

# CONTROL VALVES

DIRECTIONAL

PRESSURE

FLOW



# Control Valve Information

Hytec has created a line of control valves designed and manufactured so precisely that there is virtually zero leakage, making them ideal for constant pressure hydraulic workholding systems. **Valves with internal leakage (such as spool valves) are not appropriate for use with Hytec pumps and pallet valve systems.**

## Directional Control Valves

Available in many versions, each of these valves is capable of operating double or single-acting spring return systems. Mounting configurations available are pump mounted, remote mounted, and manifold mounted, and operation is either manual or through electric solenoids.

Manually operated valves are used in applications where the valves can be mounted near the operator on the fixture, pump, or any convenient location at the workstation. The electrically operated valve is ideal for systems requiring push-button simplicity or automated systems where the valve is controlled by machine logic instead of the operator. Since it's controlled by an electrical signal, it can be mounted in any convenient location and need not take up valuable fixture or workstation space.

All remote mounted directional control valves are installed by connecting the pump or pressure port (labeled "P") to the pressure source and the return or tank port (labeled "T") to the return line. The outlets or work ports (labeled "A" and "B") are connected to the component or system to be controlled.

In single-acting systems, the valves are used as 3-way valves. One port, A or B, is plugged and the other is connected to a single-acting actuator or system. In one handle position, the port to the actuator will be pressurized and the plugged port open to the reservoir. In the other handle position, the actuator will retract because that port is open to the reservoir. This pressurizes the remaining port, but since it's plugged, the pump will build pressure and shut off.

In double-acting systems, these valves act as 4-way valves: ports A and B are connected to a double-acting actuator or system. In handle position A, port A is pressurized and port B is open to the reservoir. Handle position B pressurizes port B and port A is open to the reservoir. Shifting the valve will cause the actuator to alternately extend and retract.

Selected Hytec remote mounted directional control valves include a check valve in the pressure port to maintain system pressure during periods of fluctuating supply pressure. Carefully review check valve requirements on each product selected. With pump mounted valves, the pump outlet check valve serves the same purpose.

## Pressure Control Valves

Two types are available for specialized workholding systems – sequence and pressure reducing. Both are available in manifold and conventionally mounted styles.

**Pressure Sequence Valves** control the order of events within a hydraulic system by directing pressure into two circuits in a pressure-controlled sequence. For example, this allows clamps to be actuated before work supports are locked.

Initially, the valve is closed. Oil flows to the primary circuit until pressure reaches the valve setting. The valve then opens to deliver oil to the secondary circuit while holding pressure on the primary circuit. Once secondary and primary pressures are equal, the pressure increases uniformly in both circuits.

This valve is installed by connecting the pressure port (labeled "P") to a tee in the portion of the circuit to be actuated first. The part of the circuit to be sequenced later is connected to the outlet port (labeled "A"). The vent port must be open to atmosphere for proper operation.

**Pressure Reducing Valves** are designed to reduce the maximum pressure in a portion of a hydraulic circuit – the need for a separate power source for each pressure level is eliminated. The valve is open from the inlet to the outlet until a pre-selected pressure is reached, at which point the valve closes to limit pressure in the secondary circuit. Valve seats and poppets are precision ground, assuring virtually zero leakage and eliminating the need for a case drain line.

This valve is connected "in line" with the circuit requiring the reduced pressure. The inlet or pressure port (labeled "P") is on the high pressure side. The outlet or reduced pressure port (labeled "A") is connected to the lower pressure circuit. The drain or tank port (labeled "T") is connected to the power source return line if necessary. Ordinary pressure limiting valves close when their pressure setting is reached. Once closed, it will not re-open until system pressure is released. Even minor leakage in the system can not be made up. Hytec's pressure reducing valve uses a balanced poppet design which will re-open any time flow downstream is required.

## Flow Control Valves

The types of flow control valves available from Hytec are: pilot operated check valve and needle-type flow restrictor valves.

Hytec's **Pilot Operated Check Valve** offers a unique poppet seal design making it ideal for pallet applications or other specialized control circuits where zero leakage is essential. It can be used in any application where pressure must be maintained in a portion of a circuit until a separate pilot signal opens the valve and allows free flow in the reverse direction.

This 5,000 psi valve is used with Hytec's Automatic Pallet Coupling System and double-acting manual pallet valve. Replaceable filter elements protect the check valve and your other system components from contamination. No disassembly of circuit plumbing is required to service the filters or check valve cartridges.

When the port labeled "INLET" is pressurized, hydraulic fluid can flow freely into the valve, leaving through the port labeled "OUTLET". Pressurized fluid at the outlet port cannot flow back into the valve unless the port labeled "PILOT" is pressurized to open the valve allowing reverse flow.

**Needle Valves** are multiple-turn flow restrictor valves which provide finely adjustable flow control for components or circuits requiring reduced flow rates. They are also used in some non-critical sequencing applications where restriction in part of a circuit will tend to cause the actuators in the remainder of the circuit to operate first.

Needle valves are available that:

- restrict flow in both directions, or
- restrict flow in one direction through the use of an internal free-flow check valve.

Valves without the free-flow check are typically used in a part of a circuit where there is flow in only one direction. They can also be used in double-acting circuits where restriction is desirable in both directions.

Valves with the reverse free-flow check are most effectively used in single-acting circuits where the actuation speed must be reduced without affecting the system return time.

Our high pressure **Ball Valves** provide full unrestricted flow and positive shut-off of fluids. They have a 90 degree actuation and are available in SAE or NPT ports.



These valves are ideal for mounting directly on the machine or fixture for maximum operator convenience. They also permit the pump to be located away from the operator's workstation. Each of these valves allows several circuits to be controlled with a single pump.

