

PNEU-HYDRO



Gilmore's line of Pneu-hydro flow control products provide cost effective solutions to the demands of high-spec hydraulic systems.

Designed primarily for the energy sector, these versatile valves can be used in a wide range of applications and are designed and manufactured with the same quality for which Gilmore is known. The following list summarizes the product families within the Pneu-hydro line.



Check Valve

Gilmore's Pneu-Hydro bar stock check valves seal bubble-tight, even without back pressure. Known for durability and reliable performance, these check valves provide a smooth flow-path with minimum resistance.



Right Angle Relief Valve

Gilmore's Pneu-Hydro Right Angle Relief Valves remain bubble-tight up to cracking pressure and reseal bubble-tight at less than 10% drop from cracking pressure (significantly less in the higher pressure ranges). The external setting adjustment is particularly useful in applications where changes are required.



Inline Relief Valve

Gilmore's Pneu-Hydro Inline Relief Valves remain bubble-tight up to cracking pressure. They reseal at less than 10% drop from cracking pressure in lower ranges, and less than 5% at higher ranges. Cracking pressure is reliable, repeatable, and easily set by an internal adjustment, which is tamper-proof once the valve is installed in the system.



Miniature Relief Valve

Gilmore's Pneu-Hydro Miniature Relief Valves provide zero leakage up to cracking pressure, and they reseal bubble-tight within 5 - 10% of cracking pressure. Adjustments are insensitive to temperature variations. Available in vent-to-connection or vent-to-atmosphere configurations.



Quick Vent Valves

Gilmore's Pneu-Hydro Quick-Vent Valves are designed to provide high flow rates from an actuator when supply pressure is vented, while also providing reliable and leak free performance under normal operation. This functionality reduces restrictions on actuators, providing more consistent and predictable hydraulic performance.

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Excess Flow Check Valves

Gilmore's Pneu-Hydro Excess-Flow Check Valves are designed to contain pressurized fluids in the event of catastrophic downstream failure. The spring-loaded poppet is held open during normal operation, permitting free flow in both directions, and automatically closes once a leak is detected and a pressure differential threshold is reached.



Hand Valves

Gilmore's Pneu-Hydro Hand Valves provide durable and precise flow control in a compact design. The Teflon stem packing and pintle swivel help to prevent contamination and washout while also ensuring reliable and effortless operation.



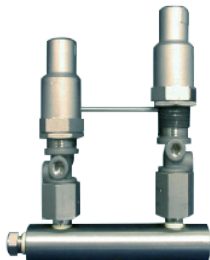
Interface Valves

Gilmore's Pneu-Hydro Interface Valves provide reliable pneumatic control over hydraulic functions up to 10,000 psi. These three-way two position valves are available in both normally open and normally closed versions.



H-2 High-Low Pilot Valves

Gilmore's Pneu-Hydro HL-2 High-Low Pilot Valves are used to sense flow-line pressure and protect equipment from abnormal conditions. These adjustable valves can function as normally closed or normally open, controlling both pneumatic and hydraulic systems.



H-2 High-Low Manifold Pilot Valve Assembly

Gilmore's Pneu-Hydro Pilot Valve Manifold assemblies utilize a pair of adjustable pilot valves to monitor flow line pressure. When a high or low limit is sensed, the assembly blocks and bleeds control pressure to provide fail safe shutdown of the system.

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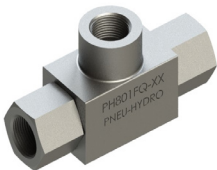
Gilmore's line of Pneu-hydro flow control products provide cost effective solutions to the demands of high-spec hydraulic systems.

Designed primarily for the energy sector, these versatile valves can be used in a wide range of applications and are designed and manufactured with the same quality for which Gilmore is known. The following list summarizes the product families within the Pneu-hydro line.



Pneumatic Control Valves

Gilmore's Pneu-Hydro Pneumatic Control Valves provide reliable control with pilot or manual push button control. These 3-way, 2-position valves are designed to select supply or vent to a function when actuated.



Shuttle Valves

Gilmore's Pneu-Hydro Shuttle Valves are used in systems where redundant or multiple supply sources are required. A simple ball and elastomeric seat design provides effective and reliable passive switching.



Sand Probe Valves

Gilmore's Pneu-Hydro Sand Probe Valves provide a visual indication and a control system signal once a predetermined level of erosion has occurred in a flowline. These 2-way, 2-position, normally open valves are piloted by flowline pressure entering the valves through an eroded opening in a sacrificial probe.



Inline Filters

Gilmore's Pneu-Hydro Inline Filters provide an effective and economic solution for filtering control system fluid. These universal filters are equipped with replaceable elements available in several particulate size ranges.



Pressure Indicators

Gilmore's Pneu-Hydro Pressure Indicators provide a visual indication for the presence of pneumatic pressure.



Pneu-Hydro O-ring Tool Kit

Gilmore's Pneu-Hydro kit of specifically designed tools for installing and extracting O-rings. Tools are invaluable to engineers, technicians and assembly personnel working on pneumatic, hydraulic and other fluid devices. They are fabricated from corrosion resistant materials for compatibility with most fluids and may be used in clean-room applications.

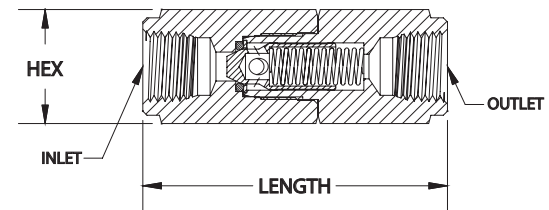
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Figure 1: Check Valve



Gilmore's Pneu-Hydro check valves are constructed of 316 stainless steel for strength and corrosion resistance and meet the requirements of NACE MR0175. The poppet is spring loaded for positive operation regardless of orientation.

Back pressure and spring loads are carried by a metal stop rather than the o-ring to ensure long seal life and minimum maintenance.

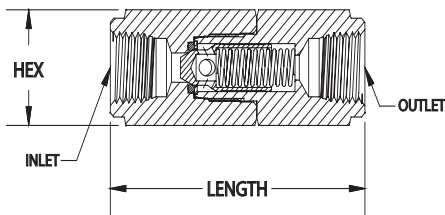
Features & Benefits

- Smooth, chatter-free performance
- Reliable and repeatable cracking and reseating pressures
- Also available in Hastelloy, Duplex Stainless Steel, Inconel 625, Monel 400
- Standard seal materials are Buna-N and Viton
- Seal material selections are available for compatibility with virtually any fluid chemistry

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**FUNCTIONAL DESIGN SPECIFICATION**

Maximum Allowable Working Pressure	10,000 psi
Flow Coefficient (Cv) – 1/4"	0.55
Flow Coefficient (Cv) – 3/8" & 1/2"	1.3
Operating Temperature Range – Buna N Seals	-40° F to 250° F
Operating Temperature Range – Viton Seals	-20° F to 400° F
Hydrostatic Proof Pressure	15,000 psi

Part Number	Dimensions (in)				
	Buna-N	Viton	Inlet	Outlet	Hex
PH301F4Q	PH301		1/4" NPTF	1/4" NPTF	2.28
PH301M4Q	PH301		1/4" NPTM	1/4" NPTM	2.34
PH301M4F4Q	PH301M4F4Q-V		1/4" NPTM	1/4" NPTF	2.25
PH301F6Q	PH301F6Q-V		3/8" NPTF	3/8" NPTF	3.13
PH301M8Q	PH301M8Q-V		1/2" NPTM	1/2" NPTM	3.63

Note: All models are designed for 5 psi cracking pressure. To order valves with the optional pressures shown above, add the indicated suffix number to the basic model number.

