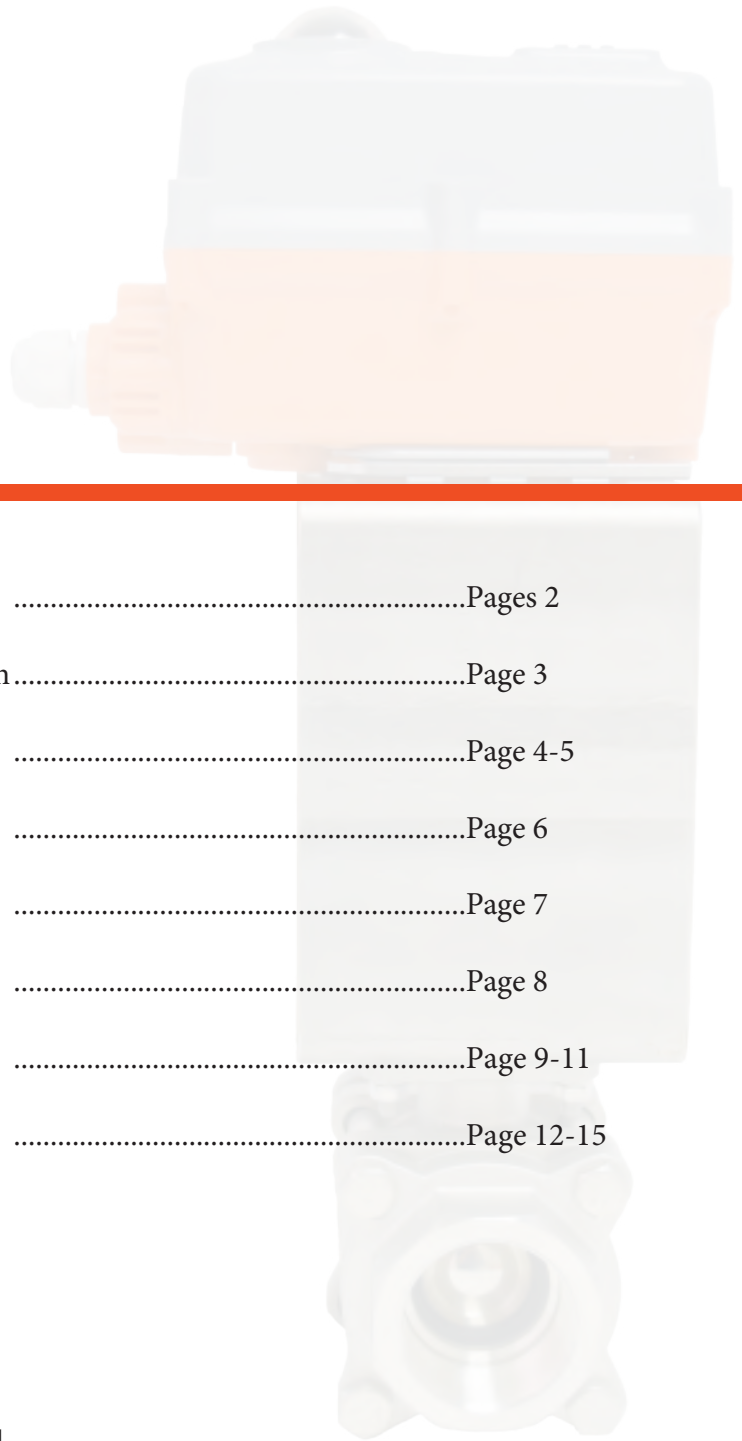


# JVV V-BALL SERIES CONTROL VALVE IOM BULLETIN





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# JVV V-BALL CONTROL VALVE INSTALLATION | OPERATION | MAINTENANCE BULLETIN

The ThermaFlo JVV V-Ball Series Control Valve is designed for high speed 100% duty for temperature pressure and level control applications. Specifically designed for steam, high temperature hot water, and other rigorous control applications. Dead tight 100% Class VI Shutoff Flow.

The equal percentage segmented and V inner ball design provides the user with accurate control over a 100:1 flow turndown rangeability and 1000:1 actuator rangeability. Half the size and weight of any conventional globe control valve, the JVV is simple to install. The high-speed electronic actuator accepts 0-10v or 4-20 ma input control signal and can be split range control when required. The JVV Series high flow CV reduces valve size, space and overall weight of any application in your piping system.

