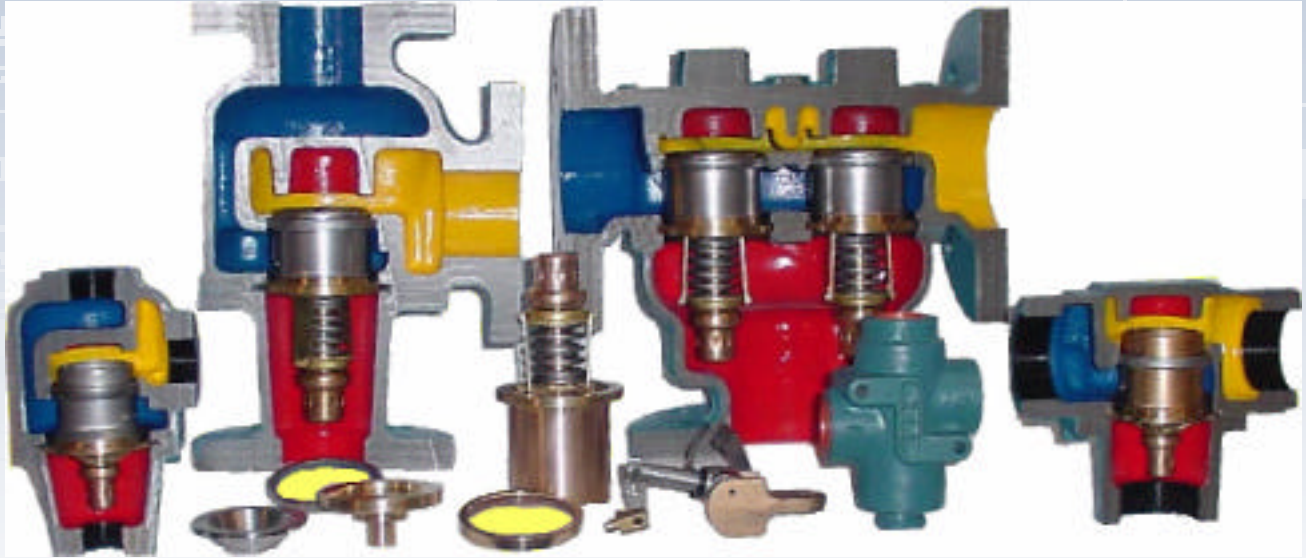


# Thermostatic Control Valves From Fluid Power Energy:



## Superior Quality And Delivery At A Great Price.

**Fluid Power Energy (FPE)**, an ISO 9001-2000 Certified Company, was established in 1975 with one goal in mind: To provide high quality, economically priced Thermostatic Control Valves for the Industrial Equipment, Industrial Engine and Industrial Compressor Markets. With more than 25 years of experience in the industry, FPE has established itself as a leader in its field.

FPE has made every effort to greatly improve the quality, performance and pricing of Thermostatic Control Valves, but it doesn't stop there. Superior customer service and complete satisfaction is an integral part of every order. Our commitment to you: We will deliver a **QUALITY** product **ON TIME** at a **LOWER COST**. Let us show you why FPE is your best source for Thermostatic Control Valves.

### Features

**Wide Range of  
Temperatures**

**Heavy Duty**

**Self-Contained**

**Replaceable Element**

**Non-Adjustable**

**Rugged Construction**

**Tamper-Proof**

**Operate in Any Position**

**Compact**



## FPE Valves

<u>Model</u>	<u>Description</u>	<u>Available Sizes</u>	<u>Materials</u>
0750	Three-Way & Two-Way (Water Saver)	1/2", 3/4"	AL, B
1010	Three-Way	1/2", 3/4", 1"	A, AL, B, D, S, SS
1011	Two-Way (Water Saver)	1/2", 3/4", 1", 1 1/4", 1 1/2"	A, AL, B, D, S, SS
1530	Three-Way (T-Style)	1", 1 1/4", 1 1/2"	A, B, D, S, SS
2010	Three-Way	1 1/2", 2"	A, B, D, S, SS
2012	Three Way (T-Style)	1 1/2", 2"	A, B, D, S, SS
2013	Three-Way (T-Style), Mounting Ribs	1 1/2", 2"	A, B, D, S, SS
2014/15	Three-Way (Refrigeration)	1 1/2", 2"	S
2510	Three-Way (T-Style)	2 1/2"	A, B, D, S, SS
3010	Three-Way (T-Style)	3"	A, B, D, S, SS
4010	Three-Way (T-Style)	4"	A, B, D, S, SS
5010	Three-Way (T-Style)	5"	A, B, D, S, SS
6010	Three-Way (T-Style)	6"	A, B, D, S, SS
Air Stop	Air Shutoff Valve	2" through 8"	AL

**Threads/Connections:** NPT, SAE O-Ring, Socket Weld, 125# Flat Face Flange, 150# and 300# Raised Face Flanges. Navy Flange and Metric Flange are available upon request.

**Specialty/Products:** Reduced Stroke Elements (high over-temperature), Low-Flow Valves, Manual Override Thermostatic Valves, Lube Management Blocks

**Flow Range:** 2 to 1200 GPM

**Materials:** A=Cast Iron, AL =Aluminum, B=Bronze, D=Ductile, S=Steel, SS=Stainless Steel



## FPE Is Also Your Best Source For COMPETITOR'S PARTS

*Fluid Power Energy carries quality replacement parts including:*

- Thermostatic Elements: Standard, Plated, Manual Override, Reduced Stroke
  - Lube Oil Management Blocks
  - Custom Castings & Machining
    - Housing Seals & Gaskets
      - O-Rings
      - Filterstats
      - Service Kits



### FLUID POWER ENERGY, INC.

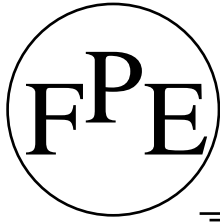
W229 N591 Foster Court • Waukesha, WI 53186  
262•548•6220 Fax 262•548•6239

VISIT OUR WEBSITE AT:

[www.fpevalves.com](http://www.fpevalves.com)

### To Order

Specify model number, nominal temperature desired, and housing material. For model coding information, visit our website or consult your factory representative.



# FLUID POWER ENERGY, INC.

---

W229 N591 Foster Court • Waukesha, Wisconsin 53186  
Phone (262) 548-6220 • Fax (262) 548-6239

## Electronic Catalog Quick Select

### Index

- I. Personnel - FPE History & Personnel
- II. Product - Model Number & Description
  - a. 0750 = 3/4" NPT, 0752 = 1/2" NPT, Three-Way or Two-Way (Water Saver, Low Flow & Pressure Relief), Thermostatic Valve
  - b. 1010 = 1" NPT, 1110 = 3/4" NPT, 1210 = 1/2" NPT, 1010J8 = 1/2" SAE O-Ring, 1010J12 = 3/4" SAE O-Ring, 1010J16 = 1" SAE O-Ring Three-Way, Thermostatic Valve
  - c. 1011 = 1" NPT, 1111 = 3/4" NPT, 1211 = 1/2" NPT, 1411 = 1 1/4" NPT, 1511 = 1 1/2" NPT Two-Way (Water Saver), Thermostatic Valve
  - d. 1530 = 1 1/2" NPT, 1530M = 1 1/2" NPT w/Manual Override, 1530J16 = 1" SAE O-Ring, 1530J20 = 1 1/4" SAE O-Ring, 1530J24 = 1 1/2" SAE O-Ring, F1530 = 1 1/2" 125# FF Flange, SF1530 = 1 1/2" 150# RF Flange, SF1530X = 1 1/2" 300# RF Flange, Thermostatic Valve
  - e. 2010 = 2" NPT, 2010-1 = 1 1/2" NPT, 2010J24 = 1 1/2" SAE O-Ring, 2010J32 = 2" SAE O-Ring, F2010 = 2" 125# FF Flange, SF2010 = 2" 150# RF Flange, SF2010X = 2" 300# RF Flange, Thermostatic Valve
  - f. 2012-1 = 1 1/2" NPT, 2010 = 2" NPT, 2012J24 = 1 1/2" SAE O-Ring, 2012J32 = 2" SAE O-Ring, 2012M = 2" NPT w/Manual Override, F2012 = 2" 125# FF Flange, F2012M = 2" 125# FF Flange w/Manual Override

**With Mounting Rails: 2013-1 = 1 ½" NPT, 2013 = 2" NPT,  
2013J24 = 1 ½" SAE O-Ring, 2013J32 = 2" SAE O-Ring,  
2013M = 2" NPT w/Manual Override, Thermostatic Valve**

- g. S2014-1 = 1 ½" Socket Weld, S2014 = 2" Socket Weld,  
S2015-1 = 1 ½" Socket Weld (Reverse Flow),  
S2015 = 2" Socket Weld (Reverse Flow),  
S2014-X16 = 2" Butt Weld,  
S2015-X16 = Butt Weld (Reverse Flow) Thermostatic  
Valve**
  
- h. 2510 = 2 ½" 125# FF Flange, S2510 = 150# RF Flange,  
S2510X = 300# RF Flange,  
2510M = 2 ½" 125# FF Flange, S2510 = 150# RF Flange,  
S2510X = 300# RF Flange, w/Manual Override,  
Thermostatic Valve**
  
- i. 3010 = 2 ½" 125# FF Flange, S3010 = 150# RF Flange,  
S3010X = 300# RF Flange,  
3010M = 2 ½" 125# FF Flange, S3010 = 150# RF Flange,  
S3010X = 300# RF Flange, w/Manual Override,  
Thermostatic Valve**
  
- j. 4010 = 2 ½" 125# FF Flange, S4010 = 150# RF Flange,  
S4010X = 300# RF Flange,  
4010M = 2 ½" 125# FF Flange, S4010 = 150# RF Flange,  
S4010X = 300# RF Flange, w/Manual Override,  
Thermostatic Valve**
  
- k. 5010 = 2 ½" 125# FF Flange, S5010 = 150# RF Flange,  
S5010X = 300# RF Flange,  
5010M = 2 ½" 125# FF Flange, S5010 = 150# RF Flange,  
S5010X = 300# RF Flange, w/Manual Override,  
Thermostatic Valve**
  
- l. 6010 = 2 ½" 125# FF Flange, S6010 = 150# RF Flange,  
S6010X = 300# RF Flange,  
6010M = 2 ½" 125# FF Flange, S6010 = 150# RF Flange,  
S6010X = 300# RF Flange, w/Manual Override,  
Thermostatic Valve**



- m. Air Stop = Emergency Engine Intake Air Shutoff Valve, 2” Through 8”, Unrestricted Flow**
- n. Model 75 Spin Clean – Oil Cleaning Centrifuge, 1GPM**
- o. Model 150 Spin Clean – Oil Cleaning Centrifuge, 2GPM**
- p. Model 300 Spin Clean – Oil Cleaning Centrifuge, 4GPM, Gravity Drain Bottom**
- q. Model M300 Spin Clean – Oil Cleaning Centrifuge, 4GPM, Gravity Drain Side**
- r. Model HPU300 Spin Clean – Oil Cleaning Centrifuge, 4GPM, High Pressure Unit**
- s. Model 1000 Spin Clean – Oil Cleaning Centrifuge, 8, 12, or 16GPM, Gravity Drain Bottom**
- t. Model HPU1000 Spin Clean – Oil Cleaning Centrifuge, 8, 12, or 16GPM, High Pressure Unit**

**III. Specifications - FPE Thermostatic Valve Dimensional Data & Weights**

**IV. Technical -**

- a. FPE Model Code Matrix**
- b. FPE Flow Rates**
- c. Temperature Conversion Factors**
- d. Measurement Conversion Factors**
- e. Seal Material Compatibility**
- f. Seal Compatibility with Fluids**

- g. Application Diverting & Mixing**
- h. Application Water Saver**
- i. Application Multiple Compressors**

**V. Policies - Sales, Operation and Return Policies**

- a. FPE, Product Instruction, Installation, Maintenance & Operation**
- b. Troubleshooting**
- c. Repair Instructions**
- d. Return Goods Policy**
- e. Warranty, Terms of Sale, Conditions of Sale**
- f. Customer Service Request Questionnaire**

# I

# Personnel

## a. History & Personnel

## **FLUID POWER ENERGY, INC**

Fluid Power Energy, Inc., established in 1975 is an ISO 9001-2000 Certified Manufacturer of Thermostatic Control Valves. All product is manufactured in the company's 52,000 square foot facility in Waukesha, Wisconsin, using 100% American-made materials. FPE has an extensive machining shop consisting of CNC Turning Centers, CNC Horizontal and CNC Vertical machining centers. In addition, FPE has its own hydraulic test stand with the capability of flow testing, calibrating and re-calibrating elements, which ensures temperature accuracy and the highest quality product possible. These factors have resulted in establishing Fluid Power Energy as an industry leader in the manufacture of Thermostatic Control Valves.

### **PERSONNEL**

***President:*** Douglas G. Bayerlein, BSME.

***Treasurer:*** Richard E. Bayerlein, BSME, Professional Engineer #11390-006.

***Engineering Manager:*** Scott Hoerig, BSME.

***Senior Engineer:*** John Hannes, BSME.

***Engineering Support and Design:***

Ed Batura, BSME

***Quality Manager:*** Dennis Green

***Operations Manager:*** Bob Klamert

***Sales Manager:*** Jim Davies

***Customer Service, Purchasing and Assembly Coordinator.:*** Jim Lindemann

***Customer Service Support:*** Teresa Hunkins

***Accounts Receivable/Payable:*** Ashley Aldrich/ Teresa Hunkins

***Product Manager/New Product Development:*** Bob Odum

# II

# Product

## **Model Data Sheets & Description**

- a. 0750 & 0752 Three-way & Two-way**
- b. 1010, 1110, 1210, 1010J8, 1010J12, 1010J16 Three-way**
- c. 1011, 1111, 1211, 1411, 1511 Two-way (Water Saver)**
- d. 1530, 1530M, 1530J16, 1530J20, 1530J24, F1530, SF1530, SF1530X Three-way (T-Style), Available with Manual Override**
- e. 2010, 2010-1, 2010J24, 2010J32, F2010, SF2010, SF2010X Three-way**
- f. 2012-1, 2012, 2012J24, 2012J32, 2012M, F2012M Three-way (T-Style), Available with Manual Override 2013-1, 2013, 2013J24, 2013J32, 2013M Three-way (T-Style) w/ Bulkhead Mounting Provisions, Available with Manual Override**
- g. S2014-1, S2014, S2015-1, S2015, S2014-X16, S2015-X16 Three-way (Refrigeration), Steel Body, Plated Element, Teflon Lip Seal and Neoprene Seal Standard**

- h. 2510, 2510M Three-way (T-Style), Available with Manual Override**
- i. 3010, 3010M Three-way (T-Style), Available with Manual Override**
- j. 4010, 4010M Three-way (T-Style), Available with Manual Override**
- k. 5010, 5010M Three-way (T-Style), Available with Manual Override**
- l. 6010, 6010M Three-way (T-Style), Available with Manual Override**
- m. Air Stop (Emergency Engine Intake Air Shutoff Valve), 2” Through 8”, Unrestricted Flow, Pneumatic & Electric Actuation**
- n. Model 75 Spin Clean – Oil Cleaning Centrifuge, 1GPM**
- o. Model 150 Spin Clean – Oil Cleaning Centrifuge, 2GPM**
- p. Model 300 Spin Clean – Oil Cleaning Centrifuge, 4GPM, Gravity Drain Bottom**
- q. Model M300 Spin Clean – Oil Cleaning Centrifuge, 4GPM, Gravity Drain Side**
- r. Model HPU300 Spin Clean – Oil Cleaning Centrifuge, 4GPM, High Pressure Unit**
- s. Model 1000 Spin Clean – Oil Cleaning Centrifuge, 8, 12, or 16GPM, Gravity Drain Bottom**

**t. Model HPU1000 Spin Clean – Oil Cleaning Centrifuge, 8,  
12, or 16GPM, High Pressure Unit**



# Model 0750

## Three-Way or Two-Way (Water Saver) Thermostatic Valve



### Three-Way

0750	3/4" NPT
0750D1	3/4" NPT Low Flow
0750J12	3/4" SAE O-Ring
0750J12D1	3/4" SAE O-Ring Low Flow
0752	1/2" NPT
0752D1	1/2" NPT Low Flow

### Two-Way (Water Saver)

0750JW	3/4" NPT
0750JWJ12	3/4" SAE O-Ring
0752JW	1/2" NPT

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system in the three-way valve or blocked by a sleeve in the two-way version. As fluid temperature rises to the control range, some fluid is diverted to the cooling system in the three-way valve or to drain in the two-way version. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system in the three-way valve or to drain in the two-way version. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

FPE Thermostatic Valve Housings are made from cast aluminum or cast bronze, with other materials available.

Optional 0750 features: Plated elements and viton or neoprene seals.

## Features

- Wide Range of Temperatures
- Mountable Housing
- Heavy Duty
- Self-Contained
- Replaceable Element
- Non-Adjustable
- Rugged Construction
- Tamper-Proof
- Operate In Any Position
- Compact
- Available for Refrigeration Service



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

[www.fpevalves.com](http://www.fpevalves.com)

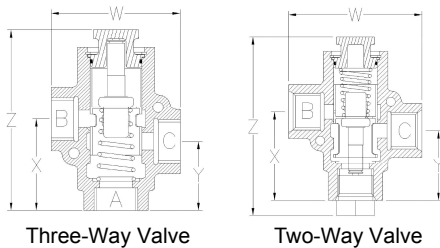


# Model 0750

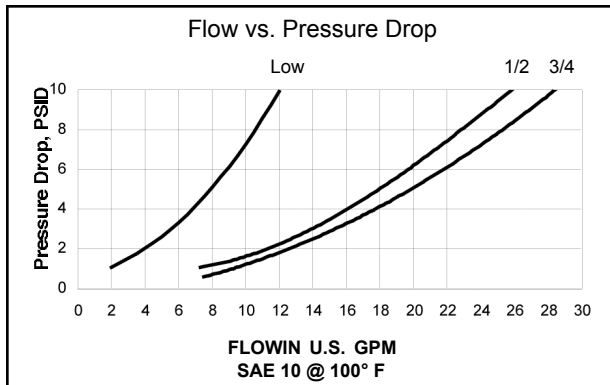
MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*0750	AL, B	3/4" NPT	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	4 9/16 (115.89)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	3-Way Valve
*0750D1	AL, B	3/4" NPT Low flow	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	4 9/16 (115.89)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	3-Way Valve
*0750J12	AL, B	SAE 12 3/4"	2 3/8 (60.33)	1 13/16 (46.04)	4 (101.60)	4 15/16 (125.41)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	3-Way Valve
*0750J12D1	AL, B	3/4" SAE 12 Low flow	2 3/8 (60.33)	1 13/16 (46.04)	4 (101.60)	4 15/16 (125.41)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	3-Way Valve
*0752	AL, B	1/2" NPT	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	4 9/16 (115.89)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	3-Way Valve
*0752D1	AL, B	1/2" NPT Low flow	2 3/8 (60.33)	1 13/16 (46.04)	4 (101.60)	4 15/16 (125.41)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	3-Way Valve
*0750JW	AL, B	3/4" NPT	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	5 3/8 (136.53)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	2-Way Valve
*0750JWJ12	AL, B	SAE 12 3/4"	2 3/8 (60.33)	1 13/16 (46.04)	4 (101.60)	5 3/8 (136.53)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	2-Way Valve
*0752JW	AL, B	1/2" NPT	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	5 3/8 (136.53)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	2-Way Valve

\*(Replace \* with body material type; AL=Aluminum, B=Bronze)

For port sizes not shown consult factory



PRESSURE RATINGS	
MATERIAL	PSI
AL, B	350

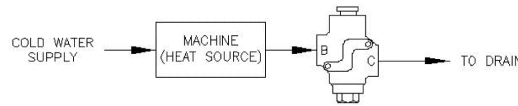
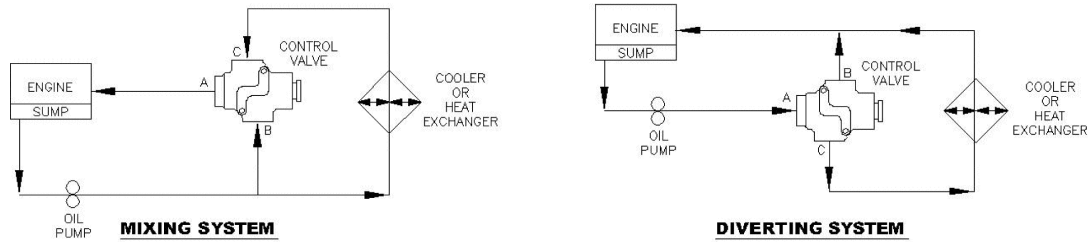


PART #	DESCRIPTION
*0750-1	VALVE BODY (*See table for material)
0750-3	CAP
0750-4	SPRING
0750*-6	O-RING (Specify B, V or E for material)
0750-7	SNAP RING
0750-9	SLEEVE (Specify weep hole or low flow)
0760-Temp	THERMOSTAT (Temp to follow dash)
0750-10	PLUG, (2-way valve only)

FPE Model 0700* Replacement Kit (Includes the following:)	
0750-4	SPRING
0750-6	BUNA-N O-RING
0760-Temp	THERMOSTAT (Temp to follow dash)

(Replace \* with O-Ring material type for Viton® (V) & Neoprene (E) only  
Viton® is a registered trademark of Dupont Dow Elastomers)

## APPLICATION CHARTS



TYPICAL "WATER SAVER" SYSTEM

## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

**262 • 548 • 6220 Fax 262 • 548 • 6239**

www.fpevalves.com

# Model 1010

## Three-Way Thermostatic Valve

1010	1/2" NPT
1110	3/4" NPT
1210	1/2" NPT
1010J8	SAE #8
1010J12	SAE #12
1010J16	SAE #16

Fluid Power Energy Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained power element activates a stainless steel sliding sleeve which provides positive three-way valve action. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from aluminum and grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Optional 1010 features: High over temperature element, plated element.



## Features

Self-Contained

Non-Adjustable

Tamper-Proof

Compact

Wide Range of Temperatures

Heavy Duty

Replaceable Element

Rugged Construction

Operate in Any Position



**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

**262 • 548 • 6220 Fax 262 • 548 • 6239**

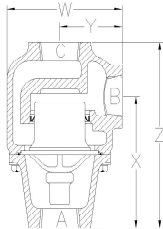
[www.fpevalves.com](http://www.fpevalves.com)



# Model 1010

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*1010	A, AL, B, D, S, SS	1" NPT	4 1/4 (107.95)	2 (50.80)	3 5/8 (92.08)	6 (152.40)	3 3/8 (85.73)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1110	A, AL, B, D, S, SS	3/4" NPT	4 1/4 (107.95)	2 (50.80)	3 5/8 (92.08)	6 (152.40)	3 3/8 (85.73)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1210	A, AL, B, D, S, SS	1/2" NPT	4 1/4 (107.95)	2 (50.80)	3 5/8 (92.08)	6 (152.40)	3 3/8 (85.73)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1010J8	A, AL, B, D, S, SS	SAE 8 1/2"	4 13/32 (111.92)	2 3/16 (55.56)	3 7/8 (98.43)	6 11/32 (161.13)	3 3/8 (85.73)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1010J12	A, AL, B, D, S, SS	SAE 12 3/4"	4 13/32 (111.92)	2 3/16 (55.56)	3 7/8 (98.43)	6 11/32 (161.13)	3 3/8 (85.73)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1010J16	A, AL, B, D, S, SS	SAE 16 1"	4 13/32 (111.92)	2 3/16 (55.56)	3 7/8 (98.43)	6 11/32 (161.13)	3 3/8 (85.73)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	

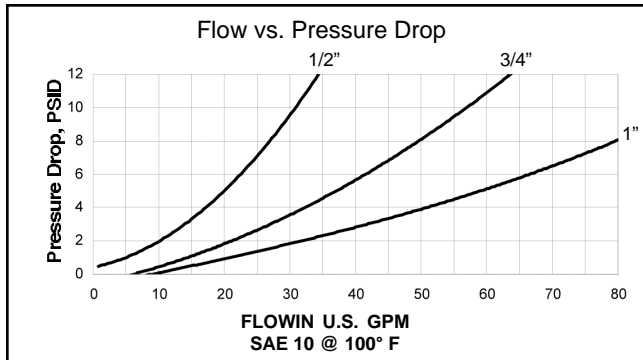
\* (Replace \* with body material type; A= Cast Iron, AL=Aluminum, B=Bronze, D = Ductile Iron, S= Steel, SS = Stainless Steel)



All models

PRESSURE RATINGS	
MATERIAL	PSI
A, AL, B	150
D	250
S, SS	500

For port sizes not shown consult factory



PART #	DESCRIPTION
*1010	VALVE BODY (*See table for material)
*1020	VALVE COVER (*See table for material)
1080	GASKET (Older than 1979)
1572*	O-RING (*Specify B, V or E for material)
1071	LIP SEAL
1060-Temp	THERMOSTAT (Temp to follow dash)
1600	HEX BOLT
1601	LOCK WASHER
1590	NAMEPLATE

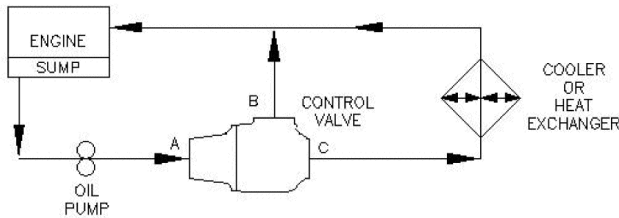
### FPE Model 1000\* Replacement Kit (Includes the following:)

1572B	BUNA-N O-RING
1071	LIP SEAL
1060-Temp	THERMOSTAT (Temp to follow dash)

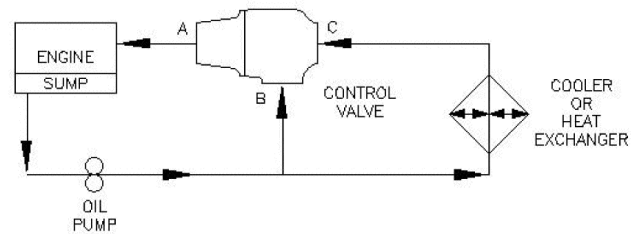
(Replace \* with O-Ring material type for Viton® (V) & Neoprene (E) only)

Viton® is a registered trademark of Dupont Dow Elastomers

### APPLICATION CHARTS



**DIVERTING SYSTEM**



**MIXING SYSTEM**

## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com

# Model 1011

## Two-Way (Water Saver) Thermostatic Valve

1011	1" NPT
1111	3/4" NPT
1211	1/2" NPT
1411	1 1/4" NPT
1511	1 1/2" NPT

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a bronze or nickel plated sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for city or treated water temperature control applications.

On start-up, a majority of the fluid flow is blocked by a sleeve. A small amount will flow through the weep hole to the drain. As fluid temperature rises to the control range, more of the fluid is directed to the drain, and when the thermostat is in a fully stroked condition, all fluid flow is directed to the drain. This FPE valve is designed for use in water saver applications.

Standard FPE Thermostatic Valve Housings are made from aluminum and grey iron castings; however, ductile iron, bronze, steel and stainless steel housings are available.



### Features

- Self-Contained
- Replaceable Element
- Non-Adjustable
- Rugged Construction
- Tamper-Proof
- Compact Operate In Any Position
- Wide Range of Temperatures
- Heavy Duty



### FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186  
**262 • 548 • 6220 Fax 262 • 548 • 6239**

[www.fpevalves.com](http://www.fpevalves.com)



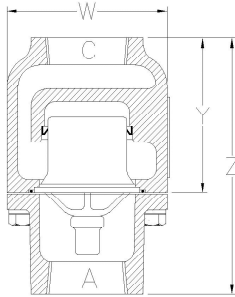
ISO 9001-2000



# Model 1011

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*1011	A, AL, B, D, S, SS	1" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1111	A, AL, B, D, S, SS	3/4" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1211	A, AL, B, D, S, SS	1/2" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1411	A, AL, B, D, S, SS	1 1/4" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	
*1511	A, AL, B, D, S, SS	1 1/2" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=6.5#, AL=3# B=8.5#, D=6.5# S & SS=7#	

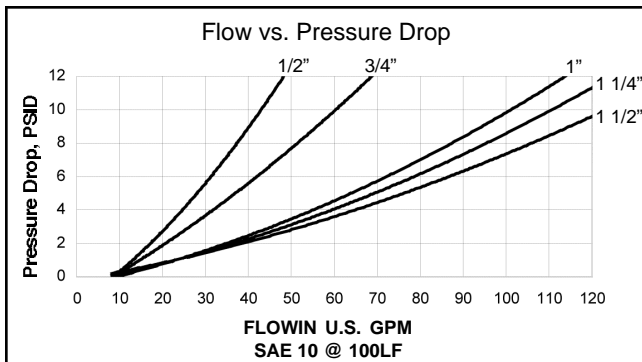
\* (Replace \* with body material type; A= Cast Iron, AL=Aluminum, B=Bronze, D = Ductile Iron, S= Steel, SS = Stainless Steel)



All models

PRESSURE RATINGS	
MATERIAL	PSI
A, AL, B	150
D	250
S, SS	500

For port sizes not shown consult factory

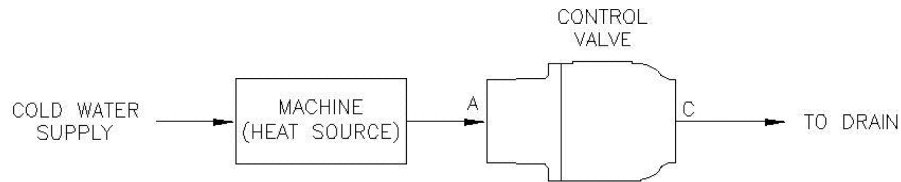


PART #	DESCRIPTION
*1011	VALVE BODY (*See table for material)
*1040	VALVE COVER (*See table for material)
1572*	O-RING (*Specify B, V or E for material)
1571	LIP SEAL
1560-Temp	THERMOSTAT (Temp to follow dash)
1600	HEX BOLT
1601	LOCK WASHER
1590	NAMEPLATE

FPE Model 1500* Replacement Kit (Includes the following:)	
1572B	BUNA O-RING
1571	LIP SEAL
1560-Temp	THERMOSTAT (Temp to follow dash)

(Replace \* with O-Ring material type for Viton® (V) & Neoprene (E) only)  
 Viton® is a registered trademark of Dupont Dow Elastomers

## APPLICATION CHARTS



## TYPICAL "WATER SAVER" SYSTEM

## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com



# Model 1530

## Three-Way Thermostatic Valve



1530	1 1/2" NPT
1530J16	1" SAE O-Ring
1530J20	1 1/4" SAE O-Ring
1530J24	1 1/2" SAE O-Ring
F1530	1 1/2" 125# FF Flange
SF1530	1 1/2" 150# RF Flange
SF1530X	1 1/2" 150# RF Flange

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at pre-determined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system in the three-way valve or blocked by a sleeve in the two-way version. As fluid temperature rises to the control range, some fluid is diverted to the cooling system in the three-way valve or to drain in the two-way version. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system in the three-way valve or to drain in the two-way version. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE Thermostatic Valve Housings are made from aluminum and grey iron castings, however, ductile iron, steel and stainless steel housings are available.

