

Porta-Punch Manual



CST CLEVELAND
STEEL TOOL

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TABLE OF CONTENTS

	Page
General Information.....	1
Porta-Punch Warranty	2
Safety Precautions	
Punching Unit	3
Hydraulic Hoses	3
The Porta Punch	
Exploded View Drawing.....	4
Specifications	4
Punches and Dies	5
Punch and Die Installation.....	5
Parts List.....	5
Troubleshooting.....	6
Pump	
Warranty	7
Safety Precautions	8-10
Troubleshooting.....	11
Exploded View Drawings.....	12-14

GENERAL INFORMATION

The information and illustrations in this bulletin cover The Porta Punch, Cleveland Steel Tool's 35-Ton portable hydraulic punching unit.

Read and carefully follow these instructions before installation and use of this equipment. Most problems and personal injuries can be avoided with proper installation and operation.

Inspect the equipment upon arrival. It is the carrier's responsibility for any damage resulting from shipment.

For further information, please contact your Cleveland Steel Tool representative.

800-446-4402

PORTA-PUNCH WARRANTY

The Cleveland Steel Tool Company will, within one (1) year of date of purchase, replace or repair F.O.B. the factory, any goods, which are defective in materials and workmanship provided that the buyer returns the defective goods, freight prepaid, to the seller, which shall be the buyer's sole and exclusive remedy for the defective goods. THIS WARRANTY IS VOID IF YOU ATTEMPT REPAIRS YOURSELF. This warranty is void if the items have been damaged by accident, neglect, or other causes not arising out of defects in materials or workmanship. This warranty does not apply to machines and/or components which have been altered, changed or modified in any way, or subjected to use beyond recommended capacities and specifications. Electrical components are subject to respective manufacturer's warranties. In no event shall The Cleveland Steel Tool Co. be liable for loss or damage resulting directly or indirectly from the use of merchandise or from any other cause. The Cleveland Steel Tool Co. is not liable for any costs incurred on such goods or consequential damages. No officer, employee or agent of the Cleveland Steel Tool Co. is authorized to make oral representations or warranty of fitness or to waive any of the foregoing terms of sales and none shall be binding on The Cleveland Steel Tool Co.

Proof of purchase date required

This warranty does not apply to machines and/or components which have been altered, changed or modified in any way, or subjected to use beyond seller recommended capacities and specifications. In no event shall seller be liable for labor costs expended on such goods or consequential damages. Seller shall not be liable to the purchaser or any other person for loss, downtime, or damage directly or indirectly arising from the use of the goods from any other cause. The Cleveland Steel Tool Co. reserves the right to make improvements and design modifications to the machine without prior notice.

Company Name

Date of Purchase _____ **Serial #** _____

Warning!

- Read, understand and follow the operating instructions before using the equipment.
- Failure to observe all warnings and instructions may result in personal injury or property damage.
- It is the responsibility of the user to set up and use the machine and tooling in accordance with local and national OSHA laws and ANSI B11.5 safety standards. Do not allow unqualified personnel to set up or operate machines. Use extreme care at all times.

