

### To Protect Your Warranty, Use Only ENERPAC Hydraulic Oil.

Energac recommends that all kit components be installed to insure optimum performance of the repaired product.

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#### SOLENOID VALVE OPERATION

Each solenoid is supplied with a DIN plug for connecting the appropriate voltage. A different solenoid is required for each voltage and the proper voltage must be connected to the valve. Voltage can be 115 VAC, 230 VAC, or 24 VDC.

When a particular coil is energized, flow will be directed to the port on the same side of the valve as the coil. For instance, to get flow out of the "A" port, the coil on the same side as the "A" port must be energized. Always refer to stamping on the remote manifold for correct port location.



**IMPORTANT:** Remote mounted valves must be equipped with a return-to-tank line. DO NOT plug the Tank Port on the valve.

#### ACCESSORY VALVES

##### Using a Pilot Operated (P.O.) Check Valve

A 3-way or 4-way P. O. check, when used, will prevent loss of pressure at the cylinder when the solenoid valve shifts. Without a P. O. check accessory valve, pressure loss will occur as the solenoid valve shifts.

##### Using the Pump Relief Valve

The relief valve can be adjusted by hand using the large hex adjustment. It will control both downstream and upstream pressure and therefore can not be used to provide independent cylinder pressures when multiple valves and cylinders are used.

#### Custom build your Modular Valves

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

<b>VE</b>	<b>A</b>	<b>-</b>	<b>1</b>	<b>5</b>	<b>600</b>	<b>-</b>	<b>D</b>
1	2		3	4	5		6
Solenoid Operated Valve	Valve Flow Path		Flow Capacity	Voltage	Accessory Valves		Manifold

#### 1 Product Type

**VE = Solenoid Operated Valve**

#### 2 Valve 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 gallons per minute

#### 4 Voltage

- 1** = 24 VDC
- 2** = 220/240 V, 1 ph, 50 Hz
- 5** = 115 V, 1 ph, 60 Hz
- 6** = 230 V, 1 ph, 60 Hz

#### 5 Accessory Valves

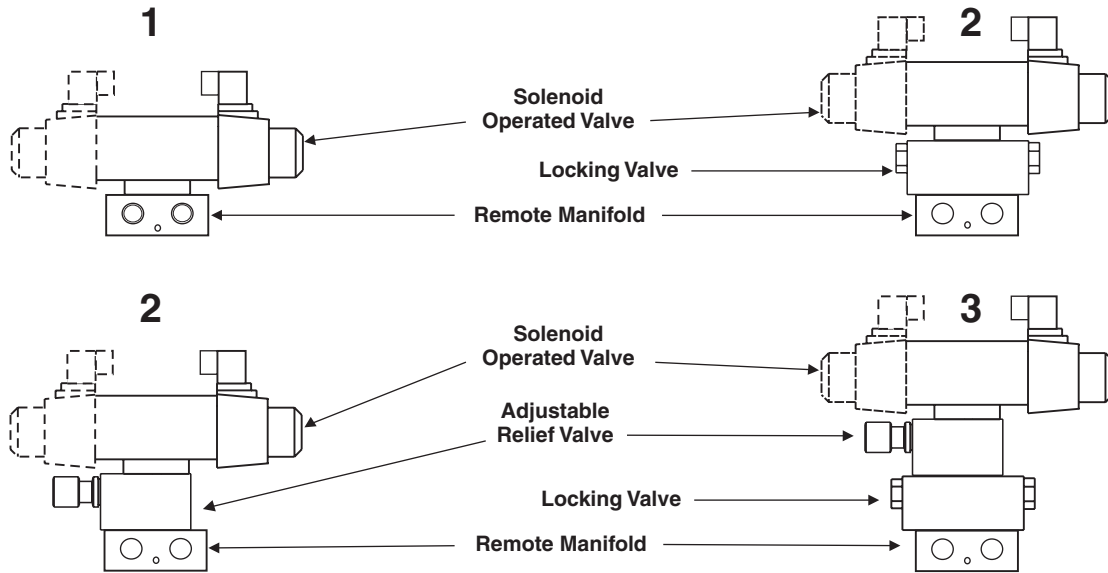
- 000** = No accessory valves
- 100** = Relief Valve only
- 150** = Relief Valve and 3-way pilot operated check valve  
**Only for VEF/VEG**
- 160** = Relief Valve and 4-way pilot operated check valve  
**Only for VEA/VEB/VEC/VED**
- 500** = 3-way pilot operated check valve  
**Only for VEF/VEG**
- 600**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

