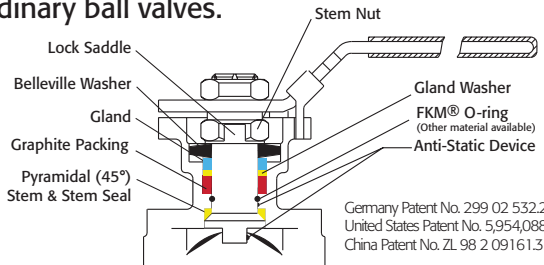


**API 607 - 6th Edition
CERTIFIED**

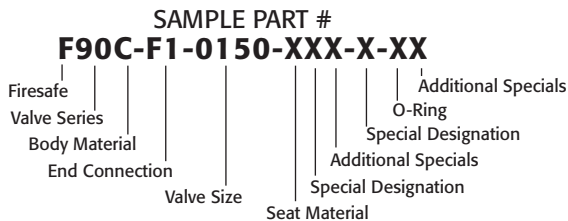


Triac 90 Series Flanged Ball Valves feature a split body design. The high quality investment castings feature a fully machined bore. The superior live-loaded packing system is accomplished with Belleville washers, "V" ring packing and a unique primary pyramidal stem seal. This advanced sealing system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



Series F90

FIRESAFE

**Split Body
Flanged Ball Valve**

Sizes 1/2" - 4"

Available in 316SST or WCB

ASME Class 150

Full Port Design

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	ASME B16.34 (fully conforms)
Face to Face	ASME B16.10
Flange Dimensions	ASME B16.5
Pressure Testing	API 598
Fire Testing	API 607-6th Edition
Fugitive Emissions	ISO 15848-1
Gas Shut-off Valves	CSA 3.16:21
Mounting	ISO 5211
CE Approval	2014/68/EU Module H
Safety Integrity	SIL 3; IEC 61508:2010
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015

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 F90 Split Body Flanged Ball Valve
Firesafe

Series F90

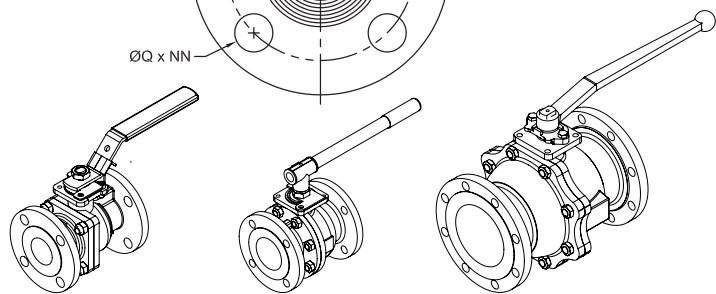
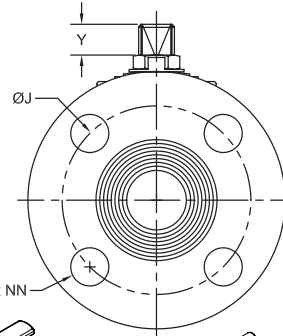
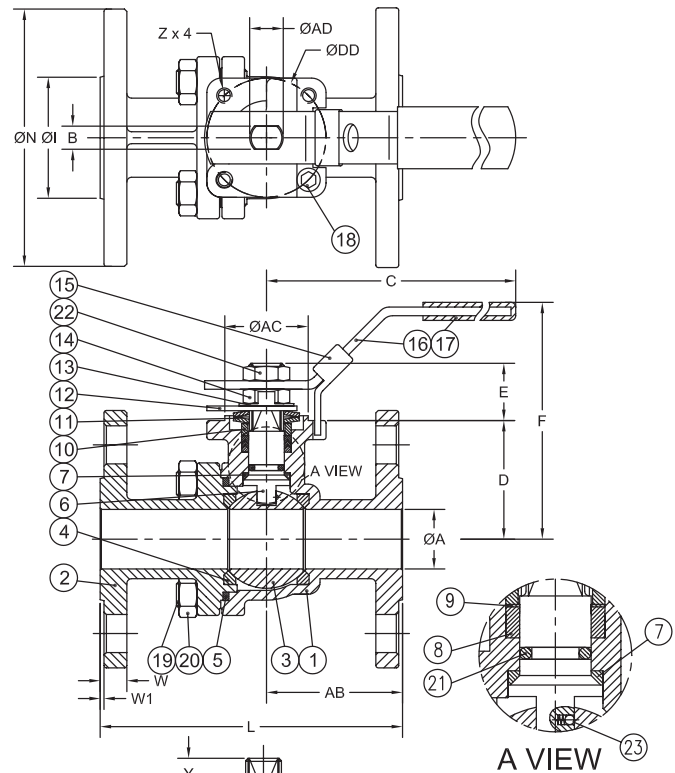
High Performance Full Port Split Body Flanged Ball Valve Series F90 (ASME Class 150)

