

# FullFloXF™

## 2-Way and 3-Way Diverter Valve and Check Valve Installation and Operation Instructions

**⚠ WARNING** SERIOUS BODILY INJURY OR DEATH CAN RESULT IF THE 3" VALVE IS NOT INSTALLED AND USED CORRECTLY. INSTALLERS, POOL OPERATORS AND POOL OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS BEFORE INSTALLING THIS VALVE.

**⚠ WARNING** This valve must be installed by a qualified pool and spa service professional or plumber in accordance with all applicable local codes and ordinances. Improper installation may create an electrical hazard which could result in death or serious injury to pool users, installers, or others due to electrical shock, and may also cause damage to property. Most states and local codes regulate the construction, installation, and operation of public pools and spas, and the construction of residential pools and spas. It is important to comply with these codes, many of which directly regulate the installation and use of this product. Consult your local building and health codes for more information.

**⚠ WARNING** DO NOT increase pump size; this may increase the flow rate through the system and exceed the maximum flow rate stated on the drain cover. **Exceeding the maximum flow rate stated on the drain cover could result in death or serious injury to pool users and may also cause property damage.**



**IMPORTANT NOTICE - Attention Installer:** This Installation and Operation Instructions ("Instructions") contains important information about the installation, operation and safe use of the 3-inch pump. These Instructions should be given to the owner and/or operator of this equipment. This 3" Valve is intended for use in swimming pool and spa applications.

## 2-Way & 3-Way Diverter Valve (2-1/2" Socket x 3" Spigot)

### Diverter Valve

The Pentair Water Pool and Spa® user adjustable diverter valve is designed to be used a DIVERTER valve, NOT a BACKWASH valve.

The FullFloXF™ 2-Way and 3-Way Diverter valves can operated by hand or with a motorized valve actuator (such as the CVA-24 by Pentair Water Pool and Spa®). 3-Way Diverter valves are used to divert incoming water flow (from pump, etc.) applied at the INLET port to either of the different branches of the systems plumbing (filter, heater, solar collectors, skimmer, etc.). 2-Way Diverter and Check valves are used to block the flow of water in one direction only. The 2-Way and 3-Way Diverter valves can also be used to regulate (limit) water flow coming out of the valve by adjusting the diverter mechanism covering a portion of the OUTLET port. All Diverter valves should ONLY be used with the Diverter mechanism regulating or shutting off flow on the down stream (OUTLET) side of the flow.

### Plumbing

The Diverter and Check valves are sized for use with 2-1/2" or 3" CPVC/PVC pipe fittings. 2-1/2" pipe can be plumbed directly into the valve port's socket, 3" plumbing requires an appropriate 3" (coupling or 90° elbow) slipped over the valve port's spigot. Can also be used with any size PVC plumbing with appropriate adapters

**Note: Be cautious that no glue enters the inside of the valve body past the ports. The recommended pipe glue to use is, WELD-ON® 724 CPVC, GRAY or glue types such as WELD-ON® 790™ MULTI-PURPOSE SOLVENT CEMENT.**

