

DFEB-91

## **ITT DIA-FLO® Diaphragm Valve**

*A performance-proven diaphragm valve designed to handle critical applications and control fugitive emissions in chemical processing applications.*



**ITT Engineered Valves**  
ITT Fluid Technology Corporation



**Now there's a Dia-Flo  
diaphragm valve designed to  
help meet your toughest  
process requirements—while  
reducing fugitive emissions as  
required by the EPA.**

ITT Engineered Valves has been the leading innovator and producer of diaphragm valves for over thirty years. Our products and engineering experience can help you obtain the right valve while reducing fugitive emissions.

Today's chemical processing environment demands a lot from a valve.

Not only must your valves provide positive shut-off...precise flow control...and minimal pressure drop. They must also meet EPA standards for control of fugitive emissions.

Dia-Flo diaphragm valves from ITT Engineered Valves are designed with these needs in mind.

**Now your process can satisfy the  
most stringent EPA standards for  
emissions control.**

The EPA has strict requirements for handling volatile organic compounds. Fugitive emissions for the entire piping system must be less than 500 parts per million. Process lines, valves, and connections must be leak-tight to prevent escape of pollutants. Dia-Flo diaphragm valves help you meet that requirement.





## A multi-turn design prevents accidental spills during routine maintenance.

The Dia-Flo valve's multi-turn design allows for slow, incremental opening of the valve. This makes the Dia-Flo valve the smart choice for vents, drains, and end-of-line service. If the valve weeps after the first turn, this warns the operator that the piping system is not fully drained—preventing accidental episodic release of hazardous, toxic, or dangerous materials.

## The Dia-Flo valve handles emission control and resists corrosion, while still giving you the process control you need.

In addition to the special benefits it offers in harsh chemical environments, the Dia-Flo valve also gives you extraordinary valve performance.

Packless design, precise flow control, positive shut-off, minimal pressures drop. They're all yours in a valve that's well-suited for applications involving corrosion, abrasion, contamination, clogging, gas handling, and emission control.

Available in sizes from 1/4 to 14 inches, Dia-Flo Diaphragm Valves can handle pressures to 200 psi and temperatures to 350°F. A wide range of options enables you to tailor a Dia-Flo valve for your specific process requirements.

## Design your own Dia-Flo Diaphragm Valve 4 options for you to select from

### OPTION #1:

#### Enviro-Shield®

This package of options gives you a valve offering maximum protection against severe corrosive atmospheres.

The Dia-Flo Enviro-Shield valve comes with a sealed bonnet, adjustable travel stop, stem cap, and leak detection port. The body, bonnet, and handwheels are coated with PVDF to protect against exterior corrosion. All other exposed metal parts are fabricated from stainless steel.



We've designed a complete corrosion package called Enviro-Shield® to give our valves the best combination of corrosion resistance and performance. That's just one of the reasons why more chemical companies specify valves made by ITT.

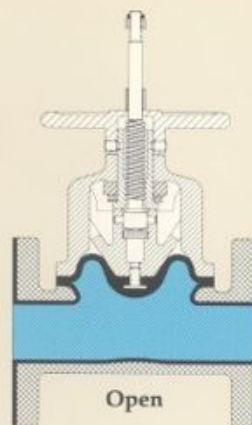
### OPTION #2:

#### Dia-Flo Straightway Diaphragm Valve

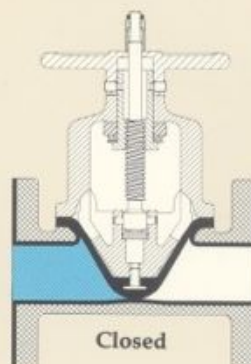
The Straightway model features a no-clog design ideal for handling viscous fluids, abrasives, fibrous slurries, sludges, suspended solids, and other process streams that can plug up an ordinary valve.

In the open position, the Straightway Dia-Flo valve presents a straight, unimpeded path for fluid flow in either direction. The diaphragm retracts into the bonnet, clear of the flow stream. As a result, the Straightway gives you maximum flow capacity—with minimal pressure drop.

