# CENTRIFUGAL PUMPS
# FLOT AND PK/FLOT

# IOM MANUAL

## INSTALLATION, OPERATION AND MAINTENANCE (IOM) INFORMATION

**PLEASE LEAVE THIS MANUAL FOR OWNER'S USE**

## *SAFETY INSTRUCTIONS*

Read this manual carefully to learn how to safely install and operate your pump. Throughout this manual there are a number of SAFETY HAZARDS that must be read and adhered to in order to prevent possible personal injury and/or damage to the equipment.

*Three keywords, "DANGER", "WARNING", and "CAUTION", are used to indicate the potential severity of the hazard, and are preceded by a SAFETY ALERT SYMBOL. Failure to follow the safety-related instructions may result in a safety hazard.*

**DANGER** Indicates an imminently hazardous situation which, if not avoided, *WILL* result in serious injury or death.

**WARNING** Indicates a potentially hazardous situation which, if not avoided, *COULD* result in serious injury or death.

**CAUTION** Indicates a potentially hazardous situation which, if not avoided, *MAY* result in minor or moderate injury.

THOROUGHLY REVIEW ALL INSTRUCTIONS AND WARNINGS PRIOR TO PERFORMING ANY WORK ON THIS PUMP.

FLOT

PK/FLOT

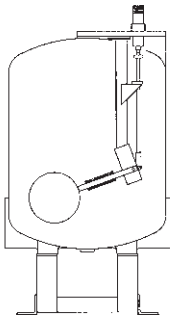
This bulletin should be used by experienced personnel as a guide to the installation and maintenance of the FLOT or PK/FLOT. A SHIPCO® FLOT unit or packaged unit (PK/FLOT) is designed to move condensate without the use of electricity. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact your local SHIPCO® Representative or SHIPCO® or if further information is required.

## *Introduction:*

Because pump installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for each specific application. Therefore, it is the responsibility and the duty of all personnel involved in the installation, operation and maintenance of the equipment to ensure that applications not addressed in this manual are performed after establishing that neither operator safety nor pump integrity is compromised by the installation.

The maximum operating pressure for SHIPCO® FLOT units will be 125 PSIG. The maximum design pressure for standard models is 150 PSIG at 375°F.

**FIGURE 1**
**Ductile Iron Body**



**WARNING**
Hazard

*Note: Although the maximum operating pressure is 125 PSI, it is highly recommended that the motive be set only 15-20 PSI (1.0-1.4 bar) above the discharge pressure. This will provide optimum performance and reduce venting time between cycles.*

## *Pre-Installation Check:*

**WARNING**
Hazard

Open all cartons and inspect for shipping damage. Report any damage to your SHIPCO® Sales Representative or shipping carrier immediately.

### Site Inspection:

The pump should be of the proper size and capacity for the proposed installation. Refer to nameplate for rated capacities.

## *Installation:*

**WARNING**
Hazard

If applicable, electrical connections are to be made by a qualified electrician in accordance with the National Electrical Code (NEC) or the Canadian Electrical Code, as well all national, state and local codes. Code questions should be directed to your local electrical inspector. Failure to follow electrical codes and OSHA safety standards may result in personal injury or equipment damage. Failure to follow the manufacturer's installation instructions may result in electrical shock, fire hazard, personal injury or death, damaged equipment, provide unsatisfactory performance, and may void the manufacturer's warranty.

**Operating personnel should be trained in the operation of the pump and any associated system.**

### Pumping Trap Operation

1. At start-up, the float lies at its lowest position in the bottom of the tank. The motive inlet valve is closed and the vent valve is open.
2. Liquid enters the pump body by gravity through the inlet swing check valve. Back pressure (typically) holds the discharge lift check valve closed. The float becomes buoyant and begins rising.
3. Continued rising of the float, through linkage, increases spring tension until the float reaches its upper tripping point. Energy is


**FORM IOM FLOT/PKFLOT** *Revised 6/07*
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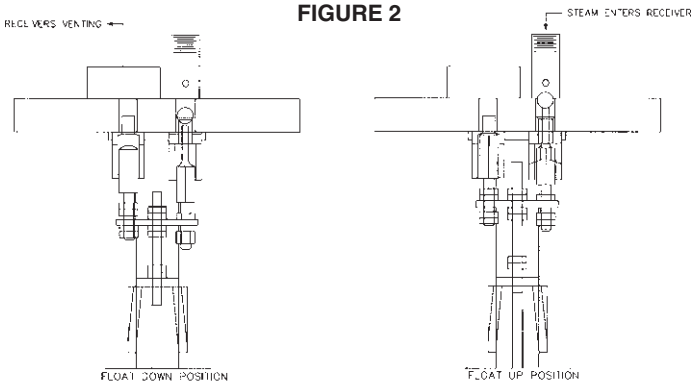
then released instantly from the spring, causing the linkage to snap upwards over center. This upward motion opens the motive inlet valve and closes the vent valve simultaneously. See Figure 2.

**FIGURE 2**




4. Steam, air, or gas enters the inlet valve and builds pressure inside the FLOT. This pressure will close the inlet check valve and force liquid out through the discharge check valve as it opens (Figure 3).
5. The discharge cycle will lower the float level and, through linkage, increase spring tension until the float reaches its lower tripping point. Energy is then released instantly from the spring, causing the linkage to snap over center downward. This downward motion closes the motive inlet valve and opens the vent valve.
6. Venting of pressure from the body opens the inlet check valve and closes the discharge check valve (See Figure 3). Liquid now flows by gravity through the inlet check valve into the FLOT as a new cycle begins.

