



ITT

Pure-Flo®

# General Engineering

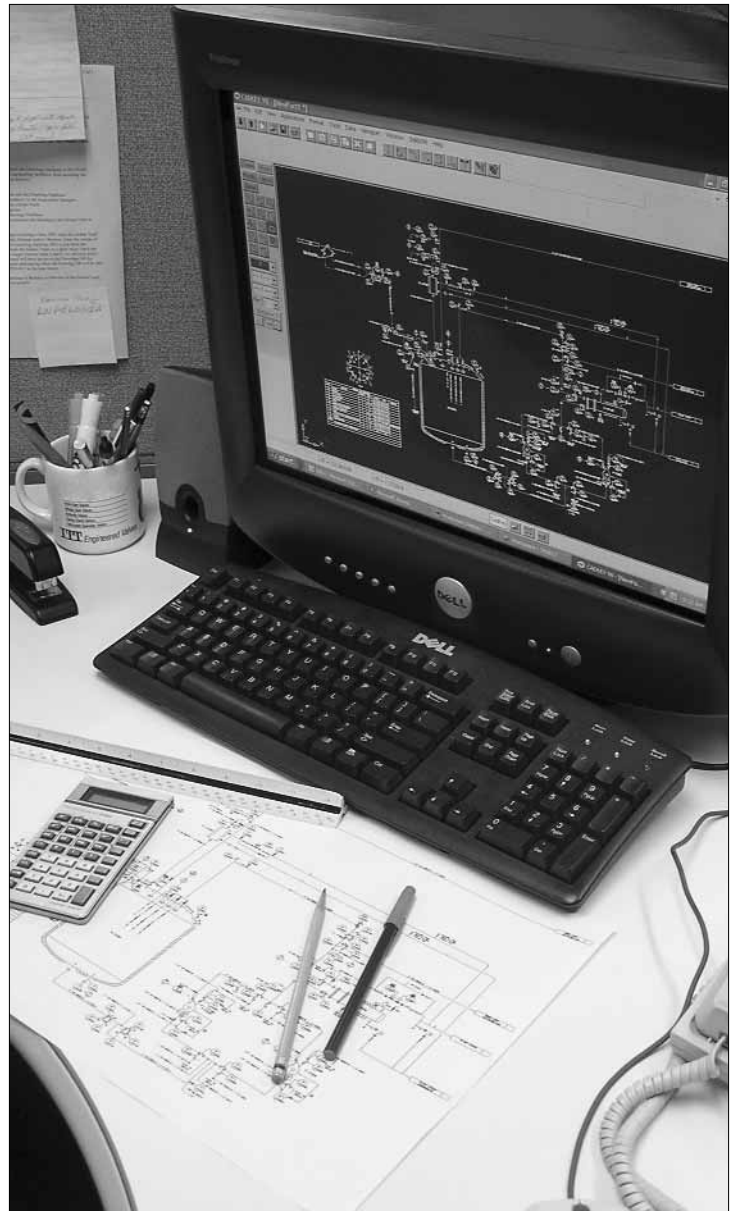


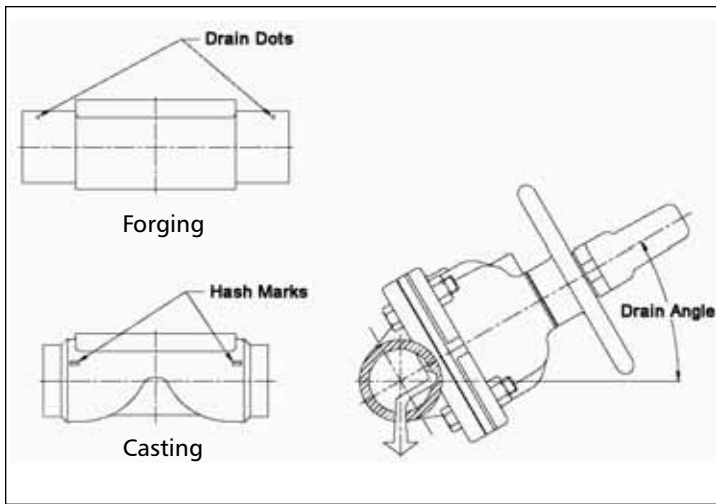
*Engineered for life*

[www.ittpureflo.com](http://www.ittpureflo.com)

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Drain Angles							
Valve Size		Forging	Forging			Investment Casting	
Inch	DN	ANSI	ISO	DIN	ANSI	ISO	
1/4, 3/8, 1/2 <sup>1</sup>	6, 10, 15 <sup>1</sup>	30°/20° <sup>2</sup>	20°	20°	N/A	N/A	
0.50	15	30°	13°	16°	30°	17°	
0.75	20	30°	21°	25°	30°	18°	
1.00	25	30°	22°	26°	31°	20°	
1.50	40	28°	17°	22°	30°	20°	
2.00	50	23°	16°	19°	25°	19°	
2.50	65 <sup>5</sup>	26° <sup>3</sup>	23°	23°	19°	N/A	
3.00	80 <sup>5</sup>	20°	14°	18°	25°	N/A	
4.00 <sup>4</sup>	100 <sup>5</sup>	16°	11°	14°	20°	N/A	
6.00	150	N/A	N/A	N/A	20°	N/A	

<sup>1</sup> Bio-Tek sizes.

