




# Valves Section Overview

**E**NERPAC hydraulic valves are available in a wide variety of models and configurations.

Whatever your requirements... directional control, flow control, or pressure control... you can be sure that Enerpac has the correct valve to match your application exactly.

Designed and manufactured for safe operation up to 700 bar, the range of Enerpac valves allows for direct pump mounting, remote mounting, manual or solenoid actuation, and in-line installation, giving you flexible solutions to control your hydraulic system.

Valve Type	Series		Page
3-Way Directional Control Valves	VC, VM VE		138 ▶
4-Way Directional Control Valves	VC, VM VE		140 ▶
Pressure and Flow Control Valves	V		142 ▶



# 3-Way Directional Control Valves

▼ Shown from left to right: VE32D, VE33, VC-3L, VM33L, VM32



- User adjustable relief valves on VM- and VE-Series allow the operator to easily set the working pressure for each application
- All VM- and VE-series valves feature several gauge ports for "system", A and B port pressure monitoring
- All valves (except VM32, VE32D and VC-Series) include manifold with built-in "System Check" feature, for more precise pressure holding and improved system control
- VM33 has improved porting for faster cylinder retraction while pump motor is running
- Manual or solenoid operation.



◀ A typical multi-cylinder control set-up using solenoid directional control valves.

## For Reliable Control of Single-Acting Cylinders



### Valving Help

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

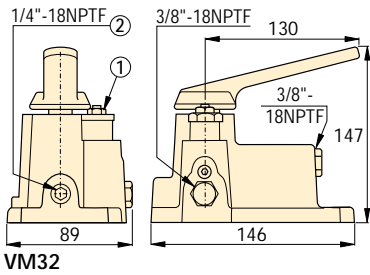
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Valve Operation	Valve Location	Valve Type	
Manual	Pump Mounted	3-way, 2-position	
Manual	Pump Mounted	3-way, 3-position, Tandem Center	
Manual	Pump Mounted	3-way, 3-position, Tandem Center, Locking <sup>1)</sup>	
Manual	Remote Mounted <sup>3)</sup>	3-way, 3-position Tandem Center	
Manual	Remote Mounted <sup>3)</sup>	3-way, 3-position Tandem Center, Locking <sup>1)</sup>	
Manual	Remote Mounted <sup>3)</sup>	3-way, 3-position Closed Center	
Manual	Remote Mounted <sup>3)</sup>	3-way, 3-position Closed Center, Locking <sup>1)</sup>	
Solenoid 24 VDC	Pump Mounted	3-way, 2-position <sup>2)</sup>	
Solenoid 24 VDC	Pump Mounted	3-way, 2-position Dump	
Solenoid 24 VDC	Pump Mounted	3-way, 3-position Tandem Center	

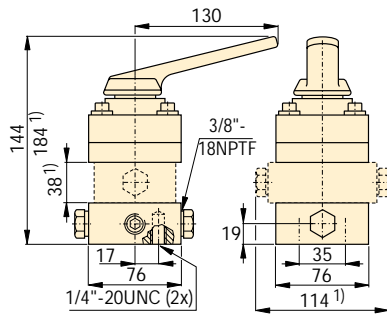
<sup>1)</sup> with pilot-operated check valve.

<sup>2)</sup> VE32 provides "HOLD" function by turning off pump and holding pressure against system check.

# 3-Way Directional Control Valves

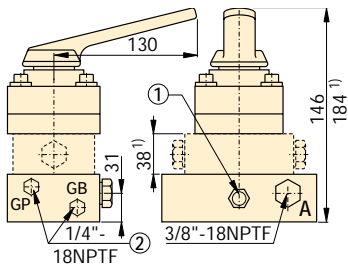


VM32

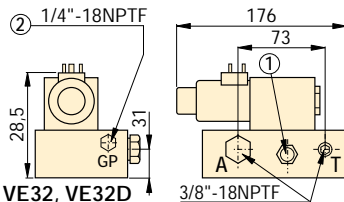


VC-3, VC-3L, VC-15, VC-15L

<sup>1)</sup> VC-3L and VC-15L only



VM33, VM33L <sup>1)</sup> for VM33L only



VE32, VE32D

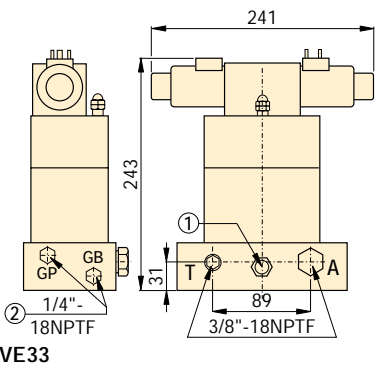
- ① adjustable relief valve    ② auxiliary ports

