



# Pneumatic Double Acting

## Automated Ball Valve Package

### Series 88 3-Piece Ball Valve

Sizes 1/4" - 4"

Full Port Design

1000/1500/2000 psi WOG  
(by size)

316SST Body, Ball, & Stem

TH, SW, or BW Ends

Superior Live Loaded Packing  
System

Blowout Proof Stem w/ Dual  
Anti-Static Devices

RTFE Seats Standard

Pyramidal Stem Seal Design

#### STANDARDS

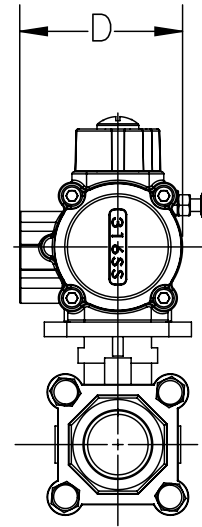
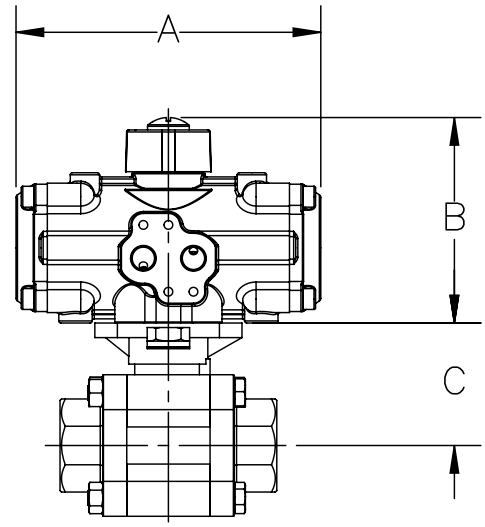
Design	ANSI/ASME B16.34
End Connections	ASME B16.25, B1.20.1, B16.11
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25, ISO 5209
Safety Integrity	IEC 61508:2010; SIL 3
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015



Direct Mount to TRIAC® S2 Series  
Stainless Steel Actuator

#### DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	VALVE Cv
1/4"	5.75	3.88	1.66	3.07	7
3/8"	5.75	3.88	1.66	3.07	8
1/2"	5.75	3.88	1.66	3.07	15
3/4"	5.75	3.88	1.83	3.07	40
1"	5.75	3.88	2.31	3.07	70
1-1/4"	6.81	4.49	2.46	3.58	110
1-1/2"	6.81	4.49	3.07	3.58	250
2"	8.03	5.30	3.42	4.42	430
2-1/2"	8.03	5.30	4.28	4.42	600
3"	10.63	6.32	4.63	5.31	1,100
4"	11.89	7.14	5.26	6.12	2,000

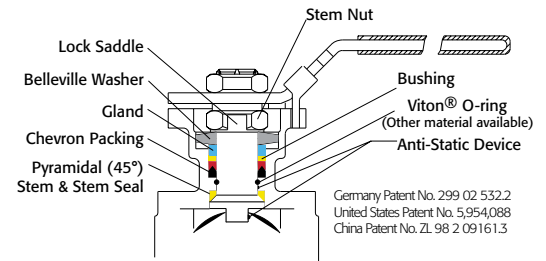


DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY

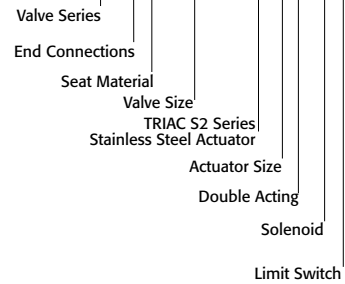
SERIES 88 3-Piece Direct Mount "Painless Stainless"

SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/4"	88-TX-025/S21D-XX
3/8"	88-TX-038/S21D-XX
1/2"	88-TX-050/S21D-XX
3/4"	88-TX-075/S21D-XX
1"	88-TX-100/S21D-XX
1-1/4"	88-TX-125/S22D-XX
1-1/2"	88-TX-150/S22D-XX
2"	88-TX-200/S23D-XX
2-1/2"	88-TX-250/S23D-XX
3"	88-TX-300/S24D-XX
4"	88-TX-400/S25D-XX

SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/4"	88-TX-025/S21D-XX
3/8"	88-TX-038/S21D-XX
1/2"	88-TX-050/S21D-XX
3/4"	88-TX-075/S21D-XX
1"	88-TX-100/S22D-XX
1-1/4"	88-TX-125/S22D-XX
1-1/2"	88-TX-150/S23D-XX
2"	88-TX-200/S23D-XX
2-1/2"	88-TX-250/S24D-XX
3"	88-TX-300/S24D-XX
4"	88-TX-400/S25D-XX



#### SAMPLE PART # 88-TX-150/S22D-XX



See valve part number matrix for complete part number and options.



#### OPTIONS

DESCRIPTION	PART NO. SUFFIX	DESCRIPTION	PART NO. SUFFIX
Type 4 Aluminum Solenoid	(A)	Type 4 Aluminum Limit Switch (2) spdt	(A)
Type 7 Aluminum Solenoid	(B)	Type 7 Aluminum Limit Switch (2) spdt	(B)
Type 4 Stainless Steel Solenoid	(Q)	Type 4 Stainless Steel Limit Switch	(Q)
Type 7 Stainless Steel Solenoid	(M)	Type 7 Stainless Steel Limit Switch	(M)

Other options available - call for details  
Actuators are sized based on clean/clear fluid.

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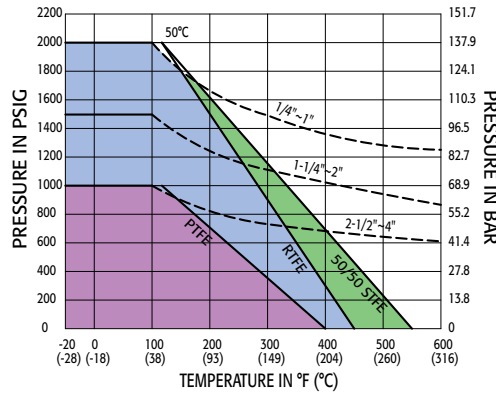
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# Series 88

## High Performance, Full Port 3-Piece Ball Valve ISO 5211 Direct Mount

1000/1500/2000 psi WOG by size  
1/4" to 4"

Pressure vs. Temperature Chart  
for Valves 1/4" to 4"

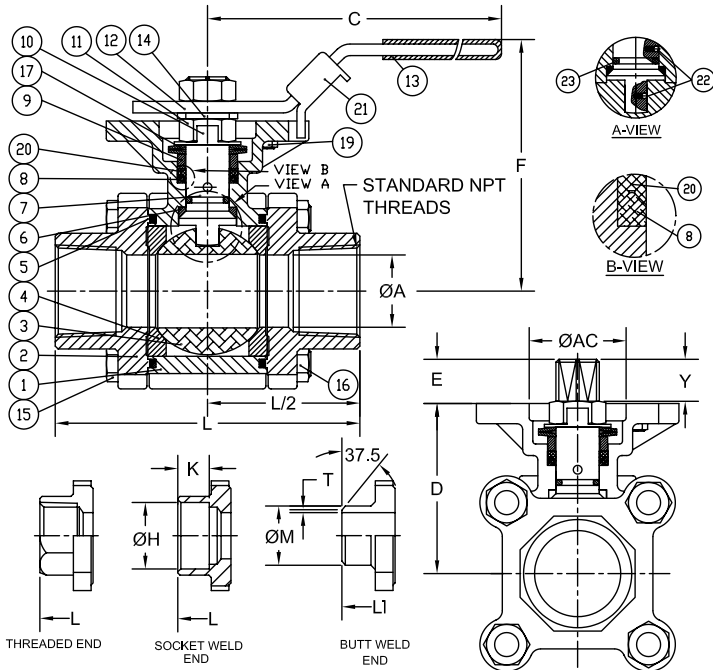
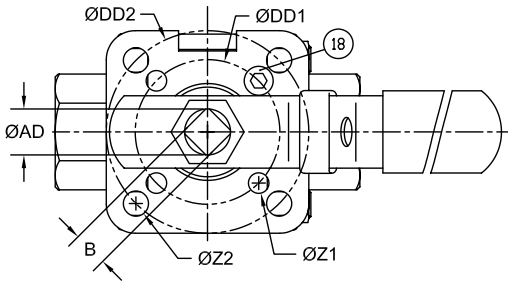


