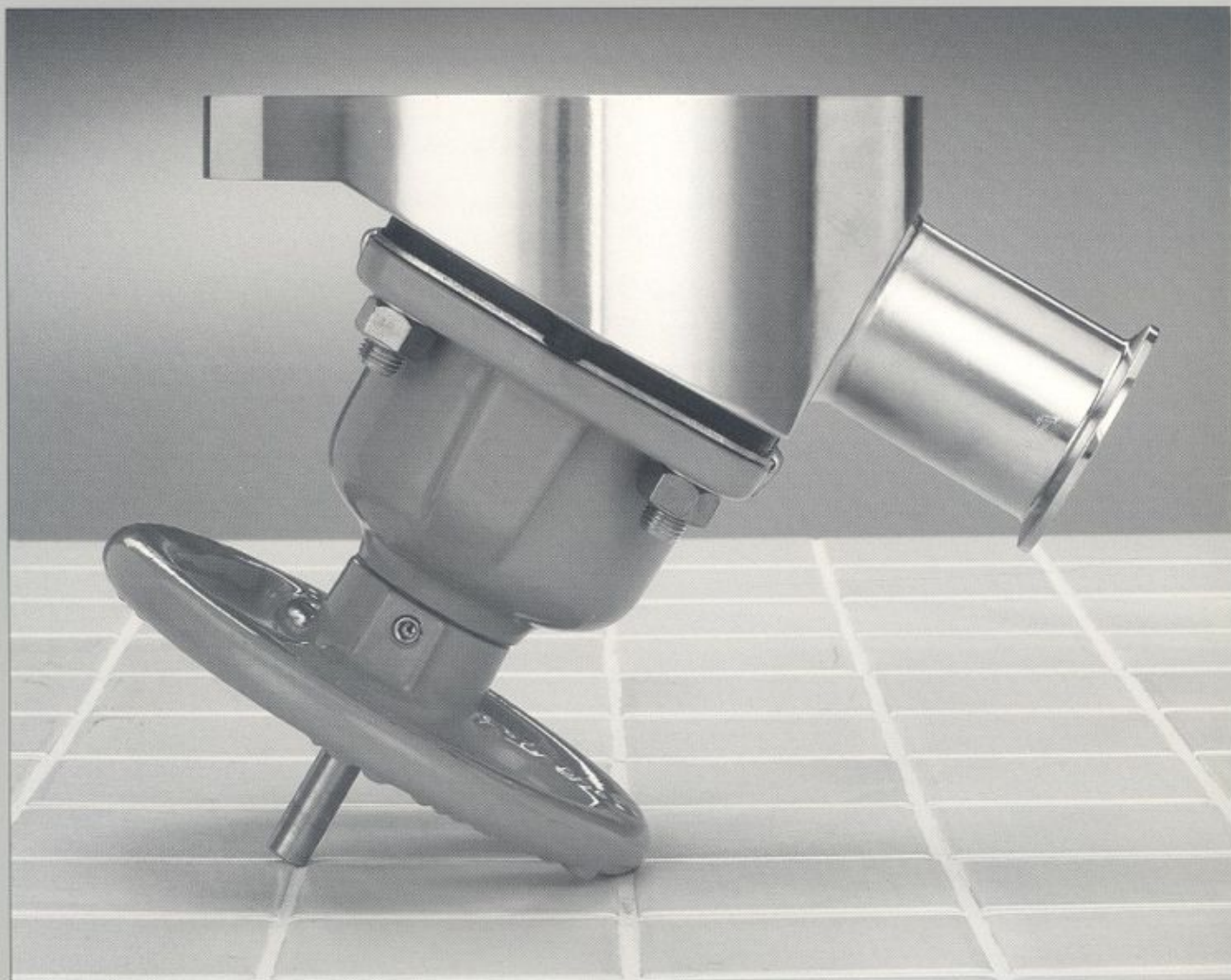


ITT PURE-FLO™

Tank Bottom Diaphragm Valve

The same process proven PURE-FLO Diaphragm Valve design features that you rely on throughout your pharmaceutical and biological process systems are now available to ensure product purity where it's needed most: at the bottom of the vessel.



ITT Engineered Valves
ITT Fluid Technology Corporation

Now there's a Pure-Flo Diaphragm Valve designed to ensure product purity and process efficiency where you need it most: at the bottom of the vessel.

A Look at the Problem:

For years, there has not been an adequate process solution for controlling fluid flow from the bottom of a vessel.

Ball valves, kettle valves, ram valves, plunger type valves, and other designs all have areas where material can collect and bacteria can grow, threatening the purity of your process stream.

Now ITT Engineered Valves has engineered a solution to this problem: The ITT Pure-Flo Tank Bottom Diaphragm Valve*.

