Pneumatically Actuated Dosing Valve

Type 604/605

General

- **Size**: ½"
- **Material**: PVC, CPVC, PROGEF® Standard PP, SYGEF® Standard PVDF
- **Diaphragm:** EPDM, FPM, PTFE/EPDM, PTFE/FPM
- **Actuator Housing**: Glass-filled PP
- **End Connection**: Solvent cement socket, threaded, flanged, fusion spigot union, fusion socket union, fusion spigot
- **Action**: FC, FO, DA
- **Top Works**: Threaded bonnet connection to valve body
- **Mounting:** Stainless steel threaded inserts

Key Certifications

- **FDA CFR 21 177.1520**: PP and PVDF
- **FDA CFR 21 177.2600**: EPDM and FPM
- **FDA CFR 21 177.1550**: PTFE
- **USP 25 Class VI (physiological non-toxic)**: PP and PVDF

Optional Features

- **Pilot Valve**: 24VAC/DC, 110VAC, 230VAC
- **End Connection**: Alternatives available upon request
- **Face Seals**: Alternatives available upon request
- **Cleaned**: Silicone free/oil free

Sample Specification

The Type 604/605 Valves shall be available in the fail-safe to close, fail-safe to open and double acting configurations. The actuator shall be fully molded glass-filled polypropylene and integrated to the valve body. The pilot solenoid connection shall be ¼" threaded BSP. The bonnet to body connection shall be threaded. The diaphragm material shall be indicated by a color specific insert. Diaphragms of PTFE material shall have an elastomeric backing. The stroke shall be indicated by a optical indicator. A diaphragm leak detection indicator shall be integrated. ANSI flanged versions shall meet ANSI B16.5 150lb standards. All valves shall be tested in accordance to ISO9393 and designed to ISO16136 standards. All valves shall be man-ufactured under ISO9001 for Quality and ISO14001 for Environmental Management. Following assembly, every valve shall be tested and certified bubble tight exceeding Class VI standards. PVC valves shall meet ASTM D1784 cell classification 12454 standards. CPVC valves shall meet ASTM D1784 cell classification 23447-B standards. PP valves shall meet ASTM D5847-14 cell classification PP0510B66851 standards. PVDF valves shall be type 1, grade 2 according to ASTM D3222 standards. Valves of all materials shall be RoHS compliant.

Pressure Rating

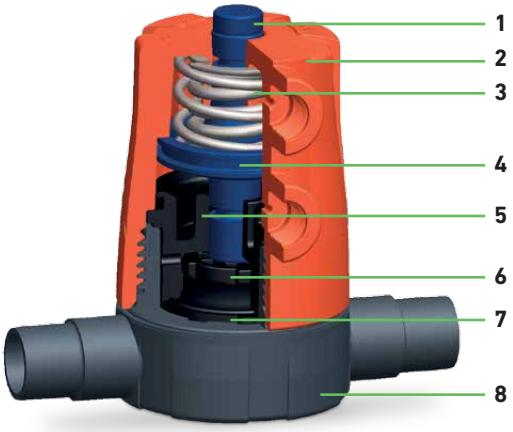
Type 604/605: The combined upstream and downstream process line pressures shall not exceed 90psi when the valve is closed. The process line pressure shall not exceed 90psi when the valve is open.

Definition of Valve Type

Type 604: Union

Type 605: Spigot

Components



Components

Part	Description	Material
1	Position Indicator	Glass-filled PP
2	Bonnet	Glass-filled PP
3	Spring	Deltatone coated steel
4	Piston/Pressure Plate	Glass-filled PP
5	Inner Body	Glass-filled PP
6	Compressor	Glass-filled PPS
7	Diaphragm	EPDM, FPM, PTFE
8	Body	PVC, CPVC, PP, PVDF

Key Design Features

The Type 604/605 Dosing Valve utilizes several design features that are beneficial in chemical process applications. A commonly used diaphragm material in these applications is PTFE. All GF PTFE diaphragms are installed with a non-bonded elastomeric backing, either EPDM or FPM. The FPM backing is impregnated with approximately 15% PTFE. These diaphragms are available with all Type 604/605 Dosing Valve body materials. The backing material completely covers the PTFE diaphragm with the exception of the diaphragm pin.

One concern with diaphragm valves in chemical process applications is permeation. The Type 604/605 diaphragm is designed to protect against damage commonly caused by permeation. The FPM/PTFE backing provides a chemically resistant barrier to protect the mechanical components inside the bonnet. The backing protects nearly the entire PTFE diaphragm to provide maximum protection against component corrosion.