Available connections: NPT, SAE O-Ring, 125 # FF Flange, 150# RF Flange, 300 # RF Flange, Navy and Metric Flanges.

Optional Features: Manual Override, High Over Temp elements, Plated elements

## Features

Self-Contained

Non-Adjustable

Tamper-Proof

Compact

Wide Range of Temperatures

Heavy Duty

Replaceable Element

Rugged Construction

Operate in Any Position



**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

**262 • 548 • 6220 Fax 262 • 548 • 6239**

[www.fpevalves.com](http://www.fpevalves.com)



ISO 9001-2000

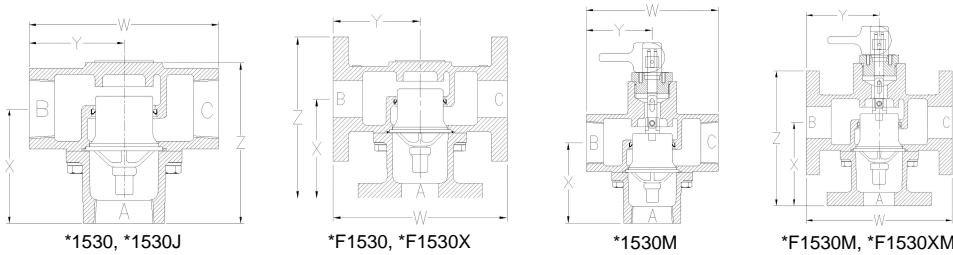




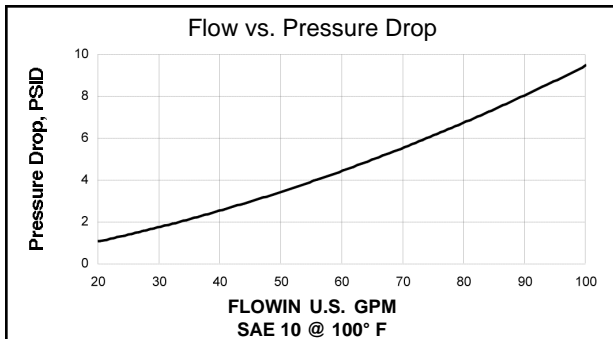
# Model 1530

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm.))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*1530	A, B, D S, SS	1 1/2" NPT	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	5 1/4 (133.35)	3 3/4 (95.25)	N/A	N/A	N/A	1	A & D=9#, B=10# S & SS=10#	
*1530J16	A, B, D S, SS	SAE 16 1"	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	5 1/4 (133.35)	3 3/4 (95.25)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*1530J20	A, B, D S, SS	SAE 20 1 1/4"	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	5 1/4 (133.35)	3 3/4 (95.25)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*1530J24	A, B, D S, SS	SAE 24 1 1/2"	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	5 1/4 (133.35)	3 3/4 (95.25)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*1530M	A, B, D S, SS	1 1/2" NPT	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	N/A	3 3/4 (95.25)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	Manual Override
*F1530	A, B, D	1 1/2" 125# FF FLANGE	4 (101.60)	3 1/2 (88.90)	7 (177.80)	6 1/2 (165.10)	5 (127.00)	4 (15.88)	5/8 (98.43)	3 7/8 (98.43)	1	A&D=16# B=18#	
	S, SS	1 1/2" 150# RF FLANGE	4 (101.60)	3 1/2 (88.90)	7 (177.80)	6 1/2 (165.10)	5 (127.00)	4 (15.88)	5/8 (98.43)	3 7/8 (98.43)	1	S & SS=17#	
*F1530M	A, B, D	1 1/2" 125# FF FLANGE	4 (101.60)	3 1/2 (88.90)	7 (177.80)	N/A	5 (127.00)	4 (15.88)	5/8 (98.43)	3 7/8 (98.43)	1	A&D=17# B=19#	Manual Override
	S, SS	1 1/2" 150# RF FLANGE	4 (101.60)	3 1/2 (88.90)	7 (177.80)	6 1/2 (165.10)	5 (127.00)	4 (15.88)	5/8 (98.43)	3 7/8 (98.43)	1	S & SS=18#	Manual Override
*F1530X	S, SS	1 1/2" 300# RF FLANGE	4 3/4 (120.65)	4 (101.60)	8 (203.20)	7 13/16 (198.44)	6 1/8 (155.58)	4 (22.23)	7/8 (22.23)	4 1/2 (114.30)	1	S & SS=28#	
*F1530XM	S, SS	1 1/2" 300# RF FLANGE	4 3/4 (120.65)	4 (101.60)	8 (203.20)	7 13/16 (198.44)	6 1/8 (155.58)	4 (22.23)	7/8 (22.23)	4 1/2 (114.30)	1	S & SS=28#	Manual Override

\* (Replace \* with body material type; A= Cast Iron, AL=Aluminum, B=Bronze, D = Ductile Iron, S= Steel, SS = Stainless Steel)



PRESSURE RATINGS	
MATERIAL	PSI
A, B	150
D	250
S, SS	500
SF, SSF	275
SFX, SSFX	350



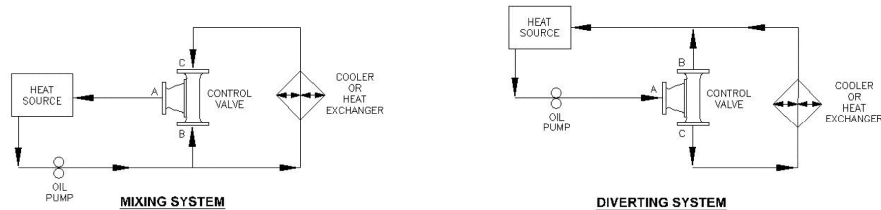
PART #	DESCRIPTION
*1530	VALVE BODY (*See table for material)
*1540	VALVE COVER (*See table for material)
*1572	O-RING (*Specify B, V or E for material)
1571	LIP SEAL
1560-Temp	THERMOSTAT (Temp to follow dash)
1600	HEX BOLT
1601	LOCK WASHER
1590	NAMEPLATE

#### FPE Model 1500\* Replacement Kit (Includes the following:)

1570B	BUNA O-RING
1571	LIP SEAL
1560-Temp	THERMOSTAT (Temp to follow dash)

Replace \* with O-Ring material type for Viton (V) & Neoprene (E) only  
Viton® is a registered trademark of Dupont Dow Elastomers

#### APPLICATION CHARTS



## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

www.fpevalves.com

# Model 2010

## Three-Way Thermostatic Valve

2010	2" NPT
2010-1	1 1/2" NPT
2010J24	1 1/2" SAE O-Ring
A2010J32	2" SAE O-Ring
F2010	2" 125# FF Flange
SF2010	2" 150# RF Flange
SF2010X	2" 300# RF Flange

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from aluminum and grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Available Connections: NPT, SAE O-Ring, 125# FF Flange, 150# and 300# RF.

Optional features: High over temperature element, plated element.



## Features

Self-Contained

Non-Adjustable

Tamper-Proof

Compact

Wide Range of Temperatures

Heavy Duty

Replaceable Element

Rugged Construction

Operate in Any Position



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

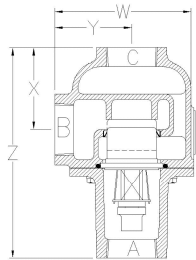
[www.fpevalves.com](http://www.fpevalves.com)



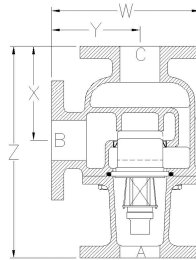
# Model 2010

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*2010-1	A, B, D S, SS	1 1/2" NPT	3 13/16 (96.84)	3 9/16 (90.49)	6 5/16 (160.34)	9 3/4 (247.65)	5 1/2 (139.70)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*2010	A, B, D S, SS	2" NPT	3 13/16 (96.84)	3 9/16 (90.49)	6 5/16 (160.34)	9 3/4 (247.65)	5 1/2 (139.70)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*2010J24	A, B, D S, SS	SAE 24 1 1/2"	3 13/16 (96.84)	3 9/16 (90.49)	6 5/16 (160.34)	9 3/4 (247.65)	5 1/2 (139.70)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*2010J32	A, B, D S, SS	SAE 32 2"	3 13/16 (96.84)	3 9/16 (90.49)	6 5/16 (160.34)	9 3/4 (247.65)	5 1/2 (139.70)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*F2010	A, B, D	2" 125# FF FLANGE	4 3/4 (120.65)	4 9/16 (115.89)	7 9/16 (192.09)	10 5/8 (269.88)	6 (152.40)	4	3/4 (19.05)	4 3/4 (120.65)	1	A=32#, B=40# D=32#	
	S, SS	2" 150# RF FLANGE	4 7/8 (123.83)	4 9/16 (115.89)	7 9/16 (192.09)	10 7/8 (276.23)	6 (152.40)	4	3/4 (19.05)	4 3/4 (120.65)	1	S & SS=34#	
*F2010X	S, SS	2" 300# RF FLANGE	5 (127.00)	4 11/16 (119.06)	7 15/16 (201.61)	11 1/8 (282.58)	6 1/2 (165.10)	8	7/8 (22.23)	5 (127.00)	1	S & SS=36#	

\* (Replace \* with body material type; A=Cast Iron, AL= Aluminum, B=Bronze, D=Ductile, S=Steel, SS=Stainless Steel)

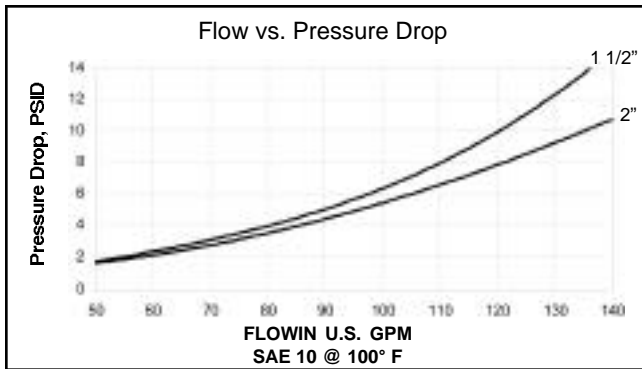


#2010-1, #2010, #2010J



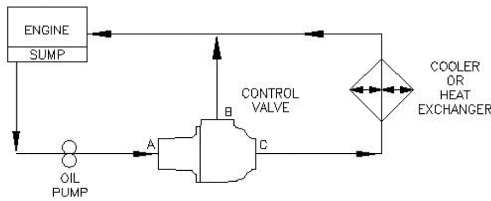
\*F2010, \*F2010X

PRESSURE RATINGS	
MATERIAL	PSI
A, B	150
D	250
S, SS	500
SF, SSF	275
SFX, SSFX	350

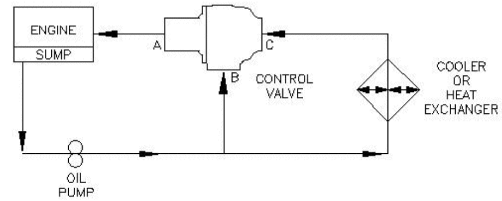


PART #	DESCRIPTION
*2010	VALVE BODY (*See table for material)
*2020	VALVE COVER (*See table for material)
1570*	O-RING (*Specify B, V or E for material)
2071	LIP SEAL
2050-Temp	THERMOSTAT (Temp to follow dash)
1600	HEX BOLT
1601	LOCK WASHER
FPE Model 2000* Replacement Kit (Includes the following:)	
1570B	BUNA O-RING
2071	LIP SEAL
2050-Temp	THERMOSTAT (Temp to follow dash)
* (Replace * with O-Ring material type for Viton (V) & Neoprene (E) only)	
Viton® is a registered trademark of Dupont Dow Elastomers	

## APPLICATION CHARTS



**DIVERTING SYSTEM**



**MIXING SYSTEM**

## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

www.fpevalves.com

# Model 2012 & 2013

## Three-Way Thermostatic Valve (T Style)



2012-1	1 1/2" NPT
2012	2" NPT
2012J24	1 1/2" SAE O-ring
2012J32	2" SAE O-ring
2012M	2" NPT with Manual Override
F2012	2" Flange
F2012M	2" Flange with Manual Override

### With Bulkhead Mounting Provisions

2013-1	1 1/2" NPT
2013	2" NPT
2013J24	1 1/2" SAE O-ring
2013J32	2" SAE O-ring
2013M	2" NPT with Manual Override

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from aluminum and grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Optional features: High over temperature element, plated element, manual override.

## Features

Designed for Hydraulic Power Units

Mounting Rails

Self-Contained

Replaceable Element

Non Adjustable

Rugged Construction

Tamper-Proof

Compact Operate in Any Position

Wide Range of Temperatures

Extra Heavy Casting



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

[www.fpevalves.com](http://www.fpevalves.com)

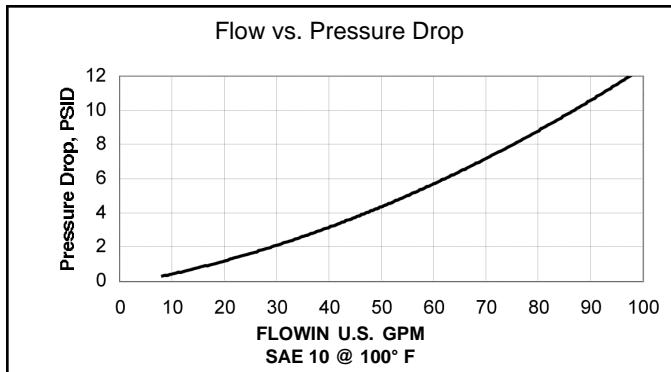
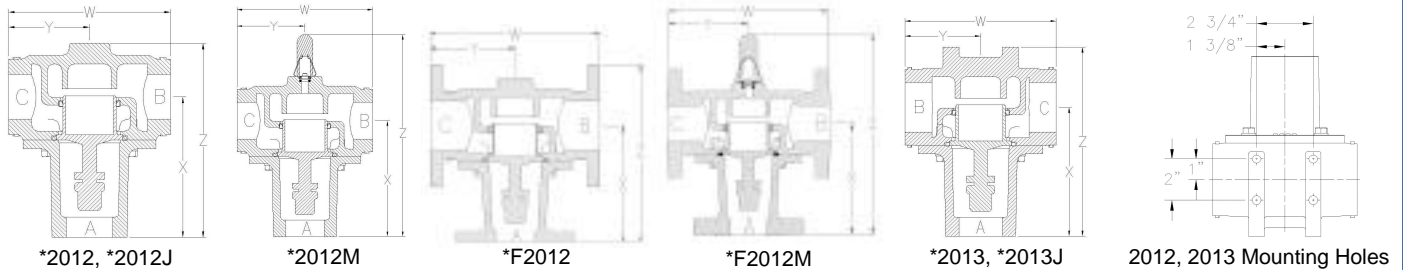


# Model 2012 & 2013

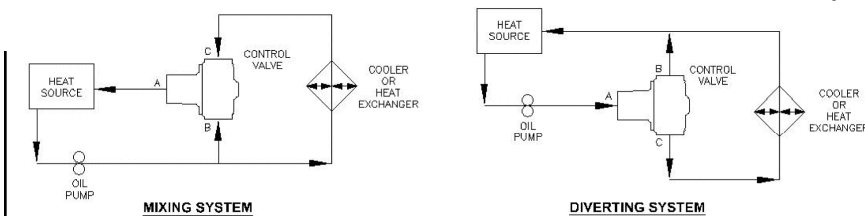
MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*2012-1	A, B, D, S, SS	1 1/2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/8 (212.73)	5 3/4 (146.05)	N/A	N/A	N/A	1	A&D=22#, B=28# S & SS=25#	
*2012	A, B, D, S, SS	2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/8 (212.73)	5 3/4 (146.05)	N/A	N/A	N/A	1	A&D=22#, B=28# S & SS=25#	
*2012J24	A, B, D, S, SS	SAE 24 1 1/2"	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/8 (212.73)	5 3/4 (146.05)	N/A	N/A	N/A	1	A&D=22#, B=28# S & SS=25#	
*2012J32	A, B, D, S, SS	SAE 32 2"	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/8 (212.73)	5 3/4 (146.05)	N/A	N/A	N/A	1	A&D=22#, B=28# S & SS=25#	
*2012M	A, B, D, S, SS	2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/8 (212.73)	5 3/4 (146.05)	N/A	N/A	N/A	1	A&D=22#, B=28# S & SS=25#	Manual Override
*F2012	A, B, D	2" 125# FF FLANGE	6 (152.40)	4 7/16 (112.71)	8 7/8 (225.43)	9 (228.60)	6 (152.40)	4 (19.05)	3/4 (19.05)	4 3/4 (120.65)	1	A=24#, B=26# D=20#	
	S, SS	2" 150# RF FLANGE	6 (152.40)	4 7/16 (112.71)	8 7/8 (225.43)	9 (228.60)	6 (152.40)	4 (19.05)	3/4 (19.05)	4 3/4 (120.65)	1	S & SS=24#	
*F2012M	A, B, D	2" 125# FF FLANGE	6 (152.40)	4 7/16 (112.71)	8 7/8 (225.43)	11 (279.40)	6 (152.40)	4 (19.05)	3/4 (19.05)	4 3/4 (120.65)	1	A=24#, B=26# D=20#	Manual Override
	S, SS	2" 150# RF FLANGE	6 (152.40)	4 7/16 (112.71)	8 7/8 (225.43)	11 (279.40)	6 (152.40)	4 (19.05)	3/4 (19.05)	4 3/4 (120.65)	1	S & SS=24#	Manual Override
*F2012X	S, SS	2" 300# RF FLANGE	6 (152.40)	4 7/16 (112.71)	8 7/8 (225.43)	9 7/16 (239.71)	6 1/2 (165.10)	4 (19.05)	3/4 (19.05)	5 (127.00)	1	S & SS=24#	
*2013-1	A, B, D, S, SS	1 1/2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/4 (222.25)	6 1/2 (165.10)	N/A	N/A	N/A	1	A&D=25#, B=30# S & SS=27#	Mounting Ribs
*2013	A, B, D, S, SS	2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/4 (222.25)	6 1/2 (165.10)	N/A	N/A	N/A	1	A&D=25#, B=30# S & SS=27#	Mounting Ribs
*2013J24	A, B, D, S, SS	SAE 24 1 1/2"	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/4 (222.25)	6 1/2 (165.10)	N/A	N/A	N/A	1	A&D=25#, B=30# S & SS=27#	Mounting Ribs
*2013J32	A, B, D, S, SS	SAE 32 2"	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/4 (222.25)	6 1/2 (165.10)	N/A	N/A	N/A	1	A&D=25#, B=30# S & SS=27#	Mounting Ribs

PRESSURE RATINGS	
MATERIAL	PSI
A, B	150
D	250
S, SS	500
SF, SSF	275
SFX, SSFX	350

(\* Replace \* with body material type; A=Cast Iron, B=Bronze, D=Ductile, S=Steel, SS=Stainless Steel)



### APPLICATION CHARTS



PART #	DESCRIPTION
*2012	VALVE BODY (*See table for material)
*2013	VALVE BODY W/MOUNTING HOLES
*2020	VALVE COVER (*See table for material)
2071	LIP SEAL
2050-Temp	THERMOSTAT (Temp to follow dash)
1604	HEX BOLT
1605	LOCK WASHER
1570*	O-RING (*Specify B, V or E for material)
1590	NAMEPLATE

### FPE Model 2000\* Replacement Kit (Includes the following:)

1570B	BUNA O-RING
2071	LIP SEAL
2050-Temp	THERMOSTAT (Temp to follow dash)

(Replace \* with O-Ring material type for Viton® (V) & Neoprene (E) only  
Viton® is a registered trademark of Dupont Dow Elastomers)

## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com



# Model 2014 & 2015

## Three-Way Thermostatic Valve (Refrigeration)

S2014-1	1 1/2" Socket Weld Connection
S2014	2" Socket Weld Connection
S2015-1	1 1/2" Socket Weld Connection (Reverse Flow)
S2015	2" Socket Weld Connection (Reverse Flow)
S2014X16	2" Butt Weld Connection
S2015X16	2" Butt Weld Connection (Reverse Flow)

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a nickel plated sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

FPE 2014/2015 Thermostatic Valve Housings are made from (WCB) steel.



## Features

Designed for Refrigeration Service

Neoprene O-ring Seal  
On Cover

Self-Contained

Replaceable Element without  
Breaking Connections

Non-Adjustable

Rugged Construction

Tamper-Proof

Compact Operate  
In Any Position

Wide Range of Temperatures



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

[www.fpevalves.com](http://www.fpevalves.com)



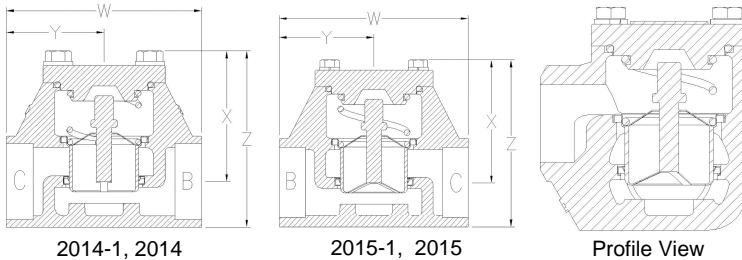
ISO 9001-2000



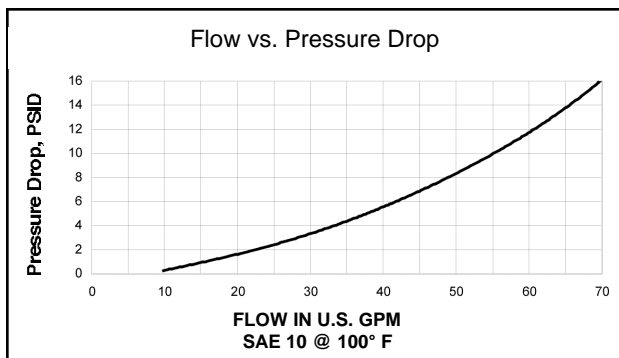
MADE IN  
  
U. S. A.

# Model 2014 & 2015

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*2014-1	S	1 1/2" SOCKET WELD	4 15/16 (125.41)	3 13/16 (96.84)	6 7/16 (163.51)	5 13/16 (147.64)	5 15/16 (150.81)	N/A	N/A	N/A	1	20#	
*2014 *2015	S	2" SOCKET WELD	4 15/16 (125.41)	3 13/16 (96.84)	6 7/16 (163.51)	5 13/16 (147.64)	5 15/16 (150.81)	N/A	N/A	N/A	1	20#	
*2014X16 *2015X16	S	2" BUTT WELD	4 15/16 (125.41)	3 13/16 (96.84)	6 7/16 (163.51)	5 13/16 (147.64)	5 15/16 (150.81)	N/A	N/A	N/A	1	21#	



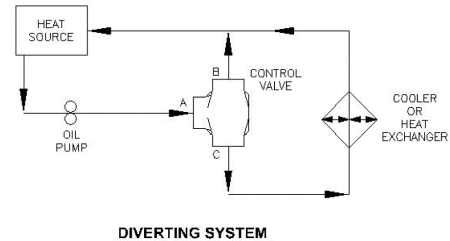
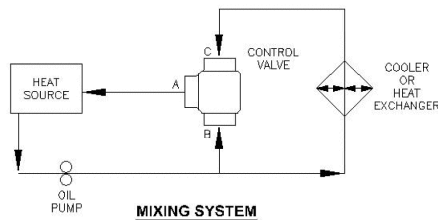
PRESSURE RATINGS	
MATERIAL	PSI
S	500



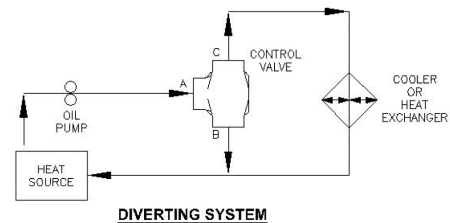
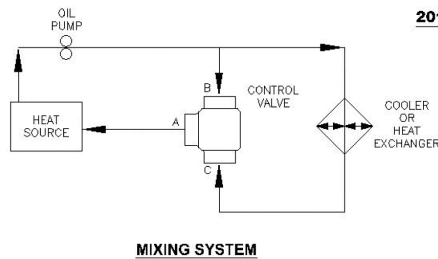
PART #	DESCRIPTION
S2104	VALVE BODY
S2024	VALVE COVER
2014-2	SPRING
2071	LIP SEAL
2040P-Temp	PLATED THERMOSTAT (Temp to follow dash)
1604	HEX BOLT
1605	LOCK WASHER
1570E	NEOPRENE O-RING
1590	NAMEPLATE
<b>FPE Model 2000E Replacement Kit (Includes the following:)</b>	
1570E	BUNA O-RING
2071	LIP SEAL
2050P-Temp	THERMOSTAT (Temp to follow dash)

## APPLICATION CHARTS

### 2014 & 2014-1



### 2015 & 2015-1



## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

**262•548•6220 Fax 262•548•6239**

www.fpevalves.com



# Model 2510

## Three-Way Thermostatic Valve (T Style)

2510                      2 1/2" Flange  
2510 M                    2 1/2" Flange with manual Override



FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from aluminum and grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Available Connections: 125 # FF Flange, 150 # RF Flange, 300 # RF Flange, Navy and Metric Flanges

Optional features: Manual Override, High Over Temp element, Plated element

## Features

- Self-Contained
- Non-Adjustable
- Tamper-Proof
- Compact
- Wide Range of Temperatures
- Heavy Duty
- Replaceable Element
- Rugged Construction
- Operate in Any Position



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

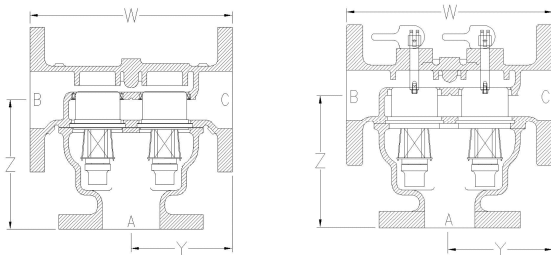
[www.fpevalves.com](http://www.fpevalves.com)



# Model 2510

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*2510	A, B, D	2 1/2" 125# FF FLANGE	N/A	5 (127.00)	10 (254.00)	6 1/2 (165.10)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	A=47#, B=54# D=47#	
	S, SS	2 1/2" 150# RF FLANGE	N/A	5 3/16 (131.76)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	S & SS=51#	
*2510M	A, B, D	2 1/2" 125# FF FLANGE	N/A	5 (127.00)	10 (254.00)	6 1/2 (165.10)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	A=48#, B=55# D=48#	Manual Override
	S, SS	2 1/2" 150# RF FLANGE	N/A	5 3/16 (131.76)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	S & SS=52#	
*2510X	S, SS	2 1/2" 300# RF FLANGE	N/A	5 3/16 (131.76)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	8	7/8 (22.23)	5 7/8 (149.23)	2	S & SS=59#	
*2510XM	S, SS	2 1/2" 300# RF FLANGE	N/A	5 3/16 (131.76)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	8	7/8 (22.23)	5 7/8 (149.23)	2	S & SS=60#	Manual Override

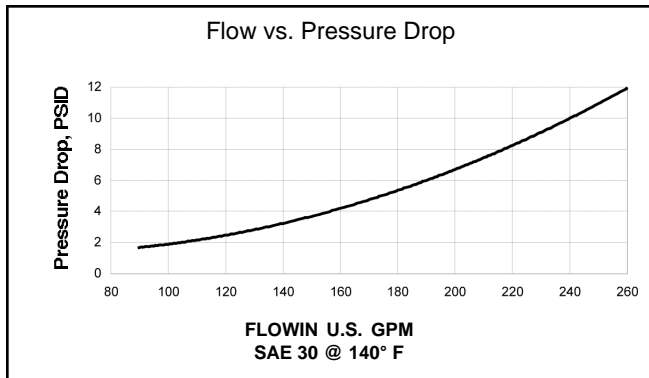
\* (Replace \* with body material type; A=Cast Iron, B=Bronze, D=Ductile, S=Steel, SS=Stainless Steel)



\*2510, \*2510X

\*2510M, \*2510XM

PRESSURE RATINGS	
MATERIAL	PSI
A, B, D	125
S, SS	275
SX, SSX	350

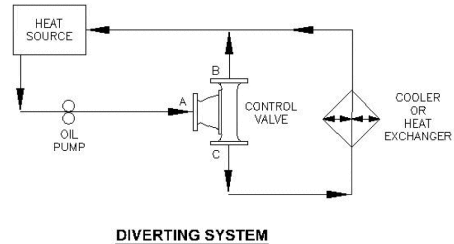
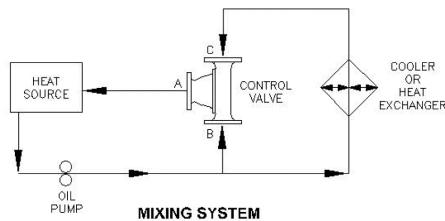


PART #	DESCRIPTION
*2510	VALVE BODY (*See table for material)
*2520	VALVE COVER (*See table for material)
2071	LIP SEAL
3080-C	GASKET
2050-Temp	THERMOSTAT (Temp to follow dash)
1604	HEX BOLT
1605	LOCK WASHER
1590	NAMEPLATE

### FPE Model 2500 Replacement Kit (Includes the following:)

3080-C	GASKET
(2) 2071	LIP SEAL
(2) 2050-Temp	THERMOSTAT (Temp to follow dash)

### APPLICATION CHARTS



## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com

# Model 3010

## Three-Way Thermostatic Valve (T Style)

3010                      3" Flange  
3010M                    3" Flange with Manual Override



FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from aluminum and grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Available Connections: 125# FF Flange, 150# RF Flange, 300# RF Flange, Navy and Metric Flanges

Optional features: Manual Override, High Over Temp element, Plated element

## Features

- Self-Contained
- Non-Adjustable
- Tamper-Proof
- Compact
- Wide Range of Temperatures
- Heavy Duty
- Replaceable Element
- Rugged Construction
- Operate in Any Position



### FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

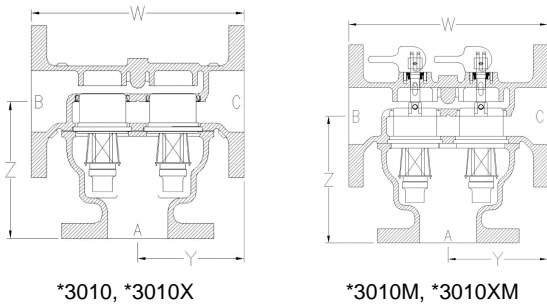
[www.fpevalves.com](http://www.fpevalves.com)