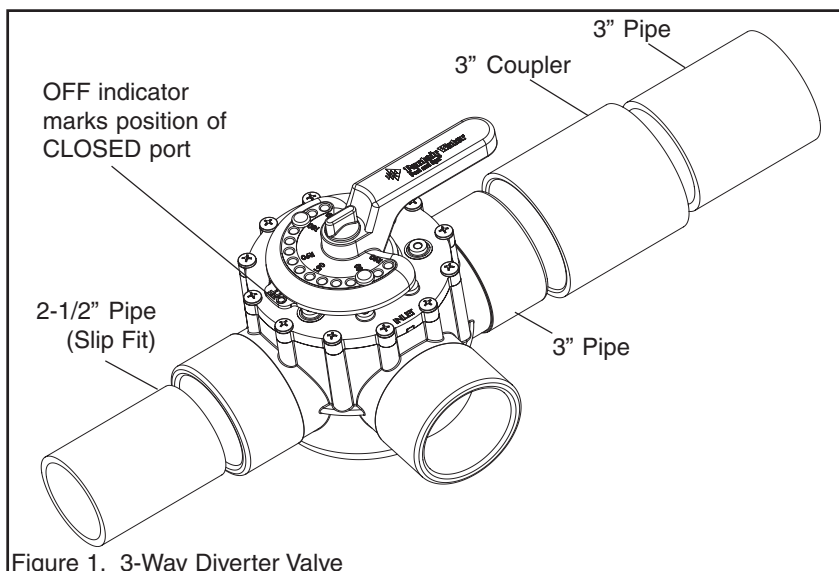


Figure 1. 3-Way Diverter Valve

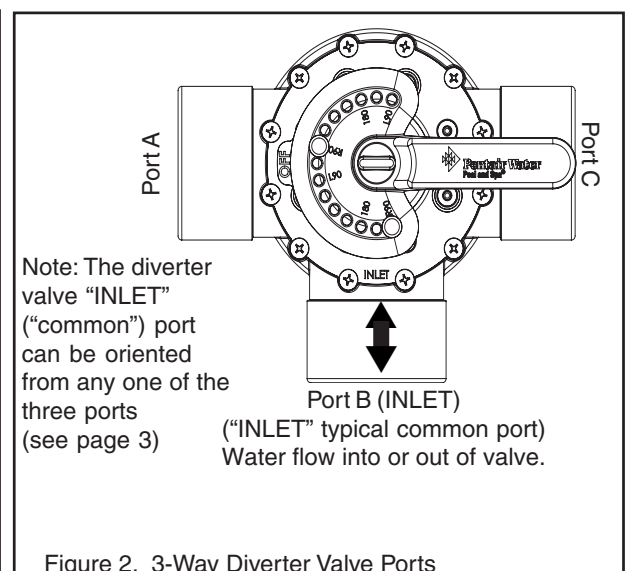


Figure 2. 3-Way Diverter Valve Ports

## Valve Handle Operation

To reposition the valve handle:

- Rotate the handle to the desired “OFF” position. The diverter valve handle OFF indicator, represents the current position of the valve’s internal diverter seal which will stop the flow of water. The valve handle stop-pins determine the position of the diverter valve’s internal seal to stop or allow water flow. Note: When a motorized valve actuator is installed, stop-pins are not required.