SAFETY PRECAUTIONS

Punching Unit

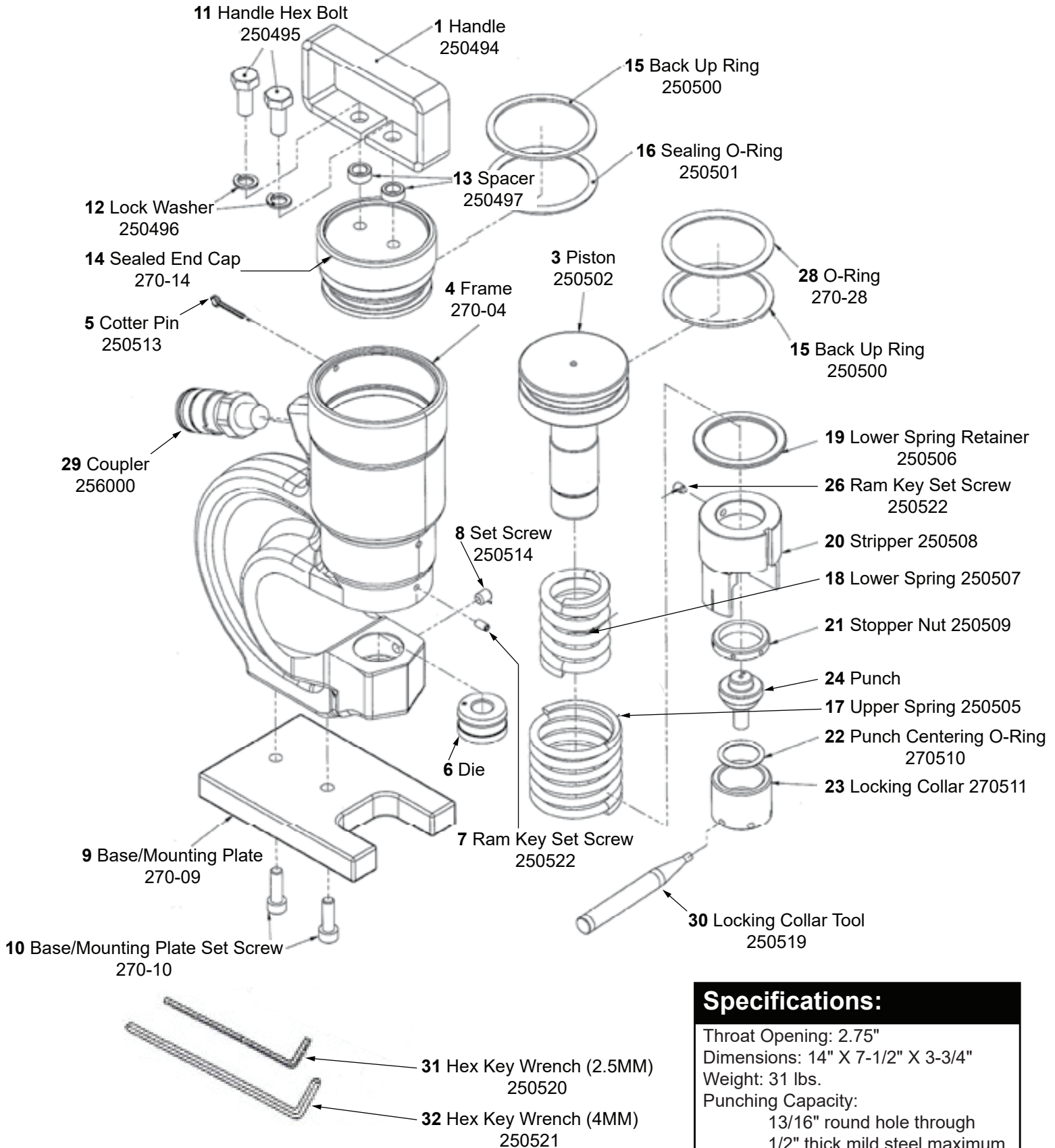
- Always wear safety glasses.
- Die must be properly inserted with the smaller hole facing upward.
- Never exceed the maximum capacity of this machine.
- Match the punch and die correctly.
- Never use chipped or worn punches and dies. Replace them immediately.
- Properly align and tighten all tooling.
- Disconnect the power source to the machine when changing tooling.

Hydraulic Hoses

- Securely tighten all connections to insure that they are leak-free and periodically check for tightness.
- Periodically inspect the hose for signs of wear or deterioration. Should a hydraulic hose burst, rupture or need to be disconnected, immediately shut off the pump.

- Never attempt to grasp a leaking hose with your hands. The force of escaping hydraulic fluid may result in serious personal injury.
- Do not use the hose to move attached equipment. Stress may damage the hose which can result in serious injury.
- Keep hoses away from any potential hazard such as fire, extreme heat or cold, sharp surfaces, corrosive materials and heavy impact.
- Do not allow the hose to kink, twist, curl or bend so the oil within the hose can flow freely.
- The hydraulic fluid must be compatible with the hose material and coupler seals. Use Mobil Hydraulic Oil AW 46. Do not mix fluids as this could result in a fluid incompatible condition that would cause the fluids to congeal.

BASE TYPE PARTS BREAKDOWN



Specifications:

Throat Opening: 2.75"
 Dimensions: 14" X 7-1/2" X 3-3/4"
 Weight: 31 lbs.
 Punching Capacity:
 13/16" round hole through
 1/2" thick mild steel maximum

PUNCHES AND DIES

The Cleveland Steel Tool Company maintains an inventory of replacement punches and dies for The Porta Punch.

