



# Maintenance Free Ball Valves



## **ENGINEERING GUIDE**

Contact Spears® for any Information not found.

Valves Technical  
**Compact 2000 Ball Valves**



**Features — PVC, CPVC**

Economical, low profile quarter-turn shutoff valve is excellent for general purpose and many O.E.M applications. PVC and CPVC valves are available in IPS sizes 1/2" through 2" with socket, regular thread and flanged.

- Industrial Grade, Maintenance-Free Sealed Unit
- New Actuator-Ready Body — Accepts Spears® Improved Mini-Mount Actuator Mounting Kits
- New Double O-ring Stem Seal
- Schedule 80 Full-Port Design
- Spears® Safe-T-Shear Stem
- PTFE Self Adjusting Floating Seats
- EPDM or FKM O-ring Seals
- Full 235 psi PPressure Rating @ 73°F
- EPDM valves NSF® Certified for Use with Potable Water
- Suitable for Vacuum Service
- Produced in ASTM IPS sizes 1/2" - 2" with Socket, Threaded or Flanged End Connectors.

**Sample Engineering Specification**

All thermoplastic ball valves shall be 2000 Compact sealed unit type manufactured to ASTM F 1970 and constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, ASTM D 1784 Cell Classification 23447. All O-rings shall be EPDM or FKM. All valves shall have Safe-T-Shear® stem with O-ring stem seal. All handles shall be polypropylene. All EPDM valves shall be certified by NSF International for use with potable water. All 1/2" - 2" valves shall be pressure rated to 235 psi and all flanged valves shall be pressure rated at 150 psi for water @ 73°F, as manufactured by Spears® Manufacturing Company.

**Optional Accessories\***

- Round Safety Handles
- Stem Extension Kits
- Square Operator Nuts
- Multi Mount Valve/Actuation Mounting Kits
- Mini-Mount Actuation Mounting Kits

\* See **"BALL VALVE ACCESSORIES"** section for details of individual products.

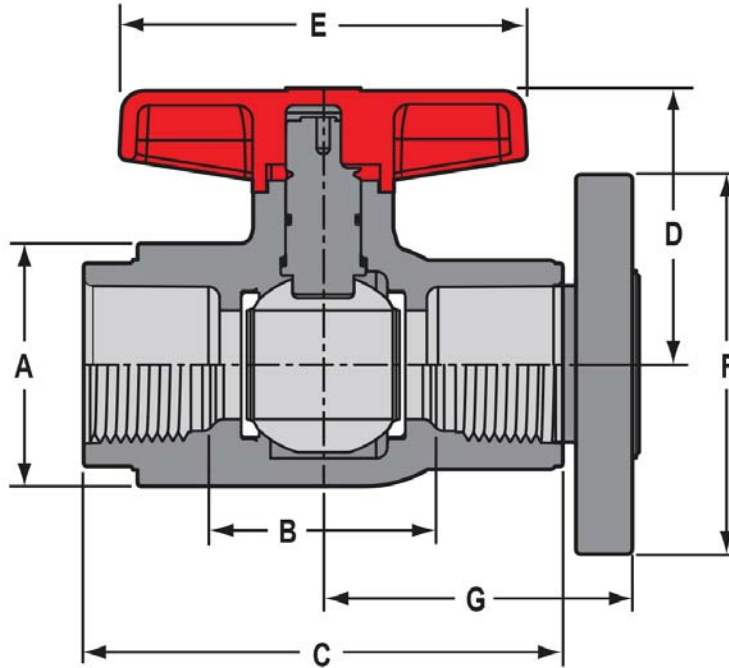
**Quick-View Valve Selection Chart**

Valve Size	O-ring Material	PVC Part Number <sup>1</sup>			Pressure Rating
		Socket	Threaded	Flanged	
1/2	EPDM	6622-005	6621-005	6623-005	235 psi Non-Shock Water @73°F  (Flanged 150 psi Non-Shock) Water @73°F
	FKM	6632-005	6631-005	6633-005	
3/4	EPDM	6622-007	6621-007	6623-007	
	FKM	6632-007	6631-007	6633-007	
1	EPDM	6622-010	6621-010	6623-010	
	FKM	6632-010	6631-010	6633-010	
1-1/4	EPDM	6622-012	6621-012	6623-012	
	FKM	6632-012	6631-012	6633-012	
1-1/2	EPDM	6622-015	6621-015	6623-015	
	FKM	6632-015	6631-015	6633-015	
2	EPDM	6622-020	6621-020	6623-020	
	FKM	6632-020	6631-020	6633-020	