## Suggested Installation of Accessories

**Gauge Glass Assembly**...is an available option.

**Cycle Counter**...is an available option.

**CAUTION**
Hazard

*NOTE: On pre-piped packaged units, inspect and tighten all threaded fittings (such as unions, etc.) that may have loosened during shipment.*

### Filling Head:

Install the FLOT below the equipment being drained. Typical Filling Head is 12" but may be changed (consult factory). Filling Head is the distance between the bottom of a vented receiver or reservoir pipe and the top of the FLOT cap. See typical hook-up in Figures 3 and 4 for an example. All inlet fittings must be fully ported and match the pump's liquid inlet connection size. Greater fill heads increase the capacity of the pump trap. Reference capacity chart for multiplying factors for other filling heads in Bulletin 143.

### Liquid Reservoir:

Liquid flowing from the equipment being drained must be stored during the pump's discharge cycle. A holding tank, either ASME Code stamped or vented receiver, should be installed in a horizontal plane to prevent flooding of equipment. Please contact your local SHIPCO® representative for questions regarding reservoir pipe sizing or reference reservoir sizing data from Bulletin 143. See typical hook-ups on Figures 3 and 4.

### Check Valves:

NOTE: The FLOT will not function without inlet and discharge check valves. Connect the SHIPCO® supplied check valves to the pump. The swing check is the inlet check valve, and lift check valve is used at the pump discharge. The use of SHIPCO® supplied check valves is necessary to ensure the pump will attain published capacities. Best performance is achieved when a minimum of horizontal pipe is used before the inlet check valve or after the discharge check valve. Stainless steel in-line spring type check valves are recommended for applications where the differential pressure between the motive pressure and back pressure is greater than 25 PSI. The stainless steel check valves are also a good choice for critical applications where the extended life of the stainless steel check valve would be of greater value.

The following guidelines apply if the FLOT is installed without SHIPCO® supplied check valves.

- Inlet check valves should be bronze swing type with Teflon disc, Class 150 (minimum). Pipe size of the check valve must match the size of the pump's liquid inlet connection.
- Discharge check valve should be bronze lift type, or in-line spring assist type, Class 150 (minimum) and match the size of the pump's liquid discharge connection.

### Motive Inlet Piping:

Connect the motive force piping (steam, air or inert gas) to the inlet connection on the pump cap. Proper piping and trapping of the motive supply line must include a strainer, check valve, properly sized drip leg with mud pocket, and drip trap. The drip trap discharge line should be connected to the holding tank, either ASME Code stamped or vented receiver, when practical. See TYPICAL HOOK-UPS on page 3.

**WARNING**
Hazard

*Maximum operating pressure for the FLOT is 125 PSI (9 bar). A pressure reducing valve must be used when the motive pressure exceeds 125 PSI (9 bar). It is also recommended that the motive pressure be set between 15-20 PSI (1.0-1.4 bar) above the total discharge pressure (total discharge pressure = vertical lift in PSI plus return line pressure). This pressure setting keeps venting time to a minimum and, when using steam, reduces the temperature differential. The PRV should be installed as far from the pump as possible. A good rule is to use a minimum of 10 pipe diameters from the end source. Example: For pipe diameter of 1", minimum length would be 10" (10 x 1").*

Installation of a safety relief valve and pressure gauge is recommended in the motive force supply line. The relief valve should be set for 150 PSIG (10 bar).

### Vent Connection ("Open System" vented to atmosphere):

Piping from the FLOT's cap connection labeled "Vent", the equalizing line should be routed to the top of the equipment being drained or its outlet piping immediately after the heat exchange equipment. A thermostatic air vent is recommended (for steam) at the high point of the exhaust line. Piping of the equalizing line should be a minimum 1" (25mm) diameter and must be pitched in order to be self-draining.

If pressure from the equipment being drained could ever exceed back pressure against the pump, a properly sized inverted bucket steam trap with a large vent or a float and thermostatic trap must be installed between the pump and discharge check valve.

**PK/FLOT Vent Connections:** The receiver vent must be unrestricted and atmospherically vented unless an ASME coded tank is specified.

**PK/FLOT Vent Connections:** Piping from the pump's cap connection labeled "vent" should be installed upward to connect with the receiver vent line, and be a minimum of one (1) inch (25mm) in diameter.

### PK/FLOT:

**WARNING**
Hazard

*NOTE: All receiver tanks should be operated at the atmospheric pressure (vented) unless the package was ordered with an ASME coded tank.*

## Start-up

1. Slowly open motive force (steam, air or inert gas) supply to FLOT providing pressure to the inlet valve. Check for proper operation of drip trap on the motive line if using steam.
2. Open isolation valves leading to FLOT liquid inlet and discharge lines.
3. Open any additional valves upstream allowing liquid to enter FLOT from the equipment being drained. Pump will begin discharging when body is nearly full.

4. Proper operation includes an audible exhaust after each pump cycle. If operation doesn't seem proper, recheck the installation and start-up procedure. Contact SHIPCO® or your local SHIPCO® Representative if necessary.
5. If overflow piping is used on a receiver, check that a water seal has formed to prevent venting of steam during operation. One suggestion would be the use of a "P"-Trap to form a sufficient water seal.

## Maintenance

**CAUTION**
Hazard

1. Close the valves in the motive supply, vent, condensate supply and discharge lines. Also close the shut-off valve to the receiver for packaged units. Make sure that the FLOT is completely relieved of pressure before breaking any connections.

*NOTE: If a problem is suspected with motive or vent valve and seat combinations, the FLOT cap will need to be removed. The seats are internally replaceable.*

2. Break motive inlet and vent (all cap) connections. Remove bolts and lift the cap. A 15 inch (381mm) withdrawal distance is required in order to remove the mechanism assembly with float for all SHIPCO® Flot Pumps.