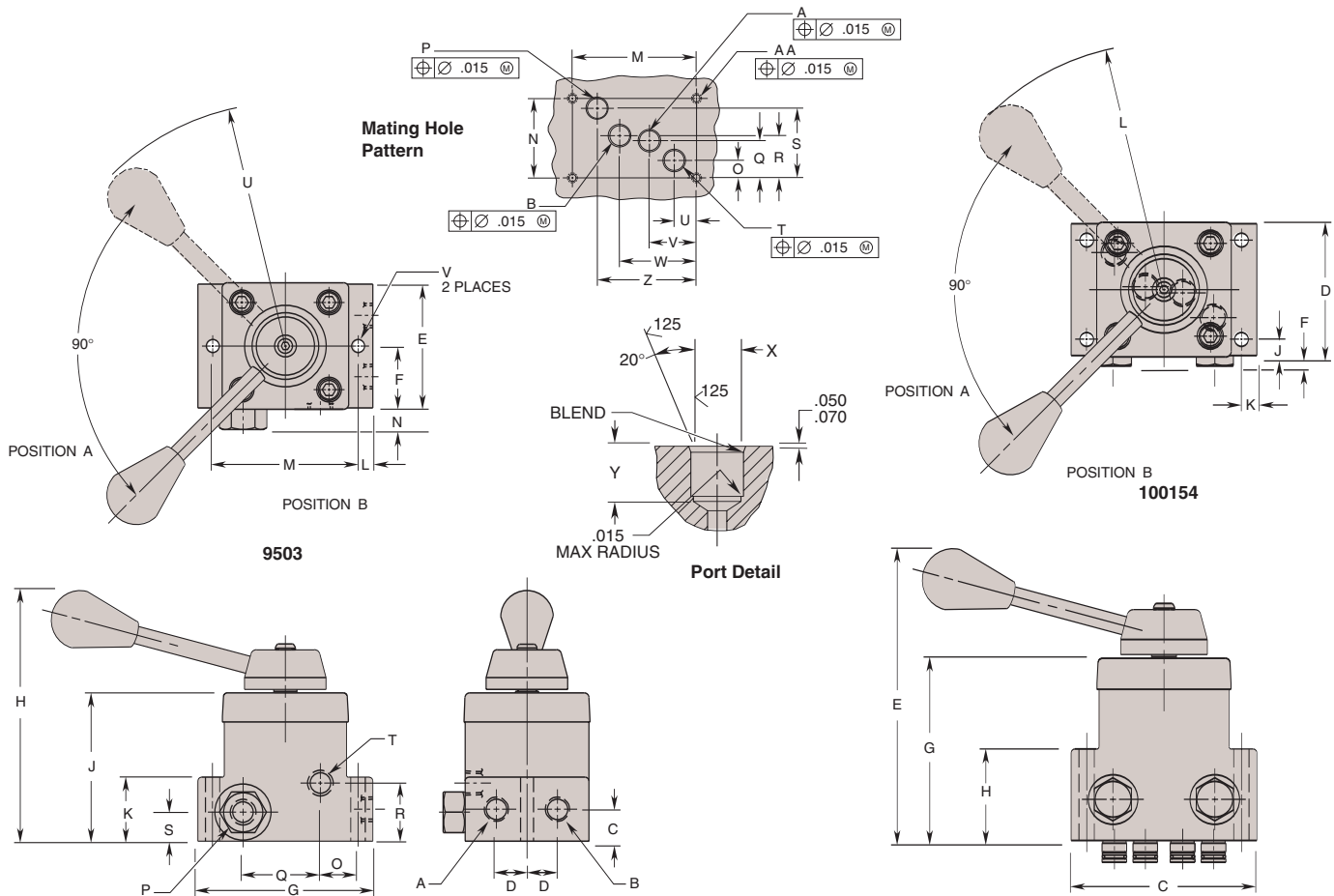
**Features:**

- 3-way/4-way, 2-position, detented
- Manually operated
- Remote mounted
- Single- or double-acting systems
- Handle swings 90° and may be repositioned in 22.5° intervals
- Pressure port check valves

- 5,000 psi max.
- 5 gpm max.
- 500 psi max. return line pressure
- No. 9503 includes mounting hardware, ¼-20 UNC x 1.875" cap screws

**Note:** When using No. 9503 valve in multiple fixture applications with a single power source, Hytec recommends that check valve No. 206330 or No. 500171 be connected to the tank port to prevent return line back pressure from actuating released single-acting components, or causing pressure fluctuations in double-acting systems. Valve No. 100154 has a built-in check valve.

Remote Mounted Control Valves



Cat. No.	Dimensions (In Inches)																				
	A Port	B Port	C	D	E	F	G	H	J	K	L	M	N	O	P Port	Q	R	S	T Port	U Rad.	V Dia.
9503	¼ NPTF	¼ NPTF	.687	.656	2.660	1.330	3.750	5.420	3.188	1.375	.312	3.125	.469	.812	¼ NPTF	1.656	1.250	.625	¼ NPTF	5.031	.281

Cat. No.	Dimensions (In Inches)																									
	A	B	C	D	E	F	G	H	J	K	L Rad.	M	N	O	P	Q	R	S	T	U	V	W	X Dia.	Y	Z	AA Thd. Size
100154	*	*	3.750	2.656	6.047	.213	3.675	1.845	.312	.312	5.032	3.125	2.000	.438	*	.938	1.063	1.750	*	.560	1.185	1.935	.500 .503	.515 .535	2.560	¼-20 UNC

NOTE: \*See Port Detail drawing for ports A, B, P and T.



These 3-way/4-way, two-position directional control valves are ideal for workholding applications. Their zero-leakage design is the right choice for constant pressure applications. Their smaller size allows you to maximize usable fixture space.

To improve operator ergonomics, you can instantly position the control lever in any of 24 positions without tools. Finer adjustments are possible by loosening a locknut. Internal stops and detents along with a shaft wiper seal provide excellent contamination resistance.

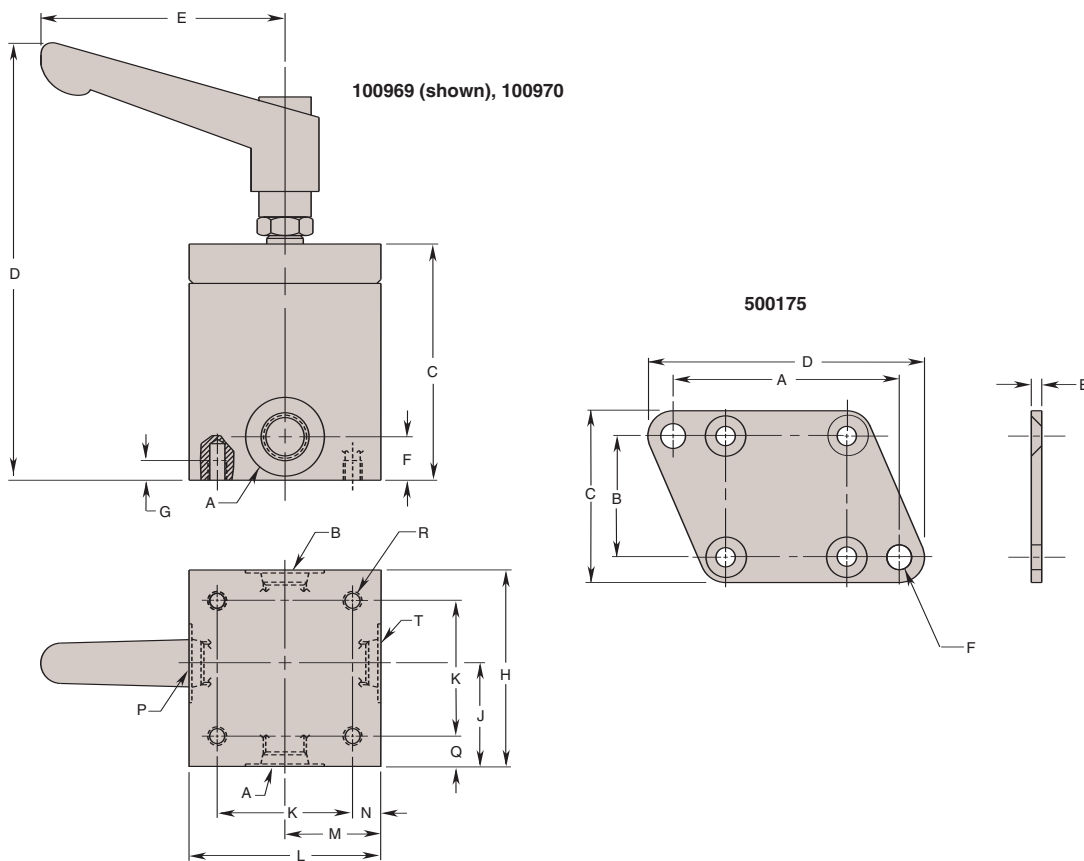
Built without check valves, these directional valves are intended **only** for systems with one valve per hydraulic pressure source.

For multiple valve applications install appro-

appropriate pressure ("P") and tank ("T") port check valves (page 96) or use our 100971 directional valve with 100974 check valve subplate. Ported subplates 100972 and 100973 or 2-station manifold 100975 can be added as appropriate.

**Features:**

- 3-way/4-way, 2-position, detented
- Single or double acting systems
- Manually operated, 90 deg. swing
- 1500 psi max. return line pressure
- Remote mounted, SAE or NPT ports
- Infinite handle adjustment
- 5,000 psi max.
- Shaft wiper excludes contaminants
- Optional mounting bracket (No. 500175)
- Single valve applications



Cat. No.	Dimensions (In Inches)					
	A	B	C	D	E	F Dia.
500175	2.565	1.375	1.948	3.138	.119	.281