NOTE: Dotted line shows the rating for valve body. Solid line shows the rating for valve seat. Both ratings need to be considered when determining the limitation of the valve for specific application. Consult factory for other seat materials

Break Away Torque  
for RTFE Seats

SIZE	IN.-LBS.
1/4"	70
3/8"	70
1/2"	75
3/4"	100
1"	145
1-1/4"	220
1-1/2"	300
2"	420
2-1/2"	560
3"	900
4"	1,500

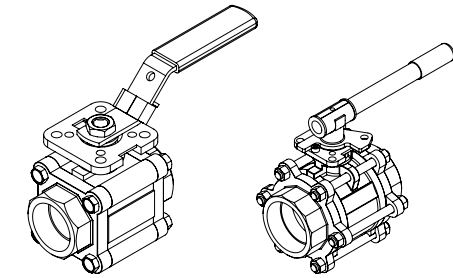
NOTE: For other seat material, consult factory



### MATERIALS LIST

NO.	PART NAME	QTY	STAINLESS STEEL
1	BODY	1	ASTM A351 GRADE CF8M
2	TH END CAP	2	ASTM A351 GRADE CF8M
2	BW/SW END CAP	2	ASTM A351 GRADE CF3M
3	BALL	1	1/4" THRU 3/8" ASTM A276 SS316
3	BALL	1	1/2" THRU 4" ASTM A351 GRADE CF8M
4	SEAT	2	RTFE
5	JOINT GASKET	2	PTFE
6	STEM SEAL	1	RTFE
7	STEM	1	ASTM A276 SS316
8	GLAND PACKING	1 <sup>^</sup>	PTFE
9	GLAND BUSHING	1	AISI 304
10	LOCK SADDLE	1	AISI 304
11	STEM NUT	1	AISI 304
12	HANDLE	1	AISI 304
13	HANDLE SLEEVE	1	VINYL
14	STEM WASHER	1	AISI 304
15	BODY BOLT/STUD	*	ASTM A193 GRADE B8
16	BODY NUT	#	ASTM A194 GRADE 8
17	BELLEVILLE WASHER	2	AISI 301
18	STOP BOLT	1	AISI 304
19	STOP BOLT NUT	1	AISI 304
20	GLAND WASHER	1	RTFE
21	HANDLE LOCK	1	AISI 304
22	ANTI-STATIC DEVICE	2	AISI 316
23	STEM O-RING	1	VITON®

<sup>^</sup> PACKING SET NOTE: SIZES 2-1/2" THRU 4" INCLUDE SEAT RETAINER RINGS.  
 \* 1/4" THRU 1-1/2" QTY = 4 PCS  
 \* 2" THRU 4" QTY = 6 PCS  
 #\* 1/4" THRU 1-1/2" QTY = 4 PCS  
 #\* 2" THRU 4" QTY = 12 PCS



BENT HANDLE  
SIZES 1-1/4" - 2"

PIPE HANDLE  
SIZES 2-1/2" - 4"