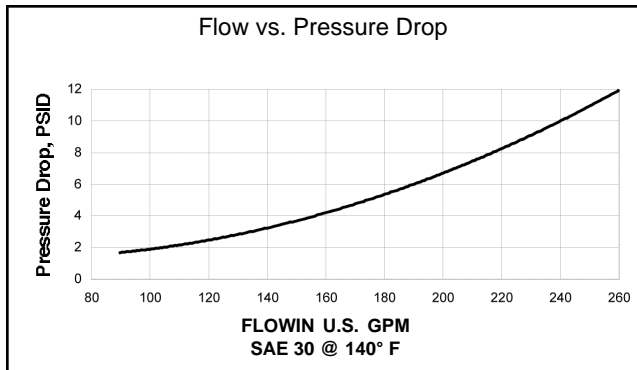
# Model 3010

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*3010	A, B, D	3" 125# FF FLANGE	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 3/4 (171.45)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	A=57#, B=69# D=50#	
	S, SS	3" 150# RF FLANGE	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 7/8 (174.63)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	S & SS=63#	
*3010M	A, B, D	3" 125# FF FLANGE	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 3/4 (171.45)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	A=48#, B=55# D=48#	Manual Override
	S, SS	3" 150# RF FLANGE	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 7/8 (174.63)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	S & SS=64#	Manual Override
*3010X	S, SS	3" 300# RF FLANGE	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 7/8 (174.63)	8 1/4 (209.55)	8	7/8 (22.23)	6 5/8 (168.28)	2	S & SS=70#	
*3010XM	S, SS	3" 300# RF FLANGE	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 7/8 (174.63)	8 1/4 (209.55)	8	7/8 (22.23)	6 5/8 (168.28)	2	S & SS=71#	Manual Override

\* (Replace \* with body material type; A=Cast Iron, B=Bronze, D=Ductile, S=Steel, SS=Stainless Steel)



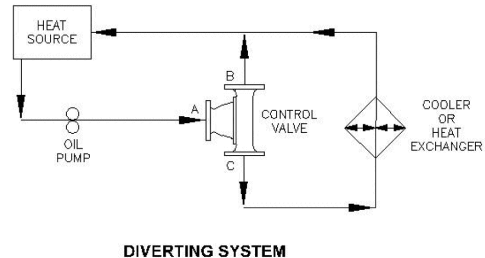
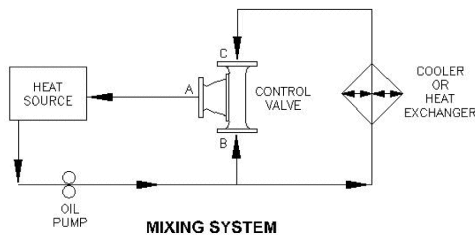
PRESSURE RATINGS	
MATERIAL	PSI
A, B, D	125
S, SS	275
SX, SSX	350



PART #	DESCRIPTION
*3010	VALVE BODY (*See table for material)
*3020	VALVE COVER (*See table for material)
2071	LIP SEAL
3080-C	GASKET
2050-Temp	THERMOSTAT (Temp to follow dash)
1604	HEX BOLT
1605	LOCK WASHER
1590	NAMEPLATE

FPE Model 3000 Replacement Kit (Includes the following)	
3080-C	GASKET
(2) 2071	LIP SEAL
(2) 2050-Temp	THERMOSTAT (Temp to follow dash)

## APPLICATION CHARTS



## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com

# Model 4010

## Three-Way Thermostatic Valve



4010	4" Flange
4010M	4" Flange with Manual Override

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from aluminum and grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Available Connections: 125 # FF Flange, 150 # RF Flange, 300 # RF and FF Flange, and Navy Flanges

Optional features: Manual Override, High Over Temp element, Plated element

## Features

- Self-Contained
- Non-Adjustable
- Tamper-Proof
- Compact
- Wide Range of Temperatures
- Heavy Duty
- Replaceable Element
- Rugged Construction
- Operate in Any Position



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

[www.fpevalves.com](http://www.fpevalves.com)

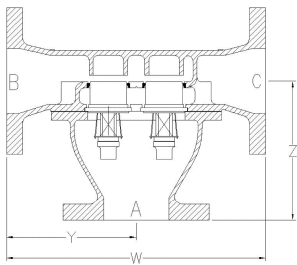




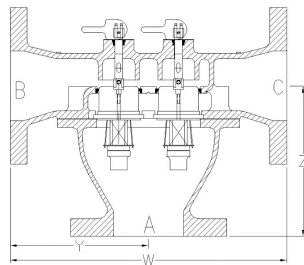
# Model 4010

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*4010	A, B, D	4" 125# FF FLANGE	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	A=95#, B=116# D=90#	
	S, SS	4" 150# RF FLANGE	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	S & SS=104#	
*4010M	A, B, D	4" 125# FF FLANGE	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	A=97#, B=118# D=92#	Manual Override
	S, SS	4" 150# RF FLANGE	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	S & SS=106#	Manual Override
*4010X	S, SS	4" 300# RF FLANGE	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	7/8 (22.23)	7 7/8 (200.03)	4	S & SS=126#	
*4010XM	S, SS	4" 300# RF FLANGE	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	7/8 (22.23)	7 7/8 (200.03)	4	S & SS=127#	Manual Override

\* (Replace \* with body material type; A=Cast Iron, B=Bronze, D=Ductile, S=Steel, SS=Stainless Steel)



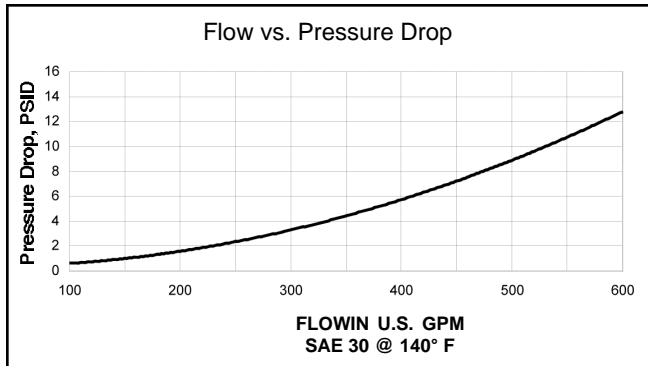
\*4010, \*4010X



\*4010M, \*4010XM

### PRESSURE RATINGS

MATERIAL	PSI
A	150
B	125
D	200
S, SS	275
SX, SSX	350

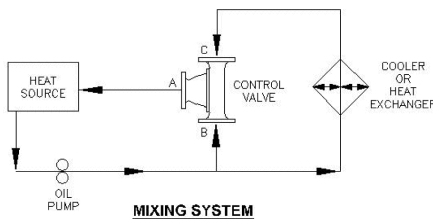


PART #	DESCRIPTION
*4010	VALVE BODY (*See table for material)
*4020	VALVE COVER (*See table for material)
2071	LIP SEAL
4080-C	GASKET
2050-Temp	THERMOSTAT (Temp to follow dash)
1604	HEX BOLT
1605	LOCK WASHER
1590	NAMEPLATE

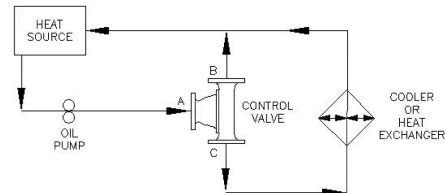
### FPE Model 4000 Replacement Kit (Includes the following:)

4080-C	GASKET
(4) 2071	LIP SEAL
(4) 2050-Temp	THERMOSTAT (Temp to follow dash)

### APPLICATION CHARTS



MIXING SYSTEM



DIVERTING SYSTEM

## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com

# Model 5010

## Three-Way Thermostatic Valve



5010

5" Flange

FPE Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained element activates a stainless steel sleeve, which directs flow. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Available Connections: 125# FF Flange, 150# RF Flange, 300# RF and FF Flange, and Navy Flanges

Optional features: Manual Override, High Over Temp element, Plated element

## Features

Self-Contained

Non-Adjustable

Tamper-Proof

Compact

Wide Range of  
Temperatures

Heavy Duty

Replaceable Element

Rugged Construction

Operate in Any Position



**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

**262 • 548 • 6220 Fax 262 • 548 • 6239**

[www.fpevalves.com](http://www.fpevalves.com)

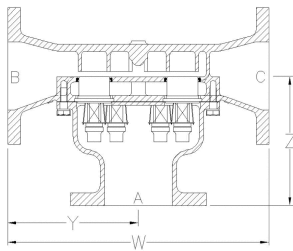




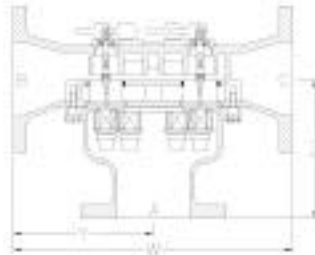
# Model 5010

MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm) )				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*5010	A, B, D	5" 125# FF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	A=120#, B=146# D=120#	
	S, SS	5" 150# RF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	S & SS=132#	
*5010M	A, B, D	5" 125# FF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	A=123#, B=149# D=123#	Manual Override
	S, SS	5" 150# RF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	S & SS=135#	Manual Override

\* (Replace \* with body material type; A=Cast Iron, B=Bronze, D=Ductile, S=Steel, SS=Stainless Steel)

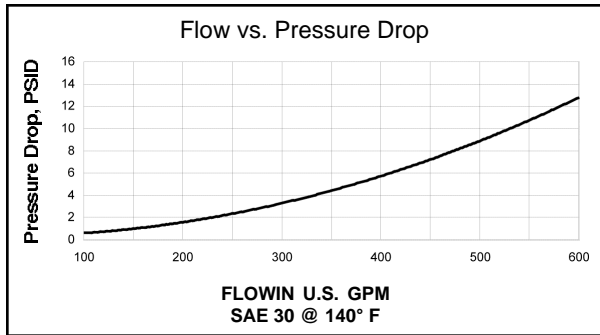


\*5010, \*5010X



\*5010M, \*5010XM

PRESSURE RATINGS	
MATERIAL	PSI
A, B, D	125
S, SS	275

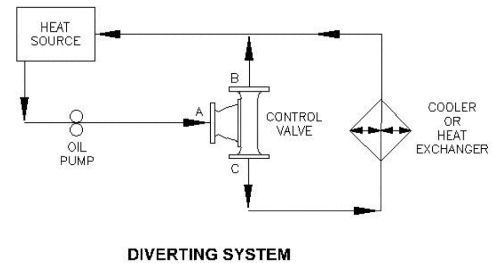
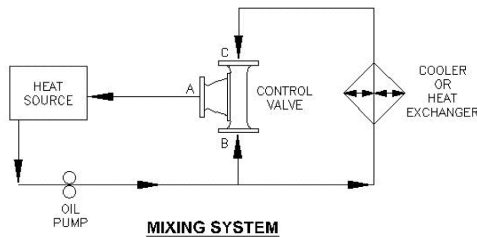


PART #	DESCRIPTION
*5010	VALVE BODY (*See table for material)
*5020	VALVE COVER (*See table for material)
2071	LIP SEAL
5080-C	GASKET
2050-Temp	THERMOSTAT (Temp to follow dash)
1604	HEX BOLT
1605	LOCK WASHER
1590	NAMEPLATE

### FPE Model 5000 Replacement Kit (Includes the following:)

5080-C	GASKET
(6) 2071	LIP SEAL
(6) 2050-Temp	THERMOSTAT (Temp to follow dash)

### APPLICATION CHARTS



## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com

# Model 6010

## Three-Way Thermostatic Valve



6010      6" Flange

Fluid Power Energy Thermostatic Valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained power element activates a stainless steel sliding sleeve which provides positive three-way valve action. All FPE Thermostatic Valves are factory set at predetermined temperatures: no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

When used in a diverting application, on start-up the total fluid flow is routed back to the main system. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted. When the thermostat is in a fully stroked condition, all fluid flow is directed to the cooling system. FPE Thermostatic Valves may also be used in a mixing application.

In a mixing application, hot fluid enters the "B" port and colder fluid enters the "C" port. The flows mix and the thermostat adjusts to reach the desired temperature, exiting the "A" port.

Standard FPE thermostatic valve housings are made from grey iron castings, however, ductile iron, bronze, steel and stainless steel housings are available.

Available connections: 125# FF Flange, 150# RF Flange, 300# RF Flange, Navy and Metric Flanges

Optional Features: Manual Override, High Over Temp element, Plated element

## Features

Self-Contained

Non-Adjustable

Tamper-Proof

Compact

Wide Range of Temperatures

Heavy Duty

Replaceable Element

Rugged Construction

Operate in Any Position



**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

**262 • 548 • 6220 Fax 262 • 548 • 6239**

[www.fpevalves.com](http://www.fpevalves.com)

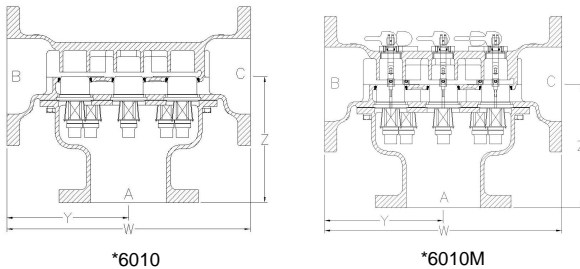


# Model 6010

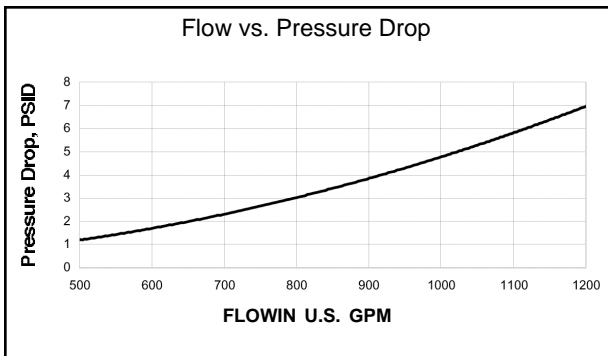
MODEL NUMBER	BODY MATERIAL (*)	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHT	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*6010	A, B, D	6" 125# FF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	A=160#, B=195# D=160#	
	S, SS	6" 150# RF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	S & SS=177#	
*6010M	A, B, D	6" 125# FF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	A=163, B=198# D=163#	Manual Override
	S, SS	6" 150# RF FLANGE	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	S & SS=180#	Manual Override

\* (Replace \* with body material type; A= Cast Iron, B=Bronze, D = Ductile Iron, S= Steel, SS = Stainless Steel)

For port sizes not shown consult factory



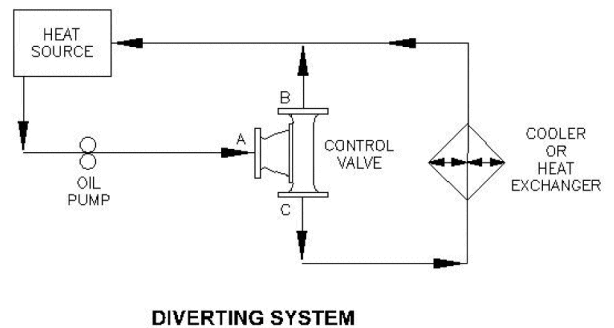
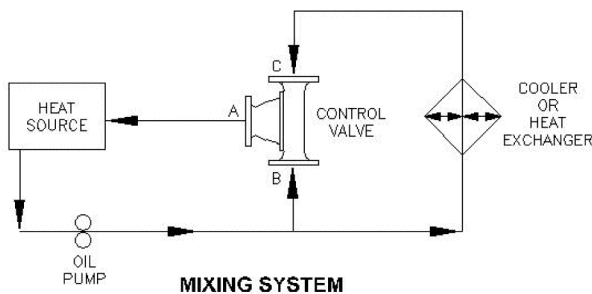
PRESSURE RATINGS	
MATERIAL	PSI
A, B, D	125
S, SS	275



PART #	DESCRIPTION
*6010	VALVE BODY (*See table for material)
*6020	VALVE COVER (*See table for material)
2071	LIP SEAL
6080-C	GASKET
2050-Temp	THERMOSTAT (Temp to follow dash)
1604	HEX BOLT
1605	LOCK WASHER
1590	NAMEPLATE

FPE Model 6000 Replacement Kit (Includes the following:)	
6080-C	GASKET
(6) 2071	LIP SEAL
(6) 2050-Temp	THERMOSTAT

## APPLICATION CHARTS



## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com

# Air Stop



## Emergency Engine Intake Air Shutoff Valve

2" Through 8"  
Unrestricted Flow  
Larger Sizes Made To Order



During operation of industrial and marine engines, combustible vapors present in the operating envelope of the engine can be drawn into the air intake. This provides an additional source of fuel. Intake of this vapor can result in loss of engine control. Loss of control can also be the result of a failed drive train or sudden loss of a coupled load. Attempts to shutdown the engine by standard control systems such as normal fuel shutoff will not stop the runaway condition and prevent serious engine damage, personal injury or catastrophic results.

The Air Stop intake air shutoff is installed in the engine intake air system. Air Stop actuation may be initiated automatically, electrically or pneumatically. Actuation of Air Stop provides a positive sliding gate that will block the air intake causing positive engine shutdown. During normal engine operation, the patented guillotine design of Air Stop eliminates any potential decrease in engine performance by providing obstruction free air passage through the valve.

Air Stop has been used throughout the Offshore, Oil & Gas, Drilling, Production, Mobile Equipment and Marine industry around the world as a successful deterrent to engine overspeed. Air Stop is compatible with existing engine safety systems or as a backup to the engine safety system.

Applications include: Diesel & Natural Gas Engines, Vapor Recovery Engines, Offshore Production Engines, Drilling Industry, Fire Trucks, Hazardous Materials Vehicles, Ambulances, Marine Engines, Bulk Fuel Haulers (Tankers), Landfill Gas Boosters, Power generation (Gen Sets), Well Service Vehicles, Mining Equipment, Locomotives, Highway Resurfacing Units, Aircraft Mobile Support Equipment, Fuel Transfer Pumps, Fire Pumps.

### Features

- Sliding Gate Design
- Unobstructed Flow
- Corrosion Resistant Solid Cast Aluminum
- Stainless Steel Trim
- All Components Contained within Valve Body
- Connection Options:
  - Hose Sleeves
  - Mating Flanges
  - Welded into Intake Pipe
  - Special Made to Order Connections
- Field Serviceable
- All Viton Seals
- Mountable Downstream of Turbo Charger
- Patented Design
- Failsafe
- Easy to Install



### FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

262 • 548 • 6220 Fax 262 • 548 • 6239

[www.fpevalves.com](http://www.fpevalves.com)



# Air Stop

## Air Stop Dimensionals & Weights

MODEL	WEIGHT (lbs)	A	B	C	D	E	F	G	H	I	J	K
AP3	7.5	11	-	-	3	5 9/16	-	-	3 1/2	4 1/4	2 3/4	3/4
AP5	9.0	14 3/4	-	-	5	7 3/8	-	-	5 1/2	4 1/4	2 3/4	3/4
AP8	11.0	18	-	-	8	9 3/8	-	-	8 1/2	4 1/4	2 3/4	3/4
MP3	9.5	12 3/8	3 11/16	16 1/16	3	5 9/16	7 13/16	3 7/16	3 1/2	4 1/4	2 3/4	3/4
MP5	12.5	16 1/8	5 1/2	21 5/8	5	7 3/8	9 11/16	5 13/16	5 1/2	4 1/4	2 3/4	3/4
MP8	15.5	20 1/8	7 1/2	27 5/8	8	9 3/8	11 5/8	8 1/8	8 1/2	4 1/4	2 3/4	3/4
ME3	9.5	12 3/8	3 11/16	16	3	5 9/16	7 13/16	3 7/16	3 1/2	4 1/4	2 3/4	3/4
ME5	12.5	16 1/8	5 1/2	21 5/8	5	7 3/8	9 5/16	5 13/16	5 1/2	4 1/4	2 3/4	3/4
ME8	15.5	20 1/8	7 1/2	27 5/8	8	9 3/8	11 5/8	8 1/8	8 1/2	4 1/4	2 3/4	3/4

### OFFSHORE, INDUSTRIAL, MARINE AND EMERGENCY VEHICLE ENGINE AIR STOP VALVE MODEL CODE TABLE

Example:

**AP**

**5**

**N**

Description Code	Actuation Method	Reset Method
AP	Air Loss to Close	Air Pressure to Open
MP	Air Pressure to Close	Manually Cocked
12ME	12VDC Activate Solenoid to Close	Manually Cocked
24ME	24VDC Activate Solenoid	Manually to Close

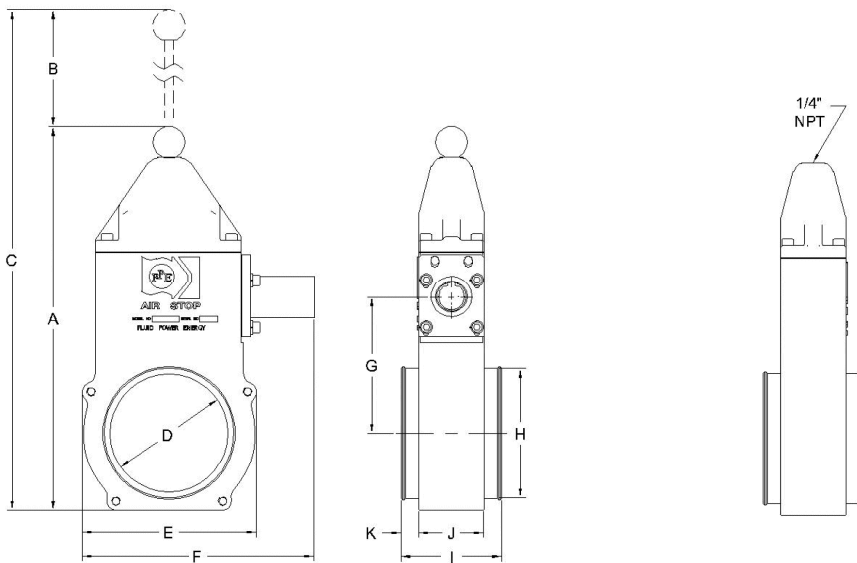
Size Code	Unrestricted Air Flow
3	3 Inch Full Flow Bore
5	5 Inch Full Flow Bore
8	8 Inch Full Flow Bore

Connection Code	Connection Description
N	3.5" or 5.5" Hoze Nozzle for use with hose clamps
F	Flange Ports for use with mating flanges or welding to existing piping

TECHNICAL SPECIFICATIONS	
Corrosion Resistant	
<b>Electric Solenoid Actuator</b>	
12 Volt	12 VDC, Max. Limit (9 Ampere)
24 Volt	24 VDC, Max. Limit (9 Ampere)
Temperature Limit:	Maximum: 150BF Minimum: 100BF
Duty Cycle:	0.01 Seconds on, 10 Seconds off
<b>Pneumatic Actuator</b>	
Pilot Pressure:	60 to 150 PSIG
Connection:	1/4" NPT

#### MANUAL STYLE

#### PNEUMATIC STYLE



Model Numbers Available	
With Nozzle Ports	With Flanged Ports
AP3N	AP3F
AP5N	AP5F
AP8N*	AP8F*
MP3N	MP3F
MP5N	MP5F
MP8N*	MP8F*
MH3N	MH3F
MH5N	MH5F
MH8N*	MH8F*
12ME3N	12ME3F
12ME5N	12ME5F
12ME8N*	12ME8F*
24ME3N	24ME3F
24ME5N	24ME5F
24ME8N*	24ME8F

## To Order

Specify Model Number, nominal temperature desired, and housing material. For Model coding information, visit our website or consult your factory representative.

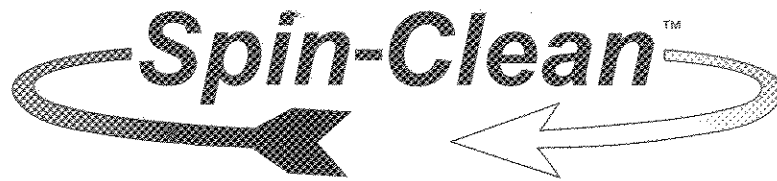


## FLUID POWER ENERGY, INC.

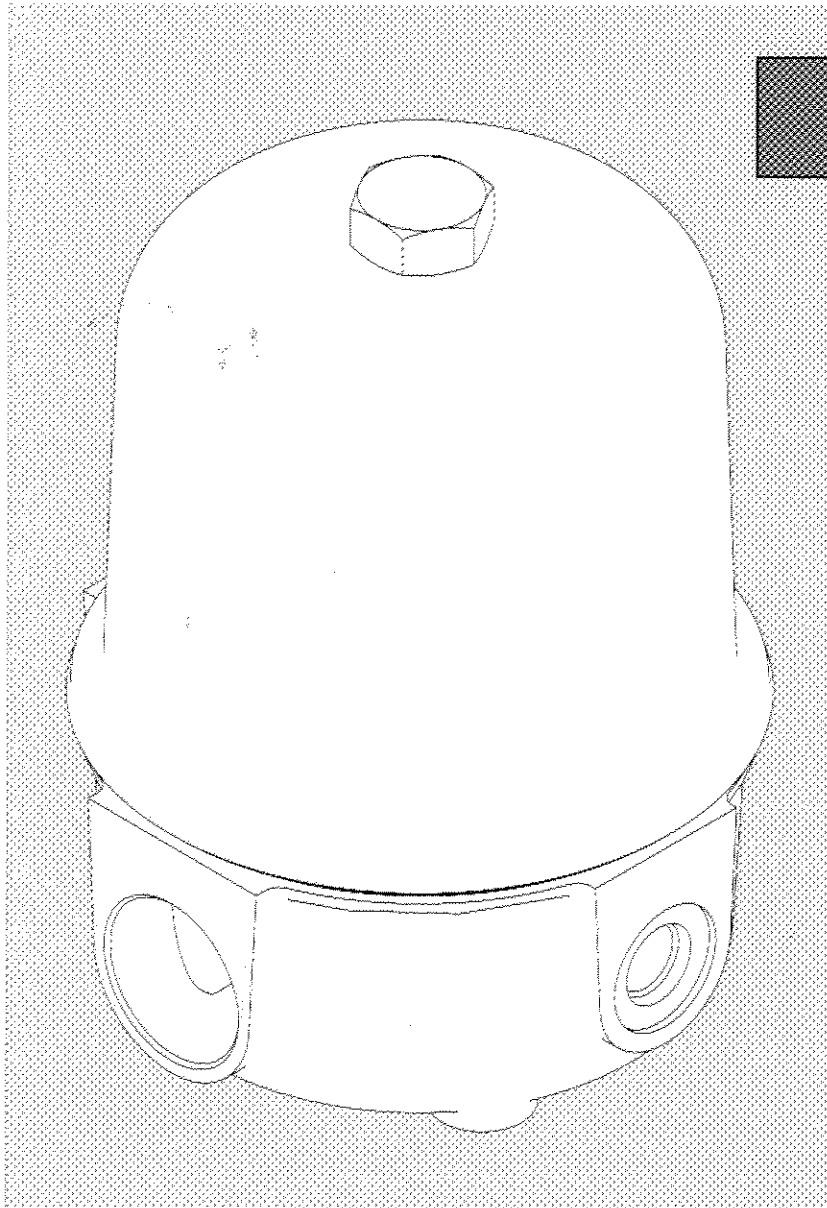
W229 N591 Foster Court • Waukesha, WI 53186

262•548•6220 Fax 262•548•6239

www.fpevalves.com



# OIL CLEANING CENTRIFUGE



## MODEL 75

### FEATURES

- True Centrifuge
- Reduces Hazardous Waste
- Reduces Engine Wear
- Extends Oil And Filter Life
- Removes Solids Below One Micron
- Diagnostic Tool
- User Friendly
- Easy Installation
- Rugged Construction

MADE IN  
  
U. S. A.

Installation • Service • Parts

# PARTS LIST

## Model 75

Centrifuge ..... Model 75

### Parts List

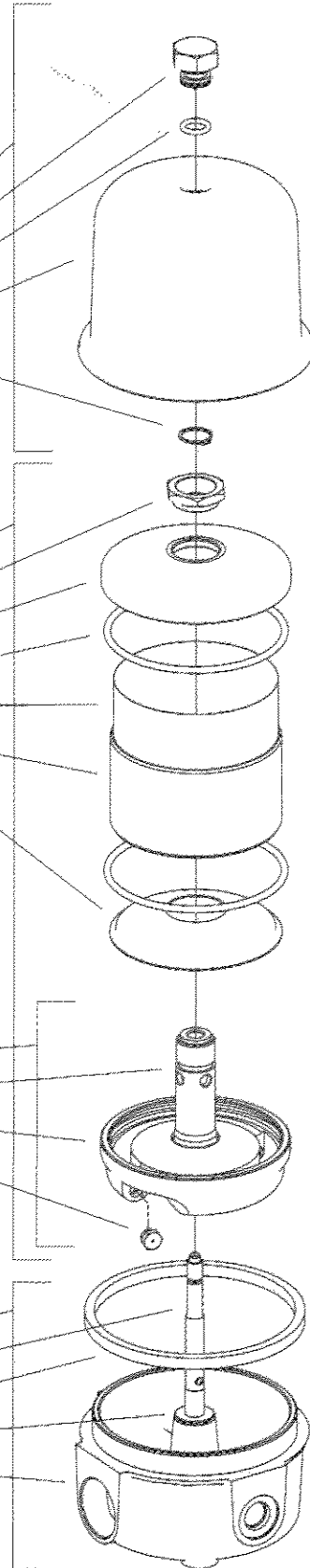
Description ..... Part No.

Cover Assembly (no clamp) ..... C75-CA  
 Cover Nut ..... C75-13  
 Seal-Cover Nut ..... C75-12  
 Cover ..... C75-14  
 Snap Ring, Cover Nut ..... C75-18

Centrifuge Turbine Assembly ..... C75-TA  
 Nut-Turbine ..... C75-11  
 Cover-Turbine ..... C75-03  
 Seal-Turbine (2 req'd) ..... C75-10  
 Insert-Turbine (Package of 25) ..... C75-24  
 Bowl-Turbine ..... C75-02  
 Baffle-Turbine ..... C75-04

Base Turbine Assembly (sold as assembly only) ..... C75-BTA  
 Bearing Tube Assembly ..... C75-06A  
 Base Turbine ..... C75-01  
 Nozzle-Turbine (2 req'd) ..... C75-19

Base Assembly w/ Shaft (no clamp) ..... C75-BA  
 Stationary Shaft ..... C75-06  
 Seal, Base to Cover ..... C75-15  
 Thrust Washer ..... C75-06-01  
 Base ..... C75-16





# INSTALLATION AND OPERATION

## Oil Supply to Centrifuge

Oil supply should be taken from a source as close to the lube oil pump discharge as possible and on the dirty side of the full flow oil filter. A 1/4" NPT pipe or #6 hose supply should be used for supply with a full-opening ball valve installed in supply line to allow the centrifuge to be isolated for cleaning without shutting the engine down. The centrifuge will operate efficiently at 30 to 90 psig with the preferred pressure of 60 to 80 psig.