#### 6 Manifold

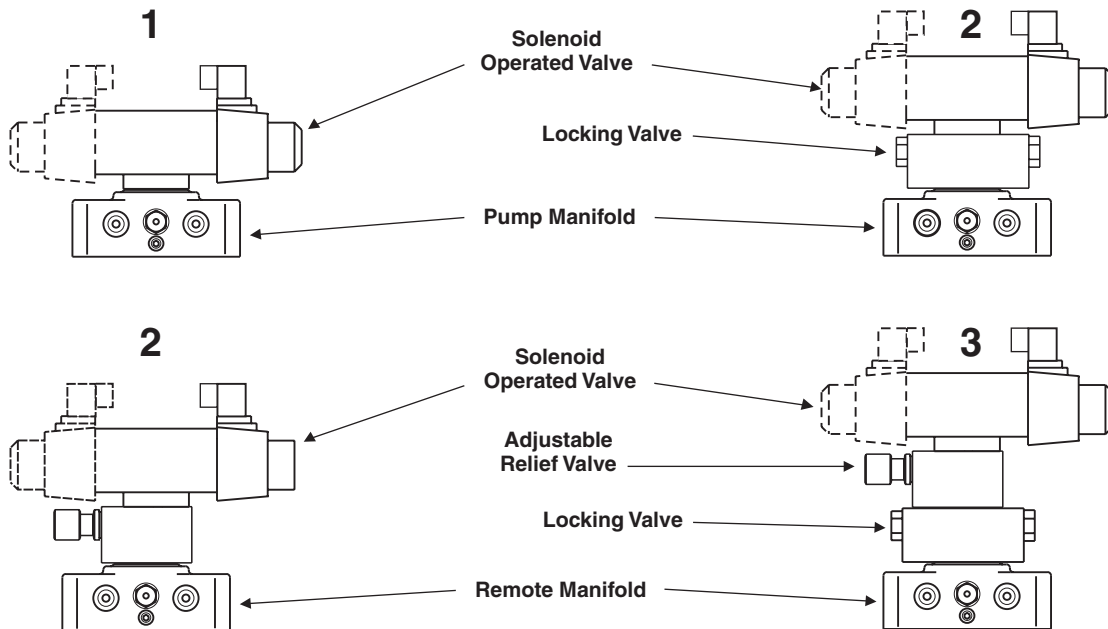
- A** = No manifold
- B** = Remote Mounted
- D** = Pump Mounted\*

\* Only for valve code:  
**VEA/VEC/VEE/VEF/VEK/VEP**

## REMOTE OPERATED VALVES:



## PUMP OPERATED VALVES:



**Figure 1, Valve Bolt Kits (Typical Valve Configurations)**

Repair Parts List for Figure 1							
Item	Part Number	Qty.	Description	Item	Part Number	Qty.	Description
1	BK1	1	Bolt Kit	3	BK3	1	Bolt Kit
2	BK2	1	Bolt Kit				