1: For CPVC Valves, add the letter "C" to part numbers listed. (e.g., 6622-005C)



## Valves Technical Compact 2000 Ball Valves



### Dimensions, Weights, Operating Torque & C<sub>v</sub> Values

Nominal Size	Dimension Reference (inches, ± 1/16)								Approx. Wt. (Lbs.)		Oper. <sup>2</sup> Torque (in.-lb.)	C <sub>v</sub> <sup>3</sup> Values
	A	B <sup>1</sup>		C	D	E	F	G	PVC	CPVC		
		Socket	Threaded									
1/2	1-7/16	1-1/4	1-1/4	3	1-5/8	2-1/2	3-1/2	2-11/32	.18	.20	10	42
3/4	1-3/4	1-1/2	1-11/16	3-9/16	2	3	3-7/8	2-5/8	.29	.31	20	87
1	2-1/16	1-3/4	2	4	2-5/16	3-3/8	4-1/4	2-29/32	.44	.46	25	157
1-1/4	2-5/8	2-1/8	2-3/4	4-5/8	2-13/16	3-1/2	4-5/8	3-9/32	.68	.70	30	311
1-1/2	3	2-1/2	3-3/8	5-5/16	3-1/16	3-15/16	5	3-27/32	.99	1.03	50	429
2	3-5/8	3	4	6	3-3/4	5	5-7/8	4-1/4	1.64	1.70	90	768

1: Valve Lay Length

2: Torque required at valve maximum internal pressure rating, 5ft/sec. Flow velocity.

3: Gallons per minute at 1 psi pressure drop. Valves calculated from laying length, based on derivative of Hazen-Williams equation with surface roughness factor of C=150.

### Temperature Pressure Rating

System Operating Temperature °F (°C)			100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
Valve Pressure Rating psi (MPa)	1/2" - 2"	PVC	235 (1.62)	211 (1.45)	150 (1.03)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	235 (1.62)	219 (1.51)	170 (1.17)	145 (1.00)	130 (.90)	110 (.76)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)
	Flanged	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.76)	100 (.70)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)

## Valves Technical Compact Ball Valves



### Features — PVC, CPVC

This industrial grade, quarter turn shutoff valve is popular where maintenance-free installations are desired for a variety of chemical processing, industrial and OEM applications. IPS Sizes 1/2" - 4" available with socket, threaded or flanged end connectors, 6" size available with socket or flanged end connectors. 6" valve uses high-efficiency lever style handle for easier operation.

- Chemical & Corrosion Resistant PVC or CPVC Construction
- Maintenance-Free Sealed Unit
- Schedule 80 Full-Port Design
- High Impact Polypropylene Handle
- Spears® Single O-ring Safe-T-Shear® Stem Design
- EPDM or FKM O-rings
- Self Adjusting PTFE Floating Seat Design
- Sizes 1/2" - 2" Pressure Rated to 235 psi @ 73°F, Sizes 3" - 6" and all Flanged Pressure Rated to 150 psi @ 73°F
- EPDM valves NSF® Certified for Potable Water use
- Suitable for Vacuum Service
- Assembled with Silicone-Free, Water Soluble Lubricant
- Manufactured to ASTM F 1970

**Note:** Valve size 6" uses Lever Handle (not shown)

### Sample Engineering Specification

All thermoplastic ball valves shall be Compact sealed unit type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, Cell Classification 23447. All O-rings shall be EPDM or FKM. All valves shall have Safe-T-Shear® stem and Polypropylene handle. All EPDM valves shall be certified by NSF International for use in potable water service. All 1/2" - 2" valves shall be pressure rated at 235 psi, all 3" - 6" and all flanged valves shall be pressure rated at 150 psi for water at 73° F, as manufactured by Spears® Manufacturing Company.

