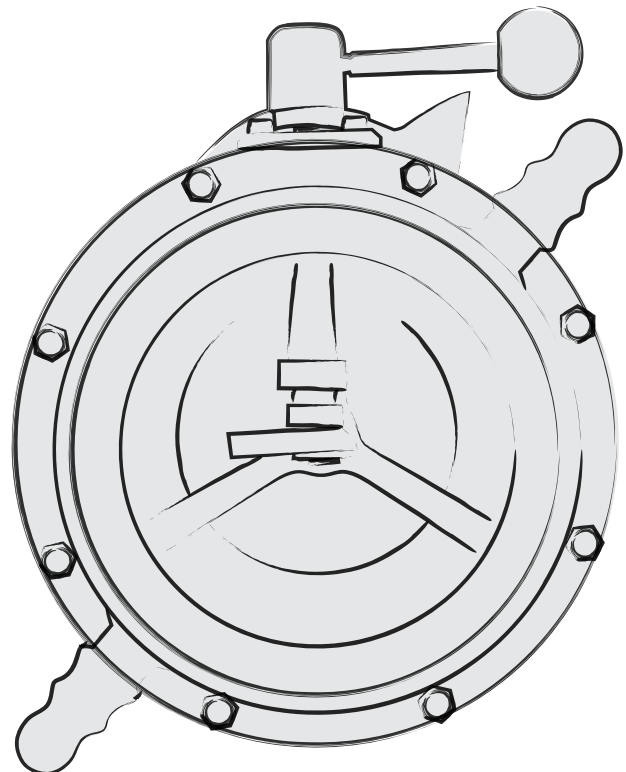


## PRE-CON VALVE OPERATION MANUAL





## PRE-CON VALVE OPERATION MANUAL

### GENERAL OPERATION

The Pre-Con Valve is a suction inlet valve designed to operate as an automatic flow control valve eliminating the need for manual adjustments in relation to water flow. The valve operates equally well in hydrant supply or drafting operations. The three basic valve positions are as follows:

### LOCK SHUT

When drafting or creating vacuum on a inlet, Pre-Con Valves on other inlets should be in the “Lock Shut” position. If positive sealing caps are used on the valve inlet it may not be necessary to lock the valve shut.

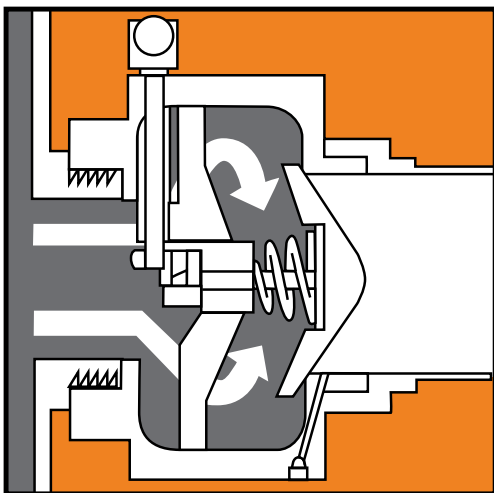
### FREE FLOATING

For normal pumping operations, leave the valve handle in the “Free Floating” position. Hydrant pressure or pump vacuum will automatically open the valve. The valve handle will show the position of the valve seat, moving with changes in flow or pressure.

### LOCK OPEN

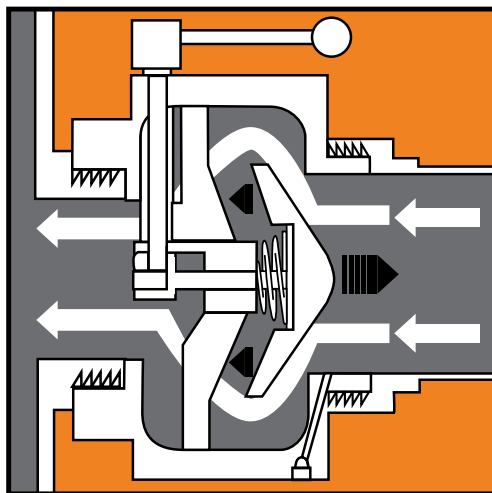
For maximum flow (low resistance) move the handle to the “Lock Open” position after water flow has automatically opened the valve. The “Lock Open” position may also be used if excessive pump vacuum is required for drafting.

