



# 300/350 Series

BALL VALVES



**Waukesha Cherry-Burrell®**

# Ball Valves 300 (2-way) and 350 (3-way)

Ball valves offer great economy and durability for a wide range of applications that do not require clean-in-place (CIP) service. They are easy to install and maintain.

The full ported, straight-through design of ball valves frees the flow path from obstructions.

As a result, pressure drops across the valves are reduced, and there is no change in elevation for piping through the valve.

This allows efficient and safe production or cleaning processes in the food, beverage, dairy, industrial, and chemical industries.

## PRODUCT FEATURES AND BENEFITS

- All stainless construction: forged body and ball
- Full port opening for unrestricted flow in the open position
- Available in "Normally Closed", "Normally Open" and "Double Acting" Actuation
- Maintenance-free pneumatic actuator with 1/4" (6mm) polytube air connections
- Easy retrofit from manual to pneumatic actuator on existing valves in field
- Three piece design with floating seals
- FDA approved materials: reinforced PTFE seats
- Cavity filled
- Complete line of control top options available including standard control tops and electropneumatic positioners for throttle/flow control applications
- 100% leakage tested at 100 PSI (7 Bar) - 350 series only
- L-Port and T-Port options available - 350 series only

## PRODUCT SPECIFICATIONS

### Materials:

#### Ball and Body:

- 316L Stainless Steel Ball and Body

#### Seat:

- PTFE

#### Finish:

- $\leq 32$  Ra ( $\leq 0.8\mu$ ) - Other finishes available upon request

#### Sizes:

- 1/2" (12mm) - 4" (101mm) O.D. Tube

#### Pressure Ratings:

##### 300 Series

#### Operating Pressure:

- 1/2" - 3/4" up to 1300 PSI (90 Bar)
- 1" - 1 1/2" up to 1100 PSI (76 Bar)
- 2" - 4" up to 900 PSI (62 Bar)

##### 350 Series

#### Operating Pressure:

- 1/2" - 2" up to 1000 PSI (69 Bar)
- 2 1/2" - 4" up to 800 PSI (55 Bar)

#### Temperature Ratings:

##### 300 Series

- 0° to 300°F (-17° to 148°C)

##### 350 Series

- 0° to 350°F (-17° to 175°C)

## OPTION AND ACCESSORIES\*

### Control Tops - WCB



#### Connector Options

- S/O Cord Grip for hard wire (std)
- Quick Disconnect Pin Connectors

#### Interface Options

- AS-i Field® Bus Card
- DeviceNet® Field Bus Network Card

#### Position Indication

- Set and Forget programmable linear switch
- Inductive Proximity Switches - 20-140V AC/DC, 2-Wire (Std)
- Microswitches 24VDC, 110VAC
- Intrinsically safe options 5-24VDC
- Externally mounted options

#### Solenoid Valves

- 24VDC or 110VAC
- Select 1, 2 or 3 Solenoids
- Intrinsically safe option 24VDC

### Control Tops - APV



#### Connector Options

- S/O Cord Grip for hard wire (std)
- Quick Disconnect Pin Connectors

#### Interface Options

- AS-i Field® Bus Card
- Profibus and DeviceNet (CU3)

#### Position Indication

- 2 internal or 2 external feedback sensor switches for valve open/valve closed position detection

#### Solenoid Valves

- 24VDC or 110VAC
- Select 1 or 3 Solenoids

#### Features

- **Visibility** - transparent control top keeps all electrical components visible.
- **User-Friendly** - designed with the user in mind, making assembly and troubleshooting worry free and easy
- **Common Parts** - utilizes the industry's most widely recognized electrical components, so access to off the shelf replacement parts is easy, ensuring quick delivery and less down time
- **Standardization** - same control top used on various WCB valve lines, offers common look and controls interface
- NEMA 4x (IP56)
- Stainless Steel Control Top Option



#### Features

- **Reliability and long service life**- robust clamp connection, reinforced Stainless Steel air coupling threads to avoid air leakages, and watertight seals
- **Reduced costs** - few parts and simple design
- **Ease of Operation** - contains manual override solenoids and adjustment screw to throttle air flow to actuator to ensure optimal opening and closing
- **Clarity** - clear and bright indication of valve position - 5 diodes in LED panel and convenient location
- **Standardization** - same control top used on various APV valve lines, offers common look and controls interface
- NEMA 6 (I67)