*NOTE: Mechanism assembly is factory set. No adjustment to mechanism assembly should be made.*

3. Inspect the mechanism for freedom of movement. Remove any dirt or scale inhibiting the motion of the mechanism. See Figure 2 on page 2.
4. Check condition of the springs. If defective, remove retaining clips and slide spring assembly from pins. Replace spring assembly and install new retaining clips. Once the retaining clips have been removed they should not be reused.
5. Check the float for pinhole leaks, dents, or corrosion. Immerse in hot water and look for air bubbles to detect pinhole leaks.
6. Inspect seating surfaces of motive inlet and vent valves for evidence of wear. Clean the surfaces. Each valve slides out from its position in the valve actuator. Reinstall or replace parts as necessary.
7. A new gasket should be installed prior to reinstalling float mechanism.
8. Inspect inlet swing check valve and discharge lift check valve for free movement. It is important that both check valves are able to fully seat.
9. Foreign material or debris may damage seating surfaces.

## Typical Hook-ups

**NOTE: Hook-up sketches depict the FLOT for clarity. However, the cap inlet and vent connections are actually located closer to each other than shown.**

### Vented Systems

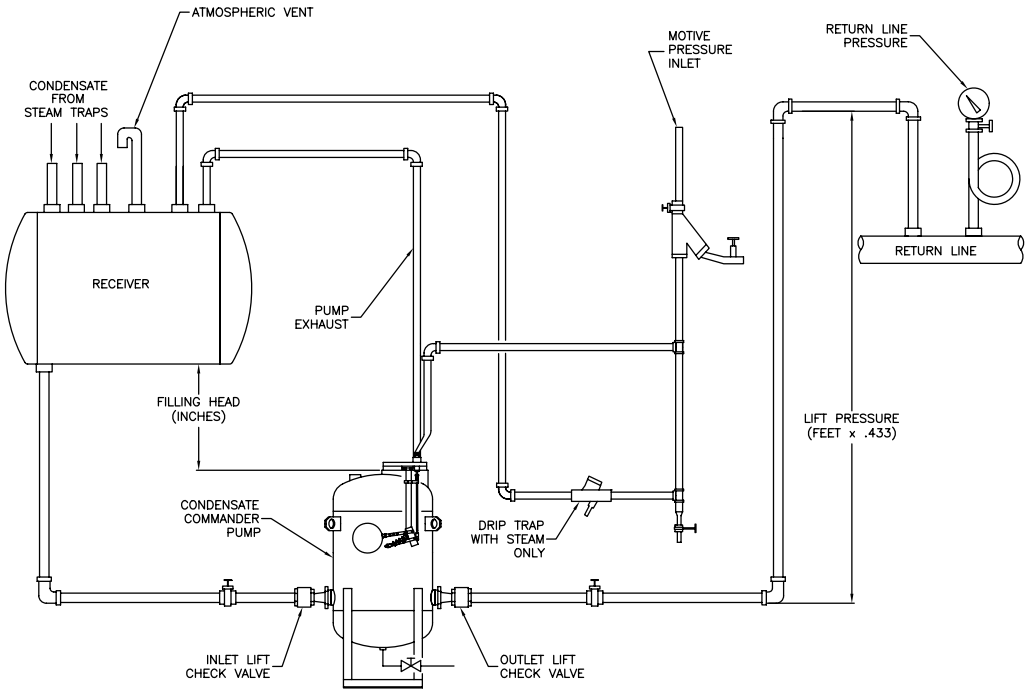



**FIGURE 3:** Condensate drainage to vented receiver with overhead condensate return. Use of the FLOT, combined with proper sizing of the steam trap and receiver, assures successful coil drainage under low-pressure conditions.

**WARNING:** ***The manufacturer will not be liable for any malfunction, damage, or destruction of the equipment if the equipment is not installed properly or is not installed by professionals, licensed and registered as required. Failure to follow and install the equipment according to job specific drawings, made by professionals who are licensed and registered as required and are familiar with the equipment, and failure to have the equipment installed by professionals, who are licensed and registered as required, in accordance with local, state, and federal codes will void all warranties and will void any liability upon the manufacturer. In addition, all warranties, including warranties of merchantability and fitness for a particular purpose are null and void for failure to follow job specific drawings made by professionals who are licensed and registered as required and are familiar with the equipment, and failure to have the equipment installed by professionals, who are licensed and registered as required, in accordance with local, state, and federal codes.***

## Closed Loop Systems

A closed loop system must be installed with caution and if any questions arise, contact SHIPCO®'s Engineering Department.

