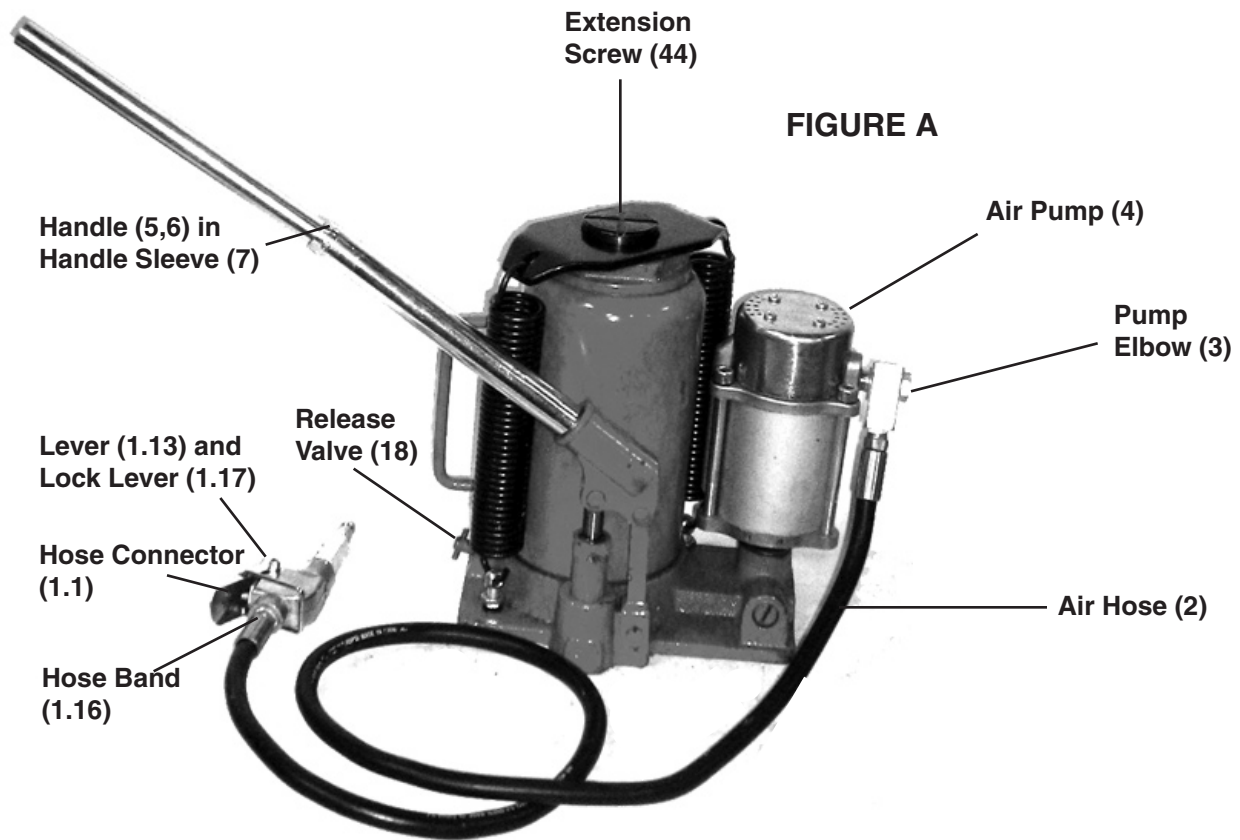
ASSEMBLY

1. Screw the Pump Elbow (3) into the Air Pump (4) and tighten.
2. Connect the Air Hose (2) to the Pump Elbow (3).
3. Connect the other end of the Air Hose to the Air Valve Body (1.6)
4. Connect the two pipe Handles (5, 6) together.
5. Check level of hydraulic oil, fill if necessary (See “Oil Replacement” section of manual for directions).

OPERATION

Lifting

1. Test Jack to ensure proper working condition before use, raise and lower ram to see if operation is smooth and without hitch.
2. Place the slotted end of the Lower Handle (6) over the Release Valve Screw (18). Turn the Valve Release screw clockwise until snug. **(See FIGURE A)**
3. Place the Jack into position under the load.
4. Check manufacturer’s manual of vehicle or other item being lifted to find the recommended lifting points.
5. Adjust the Extension Screw (44) as needed, turn counterclockwise to raise, clockwise to lower.
6. Insert the large end of the Handle assembly into the Handle Sleeve (7).
7. Connect the air supply hose lock fitting into the Hose Connector (1.1).
8. The Lever (1.13) should be Off (not in the locked position).
9. Press the Lever (1.13) to the On position and lock using the Lock Lever (1.17).
10. Raise the Jack by alternately lifting and lowering the Handle assembly or by depressing Lever (1.13).



