Type 21 ISOLATOR Ball Valves

The Chemline *Type 21 ISOLATOR* True Union Ball valve incorporates state of the art features and performance. This is a full port, full blocking True Union valve pressure rated at 16 bar (230 psi)*. Double stem o-rings are provided for safety. Pneumatic or electric actuator mounting is easily accomplished in the field – Just pull off the handle to reveal an integral ISO mounting platform. The valve base is designed to easily accept bolts for full support if desired.

CHEMLINE Plastics Limited

Your Pipeline To Quality

PVC, CPVC, PP, PVDF

SERIES:	**Type 21**
SIZES:	1/2" – 4"
ENDS:	Socket, Threaded, Flanged, Butt
SEATS:	Teflon® PTFE
SEALS:	EPDM, Viton†

230 psi Working Pressure

Easy to Actuate in the Field

Double Stem O-Rings for Safety

Features

Pressure rated to 230 psi
- Provides a high factor of safety

Integral Actuator Mounting Platform
- Actuation is easy. Electric or pneumatic actuators may be mounted in the field

Full Port
- High capacity and low pressure drops

Fully Blocking
- Downstream union nut may be safely disassembled for piping maintenance while valve is closed off under full system pressure

Built-In Spanner Wrench
- Top of the handle is designed to be used as a tool for accessing internal parts

Base Mounting Pad
- The valve base incorporates a mounting pad, enabling the valve with an actuator to be bolted securely to a support

High Chemical Resistant Material
- PVC and CPVC compounds have an "A" chemical resistance rating as per ASTM D-1784. They have outperformed other PVC and CPVC compounds on aggressive chemicals.



***** PVC, CPVC and PVDF 1/2" to 2" are rated at 230 psi; 2-1/2" to 4" and all size PP valves are rated at 150 psi at 20°C.

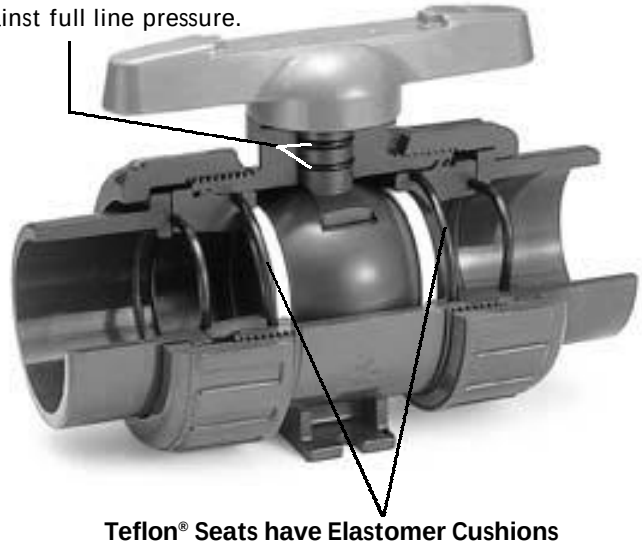
† Other materials are available special order.

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Double Stem O-Rings for Safety

- Upper o-ring groove is deeper than lower. In case of excessive stem torque, stem will shear at the upper groove, leaving the inner o-ring intact to seal against full line pressure.



Teflon® Seats have Elastomer Cushions

- Improved sealing while lowering stem torques.
- Self adjusts for seat wear



Integral Actuator Mounting Platform

- Actuation is easy. Electric or pneumatic actuators may be mounted in the field. Simply pull off the handle to reveal an ISO standard mounting platform which accepts bolt-on hardware.



Fully Blocking

- Downstream pipe may be removed while upstream side is still pressurized. This may be done with valve installed in either direction.