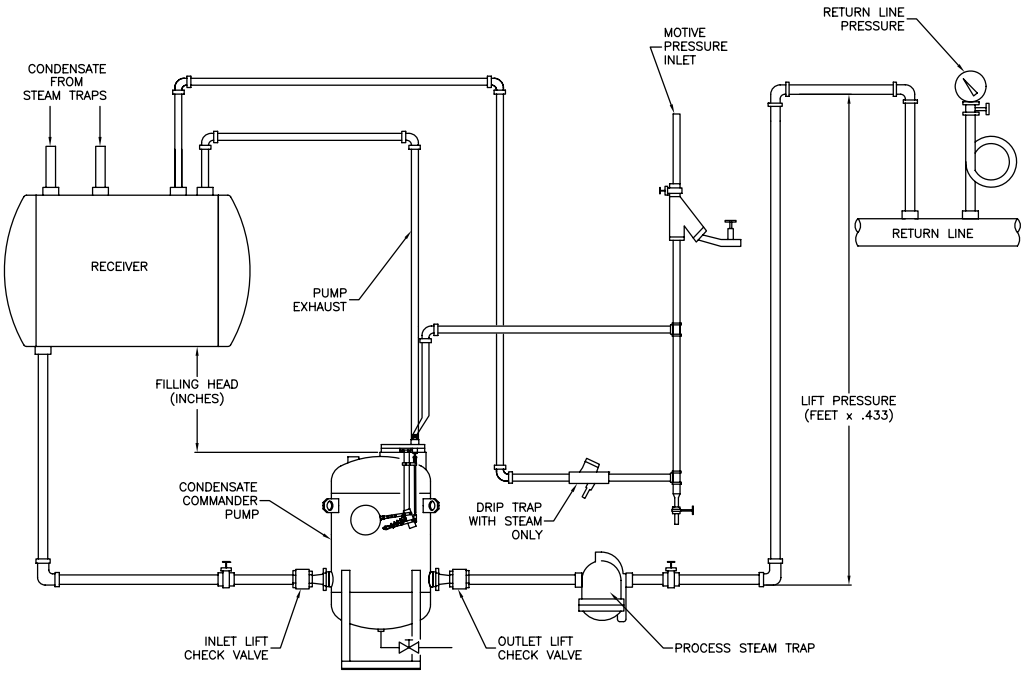


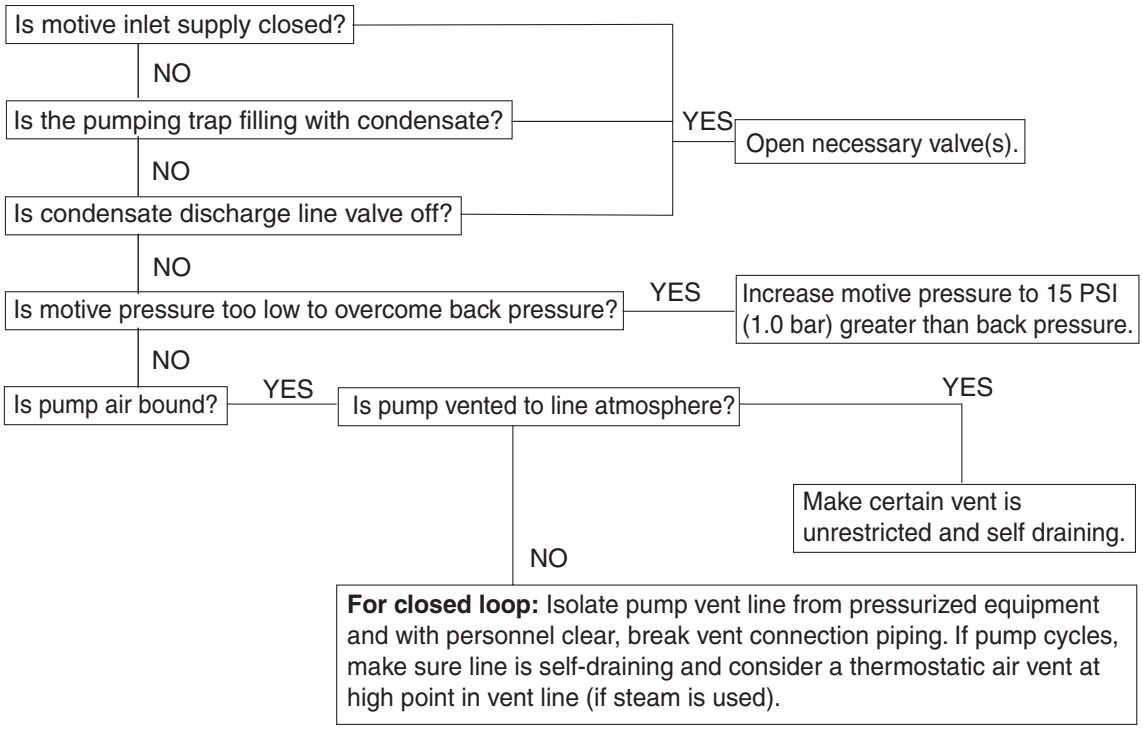

**FIGURE 4:** Draining steam coil or heat exchanger when pressure in heat exchanger is lower than return line pressure combined with overhead lift. Please note the equipment is not trapped. In this application the FLOT is used as both a steam trap and a pump.

**WARNING:** ***The manufacturer will not be liable for any malfunction, damage, or destruction of the equipment if the equipment is not installed properly or is not installed by professionals, licensed and registered as required. Failure to follow and install the equipment according to job specific drawings, made by professionals who are licensed and registered as required and are familiar with the equipment, and failure to have the equipment installed by professionals, who are licensed and registered as required, in accordance with local, state, and federal codes will void all warranties and will void any liability upon the manufacturer. In addition, all warranties, including warranties of merchantability and fitness for a particular purpose are null and void for failure to follow job specific drawings made by professionals who are licensed and registered as required and are familiar with the equipment, and failure to have the equipment installed by professionals, who are licensed and registered as required, in accordance with local, state, and federal codes.***

# *TROUBLESHOOTING FLOW CHARTS*

For Safety of Personnel– Vent line piping should be isolated from equipment and pump pressure should be relieved prior to breaking connections. ***WARNING:*** **WATER MAY RUN OUT OF THE VENT CONNECTION WHEN PIPING IS BROKEN. CARE SHOULD BE TAKEN TO AVOID DANGER TO PERSONNEL OR DAMAGE TO NEARBY EQUIPMENT.**