## JVV V-BALL STANDARD FEATURES

**MACHINED 316  
STAINLESS STEEL CONTROL  
SHAFT NON SLIP KNURL PAD**

**ENGINEERED HIGH TEMPERATURE  
EXTENDED STAINLESS STEEL  
MOUNTING BRACKET**

**HIGH SPEED FAIL SAFE  
MODULATING ACTUATOR 0-10V OR  
4-20MA CONTROL SIGNAL INPUT**

**HIGH TEMP CHEVRON SEAT AND SHAFT  
SEALS IN A MACHINED BASE MOUNT**

**COMPLETE 316 STAINLESS STEEL  
BODY, BALL, AND STEM CONSTRUCTION**

**BUBBLE TIGHT CLASS VI STEAM  
AND HOT WATER SHUTOFF**

**HIGH V PORT CV FLOW CAPACITIES  
AND EXCELLENT EQUAL PERCENTAGE  
CHARACTERIZED FLOW**



**Standard Input Control  
Signal is 0-10V**

**Actuator Standard  
Speed is 8 Seconds**



**MAX OPERATING PRESSURE/TEMPERATURE 450°F  
@250 PSIG (HIGHER RATINGS AVAILABLE)**

**MAXIMUM AMBIENT TEMPERATURE: 130°F**

**CUSTOM SLOTTED BALL AND CVS AVAILABLE**

**SIZES: 1/2 "THRU 2" CONNECTIONS: NPT OR SOCKET WELD  
3" - 8" 150LB OR 300LB AVAILABLE**

**MATERIALS OF CONSTRUCTION: 316 STAINLESS  
STEEL BODY, BALL, AND STEM**

**REINFORCED TEFLON SEATS**

# READ THIS INFORMATION CAREFULLY

## HELPFUL PIPING HINTS

### Never Insulate the Valve Body, Actuator or Mounting Bracket

Always install on a horizontal mounting position so that heat does not migrate up the actuator shaft. If the valve can not be installed on a horizontal (3:00 or 9:00 o'clock) position, at minimum, install at a 2:00/11:00 position. The extended mounting bracket allows the actuator to operate below 200°F in steam and hot fluid applications up to 450°F. With any steam control valve installation a proper steam trap drip should be located as close to the intel as possible. If the JVV V-Ball is being used for flow turndowns in excess of 20:1 a ThermFlo HSS steam separator should be installed to remove all entrained condensate and avoid seat wear. The first choice for a drain steam trap will be the ThermaFlo FT42 series and second choice the ThermaFlo 421 Thermodynamic series.

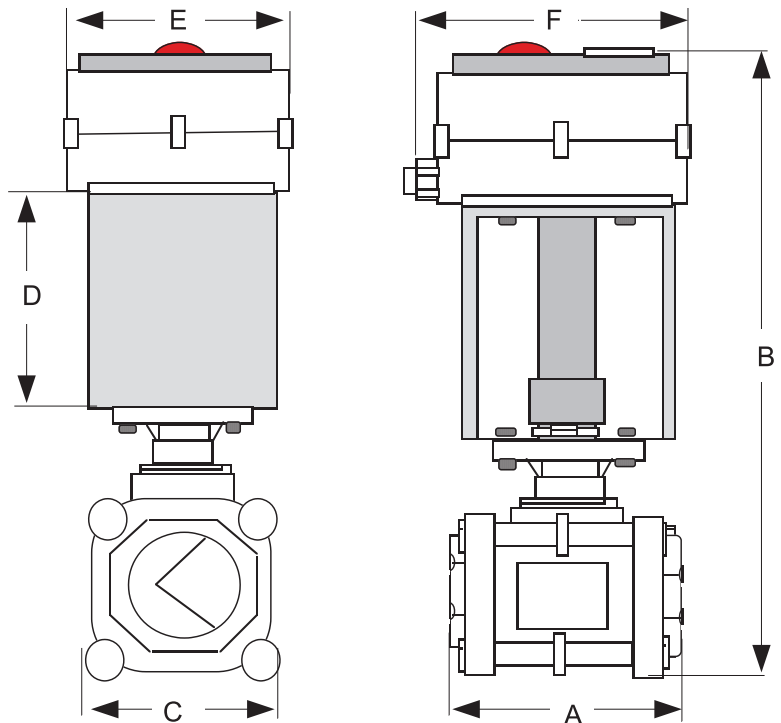
#### Sizing Notes:

1. Optimum Control Range 20% to 80%.
2. CV Reduced 40% when installed in a pipe where valve size is more than half the pipe size.  
Example: 2" Pipe and Control Valve Size 3/4"
3. When sizing for steam pressure control refer to the JVV pressure reducing sizing chart for lbs/hr capacity.

