

**Series SLA Electric Pump  
LeakLess Head  
Operating Manual**



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This manual covers the installation and operation of CheckPoint Electric motor-driven SLA and LeakLess Head

**CAUTION:**

1. **Do not operate pump without reading all of the following information.**
2. **Follow all local rules, regulations, and safety requirements, and ensure that you are wearing proper PPE at all times.**
3. **Before troubleshooting the pump, ensure that power is disconnected from the pump according to site protocol.**
4. **The electric motor must be connected so that its direction of rotation is the same as the arrow on the gearbox. Motor polarity is important. The Pump Drive's input shaft must be turned counterclockwise to prevent premature failure.**

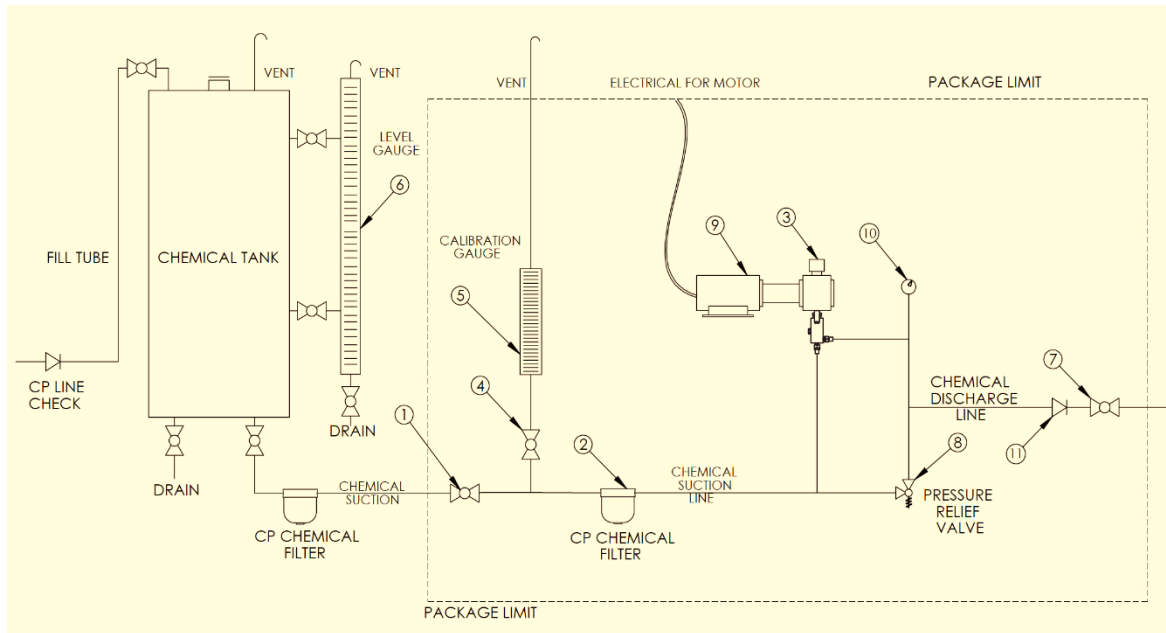
**1. PUMP DATA**

- 1.1 All information specific to the pump unit shipped with these instructions is contained in the Pump Datasheet.
- 1.2 Refer to Figure 4 in the back of this manual for location of referred components of this pump.

**2. PUMP INSTALLATION**

- 2.1 Prior to installing your pump, please inspect the pump carefully for any possible in-transit damage. If the pump appears damaged, call your authorized CheckPoint distributor, or call CheckPoint customer service directly at (800) 847-7867 or (504) 340-0770 to report damaged condition. If determined that damage has occurred in transit, you will need to file a claim with the carrier.

Figure 1: TYPICAL INSTALLATION SCHEMATIC



CheckPoint packages are available for the SLA LeakLess Pump that contain all necessary components as indicated within the Package Limit Line. We can supply packages that contain ALL the components, including the tank, mounted on a single skid with or without full leak containment.

1. Suction Line Block Valve	4. Calibration Gauge Block Valve	7. Discharge Line Block Valve	10. Discharge Pressure Gauge
2. CP Chemical Filter*	5. CP Calibration Gauge*	8. PRV – Discharge Line	11. Discharge Check Valve
3. CheckPoint Pump*	6. Tank Gauge	9. Motor	

All items in Figure 1 can be purchased from CheckPoint. Call today for our latest prices on pumps, gauges, packages and other components.