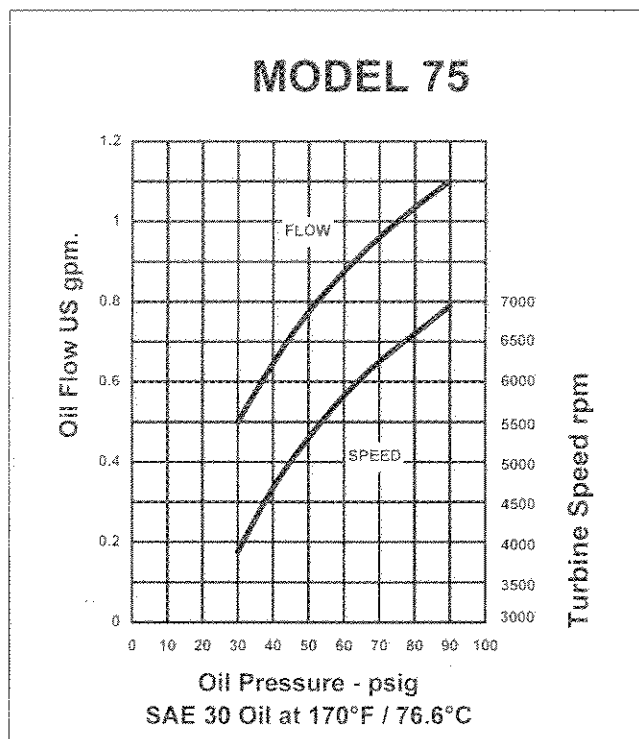
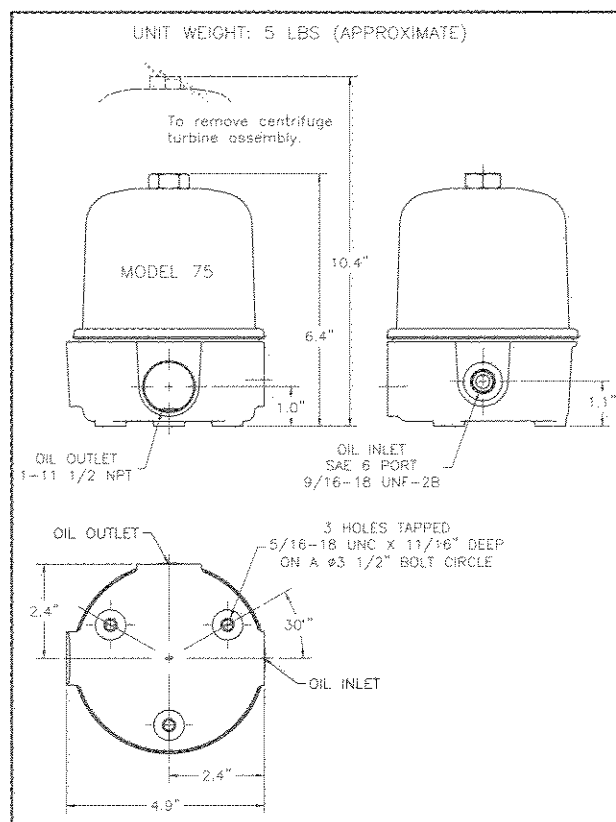
## Clean Oil Return to Sump

The clean oil drain line to the sump should be a 1.0" minimum diameter unrestricted hose or pipe. A 1.0" connection located above the oil level is required. Alternate oil fill openings or drilled-and-tapped holes in crankcase doors are options that can be used.

The drain is correct if you can drop in a 1.0" diameter ball and it can freely roll through the drain line into the engine.

## Mounting Considerations

SPIN-CLEAN™ centrifuges are high-speed devices and should be securely mounted to prevent excessive vibration. They may be installed up to 15 degrees from vertical.





# SERVICE INSTRUCTIONS

1. Shut off oil supply or stop the engine and allow centrifuge turbine assembly to come to a complete stop. **The oil drain line should be free of any shut-off valves.**

2. Unscrew cover and remove cover assembly.

3. Lift the turbine assembly one inch and allow the oil to completely drain out of the nozzles before removing completely.

4. Remove turbine nut, **Part No. C75-11**. Carefully separate the turbine assembly. **Do not strike the bushings with or against a hard surface or damage will result.**

5. Remove lower turbine bowl seal, **Part No. C75-10**, and baffle, **Part No. C75-04**.

6. Carefully remove the solids cake from the turbine bowl, **Part No. C75-02**, taking care not to damage the turbine bowl. Thoroughly wash away all traces of the solids cake to insure maintaining turbine assembly balance.

7. Thoroughly clean all other turbine parts. Check turbine nozzles, **Part No. C75-19**, and make sure they are unrestricted. Replace turbine bowl seals, **Part No. C75-10**. Examine top and bottom bearings for excessive wear. Replace turbine base assembly, **Part No. C75-BTA**, if diameters exceed 0.317" (8.1 mm) top or 0.396" (10.1 mm) bottom.

8. Seat baffle in turbine base and install lower turbine bowl seal, **Part No. C75-10**. Install turbine insert, **Part No. C75-24**, inside turbine bowl. Reassemble the turbine assembly tightening the turbine nut, **Part No. C75-11** securely using finger pressure only.

9. Examine stationary shaft journals for damage or excessive wear. Replace base assembly, **Part No. C75-BA**, complete with stationary shaft if diameter is less than 0.312" (7.9 mm) top or 0.391" (9.9 mm) bottom. The stationary shaft is factory installed to insure alignment and cannot be properly serviced in the field.

10. Coat the stationary shaft with clean oil. Install the turbine assembly on the stationary shaft, being careful not to damage bearings. Spin turbine assembly on the stationary shaft and make sure it spins freely and unrestricted.

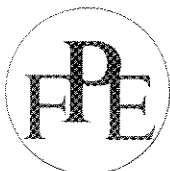
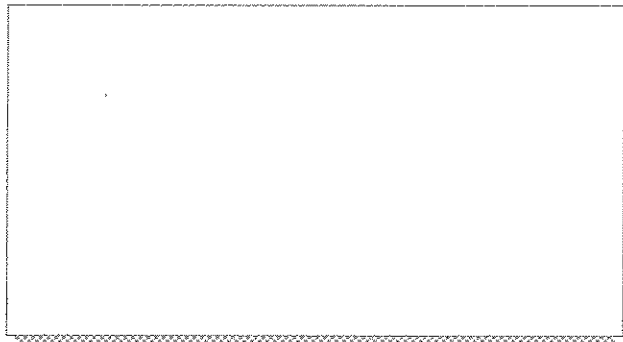
11. Clean and inspect cover assembly, **Part No. C75-CA**, and make sure the cover nut seal, **Part No. C75-12**, is not leaking. If necessary, replace the seal by removing the cover nut snap ring, **Part No. C75-18**, and remove the cover nut with seal from the cover.

12. Replace the base to cover seal, **Part No. C75-15**.

13. Replace the cover assembly and tighten the cover nut by hand pressure plus another half turn. Make sure the cover seats evenly around the base to insure proper crush on cover to base seal to prevent oil leaks.

14. Turn on oil supply to the centrifuge. With centrifuge in operation, check complete installation for oil leaks or excessive vibration. If excessive vibration exists then disassemble, inspect and reassemble.

*Note: All centrifuge turbines are factory tested for balance before leaving the factory. An out-of-balance condition can occur as a result of uneven build up of dirt cake in the bowl or as a result of excessive bearing or stationary shaft wear. Depending on conditions, wear will eventually take place on the stationary shaft and bearings, requiring replacement of the appropriate assemblies.*



**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

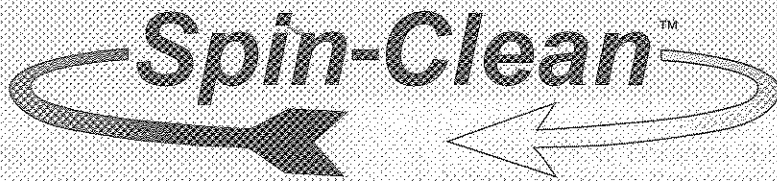
Phone: 262-548-6220 • FAX: 262-548-6239

Website: [www.fpevalves.com](http://www.fpevalves.com)



ISO 9001-2000





# OIL CLEANING CENTRIFUGE

**MODEL 300**



## FEATURES

- True Centrifuge
- Reduces Hazardous Waste
- Reduces Engine Wear
- Extends Oil And Filter Life
- Removes Solids Below One Micron
- Diagnostic Tool
- User Friendly
- Easy Installation
- Rugged Construction

MADE IN



U. S. A.

Installation • Service • Parts

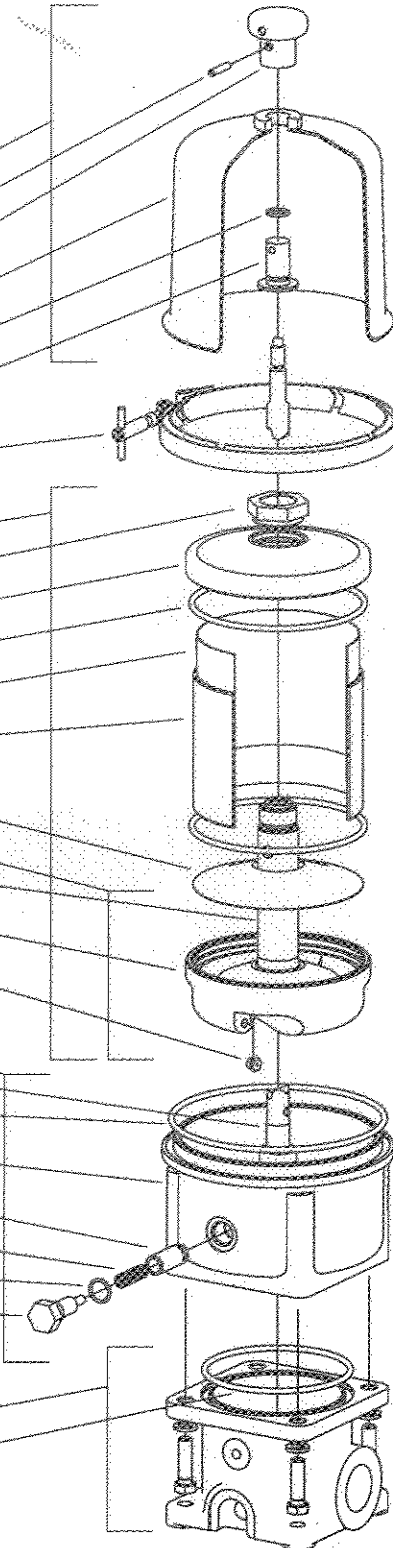
# PARTS LIST

## Model 300

Centrifuge, w/ Oil Control Base ----- Model 300-OCB  
 Centrifuge, only (gravity drain) ----- Model 300

### Parts List

Description	Part No.
Cover Assembly (no clamp) -----	C300-CA
Pin-Cover Nut -----	C300-12
Knob-Cover Nut -----	C300-14
Cover -----	C300-15
Seal-Cover Nut -----	C300-09
Nut-Cover -----	C300-13
Clamp w/ Tee Handle-Cover to Base -----	C300-18
Centrifuge Turbine Assembly -----	C300-TA
Nut-Turbine -----	C300-11
Cover-Turbine -----	C300-03
Seal-Turbine (2 req'd) -----	C300-10
Insert-Turbine (Package of 25) -----	C300-33
Bowl-Turbine -----	C300-02
Baffle-Turbine -----	C300-04
Base, Turbine Assembly (sold as assembly only) -----	C300-BTA
Bearing Tube Assembly -----	C300-05A
Base, Turbine -----	C300-01
Nozzle-Turbine (2 req'd) -----	C300-19-20
Base Assembly w/ Shaft (no clamp) -----	C300-BA
Stationary Shaft -----	C300-06
Seal, Base to Cover -----	C300-17
Base -----	C300-16
Piston, Cut Out Valve -----	C300-27
Spring, Cut Out Valve -----	C300-28
Seal, Cut Out Valve -----	C300-29
Plug, Cut Out Valve -----	C300-30
Fitting, Inlet 1/2" FNPT x 7/8 UNF -----	C300-23
Base-Oil Control w/ Hardware -----	COCB-01
Seal, Oil Control Base -----	COCB-02
Model 300 Service Tool Kit -----	C300-SK





# INSTALLATION AND OPERATION

## Oil Supply to Centrifuge

Oil supply should be taken from a source as close to the lube oil pump discharge as possible and on the dirty side of the full flow oil filter. A 1/2" NPT pipe or #8 hose supply should be used for supply with a full-opening ball valve installed in supply line to allow the centrifuge to be isolated for cleaning without shutting the engine down. The centrifuge will operate efficiently at 30 to 90 psig with the preferred pressure of 60 to 80 psig. Below 30 psig, and internal idle cutout valve will close to prevent low oil pressure during low engine RPM.

## Clean Oil Return to Sump

Using Oil Control Base (OCB)-Preferred

The oil control base, **Part No. COCB-01**, permits the Model 300 centrifuge to be installed in any convenient location near the engine.

The clean oil drain line to the sump should be a 1" minimum diameter, unrestricted hose or pipe. A 1" connection located above the oil level is preferred. Alternate oil fill openings or drilled-and-tapped holes in crankcase doors are options that can be used. A below oil-level-return will require the use of a 1-1/2" check valve, **Part No. C300-24**, be located at the OCB oil outlet to prevent back-flow when the centrifuge is being serviced. Only low-pressure-drop check valves are permitted in the drain line, manual shut-off valves should never be used on the drain line.

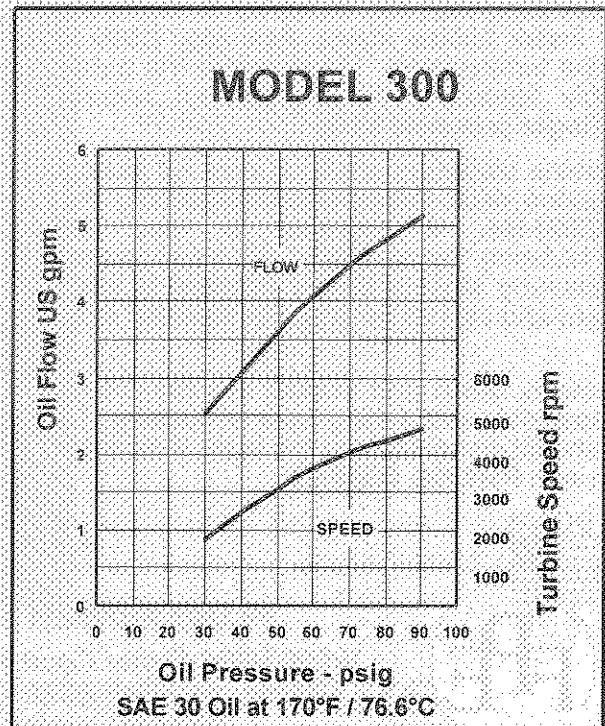
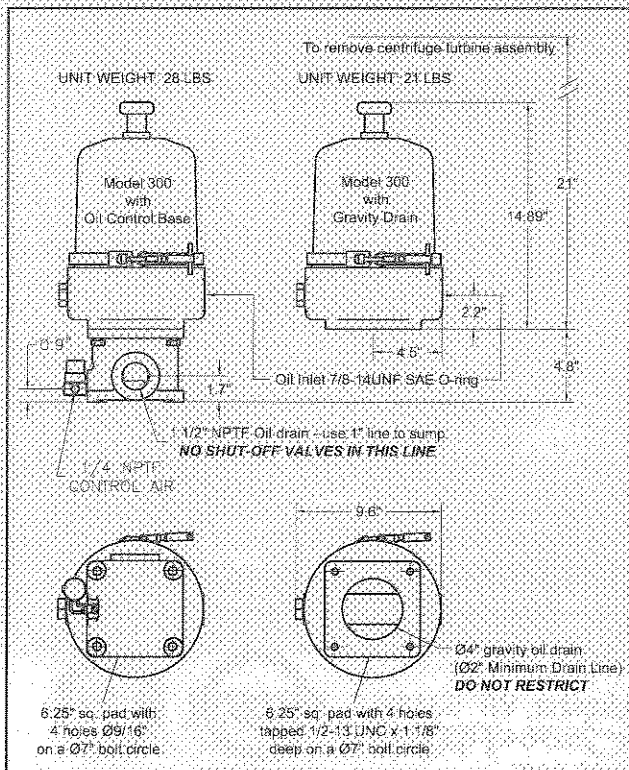
The OCB controls the oil flow from the centrifuge back to the engine and insures the centrifuge reaches maximum speed and efficiency. To accomplish this, the OCB uses a very small volume of compressed air, approximately 0.02 SCFM. The OCB is capable of receiving compressed air from any 5 to 400 psig source. If there is no compressed air available it may be possible to use turbocharger air or air from a positive displacement blower. Instructions for this type installation are available from your SPIN-CLEAN™ representative.

## Using Gravity Drain-Engine Mounting Only

For gravity drain without the OCB, the SPIN-CLEAN™ centrifuge must be close-coupled to the engine sump using an unrestricted 2" I.D. drain back into the engine above the engine normal oil level. A crankcase door, inspection cover, etc. can be modified to provide a suitable oil return back into the engine. The drain is correct if you can drop in a 2" diameter ball and it can freely roll through the drain line into the engine.

## Mounting Considerations

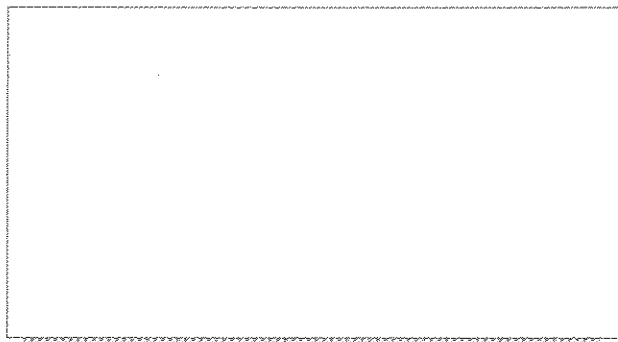
SPIN-CLEAN™ centrifuges are high-speed devices and should be securely mounted to prevent excessive vibration. They may be installed up to 15 degrees from vertical.



# SERVICE INSTRUCTIONS

1. Shut off oil supply or stop the engine and allow centrifuge turbine assembly to come to a complete stop. **Caution:** Open safety bleed valve on side of the Oil Control Base (if equipped) and be certain that the unit is not pressurized. If safety bleed valve is under pressure, locate the source and remove before proceeding. **The oil drain line should be free of any shut-off valves.**
2. Remove cover clamp, unscrew cover and remove cover assembly.
3. Lift the turbine assembly a couple of inches and allow the oil to completely drain out of the nozzles before removing completely. Carefully separate the turbine assembly. **Do not strike the bushings with or against a hard surface or damage will result.** Remove lower turbine bowl seal and then remove baffle.
4. Carefully remove the solid cake from the turbine bowl, **Part No. C300-02**, taking care not to damage the turbine bowl. Thoroughly wash away all traces of the solid cake to insure maintaining turbine balance.
5. Thoroughly clean all other turbine parts. Check turbine nozzles and make sure they are unrestricted. Inspect turbine bowl seals, **Part No. C300-10**, for cuts or damage; they can be used several times. Examine top and bottom bearings for excessive wear. Replace turbine base assembly, **Part No. C300-BTA**, if diameters exceed 0.503" (12.8 mm) top or 0.879" (22.3 mm) bottom.
6. Seat baffle in turbine base and install lower turbine bowl seal, **Part No. C300-10**, in the turbine base. Install turbine insert, **Part No. C300-33**, inside the turbine bowl. Reassemble the turbine assembly tightening the turbine nut securely **using finger pressure only.**
7. Examine stationary shaft journals for damage or excessive wear. Replace base assembly, **Part No. C300-BA**, if diameter is less than 0.496" (12.6mm) top or 0.871" (22.1mm) bottom. The stationary shaft is factory installed to insure alignment and cannot be properly serviced in the field.
8. Remove, clean and inspect the idle-cut-out-valve assembly and mating bore in housing. The piston should move freely in the bore. If damaged replace with **Part No. C300-27.**
9. If OCB is used check for proper mechanical operation and structural integrity.
10. Coat the stationary shaft with clean oil. Install the turbine assembly on the stationary shaft, being careful not to damage bushings. Spin turbine assembly on the stationary shaft and make sure it spins freely and unrestricted.
11. Clean and inspect cover and make sure the cover seal, **Part No. C300-09**, is not leaking. If necessary replace the seal by removing the roll pin below the hand knob and remove the nut from the bottom.
12. Inspect the base to cover seal, **Part No. C300-17**, and replace if necessary.
13. Replace the cover assembly and tighten the cover knob by **hand pressure only.** Make sure the cover seats on the base evenly all around to insure proper crush on cover seal to prevent oil leaks. Reinstall the cover clamp and tighten securely.
14. Close safety bleed valve on the Oil Control Base. Turn on air supply and oil supply to the centrifuge. With engine running, check complete installation for oil leaks or excessive vibration. If excessive vibration exist then disassemble, inspect and reassemble.

**Note:** All centrifuge turbines are factory tested for balance before leaving the factory. An out-of-balance condition can occur as a result of uneven build up of dirt cake in the bowl or as a result of excessive bearing or stationary shaft wear. Depending on conditions, wear will eventually take place on the stationary shaft and bearings, requiring replacement of the appropriate assemblies.



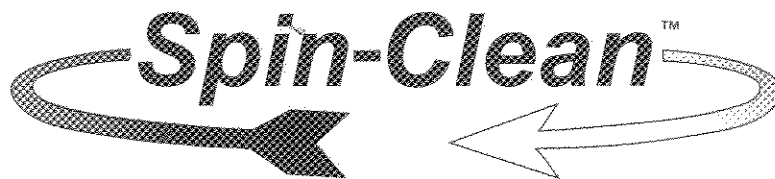
**FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186  
Phone: 262-548-6220 • FAX: 262-548-6239  
Website: [www.fpevalves.com](http://www.fpevalves.com)

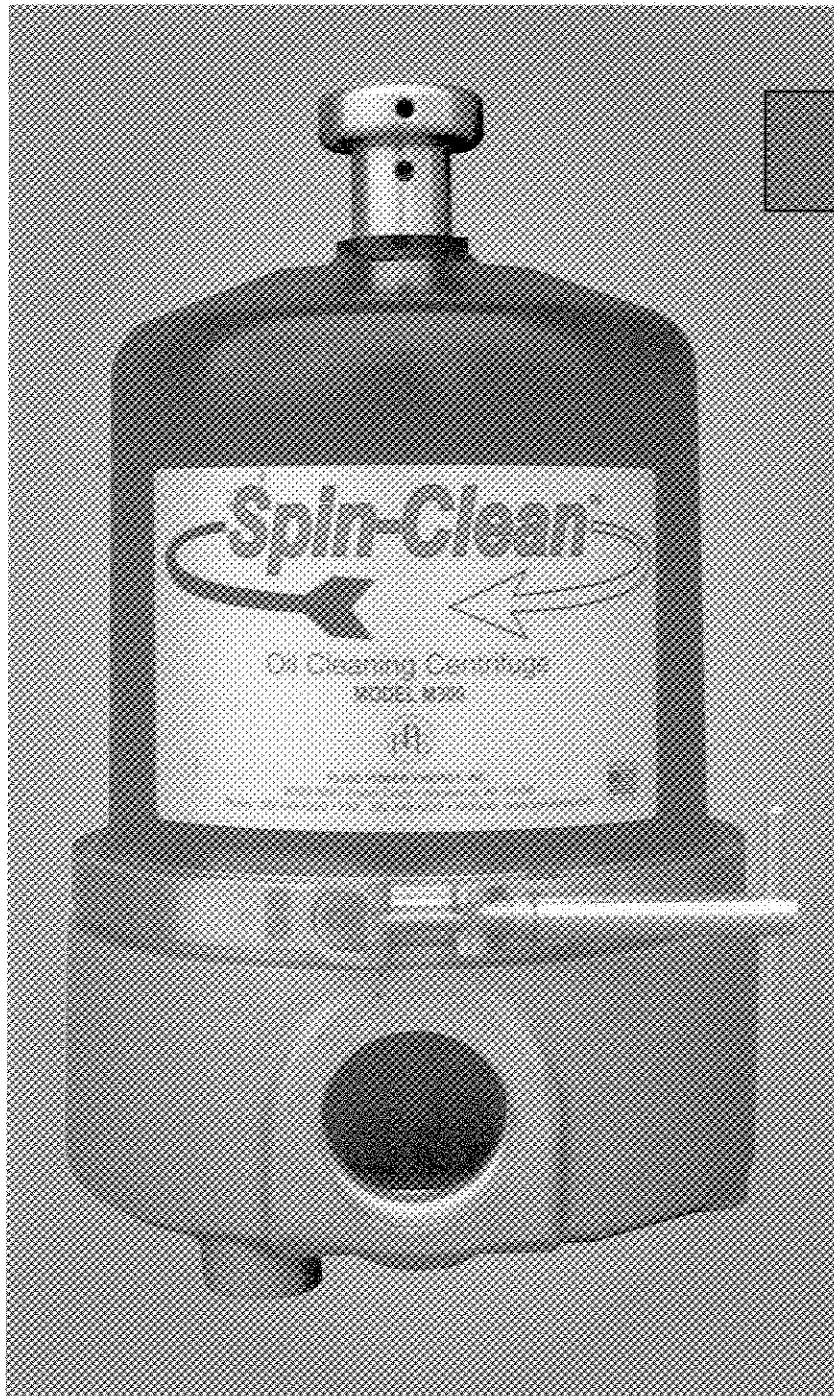


ISO 9001-2000





# OIL CLEANING CENTRIFUGE



**MODEL M300**

## FEATURES

- True Centrifuge
- Reduces Hazardous Waste
- Reduces Engine Wear
- Extends Oil And Filter Life
- Removes Solids Below One Micron
- Diagnostic Tool
- User Friendly
- Easy Installation
- Rugged Construction

MADE IN  
  
U. S. A.

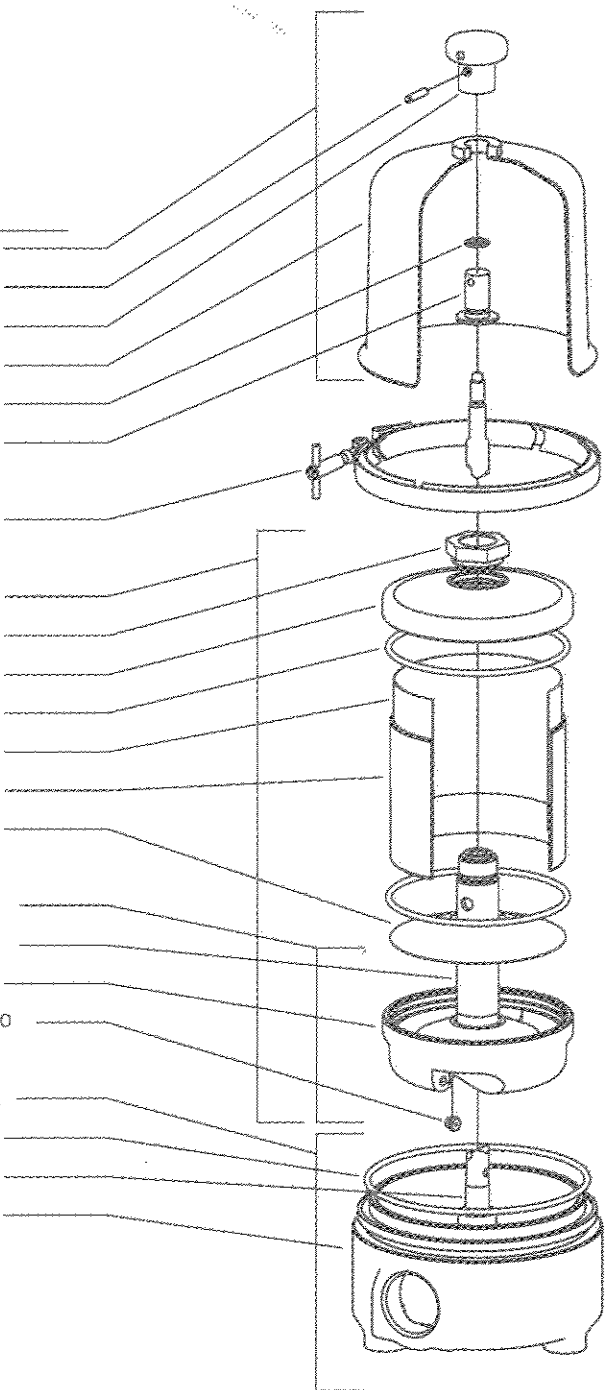
Installation • Service • Parts

# PARTS LIST

## Model M300

### Parts List

Description	Part No.
Cover Assembly (no clamp) -----	C300-CA
Pin-Cover Nut -----	C300-12
Knob-Cover Nut -----	C300-14
Cover -----	C300-15
Seal-Cover Nut -----	C300-09
Nut-Cover -----	C300-13
Clamp w/ Tee Handle-Cover to Base -----	C300-18
Centrifuge Turbine Assembly -----	C300-TA
Nut-Turbine -----	C300-11
Cover-Turbine -----	C300-03
Seal-Turbine (2 req'd) -----	C300-10
Insert-Turbine (Package of 25) -----	C300-33
Bowl-Turbine -----	C300-02
Baffle-Turbine -----	C300-04
Base, Turbine Assembly (sold as assembly only) -----	C300-BTA
Bearing Tube Assembly -----	C300-05A
Base, Turbine -----	C300-01
Nozzle-Turbine (2 req'd) -----	C300-19-20
Base Assembly w/ Shaft (no clamp) -----	C300-MBA
Seal, Base to Cover -----	C300-17
Stationary Shaft -----	C300-06
Base -----	C300M-16
Model 300 Service Tool Kit -----	C300-SK





# INSTALLATION AND OPERATION

## Oil Supply to Centrifuge

Oil supply should be taken from a source as close to the lube oil pump discharge as possible and on the dirty side of the full flow oil filter. A 1/2" NPT pipe or #8 hose supply should be used for supply with a full-opening ball valve installed in supply line to allow the centrifuge to be isolated for cleaning without shutting the engine down. The centrifuge will operate efficiently at 30 to 90 psig with the preferred pressure of 60 to 80 psig.