Crack pressure suffix number

2 psi	-1
10 psi	-2
25 psi	-3

STANDARD REPAIR KITS**Repair Kits for Valves with Buna-N Seals 1/4" NPT**

Repair Kit Part Number	For Valve Part Number	For Valve Set Pressure Range
PH613396	PH301F4Q, PH301M4Q, PH301M4F4Q	5 psi
PH613396-2	PH301F4Q-1, PH301M4Q-1, PH301M4F4Q-1	2 psi
PH613396-10	PH301F4Q-2, PH301M4Q-2, PH301M4F4Q-2	10 psi
PH613396-25	PH301F4Q-3, PH301M4Q-3, PH301M4F4Q-3	25 psi

Repair Kits for Valves with Viton Seals 1/4" NPT

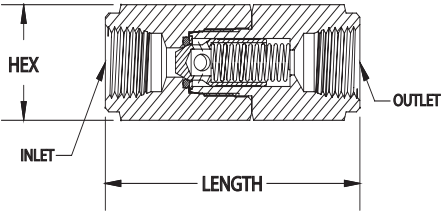
Repair Kit Part Number	For Valve Part Number	For Valve Set Pressure Range
PH613396-V	PH301F4Q-V, PH301M4Q-V, PH301M4F4Q-V	5 psi
PH613396-2V	PH301F4Q-1V, PH301M4Q-1V, PH301M4F4Q-1V	2 psi
PH613396-10V	PH301F4Q-2V, PH301M4Q-2V, PH301M4F4Q-2V	10 psi
PH613396-25V	PH301F4Q-3V, PH301M4Q-3V, PH301M4F4Q-3V	25 psi

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STANDARD REPAIR KITS

Repair Kits for Valves with Buna-N Seals 3/8" & 1/2" NPT		
Repair Kit Part Number	For Valve Part Number	For Valve Set Pressure Range
PH613581	PH301F6Q, PH301F6Q-1, PH301M8Q, PH301M8Q-1	2 & 5 psi
PH6133581-10	PH301F6Q-2, PH301M8Q-2	10 psi
PH613581-25	PH301F6Q-3, PH301M8Q-3	25 psi

Repair Kits for Valves with Viton Seals 3/8" & 1/2" NPT		
Repair Kit Part Number	For Valve Part Number	For Valve Set Pressure Range
PH613581 -V	PH301F6Q-V, PH301F6Q-1V, PH301M8Q-V, PH301M8Q-1V	2 & 5 psi
PH613581-10V	PH301F6Q-2V, PH301M8Q-2V	10 psi
PH613581-25V	PH301F6Q-3V, PH301M8Q-3V	25 psi

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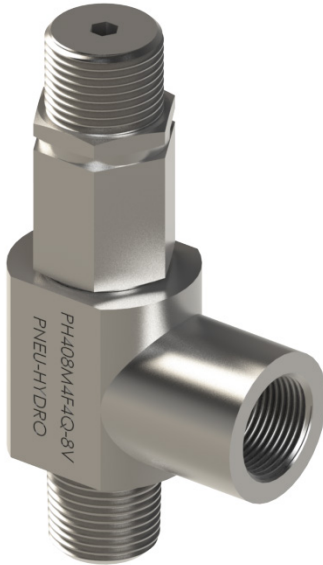
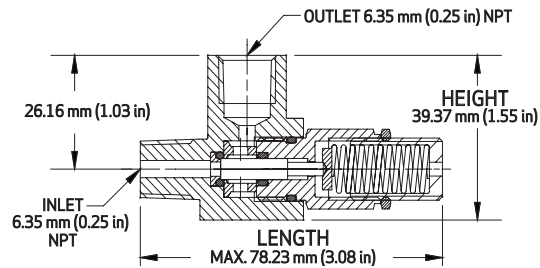


Figure 1: Right Angle Relief Valve



Gilmore's Pneu-Hydro Right Angle Relief Valves are pressure balanced internally and pressure referenced to atmosphere. This yields insensitivity to downstream pressure and permits the valve to also be used as a back pressure regulator.

The valve seals against an elastomeric seat and utilizes a metallic positive stop to carry the spring load, prolonging seal life and ensuring reliable pressure relieving performance. The design provides full flow at a very small rise above cracking pressure.

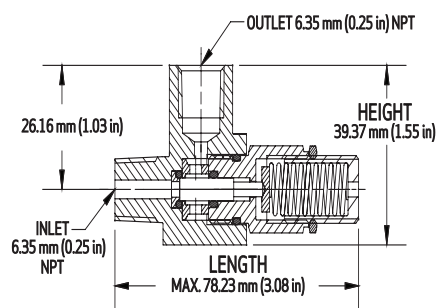
Features & Benefits

- Wide series of available relief pressure set ranges
- Precise factory set relief pressure per customer specification
- Externally adjustable
- Can be used as a back pressure regulator
- Smooth, chatter-free performance
- Reliable and repeatable cracking and reseating pressures
- 316 stainless steel construction

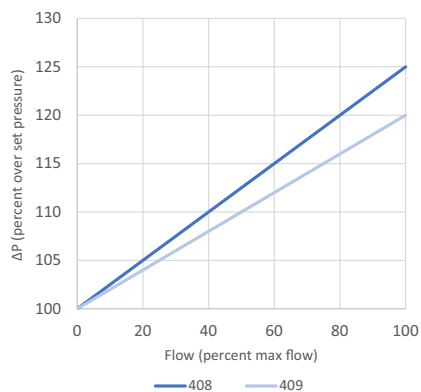
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408 and 409 Series Flow Data



FUNCTIONAL DESIGN SPECIFICATION

Maximum Allowable Working Pressure	10,000 psi
Flow Coefficient (Cv) - set range 100 - 5,000 psi	0.25
Flow Coefficient (Cv) - set range 5,000 - 10,000 psi	0.09
Operating Temperature Range - Buna N Seals	-40° F to 250° F
Operating Temperature Range - Viton Seals	-20° F to 400° F
Hydrostatic Proof Pressure	15,000 psi
Connection - Inlet	1/4" Male NPT