## Handle Stop-Pins Positions

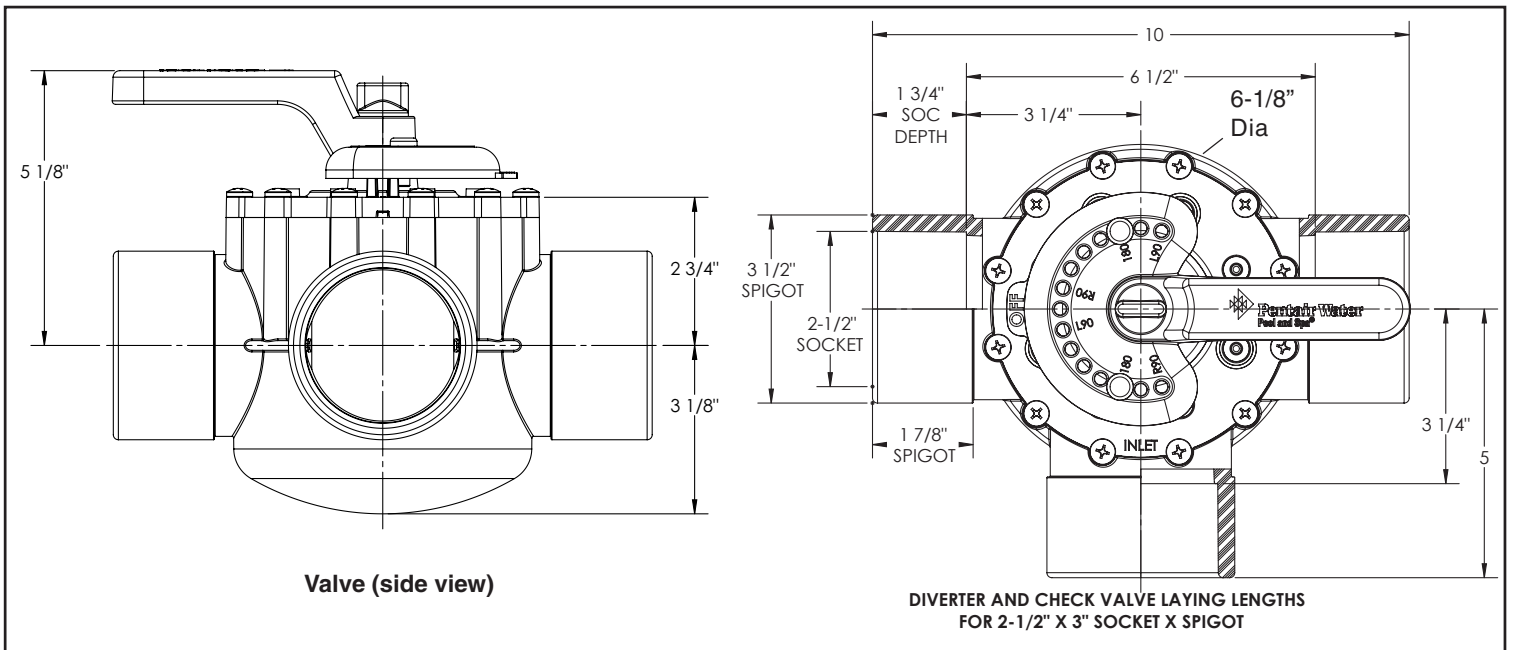
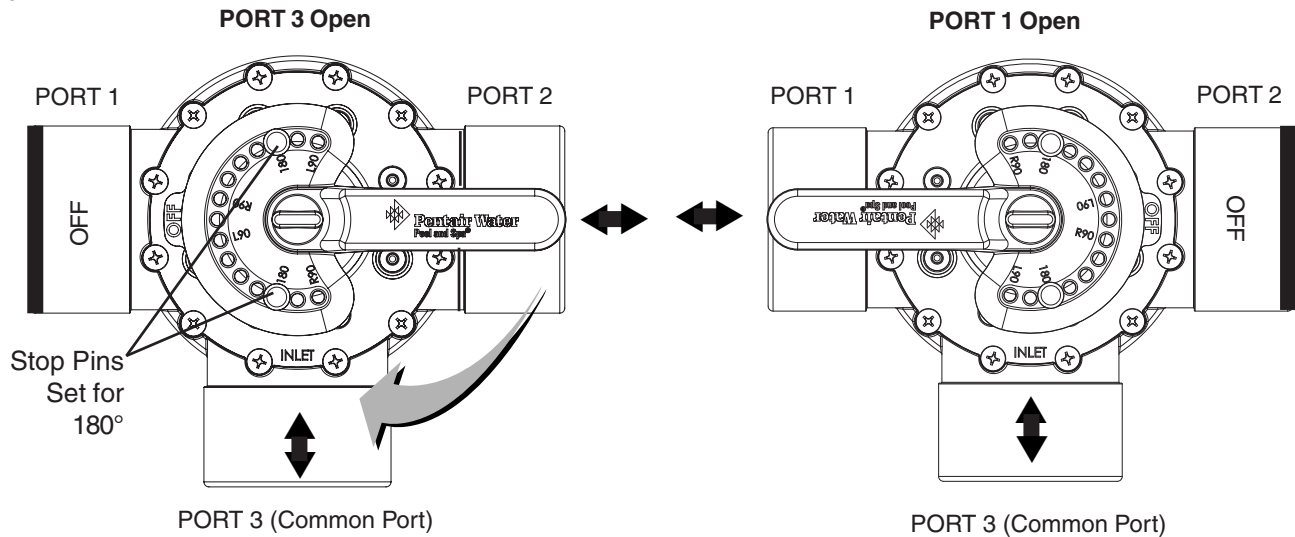
The two movable stop-pins can be set to allow the valve handle’s position to completely stop the flow of water, regulate a limited flow, or allow the maximum flow.

To set the stop-pins:

- Insert the stop-pins in the pin holes according to the corresponding “degree indicator” displayed on top of the handle. The stop-pin positions can be set to 180°, L90° (left-side) and R90° (right side). Repositioning of either stop-pins allows the handle to be set to any desired percentage of water flow.