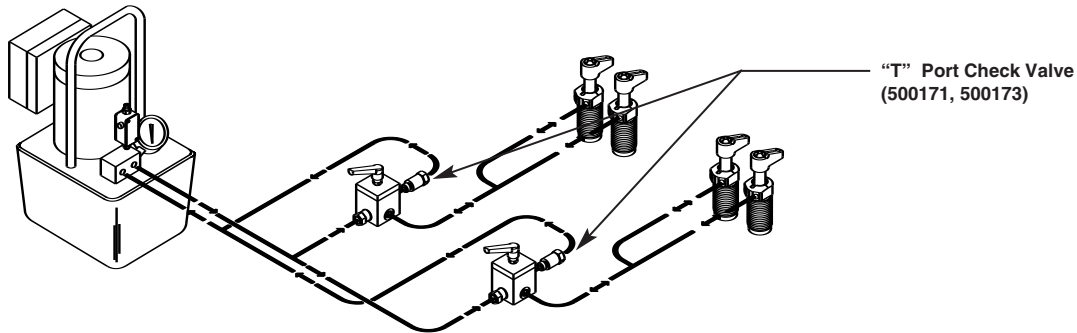
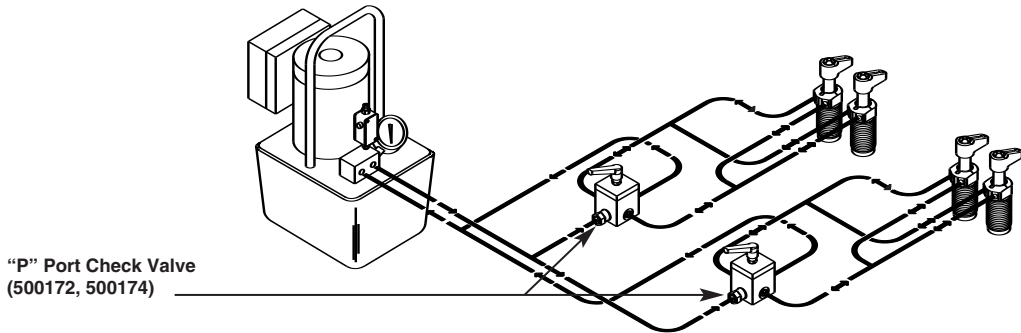
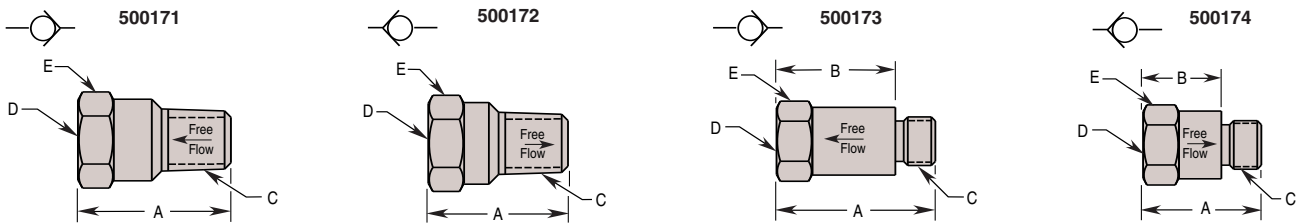
Note: #10-24 UNC x .375 Lg. flat head screws (4) included.

Cat. No.	Dimensions (In Inches)																
	"A" Port	"B" Port	C	D	E Rad.	F	G Min. Thread	H	J	K	L	M	N	"P"	Q	R Thread size	"T" Port
100969	3/16-20UNF SAE-4	3/16-20UNF SAE-4												3/16-20UNF SAE-4			3/16-20UNF SAE-4
100970	1/4 NPTF	1/4 NPTF	2.400	4.444	2.480	.442	.375	2.000	.947	1.375	1.948	.974	.287	1/4 NPTF	.313	10-24 UNC	1/4 NPTF



Both the 1/4 NPT "T" Port Check Valve (part number 500171) and the SAE-4 (part number 500173) are recommended on single acting circuits where there is more than one directional valve per power source. These check valves are ideal for use in circuits where return line pressure fluctuations may affect released clamps. Use this anytime a return line pressure spike could cause unclamped actuators to move and affect operator safety. They are designed specifically for Hytec's No. 100969 and No. 100970 Directional Control Valves.

The 1/4 NPT (500172) and the SAE-4 (500174) "P" port check valves are required on all single acting or double acting circuits where there is more than one directional valve per power source. These check valves prevent power source pressure fluctuations from affecting the pressure in clamped circuits. Without this check valve, shifting the directional control valve in one circuit will cause a temporary loss of clamping pressure in the other circuit.



Cat. No.	Specifications			Dimensions (In Inches)				
	Check Valve Location	Cracking Pressure (psi)	Use With Directional Valve No.	A	B	C Thread Size	D Thread Size	E Hex
500171	Outlet	2	100970	1.349	-	1/4 NPTF	1/4 NPTF	.750
500172	Inlet			1.259				
500173	Outlet	2	100969	1.431	1.071	3/16-20UNF SAE-4	3/16-20UNF SAE-4	.625
500174	Inlet			1.065				

# Manifold Mounted Control Valve



Similar to Hytec's 100969 and 100970, this 3-way/4-way, two-position directional control valve is ideal for manifold mounting on your fixture. The valve's zero-leakage design is the right choice for constant pressure applications. Its smaller size allows you to maximize usable fixture space.

This valve is designed with a standard ANSI, DO3 mounting and port configuration. The control lever can be placed in any of 24 positions without tools. Infinite adjustments are possible by loosening a locknut. Internal stops and detents along with a shaft wiper seal provide excellent contamination resistance.

Built without check valves, this valve is intended **only** for systems with one valve per

hydraulic pressure source. For multiple valve applications, simply add the 100974 check valve sub-plate. Ported subplates 100972 and 100973 or manifold 100975 can also be added as appropriate.

**Features:**

- 3-way/4-way, 2-position, detented
- ANSI, DO3 mounting configuration
- Single or double acting systems
- Manually operated, 90 deg. swing
- 1500 psi max. return line pressure
- Optional SAE or NPT ported subplates
- Infinite handle adjustment
- 5,000 psi max.
- Shaft wiper excludes contaminants
- Optional check-valve subplate

**DO3 Manifold Mounting Surface**

Cat. No.	Dimensions (In Inches)				
	A	B	C Rad.	D	E
100971	2.144	4.187	2.480	2.000	1.948

#10-24UNC X 2.25 Lg. Mounting screws (4) Included.

DO3 Mounting Pattern	Dimensions (In Inches)																		
	"A" Port Dia. Max	"B" Port Dia. Max	C	D	E	F	G	H	J	K	L	M	N	"P" Port Dia. Max.	Q Min.	R Min.	† S Dia.	"T" Port Dia. Max.	†† U Thread Size
	.250	.250	.030	.200	.610	1.020	1.220	1.250	1.250	.500	.850	1.190	1.300	1.594	.250	1.970	2.000	.160	.250

NOTE: † Location hole to be .160 deep min.  
†† Minimum thread depth .200

See p. 98 for sub-plates and manifolds.

Manifold Mounted Control Valve



### Single-station Sub-Plates No. 100972 and 100973

These D03 sub-plates are for use with the 100971 directional control valve and 100974 check valve sub-plate. These assemblies will provide conventionally ported, remote mounted, directional control valves for use in multiple valve systems. These sub-plates may also be used with the 100971 directional control valve only in single valve systems. (For single valve applications, consider using valves 100969 and 100970.) Optional mounting bracket (No. 500175) is available (see p. 95).