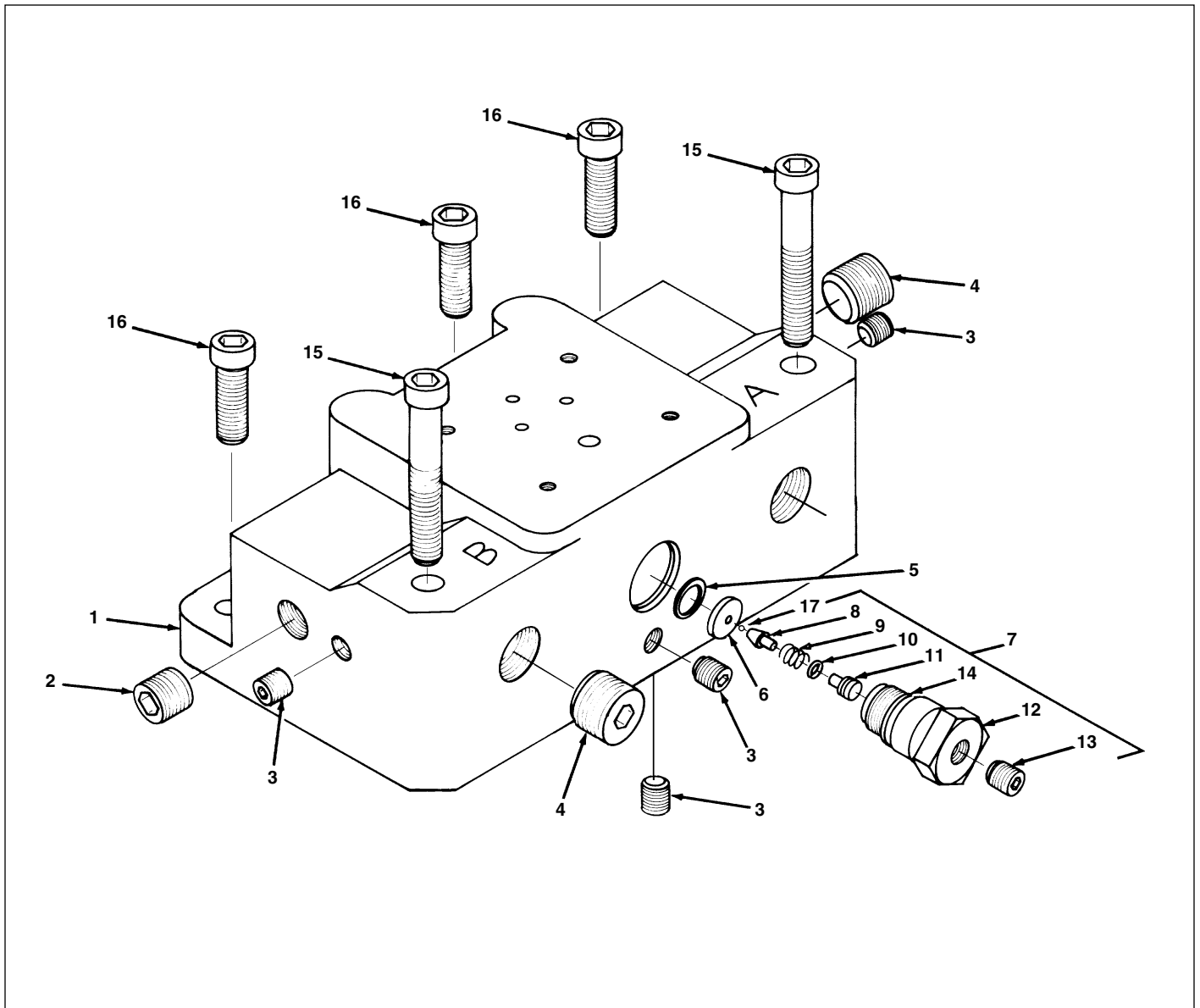


Figure 2, Pump Manifold

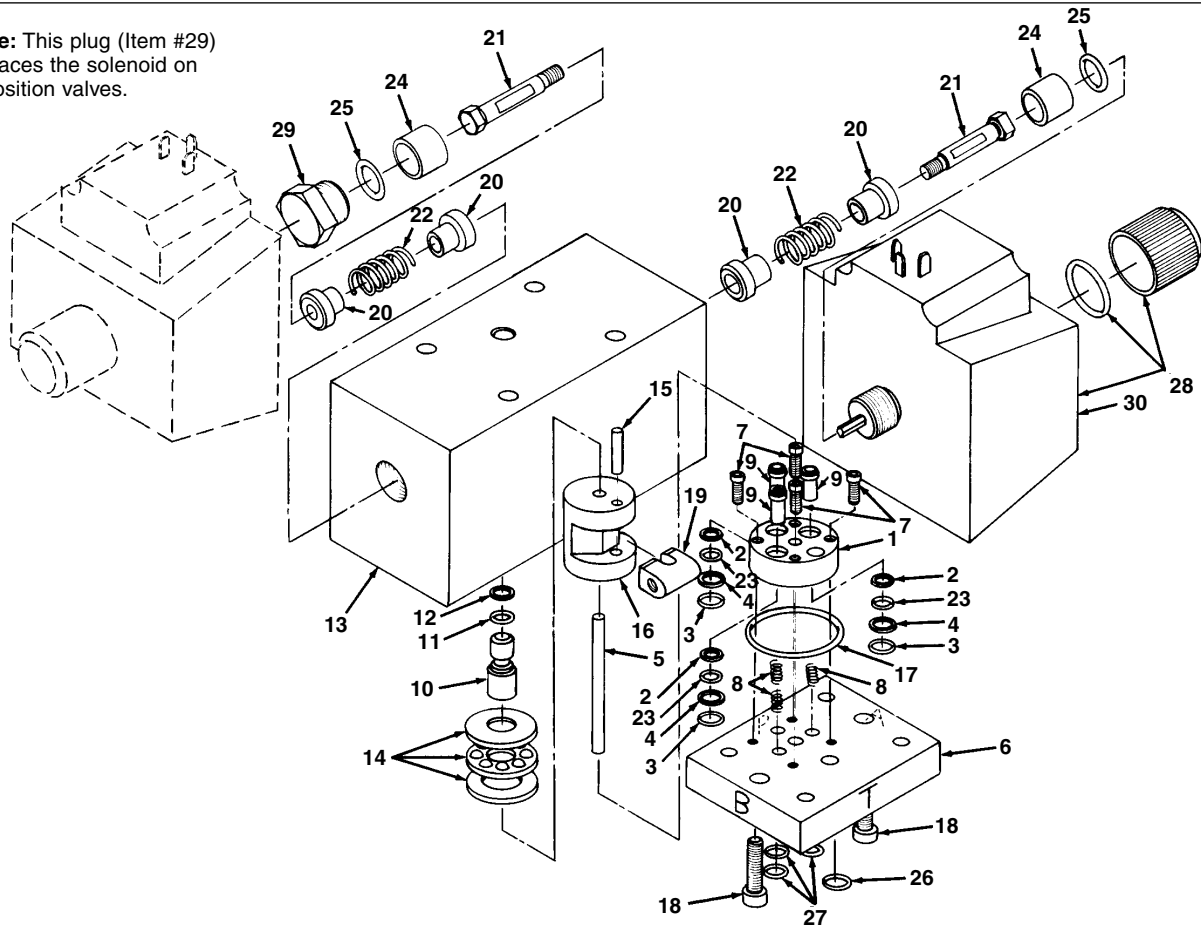
Repair Parts List for Figure 2

Item	Part Number	Qty.	Description	Item	Part Number	Qty.	Description
1	CW238005	1	Remote Mounting Base	8	CH179013	1	Ball Guide
	CR910038	1	Solenoid Valve Manifold	9	★	1	Spring
	CR909038	1	Manual Valve Manifold	10	★	1	O-Ring
2	A1008245	1	Plug	11	A8005007	1	Plug
3	A1006245	4	Plug	12	CU13190	1	Valve Body
4	A1009245	1	Plug (4-Way Valve)	13	L86028	1	Set Screw
	A1009245	2	Plug (3-Way Valve)	14	★	1	O-Ring
5	P20037	1	Gasket	15	B1359028	2	Screw
6	CB576290	1	Ball Seat	16	B1349028	3	Screw
7	CU460900SR	1	Relief Valve Assembly	17	B1003016	1	1/8" Dia. Ball

★ Items included in and available only as part of Repair Kit MVK2, with a date code beginning with the letter "O"