1. PUMP DOES NOT CYCLE DURING START-UP

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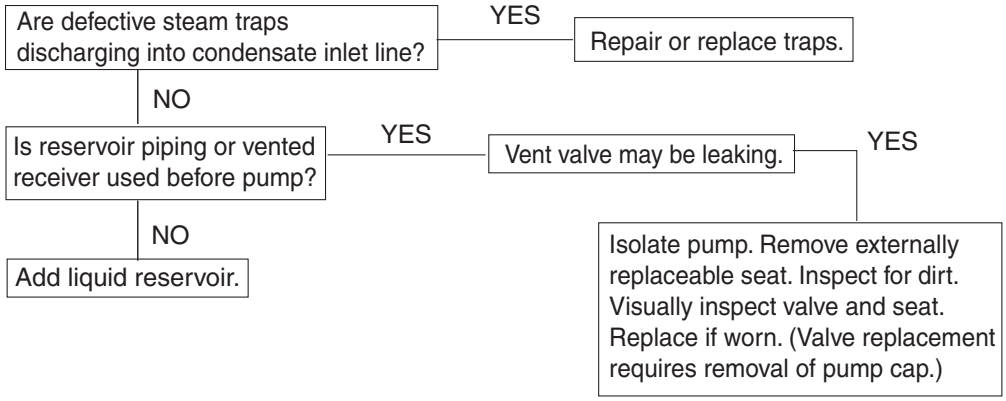
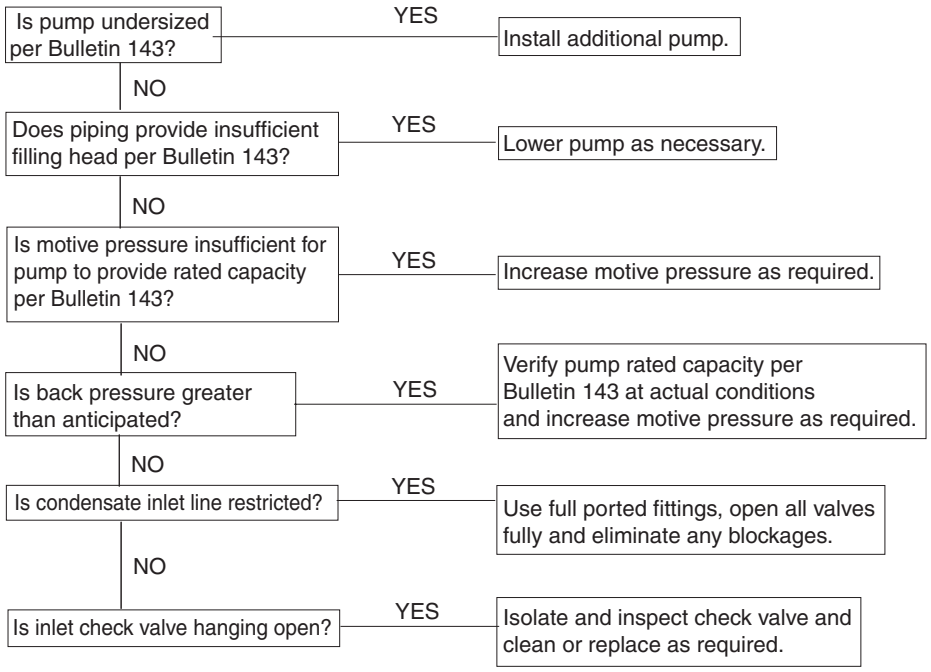
2. EXCESSIVE FLASH STEAM PASSED THROUGH VENT

