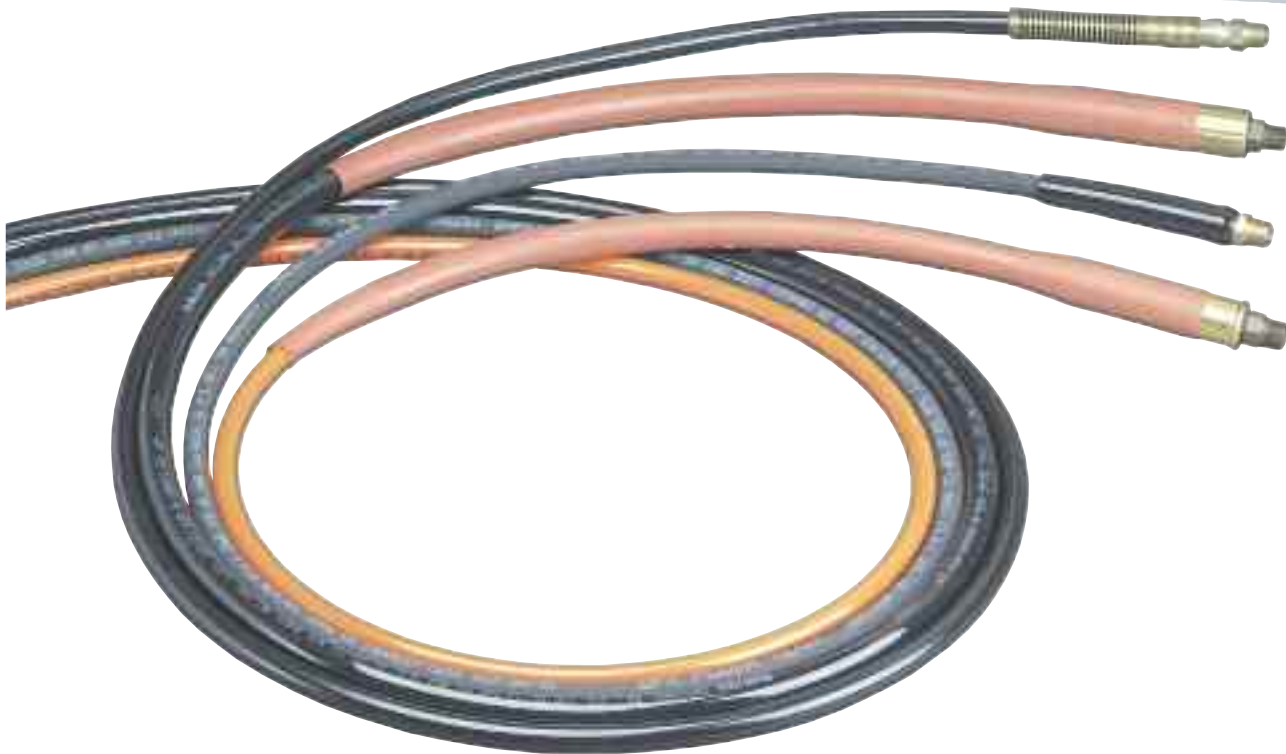


# ACCESSORIES



# HYDRAULIC ACCESSORIES





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- Urethane
- Non-Conducting



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- Oil Cooler Kits
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# HOSES

## Polyurethane Rubber Non-Conductive

- All have plastic hose guards except for the 1/4" I.D. polyurethane hoses which have spring guards.
- 3/8" NPTF fittings on both ends.
- Operating pressure is 10,000 psi. All comply with MHI standard IJ100.

### A Non-conductive hose

For applications requiring electrical isolation by the hose, non-conductive hose has a leakage factor of less than 50 microamperes, considered a safe level of conductivity by SAE standards. The covering is polyurethane and colored orange for easy identification as non-conductive hose. The covering is not perforated, preventing moisture from entering the hose and affecting its overall conductivity. All non-conductive hoses have a minimum burst pressure of 40,000 psi.

### B Rubber hose

2-ply rated hose reinforced with two braids of high tensile steel wire. The rubber covering is oil and weather resistant. These hoses are MSHA approved.

### C Polyurethane hose

Made up of nylon core tube with polyester fiber reinforcement which will withstand the minimum SAE bend radius without shortening service life. These hoses last up to seven times longer than rubber hose, and are suitable for continuous service at temperatures from -40° to 150° F.

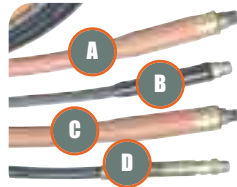
### D Hydraulic hose assembly

**No. 9764** – Hose assembly consisting of 9767 (6' hose), 1/4" I.D. polyurethane with 9798 hose half coupler and 9800 dust cap assembled.

**No. 9754** – Hose assembly consisting of 9756 (6' hose), 1/4" I.D. rubber with 9798 hose half coupler and 9800 dust cap assembled.



ACCESSORIES



A = 1/4" I.D. Polyurethane  
B = 3/8" I.D. Polyurethane  
C = 1/4" & 3/8 I.D. Rubber  
D = 1/4" I.D. Non-Conductive

### CYLINDER RETURN TIME

	No. 9769 10 Ft. Hose 1/4" I.D.	No. 9781 10 Ft. Hose 3/8" I.D.
<b>C2514C</b>	51 sec.	14 sec.
<b>C556C</b>	1 min., 30 sec.	24 sec.
<b>C5513C</b>	4 min., 12 sec.	59 sec.
<b>C10010C</b>	6 min., 56 sec.	1 min., 3 sec.

The figures show the relative effect two styles of hose can have on return time. Actual times may vary.

### ORDERING INFORMATION

Hose Type	Hose I.D.	Hose Length	Burst Rating	Order No.	Hose Type	Hose I.D.	Hose Length	Burst Rating	Order No.
Polyurethane	1/4"	2 ft.	20,000 psi	<b>9765</b>	Rubber, Wire-braid	1/4"	8 ft.	20,000 psi	<b>9757</b>
Polyurethane	1/4"	3 ft.	20,000 psi	<b>9766</b>	Rubber, Wire-braid	1/4"	10 ft.	20,000 psi	<b>9758</b>
Polyurethane	1/4"	6 ft.	20,000 psi	<b>9767</b>	Rubber, Wire-braid	1/4"	12 ft.	20,000 psi	<b>9759</b>
Polyurethane	1/4"	6 ft.	20,000 psi	<b>9764*</b>	Rubber, Wire-braid	1/4"	20 ft.	20,000 psi	<b>9760</b>
Polyurethane	1/4"	8 ft.	20,000 psi	<b>9768</b>	Rubber, Wire-braid	1/4"	30 ft.	20,000 psi	<b>9761</b>
Polyurethane	1/4"	10 ft.	20,000 psi	<b>9769</b>	Rubber, Wire-braid	1/4"	50 ft.	20,000 psi	<b>9762</b>
Polyurethane	1/4"	12 ft.	20,000 psi	<b>9770</b>	Rubber, Wire-braid	3/8" High Flow	3 ft.	20,000 psi	<b>9733</b>
Polyurethane	1/4"	20 ft.	20,000 psi	<b>9771</b>	Rubber, Wire-braid	3/8" High Flow	6 ft.	20,000 psi	<b>9776</b>
Polyurethane	1/4"	50 ft.	20,000 psi	<b>9772</b>	Rubber, Wire-braid	3/8" High Flow	10 ft.	20,000 psi	<b>9777</b>
Polyurethane	1/4"	75 ft.	20,000 psi	<b>9750</b>	Rubber, Wire-braid	3/8" High Flow	15 ft.	20,000 psi	<b>9734</b>
Polyurethane	1/4"	100 ft.	20,000 psi	<b>9751</b>	Rubber, Wire-braid	3/8" High Flow	20 ft.	20,000 psi	<b>9778</b>
Polyurethane	3/8" High Flow	6 ft.	30,000 psi	<b>9780</b>	Rubber, Wire-braid	3/8" High Flow	30 ft.	20,000 psi	<b>9735</b>
Polyurethane	3/8" High Flow	10 ft.	30,000 psi	<b>9781</b>	Rubber, Wire-braid	3/8" High Flow	40 ft.	20,000 psi	<b>9736</b>
Polyurethane	3/8" High Flow	20 ft.	30,000 psi	<b>9782</b>	Rubber, Wire-braid	3/8" High Flow	50 ft.	20,000 psi	<b>9779</b>
Polyurethane	3/8" High Flow	50 ft.	30,000 psi	<b>9783</b>	Non-Conductive	1/4"	6 ft.	40,000 psi	<b>9773</b>
Rubber, Wire-braid	1/4"	3 ft.	20,000 psi	<b>9755</b>	Non-Conductive	1/4"	10 ft.	40,000 psi	<b>9774</b>
Rubber, Wire-braid	1/4"	6 ft.	20,000 psi	<b>9756</b>	Non-Conductive	1/4"	20 ft.	40,000 psi	<b>9775</b>
Rubber, Wire-braid	1/4"	6 ft.	20,000 psi	<b>9754*</b>					

For torque wrench tools refer to page 166-169

NOTE: Polyurethane hoses not recommended for use where heat or weld splatter conditions exist.

\*Furnished with 9798 hose half coupler and 9800 dust cap.

# HOSE

## Non-Conductive

1/4 in I. D.  
10,000 psi

### NON-CONDUCTIVE HOSES

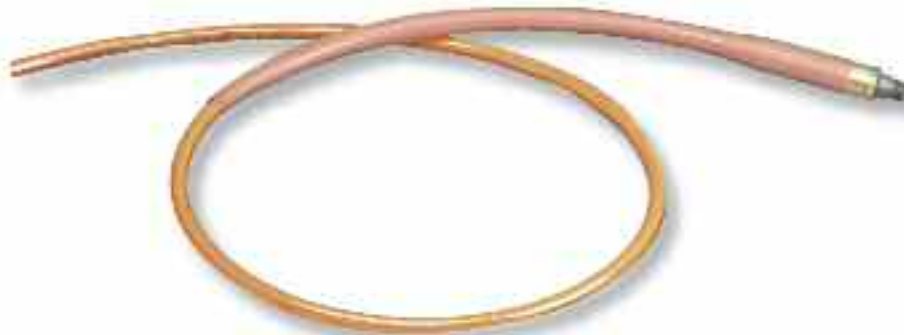
- For applications requiring electrical isolation.
- 3/8" NPTF fittings on both ends
- Leakage factor of less than 50 microampere.
- Orange polyurethane for easy identification.
- Covering is not perforated, preventing moisture from entering the hose and affecting its overall conductivity.
- Hoses feature a minimum 40,000 psi burst pressure.



TWH

#### HOSES – DUAL LINE

<b>TWH15</b>	15', 1/4" ID non-conductive
<b>TWH20</b>	20', 1/4" ID non-conductive
<b>TWH50</b>	50', 1/4" ID non-conductive



ACCESSORIES



Hose No.	Couplers/ Fitting	I. D. in.	Length ft.
<b>9773</b>	1/4" fitting	1/4	6
<b>9774</b>	1/4" fitting	1/4	10
<b>2000351</b>	1/4" fitting	1/4	15
<b>2000350</b>	1/4" fitting	1/4	25
<b>3-3944*</b>	Male/Male Couplers	1/4	6
<b>3-3945*</b>	Male/Male Couplers	1/4	10
<b>3-3946*</b>	Male/Male Couplers	1/4	15
<b>3-3947*</b>	Male/Male Couplers	1/4	25
<b>3-3956*</b>	Male/Female Couplers	1/4	6
<b>3-3957*</b>	Male/Female Couplers	1/4	10
<b>3-3958*</b>	Male/Female Couplers	1/4	15
<b>3-3959*</b>	Male/Female Couplers	1/4	25

\* Hoses are prefilled with hydraulic fluid

# COUPLERS

## Standard & Flush-Face



9795 Cylinder and  
Hose Couplers



9796



9798



9794 No-Spill  
Hose Couplers



9792

9793



9797



9799



9800

### CYLINDER AND HOSE COUPLERS

Designed for use up to 10,000 psi with hydraulic jacks, cylinders, etc.

They are the threaded union type for interchanging cylinders in seconds. Each half is valved with a precision ball for a tight shutoff when disconnected. These couplers also permit the separation of cylinders or hose from pump when at 0 psi with minimal oil loss.

**No. 9795** – Complete quick coupler,  $\frac{3}{8}$ " NPTF. (Includes two 9800 dust caps.)

**No. 9798** – Male (hose) half coupler (less hose half dust cap),  $\frac{3}{8}$ " NPTF.

**No. 9796** – Female (cylinder) half coupler with No. 9800 dust cap,  $\frac{3}{8}$ " NPTF.

**No. 9796-V** – Same as 9796, but with Viton seals.

**No. 9796-E** – Same as 9796, but with EPR seals.

**No. 9799** – Optional metal dust cap (hose half).

**No. 9797** – Optional metal dust cap (cylinder half).

### NO-SPILL, PUSH-TO-CONNECT HYDRAULIC HOSE COUPLERS

High flow, no-spill, push-to-connect couplers with locking collar and flush face designed for high pressure applications. The flush-face concept makes it easy to clean both coupler ends before connecting. Our unique push-to-connect, "dry-break" design eliminates oil spillage. The locking collar makes accidental disconnects a thing of the past. For 10,000 psi operation. Designed to permit high oil flow.

**No. 9792** – Female (cylinder) half quick coupler only. Wt., 0.3 lb.

**No. 9793** – Male (hose) half quick coupler only. Wt., 0.3 lb.

**No. 9794** – Complete quick coupler (male and female). Dust caps not included. Wt., 0.5 lb.

### HYDRAULIC COUPLER DUST CAP

Dust cap fits either male or female half couplers.

**No. 9800** – Dust cap. For male or female  $\frac{3}{8}$ " NPTF half couplers. Wt., 0.3 lb.

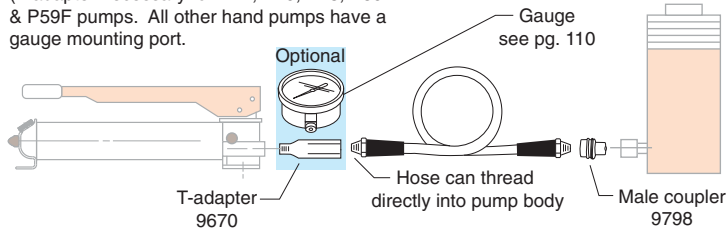


# HAND PUMP

## System with Connections

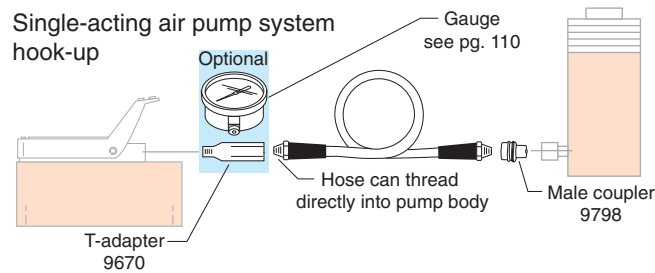
### Hand pump system hook-up

(T-adapter necessary for P12, P19, P23, P59 & P59F pumps. All other hand pumps have a gauge mounting port.



