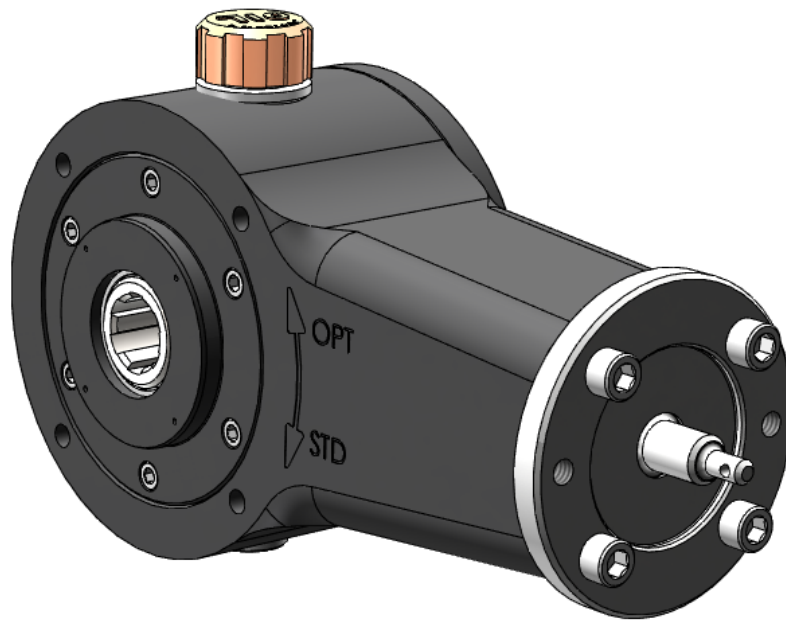


FXA Reciprocating Drive Operating Manual



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Congratulations! You have chosen the finest, most versatile chemical injection pump made; designed to superior specifications for long life, reliable performance, and low maintenance. To maximize the Series FXA's durability and to ensure proper operation, please read and follow this manual. Failure to correctly install and maintain the drive is the primary cause of premature failure and voids the product warranty.

NOTE: This IOM applies to the CheckPoint Series FXA Reciprocating Drive, part number FXA#####.

NOTE: Important illustrations, graphs, and charts are located throughout this manual.

