Elliott offers a complete line of precision tube tools, including:

tube expanders

- Boiler Expanders
- Heat Exchanger Expanders
- Condenser Expanders
- Refinery Expanders

tube rolling motors & torque controls

- Electric
- Pneumatic

tube cleaners

- Air & Water Driven Motors (Internal/External Drives)
- Jiffy Guns (“Shoot-Thru” Devices)
- Roto-Jet (Rotating Flex Shaft)

additional products

- Tube and Joint Testers
- Tube Plugs (High & Low Pressure)

retubing tools

- Tube Gauges
- Tube Cutters
- Manual Tools
- Spear Type Tube Pullers
- Collet-Type Tube Pullers
- CYCLGRIP Tube Extractors
- Grooving Tools
- End-Prep Tools

metal working products

- Back Chamfering Tools
- Carbide Roller Burnishing Tools
- Diamond Burnishing Tools
- Elliptical Deburring Tools
- Fine Boring Tools
- Internal Recessing Tools
- Magic Vise
- Mechanical Joining Tools
- Roller Burnishing Tools
- Single Blade Reamers

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TM-38
02-01

“HYDRAULIC HAND PUMP”
(Two Speed)

Model #80-36102D3

Operating and Maintenance Instructions

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PREVENTIVE MAINTENANCE

IMPORTANT: Any repair or servicing that requires dismantling the pump must be performed in a dirt-free environment by a qualified technician.

Lubrication
Apply lubricant regularly to all pivot and rubbing points. Use a good grade of No. 10 motor oil or grease. Do not use dry lubricants.

Bleeding Air From The System
Air can accumulate in the hydraulic system during the initial set-up or after prolonged use, causing the cylinder to respond slowly or in an unstable manner. To remove the air:

1. Position the cylinder at a lower level than the pump, and turn the cylinder rod end down.
2. Extend and retract the cylinder several times without putting a load on the system. Air will be released into the pump reservoir. Follow the fluid level instructions for your reservoir type to release the air from the reservoir and top off the fluid supply.

Hydraulic Fluid Level
WARNING: Cylinder(s) must be fully retracted before checking the fluid level. Release all system pressure before breaking any hydraulic connection in the system.
Check the hydraulic fluid level in the reservoir periodically. Use a funnel with a filter to add hydraulic fluid if needed.

Remove the filler cap. The fluid level should come to the bottom edge of the filler hole when the pump is level and resting horizontally on its base and the cylinders are retracted.

Draining And Flushing The Reservoir
Drain, clean and replenish the reservoir with high-grade, hydraulic fluid yearly or more often if necessary. The frequency of fluid change will depend upon the general working conditions, severity of use and overall cleanliness and care given the pump.
IMPORTANT: Clean the exterior of the pump first. After draining and flushing the reservoir, drain and clean the other hydraulic system components (hoses, cylinders, etc.) before connecting them to the pump again. This will help prevent contaminated fluid from entering the pump.

1. Remove the filler cap. Drain the hydraulic fluid through filler hole.
2. Remove the nut from the tie rod. Separate the reservoir from the pump body. Clean the reservoir and filter.
   IMPORTANT: Removing the filter from the pump assembly could result in its breakage. Attempt to clean it as well as possible with it installed.
3. Reassemble and fill the reservoir with hydraulic fluid. Replace the filler cap.

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INTRODUCTION

Thank you for purchasing this Elliott product. The design and manufacture of this machine, represents the highest standard of quality, value and durability. Elliott tools have proven themselves in thousands of hours of trouble free field operation.

If this is your first Elliott purchase, welcome to our company; our products are our ambassadors. If this is a repeat purchase, you can rest assured that the same value you have received in the past will continue with all of your purchases, now and in the future.

The Elliott Hydraulic Hand Pump is a portable hydraulic pump designed to operate the Elliott Hollow Ram Spear Puller. This ram and pump combination is used for removing tubes from heat exchangers, condensers, chillers, and fire tube boilers.

We at Elliott would like you to be completely satisfied with this machine and therefore recommend that this instruction manual be thoroughly read prior to use.

This machine has been designed and manufactured to the highest standards, using the latest in materials and technology. If the guidelines and maintenance schedules in this manual are followed, the Elliott Hydraulic Hand Pump will provide many years of trouble free operation.

TROUBLESHOOTING GUIDE

WARNING: To help prevent personal injury, always release pump pressure and disconnect hoses(s) from pump before making repairs.