Lowering

Caution: Clear tools from underneath the load before lowering. Keep hands and feet clear. Before lowering the Jack, the operator must ensure that all bystanders are free and clear of the load before continuing.

Caution: Avoid rapid descent of the load. Turn the Release Valve slowly.

1. Release the Lock Lever (1.17) to stop air flow to the Air Motor (4).
2. Remove air supply hose from the Air Inlet Fitting.
3. Place the slotted end of the Handle (5, 6) assembly over the Release Valve Screw (18).
4. Slowly and carefully lower the load by turning the Release Valve counterclockwise in extremely small increments using only the Handle assembly (never your hand).
5. Remove the Jack.

MAINTENANCE

General Care

1. Periodically lubricate the joints and Extension Screw (44) with a light oil as needed.
2. Clean the outside of the Jack with a dry, clean cloth.
3. If the Jack is exposed to moisture, wipe dry with a clean cloth and lubricate as noted above.
4. Store jack with Extension Screw (44) and Ram (48) fully collapsed.

Purging Air from the Hydraulic System

Air bubbles can become trapped inside the hydraulic system thereby reducing the efficiency of the Jack. Purge the air from the system if lift efficiency drops.

1. Place the slotted end of the Handle (5, 6) assembly over the Valve Release (18) and turn 1-1/2 turns counterclockwise.
2. Remove the oil Filler Plug (23) on the side of the jack Reservoir (37) by gently pulling and turning it.
3. Rapidly pump the Handle assembly several times to purge the air from the hydraulic system.
4. Turn the Release Valve screw clockwise until snug using the Handle assembly.
5. Top off jack Reservoir (37) as described below.
6. Replace the Filler Plug (23).

Oil Replacement

1. Place Jack in an upright position.
2. Completely lower the Ram (48).
3. Remove the Filler Plug (23).
4. Fill with high-quality hydraulic jack oil to the lower rim of the fill hole.
5. Purge air from the hydraulic system as previously described.
6. Top off with more hydraulic oil.
7. Replace Filler Plug (23).

