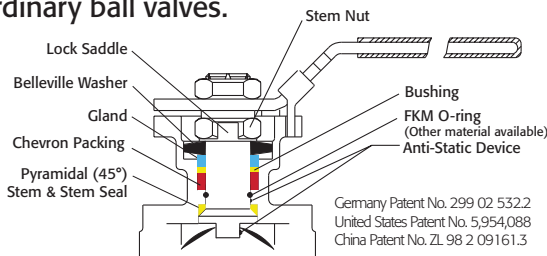


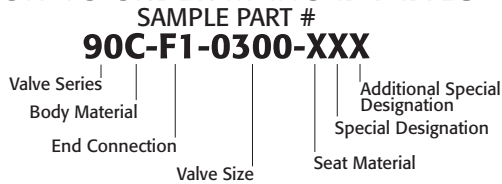


Triac 90 Series Flanged Ball Valves feature a split body design. The high quality investment castings feature a fully machined bore. The superior live-loaded packing system is accomplished with Belleville washers, "V" ring packing and a unique primary pyramidal stem seal. This advanced sealing system provides protection against stem leaks experienced by ordinary ball valves.



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.

### HOW TO ORDER MANUAL VALVES



See part number matrix for itemized options

### Easy to Automate!

See automated data sheets for pre-sized assemblies



Pneumatic



Electric

**A-T Controls, Inc.**

## Series 90/93\* Split Body Flanged Ball Valve

Sizes 1/2" – 12"

ANSI Class 150

Full Port Design

316SST, WCB, Alloy 20 or Hastelloy C-276 (1" - 4")

Superior Live Loaded Packing System

ISO 5211 Actuator Mounting Pad

Blowout Proof Stem w/ Dual Anti-Static Devices

RTFE Seats Standard

Pyramidal Stem Seal Design

Monel Ball & Stem Available

Lockable Manual Handle



### STANDARDS

Design	ANSI/ASME B16.34 (fully conforms)
Face to Face	ANSI/ASME B16.10
Flange Dimensions	ANSI/ASME B16.5
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25
Safety Integrity	IEC 61508:2010; SIL 3 (90 Series only)
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Gas Shut-off Valves	CSA 3.16-15 (6" Series 93 only)

### TABLE OF CONTENTS:

- Page 2 - Materials & Dimensions
- Page 3 - Technical Data
- Page 4 - Double Acting
- Page 5 - Spring Return
- Page 6 - Electric
- Page 7 - How to Order - Manual
- Page 8 - How to Order - Automated

\*Series 93 denotes sand cast 6"-12". TA-Luft certification applies to Series 90 only.

**A-T Controls, Inc.**

9955 International Blvd.  
Cincinnati, Ohio 45246  
www.atcontrols.com

PHONE (513) 247-5465  
FAX (513) 247-5462  
sales@atcontrols.com

**SERIES 90/93 Split Body Flanged Ball Valve**

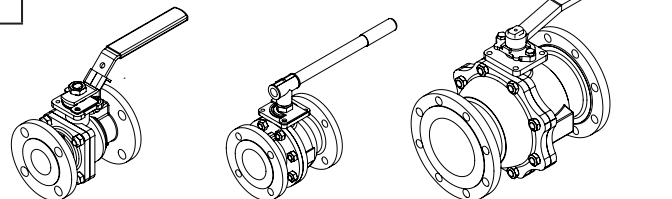
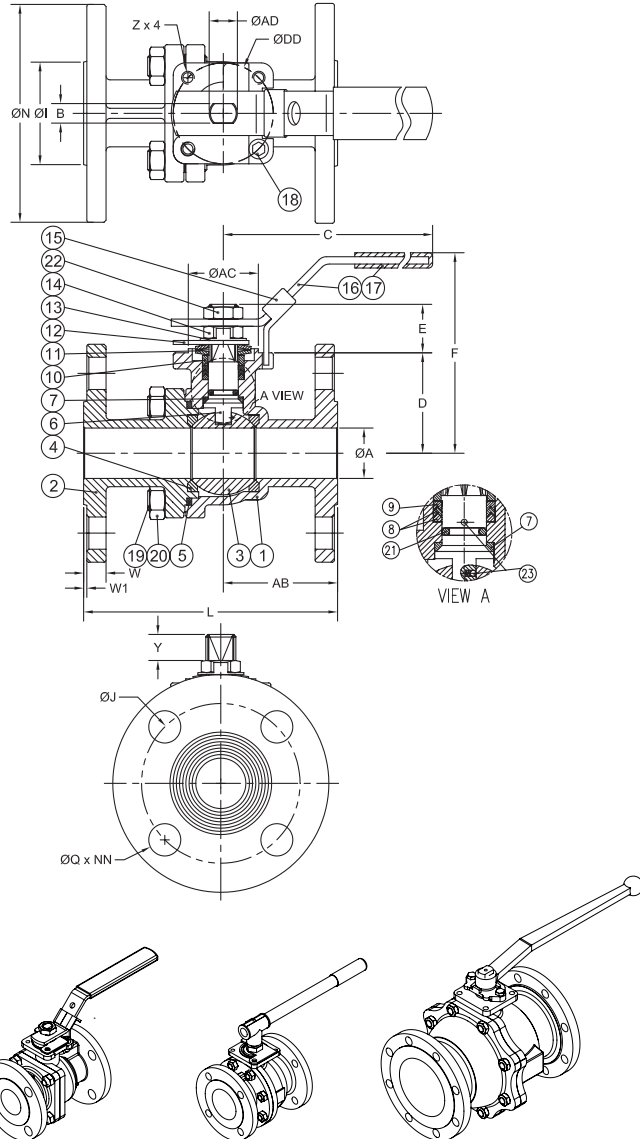
# Series 90/93