API 607 - 6th Edition
CERTIFIED

MATERIAL LIST

NO.	PART NAME	QTY	STAINLESS STEEL	CARBON STEEL	REPAIR KIT
1	BODY	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	
2	END CAP	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	
3	BALL	1	ASTM A351 GRADE CF8M	ASTM A351 GRADE CF8M	
4	SEAT	2	RTFE	RTFE	✓
5	JOINT GASKET	1	GRAPHITE	GRAPHITE	✓
6	STEM	1	ASTM A276 SS316	ASTM A276 SS316	
7	STEM SEAL	1	TFM™-1600	TFM™-1600	✓
8	GLAND PACKING	1	GRAPHITE	GRAPHITE	✓
9	GLAND WASHER	1	RTFE	RTFE	✓
10	GLAND BUSHING	1	AISI 304	AISI 304	
11	BELLEVILLE WASHER	2	AISI 301	AISI 301	
12	LOCKING PLATE	1	AISI 304	AISI 304	
13	LOCK SADDLE	1	AISI 304	AISI 304	
14	STEM NUT	1	AISI 304	AISI 304	
15	HANDLE LOCK	1	AISI 304	AISI 304	
16	HANDLE	1	AISI 304	AISI 304	
17	HANDLE SLEEVE	1	VINYL	VINYL	
18	STOP BOLT	1	AISI 304	AISI 304	
19	BODY STUD	*	ASTM A193 GRADE B8	ASTM A193 GRADE B8	
20	BODY NUT	*	ASTM A194 GRADE 8	ASTM A194 GRADE 8	
21	STEM O-RING	1	FKM	FKM	✓
22	HANDLE NUT	1	AISI 304	AISI 304	
23	ANTI-STATIC DEVICE	2	AISI 316	AISI 316	

* 1/2" THRU 2" QTY = 4 PCS
* 2-1/2" THRU 4" QTY = 8 PCS



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)

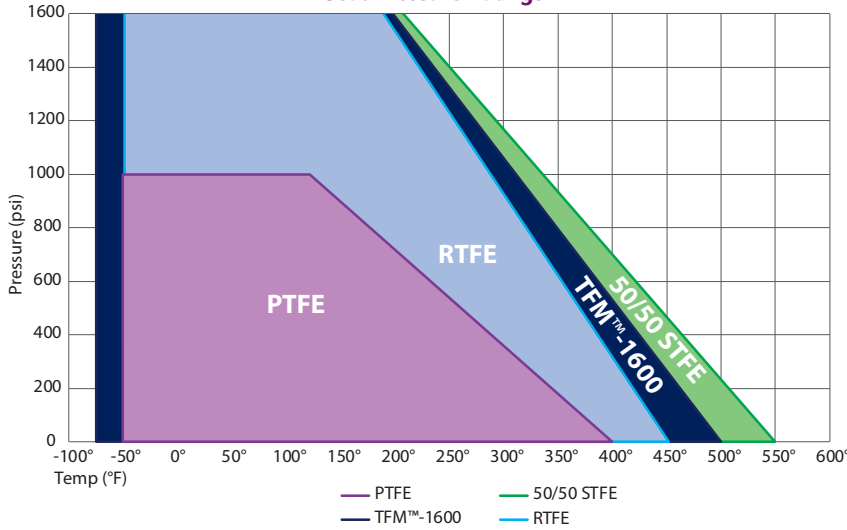
SIZE	A	B	C	D	E	F	I	J	L	N	Q	W	W1	Y	Z	AB	AC	AD	DD	NN	LBS	ISO 5211
1/2"	0.59	0.315	6.69	1.34	0.92	3.15	1.47	2.38	4.26	3.50	0.63	0.44	0.06	0.36	M5	1.82	1.17	0.43	1.654	4	3.7	F04
3/4"	0.79	0.315	6.69	1.65	0.94	3.43	1.82	2.75	4.62	3.88	0.63	0.44	0.06	0.40	M5	2.17	1.17	0.43	1.654	4	4.6	F04
1"	0.98	0.382	8.05	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