PARTS LIST

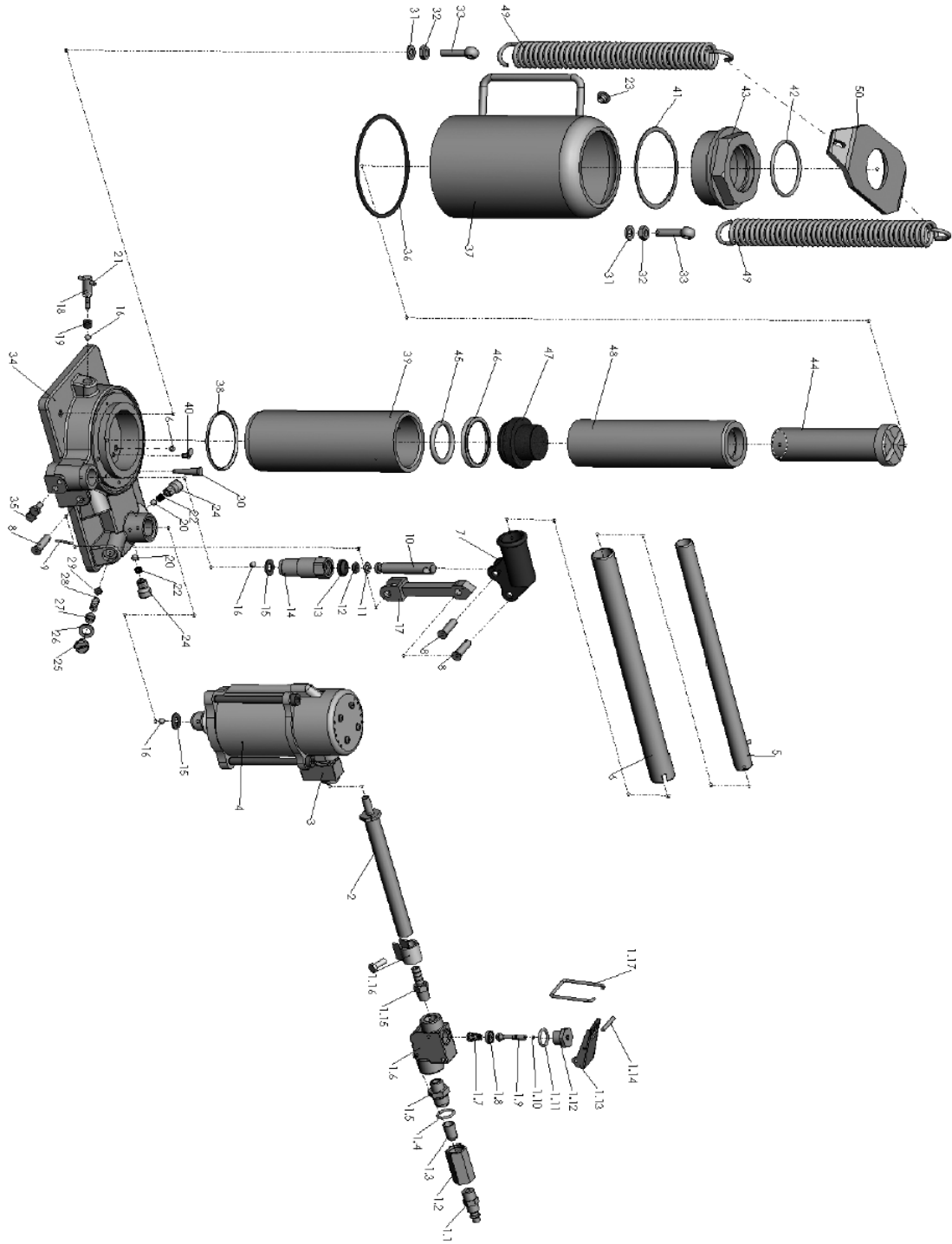
Part	Description	Qty
1.1	Hose Connector	1
1.2	Connecting Nut	1
1.3	Air Filter	1
1.4	O-Ring 18 X 2.4	1
1.5	Connector	1
1.6	Valve Body	1
1.7	Spring	1
1.8	Packing	1
1.9	Throttle	1
1.10	O-Ring 3 x 1.6	1
1.11	O-Ring 18 x 2.4	1
1.12	Nut	1
1.13	Lever	1
1.14	Lever Ring	1
1.15	Air Valve	1
1.16	Hose Connector	2
1.17	Lock Lever	1
2	Air Hose	1
3	Pump Elbow	1
4	Air Pump	1
5	Handle Upper	1
6	Handle Lower	1
7	Handle Sleeve	1
8	Shaft Pin	3
9	Cotter Pin	3
10	Pump Plunger	1
11	Pump Plunger Retainer	1
12	O-Ring	1
13	Dust Proof Ring	1
14	Pump Reservoir	1
15	Copper Washer	1
16	Steel Ball 6	6
17	Plunger Connecting Rod	1

Part	Description	Qty
18	Release Valve	1
19	Release Valve Seal	1
20	Steel Ball 6.35	1
21	Pin	1
22	Valve Spring	2
23	Filler Plug	1
24	Screw	2
25	Plug Screw	1
26	Plunge Washer	1
27	Overload Valve Screw	1
28	Safety Valve Spring	1
29	Overload Tapering Valve	1
30	Filter Net	2
31	Spring Washer 8	2
32	Nut 8	2
33	Bolt M8 x 35	2
34	Base	1
35	Plug Screw	4
36	Cylinder Bottom Seal	1
37	Reservoir	1
38	Packing	1
39	Cylinder	1
40	Steel Ball Retainer	2
41	Cylinder Top Seal	1
42	O-Ring	1
43	Top Nut	1
44	Extension Screw	1
45	O-Ring	1
46	O-Ring Retainer	1
47	Ram Header	1
48	Ram	1
49	Spring	2
50	Spring Plate	1

