

▼ Shown from left to right: VM32, VE33, VM33, VM43L, VE43



- Advance/Retract and Advance/Hold/Retract operation of single- and double-acting cylinders and tools
- Manual or solenoid operation
- Pump mounting will retrofit on most Enerpac pumps
- Available “locking” option on VM-Series valves for load-holding applications
- Standard “locking” feature on VE-Series 3-position valves
- User adjustable relief valve allows the operator to easily set the working pressure.

## Venturi Valve Technology

- For fast return of single-acting gravity and spring return cylinders
- Available as manual or solenoid valve on ZU4- and ZE-Series electric pumps
- Retrofit Venturi valve kits for field installation on existing ZU4- and ZE-Series electric pumps.



### Adjustable Relief Valve

All valves feature several gauge ports for “system”, A port and B port pressure monitoring. User adjustable relief valves are included on all models to allow the operator to easily set the optimum working pressure for each application.

VM33 and VE43 valves include “System Check” feature, for more precise pressure holding and improved system control.

The VM33 has improved porting which provides faster cylinder retraction while motor is running.

### Locking Valves

For applications that require positive load holding, VM-Series valves (except VM22 and VM32) are available with a pilot-operated check valve. This option provides hydraulic locking of the load until the valve is shifted into the retract position.

## Reliable Control of Single and Double-Acting Cylinders and Tools

Valve Operation	Used with Cylinder	Valve Type	
Manual	Single-acting	3-Way, 2-Position	
Manual	Single-acting	3-Way, 2-Position	
Manual	Single-acting	3-Way, 3-Position, Tandem Center	
Manual	Single-acting	3-Way, 3-Position, Tandem Center, Venturi Return Assist	
Manual	Double-acting	4-Way, 3-Position, Tandem Center	
Manual	Single-acting	3-Way, 3-Position, Tandem Center, Locking	
Manual	Double-acting	4-Way, 3-Position, Tandem Center, Locking	
Solenoid 24 VDC	Single-acting	3-Way, 2-Position	
Solenoid 24 VDC	Single-acting	3-Way, 2-Position, Dump	
Solenoid 24 VDC	Single-acting	3-Way, 3-Position, Tandem Center, Venturi Return Assist	
Solenoid 24 VDC 115 VAC	Single-acting	3-Way, 3-Position, Tandem Center	
Solenoid 24 VDC 115 VAC	Double-acting	4-Way, 3-Position, Tandem Center	

For remote valve information, see page 130.  
See page 131 for valve dimensions.

# Pump Mounted Directional Control Valves

## VM, VE- Series



Maximum Flow Capacity:

**4.5 gal/min**

Maximum Operating Pressure:

**10,000 psi**



### Assisted Return Pumps with Venturi Valve Technology

ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds.

See valve type in ZU4 and ZE-pump ordering matrix on pages 102 and 108.

### Venturi Valve Retrofit Kits

For field installation on existing ZU4, ZE and ZA-Series pumps, Retrofit Kits are available for manual and solenoid operated valves.


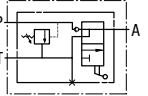
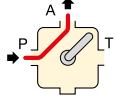

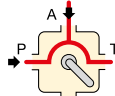
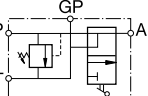
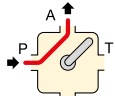