In the closed position, the diaphragm seals tight for positive closure—even with gritty or fibrous material present.



When open, the Straightway diaphragm valve offers unobstructed flow and can be rodged through.



And when closed, the valve offers bubble tight shutoff.

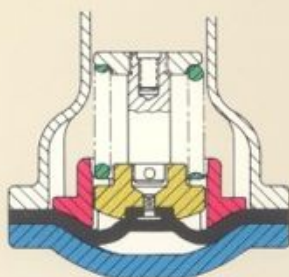


### OPTION #3:

#### Dia-Flo Dualrange® Valves

The Dualrange Control Valve gives you precise throttling over a wide range of flow rates. You can throttle low enough to control small amounts of flow, yet throttle high enough to handle normal process flows at pressures ranging up to 100 psi.

The Dia-Flo Dualrange Control Valve is designed to improve flow control for corrosive services...handle slurries without clogging...and process abrasives without wearing out. When you need greater rangeability than a conventional diaphragm valve can provide, the ITT Dia-Flo Dualrange Control Valve is the answer.

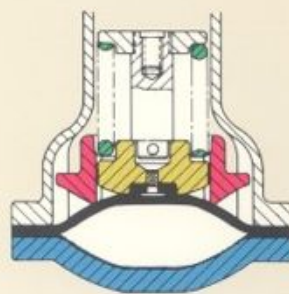


Fine Throttling

Dualrange



Conventional



Full Open



The Dia-Flo Dualrange valve allows throttling across a wide range of flow rates for precise process control

### OPTION #4:

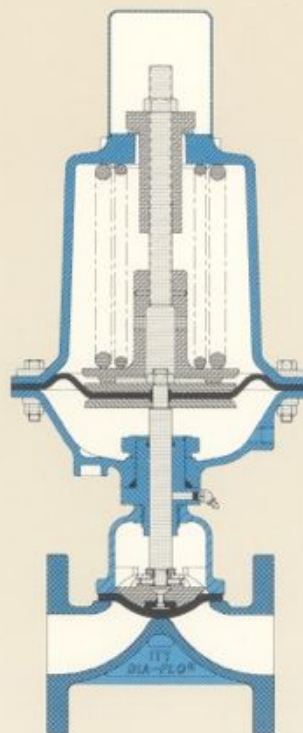
#### Dia-Flo Pneumatic Actuator

When automatic valve operation is desired, your Dia-Flo diaphragm valve can be equipped with a Dia-Flo actuator for either pneumatic or hydraulic control in a wide range of pressures.

The pneumatic actuator can be easily mounted on any Dia-Flo valve already in place. And your choice of seven interchangeable models ensures the most efficient use of available power.

The Dia-Flo actuator is compact and rugged. It fits in small spaces. And the body is fabricated from aluminum or ductile iron for maximum durability.

Moving parts are enclosed and protected from atmospheric conditions to prevent corrosion. Options include a handwheel closing device, positioner, adjustable travel stop, position indicator, adjustable opening stop, limit switches, proximity switches, and more.





## A unique design ensures leak-tight shut-off.

When your Dia-Flo diaphragm valve is closed, a resilient diaphragm is pushed down against the top surface of a weir. The large diaphragm-weir contact area assures a bubble-tight shut-off. Because there's no packing or packing gland, stem and packing leakage problems that can cause fugitive emissions are eliminated.

Bonnet fingers, in conjunction with the compressor, positively support the diaphragm as it moves from open to closed position. An adjustable travel stop, plus a floating tube nut, help achieve tight closure of the diaphragm against the weir, preventing leakage.

The diaphragm is molded to the *exact contour* of the weir in the closed position, further ensuring positive closure. In the unlikely event of diaphragm failure, an O-ring seal on the stem and bushing may be added to provide secondary containment and prevent leakage to the atmosphere.

All ITT valves are seat and seal tested prior to shipment. If a valve leaks—even the slightest bit—it doesn't leave our factory. That means you can rest easy when you install ITT Dia-Flo valves in your critical applications.