### Quick-View Valve Selection Chart

Valve Size	O-ring Material	PVC Part Numbers <sup>1</sup>			Pressure Rating	
		Socket	Threaded	Flanged		
1/2	EPDM	2122-005	2121-005	2123-005	235 psi Non-Shock Water @ 73°F	
	FKM	2132-005	2131-005	2133-005		
3/4	EPDM	2122-007	2121-007	2123-007		
	FKM	2132-007	2131-007	2133-007		
1	EPDM	2122-010	2121-010	2123-010		
	FKM	2132-010	2131-010	2133-010		
1-1/4	EPDM	2122-012	2121-012	2123-012		(Flanged 150 psi Non-Shock) Water @ 73°F
	FKM	2132-012	2131-012	2133-012		
1-1/2	EPDM	2122-015	2121-015	2123-015		
	FKM	2132-015	2131-015	2133-015		
2	EPDM	2122-020	2121-020	2123-020		
	FKM	2132-020	2131-020	2133-020		
3	EPDM	2122-030	2121-030	2123-030	150 psi Non-Shock Water @ 73°F	
	FKM	2132-030	2131-030	2133-030		
4	EPDM	2122-040	2121-040	2123-040		
	FKM	2132-040	2131-040	2133-040		
6	EPDM	2122-060	---	2123-060		
	FKM	2132-060	---	2133-060		

<sup>1</sup>: For CPVC valves, add the letter "C" to the part numbers listed (e.g., 2131-005C).

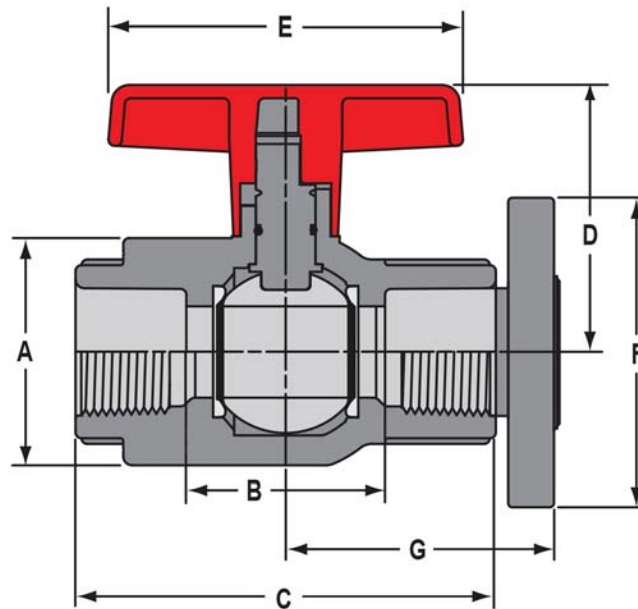
### Optional Accessories\*

- Round Safety Handle
- Stem Extension Kit
- Mini-Mount Actuation Mounting Kit
- 2" Square/T-Style Operator Nut

\* See **"BALL VALVE ACCESSORIES"** section for details of individual products.