Part Number

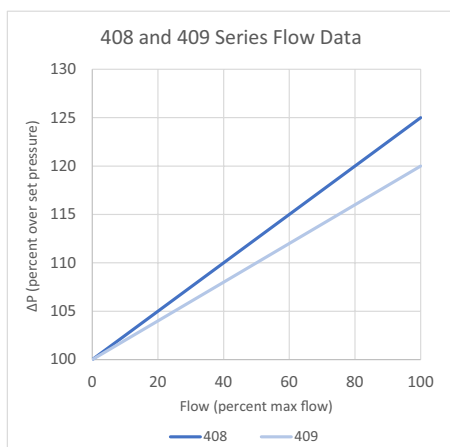
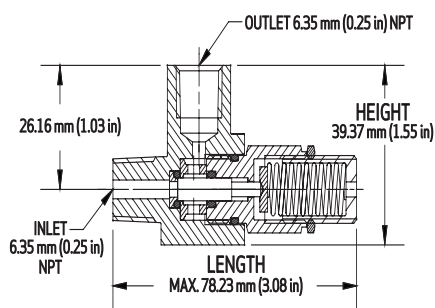
1/4" Female NPT Out let		1/4" Male NPT Out let		Operating Pressure Ranges
Buna-N	Viton	Buna-N	Viton	
PH408M4F4Q-1	PH408M4F4Q-1V	PH408M4Q-1	PH408M4Q-1V	100-150 psi (6.9 - 10.3 bar)
PH408M4F4Q-2	PH408M4F4Q-2V	PH408M4Q-2	PH408M4Q-2V	150-250 psi (10.3 - 17.2 bar)
PH408M4F4Q-3	PH408M4F4Q-3V	PH408M4Q-3	PH408M4Q-3V	250-350 psi (17.2 - 24.1 bar)
PH408M4F4Q-4	PH408M4F4Q-4V	PH408M4Q-4	PH408M4Q-4V	350-600 psi (24.1 - 41.4 bar)
PH408M4F4Q-5	PH408M4F4Q-5V	PH408M4Q-5	PH408M4Q-5V	600-900 psi (41.4 - 62.0 bar)
PH408M4F4Q-6	PH408M4F4Q-6V	PH408M4Q-6	PH408M4Q-6V	900-1,500 psi (62.0 - 103.4 bar)
PH408M4F4Q-7	PH408M4F4Q-7V	PH408M4Q-7	PH408M4Q-7V	1,500-3,000 psi (103.4-206.8 bar)
PH408M4F4Q-8	PH408M4F4Q-8V	PH408M4Q-8	PH408M4Q-8V	3,000-5,000 psi (206.8-344.7 bar)
PH409M4F4Q	PH409M4F4Q-V	PH409M4Q	PH409M4Q-V	5,000-10,000 psi (344.7-689.5 bar)

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STANDARD REPAIR KITS

Repair Kits for Valves with Buna-N Seals 1/4" NPT

Repair Kit Part Number	For Valve Part Number	For Valve Set Pressure Range	Spring Color
PH613369-1	PH408M4F4Q-1	100 - 150 psi (6.9 - 10.3 bar)	Violet
PH613369-2	PH408M4F4Q-2	150 - 250 psi (10.3 - 17.2 bar)	Black
PH613369-3	PH408M4F4Q-3	250 - 350 psi (17.2 - 24.1 bar)	Yellow
PH613369-4	PH408M4F4Q-4	350 - 600 psi (24.1 - 41.4 bar)	Yellow
PH613369-5	PH408M4F4Q-5	600 - 900 psi (41.4 - 62.0 bar)	Dark Green
PH613369-6	PH408M4F4Q-6	900 - 1,500 psi (62.0 - 103.4 bar)	Dark Green
PH613369-7	PH408M4F4Q-7	1,500 - 3,000 psi (103.4 - 206.8 bar)	Dark Blue
PH613369	PH408M4F4Q-8	3,000 - 5,000 psi (206.8 - 344.7 bar)	Red
PH613416	PH409M4F4Q	5,000 - 10,000 psi (344.7 - 689.5 bar)	Light Orange

Repair Kits for Valves with Viton Seals 1/4" NPT

Repair Kit Part Number	For Valve Part Number	For Valve Set Pressure Range	Spring Color
PH613369-1V	PH408M4F4Q-1V	100 - 150 psi (6.9 - 10.3 bar)	Violet
PH613369-2V	PH408M4F4Q-2V	150 - 250 psi (10.3 - 17.2 bar)	Black
PH613369-3V	PH408M4F4Q-3V	250 - 350 psi (17.2 - 24.1 bar)	Yellow
PH613369-4V	PH408M4F4Q-4V	350 - 600 psi (24.1 - 41.4 bar)	Yellow
PH613369-5V	PH408M4F4Q-5V	600 - 900 psi (41.4 - 62.0 bar)	Dark Green
PH613369-6V	PH408M4F4Q-6V	900 - 1,500 psi (62.0 - 103.4 bar)	Dark Green
PH613369-7V	PH408M4F4Q-7V	1,500 - 3,000 psi (103.4 - 206.8 bar)	Dark Blue
PH613369-V	PH408M4F4Q-8V	3,000 - 5,000 psi (206.8 - 344.7 bar)	Red
PH613416-V	PH409M4F4Q-V	5,000 - 10,000 psi (344.7 - 689.5 bar)	Light Orange

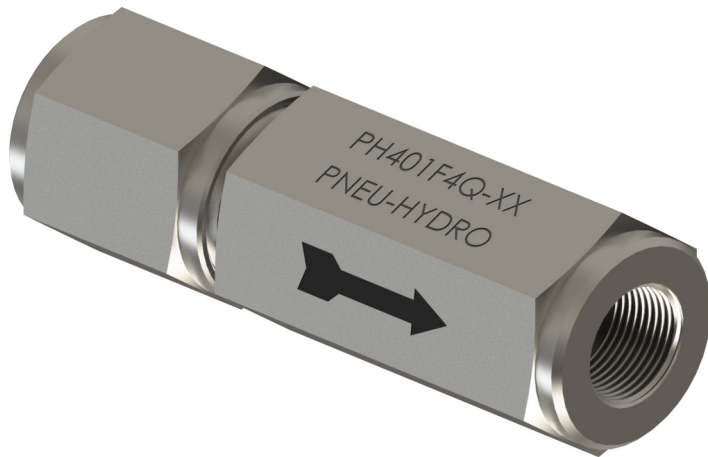
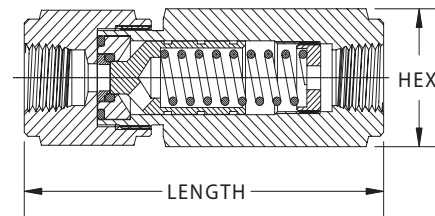


Figure 1: Inline Relief Valve



Gilmore's Pneu-Hydro Relief Valves provide reliable performance in a compact package with a wide range of available relief set points.

Utilizing an elastomeric O-ring seal on the poppet and a metallic positive stop to carry the spring pre-load, this simple design provides reliable settings, predictable performance, and prolonged service life. The standard valve is constructed of 316 stainless steel for strength and durability in the most corrosive applications.