## 3-Way Diverter Valve:

**Example: Stop-pins set to 180° - Inlet is Port 3 with flow directed out of Port 1 or Port 2 depending on the handle position.**



## Diverter Valve Top Cover Removal and Installation

To remove the diverter valve top cover (see Figure 3):

1. Remove the valve handle lock screw and handle from the valve shaft.
2. Using a No. 2 Phillips screwdriver, remove the twelve (12) cover screws. Set the screws aside.
3. When removing the cover: Do not insert a screw driver blade between the valve body and the top cover to pry open. Temporarily install the handle and thumb screw to aid lifting the cover and diverter shaft out and off the valve body. Be careful not to drop or lose the cover o-ring.

To install the diverter valve top cover (see Figure 4 and 5):

1. Lubricate the cover o-ring with silicon o-ring grease and place it on the cover flange. Install the cover and diverter shaft in reverse order of removal from the valve body. If the diverter shaft was removed from the cover, make sure the two o-ring (spacer goes between o-rings) are in place and lubricated with silicon o-ring grease.
2. Align the notch (on cover) and tab (on valve body) this will position the top cover molded name "INLET" over the center or "common" port as shown in Figure 3. Make sure the cover and valve body screw holes are aligned.
3. Install the twelve (12) cover screws. Using a No. 2 Phillips screwdriver, torque the screws sequentially to 36 lb\*in (4.1 N\*m), using the crisscross tightening sequence shown in Figure 4.
4. Mount the handle onto the diverter shaft (the handle is keyed to fit on the shaft in only one position).
5. Install the handle lock screw and finger tighten to secure in place.
6. Manually verify that the diverter valve rotates smoothly in both directions.

Note: If reorienting the valve cover is necessary, the locating tab on valve body (fig. 5) must be removed (use file or wire cutters) to allow reorienting the valve cover to an alternate position.

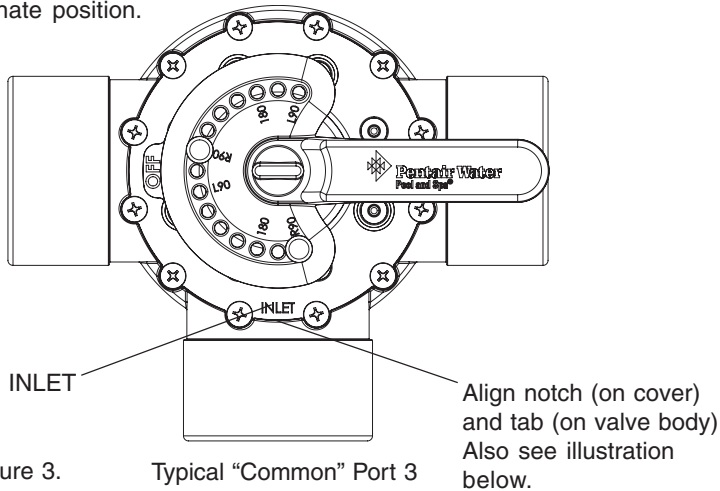


Figure 3.

Typical "Common" Port 3

Align notch (on cover) and tab (on valve body) Also see illustration below.

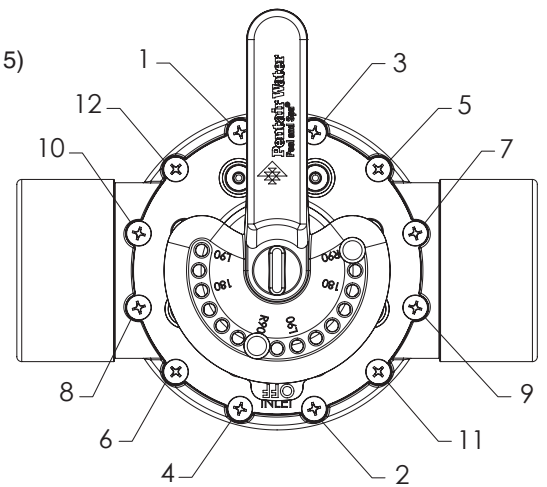


Figure 4. Diverter valve cover screws (Tightening Sequence)  
Torque: 36 lb\*in (4.1 N\*m)

SOLAR DIVERTER VALVE  
SHAFTSHOWING DRAIN  
DOWN CHECK VALVE  
(SHAFT COMPONENTS NOT  
SOLD SEPARATELY)

