posi-flate®
butterfly valves

Inflatable Seated Butterfly Valve

Series 485, 486, 487 & 488

INSTALLATION AND OPERATIONS GUIDE

Manual Number: PF111097

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Posi-flate® Butterfly Valves Series 485, 486, 487 & 488

Topic ..... ***Section***

Customer Assistance

Should any questions arise with regard to installation and/ or operation that is not covered in this manual, please call Posi-flate® for further information.

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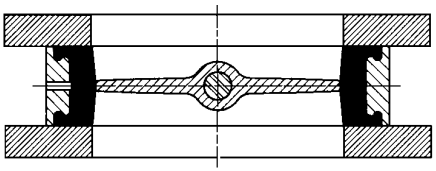
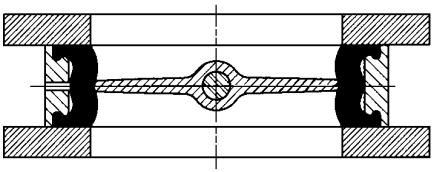
How the Inflatable Butterfly Valve Works

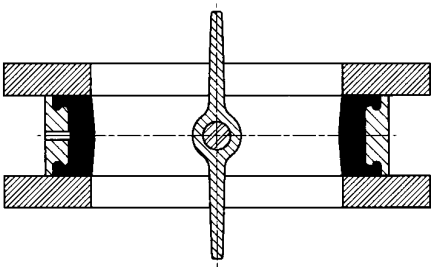
Closed, unsealed. As the valve rotates into the closed position, the disc makes only casual contact with the seat, reducing friction, wear and torque requirements.



Closed, sealed. After the valve is closed, the seat inflates against the disc providing more sealing surface and an even pressure distribution against the disc.



Open, unsealed. Before the valve opens, the seat is first deflated. The disc is then free to rotate to the open position.



⚠ CAUTION:

OPERATING CONDITIONS

POSI-FLATE'S INFLATABLE SEATED BUTTERFLY VALVE HAS A WELL DESERVED REPUTATION FOR GIVING LONG AND DEPENDABLE SERVICE, EVEN UNDER SEVERE USE. HOWEVER, THE POSI-FLATE BUTTERFLY VALVE IS INTENDED FOR SPECIFIC OPERATING CONDITIONS ONLY WITH RESPECT TO AIR PRESSURE AND VOLUME. BECAUSE CONDITIONS FOR MATERIALS HANDLED, INSTALLATION, USE, AND MAINTENANCE OF SUCH PRODUCTS ARE CONTROLLED EXCLUSIVELY BY THE USER, POSI-FLATE DISCLAIMS ALL RESPONSIBILITY FOR DAMAGE OR INJURY RESULTING FROM THE USE OF THE POSI-FLATE BUTTERFLY VALVE. THEREFORE, THE USER ASSUMES ALL RESPON-SIBILITY FOR ANY AND ALL CLAIMS ARISING DIRECTLY OR INDIRECTLY FROM THE PRODUCT AND/OR ITS USE.

1. The Posi-flate butterfly valve should be installed with the disc in the closed position. Spread the opening between the pipe flanges to permit easy installation of the valve without interference. Check to ensure mating flanges are aligned and cleaned. Remove all grease, oils and other foreign material from mating surface.

   The Posi-flate Series 485, 486, 487 and 488 butterfly valves are designed to be used with ANSI 125/150 pound flat faced flanges or PN 10 metric flat faced flanges (PN 16 for 150mm and smaller valves or 10 BAR flat faced flanges), or JIS 10 BAR flanges.

   Flange gaskets are not required with these valves (See Fig. 1).

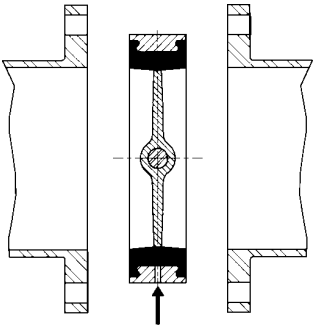


Fig. 1

⚠ WARNING:

CONTACT FACTORY FOR APPROVAL IF VALVE MATING FLANGES ARE NOT AS RECOMMENDED. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE SEAT OR THE ENTIRE VALVE OR MAY IMPAIR THE VALVE'S ABILITY TO OPERATE PROPERLY.

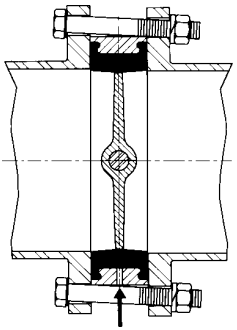


Fig. 2

⚠ CAUTION:

DO NOT INSTALL VALVE IF FLANGES ARE MISALIGNED. THIS CAN CAUSE DAMAGE TO THE DISC AND SEAT RESULTING IN PREMATURE FAILURE . (SEE FIG. 2)

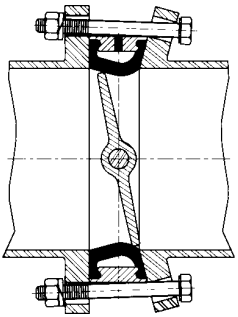


Fig. 3

⚠ CAUTION:

DO NOT INSTALL VALVE WITH A WARPED FLANGE. THE FLANGE MUST BE FLAT WITHIN ±.015 INCHES TO PREVENT INCREASED TORQUE AND PREMATURE WEAR (SEE FIG 3).

2. Following is a recommended bolt diameter chart for use with ANSI 125/150 pound and PN 10 metric flat faced flanges (PN 16 flanges for valves 150mm and smaller).

VALVE	RECOMMENDED BOLT DIAMETER		
	ANSI 125/150 LB. FLANGES	PN 10 OR 16 FLANGES	JIS 10 BAR FLANGES
2"/50mm	5/8"	M16	M16
3"/80mm	5/8"	M16	M16
4"/100mm	5/8"	M16	M16
5"/125mm	3/4"	M16	M20
6"/150mm	3/4"	M20	M20
8"/200mm	3/4"	M20	M20
10"/250mm	7/8"	M20	M22
12"/300mm	7/8"	M20	M22
14"/350mm	1"	M20	M22
16"/400mm	1"	M24	M24
18"/450mm	1-1/8"	M24	M24
20"/500mm	1-1/8"	M24	M24
24"/600mm	1-1/4"	M27	M30
30"/800mm	1-1/4"	M30	M30

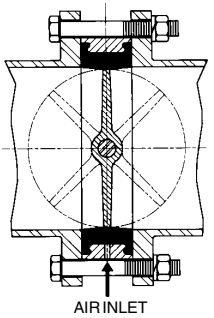


Fig. 4

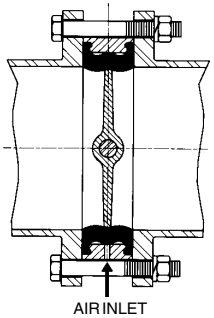


Fig. 5

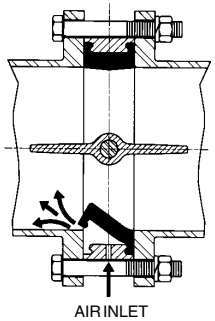


Fig. 6

3. Adjust the valve body position so it is centered between the flanges. Install flange bolts and finger-tighten. Slowly open and close the valve manually without air pressure on the seat to insure proper alignment of valve (see Fig. 4). Return disc to closed position and **cross-tighten** all bolts until the flanges touch the valve housing. Connect the compressed air supply line but do not pressurize seat until the disc is in the closed position (see Fig. 5).

⚠ CAUTION:

DO NOT INFLATE SEAT WHEN DISC IS IN THE OPEN POSITION. THIS CAN RESULT IN VALVE FAILURE AND/OR CAUSE THE SEAT TO BECOME DISLODGED OR DAMAGED (SEE FIG. 6).

⚠ CAUTION:

DO NOT ATTEMPT TO OPEN DISC WHEN INFLATABLE SEAT IS PRESSURIZED. THIS CAN RESULT IN TWISTING OF THE SHAFT AND DAMAGE TO THE SEAT (SEE FIG. 7).

4. In the closed position, the disc should be centered or slightly over center so that the seat tends to push the disc against a mechanical restraint such as an air cylinder in the bottomed-out position (see Fig. 8).

5. Do not weld to any part of the Butterfly Valve housing (see Fig. 9). All supporting connections must be bolted to the housing flange.

6. Customer to supply clean, dry compressed air at 80-115 PSIG (5.5-7.9 BAR).

⚠ DANGER:

KEEP HANDS FREE OF ALL ROTATING PARTS DURING CHECK-OUT PROCEDURE AND DO NOT ATTEMPT TO PUT HANDS OR FINGERS INSIDE THE BUTTERFLY VALVE SEALING AREA WHEN EITHER THE COMPRESSED AIR SUPPLY OR ELECTRICAL POWER IS CONNECTED.