Features & Benefits

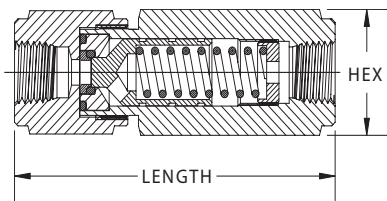
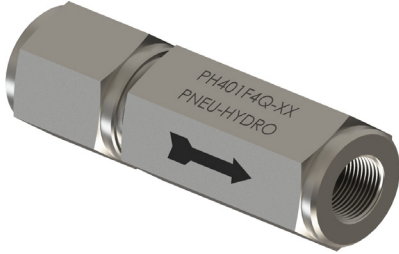
- Wide set range from a single part number
- Precise factory set relief pressure per customer specification
- Relief pressure easily set by internal adjustment
- Tamper proof adjustment
- Smooth, chatter-free performance
- Reliable and repeatable cracking and reseating pressures
- Standard seal materials are Buna-N and Viton
- Seal material selections are available for compatibility with virtually any fluid chemistry

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FUNCTIONAL DESIGN SPECIFICATION

Operating Pressure Range - Type 401	50 - 3,000 psi
Operating Pressure Range - Type 402	3,000 - 10,000 psi
Operating Temperature Range - Buna N Seals	-40° F to 250° F
Operating Temperature Range - Viton Seals	-20° F to 400° F

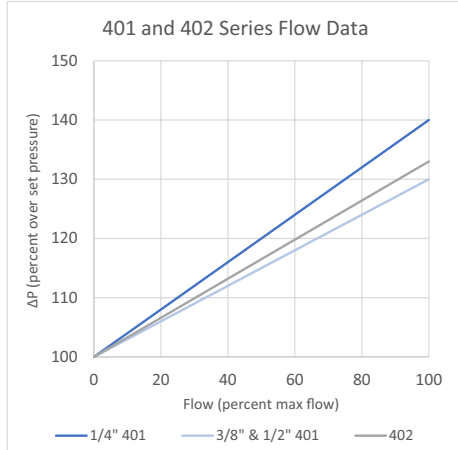
Part Number	Connections	Cv	Length (In)	Hex (In)	Pressure Range (psi)	Dash #
PH401F4Q- ^{1,2}	1/4" NPTF	0.6	3.0	0.94	50-250	-1
PH401F6Q- ^{1,2}	3/8" NPTF	1.3	4.25	1.38	250-600	-2
PH401F8Q- ^{1,2}	1/2" NPTF	1.3	4.61	1.38	500-1,750	-3
PH401M4Q- ^{1,2}	1/4" NPTM	0.6	3.5	0.94	1,500-3,000	-4
PH402F4Q- ²	1/4" NPTF	0.6	4.5	1.38	3,000-10,000	N/A
PH402F8Q- ²	1/2" NPTF	0.6	4.67	1.38	3,000-10,000	N/A

STANDARD REPAIR KITS

Repair Kit Part Number	For Valve Part Number	Pressure Range (psi)	Dash #	Spring Color
PH613652- ^{1,2}	PH401F6Q	50-250	-1	Lt Green
	PH401F8Q	250-600	-2	Brown
		500-1,750	-3	Brown
		1,500-3,000	-4	Uncoated
PH614114- ^{1,2}	PH401F4Q	50-250	-1	Yellow
	PH401M4Q	250-600	-2	Uncoated
		500-1,750	-3	Red
		1,500-3,000	-4	Uncoated
PH613760- ²	PH402F4Q	3,000-10,000	N/A	Uncoated
	PH402F8Q			

¹ Dash number for pressure range must be included with part number

² Buna-N standard elastomer - Include "V" with part number for Viton



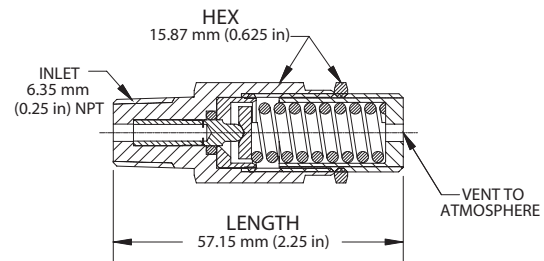
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Figure 1: Miniature Relief Valve



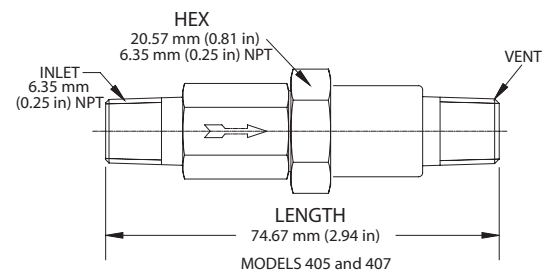
Gilmore's Pneu-Hydro Miniature Relief Valves provide low flow, reliable pressure relief with options for ported or atmospheric vent.

Standard models are constructed of 316 stainless steel for strength and durability in the most corrosive applications, with additional material options available. Buna-N or Viton O-rings are standard with other sealing materials available.

Features & Benefits

- Wide set range from a single part number
- Precise factory set relief pressure per customer specification
- Relief pressure easily set by external adjustment
- Smooth, chatter-free performance
- Reliable and repeatable cracking and reseating pressures
- Standard seal materials are Buna-N and Viton
- Seal material selections are available for compatibility with virtually any Fluid chemistry
- Ported vent models (PH405 and PH407) have 1,000 psi rated vent ports

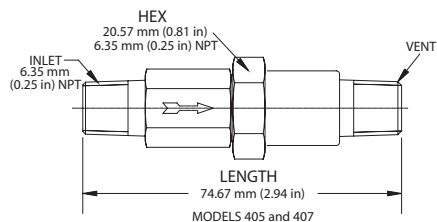
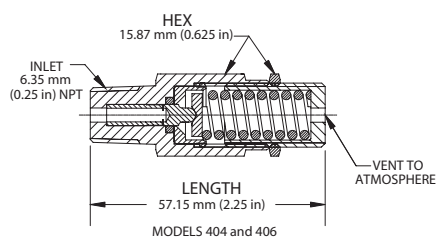
Figure 2: Miniature Relief Valve



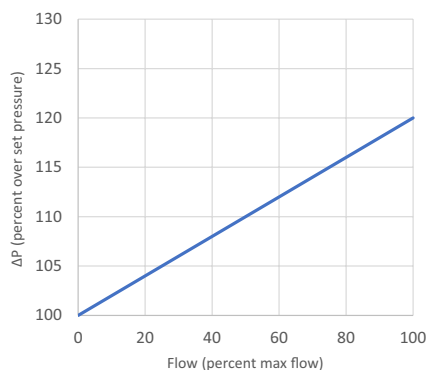
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404 and 405 Series Flow Data



FUNCTIONAL DESIGN SPECIFICATION

Operating Pressure Range - Type 404 and 405	50 - 5,000 psi
Operating Pressure Range - Type 406 and 407	5,440 - 13,000 psi
Connection - Inlet	1/4" NPT M
Connection - Vent (Type 405 and 407)	1/4" NPT M
Operating Temperature Range - Buna N Seals	-40° F to 250° F
Operating Temperature Range - Viton Seals	-20° F to 450° F
Cv - Type 404, 405, 406, 407	0.035

Part Number	Vent Type	Length (In)	Hex (In)	Pressure Range (psi)	Dash #
PH404M4Q- ^{1,2}	Atmosphere	4.61	1.38	50-100	-10
				100-150	-1
				150-250	-2
				250-350	-3
				350-600	-4
PH405M4Q- ^{1,2}	Ported	3.5	0.94	600-900	-5
				900-1,500	-6
				1,500-3,000	-7
				3,000-5,000	-8
PH406M4Q- ²	Atmosphere	4.5	1.38	5,000-13,000	N/A
PH407M4Q- ²	Ported	4.67	1.38		N/A