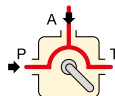
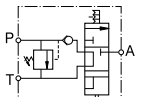
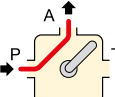
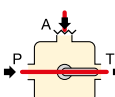
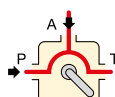
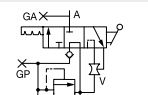
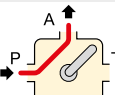
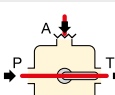
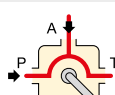
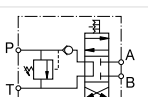
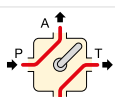
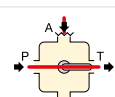
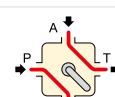
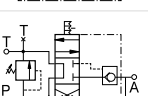
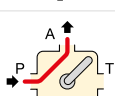
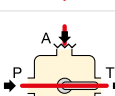
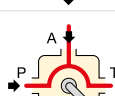
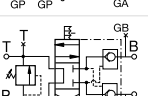
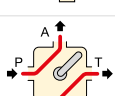
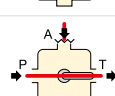
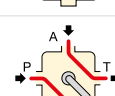
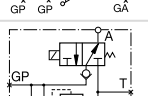
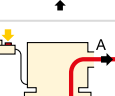
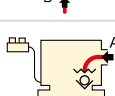
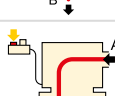
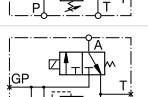
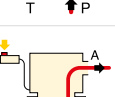

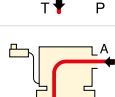
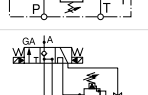
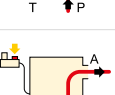
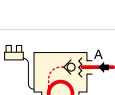

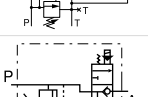
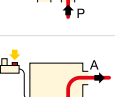
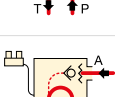
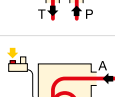

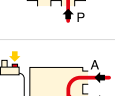
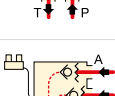
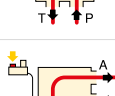

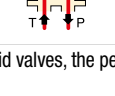

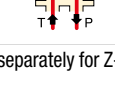
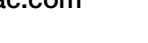



For valve model	For valve operation	Retrofit Kit Model Nr.
VM33, VM33L	Manual	<b>VM33RVK</b>
VE33	Solenoid	<b>VUV5</b>



### Spring Centered Valve Kits

VM and VC-Series manual 3-position valves can be easily converted into spring centered valves. With these retrofit kits the handle will automatically move into the neutral valve position when released.

For valve model	Model Number
VM33, VM43	<b>VMC3343K</b>
VM33L, VM43L	<b>VMC3343KL</b>
VC3, VC15, VC4, VC20	<b>VMC34K</b>
VC3L, VC15L, VC4L, VC20L	<b>VMC34KL</b>

Model Number	Hydraulic Symbol	Schematic Flowpath			 (lbs)
		Advance	Neutral	Retract	
VM22					5.6
VM32					5.6
VM33					6.7
VM33VAC					7.5
VM43					6.8
VM33L					10.7
VM43L					10.8
VE32 *					8.7
VE32D *					8.7
VE33VAC*					22.0
VE33 *					20.3
VE33-115*					
VE43 *					20.3
VE43-115*					

\* When ordering Enerpac VE-Series solenoid valves, the pendant must be ordered separately for Z-Class Pumps.

▼ Shown from left to right: **VC20**, **VC4L**




## Remote Control of Single and Double-Acting Cylinders and Tools



### Locking Valves

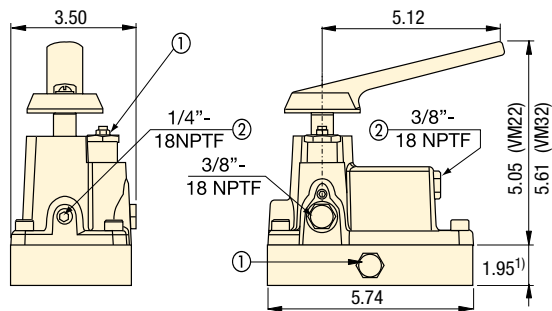
For applications that require positive load holding, VC-Series valves are available with a pilot-operated check valve. This option provides hydraulic locking of the load until the valve is shifted into the retract position.

- Advance/Hold/Retract operation for use with single-acting or double-acting cylinders and tools
- Return line kit included with remote valves.