## Typical product applications

### Food & Beverage

Dairy  
Beverage  
Clean in Place  
Personal Care



### Industrial

Chemical



### Additional Options - APV and WCB Control Tops

#### Proximity Switch Only

- Available with manual handle and pneumatic actuators
- Yoke mounted 10-30 VDC prox sensors with LED
- Feedback for valve open/valve closed position detection

#### Electropneumatic Positioner

- 4-20mA feedback signal
- Throttle/Control flow
- LCD display and simple set-up
- Optional DeviceNet, Profibus or AS-i Communication

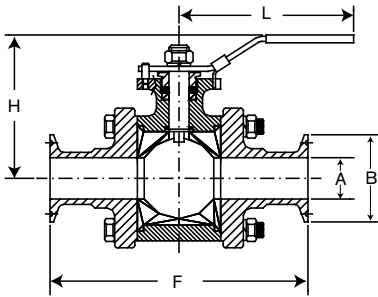


\* Control top options only available on 300 series with linear actuator not 350 series

## DIMENSIONAL DATA:

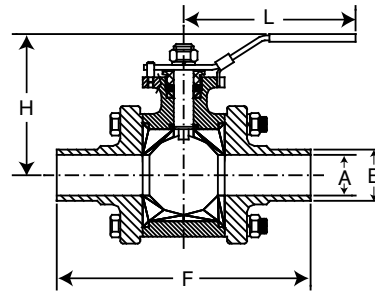
### 300 Series Ball Valves

#### Clamp Connections



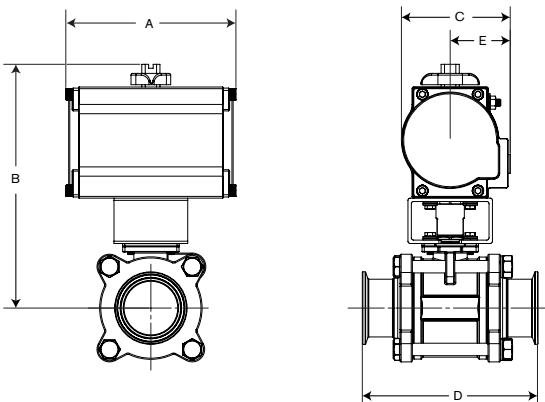
Valve Size in (mm)	H	F	L	A	B
0.50 (12)	2.17 (55)	3.50 (88)	5.20 (132)	0.37 (9)	1.00 (25)
0.75 (19)	2.36 (59)	3.98 (101)	5.20 (132)	0.63 (16)	1.00 (25)
1.00 (25)	2.72 (69)	4.49 (114)	6.50 (165)	0.87 (22)	1.98 (50)
1.50 (38)	3.31 (84)	5.51 (139)	7.64 (194)	1.38 (35)	1.98 (50)
2.00 (50)	3.62 (91)	6.14 (155)	7.64 (194)	1.87 (47)	2.52 (64)
2.50 (63)	5.00 (127)	7.76 (197)	9.92 (251)	2.37 (60)	3.05 (77)
3.00 (76)	5.35 (135)	9.02 (229)	9.92 (251)	2.87 (72)	3.58 (90)
4.00 (101)	6.26 (159)	9.57 (243)	13.11 (332)	3.83 (97)	4.68 (93)