## An inside look at the Pre-Con operation



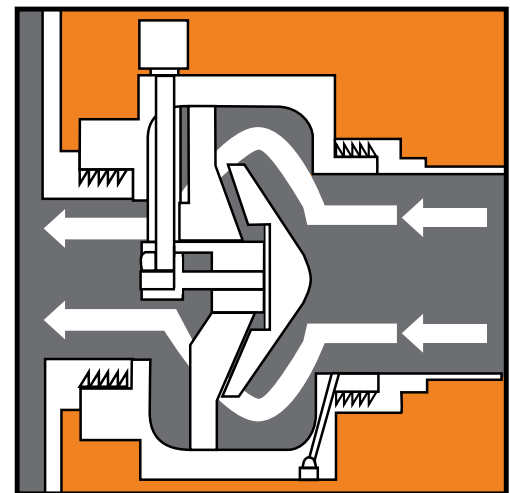
### **VALVE CLOSED**

Automatically shuts off when water flow stops (can be manually locked closed). Valve will automatically open when flow is resumed.



### **VALVE OPEN (Free Floating)**

Automatically adjusts to changes in flow and pressure. Automatically closes to reduce water hammer if water flow is abruptly stopped.



### **VALVE FULLY OPEN**

Low friction, streamlined design for maximum flow (can be manually locked open). Low pressure area behind float enhances laminar flow.

## **INSTALLATION**

The Pre-Con Valve is supplied with a swivel female pump connection that allows the valve to be installed in the desired upright position.

**NOTE:** If the pump suction tube uses an intake screen, make sure it does not interfere with the control mechanism inside the valve. The intake screen may need to be modified for correct clearance.

## **MAINTENANCE**

The Pre-Con Valve requires very little maintenance during normal operation. A grease zerk is provided to maintain a grease film on internal stainless steel parts. Research has shown that the grease film will prevent build up of calcium and other water chemicals that could hinder smooth valve operations. The grease fittings do not involve sealed bushings and can not be over greased. Use any quality water proof grease. The valve should be greased weekly or more often depending on water condition and valve use. This may be done without removing the Pre-Con Valve from the apparatus.

After each use, check the valve for debris that may have accumulated from the water supply. It may be necessary to remove to Pre-Con Valve to clean intake screen of the apparatus suction inlet.

## **CAUTION**

Do not force valve from “Lock Shut” position if there is excessive pressure against valve. (See ADJUSTMENTS for proper operations.)

## **ADJUSTMENT**

The valve float seat can be adjusted without disassembly or removing the Pre-Con Valve from the apparatus. Loosen 3/8-16 screw in the center of the valve float by backing off several turns.

### **A. VALVE LEAKING**

Turn valve float 1/8 to 1/4 turn counter clockwise while applying a downward force on the face of the valve float. Now place the valve in “Lock Shut” position and check for leaks. Repeat above procedure as necessary until a suitable position is found.



#### **B. DIFFICULT TO “LOCK SHUT”**

Turn valve float clockwise 1/8 to 1/4 turn while applying a downward force on the face of the valve float until desired “Lock Shut” position is achieved.

(NOTE: Valve is spring loaded in both “Lock Open” and “Lock Shut” positions and a happy medium must be found which will allow a firm seat in the closed position and still be able to properly lock open.)

See parts list for replacing the special tee o-ring valve float seat or other components.

