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400 Series Two Way, No-Freeze Valve and Angle Valve

Application:

These valves are used for snap acting on-off or throttling control of high pressure liquids or gas. Oil and gas separators, gas scrubbers or any liquid accumulators are a few applications. The no-freeze version has the trim on the inside of the vessel in direct contact with the process. This "heating process" prevents the fluid from freezing.

Operation:

The spring in the topworks exerts a force on the top of the diaphragm pushing the stem and plug onto the seat. To open the valve, supply pressure is applied under the diaphragm. This pressure overcomes the spring force and the valve opens allowing flow through the valve. When supply pressure is removed, the spring closes the valve.

Features:

- Lower cost and longer field life.
- Stainless steel body and wetted parts available.
- Topworks are available in three sizes to fit your application.
- No-freeze version for gas scrubbers.
- Fail closed for safety.



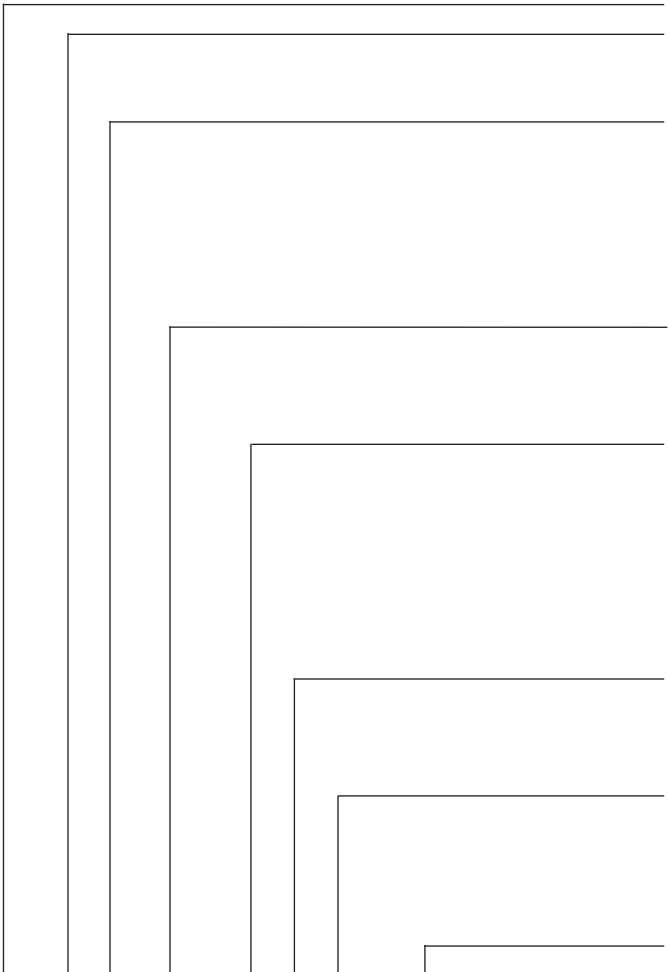
400 Series

Two Way, No-Freeze Valve and Angle Valve

Specifications:

Type:	400-1	400-22	400-23
Size:	1" FNPT Inlet & Outlet	See Below	See Below
Working Pressure:	4000 psig	4000 psig	1500 psig
Temperature:	-20°F to +180°F, available to +240° F		
Topworks:	Cast iron or pressed steel with nylon reinforced nitrile diaphragm. 50 psig maximum supply pressure.		
C_v Factor - Orifice:			
	1/4" 2.2 2.0	
	3/8" 4.6 4.4	
	1/2" 8.4 3.5	
Trim:	17-4 PH Stainless Steel, Carbide, or Carbide K coating.		
Material:			
Body:	Steel or T316 Stainless Steel		
Stem:	Stainless Steel		
Packing:	Poly Pak		

Ordering Chart:



- 400 Series: Two-way, no-freeze and angle valve
- Body Type:**
 - 1 - Two way valve*
 - 2 - No freeze valve**
- Connection:**
 - 1 - 1" FNPT Inlet & Outlet, *Body Type 1 only*
 - 2 - 2" MNPT vessel, 1" FNPT Outlet, *Body Type 2 only*
 - 3 - 1" MNPT Inlet, 1" FNPT Outlet, *Body Type 2 only*
- Topworks:**
 - 1 - 9 sq. in. cast iron
 - 2 - 23 sq. in. pressed steel
 - 3 - 45 sq. in. pressed steel
- Trim Type:**
 - 1 - Snap acting (stainless steel)
 - 2 - Throttling (stainless steel) ***
 - 3 - Snap acting (carbide) ***
 - 4 - Throttling (carbide) ***
 - 5 - Options (*see common options list*)
 - 6 - Snap acting (carbide K coating) ***
 - 7 - Throttling (carbide K coating) ***
- Trim Size:**
 - 1 - 1/4"
 - 2 - 3/8"
 - 3 - 1/2"
- Other:**
 - 1 - No visual indicator
 - 2 - Visual indicator
 - 5 - Options (*see common options list*)
 - 6 - Stainless steel body & wetted parts
- Option Number:**
 - () - Pathway will assign an option number based on specified requirements.