High Performance Full Port Split Body Flanged Ball Valve Series F90 (ASME Class 150)

Series F90

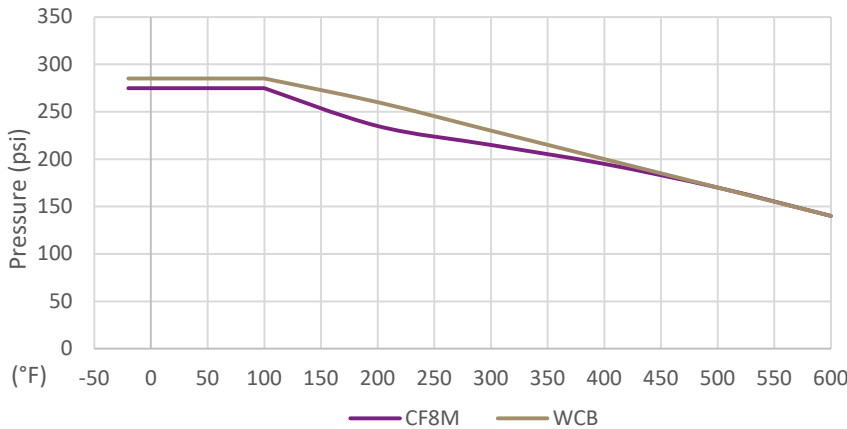
API 607 - 6th Edition
CERTIFIED

Pressure vs. Temperature - F90
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 F90
Body & End Cap Ratings ASME B16.34



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

F90 Component Temperature Ratings		
COMPONENT	MATERIAL	TEMPERATURE
Stem Packing	Graphite	-100°F to 1100°F
Stem Seal	TFM™-1600	-75°F to 500°F
Gaskets	Graphite	-100°F to 1100°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.

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

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

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 F90
ASME Class 150
Flanged Ball Valve

Firesafe

Sizes 1/2" - 4"

Available in 316SST or WCB

ASME 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

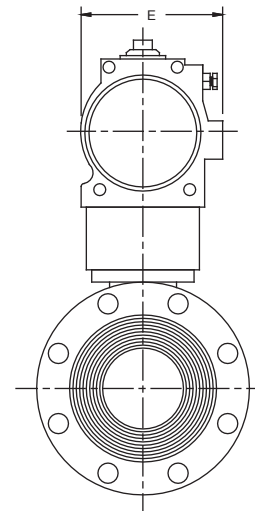
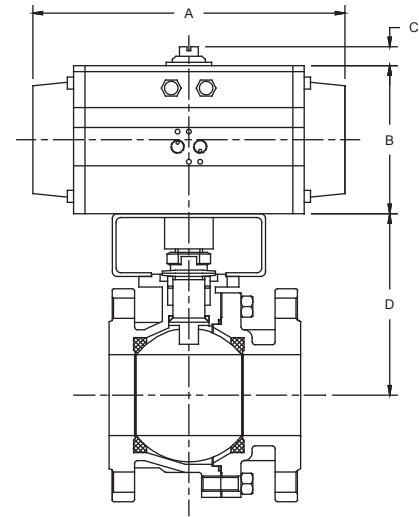
STANDARDS