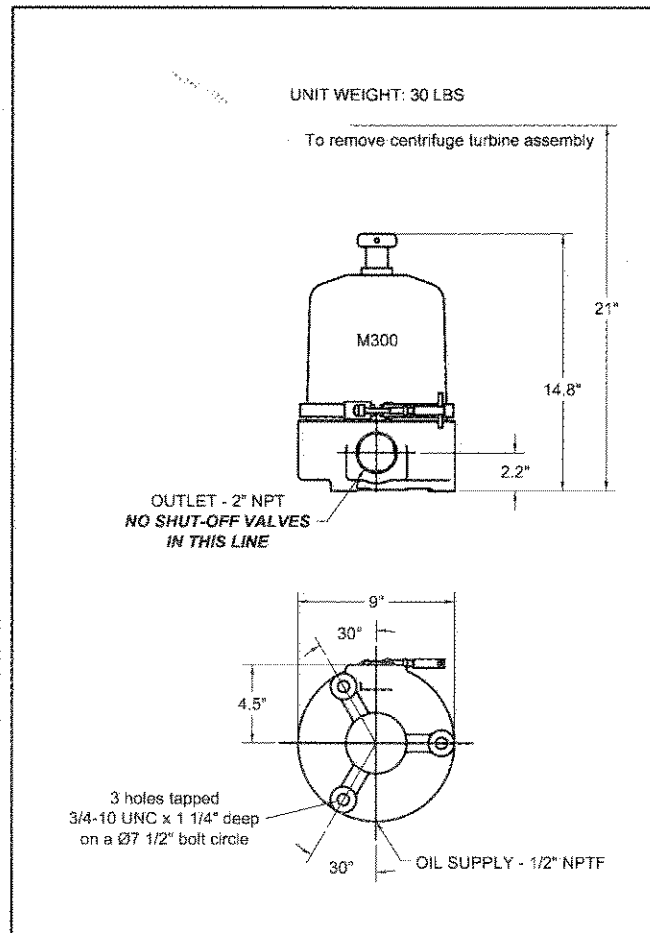
## Clean Oil Return to Sump

The clean oil drain line to the sump should be a 2.0" minimum diameter unrestricted hose or pipe. A 2" connection located above the oil level is required. Alternate oil fill openings or drilled-and-tapped holes in crankcase doors are options that can be used.

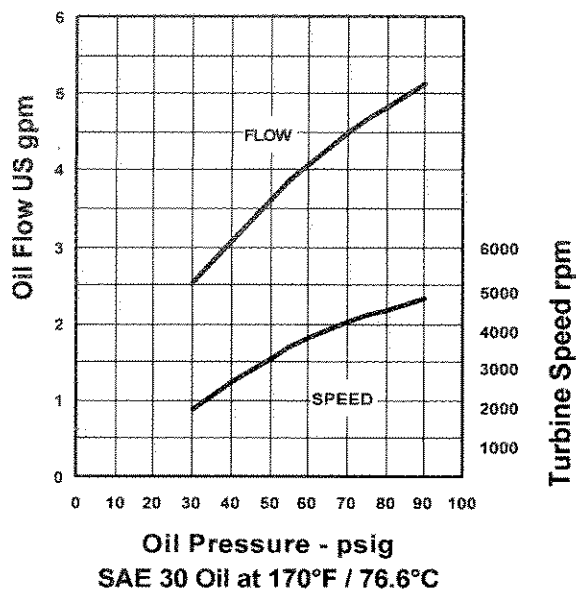
The drain is correct if you can drop in a 2" diameter ball and it can freely roll through the drain line into the engine.

## Mounting Considerations

SPIN-CLEAN™ centrifuges are high-speed devices and should be securely mounted to prevent excessive vibration. They may be installed up to 15 degrees from vertical.



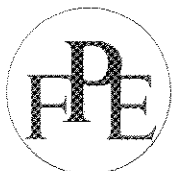
## MODEL M300



# SERVICE INSTRUCTIONS

1. Shut off oil supply or stop the engine and allow centrifuge turbine assembly to come to a complete stop. **The oil drain line should be free of any shut-off valves.**
2. Remove cover clamp, unscrew cover and remove cover assembly.
3. Lift the turbine assembly a couple of inches and allow the oil to completely drain out of the nozzles before removing completely. Carefully separate the turbine assembly. **Do not strike the bushings with or against a hard surface or damage will result.** Remove lower turbine bowl seal and then remove baffle.
4. Carefully remove the solids cake from the turbine bowl, **Part No. C300-02**, taking care not to damage the turbine bowl. Thoroughly wash away all traces of the solids cake to insure maintaining turbine balance.
5. Thoroughly clean all other turbine parts. Check turbine nozzles and make sure they are unrestricted. Inspect turbine bowl seals, **Part No C300-10**, for cuts or damage; they can be used several times. Examine top and bottom bearings for excessive wear. Replace turbine base assembly, **Part No. C300-BTA**, if diameters exceed 0.503" (12.8 mm) top or 0.879" (22.3 mm) bottom.
6. Seat baffle in turbine base and install lower turbine bowl seal, **Part No. C300-10**, in the turbine base. Install turbine insert, **Part No. C300-33**, inside the turbine bowl. Reassemble the turbine assembly tightening the turbine nut securely **using finger pressure only.**
7. Examine stationary shaft journals for damage or excessive wear. Replace base assembly, **Part No. C300-MBA**, if diameter is less than 0.496"(12.6mm) top or 0.871" (22.1mm) bottom. The stationary shaft is factory installed to insure alignment and cannot be properly serviced in the field.
8. Coat the stationary shaft with clean oil. Install the turbine assembly on the stationary shaft, being careful not to damage bushings. Spin turbine assembly on the stationary shaft and make sure it spins freely and unrestricted.
9. Clean and inspect cover and make sure the cover seal is not leaking. If necessary replace the seal, **Part No. C300-09**, by removing the roll pin below the hand knob and remove the nut from the bottom.
10. Inspect the base to cover seal, **Part No. C300-17**, and replace if necessary.
11. Replace the cover assembly and tighten the cover knob by **hand pressure only**. Make sure the cover seats on the base evenly all around to insure proper crush on cover seal to prevent oil leaks. Reinstall the cover clamp and tighten securely.
12. Turn on oil supply to the centrifuge. With engine running, check complete installation for oil leaks or excessive vibration. If excessive vibration exists then disassemble, inspect and reassemble.

*Note: All centrifuge turbines are factory tested for balance before leaving the factory. An out-of-balance condition can occur as a result of uneven build up of dirt cake in the bowl or as a result of excessive bearing or stationary shaft wear. Depending on conditions, wear will eventually take place on the stationary shaft and bearings, requiring replacement of the appropriate assemblies.*

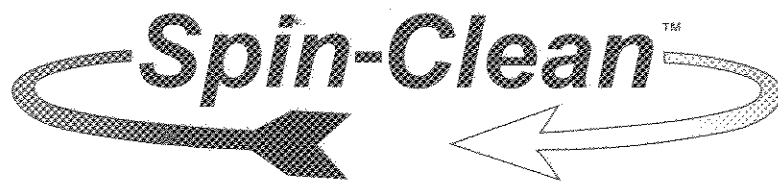


## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186  
Phone: 262-548-6220 • FAX: 262-548-6239  
Website: [www.fpevalves.com](http://www.fpevalves.com)



ISO 9001-2000



# PRESSURIZED FLUID CLEANING CENTRIFUGE

**MODEL HPU-300**

## FEATURES

- True Centrifuge
- Reduces Hazardous Waste
- Reduces Equipment Wear
- Extends Fluid And Filter Life
- Removes Solids Below One Micron
- Diagnostic Tool
- User Friendly
- Easy Installation
- Rugged Construction



MADE IN  
  
U. S. A.

Installation • Service • Parts

# PARTS LIST

## Model HPU-300

### Parts List

Description Part No.

- Nut, Swing Bolt ----- N/A
- Lock Washer, Swing Bolt ----- N/A
- Washer, Swing Bolt ----- N/A
- Cover, HPU ----- N/A
- Gasket, HPU Cover ----- HPU300-02

Stabilizer Plate Assembly ----- C300-20-A

Centrifuge Turbine Assembly ----- C300-TA

- Nut-Turbine ----- C300-11
- Cover-Turbine ----- C300-03
- Seal-Turbine (2 req'd) ----- C300-10
- Insert-Turbine (Package of 25) ----- C300-33
- Bowl-Turbine ----- C300-02
- Baffle-Turbine ----- C300-04

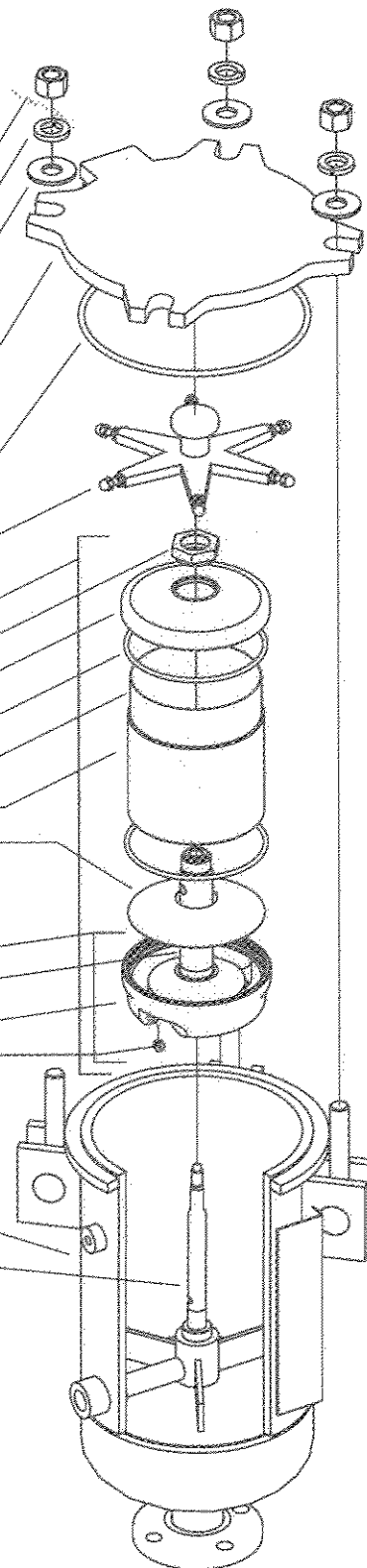
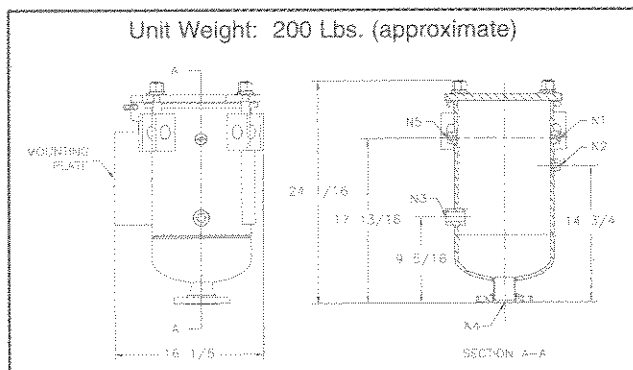
Base, Turbine Assembly (sold as assembly only) ----- C300-BTA

- Bearing Tube Assembly ----- C300-05A
- Base, Turbine ----- C300-01
- Nozzle-Turbine (2 req'd) ----- C300-19-20

Body Assembly ----- HPU300-BA

- Stationary Shaft ----- C300-06

Model 1000 Service Tool Kit ----- C300-SK



# SERVICING INSTRUCTIONS

## PRIOR TO SERVICING

- Confirm valves are in the following positions:
 

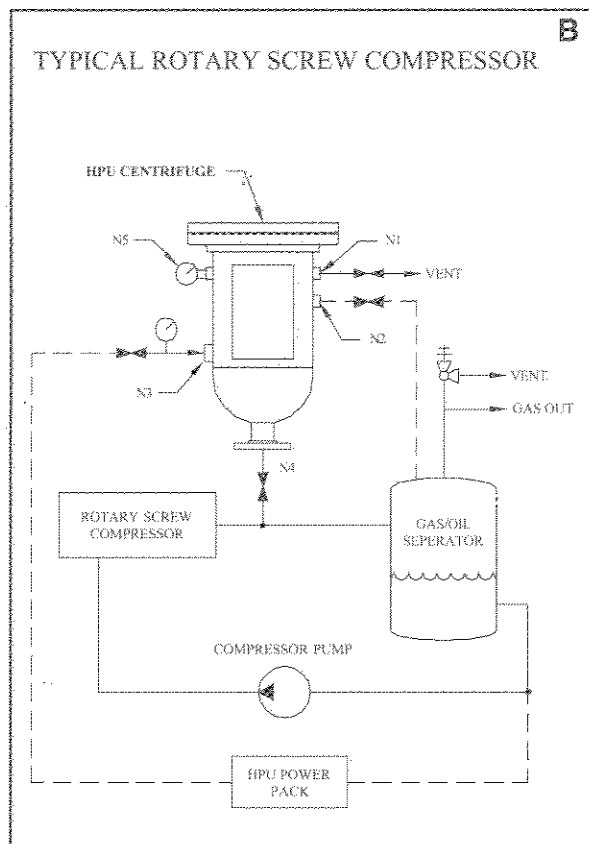
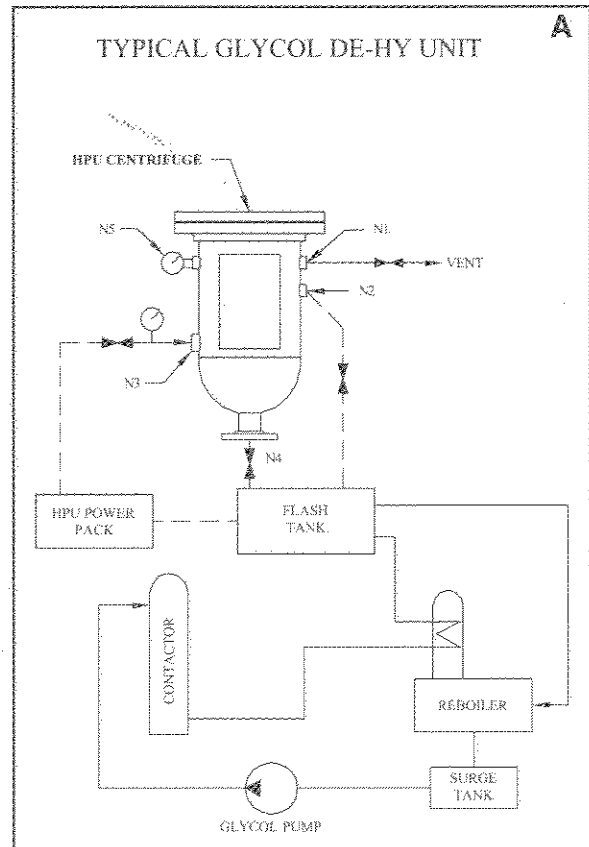
N1 - 1/2" NPT - Vent	Closed
N2 - 1/2" NPT - Equalizer	Open
N3 - 3/4" NPT - Supply	Open
N4 - 2" - 150# RF Flange - Outlet	Open
- Close equalizer valve on port N2.
- Close centrifuge supply valve on port N3.
- Close outlet valve on port N4.
- Slowly open vent valve on port N1. **Caution:** When confident all pressure has vented from the centrifuge, it is safe to open centrifuge cover.

## CENTRIFUGE CLEANING (See Centrifuge Parts List)

- Remove centrifuge cover
- Loosen the six stabilizer locking mechanisms.
- Unscrew center knob, counterclockwise, and remove stabilizer plate assembly.
- Carefully slide centrifuge turbine assembly off stationary shaft. **Caution:** Turbine may still contain fluid.
- Separate turbine assembly by removing turbine nut on top of turbine assembly and then remove turbine cover and turbine base assembly from the turbine bowl.
- Carefully remove solids from the turbine bowl. **Caution:** Be sure to remove all solids from all pieces when cleaning turbine assembly parts to insure turbine balance when reassembled.
- Inspect top and bottom bearings for abnormal or excessive wear. Check turbine nozzles to ensure that they are unrestricted. Inspect seals and replace if damaged.

## ASSEMBLE CENTRIFUGE

- Install turbine insert in turbine bowl.
- Assemble turbine per parts list exploded view.
- Examine stationary shaft bearing journals for damage or excess wear. Lubricate bearing journals prior to installing turbine assembly.
- Replace turbine assembly on stationary shaft, being careful of turbine bearings. Spin turbine assembly on the stationary shaft and make sure it spins freely and unrestricted.
- Install stabilizer plate assembly and lock the six locking assemblies.
- Inspect centrifuge cover seal and replace if torn, damaged or has lost its ability to seal.
- Install cover.
- Make sure vent valve N1 is closed.
- Slowly open equalizer valve N2 to pressurize centrifuge.
- Open oil outlet valve N4.
- Slowly open fluid supply valve N3, to pressure and activate turbine assembly.
- Monitor centrifuge for 5 to 10 minutes. If excessive vibration occurs this is due to improper cleaning or assembly. Check turbine cleanliness and reassemble.



# INSTALLATION

The HPU-300 Centrifuge is a gravity drain centrifuge. For a gravity drain centrifuge to properly operate, the drain must remain unrestricted from the centrifuge outlet and return piping back into the system above the liquid level in the system to prevent fluid back-up, into the centrifuge, flooding the housing, which will drastically reduce centrifuge performance.

## See Typical Installations A&B

1. Mount centrifuge on a sturdy mounting where the centrifuge outlet flange N4 is above the liquid level in the system.
2. Install 2" unrestricted shut-off valve to the centrifuge outlet flange N4. Install 2" diameter piping back into the system, keeping it free of elbows and restrictions, to a point above liquid level in the system.
3. Install 3/4" valve and gauge to centrifuge supply port N3. The gauge should be 100 psi greater than system pressure. Complete 3/4" diameter fluid piping from supply valve to the system or HPU power pack.

**Note:** The centrifuge requires fluid pressure 60 to 80 psi higher than system pressure it is used on.

4. Install pressure gauge in gauge port N5. Gauge range should be compatible with highest system pressure.
5. Install 1/2" valve to vent port N1. This valve allows venting of centrifuge internal pressures prior to removing centrifuge cover.
6. Install 1/4" (minimum) valve to port N2 and run 1/4" diameter tubing back into system. This line is used to equalize the centrifuge pressure with system pressure.
7. HPU Power Pack - If a dedicated pump is used it is necessary to pipe liquid from the system to the pump suction using appropriate size piping to prevent pump cavitation.

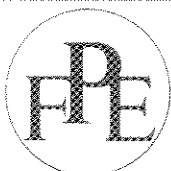
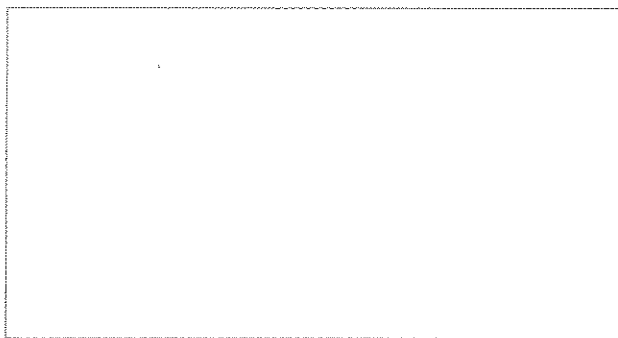
**Note:** As an optional extra, Fluid Power Energy will supply all valves and gauges at customer's request.

## PRE-START INSTRUCTIONS

Check valve positions prior to HPU-300 centrifuge start-up.

Port	Position
N1	Open
N2	Closed
N3	Closed
N4	Closed

- Step 1: Close vent valve on vent port N1
- Step 2: Slowly open equalizer valve on port N2
- Step 3: Make sure drain valve on port 4 is open.
- Step 4: Slowly open centrifuge supply valve on port N3



### FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186  
Phone: 262-548-6220 • FAX: 262-548-6239  
Website: [www.fpevalves.com](http://www.fpevalves.com)



ISO 9001-2000





# OIL CLEANING CENTRIFUGE



**MODEL 1000**

## FEATURES

- True Centrifuge
- Reduces Hazardous Waste
- Reduces Engine Wear
- Extends Oil And Filter Life
- Removes Solids Below One Micron
- Diagnostic Tool
- User Friendly
- Easy Installation
- Rugged Construction

MADE IN  
  
U. S. A.

Installation • Service • Parts



# PARTS LIST

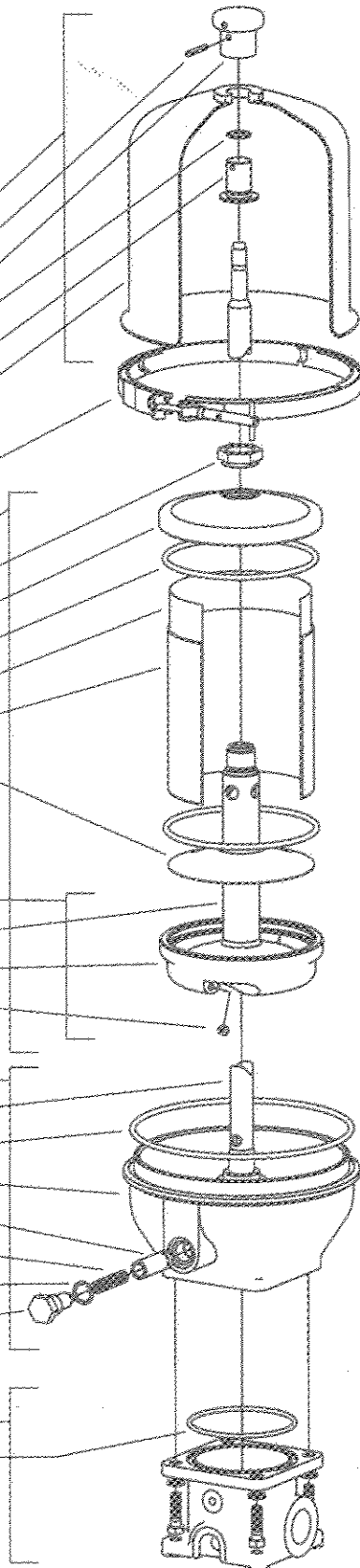
## Model 1000

Centrifuge, w/ Oil Control Base ----- Model 1000-OCB

Centrifuge, only (gravity drain) ----- Model 1000

### Parts List

Description	Part No.
Cover Assembly (no clamp) -----	C1000-CA
Pin-Cover Nut -----	C1000-12
Knob-Cover Nut -----	C1000-14
Seal-Cover Nut -----	C1000-09
Nut-Cover -----	C1000-13
Cover -----	C1000-26
Clamp w/ Tee Handle-Cover to Base -----	C1000-32
Centrifuge Turbine Assembly -----	C1000-TA
Nut-Turbine -----	C1000-11
Cover-Turbine -----	C1000-03
Seal-Turbine (2 req'd) -----	C1000-10
Insert-Turbine (Package of 10) -----	C1000-33
Bowl-Turbine -----	C1000-02
Baffle-Turbine -----	C1000-04
Base, Turbine Assembly (sold as assembly only) -----	C1000-BTA
Bearing Tube Assembly -----	C1000-05A
Base, Turbine -----	C1000-01
Nozzle-Turbine (2 req'd) -----	C300-19-80
Base Assembly w/ Shaft (no clamp) -----	C1000-BA
Stationary Shaft -----	C1000-06
Seal, Base to Cover -----	C1000-25
Base -----	C1000-24
Piston, Cut Out Valve -----	C1000-27
Spring, Cut Out Valve -----	C1000-28
Seal, Cut Out Valve -----	C1000-29
Plug, Cut Out Valve -----	C1000-30
Fitting, Inlet 1" FNPT X 1 5/16 SAE -----	C1000-23
Base-Oil Control w/ Hardware -----	COCB-01
Seal, Oil Control Base -----	COCB-02
Model 1000 Service Tool Kit -----	C1000-SK



# INSTALLATION AND OPERATION

## Oil Supply to Centrifuge

Oil supply should be taken from a source as close to the lube oil pump discharge as possible and on the dirty side of the full flow oil filter. A 3/4" NPT pipe or #12 hose supply should be used for supply with a full-opening ball valve installed in supply line to allow the centrifuge to be isolated for cleaning without shutting the engine down. The centrifuge will operate efficiently at 30 to 90 psig with the preferred pressure of 60 to 80 psig. Below 30 psig, and internal idle cutout valve will close to prevent low oil pressure during low engine RPM.

## Clean Oil Return to Sump

*Using Oil Control Base (OCB) Preferred*

The oil control base, **Part No. COCB-01** permits the Model 1000 centrifuge to be installed in any convenient location near the engine.

The clean oil drain line to the sump should be 1 1/2" minimum diameter, unrestricted hose or pipe. A 1 1/2" connection located above the oil level is preferred. Alternate oil fill openings or drilled-and-tapped holes in crankcase doors are options that can be used. A below oil-level-return will require the use of a 1 1/2" check valve, **Part No. C300-24**, located at the OCB oil outlet connection to prevent back-flow when the centrifuge is being serviced. Only low-pressure-drop check valves are permitted in the drain line, manual shut-off valves should never be used on the drain line.

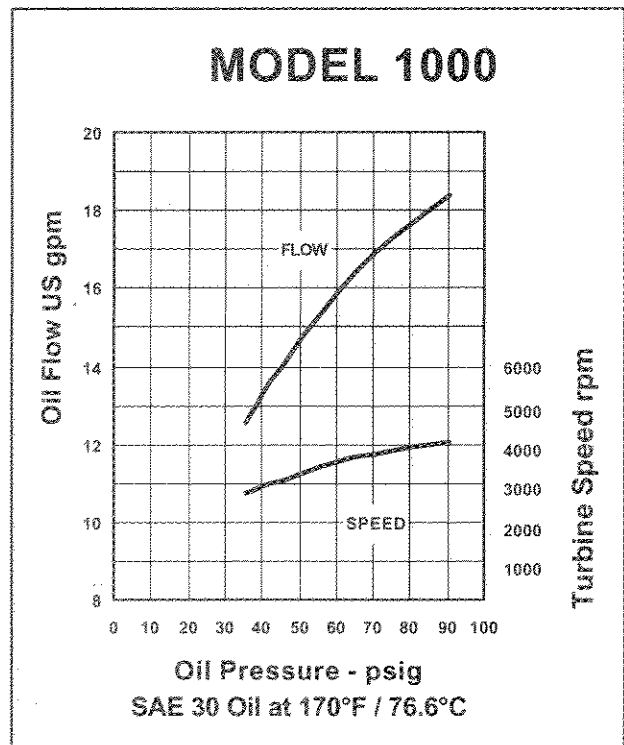
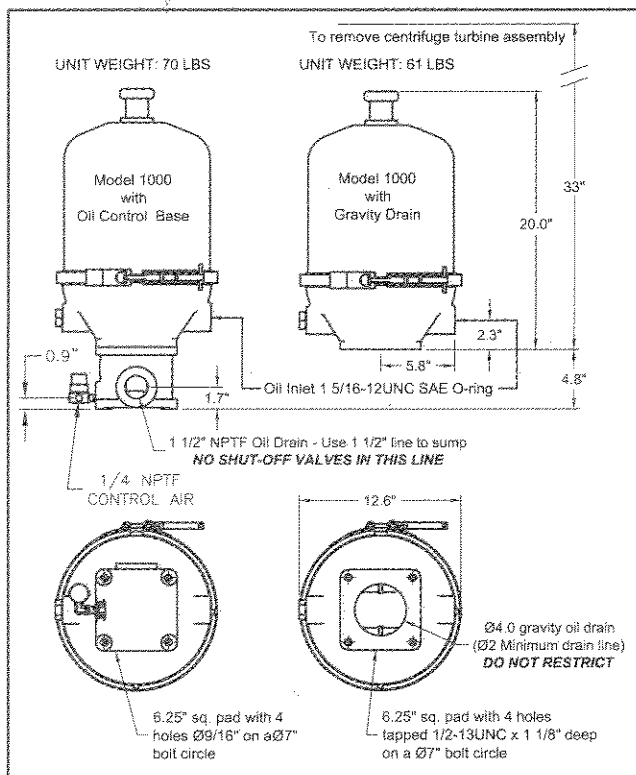
The OCB controls the oil flow from the centrifuge back to the engine and insures the centrifuge reaches maximum speed and efficiency. To accomplish this, the OCB uses a very small volume of compressed air, approximately 0.02 SCFM. The OCB is capable of receiving compressed air from any 5 to 400 psig source. If there is no compressed air available it may be possible to use turbocharger air or air from a positive displacement blower. Instructions for this type installation are available from your SPIN-CLEAN™ representative.

## Using Gravity Drain Engine Mounting Only

For gravity drain without the OCB, the SPIN-CLEAN™ centrifuge must be close-coupled to the engine sump using an unrestricted 4" I.D. drain back into the engine above the engine normal oil level. A crankcase door, inspection cover, etc. can be modified to provide a suitable oil return back into the engine. The drain is correct if you can drop in a 4" diameter ball and it can freely roll through the drain line into the engine.

## Mounting Considerations

SPIN-CLEAN™ centrifuges are high-speed devices and should be securely mounted to prevent excessive vibration. They may be installed up to 15 degrees from vertical.



# SERVICE INSTRUCTIONS

1. Shut off oil supply or stop the engine and allow centrifuge turbine assembly to come to a complete stop. **Caution:** Open safety bleed valve on side of the Oil Control Base (if equipped) and be certain that the unit is not pressurized. If safety bleed valve is under pressure, locate the source and remove before proceeding. **The oil drain line should be free of any shut-off valves.**

2. Remove cover clamp, unscrew cover and remove cover assembly.

3. Lift the turbine assembly a couple of inches and allow the oil to completely drain out of the nozzles before removing completely. Carefully separate the turbine assembly. **Do not strike the bushings with or against a hard surface or damage will result.** Remove lower turbine bowl seal and then remove baffle.

4. Carefully remove the solid cake from the turbine bowl, **Part No. C1000-02**, taking care not to damage the turbine bowl. Thoroughly wash away all traces of the solid cake to insure maintaining turbine balance.

5. Thoroughly clean all other turbine parts. Check turbine nozzles and make sure they are unrestricted. Inspect turbine bowl seals, **Part No. C1000-10**, for cuts or damage; they can be used several times. Examine top and bottom bearings for excessive wear. Replace turbine base assembly, **Part No. C1000-BTA**, if diameters exceed 0.877" (22.3 mm) top or 1.378" (35.0 mm) bottom.

6. Seat baffle in turbine base and install lower turbine bowl seal, **Part No. C1000-10**, in the turbine base. Install turbine insert, **Part No. C1000-33**, inside the turbine bowl. Reassemble the turbine assembly tightening the bowl nut securely **using finger pressure only.**

7. Examine stationary shaft journals for damage or excessive wear. Replace base assembly, **Part No. C1000-BA**, if diameter is less than 0.870" (22.1 mm) top or 1.370" (34.8mm) bottom. The stationary shaft is factory installed to insure alignment and cannot be properly serviced in the field.