### Single-acting air pump system hook-up

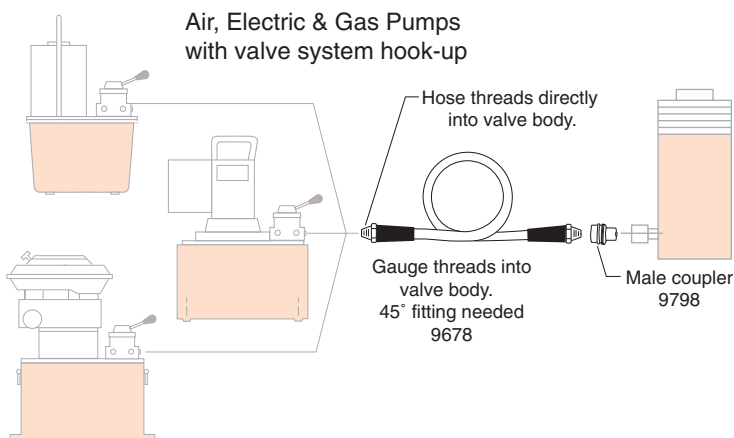
(T-adapter necessary for P12, P19, P23, P59 & P59F pumps. All other hand pumps have a gauge mounting port.)



ACCESSORIES



### Air, Electric & Gas Pumps with valve system hook-up



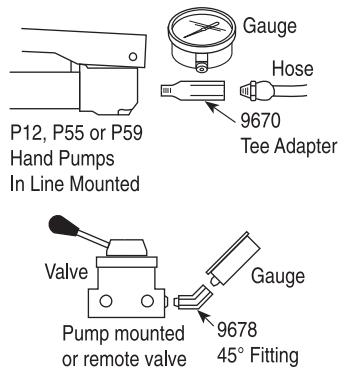
# GAUGES

## Analog & Digital

ASME B40.1  
GRADE B



### Typical Mounting Situations



DG100



ACCESSORIES

### Heavy-duty Hydraulic Pressure Gauges

- Gauges feature an easily readable and highly visible, red day-glo needle.
- High strength steel bourdon tube ensures high cycle life.
- Stainless steel cases and lens locking rings.
- 4" and 6" dry gauges can be filled with silicone (Kit #9046).
- Have 1/4" NPT connections.
- Calibratable gauge

### Digital Pressure Gauges

- Accurate to within 1%.
- Larger display characters than ordinary digital gauges.
- Long-life pressure transducer.
- 1/4" NPTF male threads for the pressure connection.
- 6-foot signal input cable connects to back of display unit.

### FEATURES

- Pressure values are displayed on large red LEDs in 10 psi or bar increments.
- "Peak" hold feature with reset toggle switch and "Peak On" indicator; Hi/Low set point feature with relay outputs for Hi/Low alarms and/or control signals.

- A slow flashing display indicates pressure below the low limit; fast blinking display alerts if limit is exceeded.
- High and low limit relays are rated to 5 amps at 115 volts.
- Operating temperature of 0-140°F for the electronic display and -20 to 180°F for the transducer. Gauge housings are extruded aluminum 1/8 DIN enclosures (NEMA 1 rating).
- When power cable is connected to gauge, display will scroll all characters, performing a self-diagnostic routine.

**Digital Pressure Gauge**

**No. DG100** – Digital pressure gauge, pressure range 0-10,000 psi. Note: Serviced only at factory. Wt., 2.3 lbs.

**No. DG100B** – Digital pressure gauge, pressure range 0-700 bar. Note: Serviced only at factory. Wt., 2.3 lbs.

**Digital Pressure Gauge Accessories**

**No. 420778** – Gauge stand for DG100. Has angled base mounting to hold gauge at a convenient viewing angle. Wt., 1.2 lbs.

**No. 37045** – Auxiliary power cord for use with any 12 or 24V battery. Wt., 0.2 lb. Caution: For use on negative ground systems only.

**Standard Pressure Gauge Accessories**

**No. 9046** – Silicone fill kit. 7.5 fl. oz. Requires one bottle to fill 4" gauge; four bottles to fill 6" gauge.

**No. 9049** – High performance pulsation dampener. 1/4" NPTF male x 1/4" NPTF female.



**STANDARD PRESSURE GAUGE ORDERING INFORMATION**

Face Dia.	psi/Bar	Tons	Major Graduations	Minor Graduations	Silicone Filled	Use With Cylinder Series	Gauge No.
2 1/2"	0-10,000/0-690	–	2500 psi, 100 Bar	500 psi, 20 Bar	No	All	<b>9041</b>
2 1/2"	0-10,000/0-690	–	2500 psi, 100 Bar	500 psi, 20 Bar	Yes	All	<b>9040</b>
4"	0-10,000/0-690	–	1000 psi, 100 Bar	200 psi, 10 Bar	No*	All	<b>9051</b>
4"	0-10,000/0-690	–	1000 psi, 100 Bar	200 psi, 10 Bar	Yes	All	<b>9052</b>
4"	0-10,000/0-690	0-17.5, 0-30 and 0-50	2000 psi, 5 Ton	200 psi, .5 Ton on 30, 50 Ton Scales; .2 Ton on 17.5 Ton Scale	No*	RT172, RT302, RT503	<b>9059</b>
4"	0-10,000/0-690	0-5	2000 psi, 1 Ton	200 psi, .1 Ton	No	C & RLS	<b>9053</b>
4"	0-10,000/0-690	0-10	2000 psi, 1 Ton	200 psi, .1 Ton	No*	C, RD, RH, RLS & RSS	<b>9055</b>
4"	0-10,000/0-690	0-25	2000 psi, 5 Ton	200 psi, .5 Ton	No*	C & RD	<b>9063</b>
4"	0-10,000/0-690	0-30	2000 psi, 5 Ton	200 psi, .5 Ton	No*	RH†, RLS & RSS	<b>9065</b>
4"	0-10,000/0-690	0-50	2000 psi, 5 Ton	200 psi, .5 Ton	No*	RH†, RLS & RSS	<b>9067</b>
4"	0-10,000/0-690	0-55	2000 psi, 5 Ton	200 psi, .5 Ton	No*	C, R, RA & RD	<b>9069</b>
4"	0-10,000/0-690	0-60	2000 psi, 5 Ton	200 psi, 1 Ton	No*	RH	<b>9071</b>
4"	0-10,000/0-690	0-100	2000 psi, 10 Ton	200 psi, 1 Ton	No*	C, R, RA, RD, RH, RLS†, RSS† & RT1004†	<b>9075</b>
4"	0-10,000/0-690	0-150	2000 psi, Initial 10 Then 20 Ton	200 psi, 2 Ton	No*	C, R, RD & RLS	<b>9077</b>
4"	0-10,000/0-690	0-200	2000 psi, 20 Ton 10 Then 20 Ton	200 psi, 2 Ton	No*	R, RD & RH†	<b>9079</b>
6"	0-10,000/0-690		1000 psi, 100 Bar	100 psi, 10 Bar	No*	All	<b>9089</b>

\* Shipped “dry.” User can convert to “wet” using liquid silicone No. 9046.

† The tonnage scale on the gauge may vary slightly among different series cylinders due to different effective area.

# HYDRAULIC FLUIDS

Standard, Flame Out®, Biodegradable and Low Temp.



Oil Description	Qty.	Order No.
Standard Oil	1 qt. (57 cu. in.)	<b>9636</b>
Standard Oil	1 gal. (231 cu. in.)	<b>9637</b>
Standard Oil	2½ gal. (577 cu. in.)	<b>9638</b>
Standard Oil	55 gal.	<b>9616</b>
Flame-Out*	1 gal. (231 cu. in.)	<b>9639</b>
Flame-Out*	2½ gal. (577 cu. in.)	<b>9640</b>
Biodegradable	1 gal. (231 cu. in.)	<b>9645</b>
Biodegradable	2½ gal. (577 cu. in.)	<b>9646</b>
Low Temp.	1 gal. (231 cu. in.)	<b>9647</b>



Description	Grade (ASTM)	Specific Gravity		Flash Point	Fire Point	Pour Point	Viscosity		Foam Test (ASTM)
		@ 60°F (16°C)	Color (ASTM)				SUS @ 100°F (38°C)	SUS @ 210°F (99°C)	
Standard Oil	215	.88	2.0	400°F (204°C)	430°F (221°C)	-30°F (-34°C)	215	48	100 min.
Flame-Out*	220	.91	Light Amber	500°F (260°C)	550°F (288°C)	-15°F (-26°C)	220	55	140 min.
Biodegradable	—	.92	2.0	432°F (224°C)	NA*	-22°F (-30°C)	183	53	213 min.
Low Temp.	—	.87	6.5 (Red)	356°F (180°C)	399°F (204°C)	-48°F (-45°C)	183	52	190 min.

### Standard Hydraulic Oil

- For dependable performance of all your hydraulic pumps and cylinders.
- Contains foam suppressant additives and has a high viscosity index.

### Flame-Out® 220 fire resistant hydraulic fluid\*

- Contains anti-rust, anti-foam and anti-sludge additives.
- Provides fire resistant protection.  
**(Note: Will burn if heat source is extreme enough. Will not, however, propagate the flame and is self-extinguishing when there is no ignition source.)**
- Provides maximum lubrication and heat transfer.
- Offers a wider operating temperature range.
- No need to change seals in your Power Team equipment. Just drain the standard oil and replace it with Flame-Out 220.

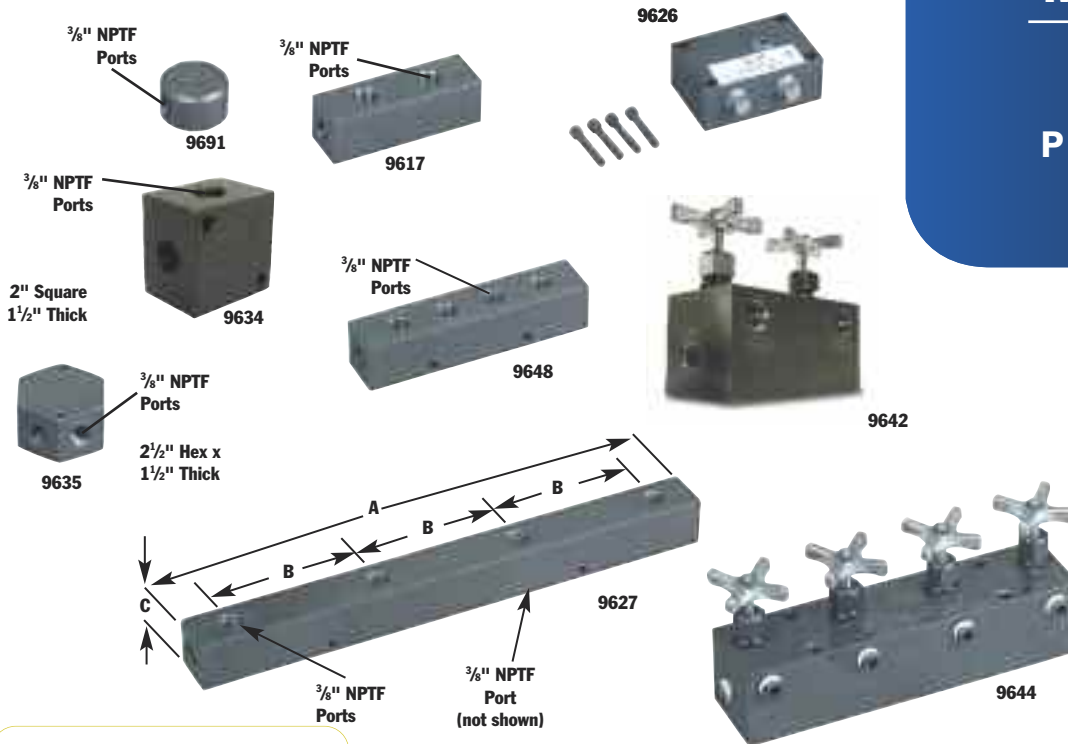
### Biodegradable Hydraulic Fluid

- Biodegradable, non-toxic fluid withstands moderate to severe operating conditions; provides excellent protection against rust.
- Offers superior anti-wear properties, has excellent multi-metal compatibility. Developed to meet stringent performance requirements and satisfy growing environmental needs for hydraulic fluids which are readily biodegradable and non-toxic. Can be used with all Power Team pumps, cylinders, valves and other accessories using standard seals. Depending on the contamination or degradation levels which might be present in used fluid, small amounts of this substance, if spilled, will not affect ground water or the environment. Acceptable methods of disposal include use as a fuel supplement. Since this fluid

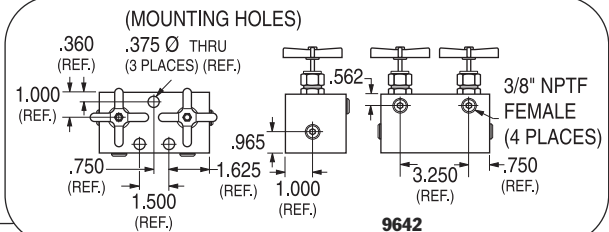
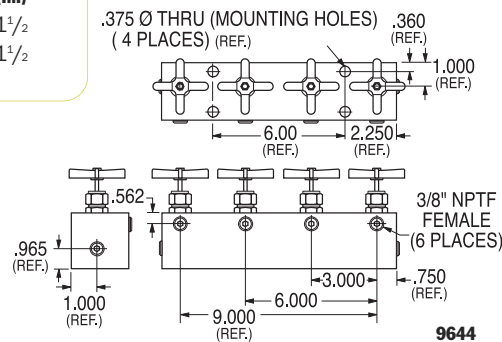
will not typically be hazardous waste, additional disposal options may be available, including land farming or processing through sewage treatment facilities, if necessary approvals are obtained from appropriate regulatory authorities. This fluid has been tested against EPA 560/6-82-003 and OECD 301 for biodegradability, and toxicity has been tested against EPA 560/6-82-002 and OECD 203: 1-12. Not recommended for operation in temperatures below 20°F (-7°C) or above 160°F (71°C). Recommended storage temperatures not below -10°F (-23°C) or above 170°F (77°C). For additional technical information or to order a **MATERIAL SAFETY DATA SHEET** call **1-800-477-8326** or go to **www.powerteam.com**.  
**Low-Temperature Oil**  
Provides smooth, reliable operation in the coldest climate conditions.