## High Performance, Full Port Split Body Flanged Ball Valve Series 90/93 (ANSI Class 150)

### 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	END CAP	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	ASTM A351 GRADE CN7M	ASTM A494 Grade CW12MW	
3	BALL	1	ASTM A351 GRADE CF8M	ASTM A351 GRADE CF8M	ASTM A351 GRADE CN7M	ASTM A494 Grade CW12MW	
4	SEAT	2	RTFE	RTFE	RTFE	TFM™-1600	✓
5	JOINT GASKET	1	TFM™-1600	TFM™-1600	TFM™-1600	TFM™-1600	✓
6	STEM	1	ASTM A276 SS316	ASTM A276 SS316	ASTM A351 GRADE CN7M	UNS N10276	
7	STEM SEAL	1	TFM™-1600	TFM™-1600	TFM™-1600	TFM™-1600	✓
8	GLAND PACKING	1^	PTFE	PTFE	PTFE	TFM™-1600	✓
9	GLAND WASHER	1	RTFE	RTFE	RTFE	TFM™-1600	✓
10	GLAND BUSHING	1	AISI 304	AISI 304	AISI 304	AISI 304	
11	BELLEVILLE WASHER	2	AISI 301	AISI 301	AISI 301	AISI 301	
12	LOCKING PLATE	1	AISI 304	AISI 304	AISI 304	AISI 304	
13	LOCK SADDLE	1	AISI 304	AISI 304	AISI 304	AISI 304	
14	STEM NUT	1	AISI 304	AISI 304	AISI 304	AISI 304	
15	HANDLE LOCK	1	AISI 304	AISI 304	AISI 304	AISI 316	
16	HANDLE	1	AISI 304	AISI 304	AISI 304	AISI 316	
17	HANDLE SLEEVE	1	VINYL	VINYL	VINYL	VINYL	
18	STOP BOLT	1	AISI 304	AISI 304	AISI 304	AISI 304	
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	Body Bolts	1/2"-2"	ASTM A193 GRADE B8				ISO 3506-1 A4-70
		2 1/2"-4"	ISO 3506-1 A2-70				
		6"-12"	ASTM A193 GRADE B8	ASTM A193 GRADE B7	ASTM A193 GRADE B8		N/A
20	Body Nuts	1/2"-2"	ASTM A194 GRADE 8				ISO 3506-2 A4-70
		2 1/2"-4"	ISO 3506-2 A2-70				
		6"-12"	ASTM A194 GRADE 8	ASTM A194 GRADE 2H	ASTM A194 GRADE 8		N/A
21	O-RING	1**	FKM	FKM	FKM	FKM	✓
22	HANDLE NUT	1	AISI 304	AISI 304	AISI 304	AISI 304	
23	ANTI-STATIC DEVICE	2	AISI 316	AISI 316	AISI 316	AISI 316	

\*QTY = 8 PCS for 2-1/2" THRU 6"    » Call for material details on Hastelloy C-276 valves    » See website for Series 93 bill of material drawing  
 QTY = 12 PCS for 8"  
 QTY = 16 PCS for 10" THRU 12"



BENT HANDLE SIZES 1/2" - 2-1/2"    PIPE HANDLE SIZES 3" - 4"    CAST HANDLE SIZES 6"  
 NOTE: A-T CONTROLS RECOMMENDS A GEAR FOR 6" VALVES AND LARGER. 6" SERIES 93 VALVES DO NOT HAVE LOCKABLE HANDLES.

### DIMENSIONS (IN)

#### INVESTMENT CAST BODY (Series 90)

SIZE	A	B	C	D	E	F	I	J	L	N	Q	W	W1	Y	Z	AB	AC	AD	DD	NN	(LBS)	ISO 5211
1/2"	0.59	0.315	6.69	1.34	0.92	3.15	1.47	2.38	4.26	3.50	0.63	0.44	0.06	0.36	M5	1.82	1.17	0.43	1.654	4	3.7	F04
3/4"	0.79	0.315	6.69	1.65	0.94	3.43	1.82	2.75	4.62	3.88	0.63	0.44	0.06	0.40	M5	2.17	1.17	0.43	1.654	4	4.6	F04
1"	0.98	0.382	8.05	1.95	0.94	3.85	2.08	3.13	5.00	4.26	0.63	0.44	0.06	0.42	M6	2.20	1.37	0.56	1.969	4	6.8	F05
1-1/2"	1.50	0.472	10.28	3.08	1.37	6.02	2.88	3.88	6.50	5.00	0.63	0.56	0.06	0.58	M8	2.81	2.17	0.75	2.756	4	13.6	F07
2"	1.97	0.472	10.28	3.40	1.37	6.38	3.62	4.75	7.02	6.00	0.75	0.63	0.06	0.58	M8	3.38	2.17	0.75	2.756	4	19.2	F07
2-1/2"	2.56	0.472	10.28	3.83	1.37	6.81	4.12	5.50	7.49	7.00	0.75	0.69	0.06	0.58	M8	3.02	2.17	0.75	2.756	4	30.0	F07
3"	3.15	0.591	13.94	4.23	1.81	6.95	5.00	6.00	8.01	7.50	0.75	0.75	0.06	0.93	M10	4.01	2.76	0.94	4.016	4	41.0	F10
4"	3.94	0.591	13.94	4.82	1.79	7.52	6.19	7.50	9.04	9.00	0.75	0.94	0.06	0.93	M10	4.06	2.76	0.94	4.016	8	65.0	F10