The Pure-Flo weir-type diaphragm valve is now available in a tank-bottom design.

The ITT Pure-Flo Tank Bottom Diaphragm Valve is the first weir-type diaphragm valve specifically engineered for **tank-bottom** applications in the pharmaceutical and bioprocessing industries.

It is designed especially for use on:

- sterile receivers
- fermentation vessels
- cell culture holding vessels
- water-for-injection storage vessels
- process vessels
- media fill vessels
- inoculant tanks
- cip tanks
- and any other batch or continuous process vessels used in pharmaceutical/bioprocessing applications



Proven Pure-Flo design and technology adapted for a new application.

Importantly, the ITT Pure-Flo Tank Bottom Diaphragm Valve uses the same process-proven design features, parts, and components as the other valves in our popular Pure-Flo product line – many of which you may already be using throughout your plant.

Because the Pure-Flo Tank Bottom Valve's diaphragm, actuator, and bonnet are interchangeable with those used in other Pure-Flo valves, there's no need to maintain a separate inventory of spare parts. This simplifies maintenance and dramatically reduces the cost of ownership.

Bonnet isolation and a streamlined, cavity-free interior prevent contamination and keep products pure.

The Pure-Flo Tank Bottom Diaphragm Valve features a streamlined fluid passage with minimal surface contact area and **no** pockets of entrapment. All moving parts (except the diaphragm) are isolated within the bonnet and kept out of contact with the process stream. Interior body surfaces are smoothly contoured and free of cavities to prevent the accumulation of process fluids – and the resultant bacterial growth and process contamination.

*Patent Pending

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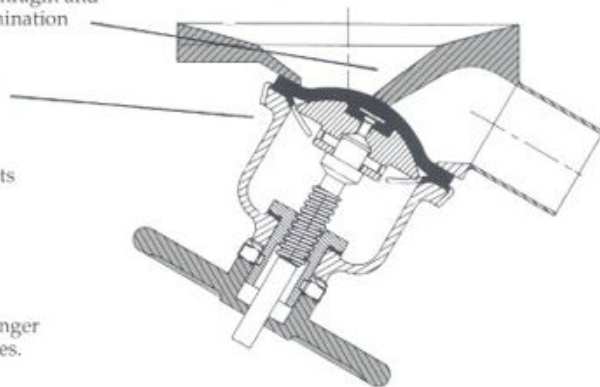
Weir/diaphragm design. Large contact area between diaphragm and weir provides positive leak-tight closure to prevent contamination and product loss.

Bonnet isolation. All working parts are isolated from the process stream to simplify cleaning and maintenance.

Streamlined fluid passage. Interior body surfaces are smoothly contoured and free of cavities, eliminating pockets that can entrap product and cause cross-contamination.

Standardized construction. Major Tank Bottom Valve components are the same as other Pure-Flo Diaphragm valves, reducing your inventory and cost of ownership.

Diaphragm-driven type actuator. Rugged design has a longer service life, even under varying environmental temperatures.



The unique Pure-Flo weir-type diaphragm design prevents leaks and cross-contamination of process streams.

The large contact area between the Pure-Flo's weir and diaphragm creates positive closure, assuring a leak-tight shut-off throughout the life of the valve. When your Pure-Flo Tank Bottom Diaphragm Valve is closed, it's closed: no leakage, no product loss, no cross-contamination. The product stream stays pure, the vessel remains sterile. Diaphragms are available in six different FDA-accepted materials to meet your processing requirements.

The Pure-Flo design allows for easy in-line maintenance.

The removable bonnet provides quick access for in-line maintenance. All major components except the body can be changed out and replaced using your existing inventory of Pure-Flo valve parts. Because no moving parts or cavities come in contact with process materials, the Pure-Flo Tank Bottom Diaphragm Valve is exceptionally easy to clean and is rated for cip/sip (clean-in-place/steam-in-place).

Although the body of the Tank Bottom Valve has been modified to fit tank-bottom applications, the main components – bonnet, actuator, and diaphragm – are interchangeable with those in the Pure-Flo Diaphragm Valves you are already currently using throughout your system.

Important Technical Information About The Pure-Flo Tank Bottom Diaphragm Valve

Sizes range from 1 to 4 inches.

The Pure-Flo Tank Bottom Valve is available in sizes 1 to 4 inches with flow rates ranging up to 368 gallons per minute:

Diameter of outlet (inches)	Maximum flow rate (gallons per minute)
1.0	17.5
1.5	47.5
2.0	69.0
3.0	175.0
4.0	368.0

The Pure-Flo Tank Bottom Diaphragm Valve operates safely and reliably at the temperatures needed to maintain a sterile environment.

Valve rated pressure is full vacuum at ambient temperature, 150 psi at 300°F. The Pure-Flo Tank Bottom Diaphragm Valve can be used in a variety of pharmaceutical and bioprocessing applications ranging from process sterilization protocols (250°F to 286°F) to process applications involving cell cultures and media preparation.