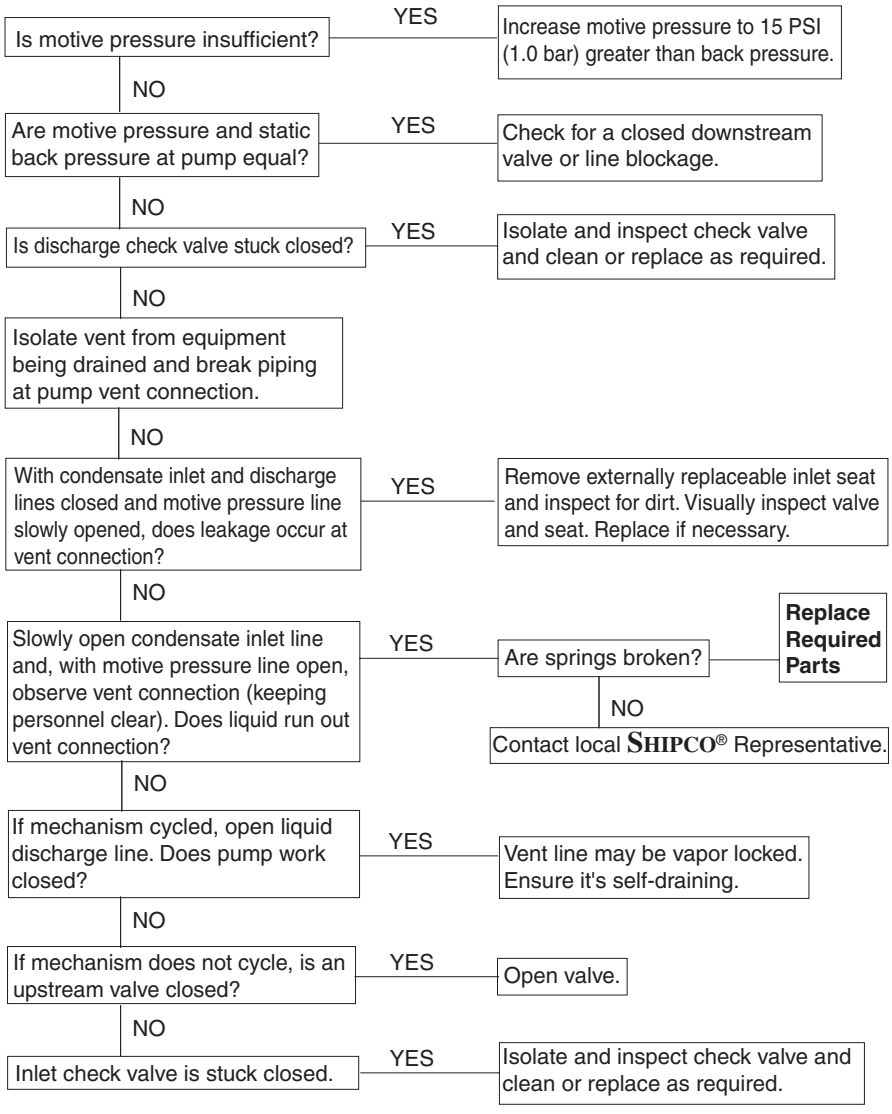


3. PUMP DOES NOT CYCLE DURING START-UP



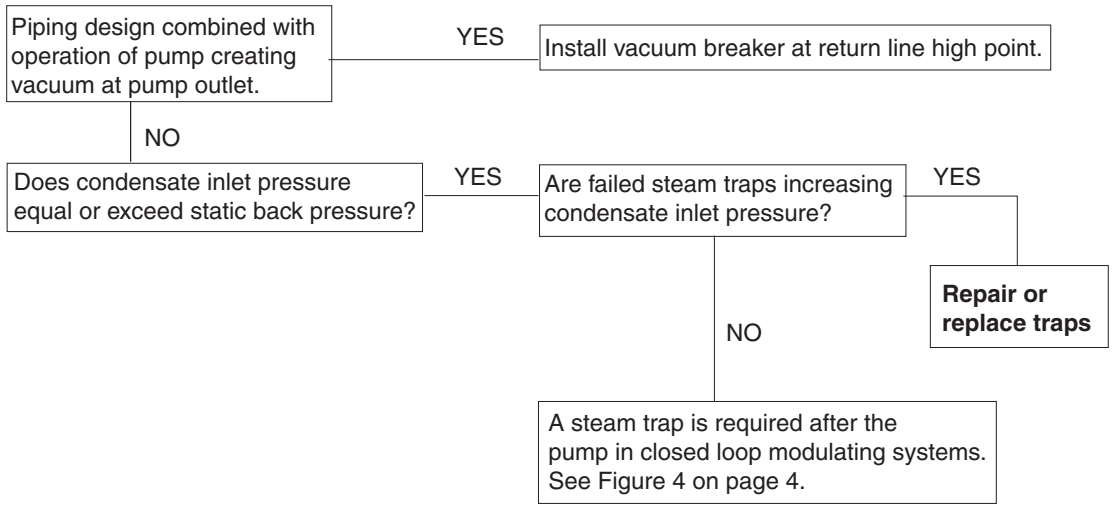

For Safety of Personnel– Vent line piping should be isolated from equipment, and pump pressure should be relieved prior to breaking connections. ***WARNING:*** **WATER MAY RUN OUT OF THE VENT CONNECTION WHEN PIPING IS BROKEN. CARE SHOULD BE TAKEN TO AVOID DANGER TO PERSONNEL OR DAMAGE TO NEARBY EQUIPMENT.**

4. PUMP STOPS CYCLING AND EQUIPMENT IS FLOODED

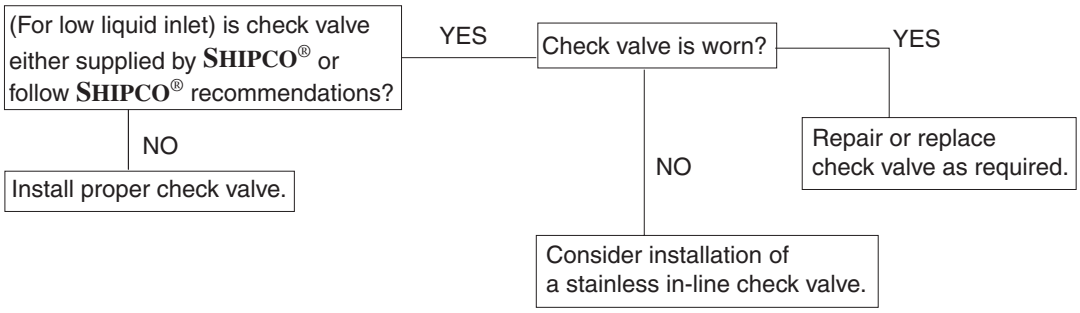


For Safety of Personnel– Vent line piping should be isolated from equipment and pump pressure should be relieved prior to breaking connections. ***WARNING:*** **WATER MAY RUN OUT OF THE VENT CONNECTION WHEN PIPING IS BROKEN. CARE SHOULD BE TAKEN TO AVOID DANGER TO PERSONNEL OR DAMAGE TO NEARBY EQUIPMENT.**

5. CHATTERING OR KNOCKING IN RETURN LINE AFTER DISCHARGE




6. EXCESSIVE CHATTER FROM INLET CHECK VALVE



# TERMS AND CONDITIONS OF SALE

**AGREEMENT**

By entering your order or requesting a quote, you confirm that the following terms and conditions of sale are the legal agreement governing your purchase, and that no changes or additional or different terms will apply unless you have previously established a different written contract for these purchases with Shippensburg Pump Company, Inc., hereafter referred to as the Seller.