400- [] ()
Example: 400-111-111

Notes:
 1. Visual indicator not available on valves with Topworks #1.
 2. Model 400-22 available only with Topworks #2 & #3 and with Trim Type #1, Trims Size #1 & #2.
 3. Model 400-23 available only with Trim Type #1 and Trim Size #3.

* 111 Maximum differential pressure = 1000 psi
 ** 231 Maximum differential pressure = 700 psi
 *** 232 Maximum differential pressure = 1500 psi
 *** Available only with the two-way valve body Type 1

400 Series

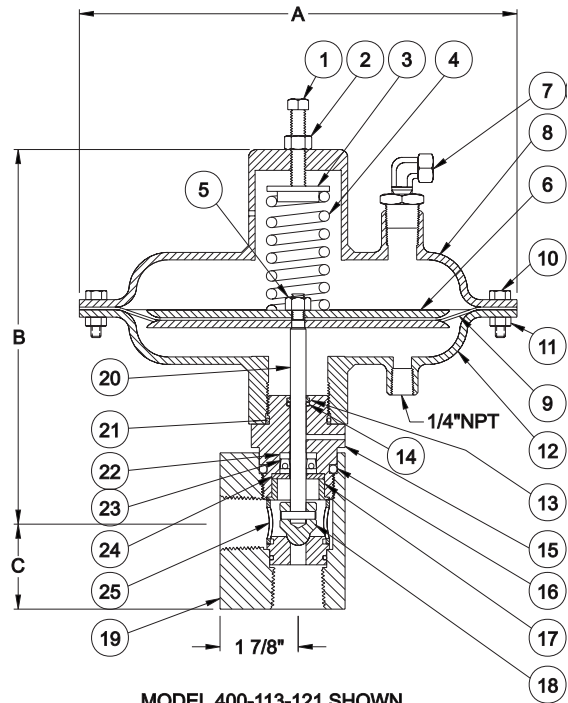
Two Way, No-Freeze Valve and Angle Valve

Dimensions for Standard Models

Model	400-113	400-111	400-112
A	10 1/2"	5 1/2"	9"
B	9 1/4"	6 7/8"	7 3/8"
C	2 1/8"	2 1/8"	2 1/8"

Trim Chart

1/4"	3/8"	1/2"	Material
20731	20732	20733	Snap, 17-4 PH
20737	20738	20739	Throttling, 17-4 PH
20743	20744	20745	Snap, Carbide
20749	20750	20751	Throttling, Carbide
23768	23769	23770	Snap, Carbide-K
23780	23781	23782	Throttling, Carbide-K



MODEL 400-113-121 SHOWN

CAUTION:

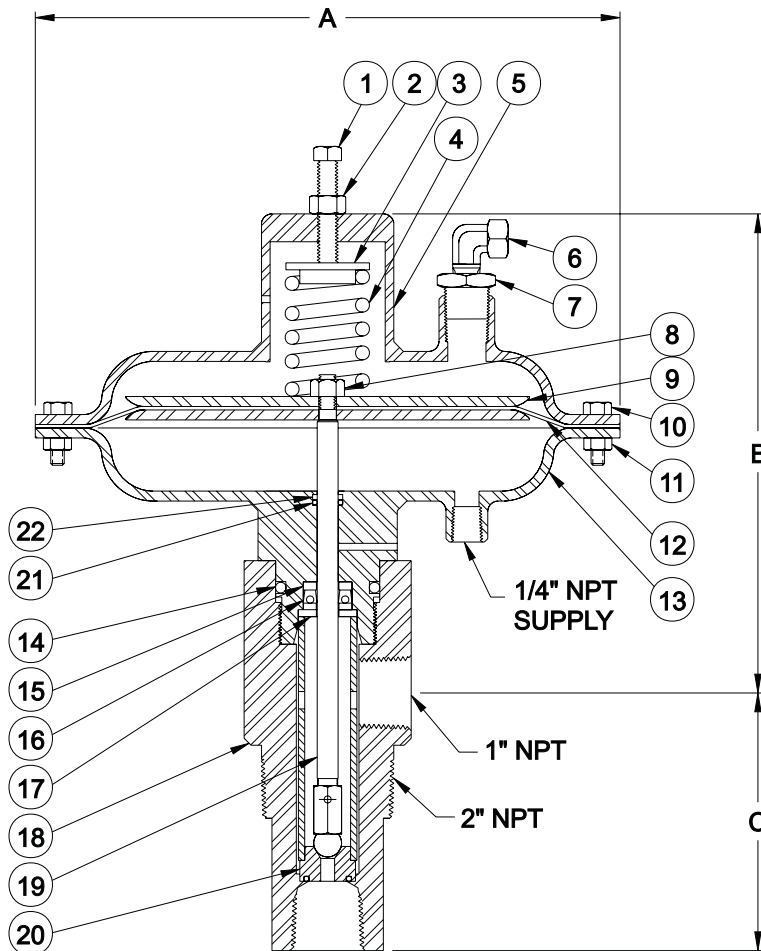
Remove spring tension by backing off adjustment screw OR apply air pressure under diaphragm BEFORE removing top-works. Otherwise, trim will be damaged!