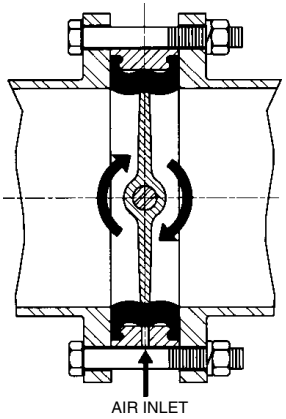


Fig. 7

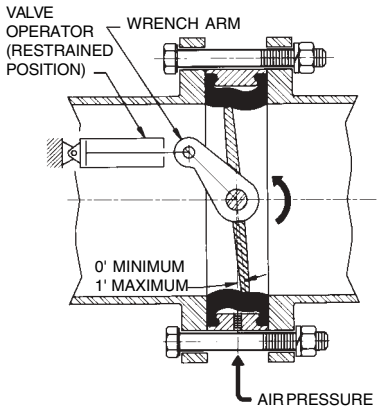
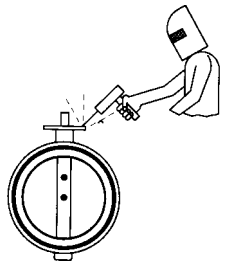


Fig. 8



DO NOT WELD

7. Determine the correct seat pressure and regulate the seat air supply to this pressure. The minimum seat pressure must be 15 PSI (1 BAR) above the maximum process pressure (the pressure the valve must seal against). If the result is less than 40 PSI (2.7 BAR), the seat pressure should be set at 40 PSIG (2.7 BAR). Determine and record the proper seat pressure below:

   MINIMUM SEAT PRESSURE DETERMINATION:

   MAXIMUM PROCESS PRESSURE: _____

   MINIMUM PRESSURE DIFFERENTIAL: 15 PSI (1 BAR)

   TOTAL (IF LESS THAN 40 (2.7 BAR), ENTER 40 (2.7 BAR))

   MINIMUM SEAT PRESSURE = _____

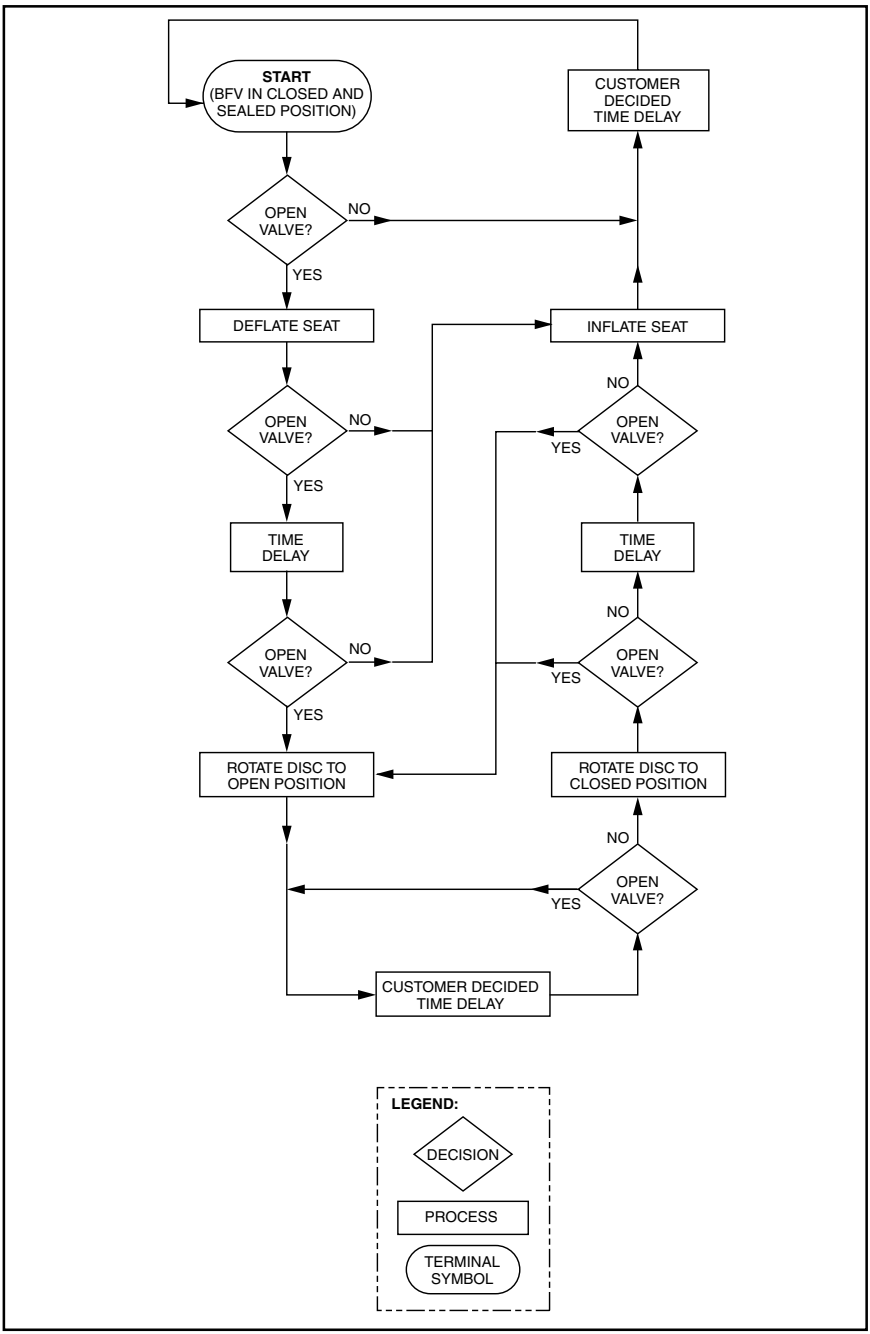
   The single most important factor in getting the maximum life from your Posi-flate butterfly valve is setting the correct seat pressure. The above pressure is the minimum pressure which will give good results. In many applications, you can enhance the life of the valve by raising the seat pressure above the minimum. For optimum seat pressure, please contact your Posi-flate distributor or the factory.

   OPTIMUM SEAT PRESSURE: _____

8. Make sure, during installation, adequate space is provided for maintenance and replacement of worn parts. Sufficient clearance must be allowed to easily replace any worn or defective parts, should it be necessary.

⚠ CAUTION:

DAMAGED INFLATABLE SEAT MAY POSE A SAFETY HAZARD DUE TO THE POSSIBILITY OF SUDDEN FAILURE. TO AVOID MISHAP, INSPECT ALL INFLATABLE SEATS PRIOR TO INSTALLATION AND AT PERIODIC INTERVALS. REPLACE ANY DAMAGED SEATS.


START
(BFV IN CLOSED AND SEALED POSITION)
OPEN VALVE?
NO
YES
DEFLATE SEAT
OPEN VALVE?
NO
YES
TIME DELAY
OPEN VALVE?
NO
YES
ROTATE DISC TO OPEN POSITION
CUSTOMER DECIDED TIME DELAY
CUSTOMER DECIDED TIME DELAY
INFLATE SEAT
NO
OPEN VALVE?
YES
TIME DELAY
NO
OPEN VALVE?
YES
ROTATE DISC TO CLOSED POSITION
NO
OPEN VALVE?
YES
LEGEND:
DECISION
PROCESS
TERMINAL SYMBOL

Symptom	Problem	Correction
BUTTERFLY VALVE DISC DOES NOT MOVE	• Improper signal to control assembly	• Ensure that the electrical signal is the correct voltage and the valve is installed in accordance with the electrical schematic
	• Low compressed air supply pressure	• Correct air supply to 80 to 115 PSIG (5.5-7.9 BAR)
	• Compressed air supply line leaks	• Eliminate compressed air supply line leaks
	• Seat is inflated	• Ensure control assembly is installed and operating correctly
		• Remove any seat exhaust restrictions
		• Ensure seat inflation line is not kinked or restricted
	• Seat is deformed (compression set)	• Replace seat
		• Review application to ensure proper seat is being used
	• Valve opens under vacuum	• Contact factory for special "Vacuum Control Assembly"
	• Material is sticking to disc or seat	• Clean material from seat or disc
		• Review application for proper seat and disc selection
	• Material packed above and below disc	• Review valve application
	• Defective actuator	• Repair or replace actuator
	• Defective solenoid valve	• Clean or replace solenoid valve
	• Manual override actuated	• Release manual override
	• Control assembly is installed wrong	• Review installation section, piping diagram and custom design section for correct installation

Symptom	*Problem*	*Correction*
BUTTERFLY VALVE DISC DOES NOT MOVE	• Foreign object preventing movement	• Remove object and check valve for damage
	• Frozen or seized shaft	• Replace upper and lower bearings and shaft seals following the butterfly valve rebuilding instructions in Section 5
	• Sheared or missing disc screws connecting disc to shaft (Series 485 and 487 only)	• Replace disc screws and screw seals. Use a thread locker (such as Loctite) on threads when installing screws
	• Actuator is incorrect size and/or installed incorrectly	• Check to ensure actuator is correct size and correctly installed
	• Butterfly valve seat popped out of housing	• Remove valve and repair • Consult the rebuilding instructions in Section 5 for proper repair procedure • Re-install valve and check function of control assembly
	• Butterfly valve installed incorrectly	• Remove valve and install in accordance with the Installation Guide in Section 2
	• Butterfly valve installed with raised face flanges	• Replace flanges with flat faced flanges or order adapter rings from Posi-flate
	• Defective limit switch	• Repair or replace limit switch (if used)
BUTTERFLY VALVE DISC MOVES SLOWLY	• Low compressed air supply pressure	• Correct air supply to 80 to 115 PSIG (5.5-7.9 BAR)
	• Compressed air supply line leaks	• Eliminate compressed air supply line leaks
	• Seat is inflated	• Ensure control assembly is installed and operating correctly