#### DIMENSIONS (Shown in Inches)

VALVE SIZE	A	B	C	D	E	F
1/2"	2.5	14	2	6	3	4
3/4"	2.9	14	2	6	3	4
1"	3.4	14.5	2.2	6	3	4
1.25"	3.7	14.6	2.9	6	4	6
1.5"	4.3	15	3.2	6	4	6
2"	5.8	15.3	3.5	6	4	6

**NOTE:** Dimensions may change with inlet pressures over 150 psig due to actuator selection. Consult Factory.

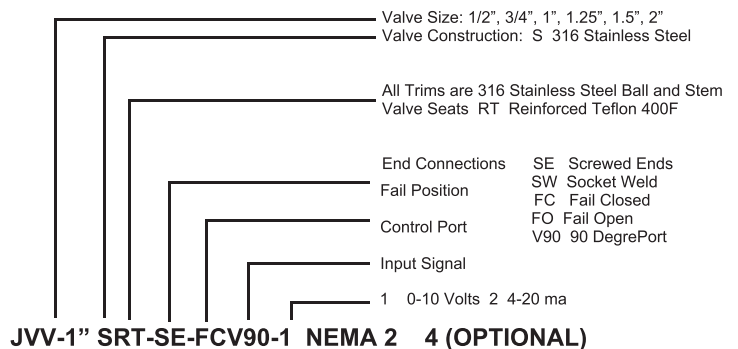


#### FLOW PERFORMANCE DATA VALVE CV % of Opening 90% Segmented V

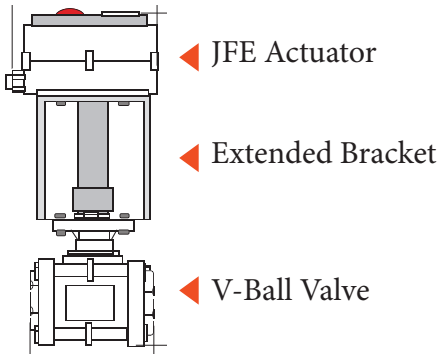
SIZE	30%	50%	80%	100%
1/2"	.85	2	8	14
3/4"	1	2.6	10	20
1"	2.7	7.7	24	43
1.25"	3	10.2	34	65
1.5"	3	14	48	90
2"	7.2	25	87	167

3"- 8" 150lb or 300lb Available

#### JVV V Ball Series Model Number Designation



# INSTALLATION, OPERATION & MAINTENANCE FOR JVV SEGMENTED V VALVES



**NEVER REMOVE ACTUATOR TOP**

**CAUTION**  
**!!!SAFETY PRECAUTION!!!**

## GENERAL

ThermaFlo JVV V-Ball valves have been designed and engineered to provide long lasting and trouble free service when used in accordance with the instructions and specifications herein. The following instructions refer only to JVV V-Ball Control Valves. Keep protective cover in place until moment of installation. Valve performance depends upon preventing of damage to ball surface. Upon removal of cover, make sure that the valve is completely open and free of obstruction. If requested, valves can be shipped from the factory containing a silicon based lubricant which aids in the assembly of the valve. This may be removed with a solvent if found intolerable. Certain ferrous valves are phosphate and oil dipped during the course of manufacture, but they are completely non-toxic and the valves are quite safe to use for edible or potable products.

## STORAGE

All manual valves are shipped in the fully open position with protective end caps (covers). Keep all protective packaging, flange covers, or end caps attached to the valves during storage. To avoid damage to the seat due to contact with the ball's edge, leave the valve in the fully open or closed position during storage. It is recommended to keep the valves in a clean and dry environment until ready for use.

### BEFORE REMOVING VALVE FROM PIPELINE NOTE THAT:

Media flowing through a valve may be corrosive, toxic, flammable, a contaminant or harmful nature. Where there is evidence of harmful fluids having flowed through the valve, the utmost care must be taken. It is suggested that the following minimal safety precautions be taken when handling valves.

- |   |  |  |
|---|--|--|
| <p>1</p>  <p><b>ALWAYS WEAR EYE SHIELDS</b></p>  | <p>2</p>  <p><b>ALWAYS WEAR GLOVES AND OVERALLS</b></p>                  | <p>3</p>  <p><b>WEAR PROTECTIVE FOOTWEAR</b></p>                                       |
| <p>4</p>  <p><b>WEAR PROTECTIVE HEADGEAR</b></p> | <p>5</p>  <p><b>ENSURE THAT RUNNING WATER IS READILY ACCESSIBLE</b></p> | <p>6</p>  <p><b>HAVE A SUITABLE FIRE EXTINGUISHER READY IF MEDIA IS FLAMMABLE</b></p> |

**7** Be sure that you are aware of the fluid that has been passing through the valve before opening or dismantling any valve. Require MSDS information.

## READ INSTALLATION CAREFULLY

By checking line gauges, ensure that no pressure is present at the valve. Ensure that any media is released by operating valve slowly to half open position. Ideally, the valve should be decontaminated when the ball is in the half open position.

These valves, when installed, have body connectors which form an integral part of the pipeline and the valve cannot be removed from the pipeline without being dismantled.

Valves and accessories must not be used as a sole support of piping or human weight. Safety accessories such as safety relief (overpressure) valves are the responsibility of the system designer.

It is the user/system designer's responsibility to use insulation in high temperature applications. Refer to OSHA documents for more details.