8. Remove, clean and inspect the idle-cut-out-valve assembly and mating bore in housing. The piston should move freely in the bore. If damaged replace with **Part No. C1000-27.**

9. If OCB is used check for proper mechanical operation and structural integrity.

10. Coat the stationary shaft with clean oil. Install the turbine assembly on the stationary shaft, being careful not to damage bushings. Spin turbine assembly on the stationary shaft and make sure it spins freely and unrestricted.

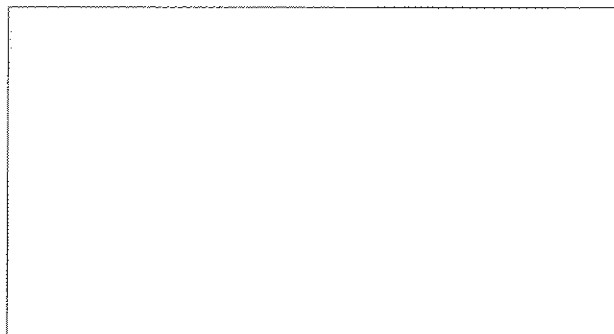
11. Clean and inspect cover and make sure the cover seal, **Part No. C1000-09**, is not leaking. If necessary replace the seal by removing the roll pin below the hand knob and remove the nut from the bottom.

12. Inspect the base to cover seal, **Part No. C1000-25**, and replace if necessary.

13. Replace the cover assembly and tighten the cover knob by **hand pressure only.** Make sure the cover seats on the base evenly all around to insure proper crush on cover seal to prevent oil leaks. Reinstall the cover clamp and tighten securely.

14. Close safety bleed valve on the Oil Control Base. Turn on air supply and oil supply to the centrifuge. With engine running, check complete installation for oil leaks or excessive vibration. If excessive vibration exists then disassemble, inspect and reassemble.

**Note:** All centrifuge turbines are factory tested for balance before leaving the factory. An out-of-balance condition can occur as a result of uneven build up of dirt cake in the bowl or as a result of excessive bearing or stationary shaft wear. Depending on conditions, wear will eventually take place on the stationary shaft and bearings, requiring replacement of the appropriate assemblies.



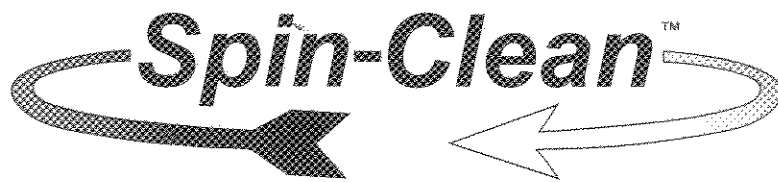
## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186  
Phone: 262-548-6220 • FAX: 262-548-6239  
Website: [www.fpevalves.com](http://www.fpevalves.com)



ISO 9001-2000





# PRESSURIZED FLUID CLEANING CENTRIFUGE

**MODEL HPU-1000**



## FEATURES

- True Centrifuge
- Reduces Hazardous Waste
- Reduces Equipment Wear
- Extends Fluid And Filter Life
- Removes Solids Below One Micron
- Diagnostic Tool
- User Friendly
- Easy Installation
- Rugged Construction

MADE IN  
  
U. S. A.

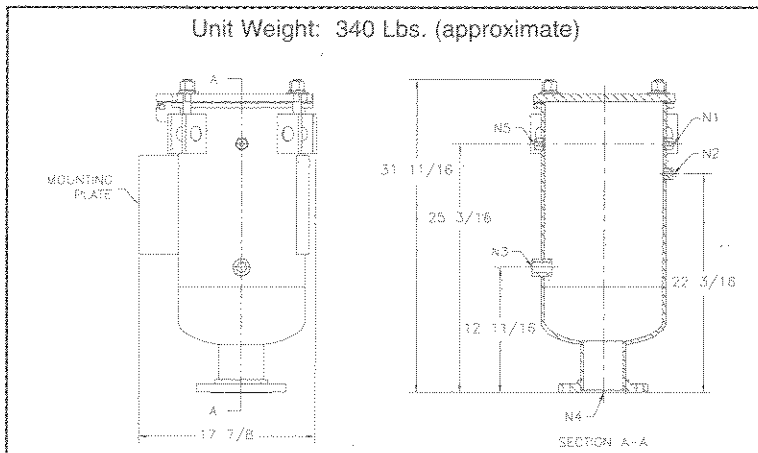
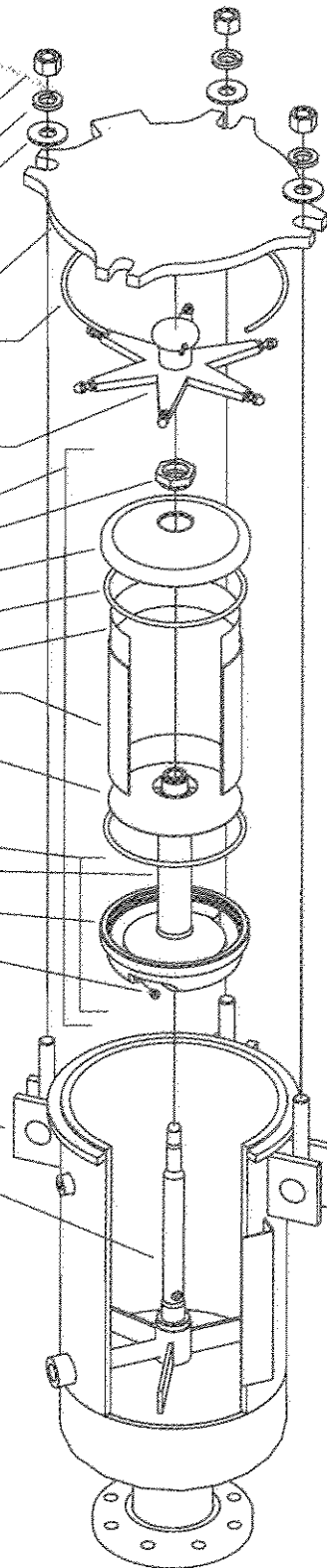
Installation • Service • Parts

# PARTS LIST

## Model HPU-1000

### Parts List

Description	Part No.
Nut, Swing Bolt	N/A
Lock Washer, Swing Bolt	N/A
Washer, Swing Bolt	N/A
Cover, HPU	N/A
Gasket, HPU Cover	HPU1000-02
<b>Stabilizer Plate Assembly</b>	<b>C1000-15-A</b>
<b>Centrifuge Turbine Assembly</b>	<b>C1000-TA</b>
Nut-Turbine	C1000-11
Cover-Turbine	C1000-03
Seal-Turbine (2 req'd)	C1000-10
Insert-Turbine (Package of 10)	C1000-33
Bowl-Turbine	C1000-02
Baffle-Turbine	C1000-04
<b>Base, Turbine Assembly (sold as assembly only)</b>	<b>C1000-BTA</b>
Bearing Tube Assembly	C1000-05A
Base, Turbine	C1000-01
Nozzle-Turbine (2 req'd)	C300-19-80
<b>Body Assembly</b>	<b>HPU1000-8A</b>
Stationary Shaft	C1000-06
<b>Model 1000 Service Tool Kit</b>	<b>C1000-SK</b>



# SERVICING INSTRUCTIONS

## PRIOR TO SERVICING

- Confirm valves are in the following positions:
 

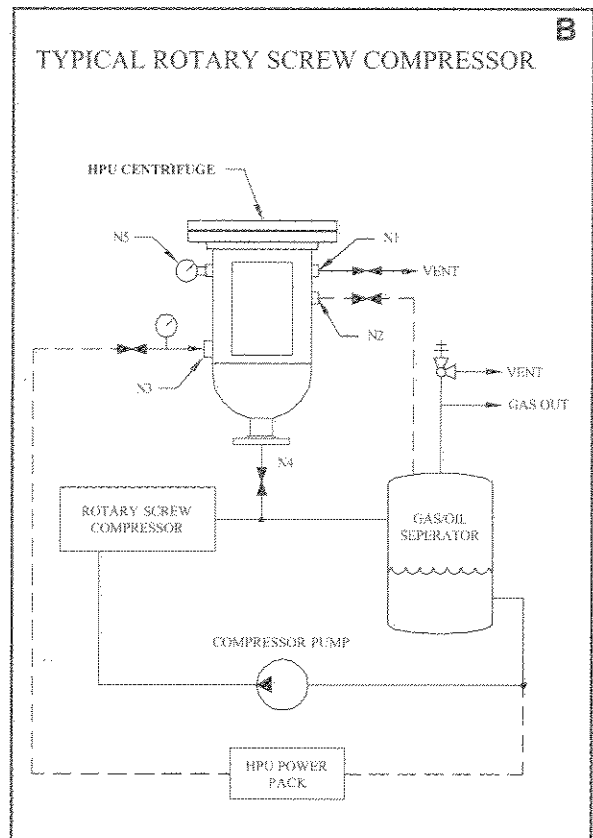
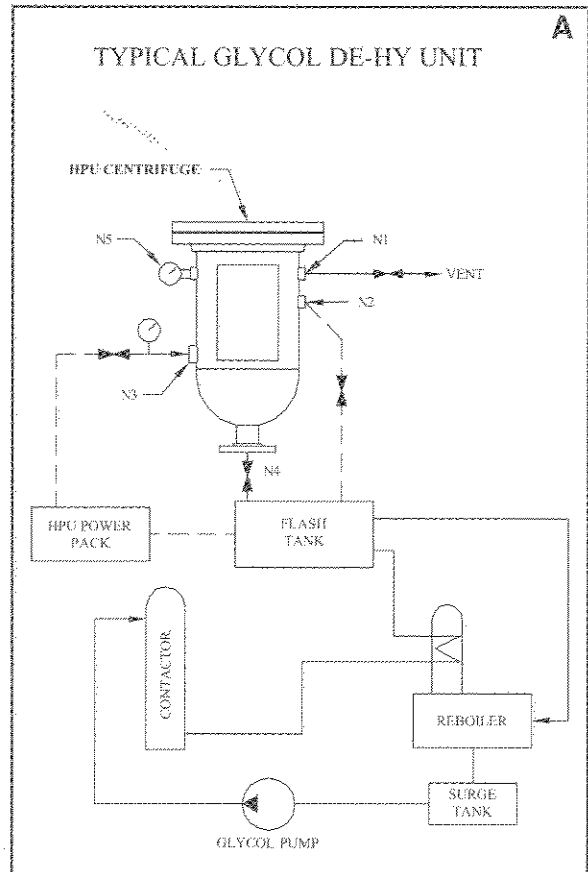
N1 - 1/2" NPT - Vent	Closed
N2 - 1/2" NPT - Equalizer	Open
N3 - 3/4" NPT - Supply	Open
N4 - 4" - 150# RF Flange - Outlet	Open
- Close equalizer valve on port N2.
- Close centrifuge supply valve on port N3.
- Close outlet valve on port N4.
- Slowly open vent valve on port N1. **Caution:** When confident all pressure has vented from the centrifuge, it is safe to open centrifuge cover.

## CENTRIFUGE CLEANING (See Centrifuge Parts List)

- Remove centrifuge cover
- Loosen the six stabilizer locking mechanisms.
- Unscrew center knob, counterclockwise, and remove stabilizer plate assembly.
- Carefully slide centrifuge turbine assembly off stationary shaft. **Caution:** Turbine may still contain fluid.
- Separate turbine assembly by removing turbine nut on top of turbine assembly and then remove turbine cover and turbine base assembly from the turbine bowl.
- Carefully remove solids from the turbine bowl. **Caution:** Be sure to remove all solids from all pieces when cleaning turbine assembly parts to insure turbine balance when reassembled.
- Inspect top and bottom bearings for abnormal or excessive wear. Check turbine nozzles to ensure that they are unrestricted. Inspect seals and replace if damaged.

## ASSEMBLE CENTRIFUGE

- Install turbine insert in turbine bowl.
- Assemble turbine per parts list exploded view.
- Examine stationary shaft bearing journals for damage or excess wear. Lubricate bearing journals prior to installing turbine assembly.
- Replace turbine assembly on stationary shaft, being careful of turbine bearings. Spin turbine assembly on the stationary shaft and make sure it spins freely and unrestricted.
- Install stabilizer plate assembly and lock the six locking assemblies.
- Inspect centrifuge cover seal and replace if torn, damaged or has lost its ability to seal.
- Install cover.
- Make sure vent valve N1 is closed.
- Slowly open equalizer valve N2, to pressurize centrifuge.
- Open oil outlet valve N4.
- Slowly open fluid supply valve N3, to pressure and activate turbine assembly.
- Monitor centrifuge for 5 to 10 minutes. If excessive vibration occurs this is due to improper cleaning or assembly. Check turbine cleanliness and reassemble.





# INSTALLATION

The HPU-1000 Centrifuge is a gravity drain centrifuge. For a gravity drain centrifuge to properly operate, the drain must remain unrestricted from the centrifuge outlet and return piping back into the system above the liquid level in the system to prevent fluid back-up, into the centrifuge, flooding the housing, which will drastically reduce centrifuge performance.

## See Typical Installations A&B

1. Mount centrifuge on a sturdy mounting where the centrifuge outlet flange N4 is above the liquid level in the system.
2. Install 4" unrestricted shut-off valve to the centrifuge outlet flange N4. Install 4" diameter piping back into the system keeping it free of elbows and restrictions, to a point above liquid level in the system.
3. Install 3/4" valve and gauge to centrifuge supply port N3. The gauge should be 100 psi greater than system pressure. Complete 3/4" diameter fluid piping from supply valve to the system or HPU power pack.

**Note:** The centrifuge requires fluid pressure 60 to 80 psi higher than system pressure it is used on.

4. Install pressure gauge in gauge port N5. Gauge range should be compatible with highest system pressure.
5. Install 1/2" valve to vent port N1. This valve allows venting of centrifuge internal pressures prior to removing centrifuge cover.
6. Install 1/4" (minimum) valve to port N2 and run 1/4" diameter tubing back into system. This line is used to equalize the centrifuge pressure with system pressure.
7. HPU Power Pack - If a dedicated pump is used it is necessary to pipe liquid from the system to the pump suction using appropriate size piping to prevent pump cavitation.

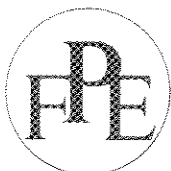
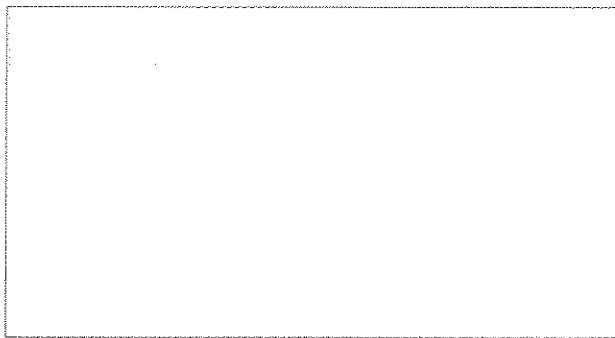
**Note:** As an optional extra, Fluid Power Energy will supply all valves and gauges at customer's request.

## PRE-START INSTRUCTIONS

Check valve positions prior to HPU-1000 centrifuge start-up.

Port	Position
N1	Open
N2	Closed
N3	Closed
N4	Closed

- Step 1: Close vent valve on vent port N1
- Step 2: Slowly open equalizer valve on port N2
- Step 3: Make sure drain valve on port 4 is open.
- Step 4: Slowly open centrifuge supply valve on port N3



### FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186  
Phone: 262-548-6220 • FAX: 262-548-6239  
Website: [www.fpevalves.com](http://www.fpevalves.com)



ISO 9001-2000



# III

# Specifications

## a. FPE Thermostatic Valves Dimensional Data & Weights



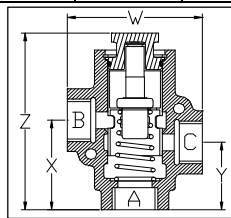
# FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

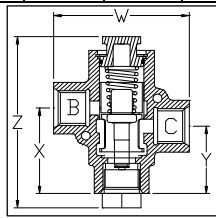
• (262) 548-6220 • (262) 548-6239 (fax) • www.fpevalves.com

## THERMOSTATIC VALVE DIMENSIONAL DATA & WEIGHTS

MODEL NUMBER (* SEE FOOTNOTE)	BODY MATERIAL	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm) )				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHTS	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*0750	AL	3/4" NPT	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	4 9/16 (115.89)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5#	
*0750J12	AL	SAE	2 3/8 (60.33)	1 13/16 (46.04)	4 (101.60)	4 15/16 (125.41)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5#	
*0750W	AL	3/4" NPT	2 3/8 (60.33)	1 13/16 (46.04)	4 (101.60)	5 3/8 (136.53)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5#	2-Way Valve
*0750JW	AL, B	3/4" NPT	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	5 3/8 (136.53)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	2-Way Valve
*0750JWJ	AL, B	SAE	2 3/8 (60.33)	1 13/16 (46.04)	4 (101.60)	5 3/8 (136.53)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	2-Way Valve
*0752JW	AL, B	1/2" NPT	2 3/8 (60.33)	1 13/16 (46.04)	3 1/4 (82.55)	5 3/8 (136.53)	2 1/8 (53.98)	N/A	N/A	N/A	1	AL=1.5# B=4.5#	2-Way Valve



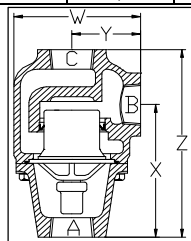
AL0750, AL0750J



AL0750W, AL0750JW, AL0750JWJ, AL0752JW

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
AL, B	350 PSI

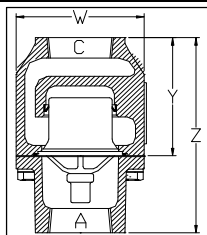
*1210	AL, A B, D S, SS	1/2" NPT	4 1/4 (107.95)	2 (50.80)	3 5/8 (92.08)	6 (152.40)	3 3/8 (85.73)	N/A	N/A	N/A	1	AL=3#, A=6.5# B=8.5#, D=6.5# S & SS=7#	
*1110	AL, A B, D S, SS	3/4" NPT	4 1/4 (107.95)	2 (50.80)	3 5/8 (92.08)	6 (152.40)	3 3/8 (85.73)	N/A	N/A	N/A	1	AL=3#, A=6.5# B=8.5#, D=6.5# S & SS=7#	
*1010	AL, A B, D S, SS	1" NPT	4 1/4 (107.95)	2 (50.80)	3 5/8 (92.08)	6 (152.40)	3 3/8 (85.73)	N/A	N/A	N/A	1	AL=3#, A=6.5# B=8.5#, D=6.5# S & SS=7#	
*1010J	AL A, B	SAE	4 13/32 (111.92)	2 3/16 (55.56)	3 7/8 (98.43)	6 11/32 (161.13)	3 3/8 (85.73)	N/A	N/A	N/A	1	AL=3# A=6.5#, B=8.5#	



ALL

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
AL, A, B	150 PSI
D	250 PSI
S & SS	750 PSI

*1211	A	1/2" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#	
*1111	A	3/4" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#	
*1011	A	1" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#	
*1411	A	1 1/4" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#	
*1511	A	1 1/2" NPT	N/A	3 5/8 (92.08)	3 3/4 (95.25)	6 (152.40)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#	

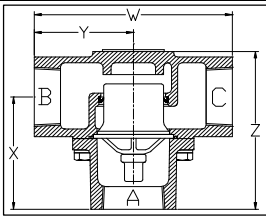


ALL

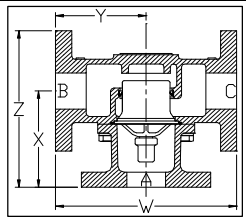
PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A	150 PSI

\* (Replace \* with Body Material Type) (A-Cast Iron, AL-Aluminum, B-Bronze, D-Ductile, S-Steel, SS-Stainless Steel)  
 FPE Thermostatic Valve Dimensional Data & Weights (REV C).xls Created By: Nick Oblamski, FPE Design Engineer

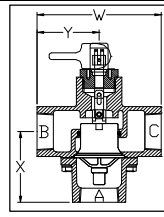
MODEL NUMBER (* SEE FOOTNOTE)	BODY MATERIAL	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHTS	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
**1530	A, B, D S, SS	1 1/2" NPT	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	5 1/4 (133.35)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#, B=10# D=9# S & SS=10#	
*1530J	A	SAE	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	5 1/4 (133.35)	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#	
*1530M	A, B S, SS	1 1/2" NPT	3 3/4 (95.25)	3 1/16 (77.79)	6 1/8 (155.58)	N/A	3 3/4 (95.25)	N/A	N/A	N/A	1	A=9#, B=10# S & SS=10#	Manual Override
*F1530	A, B, D	1 1/2" FLG	4 (101.60)	3 1/2 (88.90)	7 (177.80)	6 1/2 (165.10)	5 (127.00)	4	5/8 (15.88)	3 7/8 (98.43)	1	A=16.5#, B=21# D=16.5#	1
	S, SS	1 1/2" FLG	4 (101.60)	3 1/2 (88.90)	7 (177.80)	6 1/2 (165.10)	5 (127.00)	4	5/8 (15.88)	3 7/8 (98.43)	1	S & SS=18#	2
*F1530M	A	1 1/2" FLG	4 (101.60)	3 1/2 (88.90)	7 (177.80)	N/A	5 (127.00)	4	5/8 (15.88)	3 7/8 (98.43)	1	A=16.5#	Manual Override 1
	S, SS	1 1/2" FLG	4 (101.60)	3 1/2 (88.90)	7 (177.80)	6 1/2 (165.10)	5 (127.00)	4	5/8 (15.88)	3 7/8 (98.43)	1	S & SS=18#	2
*F1530X	S, SS	1 1/2" RF FLG	4 3/4 (120.65)	4 (101.60)	8 (203.20)	7 13/16 (198.44)	6 1/8 (155.58)	4	7/8 (22.23)	4 1/2 (114.30)	1	S & SS=28#	3
*F1530XM	S, SS	1 1/2" RF FLG	4 3/4 (120.65)	4 (101.60)	8 (203.20)	7 13/16 (198.44)	6 1/8 (155.58)	4	7/8 (22.23)	4 1/2 (114.30)	1	S & SS=28#	Manual Override 3



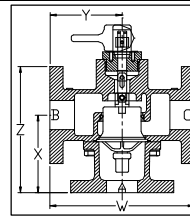
\*1530, \*1530J



\*F1530, \*F1530X



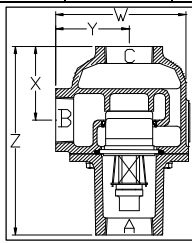
\*1530M



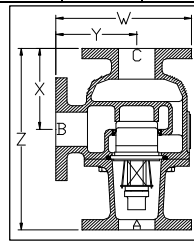
\*F1530M, \*F1530XM

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B	150 PSI
D	250 PSI
S, SS	750 PSI
SF, SSF	275 PSI
SFX, SSFX	720 PSI

*2010-1	A, B S, SS	1 1/2" NPT	3 13/16 (96.84)	3 9/16 (90.49)	6 5/16 (160.34)	9 3/4 (247.65)	5 1/2 (139.70)	N/A	N/A	N/A	1	A=21#, B=24# S & SS=23#	
*2010	A, B, D S, SS	2" NPT	3 13/16 (96.84)	3 9/16 (90.49)	6 5/16 (160.34)	9 3/4 (247.65)	5 1/2 (139.70)	N/A	N/A	N/A	1	A & D=21#, B=24# S & SS=23#	
*2010J	A	SAE	3 13/16 (96.84)	3 9/16 (90.49)	6 5/16 (160.34)	9 3/4 (247.65)	5 1/2 (139.70)	N/A	N/A	N/A	1	A=21#	
*F2010	A, B, D	2" FLG	4 7/8 (123.83)	4 9/16 (115.89)	7 9/16 (192.09)	10 5/8 (269.88)	5 1/2 (139.70)	4	3/4 (19.05)	4 3/4 (120.65)	1	A=32#, B=40# D=32#	1
	S, SS	2" FLG	4 7/8 (123.83)	4 9/16 (115.89)	7 9/16 (192.09)	10 7/8 (276.23)	5 1/2 (139.70)	4	3/4 (19.05)	4 3/4 (120.65)	1	S & SS=34#	2
*F2010X	S, SS	2" RF FLG	5 (127.00)	4 11/16 (119.06)	7 15/16 (201.61)	11 1/8 (282.58)	6 1/2 (165.10)	8	3/4 (19.05)	5 (127.00)	1	S & SS=36#	3



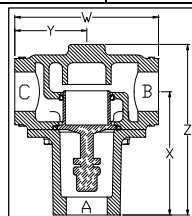
\*2010-1, \*2010, \*2010J



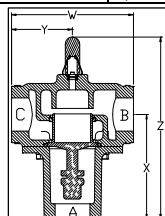
\*F2010, \*F2010X

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B	150 PSI
D	250 PSI
S, SS	750 PSI
SF, SSF	275 PSI
SFX, SSFX	720 PSI

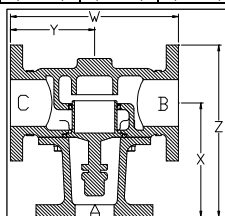
*2012-1	A, B S, SS	1 1/2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 1/4 (209.55)	5 3/4 (146.05)	N/A	N/A	N/A	1	A=22#, B=28# S & SS=25#	
*2012	A, B S, SS	2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 1/4 (209.55)	5 3/4 (146.05)	N/A	N/A	N/A	1	A=22#, B=28# S & SS=25#	
*2012J	A, B S, SS	SAE	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 1/4 (209.55)	5 3/4 (146.05)	N/A	N/A	N/A	1	A=22#, B=28# S & SS=25#	
*2012M	A, B S, SS	2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	10 1/8 (257.18)	7 (177.80)	N/A	N/A	N/A	1	A=22#, B=28# S & SS=25#	Manual Override
*F2012	A, B, D	2" FLG	5 7/8 (149.23)	4 5/16 (109.54)	8 5/8 (219.08)	9 (228.60)	6 1/4 (158.75)	4	5/8 (15.88)	4 3/4 (120.65)	1	A=24#, B=26# D=20#	1
	S, SS	2" RF FLG	6 (152.40)	4 7/16 (112.71)	8 7/8 (225.43)	9 1/8 (231.78)	6 1/4 (158.75)	4	5/8 (15.88)	4 3/4 (120.65)	1	S & SS=24#	2
*F2012M	A, B, D	2" FLG	5 7/8 (149.23)	4 5/16 (109.54)	8 5/8 (219.08)	10 7/8 (276.23)	6 1/4 (158.75)	4	5/8 (15.88)	4 3/4 (120.65)	1	A=24#, B=26# D=20#	Manual Override 1
	S, SS	2" RF FLG	6 (152.40)	4 7/16 (112.71)	8 7/8 (225.43)	11 (279.40)	6 1/4 (158.75)	4	5/8 (15.88)	4 3/4 (120.65)	1	S & SS=24#	Manual Override 2



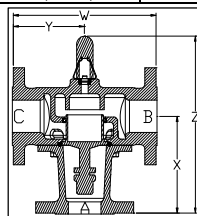
\*2012, \*2012J



\*2012M



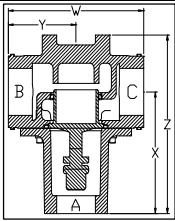
\*F2012



\*F2012M

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B	150
D	250
S, SS	300

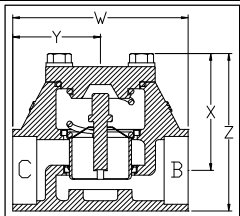
MODEL NUMBER (* SEE FOOTNOTE)	BODY MATERIAL	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHTS	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*2013-1	A, B S, SS	1 1/2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/4 (222.25)	6 1/2 (165.10)	N/A	N/A	N/A	1	A=25#, B=30# S & SS=27#	
*2013	A, B S, SS	2" NPT	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/4 (222.25)	6 1/2 (165.10)	N/A	N/A	N/A	1	A=25#, B=30# S & SS=27#	
*2013J	A, B S, SS	SAE	6 (152.40)	3 1/2 (88.90)	7 (177.80)	8 3/4 (222.25)	6 1/2 (165.10)	N/A	N/A	N/A	1	A=25#, B=30# S & SS=27#	



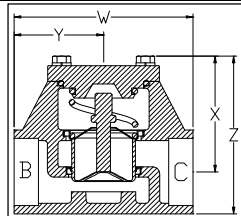
\*2013, \*2013J

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B	150
D	250
S, SS	300

*2014-1	A, B	1 1/2" NPT	4 15/16 (125.41)	3 13/16 (96.84)	6 7/16 (163.51)	5 13/16 (147.64)	5 15/16 (150.81)	N/A	N/A	N/A	1	A=18#, B=24# S & SS=20#	
*2015-1	S, SS	2" NPT	4 15/16 (125.41)	3 13/16 (96.84)	6 7/16 (163.51)	5 13/16 (147.64)	5 15/16 (150.81)	N/A	N/A	N/A	1	A=18#, B=24# S & SS=20#	



\*2014-1, \*2014

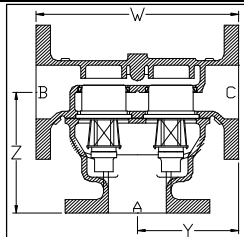


\*2015-1, \*2015

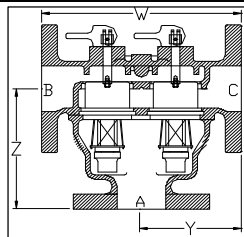
"A" port is on the front side of the valve in the views shown at the left.