STANDARD REPAIR KITS

Repair Kit Part Number	For Valve Part Number	Pressure Range (psi)	Dash #	Spring Color
PH613376- ^{1,2}	PH404M4Q PH405M4Q	50-100	-10	Purple
		100-150	-1	Violet
		150-250	-2	Black
		250-350	-3	Orange
		350-600	-4	Yellow
		600-900	-5	Pink
		900-1,500	-6	Dk Green
		1,500-3,000	-7	Dk Blue
		3,000-5,000	-8	Lt Orange
PH613374- ²	PH406M4Q PH407M4Q	5,000-13,000	N/A	Uncoated

¹ Dash number for pressure range must be included with part number

² Buna-N standard elastomer - Include "V" with part number for Viton

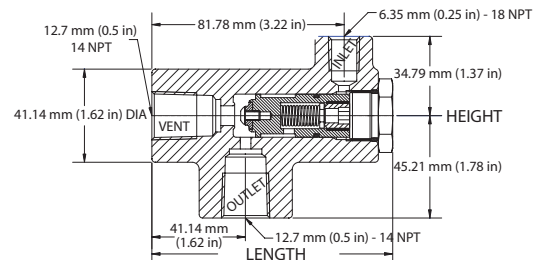
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Figure 1: Quick Vent Valve



Gilmore's Pneu-Hydro Quick Vent Vales are constructed of 316 stainless steel for strength, durability and in accordance with NACE MR-01-75.

Additional material options are available. Buna-N or Viton O-rings are standard with other sealing materials available.

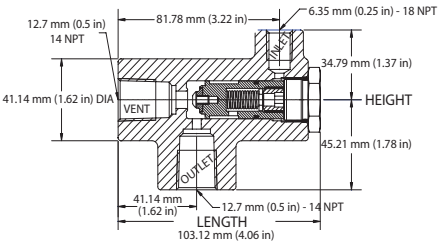
Features & Benefits

- Smooth, chatter-free performance
- 316 stainless steel construction
- Standard seal materials are Buna-N and Viton
- Seal material selections are available for compatibility with virtually any fluid chemistry

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PNEU-HYDRO -091620-002-13



FUNCTIONAL DESIGN SPECIFICATION

Maximum Allowable Working Pressure	10,000 psi
Connection - Inlet	1/4" NPT F
Connection - Outlet	1/2" NPT F
Connection - Vent	1/2" NPT F
Operating Temperature Range - Buna N Seals	-40° F to 250° F
Operating Temperature Range - Viton Seals	-20° F to 450° F
Cv - Supply to Function	0.8
Cv - Function to Vent	2.0

Part Number Seal Type

PH433254	Buna-N
PH433254-V	Viton

STANDARD REPAIR KIT

Part Number Seal Type

PH613254	Buna-N
PH613254-V	Viton

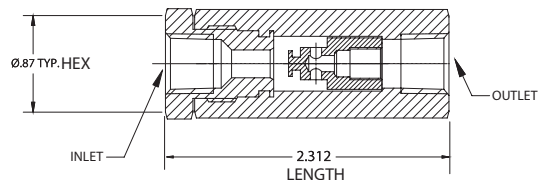
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Figure 1: Excess-Flow Check Valve



Gilmore's Pneu-Hydro Excess-Flow Check Valve are designed not only to prevent fluid loss in the event of a downstream failure but will also remain closed as long as supply pressure is maintained.

Constructed of 316 stainless steel for strength, durability and in accordance with NACE MR-01-75. Suitable for use with liquids or gasses.

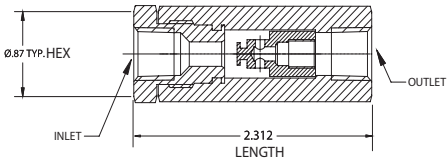
Features & Benefits

- Flow is normally permitted in both directions through the valve
- In the event of a down-stream failure causing an imbalance in pressure, the poppet will close preventing escape of fluid until system repair
- The spring will reset the poppet to its open position after the removal of supply pressure for system maintenance

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FUNCTIONAL DESIGN SPECIFICATION

Operating Pressure	50 psi
Maximum allowable Working Pressure	7,500 psi
Proof Pressure	10,000 psi
Connection - Inlet	1/4" NPT F
Connection-Outlet	1/4" NPT F
Operating Temperature Range - Viton Seals	-20° F to 400° F
Cv	0.45

Part Number Seal Type

PH213677	Viton
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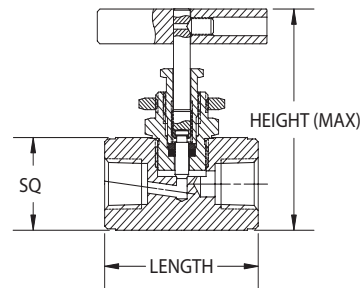
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Figure 1: Hand Valve



Gilmore's Pneu-Hydro Hand Valves include many features designed specifically to improve the durability and performance, while also minimizing the overall size.

A strategically placed packing below the stem threads help to ensure a durable and leakproof seal, and a self-aligning swivel pintle aids in minimizing seat scoring. A very low operating torque (less than 10 lb-inches) provides a precise 'feel' and adjustment sensitivity over the lifetime of the valve. The valve stem is designed so that it cannot be inadvertently backed out of the valve, and the low profile makes this valve ideally suited for panel mounted or other limited space applications. Teflon stem seal and 316 stainless steel construction combine to provide maximum compatibility with corrosive fluids.

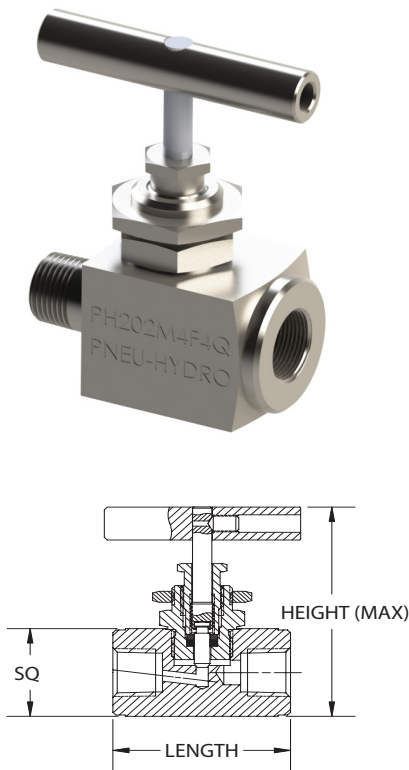
Features & Benefits

- Self-aligning swivel pintle to minimize seat scoring
- Teflon stem seal and 316 stainless steel construction to provide maximum compatibility with corrosive fluids
- Weight = approx .5 lbs

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PNEU-HYDRO -091620-002-17



FUNCTIONAL DESIGN SPECIFICATION

Maximum Allowable Working Pressure (206)	6,000 psi
Maximum Allowable Working Pressure (202)	10,000 psi
Proof Pressure	20,000 psi
Burst Pressure	40,000 psi
Operating Temperature Range - Buna-N Seals	-65° F to 450° F
Cv	0.26
Orifice	0.125"

Part Number	Inlet	Outlet	Dimensions (in)		
			L	H	SQ
PH206F4Q	1/4" NPT F	1/4" NPT F	1.81	2.38	0.89
PH202M4F4Q	1/4" NPT M	1/4" NPT F	1.93	2.5	1
PH202F4Q	1/4" NPT F	1/4" NPT F	1.81	2.5	1