<sup>2</sup> 20° is drain angle for the Bio-Tek butt-weld bodies with 1" (25.4 mm) cutbacks. 30° is drain angle for Bio-Tek TC bodies. Consult engineering drawings for drain angles on Bio-Tek fabrications.

<sup>3</sup> 3" forge body with 2 1/2" end connection.

<sup>4</sup> 4" ANSI body is wrought/forgings to be available 8/04.

<sup>5</sup> DN 65, 80, 100 bodies to DIN/ISO dimensions are wrought.

Note: As a rule of thumb drain angle tolerances of +/- 2° will assure optimal drainability. Consult Pure-Flo product engineering for specific drain angle tolerances.

## Valve Stroke

Valve Size	Approx. Stroke
Bio-Tek	0.16"
0.50"	0.25"
DN 15	6.3 mm
0.75"	0.38"
DN 20	9.6 mm
1.00"	0.50"
DN 25	12.7 mm
1.50"	0.81"
DN 40	20.6 mm
2.00"	1.12"
DN 50	28.4 mm
3.00"	1.62"
DN 80	41.3 mm
4.00"	2.12"
DN 100	53.8 mm

## Installation

### Position of Drainability

Pure-Flo diaphragm valves may be installed in vertical or horizontal lines as required. To optimize drainability in a horizontal line, hash marks are provided on the casting and drain dots on the forging to orient the valve at the proper angle during installation. This feature helps assure that the valve is positioned to optimize drainability. One hash mark must be in a plane cutting the vertical centerline of the pipe.

The slope of process piping must be designed to provide proper pitch in order to optimize drainability. Drainability in a process system is ultimately the responsibility of the system designer and/or end user.

### Weld Installation

Bio-Tek Valves, 1/4"-1/2" (DN 8-15) and ISO End valves have minimum 1" (25 mm) cutbacks\* and generally do not require tube extensions for standard TIG orbital welding equipment.

Pure-Flo valves, 1/2"-6" (DN 15-150) have ASME BPE fitting compatible outbacks and generally can be welded without disassembly using most standard TIG orbital welding equipment.\*

As an added safety precaution, a 350°F (176°C) tempilstick should be placed on the body bonnet flange adjacent to the weld if excessive heat transfer is expected. The bonnet area should be kept at or below 350°F (176°C).<sup>1</sup>

<sup>1</sup> For Thermoplastic PAS and 950 Bonnets, the bonnet area should not exceed 300°F (149°C).

# C<sub>v</sub>/K<sub>v</sub> Data for Standard 2 Way Valve

Valve Size	C <sub>v</sub> /K <sub>v</sub> Ratings for Stainless Steel Pure-Flo Diaphragm Valves															
Inch/DN	0.50"	15	0.75"	20	1.00"	25	1.50"	40	2.00"	50	2.5"	65	3.00"	80	4.00"	100*
% Open	C <sub>v</sub>	K <sub>v</sub>	C <sub>v</sub>	K <sub>v</sub>	C <sub>v</sub>	K <sub>v</sub>	C <sub>v</sub>	K <sub>v</sub>	C <sub>v</sub>	K <sub>v</sub>	C <sub>v</sub>	K <sub>v</sub>	C <sub>v</sub>	K <sub>v</sub>	C <sub>v</sub>	K <sub>v</sub>
10	0.2	0.05	2.0	0.48	3.0	0.72	9	2.16	12	2.88	20	4.08	30	7.20	32	7.68
20	0.4	0.10	3.1	0.74	6.0	1.44	16	3.84	26	6.24	37	8.88	55	13.20	70	16.80
30	0.7	0.17	4.5	1.08	8.0	1.92	24	5.76	39	9.36	52	12.48	85	20.40	130	31.20
40	1.2	0.29	5.5	1.32	10.0	2.40	30	7.20	49	11.76	65	15.60	115	27.60	200	48.00
50	1.5	0.36	6.0	1.44	13.0	3.12	36	8.64	56	13.44	75	18.00	135	32.40	265	63.60
60	2.0	0.48	6.4	1.54	14.0	3.36	40	9.60	62	14.88	83	19.92	155	37.20	290	69.60
70	2.4	0.58	6.8	1.63	16.0	3.84	44	10.56	66	15.84	89	21.36	165	39.60	320	76.80
80	2.8	0.67	7.0	1.68	17.0	4.08	47	11.28	69	16.56	94	22.56	170	40.80	360	86.40
90	3.0	0.72	7.2	1.73	18.0	4.32	48	11.52	70	16.80	95	22.80	175	42.00	385	92.40
100	3.5	0.84	7.5	1.80	19.0	4.46	48	11.52	70	16.80	95	22.80	180	43.20	400	96.00

Note: C<sub>v</sub> Values expressed in GPM per one psi pressure drop. K<sub>v</sub> Values expressed in liters/second per one bar pressure drop.