\* CheckPoint OEM products

2.2 Ensure that all necessary components are present in your injection system and in good working order. CheckPoint is available to answer your process questions or to help design and build a skid system utilizing components appropriate for your application.

**CAUTION: The pump must always be oriented with the discharge check on top and the suction check on bottom or lower than the discharge check. Mounting the pump in another orientation may cause premature failure or other problems.**

2.3 CheckPoint recommends the use of a calibration gauge for your assurance of proper chemical delivery rate. Refer to *Section 10: Setting and Adjusting the Pump Delivery Volume* for more information. For the proper position of the calibration gauge see Figure 1, Item 5.

**CAUTION: It is necessary to attach a vent tube to the top of all calibration gauges, chemical tanks, and tank level gauges. The height of the top of each vent tube should always be greater than the highest possible liquid level in the system, and the tube should have a means to prevent water entry, such as a 180-degree bend.**

2.4 This pump requires flooded suction to prime.

2.5 All valves, fittings, and piping between the source of chemical and the pump's suction check valve must be 100% bubble-tight and fully compatible with the chemical being delivered and with each other. Failure to adhere strictly to this

rule will lead to gas build-up in the chemical head and loss of prime.

Specifically:

2.5.1 Any fitting or screw-on joint without Teflon™ tape or other acceptable joint sealant may allow air at atmospheric pressure to enter the suction tubing, even if no chemical leakage is visible.

2.5.2 Dissimilar metals, when joined together in the suction pipe work may react with each other, creating gas bubbles that will end up being carried into the pump head. CheckPoint generally recommends all suction components, including all tubing, piping, fittings, and valves, be of similar material, preferably stainless steel or other chemically resistant metal.

2.5.3 Incompatibilities between the chemical and the metallic elements in the suction pipe work can also create gas bubbles. In particular, some acids require Hastelloy™ or PVC fittings and tubing, while other chemicals may only require 316 SS.

2.6 Always check to ensure that all process block valves are closed prior to disconnecting or re-installing any chemical injection pump. There should always be a block valve placed between a properly installed pump and the process flow and the chemical supply. Conversely, while the pump is running, all such block valves should always be open.

2.7 To ensure sufficient flow rates of chemical and minimize pressure drop through the lines, all suction lines should be equal to or greater than the suction check valve size; this will differ based on plunger size. All discharge lines should be equal to or greater than the discharge check valve size; this will also differ based on plunger size. Additional allowances are required for multiple pump installations and for the use of viscous chemicals. Contact CheckPoint or your authorized CheckPoint distributor for design assistance. Pulsation dampeners are sometimes specified in systems. Pump drives with low flow rates do not generate harmful pulsation therefore pulsation dampeners are not required.

### **3. PRIOR TO STARTUP – SAFETY CHECKS**

- 3.1 Is the gearbox filled with suitable lubricant?
- 3.2 Is the power supply correctly matched to the motor?
- 3.3 Is the electric hookup of the pump correct and carried out according to all applicable codes?
- 3.4 Are all tubing/pipe connections made up correctly?
- 3.5 Is there a pressure relief valve on the discharge side?
- 3.6 Is the pressure relief valve operating correctly, and is the correct pressure set?

### **4. CHECKING THE GEAR LUBRICANT LEVEL**

**CAUTION: TO AVOID RISK OF DAMAGE AND OVERHEATING, the pump gearbox must be filled with gear lubricant at all times when operating the pump.**

- 4.1 Oil level should be checked weekly.
- 4.1.2 Oil level may be checked while pump is running.
- 4.1.3 Drives have one or two sight glasses. If fitted with two, the lower sight glass should always be filled completely.
- 4.1.4 Check the upper sight glass. The oil should be filled at a minimum 25% up the sight glass.

NOTE: When pump is stroking, the glass will appear full but never look empty. If fluid is coming out of the vent cap, pump is overfilled.

- 4.1.5 If the oil is below the 25% level on the upper sight glass, stop the pump, remove the vent cap and fill to 50% level. Replace vent cap.