## INSTALLATION

**Always install a 100 to 80 Mesh Strainer as close to the inlet as possible to be sure no debris, weld slag, pipe shavings or dirt get to the seats. Also install a steam trap directly at the valve inlet when used on steam. This will eliminate seat wash out due to flashing condensate. Never insulate the valve, shaft, bracket or actuator. Insulating causes heat to migrate up the shaft and overheats the actuator over time shorting the life. Install at a 3:00 or 9:00 position if possible**

## OPERATION

JVV valves provide tight shut off when used under normal conditions and in accordance with JVV's published pressure/temperature chart. If these valves are used in a partially open (throttled) position seat life may be reduced. JVV valves have ¼ turn operation closing in a clock-wise direction. It is possible to see when the valve is open or closed by the position of the wrench handle. When the wrench is inline with the pipeline, the valve is open. Any media which might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities unless regular maintenance is provided. If minimal maintenance is re-quired, JVV offers steam jacketed ball valves.

## TORQUE REQUIREMENTS

Torque ratings are subject to variations depending on the length of time between cycles and the media in the system. Breakaway torque is that force which must be exerted to cause the ball to begin to open. Operating torque requirements will vary depending on the length of time between cycles, media in the system, line pressure and type of valve seat.

## MAINTENANCE

With self-wiping ball/seats, JVV valves have a long, trouble free life, and maintenance is seldom required. When necessary, valves may be refurb-ished, using a small number of components, none of which require machining. JVV valves are designed for easy service and assembly in the field. The following checks will help to extend valve life, or reduce plant problems. JVV ball valves utilize live-loaded stem seals featuring Belleville Wash-ers (disk springs) that maintain constant pressure on the Stem Seal area even under a wide range of pressure and temperature fluctuations. If stem leakage is evident proceed as follows:

### STEM LEAKAGE

Examine the disk springs (Belleville washers) for damage. If in good condition tighten the gland nut until disk springs are firmly compressed, then back nut off 1/16th of a turn. If damaged, dismantle the stem down to the gland, fit new disk springs with their outer edges touching, replace and retighten using gland nut. Further maintenance necessitates dismantling of the valve.

### LEAKAGE AT BODY JOINT

Check for tightness at the body connector bolts. If loose, tighten body bolts. Excessive force will damage the bolts (see Table A). If there is still leakage, it will be necessary to dismantle the valve and replace the body seals.

### IN-LINE LEAKAGE

Check that the valve is fully closed. If leakage occurs while the valve is in the closed position, a seat or ball sealant surface may be damaged and it will be necessary to disassemble the valve.

**NOTE:** If stem leakage and leakage at the body joint are not cured by simple means described above, it will be necessary to dismantle the valve. If there is no stem leakage the stem assembly should not be touched.



# INSTALLATION, OPERATION & MAINTENANCE FOR JVV SEGMENTED V VALVES

## REBUILDING

Before rebuilding, check that all the correct components are available and that they are fit for reassembly. When rebuilding, cleanliness is essential to allow long valve life and provide cost effective maintenance.

**CAUTION:**  
**NO BODY OR STEM SEALS ARE REUSABLE.**

Care must be taken to avoid scratching the seats and seals during installation. NOTE: Caution must be taken with valves that have been in hazardous media. They must be decontaminated before disassembly by relieving the line pressure and flushing the line with the valve in the partially open position. Protective clothing, face shields, gloves, etc., **MUST BE USED** for this operation. Generally if a valve has been in steam service for over 10 years, it should be totally replaced.

### A DISASSEMBLY OF VALVE REMOVED FROM LINE

1. Remove the End Connectors (#1) by removing the Body Bolts (#6A) and Body Bolt Nuts (#6B).
2. Once the End Connectors (#1) have been separated from the Body (#2), remove the Body Seals (#5), Seats (#4), and Seat Retainer, if applicable (#17).
3. Make sure the Ball is in the closed position, thus the Ball (#3) can be taken out easily from the Body (#2).

### B REMOVING STEM ASSEMBLY 1/4" - 2"

1. Remove Handle (#12) by removing Handle Nut (#14) along with the Lock Washer (#13).
2. Remove the complete chevron packing seals. Push the Stem (#10) down into the body cavity to remove. Once removed take off the Thrust Washer (#7).

### C INSPECTION

1. The ball and the surfaces of the seats should be free of pit marks and scratches. Light marring from the action of the ball against the seats is normal and will not affect the operation of the valve.
2. The stem and body surfaces, which the thrust and washer make contact with, should be free of pit marks and scratches.

### D REASSEMBLY

1. Apply an adequate amount of lubricant compatible with the media being handled around the Ball (#10), Seats (#4), Body Seals (#6), Stem (#4), and Thrust Washer (#18).
2. For stem reassembly, disassembly procedure should be followed in reverse order.
3. When stem assembly is complete, tighten Stem Nut according to the values in Table A.
4. With the Stem (#10) in the closed position, insert the Ball (#3) into Body (#1) so that stem slot engages with the tang at the base of the stem.
5. Make sure the Body Seals (#6) rests squarely on the center seal surface of the Body (#1).
6. Insert Seats (#5) into the Body (#1). Make sure seats rest firmly on back surface of each recess.
7. Merge the End Connectors (#2) with the Body (#1).
8. Insert and tighten the Body Bolts (#16) diagonally, in accordance to the cross pattern procedure shown on page 5 for sizes 1/4" to 2-1/2" or page 6 for size 3."
9. In the final assembly step, ensure that the Body Bolts (#6A) are tightened according to torque values in Table A.