★ Items included in and available only as part of Repair Kit MVK3, with a date code beginning with the letter "A"

**Note:** This plug (Item #29) replaces the solenoid on 2-position valves.



**Figure 3, Modular Valve Assembly**

**Repair Parts List for Figure 3**

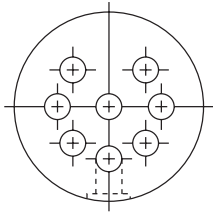
Item	Part No.	Qty.	Description	Item	Part No.	Qty.	Description	
1	*DC458101	1	Clamp Plate	18	B1321028	2	Cap Screw	
2	★	3	Back-Up: 4-Way, 3-Way Locking	19	CN624190	1	Pivot Block	
	★	2	Back-Up: 3-Way	20	CN626001	4	Spring Guide	
3	★	3	O-Ring: 4-Way, 3-Way Locking	21	CN553149	2	Shift Rod	
	★	2	O-Ring: 3-Way	22	DA11757110	2	Spring	
4	★	3	Ring: 4-Way, 3-Way Locking	23	★	3	O-ring: 4-Way, 3-Way Locking	
	★	2	Ring: 3-Way		★	2	O-ring: 3-Way	
5	CN544061	1	Dowel Pin	24	CW75186	2	Spacer	
6	*DC522190	1	Mounting Plate	25	★	2	O-Ring	
7	*DC461028	4	Cap Screw	26	★	1	O-Ring	
8	★	3	Comp. Spring: 4-, 3-Way Locking	27	★	3	O-Ring	
	★	2	Compression Spring: 3-Way	28	E1300007	2	3 Pos. Valves 115 VAC Solenoid Assy.	
9	CN628040	3	Shear Seal: 4-, 3-Way Locking		E1300007	1	2 Pos. Valves 115 VAC Solenoid Assy.	
	CN628040	2	Shear Seal: 3-Way		DA3036720		24 VDC Solenoid Assembly	
10	CU282416	1	Valve Stem		DA3035720		230 VAC Solenoid Assembly	
11	★	1	Back-Up	29	CU574006	1	Plug (2 Position only)	
12	★	1	O-Ring	30	DA3531720	2	115 V Coil (only) 3 Pos. Valves	
13	CR967190	1	Elev. Valve Housing			DA3531720	1	115 V Coil (only) 2 Pos. Valves
14	CN552107	1	Bearing			DA3532720	2	230 V Coil (only) 2 Pos. Valves
15	DA1567061	1	Needle Roller			DA3532720	1	230 V Coil (only) 3 Pos. Valves
16	See Figure 4 for Flow Path		Barrel Assembly			DA3533720	2	24 VDC Coil (only) 2 Pos. Valves
17	★	1	O-Ring			DA3533720	1	24 VDC Coil (only) 3 Pos. Valves

★ Items included in and available only as part of Repair Kit MVK2 or MVK3.

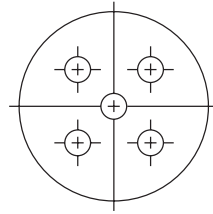
MVK2-for valves with a date code beginning with the letter "O"

MVK3-for valves with a date code beginning with the letter "A"

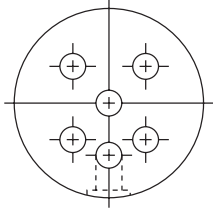
\* MVK2SR includes parts from MVK3 with additional parts to update valve to latest design



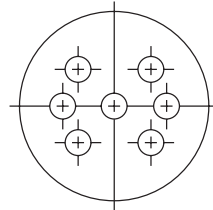
<b>Valve Code</b>	A
<b>Part Number</b>	CR378900SR
<b>Description</b>	Open Center



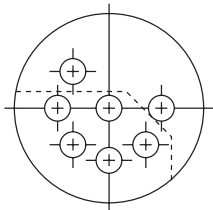
<b>Valve Code</b>	B, G, H
<b>Part Number</b>	CR376900SR
<b>Description</b>	Closed Center