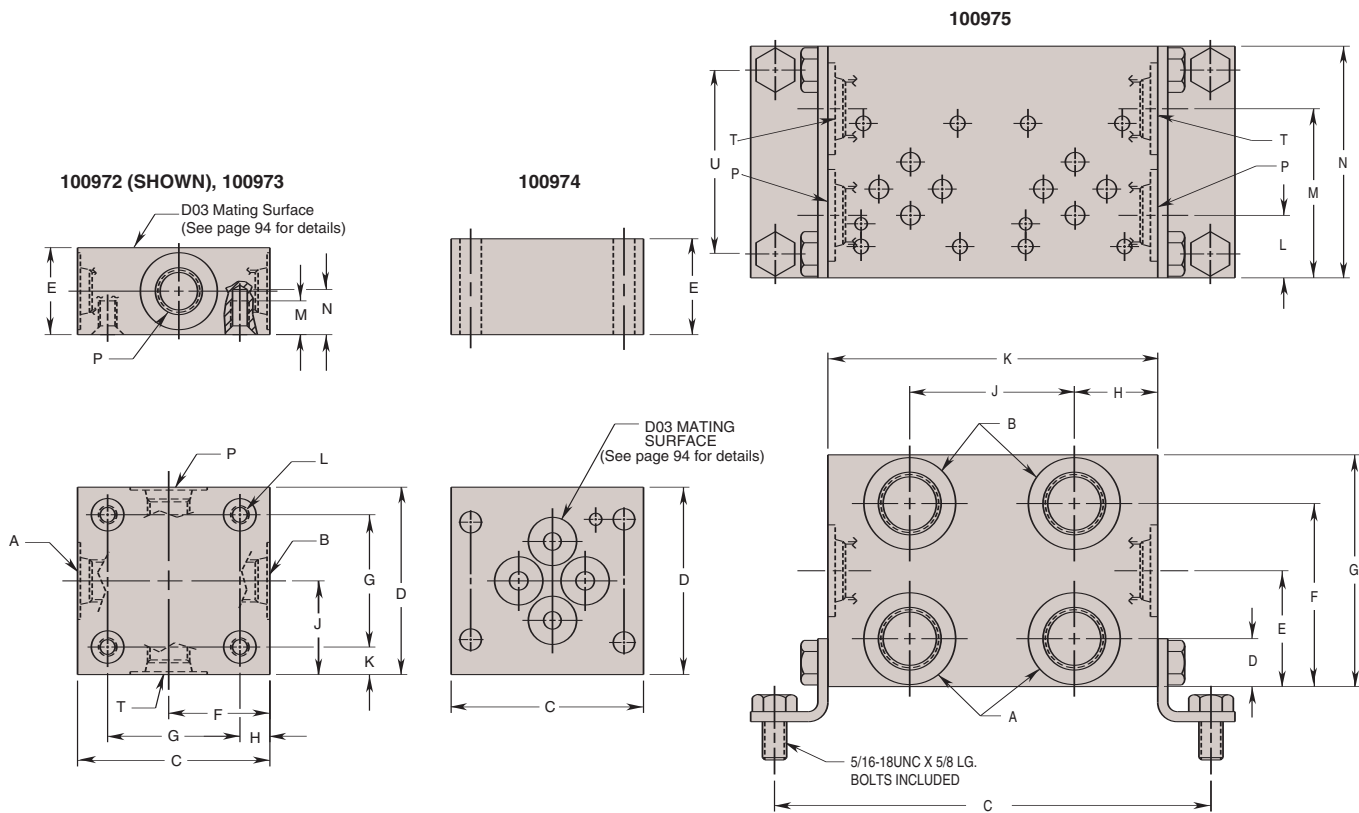
### Two-Station Manifold No. 100975

This manifold provides for mounting two, 100971 directional control valves. External plumbing is reduced because both D03

mounting patterns share the same pressure and tank ports. Check valve sub-plate 100974 must also be used in workholding circuits.

### Check Valve Sub-Plate No. 100974

Use this in directional control valve in applications requiring inlet and outlet checks. (Ports P and T) When two or more valves are connected to the same pressure source, these check valves prevent pressure fluctuations in one system from affecting the other. Without this check valve sub-plate, the shifting of one valve in a system can cause the loss of clamping pressure in another. This check valve sub-plate uses the same D03 mounting configuration as our 100971 directional control valve. It is simply placed underneath the valve. Mounting screws are included.



Cat. No.	Dimensions (In Inches)														
	"A" Port	"B" Port	C	D	E	F	G Mtng.	H Mtng.	J	K Mtng.	L Thread Size	M Min. Thread	N	"P" Port	"T" Port
100972	1/16-20 UNF SAE-4	1/16-20 UNF SAE-4	2.00	1.948	.904	.947	1.375	.313	.974	.287	10-24 UNC	.260	.452	1/16-20 UNF SAE-4	1/16-20 UNF SAE-4
100973	1/4 NPTF	1/4 NPTF			1/4 NPTF	1/4 NPTF									
100974†	—	—	—	—	.997	—	—	—	—	—	—	—	—	—	—

NOTE: † 100974 Check Valve includes (4) #10-24 UNC x 3.25 Lg. Mounting Screws.

Cat. No.	Dimensions (In Inches)															
	"A" Port	"B" Port	C	D	E	F	G	H	J	K	L	M	N	"P" Port	"T" Port	U
100975	3/16-16UNF SAE-8	3/16-16UNF SAE-8	5.630	.630	1.500	2.380	3.000	1.060	2.130	4.250	.810	2.190	3.000	3/16-14UNF SAE-10	3/16-14UNF SAE-10	2.38

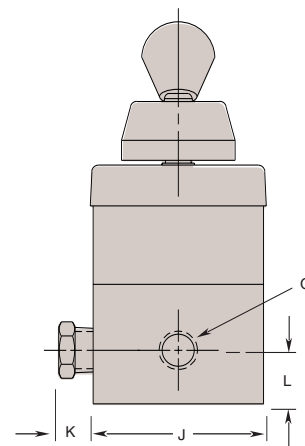
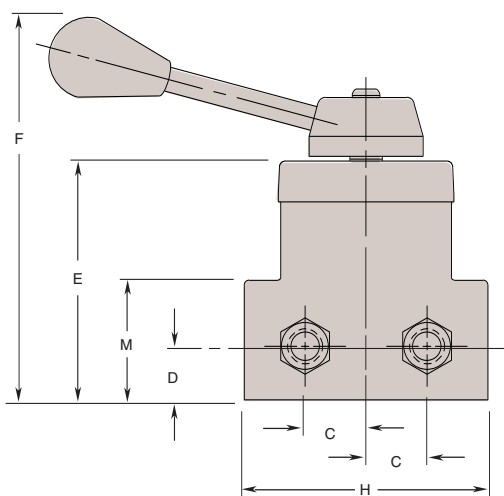
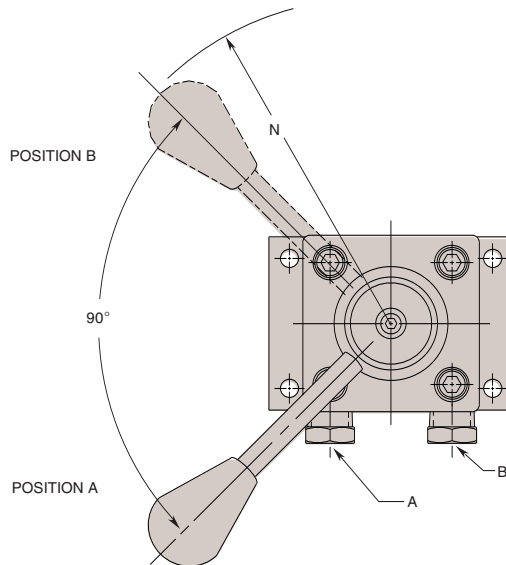
# Pump Mounted Control Valve



Designed to be used in applications where the pump is located near the operator with the valve mounted directly on the pump. This configuration eliminates the need for pressure and return lines between the pump and remote mounted control valves. It will replace the outlet manifold on most Hytec constant pressure pumps having that feature. (For use with Hytec No. 100178 pump, contact Hytec Technical Services.) One pump/valve combination is required for each circuit to be controlled.

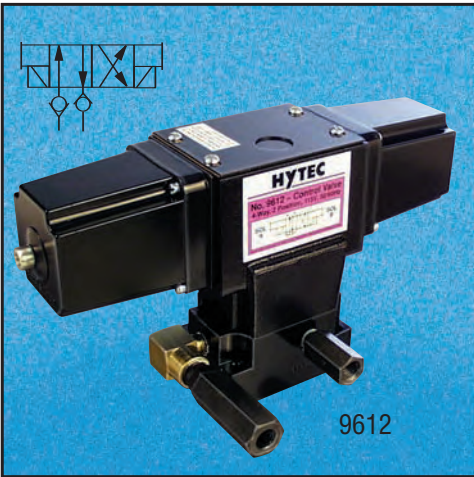
### Features:

- 3-way/4-way, 2-position, detented
- Manually operated
- Pump mounted
- Handle swings 90° and can be repositioned in 22.5° intervals
- Single- or double-acting systems
- ¼" NPTF reducer bushing
- Includes mounting hardware, return tube
- 5,000 psi max.
- 5 gpm max.