Design	ASME B16.34 (fully conforms)
Face to Face	ASME B16.10
Flange Dimensions	ASME B16.5
Pressure Testing	API 598
Fire Testing	API 607-6th Edition
Fugitive Emissions	ISO 15848-1
Gas Shut-off Valves	CSA 3.16:21
Mounting	ISO 5211
CE Approval	2014/68/EU Module H
Safety Integrity	SIL 3; IEC 61508:2010
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015

API 607 - 6th Edition
CERTIFIED



ASME CLASS150# Flanged
Firesafe tested to API-607



DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	E	VALVE Cv
1/2"	6.50	2.84	0.787	2.82	2.82	15
3/4"	6.50	2.84	0.787	3.22	2.82	45
1"	6.50	2.84	0.787	4.12	2.82	85
1-1/2"	7.60	3.47	0.787	5.05	3.35	275
2"	7.60	3.47	0.787	5.37	3.35	460
2-1/2"	9.29	4.30	0.787	5.80	4.18	700
3"	11.02	4.61	0.787	6.848	4.27	1,100
4"	11.50	5.28	0.787	7.44	4.78	2,200

DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY

SERIES F90 150# Flanged

Firesafe

SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/2"	F90-F1-050/3RDD-XX
3/4"	F90-F1-075/3RDD-XX
1"	F90-F1-100/3RDD-XX
1-1/2"	F90-F1-150/3RED-XX
2"	F90-F1-200/3RED-XX
2-1/2"	F90-F1-250/3RFD-XX
3"	F90-F1-300/3RGD-XX
4"	F90-F1-400/3RHD-XX

SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/2"	F90-F1-050/3RDD-XX
3/4"	F90-F1-075/3RDD-XX
1"	F90-F1-100/3RDD-XX
1-1/2"	F90-F1-150/3RED-XX
2"	F90-F1-200/3RFD-XX
2-1/2"	F90-F1-250/3RFD-XX
3"	F90-F1-300/3RGD-XX
4"	F90-F1-400/3RJD-XX

OPTIONS

SUFFIX 1	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	TVIS-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

SUFFIX 2	Accessories	Model no.
X	No Specials	
A	TYPE 4 Limit Switch	APL-210N
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

Other options available - call for details
Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

SAMPLE PART #
F90C-F1-150/3RED-XX

Firesafe |
Valve Series |
Carbon Steel |
End Connection |
Seat Material |
Valve Size |
TRIAC Actuator Series |
Actuator Size |
Double Acting |

See automated part number matrix on back cover for complete part number and options.

SUFFIX 1: Solenoids
SUFFIX 2: Limit Switch

Pneumatic Spring Return Automated Ball Valve Package

Series F90
ASME Class 150
Flanged Ball Valve

Firesafe

Sizes 1/2" - 4"

Available in 316SST or WCB

ASME 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

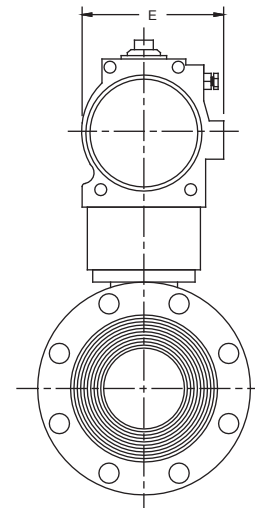
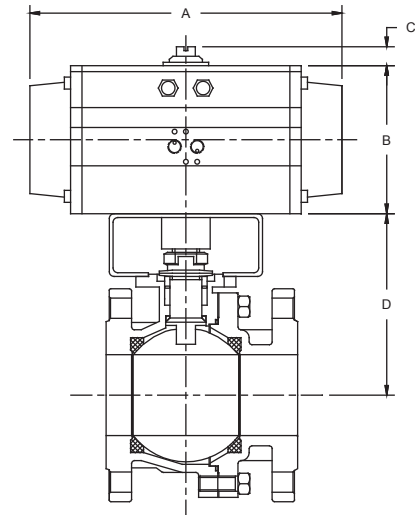
STANDARDS