#### SAND CAST BODY (Series 93)

6"	6.00	0.910	21.00	6.61	2.64	11.25	8.50	9.50	15.51	10.98	0.87	1.00	0.06	1.57	1/2-13	7.06	CF	1.64	4.921	8	168.0	F12
8"	8.00	0.910	N/A	8.86	2.40	13.26	10.63	11.75	17.99	13.50	0.87	1.13	0.06	1.26	1/2-13	8.40	CF	1.64	4.921	8	232.0	F12
10"	9.84	1.181	N/A	10.43	3.94	15.86	12.76	14.25	20.98	15.95	0.98	1.21	0.06	1.42	5/8-11	CF	CF	1.97	5.512	12	430.0	F14
12"	11.81	1.378	N/A	12.83	4.09	18.18	15.00	17.00	24.02	19.02	0.98	1.25	0.06	1.50	5/8-11	CF	CF	1.97	5.512	12	551.0	F14

#### Series 93 Note:

Due to differences between sand cast and investment cast valves, A-T Controls requires that each valve be measured for the correct stem height and width before making a mounting adaption.

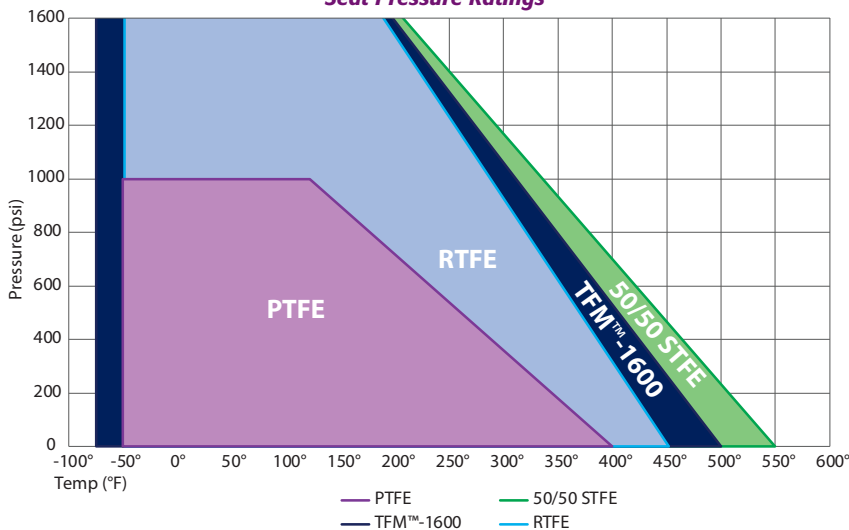
Standard manual valves should be ordered with an automation gland if A-T Controls is not making the mounting kit.

Dimensions B, E, and Y are for reference only.

# High Performance, Full Port Split Body Flanged Ball Valve Series 90/93 (ANSI Class 150)

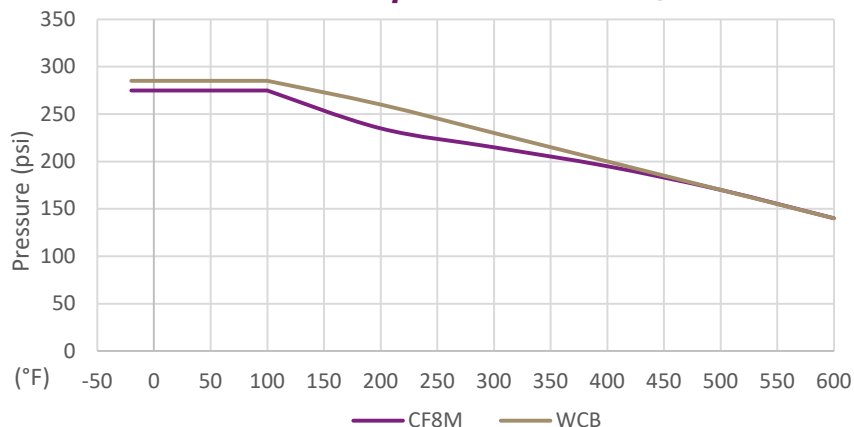
# Series 90/93

**Pressure vs. Temperature - Series 90/93**  
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		

**Pressure vs. Temperature - Series 90/93**



Temp	CF8M psi	WCB psi
-20°	275	285
50°	275	285
75°	275	285
90°	275	285
99°	275	285
100°	275	285
200°	235	260
300°	215	230
400°	195	200
500°	170	170
600°	140	140

### 90/93 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
	50/50 STFE	-50°F to 550°F
O-Rings	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

NOTE: At temperature, valves are limited by either the valve body/end cap pressure ratings, seat pressure ratings, or packing/stem seal/gaskets; whichever is lower.