Cat. No.	Dimensions (In Inches)												
	A Port	B Port	C	D	E	F	G Gauge-Port	H	J	K	L	M	N Rad.
9504	¼ NPTF	¼ NPTF	.937	.750	3.188	5.562	¼ NPTF	3.750	2.660	.531	.812	1.437	5.031





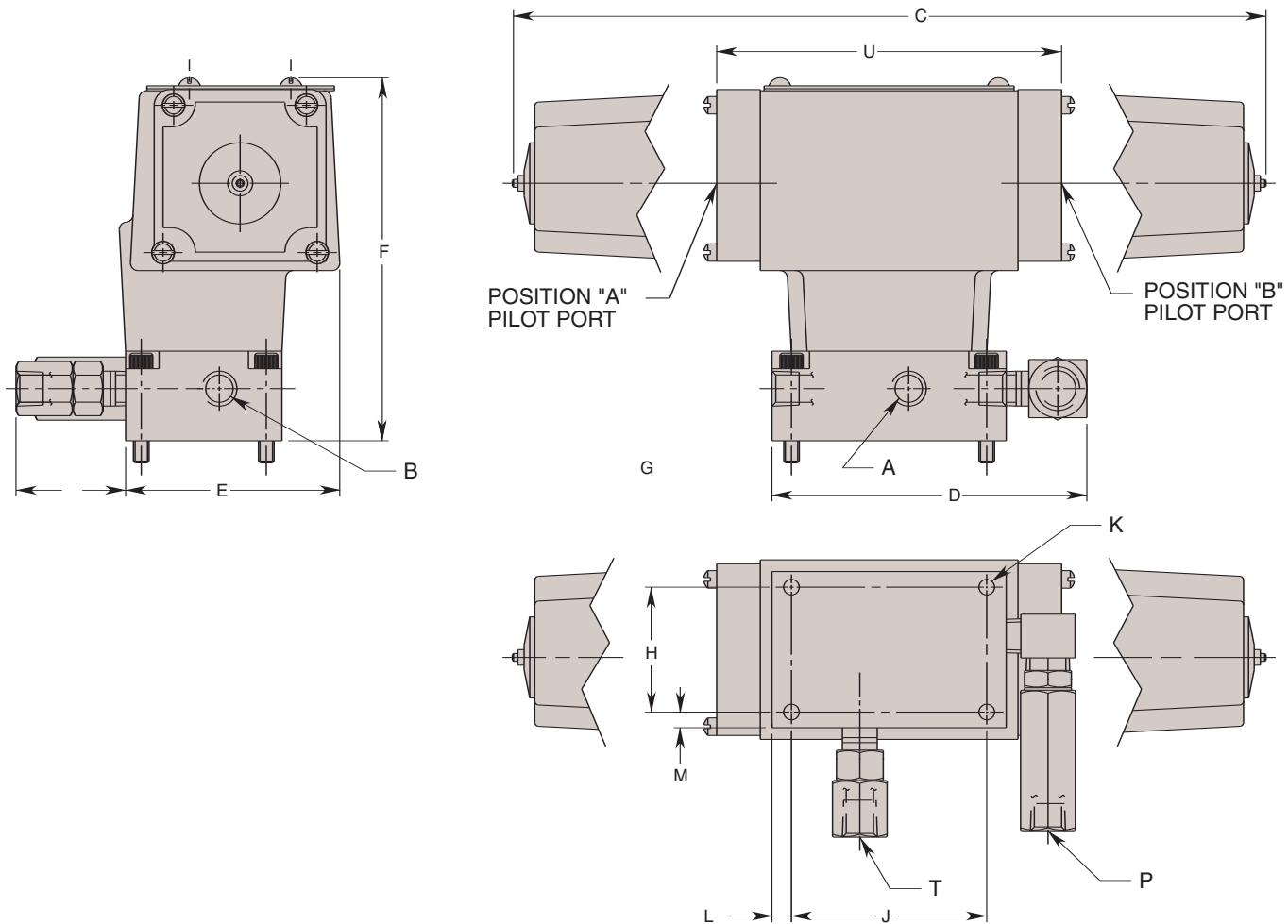
Designed for applications where the valve can be mounted remotely from the pump and where electrical operation is required.

Detented action needs only a momentary signal to shift valve positions. Electrical power interruption won't cause the valve to shift and release clamping pressure or pressurize the system unexpectedly.

**Features:**

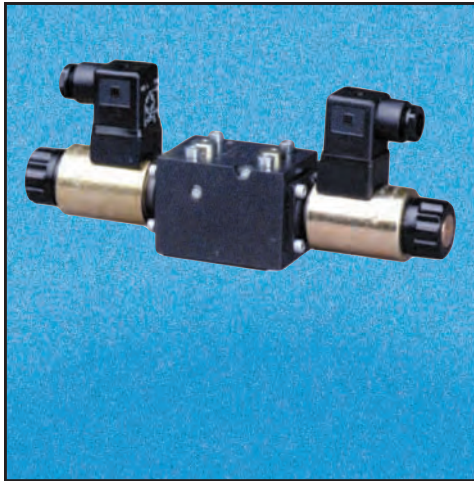
- 3-way/4-way, 2-position, detented
- Electrically operated; continuous duty rated
- Remote mounted
- Single- or double-acting systems
- 5,000 psi max.; 1,000 psi max. return line pressure
- 5 gpm max.
- Includes mounting hardware: ¼-20 UNC X 1.5" cap screws (4)
- Tank port check valve included to prevent return line back pressure from actuating released single-acting components, or causing pressure fluctuations in double-acting systems.

Remote Mounted Control Valves



Cat. No.	Specifications	Dimensions (In Inches)																
		"A" Port	"B" Port	Position A Pilot Port	Position B Pilot Port	C	D	E	F	G	H	J	K Dia.	L	M	"P" Port	"T" Port	U
9612	115 VAC, 50/60 Hz 5.3 Amps inrush, .6 Amps holding																	
9573	24 VAC, 50/60 Hz 25.4 Amps inrush, 2.8 Amps holding	¼ NPTF	¼ NPTF	—	—	12.062	5.000	3.375	5.812	2.500	2.000	3.125	.281	.312	.250	¼ NPTF	¼ NPTF	—
9574	230 VAC, 50/60 Hz 2.8 Amps inrush, .31 Amps holding																	
9611	50 psi min./150 psi max. air pressure			¼ NPTF	¼ NPTF	—												6.125

# Remote Mounted Control Valve



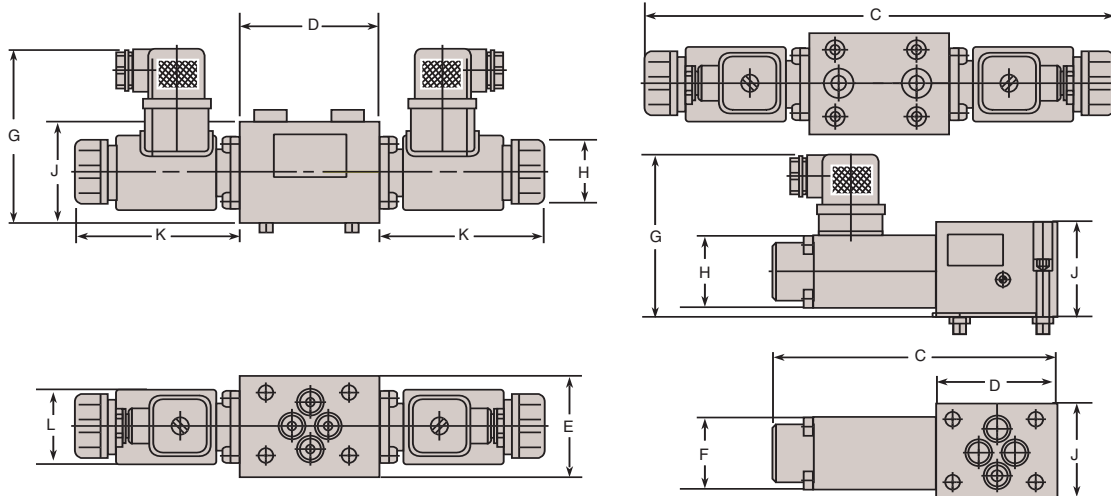
These extremely compact valves have zero leakage poppet design and are great for applications where the valve is remotely mounted from the pump.

- For use in single- and double-acting applications.
- DO3 Mounting.
- Heavy duty continuous duty coils last longer.