# INSTALLATION, OPERATION & MAINTENANCE FOR JVV SEGMENTED V VALVES

## TORQUE SPECS

Certain precautions need to be followed when tightening bolts down to their corresponding torques to help prevent bolt galling. There are two passes each bolt has to undergo during the process, first pass and the final pass. Once every bolt has met the first pass requirement, the final pass can be initiated. When tightening down bolts it is necessary to follow the corresponding bolt pattern shown below.

**TABLE A TORQUE REQUIREMENTS**  
IN - LBS

Valve Size	Bolt Pattern	BODY BOLTS				Stem Nuts
		Stainless Steel		Carbon Steel		
		First Pass	Final Pass	First Pass	Final Pass	
1/4"	4	48	80	53	88	35
3/8"	4	48	80	53	88	35
1/2"	4	48	80	53	88	35
3/4"	4	48	80	53	88	35
1"	4	101	168	117	195	80
1-1/4"	4	101	168	117	195	80
1-1/2"	4	207	345	240	400	115
2"	4	207	345	240	400	115

**TABLE B GENERAL REPAIR KIT**  
1/4" ~ 2"

Part	Quantity
Thrust Washer	1
Stem Seals	2
Chevron Packing	2
Seats	2
Body Seals	2

## REPAIR KIT

Repair Kits are available from ThermaFlo. Table B below shows what the kits consist of. When ordering a Repair Kit, please be sure to specify the type, size and seating material of the valve. When repairing a valve use only ThermaFlo Inc., authorized spare parts including; bolts and nuts, etc. In addition to maintenance kits, spare parts are available from ThermaFlo. They are: balls, stems and glands. If additional parts are required (body and ends), it is normally recommended that the complete valve be replaced. Components from a different valve series should not be used with the repair of any other valve. If the valve is altered in any way, no liability can be accepted by ThermaFlo Inc.

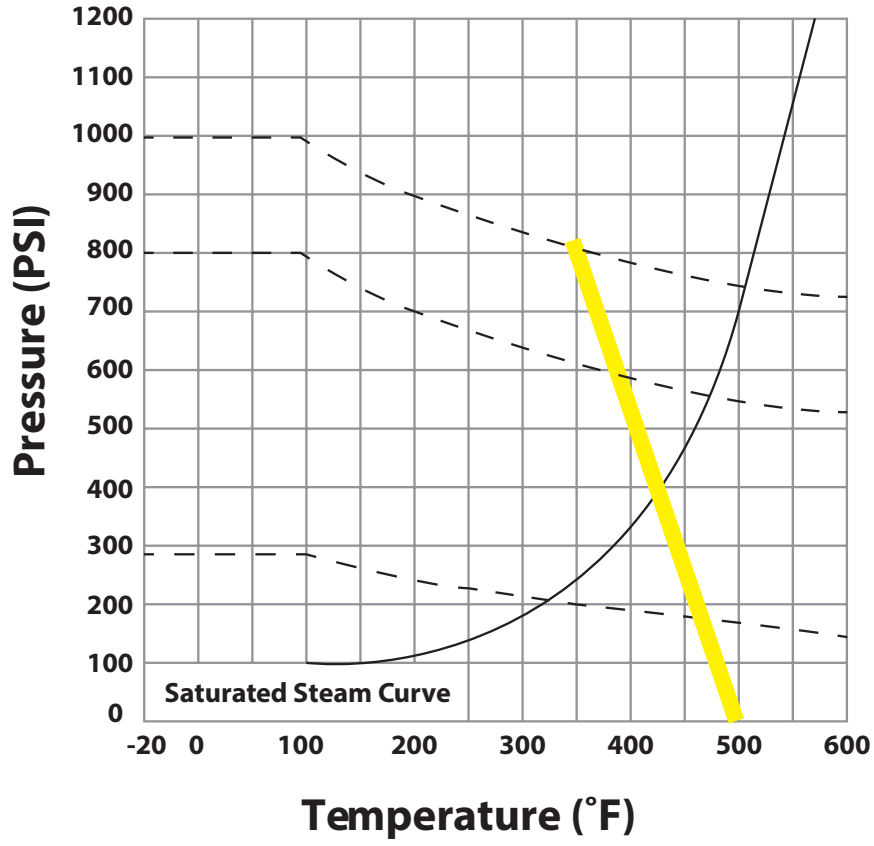
**TABLE C**

R8	B8
1/4"	-
3/8"	-
1/2"	-
3/4"	1/2"
1"	3/4"
1-1/4"	1"
1-1/2"	1-1/4"
2"	1-1/2"

**NOTE:** When ordering parts, keep in mind that standard port valves and full port valves use interchangeable parts. Refer to Table C to see the valve size comparison.