#### Weld Connections



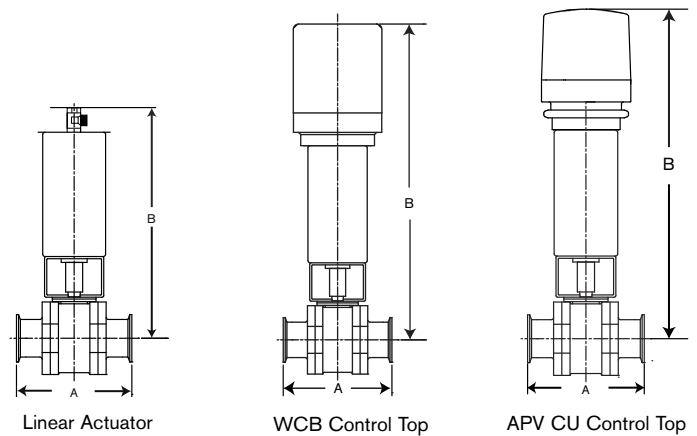
Valve Size in (mm)	H	F	L	A	B
0.50 (12)	2.36 (59)	3.50 (88)	5.20 (132)	0.37 (9)	1.00 (25)
0.75 (19)	2.56 (65)	3.98 (101)	5.20 (132)	0.63 (16)	1.00 (25)
1.00 (25)	2.72 (69)	4.49 (114)	6.50 (165)	0.87 (22)	1.98 (50)
1.50 (38)	3.50 (88)	5.51 (139)	7.64 (194)	1.38 (35)	1.98 (50)
2.00 (50)	3.82 (97)	6.14 (155)	7.64 (194)	1.87 (47)	2.52 (64)
2.50 (63)	5.00 (127)	7.76 (197)	9.92 (251)	2.37 (60)	3.05 (77)
3.00 (76)	5.31 (134)	9.02 (229)	9.92 (251)	2.87 (72)	3.58 (90)
4.00 (101)	6.26 (159)	9.57 (243)	13.11 (332)	3.83 (97)	4.68 (93)

#### Rack and Pinion Actuator



Valve Size in (mm)	A	B	C	D	E
0.50 (12)	4.72 (119)	5.93 (150)	2.45 (62)	3.50 (88)	1.33 (33)
0.75 (19)	4.72 (119)	6.11 (155)	2.45 (62)	3.98 (101)	1.33 (33)
1.00 (25)	5.68 (144)	9.21 (234)	3.21 (81)	4.49 (114)	1.88 (47)
1.50 (38)	5.87 (149)	11.34 (288)	3.74 (95)	5.51 (140)	2.03 (51)
2.00 (50)	5.87 (149)	11.65 (296)	3.74 (95)	6.14 (156)	2.03 (51)
2.50 (63)	7.21 (183)	13.90 (353)	4.69 (119)	7.76 (197)	2.54 (64)
3.00 (76)	7.21 (183)	14.27 (362)	4.69 (119)	9.02 (229)	2.54 (64)
4.00 (101)	10.22 (259)	18.07 (459)	5.54 (140)	9.56 (242)	2.97 (75)

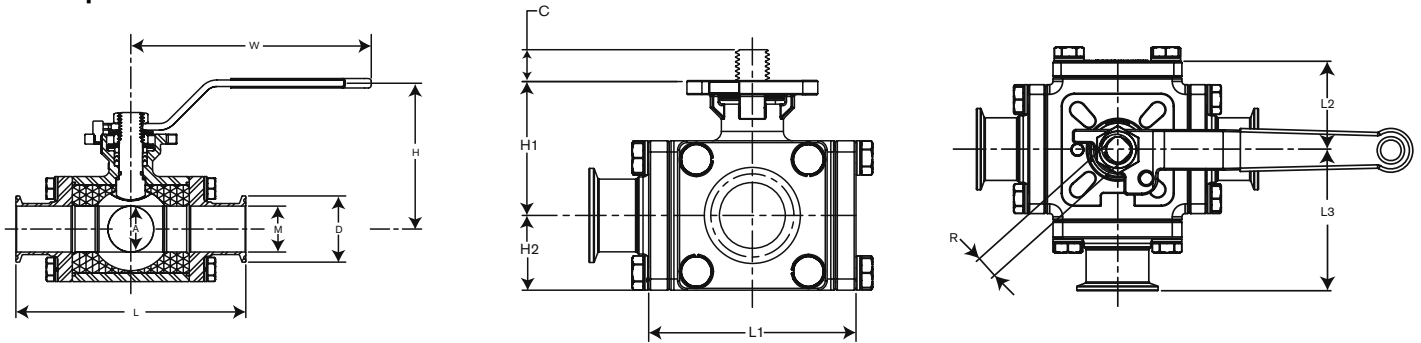
#### Linear Actuator and Control Top Options



Valve Size in (mm)	A	B		
		Linear Actuator	WCB Control Top	APV CU Control Top
0.50 (12)	3.50 (88)	10.83 (275)	12.60 (320)	12.91 (328)
0.75 (19)	3.98 (101)	11.00 (280)	12.78 (325)	13.09 (333)
1.00 (25)	4.49 (114)	11.22 (285)	12.99 (330)	13.31 (338)
1.50 (38)	5.51 (140)	11.77 (299)	13.44 (342)	13.76 (350)
2.00 (50)	6.14 (156)	12.09 (307)	13.76 (350)	14.07 (358)
2.50 (63)	7.76 (197)	16.17 (411)	18.02 (458)	18.34 (466)
3.00 (76)	9.02 (229)	16.54 (420)	18.39 (467)	18.71 (475)
4.00 (101)	9.56 (242)	17.32 (440)	19.17 (487)	19.49 (495)