## Valves Technical Compact Ball Valves



### Dimensions, Weights, Operating Torque & C<sub>v</sub> Values

Nominal Size	Dimension Reference (inches, ± 1/16)								Approx. Wt. (Lbs.)		Oper. <sup>2</sup> Torque (in.-lb.)	C <sub>v</sub> <sup>3</sup> Values	
	A	B <sup>1</sup>		C	D	E <sup>4</sup>	F	G	PVC	CPVC		Soc/Thd	Flanged
		Socket	Threaded										
1/2	1-5/8	1-7/16	1-7/8	3-1/4	2-5/16	2-3/4	3-1/2	2-17/32	.31	.32	20	36	20
3/4	1-15/16	1-3/4	2 1/4	3-7/8	2-11/16	3-1/4	3-7/8	2-27/32	.49	.52	30	74	42
1	2-13/32	2-1/16	2-1/8	4-3/8	2-25/32	3-23/32	4-1/4	3-1/16	.64	.69	40	141	80
1-1/4	2-3/4	2-5/16	3	4-13/16	3-5/16	4-1/8	4-5/8	3-13/32	.93	.98	60	284	163
1-1/2	3-1/4	2-13/16	3-1/2	5-5/8	3-11/16	4-1/2	5	4	1.39	1.45	80	402	229
2	3-15/16	3-1/4	4-7/16	6-1/4	4-5/16	5-1/4	5-31/32	4-13/32	2.33	1.93	90	706	429
3	5-5/16	4-9/16	5-1/2	8-5/16	5-1/2	7-21/32	7-1/2	5-7/16	4.49	5.02	300	1660	1079
4	7-3/8	6-3/16	7-3/16	10-5/32	6-5/8	10-27/32	9-1/16	6-7/8	9.50	10.24	400	3104	2028
6 <sup>4</sup>	10-3/16	8	10-3/4	14-1/8	8-1/16	14-5/16	11-1/4	8-21/32	21.48	23.41	900	7942	5268

1: Valve Lay Length

2: Torque required at valve maximum internal pressure rating, 5 ft./sec. flow velocity.

3: Gallons per minutes at 1 psi pressure loss. Values calculated from valve laying length, based on derivative of Hazen-Williams equation with surface roughness factor of C =150.

4: 6" valve has lever handle, dimension is from valve centerline (not illustrated)

### Temperature Pressure Rating

System Operating Temperature °F (°C)			100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
Valve Pressure Rating psi (MPa)	1/2" - 2"	PVC	235 (1.62)	211 (1.45)	150 (1.03)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	235 (1.62)	219 (1.51)	170 (1.17)	145 (1.00)	130 (.90)	110 (.76)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)
	3" - 6" and Flanged	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.76)	100 (.70)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)



### Features - PVC White, PVC Gray & CPVC

A high quality, economical quarter-turn shutoff valve designed for irrigation, pool and spa, and general purpose applications. IPS sizes 1/2" - 3" available in PVC White, PVC Gray or CPVC with socket or threaded end connectors. Size 4" available in PVC White with socket or threaded end connectors. 6" size available in PVC White with socket end connectors and high-efficiency lever style handle for easier operation.

- Chemical & Corrosion Resistant PVC or CPVC Construction
- Economical Sealed Unit
- Schedule 80 Full-Port Design
- High Impact Polypropylene Handle
- Spears® Single O-ring Safe-T-Shear® Stem Design
- EPDM O-rings
- PTFE/HDPE Floating Seat Design
- Sizes 1/2" - 6" Pressure Rated to 150 psi @ 73°F
- NSF® Certified for Potable Water use
- Assembled with Silicone-Free, Water Soluble lubricant

### Sample Engineering Specification

All thermoplastic ball valves shall be Utility sealed unit type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, ASTM D 1784 Cell Classification 23447. All O-rings shall be EPDM. All valves shall have Safe-T-Shear® stem and Polypropylene handle. All valves shall be certified by NSF International for use in potable water service. All valves shall be pressure rated at 150 psi for water at 73°F, as manufactured by Spears® Manufacturing Company.

**Note:** Valve sizes 4" and 6" are not available in CPVC.  
Refer to Compact Ball Valve  
Valve size 6" uses Lever Handle (not shown)