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B	150
D	250
S, SS	300

*2510	A, B, D	2 1/2" FLG	N/A	5 (127.00)	10 (254.00)	6 1/2 (165.10)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	A=47#, B=54# D=47#	1
	S, SS	2 1/2" FLG	N/A	5 3/16 (131.76)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	S & SS=51#	2
*2510M	A	2 1/2" FLG	N/A	5 (127.00)	10 (254.00)	6 1/2 (165.10)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	A=47#	Manual Override 1
	S	2 1/2" FLG	N/A	5 3/16 (131.76)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	4	3/4 (19.05)	5 1/2 (139.70)	2	S=51#	2
*2510X	S	2 1/2" RF FLG	N/A	5 (127.00)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	8	7/8 (22.23)	5 7/8 (149.23)	2	S=59#	3
*2510XM	S	2 1/2" RF FLG	N/A	5 (127.00)	10 3/8 (263.53)	6 5/8 (168.28)	8 (203.20)	8	7/8 (22.23)	5 7/8 (149.23)	2	S=59#	Manual Override 3



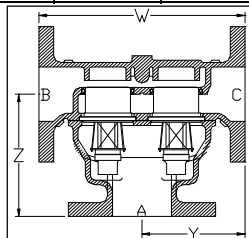
\*2510, \*2510X



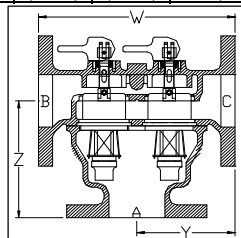
\*2510M, \*2510XM

PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B, D	125 PSI
S, SS	275 PSI
SX, SSX	720 PSI

*3010	A, B, D	3" FLG	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 3/4 (171.45)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	A=57#, B=69# D=50#	1
	S, SS	3" FLG	N/A	5 7/16 (138.11)	10 7/8 (276.23)	7 (177.80)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	S & SS=63#	2
*3010M	A, B	3" FLG	N/A	5 1/4 (133.35)	10 1/2 (266.70)	6 3/4 (171.45)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	A=57#, B=69#	Manual Override 1
	S, SS	3" FLG	N/A	5 7/16 (138.11)	10 7/8 (276.23)	7 (177.80)	8 (203.20)	4	3/4 (19.05)	6 (152.40)	2	S & SS=63#	2
*3010X	S, SS	3" RF FLG	N/A	5 5/8 (142.88)	11 1/4 (285.75)	7 1/8 (180.98)	8 1/4 (209.55)	8	7/8 (22.23)	6 5/8 (168.28)	2	S & SS=70#	3
*3010XM	S, SS	3" RF FLG	N/A	5 5/8 (142.88)	11 1/4 (285.75)	7 1/8 (180.98)	8 1/4 (209.55)	8	7/8 (22.23)	6 5/8 (168.28)	2	S & SS=70#	Manual Override 3



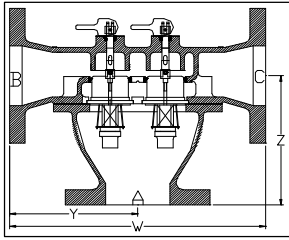
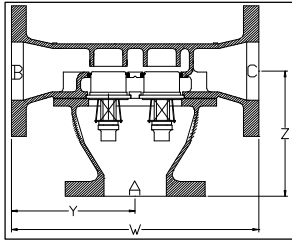
\*3010, \*3010X



\*3010M, \*3010XM

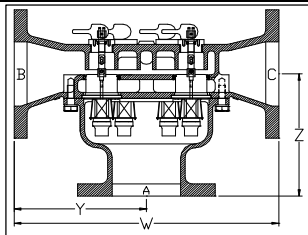
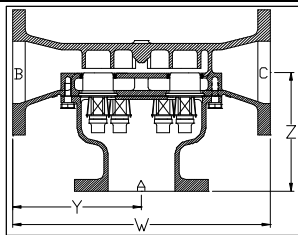
PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B, D	125 PSI
S, SS	275 PSI
SX, SSX	720 PSI

MODEL NUMBER (* SEE FOOTNOTE)	BODY MATERIAL	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm))				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHTS	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			
*4010	A, B, D	4" FLG	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	A=95#, B=116# D=90#	1
	S, SS	4" FLG	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	S & SS=104#	2
*4010M	A, B, D	4" FLG	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	A=95#, B=116# D=90#	Manual Override 1
	S, SS	4" FLG	N/A	7 15/16 (201.61)	15 7/8 (403.23)	8 9/16 (217.49)	11 (279.40)	8	3/4 (19.05)	7 1/2 (190.50)	4	S & SS=104#	2
*4010X	S, SS	4" RF FLG	N/A	7 15/16 (201.61)	15 7/8 (403.23)	9 11/32 (237.33)	11 (279.40)	8	7/8 (22.23)	7 7/8 (200.03)	4	S & SS=126#	3
*4010XM	S, SS	4" RF FLG	N/A	7 15/16 (201.61)	15 7/8 (403.23)	9 11/32 (237.33)	11 (279.40)	8	7/8 (22.23)	7 7/8 (200.03)	4	S & SS=126#	Manual Override 3



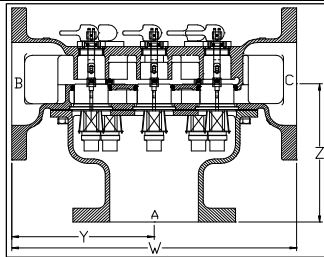
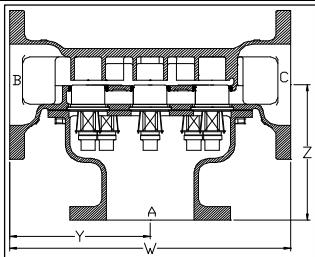
PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B, D	125 PSI
S, SS	275 PSI
SX, SSX	720 PSI

*5010	A, B, D	5" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	A=120#, B=146# D=120#	1
	S, SS	5" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	S & SS=132#	2
*5010M	A, D	5" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	A=120#, D=120#	Manual Override 1
	S, SS	5" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	9 1/2 (241.30)	14 (355.60)	8	7/8 (22.23)	8 1/2 (215.90)	6	S & SS=132#	2



PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B, D	125 PSI
S, SS	275 PSI

*6010	A, B, D	6" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	A=160#, B=195# D=160#	1
	S, SS	6" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	S & SS=177#	2
*6010M	A, D	6" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	A=160#, D=160#	Manual Override 1
	S, SS	6" FLG	N/A	9 5/8 (244.48)	19 1/4 (488.95)	10 (254.00)	18 (457.20)	8	7/8 (22.23)	9 1/2 (241.30)	9	S & SS=177#	2



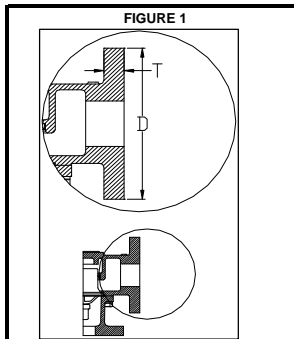
PRESSURE RATINGS	
MATERIAL	PRESSURE RATING
A, B, D	125 PSI
S, SS	275 PSI

ENDNOTES	
1	- All Cast Iron, Bronze & Ductile Flanges are 125# Flat Face Flanges (See Table of Flanges)
2	- Steel & Stainless Steel Flanges are 150# Raised Face Flanges (See Table of Flanges) - All Dimensions include this 1/16" Raised Face
3	- Any Valve with an "X" in its Part Number uses 300# Raised Face Flanges (See Table of Flanges) - All Dimensions include this 1/16" Raised Face

MODEL NUMBER (* SEE FOOTNOTE)	BODY MATERIAL	NOMINAL PIPE SIZE	PRINCIPAL DIMENSIONS (UNITS in. & (mm) )				MAX WIDTH IN THE OTHER PLANE	FLANGE DRILLING			NO. OF ELEMENTS	APPROX. SHIPPING WEIGHTS	NOTES OR NUMBERED ENDNOTES
			"X"	"Y"	"W"	"Z"		NO. OF HOLES	DIA. OF HOLES	BOLT CIRCLE			

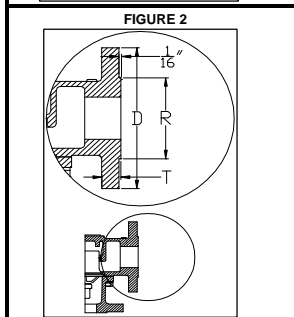
**TABLE OF FLANGES**

150 # FLANGE (FIGURE 2)			
NOMINAL PIPE SIZE	DIAM. OF FLANGE	THICKNESS OF FLANGE	DIAM. OF RAISED FACE
	D	T	R
1 1/2	5	11/16	2 7/8
2	6	3/4	3 5/8
2 1/2	7	7/8	4 1/8
3	7 1/2	15/16	5
4	9	15/16	6 3/16
5	10	15/16	7 5/16
6	11	1	8 1/2



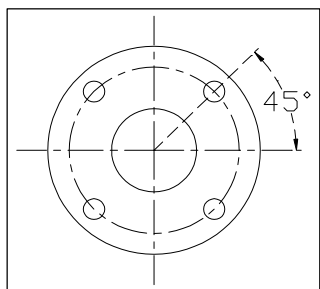
125 # FLANGE (FIGURE 1)		
NOMINAL PIPE SIZE	DIAM. OF FLANGE	THICKNESS OF FLANGE
	D	T
1 1/2	5	5/8
2	5 3/4	5/8
2 1/2	7	11/16
3	7 1/2	3/4
4	9	15/16
5	10	15/16
6	11	1

300 # FLANGE (FIGURE 2)			
NOMINAL PIPE SIZE	DIAM. OF FLANGE	THICKNESS OF FLANGE	DIAM. OF RAISED FACE
	D	T	R
1 1/2	6 1/8	13/16	2 7/8
2	6 1/2	7/8	3 5/8
2 1/2	7 1/2	1	4 1/8
3	8 1/4	1 1/8	5
4	10	1 1/4	6 3/16
5	11	1 3/8	7 5/16
6	12 1/2	1 7/16	8 1/2

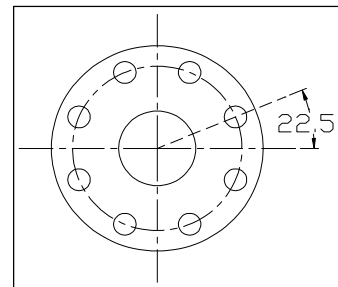


**BOLT HOLE PATTERNS**

**4 HOLE FLANGES**



**8 HOLE FLANGES**



# IV

# Technical

- a. FPE Model Code Matrix**
- b. FPE Flow Rates**
- c. Temperature Conversion Factors**
- d. Measurement Conversion Factors**
- e. Seal Material Compatibility**
- f. Seal Material Compatibility With Fluids**
- g. Application Diverting & Mixing**
- h. Application Water Saver**
- i. Application Multiple Compressors**



AL

1010

N

160

Body Material

Valve Size

Special Requirements

Temperature Settings

Table with 2 columns: Material Code (A, AL, B, D, S, SS) and Material Name (Cast Iron, Aluminum, Bronze, Ductile, Steel (WCB), Stainless Steel (CF8M)).

Table listing valve sizes from 0750 to 6010 with corresponding SAE thread specifications (e.g., 3/4" NPT, 1/2" NPT, 1/2" SAE #8 THREADS).

Table listing special requirements from C to -X with descriptions (e.g., NO COVER, LOW FLOW OPTION, NEOPRENE O-RING, SOCKET WELD FOLLOWED BY ORIFICE SIZE IN 32ND OF AN INCH).

Table titled 'THERMOSTATIC ELEMENT PART NUMBER' showing FPE P/N, model numbers (0760, 1060, 1560, 2040, 2050, 2055, 2096, 2125X, 2433), and valve model numbers used in.

Thermostatic Valve Matrix Sample: AL1010N-160

Table titled 'THERMOSTATIC ELEMENT TEMPERATURE RANGES' showing nominal temperature ranges (040 to 260) and corresponding element part numbers for various temperature settings (0760, 1060, 1560, 2040, 2050, 2055, 2096, 2125, 2433).

Weep Hole Sizing Criteria and Flow Rates in USGPM of Water

Table showing weep hole sizing criteria and flow rates in USGPM for various system water pressures (10 PSIG to 120 PSIG) and hole sizes (1/32" to 1/2").

Weep Hole size should be calculated per table to provide optimum response time with minimum water usage.

Weep Hole or Leak Hole should be sized so that the largest expected particle of foreign matter or debris in the water or fluid will pass through without blocking the weep hole.

All flows listed are per weep hole. Thermostats generally require only one weep hole and each valve may contain more than one thermostat.

Caution: Care should be taken to not exceed differential pressure of more than 20 PSI across the weep hole as it may create friction and malfunction of the thermostat.

\*\*NON-STANDARD, CONTACT FACTORY FOR DELIVERY

Valve Cv's and Element Quantities

Table showing Valve Cv's and Element Quantities for various valve models (0750, 1010, 1110, 1210, 1011, 1111, 1211, 1411, 1511, 1530, 2010, 2010-1).



# FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186  
 • (262) 548-6220 • (262) 548-6239 (fax) • www.fpevalves.com

## THERMOSTATIC VALVE FLOW RATES & APPLICATIONS

FPE MODEL NO. & SIZE		WATER OR WATER / GLYCOL		LUBRICATING OIL			
				SAE 30-40 SSU 80-110 @ 180 F		SAE 30-40 SSU 160-230 @ 140 F	
MODEL NO.	SIZE	FLOW RATE (US gpm)		FLOW RATE (US gpm)		FLOW RATE (US gpm)	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0750, 3 WAY	3/4" NPT	TBD	TBD	8	21	7	19
1210, 3 WAY	1/2" NPT	12	32	TBD	TBD	TBD	TBD
1010J8, 3 WAY	SAE#8						
1110, 3 WAY	3/4" NPT	19	44	TBD	TBD	TBD	TBD
1010J12, 3 WAY	SAE#12						
1010, 3 WAY	1" NPT	27	55	TBD	TBD	TBD	TBD
1010J16, 3 WAY	SAE#16						
1011, 2 WAY	1" NPT	40	71	36	70	30	64
1511, 2 WAY	1 1/2" NPT	40	71	36	70	30	64
1530, 3 WAY	1 1/2" NPT	40	75	37	69	32	64
1530J24, 3 WAY	SAE#24						
1530J18, 3 WAY	SAE#18	TBD	TBD	TBD	TBD	TBD	TBD
1530J20, 3 WAY	SAE#20	TBD	TBD	TBD	TBD	TBD	TBD
2010-1, 3 WAY	1 1/2" NPT	TBD	TBD	TBD	TBD	TBD	TBD
2010J24, 3 WAY	SAE#24						
2010, 3 WAY	2" NPT	76	131	65	125	55	113
2010J32, 3 WAY	SAE#32						
2510, 3 WAY	2 1/2" FLG	139	238	110	222	92	204
3010, 3 WAY	3" FLG	146	263	124	245	110	227
4010, 3 WAY	4" FLG	286	522	235	488	218	448
5010, 3 WAY	5" FLG	504	935	405	876	353	804
6010, 3 WAY	6" FLG	650	1200	TBD	TBD	TBD	TBD

**Fluid Power Energy, Inc.**  
**W229 N591 Foster Court**  
**Waukesha, WI 53186**  
**Phone 262-548-6220 Fax 262-548-6239**  
**Website: www.fpevalves.com**

F.P.E. Equivalency and Conversion Factors Chart

**TEMPERATURE DEGREE'S FAHRENHEIT AND DEGREE'S CELSIUS**

(Degree C)	(Convert Value)	(Degree F)	(Degree C)	(Convert Value)	(Degree F)	(Degree C)	(Convert Value)	(Degree F)
-17.2	1.0	33.8	10.6	51	123.8	43	110	230
-16.7	2	35.6	11.1	52	125.6	49	120	248
-16.1	3	37.4	11.7	53	127.4	54	130	266
-15.6	4	39.2	12.2	54	129.2	60	140	284
-15.0	5	41.0	12.8	55	131.0	66	150	302
-14.4	6	42.8	13.3	56	132.8	71	160	320
-13.9	7	44.6	13.9	57	134.6	77	170	338
-13.3	8	46.4	14.4	58	136.4	82	180	356
-12.8	9	48.2	15.0	59	138.2	88	190	374
-12.2	10	50.0	15.6	60	140.0	93	200	392
-11.7	11	51.8	16.1	61	141.8	99	210	410
-11.1	12	53.6	16.7	62	143.6	100	212	413
-10.6	13	55.4	17.2	63	145.4	104	220	428
-10.0	14	57.2	17.8	64	147.2	110	230	446
-9.4	15	59.0	18.3	65	149.0	115	240	464
-8.9	16	60.8	18.9	66	150.8	121	250	482
-8.3	17	62.6	19.4	67	152.6	127	260	500
-7.8	18	64.4	20.0	68	154.4	132	270	518
-7.2	19	66.2	20.6	69	156.2	138	280	536
-6.7	20	68.0	21.1	70	158.0	143	290	554
-6.1	21	69.8	21.7	71	159.8	149	300	572
-5.6	22	71.6	22.2	72	161.6	154	310	590
-5.0	23	73.4	22.8	73	163.4	160	320	608
-4.4	24	75.2	23.3	74	165.2	165	330	626
-3.9	25	77.0	23.9	75	167.0	171	340	644
-3.3	26	78.8	24.4	76	168.8	177	350	662
-2.8	27	80.6	25.0	77	170.6	182	360	680
-2.2	28	82.4	25.6	78	172.4	188	370	698
-1.7	29	84.2	26.1	79	174.2	193	380	716
-1.1	30	86.0	26.7	80	176.0	199	390	734
-0.6	31	87.8	27.2	81	177.8	204	400	752
0.0	32	89.6	27.8	82	179.6	210	410	770
0.6	33	91.4	28.3	83	181.4	215	420	788
1.1	34	93.2	28.9	84	183.2	221	430	806
1.7	35	95.0	29.4	85	185.0	226	440	824
2.2	36	96.8	30.0	86	186.8	232	450	842
2.8	37	98.6	30.6	87	188.6	238	460	860
3.3	38	100.4	31.1	88	190.4	243	470	878
3.9	39	102.2	31.7	89	192.2	249	480	896
4.4	40	104.0	32.2	90	194.0	254	490	914
5.0	41	105.8	32.8	91	195.8	260	500	932
5.6	42	107.6	33.3	92	197.6	265	510	950
6.1	43	109.4	33.9	93	199.4	271	520	968
6.7	44	111.2	34.4	94	201.2	276	530	986
7.2	45	113.0	35.0	95	203.0	282	540	1004
7.8	46	114.8	35.6	96	204.8	288	550	1022
8.3	47	116.6	36.1	97	206.6	293	560	1040
8.9	48	118.4	36.7	98	208.4	299	570	1058
9.4	49	120.2	37.2	99	210.2	304	580	1076
10.0	50	122.0	37.8	100	212.0	310	590	1094

Note: In the **Convert Value** column, find the numerical temperature value to be converted. The equivalent **Celsius** temperature is in the left column and the **Fahrenheit** temperature is in the right column.

**INTERPOLATION VALUES**

(Degree C)	(Convert Value)	(Degree F)	(Degree C)	(Convert Value)	(Degree F)
0.56	1	1.8	3.33	6	10.8
1.11	2	3.6	3.89	7	12.6
1.67	3	5.4	4.44	8	14.4
2.22	4	7.2	5.00	9	16.2
2.78	5	9.0	5.56	10	18.0

**Fluid Power Energy, Inc.**  
**W229 N591 Foster Court**  
**Waukesha, WI 53186**  
**Phone 262-548-6220 Fax 262-548-6239**  
**Website: www.fpevalves.com**

**F.P.E. Equivalency and Conversion Factors Chart - Page Two**

**EQUIVALENTS OF COMMON FRACTIONS OF AN INCH**

64THS	32NDS	16THS	8THS	DECIMAL	MM
1/64				0.01562	0.397
	1/32			0.03125	0.794
3/64				0.04688	1.191
		1/16		0.06250	1.588
5/64				0.07812	1.984
	3/32			0.09375	2.381
7/64				0.10938	2.778
			1/8	0.12500	3.175
9/64				0.14062	3.572
	5/32			0.15625	3.969
11/64				0.17188	4.366
		3/16		0.18750	4.763
13/64				0.20312	5.159
	7/32			0.21875	5.556
15/64				0.23438	5.953
			1/4	0.25000	6.350
17/64				0.26562	6.747
	9/32			0.28125	7.144
19/64				0.29688	7.541
		5/16		0.31250	7.938
21/64				0.32812	8.334
	11/32			0.34375	8.731
23/64				0.35938	9.128
			3/8	0.37500	9.525
25/64				0.39062	9.922
	13/32			0.40625	10.319
27/64				0.42188	10.716
		7/16		0.43750	11.113
29/64				0.45312	11.509
	15/32			0.46875	11.906
31/64				0.48438	12.303
			1/2	0.50000	12.700
33/64				0.51562	13.097
	17/32			0.53125	13.494
35/64				0.54688	13.891
		9/16		0.56250	14.288
37/64				0.57812	14.684
	19/32			0.59375	15.081
39/64				0.60938	15.478
			5/8	0.62500	15.875
41/64				0.64062	16.272
	21/32			0.65625	16.669
43/64				0.67188	17.066
		11/16		0.68750	17.463
45/64				0.70312	17.859
	23/32			0.71875	18.256
47/64				0.73438	18.653
			3/4	0.75000	19.050
49/64				0.76562	19.447
	25/32			0.78125	19.844
51/64				0.79688	20.241
		13/16		0.81250	20.638
53/64				0.82812	21.034
	27/32			0.84375	21.431
55/64				0.85938	21.828
			7/8	0.87500	22.225
57/64				0.89062	22.622
	29/32			0.90625	23.019
59/64				0.92188	23.416
		15/16		0.93750	23.813
61/64				0.95312	24.209
	31/32			0.96875	24.606
63/64				0.98438	25.003
			1	1.00000	25.400

**TABLE OF EQUIVALENTS**

TO CONVERT	INTO	MULTIPLY BY
INTO	TO CONVERT	DIVIDE BY
Atmospheres	Feet of Water	33.9
Atmospheres	Inches of Mercury (Hg.)	29.92
Atmospheres	PSI (Lbs./Sq.In.)	14.7
BTU	Foot Lbs.	778.3
BTU / Hr.	Watts	0.2931
BTU / Min.	Horsepower	0.02356
Centigrade	Fahrenheit	Deg. C x 1.8 + 32
Centimeters	Inches	0.3937
Cubic Centimeters	Gallons (U.S. Liq.)	0.0002642
Cubic Centimeters	Liters	0.001
Cubic Feet	Cubic Inches	1,728
Cubic Feet	Gallons (U.S. Liq.)	7.48052
Cubic Inches	Cubic Feet	0.0005787
Cubic Inches	Gallons (U.S. Liq.)	0.004329
Days	Seconds	86,400
Degrees (Angle)	Radians	0.01745
Feet	Meters	0.3048
Feet	Miles	0.0001894
Feet of Water	Atmospheres	0.0295
Feet of Water	Inches of Mercury (Hg.)	0.8826
Feet of Water	PSI (Lbs./Sq.In.)	0.4335
Feet / Min.	Miles / Hr.	0.01136
Feet / Sec.	Miles / Hr.	0.6818
Foot Lbs.	BTU	0.001286
Foot Lbs. / Min.	Horsepower	0.0000303
Foot Lbs. / Sec.	Horsepower	0.001818
Gallons (U.S. Liq.)	Cubic Feet	0.1337
Gallons (U.S. Liq.)	Cubic Inches	231
Gallons of Water	Pounds of Water	8.3453
Horsepower	BTU /Min	42.44
Horsepower	Foot Lbs. / Min.	33,000
Horsepower	Foot Lbs. / Sec.	550
Horsepower	Watts	745.7
Hours	Days	0.04167
Hours	Weeks	0.005952
Inches	Centimeters	2.54
Inches of Mercury (Hg.)	Atmospheres	0.03342
Inches of Mercury (Hg.)	Feet of Water	1.133
Inches of Mercury (Hg.)	PSI (Lbs./Sq.In.)	0.4912
Inches of Water	PSI (Lbs./Sq.In.)	0.03613
Liters	Cubic Centimeters	1,000
Liters	Gallons (U.S. Liq.)	0.2642
Micron	Inches	0.00004
Miles (Statute)	Feet	5,280
Miles / Hr. (MPH)	Feet / Min.	88
Miles / Hr. (MPH)	Feet / Sec.	1.467
Ounces (Weight)	Pounds	0.0625
Ounces (Fluid)	Cubic Inches	1.805
Pints (Fluid)	Quarts (Fluid)	0.5
Pounds	Grains	7,000
Pounds	Grams	453.5924
Pounds	Ounces	16
PSI (Lbs. / Sq. In.)	Atmospheres	0.06804
PSI (Lbs. / Sq. In.)	Feet of Water	2.307
PSI (Lbs. / Sq. In.)	Inches of Mercury (Hg.)	2.036
Quarts	Gallons	0.25
Square Feet	Square Inches	144
Temperature (Deg.F) -32	Temperature (Deg.C)	0.5555
Tons (Short)	Pounds	2,000
Watts	Horsepower	0.001341

**Fluid Power Energy, Inc.**  
**W229 N591 Foster Court**  
**Waukesha, WI 53186**  
**Phone 262-548-6220 Fax 262-548-6239**  
**Website: www.fpevalves.com**

**F.P.E. BASIC SEAL MATERIALS (ELASTOMERS)**

The following is a brief list of the various elastomers used in seals. The trade names shown are representative and typical, but not a complete listing.

**BUNA N (NITRILE ) (NBR)**

**Trade Names:**

**Chemigum** Goodyear Tire & Rubber Co.  
**Butaprene** Firestone Tire & Rubber Co.  
**Paracril** Naugatuck Chemical  
**Hycar** Goodrich Chemical Co.

Copolymer of butadiene & acrylonitrile. Excellent w/ petroleum products. -65 to +250 Deg.F. For low temperature it is necessary to sacrifice some high temperature resistance. Superior in compression set, cold flow, tear and abrasion resistance. Inferior in resistance to ozone, sunlight or weather.

**Generally recommended for:**

**General purpose**  
**Petroleum**  
**Water**  
**Diester**  
**Water-Glycol**

**Not recommended for:**

**Halogenated hydrocarbons**  
**Phosphate ester**  
**Ketones**  
**Acids**  
**Brake Fluid**

**BUNA S (SBR) (GRS)**

**Trade Names:**

**Plioflex** Goodyear Tire & Rubber Co.  
**Ameripol** B.F. Goodrich Chemical Co.  
**ASRC** American Synthetic  
**Copo** Copolymer Rubber & Chemical Corp  
**FR-S** Firestone Tire & Rubber Co.  
**Gentrol** General Tire

Originally a substitute for natural rubber. Composition, styrene and butadiene rubber. Little used for hydraulic seals (except brake systems). -65 to +200 Deg.F.

**Generally recommended for:**

**Automotive brake fluid**  
**Some alcohols**  
**Water**  
**Ketones**

**Not recommended for:**

**Ozone**  
**Petroleum**

**BUTYL RUBBER (11R)**

**Trade Names:**

**Enjay Butyl** Enjay Chemical Company  
**Hycar (2202)** B.F. Goodrich Chemical Co.

Copolymer is isobutylene and isoprene. -65 to +225 Deg.F.

Used for inner tubes. Excellent resistance to gas permeation.

Particularly useful for high vacuum.

**Generally recommended for:**

**Phosphate ester**  
**Ketones**

**Not recommended for:**

**Petroleum**  
**Diester**

**CORFAM**

**Trade Names:**

**Corfam** E.I. DuPont Co.

Totally new material made of corfam paromeric substrate imoregnated with adiprene polyurethane rubber. High abrasion, oil, fuel resistance. Also available with silicone or teflon coating. Finished seals are waterproof.-65 to +212 Deg.F.

**Generally recommended for:**

**General purpose**  
**Petroleum**  
**Hot water**  
**Water / glycols**  
**Water/ oil emulsion**  
**Water/soluble oil**

**Not recommended for:**

**High test gasoline**  
**Hot detergent water**  
**Phosphate**

**ETHYLENE PROPYLENE RUBBER (EPM) (EP) (EPR)**

**Trade Names:**

**Nordel** E.I. DuPont Co.  
**Enjay EPR** Enjay Chemical Co.  
**Olethene** Avisum Corp.

An elastomer of ethylene and propylene monomers (Ethylene Propylene Copolymers). Excellent w Skydrol 500 and Phosphate esters. -65 to +300 Deg.F.

**Generally recommended for:**

**Phosphate ester**  
**Steam (to 400 Deg.F.)**  
**Water**  
**Ketones**

**Not recommended for:**

**Petroleum**  
**Diester**

**FLUOROCARBON (FPM) (VITON)**

**Trade Names:**

**Fluorel and Kel-F**  
**Viton**

Minnesota Mining & Mfg. Co.  
E.I. DuPont

A linear copolymer of vinylidene fluoride and hexafluoro propylene (approximately 65% fluorine). Excellent for high vacuum. Compatible and recommended with most fluids and gases. -20 to +350 Deg.F (to 600 Deg.F. for short periods).

**Generally recommended for:**

**Petroleum**  
**Silicate ester**  
**Diester**  
**Halogenated hydrocarbons**  
**Most phosphate esters**

**Not recommended for:**

**Ketones**  
**Skydrol 500, 7000**

**SILICONE RUBBER (SI)**

**Trade Names:**

**Silastic**

Dow Corning Corporation  
General Electric  
Union Carbide & Carbon

Made from silicone, oxygen, hydrogen and carbon. Resistance to temperature extremes.-135 to +500 Deg.F. for short periods. Recommended temperature, 400 Deg.F. Retention of properties at high temperatures is superior to other elastic materials. Fluorosilicone combines the good temperature properties of silicone with basic fuel and oil resistance. Not recommended for dynamic sealing because of poor tear and tensile strength. Higher than normal mold shrinkage.

**Generally recommended for:**

**High-aniline point oils**  
**Chlorinated di-phenylis**  
**Some water glycols**

**Not recommended for:**

**Most petroleum**  
**Ketones**  
**Some phosphate esters**

**CHLOROPRENE RUBBER (CR) (NEOPRENE)**

**Trade Names:**

**Neoprene**

E.I. DuPont Company

Homopolymers of chloroprene (chlorobutadiene). -65 to +250 Deg.F. Should be spring loaded for low temperatures.

**Generally recommended for:**

**Refrigerants (Freons)**  
**High aniline point petroleu**  
**Silicate ester**

**Not recommended for:**

**Phosphate ester fluids**  
**Ketones**

**NATURAL RUBBER**

**NATURAL POLYSOPRENE (NR)**

Principal source: The tree Hevea Brasiliensis. Petroleum oils are the greatest enemy of natural rubber compounds.

**Generally recommended for:**

**Brake fluid**  
**Water**

**Not recommended for:**

**Petroleum**  
**Water/oil**  
**Phosphate esters**  
**Silicate esters**

**POLYURETHANE**

**Trade Names:**

**Disogrin**  
**Adiprene**

Pellon Corp.  
E.I. DuPont Co.

Diisocyanate with polyesters or polyethers. Superior mechanical and physical properties. Good resistance to petroleum products. Difficult to mold or cast. Some have poor compression and permanent set properties. Trend to soften excessively at temperatures above 250 Deg.F. and in hot water.

**Generally recommended for:**

**Petroleum**  
**Water/oil (moderate temp.)**  
**Phosphate ester**

**Not recommended for:**

**Hot water**  
**Acids**  
**Ketones**  
**Chlorinated hydrocarbons**

**ISOPRENE RUBBER-SYNTHETIC (IR) (POLYISOPRENE)**

**Trade Names:**

**Ameripol SN**  
**Coral**  
**Natsyn**  
**Shell IR**

Goodrich -Gulf Chemicals, Inc.  
Firestone Tire & Rubber Co.  
Goodyear Tire and Rubber Co.  
Shell Chemical Co.

The same chemical composition as natural rubber. (For properties, refer to Natural Rubber).

**TETRAFLUOROETHYLENE (TEF) (not an elastomer)**

**Trade Names:**

**Teflon**

E.I. DuPont Co.