## 350 Series Ball Valves

### Clamp Connections



Valve Size in (mm)	A	W	H	H1	C	L	M	D	L1	L2	L3	H2	R	
0.50 (12)	0.37 (9)	4.76 (120)	3.07 (77)	1.75 (44)	0.35 (8)	4.64 (117)	0.37 (9)	1.00 (25)	2.75 (69)	1.37 (34)	2.32 (58)	0.94 (23)	0.35 (8)	M12 x 1.75
0.75 (19)	0.62 (15)	4.76 (120)	3.22 (81)	1.89 (48)	0.35 (8)	5.00 (127)	0.62 (15)	1.00 (25)	2.87 (72)	1.51 (38)	2.52 (64)	1.02 (25)	0.35 (8)	M12 x 1.75
1.00 (25)	0.87 (22)	5.39 (136)	3.54 (89)	2.32 (58)	0.43 (10)	5.39 (136)	0.87 (22)	1.98 (50)	3.38 (85)	1.69 (42)	2.99 (75)	1.22 (30)	0.43 (10)	M14 x 2.00
1.50 (38)	1.37 (34)	7.16 (181)	4.09 (103)	2.83 (71)	0.55 (13)	6.89 (175)	1.37 (34)	1.98 (50)	4.37 (110)	2.20 (55)	3.46 (87)	1.57 (39)	0.55 (13)	M18 x 2.50
2.00 (50)	1.87 (47)	7.16 (181)	4.52 (114)	3.22 (81)	0.55 (13)	7.48 (189)	1.87 (47)	2.51 (63)	4.88 (123)	2.44 (61)	3.74 (94)	1.96 (49)	0.55 (13)	M18 x 2.50
2.50 (63)	2.37 (60)	14.56 (369)	4.25 (107)	3.97 (100)	0.66 (16)	8.97 (227)	2.37 (60)	3.05 (77)	8.97 (227)	2.46 (62)	4.21 (106)	2.40 (60)	0.66 (16)	M22 x 2.50
3.00 (76)	2.87 (72)	15.74 (399)	5.27 (108)	4.96 (125)	0.86 (21)	10.23 (259)	2.87 (72)	3.57 (90)	11.37 (288)	2.97 (75)	4.80 (121)	2.91 (73)	0.86 (21)	1.12 x 12UNF
4.00 (101)	3.83 (71)	15.74 (399)	6.14 (155)	5.35 (135)	0.86 (21)	11.37 (288)	3.83 (97)	4.68 (118)	3.83 (71)	3.16 (80)	5.68 (144)	3.30 (83)	0.86 (21)	1.12 x 12UNF

