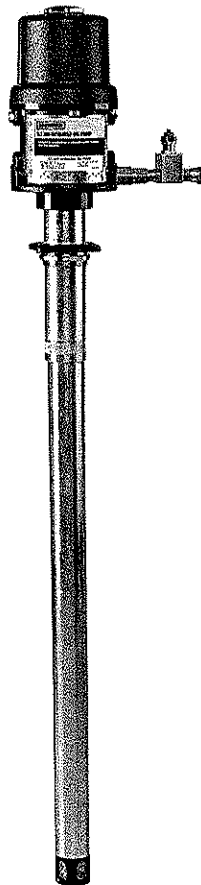




HEAVY-DUTY 5:1 AIR-OPERATED OIL PUMP W/ RELEASE VALVE

OWNER'S MANUAL



WARNING: Read carefully and understand all INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item#s 28701, 28702

Thank you very much for choosing a Roughneck™ Product! For future reference, please complete the owner's record below:

Model: _____ Purchase Date: _____

Save the receipt, warranty and these instructions. It is important that you read the entire manual to become familiar with this product before you begin using it.

This machine is designed for certain applications only. The distributor cannot be responsible for issues arising from modification. We strongly recommend this machine is not modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, DO NOT use the machine until you have first contacted distributor to determine if it can or should be performed on the product.

For technical questions, please call 1-800-222-5381.

⚠ WARNING: Read carefully and understand all INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury. Save these instructions in a safe place and on hand so that they can be read when required. Keep these instructions to assist in future servicing.

TECHNICAL SPECIFICATIONS

Model	28701	28702
Pressure ratio	5:1	5:1
Air inlet working pressure	70-180 PSI	70-180 PSI
Max. air inlet pressure	180 PSI	180 PSI
Max. fluid pressure	870 PSI	870 PSI
Air motor effective diameter	4.25in.	4.25in.
Max. flow rate	11 GPM	11 GPM
Suction tube diameter	2.1in.	2.1in.
Suction tube length	37in.	46in.
Air inlet	1/4in. FNPT	1/4in. FNPT
Oil outlet	3/4in. FNPT	3/4in. FNPT
Adjusting range of release valve	70-750 PSI	70-750 PSI
Features a 3/4in. to 1/2in. adapter and a release valve.		

GENERAL SAFETY REGULATIONS


⚠ WARNING: Read and understand all instructions.


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

1. **Keep the work area clean and dry.** Damp or wet work areas can result in injury.
2. **Keep children away from work area.** Do not allow children to handle this product.
3. **Store idle equipment.** When not in use, tools and equipment should be stored in a dry location to inhibit rust. Always lock up tools and equipment, and keep out of reach of children.

4. **Use the right tool for the job.** Do not attempt to force small equipment to do the work of larger industrial equipment. There are certain applications for which this pump was designed. It will do the job better and more safely at the capacity for which it was intended. Do not modify this pump, and do not use this pump for a purpose for which it was not intended.
5. **Check for damaged parts.** Before using this product, carefully check that it will operate properly and perform its intended function. Check for damaged parts and any other conditions that may affect the operation of this product. Replace damaged or worn parts immediately.
6. **Do not overreach.** Keep proper footing and balance at all times to prevent tripping, falling, back injury, etc.
7. **DO NOT use the pump when tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating this equipment may result in serious personal injury.
8. **Industrial applications must follow OSHA requirements.**

SPECIFIC OPERATION WARNINGS

 **WARNING:** This pump mainly provides power during oil transportation. Any other use can cause unsafe operating conditions and result in component rupture, fire or explosion, which can cause serious injury, including fluid injection.

 **WARNING:** To prevent personal injury, perform the Pressure Relief Procedure before and after operating the pump and before performing any disassembly or assembly.

