



# **QS-1800A**

## **OPERATING MANUAL**

### **CONTENTS:**

- PARTS LIST**
- LOADING AND OPERATING THE QS-1800A**
- INJECTING MATERIAL IN YOUR VALVE**
- PERIODIC MAINTENANCE FOR YOUR PUMP**
- HYDRAULIC PUMP PERIODIC MAINTENANCE (EIS 63.107-1)**
- HYDRAULIC PUMP REPAIR PARTS SHEET (I2694 Rev. B)**
- RETROFIT KIT (NEEDED FOR REPAIR ONLY) (L2695 Rev. A)**
- MATERIAL SAFETY DATA SHEET – HYDRAULIC FLUID**

## Parts list for the QS-1800A

PART NUMBER		DESCRIPTION	QUANTITY
QS-1801A		FRAME	1
P-392FPU103		HYDRAULIC PUMP	1
2016		GREASE HOSE ASSEMBLY	1
CONSISTS OF:			
	1420	HOSE TEE ADAPTER	1
	6	G.B. COUPLER	1
	1/4" CPLG	1/4X1/4 COUPLING	1
	321320	1/4X1/4 STR SWIVEL	1
	.25 TEE	1/4" TEE	1
	15MGF	15,000 PSI GAUGE	1
	GC-250	GAUGE COVER	1
	43379	ADAPTER 1/4"X1/2-27	1
	20638	6' X 3/8" HP HOSE	1
	52752	1/2"-1/2-27 Z SWIVEL	1
1819		HYDRAULIC TUBING	1
PT-1/4 x .375		1/4"NPTx.375 TUBE FITTING	1
PT-3/8 x .375		3/8"NPTx.375 TUBE FITTING	1
2018		GREASE BARREL ASSEMBLY	1
CONSISTS OF:			
	1407	GREASE BARREL CAP	2
	1409-R*	GREASE BARREL	1
	1410	O-RING	2
1413		HANDLE	
TAG		METAL TAG	
2008		PISTON ASSEMBLY	1
CONSISTS OF:			
	1408-A	CAP SCREW	1
	1408-BA	COPPER WASHER	1
	2008-1	PISTON BODY	1
	2008-2	SNAP RING	2
	2008-3	RETAINING RING	2
	2008-4	UPPER & COVER SEAL	2
SC-14		1/4" NPT FITTING	1
QS-2001A-SG		CAP SAFETY GAUGE	1
QS-2001A-PIN		ROLL PIN	1

\* If you have a QS-1800A-K, get a 1409-R-K barrel

## Loading and Operating the QS-1800A

1. Depress "bypass pedal" in release position to ensure pressure is relieved. Confirm there is no pressure at the sealant hose gauge.



2. Using the handle (1413) supplied, remove sealant barrel cap (1407).
3. Depress and hold "bypass pedal" in release position to allow you to return the piston assembly.
4. Use the handle (1413) to push piston assembly (2008) to the desired depth. When less than full capacity is required, use 1 oz. marking on handle.



5. Release foot pedal.
6. Load Val-Tex lube sealant or Valve Flush as required. Remember to remove cellophane wrapper on sticks.

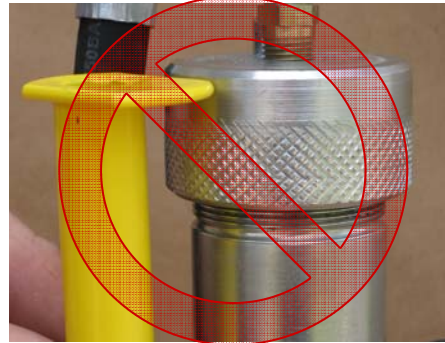
7. Replace sealant barrel (1407) cap. Tighten with handle (1413) provided.

**WARNING: FAILURE TO COMPLY WITH THE FOLLOWING SAFETY PROCEDURE COULD RESULT IN SERIOUS INJURY: THE SEALANT CAP MUST BE COMPLETELY SCREWED ONTO THE BARREL BEFORE OPERATING THIS UNIT. THE YELLOW SAFETY GAUGE MUST BE LIFTED UP AND THE BOTTOM SIDE OF THE TAB MUST CLEAR THE TOP OF THE CAP.**

# SAFE



# STOP



8. Place foot on the foot pedal. Then remove the handle retainer to allow you to pump the unit.



9. You can now pump the unit with your foot to inject material into the valve.



10. Before removing the coupler from the valve or when the hydraulic pump is not in use, release the pressure on the hydraulic pump by depressing the foot pedal in "release"

**WARNING!** If the pump is activated when the sealant barrel cap (1407) is removed, the piston assembly (2008) can be pumped out of the cylinder.

\* Dispose of any expelled material properly.

### **Injecting Material Into Your Valve**

1. The gun is equipped to couple onto a giant buttonhead fitting.
2. Monitor the gauge during pumping to avoid excessive pressure.
3. It takes approximately **11 strokes** to inject 1 ounce of material.

### **Periodic Maintenance For Pump**

Refer to the Enerpac instruction sheet EIS 63.107-1 (9/2004) included in this manual for maintenance requirements on the pump.



EIS 63.107-1 09/2004

#### Index:

English .....	1-4
Français .....	5-9
Deutsch .....	10-14



#### 1.0 IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. Shipping damage is **not** covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

#### SAFETY FIRST

##### 2.0 SAFETY ISSUES



Read all instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation. Enerpac cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation.