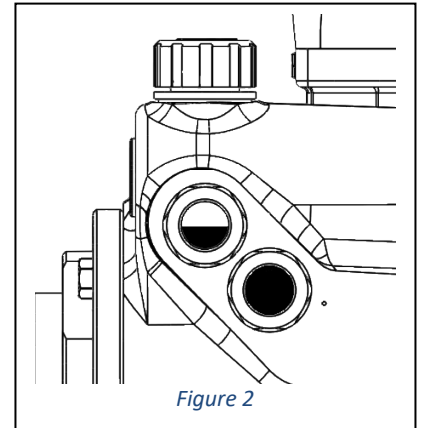


Figure 2

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## 5. GEAR LUBRICANT TYPE

5.1 Use Mobil SHC 634 or equivalent.

5.2 Capacity of unit is 2.1 Quarts / 2.0 L.

**NOTE: New pumps experience a break-in period. Temperatures will rise and eventually fall, typically within a few hours.**

### 5.3 Maintenance period

5.3.1 If temperature exceeds 180°F (82°C) during break-in period, we recommend replacing the oil once the temperature levels out. If temperature remains below 180°F (82°C), refer to section 5.3.2.

5.3.2 Oil should be changed after 1 month (800 hours) for the first-time break-in or run-in period, and every 6 months (4,400 hours) thereafter.

**CAUTION: DO NOT DRAIN HOT LUBRICANT. EXPOSURE TO HOT LUBRICANT CAN CAUSE SIGNIFICANT BURNS.**

**NOTE: Assure environmentally safe draining and disposal of spent lubricants.**

## 6. MOTOR ELECTRICAL CONNECTION

6.1 The electric motor must be connected so that its direction of rotation is the same as the arrow on the gearbox.

6.2 The electric motor must be connected in accordance with all local regulations, including especially overload protection.

6.3 The complete installation must be equipped with an “emergency off” switch that is easily and quickly accessible by the user.

## 7. PRESSURE RELIEF VALVE (PRV)

**CAUTION: NEVER OPERATE PUMP WITHOUT A PRESSURE RELIEF VALVE (PRV) ON THE DISCHARGE SIDE OF THE PUMP THAT HAS BEEN SET TO THE APPROPRIATE OVERLOAD PRESSURE! OPERATING PUMP WITHOUT A PRV MAY CAUSE DAMAGE TO THE DRIVE AND/OR CAUSE A LEAK!**

**NOTE:** When using a pressure relief valve vented to the chemical tank the vessel MUST BE properly vented to the atmosphere to avoid the possibility of over-pressurizing the tank.

7.1 PRV set pressures are 20% above max pump pressure per datasheet, unless specific customer requires otherwise.

## 8. CONNECTING THE CHEMICAL SUPPLY

8.1 Clean suction lines and check chemical containers.

**CAUTION: Removing foreign debris from suction lines and chemical containers will substantially extend the life of the seal and other components of the pump. Even a new chemical tank can contain debris that can be carried into the pump and damage it.**

**NOTE:** If scoring of the pump plunger or early seal failure is observed during operation, a likely cause is abrasive particles carried into the pump through the suction plumbing. Use of a pre-suction in-line chemical filter such as the CheckPoint Series ST Chemical Filter and/or a ceramic plunger is recommended.

**CAUTION: Substantial plunger scoring can lead to loss of flow due to chemical bypassing the main seal.**

8.2 Connect the chemical suction line to the suction check valve or the wet end.

**NOTE:** Always apply Teflon™ tape or thread sealant to NPT threads only prior to attachment to prevent leakage.

**CAUTION: Never relocate the suction or discharge check valves away from the chemical head. To operate properly, check valves must remain directly attached to the chemical head. If desired, a secondary discharge check may be placed downstream of the primary discharge check valve.**

8.3.1 Connect your discharge line to the discharge check valve. An arrow stamped on the check valve indicates flow direction

8.3.2 Open all process block valves to allow the process pressure to reach the chemical head. Correct any leakage observed.