Symptom	Problem	Correction
BUTTERFLY VALVE DISC MOVES SLOWLY	• Seat is inflated	• Remove any seat exhaust restrictions
		• Ensure seat inflation line is not kinked or restricted
	• Valve opens under vacuum	• Contact factory for special "Vacuum Control Assembly"
	• Material packed above and below disc	• Review valve application
	• Defective actuator	• Repair or replace actuator
	• Defective solenoid valve	• Clean or replace solenoid valve
	• Plugged or restricted solenoid exhaust	• Remove restriction
	• Foreign object preventing movement	• Remove object and check valve for damage
	• Butterfly valve incorrectly installed	• Remove valve and install in accordance with the Installation Guide in Section 2
	• Butterfly valve installed with raised face flanges	• Replace flanges with flat faced flanges or order adapter rings from Posi-flate
	• Defective limit switch	• Repair or replace limit switch
BUTTERFLY VALVE SEAT DOES NOT INFLATE	• Seat pressure regulator not functioning	• Repair or replace regulator assembly
		• Ensure air supply is clean and dry
	• Seat pressure not correctly set	• Adjust regulator to proper pressure
		• Seat pressure must be 15 (1 BAR) PSIG above process pressure, and must be a minimum of 40 PSIG (2.7 BAR)
		• See Section 2.4 for proper pressure

Symptom	Problem	Correction
BUTTERFLY VALVE SEAT DOES NOT INFLATE	• Air leaking from solenoid exhaust ports	• Clean, repair or replace solenoid
		• Repair or replace actuator
	• Insufficient air supply pressure	• Correct air supply to 80 to 115 PSIG (5.5-7.9 BAR)
	• Butterfly valve seat popped out of housing	• Remove valve and repair
		• Consult Installation Guide in Section 2 for proper repair and installation procedure
		• Re-install valve and check function of control assembly
	• Butterfly valve seat leaking	• Replace seat
		• Consult rebuilding instructions in Section 5 for proper repair
	• Butterfly valve incorrectly installed	• Remove valve and install in accordance with the Installation Guide in Section 2
	• Manual override actuated	• Release manual override
	• Damaged shaft seal(s)	• Replace shaft seal(s) and check to make sure the seal(s) is correctly installed.
	• Defective gauge.	• Replace gauge.
BUTTERFLY VALVE LEAKS WHEN DISC IS IN CLOSED POSITION AND SEAT IS INFLATED	• Seat pressure not correctly set.	• Adjust regulator to proper pressure.
		• Seat pressure must be 15 (1 BAR) PSIG above process pressure, and must be a minimum of 40 PSIG (2.7 BAR).
		• See Section 2.4 for proper pressure.
	• Flanges not centered or bolts tightened.	• Center flanges with butterfly valve and completely tighten.

Symptom	*Problem*	*Correction*
BUTTERFLY VALVE LEAKS WHEN DISC IS IN CLOSED POSITION AND SEAT IS INFLATED	• Warped or defective flanges.	• Replace defective flanges.
	• Foreign material on flanges.	• Remove and clean foreign material from flanges.
	• Obstruction blocking sealing surface.	• Remove obstruction from sealing surface.
	• Disc not centered with seat in Butterfly Valve closed position.	• Center disc with seat by following the instructions in the Installation Guide in Section 2.
	• Damaged shaft seals.	• Reinstall shaft seals following the butterfly valve rebuilding instructions in Section 5.
	• Butterfly valve seat is worn or defective.	• Replace butterfly valve seat.
	• Air leak at split in housing (Series 486, 487 & 488 only).	• Replace gasket between housing halves.
	• Butterfly valve disc is worn or defective.	• Replace butterfly valve disc.
	• Disc screws leaking (Series 485 & 487 only).	• Replace screw seals. Use a thread locker (such as Loctite) on threads when installing screws.
	• Bearings are worn or defective.	• Replace bearings.
	• Hole worn in butterfly valve housing.	• Replace butterfly valve housing.
	• Mismatched housing halves (Series 486, 487 & 488 only).	• Use matched housing halves or replace housing halves.

Daily, Weekly, Monthly, and Yearly Maintenance

⚠ CAUTION:

The Posi-flate butterfly valve and any accessories you have purchased have a limited and variable life, which will depend on each specific application, operating condition and medium of material handled. Over time, the individual components will deteriorate, wear, corrode, and eventually fail. It is therefore the responsibility of the purchaser of the valve to determine when a valve will fail, to safeguard all plant personnel against any and all adverse conditions. The user must follow all instructions contained in this notice and in the operating manuals provided with each Posi-flate product.

REQUIRED PREVENTATIVE MAINTENANCE SCHEDULES

The user of Posi-flate supplied valve and equipment must take adequate preventative maintenance precautions to safeguard all plant personnel, equipment and property against any and all adverse conditions that may occur during operation of the Posi-flate butterfly valve. To prevent valve failure, the user must establish, create and follow a daily, weekly, monthly and yearly maintenance schedule, which coincides with the actual intended use of each valve. The maintenance schedule for each situation will depend on the user's specific application and medium of material handled. If the user has any questions about creating a specific maintenance program, you may contact the Posi-flate engineering department for recommendations.

REQUIRED INSPECTIONS

The user of the Posi-flate valve and/or equipment must visually inspect all valves and/or other Posi-flate equipment at least once daily. This inspection is necessary to detect and/or guard against any potential problems or unsafe operating conditions such as leaks, stress cracks, loosening of bolts and part failures, etc.

⚠ WARNING:

VALVES THAT REQUIRE IMMEDIATE SHUTDOWN AND INSPECTION

Whenever any unusual operating conditions are noticed during operation of the Posi-flate valve and any accessories, the valve should be immediately replaced. Prior to replacing the valve, all air and electrical power should be shut off and the upstream pressure relieved, in order to protect personnel from potential injury and to protect any equipment from potential damage or unsafe operating conditions. After replacing the valve, it should be thoroughly inspected to determine the cause of such unusual operating conditions or symptoms. The root cause of the problem must be corrected and/or any worn or failed parts must be replaced prior to putting the valve back into service.

Daily, Weekly, Monthly, and Yearly Maintenance

Conditions that require immediate shutdown and inspection include, but are not limited to excess vibration, unusual pipe or equipment movement, abnormal noise, excessive heat build-up, leaks, sudden loss of air pressure, or sudden and unusual changes in temperature, noise, etc.

SERVICE AND SAFEGUARD REQUIREMENTS

To safeguard plant personnel, prevent valve failure, and optimize valve performance, a qualified Posi-flate factory service technician must inspect each valve on a yearly basis, at a minimum. Failure to follow the above recommendations or observe other safety precautions outlined in the operating manual could damage the Posi-flate valve and endanger plant personnel. It is the user's responsibility to schedule these regular service visits as required.

CHANGES TO POSI-FLATE SUPPLIED EQUIPMENT

Any changes made by the user to the Posi-flate butterfly valve and/or associated components, and not specifically authorized in writing by the Posi-flate engineering department, are made totally at the risk of the user, who assumes all liability. These changes may have a negative effect with regard to the valve's performance and decrease life, damage adjacent equipment, or endanger plant personnel. Failure to follow this requirement could cause damage to the valve, accessories and associated equipment or endanger plant personnel. Should the user fail to operate the valve according to all instructions in the operating manuals, the warranty will be invalidated.

DANGEROUS OR EXPLOSIVE MATERIALS:

The valve or associated equipment furnished by Posi-flate may handle materials that may be dangerous or explosive. The customers assumes all liability and total responsibility to insure the safety of plant personnel by following to the fullest extent those procedures recommended by the suppliers of such dangerous or explosive materials. The user must determine when a valve will fail, be proactive and respond before any plant personnel are put into a dangerous situation. Posi-flate assumes no liability with regard to potential hazards when handling either dangerous or explosive materials.

It is the user's responsibility to perform a "hazardous operation study" by a qualified individual and/or company with regard to possible valve failure and/or possible repercussions or other dangerous situations as a result. In addition, any safeguarding required to protect plant personnel should a Posi-flate butterfly valve or associated equipment and/or or accessories fail, is the user's responsibility.

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.1 and 8.2.

Note: *Before disassembling the series 485 butterfly valve, make sure that a complete repair kit is available.*

⚠ DANGER:

MAKE SURE COMPRESSED AIR SUPPLY IS DISCONNECTED AND DEPRESSURIZED AND ALL ELECTRICAL POWER DISCONNECTED FROM THE BUTTERFLY VALVE BEFORE PERFORMING ANY MAINTENANCE.

1. Remove the actuator and control assembly from the butterfly valve.
2. Remove the butterfly valve from between the flanges.
3. Remove the disc screws (J) from the disc (D) and the shaft (H) of the butterfly valve.
4. Slide the shaft (H) out of the disc (D) and housing (B). Remove the disc and set it aside.
5. Remove the seat (A) by placing a blunt instrument with rounded edges, such as a slotted screwdriver, between the housing (B) and the seat, see Fig. 1.

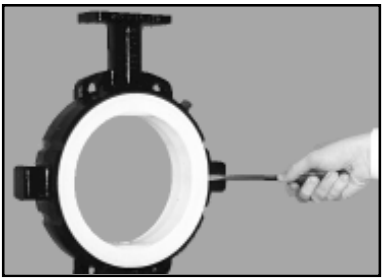


Fig. 1

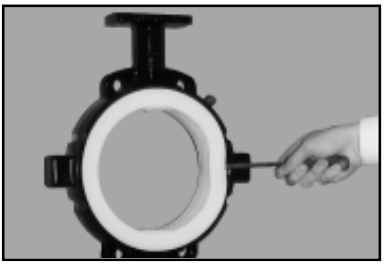


Fig. 2

⚠ CAUTION:

DO NOT PLACE BLUNT INSTRUMENT NEAR SHAFT OPENING SINCE IT MAY CAUSE DAMAGE TO THE SEAT ALONG THE SHAFT SEALING AREA.

6. Once the instrument makes contact with the inside edge of the housing (B), angle the tool to get below the housing lip (see Fig. 2).
7. Push the instrument between the seat (A) and the housing (B), working the end of the tool past the seat to the side opposite where the tool was inserted (see Fig.3).