Contact Enerpac when in doubt as to the safety precautions and operations. If you have never been trained on high-pressure hydraulic safety, consult your distribution or service center for a free Enerpac Hydraulic safety course.

Failure to comply with the following cautions and warnings could cause equipment damage and personal injury.

A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.



**WARNING:** Wear proper personal protective gear when operating hydraulic equipment.



**WARNING:** Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be blocked mechanically.



**WARNING: USE ONLY RIGID PIECES TO HOLD LOADS.** Carefully select steel or wood blocks that are capable of supporting the load. Never use a hydraulic cylinder as a shim or spacer in any lifting or pressing application.



**DANGER:** To avoid personal injury keep hands and feet away from cylinder and workpiece during operation.



**WARNING:** Do not exceed equipment ratings. Never attempt to lift a load weighing more than the capacity of the cylinder. Overloading causes equipment failure and possible personal injury. The cylinders are designed for a max. pressure of 700 bar [10,000 psi]. Do not connect a jack or cylinder to a pump with a higher pressure rating.



**DANGER: Never** set the relief valve to a higher pressure than the maximum rated pressure of the pump. Higher settings may result in equipment damage and/or personal injury. Do not remove relief valve.



**WARNING:** The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system.



**CAUTION:** Avoid damaging hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.



**Do not drop heavy objects on hose.** A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.




**IMPORTANT:** Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or other means of safe transport.





**CAUTION: Keep hydraulic equipment away from flames and heat.** Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65 °C [150 °F] or higher. Protect hoses and cylinders from weld spatter.





**DANGER: Do not handle pressurized hoses.** Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, see a doctor immediately.


 **WARNING:** Only use hydraulic cylinders in a coupled system. Never use a cylinder with unconnected couplers. If the cylinder becomes extremely overloaded, components can fail catastrophically causing severe personal injury.


 **WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD.** Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

 **Avoid** situations where loads are not directly centered on the cylinder plunger. Off-center loads produce considerable strain on cylinders and plungers. In addition, the load may slip or fall, causing potentially dangerous results.

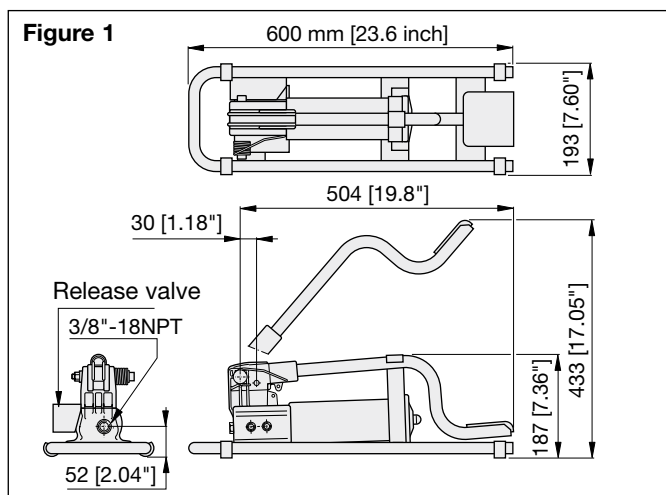
 Distribute the load evenly across the entire saddle surface. Always use a saddle to protect the plunger.

 **IMPORTANT:** Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Authorized ENERPAC Service Center in your area. To protect your warranty, use only ENERPAC oil.


 **WARNING:** Immediately replace worn or damaged parts by genuine ENERPAC parts. Standard grade parts will break causing personal injury and property damage. ENERPAC parts are designed to fit properly and withstand high loads.

 **CAUTION:** Always use the handle to carry the pump. Carrying the pump by the hose may damage the hose and/or the pump.


### 3.0 DESCRIPTION



**FIGURE 2 - SPECIFICATIONS**

Used with cylinder	Usable Oil Capacity	Model Number	Pressure Rating		Oil Displacement per Stroke		Max. Handle Effort	Piston Stroke	
			bar [psi]		cm³ [in³]				
	cm³ [in³]		1 <sup>st</sup> stage	2 <sup>nd</sup> stage	1 <sup>st</sup> stage	2 <sup>nd</sup> stage	kg [lbs]	mm [inch]	kg [lbs]
Single- Acting	492 [30]	P-392FP	15 [220]	700 [10,000]	11,26 [.687]	2,47 [.151]	42 [93]	25,4 1.00	7,0 [15.4]

The P-392FP is a two-speed pump which can be used to power single-acting cylinders and tools with an oil capacity up to 490 cm<sup>3</sup>. It has an internal pressure relief valve for overload protection. For dimensions see Figure 1. Figure 2 shows the specifications of the pump.

 **WARNING:** The P-392FP is operated with a non-vented reservoir. If the reservoir is subjected to high pressure, the casing may rupture, causing personal injury and/or equipment damage. NEVER attempt to return more oil to the reservoir than it is capable of holding.

### 4.0 INSTALLATION

#### 4.1 Connecting the Pump

1. Thread hose into pump outlet. Use 1 1/2 wraps of Teflon tape (or suitable thread sealant) on hose fitting, leaving the first complete thread free of tape to ensure that tape does not shed into hydraulic system, causing damage. Trim loose ends.
2. Install a pressure gauge in-line from the pump for added safety and better control.
3. Connect the hose(s) to your cylinder or tool.