## 9. BLEEDING/PRIMING THE LEAKLESS HEAD

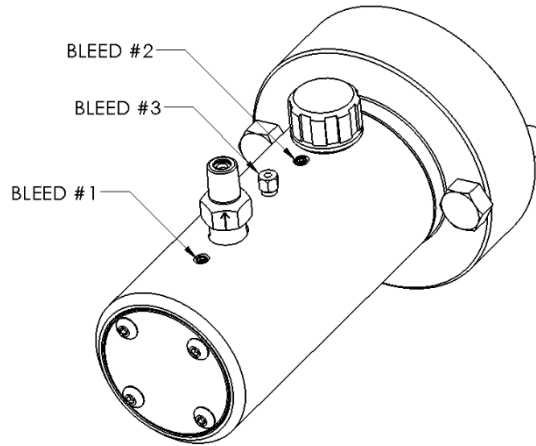


Figure 3

9.1 Open the chemical supply block valve.

**CAUTION: Other than during brief testing, NEVER operate the pump without chemical supply available and flowing freely. Doing so will create undue friction and heat, decreasing the life of the seal and voiding the pump warranty.**

See Figure 3 for the following operations:

9.2 Crack Bleed 1 until fluid flows out of bleed. Close bleed screw

9.3 Crack Bleed 2 until fluid flows out of bleed. Close bleed screw

9.4 Crack Bleed 3 until fluid flows out of bleed. Close bleed screw.

9.5 NOTE: It's not necessary to prime with the pump running. Adjusting the stroke length to its maximum position may speed up the priming process.

9.6 Start the pump and repeat section 9.5 if necessary

NOTE: If the pump is not new, it is very possible for dried or solidified chemical to be present in the bleed assembly. If your pump does not bleed when following the directions above, try cleaning these items in solvent and replacing them.

**CAUTION: DO NOT OVER-TIGHTEN THE BLEED SCREW. Tighten the bleed screw ONLY until chemical stops flowing. Applying excess torque to the bleed valve may impair future valve operation.**

## 10. SETTING AND ADJUSTING THE PUMP DELIVERY VOLUME

10.1 The pump stroke rate remains constant regardless of delivery volume.

10.2 The pump delivery volume is adjusted by changing the stroke length.

10.3 Stroke length is adjustable from 0-1" (0%-100%). Full stroke=100%

10.4 The stroke length may be adjusted while the pump is running.

10.5 There are a variety of calibration gauges available, including a complete line of appropriately sized CheckPoint calibration gauges for every CheckPoint pump. To ensure that your pump is working as it should and that chemical is being delivered at the rate you need, it is important to use a calibration gauge.

10.6 Most calibration gauges are designed to read properly when one full minute of pumping has taken place. If the liquid

level drops too fast to allow for a full minute, shorter periods are acceptable. Try to size the gauge so that at least a 30 second test can be made, or a loss of accuracy will result.

10.7 Proper gauge placement and plumbing is important. Please refer to Figure 1 for appropriate valving and placement, and for reference numbers as used in this section. The calibration gauge is labeled as Item 5 in Figure 1.

10.8 With the pump either running or stopped, open the Gauge Fill Valve (Figure 1, Item 4). The calibration gauge (Figure 1, Item 5) should begin to fill. Continue filling until the chemical level is at or near the top markings on the gauge, then close the Gauge Fill Valve (Figure 1, Item 4).

10.9 Now ensure that the CheckPoint pump is running. Take note of the level of chemical in the gauge using the appropriate scale for the volume units you want to measure the pump's output in. Usually, the calibration gauge will show liters on one scale and quarts or gallons on the other. It is best to write down the number so that you can calculate flow accurately.

10.10 Open the Gauge Fill Valve (Figure 1, Item 4), and immediately close the Chemical Supply Valve (Figure 1, Item 1). This isolates the pump and gauge so that the pump is being supplied directly from the gauge.

10.11 The level in the gauge should begin to fall. When the liquid level in the gauge gets near the bottom of the gauge, or when one minute has expired (whichever comes first), stop timing, note the ending level on the gauge, and reopen the Chemical Supply Valve (Figure 1, Item 1).

10.12 Write down the amount of time in seconds and the final gauge reading, then close the Gauge Fill Valve (Figure 1, Item 4).

NOTE: Failure to reopen the Chemical Supply Valve will result in the pump quickly depleting the remaining chemical in the gauge and sucking in air from the gauge, necessitating pump re-priming.

NOTE: In cases where the chemical flow rate is extremely low, you may need to time for longer than one minute to allow an adequate amount of chemical to move out of the gauge.

10.13 The pumping volume (in the units specified on the gauge scale) is given by the following equation:

$$\text{PUMPING VOLUME} = \frac{[\text{END READING}] - [\text{BEGINNING READING}]}{[\text{DURATION OF READING IN SECONDS}]} \times 60$$

NOTE: To ensure accurate stroke rate measurement, allow sufficient measurement duration. Where possible, allow at least thirty seconds of gauge drawdown.