### **OPERATION HINTS**

The Pre-Con Valve is designed to operate under a variety of conditions and fire department operating procedures. However, the Pre-Con Valve is not designed as a manual flow control valve. Attempting to force the valve handle open or closed against water flow or excessive pressure may result in damage to internal parts. Although every fire department operates somewhat differently from the next, most crews using the Pre-Con Valve are able to use one or more of the following hints for improved operations.

#### **BEFORE LEAVING THE FIRE STATION**

- Carry the Pre-Con Valve in the “Free Floating” position if possible. Your particular fire department operations may require one or more Pre-Con Valve to be carried in a “Lock Shut” position.
- Lubricate grease fittings weekly or more often depending on use and local water conditions.
- When checking Pre-Con Valve operations, make sure there is no pressure in the pump housing by opening pump drain valve. Attempting to force open the Pre-Con Valve against internal pump pressure may cause valve damage.
- If Pre-Con Valve leaks, check adjustment according to “ADJUSTMENT” section above. Also check for debris trapped between o-ring seal and valve body.

#### **BOOSTER TANK OPERATION**

- When operating from the booster tank at low flows (less than 5 in. Hd vacuum), the Pre-Con Valve should be in the “Free Floating” positions, ready to receive hydrant water.

- When operating from the booster tank at high flows (5 in Hg. vacuum or more) the Pre-Con Valve should be “Locked Shut” or capped with a positive sealing cap.

## **HYDRANT OPERATIONS**

- When Hydrant water arrives, the Pre-Con Valve should be in the “Free Floating” positions. The Pre-Con will automatically open in proportion to flow demand.
- To avoid sudden pressure surges when hydrant water arrives, set pump pressure regulator in a by-pass mode close to the desired operating pressure. Pressure regulator should be by-passing water BEFORE hydrant water arrives. Re-adjust throttle and discharge valve settings after hydrant flow has been established.
- To regulate flow, open or close, discharge valve. The Pre-Con Valve will automatically adjust to flow changes, as can be noted by the changes in the handle position.
- After shutting down, use the bleeder to drain pressure from the hydrant supply hose. Since the Pre-Con Valve automatically shuts down when flow is stopped, there may be water pressure trapped in the pump housing. Use the pump drain to relieve the pressure prior to manually opening the Pre-Con Valve.
- Do not attempt to flow water in the reverse direction through the Pre-Con Valve. The directional check valve flow characteristics of the Pre-Con Valve will not accommodate reverse flows.
- When a pumper is supplied by multiple sources, the Pre-Con Valve will automatically adjust to balance flow between different pressure sources. This important feature helps prevent back flow into low pressure hydrant systems.

## **DRAFTING OPERATIONS**

- With the Pre-Con in the “Free Floating” position, prime pump per normal drafting procedures. The Pre-Con Valve will automatically open at about 5 in. Hg. vacuum.
- If booster tank operation was started prior to drafting, it is possible to manually open the Pre-Con Valve a slight amount to allow booster tank water into the suction hose. This operation must be coordinated with a gradual closing of the booster tank valve to create a vacuum for drafting.
- If discharge is stopped, the Pre-Con Valve will automatically close helping to prevent loss of prime water.
- To switch back to booster tank operation, simply open the booster tank will force the Pre-Con Valve closed. To re-establish draft, close the booster tank valve. The increased pump vacuum will automatically open the Pre-Con Valve. Re-priming is usually not necessary.



**NOTE:** The above procedure assumes booster tank flow and creates less than 5 in. Hg. vacuum. For high flow rates it may be necessary to “Lock Shut” the Pre-Con Valve or close discharge outlets until pump vacuum is less than 5 in. Hg.

