

# Type 21 True Union Ball Valves



SERIES: Type 21

SIZES: 3/8" to 4"

ENDS: Socket, Threaded, Flanged, Butt<sup>1</sup> or ChemFlare™

SEATS: PTFE

SEALS: EPDM or FKM (Viton®)



The Chemline **Type 21** True Union Ball valve is a full port, blocking valve pressure rated at 16 bar (230 psi)<sup>2</sup>. Double stem o-rings provide for a high degree of safety on hazardous fluid applications. All sizes have an ISO standard actuator mounting platform for mounting of pneumatic or electric actuators.

## Features

### Pressure rated to 230 psi<sup>2</sup>

- 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

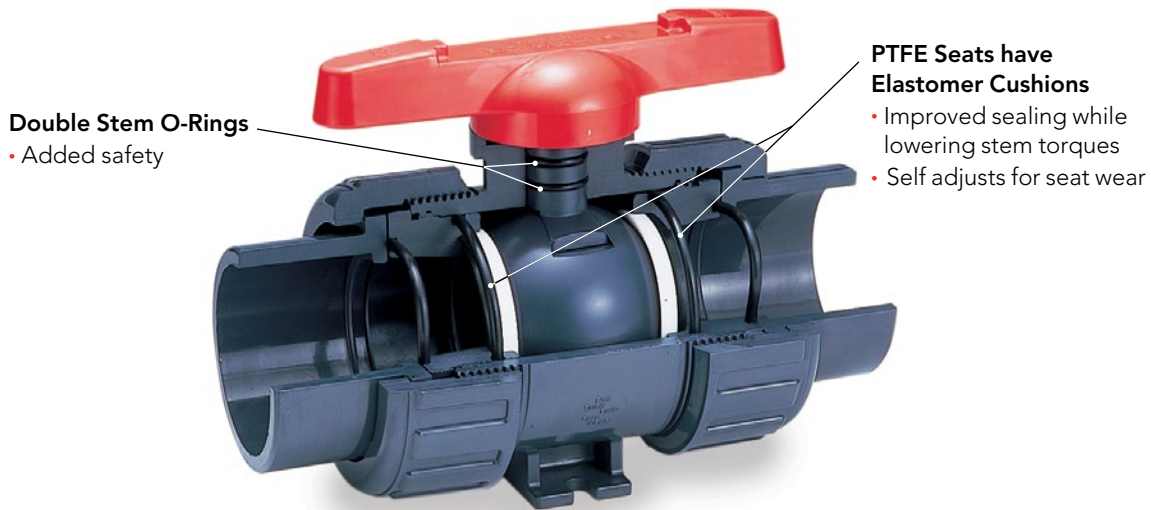
<sup>1</sup>Butt ends for fusion to Chemline metric PP, PVDF or ECTFE (Halar®) piping

<sup>2</sup>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

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## Features



### Built in Spanner Wrench

- For removing or tightening the seat carrier
- All parts are replaceable



### Integral Actuator Mounting Platform

- Actuation is easy. Electric or pneumatic actuators may be mounted in the field.