## Dia-Flo valves handle the toughest environments in the chemical processing industry.

Here's how we designed the Dia-Flo valve to resist corrosion and harsh environments:

The working parts of the valve—contained in the bonnet—are isolated from the process stream by the diaphragm. So acids, corrosives, slurries, abrasives, and other fluid streams that can damage process equipment won't hurt yours. A clear, protective stem cap controls corrosion in the stem and bushing area to maintain low operating torque.

The valve body, body lining, diaphragm, bonnet, and other components are available in a wide variety of metals, plastics, and elastomers. So we can manufacture a valve to withstand virtually any service you specify.

## Dia-Flo valves have a longer service life.

In your chemical process, continuous operation—without costly down-time—is essential to maintaining production schedules...and profits. That's why Dia-Flo Valves are designed to perform year after year, with minimal maintenance and virtually no down-time.



**Our Dia-Flo Diaphragm Valve product line is unmatched. A broad range of coatings, linings and design features have enabled Dia-Flo to outperform the competition in demanding applications time after time.**

An adjustable travel stop, with visual position indicator, prevents overclosing that can cause wear and tear on the diaphragm. A floating tube nut ensures that the force of closure is distributed evenly over the sealing area of the diaphragm, reducing cold flow and stud pull problems.

The valve can be equipped with a two-piece TFE diaphragm fabricated using our unique Fluorolastic® process. This process removes entrained air from the diaphragm to enhance dimensional stability and extend diaphragm life. The two-piece design eliminates delamination of the TFE which can occur in one-piece configurations.

## Easy to use, easy to maintain.

A bronze bushing reduces turning torque, making it easy for anyone in your plant to open or close the valve.

Because the bonnet assembly is removable, you can simply lift it off for easy in-line maintenance. Leak detection ports make it easy to verify diaphragm integrity at a glance.

The protective stem cap further assures easy, dependable, reliable operation.

## Eliminates accumulation of process fluids and contaminants.

The Dia-Flo valve features a streamlined design without pockets, cavities, or dead space. And the valve is self-draining when installed in a vertical line or at a slight angle above horizontal. This allows drainage of your piping system to the lowest point without restriction by the valve.



## Ten things to look for in your next diaphragm valve:

ADJUSTABLE TRAVEL STOP WITH VISUAL POSITION INDICATOR – an externally adjustable device to provide a metal to metal stop which prevents overclosing the valve and prolongs diaphragm life.

SEALED BONNET – "O" ring sealed around the stem and bushing to provide secondary containment in the unlikely event of diaphragm failure.

BONNET FINGERS/FINGER PLATE – in conjunction with the compressor, the bonnet fingers/finger plate positively support the diaphragm from the closed to open position.

BROAD RANGE OF PLASTIC LININGS – are  $\frac{3}{16}$ " thick minimum to control permeation and enhance durability. Available in PVDF, Tefzel®, Polypropylene and other materials.

BODY MATERIALS – of Stainless Steel, CN7M, Ductile Iron or Cast Iron are available.

CLEAR PROTECTIVE STEM CAP – effectively controls corrosion in the stem and bushing area to maintain ease of operation and assure dependable operation.

BONNET CHOICES – available in S.S., A-20, and corrosion resistant plastic coatings for secondary containment of corrosive fluids. Cast iron is standard.

LEAK DETECTION PORT – V-notch vent plugs are furnished with all sealed bonnets to provide a safe and easy method to verify diaphragm integrity. Alternate methods are available.

WIDE CHOICE OF DIAPHRAGMS – including Fluorlastic® TFE, Viton®, EPDM, Butyl and Hypalon which will handle most emissions services.

LINE-LOK FEATURE – Dia-Flo Diaphragm Valves' feature which secures the plastic lining in weir area prolonging lining life.

## **Dia-Flo® Diaphragm Valve Features and Benefits**

### **Line-Lok®**

Unique feature in plastic lined valves that prevents liner flexing over weir which would lead to liner cracking.

