



VERSAFLEX

*Fast-Acting, Modulating Control Valve Assembly
with Fail Safe Battery Back Up*



Model Series: VF

Apex Industrial Solutions, Inc.

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High Quality, Fast-Acting, Modulating Control Valve Assembly with Fail Safe Battery Back Up

Features

- Fast acting < 6 seconds
- 300:1 Turn-down
- Wide Cv range to cover a broad spectrum of flows (.04 to 3200 Cv)
- Fail-safe, lithium-ion battery back up
- Wide range of torque outputs (310 - 7,080 in/lbs)
- Configurable Modulating or On/Off Control
- ATEX certified explosion-proof enclosure
- 360° mounting flexibility
- Class 6 bubble-tight shut off

Benefits

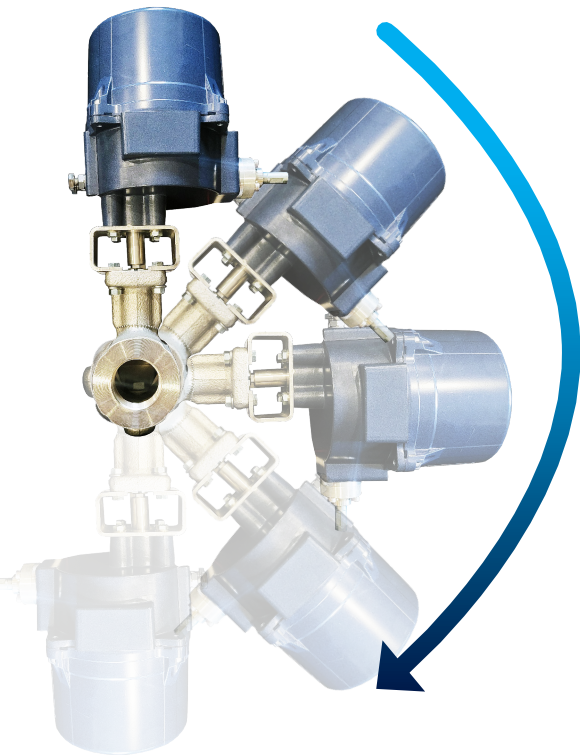
- Avoid the stress of discovering your actuator that should last for years only lasted a few months. The Versaflex offers a realistic flow rating for saving actuator life and avoiding valve hunting.
- Never worry about your valve leaking. The Class 6 bubble-tight shut-off valve with Teflon seat allows virtually no steam to escape. This provides you with energy savings over time.
- The unique, no-leak stem and V-Ring combination ensures your stem will never leak.
- No mistakes! Your valve can be oriented any way. This allows you to save potential space that would be impossible with other assemblies.
- Eliminate energy waste and potential safety issues with the Versaflex quick shut-off. This assembly prevents over-heating coils and other equipment so everyone stays safe.
- Easily keeps up with modulating load changes.

Applications

- Semi-instantaneous hot water heaters
- Domestic hot water
- Heat exchanger control
- Coil and damper control
- CIP systems
- Chilled water systems



Valve & Actuator Orientation Guide



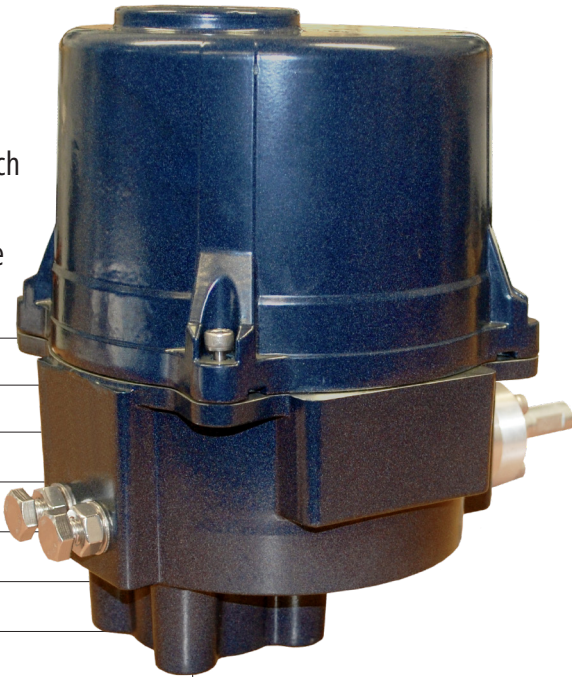
Traditional globe valves feature linear stems that need to be in the vertical position. The linear stem in a traditional globe valve rises and lowers through the packing gland. When the stem is lowered into the packing, it passes through the packing and enters the process. Particulates in the process water, steam, or media can bind to the stem. When the valve is opened and the stem is drawn up through the packing, it will etch the packing gland and create a leak path. This allows fugitive emissions and fluid to escape through the packing gland.