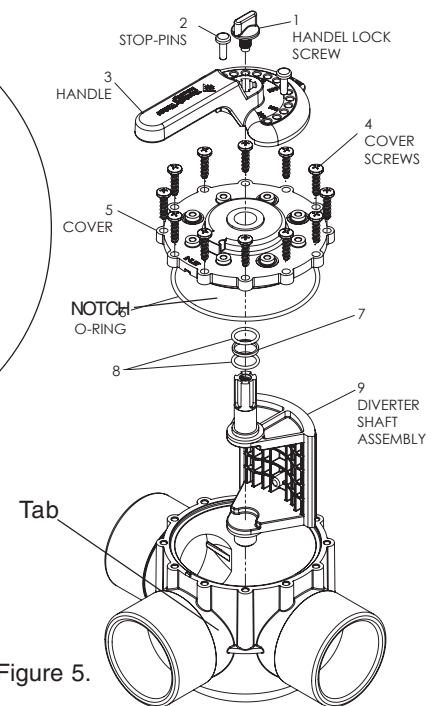
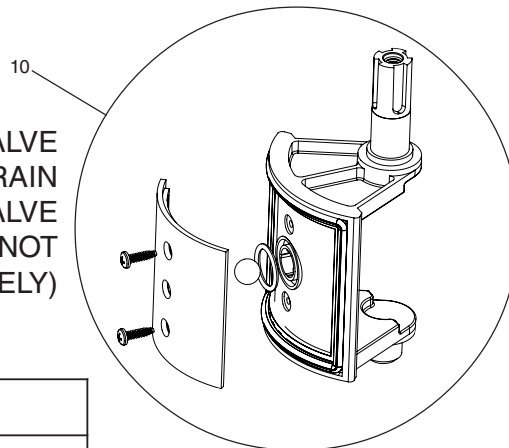


Figure 5.

### Diverter Valve Parts List

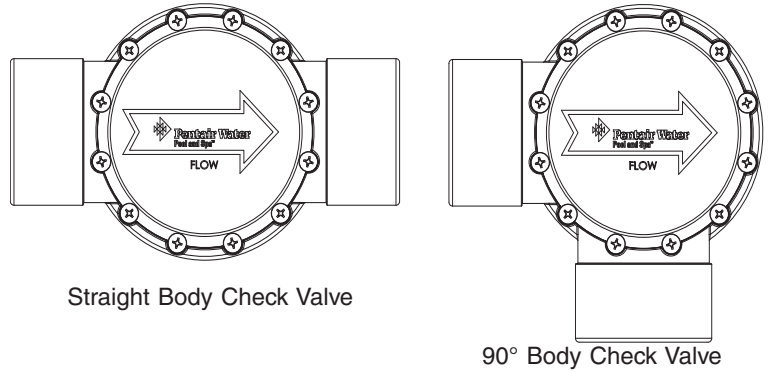
Item No.	Part Number	Description
1	271074Z	SCREW HANDLE LOCK
2	271072Z	PIN HANDLE STOP
3	270118Z	HANDLE
4	271077Z	SCREW KIT (12 SCREWS/KIT)
5	270115Z	DIVERTER VALVE COVER
6	270116Z	O-RING, 2-248 BUNA-N 70 SHORE A (1 REQ'D)
7	271073Z	O-RING, SPACER (1 REQ'D)
8	192039	O-RING, 2-116 BUNA-N 70 SHORE A (2 REQ'D)
9	270106Z	DIVERTER SHAFT ASSEMBLY
10	270107Z	DIVERTER ASSY SOLAR 3-WAY VALVE WITH DRAIN DOWN CHECK VALVE

# Check Valve (2-1/2" Socket x 3" Spigot)

## Check Valve

The Pentair Water Pool and Spa® straight and 90° body check valve is designed for use with return and intake water flow. A clear top cover is provided for easy viewing of water flow direction.