See chart below for Bio-Tek C<sub>v</sub> ratings.

\*C<sub>v</sub> (K<sub>v</sub>) for 4" (DN 100) valve full open with Advantage Actuator is 340 (86,36).

Bio-Tek Cv/Kv Data			
Size	DN	Cv	Kv
0.25	8	.89	0.21
0.375	10	1.92	0.46
0.50	15	3.03	0.73

Zerostatic Block Body T Flow Reduction						
Estimate of Reduction of Cv (Standard 2 Way Valve Baseline) (% Reduction)						
Valve Size	BT 0.5"	0.5"	0.75"	1"	1.5"	2"
Run Size	DN15	DN15	DN 20	DN 25	DN 40	DN 50
0.5" (DN 15)	15.2	18.0	NA	NA	NA	NA
0.75" (DN 20)	14.5	17.2	16.2	NA	NA	NA
1" (DN 25)	13.8	16.3	15.4	23.5	NA	NA
1.5" (DN 40)	13.1	15.5	14.6	22.3	25.5	NA
2" (DN 50)	12.4	14.6	13.8	21.0	24.1	19.0
2.5" (DN 65)	12.0	14.1	13.4	20.3	23.3	18.4
3" (DN 80)	12.0	14.1	13.4	20.3	23.3	18.4
4" (DN 100)	11.6	13.7	12.9	19.7	22.6	17.8

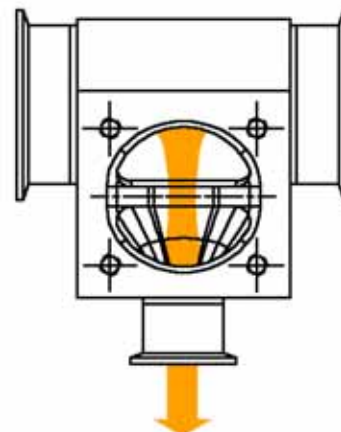
Notes:

Consider entrance loss (at valve inlet) is similar to flow thru branch of standard tee.

## Example

1.5" (DN40) Zero Static Tee with 3" (DN80) Run

$$\begin{aligned}
 \text{Approximate 100\% open } C_v &= \\
 48 - (23.3\%) (48) &= 36.8 C_v \\
 &= 8.84 K_v
 \end{aligned}$$



Reduced Flow vs.  
Standard 2 Way Valve

# Validation and Qualification Documentation

Pure-Flo can provide the following documentation to aid the validation and qualification process upon request.

## Process Validation Documentation

- Certified Mill Test Reports
- Interior Surface Characterization
- Certification of compliance to specifications
- Certification of compliance to CFR Title #21 section 177
- Certification to USP XXVIII Class VI compliance
- Quality assurance manual
- ISO 9001 certification
- Certification of testing to MSS SP-88

## Qualification Assistance

To assist you in compliance to IQs, OQs and PQs, a preventative maintenance program can be established for the changeout of diaphragms based on your passivation, cleaning, sterilization and process protocols.

Test Certificate 2005/3004047  
Date 30/06/2005  
Page 1

INDUSTRIAL INC. ITT ENGINEERED VALVES  
550 WEST RD. 33 CENTERVILLE ROAD  
17603 LANCASTER, PA 17603 LANCASTER, PA

Customer Order: 869-020C | Delivery Note: 2005/003/0031635 | Invoice: 0002889 | Delivery Qty: 2,500.00

Code Article: 819002143106 | Piece Description: BODY STD TFM 113208 P/N 42409

Material: TFM 304L 1.4308 | Heat Number: P318289/1.4438 ADM ALB+DTM 17440-A ND BASEL STD BMS

Heat Number: 236913 | Trade Mark: FORGIN CODE: FR

**CHEMICAL ANALYSIS**

Element	AS	C	Cr	Co	Mo	Ni	P	S	Si	Fe	Al	Ca	Mg	Other
Max	0.018	0.001	18.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Min	0.001	0.001	17.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

**MECHANICAL PROPERTIES**

Property	Unit	Value	Min	Max
Yield Strength	MPa	215,000	207,000	221,000
Tensile Strength	MPa	578,000	578,000	578,000
Elongation	%	40,000	40,000	40,000
Reduction of Area	%	50,000	50,000	50,000
Impact Energy	J	20,000	20,000	20,000
Hardness	HV	20,000	20,000	20,000

**Heat Treatment:**  
SOLUTION ANNEAL:  
ALL PIECES WERE HEATED TO 1940 F.  
HELD AT THIS TEMPERATURE FOR 1 HOUR FOR EACH 1" OF THICKNESS AND QUENCHED IN WATER.