The following round punch sizes and corresponding dies are available for immediate shipment:

5/16" 3/8" 7/16" 1/2" 17/32" 9/16" 5/8" 11/16" 3/4" 25/32" 13/16"

Non-stock sizes of round, oblong, square, hexagonal and rectangular shapes can be shipped within 48 hours.

*For further information, please contact your
Cleveland Steel Tool representative.*

Punch and Die Installation

Disconnect the power source to the machine when changing tooling.

Care should be used in matching the proper punch to the correct die. Each will be marked with the hole size required.

The die should be placed in the holder with the smaller hole facing upward. Tighten the set screw.

Position the punch in the coupling nut with the effective working length of the punch facing downward. Thread the locking collar on to the piston rod. Tighten with the locking collar tool.

Proper alignment of the punch over the die in shaped tooling (oblong, square, rectangular, etc.) must be maintained. A locating pin is provided with each shaped punch and locating spots on shaped dies.

The punch ram has two locating holes to align shapes at 90°. Check for proper alignment by slowly advancing the punch into the die.

Periodically check the coupling nut and set screw to ensure that the tooling is secure.

Lubrication of punches and dies is recommended but not required. This may extend the life of the tooling.

PORTA-PUNCH TROUBLESHOOTING

Problem	Cause	Solution
Ram will not advance.	Bad hose connections	Check hose connections
	Material hardness	Tool rated for 65,000 psi tensile strength. Harder material requires more tonnage.
	Power source	Unit operates with 10,000 psi power source. Lower psi reduces tonnage.
Ram will not retract.	Check clearance between punch and die.	Standard clearance is 1/16" Some materials may require greater die clearance.
	Weak or worn stripper spring.	Springs must be replaced.
	Stopper nut has loosened.	Check to see if there is a 9/16" gap between the stripper forks and the top of the die. If less than 9/16" contact our repair department
	Material is not perpendicular to the line of the punch.	Bevel top dies are available for punching tapered flanges on channel and "I" beams.

PUMP WARRANTY

Warranty Statement

Cleveland Steel Tool Co. pumps are warranted to be free of defects in workmanship and materials for 1 year from the date of purchase

Any Cleveland Steel Tool Co. pumps proven to be defective in workmanship or material will be repaired or replaced at no charge. To obtain the benefits of this warranty, first contact Cleveland Steel Tool Co. at (800) 446-4402 for a return goods authorization (RGA) number. Drain all oil from the pump and deliver via prepaid transportation the complete hydraulic pump with proof of purchase to:

Attn.: Warranty Repair Department
CST/ValPower Hydraulic Products
326 N. County Rd. 400 East
Valparaiso, IN 46383

If any pump product or part sold by Cleveland Steel Tool Co. is found to be defective by CST/ValPower Hydraulics, CST/ValPower Hydraulics, at its option, will either repair or replace the defective part or product and return via ground transportation, freight prepaid.

This warranty does not cover any product or part which is worn or abused, altered used for a purpose other than for which it was intended, or used in a manner which was inconsistent with any instructions regarding its use.

Electric motors are separately warranted by their manufacturer under the conditions stated in their separate warranty.

PUMP SAFETY PRECAUTIONS

VEP0751-PM-CST ELECTRIC HYDRAULIC PUMP

3/4 hp, 115 volt, 60/50 Hz, single phase, with internal auto dump valve



NOTE: These instructions cover all 'Automatic Return' style pumps. Some units may have different specifications than others and may have additional items. Electric models with standard manifold block are illustrated.

ATTENTION:

Inspect pump upon arrival. Make sure that there is no apparent damage due to handling during shipment. Cleveland Steel Tool Co. is not responsible for damaged caused by shipper. Report damage to shipper immediately.

Read and follow instructions carefully. Many problems are the result of improper installation and use.



WARNING SAFETY PRECAUTIONS



- All *WARNING* statements must be carefully observed to prevent personal injury.
- Always wear eye protection when working with equipment.