# MANIFOLDS

## Remote and Pump-Mounted



Manifold No.	A (In.)	B (In.)	C (In.)
9627	16	4 $\frac{1}{2}$	1 $\frac{1}{2}$
9648	7	1 $\frac{1}{2}$	1 $\frac{1}{2}$



ACCESSORIES



### No. 9691 – “Y” Manifold

Extremely useful when connecting two hydraulic cylinders to a single line. Has three  $\frac{3}{8}$ " NPTF ports. Wt. 1 lb.

### No. 9634 – Manifold block

This manifold is for multiple-cylinder installations, has four  $\frac{3}{8}$ " NPTF ports and two  $\frac{1}{4}$ " mounting holes. Wt. 1.5 lbs.

### No. 9635 – Manifold block

This hex-shaped manifold offers extra versatility with six  $\frac{3}{8}$ " NPTF ports and two  $\frac{1}{4}$ " mounting holes. Wt. 2 lbs.

### No. 9617 – Manifold block

When a multiple-cylinder installation is required, this manifold is invaluable. Has six  $\frac{3}{8}$ " NPTF ports to handle larger multiple-cylinder systems. Wt. 3 lbs.

### No. 9648 – Manifold block

This 7" long manifold block has seven  $\frac{3}{8}$ " NPTF ports and two  $\frac{1}{4}$ " mounting holes. Wt. 2.7 lbs.

### No. 9627 – Manifold block

This 16" long manifold block allows you to mount the 9575 or 9596 valves without interference. Has seven  $\frac{3}{8}$ " NPTF ports and two  $\frac{1}{4}$ " mounting holes. Wt. 6 lbs.

### No. 9626 – Pump mounted manifold block

Converts pumps with pump mounted valves for use with remote mounted valves. This manifold block is subplate mounted on the pump cover plate and provides  $\frac{3}{8}$ " NPTF pressure and return ports. Maximum recommended flow rate is 5 gpm. Note: If used on PE30

or PG30 series pump,  $\frac{1}{2}$ " longer mounting screws are required. Order four (4) No. 11956 screws separately.

### 9642 AND 9644 MANIFOLD BLOCKS WITH NEEDLE VALVES

For independent multiple-cylinder operation, feature needle valves for precise manual control. Designed for remote-mounted applications. Can be used with all Power Team pumps.

**No. 9642** – Manifold with two needle valves for control of two cylinders. Has four  $\frac{3}{8}$ " NPTF ports. Wt. 8.2 lbs.

**No. 9644** – Manifold with four needle valves for control of four cylinders. Has six  $\frac{3}{8}$ " NPTF ports. Wt. 16.2 lbs.

# FITTINGS

10,000 PSI

Hydraulic fittings:  
All applications.



	<b>9190</b>	Hyd. tubing. $\frac{3}{8}$ " O.D. x .065" wall, 50 ft. (10 pieces 5 feet long.) Wt. 12 lbs.
	<b>9670</b>	Tee adapter. For installing gauge between pump and hose coupling. Has $\frac{1}{4}$ " and $\frac{3}{8}$ " NPTF female and $\frac{3}{8}$ " NPTF male ports. Wt. 0.5 lb.
	<b>9671</b>	Double tee adapter. Permits use of more than one cylinder in series with one pump. Three $\frac{3}{8}$ " NPTF female ports. Wt. 1 lb.
	<b>9672</b>	Service tee. Two $\frac{3}{8}$ " NPTF female internal, one $\frac{3}{8}$ " NPTF male external. Wt. 0.6 lb.
	<b>9673*</b>	Swivel connector. $\frac{3}{8}$ " NPSM male, $\frac{1}{4}$ " NPSM female. Wt. 0.2 lb.
	<b>9674</b>	Male connector. $1\frac{11}{16}$ " long, $\frac{1}{4}$ " x $\frac{3}{8}$ " NPTF. Wt. 0.2 lb.
	<b>9675*</b>	Swivel connector. $\frac{3}{8}$ " NPTF male, $\frac{3}{8}$ " NPSM female. Wt. 0.2 lb.
	<b>9676*</b>	Swivel connector. $\frac{1}{4}$ " NPTF male, $\frac{3}{8}$ " NPSM female. Wt. 0.2 lb.
	<b>9677*</b>	45° swivel connector. $\frac{3}{8}$ " NPTF male, $\frac{3}{8}$ " NPSM female. Wt. 0.3 lb.
	<b>9678</b>	45° fitting. Used when mounting gauge at an angle on connection such as 9670. Male and female $\frac{1}{4}$ " NPTF ends. Wt. 0.3 lb.
	<b>9679</b>	Connector. $\frac{1}{4}$ " NPTF female and $\frac{3}{8}$ " NPTF male. Wt. 0.1 lb.
	<b>9680</b>	Coupling. Both ends $\frac{3}{8}$ " NPTF female. Wt. 0.2 lb.
	<b>9681</b>	Street elbow. Male and female $\frac{3}{8}$ " NPTF ends. Wt. 0.3 lb.
	<b>9682</b>	Male connector. $1\frac{11}{16}$ " long, $\frac{3}{8}$ " NPTF male ends. Wt. 0.1 lb.

	<b>9683</b>	Male connector. $2\frac{1}{4}$ " long, $\frac{3}{8}$ " NPTF male ends. Wt. 0.2 lb.
	<b>9684</b>	Male connector. $2\frac{1}{4}$ " long, $\frac{1}{4}$ " NPTF male ends. Wt. 0.2 lb.
	<b>9685</b>	Coupling. $\frac{1}{4}$ " NPTF female and $\frac{3}{8}$ " NPTF female. Wt. 0.2 lb.
	<b>9686</b>	90° elbow. $\frac{3}{8}$ " NPTF female ends. Wt. 0.4 lb.
	<b>9687</b>	Pipe plug. Heat-treated, $\frac{3}{8}$ " NPTF. Wt. 0.1 lb.
	<b>9688</b>	Pipe plug. Heat-treated, $\frac{1}{4}$ " NPTF. Wt. 0.1 lb.
	<b>9689</b>	Connector. $\frac{1}{4}$ " NPTF male and $\frac{3}{8}$ " NPTF female. Wt. 0.2 lb.
	<b>9690</b>	Male connector. $1\frac{11}{16}$ " long, $\frac{1}{4}$ " NPTF male ends. Wt. 0.1 lb.
	<b>9692</b>	Straight connector. $\frac{3}{8}$ " tube x $\frac{3}{8}$ " male NPTF. Wt. 0.2 lb.
	<b>9693</b>	90° elbow. $\frac{3}{8}$ " tube x $\frac{3}{8}$ " male NPTF. Wt. 0.2 lb.
	<b>9694</b>	45° elbow. $\frac{3}{8}$ " tube x $\frac{1}{4}$ " male NPTF. Wt. 0.2 lb.
	<b>9695</b>	Tee. $\frac{3}{8}$ " tube. Wt. 0.3 lb.
	<b>9696</b>	Male run tee. $\frac{3}{8}$ " tube x $\frac{1}{4}$ " male NPTF. Wt. 0.3 lb.
	<b>9697</b>	Male branch tee. $\frac{3}{8}$ " tube x $\frac{1}{4}$ " male NPTF. Wt. 0.3 lb.
	<b>9698</b>	Cross. $\frac{3}{8}$ " tube. Wt. 0.4 lb.
	<b>9699</b>	45° gauge fitting. $\frac{3}{8}$ " NPTF male and female, and $\frac{1}{4}$ " NPTF female at 45°. Wt. 0.6 lb.
	<b>9705</b>	Fitting, swivel. $\frac{3}{8}$ " NPTF male to $\frac{3}{8}$ " NPTF female. 90° fitting with internal 370 micron screen. May be rotated 360° about male thread axis.

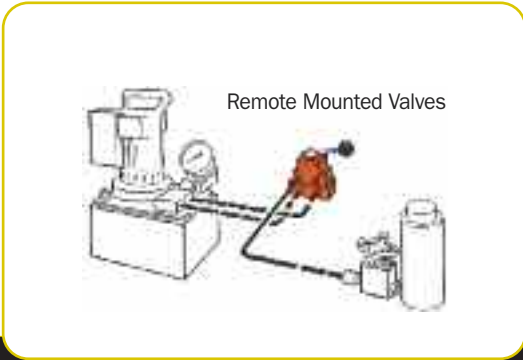
NOTE: Power Team hydraulic fittings are intended for use with our high pressure hydraulic products and are suitable for use at max. working pressures of 10,000 psi unless otherwise noted.

\* **CAUTION:** On part numbers 9673, 9675, 9676 and 9677 the female swivel end of these adapters is a straight pipe thread (NPSM) with a 30° seat. All male pipe fittings that are used with these female swivel adapters must have an internal 30° seat in order to effect a proper seal. All Power Team male fittings are manufactured with a 30° seat except 9687 and 9688.

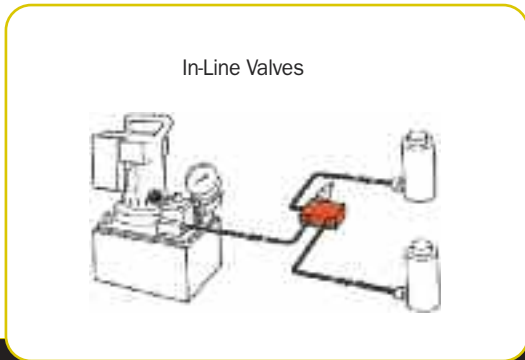


# VALVES

## Remote/In-Line Valve selection chart



Order No.	Page No.	*Cylinder Application	Operation	Valve Type	Volt	Advance/Return	Advance/ Hold Return	Posi-Check® Feature
9508	117	S.A. & D.A.	Manual	4-way, 3 Pos. Closed Center	—	no	yes	yes
9509	117	S.A. & D.A.	Manual	4-way, 3 Pos. Tandem Center	—	no	yes	yes
9514	117	D.A.	Solenoid	4-way, 3 Pos. Tandem Center	115	no	yes	yes
9524	116	S.A. & D.A.	Solenoid	3/4-way, 2 Pos.	230	no	yes	no
9525	117	D.A.	Solenoid	4-way, 3 Pos. Tandem Center	230	no	yes	yes
9526	117	S.A.	Solenoid	3-way, 2 Pos.	230	no	yes	no
9554	116	S.A. & D.A.	Solenoid	3/4-way, 2 Pos.	24	no	yes	no
9555	117	D.A.	Solenoid	4-way, 3 Pos. Tandem Center	24	no	yes	yes
9556	117	S.A.	Solenoid	3-way, 2 Pos.	24	no	yes	no
9559	117	S.A.	Solenoid	3-way, 2 Pos.	115	no	yes	no
9593	116	S.A. & D.A.	Solenoid	3/4-way, 2 Pos.	115	no	yes	no
9595	116	S.A. & D.A.	Air	3/4-way, 2 Pos.	—	no	yes	no



Order No.	Page No.	*Cylinder Application	Operation	Valve Type	Volt	Advance/Return	Advance/ Hold Return	Posi-Check® Feature
9575	118	S.A.	Manual	Shut-Off Valve	—	—	—	—
9580	119	S.A.	Automatic	One-way Check Valve	—	—	—	—
9581	119	S.A. & D.A.	Automatic	Pilot Op. Check Valve	—	—	—	—
9596	118	S.A.	Manual	Load Lowering Valve	—	—	—	—
9597	118	S.A. & D.A.	Automatic	Sequence Valve	—	—	—	—
9608	118	S.A. & D.A.	Automatic	Pressure Reducing Valve	—	—	—	—
9623	119	S.A. & D.A.	Automatic	Pressure Relief Valve	—	—	—	—
9631	119	S.A. & D.A.	Automatic	Metering Valve	—	—	—	—
9633	119	S.A. & D.A.	Automatic	Pressure Regulator Valve	—	—	—	—
9720	118	S.A. & D.A.	Automatic	Counter Balance Valve	—	special	—	—
9721	118	S.A. & D.A.	Automatic	Counter Balance Valve	—	special	—	—
RV21278	119	—	Automatic	Relief Valve	—	—	—	—

\*S.A. represents single-acting cylinders, \*D.A. represents double-acting cylinders.  
For pump-mounted valves, see pages 51-57.

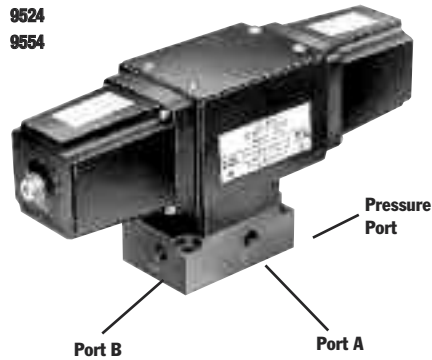
# VALVES

## Remote Mounted

10,000 psi.,

1/4" ports 5 gpm max flow

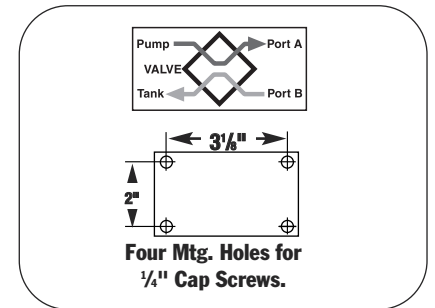
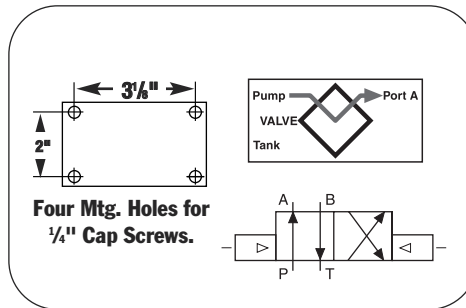
9593  
9524  
9554



9595



### 3/4-WAY/2-POSITION SOLENOID AND AIR ACTUATED VALVES



#### Application: Single- or double-acting cylinders.

**Actuation:** 9593, 9524 and 9554 are solenoid operated, 9595 is air operated.

**Operation with single-acting cylinder:** Either oil port "A" or "B" must be plugged on valve. With port "B" plugged, solenoid is energized to position "A," oil port "A" becomes pressurized. When solenoid is energized to position "B," oil port "A" becomes the return port.

**Operation with multiple single-acting cylinders:** A pressure line from one bank can be connected to oil port "A" and the other to oil port "B" on the valve. Sequence: When energized to position "A," oil port "A" becomes pressurized and clamps the fixture connected to oil port "A"; oil port "B" becomes a "return" port for cylinder connected to oil port "B," and retracts it. The opposite happens when solenoid "B" is energized.