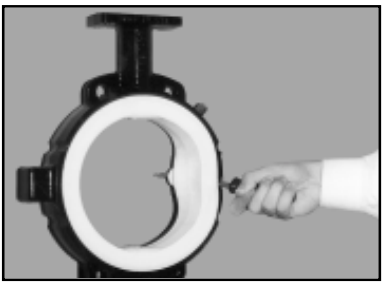


Fig. 3

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.1 and 8.2.

8. Pull a portion of the seat (A) out of the housing (B), see Fig. 4.
9. Grasp the portion of the seat (A) that is out of the housing (B) and ease the seat out of the housing.

Fig. 4

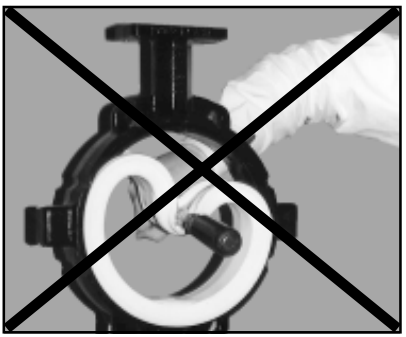
⚠ CAUTION:

DO NOT BEND BUTTERFLY VALVE SEAT TO EXTREMES (SEE FIG. 5) SINCE THIS MAY CAUSE DAMAGE TO THE SEAT.

⚠ CAUTION:

DO NOT BEND SEAT AT THE SHAFT HOLE, SINCE THIS MAY DAMAGE OR DESTROY SEATS THAT ARE FABRIC REINFORCED OR THAT HAVE SEAT INSERTS.

10. Remove the retaining ring (G), lower bearing (F), upper bearings (C) and shaft seals (E) from the housing (B).
11. Inspect all parts to ensure that they are clean and free of defects. Replace any worn or damaged parts.



DO NOT BEND SEAT

Fig. 5

Note: *Posi-flate recommends replacing shaft seals (E), disc screws (J) and screw seals (K) each time the valve is disassembled.*

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.1 and 8.2.

12. Lubricate the shaft holes in the seat (A) and the shaft seals (E) using the appropriate lubricant as shown below.

Seat Material	Grease Type
Silicone based	Fluorosilicone
EPDM	Silicone based
FDA Buna-N petroleum based	FDA approved
Polyurethane	Petroleum based
Buna-N	Petroleum based

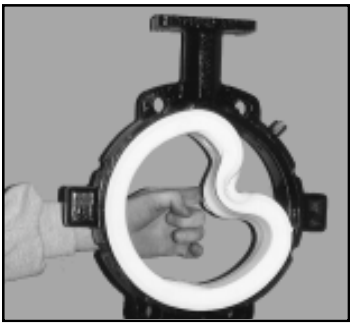


Fig. 6

⚠ WARNING:

USE OF AN IMPROPER LUBRICANT ON THE RUBBER SEAT MAY RESULT IN DECREASED SEAT LIFE DUE TO CHEMICAL INCOMPATIBILITY.

13. Install the lower bearing (F) in the housing. This bearing may be either a "cup" or a "sleeve" depending upon valve size and bearing material.
14. Install the retaining ring (G), upper bearings (C) and shaft seals (E) as shown in Section 8.1. Some butterfly valve sizes have 3 bearings and shaft seals. Consult the exploded view drawing included with the repair kit.
15. Install the seat (A) into the middle of the housing (B) by attaching the seat to the lip of the housing making sure the seat shaft hole is aligned with the housing shaft hole.
16. Continue attaching the seat (A) to the housing (B) by gradually working the seat over the housing lip (see Fig. 6).
17. Once the seat (A) has been fully installed, check the seat alignment in the housing (B) by inserting the shaft (H) completely into the valve, without the disc (D) in place.

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.1 and 8.2.

18. Withdraw the shaft (H) sufficiently to allow the installation of the disc (D).
19. Position the disc (D) by aligning the shaft bore of the disc with the seat (A) shaft openings.
20. Push the shaft (H) through the disc (D) and rotate it until the screw holes line up with the disc screw holes.
21. Install the disc screws (J) and screw seals (K) in the disc (D). Some valve sizes use three disc screws and screw seals. If new screws are not used, a thread locking compound should be used to ensure the disc screws will not become dislodged.
22. Install the actuator and control assembly on the butterfly valve. Adjust the angular position of the disc so that it is centered on the seat. Once this step is completed, the actuator and valve must remain assembled until installed. Proper completion of this step will help maximize the life of the seat.
23. Install the valve in accordance with Section 2 of this manual.
24. Consult the "Controlling the Posi-flate Butterfly Valve" manual for additional instructions and performance tips.

⚠ CAUTION:

PRIOR TO CONNECTING ELECTRICAL POWER AND COMPRESSED AIR SUPPLY, MAKE SURE THAT NO FOREIGN OBJECTS ARE PRESENT INSIDE OF DISC CLOSURE AREA.

⚠ DANGER:

TO AVOID PERSONAL INJURY, MAKE SURE PRIOR TO CONNECTING THE COMPRESSED AIR SUPPLY, HANDS ARE KEPT FROM THE INSIDE OF THE SEAL, SINCE THE DISC MAY ROTATE INTO POSITION UNEXPECTEDLY WHEN THE COMPRESSED AIR IS APPLIED.

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.3 and 8.4.

Note: *Before disassembling the series 486 or 488 Butterfly Valve, make sure that a complete repair kit is available.*

⚠ DANGER:

MAKE SURE COMPRESSED AIR SUPPLY IS DISCONNECTED AND DEPRESSURIZED AND ALL ELECTRICAL POWER DISCONNECTED FROM THE BUTTERFLY VALVE BEFORE PERFORMING AND MAINTENANCE.

1. Remove the actuator and control assembly from the butterfly valve.
2. Remove the butterfly valve from between flanges.
3. Remove the housing nuts (D), bolts (J) and washers (K and N) from the housing.
4. Pull the upper half of the housing (B) from the disc/shaft (H), seat (A) and lower half of the housing.
5. Remove the alignment sleeves (M) from the housing halves. Some Posi-flate valves use alignment pins. These pins are pressed into one half of the housing and do not need to be removed.
6. Remove the retaining ring (G), lower bearing (F), upper bearings (C) and shaft seals (F) from the housing (B).
7. Pull the disc/shaft (H) with the seat (A) attached from the lower half of the housing (B).
8. Remove the seat (A) from the disc/shaft (H) by detaching the seat from the short stem (see Fig. 1).
9. Rotate the seat (A) 90 degrees and slide it past the disc/shaft (H) and off the long stem.

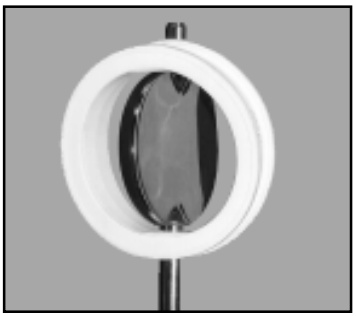


Fig. 1

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.3 and 8.4.

10. Inspect all parts to ensure that they are clean and free of defects. Replace any worn or damaged parts.

Note: *Posi-flate recommends replacement of shaft seals (E) and housing gaskets (L) each time the valve is disassembled.*

11. Check housing halves to ensure a proper match. Split housing halves are matched at the factory and can not be interchanged.
12. Lubricate the shaft holes in the seat (A) and the shaft seals (E) using the appropriate lubricant as shown below.

Seat Material	Grease Type
Silicone	Fluorosilicone based
EPDM	Silicone based
FDA Buna-N	FDA approved petroleum based
Polyurethane	Petroleum based
Buna-N	Petroleum based

13. Install the lower bearing (F) in the housing. This bearing may be either a "cup" or a "sleeve" depending upon valve size and bearing material.
14. Install the retaining ring (G), upper bearings (C) and shaft seals (E) as shown in Section 8.3. Some sizes have three bearings and shaft seals. Consult the exploded view drawing included with the repair kit.
15. Attach the seat (A) to the disc/shaft (H) by first sliding it over the long stem, and then over the short stem of the disc/shaft.

⚠ WARNING:

DO NOT BEND SEAT AT THE SHAFT HOLE, SINCE THIS MAY DAMAGE OR DESTROY SEATS THAT ARE FABRIC REINFORCED OR THAT HAVE SEAT INSERTS.

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.3 and 8.4.

16. Insert the short stem of the disc/shaft (H) with the seat (A) attached into the housing (B).
17. Apply the housing gaskets (L) to housing. See Section 8.3 for the correct location of the gasket.
18. Insert alignment sleeves (M), if used, into the housing (B).
19. Push the upper housing (B) half onto the seat (A) and disc/shaft (H) until the housing halves meet snugly together.
20. Install the housing bolts (J), washers (K and N) and nuts (D) into housing (B). Tighten bolts evenly to properly compress the housing gaskets (L). Torque bolts according to the following specifications:

Valve Size	486/488 Housing Bolt Torque Specifications	
2"	35-40 ft.-lbs.	45-55 Nm
3"	35-40 ft.-lbs.	45-55 Nm
4"	40-45 ft.-lbs.	55-65 Nm
5"	40-45 ft.-lbs.	55-65 Nm
6"	40-45 ft.-lbs.	55-65 Nm
8"	45-50 ft.-lbs.	60-70 Nm
10"	45-50 ft.-lbs.	60-70 Nm
12"	45-50 ft.-lbs.	60-70 Nm
14"	50-55 ft.-lbs.	65-75 Nm
16"	50-55 ft.-lbs.	65-75 Nm
18"	60-65 ft.-lbs.	80-90 Nm
20"	60-65 ft.-lbs.	80-90 Nm
24"	70-75 ft.-lbs.	95-105 Nm
30"	70-75 ft.-lbs.	95-105 Nm

21. Trim the housing gasket (L) as shown in section 8.7. Slide a blunt instrument with rounded edges, such as a slotted end screw driver, between the seat (A) and the housing (B) and pull the seat away from the gasket (L). Using a small grinding tool or knife, remove the excess gasket material that is protruding from the housing into the seat sealing area. Be careful not to cut the seat. Repeat unit both gaskets are properly trimmed.