### Rack and Pinion Actuator



### Normally Open/Closed

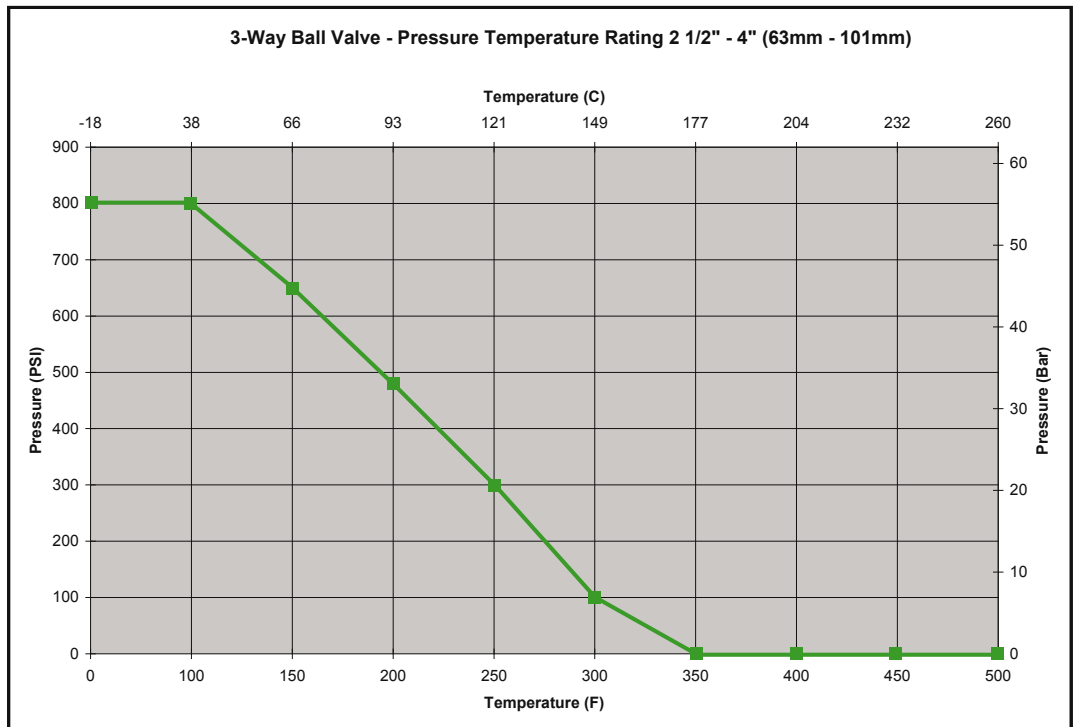
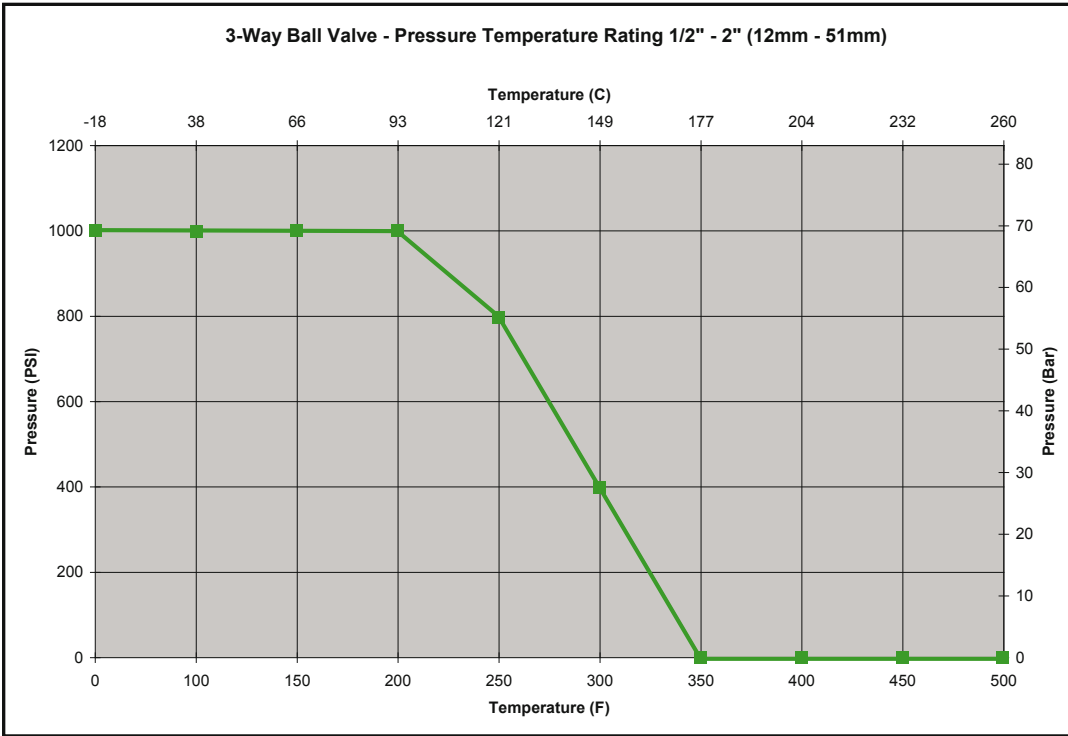
Valve Size in (mm)	A	B	C
0.50 (12)	5.68 (144)	5.80 (147)	3.20 (81)
0.75 (19)	5.68 (144)	6.02 (153)	3.20 (81)
1.00 (25)	5.68 (144)	6.65 (169)	3.20 (81)
1.50 (38)	7.20 (178)	9.17 (233)	4.68 (118)
2.00 (50)	7.20 (178)	9.96 (253)	4.68 (118)
2.50 (63)	2.37 (60)	11.10 (282)	4.68 (118)
3.00 (76)	10.22 (259)	13.42 (340)	5.53 (140)
4.00 (101)	10.22 (259)	14.21 (360)	5.53 (140)