**Operation with double-acting cylinder:** Port "A" is connected to "advance" port of cylinder, oil port "B" connects to cylinder "return" port. Solenoid is energized to position "A," oil port "A" becomes pressurized to extend cylinder piston. The opposite happens when solenoid "B" is energized. Valve does not hold in "retract" position.

NOTE: When using more than one valve on a pump, the tank port may require a check valve to permit inadvertent, momentary extension of a retracted cylinder.

NOTE: If pump is equipped with an internal outlet check, a "hold" position can be maintained with the pump shut off.

**No. 9593** – 3/4-way/2-position, remote mounted solenoid valve, 115 volt, 50/60 Hz. Wt., 15.4 lbs.

**No. 9524** – Same as 9593 except with 230 volt, 50/60 Hz.

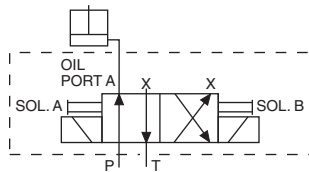
**No. 9554** – Same as 9593 except with 24 volt, 50/60 Hz.

**No. 9595** – Same as 9593 except is air operated (minimum of 50 psi air pressure required). Wt., 11.4 lbs.

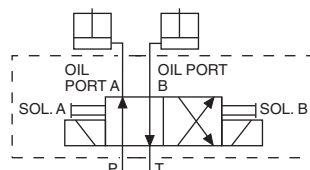
NOTE: Valves above are shipped without controls. The 9524, 9554 and 9593 can be used with the 304718 remote hand control (see page 130). The 9595 can be used with the 209593 remote hand control (see page 130).

NOTE: Valves have 1/4" NPTF ports. 3/8" to 1/4" adapters are included.

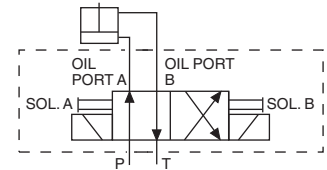
NOTE: Maximum tank line pressure for remote mounted valves is 500 psi.



1. To actuate one single-acting cylinder.



2. To actuate two single-acting cylinders.



3. To actuate one double-acting cylinder.

NOTE: Valves above are shipped without control switch. Use 202777 remote hand switch (see page 130).

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

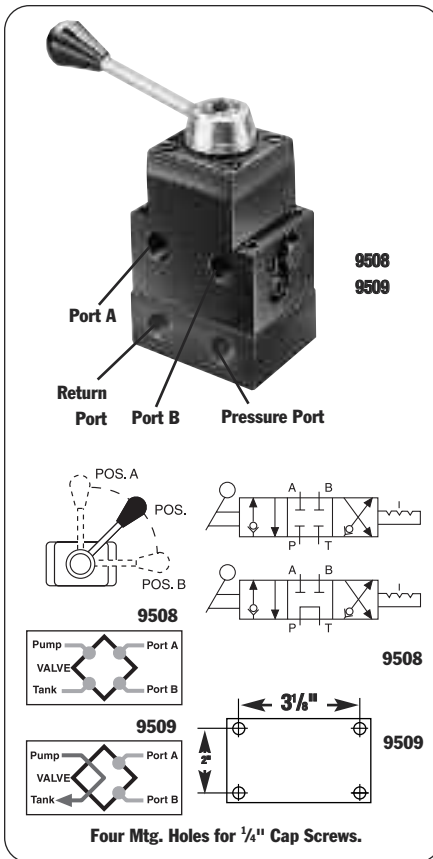


# VALVES

## Remote Mounted

10,000 psi.,

3/8" ports 5 gpm max flow



### 3-WAY/2-POSITION SOLENOID VALVE

**Application:** Single-acting cylinders.  
**Actuation:** Solenoid operated, 115 volt, 50/60 Hz.

**Function:** Advances cylinder piston when solenoid is de-energized, and pump is running. When solenoid is energized, oil is directed back through valve "return" port and cylinder piston returns. To place cylinder in "hold" position, pump must be stopped or its flow held at the valve "pressure" port with the solenoid de-energized.

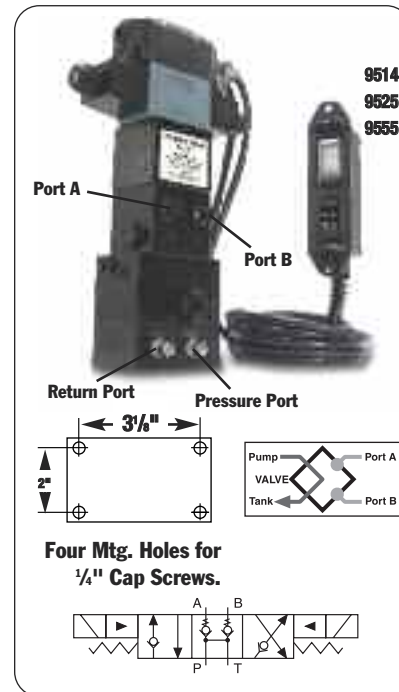
**NOTE:** Valve is equipped with a 9631 snubber valve in port "A." The line from the "return" port of the valve must be unrestricted (100 psi back pressure maximum) back to the reservoir.  
**IMPORTANT:** A 9580 in-line check valve (see page 119) must be installed in the "pressure" port if the supply pump is not equipped with an outlet check valve.

**No. 9559** – 3-way/2-position solenoid valve, 115 volt 50/60 Hz. Includes a remote mounting subplate. Wt., 9.7 lbs.

**No. 9526** – Same as 9559 except for 230 volt, 50/60 Hz.

**No. 9556** – Same as 9559 except for 24 volt, 50/60 Hz.

**NOTE:** Valves above are shipped without control switch. Use 202777 remote hand switch (see page 130).



### 4-way/3-position (tandem center) solenoid valve with Posi-CHECK®

**Application:** Double-acting cylinders.  
**Actuation:** Solenoid operated, 115 volt, 50/60 Hz.

**Functions:** Push button control of "advance," "hold" and "return." The "Posi-Check®" feature guards against pressure loss when shifting from "advance" to "hold." With valve in "hold" position, cylinder ports are blocked and oil is directed from pump to reservoir.  
**NOTE:** Do not allow return tank pressure to exceed 500 psi at the valve.

**No. 9514** – 4-way/3-position (tandem center) solenoid valve, 115 volt, 50/60 Hz. Remote hand control included. Wt., 10.1 lbs.

**No. 9525** – Same as 9514 except for 230 volt, 50/60 Hz.

**No. 9555** – Same as 9514 except for 24 volt, 50/60 Hz.

**NOTE:** Consult factory before installing a pressure switch on any of these valves.

### 4-way/3-position (closed center) and (tandem center) manual valves with Posi-Check®

**Application:** Single- or double-acting cylinders. When used with single-acting cylinders, one port must be plugged. For double-acting cylinders, either port can be used for "advance" or "return."

**Actuation:** Lever-operated, detent positioned.

**Functions:** The 9508 provides "advance," "hold" and "return" positions with all ports blocked (closed center) in the "hold" position. The 9509 has "advance," "hold" and "return" with tandem center (cylinder ports are blocked, pump remains running). Both valves have "Posi-Check®" feature to guard against pressure loss when shifting from "advance" to "hold."

**No. 9508** – 4-way/3-position (closed center) manual valve, including subplate for remote mounting. Wt., 6.3 lbs.

**No. 9509** – Same as 9508, except is tandem center.

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

**CAUTION:** The Posi-Check® feature will not hold the load when shifted directly A to B-B to A or from hold to A or B.

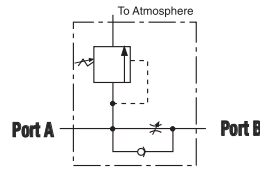
**NOTE:** Maximum tank line pressure for remote mounted valves is 500 psi.

ACCESSORIES



# VALVES HYDRAULIC IN- LINE

10,000 psi.



9596



## LOAD LOWERING VALVE

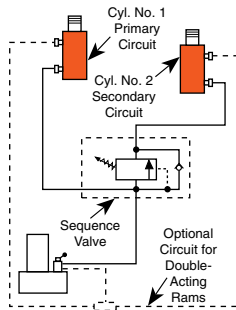
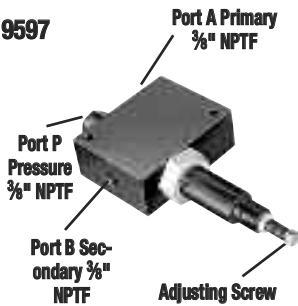
**Application:** Precision metering for controlled cylinder piston return.

**Operation:** Permits free flow when extending cylinder, built-in pressure relief and "Posi-Check\*" locks and holds load in raised position until operator opens valve. May be pre-set to provide consistent metered return, or operator may select rate of return with each actuation. Has 3/8" NPTF ports.

NOTE: Pressure relief valve setting is 12,000 psi. Operating pressure is 10,000 psi and max. flow rate is 5 gpm.

**No. 9596** – Load lowering valve. Wt., 2.1 lbs.

9597



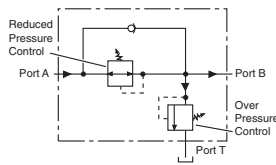
## SEQUENCE VALVE

**Application:** Used when one cylinder in a multi-cylinder application must advance before any other.

**Operation:** Pump is connected to port "P" and separate cylinders to ports "A" and "B". When pressure is applied to port "P", cylinder "A" advances. Cylinder "B" will not advance until a predetermined pressure setting is reached in cylinder "A". Pressure setting is adjustable from 500 to 8,000 psi with adjustment screw; factory preset at 1,000 psi. Has 3/8" NPTF ports.

**No. 9597** – Pressure control sequencing valve. Wt., 5.6 lbs.

9608



## PRESSURE REDUCING VALVE

**Application:** Provides complete, independent pressure control to two or more clamping systems operated by a single power source.

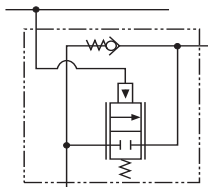
**Operation:** Can be used to provide different pressures in various stages of a single system. Virtually zero leakage across valve means each system can be operated by a single continuous pressure source. Adjustable from 1,000 to 5,000 psi at outlet port "B" (secondary). Has 1/4" NPTF ports.

**No. 9608** – Pressure reducing valve. Wt., 5.8 lbs.

**CAUTION:** Over Pressure control must be set at a higher value than operating pressure.

9720

9721



## COUNTER BALANCE VALVE

**Application:** Double-acting cylinders. Provides positive holding and controlled, "chatter-free" lowering of a load.

**Operation:** Load is raised at flow rate of pump, and held when pump is shut off. When the pump is shifted to "retract", the counter balance valve will continue to hold the load until system pressure exceeds pressure caused by load. The load can then be lowered smoothly to the flow rate

of the pump. The counter balance valve is designed to operate with pumps having a high pressure flow rate of up to 120 cu. in./min. and cylinder ratios of 3 to 1.

**No. 9720** – Counter balance valve, including two male and two female half two hydraulic hoses, fittings and dust caps. Wt., 10 lbs.

**No. 9721** – Same as 9720, but does not include couplers, hoses, fittings and dust caps. Wt., 9.2 lbs.

**CAUTION:** The 9720 patented counter balance valve has a pilot pressure as high as 3,000 psi. Because this pressure is applied to the rod end of the cylinder while it is already under load, the system should not be sized for loads greater than 80% of cylinder rated capacity.

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve in conjunction with the directional valve used in your application. See above, this page.

### Shut-off valve

**Application:** This needle valve permits fine metering of hydraulic oil.  
**Operation:** Can be used for controlling multiple single-acting cylinders.

**No. 9575** – Shut off valve with 3/8" NPTF ports. Wt., 1.4 lbs.



9575

### Check valve

**Application:** Permits flow of hydraulic oil in one direction only.  
**Operation:** Installs right in hydraulic line.

**No. 9580** – Check valve with 3/8" NPTF male ends. Wt., .4 lb.



9580



### Pilot operated check valve

**Application:** For use with open or tandem center valves. Permits free flow of fluid in one direction.

**Operation:** Flow is blocked in opposite direction until pilot oil pressure is applied. This prevents the loss of pressure if the valve is inadvertently shifted or the pump line is broken. Minimum cracking pressure is 60 psi. Required pilot pressure is approximately 16% of checked system pressure.

**No. 9581** – Pilot operated check valve with 3/8" NPTF ports. Wt., 3.8 lbs.



9581



### "In-line" pressure relief valve

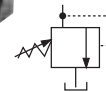
**Application:** Single- or double-acting cylinders. For remote locations in a hydraulic circuit where maximum pressure requirements are less than basic overload valve setting in pump.

**Operation:** Adjustable from 1,000 to 10,000 psi. Valve is spring-loaded and direct-acting.

**No. 9623** – Pressure relief valve with 3/8" NPTF ports. Wt., 2 lbs.



9623



### Metering valve

**Application:** For systems using large cylinders or extended lengths of hydraulic hose.

**Operation:** Controls surges by restricting flow if it exceeds 7 gpm. When flow subsides, valve reopens automatically. Has 3/8" NPTF male end to thread into return port of system control valve, and a 3/8" NPTF female end, permitting return hose to be directly connected.

**No. 9631** – Metering valve. Wt., 0.2 lb.



9631



### "In-line" pressure regulator valve

**Application:** Single- or double-acting cylinders. Permits adjusting operating pressures at various values below relief valve setting of pump.

**Operation:** Regulator valve is easily adjusted to maintain pressures between 300 and 10,000 psi. Maintains a given pressure setting within 3% over repeated cycles. Flow range is 17 cu. in./minute to 6 gpm.

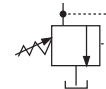
**No. 9633** – In-line pressure regulator valve with two 3/8" NPTF inlet ports, one 1/8" NPTF tank port and 3 foot drain line kit. Wt., 1.9 lbs.

**Simply turn the handle clockwise to increase the pressure setting, counter-clockwise to reduce pressure.**

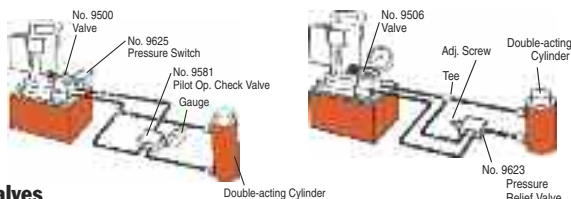
**Note: 3' Drain Line Kit is included.**



9633



ACCESSORIES



### Relief valves

**Application:** Provide an economical means of protecting an hydraulic circuit against over pressurization.

**Operation:** These factory preset valves are designed for maximum flow rate of 5 gpm. Furnished with 1/8" NPTF male port. All valves weigh 0.2 lb. See chart to the right for ordering information.