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.3 and 8.4.

22. Check to ensure the seat (A) is correctly installed in the housing (B) and trim the excess gasket (L) around the outside of the housing. Be careful not to cut the seat.
23. Install the actuator and control assembly on the butterfly valve. Adjust the angular position of the disc so that it is centered on the seat. Once this step is completed, the actuator and valve must remain assembled until installed. Proper completion of this step will help maximize the life of the seat.

⚠ CAUTION:

PRIOR TO CONNECTING ELECTRICAL POWER AND COMPRESSED AIR SUPPLY, MAKE SURE THAT NO FOREIGN OBJECTS ARE PRESENT INSIDE OF DISC/STEM CLOSURE AREA.

⚠ DANGER:

TO AVOID PERSONAL INJURY, MAKE SURE PRIOR TO CONNECTING THE COMPRESSED AIR SUPPLY, HANDS ARE KEPT AWAY FROM THE INSIDE OF THE SEAT, SINCE THE DISC/STEM MAY ROTATE INTO POSITION UNEXPECTEDLY WHEN THE AIR IS APPLIED.

24. Install the valve in accordance with Section 2 of this manual.
25. Consult "Controlling the Posi-flate Butterfly Valve" for additional instructions and performance tips.

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.5 and 8.6.

Note: *Before disassembling the series 487 Butterfly Valve, make sure that a complete repair kit is available.*

⚠ DANGER:

MAKE SURE COMPRESSED AIR SUPPLY IS DISCONNECTED AND DEPRESSURIZED AND ALL ELECTRICAL POWER DISCONNECTED FROM THE BUTTERFLY VALVE BEFORE PERFORMING AND MAINTENANCE.

1. Remove the actuator and control assembly from the butterfly valve.
2. Remove the butterfly valve from between flanges.
3. Remove the disc screws (P) from the disc (H) and the shaft (R) of the butterfly valve.
4. Slide the shaft (R) out of the disc (H) and the housing (B). Remove the disc and set it aside.
5. Remove the housing nuts (D), bolts (J) and washer (K and N) from the housing (B).
6. Pull the upper half of the housing (B) from the lower half.
7. Remove the alignment sleeves (M) from the housing halves.
8. Remove the seat (A) from the housing (B).
9. Remove the retaining ring (G), lower bearing (F), upper bearings (C) and shaft seals (E) from the housing (B).
10. Inspect all parts to ensure that they are clean and free of defects. Replace any worn or damaged parts.

Note: *Posi-flate recommends replacing shaft seals (E), disc screws (J) and screw seals (K) each time the valve is disassembled.*

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.5 and 8.6.

11. Lubricate the shaft holes in the seat (A) and the shaft seals (E) using the appropriate lubricant as shown below:

Seat Material	Grease Type
Silicone	Fluorosilicone based
EPDM	Silicone based
FDA Buna-N	FDA approved petroleum based
Polyurethane	Petroleum based
Buna-N	Petroleum based

⚠ WARNING:

USE OF AN IMPROPER LUBRICANT ON THE RUBBER SEAT MAY RESULT IN DECREASED SEAT LIFE DUE TO CHEMICAL INCOMPATIBILITY.

12. Install the lower bearing (F) in the housing. This bearing may be either a "cup" or a "sleeve" depending upon valve size and bearing material.
13. Install the retaining ring (G), upper bearings (C), and shaft seals (E) as shown in Section 8.6.
14. Install the seat (A) into the lower housing (B), making sure the seat and shaft hole is aligned with the housing shaft hole.
15. Apply the housing gaskets (L) to the housing (B).
16. Insert the alignment sleeves (M) into the housing (B).
17. Push the upper housing half onto the seat until the housing halves meet snugly together.
18. Install the housing bolts (J), washers (K and N) and nuts (D) into the housing (B). Tighten the bolts evenly to properly compress the housing gaskets (L). Torque bolts to 40-45 ft. lbs (55-65 Nm).

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.5 and 8.6.

19. Trim the housing gasket (L) as shown in section 8.7. Slide a blunt instrument with rounded edges, such as a slotted end screwdriver, between the seat (A) and the housing (B) and pull the seat away from the gasket (L). Using a small grinding tool or knife, remove the excess gasket material that is protruding from the housing into the seat sealing area. Be careful not to cut the seat. Repeat until both gaskets are properly trimmed.
20. Check the seat alignment in the housing (B) by inserting the shaft (R) completely into the valve, without the disc (H) in place.
21. Withdraw the shaft (R) sufficiently to allow the installation of the disc (H).
22. Position the disc (H) by aligning the shaft bore of the disc with the seat shaft openings.
23. Push the shaft (R) through the disc (H) and rotate it until the screw holes line up with the disc screw holes.
24. Install the disc screws (P) and screw seals (Q) in the disc (H). If new screws are not used, a thread locking compound (such as Loc-Tite) should be used to ensure that the disc screws will not become dislodged.
25. Trim excess gasket (L) around the outside of the housing (B). Be careful not to cut the seat (A).

Series 485 Butterfly Valve Rebuilding Instructions

Please reference the assembly drawings in Sections 8.5 and 8.6.

26. Install the actuator and control assembly on the butterfly valve. Adjust the angular position of the disc so that it is centered on the seat. Once this step is completed, the actuator and valve must remain assembled until installed. Proper completion of this step will help maximize the life of the seat.

⚠ CAUTION:

PRIOR TO CONNECTING ELECTRICAL POWER AND COMPRESSED AIR SUPPLY, MAKE SURE THAT NO FOREIGN OBJECTS ARE PRESENT INSIDE OF DISC/STEM CLOSURE AREA.

⚠ DANGER:

TO AVOID PERSONAL INJURY, MAKE SURE PRIOR TO CONNECTING THE COMPRESSED AIR SUPPLY, HANDS ARE KEPT AWAY FROM THE INSIDE OF THE SEAT, SINCE THE DISC/STEM MAY ROTATE INTO POSITION UNEXPECTEDLY WHEN THE AIR IS APPLIED.

27. Install the valve in accordance with Section 2 of this manual.
28. Consult "Controlling the Posi-flate Butterfly Valve" for additional instructions and performance tips.

Recommended Spare Parts List

Description	Reference Number	Section Number	Recommended Quantity to Stock
SERIES 485 BUTTERFLY VALVE			
Seat	A	8.1 and 8.2	1
Repair Kit, consisting of:			1
Shaft Seal	E	8.1 and 8.2	2
Retaining Ring	G	8.1 and 8.2	1
Disc Screw	J	8.1 and 8.2	2
Screw Seal	K	8.1 and 8.2	2
SERIES 486 & 488 BUTTERFLY VALVE			
Seat	A	8.3 and 8.4	1
Repair Kit, consisting of:			1
Shaft Seal	E	8.3 and 8.4	2
Retaining Ring	G	8.3 and 8.4	1
Housing Gasket	L	8.3 and 8.4	2
SERIES 487 BUTTERFLY VALVE			
Seat	A	8.5 and 8.6	1
Repair Kit, consisting of:			1
Shaft Seal	E	8.5 and 8.6	2
Retaining Ring	G	8.5 and 8.6	1
Disc Screw	P	8.5 and 8.6	2
Screw Seal	Q	8.5 and 8.6	2
Housing Gasket	L	8.5 and 8.6	2

Seat Material Design Recommendations

Seat Material	FDA*	Operating Temperature	Min. Seat Pressure	Max. Seat Pressure**
Black EPDM	No	-20° to 150° F -29° to 66° C	40 PSI 2.7 BAR	115 PSI 7.9 BAR
Black Buna-N	No	-10° to 125° F -23° to 52° C	40 PSI 2.7 BAR	115 PSI 7.9 BAR
White Buna-N	Yes	+20° to 150° F -7° to 66° C	40 PSI 2.7 BAR	70 PSI 4.8 BAR
Black Poly	No	+32° to 150° F 0° to 66° C	40 PSI 2.7 BAR	115 PSI 7.9 BAR
White Poly	No	+32° to 150° F 0° to 66° C	70 PSI 4.8 BAR	115 PSI 7.9 BAR
White Silicone	Yes	-40° to 300° F -40° to 150° C	40 PSI 2.7 BAR	115 PSI 7.9 BAR
BLK Fluoroelastomer	No	+40° to 300° F 8° to 150° C	40PSI 2.7 BAR	55 PSI 3.7 BAR