**THERMAFLO GENERAL REPAIR KIT PART NO JVV-S3 16IN SPECIFY SIZE VALVE AND SERIAL NUMBER**

# JVV PRESSURE AND TEMPERATURE CHART



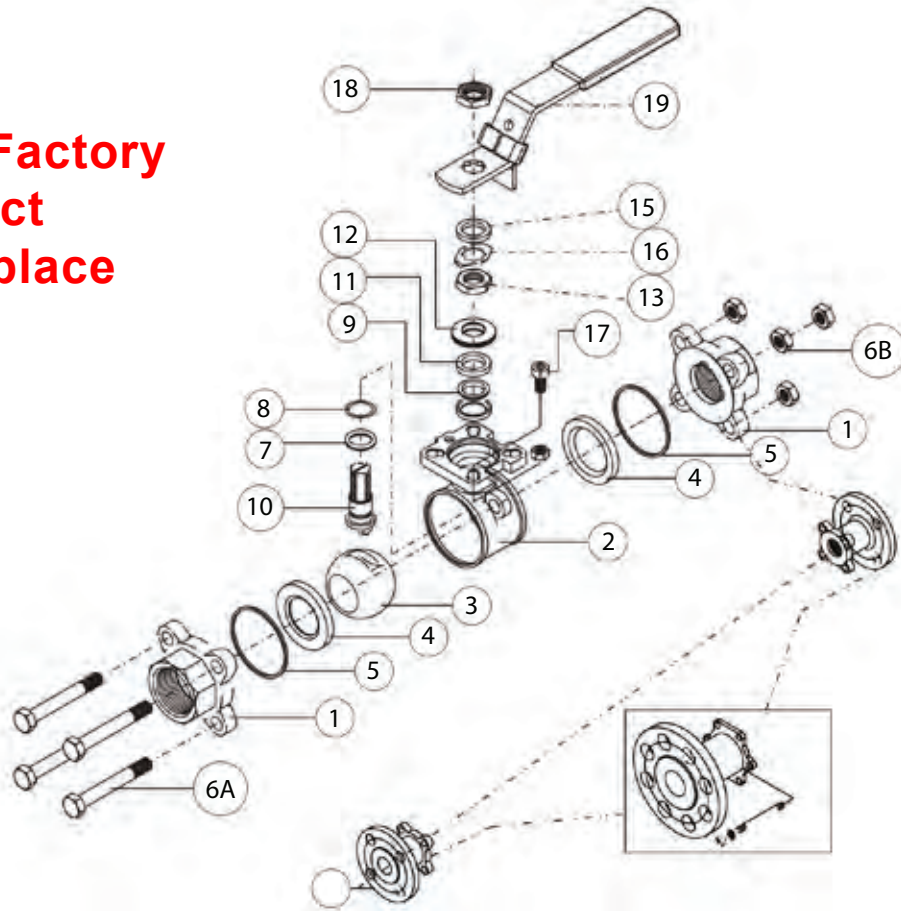
**PTFE-S**  
**USED FOR STEAM APPLICATIONS TO 150 PSIG**

## TORQUE VALUES

SIZE	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
GREASE	31	31	44	49	62	97	150	204
NON-GREASE	44	44	53	62	84	142	239	266

**NOTE:** Increase Torque value is increased by 40% when sizing JFE actuator for V-Ball.

**Consult Factory  
for Correct  
Parts Replace**



No	Part Name	Materials
1	End Cap	CF8M/WCB
2	Body	CF8M/WCB
3	V Ball	SS316
4	Seat	TFM
5	Gasket	TFM
6A	Bolt	SS304
6B	Nuts	SS304
7	Thrust Washer	TFM
8	O-Ring	Viton
9	Stem Packing	TFM
10	Stem	SS316
11	Gland	SS304
12	Disk Washer	SS301

No	Part Name	Materials
13	Stem Nut	SS304
14	Nut Stop	SS304
15	Space Washer	SS304
16	Plater	SS304
17	Stop Pin	SS304
18	Handle Nut	SS304
19	Handle	SS304
20	Handle Cover	Plastic
21	Set Bolt	SS304
22	Lever Head	CF8
23	Lever	Steel Pipe