RV21278 Series

**NOTE: Care should be exercised to protect workers from hot, pressurized hydraulic oil. Install these valves only in an enclosed or shielded area.**

Valve Order No.	Pressure Setting (psi)	Valve Order No.	Pressure Setting (psi)
RV21278	10,100 / 10,700	RV21278-50	5,100 / 5,700
RV21278-6	600 / 640	RV21278-52	5,300 / 5,900
RV21278-10	900 / 1,000	RV21278-55	5,600 / 6,200
RV21278-15	1,500 / 1,700	RV21278-57	5,800 / 6,400
RV21278-17	1,600 / 1,800	RV21278-60	6,100 / 6,700
RV21278-20	1,900 / 2,200	RV21278-65	6,600 / 7,200
RV21278-25	2,300 / 2,700	RV21278-70	7,100 / 7,700
RV21278-27	2,600 / 2,800	RV21278-75	7,600 / 8,200
RV21278-28	2,700 / 3,000	RV21278-80	8,100 / 8,700
RV21278-30	3,000 / 3,400	RV21278-83	8,400 / 9,000
RV21278-32	3,100 / 3,300	RV21278-86	8,700 / 9,300
RV21278-35	3,500 / 3,800	RV21278-88	8,900 / 9,600
RV21278-38	3,750 / 3,950	RV21278-90	9,100 / 9,700
RV21278-40	4,100 / 4,500	RV21278-114	11,500 / 12,100
RV21278-43	4,400 / 4,800	RV21278-6280	6,380 / 6,900
RV21278-48	4,900 / 5,300		

Preset — Non-Serviceable

# VALVE SELECTION

## Choosing the Right Valve

### CONSIDERATIONS:

- Will the valve be used with single- or double-acting cylinders?
- Will the valve be mounted on the pump, away from the pump or directly into the hydraulic lines?



- Step 1 -** Select the hydraulic cylinder that best suits the application. See pages 6-8.
- Step 2 -** Select the series of hydraulic pump with adequate oil output and reservoir capacity to power cylinder. See pages 42-45. Check speed chart on page 6.
- Step 3 -** Select pump within series with the valve option that is best matches cylinder, pump and application. See pages 122-127.

- Will the valve be manually-operated or is remote control preferred?
  - Is independent control of multiple cylinders, or hydraulics tools preferred?
  - What directional control and pressure control valve functions are needed for the application?
- Basic valve types include manually operated, air or solenoid operated and pilot operated. Special application valves for pre-stressing and post-tensioning are also offered. Consult selection chart on page 50 for listings of all Power Team valves.

## DIRECTIONAL CONTROL VALVES



### 2-WAY, 2-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS):

POSITION 1	CENTER POSITION	POSITION 2
 <p>Oil goes from pump to cylinder; pressure is held from valve to cylinder when pump is shut off.</p>	None	 <p>Oil goes from pump to cylinder; pressure is released to reservoir when motor is turned off.</p>




### 3-WAY, 2-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS)

POSITION 1	CENTER POSITION	POSITION 2
 <p>Oil goes from pump to cylinder and holds when pump is shut off. Return line to reservoir is blocked.</p>	None	 <p>Cylinder retracts, oil returns to reservoir.</p>

### 3-WAY, 3-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS)

POSITION 1	CENTER POSITION	POSITION 2
 <p>Oil goes from pump to cylinder and holds when pump is shut off. Return line to reservoir is blocked.</p>	 <p>Cylinder pressure is held; pump can remain running and oil returns to reservoir.</p>	 <p>All oil is open to reservoir through return line.</p>

ACCESSORIES



## IN-LINE HYDRAULIC VALVES

**Load Lowering Valve** – Provides precision metering for controlled return of the cylinder piston.

**Sequence Valve** – Used when a cylinder in a multiple cylinder application must advance before any other.

**Pressure Reducing Valve** – Permits independent pressure control to two or more clamping systems operated by a single power source.

**Shut-off Valve** – For fine metering of hydraulic oil. Several may be used to control multiple single-acting cylinders.

**Check Valve** – Permits flow of hydraulic oil in one direction only.

**Pressure Relief Valve** – Used at remote locations in a hydraulic circuit where maximum pressure requirements are less than the setting of the basic overload valve in the pump. Protects a hydraulic system against over pressurization.



**Metering Valve** – Restricts surges by restricting flow to a certain level; when flow subsides, valve reopens automatically. For systems using large cylinders or extended lengths of hose.

**Pressure Regulator Valve** – Permits external adjustment of operating pressures at various values below the internal relief valve setting of the pump.

## DIRECTIONAL CONTROL VALVES

### 4-WAY, 2-POSITION

(FOR CONTROL OF SINGLE- OR DOUBLE-ACTING CYLINDERS):




POSITION 1	CENTER POSITION	POSITION 2
 <p>Oil goes to the “extend” side of the cylinder. The oil from the “retract” side returns to reservoir. Cylinder holds with pump shut off.</p>	<p>None</p>	 <p>Oil goes to the “retract” side of the cylinder, oil from the “extend” side returns to reservoir.</p>

ACCESSORIES






### 4-WAY, 3-POSITION

(FOR CONTROL OF DOUBLE-ACTING CYLINDERS)

POSITION 1	CENTER POSITION	POSITION 2
 <p>Oil goes to the “extend” side of the cylinder, oil from the “retract” side returns to reservoir. Cylinder holds with pump shut off.</p>	 <p>Holds pressure even if pump is running. Oil from pump goes through valve, back to reservoir.</p>	 <p>Oil goes to “retract” side of cylinder. Oil from “extend” side returns to the reservoir.</p>

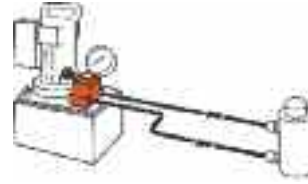
## TYPICAL CENTERS

TANDEM CENTER	CLOSED CENTER	OPEN CENTER
 <p>Cylinder ports are blocked, oil from pump goes to reservoir. Used when pump remains running. Example: gasoline-driven pumps.</p>	 <p>Generally used when running multiple valves in series from one pump.</p>	 <p>Open Center Used when holding is not a requirement, as when running tow separate hydraulic tools such as cutters and crimpers.</p>

# VALVES

## Selection Information

### Pump Mounted Valves



#### PUMP MOUNTED VALVES

Order No.	Page No.	*Cylinder Application	Operation	Valve Type	Volt	Advance/Return	Advance/ Hold Return	Posi-Check® Feature
9500	125	S.A. & D.A.	Manual	4-way, 3 Pos. Tandem Center	—	no	yes	no
9501	125	S.A. & D.A.	Manual	4-way, 3 Pos. Closed Center	—	no	yes	no
9502	124	S.A.	Manual	3-way, 3 Pos. Closed Ctr.	—	no	yes	yes
9504	123	S.A. & D.A.	Manual	3/4-way, 2 Pos.	—	yes	yes	no
9506	125	D.A.	Manual	4-way, 3 Pos. Tandem Center	—	no	yes	yes
9507	125	D.A.	Manual	4-way, 3 Pos. Closed Center	—	no	yes	yes
9511	125	S.A. & D.A.	Manual	4-way, 3 Pos. Open Center	—	yes	yes	no
9512	128	D.A.	Solenoid	4-way, 3 Pos. Tandem Center	24	no	yes	yes
9513	128	D.A.	Solenoid	4-way, 3 Pos. Tandem Center	115	no	yes	yes
9516	128	D.A.	Solenoid	4-way, 3 Pos. Tandem Center	12DC	no	yes	yes
9517	123	S.A.	Manual	2-way, 2 Pos.	—	no	yes	no
9519	128	D.A.	Solenoid	4-way, 3 Pos. Tandem Center	230	no	yes	yes
9520	124	S.A.	Manual	4-way, 3 Pos. Tandem Center	—	no	yes	yes
9522	128	D.A.	Solenoid	4-way, 3 Pos. Open Center	230	yes	no	no
9523	128	S.A.	Pilot Operated Solenoid	3-way, 2 Pos.	230	yes	no	no
9552	127	S.A. & D.A.	Solenoid	3/4-way, 2 Pos.	230	yes	no	no
9553	128	S.A.	Pilot Operated Solenoid	3-way, 2 Pos.	24	yes	no	no
9569	128	S.A.	Solenoid	3-way, 2 Pos.	24	no	yes	no
9570	128	S.A.	Solenoid	3-way, 2 Pos.	230	no	yes	no
9572	128	S.A. & D.A.	Solenoid	3/4-way, 2 Pos.	24	yes	no	no
9576	124	S.A.	Manual	3-way, 3 Pos. Metering Tandem Ctr.	—	no	yes	no
9579	127	S.A.	Solenoid	3-way, 2 Pos.	115	no	yes	no
9582	123	S.A.	Manual	3-way, 2 Pos.	—	no	yes	no
9584	123	S.A.	Manual	3-way, 2 Pos.	—	no	yes	no
9589	128	S.A.	Pilot Operated Solenoid	3-way, 2 Pos.	115	yes	no	no
9590	128	D.A.	Solenoid	4-way, 3 Pos. Open Center	115	yes	no	no
9592	127	S.A. & D.A.	Solenoid	3/4-way, 2 Pos.	115	yes	no	no
9594	127	S.A. & D.A.	Air	3/4-way, 2 Pos.	—	no	yes	yes
9599	126	S.A.	Pilot Operated Solenoid	3-way, 3 Pos. Tandem Center	24	no	yes	yes
9605	126	S.A.	Pilot Operated Solenoid	3-way, 3 Pos. Tandem Center	115	no	yes	yes
9609	126	S.A.	Manual	3-way, 3 Pos. Tandem Center	—	no	yes	no
9610	123	S.A.	Auto Pilot Operated	3-way, 2 Pos.	—	yes	no	no
9610A	123	S.A.	Manual	2/3-way, 2 Pos.	—	no	yes	no
9615	128	D.A.	Solenoid	4-way, 3 Pos. Open Center	24	yes	no	no
9628	129	S.A. & D.A.	Manual	Post Tensioning	—	special	no	no
9632	129	S.A. & D.A.	Manual	Post Tensioning	—	special	no	no

\* "S.A." represents single-acting cylinders, "D.A." represents double-acting cylinders

ACCESSORIES



# VALVES

## Hydraulic

### Pump Mounted

#### 3-WAY/2-POSITION MANUAL VALVES

**Applications** – Single-acting cylinders. **Actuation** – Lever operated.

**Functions** – Cylinder piston “advance”, “hold” and “return”.

**Used on these pumps** – P460, PE17, PE21, PE30, PE46, PE55, PE84, PE90, and PE120 series.

**No. 9582** – 3-way/2-position manual valve. Wt. 2.5 lbs.

**No. 9584** – Same as 9582, but has “flipper” control. Wt., 1.8 lbs.

#### 3-WAY/2-POSITION, PILOT OPERATED AUTOMATIC VALVE

**Application** – Single-acting cylinders. Actuation: Pilot oil.

**Functions** – When pump is started, pilot oil automatically closes valve and directs oil to cylinder; when pump is stopped, valve automatically opens and oil returns to reservoir. **Used on these pumps** – Furnished with pilot lines and adapters for PA55, PA90, PE30, PE55, PE90 and PE120 series.

**No. 9610** – 3-way/2-position pilot operated automatic valve. Wt., 4.2 lbs.

#### 2/3-WAY/2-POSITION MANUAL/PILOT OPERATED AUTOMATIC VALVE

**Application** – Manual operation for load lifting and holding with single-acting cylinders; automatic “dump” for operating hydraulic tools. **Actuation** – Flipper lever/pilot oil. **Functions** – With lever in closed position, valve will hold the load. When lever is “open”, valve functions as a true automatic “dump” valve. **Used on these pumps** – Furnished with pilot lines and adapters for PA55, PA90, PE30, PE55, PE90 and PE120 series. For application on other pumps, consult factory.

**No. 9610A** – 2/3-way/2-position manual/pilot operated automatic valve. Wt., 4.4 lbs.

#### 2-WAY/2-POSITION MANUAL VALVE

**Application** – Single-acting cylinders. **Actuation** – Flipper lever operated.

**Functions** – Cylinder piston “advance”, “hold” and “retract”.

**Used on these pumps** – PE172, PA172 and PE84 series.

**No. 9517** – 2-way/2-position manual valve. Wt., 3.2 lbs.

#### 3/4-WAY/2-POSITION MANUAL VALVE

**Application** – Single- or double-acting cylinders. **Actuation** – Lever operated, detent positioned. **Functions** – Pos. 1 – Oil is directed to “advance” side of cylinder, oil from “retract” side goes to reservoir; cylinder “holds” with pump shut off. Pos. 2 – Oil goes to “retract” side of cylinder; cylinder “holds” with pump shut off. When using as a 3-way valve for single-acting cylinders, port “A” or “B” is plugged. See note on page 124 regarding plugging of ports and resulting heat build-up.

**Used on these pumps** – P460, PA6D, PA17, PA46, PA55, PA60, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series.

**No. 9504** – 3/4-way/2-position manual valve. Wt., 4.2 lbs.

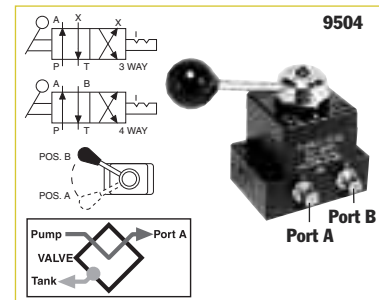
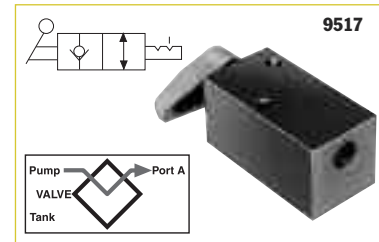
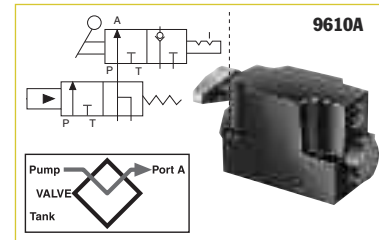
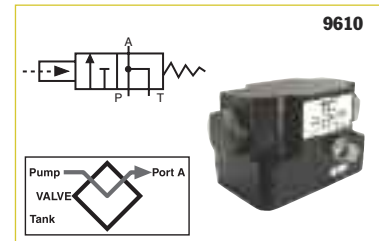
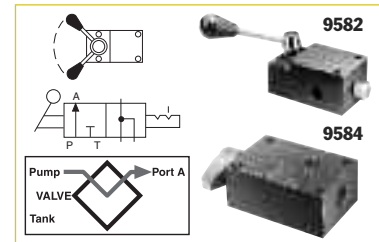
**NOTE:** 9504 can be remote mounted with a 9510 subplate (see page 95).