APPROVED BY: [Signature]

NOV 30 2005

REMARKS:  
DELTA PERMITS CONFORM = 0.24  
PERMITS AS TO BMS = 5.96  
MATERIAL PRODUCED ACCORDING TO ITT SPEC. ESA-0143 AND ESA-0055 (FOR VALVES)  
3.1B CERTIFICATE ACCORDING TO EN 10204

1 - The results of analyses are a true and correct copy of the analyses issued by the manufacturer of the test material.  
2 - The results of analyses are a true and correct copy of the analyses issued by the manufacturer of the test material.  
3 - For material requirements, please refer to the relevant standards and specifications and contact us for any further information or assistance.

ITT Industries  
Engineered Process Solutions Group  
30 Centerville Road  
P.O. Box 3308  
Lancaster, PA 17603-0308  
Phone: 717-398-1111  
Fax: 717-398-0308

**CERTIFICATE OF COMPLIANCE**  
Date Issued: October 24, 2005

Customer: ABC CORP | Quantity: 100

Customer Order Number: 1000000  
ITT Order Number: 70700  
ITT Line Number: 050  
ITT Item Number: 42175

**Item Number (Description):** IN KIT DRAGING CUSH BT TM17  
FR PFC

**Additional Information:**

- 34851: GUPHROAM BT MC TFM GR TM | Quantity: 100  
Care Data: 350  
Grade TM (modified PTFE) diaphragms have a LIMITED SHELF LIFE of 14 years.  
Grade TM (modified PTFE) diaphragms comply with the FDA Code of Federal Regulations Title 21 Section 177.2003 and have been tested in accordance with and successfully passed the U.S. Pharmacopoeia XXVIII Class VI Biological Reactivity test, Section 87 and Section 88. The maximum temperature rating for Grade TM (modified PTFE) diaphragms is 350° F (177° C).
- 43026: SACKING CUSH BT FDA 17 GR EPDM 17 | Quantity: 100  
Care Data: 350  
Grade 17 (EPDM) backing cushions have a LIMITED SHELF LIFE of 8 years.  
Grade 17 (EPDM) backing cushions comply with the FDA Code of Federal Regulations Title 21 Section 177.2003 and have been tested in accordance with and successfully passed the U.S. Pharmacopoeia XXVIII Class VI Biological Reactivity test, Section 87 and Section 88.

**Comments:**

We certify that the components on the above referenced purchase order meet the requirements of the purchase order, applicable drawings, and our ISO 9001:2000 manufacturing, testing, and inspection procedures to ensure an acceptable quality level applicable to the product.

Richard E. Bird  
Richard E. Bird  
Manager, Quality Assurance (for representative)  
(This certificate was created electronically and is valid without signature.)

This certificate is correct at the time of issue and no changes shall be made to it without the authorization of the issuing ITT Manager. If any unauthorised changes are made, the certificate is void.

CERTIFICATE © (2005)



# Compliance

## 100% Interior Surface Finish Inspection:

- 100% visual inspection
- Statistical profilometer checks

## 100% Visual Weld Inspection:

- 100% visual inspection of fabrication welds
- Welds by ASME Section IX certified welders.
- 100% pressure test of fabricated welds

## Leak and Shell Test:

- Valves are statistically leak and shell tested per MSS SP-88
- 100% inspection is available upon request

## 100% Final Assembly Inspection:

- All valve assemblies are 100% visually inspected prior to shipment

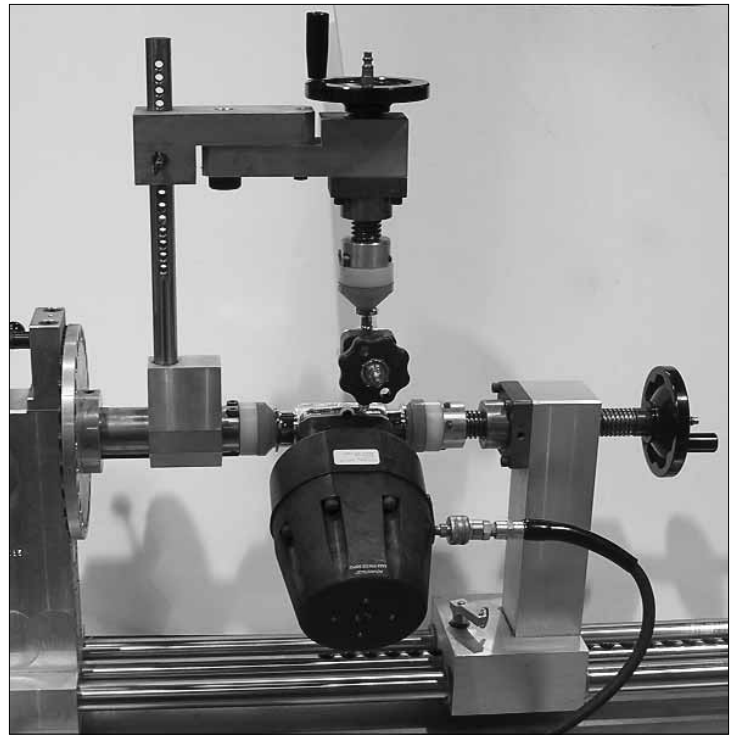
## Certified Mill Tests Reports:

- All valve bodies contain a heat number traceable to a Certified Mill Test Report (CMTR)
- CMTRs for weld wire and tubing used in valve fabrications.