**ORDER ACCEPTANCE**

All orders are subject to acceptance by Seller at its general office in Shippensburg, Pennsylvania. Acceptance will be evidenced by Seller issuing its Sales Acknowledgement Form. The Sales Acknowledgement Form, together with any documents incorporated therein, shall constitute the entire agreement and may not be changed except in writing signed by Seller and Buyer. Publication and circulation of current price lists, catalogues and related literature by Seller shall not be deemed an offer to sell, but rather an invitation for offers to buy. Acceptance by Seller of the Buyer's order is expressly limited to the Terms and Conditions stated herein; any additional, inconsistent or different terms and conditions contained in the Buyer's purchase order or other documents supplied by Buyer are expressly rejected.

**PAYMENT TERMS—PRICES**

Payment terms are as follows: If the Buyer is a Credit Card Customer, the Buyer agrees to pay at the time of purchase the price, shipping and handling charges, taxes and duties quoted by the Seller. If the Buyer is an Account Holder, the Buyer agrees to pay invoices with payment terms of net thirty (30) days after date of invoice unless otherwise specifically agreed to in writing. If the Seller believes that the Buyer's financial condition requires it, the Seller reserves the right to require full or partial payment prior to manufacture or shipment. If the Buyer fails to make any payment when due, (1) the seller reserves the right to suspend performance and the Buyer agrees that any charges incurred prior to the suspension will be assessed to the Buyer and payable to the Seller; (2) the Buyer further agrees to pay a charge on the amount past due at the rate of 1½% per month (18% per year) or the maximum lawful rate, whichever is less. In the event of non-payment, the Buyer agrees to pay the Seller reasonable attorney's fees and court costs, if any incurred by the Seller to collect payment and interest charges. These terms shall apply to partial, as well as complete shipments of Product. Published prices are subject to change without notice and the right is reserved to invoice at prevailing prices at time of shipment unless otherwise specifically agreed to in writing. All quotations are conditional on 30 days acceptance unless stipulated otherwise in writing and to approved credit rating or reference, otherwise payment terms are cash with order or C.O.D.

**DELIVERY—DELAYS**

Shipping dates represent estimates only and are based on projected production schedules and commitments by suppliers. Seller shall not be liable for failure or delay in manufacturing or shipping Products, nor shall such failure or delay constitute grounds for cancellation if such failure or delay is directly or indirectly due to shortages of fuel or energy; acts of omissions of the Buyer; acts of God; war, riot, civil disturbances; labor difficulties; accident; inability to reasonably obtain materials; acts of transportation companies; or other causes of any kind whatever beyond the control of Seller. In the event of such delays, Seller reserves the right to make adjustments in price and delivery schedules.

**FREIGHT TERMS**

Prices are f.o.b. factory unless otherwise stated. Seller's responsibility ceases upon delivery to the transportation company at shipping point. It is the Buyer's responsibility to examine shipment upon arrival to ascertain if in good order. Any shortage or damage claims must be pursued by the Buyer. All weights shown on price sheets and literature are approximate. All packaging is standard domestic boxing, slat and wire crating and/or skidding. An additional charge will be made for full wooden crating or special packaging when specified on the order.

Seller will make every effort to consolidate orders and backorders wherever possible. Seller will not be responsible for excess charges due to their inability to consolidate shipments.

When requested by Buyer, shipments may be routed using premium carriers such as express or airfreight or the Buyer may specify the method or route of shipment. In such cases the shipment will be made on a "collect" basis and where applicable the freight allowance will appear as a separate line item on the product invoice, Seller reserves the right to select the transportation company where freight is allowed.

**TAXES**

In addition to the price stated, the amount of any present or future sales, use, excise or other similar tax applicable to the production, sale, use or transportation of the Products shall be paid by Buyer. In lieu of paying such taxes to Seller, Buyer may furnish Seller a Tax Exemption Certificate or Certificates acceptable to appropriate taxing authorities at any time prior to Seller's shipment of the Products.

**CANCELLATIONS**

Any order placed with Seller may be cancelled by the Buyer only upon payment of reasonable cancellation charges that shall include but not be limited to expenses already incurred, as well as material and labor commitments made by Seller.

**SHIPMENT—TITLE—RISK OF LOSS**

Shipment terms are f.o.b. Seller's facility, unless otherwise specifically agreed to in writing. Notwithstanding the granting of any allowances for shipping, title to and risk of loss for Products will pass to the Buyer when delivered to the Common carrier at the Seller's facility.

**BACK CHARGES**

All invoices shall be due and payable when submitted for payment in accordance with the provision entitled "Payment Terms—Prices." No withholding of funds, back charges, or credits against amounts otherwise due Seller will be permitted unless specifically agreed to in writing by Seller. Settlement of any amounts due Buyer will be negotiated as separate items and not as offsets against amounts otherwise due Seller from Buyer for Products sold hereunder.

**RETURNED GOODS**

Unused material of current manufacture can only be returned for credit with the written consent of Seller, under return goods policies existing at the date of the return. Products that are obsolete or made to special order are not returnable.

**PATENT INDEMNITY**

*a.* Patent Indemnity by Seller to Buyer

Seller agrees to indemnify and hold harmless the Buyer from and against all legal expenses which may be incurred, as well as all damages and costs (except all consequential and special damages and costs) which may be finally assessed against Buyer in any action for infringement of any United States Letters Patent by the Products delivered to Buyer hereunder; provided that the Buyer shall give Seller prompt written notice of any action, claim or threat of patent infringement suit, either oral or written, or of the commencement of any patent infringement suit against Buyer relating to Products sold by Seller to Buyer hereunder; and provided Buyer shall give Seller opportunity to elect to take over, settle, or defend any such claim, action or suit through counsel of Seller's own choice and under its sole direction, and at its sole expense, and provided that in the event Seller elects to take over, defend or settle same. Buyer will make available to Seller all defenses against any such claim, action, suit or proceeding known to or available to Buyer; and provided further that Seller shall have the right to substitute for any such Product or any part thereof claiming to infringe the patent right of others, non-infringing Products which will give equally good service. If the use of any such Product or any part thereof should be enjoined, Seller shall have the right at its own expense, to take any of the following courses of action:

i. To procure for Buyer the right to continue using such Product;
ii. To replace said Product with a non-infringing Product;
iii. To modify the Product so that it becomes non-infringing; or
iv. To remove said Product and refund the purchase price, transportation costs and installation costs thereof.