**NOTE:** A pressure switch and/or gauge may be attached to any valve on this page. (refer to pages 131, 110-111)

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

**IMPORTANT:** Conversion kit 251528 must be used when mounting any of the valves on this page on PA17 or PE17 pumps.

**IMPORTANT:** When ordering any valve for a PE30 or PG30 series pump, 1/2" longer mounting screws are required. For valves 9504, 9584, 9610 and 9610A, order four 12001 cap screws. For valve 9582, order two 12001 and two 10856 cap screws.



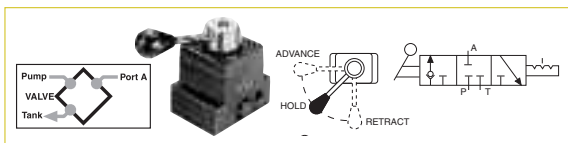
ACCESSORIES



# VALVES

## Pump Mounted 3 Way/3 Position Manual

**10,000 PSI, 3/8" PORTS, 5  
GPM MAX FLOW RATE.**



### 3-WAY/3-POSITION (CLOSED CENTER) NON-INTERFLOW MANUAL VALVE WITH 'POSI-CHECK®'

**Application** – Single-acting cylinders.

**Actuation** – Lever operated, detent positioned.

**Functions** – Pos. 1 – Oil is directed from pump to cylinder and “holds” with pump shut off; line to reservoir is blocked. Pos. 2 – All oil is open to reservoir through tank line.

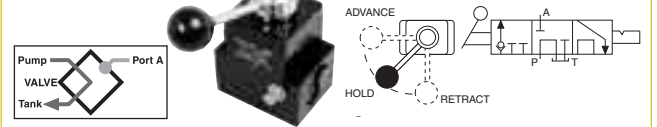
**Center pos.** – Cylinder pressure is held; pump should be shut off.

**Used on these pumps** – P460, PA17, PA46, PA55, PA60, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series.

**NOTE:** A pressure switch and/or gauge may be attached if desired (see pages 110-111, 131). Also, the 9502 can be remote mounted if a 9510 subplate is used (see page 131).

**No. 9502** – 3-way/3-position (closed center) manual valve. Wt., 4.2 lbs.

**9520**



### 3-WAY/3-POSITION (TANDEM CENTER) MANUAL VALVE WITH 'POSI-CHECK®'

**Application** – Single-acting cylinders.

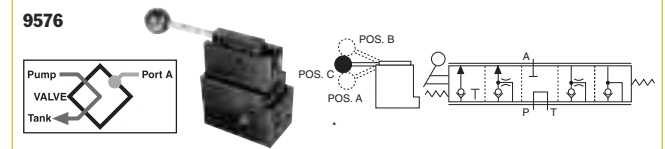
**Actuation** – Lever operated, detent positioned.

**Functions** – “Advance” “hold” and “return”. When shifted to “return” position, pump and cylinder return oil through their own separate return lines, allowing faster retraction of piston. The “Posi-Check®” feature guards against pressure loss when shifting from “advance” to “hold” position.

**Used on these pumps** – P460, PA17, PA46, PA55, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PQ60, PQ120, PE200, PE400, PG30, PG55, PG120 and PG400 series.

**No. 9520** – 3-way/3-position (tandem center) manual valve. Wt., 5.1 lbs.

### 3-WAY/3-POSITION (TANDEM CENTER) METERING



### VALVE

**Application** – Single-acting cylinders.

**Actuation** – Lever operated.

**Functions** – Cylinder piston metered “advance”, “hold” and metered “return”.

**Used on these pumps** – PA17, PA46, PA55, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PQ60, PQ120, PE200, PE400, PG30, PG55, PG120 and PG400 series.

**NOTE:** A pressure switch and/or gauge may be attached if desired see pages 124-125, 117). Also, the 9576 can be remote mounted with a 9510 subplate (see page 131).

**No. 9576** – 3-way/3-position (tandem center) metering valve. Wt., 8.5 lbs.

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

**NOTE:** Valves 9501, 9502, 9504 and 9507 can have a port blocked or have a closed center position. When a port is blocked and the valve is shifted to the blocked port, the pump will generate excessive heat. An electric or rotary air pump can either be turned off manually or with a pressure switch. Reciprocating air pumps may be adjusted to stall out and stop. **NOTE:** Gauge ports monitor pump pressure only, not pressure to the hydraulic cylinder(s).

**IMPORTANT:** Conversion kit 251528 must be used when mounting any of the valves on this page on PA17 or PE17 pumps.

**IMPORTANT:** When ordering any valve for a PE30 or PG30 series pump, 1/2" longer mounting screws are required. For valves 9502 and 9520, order four 12001 cap screws. For valve 9576, order four 17428 cap screws.

ACCESSORIES

# VALVES

## Hydraulic Pump

### Mounted

#### 4 Way/3 Position Manual

### 4-WAY/3-POSITION (TANDEM CENTER) VALVE WITH "POSI-CHECK®"

**Application** – Single or double-acting cylinders.

**Actuation** – Lever operated, detent positioned.

**Functions** – “Advance”, “hold” and “return”. The “Posi-Check®” feature guards against pressure loss when shifting from “advance” to “hold” position.

**Used on these pumps** – P460, PA6D, PA17, PA46, PA55, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PED, PG30, PG55, PG120, PG400, PQ60 and PQ120 series

**No. 9506** – 4-way/3-position (tandem center) manual valve. Wt., 5.1 lbs.

### 4-WAY/3-POSITION (TANDEM CENTER) AND (OPEN-CENTER) MANUAL VALVES

**Application** – Single- or double-acting cylinders.

**Actuation** – Lever operated, detent positioned.

**Functions** – The 9500 provides “advance”, “hold” and “return”. The 9511 (open center) valve can be used if holding is not a requirement, as when running two separate hydraulic tools. Provides “advance” and “return” only.

**Used on these pumps** – P460, PA17, PA46, PA55, PE17\*, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PG30, PG55, PG120, PG400, PQ60 and PQ120 series. \*Does not mount without 251528

**No. 9500** – 4-way/3-position (tandem center) manual valve. Wt., 4.2 lbs.

**No. 9511** – Same as 9500, except has an open center.

### 4-WAY/3-POSITION (CLOSED CENTER) MANUAL VALVE WITH "POSI-CHECK®"

**Application** – Single- or double-acting cylinders.

**Actuation** – Lever operated, detent positioned.

**Functions** – Similar to 9506, but is a closed center valve with “Posi-Check®”. Generally used to operate multiple cylinders with a single pump. Provides “advance”, “hold” and “return”. The “Posi-Check®” feature guards against pressure loss when shifting from the “advance” to “hold” position. See note on page 124 regarding plugging of ports and resulting heat build-up.

**Used on these pumps** – P460, PA17, PA46, PA55, PA60, PA6D, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series.

**No. 9507** – 4-way/3-position (closed center) manual valve. Wt., 5 lbs.

### 4-WAY/3-POSITION (CLOSED CENTER) MANUAL VALVE

**Application** – Single- or double-acting cylinders.

**Actuation** – Lever operated, detent positioned.

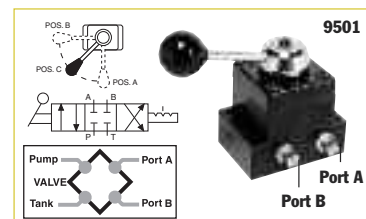
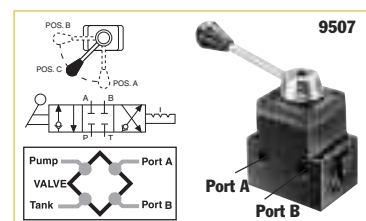
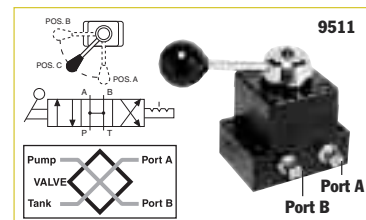
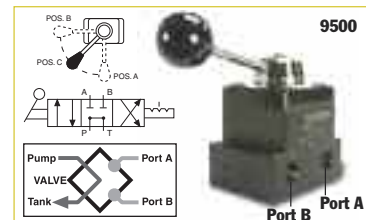
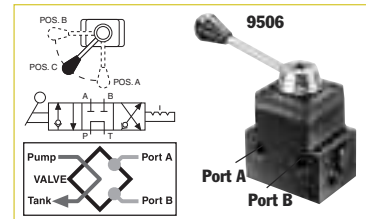
**Functions** – “Advance”, “hold” and “return”. Closed center design makes valve suitable for operating multiple cylinders from a single pump. See note on page 52 regarding plugging of ports and resulting heat build-up.

**Used on these pumps** – P460, PA17, PA46, PA55, PA60, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and P120 series.

**No. 9501** – 4-way/3-position (closed center) valve. Wt., 4.2 lbs.

**NOTE:** A pressure switch and/or gauge may be attached to valves 9500, 9501, 9506, 9511 if desired (see pages 110-111, 131). Also, all valves on this page may be remote mounted with a 9510 subplate (see page 131).

**10,000 PSI., 3/8" PORTS, 5 GPM MAX FLOW RATE.**



ACCESSORIES



# VALVES

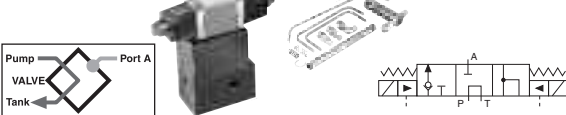
## Hydraulic Pump

### Mounted

Manual and Pilot Operated

**10,000 PSI., 3/8" PORTS, 5 GPM MAX FLOW RATE.**

**9605, 9599**



### 3-WAY/3-POSITION (TANDEM CENTER) SOLENOID VALVES WITH 'POSI-CHECK®'

**Application** – Single-acting cylinders.

**Actuation** – Solenoid operated: 9605 is 115 volt, 50/60 Hz; 9599 is 24 volt, 50/60 Hz.

**Functions** – “Advance”, “hold” and “return” positions. When in “advance”, solenoid “B” is energized and oil goes from pump to cylinder through pressure port. In “return” position, solenoid “A” is energized and oil is directed from cylinder and pump to reservoir. With both solenoids de-energized, in “hold” position, oil from pump is directed back to reservoir while oil is checked in cylinder. The “Posi-Check®” feature holds load when shifting from “advance” to “hold” position.

**Used on these pumps** – Furnished with pilot lines and adapters for PE55, PE30 (carrying handles must be removed) and PE120 series. For application on other models, consult factory.

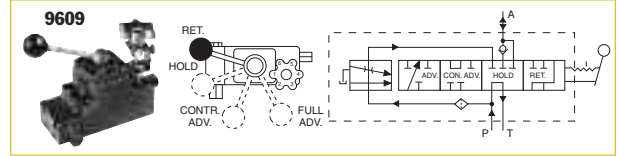
**No. 9605** – 3-way/3-position (tandem center) solenoid valve, 115 volt, 50/60 Hz. Wt., 14.0 lbs.

**No. 9599** – Same as 9605 except for 24 volt, 50/60 Hz circuits.

**NOTE:** Valves above are shipped without controls. Use 202777 remote hand control (see page 130). Consult factory for field installation.



**9609**



### 3-WAY/4-POSITION MANUAL PRESSURE COMPENSATED VALVE

**Application** – Single-acting cylinders. Primarily for use in testing soil, rock, concrete, asphalt and related engineering materials.

**Actuation** – Lever and adjustable, pressure compensated flow control valve.

**Functions** – Cylinder piston “return”, “hold”, “controlled advance” (pressure compensated) and “advance” (full flow). Will deliver a relatively constant flow regardless of pressure between 1,000 and 10,000 psi.

**Used on these pumps** – PA17, PA46, PA55, PE17, PE21, PE30\*, PE46, PE55, PE90, PE200, PE400, PG30\*, PG55, PG120, PG400, PQ60 and PQ120 series. \* **NOTE:** Adapter kit 252161 is required for mounting this valve to a PE30 or PG30 series pump.

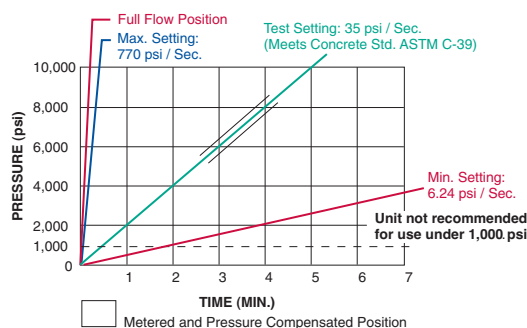
**NOTE:** This valve can be remote mounted with a 9510 sub-plate (see page 131).

**No. 9609** – 3-way/4-position manual pressure compensated valve. Wt., 8.7 lbs.

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

**IMPORTANT:** Conversion kit 251528 must be used when mounting the 9609 valve on PA17 or PE17 pumps.

**IMPORTANT:** When ordering any valve for a PE30 or PG30 series pump, 1/2" longer mounting screws are required. For valves 9500, 9501 and 9511, order four 12001 cap screws. For valve 9552, 9506, and 9507, order four 11956 cap screws. For valves 9599 and 9605, order four 251078 cap screws. For valve 9609, order four 10855 cap screws.



### FLOW

Full flow position - 5 gpm (Ref.)  
Metered advance position  
65 cu. in./min. (Max.)

### PRESSURE

Min. working pressure - 1,000 psi.  
Max. working pressure - 10,000 psi.  
Max. valve case pressure - 500 psi.

ACCESSORIES



# VALVES

## Hydraulic Pump

### Mounted

#### Solenoid or Air Operated

### 3-WAY/2-POSITION SOLENOID VALVE

**Application** – Single-acting cylinders. **Actuation** – Solenoid operated, 115 volt, 50/60 Hz.

**Functions** – Cylinder piston advances when solenoid is de-energized and pump is running. When solenoid is energized, oil is directed to reservoir, and piston returns. For “hold” position, pump is stopped with solenoid de-energized.

**Used on these pumps** – PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series.

**No. 9579** – 3-way/2-position solenoid valve, 115 volt, 50/60 Hz. Wt., 9.6 lbs.

**No. 9569** – Same as 9579, except with 24 volt, 50/60 Hz solenoid.

**No. 9570** – Same as 9579 except with 230 volt, 50/60 Hz solenoid.

**NOTES:** Valves above are shipped without control switch. Use 202777 remote hand switch (see page 130). When this valve is mounted, the pump must be equipped with an outlet check valve.