### DIMENSIONS (IN)

SIZE	ØA	B	C	D	E	F	H	K	L	L1	M	T	Y	AC	AD	DD1	DD2	ØZ2	ØZ1	(LBS)	ISO 5211
1/4"	0.45	0.354	5.47	1.66	0.25	3.00	0.55	0.39	2.95	2.95	0.85	0.13	0.25	1.04	0.44	1.654	1.969	0.28	0.28	1.6	F04/F05
3/8"	0.50	0.354	5.47	1.66	0.25	3.00	0.69	0.39	2.95	2.95	0.85	0.11	0.25	1.04	0.44	1.654	1.969	0.28	0.28	1.6	F04/F05
1/2"	0.59	0.354	5.47	1.66	0.25	3.00	0.85	0.39	2.85	2.95	0.85	0.06	0.25	1.07	0.44	1.654	1.969	0.28	0.28	2.0	F04/F05
3/4"	0.79	0.354	5.47	1.83	0.33	3.20	1.07	0.51	3.36	3.54	1.07	0.06	0.33	1.07	0.44	1.969	2.756	0.34	0.28	3.0	F05/F07
1"	0.98	0.433	6.50	2.31	0.41	3.86	1.34	0.51	4.15	4.33	1.34	0.06	0.41	1.34	0.56	1.969	2.756	0.34	0.28	4.5	F05/F07
1-1/4"	1.26	0.433	6.50	2.46	0.41	4.00	1.69	0.51	4.37	4.53	1.68	0.06	0.41	1.34	0.56	1.969	2.756	0.34	0.28	6.0	F05/F07
1-1/2"	1.50	0.551	8.46	3.11	0.53	5.04	1.92	0.51	5.01	5.12	1.91	0.06	0.53	1.54	0.74	1.969	2.756	0.34	0.28	10.0	F05/F07
2"	1.97	0.551	8.46	3.42	0.53	5.35	2.40	0.63	5.62	5.62	2.38	0.06	0.53	1.54	0.74	1.969	2.756	0.35	0.30	13.0	F05/F07
2-1/2"	2.56	0.748	10.31	4.28	0.66	6.60	2.89	0.63	7.28	7.28	3.00	N/A	0.66	2.09	0.94	2.756	4.016	0.47	0.39	26.0	F07/F10
3"	3.15	0.748	10.31	4.63	0.70	6.96	3.54	0.63	8.07	8.07	3.54	N/A	0.70	2.09	0.94	2.756	4.016	0.47	0.39	34.0	F07/F10
4"	3.94	0.748	12.28	5.26	0.66	7.59	4.54	0.79	9.45	9.45	4.57	N/A	0.66	2.09	0.94	2.756	4.016	0.47	0.39	52.0	F07/F10

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# Pneumatic Spring Return Automated Ball Valve Package

## Series 88 3-Piece Ball Valve

- Sizes 1/4" - 4"
- Full Port Design
- 1000/1500/2000 psi WOG (by size)
- 316SST Body, Ball, & Stem
- TH, SW, or BW Ends
- Superior Live Loaded Packing System
- Blowout Proof Stem w/ Dual Anti-Static Devices
- RTFE Seats Standard
- Pyramidal Stem Seal Design

### STANDARDS

Design	ANSI/ASME B16.34
End Connections	ASME B16.25, B1.20.1, B16.11
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25, ISO 5209
Safety Integrity	IEC 61508:2010; SIL 3
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015

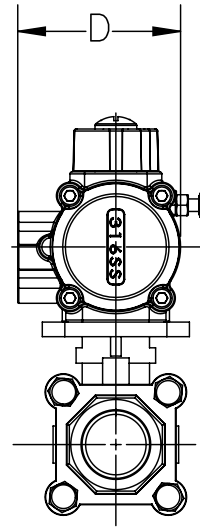
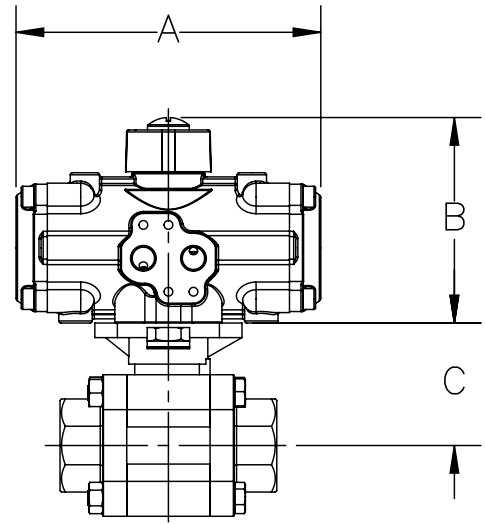