**NOTE:** For single-acting cylinders, connect one hose from the pump to the cylinder. For double-acting cylinders, connect two hoses. Connect one hose from the pressure port of the pump to the pressure port of the cylinder. Connect another hose from the retract port of the pump to the retract port of the cylinder.

#### 4.2 Pump Venting


The P-392FP is operated with a non-vented reservoir. If the reservoir is subjected to high pressure, the casing may rupture, causing personal injury and/or equipment damage. NEVER attempt to return more oil to the reservoir than it is capable of holding.

### 5.0 OPERATION

#### 5.1 Before Using the Pump

1. Check all system fittings and connections to be sure they are tight and leak free.
2. Check oil level in reservoir before operating pump. See paragraph 7.1 "Adding Oil to the Pump" on page 3.

 **CAUTION:** NEVER add extensions to pump handle. Extensions cause unstable pump operation.

 **WARNING:** In certain situations the pump handle can "kick back". Always keep your body to the side of the pump, away from the line of force of the handle.

**NOTE:** To reduce handle effort at high pressure, take short strokes. Maximum leverage is obtained in the last 5° of stroke.

## 5.2 Using Two-Speed Pumps

These pumps provide 2-stage flow. Under no-load, the pump operates in the high flow first stage for rapid advance. When the load is contacted, the pump automatically shifts to the second stage for building pressure.

NOTE: For best performance, operate pump handle at moderate speed during the high flow first stage. Rapid handle speed in the first stage will prevent the pump from delivering full volume of oil.

## 5.3 Single-Acting Applications with Release Valve

1. Close release valve by turning clockwise, as shown in Figure 3.



**CAUTION: Close release valve finger tight ONLY. Using tools on release valve can damage it and cause the pump to malfunction.**

2. Operate pump handle to deliver hydraulic power to system. Pressure will be maintained until release valve is opened.
3. Open release valve (turn counter-clockwise) to release pressure, allowing oil to flow back to the reservoir.

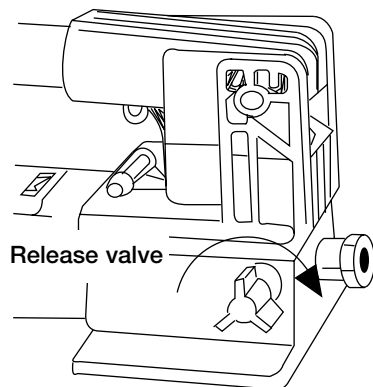
## 5.6 Relief Valve Adjustment

All pumps contain a factory set relief valve to prevent over-pressurization of the system. Lower pressure settings can be obtained. Contact your Authorized Enerpac Service Center.

## 6.0 AIR REMOVAL

Removing air from the hydraulic system will help the cylinder to advance and retract smoothly (see figure 4).

Figure 3



## 6.1 Pump With Single-Acting Cylinder (A)

1. Vent pump reservoir (for vented pumps only) and close release valve.
2. Position pump at higher elevation than cylinder.
3. Position cylinder with the plunger end down (up if using pull cylinder). See Figure 4 below.
4. Operate pump to fully extend the cylinder (retract if using pull cylinder).
5. Open release valve to retract cylinder (extend if a pull cylinder). This will force the trapped air to move up to the pump reservoir.
6. Repeat the above steps as necessary.
7. Add oil if necessary. See paragraph 7.1 (page 3)
8. Return vent/fill cap to operating position.

## 7.0 MAINTENANCE

Use only Enerpac hydraulic oil with these pumps to promote long pump life and to protect your warranty. Viton and EPR seal kits are available for some hand pumps. Contact your Enerpac representative for more information

## 7.1 Adding oil to pump

Check oil level regularly.



**WARNING: Always add oil with cylinders fully retracted (extended if pull cylinders) or the system will contain more oil than the reservoir can hold.**

1. Remove vent/fill cap from reservoir.
2. Fill reservoir only to level mark shown on pump.
3. Remove air from system if necessary. See page 6. Recheck oil level after removing air.
4. Return vent/fill cap to proper position.

NOTE: Non-vented hand pumps require air in the reservoir to function properly. If the reservoir is completely filled, a vacuum will form preventing oil from flowing out of the pump.

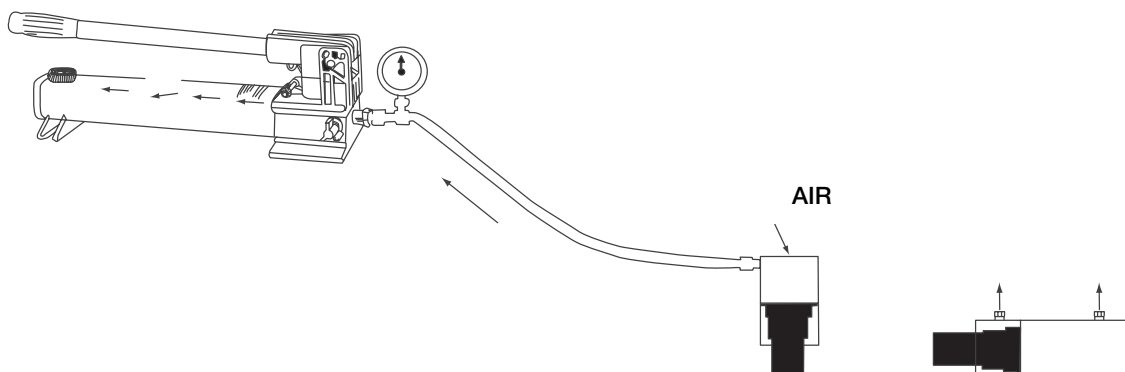
## 7.2 Keeping Oil Lines Clean

When coupler halves are disconnected, always screw on dust caps. Use every precaution to guard unit against entrance of dirt because foreign matter may cause pump, cylinder, or valve failure.