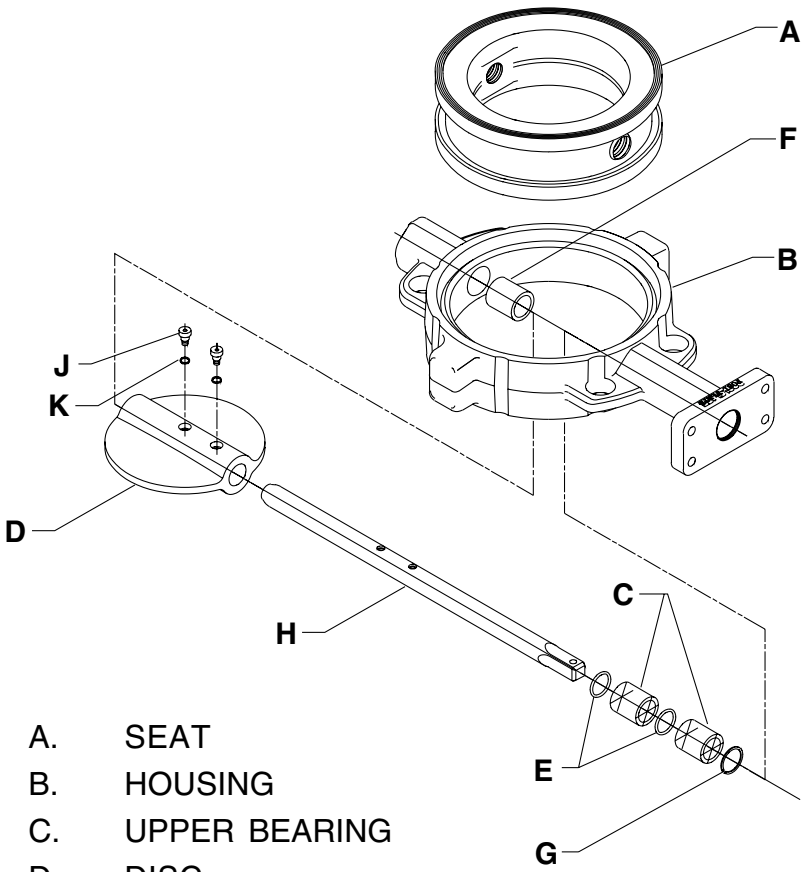
* *The seat compound ingredients and molding process comply with FDA requirements for elastomeric materials in direct contact with food, as published in 21 CFR Part 177.2600.*

** *Maximum seat pressure. Process pressure is 15 PSI (1 BAR) less.*

Notes:

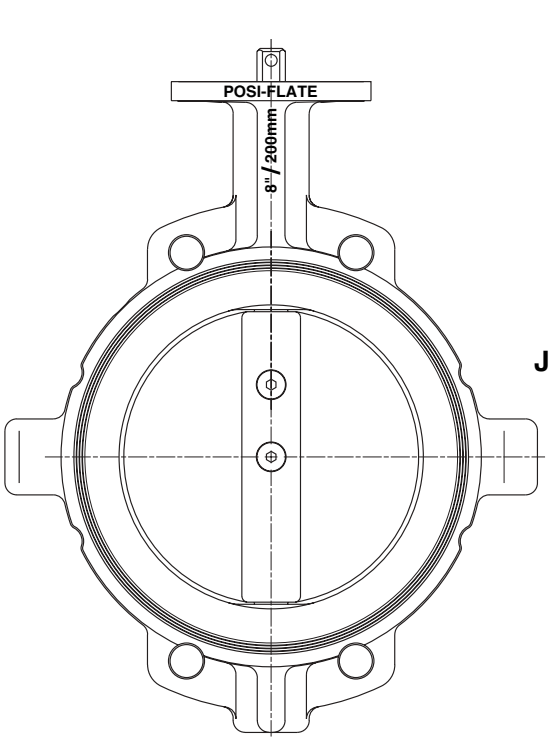
1. Posi-flate Research and Development engineers are constantly developing new seat materials. Please consult factory for any material not listed.
2. Consult Posi-flate for chemical compatibility recommendation.

Series 485 Assembly, Exploded View



A. SEAT
B. HOUSING
C. UPPER BEARING
D. DISC
E. SHAFT SEAL
F. LOWER BEARING
G. RETAINING RING
H. SHAFT
J. DISC SCREW
K. SCREW SEAL

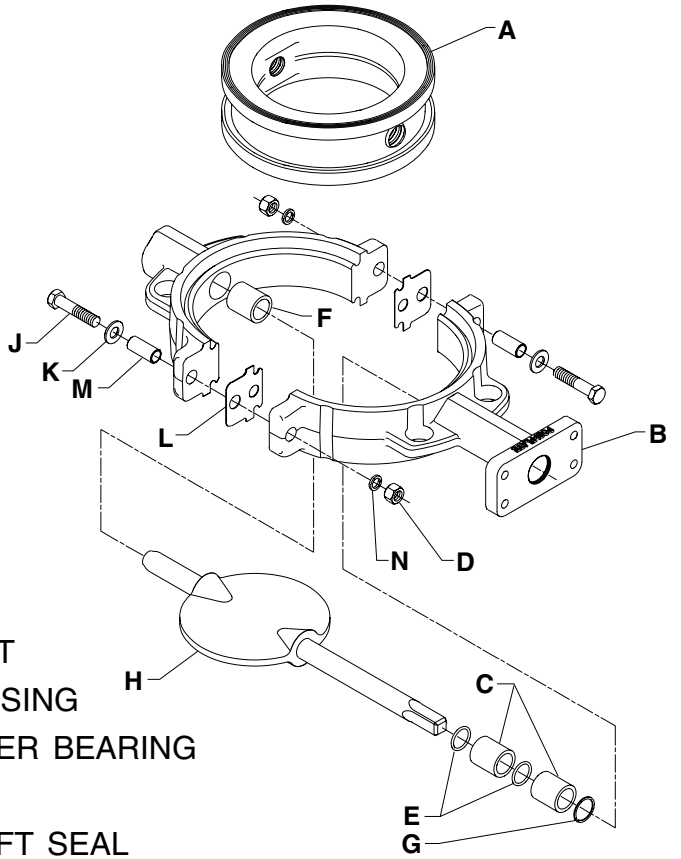
See sections 8.7 and 8.8 for Bearing and Seal Placement for all sizes



A. SEAT
B. HOUSING
C. UPPER BEARING
D. DISC
E. SHAFT SEAL
F. LOWER BEARING
G. RETAINING RING
H. SHAFT
J. DISC SCREW
K. SCREW SEAL

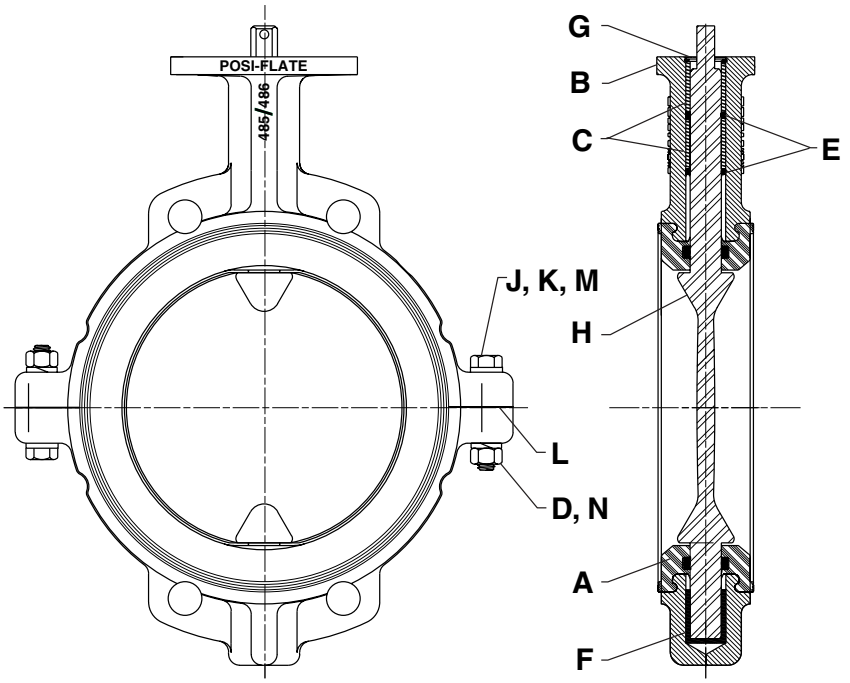
See sections 8.7 and 8.8 for Bearing and Seal Placement for all sizes

Series 486 & 488 Assembly, Exploded View



A. SEAT
B. HOUSING
C. UPPER BEARING
D. NUT
E. SHAFT SEAL
F. LOWER BEARING
G. RETAINING RING
H. DISC/SHAFT
J. HOUSING SCREW
K. FLAT WASHER
L. HOUSING GASKET
M. ALIGNMENT SLEEVE
N. LOCK WASHER

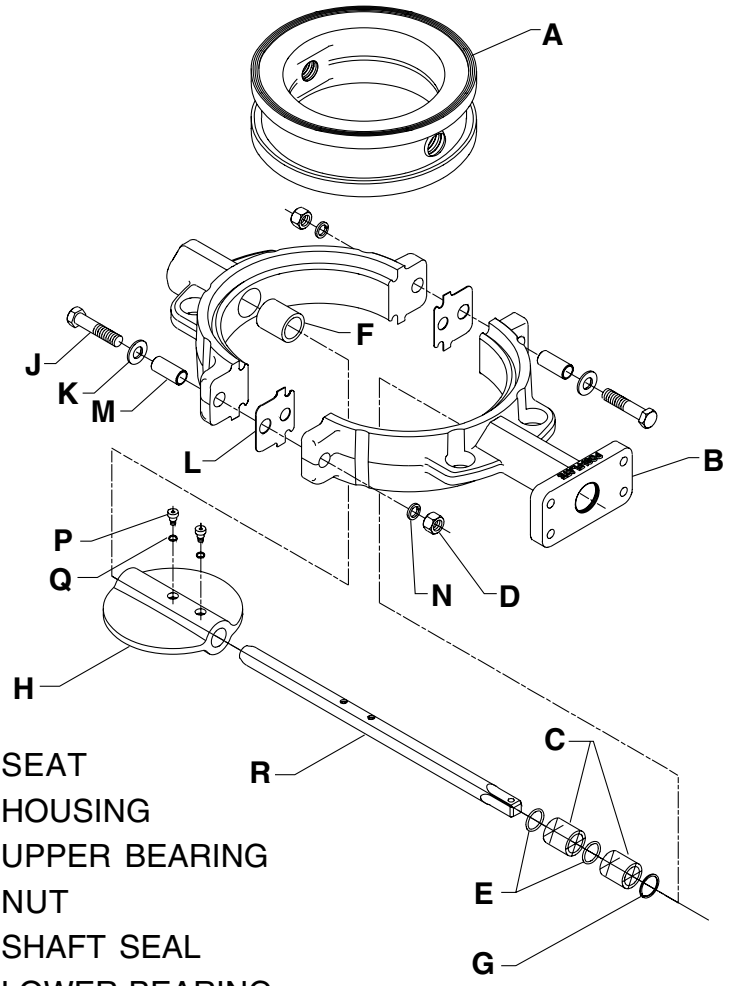
See sections 8.7 and 8.8 for Bearing and Seal Placement for all sizes