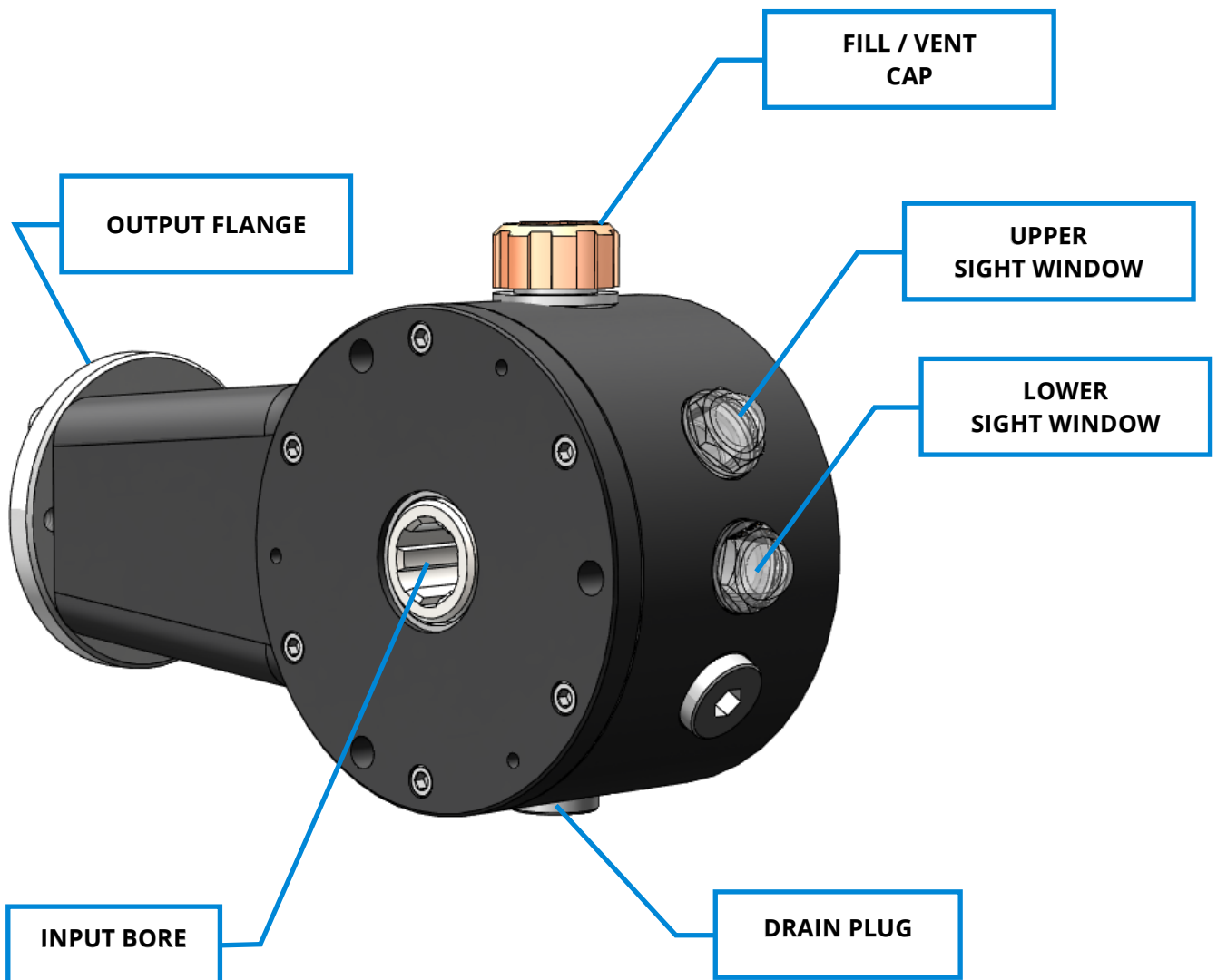
1. INTRODUCTION

1.1 Scope

This IOM covers the Series FXA installation and operation. Safe system design and pump systems for this drive are described in other CheckPoint manuals.

1.2 Description

The Series FXA is a mechanical drive that uses reciprocating motion to drive various pump heads in an oscillating motion at a fixed stroke length of $\frac{3}{4}$ ". The FXA is a cam and follower drive system submerged in an oil bath which converts rotary input motion to linear motion. There are 2 sight windows to indicate a maximum and minimum fill range for the FXA.



1.3 Specification

Maximum Speed	180 Strokes Per Minute
Minimum Speed	1 Stroke Per Minute
Maximum Allowable Rod Load	2,000 lbs / (907 KG)
Fixed Stroke Length	3/4" (19 mm)
Hydraulic Oil Capacity	7 Fl Oz, (207 ml)
Hydraulic Fluid	Mobil 1 5W-30 Fully Synthetic Motor Oil

1.4 Features

- ATEX
- High Efficiency
- Oil Bath Lubricated
- Hard Coat Anodized Protective Finish
- Oil Level Sight Windows
- Bi-directional Input

1.5 Options

The FXA pump has several innovative features and options. Two prominent options are the input shaft style and output flange configuration.

PART NUMBER	INPUT SHAFT	OUTPUT FLANGE
FXA582525	5/8" KEYED SHAFT	1250 SERIES PUMP
FXA585050	5/8" KEYED SHAFT	1500 SERIES PUMP
FXA5850HD	5/8" KEYED SHAFT	HDA SERIES PUMP
FXASP2525	SAE 7/8" 6T SPLINED SHAFT	1250 SERIES PUMP
FXASP5050	SAE 7/8" 6T SPLINED SHAFT	1500 SERIES PUMP
FXASP50HD	SAE 7/8" 6T SPLINED SHAFT	HDA SERIES PUMP

1.5.1 Input Bore

The FXA can be configured to either accept a 5/8" or SAE 7/8 6T splined shaft.

1.5.2 Output Flange

1.5.2.1 *Series 1250 Pump Flange* - This option allows the direct coupling of a CheckPoint 1250 series pump head and plunger.

1.5.2.2 *Series 1500 Pump Flange* - This option allows the direct coupling of a CheckPoint 1500 series pump head and plunger.

1.5.2.3 *Series HDA Pump Flange* - This option allows the direct coupling of a CheckPoint HDA series pump head and plunger.