## 7.3 Lubricating the Pump

To extend pump life and improve performance, lubricate the beam pin (A), cross pin (B), and piston head (C) regularly, using roller bearing grease. See Figure 5 on page 4.

Figure 4





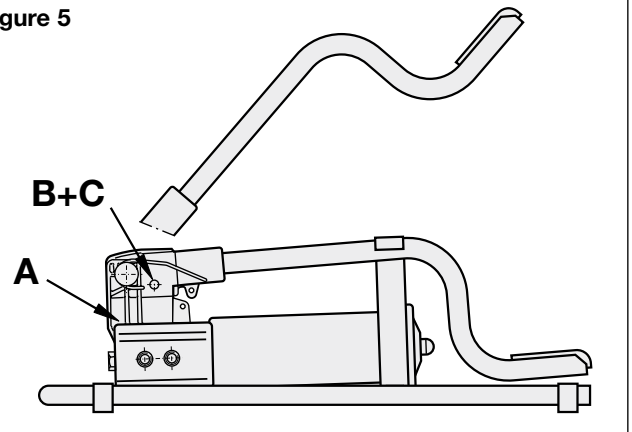
#### 7.4 Changing the Oil

1. Drain all oil and refill with clean Enerpac oil every 12 months. If pump is used in dirty environments, change the oil more often.
2. Remove vent/fill cap or plug from reservoir.
3. Tilt pump to drain out old oil.
4. Fill reservoir only to level mark shown on pump.
5. Replace the vent/fill cap or plug.
6. Dispose of used oil properly.

#### 8.0 TROUBLESHOOTING GUIDE

The following information is intended as an aid in determining if a problem exists. For repair service, contact the Authorized Enerpac Service Center in your area.

Figure 5



#### 8.0 TROUBLE SHOOTING

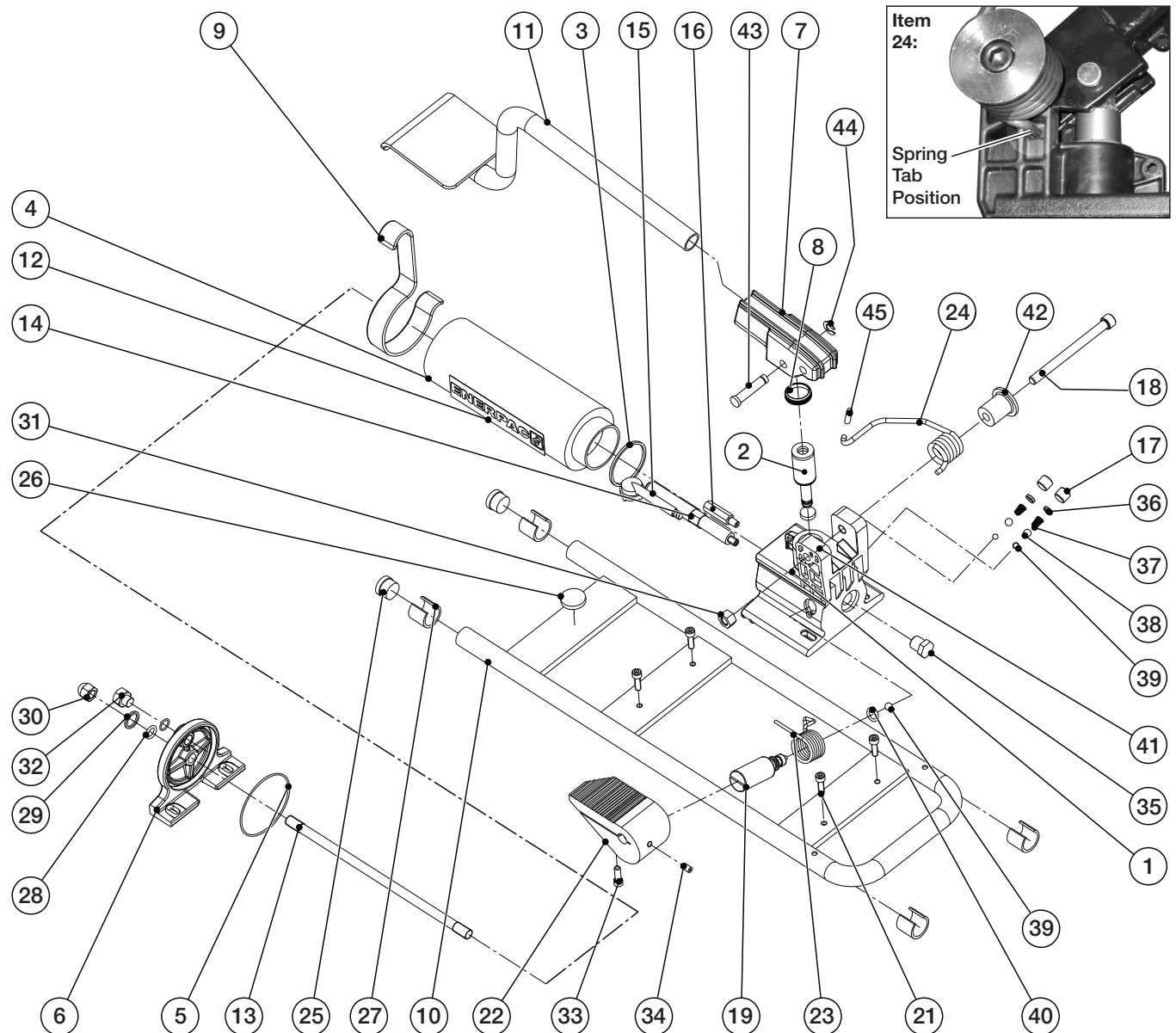
Problem	Possible Cause	Solution
1. Cylinder does not advance, advances slowly, or advances in spurts.	<ol style="list-style-type: none"> <li>1. Oil level in pump reservoir is low.</li> <li>2. Release valve open.</li> <li>3. Loose hydraulic coupler.</li> <li>4. Load is too heavy.</li> <li>5. Air trapped in system.</li> <li>6. Cylinder plunger binding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add oil according to the Maintenance instructions on page 3 (paragraph 7.1).</li> <li>2. Close the release valve.</li> <li>3. Check that all couplers are fully tightened.</li> <li>4. Do not attempt to lift more than rated tonnage.</li> <li>5. Remove air according to the instructions on page 3 (paragraph 6.0).</li> <li>6. Check for damage to cylinder. Have cylinder serviced by a qualified hydraulic technician.</li> </ol>
2. Cylinder advances, but does not hold pressure.	<ol style="list-style-type: none"> <li>1. Leaking connection.</li> <li>2. Leaking seals.</li> <li>3. Internal leakage in pump.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check that all connections are tight and leak free.</li> <li>2. Locate leak(s) and have equipment serviced by a qualified hydraulic technician.</li> <li>3. Have pump serviced by a qualified hydraulic technician.</li> </ol>
3. Cylinder does not retract, retracts part way, or retracts more slowly than normal..	<ol style="list-style-type: none"> <li>1. Release valve closed.</li> <li>2. Pump reservoir is over-filled.</li> <li>3. Loose hydraulic coupler.</li> <li>4. Air trapped in system.</li> <li>5. Hose internal diameter too narrow.</li> <li>6. Cylinder retraction spring broken or other cylinder damage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open release valve.</li> <li>2. Drain oil level to full mark. See page 3 instructions for adding oil (paragrapg 7.1).</li> <li>3. Check that all couplers are fully tightened.</li> <li>4. Remove air according to the instructions on page 3 (paragraph 6.0).</li> <li>5. Use larger diameter hydraulic hose.</li> <li>6. Have cylinder serviced by a qualified hydraulic technician.</li> </ol>