However, the Versaflex can be oriented in any position! This is possible due to the rotary stem with a live-loaded packing. The stem does not travel through the packing; it rotates within the packing. The Versaflex is also smaller and lighter than traditional globe valve packages, allowing it to be less stressful on your pipes. These features combined in the Versaflex eliminate potentially costly and hazardous leaks and allow for unlimited orientation options in your process!

Fast-Acting, Fail-Safe, Quarter-Turn Electric Actuator

The Versaflex electric actuator is a rugged, compact, quarter-turn actuator for modulating control of valves and dampers. It offers a high-quality and reliable solution for valve automation that is also cost-effective.

The actuator integrates a multi-functional servo amplifier and a position signal transmitter into the standard actuator to provide modulating control. All operations such as calibration, sensitivity settings, and automatic/manual switching are controlled by four buttons on the PRC Control Module. This makes set up quick and easy. LEDs on the panel indicate status with images so you always know what setting the actuator is on.



Input Signal	Analog Signal: 4~20mA, 0 - 10 VDC Modulating or On/Off (Configurable)
Valve Transmitting Output Signal	4~20mA, 0 - 10 VDC
Basic Deviation	≤± 0.2%
Motor Stall Protection Trigger Time	1~25.4 Seconds (Default 6.4 Seconds)
Power Consumption	≤ 5 VA
Actuator Action Sensitivity	0.4%
Power Supply	120VAC/220VAC , 50/60Hz ± 10% 24VDC (24VAC Optional)
Heating Package	10W Low Temperature Heater (-40°F to 158°F) Standard
Enclosure	ATEX Ex db IIC T6 Gb and EX tb IIIC T80°C Db Certification
Duty Cycle	100%

Battery Back Up

Lithium-Ion battery pack provides failsafe functionality. This drives the actuator to present fail position on loss of power.

Compact Motor

Servo compact electric motor with high starting torque and high efficiency with integral thermal protection to prevent motor overheating.

Manual Operation

In the event of a power failure, the clutch-less hand wheel can be used for manual control.

Position Indicator

Mechanical position indicator with easy-to-read top dial.

Heavy-Duty Housing

Hard anodized aluminum alloy housing with polyester powder coating to achieve superior anti-corrosion characteristics.

Explosion-Proof

The Explosion-Proof Enclosure ensures operation even in harsh environments (ATEX Ex db IIC T6 Gb and EX tb IIIC T80°C Db Certification). Maximum humidity resistance relative 90% (non-condensing).

ISO 5211 Mount

Mounting base conforms to ISO 5211 standard for ease of mounting to valves.

LED Control Board

The Digital Control Board for configuring key parameters such as open and close positions, fail position, selection of on/off, or modulating control method. Split board to save space.

State: At Rest
0.09A
100 %
100% Open

State: Loss SIG
0.09A
0.0%
100% Closed

Low Torque, Class 6 Shut-Off Segmented Control Ball Valve

The Versaflex valve is designed to ensure that the valve lasts for the life of the system with little or no downtime. It features a replaceable packing and a seat that only requires simple hand tools to replace.

The seat and backup ring can be removed and inspected by removing as little as two screws then pulling them from the body by hand. A full seat replacement can be performed for double flanged and NPT installations by removing the seat retainer ring.

Type	Segmented Ball Control Valve
Size	1" - 12"
Seat	TFM Heavy Duty w/ SS Backup Ring
Flange	Double Flanged and NPT (1" - 2") ANSI 150 and ANSI 300 (3" - 12")
Packing Rings	No Maintenance, Spring Loaded, PTFE
Service Kit (Optional)	Packing Rings, O-Rings, Spanner Wrench Included



The characterized “V” port type notched ball of the Versaflex is designed to provide a modified equal percentage flow curve. This flow characterization matches well in coil and temperature control applications, both as retrofit for obsolete or damaged control valves such as globe valves or new installations.

The high 300:1 turn down range ensures that each valve can be used for flow control over essentially its entire range of travel with minimal cavitation and noise.

Designers utilizing the Versaflex are able to create systems with wider swings in flow than traditional control valves while still maintaining the accuracy required by modern building automation packages. No more need for 1/3, 2/3 systems!