Leak Detection

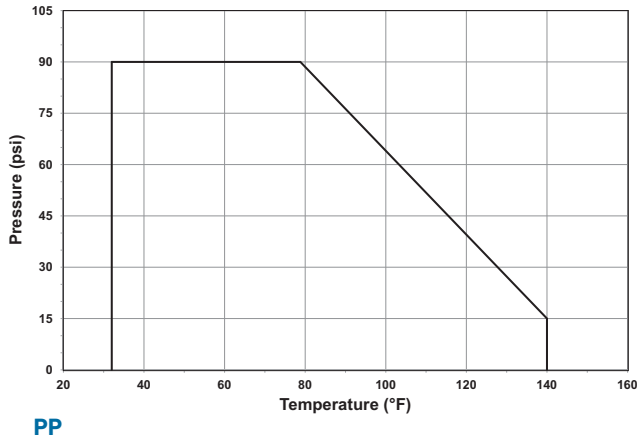
The Type 604/605 Pneumatically Actuated Dosing Valve features an integrated leak detection system by utilizing a small hole in the actuator bonnet. If the diaphragm is damaged or begins to leak, a small amount of media will leak out the bonnet through the weep hole located next to the lower pneumatic connection port as shown at right, thus alerting the operator that a failure has occurred. The weep hole does not affect the performance of the actuator and is not connection to the pressurized chambers of the actuator.

Technical Data

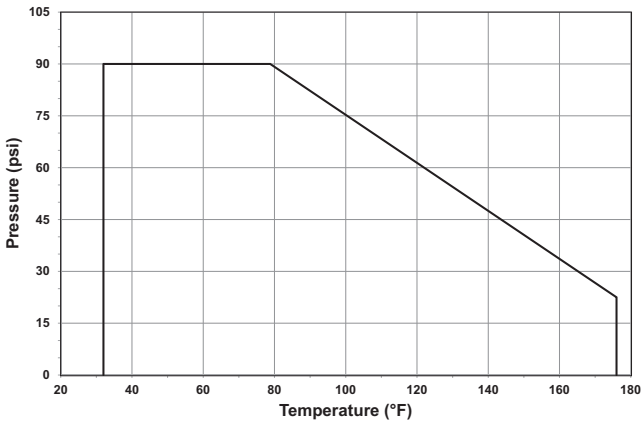
Pressure Temperature Curves

The following graphs are based on a 25 year lifetime water or similar media application

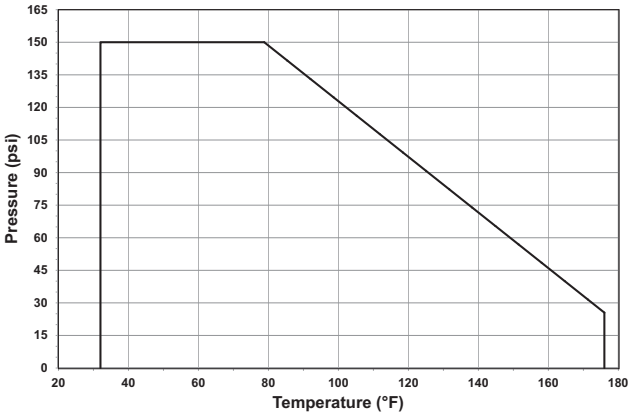
PVC



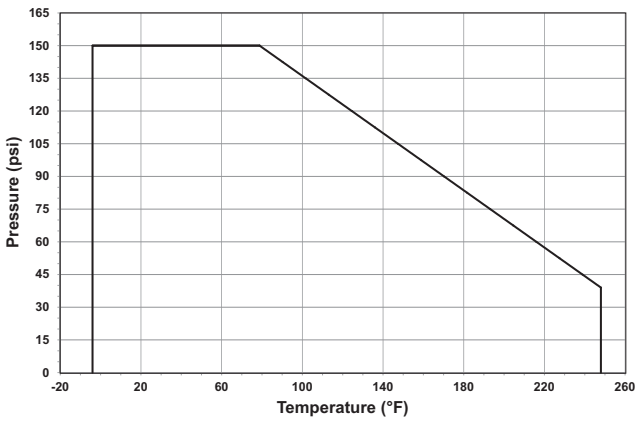
CPVC



PP



PVDF



Pressure-Temperature

Material	Temperature Range (°F)	Max Pressure (psi)
PVC	32 to 140	90
CPVC	32 to 176	90
PP	32 to 176	90
PVDF	-4 to 284	90

Vacuum Service

Type 604/605 Valves are not rated for full vacuum service. Maximum differential pressure of 7.5 psi at 122°F.