 **WARNING:** Failure to follow these warnings could result in serious personal injury or even death.

1. EQUIPMENT MISUSE HAZARD: Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before you operate this equipment.
- Use the equipment only for its intended purpose. If you are not sure, call the distributor.
- Do not modify this equipment. If you need to replace the parts, use standard parts or components.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated component in your system.
- Do not misuse this equipment to pump fluids and solvents, which may cause damage to the wetted parts of the equipment. Refer to instructions of the manufacturers of the fluids and solvents.
- Handle hoses carefully. Do not pull on hoses to move equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Wear heat insulated gloves when operating the pumps.
- Do not move or lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

2. SKIN INJECTION HAZARD: Fluid from the dispensing valve, leaks, or ruptured components can inject fluid into your body and cause extremely serious injury. Fluid splashed in the eyes or on the skin can also cause serious injury. If a fluid injection injury occurs, **GET IMMEDIATE MEDICAL TREATMENT.** Do not treat it as a simple cut.

- Do not point the dispensing valve at anyone or at any part of the body.
- Do not put your hand or fingers over the end of the dispensing valve.
- Do not stop or deflect leaks with your hand, body, glove or a rag.
- Do not use oil that has been polluted or soiled.
- Use only extensions and no-drip tips which are designed for use with your dispensing valve.

- Follow the **Pressure Relief Procedure** in the **OPERATION INSTRUCTIONS** section if the fitting coupler clogs and before you clean or service this equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high-pressure couplings; you must replace the entire hose.

3. MOVING PARTS HAZARD: Moving parts, such as the air motor piston, can pinch or amputate your fingers.


- Keep clear of all moving parts when you start or operate the pump.
- Before you service this equipment, follow the **Pressure Relief Procedure** in the **OPERATION INSTRUCTIONS** section to prevent the equipment from starting unexpectedly.
- Before operating the pump, make sure no moving parts are exposed to the outside.
- **Never operate the pump with the warning plate or the identification plate removed.** These plates serve as shields to protect your fingers from pinching or amputation by moving parts inside the pump.

4. FIRE AND EXPLOSION HAZARD: Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground the equipment and the object that is to be lubricated.
- Do not run the pump without load.
- If there is any static sparking or you feel an electric shock while using this equipment, stop dispensing immediately. Do not use the equipment until proper grounding is established or any other problem is identified and solved.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being dispensed.
- Keep the dispensing area free of debris, including solvents, rags, and gasoline.
- Do not smoke in the dispensing area.

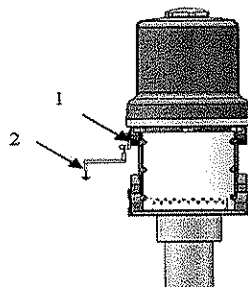
INSTALLATION

1. GROUNDING

 **WARNING:** Before operating the pump, check the grounding of whole system to avoid the risk of fire and explosion.

To reduce the risk of static sparking, effectively ground all of this equipment.

- **Pump:** Refer to Fig.1. Use ground wire and clamp as shown in Fig. 1. Remove the ground screw 1. Connect the ground wire 2 to a true earth ground by inserting the terminal end of ground wire 2 through the eye of the ring. Fasten the ground screw 1 back onto the pump and tighten securely.



- 1. Ground Screw
- 2. Ground Wire

Fig.1 Ground the pump

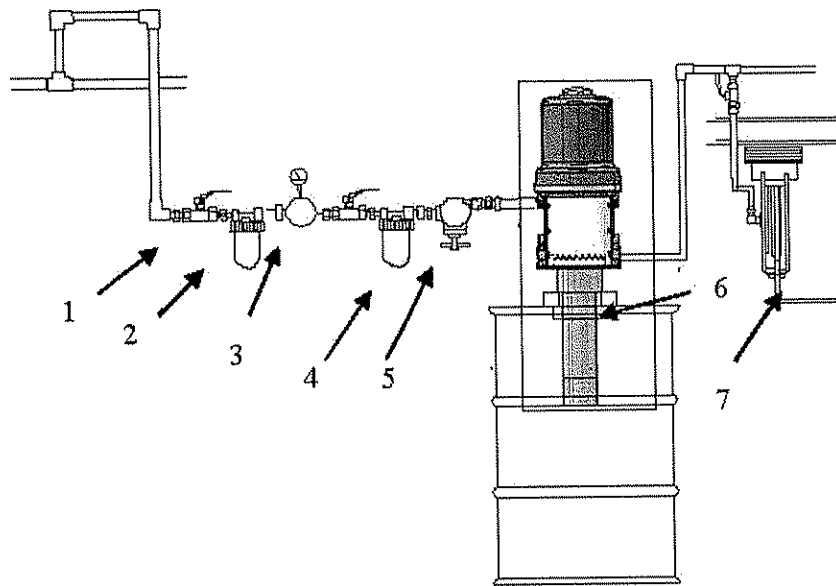
- **Air and fluid hoses:** Make sure they are effectively grounded.
- **Air compressor:** Follow the manufacturer's instruction to ground it.