### Air to Air Double Acting

Valve Size in (mm)	A	B	C
0.50 (12)	4.72 (119)	5.21 (132)	2.44 (62)
0.75 (19)	4.72 (119)	5.43 (138)	2.44 (62)
1.00 (25)	5.68 (144)	6.65 (169)	3.20 (81)
1.50 (38)	5.87 (149)	8.26 (209)	3.74 (95)
2.00 (50)	5.87 (149)	9.05 (229)	3.74 (95)
2.50 (63)	7.20 (178)	11.10 (282)	4.68 (118)
3.00 (76)	10.22 (259)	13.42 (340)	5.53 (140)
4.00 (101)	10.22 (259)	14.21 (360)	5.53 (140)

**ADDITIONAL TECHNICAL DATA:**

**Temperature Ratings - 350 Series**



### Ball Valve Torque vs. Rack and Pinion Actuator Torque Ratings - 300 and 350 Series

#### Imperial Units

Valve Size in (mm)	Min. Torque to Rotate Valve (Dry Condition)		Operating Air Pressure to Rotate Valve		Torque Output Air to Spring In-Lbs				Torque Output Air to Air In-Lbs	
	In-Lbs		psi		Spring Torque start/end		Air Torque start/end		Air Torque at operating air pressure	
	300 Series	350 Series	300 Series	350 Series	300 Series	350 Series	300 Series	350 Series	300 Series	350 Series
0.50 (12)	42	40	80		140/90	140/90	151/93	151/93	125	125
0.75 (19)	58	40	80		140/90	140/90	151/93	151/93	125	125
1.00 (25)	93	50	80		254/162	140/90	271/167	151/93	250	250
1.50 (38)	285	125	80		559/360	559/360	599/371	599/371	450	450
2.00 (50)	350	125	80		559/360	559/360	599/371	599/371	450	450
2.50 (63)	782	200	80		1320/787	559/360	1379/788	599/371	1000	1000
3.00 (76)	951	200	80		2091/1217	1320/787	2300/1335	2300/1335	1000	2250
4.00 (101)	1232	250	80		3130/1570	1320/787	3180/1600	2300/1335	2250	2250

### Ball Valve Torque vs. Rack and Pinion Actuator Torque Ratings - 300 and 350 Series

#### Metric Units

Valve Size in (mm)	Min. Torque to Rotate Valve (Dry Condition)		Operating Air Pressure to Rotate Valve		Torque Output Air to Spring N-m				Torque Output Air to Air N-m	
	N-m		bar		Spring Torque start/end		Air Torque start/end		Air Torque at operating air pressure	
	300 Series	350 Series	300 Series	350 Series	300 Series	350 Series	300 Series	350 Series	300 Series	350 Series
0.50 (12)	4.7	4.5	5		15.8/10.1	15.8/10.1	17.0/10.5	17.0/10.5	14.1	14.1
0.75 (19)	6.6	4.5	5		15.8/10.1	15.8/10.1	17.0/10.5	17.0/10.5	14.1	14.1
1.00 (25)	10.5	5.6	5		28.7/18.3	15.8/10.1	30.6/18.8	17.0/10.5	28.2	28.2
1.50 (38)	32.2	14.1	5		63.1/40.6	63.1/40.6	67.6/41.9	67.6/41.9	50.8	50.8
2.00 (50)	39.5	14.1	5		63.1/40.6	63.1/40.6	67.6/41.9	67.6/41.9	50.8	50.8
2.50 (63)	88.4	22.6	5		149.2/88.9	63.1/40.6	155.8/89.0	67.6/41.9	113	113
3.00 (76)	107.5	22.6	5		236.3/137.5	149.2/88.9	259.9/150.8	259.9/150.8	133	254.2
4.00 (101)	139.2	28.3	5		353.7/177.4	149.2/88.9	359.3/180.8	259.9/150.8	254.2	254.2



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**SPX FLOW TECHNOLOGY**

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