### 3/4-WAY/2-POSITION SOLENOID VALVES

**Application** – Single- or double-acting cylinders. When used with single-acting cylinders, one port should be plugged. **Actuation** – Solenoid operated.

**Functions** – Oil is directed to “extend” side of cylinder, oil from “retract” side goes to reservoir; cylinder “holds” with pump shut off. Oil is directed to “retract” side of cylinder; oil from “extend” side goes to reservoir.

**NOTE:** Cylinder will not “hold” in the “return” position with motor running or shut off.

**Used on these pumps** – 9552, 9572 and 9592 are used with PE17, PE30 (with carrying handles removed), PE46, PE55, PE84, PE90, PE200, PE400, PQ60 and PQ120 series.

**No. 9592** – 3/4-way/2-position solenoid valve, 115 volt, 50/60 Hz. Wt., 14.6 lbs.

**No. 9552** – Same as 9592, except with 230 volt, 50/60 Hz solenoid.

**No. 9572** – Same as 9592, except with 24 volt, 50/60 Hz solenoid.

**NOTE:** Valves above are shipped without controls. The 9552, 9572 and 9592 can be used with the 304718 remote hand control. (see page 130)

Note: Ports are 1/4" NPTF.

### AIR ACTUATED VALVE

**Application** – Single- or double-acting cylinders. When used with single-acting cylinders, one port should be plugged. **Actuation** – Air operated.

**Functions** – Oil is directed to “extend” side of cylinder, oil from “retract” side goes to reservoir; cylinder “holds” with pump shut off. Oil is directed to “retract” side of cylinder; oil from “extend” side goes to reservoir.

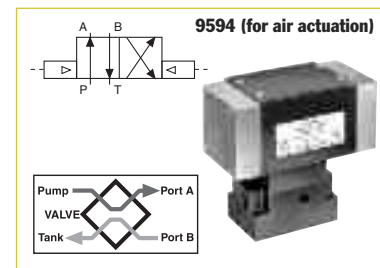
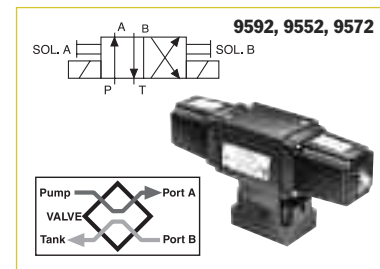
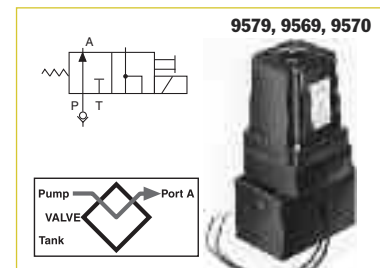
**NOTE:** Cylinder will not “hold” in the “return” position with motor running or shut off.

**Used on these pumps** – PA17, PA46 and PA55 series.

**No. 9594** – 3/4-way/2-position solenoid valve, air operated (minimum of 50 psi air pressure required). Wt., 11 lbs.

**NOTES:** Valve above is shipped without controls. 9594 can be used with the 209593 remote hand control (see page 130). See page 118 for remote mounted models of this valve.

**10,000 PSI, 3/8" PORTS, 5 GPM MAX FLOW RATE.**



ACCESSORIES



**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

**IMPORTANT:** Conversion kit 251528 must be used when mounting any of the valves on this page on PA17 or PE17 pumps.

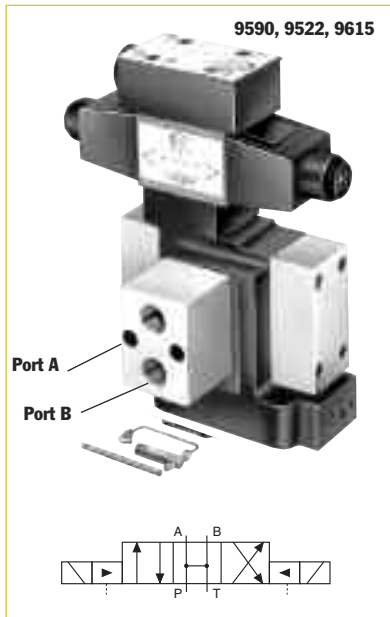
**IMPORTANT:** When ordering any valve for a PE30 or PG30 series pump, 1/2" longer mounting screws are required. For valves 9569, 9570 and 9579, order four 10856 cap screws. For valves 9552, 9572 and 9592, order four 12001 cap screws.

# VALVES

## Pump Mounted Solenoid or Air Operated



ACCESSORIES



### 4-WAY/3-POSITION (OPEN CENTER) SOLENOID VALVE

**Application** – Double-acting cylinders.

**Actuation** – Solenoid operated, 115 volt, 50/60 Hz.

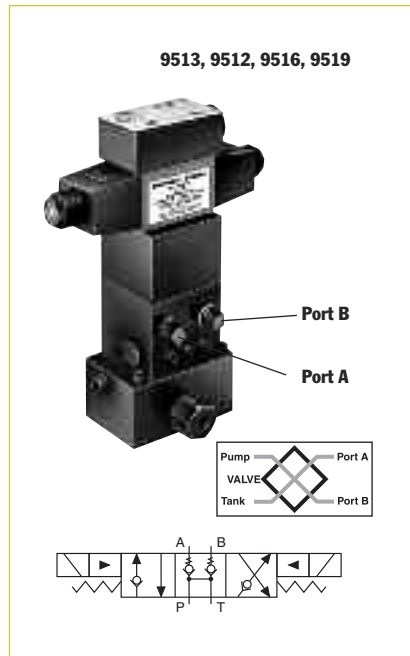
**Functions** – “Advance”, open center and “return” positions. Cylinder ports and pump port are open to reservoir in “neutral”.

**Used on these pumps** – Furnished with pilot lines and adapters for PE30 (with carrying handles removed), PE55, PE90 and PE120 series. For other pump models, consult factory. **NOTE:** A pressure switch and/or gauge may be attached if desired (see pages 111-112, 131).

**No. 9590** – 4-way/3-position (open center) solenoid valve, 115 volt, 50/60 Hz. Wt., 15.5 lbs.

**No. 9522** – Same as 9590 except for 230 volt, 50/60 Hz.

**No. 9615** – Same as 9590 except for 24 volt, 50/60 Hz.



### 4-WAY/3-POSITION (TANDEM CENTER) PILOT OPERATED SOLENOID VALVE

**Application** – Double-acting cylinders.  
**Actuation** – Solenoid operated, 115 volt, 50/60 Hz.

**Functions** – “Advance”, “hold” and “return”. The “Posi-Check” feature holds the load when shifting from the “advance” to the “hold” position.

**Used on these pumps** – PE17, PE21, PE30 (with carrying handles removed), PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series. **NOTE:** A gauge may be attached if desired (see pages 111, 112).

**No. 9513** – 4-way/3-position (tandem center) solenoid valve, 115 volt, 50/60 Hz. Wt., 18.1 lbs.

**No. 9512** – Same as 9513 except for 24 volt, 50/60 Hz circuits.

**No. 9516** – Same as 9513 except for 12 volt DC. For use on the PG1204S and PG400 series pumps only.

**No. 9519** – Same as 9513 except for 230 volt, 50/60 Hz circuits. Consult factory for field installation.

**NOTE:** Valves above are shipped without control switch. Use 202777 remote hand switch (see page 130).

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

**IMPORTANT:** Conversion kit 251528 must be used when mounting the 9609 valve on PA17 or PE17 pumps.

**IMPORTANT:** When ordering any valve for a PE30 or PG30 series pump, 1/2" longer mounting screws are required. For valves 9513 and 9519, order four 11956 cap screws. For valves 9523, 9553 and 9589, order four 10855 cap screws. For valves 9522, 9590 and 9615, order four 10854 cap screws.



### 3-WAY/2-POSITION (PILOT OPERATED, NORMALLY OPEN) SOLENOID VALVE

**Application:** Single-acting cylinders.

**Actuation:** Solenoid operated, 115 volt, 50/60 Hz.

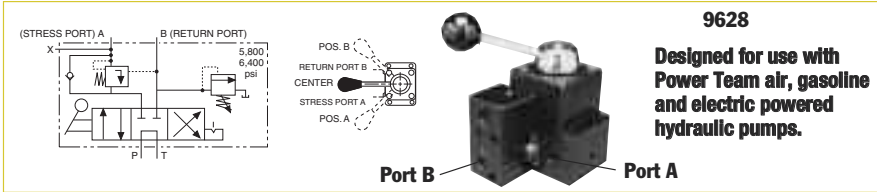
**Function:** “Advance” and “return”.

**Used on these pumps:** Furnished with pilot lines and adapters for PE30 (with carrying handles removed), PE55, PE90 and PE120 series. For other pump models, consult factory. **NOTE:** A pressure switch and/or gauge may be attached if desired (see pages 111-112, 131).

**No. 9589** – 3-way/2-position (pilot operated) solenoid valve, 115 volt, 50/60 Hz. Wt., 8.2 lbs.

**No. 9523** – Same as 9589 except for 230 volt, 50/60 Hz.

**No. 9553** – Same as 9589 except for 24 volt, 50/60 Hz.



9628

Designed for use with Power Team air, gasoline and electric powered hydraulic pumps.

### 4-WAY/3-POSITION (TANDEM CENTER) MANUAL VALVE

**Application** – Single strand, double-acting stressing jacks with Power Wedge seater.

**Actuation** – Lever operated, detent positioned.

**Operation** –

1. With valve in center position, pump is started.
2. Cable is inserted into stressing tool, valve is placed in “A” position. “Pull” portion of stressing tool is pressurized to specified level for proper cable tensioning (“A” port is checked

- internally, can only be released by building pressure in “B” position).
3. Valve is placed in “B” position, which is pressure controlled and will not exceed 6,400 psi. “Return” portion of stressing tool is pressurized and will release “A” port when pressure reaches approximately one-half the “A” port pressure. “A” port remains open as long as this pressure differential is maintained.
4. Pump is stopped, valve is placed in “A” position, releasing “B” port pressure.

**Used on these pumps:** PA17\*, PA46\*, PA55, PE17\*, PE21\*, PE30, PE46\*, PE55, PE60, PE84, PE120, PE200, PE400, PG30\*, PG55, PG120, PG400, PQ60 and PQ120 series.

\* These pumps may have reduced first flow stage characteristics due to internal valve restrictions.

**No. 9628** – Post tensioning valve for 10,000 psi (max.) single-acting/Power Wedge seater. Wt., 5.4 lbs.

### “TWIN” 4-WAY/3-POSITION (TANDEM CENTER) MANUAL VALVE

**Application** – Multi-strand, double-acting stressing jacks with an auxiliary seating cylinder.

**Actuation** – Dual lever operated, detent positioned.

**Operation** –

1. With valves “A” and “B” in center position, pump is started; cable is inserted into stressing tool.
2. Valve “A” is placed in “Stress” position; cylinder extends to tension cable. Pump pressure controls force exerted by tensioning cylinder in this position. “Stress” port is checked internally, and can only be released by building pressure in the valve “B” return position.
3. When desired cable tension is achieved, valve “A” is placed in valve “B” position and valve “B” in “Seat” position. Seating portion of cylinder

will be pressurized to seating pressure controlled by “Seat” relief valve (factory set to 3,900 psi).

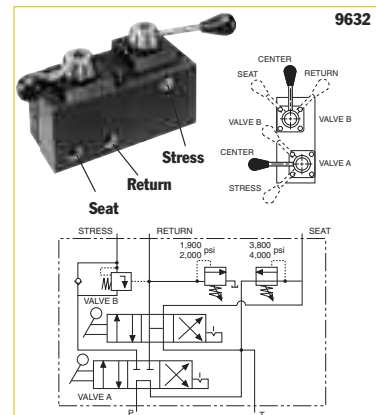
4. Valve “B” is shifted to “Return” position, which is pressure controlled and will not exceed 2,200 psi. “Return” portion of stressing tool should be pressurized and will release “Stress” port when pressure reaches 15% of “Stress” port pressure.
5. “Stress” port will remain open and cylinder will return as long as pressure differential is maintained. “Stress” and “Seat” ports are open to reservoir.
6. When cylinder has fully returned, both valves are shifted to “Center” position and oil will be directed to reservoir. Maximum pressure setting for the “Seat” relief valve is 6,000 psi.

**Used on these pumps:** PA17\*, PA46\*, PA55, PE17\*, PE21\*, PE30, PE46\*, PE55, PE84, PE120, PE200, PE400, PG30\*, PG55, PG120, PG400, PQ60

and PQ120 series.\*

\* These pumps may have reduced first flow stage characteristics due to internal valve restrictions.

**No. 9632** – Post tensioning valve for 10,000 psi (max.) double-acting systems. Wt., 13.6 lbs.



9632

Pump mounted, 6-position detented 5-way manual dual valve. Rated pressure to valve “A” is 10,000 psi and valve “B” is 6,000 psi. Case pressure is 500 psi max.

ACCESSORIES



**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 118) in conjunction with the directional valve used in your application.

**IMPORTANT:** Conversion kit 251528 must be used when mounting any of the valves on this page on PA17 or PE17 pumps.

**IMPORTANT:** When ordering any valve for a PE30 or PG30 series pump, 1/2" longer mounting screws are required. For valves 9569, 9570 and 9579, order four 10856 cap screws. For valves 9552, 9572 and 9592, order four 12001 cap screws.

# HYDRAULIC PUMP

## Accessories



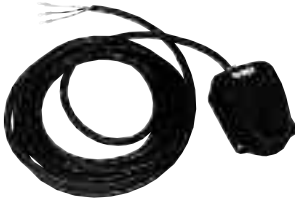
25017  
202777  
202778  
304718



203225



10461



251660



309652  
309653



209593



17627  
216209



### ON/OFF MOTOR CONTROL

The following remote control switches will give you momentary “ON” control of your hydraulic pump. These switches are deadman type, spring loaded to the “OFF” position. They can be used with any Power Team electric hydraulic pumps.

**No. 25017** – Remote hand control. Has a push button switch, with a 10 foot cord. Wt., 0.8 lb.

**No. 203225** – Remote hand control. Heavy-duty with single push button switch in a neoprene housing with 10 foot cord. Housing seals out dust, lint and liquids (unit is not submersible). Wt., 0.8 lb.

**No. 10461** – Remote foot control, with 10 foot cord. Wt., 3 lbs.

**No. 251660** – Remote foot control, with 10 foot cord. For use with the PE10 style pumps. Wt., 1 lb.

### SOLENOID & MOTOR CONTROL

For use on solenoid valves that are used on single-acting cylinders:

**No. 202777** – Remote hand control. Has rocker style switch that is momentary advance, spring center hold and detented retract. It comes with a 10 foot cord, for use with 3-way/2 or 3-position valves. Wt., 0.9 lb.