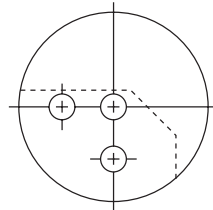
<b>Valve Code</b>	C, F
<b>Part Number</b>	CR377900SR
<b>Description</b>	Tandem Center



<b>Valve Code</b>	D, M
<b>Part Number</b>	CR375900SR
<b>Description</b>	Float Center



<b>Valve Code</b>	E
<b>Part Number</b>	CR380900SR
<b>Description</b>	Crossover Center



<b>Valve Code</b>	K, P
<b>Part Number</b>	CR379900SR
<b>Description</b>	Normally Open Center

### Valve Flow-path Codes

Symbol	Valve Flow Path	Used w/ Cylinder	Valve Code	Symbol	Valve Flow Path	Used w/ Cylinder	Valve Code
	4-way/3-position (4/3) Open Center	Double-Acting	A		3-way/3-position (3/3) Closed Center	Single-Acting	G
	4-way/3-position (4/3) Closed Center	Double-Acting	B		2-way/2-position (2/2) Normally Closed	System Un-loading	H*
	4-way/3-position (4/3) Tandem Center	Double-Acting	C		2-way/2-position (2/2) Normally Open	System Un-loading	K*
	4-way/3-position (4/3) Float Center	Double-Acting	D		4-way/2-position (4/2) Float Offset	Double-Acting	M
	4-way/2-position (4/2) Crossover Offset	Double-Acting	E		3-way/2-position (3/2) Normally Open	Single-Acting	P
	3-way/3-position (3/3) Tandem Center	Single-Acting	F	* Requires use of tank port for dump or unloading.			