# TFE-S80 Actuator



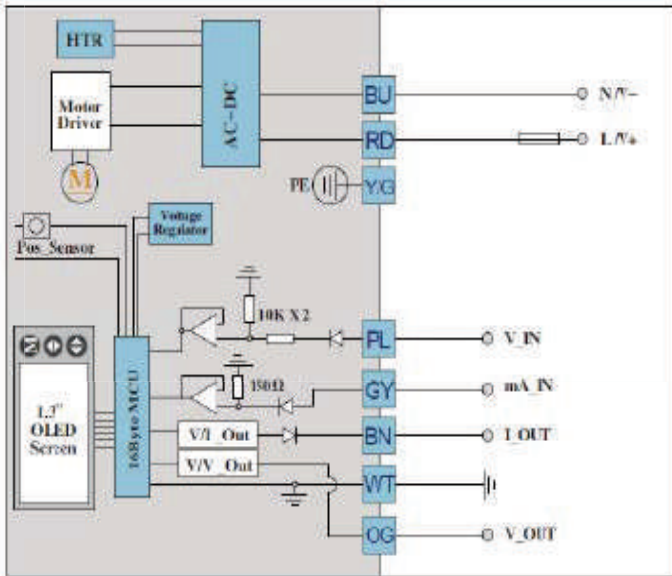
**1/2" - 2" Valve Sizes**



# INTELLIGENT MODULATING ACTUATOR USAGE INSTRUCTIONS

**NEVER REMOVE THE TOP HOUSING OF THE ACTUATOR OR YOU WILL VOID THE WARRANTY CONTACT 704-940-1228 FOR HELP**

## WIRING DIAGRAM



- 1 BLUE
- 2 RED
- 3 YELLOW/GREEN
- 4 PURPLE
- 5 ORANGE
- 6 WHITE

SET V % open set from the control signal.  
ANGLE Actual Valve Position

LED Power Light Valve Indicator  
**RED is Closed**  
**Yellow is Open**



**24VDC Power is Recommended**  
**FORMELY 06T**

## POWER REQUIREMENTS

### S80 Series 60W @ 24vdc

S80 (Formely 06T)	Valve Sizes . 5" to 2"
RED	24V DC DC ONLY
BLUE	NEUTRAL - Volt
PURPLE	0-10V Control INPUT SIGNAL
WHITE	COMMON
GREEN /YELLOW	GROUND
ORANGE	SIGNAL FEEDBACK

**NOTE:** Factory Control Signal is 0-10V Calibrated Input and Output

**24VAC can be used. However 24VDC will enable the actuator to be 100% duty cycle**

**Note:** Whenever the actuator is first powered up at anytime it will take approx 45-60 seconds to fully charge the internal capacitor. This will be noticed on the top actuator screen and the green indicator light will come on.

