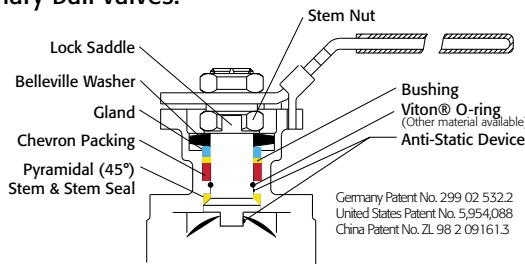




The 88 Series 3 -Piece Ball Valves feature a direct mount automation pad. The high quality investment castings feature a fully machined bore. The superior live-loaded packing system is accomplished with Belleville washers, "V" ring packing and a unique primary pyramidal stem seal. This advanced sealing system provides protection against stem leaks experienced by ordinary ball valves.



**Conforms to ASME B16.34 (2017)**

- SST Body - Class 260 to 600
- WCB Body - Class 254 to 600

RTFE seats are standard, but various options are available for seat materials. The 50/50 STFE seat option is excellent for services that call for higher temperatures and more difficult applications including steam. Call us for details.

**Easy to Automate!**

See automated data sheets for pre-sized assemblies



Pneumatic



Electric



**Series 88**  
**HIGH PERFORMANCE**  
**3-Piece Design**

Sizes 1/4" - 4"

Full Port Design

Conforms to ASME B16.34 (2017)

- Classes up to 600
- 1000 to 2000 psi (BPVC) by size

CF8M, WCB, Alloy 20,  
or Hastelloy C-276 (other materials available)

Threaded, Socket Weld, or Butt Weld Ends

Superior Live Loaded Packing System

Direct Mount

Blowout Proof Stem w/ Dual Anti-Static Devices

RTFE Seats Standard

Pyramidal Stem Seal Design

Monel Ball & Stem Available

Lockable Manual Handle



**STANDARDS**

Conforms to ASME B16.34 (2017)

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

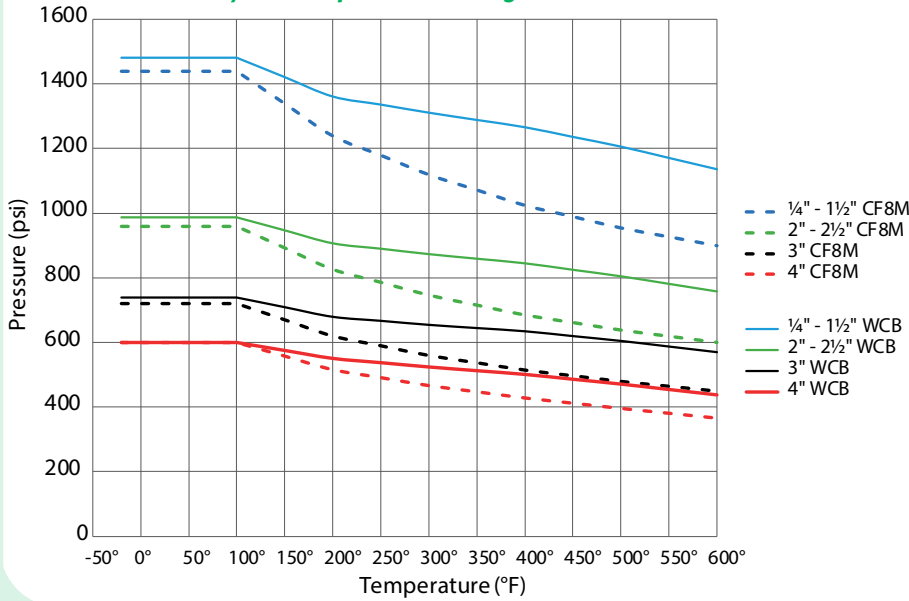
Page 2 | Valve Technical Data  
 Page 3 | Valve Materials & Dimensions  
 Page 4 | Double Acting Automation  
 Page 5 | Spring Return Automation  
 Page 6 | Electric Automation  
 Page 7 | How to Order & Options