Valve Resistance Guide

Designation	Common Names	Composition	Min/Max Temp Range	General Properties	Resistances	Weaknesses
TFM™	TFM™, Modified PTFE	Polytetrafluoro-ethylene	-100°F to 450°F	Excellent abrasion resistance & chemically inert	Acids, harsh inorganic and organic chemicals, oils, oxidizing agents, solvents	Molten alkali metals and fluorine at high temperatures
PTFE	PTFE, Teflon™	Polytetrafluoro-ethylene	-100°F to 450°F	Excellent abrasion resistance & chemically inert	Acids, harsh inorganic and organic chemicals, oils, oxidizing agents, solvents	Molten alkali metals and fluorine at high temperatures
FKM	FKM, Viton™	Hexafluoropropylene-vinylidene fluoride	-100°F to 450°F	Excellent oil & air resistances both at low and high temperatures. Very good chemical resistance	All aliphatic, aromatic, and halogenated hydrocarbons, acids, animal and vegetable oils	Ketones, low molecular weight esters and nitro containing compounds

Universal Actuation

The ISO 5211 top-mount allows for easy, trouble-free actuator mounting.

Live Loaded Packing

The spring loaded Teflon V-ring type packing provides maintenance-free service.

Premium Finishing

The stainless steel ball is nickel-chromium plated and polished. This allows for the ultimate in corrosion resistance and extended seat life

Designed for Steam

Specifically designed for applications including chilled water, hot water, and low and high pressure steam. The TFM seat is capable of handling up to 150 PSI of steam.

Identification

All valve castings feature a prominent flow direction indicator and size designation for easy installation and future inspections.

High Performance

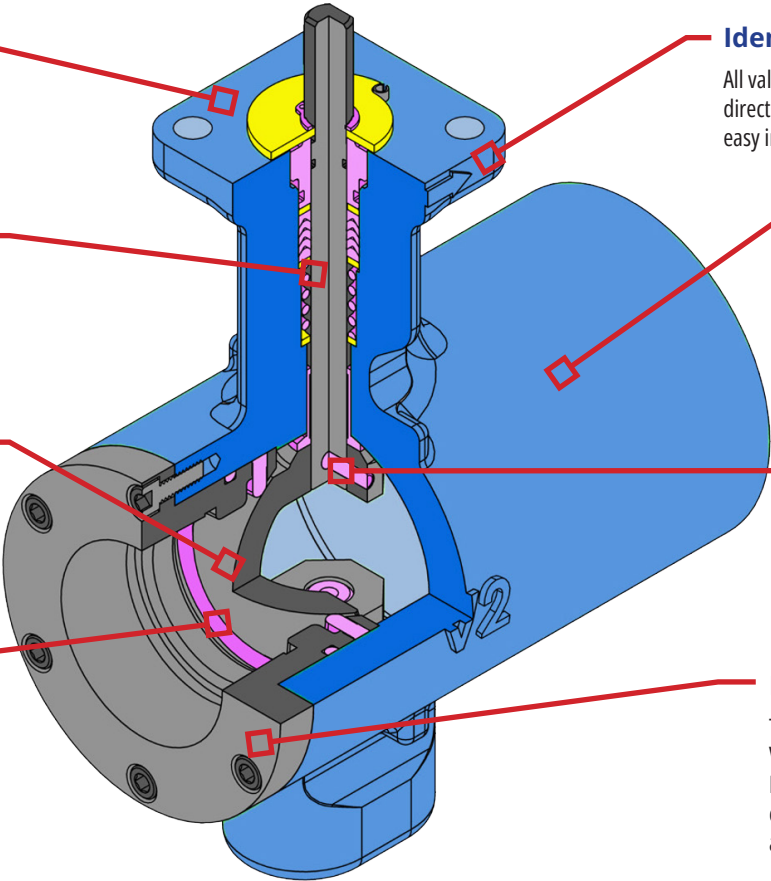
Dual rated for installation between both ANSI Class 150 and Class 300 flanges. Includes NPT connection for threaded installations.

Positive Positioning

Shaft and segmented ball are connected by a knurled pin pressed in place and welded to ensure minimal hysteresis.

Easy Retrofit Installation

The face-to-face dimensions of the Versaflex conforms to ASME B16.10 or ISA S75.08.02 standards to accommodate easy retrofit replacement of older globe and other outdated control valves.