### **Fluorlastic® TFE Diaphragm**

Unique TFE molding process which increases flex life, reduces permeation and improves dimensional stability.

### **Molded Closed Diaphragm**

Diaphragms are molded to the exact contour of the weir for superior shutoff capabilities.

### **Adjustable Travel Stop**

Prevents overclosure of the valve and prolongs diaphragm life. Also the adjustability feature assures that leak-tight shutoff can be maintained throughout the valve's life.

### **Bronze Bushing**

Reduces turning torque and enhances cycle life in "dirty" atmospheres.

### **Sealed Bonnet**

Offers secondary process containment to control fugitive emissions. Supplied with leak detection port as standard.

### **Enviro-Shield®**

Atmospheric corrosion resistant valve package to protect valve against severe atmospheric corrosion.

### **2-Piece TFE Diaphragm**

Eliminates delamination of TFE which is common in 1-piece configurations.

### **Floating Tube Nut**

Prevents point loading of stud on TFE diaphragm which enhances life especially in demanding services.

### **100% Seat & Body Testing**

All valves are seat and seal tested at rated pressure prior to shipment. NO leakage is allowed.

### **Extensive selection of body and diaphragm materials and actuating systems**

Allows optimum selection of materials for service conditions.

## **The Dia-Flo Diaphragm Valve is available in these materials (and many others)**

### **Bonnet:**

Stainless steel, cast iron, alloy 20, and corrosion-resistant plastic coatings for secondary containment or corrosive atmospheres.

### **Diaphragm:**

Fluorolastic TFE, Viton, EPDM, Butyl, Hypalon, Buna, Neoprene.

### **Body:**

Metals: Stainless steel, cast steel, ductile iron, cast iron, bronze, alloy 20, hastelloy, monel, aluminum.

Plastic: PVC, CPVC, PVDF (natural), polypropylene

### **Body Linings:**

Plastic linings are secured to the metal body for greater durability using Line-Lok process. Line-Lok prevents liner flexing over the weir, eliminating cracking of liner.

Plastic linings: PVDF, PVC, Saran, Tefzel®, polypropylene, and other materials.

Rubber linings: neoprene, soft rubber, hard rubber, hypalon, butyl, others.



## ...And you thought we just made valves?

At ITT Fluid Technology Corporation, valves are just part of our broad range of flow loop products. Today we are a world leader in the design and production of pumps, heat exchangers, as well as instruments and controls to handle just about any fluid application you can think of.

With more than 9000 employees serving industries in over 100 countries, we can help you with products and engineering expertise to solve your flow loop needs. For additional information or help on your next project please call or write any of our offices listed below. We look forward to working with you.

For more information write to:

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Phone 717-291-1901 • FAX 717-291-2025 • Telex 84-8420

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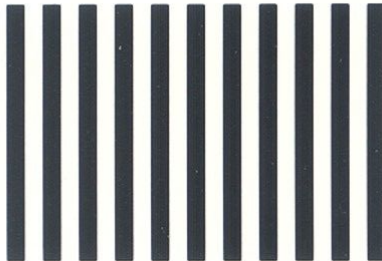
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## ITT: A single-source for all your chemical processing flow loop requirements

ITT Fluid Technology Corporation is a worldwide supplier of valves, pumps, heat exchangers, controls, switches, and instruments for use in the chemical processing industry.

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.

Or call us toll-free: 1-800-2-ITT-FTC (1-800-248-8382).

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

☐ We're interested in the ITT Dia-Flo Valve. Please provide more details including your "Dia-Flo Diaphragm Valves Service and Engineering Catalog" (bulletin DV-91)

☐ Have a sales representative call me. Best time to call is: \_\_\_\_\_

☐ Please provide more information on these other ITT products:

☐ Pure-Flo® diaphragm valves

☐ Fabri® knife gate valves

☐ Pumps

☐ Cam-Tite® ball valves

☐ Tork-Pak® 1/4 turn diaphragm actuator

☐ Instruments & Controls

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☐ Heat exchangers

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Our application is: \_\_\_\_\_