The 3" check valve can be used with 2-1/2" or 3" pipe. The 2-1/2" pipe slip-fits into the valve ports (see Figure 1). The 3" pipe is connected to the valve using a 3" pipe coupler, a 45° elbow or a 90° elbow. **Note: Be sure no glue enters the inside of the valve body past the ports. The recommended pipe glue to use is, WELD-ON® 724 CPVC, GRAY or WELD-ON® 790™ MULTI-PURPOSE SOLVENT CEMENT.**



## Check Valve Top Cover- Removal and Installation (see Figure 6 and 7)

To remove the check valve top cover:

1. Mark the position of the check valve flapper or direction of arrow on cover. Use a No. 2 Phillips screwdriver to remove the twelve (12) screws. Set the cover screws aside.
2. When removing the cover: Do not insert a screw driver blade between the valve body and the top cover to pry open. If cover is stuck use a mallet or wooden dowel and tap lightly on the side of the cover (not on screw bosses) to loosen cover. Be careful not to drop or lose the cover o-ring.

To install the check valve top cover (see Figure 6 and 7)

1. Make sure the cover o-ring is lubricated with silicon o-ring grease and installed on the cover flange. Mount the check valve cover on top of the body with the flapper oriented in same position as when removed. Align the notch (on cover) and tab (on valve body), see Figure 7).
2. Make sure the cover and valve body screw holes are aligned.
3. Install the twelve (12) cover screws. Using a No. 2 Phillips screwdriver, torque screws sequentially to 36 lb\*in (4.1 N\*m), using the tightening sequence shown in Figure 6. Verify that the check valve flapper is oriented in the proper direction.

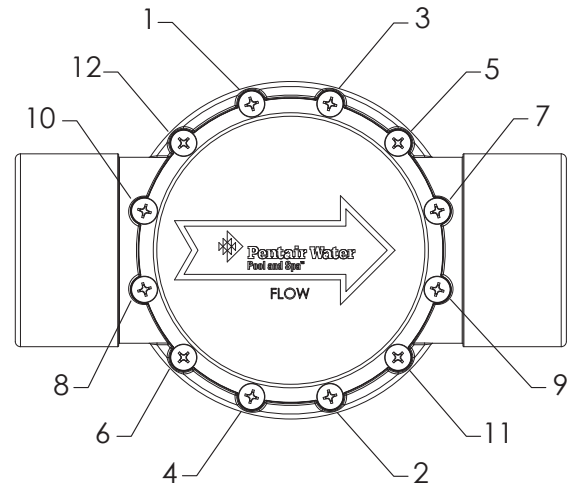


Figure 6.  
Check Valve Cover Screws (Tightening Sequence)

Torque to: 36 lb\*in (4.1 N\*m)

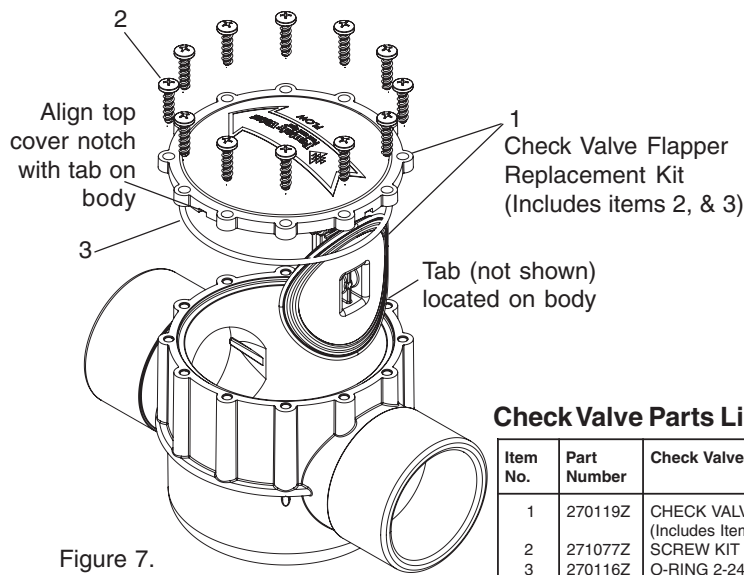
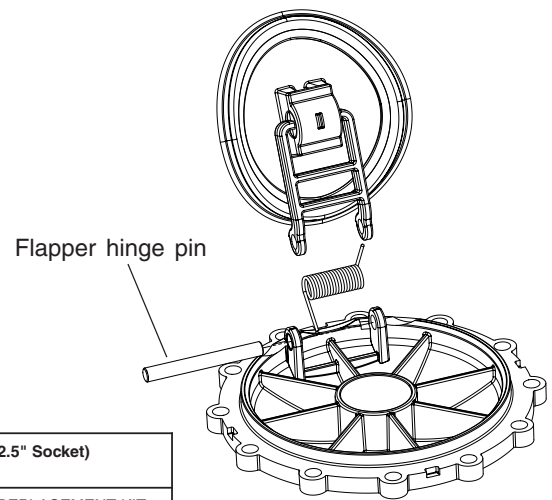