VALVE SIZE	VALVE Cv
1/2"	15
3/4"	45
1"	85
1-1/2"	275
2"	460
2-1/2"	700
3"	1,100
4"	2,200
6"	5,150
8"	10,000
10"	15,000
12"	21,000

BREAKAWAY TORQUES	
SIZE	IN-LBS
1/2"	45
3/4"	73
1"	91
1-1/2"	230
2"	297
2-1/2"	535
3"	768
4"	1250
6"	4,800
8"	10,300
10"	18,000
12"	24,209

Published torques are based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

# Pneumatic Double Acting

## Automated Ball Valve Package

Series 90/93  
ANSI Class 150  
Flanged Ball Valve

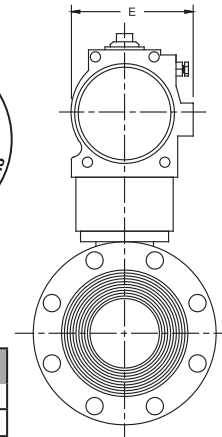
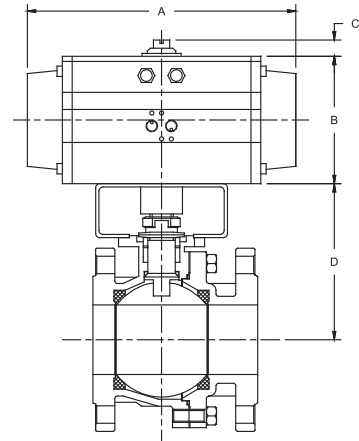
- Sizes 1/2" - 12"
- Available in 316SST, WCB or Alloy 20
- ANSI Class 150
- Full Port Design
- Superior Live Loaded Packing System
- Blowout Proof Stem w/ Dual Anti-Static Devices
- RTFE Seats Standard
- Pyramidal Stem Seal Design
- Monel Ball & Stem Available

### STANDARDS

Design	ANSI/ASME B16.34 (fully conforms)
Face to Face	ANSI/ASME B16.10
Flange Dimensions	ANSI/ASME B16.5
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25
Safety Integrity	IEC 61508:2010; SIL 3 (90 Series only)
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Gas Shut-off Valves	CSA 3.16-15 (6" Series 93 only)



150# Flanged



### DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	E	VALVE Cv
1/2"	5.98	2.76	0.79	2.91	2.58	15
3/4"	5.98	2.76	0.79	3.21	2.58	45
1"	7.95	3.43	0.79	3.52	3.29	85
1-1/2"	9.29	4.49	0.79	5.04	4.41	275
2"	9.29	4.49	0.79	5.37	4.41	460
2-1/2"	10.87	4.88	0.79	5.80	4.82	700
3"	11.46	5.28	0.79	6.85	5.20	1,100
4"	13.90	6.18	0.79	7.44	6.04	2,200
6"	20.95	8.31	1.18	9.96	7.64	5,150
8"	24.37	10.12	1.18	12.21	9.29	10,000

DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY

SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/2"	90-F1-050/TR1D-XX
3/4"	90-F1-075/TR1D-XX
1"	90-F1-100/2R2D-XX
1-1/2"	90-F1-150/2R3D-XX
2"	90-F1-200/2R3D-XX
2-1/2"	90-F1-250/2R4D-XX
3"	90-F1-300/2R5D-XX
4"	90-F1-400/2R6D-XX
6"	93-F1-600/2R8D-XX
8"	93-F1-800/2R0D-XX

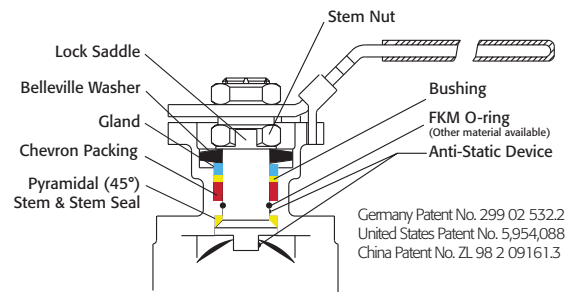
SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/2"	90-F1-050/TR1D-XX
3/4"	90-F1-075/2R2D-XX
1"	90-F1-100/2R2D-XX
1-1/2"	90-F1-150/2R3D-XX
2"	90-F1-200/2R3D-XX
2-1/2"	90-F1-250/2R5D-XX
3"	90-F1-300/2R6D-XX
4"	90-F1-400/2R6D-XX
6"	93-F1-600/2R9D-XX
8"	93-F1-800/2RAD-XX

Series 90 denotes investment cast / Series 93 denotes sand cast

### OPTIONS

DESCRIPTION	PART NO. SUFFIX	DESCRIPTION	PART NO. SUFFIX
NEMA 4 Solenoid	(A)	NEMA 4 Limit Switch (2) spdt	(A)
NEMA 7 Solenoid	(B)	NEMA 7 Limit Switch (2) spdt	(B)
Intrinsically Safe Solenoid	(C)	Intrinsically Safe Limit Switch	(C)

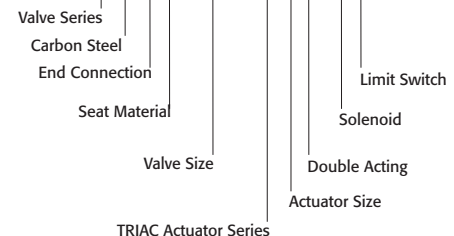
Other options available - call for details. Actuators are sized based on clean/clear fluid.