A.	SEAT		
B.	HOUSING	H.	DISC/SHAFT
C.	UPPER BEARING	J.	HOUSING SCREW
D.	NUT	K.	FLAT WASHER
E.	SHAFT SEAL	L.	HOUSING GASKET
F.	LOWER BEARING	M.	ALIGNMENT SLEEVE
G.	RETAINING RING	N.	LOCK WASHER

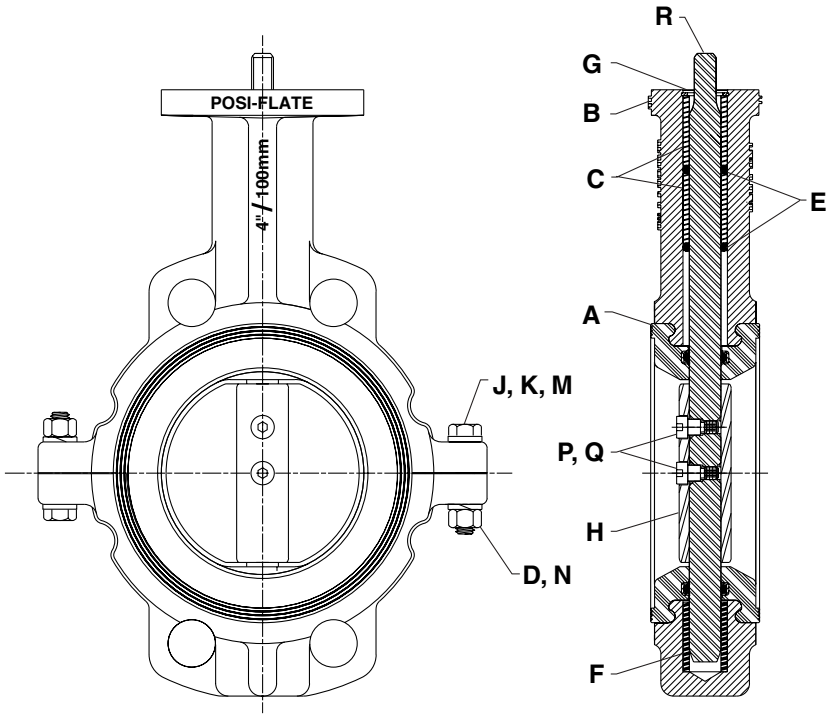
See sections 8.7 and 8.8 for Bearing and Seal Placement for all sizes

Series 487 Assembly, Exploded View



A.	SEAT		
B.	HOUSING		
C.	UPPER BEARING		
D.	NUT		
E.	SHAFT SEAL		
F.	LOWER BEARING		
G.	RETAINING RING	M.	ALIGNMENT SLEEVE
H.	DISC	N.	LOCK WASHER
J.	HOUSING SCREW	P.	DISC SCREW
K.	FLAT WASHER	Q.	SCREW SEAL
L.	HOUSING GASKET	R.	SHAFT

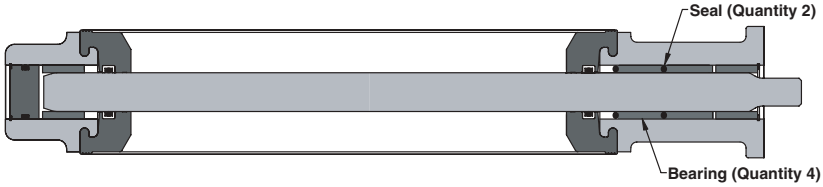
See sections 8.7 and 8.8 for Bearing and Seal Placement for all sizes



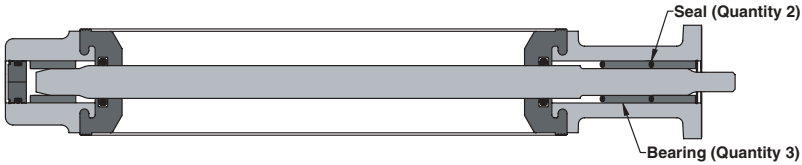
A.	SEAT	J.	HOUSING SCREW
B.	HOUSING	K.	FLAT WASHER
C.	UPPER BEARING	L.	HOUSING GASKET
D.	NUT	M.	ALIGNMENT SLEEVE
E.	SHAFT SEAL	N.	LOCK WASHER
F.	LOWER BEARING	P.	DISC SCREW
G.	RETAINING RING	Q.	SCREW SEAL
H.	DISC	R.	SHAFT

See sections 8.7 and 8.8 for Bearing and Seal Placement for all sizes

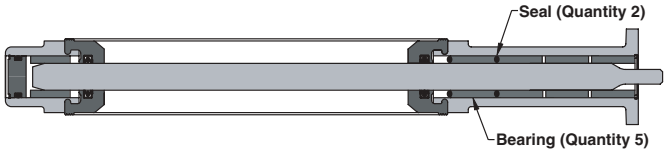
20" (500mm), 24" (600mm), 30" (800mm)



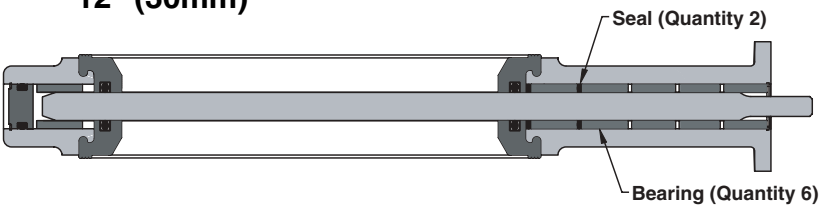
18" (450mm)



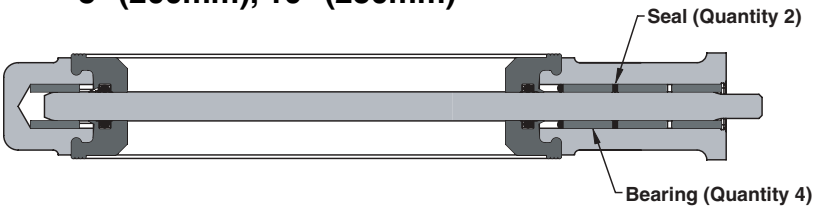
14" (350mm) & 16" (400mm)



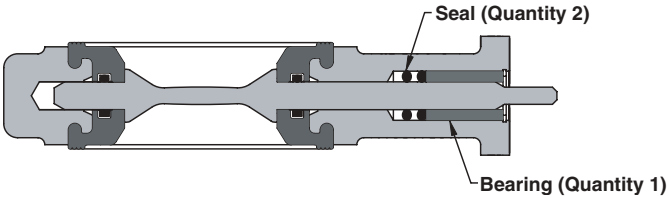
12" (30mm)