Direct Mount to TRIAC® S2 Series  
Stainless Steel Actuator

### DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	VALVE Cv
1/4"	5.75	3.88	1.66	3.07	7
3/8"	5.75	3.88	1.66	3.07	8
1/2"	5.75	3.88	1.66	3.07	15
3/4"	6.81	4.49	1.83	3.58	40
1"	8.03	5.30	2.31	4.42	70
1-1/4"	8.03	5.30	2.46	4.42	110
1-1/2"	10.63	6.32	3.07	5.31	250
2"	10.63	6.32	3.42	5.31	430
2-1/2"	10.63	6.32	4.28	5.31	600
3"	11.89	7.14	4.63	6.12	1,100
4"	15.51	7.83	5.26	6.75	2,000

DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY



SERIES 88 3-piece Direct Mount "Painless Stainless"

SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/4"	88-TX-025/S21S-XX
3/8"	88-TX-038/S21S-XX
1/2"	88-TX-050/S21S-XX
3/4"	88-TX-075/S22S-XX
1"	88-TX-100/S23S-XX
1-1/4"	88-TX-125/S23S-XX
1-1/2"	88-TX-150/S24S-XX
2"	88-TX-200/S24S-XX
2-1/2"	88-TX-250/S24S-XX
3"	88-TX-300/S25S-XX
4"	88-TX-400/S26S-XX

SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/4"	88-TX-025/S22S4-XX
3/8"	88-TX-038/S22S4-XX
1/2"	88-TX-050/S22S4-XX
3/4"	88-TX-075/S22S4-XX
1"	88-TX-100/S23S4-XX
1-1/4"	88-TX-125/S23S4-XX
1-1/2"	88-TX-150/S24S4-XX
2"	88-TX-200/S24S4-XX
2-1/2"	88-TX-250/S25S4-XX
3"	88-TX-300/S26S4-XX
4"	88-TX-400/S27S4-XX

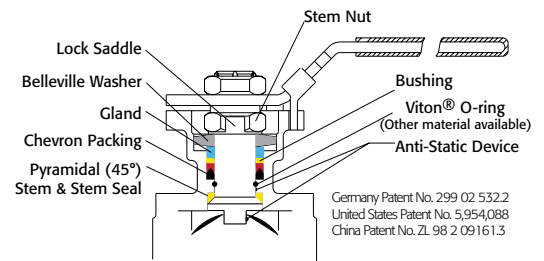
For spring return assemblies, all 80 psi assemblies will have 5 springs, and all 60 psi assemblies will have 4 springs (indicated by the 4-XX).

### OPTIONS

DESCRIPTION	PART NO. SUFFIX	DESCRIPTION	PART NO. SUFFIX
Type 4 Aluminum Solenoid	(A)	Type 4 Aluminum Limit Switch (2) spdt	(A)
Type 7 Aluminum Solenoid	(B)	Type 7 Aluminum Limit Switch (2) spdt	(B)
Type 4 Stainless Steel Solenoid	(Q)	Type 4 Stainless Steel Limit Switch	(Q)
Type 7 Stainless Steel Solenoid	(M)	Type 7 Stainless Steel Limit Switch	(M)

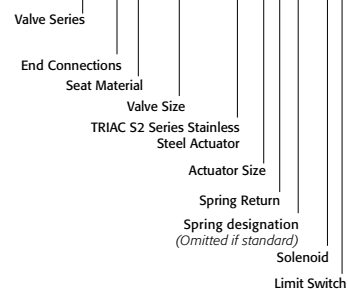
Other options available - call for details  
Actuators are sized based on clean/clear fluid.

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Germany Patent No. 299 02 532.2  
United States Patent No. 5,954,088  
China Patent No. ZL 98 2 09161.3

### SAMPLE PART # 88-TX-150/S24S4-XX



See valve part number matrix for complete part number and options.