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

SAMPLE PART #

**90C-F1-150/2R3D-XX**



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

# Pneumatic Spring Return Automated Ball Valve Package

Series 90/93  
ANSI Class 150  
Flanged Ball Valve

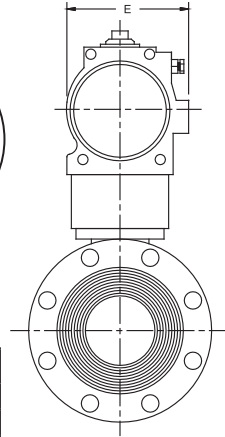
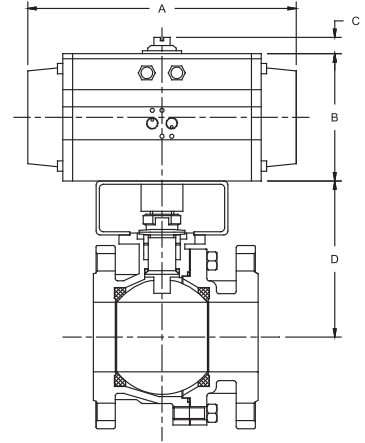
- Sizes 1/2" - 12"
- Available in 316SST, WCB or Alloy 20
- ANSI Class 150
- Full Port Design
- Superior Live Loaded Packing System
- Blowout Proof Stem w/ Dual Anti-Static Devices
- RTFE Seats Standard
- Pyramidal Stem Seal Design
- Monel Ball & Stem Available

### STANDARDS

Design	ANSI/ASME B16.34 (fully conforms)
Face to Face	ANSI/ASME B16.10
Flange Dimensions	ANSI/ASME B16.5
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25
Safety Integrity	IEC 61508:2010; SIL 3 (90 Series only)
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Gas Shut-off Valves	CSA 3.16-15 (6" Series 93 only)



150# Flanged



SERIES 90/93 150# Flanged

### DIMENSIONS (IN)

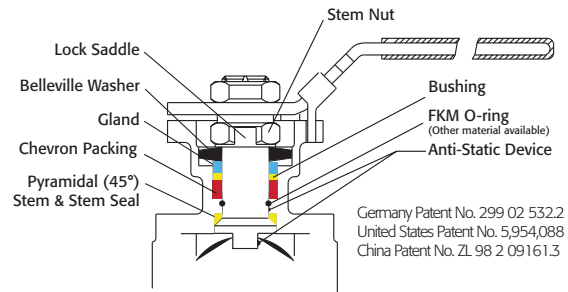
VALVE SIZE	A	B	C	D	E	VALVE Cv
1/2"	7.95	3.43	0.79	2.90	3.29	15
3/4"	7.95	3.43	0.79	3.20	3.29	45
1"	9.29	4.49	0.79	3.52	4.41	85
1-1/2"	9.29	4.49	0.79	5.05	4.41	275
2"	10.87	4.88	0.79	5.37	4.82	460
2-1/2"	13.90	6.18	0.79	5.80	6.04	700
3"	13.90	6.18	0.79	6.85	6.04	1,100
4"	15.16	6.93	0.79	7.44	6.69	2,200
6"	27.38	10.12	1.18	10.61	9.29	5,150
8"	40.50	10.12	1.18	14.86	9.29	10,000

DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY

SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/2"	90-F1-050/2R2S-XX
3/4"	90-F1-075/2R3S-XX
1"	90-F1-100/2R3S-XX
1-1/2"	90-F1-150/2R3S-XX
2"	90-F1-200/2R4S-XX
2-1/2"	90-F1-250/2R6S-XX
3"	90-F1-300/2R6S-XX
4"	90-F1-400/2R7S-XX
6"	93-F1-600/2RAS-XX
8"	93-F1-800/2RBS-XX

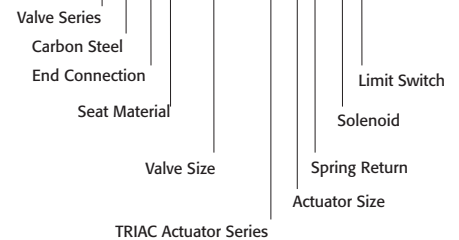
SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/2"	90-F1-050/2R3S-XX
3/4"	90-F1-075/2R3S-XX
1"	90-F1-100/2R3S-XX
1-1/2"	90-F1-150/2R4S-XX
2"	90-F1-200/2R5S-XX
2-1/2"	90-F1-250/2R6S-XX
3"	90-F1-300/2R6S-XX
4"	90-F1-400/2R7S-XX
6"	93-F1-600/2RAS-XX
8"	93-F1-800/2RBS-XX

Series 90 denotes investment cast / Series 93 denotes sand cast



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

### SAMPLE PART # 90C-F1-150/2R3S-XX



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

### OPTIONS

DESCRIPTION	PART NO. SUFFIX	DESCRIPTION	PART NO. SUFFIX
NEMA 4 Solenoid	(A)	NEMA 4 Limit Switch (2) spdt	(A)
NEMA 7 Solenoid	(B)	NEMA 7 Limit Switch (2) spdt	(B)
Intrinsically Safe Solenoid	(C)	Intrinsically Safe Limit Switch	(C)

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

# Electric

## Automated Ball Valve Package

### Series 90/93 ANSI Class 150 Flanged Ball Valve

Sizes 1/2" - 12"

Available in 316SST, WCB or Alloy 20

ANSI Class 150

Full Port Design

Superior Live Loaded Packing System

Blowout Proof Stem w/ Dual Anti-Static Devices

RTFE Seats Standard

Pyramidal Stem Seal Design

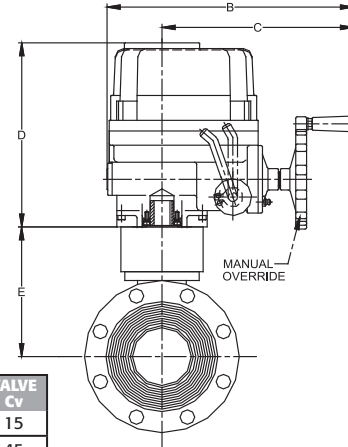
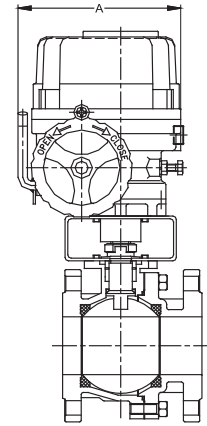
Monel Ball & Stem Available