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### Pressure vs. Temperature | Series 88 Body & End Cap Pressure Ratings B16.34-2017



Pressure Class/Rating		
Size	ASME B16.34-2017 Pressure Class	BPVC*-2019 Pressure Rating (psig)
1/4" - 1"	600	2000
1 1/4" - 1 1/2"	600	1500
2"	400	1500
2 1/2"	400	1000
3"	300	1000
4"	260 (88) 259 (88A) 259 (88T) 254 (88C)	1000

\*ASME Boiler Pressure Vessel Code

#### 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

#### Cv

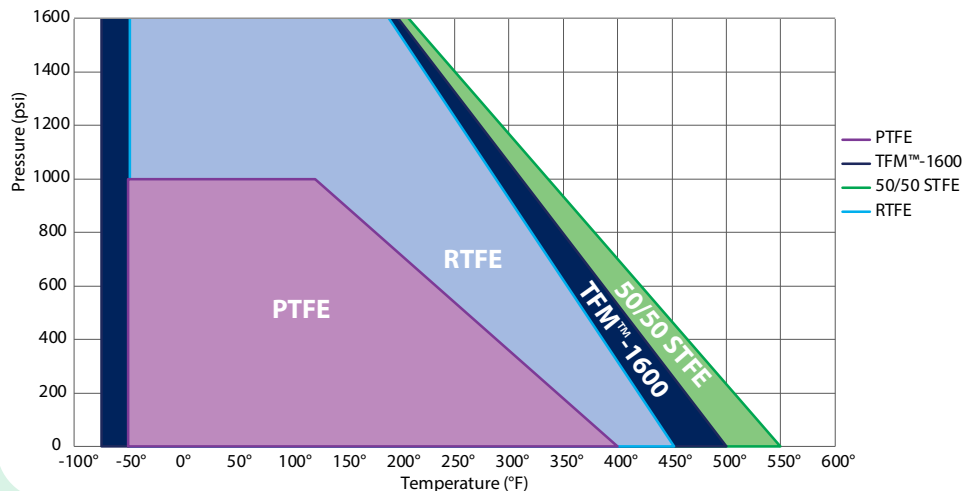
SIZE	Cv
1/4"	7
3/8"	8
1/2"	15
3/4"	40
1"	70
1 1/4"	110
1 1/2"	250
2"	430
2 1/2"	600
3"	1,100
4"	2,000

Pressure Class B16.34 (2017)				
Size	CF8M		WCB	
	Class	Rating (psi)	Class	Rating (psi)
1/4"	600	1440	600	1480
3/8"	600	1440	600	1480
1/2"	600	1440	600	1480
3/4"	600	1440	600	1480
1"	600	1440	600	1480
1 1/4"	600	1440	600	1480
1 1/2"	600	1440	600	1480
2"	400	960	400	986
2 1/2"	400	960	400	986
3"	300	720	300	740
4"	260	600	254	600

88 Component Temperature Ratings		
Component	Material	Temperature
Stem Packing	PTFE	-50°F to 450°F
Stem Seal	TFM™-1600	-75°F to 500°F
Gaskets	TFM™-1600	-75°F to 500°F
Seats (other materials available)	PTFE	-50°F to 400°F
	RTFE (standard)	-50°F to 450°F
	TFM™-1600	-75°F to 500°F
O-Rings	50/50 STFE	-50°F to 550°F
	FKM (standard)	-20°F to 450°F
	Markez® Z1028	5°F to 608°F
	Kalrez® 4079	30°F to 600°F
	Chemraz® 505	-22°F to 446°F
	Kalrez® 6375	-4°F to 527°F
	Perlast® G75M	5°F to 500°F
	Chemraz® 564	-40°F to 445°F
	Low Temp Buna	-65°F to 275°F
	EPDM	-70°F to 250°F
Silicone	-60°F to 400°F	