## VC VE VM Series



Flow Capacity:  
**17 l/min**

Maximum Operating Pressure:  
**700 bar**



VE33

Model Number	Hydraulic Symbol	Schematic Flowpath			Weight (kg)
		Advance	Hold	Retract	
VM32					2,5
VM33					3,0
VM33L					4,8
VC-3 <sup>3)</sup>					2,9
VC-3L <sup>3)</sup>					4,7
VC-15 <sup>3)</sup>					2,9
VC-15L <sup>3)</sup>					4,7
VE32					3,9
VE32D					3,9
VE33					9,2

<sup>3)</sup> VC-Series remote valves include Return line kit VRL-10.



### Locking Valves

For applications requiring positive load holding, VM- and VC-Series valves (except VM32) are available with a pilot-operated check valve. This provides hydraulic locking of the load until the valve is shifted into the retract position. To order this feature, place an "L" at the end of the model number.



### Pendants for VE-Series Solenoid Valves

When ordering Enerpac VE-Series solenoid valves, the pendant must be ordered separately. Pendant connection to be plugged into electric box of pump.

To be used with solenoid valves:	Pendant Model Nr.
VE32D	ZCP-1
VE32, VE33	ZCP-3



# 4-Way Directional Control Valves

▼ Shown from left to right: VM43, VE43, VC-20L



## For Double-Acting Cylinder Control



### Valving Help

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

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### User Adjustable Relief Valve

All VM- and VE-Series have a user adjustable relief valve to allow the operator to

easily set the optimum working pressure.

- User adjustable relief valves on VM- and VE-Series allow the operator to easily set the working pressure for each application
- All VM- and VE-Series valves feature several gauge ports for "system", A and B port pressure monitoring
- All valves (except VC-Series) include manifold with built-in "System Check" feature, for more precise pressure holding and improved system control
- Manual or solenoid operation

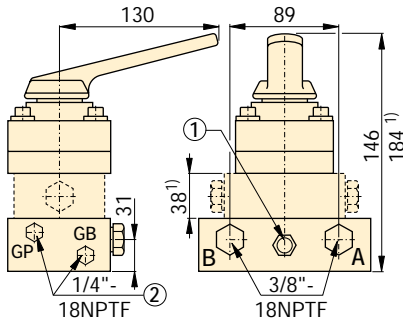
▼ In a fine control 120 ton hydraulic system for lifting a string of anchors in a subsea pipeline project, the VC-4 remote valve provides safety shutdown capacity on the ship's deck.



Valve Operation	Valve Location	Valve Type
Manual	Pump Mounted	4-way, 3-position, Tandem Center
Manual	Pump Mounted	4-way, 3-position, Tandem Center, Locking
Manual	Remote Mounted	4-way, 3-position, Tandem Center,
Manual	Remote Mounted	4-way, 3-position, Tandem Center, Locking <sup>1)</sup>
Manual	Remote Mounted	4-way, 3-position, Closed Center
Manual	Remote Mounted	4-way, 3-position, Closed Center, Locking <sup>1)</sup>
Solenoid 24 VDC	Pump Mounted	4-way, 3-position, Tandem Center

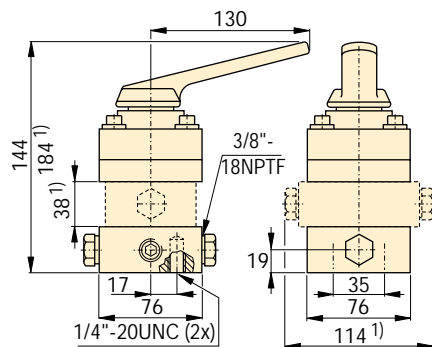
<sup>1)</sup> with pilot-operated check valves.

# 4-Way Directional Control Valves

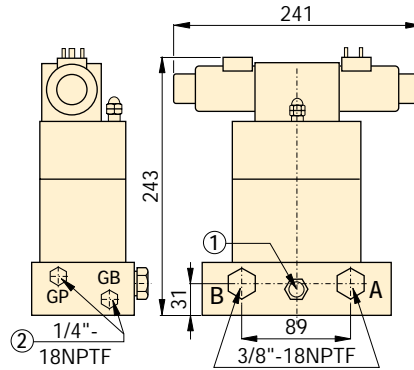


VM43, VM43L  
<sup>1)</sup> for VM43L only

- ① adjustable relief valve
- ② auxiliary ports



VC-4, VC-4L, VC-20, VC-20L  
<sup>1)</sup> VC-4L and VC-20L only



VE43

VC  
 VE  
 VM  
 Series



Flow Capacity:  
**17 l/min**

Maximum Operating Pressure:  
**700 bar**



### Fittings

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

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### Locking Valves

For applications requiring positive load holding, VM- and VC-Series valves are available with a pilot-operated check valve. This provides hydraulic locking of the load until the valve is shifted into the retract position. To order this feature, place an "L" at the end of the model number.