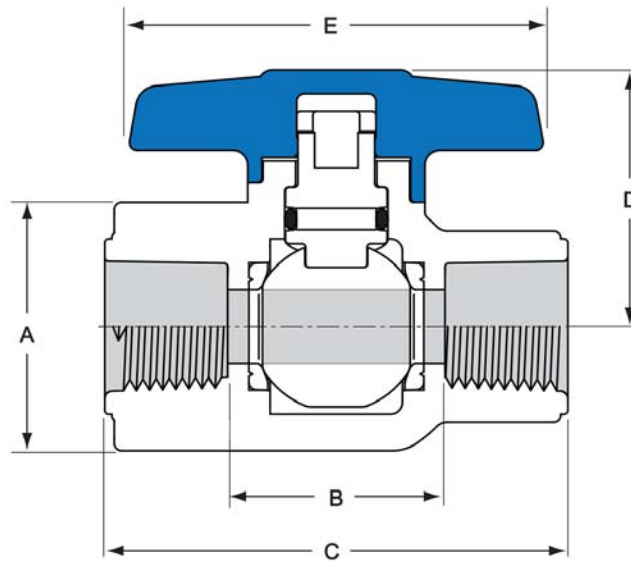
### Quick-View Valve Selection Chart

Valve Size	O-ring Material	PVC Part Number <sup>1, 2</sup>		Pressure Rating
		Socket	Threaded	
1/2	EPDM	2622-005	2621-005	150 psi Non-Shock Water @ 73°F
3/4	EPDM	2622-007	2621-007	
1	EPDM	2622-010	2621-010	
1-1/4	EPDM	2622-012	2621-012	
1-1/2	EPDM	2622-015	2621-015	
2	EPDM	2622-020	2621-020	
2-1/2	EPDM	2622-025	2621-025	
3	EPDM	2622-030	2621-030	
4	EPDM	2622-040	2621-040	
6	EPDM	2622-060	---	

1: For CPVC valves, add the letter "C" to part numbers listed (e.g., 2621-005C).  
2: For PVC Gray, add the letter "G" to part numbers listed (e.g. 2621-005G).



## Valves Technical Utility Ball Valves



### Dimensions, Weights & C<sub>v</sub> Values

Nominal Size	Dimension Reference (inches, ± 1/16)						Approx. Wt. (Lbs.)		C <sub>v</sub> <sup>2</sup> Values
	A	B <sup>1</sup>		C	D	E <sup>3</sup>	PVC	CPVC	
		Socket	Threaded						
1/2	1-7/16	1-3/16	1-1/4	2-11/16	1-11/16	2-3/4	.16	.17	46
3/4	1-25/32	1-7/16	1-7/16	2-15/16	2-1/32	3-1/4	.25	.27	91
1	2-1/32	1-5/8	1-5/8	3-3/8	2-7/16	3-1/2	.34	.36	160
1-1/4	2-9/16	1-31/32	2	3-7/8	2-3/4	3-3/4	.57	.60	306
1-1/2	2-15/16	2-1/2	2-15/32	4-5/8	3-1/8	4-1/4	.88	.90	429
2	3-9/16	2-13/16	2-13/16	5-1/8	3-7/8	5	1.34	1.34	755
2-1/2	4-5/16	3-1/2	4-7/16	7	4-1/8	5-5/8	2.31	2.41	1126
3	5-11/32	4-5/32	5-3/16	8	5-9/16	7-3/4	4.18	4.67	1660
4	6-11/16	5-1/8	6-7/32	9-3/16	6-5/32	9-1/8	8.00	N/A	3129
6 <sup>3</sup>	10-3/16	8-3/32	---	14-3/16	8-5/32	14-3/32	23.24	N/A	7942

1: Valve Lay Length

2: Gallons per minute at 1 psi pressure drop. Values calculated from valve laying length, based on derivative of Hazen-Williams equation with surface roughness factor of C=150.

3: 6" valve has lever handle, dimension is from valve stem centerline (not illustrated)

### Temperature Pressure Rating

System Operating Temperature °F (°C)		73 (23)	100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)
Valve Pressure Rating psi (MPa)	PVC	150 (1.03)	93 (.64)	75 (.52)	60 (.41)	45 (.31)	33 (.23)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
	CPVC	150 (1.03)	23 (.85)	110 (.76)	98 (.68)	86 (.58)	75 (.52)	68 (.47)	60 (.41)	48 (.33)	38 (.26)	-0- (-0-)



**Features - PVC White**

A high quality, economical quarter-turn shutoff valve designed for irrigation, pool and spa, and general purpose applications. IPS sizes 1/2" - 4" available in PVC White.