**To Protect Your Warranty, Use Only ENERPAC Hydraulic Oil.**

Energac recommends that all kit components be installed to insure optimum performance of the repaired unit.

**Item 14:**  
Set relief valve at 700 bar [10,000 psi] max.  
Torque to 14-16 Nm [10-12 Ft. lbs]

**Item 16:**  
Set by-pass valve to 14-19 bar [200-275 psi] max.  
Torque to 14-16 Nm [10-12 Ft. lbs]



**Item 30:**  
Torque to 20 Nm [15 Ft. lbs]

## Repair Parts List for Model P-392FP, Date Code "A" (Refer to Figure on Opposite Side)

Item	Part Number	Qty.	Description	Item	Part Number	Qty.	Description
1	(Not Sold Separately)	1	Base	24	DC6648110 ★	1	Return Spring
2	DC607900	1	Plunger Assembly	25	DC6645886	2	Plug, Plastic
3	B1135517 ★	1	Gasket	26	DC6649108	1	Pad, Rubber
4	DA10945025	1	Reservoir, Yellow	27	DC6644885	4	Foot, Rubber
5	B1246503 ★	1	O-Ring	28	B1009503 ★	1	O-Ring
6	DC362020	1	End Cap	29	DA10722108 ★	1	Washer
7	(see item #11) *	1	Beam	30	CL341055	1	Nut, Acorn
8	DC7364776 ★	1	Wiper	31	C428120	1	Nut
9	P392FP104	1	Handle Retainer	32	B1018006	1	Plug
10	U042192903	1	Frame	33	B1008028	1	Capscrew
11	U042192902	1	Pedal and Handle Assy.	34	C514173	1	Set Screw
12	G423026 ★	2	Decal, Enerpac	35	R515245-2	1	Plug
13	DC1017149	1	Tie Rod	36	DA3702020 ★	2	Spring Cap
14	DA8802900SR	1	Relief Valve	37	DA1176210 ★	2	Spring
15	DA3729900SR	1	Oil Filter	38	B1009016 ★	2	Ball, 5/16"
16	DA5493900SR	1	Bypass Valve	39	B1006016 ★	3	Ball, 7/32"
17	CN815006	2	Pipe Plug	40	B1111203 ★	1	O-Ring
18	DC7354028 ★	1	Beam Pin	41	B1119803 ★	1	O-Ring
19	DA10946010	1	Valve Spindle	42	DC6642186	1	Spring Spacer
21	B1007028	4	Capscrew	43	DC106061SR1	1	Cross Pin
22	DA10955218	1	Foot Pedal	44	DA1177349 ★	1	Retaining Ring
23	DA10906310 ★	1	Torsion Spring	45	DA10952020 ★	1	Spring Cap

★ Items included as part of Repair Kit P392FPK1.