- **Control valve:** Use proper grounding wire to connect it to the pump. Always keep the metal part of the control valve connected with the grounding equipment.
- **Oil Barrel:** Use a barrel which can meet the local standard and ground it properly. A metal barrel can be put directly on a surface of an electrical conductor that is properly grounded.
- **Other components:** ensure all parts are properly grounded to avoid risk of electrical shock.

⚠ **WARNING:** Always keep effective grounding when working or releasing pressure.

2. INSTALLATION

Typical installation refers to Fig.2:



1. Cut-off valve 2. Air return line filter 3. Air regulator with gauge 4. Lubricator
5. Control valve 6. Lock adapter 7. Hose reel

Fig 2 Typical installation

NOTE: The above typical installation is only for reference. It may be different from your actual system design.

Installation of air return line

NOTE: Do not hang any equipment on the air inlet as the hanging equipment may drop and be damaged.

- ⊖ Put a pump through the lock adapter (See Fig.2 part# 6), and then to barrel.
- ⊖ On the main line of air compressor, connect cut-off valve (See Fig.2 part# 1), which controls on and off air motor.
- ⊗ Install an air return line filter (See Fig.2 part# 2) to remove harmful dirt and contaminants from your compressed air supply.
 - . Install the air regulator (See Fig.2 part# 3) to control pump speed and adjust the air pressure.
 - . Install lubricator (See Fig.2 part# 4) that can self-lubricate.
 - . Install a control valve (See Fig.2 part# 5) to shut off the air to the pump if the pump accelerates beyond the pre-adjusted setting. A pump that runs too fast can be seriously damaged.
 - . Connect outlet line.

OPERATION INSTRUCTIONS

1. PRESSURE RELIEF PROCEDURE

(1) Skin injection hazard: The equipment stays pressurized until pressure is manually relieved. To reduce the risk of serious injury from pressurized fluid, fluid from the valve or splashing fluid, follow this procedure whenever you:

- Are instructed to relieve pressure
- Stop dispensing
- Check, clean or service any system equipment
- Install or clean dispensing devices

(2) Pressure relief procedure


- ⊖. Turn off the cut-off valve to shut off air.
- ⊖. Hold a metal part of the control valve firmly to a grounded metal waste container and point the valve outlet toward the waste container, then trigger the control valve to relieve the fluid pressure.
- ⊗. Open the air line valve and oil line valve.
 - . Close the control valve after the pressure is relieved.


(3) Clean the obstruction in the oil system, when any of the following cases occurs:

- ⊖. Problem on control valve, flexible hose, rigid tube or manual/auto tip.
- ⊖. Pressure cannot be relieved enough after above procedures are done.
- ⊗. It takes a very long time (above 5 seconds) to relieve the pressure thoroughly.

2. Startup

NOTE: When the pump is primed, and with sufficient air supplied, the pump starts when the control valve is opened and shuts off when it is closed.

 **WARNING:** The maximum working pressure of each component in the system may not be the same. To reduce the risk of over pressurizing any component in the system, be sure you know the maximum working pressure of each component. **Never exceed the maximum working pressure of the lowest rated component in the system.** Over pressurizing any component can result in rupture, fire, explosion, property damage, and serious injury. The maximum pressure of this pump is 870 PSI. Regulate air to the pump so that air line or fluid line component or accessory is not over pressurized.

 **CAUTION:** **Never allow the pump to run dry of the material being pumped.** A dry pump will quickly accelerate to a high speed, possibly damaging itself. If your pump accelerates quickly, or is running too fast, stop it immediately and check the material supply. If the supply container is empty and air has been pumped into the lines, prime the pump and lines with material, or flush it and leave it filled with a compatible solvent. Be sure to eliminate all air from the material lines.