Built in Spanner Wrench

- For tightening and loosening the seat carrier
- All parts are replaceable



Pneumatic and Electric Actuators

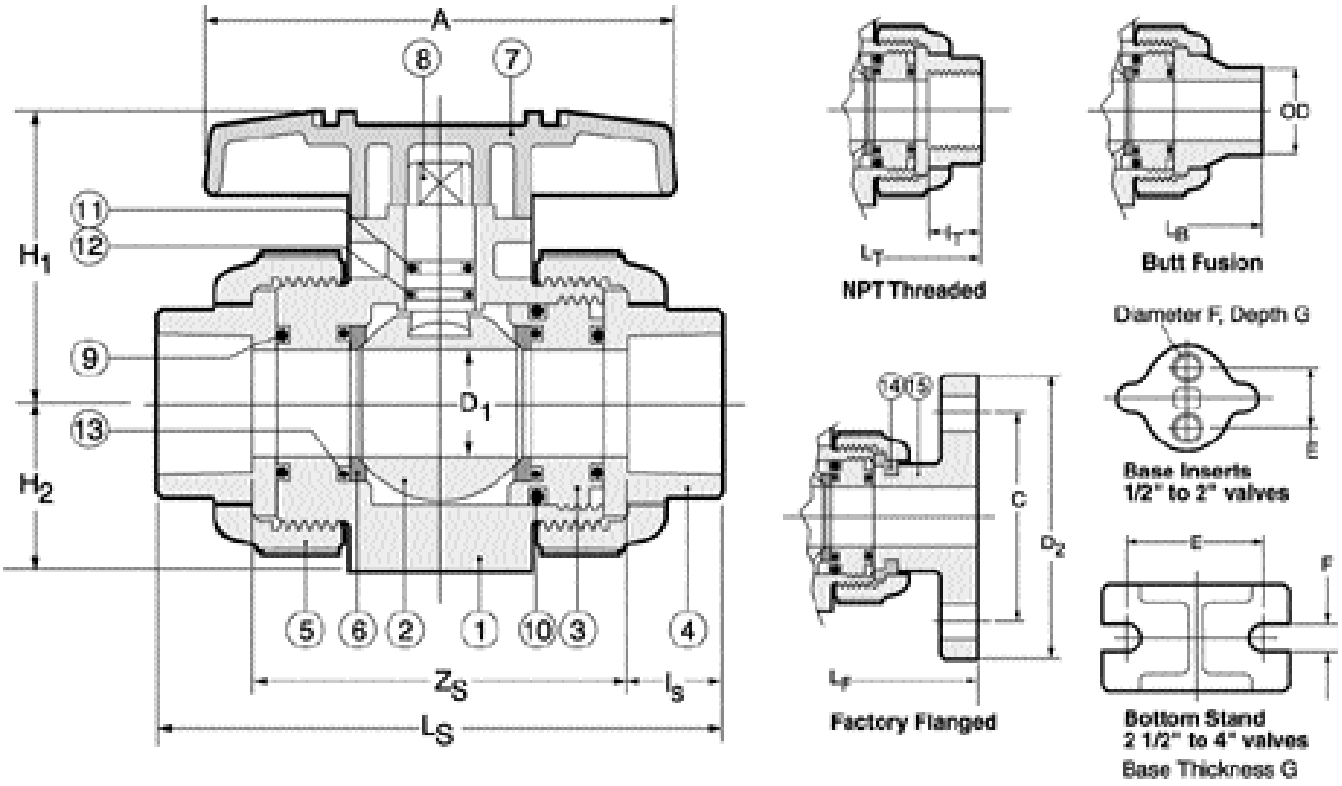
- Limits switches, positioners and other accessories are available



Base Mounting Pad

- Permits actuated valves to be securely anchored
- Valves may be used as fixation points in the piping system

Type 21 ISOLATOR Ball Valves



PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
1	Body	1	PVC, CPVC,PP, PVDF
2	Ball	1	PVC, CPVC,PP, PVDF
3	Carrier	**	PVC, CPVC, PP, PVDF
4	End Connector	2	PVC, CPVC, PP, PVDF
5	Union Nut	2	PVC, CPVC, PP, PVDF
6▲	Ball Seat	2	PTFE
7	Handle	1	ABS

* EPDM seals standard with PVC, CPVC, PP; Viton with PVDF valves.
**1 carrier 1/2"- 2", 2 carriers 2-1/2"- 4".
† 2 pcs 1/2"- 2", 6 pcs 2-1/2"- 4".

PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
8	Stem	1	PVC, CPVC,PP, PVDF
9▲	Face O-Ring*	2	EPDM,Viton
10▲	Carrier O-Ring*	2	EPDM,Viton
11▲	Upper Thicker Stem O-Ring*	1	EPDM,Viton
12▲	Lower Thinner Stem O-Ring*	1	EPDM,Viton
13	Seat Cushion*	2	EPDM,Viton
14	Flange Retainer	2†	PVDF
15	Flange	2	PVC, CPVC,PP, PVDF

DIMENSIONS INCHES

Size	D Bore	A	H_1	H_2	End Connections: Socket L_S	Socket Z_S	Socket l_S	Threaded l_T	Threaded L_T	Factory Flanged L_F	Factory Flanged D_2	Factory Flanged C	Butt L_B	Butt OD	Valve Base E	Valve Base F*	Valve Base G
1/2"	.59	3.6	2.03	1.14	4.45	2.70	.875	.64	4.02	5.63	3.50	2.38	4.88	.79	.75	.29	.43
3/4"	.79	3.9	2.34	1.38	5.08	3.08	1.00	.65	4.72	6.77	3.88	2.75	5.67	.98	.75	.29	.43
1"	.98	4.3	2.68	1.54	5.75	3.50	1.13	.81	5.16	7.36	4.25	3.12	6.06	1.26	.75	.29	.43
1-1/4"	1.22	4.8	3.17	1.85	6.46	5.21	1.25	.85	5.91	7.48	4.62	3.50	6.85	1.57	1.18	.35	.59
1-1/2"	1.57	5.2	3.50	2.17	7.24	4.49	1.38	.85	6.42	8.35	5.00	3.88	7.64	1.97	1.18	.35	.59
2"	2.01	6.3	4.02	2.60	8.23	5.23	1.50	1.90	7.76	9.21	6.00	4.75	8.82	2.48	1.18	.35	.59
2-1/2"	2.28	7.87	4.96	2.83	9.45	5.95	1.75	1.21	8.46	10.20	7.00	5.49	9.72	2.95	1.89	.35	.23
3"	2.70	9.45	5.51	3.35	11.10	7.35	1.88	1.30	10.39	11.97	7.50	6.00	11.61	3.54	2.17	.43	.28
4"	3.54	11.81	7.01	4.33	13.88	9.87	2.00	1.38	14.17	14.65	9.00	7.50	14.76	4.33	2.56	.43	.32

*Optional threaded inserts: 1/2" to 1" valves - UNC 5/16-18; 1-1/4" to 2" valves - UNC 5/16-16.
"Recoil" brand inserts require drilling before insertion.

Type 21 ISOLATOR Ball Valves

WORKING PRESSURES PSI, Water, Non-Shock

VACUUM RATING • 29.9 inches mercury

Size	PVC			CPVC						PP			PVDF				
	20°C 68°F	40°C 104°F	50°C 122°F	20°C 68°F	40°C 104°F	50°C 122°F	60°C 140°F	80°C 176°F	90°C 194°F	20°C 68°F	60°C 140°F	80°C 176°F	20°C 68°F	40°C 104°F	60°C 140°F	80°C 176°F	100°C 212°F
1/2"- 2"	230	165	150	230	165	150	120	75	55	150	85	55	230	185	150	110	85
2-1/2" - 4"	150	150	150	150	150	150	120	75	55	150	70	40	150	150	150	110	85

Temperature Ranges: PVC 0 to 60°C (32 to 140°F), **CPVC** 0 to 95°C (32 to 203°F), **PP** –20 to 90°C (–4 to 194°F), **PVDF** –40 to 100°C (–40 to 212°F).

WEIGHTS LB. THREADED or SOCKET

Size	PVC	CPVC	PP	PVDF
1/2"	0.37	0.41	0.26	0.43
3/4"	0.65	0.69	0.45	0.74
1"	1.00	1.08	0.66	1.19
1-1/4"	1.4	1.5	0.92	1.7
1-1/2"	2.2	2.4	1.5	2.5
2"	3.0	3.3	1.9	3.4
2-1/2"	5.2	5.6	3.1	6.3
3"	8.1	8.8	6.1	-
4"	20.4	22.0	13.4	-

WEIGHTS LB. FLANGED

PVC	CPVC	PP	PVDF
0.81	0.87	0.69	0.98
1.2	1.3	0.94	1.4
1.8	1.9	1.4	2.0
2.5	2.7	1.9	2.8
3.4	3.6	2.8	4.0
4.7	4.9	3.7	4.4
7.4	8.0	6.4	9.3
10.9	11.8	9.3	13.5
24.0	25.1	22.0	32.0

C_V VALUES VS. BALL ANGLE

Size	0%	25%	50%	75%	100%
1/2"	0	0.35	1.3	5.5	14.
3/4"	0	0.73	2.8	11.5	29.
1"	0	1.2	4.5	18.6	47.
1-1/4"	0	1.8	6.8	28.4	72.
1-1/2"	0	3.9	14.7	61.2	155.
2"	0	4.8	18.0	75.0	190.
2-1/2"	0	9.1	34.7	144.0	365.
3"	0	10.2	39.0	162.0	410.
4"	0	17.0	64.6	269.0	680.