\* Beam included only with item #11 (Not sold separately).

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**All Enerpac products are guaranteed against defects in workmanship and materials for as long as you own them. For your nearest authorized Enerpac Service Center, visit us at [www.enerpac.com](http://www.enerpac.com)**

### Retrofit Kit P-392FP 700 bar Foot Pump

L2695 Rev. A 08/06

For Date Codes beginning with the Letter "O" Only

#### To Protect Your Warranty, Use Only ENERPAC Hydraulic Oil.

Enerpac recommends that all kit components be installed to insure optimum performance of the repaired product.

#### RETROFIT KIT INSTALLATION INSTRUCTIONS

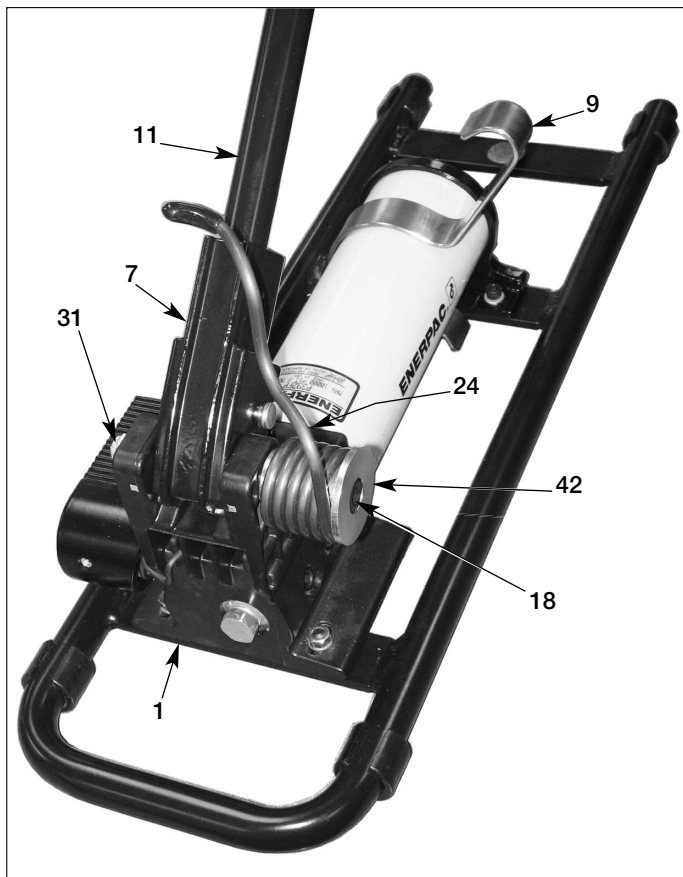
In the following procedure, the existing beam pin (item 18, p/n B1093028) and nut (item 31, p/n C428120) are replaced with new parts from a kit. The part number of the new beam pin is DC7354028. The part number of the nut is unchanged.

##### 1.0 DISASSEMBLY



**CAUTION:** Be certain that all hydraulic pressure is completely relieved before beginning disassembly procedures.

1. Remove the pump handle assembly (11) from the handle retainer (9). Move the handle to the UP position.
2. Unhook the return spring (24) from the pump handle assembly (11).
3. Using a 5/16" allen wrench and a 5/8" socket wrench, remove the beam pin (18), spring spacer (42), return spring (24), and nut (31).