### Fully Blocking

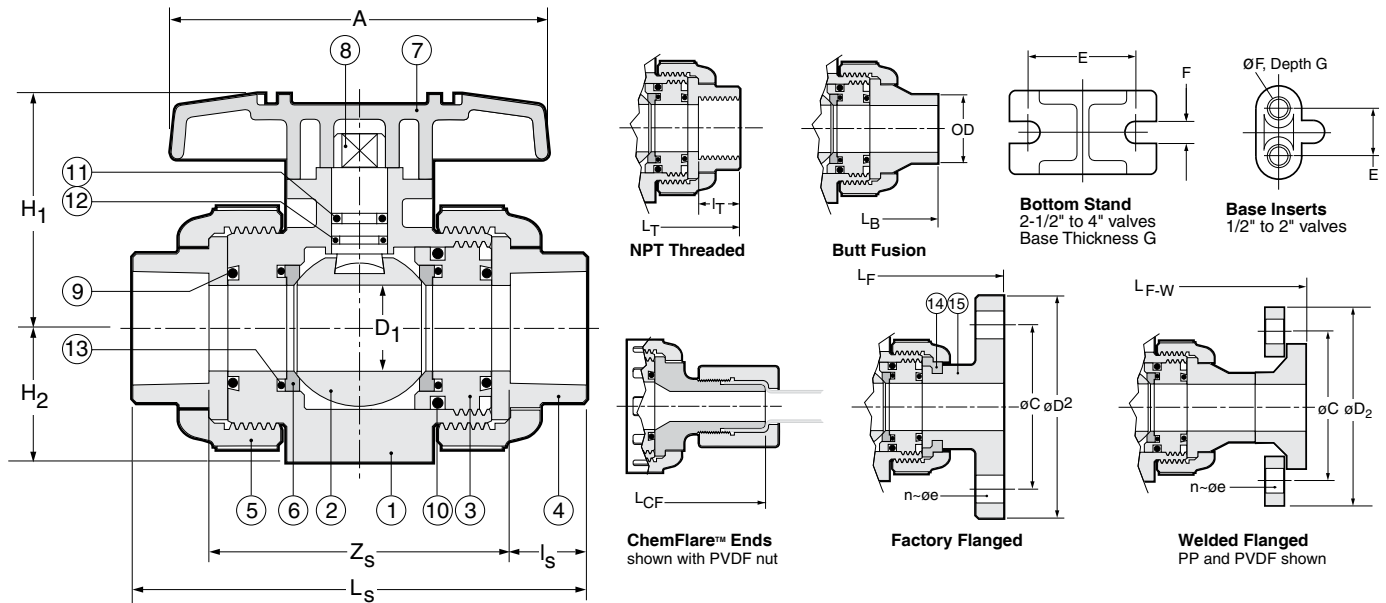
- Downstream pipe may be removed while upstream side is still pressurized. This may be done with valve installed in either direction.



### Base Mounting Pad

- Optional threaded inserts allow valves to be securely anchored
- Supplied standard with actuated valves

# Type 21 True Union 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 <sup>1</sup>	1/2	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

<sup>1</sup> 1 carrier for sizes 1/2" to 2", 2 carriers for sizes 2-1/2" to 4"

<sup>2</sup> EPDM seals standard with PVC, CPVC, PP; FKM (Viton®) with PVDF valves

<sup>3</sup> 2 pcs 1/2" to 2", 6 pcs 2-1/2" to 4"

## PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
8	Stem	1	PVC, CPVC, PP, PVDF
9▲	Face O-Ring <sup>2</sup>	2	EPDM, FKM (Viton®)
10▲	Carrier O-Ring <sup>2</sup>	2	EPDM, FKM (Viton®)
11▲	Upper Stem O-Ring <sup>2</sup>	1	EPDM, FKM (Viton®)
12▲	Lower Stem O-Ring <sup>2</sup>	1	EPDM, FKM (Viton®)
13	Seat Cushion <sup>2</sup>	2	EPDM, FKM (Viton®)
14	Flange Retainer <sup>3</sup>	2/6	PVDF
15	Flange	2	PVC, CPVC, PP, PVDF