Design	ASME B16.34 (fully conforms)
Face to Face	ASME B16.10
Flange Dimensions	ASME B16.5
Pressure Testing	API 598
Fire Testing	API 607-6th Edition
Fugitive Emissions	ISO 15848-1
Gas Shut-off Valves	CSA 3.16:21
Mounting	ISO 5211
CE Approval	2014/68/EU Module H
Safety Integrity	SIL 3; IEC 61508:2010
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015

API 607 - 6th Edition
CERTIFIED



150# Flanged
Firesafe tested to API-607



DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	E	VALVE Cv
1/2"	6.50	2.835	0.787	2.914	2.82	15
3/4"	6.50	2.835	0.787	3.224	2.82	45
1"	7.60	3.465	0.787	3.524	3.35	85
1-1/2"	9.29	4.30	0.787	5.049	4.18	275
2"	11.02	4.606	0.787	5.37	4.27	460
2-1/2"	13.39	6.142	0.787	5.80	5.59	700
3"	13.39	6.142	0.787	6.85	5.59	1,100
4"	15.35	6.811	1.181	7.438	5.98	2,200

DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY

SERIES F90 150# Flanged

Firesafe

SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/2"	F90-F1-050/3RDS-XX
3/4"	F90-F1-075/3RDS-XX
1"	F90-F1-100/3RES-XX
1-1/2"	F90-F1-150/3RFS-XX
2"	F90-F1-200/3RGS-XX
2-1/2"	F90-F1-250/3RJS-XX
3"	F90-F1-300/3RJS-XX
4"	F90-F1-400/3RKS-XX

SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/2"	F90-F1-050/3RD4-XX
3/4"	F90-F1-075/3RE4-XX
1"	F90-F1-100/3RF4-XX
1-1/2"	F90-F1-150/3RG4-XX
2"	F90-F1-200/3RG4-XX
2-1/2"	F90-F1-250/3RJ4-XX
3"	F90-F1-300/3RK4-XX
4"	F90-F1-400/3RL4-XX

OPTIONS		
SUFFIX 1	Accessories/Options	Model no.
X	No Specials	
A	TYPE 4 Solenoid 120VAC	TVCS-X411-4N-A120
B	TYPE 7 Solenoid 120VAC	TVC6-X411-7N-A120
C	Intrinsically Safe Solenoid	TVIS-X411-4N-D24
D	TYPE 4 Solenoid 24VDC	TVCS-X411-4N-D24
F	TYPE 7 Solenoid 24VDC	TVC6-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
SUFFIX 2	Accessories	Model no.
X	No Specials	
A	TYPE 4 Limit Switch	APL-210N
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

Other options available - call for details
Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

SAMPLE PART #

F90C-F1-150/3RFS-XX

Firesafe |
Valve Series |
Carbon Steel |
End Connection |
Seat Material |
Valve Size |
TRIAC Actuator Series |
Actuator Size |
Double Acting |

See automated part number matrix on back cover for complete part number and options.

SUFFIX 1: Solenoids
SUFFIX 2: Limit Switch

Electric

Automated Ball Valve Package

Series F90 ASME Class 150 Flanged Ball Valve

Firesafe

Sizes 1/2" - 4"