#### STANDARDS

Design	ANSI/ASME B16.34 (fully conforms)
Face to Face	ANSI/ASME B16.10
Flange Dimensions	ANSI/ASME B16.5
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25
Safety Integrity	IEC 61508:2010; SIL 3 (90 Series only)
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Gas Shut-off Valves	CSA 3.16-15 (6" Series 93 only)



150# Flanged



**SERIES 90/93 150# Flanged**

#### DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	E	VALVE Cv
1/2"	4.94	4.08	N/A	5.24	2.90	15
3/4"	4.94	4.08	N/A	5.24	3.20	45
1"	4.94	4.08	N/A	5.24	3.52	85
1-1/2"	4.94	4.08	N/A	5.24	5.05	275
2"	4.94	4.08	N/A	5.24	5.37	460
2-1/2"	9.02	13.31	10.43	10.55	5.80	700
3"	9.02	13.31	10.43	10.55	6.85	1,100
4"	10.20	14.49	11.26	11.42	7.44	2,200
6"	11.69	16.14	12.09	12.99	9.96	5,150
8"	12.58	16.14	12.09	22.17	14.86	10,000

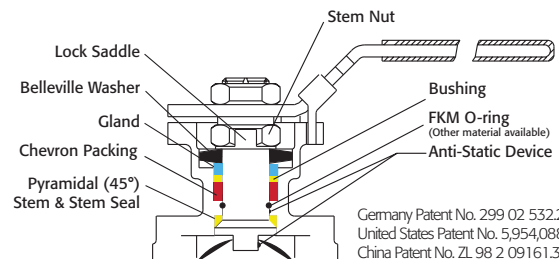
ON-OFF	
SIZE	MODEL
1/2"	90-F1-050/WEA1-XX
3/4"	90-F1-075/WEA1-XX
1"	90-F1-100/WEA1-XX
1-1/2"	90-F1-150/WEA1-XX
2"	90-F1-200/WEB1-XX
2-1/2"	90-F1-250/WEC1-XX
3"	90-F1-300/WEC1-XX
4"	90-F1-400/WEE1-XX
6"	93-F1-600/WEH1-XX
8"	93-F1-800/WEK1-XX

MODULATING	
SIZE	MODEL
1/2"	90-F1-050/WEA2-XX
3/4"	90-F1-075/WEA2-XX
1"	90-F1-100/WEA2-XX
1-1/2"	90-F1-150/WEA2-XX
2"	90-F1-200/WEB2-XX
2-1/2"	90-F1-250/WEC2-XX
3"	90-F1-300/WEC2-XX
4"	90-F1-400/WEE2-XX
6"	93-F1-600/WEH2-XX
8"	93-F1-800/WEK2-XX

#### OPTIONS

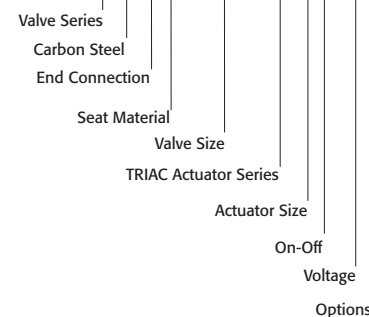
DESCRIPTION
24 VAC/24 VDC/220VAC
Feedback potentiometer

NOTE: Heater and thermostat standard  
(2) auxiliary switches standard  
Other options available - call for details  
Actuators are sized based on clean/clear fluid.



Germany Patent No. 299 02 5322  
United States Patent No. 5,954,088  
China Patent No. ZL 98 2 09161.3

SAMPLE PART #  
**90C-F1-150/WEA1-XX**



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

## HOW TO ORDER: Manual Valves

2	Valve Series
90	2pc. Flanged Full Port (Investment Cast)

3	Body/Ball/Stem Material
<i>Blank</i>	<i>Valve Series Standard (316SST)</i>
A	Alloy 20 Body, Ball, & Stem
C	Carbon Steel Body
L	Low Carbon 316L Stainless Steel
J	Low Carbon 304 Stainless Steel
H	Carbon Body/Hastelloy Ball & Stem
Q	Carbon Body/Monel Ball & Stem
R	316SST Body/Monel Call & Stem
T	Hastelloy C-276 Body, Ball, & Stem
D	CD3MN Body/Duplex SST Ball & Stem
G	CE3MN Body/Super Duplex SST Ball & Stem
P	CF8 (304SST) Body/304SST Ball & Stem