### Pressure vs. Temperature | Series 88 Seat Pressure Ratings

Temp	Pressure - Seat Material			
	RTFE	STFE	PTFE	TFM™-1600
-75°				2000
-50°	2000	2000	1000	2000
100°	2000	2000	1000	2000
122°	2000	2000	1000	2000
150°	1829	1869	899	1852
200°	1524	1636	719	1587
250°	1220	1402	540	1323
300°	915	1168	360	1058
350°	610	935	180	794
400°	305	701	0	529
450°	0	467		265
500°		234		0
550°		0		



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

Classes up to 600  
1000 - 2000 psi by size  
1/4" to 4"

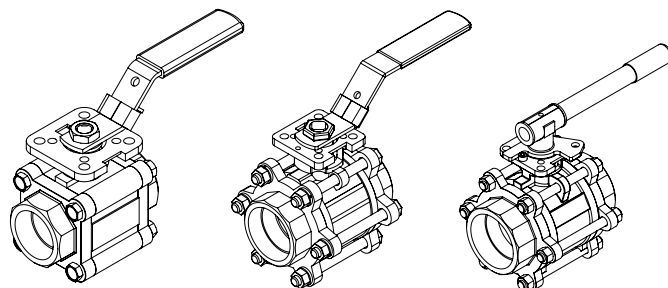
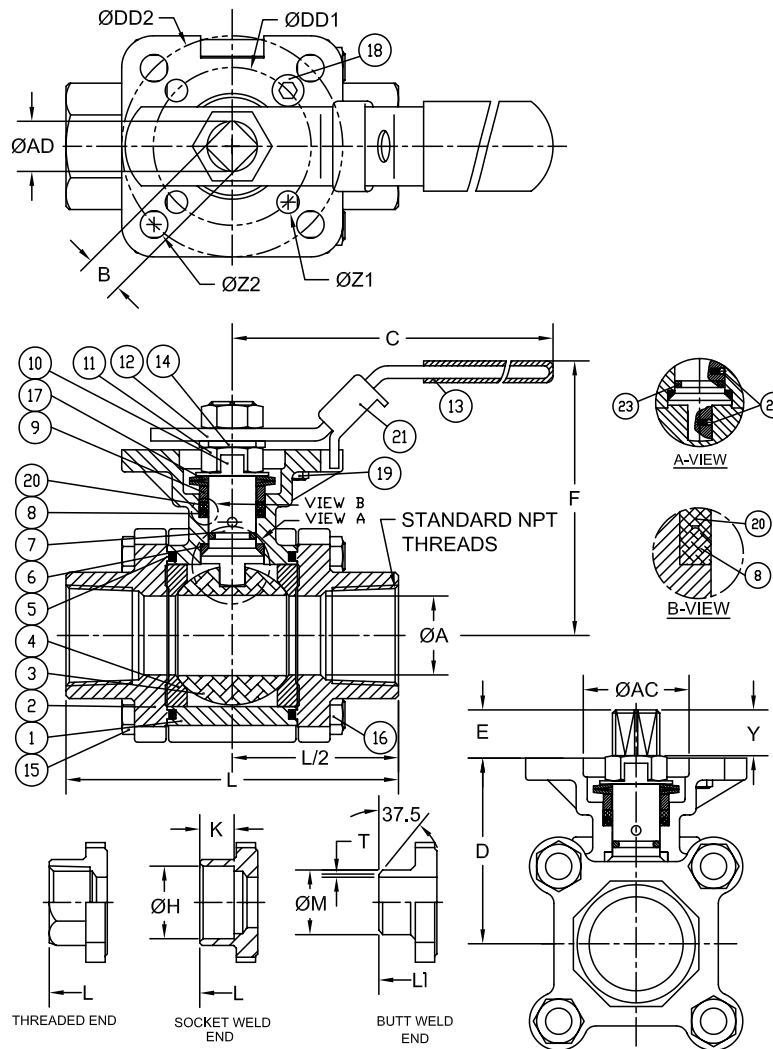
# Series 88