**11. NAME & FUNCTION DIAGRAM**

- |                               |                           |                                     |
|-------------------------------|---------------------------|-------------------------------------|
| 1. Electric Motor             | 4. Chemical Supply Inlet  | 7. Stroke Length Adjustment Setting |
| 2. Plunger-Type Chemical Head | 5. Discharge Check Valve  | 8. Fill Plug                        |
| 3. Bleed Screw                | 6. Stroke Length Adjuster | 9. Oil Level                        |

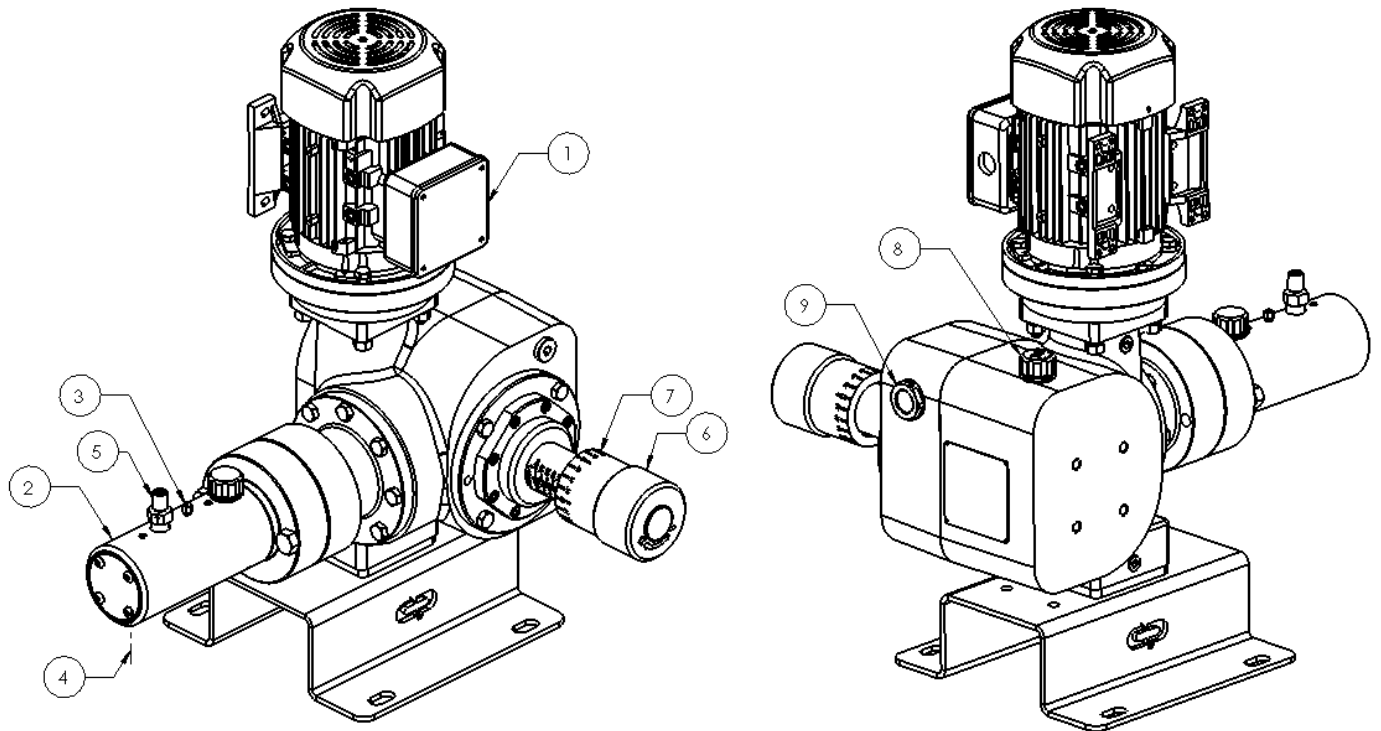


Figure 4

## 12. TROUBLESHOOTING

- 12.1 **Oil leak** If you have any type of oil leak from a seal or an O-ring, disconnect power, and check the fasteners at that location. If everything is properly sealed, check the vent cap to be sure that the vent is not clogged with debris. Dirt and dust can clog the vent cap causing pressure to build up. Check the oil level to be sure that the oil is not overfilled. Contact CheckPoint if problem is not resolved.
- 12.2 **Heat level increase** If the pump reaches a temperature exceeding 180°F (82°C), first check the oil level. If the oil is properly filled, check the motor amp draw. If the motor amp draw is correct, then check the discharge pressure.
- 12.3 **Turning the stroke length adjustment knob and nothing is happening** Remove the black cover to make sure that the nut inside didn't back off. If it did, re-tighten that nut.
- 12.4 **Motor is running, but there is no plunger movement and adjuster knob is not providing adjustment** Pull the motor off and check the coupling keys for shear.
- 12.5 **Pump runs, but chemical does not discharge at the correct rate** Refer below for possible solutions.
- 12.5.1 **Suction check valve may be clogged with debris** To flush, allow the pump to cycle at maximum rate for at least 60 seconds. If no improvement is noted, remove the suction check valve from body of pump. Blow the check out with air or water pressure. If the first attempts are unsuccessful, a check rebuild could be necessary.

NOTE: CheckPoint FailSafe™ check valves do not need replacement when they do not check properly. A simple rebuild kit is available to replace the O-rings, which corrects all but the most severe check problems. Corrosion of the valve seat, retainer, or poppet indicates an incorrect check valve material. Please contact CheckPoint to request chemical compatibility information.

NOTE: Always replace Teflon™ tape or other appropriate thread sealant on check valve threads during reinstallation to avoid chemical leakage or the introduction of air to the chemical head.