PLEASE READ THE FOLLOWING CAREFULLY

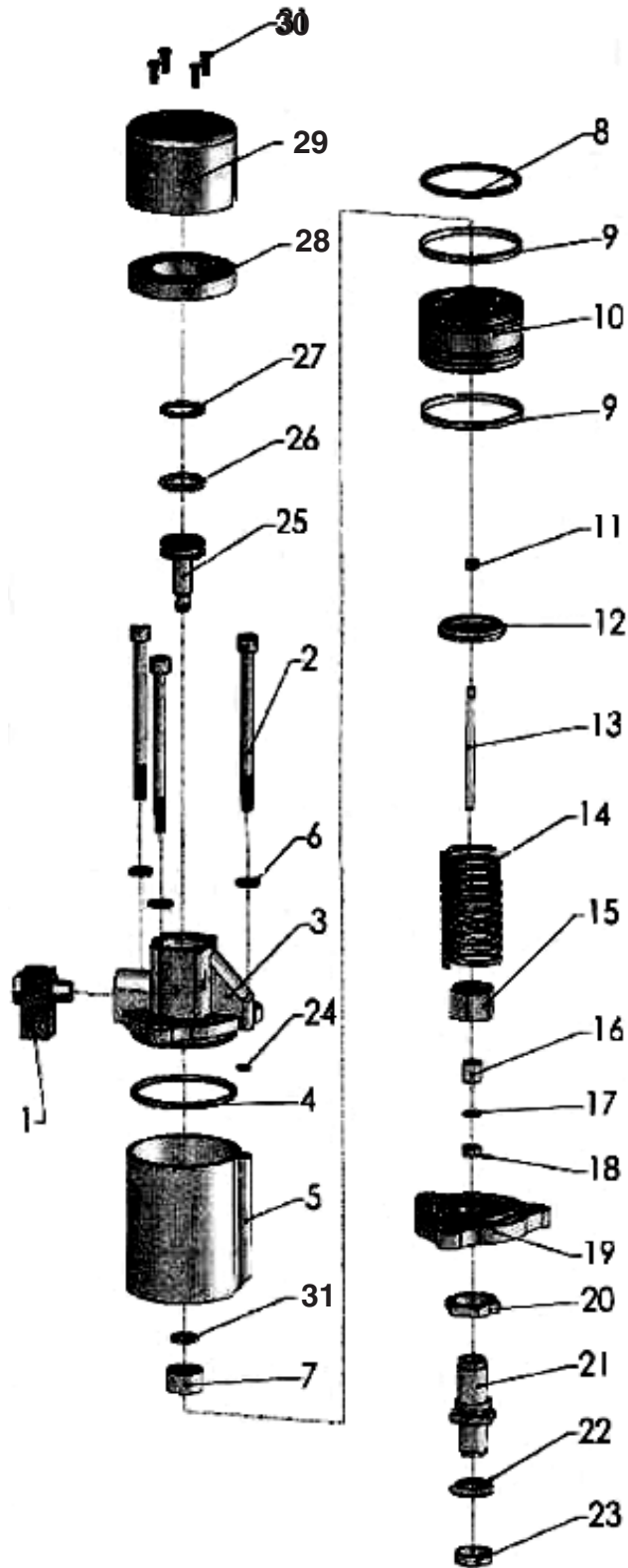
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ASSEMBLY DRAWING



PUMP DIAGRAM

Part	Description
1A	Removable Base
2A	Hex-Socket Screw
3A	Cover
4A	O-ring
5A	Air Pump Body
6A	Spring Washer
7A	Seal
8A	O-ring
9A	Square Ring
10A	Piston
11A	Nut
12A	Block
13A	Plunger Cover
14A	Spring
15A	Nut
16A	Packing Guide
17A	NL Retainer
18A	Y Seal
19A	Cover
20A	Adjusting Nut
21A	Plunger Cover
22A	Cover
23A	Thread Seal
24A	O-ring
25A	Shuttle Valve
26A	O-ring
27A	O-ring
28A	Sponge
29A	Muffler
30A	Bolt
31A	Washer



Remember to include the "A" when ordering parts from this list.

LIMITED 1 YEAR / 90 DAY WARRANTY

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that for a period of one year from date of purchase that the tank is free of defects in materials and workmanship (90 days if used by a professional contractor or if used as rental equipment). Harbor Freight Tools also warrants to the original purchaser, for a period of ninety days from date of purchase, that all other parts and components of the product are free from defects in materials and workmanship. This warranty does not apply to damage due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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Record Product's Serial Number Here: _____

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.