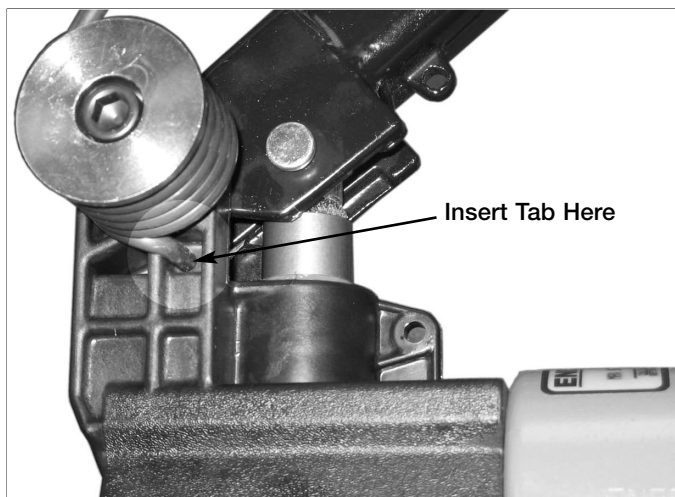


4. Discard the old beam pin (18) and nut (31). These parts will be replaced with new ones during reassembly.

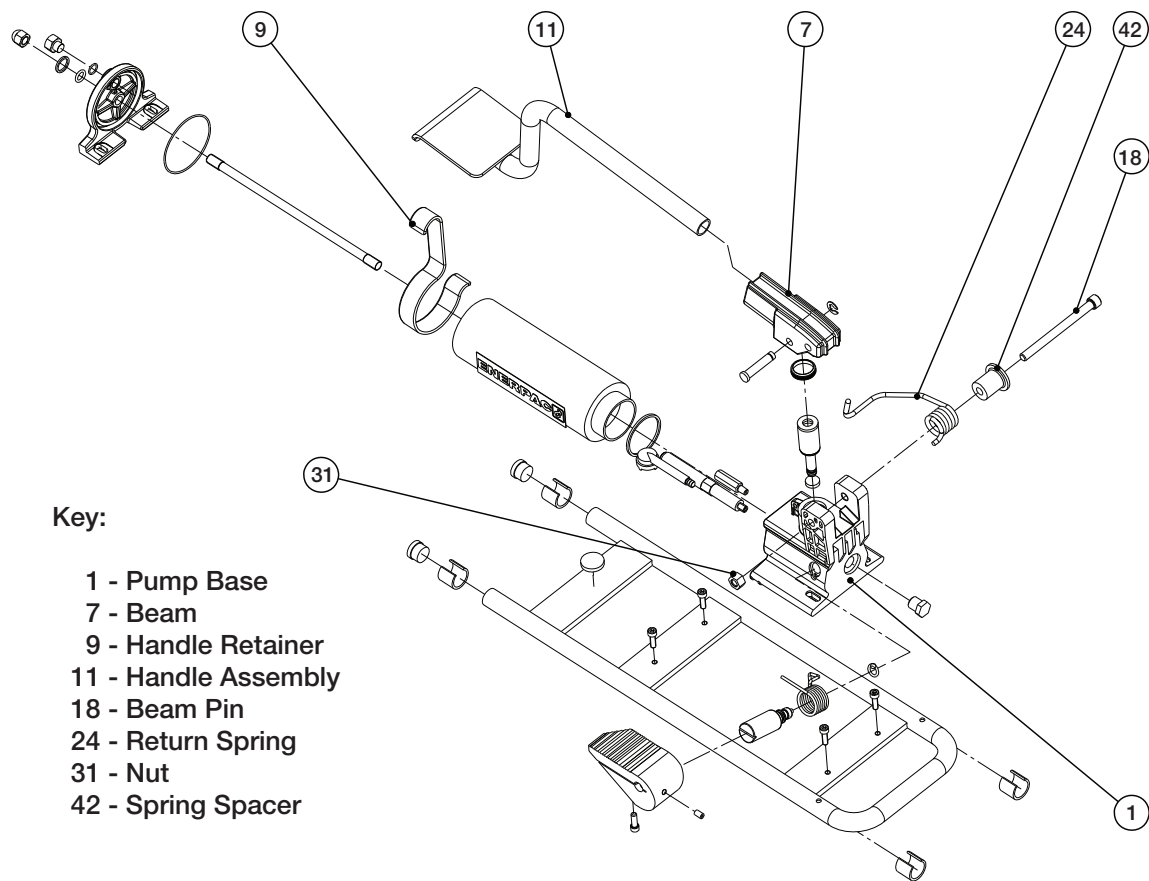
##### 2.0 REASSEMBLY

1. Place the spring spacer (42) and return spring (24) around the new beam pin (18) from the kit.
2. Slide the beam pin (18) through the holes in the pump base (1) and the pump handle assembly (11). Continue until the pin end slides through the hole on opposite side of pump base.

**Notice:** During reassembly, be sure that return spring tab is inserted into the pump base cavity as shown below.



3. Install the new nut (31) from the kit using a 5/16" allen wrench and 5/8" socket wrench. Tighten until snug, then back the nut off by 1/2 turn.
4. Check pump operation. Be sure the pump handle moves freely up and down.
5. Position the hook of the return spring (24) under the pump handle assembly (11). Test pump for proper operation.
6. Insert the pump handle assembly (11) into the handle retainer (9).





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**MATERIAL SAFETY DATA SHEET**

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**PRODUCT NAME:** Enerpac LX Hydraulic Oil**STOCK NUMBER:** LX101, LX104, CM50885**Distributor:**Enerpac  
720 West James Street  
Columbus, WI 53925**Date Issued:** 09-02-09

Supercedes: 04-16-08

**REVISION NUMBER:** 2048  
**PREPARATION/REVISION DATE:** 03/11/09  
**REVISED FROM (DATE):** 03/11/09**EMERGENCY PHONE #:** (920)-735-8298  
**NFPA CODE:** Health: 2 Fire: 1 Reactivity: 0  
**HMIS CODE:** Health: 2 Fire: 1 Reactivity: 0

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**SECTION 1 - HAZARDOUS INGREDIENTS**

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This material is not known to contain greater than 0.1% of any carcinogen required to be listed under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

<u>Component</u>	<u>Cas #</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Hydrotreated heavy paraffinic distillate	64742-54-7	5 mg/m3	5 mg/m3
Interchangeable neutral oils	64742-65-0	5 mg/m3	5 mg/m3
Zinc dialkyl dithiophosphate	68649-42-3	N.E.	N.E.

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**SECTION 2 - FIRE AND EXPLOSION HAZARDS**

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**FLASH POINT:** 375° F  
**UPPER FLAMMABLE LIMIT:** 10% (Estimated value)  
**LOWER FLAMMABLE LIMIT:** 1% (Estimated value)**EXTINGUISHING MEDIA:**

CO2, dry chemical, foam, water spray, water fog

**SPECIAL FIRE FIGHTING PROCEDURES:**

Wear self contained breathing apparatus with full face piece. Cool exposed containers with water spray. Avoid breathing fumes.

**UNUSUAL FIRE & EXPLOSION HAZARDS:**

Toxic fumes may be evolved on burning or exposure to heat. Pressure may increase in overheated closed containers. Store below 120° F.