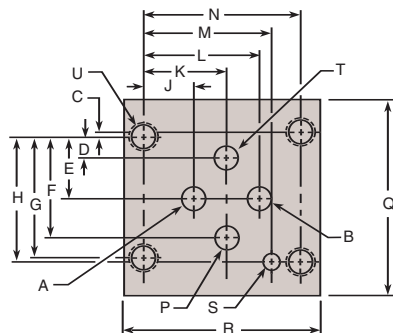
Comes in:

- 24 or 115 volt versions
- 3-position, 4-way version
- 2-position, 3-way version
- 5,000 PSI

Cat. No.	Dimensions (In Inches)											Description
	"A" Port Dia. Max	"B" Port Dia. Max	C	D	E	F	G	H	J	K	L	
110166	.25	.25	9.06	2.76	1.92	-	3.46	-	1.96	3.15	1.47	4-way, 3-pos., closed center 110V
110167	.25	.25	9.06	2.76	1.92	-	3.46	-	1.96	3.15	1.47	4-way, 3-pos., closed center 24V DC
110168	.25	.25	5.39	2.28	1.77	1.38	3.07	1.38	1.77	-	-	3-way, 2-pos., 110V
110169	.25	.25	5.39	2.28	1.77	1.38	3.07	1.38	1.77	-	-	3-way, 2-pos., 24V DC



DO3 Mounting System	Dimensions (In Inches)															"P" Port Dia. Max	Q Min.	R Min.	†† U Dia.	"T" Port Dia. Max	†† U Thread Size
	"A" Port Dia. Max	"B" Port Dia. Max	C	D	E	F	G	H	J	K	L	M	N								
	.250	.250	.030	.200	.610	1.020	1.220	1.250	.500	.850	1.190	1.300	1.594	.250	1.970	2.00	.160	.250	10-24 UNC		



Working Devices



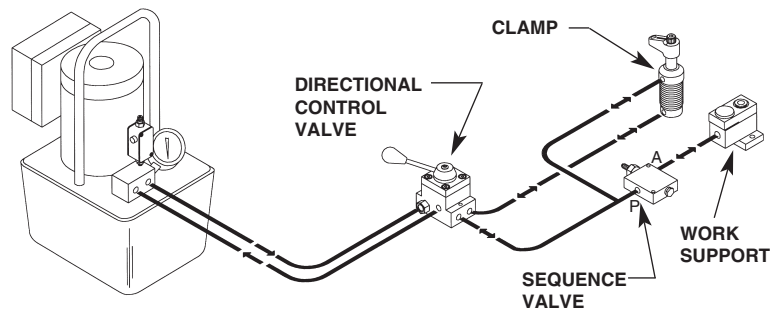
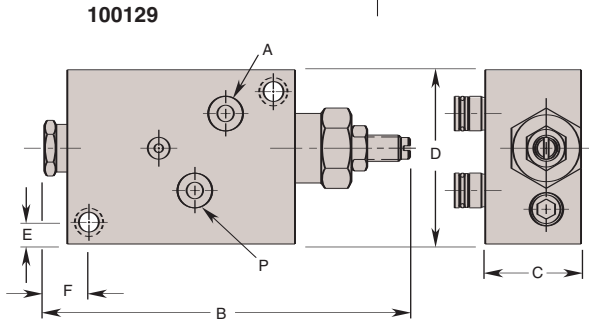
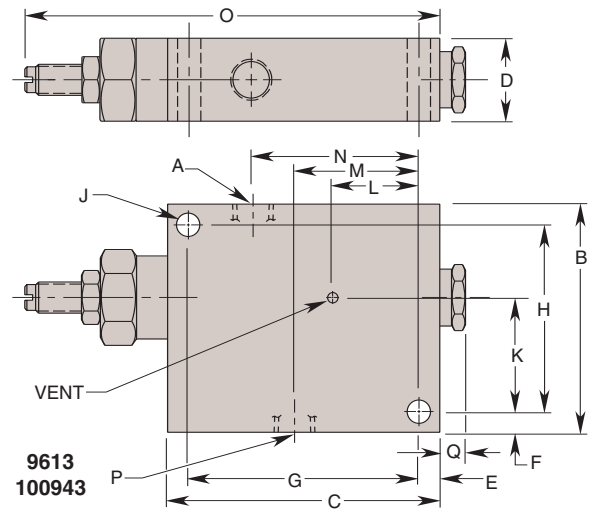
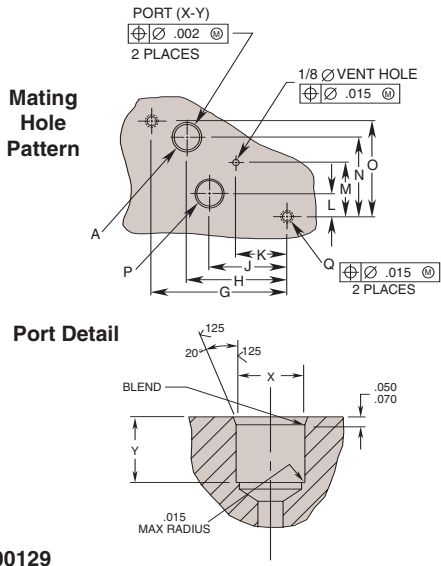
Sequence valves control the order of events within a hydraulic system by directing pressure to the two circuits in a pressure-controlled sequence. For example, this allows clamps to be actuated before work supports are locked.

Initially, the valve is closed. Oil flows to the primary circuit until pressure reaches the valve setting. The valve then opens to deliver oil to the secondary circuit while holding pressure on the primary circuit. Once secondary and primary pressures are equal, the pressure increases uniformly in both circuits. There is no reduction of pressure available to either circuit.

**Features:**

- Sequence pressure range is adjustable from 0 to 4,000 psi
- Usable with hydraulic systems operating up to 5,000 psi
- Will not reduce pressure to the secondary circuit
- Minimum operation pressure should be 120% of sequence pressure setting
- Internal check valve allows free flow in reverse direction
- Maximum flow rate 5 gpm
- Suitable for single- and double-acting circuits
- NPT, SAE or manifold mounting

Pressure Sequence Valves



Cat. No.	Dimensions (In Inches)																	
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	X Dia.	Y
100129	*	5.250	1.375	2.500	.312	.625	2.645	1.960	1.520	1.000	.456	1.063	1.560	1.875	*	1/4-20 UNC	.500 .503	.515 .535

NOTE: \*See Port Detail drawing for Ports A and P.

Cat. No.	Dimensions (In Inches)																
	"A" Port	B	C	D	E	F	G	H	J Dia.	K	L	M	N	O	"P" Port	Q	
9613	1/4 NPTF	2.750	3.281	1.000	.250	.250	2.781	2.250	.281	1.375	1.040	1.500	2.000	5.000	1/4 NPTF	.312	
100943	7/16-20UNF SAE-4														7/16-20UNF SAE-4		