### MATERIALS LIST

NO.	PART NAME	QTY	STAINLESS STEEL	CARBON STEEL	ALLOY 20	HASTELLOY C-276	REPAIR KIT
1	BODY	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	ASTM A351 GRADE CN7M	ASTM A494 GRADE CW12MW	
2	TH END CAP	2	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	ASTM A351 GRADE CN7M	ASTM A494 GRADE CW12MW	
2	BW/SW END CAP	2	ASTM A351 GRADE CF3M	ASTM A216 GRADE WCB	ASTM A351 GRADE CN7M	ASTM A494 GRADE CW12MW	
3	BALL	1	1/4" THRU 3/8" ASTM A276 SS316	1/4" THRU 3/8" ASTM A276 SS316	ASTM A351 GRADE CN7M	ASTM A494 GRADE CW12MW	
3	BALL	1	1/2" THRU 4" ASTM A351 GRADE CF8M	1/2" THRU 4" ASTM A351 GRADE CF8M	ASTM A351 GRADE CN7M	ASTM A494 GRADE CW12MW	
4	SEAT	2	RTFE	RTFE	RTFE	TFM™-1600	✓
5	JOINT GASKET	2	TFM™-1600	TFM™-1600	TFM™-1600	TFM™-1600	✓
6	STEM SEAL	1	TFM™-1600	TFM™-1600	TFM™-1600	TFM™-1600	✓
7	STEM	1	ASTM A276 SS316	ASTM A276 SS316	ASTM A351 GRADE CN7M	ASTM B574 UNS N10276	
8	GLAND PACKING	1 <sup>^</sup>	PTFE	PTFE	PTFE	TFM™-1600	✓
9	GLAND BUSHING	1	AISI 304	AISI 304	AISI 304	AISI 304	
10	LOCK SADDLE	1	AISI 304	AISI 304	AISI 304	AISI 304	
11	STEM NUT	1	AISI 304	AISI 304	AISI 304	AISI 304	
12	HANDLE	1	AISI 304	AISI 304	AISI 304	AISI 316	
13	HANDLE SLEEVE	1	VINYL	VINYL	VINYL	VINYL	
14	STEM WASHER	1	AISI 304	AISI 304	AISI 304	AISI 304	
15	BODY BOLT/STUD	*	ASTM A193 GRADE B8	ASTM A193 GRADE B8	ASTM A193 GRADE B8	ISO 3506-1 A4-70	
16	BODY NUT	#	ASTM A194 GRADE 8	ASTM A194 GRADE 8	ASTM A194 GRADE 8	ISO 3506-2 A4-70	
17	BELLEVILLE WASHER	2	AISI 301	AISI 301	AISI 301	AISI 301	
18	STOP BOLT	1	AISI 304	AISI 304	AISI 304	AISI 304	
19	STOP BOLT NUT	1	AISI 304	AISI 304	AISI 304	AISI 304	
20	GLAND WASHER	1	RTFE	RTFE	RTFE	TFM™-1600	✓
21	HANDLE LOCK	1	AISI 304	AISI 304	AISI 304	AISI 316	
22	ANTI-STATIC DEVICE	2	AISI 316	AISI 316	AISI 316	AISI 316	
23	STEM O-RING	1	FKM	FKM	FKM	FKM	✓

<sup>^</sup> PACKING SET  
\* 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

NOTE: Sizes 2 1/2" thru 4" include stainless steel seat retainer rings.



### DIMENSIONS (IN)

SIZE	$\varnothing A$	B	C	D	E	F	H	K	L	L1	M	T	Y	AC	AD	DD1	DD2	$\varnothing Z2$	$\varnothing Z1$	(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	0.08	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	0.08	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	0.08	0.66	2.09	0.94	2.756	4.016	0.47	0.39	52.0	F07/F10

A-T Controls reserves the right to change product designs and technical/dimensional specifications WITHOUT notice.