SAMPLE SPECIFICATION

- All True Union Ball Valves in PVC, CPVC, PP or PVDF shall be specified *Chemline Type 21 or equal* sizes 1/2" to 2" in PVC, CPVC, and PVDF rated at 230 psi and in PP 150 psi maximum working pressure. Sizes 2-1/2", 3" and 4" rated at 150 psi maximum working pressure with EPDM , Viton, CPE, Hypalon, or Nitrile seals. Cushioned Teflon® PTFE ball seats shall be provided for positive closure with minimum stem torques.
- All valve sizes 1/2" to 4" shall be supplied with double stem blowout-proof stem o-rings for safety. The top o-ring groove shall be deeper so that if excessive force is applied it would shear and the lower o-ring would remain intact and the valve will continue to hold pressure.
- All valves shall be full port and two-way blocking.
- Socket ends in PVC and CPVC shall be Schedule 80 and conform to ASTM D-2467.
- Threaded ends shall be Schedule 80 and conform to ASTM D-2464 . PP threaded ends shall have stainless steel reinforcing bands to prevent creep.
- Butt fusion ends in PP or PVDF will be compatible with *Chemline PP or PVDF piping systems*.
- Flanged ends shall be ANSI Class 150 one-piece factory molded using no nipples or fabrication to ensure maximum strength and close tolerance end to end dimensions and eliminating the possibility of joint failures.
- PVC compound shall have an ASTM cell classification 12454-A with a minimum suffix "A" designation for chemical resistance as per ASTM D-1784 (CSA report LO 4000-172).
- All CPVC compound shall have an ASTM cell classification 23567-A with a minimum suffix "A" designation for chemical resistance as per ASTM D-1784.
- PVC and CPVC compound and EPDM seals shall be CSA Standard B137.0 para 5.2.1. environmental requirements for toxicity (CSA Report LO 4000-1459).
- All PP materials are conformed ASTM D-4101 PP 021 B 67272 material requirements.
- All PVDF material shall be unpigmented conforming to ASTM D-3222 Type 2 suspension resin material requirements and also will be USDA Title 21 Chapter 1 Part 177. 2510 requirements for contact with food.
- All valves shall be custom tagged with manufacturers' inspection number to provide traceability.

ORDERING EXAMPLE

Chemline Type 21 ISOLATOR True Union Ball Valve	**21**	**A**	**020**	**E**	**S**
Body Material	**A** - PVC **B** - PP	**C** - CPVC **K** - PVDF			
Size[1]	**002** - 1/4" **010** - 1" **025** - 2-1/2"	**003** - 3/8" **012** - 1-1/4" **030** - 3"	**005** - 1/2" **015** - 1-1/2" **040** - 4"	**007** - 3/4" **020** - 2" **060** - 6"	
Seals	**E** - EPDM	**V** - Viton	**C** - CPE[2]	**B** - Nitrile[3]	**A** - Aflas
Ends	**S** - Socket	**T** - Threaded		**F** - Flanged	**B** - Butt

[1] 1/4" and 3/8" are 1/2" valves reduced. 6" is 4" valve with 6" end connections.
Example: Chemline Type 21 True Union Ball Valve, PVC, 2", with EPDM seals, socket ends.
[2] CPE = Chlorinated Polyethylene. [3] Nitrile is also called "Buna-N".

OPTIONS & ACCESSORIES

- **Alternate O-Ring Seals** – Nitrile, Teflon®, CPE, etc.
- **Electrically Actuated** – Refer to separate data sheets
- **Pneumatically Actuated** – Refer to separate data sheets
- **Stem Extension** made to any length
- **Limit Switches** – For open and/or closed position indication
- **Handle Lockout** – Field mountable
- **Municipal Operating Nut**
- **Lubrication-free Valves** – Factory clean room assembled

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