Valve Operation	Used with Cylinder	Valve Type	Model Number	Hydraulic Symbol	Schematic Flowpath			 (lbs)
					Advance	Hold	Retract	
Manual	Single-Acting	3-Way, 3-Position, Tandem Center	<b>VC3</b>					6.4
Manual	Single-Acting	3-Way, 3-Position, Tandem Center, Locking	<b>VC3L</b>					10.3
Manual	Single-Acting	3-Way, 3-Position, Closed Center	<b>VC15</b>					6.4
Manual	Single-Acting	3-Way, 3-Position, Closed Center, Locking	<b>VC15L</b>					10.3
Manual	Double-Acting	4-Way, 3-Position, Tandem Center	<b>VC4</b>					6.4
Manual	Double-Acting	4-Way, 3-Position, Tandem Center, Locking	<b>VC4L</b>					10.3
Manual	Double-Acting	4-Way, 3-Position, Closed Center	<b>VC20</b>					6.4
Manual	Double-Acting	4-Way, 3-Position, Closed Center, Locking	<b>VC20L</b>					10.3

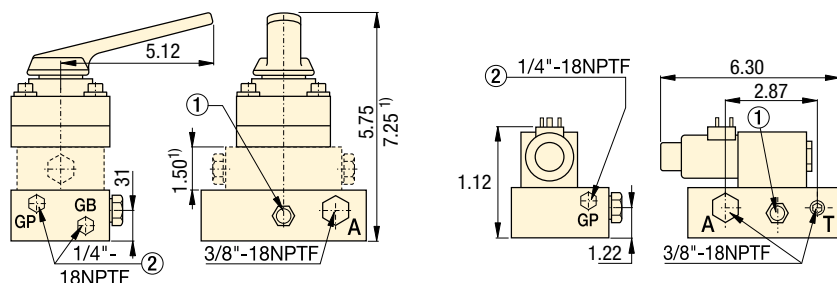
# Directional Control Valves Dimensions

## Pump Mounted Directional Control Valves



VM22, VM32

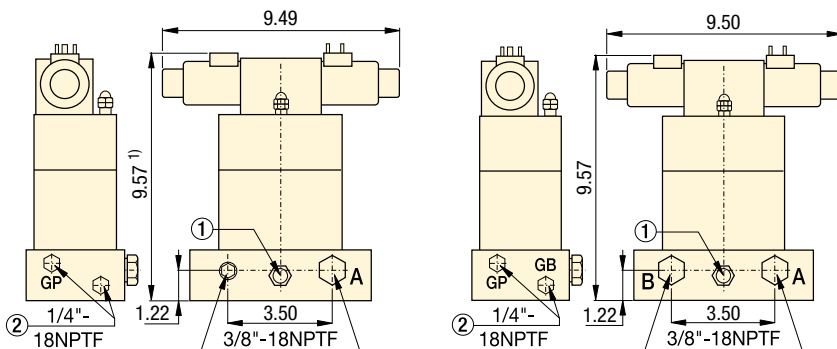
<sup>1)</sup> VM22 only



VM33, VM33L, VM33VAC, VM43, VM43L

<sup>1)</sup> VM33VAC, VM33L and VM43L only.

VE32, VE32D

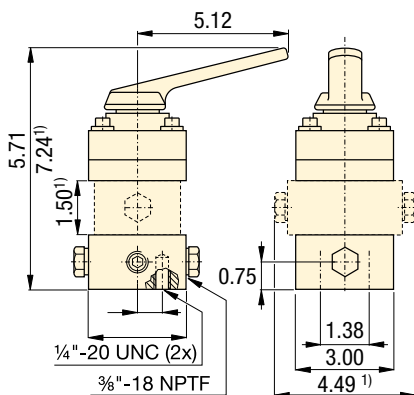


VE33, VE33VAC

<sup>1)</sup> VE33VAC is 1.50 inch higher: 11.07 inch

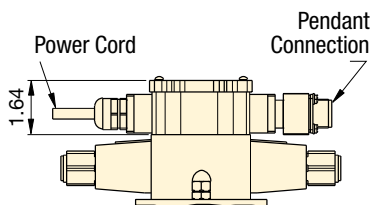
VE43

## Remote Manual Directional Control Valves



VC3, VC3L, VC15, VC15L  
VC4, VC4L, VC20, VC20L

<sup>1)</sup> VC3L, VC15L, VC4L and VC20L only.