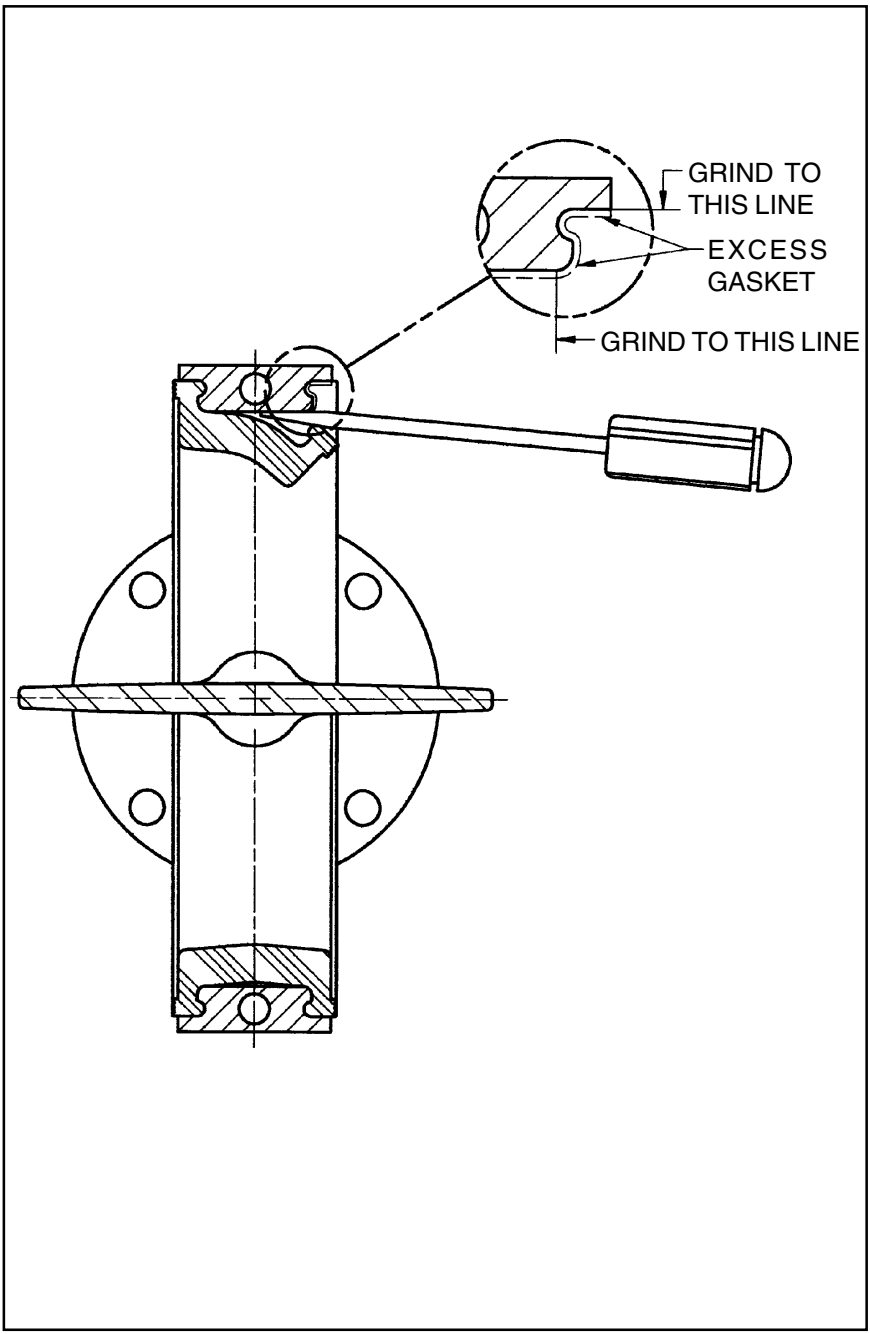


4" (100mm), 5" (125mm), 6" (150mm), 8" (200mm), 10" (250mm)



2" (50mm) & 3" (80mm)





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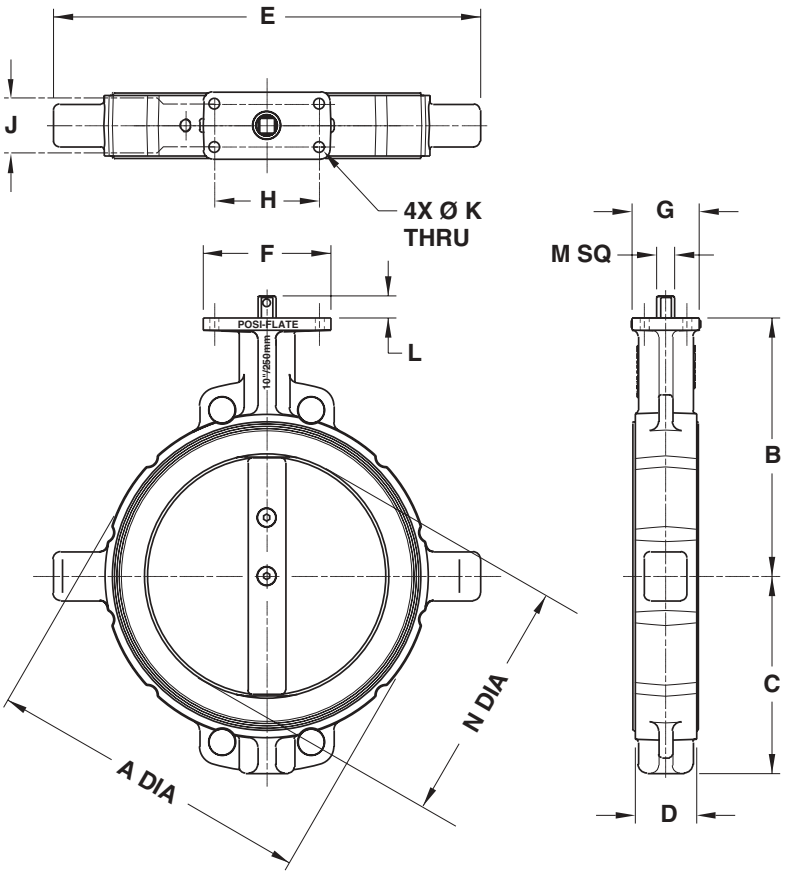

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Basic Dimensions

Posi-flate® Butterfly Valves
Series 485, 486, 487 & 488

Valve Size	Posi-flate Butterfly Valve Series 485, 486, 487, & 488 Dimensions* Inches, mm													Appx. Weight Lbs (Kg)	Normal Torque Inch Pounds (Nm)	
	A	B	C	D	E	F	G	H	J	K	L	M	N		Min.	Max.
2"	4.52	4.50	2.91	1.62	6.50	4.00	2.12	3.25	1.17	.31	.78	.43	1.99	8	40	450
50mm	114.8	114.3	73.9	41.1	165.1	101.6	53.8	82.6	29.7	7.9	19.8	11.0	50.5	(3.6)	(4.5)	(50.0)
3"	5.65	5.56	3.57	1.75	8.19	4.00	2.12	3.25	1.17	.31	.81	.43	2.89	10	80	450
80mm	143.5	141.2	90.7	44.5	208.0	101.6	53.8	82.6	29.7	7.9	20.6	11.0	73.4	(4.5)	(9.0)	(50.0)
4"	6.88	7.58	4.42	2.00	8.88	4.00	2.12	3.25	1.17	.31	.70	.43	3.88	16	130	450
100mm	174.8	192.5	112.3	50.8	225.5	101.6	53.8	82.6	29.7	7.9	17.8	11.0	98.6	(7.2)	(14.6)	(50.0)
5"	7.75	7.95	6.05	2.12	9.62	4.00	2.12	3.25	1.17	.31	.86	.55	4.92	19	260	450
125mm	196.9	201.9	153.7	53.8	244.3	101.6	53.8	82.6	29.7	7.9	21.8	14.0	125.0	(8.6)	(29.4)	(50.0)
6"	8.75	7.95	6.05	2.12	10.69	4.00	2.12	3.25	1.17	.31	.86	.55	5.88	22	300	450
150mm	222.3	201.9	153.7	53.8	271.5	101.6	53.8	82.6	29.7	7.9	21.8	14.0	149.4	(10.0)	(33.9)	(50.0)
8"	11.12	9.87	7.24	2.50	14.00	5.25	2.75	4.31	1.75	.38	.88	.75	7.86	37	540	700
200mm	282.4	250.7	183.9	63.5	355.6	133.4	69.9	109.5	44.5	9.5	22.3	19.0	199.6	(17.0)	(61.0)	(79.0)
10"	13.31	10.56	8.06	2.50	17.50	5.25	2.75	4.31	1.75	.38	.93	.75	9.81	45	860	1300
250mm	338.1	268.2	204.7	63.5	444.5	133.4	69.9	109.5	44.5	9.5	23.6	19.0	249.2	(20.0)	(97.0)	(147.0)
12"	15.50	14.28	9.52	3.00	20.25	4.00	4.00	2.84	2.84	.44	1.25	.87	11.83	80	1240	2480
300mm	393.7	362.7	241.8	76.2	514.4	101.6	101.6	72.1	72.1	11.1	31.8	22.0	300.5	(36.0)	(140.0)	(280.0)
14"	17.72	16.00	10.50	3.00	22.00	4.00	4.00	2.84	2.84	.44	1.02	.87	13.08	150	2100	6200
350mm	450.1	406.4	266.7	76.2	558.8	101.6	101.6	72.1	72.1	11.1	25.9	22.0	332.5	(68.0)	(237.0)	(700.0)
16"	19.75	16.93	11.75	4.00	24.75	4.62	4.62	3.48	3.48	.53	1.29	1.06	15.02	180	3500	9600
400mm	501.6	430.0	298.5	101.6	628.7	117.3	117.3	88.4	88.4	13.5	32.8	27.0	381.5	(82.0)	(395.0)	(1084.0)
18"	21.75	15.84	13.30	4.25	27.71	7.37	4.62	3.48	3.48	.53	1.29	1.06	17.13	235	4800	12150
450mm	552.5	402.3	337.8	108.0	703.8	187.2	117.3	88.4	88.4	13.5	32.8	27.0	435.1	(106.0)	(542.0)	(1373.0)
20"	23.75	17.38	14.38	5.00	30.00	7.37	5.50	3.90	3.90	.69	1.57	1.42	18.68	275	7800	15600
500mm	603.2	441.5	365.3	127.0	762.0	187.2	139.7	99.0	99.0	17.5	39.9	36.0	474.5	(125.0)	(881.0)	(1762.0)
24"	28.00	19.12	16.49	5.94	34.50	8.00	5.75	3.90	3.90	.69	1.48	1.42	22.65	420	9400	18800
600mm	711.2	485.6	418.8	150.9	876.3	203.2	146.0	99.0	99.0	17.5	37.6	36.0	575.3	(190.0)	(1062.0)	(2124.0)
30"	35.88	23.00	21.00	6.62	43.00	8.00	5.75	3.90	3.90	.69	1.56	1.42	28.41	750	11000	22000
750mm	911.4	584.2	533.4	108.1	109.2	203.2	146.0	99.0	99.0	17.5	39.6	36.0	721.6	(340.0)	(1243.0)	(2486.0)

** Series 485 available in 5" (125mm) to 30" (750mm). Series 486 available in 2" (50mm) to 30" (750mm). Series 487 available in 4" (100mm). Series 488 available in 2" (50mm) and 3"(80mm).*

Customer Assistance

Should any questions arise with regard to installation and/or operation that is not covered in this manual, please call Posi-flate for further recommendations.

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