## Non-Destructive Testing:

(available upon request)

- Alloy Identity Testing identifies the exact chemical composition of material
- Liquid Penetration Inspection surface inspection capable of identifying subsurface porosity and weld defects
- Radiographic Inspection volumetric test capable of locating voids or inclusions within material



Leak and Shell Test

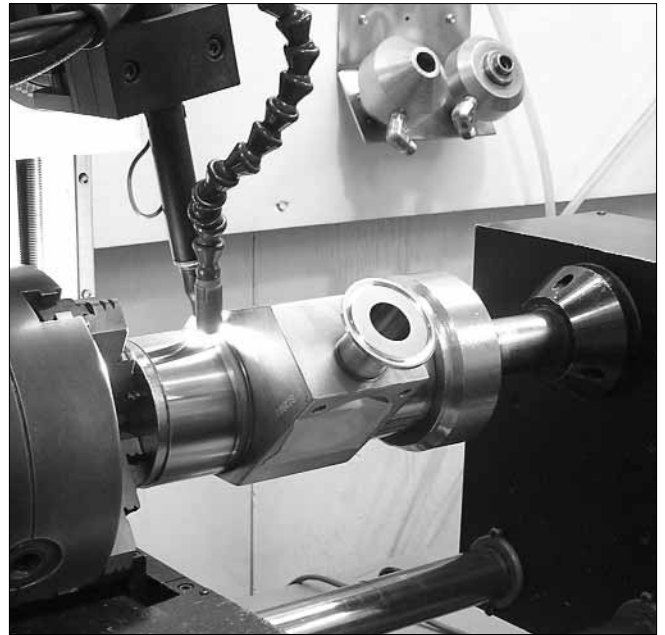


Alloy Identity Testing

# Pure-Flo Compliance Activities



Visual Inspection



Welding



Profilometer Check for Valve Surface Finish

# Approvals

Pure-Flo diaphragm valves are available to meet a variety of industry standards.



Service

Selection from the following configurations is necessary to assure 3A conformance:

## Body:

- 316L stainless steel investment casting or forging
- Sizes 1/2"–6" (DN15–150).

## Interior Polishes:

- 35  $\mu\text{in}$  (,89  $\mu\text{m}$ ) - 11  $\mu\text{in}$  (,28  $\mu\text{m}$ )
- Electropolish exterior (optional)

## End Connections:

- Quick disconnect end connections
- Buttweld (16 gauge tubing)

## Diaphragms:

- Class I Applications  
TM17 PTFE
- Class III Applications  
Grade P Buna N  
Grade17 EPDM

## Bonnet/Actuator:

- Stainless steel bonnets
- Cast iron bonnets (PVDF coated)
- Ductile iron bonnets (PVDF coated)
- Finishes per ACI surface indicator scale SIS-3
- "W4" Weep holes (4) 3/32" (2,4 mm) dia. holes 90° apart
- Stainless bolts or studs food grade lubricants

## Bonnet internals:

- Stainless steel bushing
- Stainless steel stem
- Stainless steel fingerplate (where applicable)
- PVDF coated compressor



970 Stainless Steel Manual Bonnet



Stainless Steel Bonnet (31)





Stainless Steel Valve Bodies



Grade TM17 PTFE and Grade 17 EPDM Diaphragms

### **USDA Accepted**

The Pure-Flo diaphragm valve is accepted by the USDA for use in federally inspected meat and poultry plants.

Selection from the following configurations is necessary to assure USDA acceptance.

#### **Body:**

- 316L casting
- 316L forging
- Sizes: 1/2"–6" (DN15–150)

#### **Interior Polishes:**

- 35  $\mu\text{in}$  (,89  $\mu\text{m}$ ) - 11  $\mu\text{in}$  (,28  $\mu\text{m}$ )
- Electropolish exterior (optional)

#### **End Connections:**

- Tri-Clover Tri-Clamp
- Cherry Burrell "S", "Q", and "I" line, male sanitary thread

#### **Diaphragms:**

- Black Butyl
- Buna N
- EPDM
- PTFE

#### **Bonnets:**

- White epoxy
- PVDF coatings
- Stainless steel

# ASME Bioprocessing Equipment Standard (ASME BPE)

## Scope:

The BPE standard was created to develop requirements for the design, materials, construction, inspection, and testing of vessels, piping, and related accessories such as pumps, valves, and fittings for use in the biopharmaceutical industry.

Pure-Flo valves are manufactured in accordance with applicable portions of the ASME BPE.