4	End Connection
F1	150# Flanged Ends

5	Valve Size
0050	1/2"      0200    2"
0075	3/4"      0250    2 1/2"
0100	1"        0300    3"
0150	1 1/2"    0400    4"

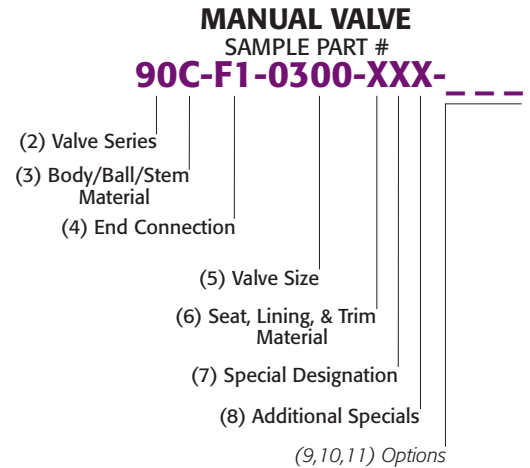
17-4 PH<sup>®</sup> is a registered trademark of AK Steel Corporation.  
 Chemraz<sup>®</sup> is a registered trademark of Greene, Tweed & Co.  
 Markez<sup>®</sup> is a registered trademark of Marco Rubber & Plastic Products Inc.  
 Perlast<sup>®</sup> is a registered trademark of Precision Polymer Engineering Ltd.  
 TFM<sup>™</sup> is a trademark of Dyneon<sup>™</sup>, a 3M Company.

6	Seat, Lining & Trim Materials
X	Reinforced TFE Seats (RTFE)
P	Virgin TFE Seats (PTFE)
U	UHMWPE Seats
S	50/50 STFE Seats
C	25% CS Powder/75% TFE Seats (CTFE)
T	TFM <sup>™</sup> -1600 Seats
E	All TFM <sup>™</sup> -1600 Seats, Seals, & Packing
A	50% SS Powder/50% TFM <sup>™</sup> -1600 Seats (STFM)
F	PTFE Cavity Filler Seats

7	Special Designations
X	No Specials/Series Standard
O	Oval Handle ( <i>available on some</i> )
4	4" Lockable Stem Extension

8	Additional Specials
X	No Specials, Series Standard
O	Oxygen Cleaned
V	Vented Ball
F	Fugitive Emissions Bonnet
D	Degreased & Bagged
A	Vented Ball, Degreased & Bagged
B	Vented Ball, Oxygen Cleaned

9	Special Designation
<i>Blank</i>	<i>No Designation, Valve Series Standard</i>
X	Multiple Option Designation
A	17-4 PH <sup>®</sup> Stem
H	Hard Coated (HMF) Ball



10	O-Ring
X	Multiple Option Designation
2	Markez <sup>®</sup> Z1028
4	Karlez 4079
5	Chemraz <sup>®</sup> 505
6	Karlez 6375
7	Perlast <sup>®</sup> G75M
9	Chemraz <sup>®</sup> 564
B	Low Temp Buna
E	EPDM

11	Additional Specials
<i>Blank</i>	<i>Standard</i>
X	Multiple Option Designation
B	B7M Bolting
M	Marine Epoxy Coating

## Series 93

2	Valve Series
93	2pc. Flanged Full Port (Sand Cast)

3	Body/Ball/Stem Material
<i>Blank</i>	<i>Valve Series Standard (316SST)</i>
C	Carbon Steel Body

4	End Connection
F1	150# Flanged Ends

5	Valve Size
0600	6"
0800	8"
1000	10"
1200	12"

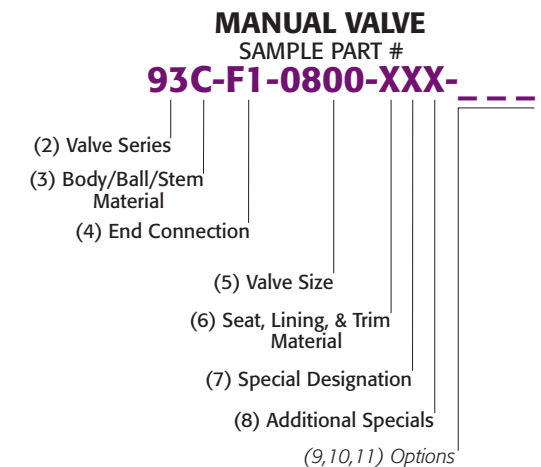
6	Seat, Lining, & Trim Materials
X	Reinforced TFE Seats (RTFE)
P	Virgin TFE Seats (PTFE)
S	50/50 STFE Seats
T	TFM <sup>™</sup> -1600 Seats

7	Special Designations
X	No Specials/Series Standard
O	Oval Handle ( <i>available on some</i> )
4	4" Lockable Stem Extension

8	Additional Specials
X	No Specials, Series Standard

9	Special Designation
<i>Blank</i>	<i>No Designation, Valve Series Standard</i>
X	Multiple Option Designation
A	17-4 PH <sup>®</sup> Stem

17-4 PH<sup>®</sup> is a registered trademark of AK Steel Corporation.  
 TFM<sup>™</sup> is a trademark of Dyneon<sup>™</sup>, a 3M Company.