Refer to the appropriate pump parts list during trouble-shooting. Repairs must be performed in a dirt-free environment by qualified personnel familiar with this equipment.

PROBLEM	CAUSE	SOLUTION
Pump Losing pressure	1. System components leaking	1. Repair or replace as necessary
	2. Directional control valve leaks or not adjusted properly	2.* Reseat, repair, or replace directional control assembly and correctly adjust
	3. Fluid leaking past outlet check seat(s)	3.* Check for dirt. Reseat pump body and/or replace poppet(s) or ball(s)
Handle rises after each stroke	1. Fluid leaking past outlet check seat(s)	1.* Check for dirt. Reseat pump body and/or replace poppet(s) or ball(s)
Pump not delivering fluid	1. Low fluid level in reservoir	1. Check fluid level per instructions
	2. Intake filter is dirty	2. Remove reservoir and clean
	3. Seats worn and not seating properly	3.* Repair seats or replace pump body
Pump does not reach full pressure	1. Low fluid level in reservoir	1. Check fluid level per instructions
	2. System components leaking	2. Repair or replace as necessary
	3. Directional control valve leaks or not adjusted properly	3.* Reseat, repair, or replace directional control assembly and correctly adjust
	4. Improperly adjusted relief valve	4.* Readjust
	5. Fluid leaking past inlet or outlet checks or high pressure piston seal damaged	5.* Reseat or repair inlet or outlet checks or replace high pressure piston seal
Pump handle can be pushed down (slowly) without raising the load	1. Inlet checks are not seating	1.* Check for dirt and/or reseat valve seats
	2. Damaged piston assembly or piston seals leaking	2.* Replace piston assembly and/or piston seals
Pump handle operates with a spongy action	1. Air trapped in system	1. Position cylinder lower than pump. Extend and return cylinder several times. Follow bleeding instructions
	2. Too much fluid in reservoir	2. Check fluid level per instructions
Pump handle effort drops significantly after some pressure has been obtained	1. This is normal operation on most two-stage hand pumps	
*Recommended these hand pump repairs be performed by an Authorized Hydraulic Service Center.		

SPECIFICATIONS

Specifications	
Weight	28 lbs.
OAL	23”
Height	7”
Handle Stroke	7” to 21”
Stage	Two Speed
Valve	4-Way
Oil Capacity	.66 Gal
Handle Effort	140 Lbs. Max.
Max. Pressure	325 High Speed 10,000 Low Speed

OPERATION

1. Depending on the hose connection pattern, the pulling ram will either extend or retract when the valve lever is positioned in the forward position or the rearward position. Determine this sequence by moving the valve lever one direction and pumping the handle.

2. Once the 325-PSI pressure has been reached in the high-speed mode, the internal valve will automatically shift into the low speed mode. You will feel this in the resistance of the handle as you pump it. The pump will continue in the high-pressure mode as long as the resistance pressure exceeds 325 PSI. If the resistance drops below 325 PSI, the valve will shift back into the high-speed mode.

3. Continue switching the valve lever from the forward to the rearward position as required to extend the pulling ram or to retract it.

4. This hand pump can be operated in a horizontal position or in a vertical position with head pointing downward.

WARNING: Operator should always release the pressure slowly.

SAFETY

Every effort has been made to ensure the operation of the Elliott Hydraulic Hand Pump is safe, although it is impossible to remove all possibilities of accidents.

It is very important that **all operators** of this machine are fully aware of the following safety considerations.

1. If you are unfamiliar with the Elliott Hydraulic Hand Pump, read this Operation Manual thoroughly before use.

2. Always wear safety glasses, protective gloves, safety shoes and protective clothing.

3. Do not allow other people in the area of the machine unless they are wearing suitable protective clothing and equipment.

4. As the machine is a hydraulic hand pump, hydraulic oil leaks from the ram and hose connections are possible. If hydraulic oil is leaked, clean-up oil immediately to avoid slippery floor surfaces.

5. Before operating the pump, all hose connections must be tightened with the proper tools. Do not over tighten. Connections need only be tightened securely and leak-free. Over tightening may cause premature thread failure or high-pressure fittings to split at pressures lower than their rated capacities. Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and shift the control valve twice to release all pressure. Never attempt to grasp a leaking hose under pressure with your hands. The force of escaping hydraulic fluid could cause serious injury. Do not subject the hose to any potential hazard such as fire, extreme heat or cold, sharp surfaces, heavy impact. Do not allow the hose to kink, twist, curl, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear because any of these conditions can damage the hose and result in personal injury. Do not use the hose to move attached equipment. Stress may damage the hose and cause personal injury. Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint the couplers. Hose deterioration due to corrosive materials may result in personal injury. All components in the hydraulic system must match the maximum pressure rating of the pump. **PUMP:** Do not exceed the PSI rating noted on the pump nameplate or tamper with internal high-pressure relief valve. Creating pressure beyond rated capacities may result in personal injury. Before adding hydraulic fluid, retract the system to prevent overfilling the pump reservoir. An overfill may cause personal injury due to excess reservoir pressure created when cylinders are retracted. **CYLINDER:** Do no exceed rated capacities of the cylinders. Excess pressure may result in personal injury.