The BPE standard applies to all parts of equipment and piping that contact:

- Finished product
- Raw materials
- Product intermediates

This includes systems such as:

- Water-for-injection (WFI)
- Clean steam
- Purified water
- Ultrafiltration
- Intermediate product storage

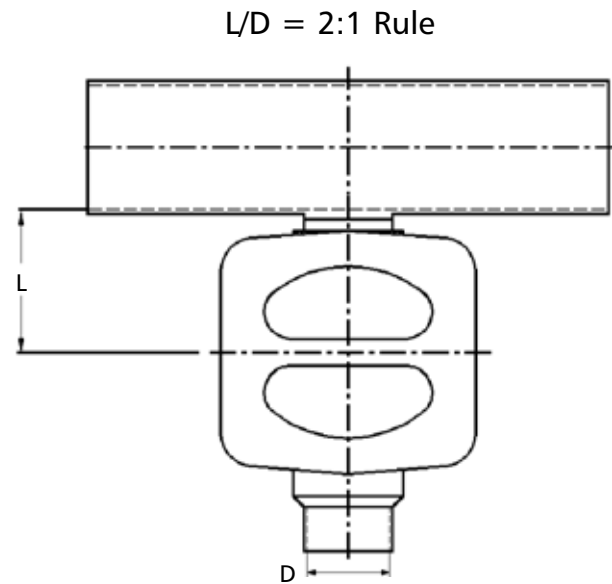
**The BPE is divided into sections or "Parts"**

## Part SD - Design for Sterility & Cleanability

Outlines accepted practices for the fabrication of bioprocessing equipment that is both Cleanable and Sterilizable.

- Cleanability
- Sterility
- Dead Legs L/D = 2:1 target
- Drainability
- Preferred, recommended, and not recommended designs

## Part SD - Design for Sterility & Cleanability



## ASME Table DT-3 Chemical Composition for Automatic Weld Ends, %

Element	% (316L)
Carbon, max	0.035
Chromium	16.00 - 18.00
Manganese, max	2.00
Molybdenum	2.00 - 3.00
Nickel	10.00 - 15.00
Phosphorus, max	0.045
Silicon, max	1.00
Sulfur	0.005 - 0.017

## ASME Table DT-4 Tangent Lengths

Nominal OD Tube size, in.	Tangent, T	
	in.	mm
1/4	1.50	38
3/8	1.50	38
1/2	1.50	38
3/4	1.50	38
1	1.50	38
1 1/2	1.50	38
2	1.50	38
2 1/2	1.50	38
3	1.75	44
4	2.00	50
6	2.50	63

## ASME Table SF-6 R<sub>a</sub> Readings for Valves

Mechanically Polished or any other finishing method that meets the R<sub>a</sub> Max

Surface Designation	R <sub>a</sub> , Max	
	μ-in.	μm
SFV1	20	0.5
SFV2	25	0.625
SFV3	30	0.75

Mechanically Polished and Electropolished

Surface Designation	R <sub>a</sub> , Max	
	μ-in.	μm
SFV4	15	0.375
SFV5	20	0.5
SFV6	25	0.625

General Notes:

1. All R<sub>a</sub> readings are taken across the lay, wherever possible.
2. No single R<sub>a</sub> reading shall exceed the R<sub>a</sub> max. value in this table.
3. Other R<sub>a</sub> readings are available if agreed upon between owner/user and manufacturer, not to exceed values in this table.

### Part DT - Dimensions and Tolerances

Establishes acceptable dimensions, tolerances, and markings. This section is not intended to cover valves.

### Part DT - V - Dimensions and Tolerances - Valves

Addresses valve related criteria including:

- Dimensions
- Tolerances
- Reduced sulfur content 316L specification
- Weld end tangent lengths
- Product marking information

### Part MJ - Material Joining

Establishes requirements for the joining of bioprocessing equipment.

Weld beads acceptance criteria for:

- Misalignment
- OD / ID concavity
- Lack of penetration
- Convexity
- Width variation
- Meander

### Part SF - Surface Finish

Specification of interior surface finishes for vessels, distribution systems, and other components having product contact.

- R<sub>a</sub> measurements (profilometer)
- Mechanical polish and electropolish requirements
- Visual acceptance criteria

### Part SG - Seals

Establishes requirements for various mechanical seals and gaskets including valve diaphragms.

- Biocompatibility - compliance to USP Class VI
- Leakage rates
- Process compatibility

# European Union Directives

European Union Directives apply to categories of equipment. CE Marking is applied to products where applicable.