Valve Design Standards

Size Range	Wafer Flanged NPT (1" - 2")
	ANSI 150 and ANSI 300 (3" - 12")
Connections	National Pipe Thread (NPT) ANSI/ASME 1.20.1 (1" - 2")
	ANSI B16.1 Class 125/ANSI B16.5 Class 150 (3" - 12") ANSI B16.1 Class 250/ANSI B16.5 Class 300 (3" - 12")
Lay Length	ASME B16.10 (1" - 6")
	ISA S75.08.02 (8" - 12")
Leakage	Class 6 Bubble-Tight Shut-Off
Shut Off	Maximum Allowable 250 PSIG CWP
Temperature	-10°F - 450°F
	Maximum Allowable 150 PSIG Steam (365°F)
	Maximum Allowable ΔP on Steam is 50 PSI Maximum Allowable 250 PSI Water
Velocity	Liquid: 20 ft/s Controllable, 40 ft/s Max at Open
	Steam: 150 ft/s Controllable, 300 ft/s Max at Open
Flow	Modified Equal Percentage Characteristics
	300:1 Turn Down Ratio
Ball Rotation	90° Degrees, Clockwise Close
Bonnet	ISO 5211

Designers utilizing the Versaflex are able to create systems with wider swings in flow than traditional control valves while still maintaining the accuracy required by modern building automation packages.

No more need for 1/3, 2/3 systems!

Valve Operating Torque	Size	1"	1 ½"	2"	3"	4"	6"	8"	10"	12"
	in/lbs	40	80	130	200	400	650	1400	2600	3700
	Nm	1.5	9.0	14.7	22.6	44.2	73.4	158	294	418

Valve Flow Coefficient (Cv)	Valve Size	Valve Rotation in Degrees - Cv Capacity									
		10	20	30	40	50	60	70	75	80	90
	1"	0.04	0.5	3	5	8	12	17	24	29	31
	1 ½"	0.07	3	7	12	21	29	40	55	68	73
	2"	0.09	4	10	21	34	43	65	77	85	96
	3"	1	12	29	49	68	117	157	207	215	270
	4"	4	22	46	86	130	195	279	350	421	529
	6"	5	33	79	148	230	330	440	507	575	850
	8"	9	55	135	255	395	565	755	865	985	1455
	10"	15	100	240	450	705	1010	1345	1550	1755	2600
	12"	19	155	300	555	865	1240	1655	1905	2165	3200

Valve Hot/Chilled Water Flow		Valve Position Open - Valve Hot/Chilled Water Flow (GPM)									
		10	20	30	40	50	60	70	75	80	90
	1"	0.1	1	11	19	30	46	65	92	112	120
	1 ½"	0.2	11	27	46	81	112	154	213	263	282
	2"	0.3	15	38	81	131	166	251	298	329	371
	3"	3	46	112	189	263	453	608	801	832	1,045
	4"	15	85	178	333	503	755	1,080	1,355	1,630	2,048
	6"	19	127	305	573	890	1,278	1,704	1,963	2,226	3,292
	8"	34	213	522	987	1,529	2,188	2,924	3,350	3,814	5,635
	10"	58	387	929	1,742	2,730	3,911	5,209	6,003	6,797	10,069
	12"	73	600	1,161	2,149	3,350	4,802	6,409	7,378	8,385	12,393

Hot Water Assumptions: 212°F Inlet Water Temperature, 250PSI Inlet Pressure, 15PSI Pressure Drop
Cold Water Assumptions: 45°F Inlet Water Temperature, 150PSI Inlet Pressure, 15PSI Pressure Drop

Low Pressure Steam Flow (PPH)	Valve Size	Valve Position (% Open) - Steam Flow PPH								
		10%	20%	30%	40%	50%	60%	70%	80%	90%
	1"	1.5	17	103	173	277	415	588	831	1,073
	1 ½"	2.4	103	242	415	727	1,004	1,385	2,355	2,528
	2"	3	138	346	727	1,177	1,489	2,251	2,943	3,324
	3"	34	415	1,004	1,697	2,355	4,052	5,437	7,446	9,351
	4"	138	761	1,593	2,978	4,502	6,753	9,662	14,580	18,321
	6"	173	1,142	1,593	5,125	7,965	11,429	15,239	19,914	29,438
	8"	311	1,904	4,675	8,831	13,680	19,568	26,148	34,114	50,392
	10"	519	3,463	8,312	15,585	24,417	34,980	46,582	60,782	90,048
	12"	658	4,329	10,390	19,221	29,958	42,946	57,319	74,982	110,829