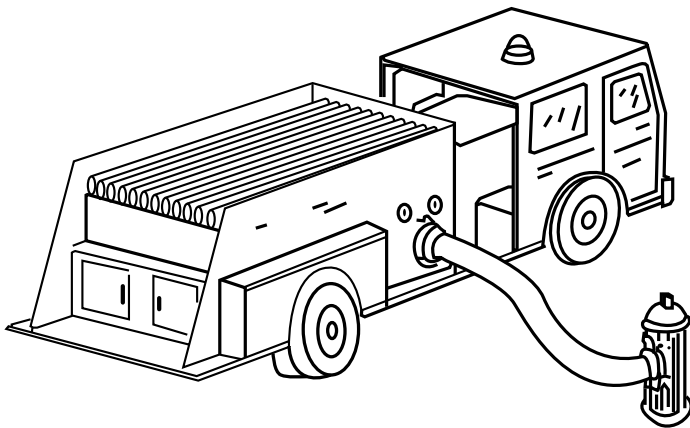
The Pre-Con Valve has Approximately 2 PSI friction loss at 1000 GPM. This equates to approximately 10 in. Hg. vacuum. The amount of flow you can obtain in any drafting operation depends on the amount of lift, size and condition of suction hose, condition of pump and engine, barometric pressure, elevation above sea level, and other factors.

**NOTE:** Do not attempt to perform U.L. type flow tests with the Pre-Con Valve (or any other valve) attached to the suction hose. Pumpers are originally certified without flow control devices attached.

## **SUMMARY**

Properly used, the Pre-Con Valve can enhance most pump operations. With the automatic action of the Pre-Con Valve, flow and pressure are controlled only by discharge valve settings using line gauges or flow meters for accuracy. The Pre-Con Valve will require no pump operator adjustment.





## **WORKING FROM HYDRANT:** **SET PRE-CON VALVE IN FREE FLOATING POSITION**

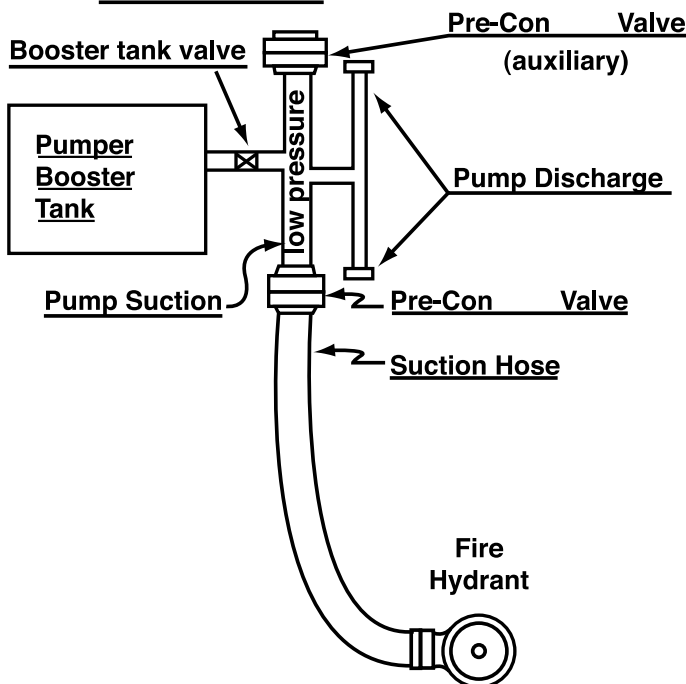
1. When the hydrant is turned on, water pressure will automatically open the Pre-con Valve. (approximately 5 psi.)
2. Pre-con Valve will open in proportion to flow demand. (Position of valve handle will change as discharged flow is increased or reduced).
3. Pre-Con Valve will automatically close if flow is shut off at pump discharge (reducing water hammer effects in suction hose and hydrant).
4. Bleeder on Pre-Con Valve is for removing air from supply hose while it is filling, and for bleeding off pressure from supply hose after shutting down.

**NOTE:** Any other Pre-Con on pumper will remain closed due to pressure in suction side of pump.

**NEW ITEM:** On latest models of the Pre-Con Valve, there is a stainless steel hex plug underneath the back half of the valve that can be used as a drain plug to entirely drain the valve of water after use.