Model 400-113 400-111 400-112

Item	Part #	Part #	Part #	Description	Material	Qty
1	10210	10209	10209	Adjustment Screw	Plated	1
2	10177	10177	10177	Jam Nut	Plated	1
3	20628	20473	20673	Spring Retainer	Carbon Steel	1
4	10075	10027	10066	Spring	Oil Tempered Steel	1
5	10172	10172	10172	Lock Nut	Nylok	1
6	20696	21101	20622	Diaphragm Plate	Cold Rolled Steel Plate	2
7	23339	23339	23339	Vent Assembly, Elbow	Plated	1
8	30045		30043	Upper Diaphragm Housing	Fabricated Carbon Steel	1
		30199		Upper Diaphragm Housing	Cast Iron	1
9	10094	10389	10100	Diaphragm	Nylon Reinforced Nitrile	1
10	10207		10206	Cap Screw	Plated	12
		10470		Cap Screw	Plated	8
11	10175		10175	Hex Nut	Plated	12
		10168		Hex Nut	Plated	8
12	30397		30332	Lower Diaphragm Housing	Fabricated Carbon Steel	1
		30286		Lower Diaphragm Housing	Cast Iron	1
13	10119	10119	10119	O-Ring	Nitrile	1
14	10120	10120	10120	Backup Ring	TFE	1
15	30284	30284	30284	Packing Block	Carbon Steel	1
16	10148	10148	10148	O-Ring	Nitrile	1
17	20607	20607	20607	Spacer	Carbon Steel	1
18	See Chart Above			Trim Set	See chart	1
19	30311	30311	30311	Body	Carbon Steel	1
20	20609	20424	20424	Stem	303 ss	1
21	10363	10363	10363	O-Ring	Nitrile	1
22	20694	20694	20694	Packing Follower	Brass	1
23	10159	10159	10159	Packing	Molythane	1
24	20608	20608	20608	Retainer	Carbon Steel	1
25	20606	20606	20606	Cage	Carbon Steel	1

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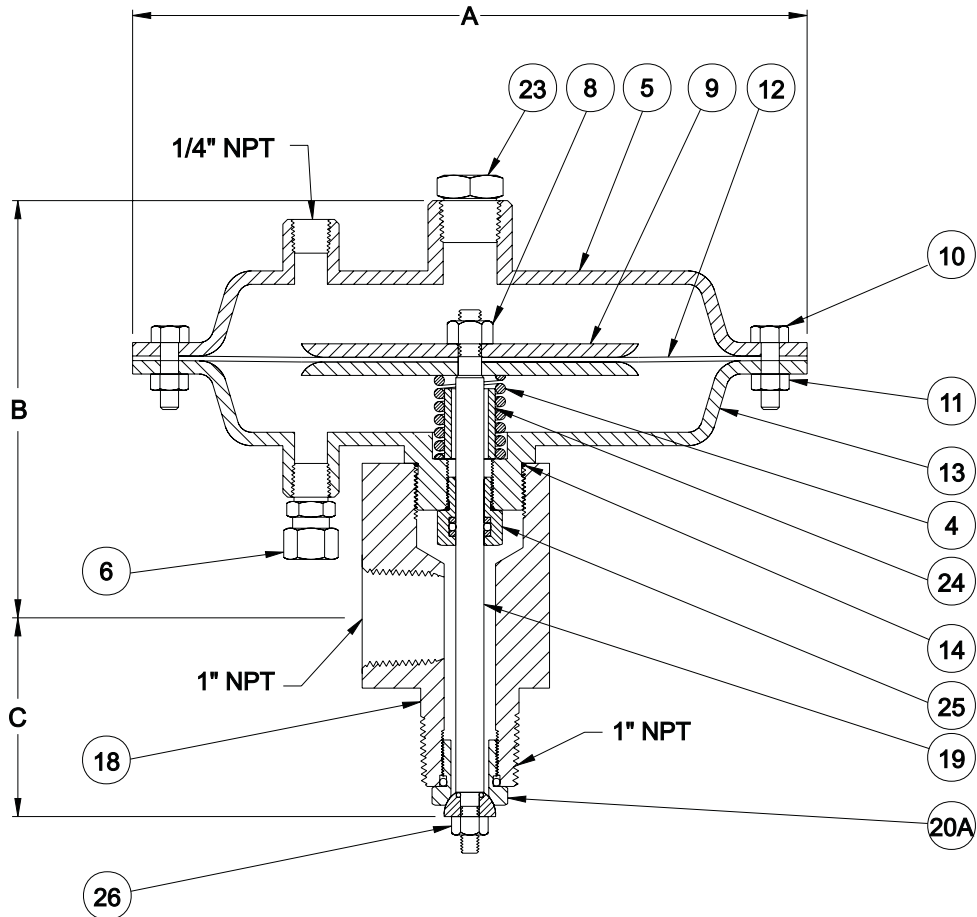