2. INSTALLATION

2.1 *Inspection*

2.1.1 Before installation, please inspect the drive carefully. If the drive appears to have sustained damage in transit, call your CheckPoint Authorized Distributor or CheckPoint Customer Service directly at +1 (504) 340-0770 to report and confirm damage. If it is determined that damage occurred in transit, a carrier claim will be required.

2.2 *Storage*

The Series FXA drive has been thoroughly tested at the CheckPoint factory prior to shipment. This testing required all fluids and lubricants to be filled. These lubricants were drained. Residual lubrication that did not drain will protect the internal components from corrosion. Although our drives can be placed in service without environmental protection, we suggest they are stored indoors until commissioning.

2.3 *Unpacking*

The FXA drive can be shipped as a single replacement drive or as part of a completed pump. When shipped as an individual drive, the drive is secured with expanding foam to protect it during shipment.

2.4 *Safety*

The Series FXA can produce high thrust loads. All CheckPoint pump heads used with the FXA are designed to provide integrated guards to minimize pinch points. Use of the FXA with another brand of pump is not recommended and may present safety hazards.

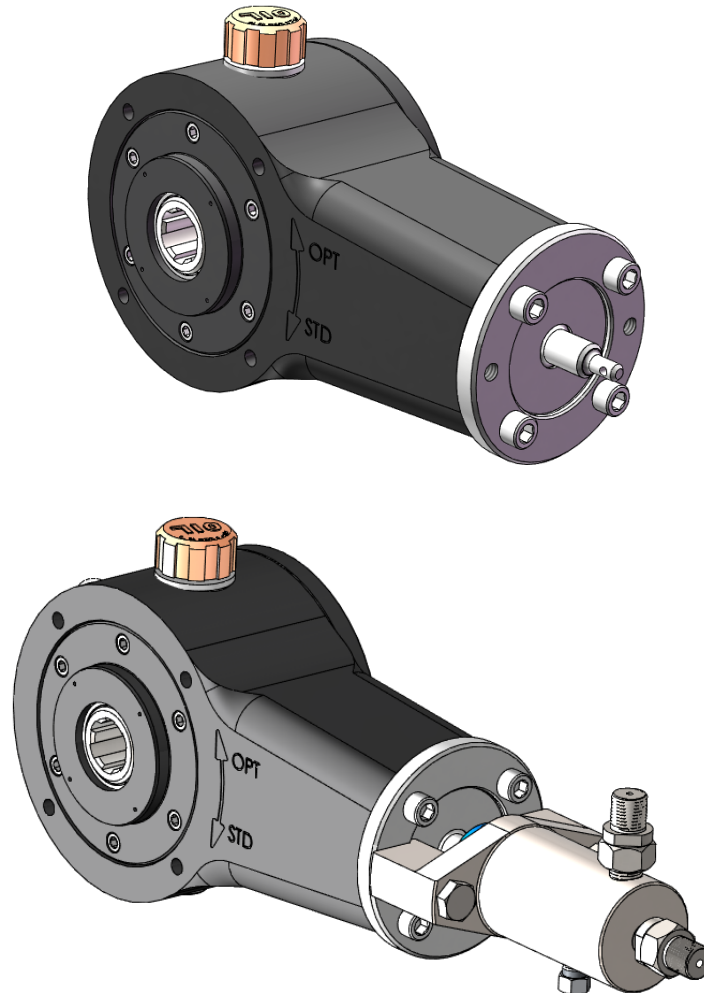
2.5 *Mounting*

- CheckPoint requires horizontal (+/- 5 degrees) mounting for the Series FXA. Improper mounting will result in oil leakage from the reservoir vent.
- The pump may be mounted to a skid or other surface in a number of ways; however, clamping around the outside of the drive is not recommended. Proper mounting techniques increase accessibility during maintenance and troubleshooting. Your CheckPoint FXA purchase includes an option to purchase a standard predrilled base for proper drive mounting.