Figure 4, Barrel Assembly Identification

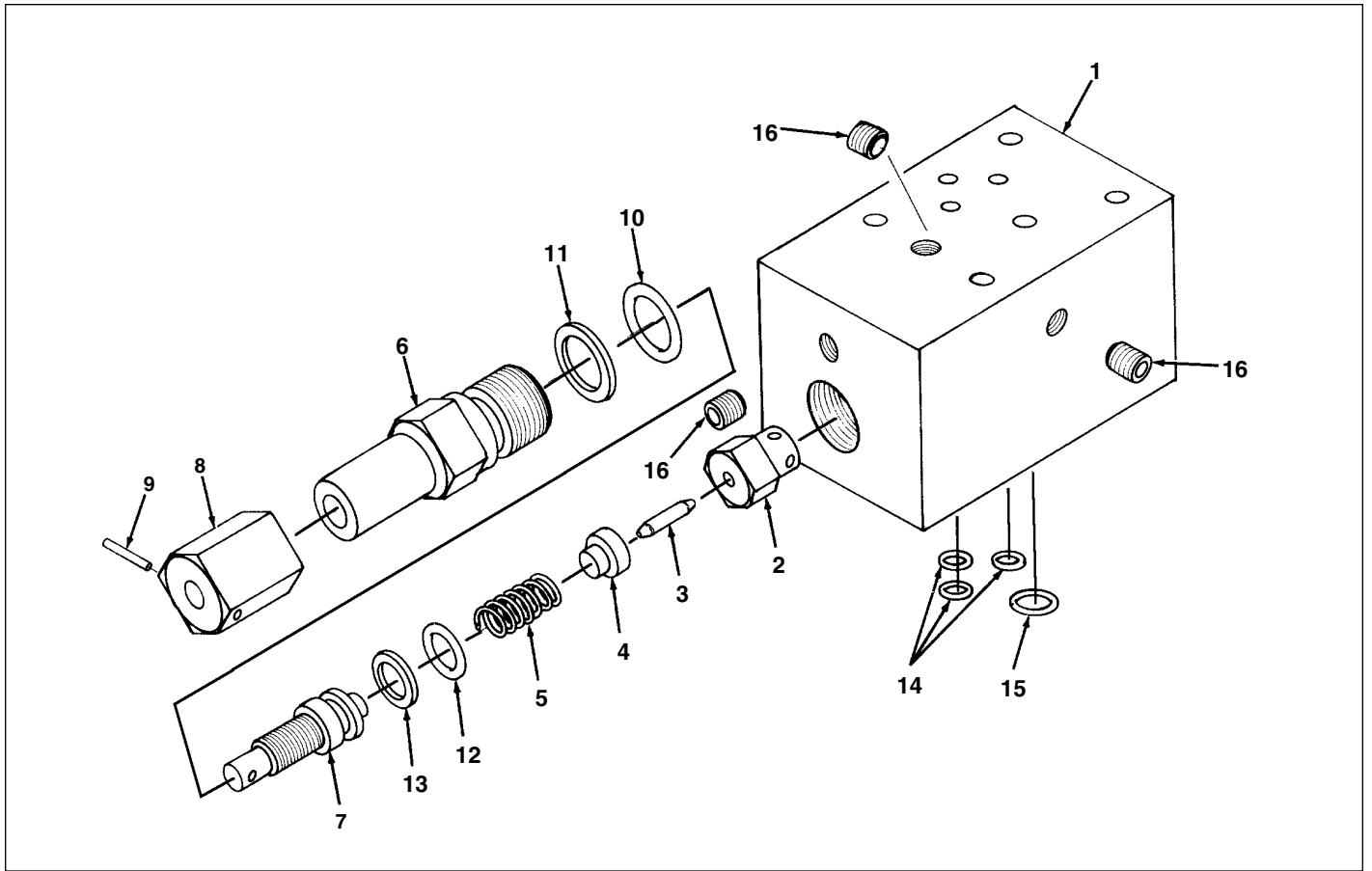


Figure 5, Relief Valve

Repair Parts List for Figure 5							
Item	Part Number	Qty.	Description	Item	Part Number	Qty.	Description
	VS11		Replacement Valve	9	B1057057	1	Spring Pin
1	CW111190	1	Relief Valve Block	10	★	1	O-Ring
2	CW112290	1	Valve Seat	11	★	1	Back-Up Washer
3	CW113051	1	Piston	12	★	1	O-Ring
4	CW114013	1	Spring Guide	13	★	1	Back-Up Washer
5	★	1	Spring	14	★	3	O-Ring
6	CW115190	1	Valve Body	15	★	1	O-Ring
7	CW116028	1	Adjustment Screw	16	A1006245	4	Pipe Plug
8	CW117020	1	Valve End Cap				

★ Items included in and available only as part of Repair Kit MVK2, with a date code beginning with the letter "O"  
 ★ Items included in and available only as part of Repair Kit MVK3, with a date code beginning with the letter "A"