# Pressure Reducing Control Valves



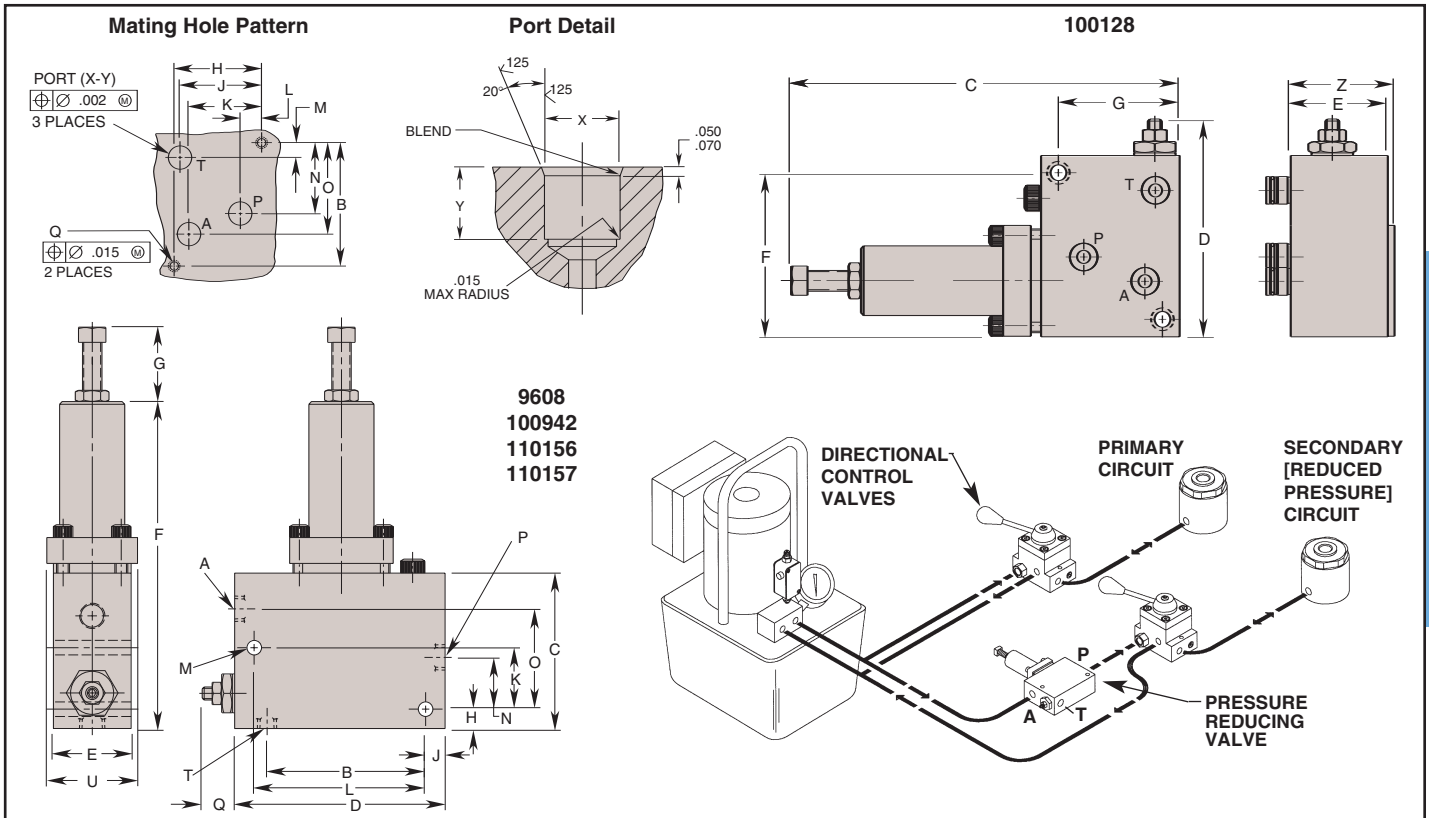
Pressure reducing valves are designed to reduce the maximum pressure in a portion of a hydraulic circuit: the valve is open from the inlet to the outlet until a pre-selected pressure is reached, at which point the valve closes to limit pressure in the secondary circuit. The need for a separate power source for each pressure level is eliminated.

Valves seats and poppets are precision ground, assuring virtually zero leakage and eliminating the need for a case drain line. The drain port (T) is used only during set up of the internal safety relief valve. This adjustable relief valve can be set to just above the reduced pressure setting so it will open only if contamination or another mal-

function prevents the pressure reducing valve from closing, causing the outlet pressure to rise above the relief valve setting. The drain port should never be plugged, although it is seldom permanently plumbed into the circuit.

**Features:**

- Valves are adjustable from 1,000 to 5,000 psi outlet pressure
- Internal check valve allows free flow in reverse direction
- Maximum flow rate at 5 gpm
- NPT, SAE or manifold mount
- Automatically reopens to replenish lost pressure



9608  
100942  
110156  
110157

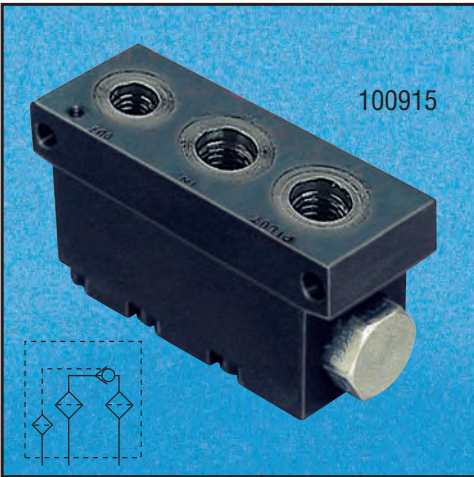
Pressure Reducing Valves

Cat. No.	Dimension (In Inches)																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q Thread Size	T	X Dia.	Y	Z
100128	*	2.645	7.000	4.000	1.750	2.960	2.188	1.875	1.750	1.560	.456	.316	1.520	1.960	*	1/4-20 UNC	*	.500 .503	.515 .535	1.875

NOTE: \*See Port Detail drawing for ports A, P and T.

Cat. No.	Dimensions (In Inches)																	
	"A" Port	B	C	D	E	F	G	H	J	K	L	M Dia.	N	O	"P" Port	Q	"T" Port	U
9608	1/4 NPTF														1/4 NPTF		1/8 NPTF	
100942	7/16-20UNF SAE-4										3.312			1.938	7/16-20UNF SAE-4		7/16-20UNF SAE-4	
110156	7/16-20UNF SAE-4	3.062	3.000	4.062	1.500	6.312	1.438	.375	.375	1.188		.281	1.000		.625	7/16-20UNF SAE-4**	1.820	
110157	1/4 NPTF														1/4 NPTF**		1/4 NPTF**	

NOTE: \*\*Include filters on P port and T port.



100915

Hytec's pilot operated check valve offers a unique poppet seal design making them ideal for pallet applications or other specialized control circuits where zero leakage is essential. They can be used in any application where pressure must be maintained in a portion of a circuit until a separate pilot signal opens the valve and allows free flow in the reverse direction.

The pilot pressure required to release the valves is approximately one third of the pressure being released. The pilot piston is sealed to prevent pilot flow through the valve.

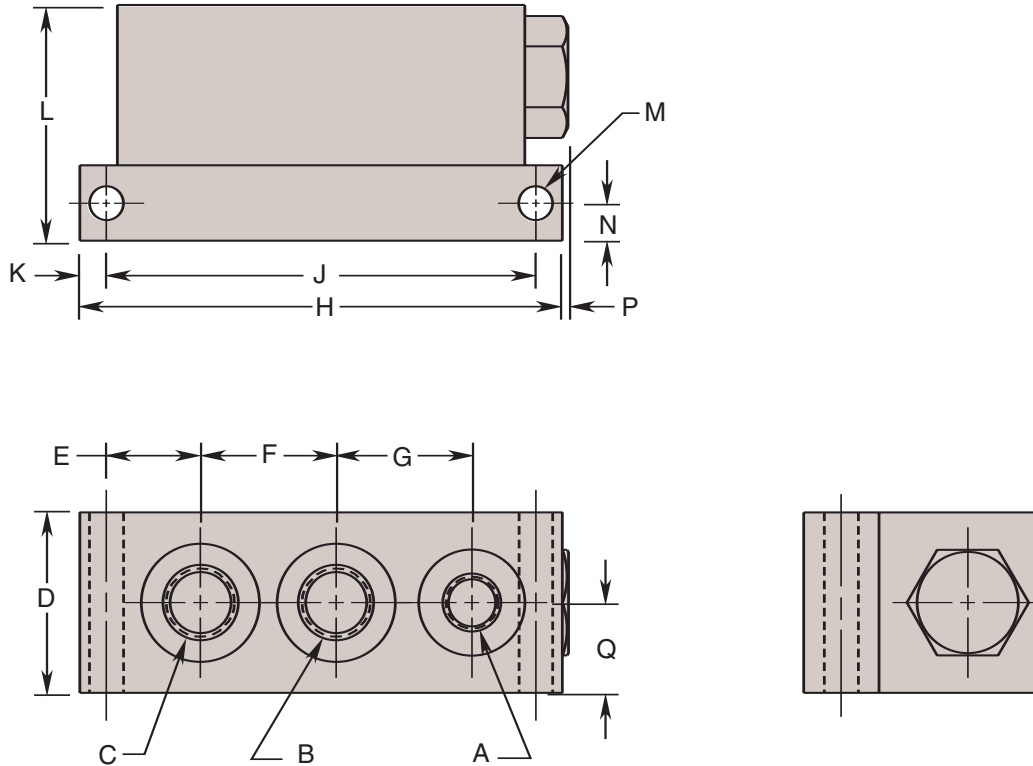
These valves are used with Hytec's Automatic Pallet Coupling System and double-acting manual pallet valve. The replaceable filter elements protect the check valve and your other system components from con-

tamination. No disassembly of circuit plumbing is required to service the filters or the check valve cartridge. An additional filter is recommended for protection of the return side of double-acting clamping circuits.