Connecting the Pump

2.5.1 Series 1250 Pump

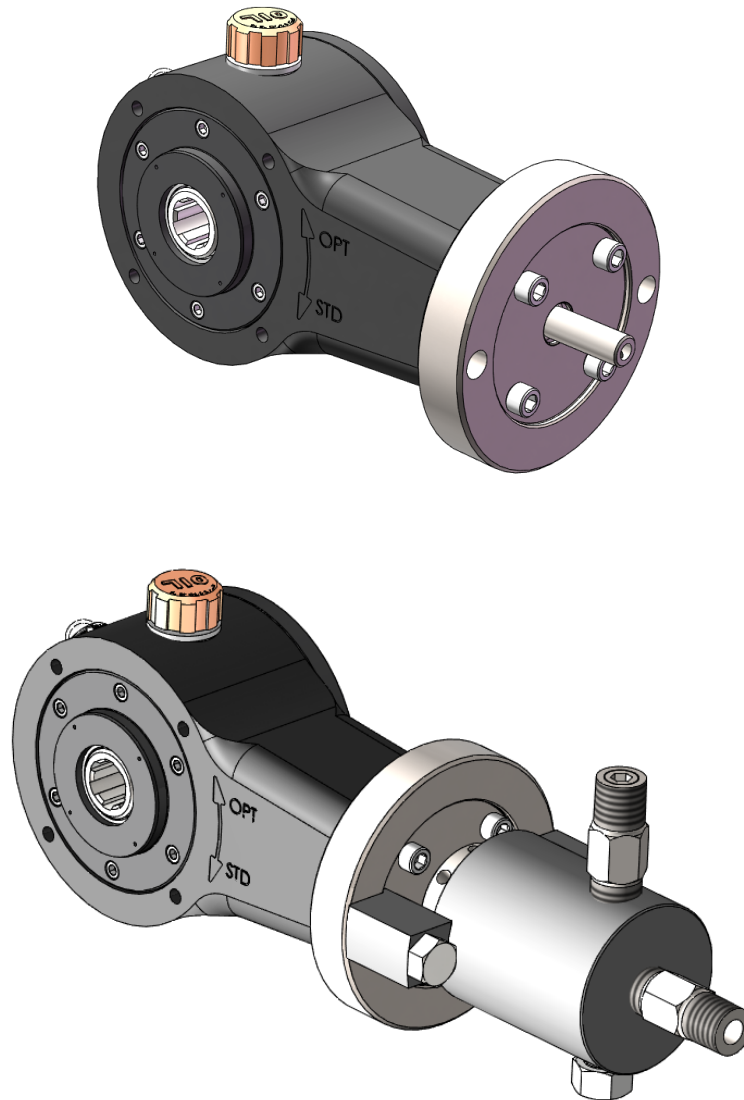
The Series 1250 pump is connected to the FXA via 2 hex head fasteners. The plunger is connected to the FXA directly via an integrated plunger adapter. Mount the pump as directed below.



- 1) Remove the retaining ring and the shear pin from Series 1250 plunger.
- 2) Mount the plunger to the plunger adapter by inserting the pin and the retaining ring
- 3) Carefully align the pump head with the plunger and slide the pump onto the plunger.
- 4) Install both fasteners, and torque according to the Series 1250 IOM.