- ⊖. If there are multiple pumps on the air line, close the air regulators and bleed-type master air valves to all but one pump.
- ⊖. Open the master air valve from the compressor.
- ⊗. Open the dispensing valve into a grounded metal waste container, making firm metal-to-metal contact between the container and valve. Open the bleed-type master air valve and open the pump air regulator slowly, just until the pump is running. When the pump is primed and all air has been pushed out of the lines, close the dispense valve.
 - . If you have more than one pump, repeat this procedure for each pump.
 - . Set the air pressure to each pump at the lowest pressure needed to get the desired results.
 - . Relieve pressure before you check or service any system equipment.

TROUBLE SHOOTING

WARNING:

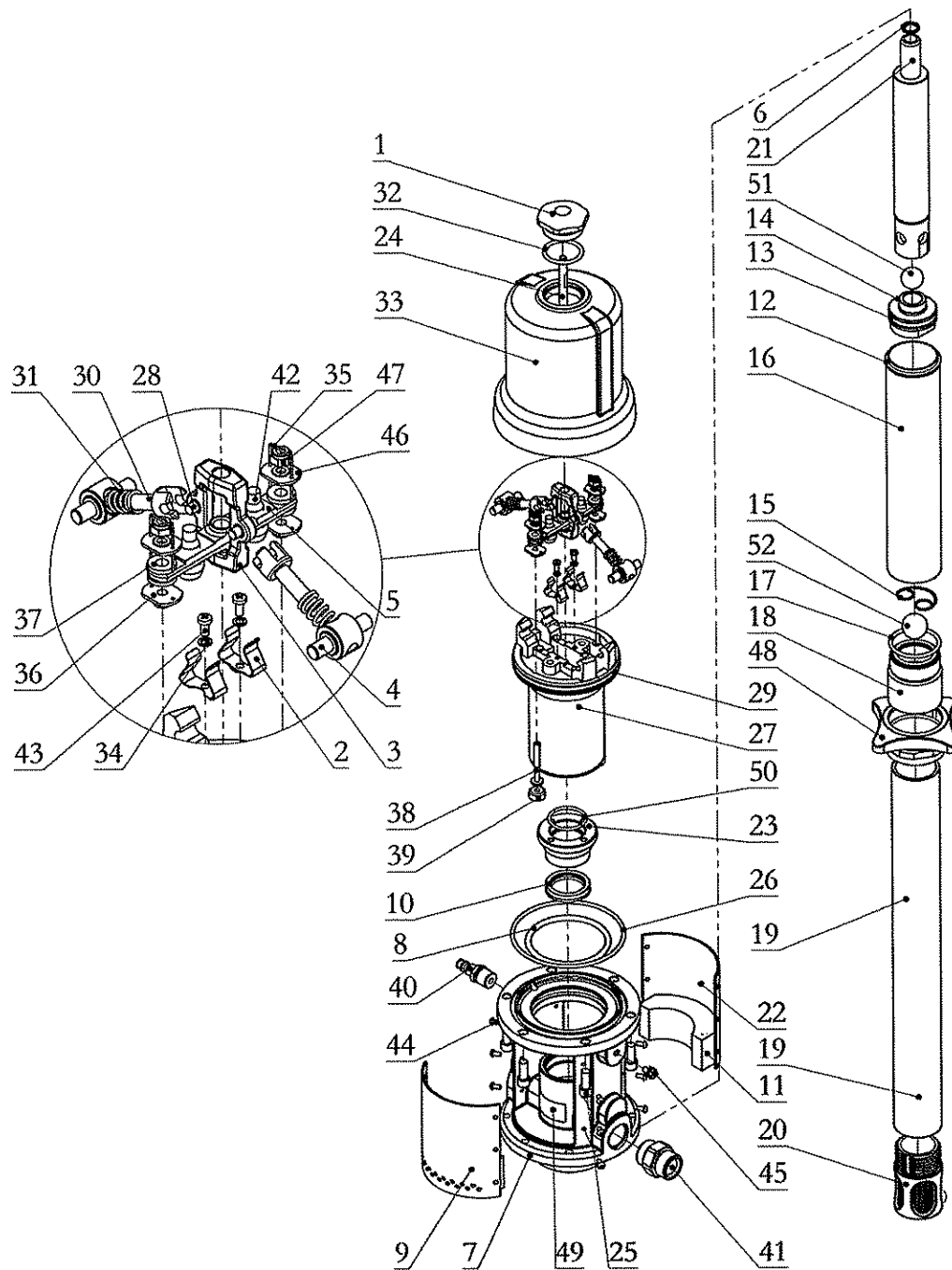
1. To reduce the risk of serious injury, relieve pressure whenever you are instructed.
2. **MOVING PARTS HAZARD.** Never operate the pump with the warning plate or the identification plate removed. These plates protect your fingers from pinching or amputation by moving parts in the air motor.
3. Relieve pressure before you check or service any system equipment.