### Pendants for VE-Series Solenoid Valves

When ordering Enerpac VE-Series solenoid valve, the pendant must be ordered separately. Pendant connection to be plugged into electric box of pump.

Model Number	Hydraulic Symbol	Schematic Flowpath			Weight (kg)
		Advance	Hold	Retract	
VM43					3,1
VM43L					4,9
VC-4 <sup>2)</sup>					2,9
VC-4L <sup>2)</sup>					4,7
VC-20 <sup>2)</sup>					2,9
VC-20L <sup>2)</sup>					4,7
VE43					9,3

<sup>2)</sup> VC-Series remote valves include Return line kit VRL-10.

▼ From left to right: V-152, V-66, V-82, V-161, V-42, V-17



## Your Hydraulic Control Solution



### Valve Applications

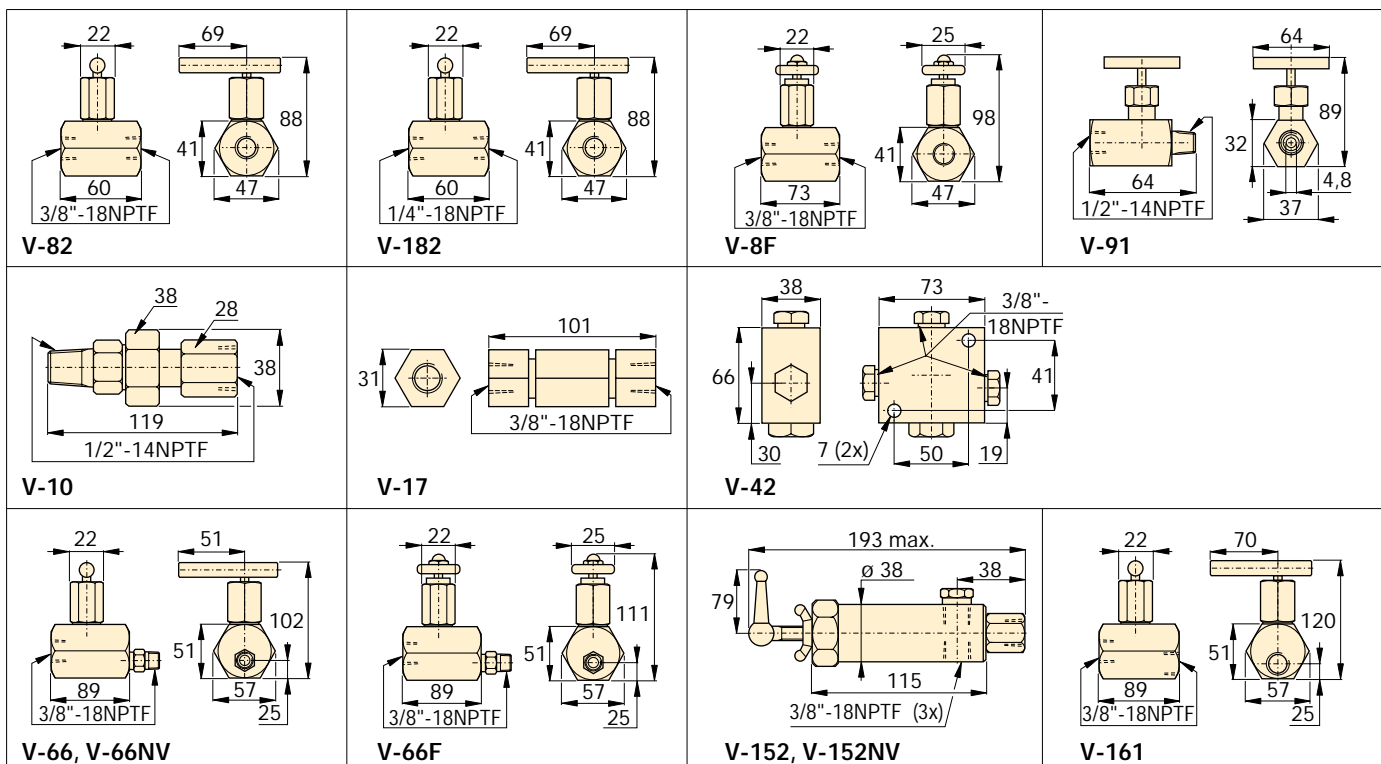
To see these valves used in typical hydraulic circuits, please see our 'Yellow Pages'.