## Relevant Directives for Valves

- Pressure Equipment Directive (PED) 97/23/EC
- Electromagnetic Compatibility Directive (EMC) 89/336/EEC
- Low-Voltage Directive (LVD) 73/23/EEC
- Safety of Machinery Directive 98/37/EC
- Equipment for Explosive Atmospheres (ATEX) 94/9/EC

## PED - Pressure Equipment Directive 97/23/EC

- The nominal size (DN)
- Maximum allowable pressure
- State of the intended fluid contents (gas or liquid)
- The classification of the intended fluid contents (Group 1 or 2 as defined in Council Directive 67/548/EEC)
- Fluid categories (Liquid or Gas)
  - Group 1
    - Explosive
    - Extremely flammable
    - Highly flammable
    - Flammable (where max allowable temp is above flashpoint)
  - Group 2
    - Very toxic
    - Toxic
    - Oxidizing
- All other fluids including steam

## PED Compliance Categories

- Sound Engineering Practice "SEP"
  - Valves  $\leq 1''$  (DN25) by definition
  - "CE" can not be marked
- Category I
  - Valves  $> 1''$ (DN25) and  $< 6''$ (DN150)
  - "CE" is marked



## PED Category by Valve Size

Valve Size		PN Rating Stainless Steel Bonnet	PN Rating PAS Bonnet	Suitable Fluid Categories			
DN	Inch			Liquid Group 2	Liquid Group 1	Gas Group 2	Gas Group 1
6*	1/4	10.3	10.3	SEP	SEP	SEP	SEP
10*	3/8	10.3	10.3	SEP	SEP	SEP	SEP
15*	1/2	10.3	10.3	SEP	SEP	SEP	SEP
20	3/4	13.8	10.3	SEP	SEP	SEP	SEP
25	1	13.8	10.3	SEP	SEP	SEP	SEP
40	1 1/2	12.1	10.3	I	I	I	I
50	2	12.1	10.3	I	I	I	I
65	2 1/2	10**	10**	I	I	I	I
80	3	10**	10**	I	I	I	I
100	4	10**	10**	I	I	I	I
150	6	8.6	N/A	I	I	I	II

\* Biotek

\*\* Derated to 145 psi / 10 bar from standard product

Requires Technical File & Notified Body (Optional upon request/agreement)



Engineered Process Solutions Group  
33 Centerville Road  
Lancaster, PA 17603 USA

**Declaration of Incorporation  
Machinery Directive 98/37/EC**

Authorised Representative within the  
European Union

ITT Pure-Flo® (UK) Ltd.  
Richard Street  
Kirkham,  
Lancashire  
England  
PR4 2HU  
Tel: +44 (0)1772-682696

Manufacturing Site

ITT Pure-Flo® (UK) Ltd.  
Richard Street  
Kirkham,  
Lancashire  
England  
PR4 2HU  
Tel: +44 (0)1772-682696

**Description of the machinery or parts:**

Manufacturer's Name	ITT Industries – Engineered Valves
Valve Type	Diaphragm valve
Model	Pure-Flo
End connections	All
Materials of Construction	Body – A182 F316L /SA479 316L/DIN 17440 1.4435 Topworks – Actuated

*The machinery (valve or valve assembly) to which this Declaration of Incorporation relates must not be put in service until the relevant machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 98/37/EC.*

Authorised representative:

M. Steele  
Managing Director

Date: 30<sup>th</sup> June 2003



## European Union Directives (cont.)

### EMC - Electromagnetic Compatibility Directive 89/336/EEC

The EMC Directive covers any apparatus liable to cause electromagnetic disturbance or can be affected by such disturbance.

Included Apparatus:

- Solenoid valves
- Proximity switches
- Electro Pnuematic positioners
- Electro Pnuematic transducers

Excluded Apparatus:

- Limit switches
- "CE" Marked

### LVD - Low Voltage Directive 73/23/EEC


- Electrical equipment rated between 50 - 1000 VAC, 75-1500 VDC
- EC Declaration of Conformity required
- "CE" marked

### Safety of Machinery Directive 98/37/EC

- An assembly of linked parts or components, at least one of which that moves
- Actuated valves are considered components and therefore require a Declaration of Incorporation
- Manual valves are excluded from this directive

## ATEX Directive 94/9/EC

- Institutes uniform controls on equipment intended for use in potentially explosive atmospheres (PEAs) within the EU and European Economic Area (EEA)
- Compliance mandatory on July 1, 2003 - All equipment intended for use in potentially explosive atmospheres, defined as machines, apparatus, fixed or mobile devices, control components and instrumentation which, separately or jointly, are capable of causing an explosion through their own potential sources of ignition.
- Facility owners must classify potentially explosive atmospheres into Zones
- Products must be classified into Equipment Groups and Categories
- Pure-Flo valves are Equipment Group II products
  - Zone 0 environments require Category 1 hardware
  - Zone 1 environments require Category 1 or 2 hardware
  - Zone 2 environments require Category 1, 2, or 3 hardware
- A facility must specify whether the hazard present is due to gas or dust. The ATEX Directive treats these hazards differently and outlines different methods of protection
- An equipment manufacturer must provide
  - ambient temperature range
  - maximum surface temperature
- All products must be assessed as a system. The compliance of individual components is not sufficient justification for deeming the assembly as ATEX approved.
- All ATEX approved products must bear a CE mark
- A Declaration of Conformity and Instructions for Safe Use are supplied as required
- Manufacturers and Users are responsible for compliance



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Engineered Process Solutions Group  
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**Declaration of Conformity  
94/9/EC (ATEX)**

Authorized Representative within the European Union	Manufacturing Site
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We hereby certify that the products listed below satisfy the requirements set forth in the Directives of the Committee for the Harmonization of Legal Regulations of Member States concerning *Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres* (ATEX 94/9/EC).