Available in 316SST or WCB

ASME 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

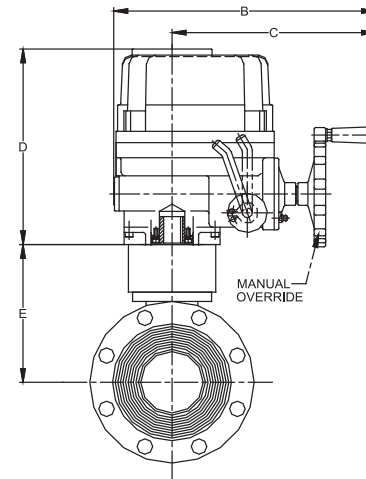
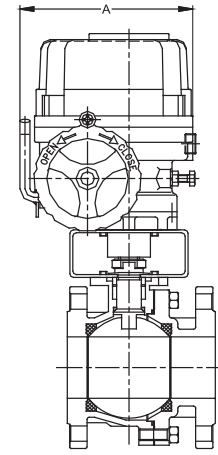
STANDARDS

Design	ANSI/ASME B16.34 (fully conforms)
Face to Face	ANSI/ASME B16.10
Flange Dimensions	ANSI/ASME B16.5
Pressure Testing	API 598
Fire Testing	API 607-6th Edition
Fugitive Emissions	ISO 15848-1
Gas Shut-off Valves	CSA 3.16:21
Mounting	ISO 5211
CE Approval	2014/68/EU Module H
Safety Integrity	SIL 3; IEC 61508:2010
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015

**API 607 - 6th Edition
CERTIFIED**



150# Flanged
Firesafe tested to API-607



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"	9.02	13.31	10.43	10.55	7.44	2,200

SERIES F90 150# Flanged

Firesafe

ON-OFF	
SIZE	MODEL
1/2"	F90-F1-050/WEA1-XX
3/4"	F90-F1-075/WEA1-XX
1"	F90-F1-100/WEA1-XX
1-1/2"	F90-F1-150/WEA1-XX
2"	F90-F1-200/WEA1-XX
2-1/2"	F90-F1-250/WEC1-XX
3"	F90-F1-300/WEC1-XX
4"	F90-F1-400/WEC1-XX

MODULATING	
SIZE	MODEL
1/2"	F90-F1-050/WEA2-XX
3/4"	F90-F1-075/WEA2-XX
1"	F90-F1-100/WEA2-XX
1-1/2"	F90-F1-150/WEA2-XX
2"	F90-F1-200/WEA2-XX
2-1/2"	F90-F1-250/WEC2-XX
3"	F90-F1-300/WEC2-XX
4"	F90-F1-400/WED2-XX

OPTIONS		
Suffix 1	Voltage / Accessory	Model No.
X	No Specials	
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		
Suffix 2 Accessories		
X	No Specials	
1	HS1 High Speed Electric	
2	HS2 High Speed Electric	

Other options available - call for details
Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

SAMPLE PART #
F90C-F1-150/WEA1-XX

Firesafe |
Valve Series |
Carbon Steel |
End Connection |
Seat Material |
Valve Size |
TRIAC Actuator Series |
Actuator Size |
On-Off |

See automated part number matrix on back cover for complete part number and options.

SUFFIX 1: Voltage
SUFFIX 2: Options

HOW TO ORDER: Manual Valves

1	Prefix
F	Firesafe Tested (see valve series for details & testing)

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
Q	Carbon Body/Monel Ball & Stem
R	316SST Body/Monel Ball & 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"

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™-1600 Seats
A	50% SS Powder / 50% TFM™-1600 Seats (STFM)
F	PTFE Cavity Filler Seats
M	MG1241 Seats
Z	PEEK Seats

7	Special Designations
X	No Specials/Series Standard
O	Oval Handle (available on some)
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

OPTIONS:

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

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

11	Additional Specials
Blank	No Designation, Valve Series Standard
X	Multiple Option Designation
B	B7M Bolting
E	CE/PED Certified
M	Marine Epoxy Coating
C	CSA 3.16 Certified (F90/F88/93 Series)

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HOW TO ORDER MANUAL VALVES															
1	2	3	-	4	-	5	-	6	7	8	-	9	-	10	11
↓	↓	↓		↓		↓		↓	↓	↓		↓		↓	↓
F	90	C	-	F1	-	0150	-	X	X	X					