General Precautions

- Before operating the pump make sure all hose connections are tightened properly. Do not overtighten connections. They only need to be secure and leak free. Overtightening may cause premature thread failure or may cause high pressure fittings to split at pressures lower than their related capacities.
- In the event that a hydraulic hose should rupture, burst or need to be disconnected, immediately shut off the pump. Never attempt to grasp a leaking hose under pressure with your hand(s) as escaping hydraulic fluid could penetrate your skin and cause serious injury.
- Do not subject the hose to potential hazards such as fire, extreme heat or cold, sharp edges or heavy impact. Do not allow the hose to kink, curl, twist or bend so that the flow of oil inside can become 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 the pump, this may result in damage to the pump and/or hose.

PUMP SAFETY PRECAUTIONS

Hose Precautions

- Hose material and coupler seals must be compatible with the hydraulic fluid used in the pump. Consult hose and fittings manufacturers for a list of compatible fluids with respect to their products. Never paint hose couplers. Improper care of hose and fittings may result in personal injury.

Pump Precautions

- Do not exceed the hydraulic pressure rating noted on the name plate attached on the pump. Do not tamper with the internal high pressure relief valve as higher pressures beyond rated capacities could result in personal injury.
- Do not over fill pump reservoir. Before filling, make sure all hydraulic cylinders are fully retracted. Maintain oil level to the middle of the sight glass located on the side of the tank.
- Never operate the pump in advance at 10,000 psi for more than 1 minute without tool movement as this might overheat the oil and could damage the pump.

Cylinder Precautions

- Do not exceed rated capacities of the cylinder(s) or tools as excess pressure may result in personal injury.
- Make sure all hydraulic equipment is properly positioned and aligned before operating
- Jerky or sluggish movement of the tool usually indicates air is trapped in the hydraulic system and must be bled out before pressurizing system to maximum pressure.
- Bleed air out of the system by placing cylinder(s) or tools lower than the pump. Lay the tool(s) on their side with the hydraulic coupling in an “up” position. Cycle the pump several times and this will purge any air out of the system.

General Operation

- Energize pump to start flow of oil to cylinder, the pump will build up to 10,000 psi until power is terminated. The automatic return valve will allow oil to return to tank.

PUMP SAFETY PRECAUTIONS

Electrical Supply Precautions

- Do not use an ungrounded (two-prong) extension cord, and never run the motor on an extension cord longer than 25 feet.
- Replace any cords that have exposed wiring or show damage. Electrical shock may cause personal injury.
- Check to be sure the voltage rating on the pump matches the voltage in the electrical outlet that the pump is to be plugged into. Incorrect voltage could cause permanent damage to the motor. Correct voltage is required for the pump to operate correctly.
- Low voltage may cause the motor to overheat, surge when trying to start, or stall before maximum pressure is reached.
- Always measure voltage at the motor with pump running at full pressure, voltage will be at the lowest under these conditions. (Low Voltage = 10% less than name plate voltage.)

Electric Motor

- To help avoid possible personal injury all electrical work must be done by a qualified electrician.
- Disconnect the power supply before performing repairs any maintenance.

Hydraulic Set-up

1. Clean all areas around the oil ports of the pump and cylinders.
2. Inspect the threads and fittings for signs of wear or damage and replace if necessary. Clean all hose ends, couplers and union ends.
3. Remove the plastic thread protectors from the hydraulic hose. Connect the hose half coupler assembly to the valve and connect the hose to the tool.
4. Seal pipe/hose connections with pipe sealant. Teflon tape can be used to seal hydraulic connections provided only one layer of tape is used. Apply the tape carefully 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 oil or cause jamming of precision fit parts.
5. Remove oil filler cap in cover plate.
6. Fill oil reservoir to within 1-1.5 inches below the cover plate (or so it can just be seen in the sight glass) with an ISO 46 hydraulic oil or equivalent. Remove vent cap and use a funnel with a filter screen to add oil.

PUMP TROUBLESHOOTING



WARNING: To help avoid possible personal injury disconnect the power supply before performing repairs or maintenance.



Maintain Hydraulic Oil

- Check hydraulic oil level every 24 hours of operation or on a daily basis. Add ISO 46 or equivalent if necessary. Oil level should be 1-1.5 inches below cover plate or visible in sight glass with the tools fully retracted and drained back to tank.
- Change oil every 250 hours or six months and refill with ISO 46 hydraulic oil or equivalent. Change oil more frequently when used in extremely dusty conditions or when the oil has been overheated.
- Clean filter screen every 250 hours or six months, this can be performed in conjunction with periodic oil changes.