**Advantage® Actuator**  
Models: A103, A105, A108, A116, A203, A204, A205, A206, A208, A209, A216, A217, A303, A305, A308, A316, A133, A233, A234, A333

The following standard was consulted with respect to the compliance with ATEX 94/9/EC:


EN13463-1, April 2002    Non-electrical equipment for potentially explosive atmospheres

The marking of the equipment listed above shall include the following:

Consult the *Instructions for Safe Use* for further information on using this equipment in potentially explosive environments.

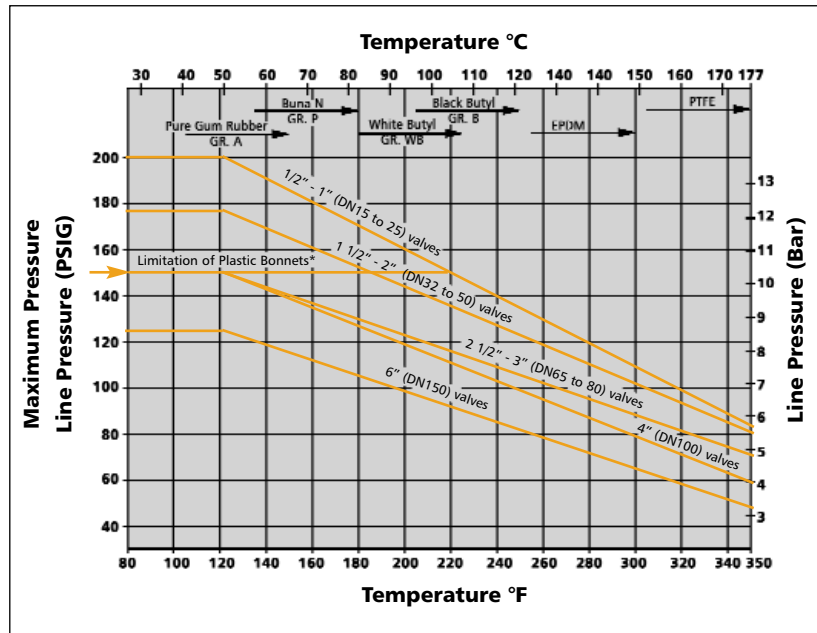
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Authorized representative:

  
M. Steele  
Managing Director

Date: 14<sup>th</sup> August 2003

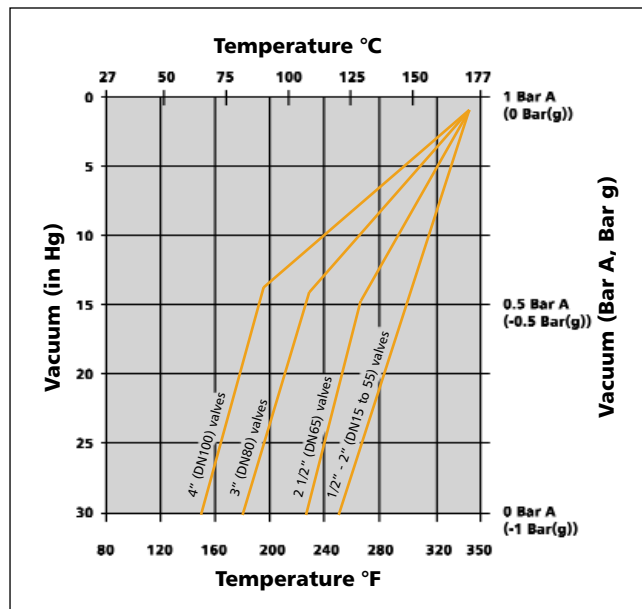
# Pressure/Temperature Recommendations



\* This line shows the limitation of plastic bonnets including 950, 963, and the Advantage Actuators.

Note: Elastomer diaphragms may be used in vacuum service within above temperature recommendations. For services exceeding charted pressure/temperature recommendations, consult factory. The chart does not pertain to steam or corrosive services. Consult ITT DV-01 Technical Manual and Service Guide for specific recommendations.

## PTFE Diaphragms for Vacuum Service



Notes:

1. Service conditions falling to the right of these lines will require bonnet evacuation.
2. PTFE-Diaphragms, 6" (DN 150) size and larger, will not withstand full vacuum at any temperature unless bonnets are evacuated.
3. With evacuated bonnets any size PTFE-Diaphragms can be used up to 350°F (176°C).
4. See page 8 "Diaphragms" brochure for Elastomer Diaphragm Service

For more information, please contact:

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