**If removed, make sure it is re-installed before next use.**

### **PIPING DIAGRAM**





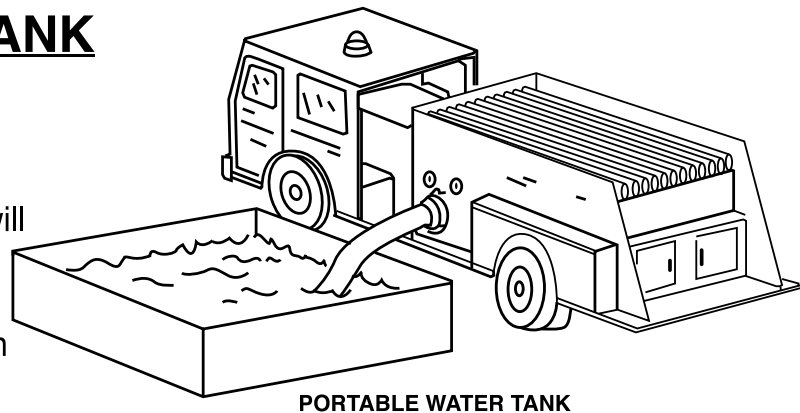


## **WORKING FROM PORTABLE TANK**

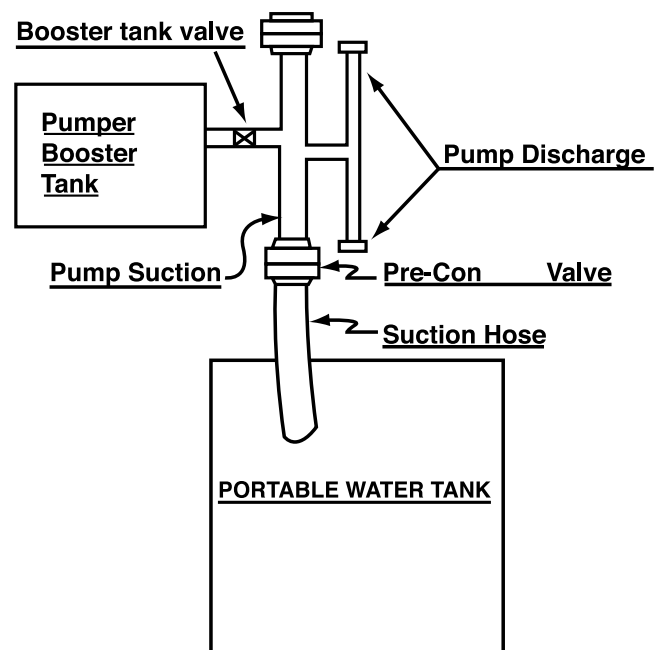
### **SET PRE-CON VALVE IN FREE FLOATING POSITION**

1. Pump can be primed as usual. The Pre-Con Valve will automatically open with about 5-10 in. of vacuum.
2. The Pre-con Valve will automatically open or close in proportion to water flow.
3. If water level in the portable tank get low, open the booster tank valve. There is less flow resistance from the booster tank and the Pre-Con Valve will automatically close, holding prime water in the suction hose.
4. When the water level is restored in the portable tank, close the booster tank valve. This creates a vacuum in the pump and which automatically opens the Pre-Con Valve.
5. Using the booster tank as an emergency reservoir, you can switch back and forth from drafting to booster tank without disrupting the water flow.
6. In the event all discharge lines are shut off, the Pre-Con Valve will automatically close to help hold prime water in the suction hose.