Assumptions: *15 PSI Inlet Pressure , **5 PSI Pressure Drop

Electric Actuator Specifications	Model	Torque		Cycle Time	Motor Power	ISO Mounting Base	Rated Current (AMPS)		Weight	Drive Shaft		While Charging Battery (AMPS)	Idle (AMPS)	Average Time to Charge Battery
		in/lbs	Nm	Sec/90°	Watts		24VDC	120VAC	Lbs	Inches	mm			
	2H	310	35	6	10	F05/F07	1.2	0.7	24.2	0.67	17	0.65	0.05	2 hrs 28 min
	2H	620	70	6	18	F05/F07	1.6	0.7	24.2	0.67	17	0.65	0.05	2 hrs 28 min
	3	885	100	10	20	F07/F10	2.0	0.8	30.9	0.67 or 0.87	17 or 22	0.65	0.05	2 hrs 28 min
	3	1,770	200	10	20	F07/F10	3.5	0.8	30.9	0.67 or 0.87	17 or 22	0.65	0.05	2 hrs 28 min
	3	2,655	300	10	40	F07/F10	5.5	1.6	30.9	0.67 or 0.87	17 or 22	0.65	0.05	2 hrs 28 min
	3	3,983	450	10	60	F07/F10	7.2	1.9	30.9	0.67 or 0.87	17 or 22	0.65	0.05	3 hrs 23 min
	4	5,310	600	10	90	F10/F12 or F10/F14	7.1	1.8	48.5	0.87 or 1.06	22 or 27	0.65	0.05	3 hrs 23 min
	4	7,080	800	10	90	F10/F12 or F10/F14	8.0	1.8	48.5	0.87 or 1.06	22 or 27	0.65	0.05	3 hrs 23 min

Parts Configurator

Model	-	Valve Size	-	Actuator	-	Valve Material	-	Valve Class	-	Actuator Power	-	Actuator Control Method
VF	-		-		-		-		-		-	

Valve Size	-	Actuator (Actuator model - Torque in Nm)	-	Valve Material	-	Valve Class	-	Actuator Power	-	Actuator Control Method
1"	-	2H* - 70	-	CS Carbon Steel	-	FNPT Female NPT + Wafer (1" - 2")	-	E 120 VAC	-	M1* Modulating (4 - 20 mA)
1 ½"	-	2H* - 70	-	SS Stainless Steel	-	150 ANSI 150 Flanged (3" - 12")	-	F 24 VDC	-	O* On/Off
2"	-	2H* - 70	-		-	300 ANSI 300 Flanged (3" - 12")	-	H 220 VAC	-	MO Modulating OR On/Off (Configurable)
3"	-	2H* - 70	-		-		-		-	
4"	-	2H* - 70	-		-		-		-	
6"	-	3 - 100	-		-		-		-	
8"	-	3 - 300	-		-		-		-	
10"	-	3 - 450	-		-		-		-	
12"	-	4 - 600	-		-		-		-	

Higher Torque Models Available on Request
Call for your quote: 763-777-9525

*The size 2H actuator is limited to the v1.0 Control Card and either the (M1) Modulating Actuator Control method or the (O) On/Off Actuator Control Method. Either (M1) or (O) must be selected at the time of order.

EXAMPLE: VF-4-2H-70-SS-300-E-M1

This example represents a 4" valve with a model 2 actuator enclosure and 70Nm torque, stainless steel valve, ANSI 300 flanged, and 120 VAC powered modulating actuator

EXAMPLE: VF-1.5-2H-70-CS-FNPT-F-O

This example represents a 1½" valve with a model 2 actuator enclosure and 70Nm torque, cast steel, female NPT and wafer valve, and 24 VDC actuator with on/off controls

EXAMPLE: VF-8-3-300-SS-150-H-MO

This example represents a 8" valve with model 3 actuator enclosure and 300Nm torque, stainless steel, ANSI 150 flanged valve, and 220 VAC actuator with configurable controls

Repair Parts

VF-[valve size]/PKG-KIT	Packing Repair Kit (Kits for the 1" - 6" also includes the necessary tool to remove the packing gland.)
VF-[valve size]/SEAT-KIT	Seat Replacement Kit. (Includes the O-Ring Seal for the seat retainer.)

EXAMPLE: VF-2/PKG-KIT

Packing repair kit for 2" valve

EXAMPLE: VF-8/SEAT-KIT

Seat replacement kit for 8" valve

Request Your Quote



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