2.5.2 Series 1500 Pump

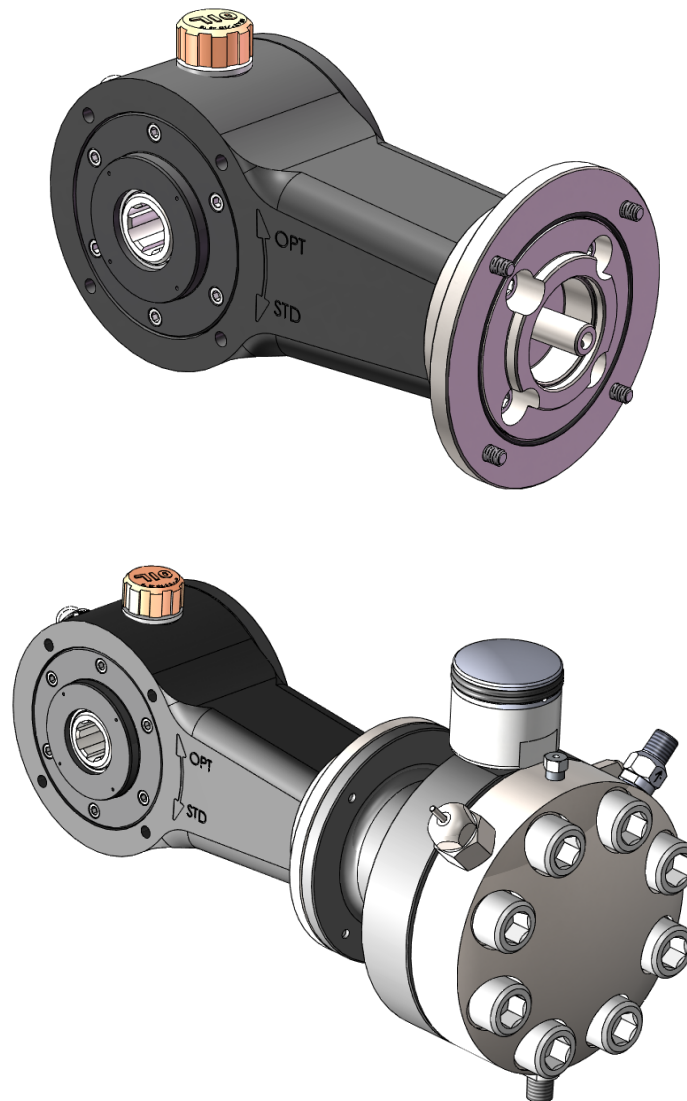
The Series 1500 pump is connected to the FXA via 2 hex head fasteners. The plunger is screwed into to the FXA directly via an integrated plunger adapter. Mount the pump as directed below:



- 1) Clean the plunger threads and threaded bore in the FXA plunger adapter.
- 2) Screw in the plunger until snug.
- 3) Apply blue Loctite to the retaining screw and tighten.
- 4) Carefully align the pump head with the plunger, and slide the pump onto plunger.
- 5) Install both fasteners, and torque according to the Series 1500 IOM.

2.5.3 Series HDA Pump

The Series HDA pump is connected to the FXA via 4 socket head fasteners and one O-ring. The HDA plunger quick change assembly is screwed into to the FXA directly via an integrated plunger adapter. Mount the pump as directed below:



- 1) Clean the plunger quick-change adapter mounting screw threads and threaded bore in the FXA plunger adapter.
- 2) Remove the set screw on the plunger adapter (this set screw will not be used).
- 3) Mount the quick-change adapter to the FXA plunger adapter.
- 4) Apply blue Loctite to the mounting screw and tighten.
- 5) Install the plunger by inserting into the quick-change adapter and turning 1/8 of a revolution.

6) Install the O-ring on the FXA discharge flange with a light coat of grease.

NOTE: Ceramic plungers and bushings in the pump head have a very tight clearance, and proper alignment is critical for assembly.

NOTE: Carefully align the pump head with the plunger, and slide the pump onto the plunger (the plunger cannot hold the weight of pump without damage).

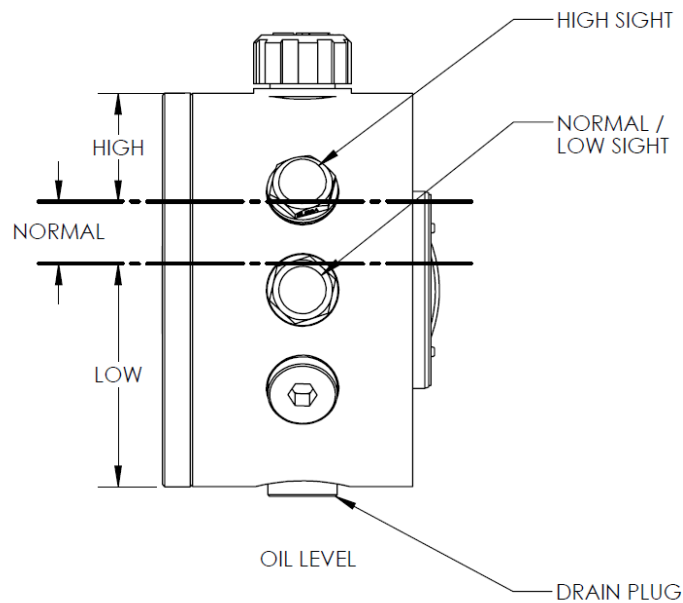
7) Install four socket head cap screw fasteners, and torque according to HDA IOM.