A valve body designed for bottom-of-the-vessel applications.

The Pure-Flo Tank Bottom Valve has a body especially designed to fit tank-bottom applications. The body is made from 316L stainless steel bar stock ASME SA-479 (UNS S31603). Heat numbers are provided as standard, and certified mill test reports are available upon request, ensuring a high integrity weld between valve and vessel.

A variety of finishes provide a smooth surface for fluid passage.

The Pure-Flo Tank Bottom Diaphragm Valve body interior surface can be furnished with interior surfaces ranging from 9 micro inch Ra to 30 micro inch Ra (320 to 150 grit). As an option, the interior and exterior surfaces of the valve body can be electropolished. Electropolishing, which is becoming increasingly popular in pharmaceutical and bioprocessing applications, enhances corrosion-resistance and provides a smoother surface that facilitates cleaning and sterilization.

Choose the end connection that meets your process requirements.

The valve body outlet is a 316L stainless steel tube stub.

Valve size (inches)	Stub length (inches)	Gauge
1, 1.5	2.0	16
2, 3	2.5	16
4	2.5	14

The Pure-Flo diaphragm valve is available with 16 different end connections, including quick disconnect and butt-weld configurations, that can be welded onto the tube stub for maximum process flexibility. We can also attach a variety of special fabrications including steam injection ports, sample ports, and clean-in-place ports.



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Diaphragms manufactured in your choice of six materials to meet your process requirements.

The Tank Bottom Valve diaphragm is available in six different FDA-accepted materials:

- TFE
- black butyl
- buna nitrile
- EPDM
- white butyl
- gum rubber

The Pure-Flo TFE diaphragm is manufactured using a special fluorlastic process that removes trapped air from the material. This results in higher cycle life, increased density, reduced porosity, and greater dimensional stability over a wider range of temperatures.



The Tank Bottom Diaphragm Valve features the same process-proven bonnet used in our other Pure-Flo Diaphragm valves.

The standard bonnet is made from cast or ductile iron coated with nylon 11, PVDF, white epoxy, or select our new PES bonnet assembly. Stainless steel and bronze bonnets are also available. The bonnet may be ordered with sanitary internals including a stainless steel stem, roll pin, finger plate, and a bronze compressor. Optional O-ring seals around the stem and bushing prevent fluids from leaking into the bonnet during wash-down or provide a secondary area of containment.

Pure-Flo's low-profile actuators meet the ever-decreasing space constraints of today's pharmaceutical and bioprocessing systems.

Tank bottom valves in sizes 1 to 2 inches come equipped with ITT's Advantage™ Actuator; 3 and 4-inch Tank Bottom Valves are equipped with our Dia-Flo® Actuator.

The Advantage is a compact, diaphragm-driven actuator designed to fit the limited space available at the bottom of a vessel. The actuator covers and bonnet are made of a lightweight, durable polyethersulphone resin capable of withstanding caustic, chloride, and alcohol wash-downs. Except for the removable switch package, the entire device is autoclavable. In addition, a single Advantage Actuator can be modified to operate in any one of these three modes of closure: normally closed, normally open, or double acting.

The Dia-Flo actuator is a diaphragm-driven pneumatic actuator suitable for pneumatic or hydraulic operation in various pressure ranges. For applications requiring modulation, the unique Dia-Flo **Dualrange**® bonnet offers superior throttling capabilities and rangeability, giving you precise flow control. The Dia-Flo actuator is available with a wide variety of accessories including positioners, handwheel closing devices, adjustable travel stops, position indicators, adjustable opening stops, limit switches, and proximity switches.

ITT: A single-source for all your pharmaceutical and biotechnology process requirements

ITT Fluid Technology Corporation is a worldwide supplier of valves, pumps, heat exchangers, controls, and instruments for use in pharmaceutical and biotechnology processes. We can also supply customized fittings and fabrication for use in your flow loop.

In addition to our broad product line, you'll also find that we have the expertise and problem-solving capability needed to help you with your processing requirements. To learn more, complete and return the card below. Or call us toll-free: (1-800-248-8382) 1-800-2-ITT-FTC

YES, I'd like to know more about how ITT can provide engineered solutions to solve my process problems.

- We're interested in purchasing the ITT Tank Bottom Diaphragm Valve. Please provide more details.
- Have a sales representative call me.
Best time to call is: _____ .
- Please provide more information on these other ITT products:
_____ engineered valves _____ heat exchangers
_____ pumps _____ switches
_____ fabrication and electropolishing

Name _____ Title _____

Company _____ Phone (_____) _____

Address _____

City _____ State _____ Zip _____

Our industry is: _____

Our application is: _____