**NOTE: Any other Pre-Con Valve on the pumper must be in the “Lock Close” position when drafting.**



### **PIPING DIAGRAM**



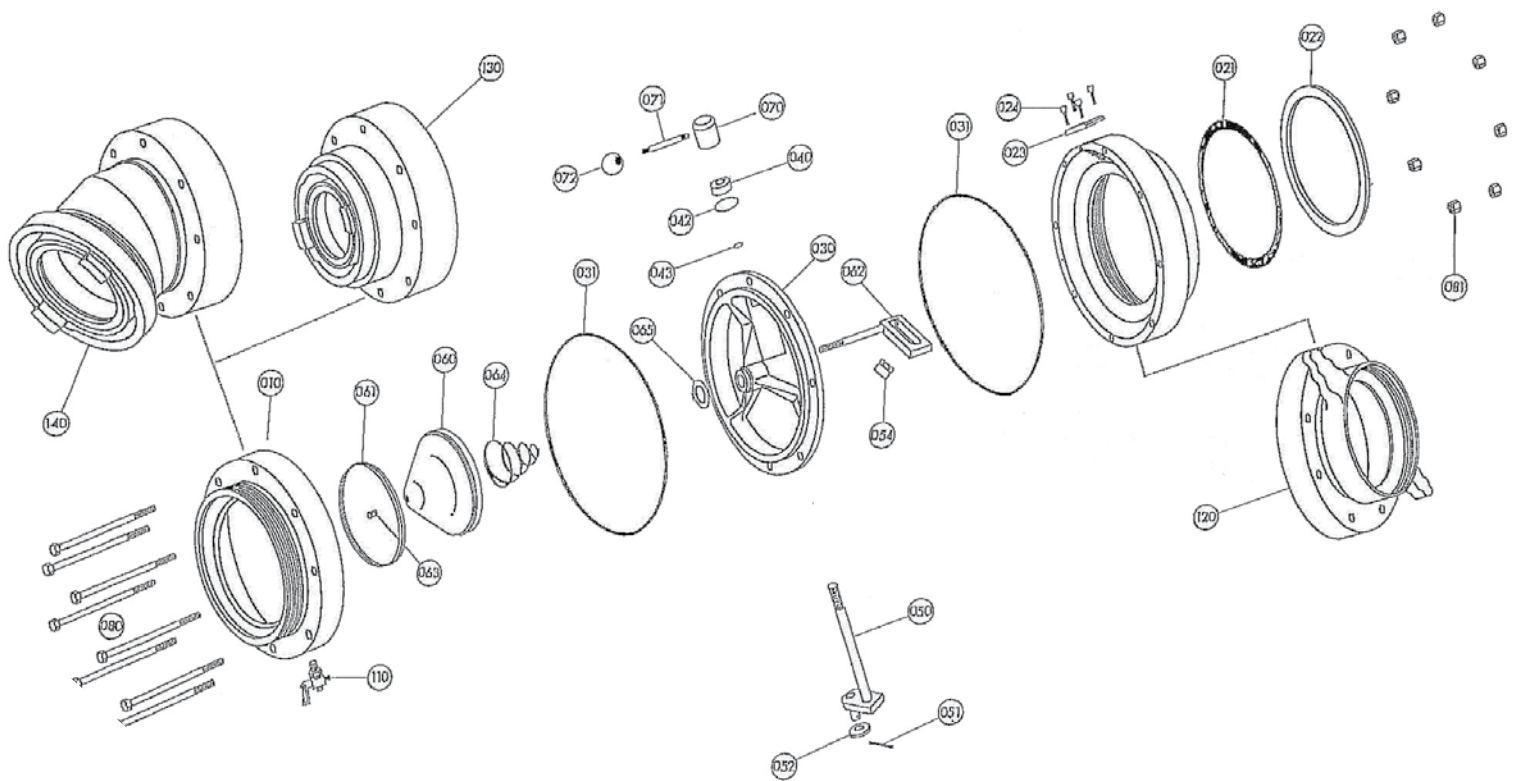


<b><u>DRAWING NO.</u></b>	<b><u>PART NO.</u></b>	<b><u>PART NO.</u></b>	<b><u>QTY.</u></b>
010	PC-40-M	RIGID MALE 4" NST	1
010	PC-45-M	RIGID MALE 4.5" NST	1
010	PC-50-M	RIGID MALE 5" NST	1
010	PC-60-M	RIGID MALE 6" NST	1
130	PC-M-40 ST	RIGID MALE WITH 4" STORZ	1
130	PC-M-50 ST	RIGID MALE WITH 5" STORZ	1
140	PC30-45-M	ANGLE MALE 4.5" NST	1
140	PC30-50-M	ANGLE MALE 5" NST	1
140	PC30-60-M	ANGLE MALE 6" NST	1
140	PC30-M-40 ST	ANGLE MALE 4" STORZ	1
140	PC30-M-50 ST	ANGLE MALE 5" STORZ	1
120	PC-40-FS	SWIVEL 4" NST	1
120	PC-45-FS	SWIVEL 4.5" NST	1
120	PC-50-FS	SWIVEL 5" NST	1
120	PC-60-FS	SWIVEL 6" NST	1
21	PC-4.5,5.0,6.0-SHIM	SHIM-use nozzle size as part number	1
22	PC-4.5,5.0,6.0,GSKT	GASKET-use nozzle size as part number	1
23	PC-SEAL-PLATE	SEAL PLATE	1
24	PC-SEAL-BOLTS	1/4"-20 X 1/2" SOCKET CAP SCREW	4
30	PC-CS	PRE-CON CENTER SUPPORT	1
31	PC-VB-SEAL	VALVE BODY SEAL	2
40	PC-SHFT-SEAL-GLAND	SHAFT SEAL GLAND (brass)	1
42	PC-SHFT-GLAND-SEAL	SHAFT SEAL FOR GLAND	1