Rigid tetrafluoroethylene resin. Extremely low friction. Compatible and recommended with most fluids and gases. Will cold flow under high loads. -320 to +500 Deg.F.

**Fluid Power Energy, Inc.**  
**W229 N591 Foster Court**  
**Waukesha, WI 53186**  
**Phone 262-548-6220 Fax 262-548-6239**  
**Website: www.fpevalves.com**

R = RECOMMENDED S = SATISFACTORY M = MARGINAL U = UNSATISFACTORY I = INSUFFICIENT DATA

Fluid Name	Code	Military Specification	Trade Name / Number	Color	TYPE OF SEAL COMPOUND - COMMON NAME								
					Buna-N	Butyl	Cortam	EP	Viton	Silicone	Neoprene	Nat.Rubber	Polyurene
Water-Glycol	1		Houghto-Safe 600 Series	Red	R	R	R	R	R	S	S	R	U
	1		Houghto-Safe 500 Series	Red	R	R	R	R	R	S	S	R	U
	1	MIL-H22072	Houghto-Safe 271	Red	R	R	R	R	R	S	S	-	U
	4		Ucan Hydrolube	Yel. or Red	R	R	R	R	R	R/S	S	R	U
	4		Ucon MI	Yellow	R	R	R	R	R	S	S	S	-
	5		Cellugard	Red	R	R	R	R	R	S	S	-	U
	10		Safety Fluid 200	Bright Pink	R	R	R	R	R	S	S	-	U
Water/Oil Emulsion	1		Houghti-Safe 5000 Series	White	R	U	R	U	R	-	S	U	U
	3		FR	Creamy	R	U	R	U	R	-	S	U	U
	7		Irus 902	Yellow	R	U	R	U	R	U	S	U	M
	8		Pyrogard C&D	Pale Yellow	R	U	R	U	R	-	S	U	U
Water-Soluble Oil	-		-	Milky	R	M	R	-	R	-	S	S	M/U
Water-Fresh	-		-	-	R	R	R	R	R	R	M	R	M/U
Water-Salt	-		-	-	R	R	R	R	R	R	M	R	M/U
Phosphate Ester	1		Houghto-Safe 1000 Series	Green	U	R	M/U	R	R	M	U	U	M
	1	MIL-H-19547B	Houghti-Safe 1120	Green	U	R	M/U	R	R	M	U	U	M
	2		Pydraul F-9, 150, 625	Cloudy Blue	U	R/S	M/U	S	R	R	U	U	S
	5		Pydroul	Lt. Green	U	R	M/U	R	R	M	U	U	M
	7		Shell SFR B.C.D.	Aqua Green	U	R	M/U	R	R	M	U	U	M
	8		Pyrogard 42,43,53,55,190,600	Pale Yellow	U	R	M/U	R	R/S	M	U	U	M
	2		Skydrol 500A	Purple	U	S	U	R	U	M	U	U	U
	2		Skydrol 7000	Green	U	S	U	R	U	M	U	U	U
	2		Pydroul 312,135 (2)	Blue Green	U	M	M	M	R	R	U	U	-
	2		Pydroul AC	Cloudy Blue	U	S	M/U	S	R	R	U	U	M/U
	2		Pydroul 60	Cloudy Blue	U	R	M/U	R	U	S	U	U	M/U
	8		Pyrogard 210 (3)	Yellow	U	M	-	M	R	R	U	U	M/U
	Diester	-	MIL-H-7808	Lube Oil-Aircraft	Amber	S	U	R	U	R	U	U	U
Chlorinat. Hydrocarb.	2		Aroclor 1200 Series (1)	Clear	M	S	-	S	R	S	U	U	U
	2		Pydroul A-200	Cloudy Blue	U	M	M	M	R	R	U	U	M/U
Silicate Ester	2		OS-45 Type 4	Clear	S	U	-	S	R	U	R	U	R
	6	MLO-8200	Oronite 8200	Clear	S	U	-	U	R	U	R	U	R
	6	MIL-8515	Oronite 8515	Clear	S	U	-	U	R	U	R	U	R
	9	MIL-H-8446B	Brayco B46	Red Brown	S	U	-	U	R	U	R	U	R
Kerosene	-			Clear	R	U	R	U	R	U	M/U	U	R
Jet Fuel	-	MIL-J-5624	JP-3, 4, 5 (RP-1)	Lt. Straw	R	U	R	U	R	U	U	U	S
Diesel Fuel	-			Clear	R	U	R	U	R	U	M/U	U	R
Gasoline	-		Gasoline	Various	R	U	R/S	U	R	U	U	U	R
Petroleum Base	-	MIL-H-6083	Preservative Oil	Red	R	U	R	U	R	U	S	S	R
Petroleum Base	-	MIL-H-5606	Aircraft Hyd. Fluid	Red	R	U	R	U	R	U	R	U	R

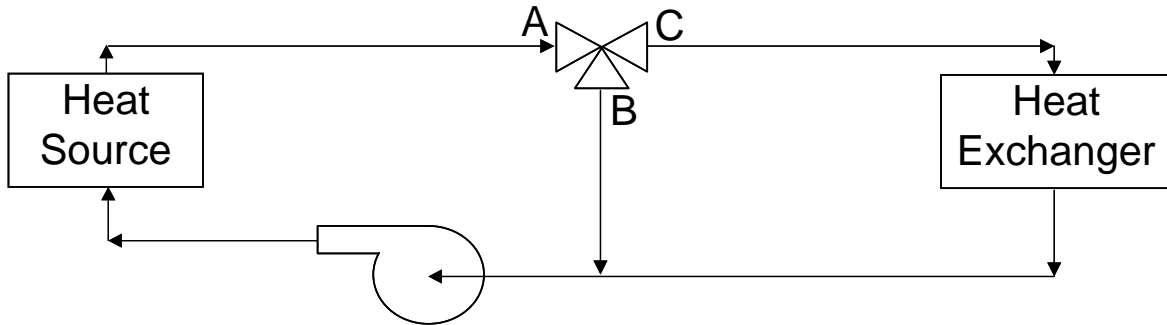
**MANUFACTURES CODE NUMBERS**

NOTES:	NO. MANUFACTURER	NO. MANUFACTURER	NO. MANUFACTURER
1) Halogenated	1. E.F. HOUGHTON	5. STAUFFER CHEMICAL	8. MOBIL OIL
2) Petroleum and halogenated hydrocarbon and phosphate ester mixture	2. MONSANTO	6. STANDARD OIL(ORTHO CHEMICAL)	9. BRAY OIL - ROYAL LUBRICANT
3) Chlorinated phosphate ester	3. GULF	7. SHELL CHEMICAL	10. TEXACO
	4. UNION CARBIDE & CHEMICAL		

## Thermostatic Valves

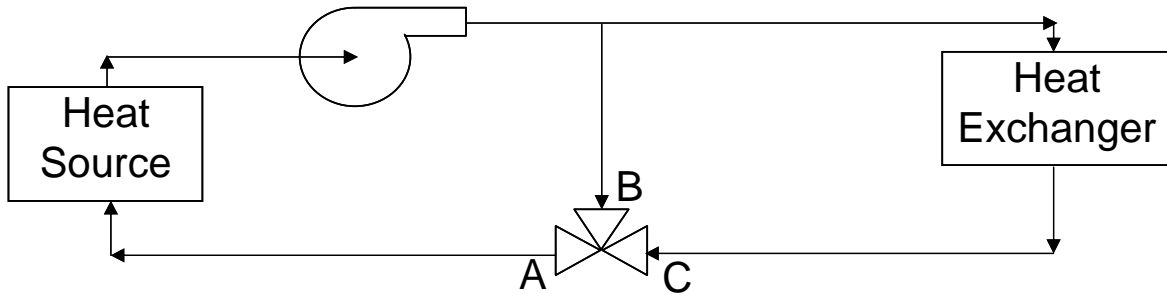
### Diverting Application

Controls temperature out of the heat source:  
Engine Jacket Water  
Cylinder Jacket Water



### Mixing Application

Controls temperature in to the heat source:  
Lube Oil  
Screw Compressor Oil/Lube



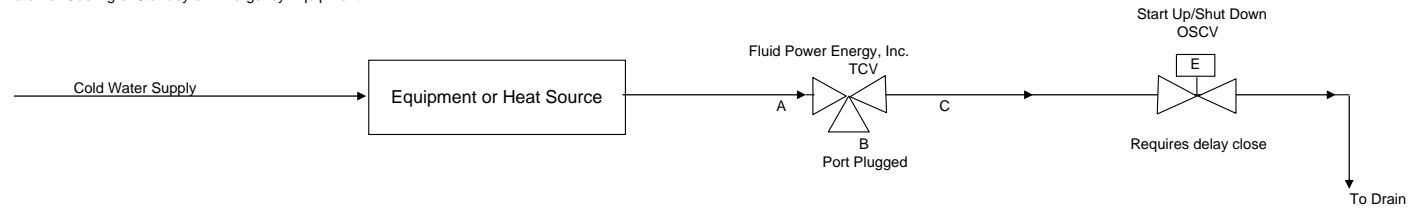
A is the control connection. Flow through A goes across the "pill". A sees 100% of the flow. B is the bypass. C connects to cooler. When cold, all flow is thru B, none thru C. As temp approaches set point valve closes B and opens C. Above the set point, B is closed and C passes 100%.



## Thermostatic Valves

### Water-Saver Application

Uses City or Treated Water for Cooling of Standby or Emergency Equipment



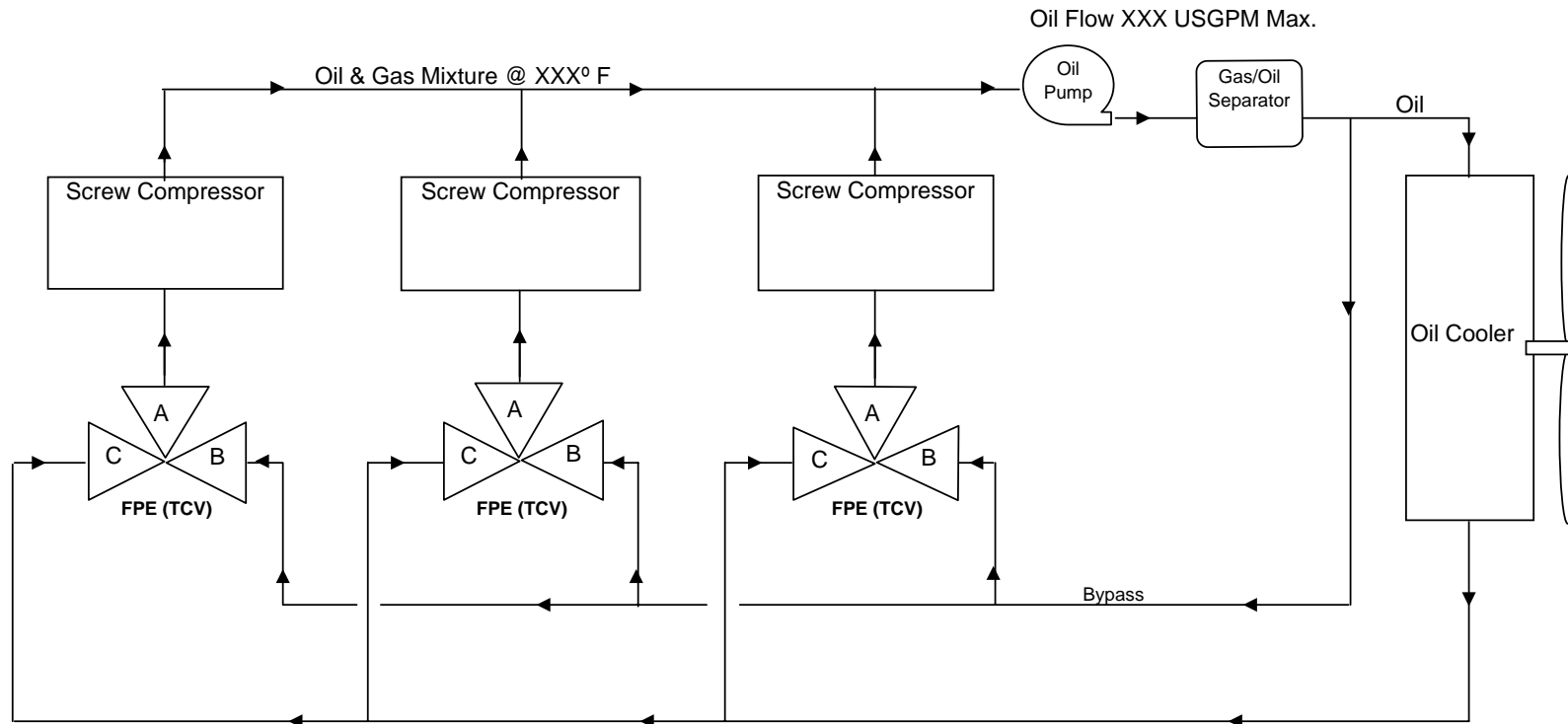
With B Port plugged valve acts as a Two-Way control valve. **It must have a Weep Hole to flow cold water.**

Optional Solenoid Control Valve (OSCV) is used to stop flow of water when equipment is not in service

**Sequence of Operation:** Equipment receives start up signal which may also be sent to the Optional Solenoid Control Valve (OSCV) which opens allowing cold water supply to flow through Port A and passing through the weep/leak hole located in the Temperature Control Valve (TCV) exiting Port C, this establishes a minimum flow through the system. As temperature increases due to friction and load on the equipment, this heat is transferred to the flow of supply water and sensed by the (TCV). As this temperature increases and reaches the operating range of the (TCV) the mechanical expansion of the temperature element inside the valve starts to stroke and open the valve (allowing additional flow) to port C. This continued increase in temperature may occur until the valve is fully open and flow through the (TCV) to modulate and maintain the nominal temperature set point of the valve. Stopping or shutting down the equipment will generally introduce a spike or temperature rise within the equipment and for this reason a minimum delay of 30-60 minutes should be provided in closing of the (OSCV) in order to dissipate residual heat and properly lower the equipment temperature.

By: Kelly C. Grenard  
Date: 08-28-2003

**Fluid Power Energy, Inc.**  
W229N591 oster Court  
Waukesha, WI 53186  
Ph; 262-548-6220 Fx: 262-548-6239



**Multiple Screw Compressor (Mixing) Application of Thermostatic Control Valves**

# **V**

# **Policies**

- a. FPE, Product Instructions, Installation, Maintenance & Operation**
- b. Troubleshooting**
- c. Repair Instructions**
- d. Returned Goods Policy**
- e. Warranty, Term of Sale, Conditions of Sale**
- f. Customer Service Request Questionnaire**



## **FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • [www.fpevalves.com](http://www.fpevalves.com)

# **THERMOSTATIC VALVES**

## **Instruction and Application Guidelines**

**Your FPE Thermostatic Valve has been manufactured with extreme care and tested to insure that it had no detectable defects at the time it left the factory. If the valve is correctly applied and installed it will give years of service under reasonable operating conditions. This instruction manual will give you service information for nearly all normal operating conditions, but for the unusual situations it may be necessary to contact your FPE representative or the FPE factory. All FPE valves use the “Expanding Wax” type of temperature sensing element set to their normal rating under closely controlled conditions, and cannot be altered once they are set. If it is ever necessary to change the nominal rating of the valve, a different set of elements must be used.**

## **Inspecting the Valve Upon Receipt**

**Immediately upon receipt of your valve, check it over carefully for damage received in shipping, and be sure you have received the proper unit. In checking the model number of the valve against your order you may find that the nominal temperature rating is stamped below the part number, which is not how it was ordered. This numbering system merely allows us to identify the construction and thermostat setting on a more exact basis. If you have any questions do not hesitate to call the factory or your representative.**

## **Materials**

**FPE valves are available in cast iron, steel, stainless steel, ductile iron, aluminum and bronze. For information concerning these different materials, please contact your factory representative. Sometimes electrolysis may be encountered in a system. If this is the case, a zinc or magnesium waste plug can be installed in the valve at port A. If the valve is installed in seawater, cast iron housings are not generally satisfactory. In this type of installation, bronze valves must be used. In mounting the valve in a system, the valve must be properly vented so that the possibility of trapping air in the valve or around the elements is eliminated. A good rule to follow on systems is to place air vents so that air can be bled from the systems to a single collection point. Please note the vent lines in the different piping diagrams.**



## **FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • [www.fpevalves.com](http://www.fpevalves.com)

### **Installation**

**FPE valve dimensions are given on an attached sheet. If special engineered drawings have been prepared, these drawings and FPE standard instructions should be resolved before the valve is put into service. At the end of this bulletin, there are recommended methods of applying FPE valves. Figure 1 illustrates a cooling water diverting system using a radiator. Figure 2 is a cooling water mixing system using a heat exchanger. Please note the difference between a diverting system and a mixing system. In the diverting system the three-way thermostatic control valve diverts part of the fluid out of the C port into the cooler, and part of the fluid out of the B port to bypass the cooler. In a mixing situation part of the flow comes from the cooler or heat exchanger into the C port, the other part of the fluid comes from the B port or by-pass, mixes in the valve and comes out the A port at the desired temperature. In comparing these two systems, diverting and mixing, it has been found that the diverting system will provide a better and more even temperature control than the mixing system. This is because the diverting system has introduced a more temperature-even homogeneous fluid to the sensing element. On the other hand a mixing system requires two different fluid temperatures to mix in a small volume of the valve in order to exit through the temperature-sensing unit. You will note that in all of the piping diagrams, a mixing system controls the temperature of the fluid going into the engine or the compressor. The diverting system controls the temperature coming out of the engine or compressor.**



## **FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • [www.fpevalves.com](http://www.fpevalves.com)

### **Maintenance**

**FPE thermostatic valves probably require less maintenance than any other type of similar use. Elements in normal service should be good for 6 to 10 years. Excessive temperatures, chemical, electrolytic or cavitation attack will of course shorten the life of the elements and seats which are replaceable. Carbonates, scale and other solids must not be permitted to build up on sliding valve or sensing cup surfaces. FPE does not recommend that a large stock of spare parts be maintained at the valve installation. Most commonly used elements and seals are immediately available from FPE's stocking area representatives or from the factory direct. Seals and composition gaskets are rated for a shelf life of one year from date of shipment. If adequately sealed from air, they may be good for longer periods. The shelf life of an FPE element is from one to two years, depending on storage conditions.**

### **Operation**

**After installation of the valve has been completed into the system, and operating of the valve has been started, system temperatures should be monitored so that the circuit is performing satisfactorily. Water cooling systems generally operate at a temperature at or slightly below the nominal temperature of the valve. Oil systems or more viscous fluids operate at temperatures at or slightly above the nominal temperature. To check an elements temperature, place the element in a water bath at a temperature of 5 degrees below the opening temperature of the element. Make sure you stir the water vigorously with the element for at least five minutes. Check the sliding valve to make sure it is not off its seat. Next, place the element in the same water bath at 25 degrees above the full open temperature reading and again stir vigorously for five minutes. Check the element and it should now be fully stroked. This can be determined by placing the element back into the FPE valve housing and pushing the element's spider fully into the counter bore. FPE valves have an over travel spring which can be felt by pushing the element down into the counter bore. If this resistance is felt, the element is now fully stroked. Since the element has a tendency to cool quickly, you must do this last step before the element has cooled.**



## **Troubleshooting**

- 1) SYSTEM TEMPERATURE RUNNING TOO HOT**
  - a) Presence of foreign objects, dirt and solid buildup inside the valve (e.g. sliding piston, piston's seat, and lip seal area) may prevent proper operation of the valve. Example: By-pass port will not close.**
  - b) Valve's by-pass and cooler ports (port B & C) installed backward. As port B closes due to temperature increase, flow is greatly restricted to cooler.**
  - c) Valve is undersized, causing increase in pressure drop and possibly cavitation.**
  - d) Thermostatic wax element may have been exposed to temperature higher than the recommended maximum temperature.**
  - e) Excessive pressure drop (in excess of 25 psi) may cause one or more of the following conditions:**
    - i) Thermostatic wax element failure**
    - ii) Lip seal dislocation**
    - iii) O-ring damage**
    - iv) Improper piston movement.**
  - f) Improper system cooling capacity.**
  - g) Improper sizing of the valve in a mixing application. If the valve is sized too large for the application it could result in poor mixing, which could cause the temperature to run either too hot or too cold.**
  
- 2) SYSTEM TEMPERATURE RUNNING TOO COLD**
  - a) Incorrect selection of valve's nominal temperature.**
  - b) Valve's by-pass and cooler ports (port B & C) installed backward. This condition forces fluid to cooler at lower temperature.**
  - c) Worn Teflon lip seal.**
  - d) Presence of foreign object, dirt and solid buildup inside of valve (e.g. sliding piston, piston's seat, and lip seal area) may prevent proper operation of the valve.**
  - e) Excessive pressure drop. Refer to part 1, item E above.**
  - f) Thermostatic control valve is oversized.**





**g) Outlet temperature is not maintained due to insufficient heat rejected to coolant.**

**3) ADDITIONAL ITEMS THAT MAY BE CHECKED:**

- a) System thermometers should be regularly checked to make sure that they are operational**
- b) Thermometers should be located on the side of horizontal pipe runs whenever possible and particularly on oil systems.**
- c) Thermometers should be as far as possible downstream from the valve in a mixing application.**
- d) The system should not have any bypasses or “sneak circuits” which prevent proper operation of thermostatic control valve.**
- e) Cracked or broken valves may be caused by:**
  - i) Piping too short, and therefore, over-tightening bolts**
  - ii) Lack of expansion isolation between piping and valve.**
  - iii) Misalignment of piping.**
  - iv) Excessive weight**
  - v) Allowing untreated water to freeze in the system.**



# FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • www.fpevalves.com

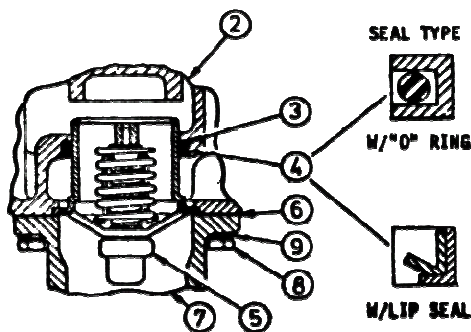
## REPAIR INSTRUCTIONS THERMOSTATIC VALVE MAINTENANCE KITS

### ELEMENT TESTING

Place element in water at a temperature 15 deg. F. to 20 deg. F. above its nominal setting and stir water vigorously with the element for five minutes. The temperature stamped on the sleeve of the element is the nominal temperature. The cracking temperature and the fully open temperature are stamped on the pill of the thermostat. After stirring vigorously immediately place the element in the housing. If the element is fully stroked, the seating and over-travel spring can be felt as it is pushed down. To determine if the element will close at a specific temperature, place the element in a bath of water approximately 5 deg. F below the start to open temperature. This is the number stamped on the element. Due to the effect of hysteresys the element will close 5 deg. F. below the start to open temperature.

### ELEMENT REPLACING

Remove four capscrews (8), lockwashers (9) and separate housings (2) and (7). Remove element assembly (5) and seal (4). Remove housing gasket or O-ring (6). Clean housing sections; remove any scale or foreign material from seal faces. Lubricate new element seal (4), lip seal is pressed into upper housing (2), O-ring is inserted into sleeve (3). Place the new housing gasket (6) in recess of upper housing (2). Insert element (5) into upper housing (2) to position shown in section view. Place lower housing (7) over exposed section of element (5) against face of upper housing (2). Secure housings with capscrews (8) and lockwashers (9).



Ref. No.	Description
2	Upper Housing
3	Sleeve
4	“O” Ring or Lip Seal
5	Element Assembly
6	Gasket or O-ring
7	Lower Housing
8	Cap-screw
9	Lock-washer



## **FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • www.fpevalves.com

### **RETURNED GOODS POLICY**

#### **NEW, COMPLETE PRODUCTS**

Most standard new and unused thermostatic valves which are suitable for resale may be returned for exchange at a 20% or \$25.00 restock charge – whichever is greater.

Thermostatic valves being returned for credit because of overstock or because of cancellations will be subject to a 25% or \$25.00 restock charge – whichever is greater.

Certain non-standard items such as plated element, specially set high temperature valves, etc., will require a 40% or \$50.00 charge, whichever is greater.

#### **USED PRODUCTS**

FPE does not generally accept used material for exchange or credit (except elements as noted below). If a customer desires to ship any unit to us prepaid, we will inspect it and advise if any salvage credit is possible. This should be discouraged however, as it often costs more to clean and inspect a valve than can be gained in salvage.

#### **EXCHANGING UNUSED ELEMENT ASSEMBLIES**

When a customer decides the wrong temperature was selected and wished to exchange the elements before they were placed in use, he may order units of the new setting, and advise on his purchase order that he is returning the original elements. The valve model and serial number should be provided within 45 days after the replacement shipment is made, credit less a 25% restock charge (and less any postage or freight) will be allowed. If the 25% charge is less than \$25.00, the minimum \$25.00 amount will be deducted from the credit.

New elements exchanges will not be made after one year from the date of original shipment.



## **FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • [www.fpevalves.com](http://www.fpevalves.com)

### **EXCHANGING USED ELEMENT ASSEMBLIES**

Sometimes a customer will install a FPE thermostatic valve and decide after several days of operation that he has the wrong temperature. If the installation has not been in operation for over 90 days, these used elements may be exchanged at a 40% (or \$25.00) cleaning and restock charge. Again the limitation of one year from original shipment applies and used elements must be received within 45 days of the replacement shipment. The purchase order for replacement elements must give the serial number of the original valve and state the original elements are being returned.

### **IMPORTANT**

On returns of either new or used elements, the customer may be cautioned to use care in removing elements from the valves. They may be bent or damaged by careless handling of the heavy housings. Customers should also use care in packaging these elements for return. If the elements are damaged in any way, no credit can be issued and the elements will be returned to the customer as his property.



## **FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • [www.fpevalves.com](http://www.fpevalves.com)

### **WARRANTY**

**The merchandise of the seller is warranted for a period of one year from date of shipment, and such warranty shall not cover any cost of work done on them by the customer. The seller's responsibility is limited to the replacement or repair of the defective parts. Should the parts be damaged in any way by the customer or if the parts have been tampered with in any way, such as disassembling, etc., then the warranty as herein stated shall not apply and the seller shall not be responsible for the replacement or repair of such parts.**



## **FLUID POWER ENERGY, INC.**

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • [www.fpevalves.com](http://www.fpevalves.com)

### **TERMS OF SALE**

1. Invoices will be issued as of the date of shipment and shall become due and payable in lawful money of the United States, within thirty days of issuance thereof, unless otherwise specifically agreed in writing.
2. All unpaid items shall bear interest at the rate of 12% per annum beginning with the first day of the second month following date of shipment.

### **CONDITIONS OF SALE**

1. The seller is not responsible for delays or failures of shipments caused by fires, strikes, trade disputes, floods, accidents, embargoes delays in transportation, shortage of materials and/or labor, action by Federal or Local government or its agencies, and any other cause beyond control of the seller.
2. Where terms and conditions as shown on the customers order are at variance with the terms and conditions of the seller, then their terms and conditions of the seller as herein or otherwise expressed shall apply.
3. The merchandise of the seller is warranted for a period of one year from date of shipment and such warranty shall cover only the replacement or repair of defective parts or workmanship, and shall not cover any cost of work done on them by the customer. The seller's responsibility is limited to the replacement or repair of the defective parts. Should the customer damage the parts in any way, or if the parts have been tampered with in any way, such as disassembling, etc. then the warranty as herein stated shall not apply and the seller shall not be responsible for the replacement or repair of such parts.
4. The seller may only return merchandise upon specific approval, in writing. Merchandise returned without this approval is subject to return to the customer, freight charges collect. Returned merchandise must be returned freight prepaid by the customer and not allowance shall be made for any freight charges applicable to the returned merchandise. Merchandise returned and for which credit will be given, shall be subject to a minimum restocking charge of twenty-five percent of the value of the merchandise, or twenty-five dollars whichever is greater.
5. Cancellation of any order, either in part of its entirety, shall be subject to cancellation charges in such amounts as may be determined by the seller at the time of cancellation. The seller either in part or in its entirety cannot accept cancellation of any order without prior written consent of the seller.
6. Customers are advised that caution must be used in the storage of parts containing rubber or other materials subject to aging without use. Parts should be stored so that oldest items are used first.
7. All sales are made pursuant to these conditions and all orders are received with the understanding that they are placed under these conditions.

# Customer Service Request, Response and Concern Form



## FLUID POWER ENERGY, INC.

W229 N591 Foster Court • Waukesha, WI 53186

• (262) 548-6220 • (262) 548-6239 (fax) • [www.fpevalves.com](http://www.fpevalves.com)

Dear Customer,

We are surveying our customers to see how we can do a better job for you. Fluid Power Energy, Inc. (F.P.E.) has designed and manufactured Industrial Thermostatic Control Valves for use and application by the Engine/Compressor OEM's and Packager/Fabricators since 1975. During this time F.P.E. has strived to provide a high level of Customer Service that is responsive to industry requirements and customer expectations. We are located centrally in the United States, close to our domestic foundries and suppliers. With all castings and component parts being provided by US Manufactureres, F.P.E. has minimized the unpredictable quality problems and often unusually long delays associated with imported castings and overseas scheduling and delays.

We request that you please take a moment to fill out this short questionnaire, in order that we might hear your thoughts and learn of better ways to serve you or provide improvements to our products and service. This form may be faxed to us at **Fax: (262)-548-6239** Phone Response: (262)-548-6220 or E-mail your comments to: [info@fpevalves.com](mailto:info@fpevalves.com)

Responses are confidential and used to improve F.P.E. Quality and Customer Service. Thank You.

Name: _____	Position: _____
Type of Industry Serving: _____	
Responding Company: _____	Phone: (    ) - _____
Postal Mailing Address: _____	Fax: (    ) - _____
City: _____	State: _____ Zip Code: _____ E-mail: _____

<b>Section (A) Response: Please provide Evaluation and Comments on Recent Order and Shipment: <i>Existing Customers.</i></b>					
Ref. Purchase Order #: _____	Today's Date: _____				
<b>How would you rate our Products Performance and Quality?</b>					
Poor	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	Excellent
Comments or Suggestions: _____					
<b>How would you rate our customer service and sales support?</b>					
Poor	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	Excellent
Comments or Suggestions: _____					
<b>How would you rate our lead-times compared to our competitors?</b>					
Poor	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	Excellent
Comments or Suggestions: _____					
<b>How would you rate our on-time delivery?</b>					
Poor	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	Excellent
Comments or Suggestions: _____					
<b>How did the packaging of our product hold up in shipping?</b>					
Poor	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	Excellent
Comments or Suggestions: _____					



Send Catalog

Request for Quote

Yes

No

Type: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Degree F Max Temp: \_\_\_\_\_ Degree F and Min Temp: \_\_\_\_\_ Degree F

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_