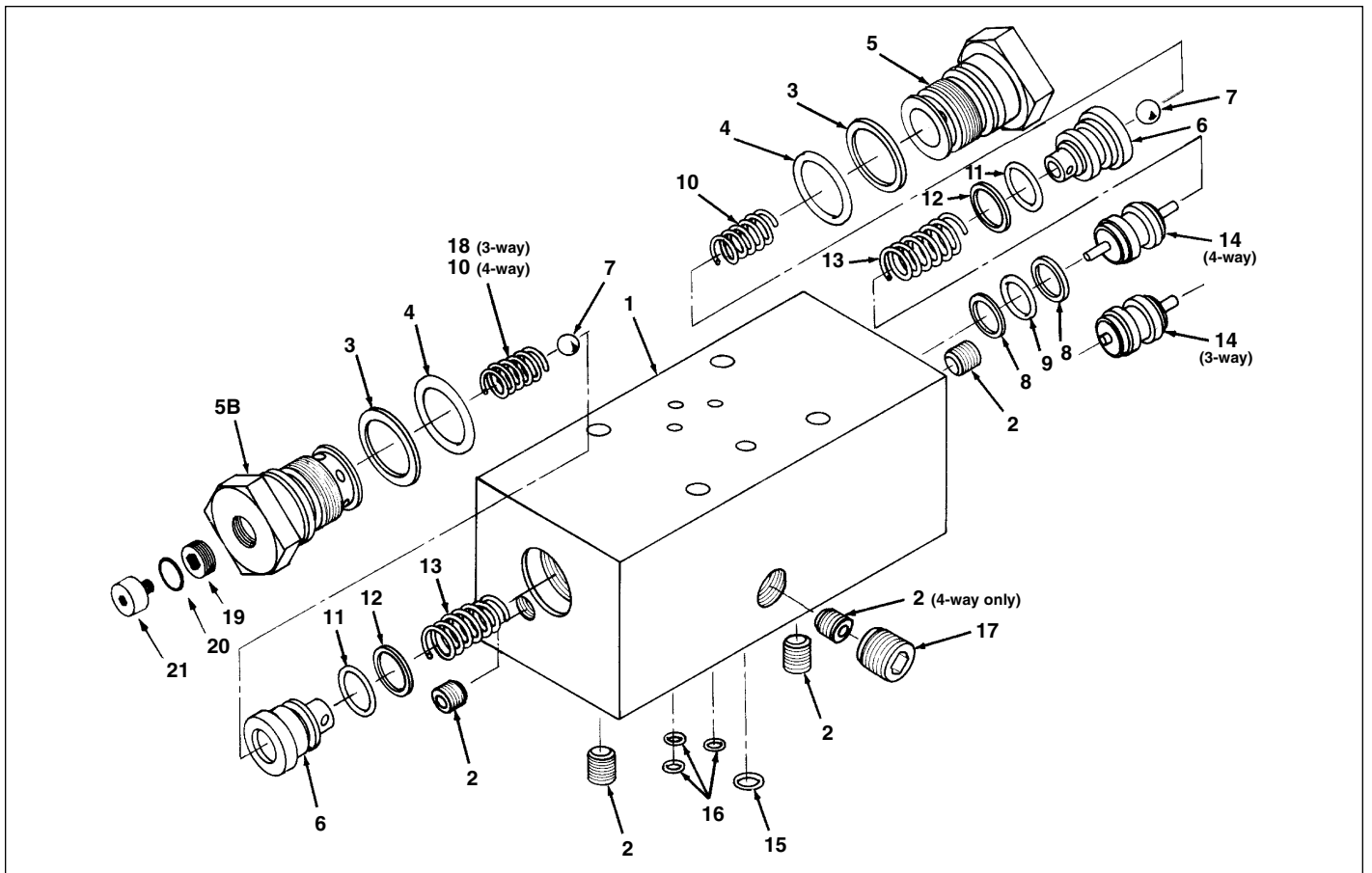


Figure 6, 3 and 4-way Locking (P.O. Check) Valves

Repair Parts List for Figure 6

Item	Part Number	Qty.	Description	Item	Part Number	Qty.	Description
	VS51		3-Way P.O. Check	10	CR121110	1	Compression Spring 3-Way Valve
	VS61		4-Way P.O. Check		CR121110	2	Compression Spring 4-Way Valve
1	CR126190	1	Valve Body	11	★	2	O-Ring
2	A1006245	4	Pipe Plug: 3-Way Valve	12	★	2	Back-Up
	A1006245	5	Pipe Plug: 4-Way Valve	13	CR122110	2	Compression Spring
3	★	2	Split Back-Up	14	DA2945051	1	Piston: 3-Way Valve
4	★	2	O-Ring		CR123051	1	Piston: 4-Way Valve
5	CR125006	2	Plug: 4-Way Valve	15	★	1	O-Ring
5B	DA4995006	1 ea. 5&5B	Plug: 3-Way Valve	16	★	3	O-Ring
6	CR124290	2	Seat	17	A1008245	1	Plug
7	★	2	Ball	18	A8126110	1	Spring, 3-Way Valve
8	★	2	Back-Up	19	DA4994028	1	Set Screw
9	★	1	O-Ring	20	★	1	Gasket
				21	B1342028	1	Screw

★ Items included in and available only as part of Repair Kit MVK2, with a date code beginning with the letter "O"

★ Items included in and available only as part of Repair Kit MVK2, with a date code beginning with the letter "A"

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