Troubleshooting

PROBLEM

ITEMS TO CHECK

Pump will not Start _____•

Make sure the power cord is plugged in to correct voltage outlet. Have electrician confirm correct voltage is available at outlet.

Sporadic Operation _____•

Check oil level.

- Bleed hydraulic system to remove trapped air.

Noisy Operation _____•

Low oil in reservoir. Check oil level.

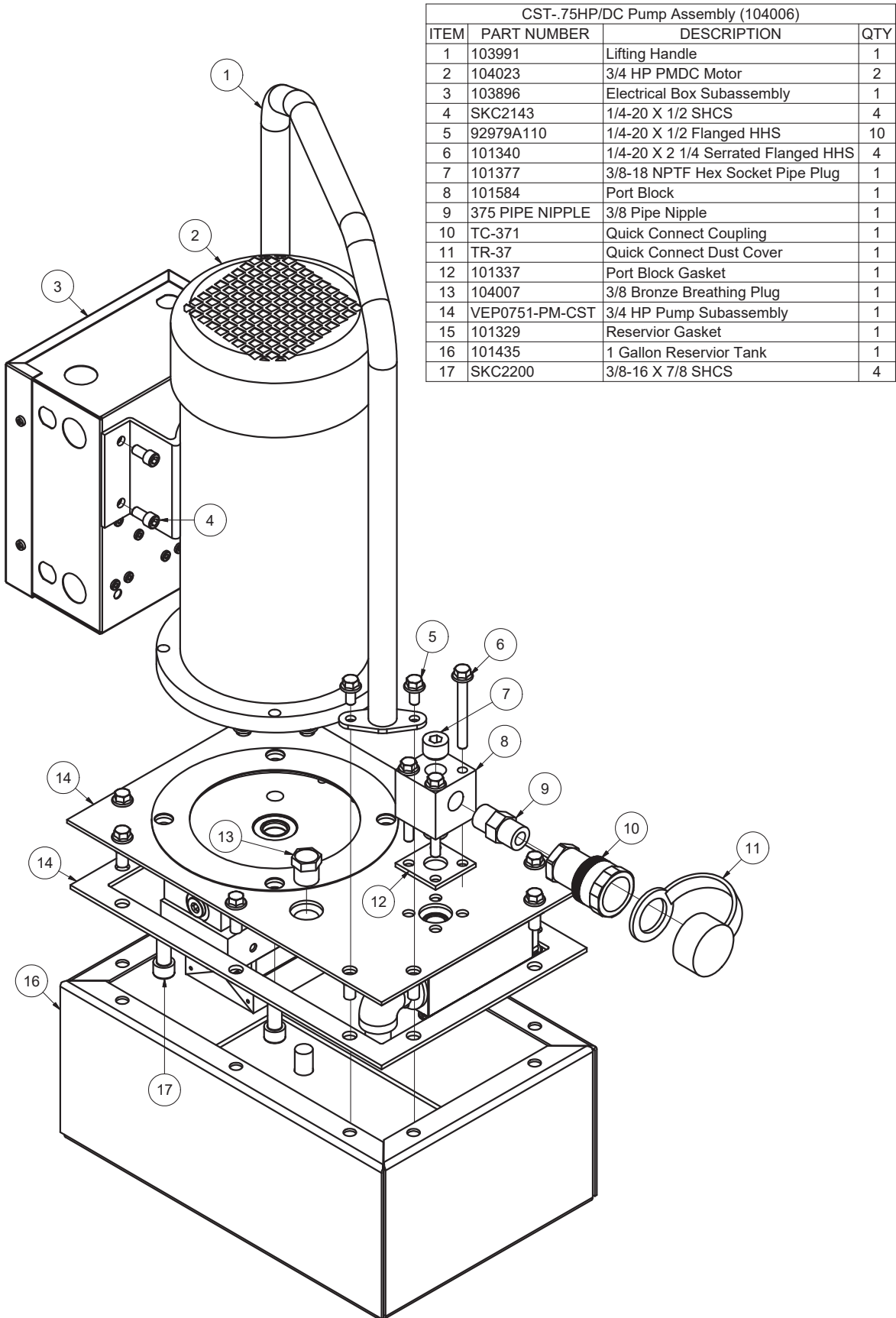
- Air in hydraulic system. Bleed entire system.
- Dirty filter screen. Clean pump inlet filter screen.