- 12.5.2 **Pump may have lost prime and became "air locked"** Check to ensure that there are no leaks in any process lines, particularly upstream of the pump, within the chemical suction lines. If air is introduced through the suction side, the pump may lose prime. Read Section 2.5 and its subparagraphs carefully for details. A common source of air in the supply is the block valve ahead of the suction check. Check this valve to make sure that the stem packing is tight and that the materials of construction are compatible with the chemical being pumped. Also, check that the pump's packing is not leaking. Finally, with pumps supplying chemical into gas lines, it is possible that the discharge port may be leaking. A leaky discharge port may allow gas under pressure to "back into" the chemical head.
- 12.5.3 **Check valves may have been relocated away from the chemical head of the pump** The checks must stay directly attached to the head in order to facilitate chemical movement.
- 12.5.4 **Chemical may be obstructed from entering the pump** Pumping upstream of the chemical head may allow a blockage which prevents chemical from getting to the suction check valve. A common example is an in-line chemical filter becoming clogged with debris. Solution - clean out suction plumbing and clean or replace the chemical filter.
- 12.5.5 Chemical supply line size or configuration may cause NPSHa to drop below NPSHr.
- 12.5.6 **Calibration gauge may be reading incorrectly due to clogged air vent** If the calibration gauge is not reading correctly, it may appear chemical is not getting into the process. Check for an obstruction in the gauge or in the air vent atop the gauge.
- 12.6 **Miscellaneous**
  - 12.6.1 If you are experiencing an operating problem not listed above, or if none of the above troubleshooting actions solve your operating problem, please contact your Authorized CheckPoint Distributor, or contact CheckPoint directly at +1 (504) 340-0770, toll free at +1 (800) 847-7867, or via email at HELP@cppumps.com. We will work to assist you in determining the appropriate next steps. Once CheckPoint has had the opportunity to assist you with troubleshooting your problem, please keep in mind the following information regarding repairs.
  - 12.6.2 CheckPoint offers exchange programs to keep you in service. CheckPoint will ship you a rebuilt pump, which you will be able to install prior to sending us your existing pump. Upon receipt of your pump, we will tear it down, rebuild it, and report to you our findings. Please contact CheckPoint headquarters to learn more about our exchange services.

- 12.6.3 Although the Pump Drive has been designed for easy operation and repair, the best way to ensure continued reliable service is to have your pump repaired by CheckPoint's factory. OEM repair services ensure CheckPoint quality and reliability.
- 12.6.4 After your CheckPoint pump has been repaired, it will perform like new
- 12.6.5 If your pump is anything less than exceptional, call us to determine what can be done to restore the pump to "like-new" performance.
- 12.6.6 Training sessions are available. CheckPoint strives to maintain excellence in all that we do, and we are happy to share our knowledge with you. If you would like to train your employees regarding anything involving CheckPoint Pumps & Systems, please contact us to discuss training options.