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¹ Dash number for pressure range must be included with part number
² Buna-N standard elastomer - Include "V" with part number for Viton

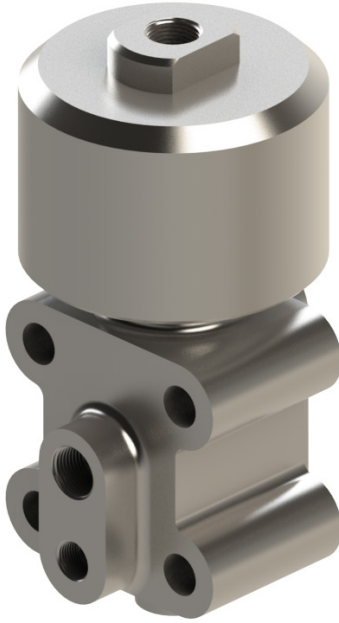
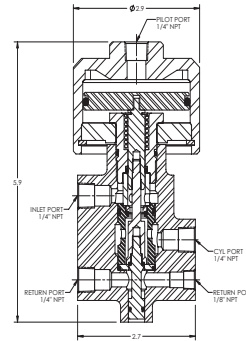


Figure 1: Interface Valve



Gilmore's Pneu-Hydro Interface Valves utilize a piston style pneumatic actuator to control a three-way two position hydraulic valve. Configured in both normally open and normally closed versions, these valves can accommodate hydraulic pressures up to 10,000 psi and pilot pressures up to 1,000 psi.

The unique spool valve design permits the use of a piston style actuator, eliminating the common failures and leakage associated with pilot diaphragms, while also ensuring safe and reliable operation with consistent low pilot pressure; 50 psi pilot at 5,000 psi hydraulic, and 80 psi pilot at 10,000 psi hydraulic.

A combination of elastomeric and metal seals ensures reliable zero leakage performance in the hydraulic power section. Failsafe closure is ensured, as both the internal spring and hydraulic pressure acting on the differential spool area provide sufficient force to effect closure should one or the other fail.

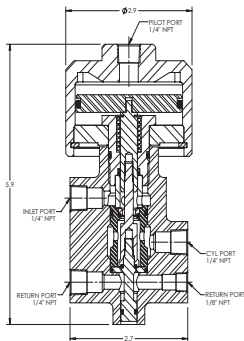
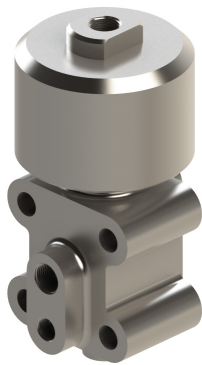
A positive indicator of operation is provided in the spool extension, which shifts to show position, and the manual override version has a turning handle located at the top center of the piston housing.

Excellent flow capacity is provided with a value of $C_v = 0.5$ or the equivalent of an orifice of 0.224 inch diameter.

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PILOT FUNCTIONAL DESIGN SPECIFICATION

Control Fluid	Hydraulic or Air
Operating Pressure	50 psi with 5,000 psi hydraulic 80 psi with 10,000 psi hydraulic
Maximum Allowable Working Pressure	1,000 psi
Proof Pressure	1,500 psi
Burst Pressure	2,000 psi
Connection	1/4" NPT F

VALVE FUNCTIONAL DESIGN SPECIFICATION

Control Fluid	Hydraulic or diesel
Maximum Allowable Working Pressure	10,000 psi
Proof Pressure	15,000 psi
Burst Pressure	20,000 psi
Temperature Range	-65° F to 450° F
Flow Capacity (Cv)	0.5
Flow Rate	39 Gal/min @ 5,000 psi
Connection	1/4" NPT F

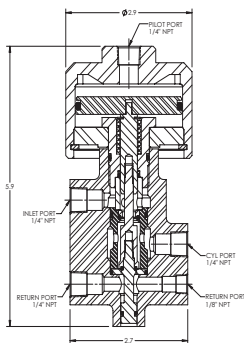
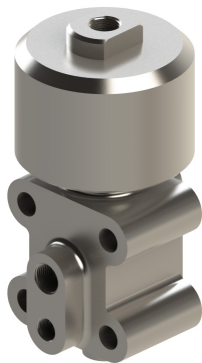
Part Number	Description
183834-P	Valve, hydraulic interface 3-wnc 6k psi manual override
433174-P	Valve, hydraulic interface 3-wnc 6k psi
433174-PA	Valve, hydraulic interface 3-wnc 6k psi arctic
433174-PH	Valve, hydraulic interface 3-wnc 8k psi hydraulic pilot
433174-PHA	Valve, hydraulic interface 3-wnc 8k psi hydraulic pilot arc
433242-P	Valve, hydraulic interface 3-wno 6k psi
433242-PH	Valve, hydraulic interface 3-wno 6k psi hydraulic pilot
433242-PHA	Valve, hydraulic interface 3-wno 6k psi hydraulic pilot arctic
433707-P	Valve, hydraulic interface 3-wnc 6k psi dual inlet
433707-PH	Valve, hydraulic interface 3-wnc 6k psi dual inlet arctic
434189	Valve, hydraulic interface 3-wnc 10k psi
434189-A	Valve, hydraulic interface 3-wnc 10k psi arctic

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Continued on page 20.1



STANDARD REPAIR KITS

Repair Kit Part Number	For Valve Part Number
PH613174-P	PH433174-P
PH613174-PA	PH433174-PA
PH613174-PH	PH433174-PH
PH613174-PHA	PH433174-PHA
PH613242-P	PH433242-P
PH613242-PH	PH433242-PH
PH613707-P	PH433707-P
PH613707-PH	PH433707-PH
PH613834-P	PH183834-P
PH614189	PH434189

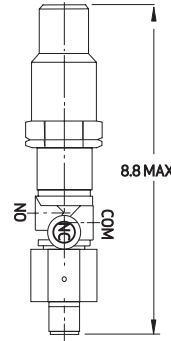
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Figure 1: HL-2 High-Low Pilot Valve



Gilmore's Pneu-Hydro HL-2 High-Low Pilot Valves rely on flowline pressure to pilot an adjustable control valve. Capable of functioning as either normally open or normally closed, these 3-way control valves are intended to initiate a shutdown when flowline pressure is sensed to exceed a low or high setpoint.

Available in eight pressure ranges up to 10,000 psi, and with a wide range of available alloys and seal materials, these valves are compatible with any flowline fluid, and can be safely used in both hydraulic and pneumatic control systems.