43	PC-SHFT-SEAL	SHAFT SEAL	1
50	PC-OP-SHAFT	OPERATING SHAFT	1



<b><u>DRAWING NO.</u></b>	<b><u>PART NO.</u></b>	<b><u>PART NO.</u></b>	<b><u>QTY.</u></b>
51	PC-RET-PIN	RETAINER PIN FOR SHAFT	1
52	PC-SLDE-WASHER	SLIDE BLOCK WASHER	1
54	PC-SLIDE-BLOCK	SLIDE BLOCK WASHER	1
60	PC-FLOAT	VALVE FLOAT	1
31	PC-VB-SEAL	VALVE BODY SEAL	2
42	PC-GL-SEAL	GLAND SEAL	1
43	PC-SHFT-SEAL	SHAFT SEAL	1
61	PC-T-SEAL	VALVE FLOAT T-SEAL	1
62	PC-VALVE-STEM	VALVE STEM	1
63	PC-FLOAT-SS	FLOAT SET SCREW 3/8"-16 X 1/2"	1
64	PC-V-SPRING	VALVE SPRING	1
65	PC-SP-WASHER	SPRING WASHER	1
70	PC-HAND-BODY	HANDLE BODY	1
71	PC-HAND-SHAFT	HANDLE SHAFT	1
72	PC-HAND-KNOB	HANDLE KNOB	1
80	PC-BODY-BOLT	BODY BOLTS 5/16"-18 X 5" HEX HEAD	8
81	PC-LOCK-NUT	LOCK NUTS 5/16"-18 NYLOCK	8
110	PC-BLDR-VALVE	BLEEDER VALVE	1
(*)	ITEMS NOT ON DRAWING		
083*	PC-SN-DECAL	SERIAL NUMBER DECAL	1
084*	PC-PRES-DECAL	PRESSURE SETTING DECAL	1
085*	PC-GRS-ZERK	GREASE ZERK	1
086*	PC-WAR-DECAL	WARNING DECAL	1
087*	PC-DP-DECAL	DRAIN PLUG	1
088*	PC-DRAIN-PLUG	DRAIN PLUG 1/4" NPT SS	1

# AUTOMATIC SUCTION VALVE





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