2.6 Drive Requirements

- The FXA drive is unpowered and requires a rotating input shaft to function. The FXA can currently be mounted to a 5/8" shaft or a SAE 7/8 6T splined shaft.
- CheckPoint strongly recommends only using CheckPoint-supplied shafts and gear reducers with a motor/gear reducer combination not exceeding 80 RPM at the FXA drive input shaft. The maximum rated rotational speed of the FXA input shaft is 180 RPM. NEVER EXCEED 180 RPM

3. OPERATION

The CheckPoint Series FXA reciprocator drive contains internal rotating parts that require constant lubrication. The housing for the drive serves as an oil reservoir and requires the oil level to be above the centerline of the plunger adapter. To facilitate the monitoring and accurate level control of the lubricating fluid, two sight plugs are installed on the housing. Fill the FXA with oil until the “normal/low” sight is covered, but no oil is present in the “high” sight. If the oil level drops below the “normal/low” sight, suspend operation until the level can be restored. The proper oil level is indicated in the figure below.



3.1 Initial Startup

3.1.1 Filling the FXA with oil

The Series FXA pump is delivered with an empty reservoir. Prior to startup, fill the FXA drive housing using 7 ounces (60mL) of SAE rated 5W-30 motor oil. CheckPoint recommends using Fully Synthetic oil for longer life. Before filling with oil, ensure that the drain plug in the bottom of the housing is installed. Remove the top breather vent in the housing. Use a funnel to pour oil into the housing. Replace the top breather vent after filling with oil. Take care not to over-tighten the connections.

3.1.2 Installing the Drive Shaft

Proper alignment between the input shaft and the FXA is critical to ensure long life of the FXA. CheckPoint supplies custom adapters between the FXA and its drive systems. Use of non-CheckPoint connectors of couplings is not suggested. Ample Never Seize shaft lubricant should be used on all shaft and bore connections.

3.2 Normal Operation

No special requirements are needed for normal operation.

3.3 Cold Weather Operating

The FXA, in climates where temperatures fall below 20°F, may require thinner oil. CheckPoint recommends using a Fully Synthetic 0W-20 for cold weather operations. For extremely low temperatures, external methods to add heat prior to startup are recommended. Once in operation, the FXA will produce sufficient heat to maintain oil fluidity.

4. MAINTENANCE

The CheckPoint Series FXA is designed to provide trouble-free operation for many years with little adjustment, lubrication, or other routine maintenance. However, like any other device, proper maintenance can extend the life of the product. This can include periodic cleaning of the chemical inlets and lubrication.

4.1 Preventative maintenance

4.1.1 Lubrication

Although other motor oils may provide satisfactory performance, The FXA is tested with and CheckPoint recommends using the oil described in section 1.3.

4.1.2 Periodic Inspection

For proper operation, oil must be above the centerline of the drive. Inspect the fluid level monthly or as conditions require. Add oil as required to maintain proper levels.

4.1.3 Oil Change

CheckPoint recommends changing the drive oil every 2,000 hours.

4.2 Decommissioning

Draining the drive's lubricating oil and plugging the fill vent are the only actions required prior to disassembly and packaging for transport.

5. TROUBLESHOOTING

5.1 Pump does not stroke

5.1.1 Check power to motor

Ensure that the required amount of power is supplied to the motor and that the motor is turned on.

5.1.2 Motor power is too low

Ensure proper motor sizing for the particular application. Contact CheckPoint or your Authorized CheckPoint Distributor for sizing assistance.

5.1.3 Damage to Keyway

A key may have sheared during an overload situation. Inspect all bores and keyways for damage or missing components.

5.2 Drive is excessively noisy

5.2.1 Drive components may be worn

The motor or gear reducer may be worn. Contact your drive component manufacturer.

5.3 Miscellaneous

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 or 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.

5.3.1 CheckPoint offers exchange programs to keep you in service

We 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. We offer a fixed-price exchange plan, an actual-cost plan, and a consigned exchange plan. Please contact CheckPoint to learn more about our unique exchange services.

5.3.2 Nothing beats factory-direct repairs

Although the Series FXA 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.

5.3.3 Remember that after you repair your CheckPoint pump, it should perform like new

If your pump is anything less than exceptional, call us to determine what can be done to restore the pump to "like-new" performance.

5.3.4 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.