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**SECTION 3 - HEALTH HAZARD DATA**

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**« ACUTE EXPOSURE »**

- ORAL TOXICITY:** Low order of acute oral toxicity. May cause irritation of the gastrointestinal tract, nausea and vomiting. Aspiration into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.
- EYE IRRITATION:** Eye irritant. Based on data from components or similar material.
- SKIN IRRITATION:** Skin irritant. Based on data from components or similar materials. Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, defatting and cracking of the skin.
- DERMAL TOXICITY:** The LD50 in rabbits is > 2000 mg/kg. Based on data from components or similar materials.
- INHALATION TOXICITY:** No data available to indicate product or components may be a toxic inhalation hazard.
- RESPIRATORY IRRITATION:** If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract similar to that observed with mineral oil. Based on data from components or similar materials. Under good industrial hygiene practices where all exposure limits are observed respiratory irritation should not be a problem.
- DERMAL SENSITIZATION:** No data available to indicate product or components may be a skin sensitizer.
- INHALATION SENSITIZATION:** No data available to indicate product or components may be a respiratory sensitizer.

**« CHRONIC EXPOSURE »**

- CHRONIC TOXICITY:** No data available to indicate product or components present at greater than 1% are chronic health hazards.
- CARCINOGENICITY:** No data available to indicate any components present at greater than 0.1% may present a carcinogenic hazard.
- MUTAGENICITY:** No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
- REPRODUCTIVE TOXICITY:** No data available to indicate either product or components present at greater than 0.1% that may cause reproductive toxicity.
- TERATOGENICITY:** No data available to indicate either product or components contained at greater than 0.1% may cause birth defects.

**« ADDITIONAL INFORMATION »**

- OTHER:** No other health hazards known.
- EXPOSURE LIMITS:** See Hazardous Ingredients Section for any applicable exposure limits for components.

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**SECTION 3A - EMERGENCY FIRST AID PROCEDURES**

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SKIN: Wash with soap and water. Get medical attention if irritation develops. Launder contaminated clothing before reuse.

EYE: Flush with water at least 15 minutes. Get medical attention if eye irritation develops or persists.

INHALATION: Remove exposed person to fresh air if adverse effects are observed.

ORAL: DO NOT INDUCE VOMITING! If conscious, give 2 glasses of water. Get immediate medical attention.

ADDITIONAL: Note to physician: treat symptomatically.

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**SECTION 4 - SPECIAL PROTECTION INFORMATION**

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VENTILATION PROCEDURE: Use local exhaust ventilation to control dust.

GLOVE PROTECTION: Neoprene or Nitrile Gloves Recommended.

EYE PROTECTION: Safety glasses recommended.

RESPIRATORY PROTECTION: Normally not required, mask or respirator for mists.

CLOTHING RECOMMENDATION: Launder as needed to prevent repeated or prolonged contact.

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**SECTION 5 - PHYSICAL DATA**

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VAPOR PRESSURE: Less than 0.01 mm Hg @ 20°C

PH: Essentially Neutral

SPECIFIC GRAVITY: 0.848

LB/GAL: 7.06

WATER SOLUBILITY: Insoluble

PERCENT VOLATILE: Negligible from open container in 4 hours @ 38°C (100°F)

VAPOR DENSITY: Greater than 1 (Air = 1)

EVAPORATION RATE: Less than 0.01 (@1 ATM and 25°C. n-butyl acetate = 1)

ODOR: Mild Petroleum oil like

APPEARANCE: Amber Viscous Liquid

VISCOSITY: 14-16.4 cSt @ 40°C

POUR: -50°F

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**SECTION 6 - STABILITY**

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STABILITY: Stable

INCOMPATIBILITY: Oxidizing agents and acids.

POLYMERIZATION: Will not occur.

THERMAL DECOMPOSITION: Smoke, carbon monoxide, aldehydes and other products of incomplete combustion. Hydrogen sulfide and short chain alkyl mercaptans may also be released. Under combustion conditions, oxides of the following elements will be formed: Phosphorus, Sulfur, Zinc.

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**SECTION 7 - SPILL OR LEAK PROCEDURES**

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**SPILL PROCEDURES:** Prevent entry into sewers and waterways. Pick up free liquid for recycle or disposal. Absorb small amounts with an inert material.

**WASTE DISPOSAL:** Dispose according to current local, state and federal regulations. Materials may become hazardous waste through use. If permitted, incineration may be practical. Consider recycling.

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**SECTION 8 - SPECIAL PRECAUTIONS**

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**SPECIAL PRECAUTIONS:** Keep containers closed when not in use. Do not handle or store near high heat or flames. Avoid breathing oil mists, wash skin thoroughly with soap and water after handling.

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**SECTION 9 - TRANSPORTATION AND OSHA LABELING INFORMATION**

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**TRANSPORTATION INCIDENT INFORMATION:** For further information relative to spills resulting from transportation incidents, refer to latest Department of Transportation Emergency Response Guidebook for Hazardous Materials Incidents.

**U.S. DOT HAZARDOUS MATERIALS SHIPPING DESCRIPTION:** Not Regulated.

**OSHA REQUIRED LABEL INFORMATION:** In compliance with hazard and right-to-know requirements, where applicable OSHA Hazard Warnings may be found on the label, bill of lading or invoice accompanying this shipment.

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of seller's knowledge, however, seller makes no warranty whatsoever, expressed, implied or of merchantability regarding the accuracy of such data or the results to be obtained from the use thereof, seller assumes no responsibility for injury to buyer or to third persons or for any damage to any property and buyer assumes all such risks.

N.A. = Not Applicable   N.D. = Not Determine   N.E. = Not Established

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