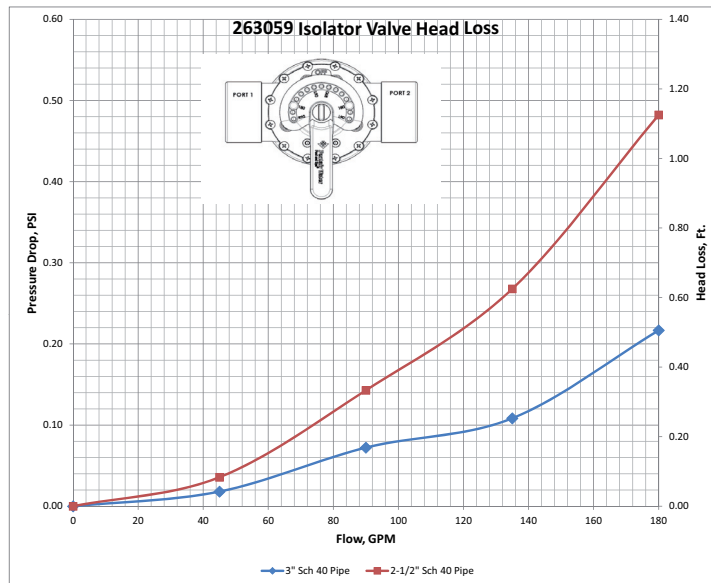
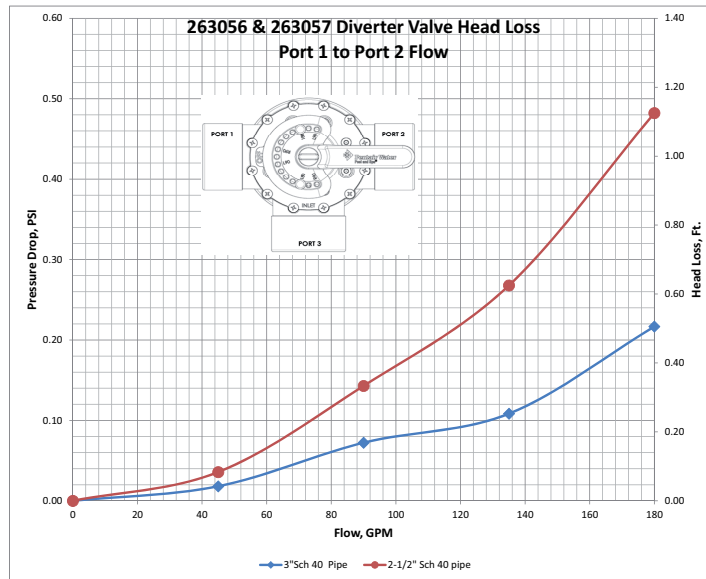
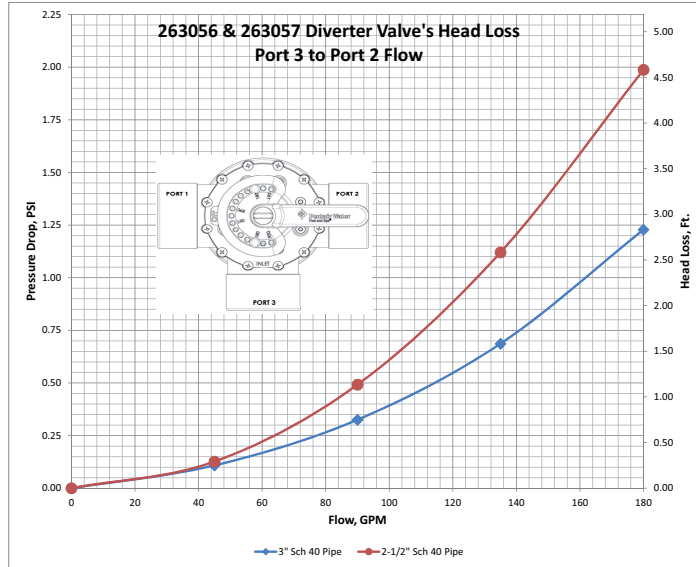
Figure 7.