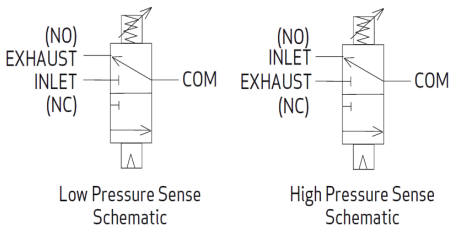
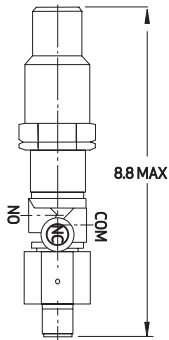
Features & Benefits

- Wide series of available pressure ranges
- Smooth, chatter-free performance
- Reliable and repeatable cracking and reseating pressures
- 316 stainless steel construction (Also available in Hastelloy, Duplex Stainless Steel, Inconel 625, Monel 400)
- Seal material selections are available for compatibility with virtually any fluid chemistry
- Repeatability of set point = 1% of full range max
- Dead Band = 10% of full range max
- Weight = Approx 2.8 lbs

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PNEU-HYDRO -091620-002-21



FUNCTIONAL DESIGN SPECIFICATION

Control Fluid	Hydraulic or Air
Maximum Allowable Working Pressure - Flowline	10,000 psi
Maximum Allowable Working Pressure - Controls	150 psi
Operating Temperature	-20° F to 400° F

Part Number Standard/H ₂ S-CO ₂	Part Number Artic Service	Pressure Range
PH433741	PH433741	5 - 50 psi (.34 - 3.4 bar)
PH433742	PH433742	30 - 115 psi (2.1 - 7.9 bar)
PH433744	PH433744	100 - 1,000 psi (6.9 - 68.9 bar)
PH433745	PH433745	500 - 1,500 psi (34.5 - 103.4 bar)
PH433743	PH433743	1,000 - 5,000 psi (68.9 - 344.7 bar)
PH433746	PH433746	1,500 - 3,500 psi (103.4 - 241.3 bar)
PH433730	PH433730	3,000 - 6,000 psi (206.8 - 413.7 bar)
PH433747	PH433747	5,000 - 10,000 psi (344.7 - 689.5 bar)

STANDARD REPAIR KITS

Repair Kit Part Number	For Valve Part Number
PH613730	PH433730
PH613741	PH433741
PH613742	PH433742
PH613743	PH433743
PH613744	PH433744
PH613745	PH433745
PH613746	PH433746
PH613747	PH433747

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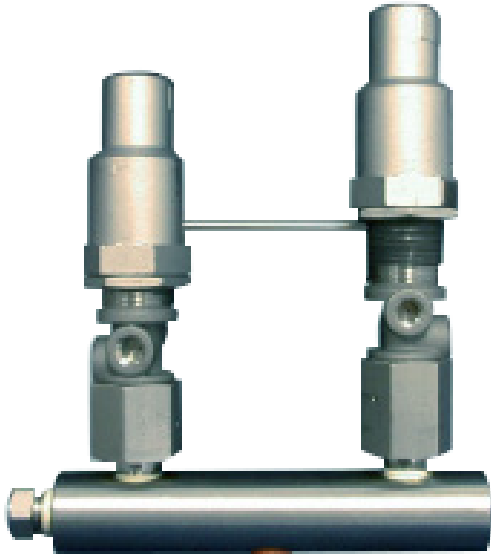
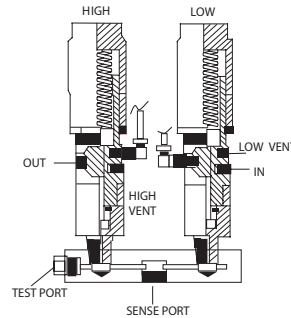


Figure 1: High-Low Manifold Pilot Valve Assembly



Gilmore's Pneu-Hydro High-Low Manifold Pilot Valve Assembly combines two HL-2 pilot valves into a compact manifold assembly to provide reliable monitoring of flowline pressure. Using any combination of two HL-2 valves, limit pressures can be set to any range between 5 and 10,000 psi.

Through a common flowline pressure sensed in the manifold, the HL-2 valves can be set to block and bleed the control fluid or switch to open the control source when pressures are detected to be beyond a low or high pressure set point.

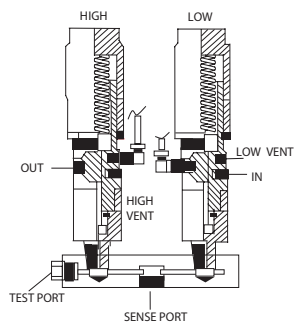
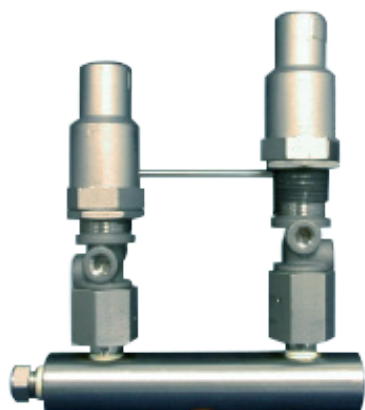
Features & Benefits

- Wide series of available pressure ranges
- Smooth, chatter-free performance
- Reliable and repeatable cracking and reseating pressures
- 316 stainless steel construction (also available in Hastelloy, duplex stainless steel, Inconel 625, Monel 400)
- Seal material selections are available for compatibility with virtually any fluid chemistry

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PNEU-HYDRO -091620-002-23



FUNCTIONAL DESIGN SPECIFICATION

Control Fluid	Hydraulic or Air
Maximum Allowable Working Pressure - Flowline	10,000 psi
Maximum Allowable Working Pressure - Controls	150 psi
Operating Temperature	-20° F to 400° F

Section	Maximum Pressure	Part Number	Pressure Range	High pilot digits 1&2	Low pilots digits 3&4
A	1,500 psi	PH433741	5 - 50 psi (3 - 3.4 bar)*	01	01
	1,500 psi	PH433742	30 - 115 psi (2.0 - 7.9 bar)*	02	02
	10,000 psi	PH433744	100 - 1,000 psi (6.9 - 68.9 bar)	03	03
	10,000 psi	PH433745	500 - 1,500 psi (34.4 - 103.4 bar)	04	04
	10,000 psi	PH433746	1,000 - 5,000 psi (68.9 - 344.7 bar)	05	05
B	10,000 psi	PH433743	1,500 - 3,500 psi (103.4 - 241.3 bar)	06	06
	10,000 psi	PH433730	3,000 - 6,000 psi (206.8 - 413.7 bar)	07	07
	10,000 psi	PH433747	5,000 - 10,000 psi (344.7 - 689.5 bar)	08	08

High-Low Pilot Manifold Assemblies are ordered under a nine-digit part number starting with 876-64-, followed with digits 1&2, and 3&4 from the table above. For optimal performance, both the high range and low range valves should be selected from the same section in the table above.

Example: P/N 876-64-0503 (high set range 1,500 - 3,000 psi; low set range 100 - 1,500 psi)

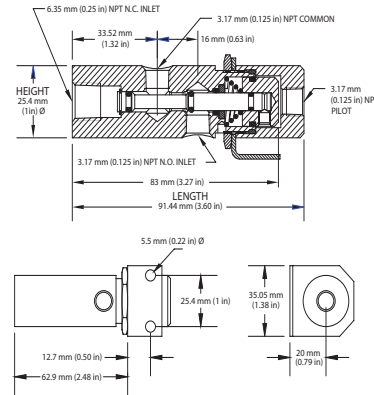
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Figure 1: Pneumatic Control Valve



Gilmore's Pneu-Hydro Pneumatic Control Valves provide control over two pneumatic sources to a single function. With manual or piloted control, these versatile and robust valves provide reliable, bubble-tight sealing for a wide range of applications.

Options for line, panel or bracket mounting configurations provide a solution for almost all installations.