**Features:**

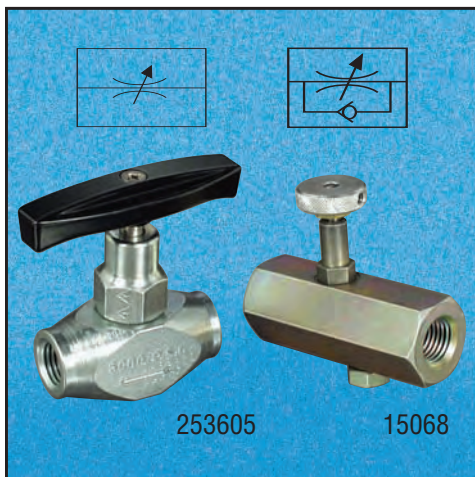
- Replaceable, cartridge design valve
- Filters in all three ports protect the check valve and downstream components
- Filters are replaceable without disassembly of plumbing
- SAE O-rings ports
- 10 micron (25 micron absolute) filtration level
- Specially reinforced filter elements resist fatigue from pressure spikes
- 5,000 psi maximum
- No. 100915 replaces and directly interchanges with No. 100856

Check Valves



Cat. No.	Specifications		Dimensions (In Inches)						
	Maximum Flow (GPM)	System/Pilot Pressure Ratio	A Pilot Port	B Inlet Port	C Outlet	D	E	F	G
100915	5	3:1	SAE-4 1/16"-20 UNF	SAE-6 1/16"-18 UNF	SAE-6 1/16"-18 UNF	1.500	.781	1.125	1.125

Cat. No.	Dimension (In Inches)							
	H	J	K	L	M Dia.	N	P	Q
100915	4.000	3.562	.219	1.955	.281	.312	.050	.750



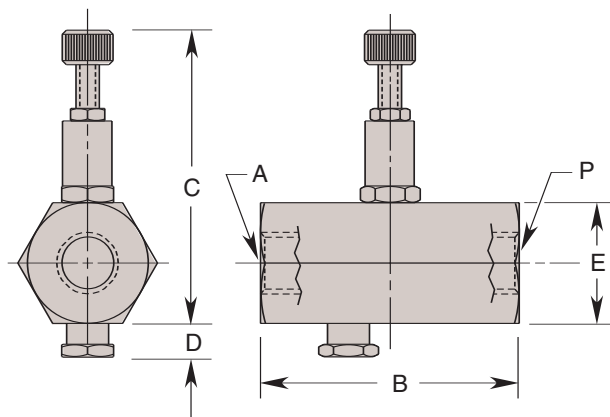
Hytec's **Needle Valves** are multiple-turn flow restrictor valves which provide finely adjustable flow control for components or circuits requiring reduced flow rates. They are also used in some non-critical sequencing applications where restriction in part of a circuit will tend to cause the actuators in the remainder of the circuit to operate first.

Needle valve No. 253605 restricts flow in both directions.

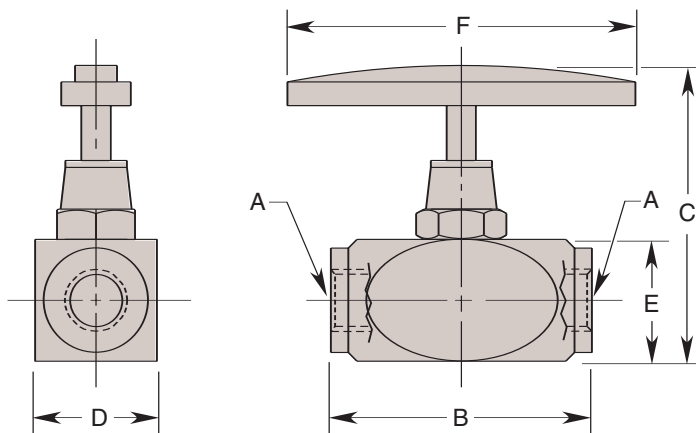
**Features:**

- Corrosion resistant construction
- 5,000 psi maximum

15068



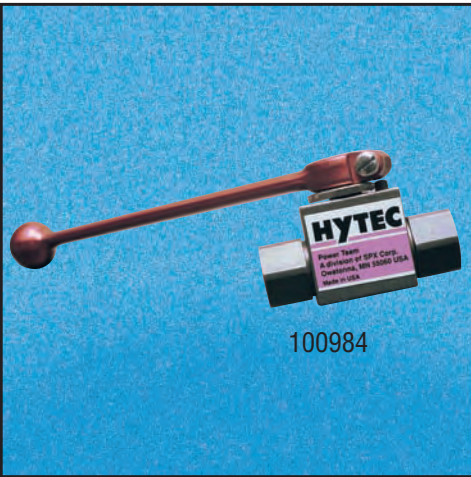
253605



Cat. No.	Dimensions (In Inches)					
	A Port	B	C Max.	D	E Hex.	P Port
15068	1/4 NPTF	2.375	2.125	.312	.875	1/4 NPTF

Cat. No.	Dimensions (In Inches)					
	A Port	B	C Max.	D	E	F
253605	1/4 NPTF	1.875	2.781	.875	.875	2.500

Needle Valves

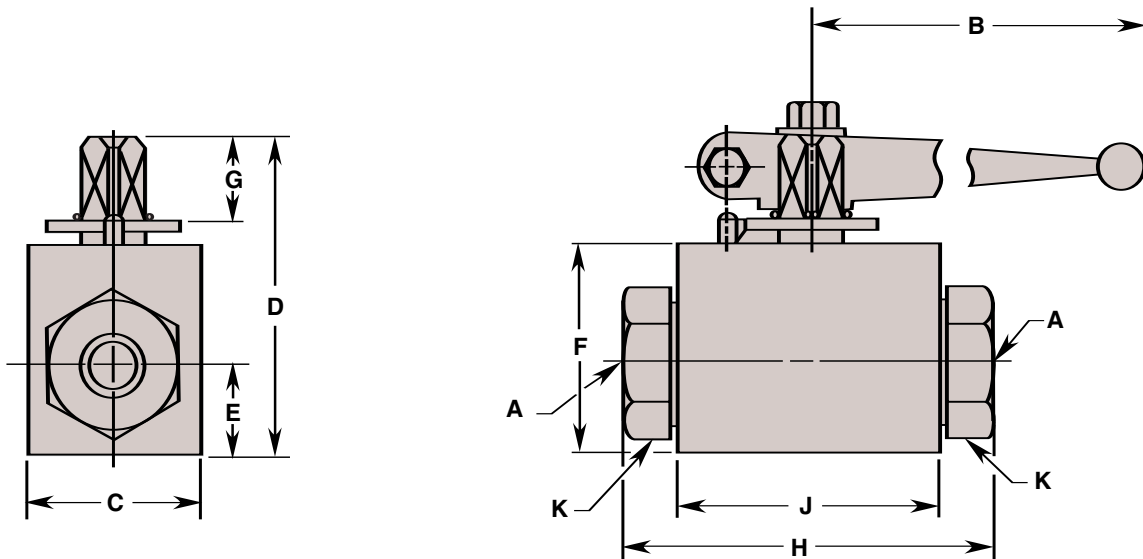


These two new high pressure ball valves provide full unrestricted flow and positive shut-off of fluids under extremely rugged service conditions making them perfect for workholding applications. Based on the "floating" ball principle, this design allows the ball to turn freely between the ball seals. A positive seal is attained by fluid pressure acting on the upstream surface of the ball and producing a constant uniform contact between the downstream ball seal and ball. The ball is operated by a single spindle with a projecting square end to which the handle is attached.

**Features:**

- Positive stops
- 90 degree actuation
- Easy Rotating
- Designed for shifting under high differential pressures
- Handle easily modified to fit application
- 5000 psi max.
- SAE or NPT ports

Ball Valves



Cat. No.	Dimensions (In Inches)										
	Max PSI	A	B	C	D	E	F	G	H	J	K Hex.
100984 (NPT)	5000	1/4 NPTF	6.000	1.000	1.970	.510	1.380	.470	2.720	1.380	.750
100985 (SAE)		7/16-20 UNF SAE-4									1.000