Flow

The following information is based on water applications at 68° F

Cv Value

Size (inch)	d (mm)	Cv (gal/min)
½	20	8.4

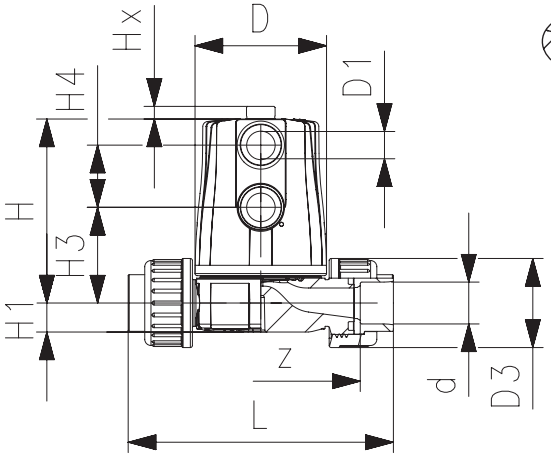
Dosing Data

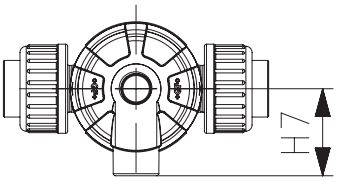
Exhaust Port Size (mm)	Control Media Volume (dm^3)	Cycle Time (ms)	Process Media Overrun (ml)
2*	0.02	114	238
4	0.02	66	138

*Standard configuration. Please contact GF for more information for custom assemblies.

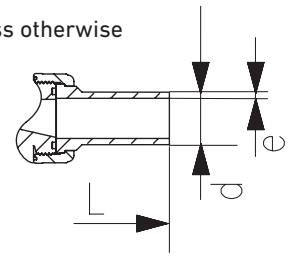
Dimensions

The following tables are shown in millimeters unless otherwise specified

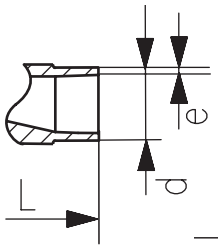




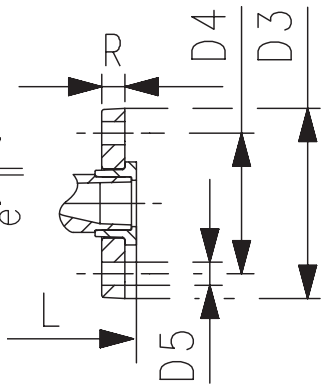
Type 604 Socket/Threaded



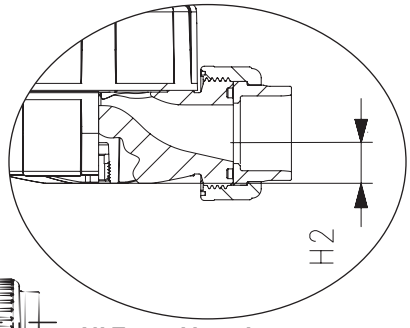
Type 604 IR/Butt



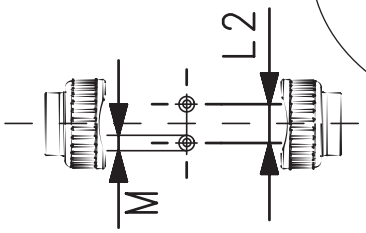
Type 605 IR/Butt



Type 605 Flanged



All Types Mounting



All Types

Size	d (mm)	D	D1	D3	L2	H	H1	H2	M	Hx
½	20	65	G¼"	43	25	89	14	12	M6	6

Type 604 PVC/CPVC

	IPS Socket		Threaded NPT	
Size (inch)	L	z	L	z
½	136	96	128	94

Type 605 PVC/CPVC

	ANSI Flanged				
Size (inch)	L	D3 (inch)	D4 (inch)	D5 (inch)	R (inch)
½	130	3.74	2.36	0.63	0.63

Type 604 PP

	Metric IR/Butt		Metric Socket		Threaded NPT	
d(mm)	L	e	L	z	L	z
20	196	1.9	128	100	132	98

Type 605 PP

		Metric IR/Butt		ANSI Flanged				
Size (inch)	d(mm)	L	e	L	D3 (inch)	D4 (inch)	D5 (inch)	R (inch)
½	20	124	1.9	134	3.74	2.36	0.63	0.63

Type 604 PVDF

	Metric IR/Butt		Metric Socket		Threaded NPT	
d(mm)	L	e	L	z	L	z
20	196	1.9	128	100	132	98

Type 605 PVDF

		Metric IR/Butt		ANSI Flanged				
Size (inch)	d(mm)	L	e	L	D3 (inch)	D4 (inch)	D5 (inch)	R (inch)
½	20	124	1.9	130	3.74	2.36	0.63	0.63