6. Do not use a cheater pipe to generate extra force on the handle. This could damage the internal valves or cause injury.

7. Always disconnect the hydraulic power supply before changing tooling.

8. Do not operate the machine if there appears to be damage to the machine, if screws are missing, or if performance appears to be unsatisfactory.

9. Never use the Hydraulic Hand Pump, or any other power tool when under the influence of medication, drugs or alcohol that decrease concentration and impair operator control.

START-UP

Unpacking

The Elliott Hydraulic Hand Pump is shipped in a carton, complete with all accessories listed. On arrival, check for external damage to the box. If damage is found, notify the carrier and the supplier so insurance inspectors can examine the box before it is unpacked. When opened, check the contents against the packing and parts list. Report any damage or shortage to Elliott.

Ensure that there is no packaging material left inside the openings of the pump, especially the hydraulic inlets.

1. Position the Elliott Hydraulic Hand Pump on a flat surface.

2. Connect the 15' hydraulic hoses to the pump quick connect couplings and to the pulling ram quick connect couplings.

3. The Elliott Hydraulic Hand Pump is shipped fully charges with hydraulic fluid. Confirm that the oil level is at the bottom edge of the filler hole when setting level.

4. Cycle the pulling ram several times to eliminate any air in the hydraulic lines.

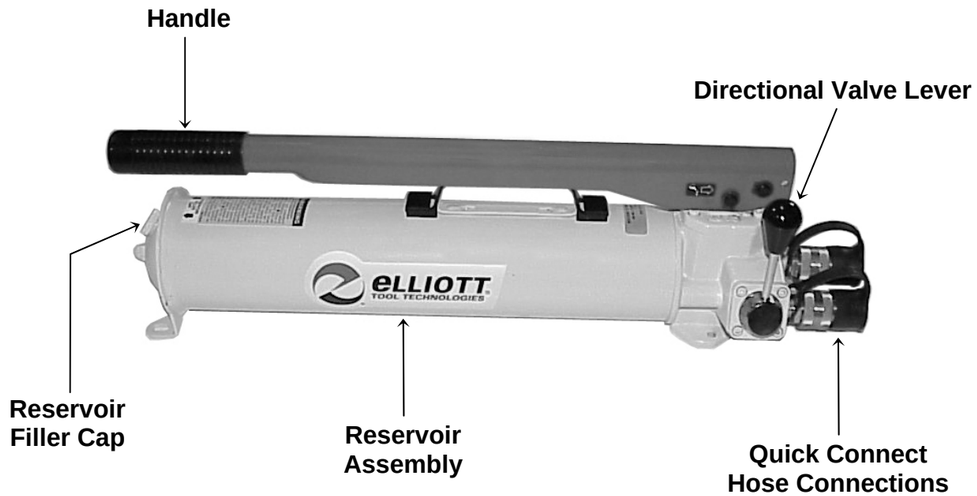
5. The Elliott Hydraulic Hand Pump is now ready for operation.

6. IMPORTANT: Seal all hydraulic connections with a high grade, nonhardening thread sealant. Teflon tape may also be used to seal hydraulic connections if only one layer of tape is use. Apply the tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the pipe end. Any loose pieces of tape could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.

7. Clean all areas around the fluid ports of the pump and cylinder. Clean all hose ends, couplers, and union ends. Remove thread protectors from the hydraulic fluid outlets, and connect the hose assembly. Couple hose to cylinder.

8. The use of a hydraulic pressure or tonnage gauge (not included) is strongly recommended. Remove the pipe plug from the gauge port of the valve, thread the gauge into this port and seal as noted above.
   WARNING: The gauge must have the same pressure rating as the pump and cylinder. Personal injury can result if the wrong gauge is used. Release hydraulic pressure BEFORE removing or tightening hose couplings.

QUICK REFERENCE DIAGRAM



NOTE: See Tech Manual # TM-41 for parts list information.