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▼ The V-152 pressure relief valve limits the pressure or force developed in the hydraulic system.



- All valves are rated for 700 bar operating pressure
- All valves feature NPTF porting to insure against leakage at rated pressure
- All valves are painted, coated, or plated for corrosion resistance
- Viton® seals (in V-66NV and V-152NV) for high temperature applications, nickel-plated for maximum corrosion resistance



Valve dimensions in mm

# Pressure and Flow Control Valves



## Premounted Manifolds

For two or four port manifolds with integral flow control valves, see the manifold page of the System Components section.

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## Fittings


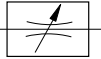

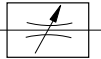



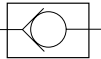

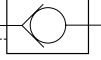

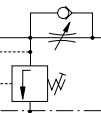

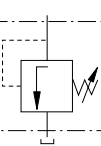

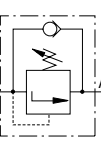
For additional fittings see the fitting page of the System Components section.

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## V Series



Maximum Operating Pressure:  
**700 bar**

Valve Type and Model Number	Description	Hydraulic Symbol
<b>Needle Valve</b> <b>V-82</b> <b>V-182</b> <b>V-8F</b>	 <p><b>V-82:</b> To control cylinder speed. Can also be used as shut-off valve for temporary load holding.  <b>V-8F:</b> Like V-82, but with very fine metering for precise flow control.  <b>V-182:</b> Same as V-82, but with 3/8" NPTF female ports.</p>	
<b>Snubber Valve</b> <b>V-91</b>	 <p><b>V-91:</b> Infinitely adjustable for metering oil out of a gauge to prevent snapping of gauge pointer when load or pressure is suddenly released. Also suitable as shut-off valve to protect the gauge during high cycling applications. 1/2" NPTF male and female threads for use with GA-1, GA-2 or GA-4 gauge adaptors.</p>	
<b>Auto Damper® Valve</b> <b>V-10</b>	 <p><b>V-10:</b> To be used when gauge pressure must be monitored during high cycle applications. Creates a flow resistance when load is released suddenly.</p>	
<b>Check Valve</b> <b>V-17</b>	 <p><b>V-17:</b> Ruggedly built to resist shock and operate with low pressure drop. Closes smoothly without pounding. 3/8" NPTF female ports.</p>	
<b>Pilot Operated Check Valve</b> <b>V-42</b>	 <p><b>V-42:</b> Can be mounted at the cylinder to hold the load in case of system pressure loss. Normally used with double-acting cylinders where pilot port receives pressure from a Tee-fitting in the cylinder retract line. 3/8" NPTF female ports. Pilot pressure ratio 14% (6,5:1).</p>	
<b>Manually Operated Check Valve</b> <b>V-66, V-66NV *</b> <b>V-66F</b>	 <p><b>V-66, V-66NV:</b> For load holding applications with single and double acting cylinders. Valves allow oil to flow back to tank when cylinder retracts. V-66NV with Viton seals, nickel-plated.  <b>V-66F:</b> Similar to V-66, but with very fine metering capability for precise flow control. V-66F is not designed for load holding.</p>	
<b>Pressure Relief Valve</b> <b>V-152</b> <b>V-152NV *</b>	 <p><b>V-152:</b> Limits pressure developed by the pump in hydraulic circuit, thus limiting the force imposed on other components. Valve opens whenever preset pressure is reached.</p> <p>To increase pressure setting, turn handle clockwise. Includes:</p> <ul style="list-style-type: none"> <li>• 0,9 m return line hose kit,</li> <li>• ± 3% repeatability,</li> <li>• 55-700 bar adjustment range.</li> </ul>	
<b>Sequence Valve</b> <b>V-161</b>	 <p><b>V-161:</b> To control oil flow to a secondary circuit. Flow is blocked until system pressure rises to the V-161 setting. When this pressure level is reached, the V-161 opens to allow flow to the secondary circuit. A pressure differential is always maintained between the primary and secondary circuit.  <b>Min. operating pressure: 140 bar.</b></p>	

\* See page 62 for more information about products for use in high temperature and extreme environment applications.