For use on solenoid valves that are used on double-acting cylinders:

**No. 202778** – Remote hand control. Has rocker style switch that is momentary advance, spring center hold and momentary retract. It comes with a 10 foot cord, for use with 4-way/3-position valves. Wt., 0.9 lb.

**No. 309653** – Remote foot control. Can be used in place of either of the above hand controls to control the same type of valves. The switch is momentary on both the advance and retract position and is spring centered to the hold position. This foot switch comes with 10 foot cord. Wt., 4 lbs.

**No. 17627** – Remote foot control. Same as the No. 309653 but without a cord. Wt., 2 lbs.

**No. 304718** – Remote hand control. Has a rocker style switch that is momentary advance, spring center hold and momentary retract. The switch is wired to start and stop the motor when the valve is energized. It comes with a 10 foot cord. To be used with 4-way/2-position valves. Wt., 0.9 lb.

**No. 309652** – Remote foot control. Has same functions as No. 304718. Supplied with a 10 foot cord. To be used with 4-way/2-position valves. Wt., 4 lbs.

**No. 216209** – Remote foot control. Same as the No. 309652, but without a cord. Wt., 2 lbs.

NOTE: See valves listing to determine which remote to use.  
Page 122-129.

### REMOTE AIR MOTOR CONTROLS

This remote hand control has two momentary push buttons, one for advance and one for retract with spring offset to hold. To be used with 4-way/2-position air pilot valves.

**No. 209593** – Remote hand control with 12 foot cord. Wt., 2 lbs.

## SUBPLATES

For remote mounting of control valves. They convert pump mounted valves to remote mounted valves quickly and easily.

**No. 9510** – Subplate for remote mounting the following valves; 9500, 9501, 9502, 9504, 9506, 9507, 9511, 9552, 9572, 9575, 9576, 9592, 9594 and 9609. Wt., 1.5 lbs.

**No. 9620** – For use with 9500, 9501, 9502, 9552, 9572, 9592 and 9594. Same as No. 9510 but has integral pressure regulating valve. Wt., 3.8 lbs.

## PUMP-MOUNTED SUBPLATES

When fitted between pump cover plate valve mounting flange and control valve, provides a separate  $\frac{3}{8}$ " NPTF female port, open to "return" regardless of position of valve. Also provides a separate  $\frac{3}{8}$ " NPTF female pressure port. This subplate can be useful when you desire to use one pump with a deck-mounted control valve, plus a separate remote-mounted valve to control another function.

For use with the following valves: 9500, 9501, 9502, 9504, 9506, 9507, 9511, 9552, 9572, 9575, 9576, 9592, 9594 and 9609.

**No. 9515** – Subplate, Wt., 1.3 lbs.

**No. 9521** – Subplate for use under most pump mounted valves to provide adjustable pressure control on units not equipped with an external pressure regulator. Wt., 3.8 lbs.

## AIR FILTER/REGULATOR/LUBRICATOR

Recommended for use with single-speed air/hydraulic pumps found on pages 49-67.

**No. 9531** – Filter/regulator.  $\frac{1}{4}$ " NPTF inlet and outlet. Wt., 0.8 lb.

## PRESSURE SWITCH

**Application:** Used in a hydraulic circuit where system pressure must be "held". Automatically (electrically) turns off pump motor when predetermined system pressure is reached.

Attaches directly to control valve manifold or can be mounted "in-line" to read system pressure. Has a  $\frac{1}{4}$ " NPTF male thread, and a  $\frac{1}{4}$ " NPTF fitting for gauge mounting if required. Adjustable from 1,000 to 10,000 psi. Can also be used to actuate other electrical devices in the system. Wired "normally open" and held closed by spring pressure.

**IMPORTANT:** Electrical rating of switch is 5 amps at 250 volts max. To prevent permanent damage to switch, a control relay must be installed to handle currents or voltage exceeding these limits. Pressure switch should never be used to directly actuate the electrical motor.

**No. 9625** – In-line pressure switch with  $\frac{1}{4}$ " NPTF gauge port. Wt., 1.1 lbs.

## PILOT OPERATED AIR CONTROL VALVES

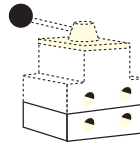
**Application:** For use when an air pilot signal is required at a set hydraulic pressure.

Can be used to shift valves, and start or stop pneumatic pumps.

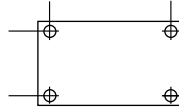
Attaches directly to control manifold or can be mounted "in-line" to read system hydraulic pressure. Automatically turns on an air pilot signal when a predetermined system pressure is reached. Has  $\frac{1}{4}$ " NPTF male thread and  $\frac{1}{4}$ " NPTF fitting for gauge mounting if required. Adjustable from 500-10,000 psi. Maximum rating of 25 scfm at 100 psi.

**No. 9641** – Pilot operated control valve, normally closed, with  $\frac{1}{4}$ " NPTF male thread. Wt., 1 lb.

**No. 9643** – Same as 9641 except normally open. Wt., 1 lb.



9510 and 9620 attach to the bottom of valve for remote mounting. The 9515 and 9521 mount between the pump cover plate and valve.



9510

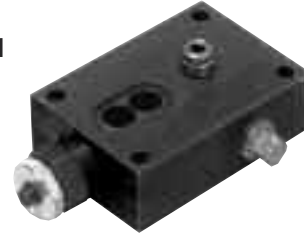
9515



9620



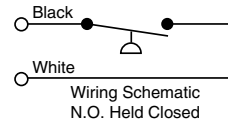
9521



9531



9625

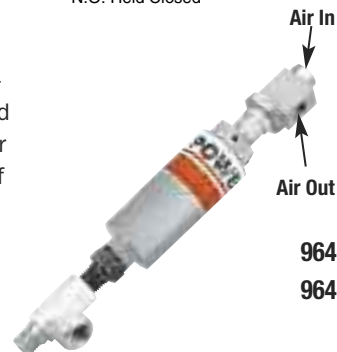


Air In

Air Out

9641

9643



ACCESSORIES



# HYDRAULIC PUMP ACCESSORIES

252511  
252512



206767  
250175



350431



10494



207762



16339



## OIL COOLER KITS

**No. 252511** – Oil cooler kit designed for use with PE604T or PE604PT pumps with 115 VAC. Wt., 5 lbs.

**No. 252512** – Oil cooler kit designed for use with PE604T or PE604PT pumps with 220 VAC. Wt., 5 lbs.

## RESERVOIR BREATHER KITS

**No. 206767** – Reservoir breather kit designed for use on PA17, PA55, PE17, PE55, PE84, PE90, PE120, PG55, PG120, PQ60 and PQ120 series pumps. Wt., 1.3 lbs.

**No. 250175** – Reservoir breather kit designed for use on PE21 and PE46 series pumps. These kits replace the reservoir filler cap when the pump is used in dusty and dirty environments. Wt., 1.3 lbs.

## CASTERS

2" diameter casters attach to the bottom of large reservoir for portability.

Sold individually; order the amount you need.

**No. 10494** – Single caster wheel. Wt., 0.3 lb.

## FLUID LEVEL/TEMPERATURE GAUGE

Displays fluid level and temperature of hydraulic oil in reservoir.

32°-212°F, 0°-100°C. 1<sup>1</sup>/<sub>4</sub>" wide and 6<sup>3</sup>/<sub>8</sub>" high.

**No. 350431** – Fluid level/temperature gauge.

## FOOT CONTROL GUARD

Guard for use with 10461 and 251660 foot controls.

**No. 16339** – Wt., 4.5 lbs.

## MAGNETIC STRIP

Magnetic strip with adhesive back can be added to No. 25017, 202777, 202778 and 304718 hand controls. Provides 6 lbs. of holding force.

**No. 207762** – Wt., 0.1 lb.

## VITON® SEAL KITS

(SEE PAGE 33)



Viton® seal kits

Order Number	Use With	Model
<b>300507</b>	P12	All
<b>300472</b>	P23, P55	All
<b>300510</b>	P59	All
<b>300508</b>	P157, P159, P300	A
<b>300690</b>	P157, P159	B
<b>300696</b>	P300	B
<b>300508</b>	P157D, P159D, P300D	A
<b>300693</b>	P157D, P159D	B
<b>300699</b>	P300D	B

**VITON® SEAL KITS** Can be used in all "C" and "RH" series cylinders (see pages 14-15 and 20-21), as well as the P12, P55, P59, P157/P159, P157D/P159D and P300/P300D series of hand pumps. These seals are required when fire resistant hydraulic fluids are used. Not required with Flame-Out fluid.

\* Viton is an E.I. duPont De Nemours & Co., Inc, trade name.

## UNIVERSAL PUMP CART

Mobilize your hydraulic pumps with the PC200. The rugged tubular frame can easily handle pumps weighing up to 200 lbs. With 12" wheels, the cart rolls easily. Just load the pump onto the cart and wheel it right to the job. The universal mounting hole pattern lets you handle a wide variety of Power Team pumps.

**No. PC200** – Universal pump cart with 12" wheels. Cart can be used with the following pumps: PA60, PA64 and PA554 air/hydraulic pumps; PE55 series, PE183-2 and PE184-2 electric/hydraulic pumps; PE21, PQ60 and PQ120 series "Quiet" pumps; PG55 series gas engine/hydraulic pumps; and pumps with optional 5- and 10-gallon reservoirs; Nos. RP50, RP51, RP101 and RP103. Wt., 27 (Shown with pump, pump not included)

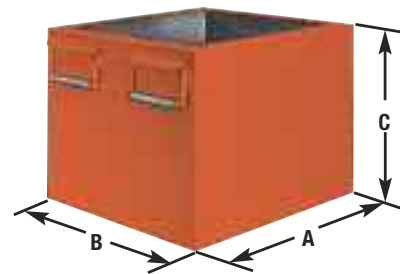
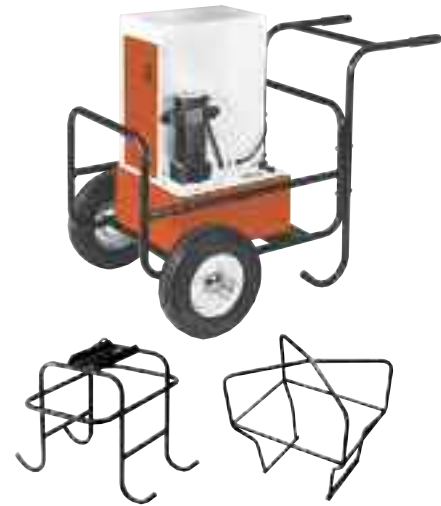
## PROTECTIVE PUMP ROLL CAGE

Safeguards pump, gas engine and valves on the job site. Horizontal bars provide convenient hand holds for carrying pump, a pick-up point permits lifting unit with an overhead crane or other device. Standard equipment on PG1203 and PG1204. Can be ordered as an option with any other gas, air, or electrically driven hydraulic pump equipped with a 5-gallon reservoir.

**Note: Refer to PG1203/PG1204 specification chart (pp 96-97) for dimensions of roll cage.**

**No. PC200RC** – Roll cage for use with PC200. (Cannot be used on pumps with 10 gallon reservoirs.) Wt., 36 lbs.

**No. RC5** – Roll cage. Wt., 19.5 lbs for PG55 & PG120. For use with PG120 and PG 55 series pumps



## LARGE CAPACITY RESERVOIRS

Capacity (gal.)	Order Number	Usable Oil (cu. in.)	Use With	Size (in.)		
				A	B	C
2	<b>RP20**</b>	442	PA6, PA50 series (models A-E)	11 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>
2	<b>RP20-F**</b>	442	PA6 series (model F), PA 50 series (model F & G)	11 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>
2 <sup>1</sup> / <sub>2</sub>	<b>RP20M*</b>	450	PA6, PA50 series (models A-E)	11 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>
2 <sup>1</sup> / <sub>2</sub>	<b>RP20M-F*</b>	450	PA6 series (model F), PA50 series (model F & G)	11 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>
2 <sup>1</sup> / <sub>2</sub>	<b>RP21*</b>	450	PE18 series	11 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>
2 <sup>1</sup> / <sub>2</sub>	<b>RP22†</b>	442	PE55, PE90, PE120, PA55	11 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>
5	<b>RP50</b>	1150	PE55, PE90, PE120, PA55	18	12 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>2</sub>
5	<b>RP51</b>	1150	PA46, PE46, PE21	18	12 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>2</sub>
10	<b>RP100</b>	2194	PE55, PE90, PE120, PA55	18	12 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>
10	<b>RP101</b>	2194	PG55, PG120	18	12 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>
10	<b>RP103*</b>	2310	PQ60, PQ120	15 <sup>7</sup> / <sub>16</sub>	14 <sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>16</sub>
10	<b>RP104</b>	2194	PA46, PE46, PE21	18	12 <sup>1</sup> / <sub>2</sub>	14

\* Four mounting holes: 1/2"-20, for 2" diameter swivel casters (No. 10494)  
 \*\* High density polyethylene reservoir. † Aluminum reservoir.

**NOTE: All metal reservoirs are equipped with drain plugs and all necessary conversion items. Hydraulic oil is not included with reservoir kits. Please order separately. See page 112.**

## METAL RESERVOIR CONVERSION KITS FOR PUMPS \*INCLUDES GASKETS AND FASTENERS.

Metal Pump Number	Res. Order Number	Metal Reservoir Capacity	Reservoir Weight (lbs.)	Metal Pump Number	Res. Order Number	Metal Reservoir Capacity	Reservoir Weight (lbs.)	Metal Pump Number	Res. Order Number	Metal Reservoir Capacity	Reservoir Weight (lbs.)
<b>PA6</b>	213896	105 cu. in.	3	<b>PA50</b>	213896	105 cu. in.	3	<b>PA174</b>	213895	578 cu. in.	9
<b>PA6A</b>	213896	105 cu. in.	3	<b>PA50R</b>	213896	105 cu. in.	3	<b>PE172</b>	213895	578 cu. in.	9
<b>PA6D</b>	213896	105 cu. in.	3	<b>PA6R</b>	213896	105 cu. in.	3	<b>PE172A</b>	213895	578 cu. in.	9
<b>PA6-2</b>	213895	578 cu. in.	9	<b>PA50R2</b>	213895	578 cu. in.	9	<b>PE172S</b>	213895	578 cu. in.	9
<b>PA6D2</b>	213895	578 cu. in.	9	<b>PA172</b>	213895	578 cu. in.	9	<b>PE174</b>	213895	578 cu. in.	9

ACCESSORIES