Pump runs but does not build pressure or will not pump oil _____•

Check oil level.

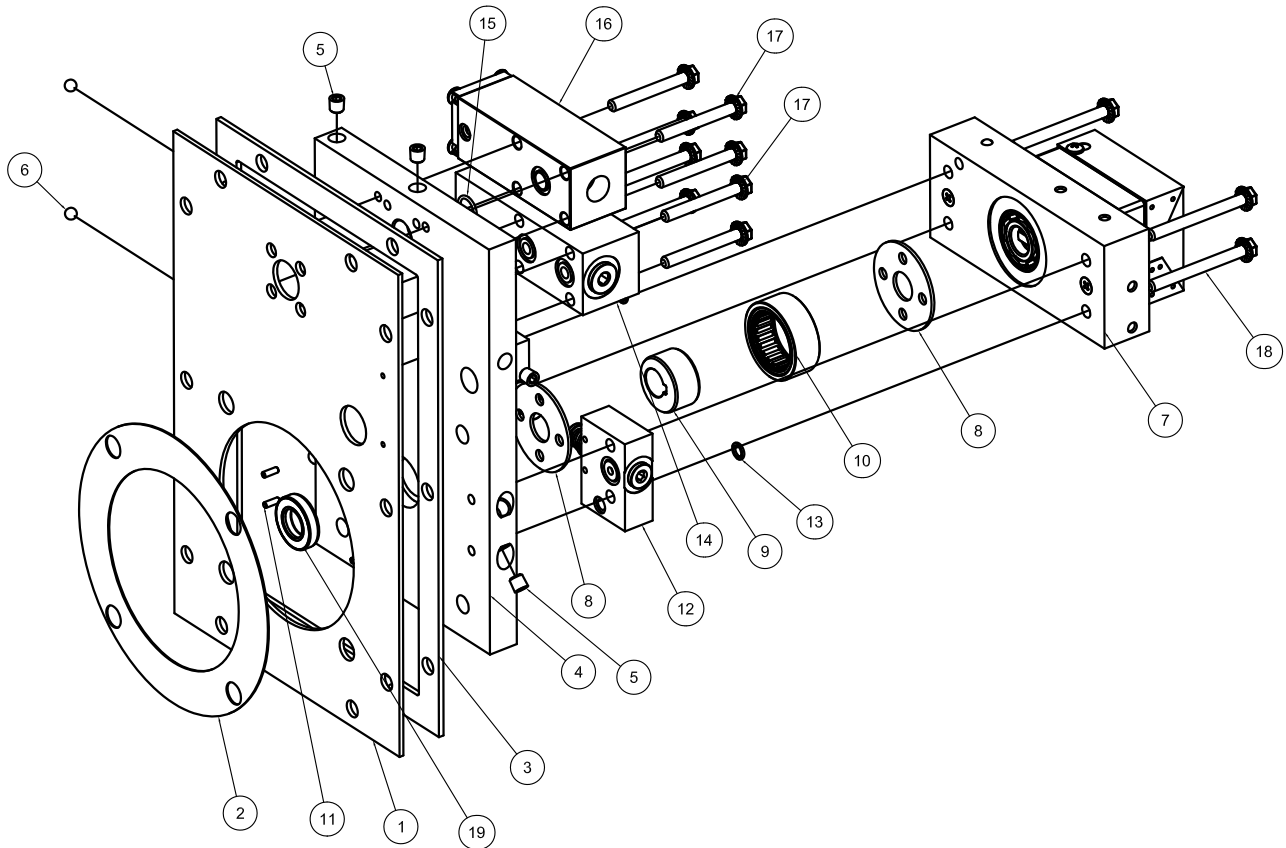
- Clean pump filter screen.
- Internal Leakage...Pump needs service. Contact Customer Service Department for repair facility information.