VE33-115  
VE43-115

## VM, VE, VC- Series



Maximum Flow Capacity:

**4.5 gal/min**

Maximum Operating Pressure:

**10,000 psi**



### Spring Centered Valve Kits

VM and VC-Series manual 3-position valves can be easily converted into spring centered valves. With these retrofit kits the handle will automatically move into the neutral valve position when released.

For valve models	Model Number
VM33, VM43	VMC3343K
VM33L, VM43L	VMC3343KL
VC3, VC15, VC4, VC20	VMC34K
VC3L, VC15L, VC4L, VC20L	VMC34KL



### Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

Page: 135



### Fittings

For additional fittings see the fitting page of the System Components section in this catalogue.

Page: 141



### Valving Help

See Basic System Set-Up and Valve Information in our 'Yellow Pages'.

Page: 418

▼ Shown top to bottom: **VEC11600D**, **VEK11000B**, **VEC11000B**



- Ideal for independent control of multiple cylinders or functions
- Relief valve and pilot-operated check accessory valves are stackable between manifold and valve body
- Remote and pump mounting.

Valve Flow Path	Used with Cylinder	Valve Code	Hydraulic Symbol
4-Way, 3-Position (4/3) Open Center	Double-acting	<b>A</b>	
4-Way, 3-Position (4/3) Closed Center	Double-acting	<b>B</b>	
4-Way, 3-Position (4/3) Tandem Center	Double-acting	<b>C</b>	
4-Way, 3-Position (4/3) Float Center	Double-acting	<b>D</b>	
4-Way, 2-Position (4/2) Crossover Offset	Double-acting	<b>E</b>	
3-Way, 3-Position (3/3) Tandem Center	Single-acting	<b>F</b>	
3-Way, 3-Position (3/3) Closed Center	Single-acting	<b>G</b>	
2-Way, 2-Position (2/2) Normally Closed	System Un-loading	<b>H *</b>	
2-Way, 2-Position (2/2) Normally Open	System Un-loading	<b>K *</b>	
4-Way, 2-Position (4/2) Float Offset	Double-acting	<b>M</b>	
3-Way, 2-Position (3/2) Normally Open	Single-acting	<b>P</b>	

\* Requires use of tank port for dump or unloading.

## Unmatched Combinations and Possibilities



### 3-Way Check Valve

Use a **VS51** 3-way pilot operated check valve assembly to convert your 3-way modular valve into a load-holding valve.



### 4-Way Check Valve

Use a **VS61** 4-way pilot operated check valve assembly to convert your 4-way modular valve into a load-holding valve.



### System Pressure Control

To add system pressure control to your modular valve, order **VS11** Relief Valve assembly.



### Bolt Kits for Accessory Valves Without Manifold

Order Bolt Kit **BK2** when adding one of the accessory valves. Order Bolt Kit **BK3** when adding any combination of two accessory valves.



### How to order one of the 1300 possible model numbers?

With over 1300 possible model numbers, Enerpac has the perfect valve for you.

Use the "chart" to build your own valve for the specific application you require. This is the complete guide to all the Modular valves that are available.