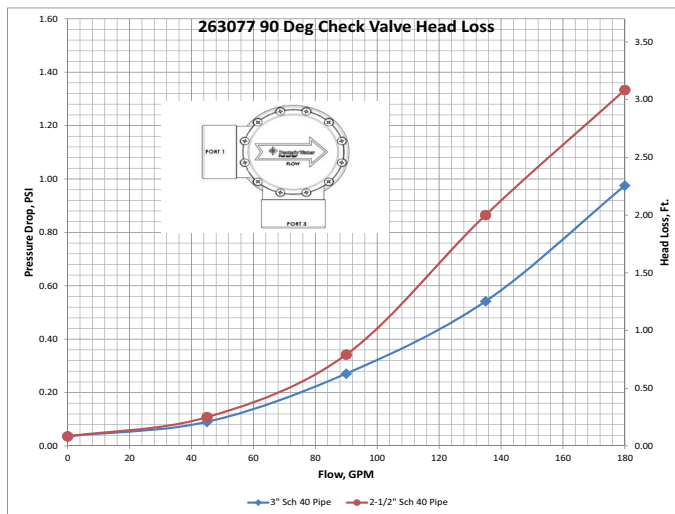
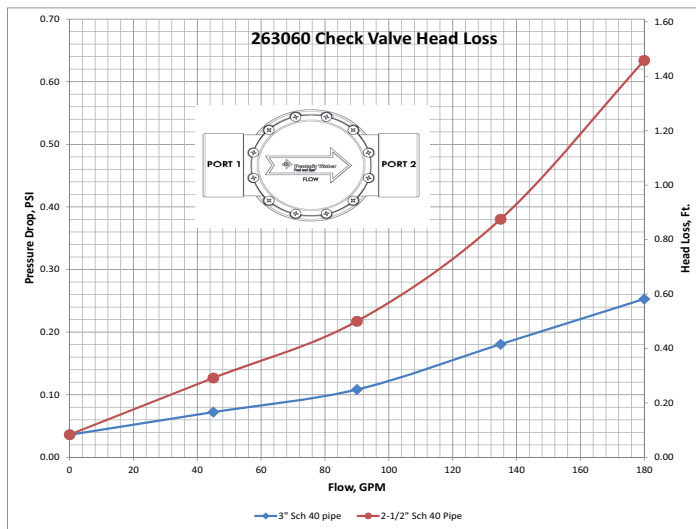
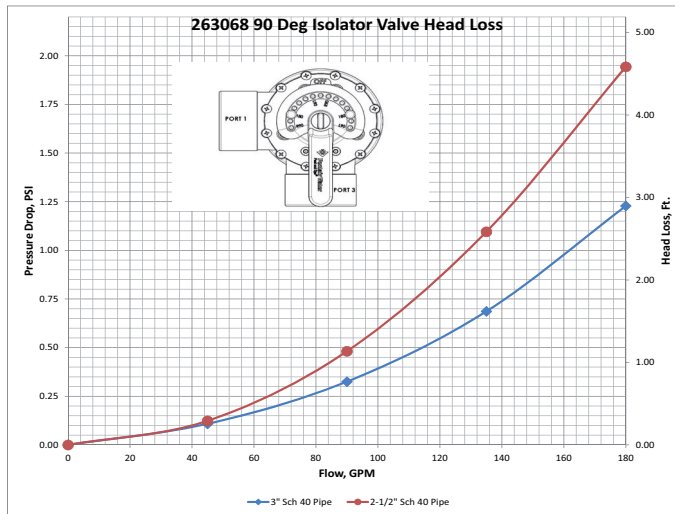
## Check Valve Parts List

Item No.	Part Number	Check Valve (3" Spigot x 2.5" Socket)
1	270119Z	CHECK VALVE FLAPPER REPLACEMENT KIT (Includes Items 2 & 3)
2	271077Z	SCREW KIT (12 SCREWS/KIT)
3	270116Z	O-RING 2-248 BUNA-N 70 SHORE A (1 REQ'D)

# Head Loss Curves



# Head Loss Curves



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