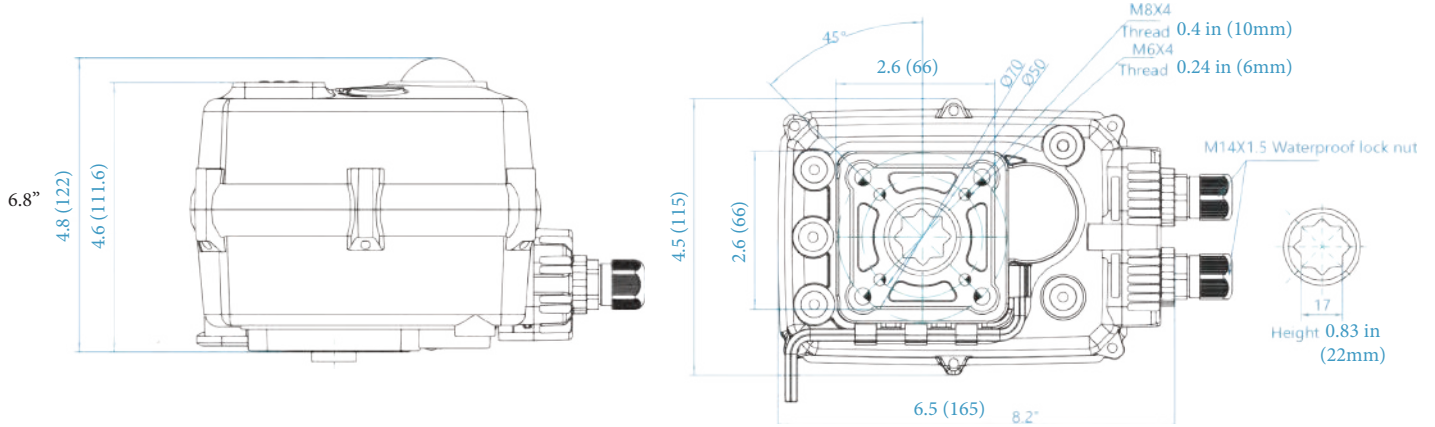


# TFE-S80 ALL SERIES

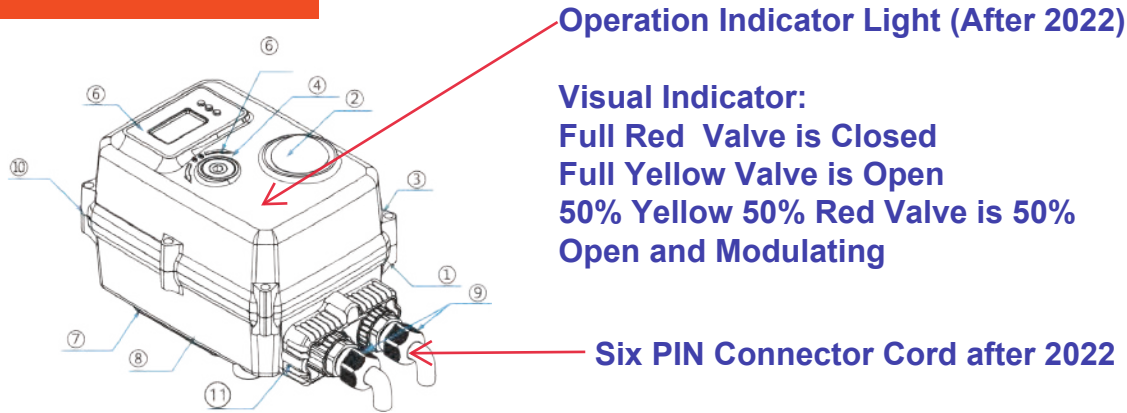
## INTELLIGENT MODULATING ACTUATOR USAGE INSTRUCTIONS

### DIMENSIONS FEMALE OCTAGON

UNIT: INCHES (MM)



### MAIN PARTS



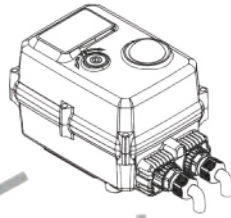
	Parts	Material		Parts	Material
1	Actuator	ABS or Casting Aluminum	8	Hexagon wrench	Tool Steel
2	Indicator	TransparentAS	9	Waterproof Cable Connector	Nil on
3	Screwx4	304	10	Seal Part between Up and Down Cover	NBR
4	Manual Shaft	304	11	Terminal Cover	ABS
5	Oil Seal	NBR			
6	Label	PVC			
7	Wrench Fixed	ABS			

**NOTE:** No. 5, "Oil Seal" is an inner gasket.

# JFES80 SERIES INTELLIGENT MODULATING ACTUATOR USAGE INSTRUCTIONS

## MOUNTING INSTRUCTIONS

Always use extended bracket for steam or fluid medium above 180°F and mount the actuator on a horizontal plane to avoid all heat radiation.



1. When assembly with valve, to use spring washer add flat washer in order to fasten the screw and nut.
2. It's recommend to use 704 silica gel or instant cement instead of anaerobic adhesive and UV glue.
3. Please keep the actuator housing away from organic solvents, such as: kerosene, butanone, tetrachlormethane etc., or the housing will crack.



**Diagram | With Bracket**  
UPVC plastic ball valve+bracket assembly



**Diagram | Direct Mount**  
3 piece stainless steel ball valve assembly



**Diagram | Direct Mount**  
3 piece stainless steel 3-way ball valve assembly

## INSTALLED VALVE TECHNICAL REQUIREMENTS

1. If the JVV V-Ball Valve is out of operation for a long time, and the torque value of first on or off is the max torque. Or you can choose ball valve with elastic sealing.
2. When installing JVV valve, the max torque. Because the torque value will increased by 20-4% after installing.
3. When installing direct mount model valve, the hole deep  $\leq 20$ mm. It requires cutting if the output shaft is longer than 20mm. **Never install a S80 actuator on any fluid above 120F**
4. Please pay attention to the following items if you install the bracket and coupling by yourself:
  - The intensity of bracket should meet the using requirements: the bracket twisting extent  $\leq 0.2$ mm in the process of on or off.
  - The parallelism of bracket  $\leq 0.5$ mm.
  - When processing the shaft hole at both end of the coupling, it is necessary to ensure the accuracy and concentricity. The purpose is to make sure the mechanical hysteresis  $\leq 10^\circ$ , otherwise it will cause the actuator unable to work.
5. It is available to use Lock Tight on all small screws used for mounting this actuator.

# JVV V-BALL SERIES CONTROL VALVE

The ThermaFlo JVV V-Ball Series Control Valve is designed for high speed 100% duty for temperature, pressure and level control applications. Specifically designed for steam, high temperature hot water, and other rigorous control applications.

The equal percentage segmented V inner ball design provides the user with accurate control over a 300:1 flow turn-down range-ability. Half the size and weight of any conventional globe control valve, the JVV is simple to install. The high-speed electronic actuator fails closed on power loss and totally eliminates air supply. The fully programmable actuator accepts 0-10V input control signal and can be split range controlled when required.

The JVV Series high flow CVs reduces **the need for large pipe size type control valves.**



**CONSULT THERMAFLO SERVICES GROUP  
FOR TECHNICAL ASSISTANCE WITH THIS PRODUCT  
704-940-1228 or Your Representative**



2880 FAIR AVE. NEWBERRY, SC.  
PHONE: 704-940-1228



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