Problem	Possible Cause	Corrective Action
Pumps fails to operate	Inadequate air supply pressure or restricted air lines	Increase air supply and/or clear restriction
	Closed or clogged control valves	Open and/or clean
	Clogged fluid line, hose, valve, or other accessory	Relieve pressure Clear obstruction
	Damaged air motor	Assess damage, and service air motor
	Exhausted fluid supply	Refill and re-prime or flush
Continuous air exhaust	Worn or damaged air motor gasket or seal	Assess wear or damage, and service air motor
Erratic pump operation	Exhausted fluid supply	Refill and re-prime or flush
	Worn pump seals	Replace pump seals
	Damaged hose	Replace hose
Pump operates, but output low	Worn piston seal	Replace piston seal
	Worn seals	Replace seals
	Clogged fluid line, hose, valve, or other accessory	Relieve pressure Clear obstruction
Leaking from muffler plates	Worn throat seal	Replace throat seal

MAINTENANCE

1. Store the pump in a dry place with good ventilation. Do not expose it to excessive heat, humidity or sunlight. Never let it touch any corrosive substances.
2. Store it out of the reach of children.
3. Always keep the pump at least 4 feet away from any heat source.

DIAGRAMS AND PARTS LIST



Part No.	Description	Qty.	Part No.	Description	Qty.
1	Air motor cover	1	27	Piston	1
2*	Spring piece	2	28	Rope pin	2
3	Bracket	1	29*	O-ring	1
4	Rope rocker	2	30	Rope shaft	2
5	Shaft	1	31*	Spring	2
6*	Copper ring	1	32*	O-ring	1
7	Air control center	1	33	Jar body	1
8*	O-ring	1	34	Washer	2
9	Right silencer	1	35*	Steel wire	2

10*	U-seal	1	36	Adjustable screw	2
11*	Sponge	2	37*	Rubber gasket	2
12*	O-ring	1	38	Connect shaft	2
13*	O-ring	1	39*	Gasket	2
14	Piston	1	40	Quick plug	1
15*	Circlip	1	41	Oil outlet	1
16	Suction tube	1	42*	Rubber gasket	2
17*	O-ring	1	43	Bolt	2
18	Oil inlet valve	1	44	Bolt	12
19	Extension tube	1	45	Bolt	1
20*	Filter	1	46	Adjustable nut	2
21	Piston shaft	1	47	Nut	2
22	Left silencer	1	48	Bung adapter	1
23	Transfer slipcover	1	49	Label	2
24	Shaft	1	50*	O-ring	1
25	Screw	6	51	Steel ball	1
26*	O-ring	1	52	Steel ball	1

Wear parts

Part No.	Description	Qty.	Part No.	Description	Qty.
2*	Spring piece	2	26*	O-ring	1
6*	Copper ring	1	29*	O-ring	1
8*	O-ring	1	31*	Spring	2
10*	U-seal	1	32*	O-ring	1
11*	Sponge	2	35*	Steel wire	2
12*	O-ring	1	37*	Rubber gasket	2
13*	O-ring	1	39*	Gasket	2
15*	Circlip	1	42*	Rubber gasket	2
17*	O-ring	1	43	Bolt	2
20*	Filter	1	50*	O-ring	1

For replacement parts and technical questions, please call 1-800-222-5381.

WARRANTY

One-year limited warranty



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