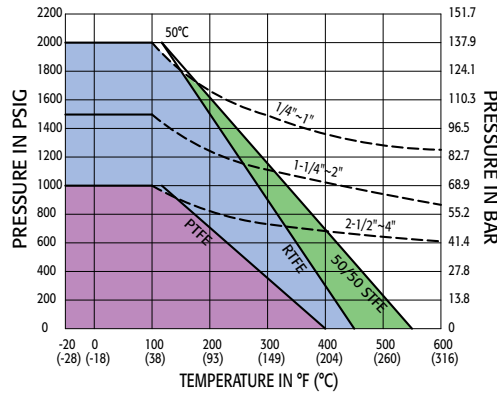
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# Series 88

## High Performance, Full Port 3-Piece Ball Valve ISO 5211 Direct Mount

1000/1500/2000 psi WOG by size  
1/4" to 4"

Pressure vs. Temperature Chart  
for Valves 1/4" to 4"

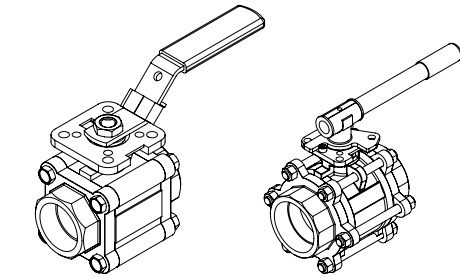
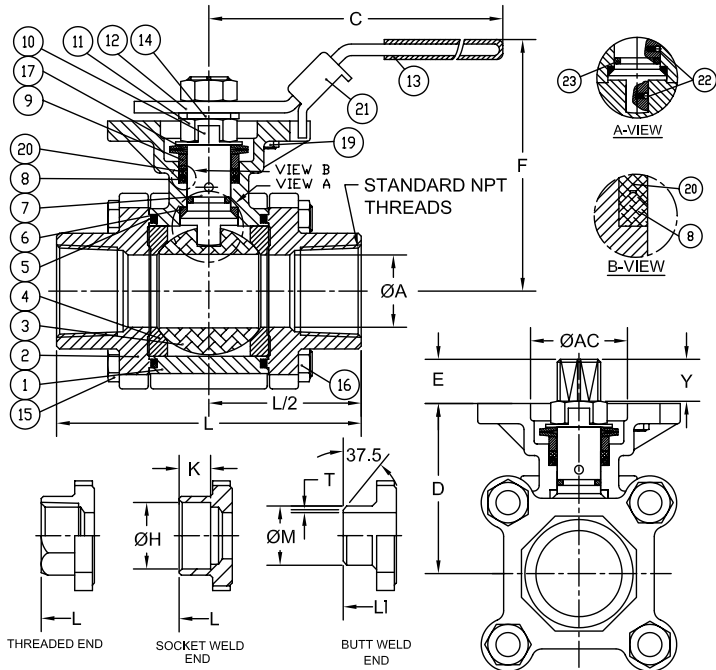
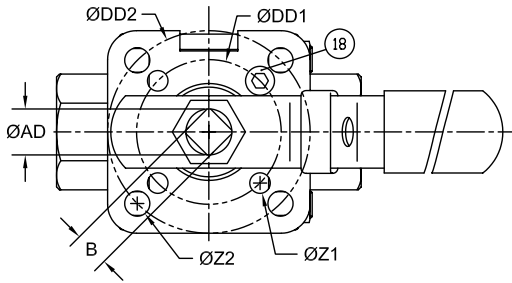


NOTE: Dotted line shows the rating for valve body. Solid line shows the rating for valve seat. Both ratings need to be considered when determining the limitation of the valve for specific application. Consult factory for other seat materials

Break Away Torque  
for RTFE Seats

SIZE	IN.-LBS.
1/4"	70
3/8"	70
1/2"	75
3/4"	100
1"	145
1-1/4"	220
1-1/2"	300
2"	420
2-1/2"	560
3"	900
4"	1,500

NOTE: For other seat material, consult factory



BENT HANDLE  
SIZES 1-1/4" - 2"

PIPE HANDLE  
SIZES 2-1/2" - 4"