## DIMENSIONS INCHES

Size	D <sub>1</sub> Bore	End Connections																						
		Flanged												Butt		ChemFlare™		Valve Base						
		Socket			Threaded		Welded			Factory	D <sub>2</sub>	C	n	e	L <sub>B</sub>	OD	L <sub>CF</sub>	Tube	E	F <sup>6</sup>	G			
		L <sub>S</sub>	Z <sub>S</sub>	I <sub>S</sub>	I <sub>T</sub>	L <sub>T</sub>	PVC/CPVC	PP <sup>4</sup>	PVDF <sup>4</sup>	ALL												L <sub>WF</sub> <sup>5</sup>	L <sub>WF</sub>	L <sub>WF</sub>
1/2"	.59	3.6	2.03	1.14	4.45	2.70	.875	.64	4.02	6.57	8.66	8.51	5.63	3.50	2.38	4	.62	4.88	.79	6.12	1/2"	.75	.29	.43
3/4"	.79	3.9	2.34	1.38	5.08	3.08	1.00	.65	4.72	7.46	9.45	9.30	6.77	3.88	2.75	4	.62	5.67	.98	6.52	3/4"	.75	.29	.43
1"	.98	4.3	2.68	1.54	5.75	3.50	1.13	.81	5.16	8.38	9.69	9.69	7.36	4.25	3.12	4	.62	6.06	1.26	7.26	1"	.75	.29	.43
1-1/4"	1.22	4.8	3.17	1.85	6.46	5.21	1.25	.85	5.91	9.27	10.63	10.48	7.48	4.62	3.50	4	.62	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	10.55	11.50	11.27	8.35	5.00	3.88	4	.62	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	11.67	12.45	12.45	9.21	6.00	4.75	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	13.95	13.39	13.35	10.20	7.00	5.49	4	.75	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	15.73	17.76	17.60	11.97	7.50	6.00	4	.75	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	18.82	20.91	20.75	14.65	9.00	7.50	8	.75	14.76	4.33	-	-	2.56	.43	.32

<sup>4</sup> PVDF and PP butt welded flanged valves have stub ends and PP backing rings. Dimensional tolerance is +/- 0.08". Factory flanged valves are available on request.

<sup>5</sup> PVC and CPVC flanged valves are solvent cemented. "L" dimension may vary. Consult Chemline at time of ordering.

<sup>6</sup> Optional threaded inserts: 1/2" to 1" valves - UNC 1/4"-20; 1-1/4" to 2" valves - UNC 5/16"-18

# Type 21 True Union 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 50°C (32 to 122°F), CPVC 0 to 90°C (32 to 194°F), PP –20 to 80°C (–4 to 176°F), PVDF –20 to 100°C (–20 to 212°F)

**WEIGHTS** LB. THREADED or SOCKET      **WEIGHTS** LB. FLANGED

Size	PVC	CPVC	PP	PVDF	PVC	CPVC	PP	PVDF
1/2"	0.4	0.4	0.4	0.4	0.9	0.9	0.7	1.1
3/4"	0.7	0.7	0.7	0.9	1.3	1.5	1.1	1.5
1"	0.9	1.1	0.9	1.1	1.8	2.0	1.5	2.2
1-1/4"	1.5	1.5	1.3	1.8	2.6	2.9	2.0	3.3
1-1/2"	2.4	2.6	1.5	2.9	3.7	4.0	2.6	4.4
2"	4.0	4.4	2.6	4.9	5.5	6.0	4.0	8.2
2-1/2"	5.1	5.5	3.7	6.2	7.3	7.7	5.3	8.8
3"	8.2	8.8	5.5	9.9	10.1	11.0	7.5	12.6
4"	19.4	21.8	13.2	24.9	21.6	23.4	15.4	26.7

**Cv 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.

## ORDERING EXAMPLE

<b>Chemline Type 21 True Union Ball Valves</b>		<b>21</b>	<b>A</b>		<b>005</b>	<b>E</b>	<b>S</b>
Body Material	<b>A</b> – PVC <b>B</b> – PP	<b>C</b> – CPVC <b>K</b> – PVDF					
Size <sup>1</sup>	<b>005</b> – 1/2" <b>015</b> – 1-1/2" <b>040</b> – 4"	<b>007</b> – 3/4" <b>020</b> – 2"	<b>010</b> – 1" <b>025</b> – 2-1/2"	<b>012</b> – 1-1/4" <b>030</b> – 3"			
Seals	<b>E</b> – EPDM	<b>V</b> – FKM (Viton®)					
Ends	<b>S</b> – Socket	<b>T</b> – Threaded	<b>FF</b> – Flanged	<b>WF</b> – Welded Flanged	<b>B</b> – Butt <sup>1</sup>		

**Example:** Chemline Type 21 True Union Ball Valve, PVC, 1/2", with EPDM seals, socket ends.

<sup>1</sup> PP, PVDF and ECTFE (Halar®) metric butt fusion ends (1/2" to 4") connect to Chemline PP, PVDF and ECTFE (Halar®) piping systems

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