- Chemical & Corrosion Resistant PVC Construction
- Economical Sealed Unit
- Schedule 80 Full-Port Design
- High Impact, U.V. Resistant Polypropylene Handle
- Spears® Single O-ring Safe-T-Shear® Stem Design
- EPDM O-rings
- Sizes 1/2" - 4" Pressure Rated to 150 psi @ 73°F
- NSF® Certified for Potable Water use
- Assembled with Silicone-Free, Water Soluble lubricant

**Sample Engineering Specification**

All thermoplastic ball valves shall be CWV sealed unit type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454. All O-rings shall be EPDM. All valves shall have Safe-T-Shear® stem and Polypropylene handle. All valves shall be certified by NSF International for use in potable water service. All valves shall be pressure rated at 150 psi for water at 73°F, as manufactured by Spears® Manufacturing Company.

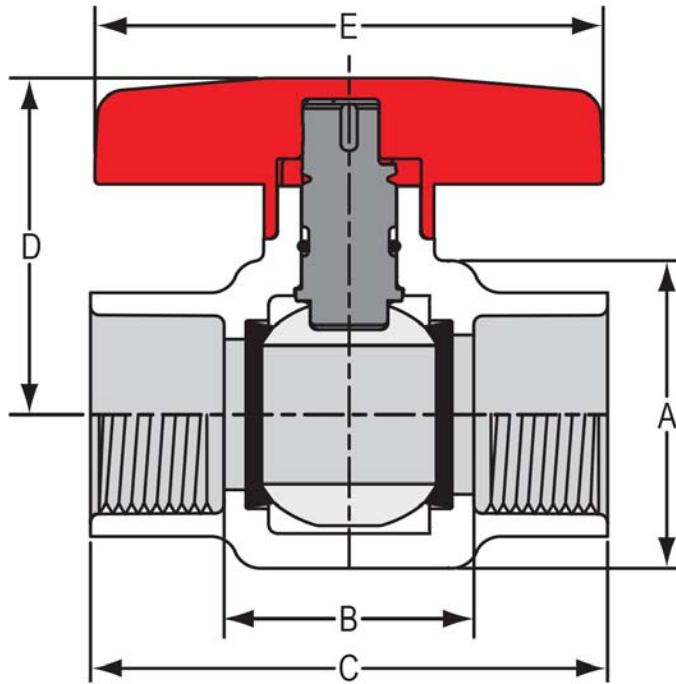
**Quick-View Valve Selection Chart**

Valve Size	O-ring Material	PVC Part Number		Pressure Rating
		Socket	Threaded	
1/2	EPDM	8722-005	8721-005	150 psi Non-Shock Water @ 73°F
3/4	EPDM	8722-007	8721-007	
1	EPDM	8722-010	8721-010	
1-1/4	EPDM	8722-012	8721-012	
1-1/2	EPDM	8722-015	8721-015	
2	EPDM	8722-020	8721-020	
2-1/2	EPDM	8722-025	8721-025	
3	EPDM	8722-030	8721-030	
4	EPDM	8722-040	8721-040	





## Valves Technical CWV Ball Valves



### Dimensions

Size	A	B		C	D	E
		Socket	Threaded			
1/2	1-5/16	1-7/32	1-7/32	2-5/8	1-9/16	2-5/8
3/4	1-5/8	1-15/32	1-7/16	2-15/16	1-15/16	2-7/8
1	1-7/8	1-5/8	1-5/8	3-7/16	2-1/4	3-3/8
1-1/4	2-3/8	2	2	3-7/8	2-3/4	3-7/8
1-1/2	2-3/4	2-7/16	2-3/4	4-5/8	3-1/8	4-1/2
2	3-11/32	2-25/32	2-25/32	5-1/8	3-23/32	4-31/32
2-1/2	4-5/16	3-1/2	4-7/16	7	4-1/8	5-5/8
3	5-5/16	4-3/16	5-1/8	7-5/16	5-9/16	7-3/4
4	6-11/16	5-1/8	6-1/4	9-3/16	6-1/8	9-1/8

### Temperature Pressure Rating

System Operating Temperature °F (°C)		73 (23)	100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)
Valve Pressure Rating psi (MPa)	PVC	150 (1.03)	93 (.64)	75 (.52)	60 (.41)	45 (.31)	33 (.23)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)