### MATERIALS LIST

NO.	PART NAME	QTY	STAINLESS STEEL
1	BODY	1	ASTM A351 GRADE CF8M
2	TH END CAP	2	ASTM A351 GRADE CF8M
2	BW/SW END CAP	2	ASTM A351 GRADE CF3M
3	BALL	1	1/4" THRU 3/8" ASTM A276 SS316
3	BALL	1	1/2" THRU 4" ASTM A351 GRADE CF8M
4	SEAT	2	RTFE
5	JOINT GASKET	2	PTFE
6	STEM SEAL	1	RTFE
7	STEM	1	ASTM A276 SS316
8	GLAND PACKING	1 <sup>^</sup>	PTFE
9	GLAND BUSHING	1	AISI 304
10	LOCK SADDLE	1	AISI 304
11	STEM NUT	1	AISI 304
12	HANDLE	1	AISI 304
13	HANDLE SLEEVE	1	VINYL
14	STEM WASHER	1	AISI 304
15	BODY BOLT/STUD	*	ASTM A193 GRADE B8
16	BODY NUT	#	ASTM A194 GRADE 8
17	BELLEVILLE WASHER	2	AISI 301
18	STOP BOLT	1	AISI 304
19	STOP BOLT NUT	1	AISI 304
20	GLAND WASHER	1	RTFE
21	HANDLE LOCK	1	AISI 304
22	ANTI-STATIC DEVICE	2	AISI 316
23	STEM O-RING	1	VITON®

<sup>^</sup> PACKING SET NOTE: SIZES 2-1/2" THRU 4" INCLUDE SEAT RETAINER RINGS.  
 \* 1/4" THRU 1-1/2" QTY = 4 PCS  
 \* 2" THRU 4" QTY = 6 PCS  
 #\* 1/4" THRU 1-1/2" QTY = 4 PCS  
 #\* 2" THRU 4" QTY = 12 PCS

### DIMENSIONS (IN)

SIZE	ØA	B	C	D	E	F	H	K	L	L1	M	T	Y	AC	AD	DD1	DD2	ØZ2	ØZ1	(LBS)	ISO 5211
1/4"	0.45	0.354	5.47	1.66	0.25	3.00	0.55	0.39	2.95	2.95	0.85	0.13	0.25	1.04	0.44	1.654	1.969	0.28	0.28	1.6	F04/F05
3/8"	0.50	0.354	5.47	1.66	0.25	3.00	0.69	0.39	2.95	2.95	0.85	0.11	0.25	1.04	0.44	1.654	1.969	0.28	0.28	1.6	F04/F05
1/2"	0.59	0.354	5.47	1.66	0.25	3.00	0.85	0.39	2.85	2.95	0.85	0.06	0.25	1.07	0.44	1.654	1.969	0.28	0.28	2.0	F04/F05
3/4"	0.79	0.354	5.47	1.83	0.33	3.20	1.07	0.51	3.36	3.54	1.07	0.06	0.33	1.07	0.44	1.969	2.756	0.34	0.28	3.0	F05/F07
1"	0.98	0.433	6.50	2.31	0.41	3.86	1.34	0.51	4.15	4.33	1.34	0.06	0.41	1.34	0.56	1.969	2.756	0.34	0.28	4.5	F05/F07
1-1/4"	1.26	0.433	6.50	2.46	0.41	4.00	1.69	0.51	4.37	4.53	1.68	0.06	0.41	1.34	0.56	1.969	2.756	0.34	0.28	6.0	F05/F07
1-1/2"	1.50	0.551	8.46	3.11	0.53	5.04	1.92	0.51	5.01	5.12	1.91	0.06	0.53	1.54	0.74	1.969	2.756	0.34	0.28	10.0	F05/F07
2"	1.97	0.551	8.46	3.42	0.53	5.35	2.40	0.63	5.62	5.62	2.38	0.06	0.53	1.54	0.74	1.969	2.756	0.35	0.30	13.0	F05/F07
2-1/2"	2.56	0.748	10.31	4.28	0.66	6.60	2.89	0.63	7.28	7.28	3.00	N/A	0.66	2.09	0.94	2.756	4.016	0.47	0.39	26.0	F07/F10
3"	3.15	0.748	10.31	4.63	0.70	6.96	3.54	0.63	8.07	8.07	3.54	N/A	0.70	2.09	0.94	2.756	4.016	0.47	0.39	34.0	F07/F10
4"	3.94	0.748	12.28	5.26	0.66	7.59	4.54	0.79	9.45	9.45	4.57	N/A	0.66	2.09	0.94	2.756	4.016	0.47	0.39	52.0	F07/F10

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