# VE-Series, Solenoid Operated Modular Valves

## CUSTOM BUILD YOUR MODULAR VALVES

▼ This is how a Modular Valve Model Number is built up:

VE	A	1	5	600	D
1	2	3	4	5	6
Solenoid Operated Valve	Valve Flow Path & Code	Flow Capacity	Operating Voltage	Accessory Valves	Manifold

### 1 Product Type

**VE** = Solenoid Operated Valve

### 2 Valve Flow Path & Code

**A** = 4/3 Open Center  
**B** = 4/3 Closed Center  
**C** = 4/3 Tandem Center  
**D** = 4/3 Float Center  
**E** = 4/2 Crossover Offset  
**F** = 3/3 Tandem Center  
**G** = 3/3 Closed Center  
**H** = 2/2 Normally Closed  
**K** = 2/2 Normally Open  
**M** = 4/2 Float Offset  
**P** = 3/2 Normally Open

### 3 Flow Capacity

**1** = 4.0 gal/min

### 4 Voltage

**1** = 24 VDC  
**2** = 220-240 V, 1 ph, 50 Hz  
**5** = 115 V, 1 ph, 60 Hz

### 5 Accessory Valves

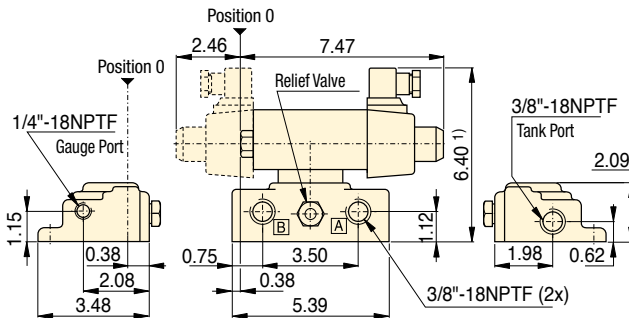
**000** = No accessory valves  
**100** = Relief Valve only  
**150** = Relief Valve and 3-way pilot operated check valve  
**Only for VEF / VEG**  
**160** = Relief Valve and 4-way pilot operated check valve  
**Only for VEA / VEB / VEC / VED**  
**500** = 3-way pilot operated check valve  
**Only for VEF / VEG**  
**600** = 4-way pilot operated check valve  
**Only for VEA / VEB / VEC / VED**

### 6 Manifold

**A** = No manifold \*  
**B** = Remote Mounted  
**D** = Pump Mounted \*\*  
 \* Must order Bolt Kit separately.  
 \*\* Only for valve code: **VEA / VEC / VEF**

### Example: VEA15600-D

VEA15600-D is a Modular Valve with a 4-way, 3-position open center flowpath, 115 VAC, and an integral pilot-operated check valve, for mounting on an Enerpac pump.



**Modular Valve Pump Mounted** <sup>1)</sup> add 1.85 inch for each Accessory Valve

Maximum Operating Pressure (psi)	Amperage Draw			Seal Material	Electric Connection Plug
	24 VDC	115 VAC, 60 Hz	230 VAC, 50 Hz		
0 - 10,000	N/A Inrush	3.6 Amp Inrush	1.8 Amp Inrush	Buna-N, Polyurethane	DIN 43650
	2.5 Amps Holding	1.0 Amp Holding	0.5 Amp Holding		

## VE Series



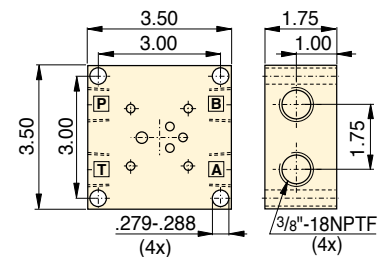
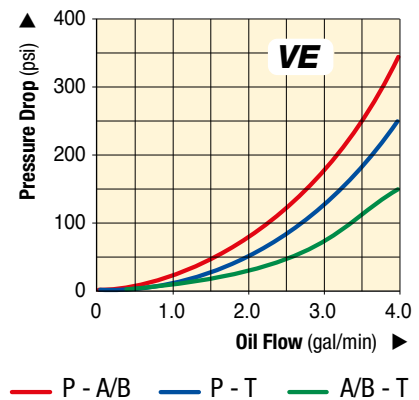
Maximum Flow Capacity:

**4.0 gal/min**

Maximum Operating Pressure:

**10,000 psi**

### PRESSURE DROP VERSUS OIL FLOW



**Modular Valve Remote Mounted Manifold**