*b.* Limitation

The foregoing provisions as to patent protection by Seller to Buyer shall not apply to any of the following:

i. To any Product manufactured to the design or specification furnished by the Buyer;
ii. To orders for special non-commercial Products which Seller has not sold or offered for sale to the public on the open commercial market;
iii. To any infringement occasioned by modification by Buyer of any Product without Seller's written consent, or any infringement arising from the use of a Product with any adjunct or device added by the Buyer without Seller's written permission.

*c.* Patent Indemnity by Buyer to Seller

To the extent that Products delivered hereunder are manufactured pursuant to detailed designs furnished by Buyer, Buyer agrees to indemnify Seller and hold Seller harmless from all legal expenses which may be incurred, as well as all damages and costs, which may finally be assessed against Seller in any action for infringement of any United States Letters Patent by such Products delivered hereunder. Seller agrees to promptly inform the Buyer of any claim for liability made against Seller with respect to such Products and Seller agrees to cooperate with the Buyer in every way reasonably available to facilitate the defense against any such claim.

**GOVERNING LAW**

The validity, interpretation and performance of any order shall be governed by the Uniform Commercial Code ("UCC") as adopted by the state in which the Products are manufactured by Seller.

**WARRANTY AND LIMITATION OF LIABILITY**

Seller warrants for a period of eighteen (18) months from date of shipment from its factory or one (1) year from date of installation, whichever occurs first, that all Products furnished by it are free from defects in materials and workmanship.

Seller's liability for any breach of this Warranty shall be limited solely to replacement or repair, at the sole option of Seller, of any part or parts found to be defective during the Warranty period providing the Product is properly installed and is being used as originally intended. Buyer must notify Seller of any breach of this Warranty within the aforementioned Warranty period; defective parts must be shipped by Buyer to Seller, transportation charges prepaid.

IT IS EXPRESSLY AGREED THAT THIS SHALL BE THE SOLE AND EXCLUSIVE REMEDY OF THE BUYER. UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR ANY COSTS, LOSS, EXPENSE, DAMAGES, SPECIAL DAMAGES, INCIDENTAL DAMAGES OR CONSEQUENTIAL DAMAGES ARISING DIRECTLY OR INDIRECTLY FROM THE DESIGN, MANUFACTURE, SALE, USE OR REPAIR OF THE PRODUCT WHETHER BASED UPON WARRANTY, CONTRACT, NEGLIGENCE OR STRICT LIABILITY. IN NO EVENT WILL LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

THE WARRANTY AND LIMITS OF LIABILITY CONTAINED HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY SELLER AND EXCLUDED FROM THIS WARRANTY.

Seller neither assumes, nor authorizes any person to assume for it, any other Warranty obligation in connection with the sale of the Product. This Warranty shall not apply to any Product or parts of Products which (a) have been repaired or altered outside of Seller's facilities; or (b) have been modified or damaged through misuse, abuse, accident, neglect or mishandling by Purchaser or Purchaser's customer, erroneous voltage, modification, acts of God, or any other act not specifically stated; or (c) have been used in a manner contrary to Seller's instructions.

Products covered by this warranty are for the intended uses as described in the corresponding seller's instructions. Before using for any other application, user shall determine the suitability of the product for its intended use and user assumes all risk and liability in connection therewith.

No oral statement made by the seller, its agents, employees, or other representatives, concerning the product, its value, description, condition, design, specifications, performance, capability, durability, adaptability, or accuracy, shall be relied upon by the purchaser and is specifically and expressly excluded and invalidated as the basis for any bargain or warranty.

In the case of Products not manufactured by Seller, there is no Warranty from Seller, but Seller will extend to the Buyer any Warranty of Seller's supplier of such Products.

**FORCE MAJEURE**

Seller shall have no liability in respect of failure to deliver or perform, or delay in delivering or performing any obligations due to causes such as acts of omissions of Buyer; acts of God, fire, flood, war and civil disturbances; riot, acts of governments, currency restrictions, labor shortages or disputes, unavailability of materials, fuel, power, energy or transportation facilities, failures of suppliers or subcontractors to deliver on time and every other circumstance outside the reasonable control of Seller.

**MODIFICATIONS**

Unless otherwise provided, Seller reserves the right to modify the specifications of Products ordered by the Buyer providing that the modification will not materially affect the performance.

**STORAGE CHARGE**

If Buyer is unable to accept products in accordance with the applicable shipping schedule then Seller may arrange to store ordered Products and the cost of storage will be charged to Buyer.

**ENTIRE CONTRACT**

These provisions constitute all the terms and conditions agreed upon by the parties and shall replace and supersede any provisions on the face and reverse side of Purchase Order and any attachment thereto, or any prior general agreement inconsistent with the provisions hereof except that orders by Representatives with whom Seller has an Agreement shall be subject to the provisions of the Agreement. No modification hereof shall be valid unless in writing and duly signed by a person authorized by Seller. The provisions hereof shall not be modified by any usage of trade, or any course of prior dealings or acquiescence in any course of performance.