ELECTRIC HYDRAULIC PUMP



CST-.75HP/DC Pump Assembly (104006)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103991	Lifting Handle	1
2	104023	3/4 HP PMDC Motor	2
3	103896	Electrical Box Subassembly	1
4	SKC2143	1/4-20 X 1/2 SHCS	4
5	92979A110	1/4-20 X 1/2 Flanged HHS	10
6	101340	1/4-20 X 2 1/4 Serrated Flanged HHS	4
7	101377	3/8-18 NPTF Hex Socket Pipe Plug	1
8	101584	Port Block	1
9	375 PIPE NIPPLE	3/8 Pipe Nipple	1
10	TC-371	Quick Connect Coupling	1
11	TR-37	Quick Connect Dust Cover	1
12	101337	Port Block Gasket	1
13	104007	3/8 Bronze Breathing Plug	1
14	VEP0751-PM-CST	3/4 HP Pump Subassembly	1
15	101329	Reservior Gasket	1
16	101435	1 Gallon Reservior Tank	1
17	SKC2200	3/8-16 X 7/8 SHCS	4

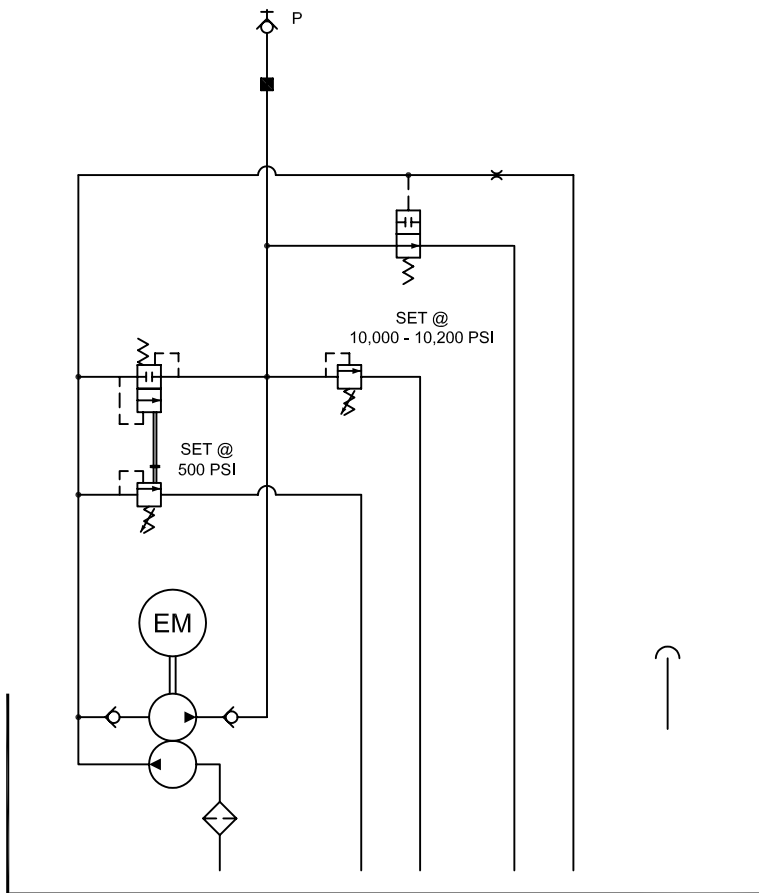
ELECTRIC HYDRAULIC PUMP



CST-3/4HP-PMDC Pump Sub-Assembly (104024)			
Item	Part Number	Description	Qty
1	101335	Reservoir Cover	1
2	101330	Motor Gasket	1
3	101329	Reservoir Gasket	1
4	101400	Upper Plate	1
5	101375	1/16-27 NPTF Pipe Plug	5
6	9528K15	Ø1/4" Precision Ball	2
7	101932	Lower Plate & 1/2 Gear Pump Ass'y.	1
8	101406	Wear Washer	2
9	101731	3/32 Offset Eccentric - 5/8" Shaft	1
10	101473	Bearing Sleeve Assembly	1
11	101382	1/8 X 3/8 Dowel Pin	4
12	101478	Piston Block Assembly	2
13	101352	010 O-Ring	4
14	101476	Unloading Block Assembly	1
15	101355	014 Disogrin O-Ring	3
16	101443	Dump Block Assembly	1
17	92323A525	1/4-20 X 2" Serrated Hex FLHCS	8
18	101385	1/4-20 X 2 1/2 Serrated Hex FLHCS	4
19	101328	CR-6247 Shaft Seal	1

PUMP SCHEMATIC

VEP0751-PM
HYDRAULIC SCHEMATIC



VEP0751-PM-115VAC
ELECTRICAL SCHEMATIC