MODEL 400-223-121 SHOWN

Dimensions for Standard Models:

Model	400-222	400-223
A	9"	10 1/2"
B.....	8 1/8"	8 5/8"
C.....	4 3/8"	4 3/8"

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MODEL 400-232-131 SHOWN

Dimensions for Standard Models

Model	400-231	400-232
A	5 1/2"	9"
B.....	4 9/16"	5 5/8"
C.....	2 11/16"	2 11/16"

400 Series

Two Way, No-Freeze Valve and Angle Valve

Model	400-222	400-223	400-231	400-232			
Item	Part #	Part #	Part #	Part #	Description	Material	Qty
1	10210	10210			Adjustment Screw	Plated	1
2	10177	10177			Jam Nut	Plated	1
3	20582	20628			Spring Retainer	Carbon Steel	1
4	10051	10075			Spring	Oil Tempered Steel	1
			10030	10030	Spring	Music Wire	1
5	30043	30045		30012	Upper Diaphragm Housing	Fabricated Carbon Steel	1
			30343		Upper Diaphragm Housing	Cast Iron	1
6	23339	23339	23338	23338	Vent Assembly	Plated	1
7	10748	10748			Bushing	Plated	1
8	10172	10172	10172	10172	Lock Nut	Plated	1
9	20622	20696	21101	20622	Diaphragm Plate	Cold Rolled Steel Plate	2
10	10206	10207		10206	Cap Screw	Plated	12
				10470	Cap Screw	Plated	8
11	10175	10175		10175	Hex Nut	Plated	12
				10168	Hex Nut	Plated	8
12	10100	10094	10389	10100	Diaphragm	Nylon Reinforced Nitrile	1
13	31381	30048		30334	Lower Diaphragm Housing	Fabricated Carbon Steel	1
				30318	Lower Diaphragm Housing	Cast Iron	1
14	10148	10148	10473	10473	O-Ring	Nitrile	1
15	20694	20694			Packing Follower	Brass	2
16	10159	10159			Packing	Mohlythane	1
17	20366	20366			Packing Retainer	Carbon Steel	1
18	30066	30066	20488	20488	Body	Carbon Steel	1
19	20365	20365	20490	20547	Stem	303 ss	1
20A	20401	20401			Trim Set, 1/4"	Nitrile/Stainless Steel	1
20B			21122	21122	Trim Set 1/2"	Nitrile/Stainless Steel	1
20C	20402	20402			Trim Set, 3/8"	Nitrile/Stainless Steel	1
21	10120	10120			Backup Ring	TFE	1
22	10119	10119			O-Ring	Nitrile	1
23			10346	10346	Plug	Plated	1
24			20501	20501	Travel Stop	Carbon Steel	1
25			21409	21409	Packing Gland Assembly	Nitrile	1
26			10170	10170	Lock Nut	18-8 ss	1
	10016	10016	10023	10023	Name Plate (not shown)	18-8 ss	1
	10324	10324	10324	10324	Drive Screw (not shown)	18-8 ss	2

CAUTION:

Prevent trim damage when removing topworks by first removing the trim plug. Extend plug by adding air pressure to top of diaphragm, remove plug nut and plug, release air pressure, and unscrew topworks. Alternative procedure - remove actuator housing bolts and the top half of actuator housing. Prevent the plug from rotating by grasping the diaphragm plate and diaphragm plate nut, and remove the plug retaining nut and the plug. Remaining half of the topworks can then be removed.