10	O-Ring
<i>Blank</i>	<i>Standard</i>

11	Additional Specials
<i>Blank</i>	<i>Standard</i>
X	Multiple Option Designation
B	B7M Bolting
M	Marine Epoxy Coating
C	CSA 3.16 Certified (F90/F88/93 Series)

# Series 90

## HOW TO ORDER: Automated Valves

2	Valve Series
90	2pc. Flanged Full Port (Investment Cast)

3	Body/Ball/Stem Material
Blank	Valve Series Standard (316SST)
A	Alloy 20 Body, Ball, & Stem
C	Carbon Steel Body
L	Low Carbon 316L Stainless Steel
J	Low Carbon 304 Stainless Steel
H	Carbon Body/Hastelloy Ball & Stem
Q	Carbon Body/Monel Ball & Stem
R	316SST Body/Monel Call & Stem
T	Hastelloy C-276 Body, Ball, & Stem
D	CD3MN Body/Duplex SST Ball & Stem
G	CE3MN Body/Super Duplex SST Ball & Stem
P	CF8 (304SST) Body/304SST Ball & Stem

4	End Connection
F	150# Flanged Ends

5	Seat, Lining & Trim Materials
T	Valve Series Standard Seats (RTFE)
P	Virgin TFE Seats (PTFE)
U	UHMWPE Seats
S	50/50 STFE Seats
C	25% CS Powder/75% TFE Seats (CTFE)
T	TFM™-1600 Seats
E	All TFM™-1600 Seats, Seals, & Packing
A	50% SS Powder/50% TFM™-1600 Seats (STFM)
F	PTFE Cavity Filler Seats

6	Valve Size
050	1/2" 200 2"
075	3/4" 250 2 1/2"
100	1" 300 3"
150	1 1/2" 400 4"

# Series 93

2	Valve Series
93	2pc. Flanged Full Port (Sand Cast)

3	Body/Ball/Stem Material
Blank	Valve Series Standard (316SST)
C	Carbon Steel Body

4	End Connection
F	150# Flanged Ends

5	Seat, Lining & Trim Materials
T	Valve Series Standard Seats (RTFE)
P	Virgin TFE Seats (PTFE)
S	50/50 STFE Seats
T	TFM™-1600 Seats

6	Valve Size
600	6" 1000 10"
800	8" 1200 12"

7	Actuator - Pneumatic (DA)
TRYD	TR10DA 2R7D 2R500DA
TR1D	TR20DA 2R8D 2R850DA
2R2D	2R40DA 2R9D 2R1200DA
2R3D	2R80DA 2R0D 2R1750DA
2R4D	2R130DA 2RAD 2R2500DA
2R5D	2R200DA 2RBD 2R3500DA
2R6D	2R300DA

7	Actuator - Pneumatic (SR)
TR1S	TR20SR 2R7S 2R500SR
2R2S	2R40SR 2R8S 2R850SR
2R3S	2R80SR 2R9S 2R1200SR
2R4S	2R130SR 2R0S 2R1750SR
2R5S	2R200SR 2RAS 2R2500SR
2R6S	2R300SR 2RBS 2R3500SR

7	Actuator - Pneumatic Stainless (DA)
S21D	S2-052DA S25D S2-125DA
S22D	S2-063DA S26D S2-140DA
S23D	S2-083DA S27D S2-160DA
S24D	S2-105DA S28D S2-210DA

7	Actuator - Pneumatic Stainless (SR)
S21S	S2-052SR S25S S2-125SR
S22S	S2-063SR S26S S2-140SR
S23S	S2-083SR S27S S2-160SR
S24S	S2-105SR S28S S2-210SR

7	Actuator - Electric (On-Off)
WEX1	WE-350 WEG1 WE-5200
WEA1	WE-500 WEH1 WE-6900
WEB1	WE-690 WEJ1 WE-10500
WEC1	WE-1350 WEK1 WE-17500
WED1	WE-1700 WEL1 WE-25900
WEE1	WE-2640 WEM1 WE-53000
WEF1	WE-4400 WEN1 WE-80000

7	Actuator - Electric (Modulating)
WEA2	WEM-500 WEH2 WEM-6900
WEB2	WEM-690 WEJ2 WEM-10500
WEC2	WEM-1350 WEK2 WEM-17500
WED2	WEM-1700 WEL2 WEM-25900
WEE2	WEM-2640 WEM2 WEM-53000
WEF2	WEM-4400 WEN2 WEM-80000
WEG2	WEM-5200

### OPTIONS:

8	Accessories/Options	Model no.
X	No Specials	
A	TYPE 4 Solenoid 120VAC	TVCS-X411-4N-A120
B	TYPE 7 Solenoid 120VAC	TVCS-X411-7N-A120
C	Intrinsically Safe Solenoid	TVSS-X411-4N-D24
D	TYPE 4 Solenoid 24VDC	TVCS-X411-4N-D24
F	TYPE 7 Solenoid 24VDC	TVCS-X411-7N-D24
Q	TYPE 4 SST Solenoid 120VAC	TVSS-X411-4N-A120
M	TYPE 7 SST Solenoid 120VAC	TVSS-X411-7N-A120
L	TYPE 4 SST Solenoid 24VDC	TVSS-X411-4N-D24
N	TYPE 7 SST Solenoid 24VDC	TVSS-X411-7N-D24
P	Pneumatic Positioner	PPR-1200
E	Electro-Pneumatic Positioner	EPR-1000
R	24VDC Electric Actuator	
S	220VAC Electric Actuator	
T	Other Voltage Electric Actuator	
W	12VDC Electric Actuator	
Y	24VAC Electric Actuator	

\* No voltage specified on electric assemblies denotes 120VAC

9	Accessories	Model no.
X	No Specials	
A	TYPE 4 Limit Switch	APL-210N/APL-310N
B	TYPE 7 Limit Switch	APL-510N
C	Intrinsically Safe Limit Switch	APL-218N
Q	TYPE 4 SST Limit Switch	APL-910N
M	TYPE 7 SST Limit Switch	APL-510S
1	HS1 High Speed Electric	
2	HS2 High Speed Electric	

10	Special Designation
Blank	No Designation, Valve Series Standard
X	Multiple Option Designation
A	17-4 PH® Stem

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