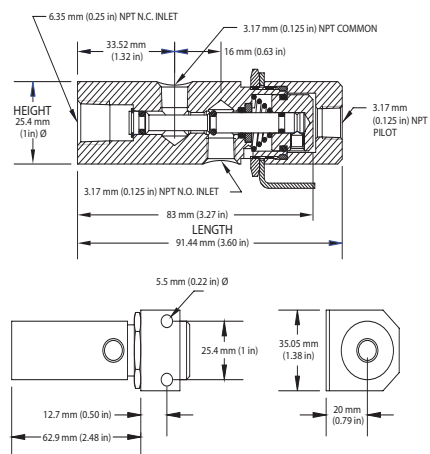
Features & Benefits

- 316 stainless steel construction
- Broad selection of o-ring materials
- Compact design

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PNEU-HYDRO -091620-002-25



FUNCTIONAL DESIGN SPECIFICATION

Control Fluid	Air
Maximum Allowable Working Pressure	250 psi
Cv	.40
Operating Temperature	-20° F to 450° F

Part Number	Description	Repair Kit Part Number
PH183552	Panel Mounted, pushbutton	PH613612
PH183554	Bracket Mounted, pushbutton	PH613612
PH183612	Line Mounted, pushbutton	PH613612
PH433553	Bracket Mounted, pilot operated	PH613612
PH433555	Line Mounted, pilot operated	PH613612
PH434150	Panel Mounted, pilot operated	PH614150

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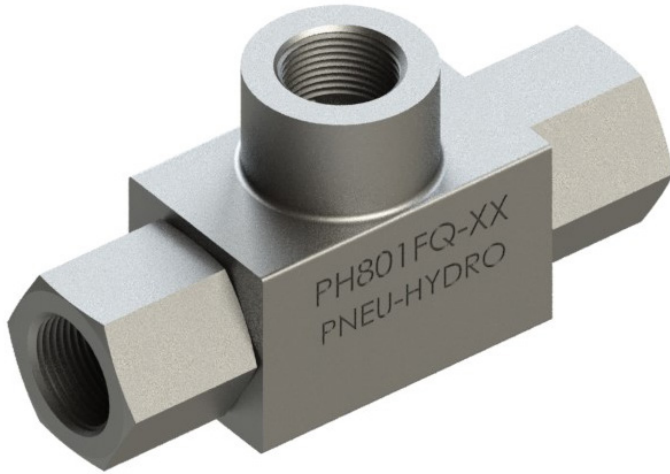
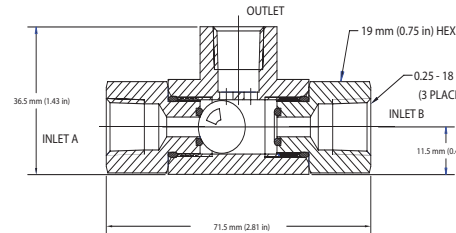


Figure 1: Shuttle Valve



Gilmore's Pneu-Hydro Shuttle Valves provide reliable passive switching for control systems with multiple and/or redundant supply sources.

The simple yet durable ball valve design eliminates breakaway friction, common with sliding seal designs, allowing the valves to switch sources with very low differential pressure. Primarily used in pneumatic control systems, these shuttle valves will also operate in low pressure hydraulic systems.

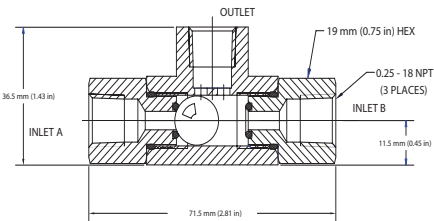
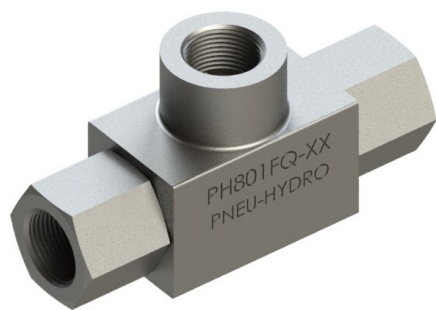
Features & Benefits

- 316 stainless steel construction
- Standard seal materials are Buna-N
- Viton or other elastomers are available to meet specific requirements

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PNEU-HYDRO -091620-002-27



FUNCTIONAL DESIGN SPECIFICATION

Control Fluid	Hydraulic or Air
Maximum Allowable Working Pressure	250 psi
Cv	.40
Operating Temperature - Buna	-40° F to 250° F
Operating Temperature - Viton	-20° F to 450° F

Part Number

Buna	Viton
PH801F4Q	PH801F4Q-V

STANDARD REPAIR KITS

Repair Kit Part Number	For Valve Part Number
PH613258-1	PH801F4Q
PH613258-2	PH801F4Q-V

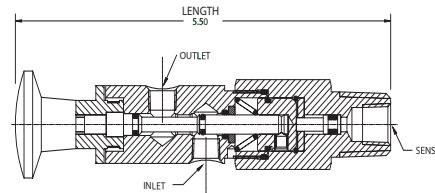
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Figure 1: Sand Probe Valve



Gilmore's Pneu-Hydro Sand Probe Valves are designed to monitor the erosive effects of abrasive fluid on flowline systems.

A carefully designed sensing probe extends into the flow path, providing a hydraulic pilot signal to the Sand Probe Valve. Once a predetermined amount of erosion opens a hydraulic communication path within the probe, the normally open valve shifts to block and bleed pneumatic control pressure, providing a signal suitable to close a flowline valve, trigger an alarm, or initiate a shutdown.

The sensing pilot is designed with a 1/2" NPT male thread for attachment to the flowline. Within this connection, is another 1/4" NPT female connection for the tubular probe. With this arrangement, probes can be readily fabricated and installed in the field from standard fittings and tubing.

Features & Benefits

Wide pressure range: This device may be safely operated in flowlines containing pressures in the range of 25 - 10,000 psi (1.72 - 689.47 bar)

Control pressure range: The pilot handles a control system pressure of 20 - 250 psi (1.37 - 17.23 bar)

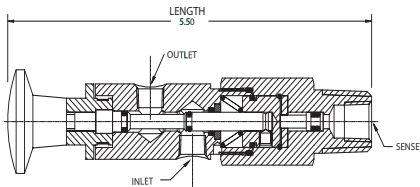
Visual indicator: When the probe has been cut and the pilot spool shifts, the palm button and red band on the main spool indicate that the pilot has been activated

Manual Control: The palm button on the pilot may be used at any time to cycle the valve and test the system

Simplicity: When the probe has been cut by abrasive action of the flowing product, the pressure in the pipeline shifts the pilot spool

Choice of probes: Standard wall probes are available in thicknesses of 0.028; 0.035; 0.049 and 0.065 inches. Standard length probes are 6, 10 and 14 inches

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FUNCTIONAL DESIGN SPECIFICATION

Control Fluid	Air
Maximum Allowable Working Pressure - Flowline	10,000 psi
Maximum Allowable Working Pressure - Controls	250 psi
Operating Temperature	-20° F to 450° F

Part Number*	Maximum Operating Pressure Ranges	Repair Kit Part Number
PH434051	30 -250 psi (2.07 - 17 bar)	PH614051
PH434052	250 - 10,000 psi (17 bar - 689 bar)	PH614052
PH434062		PH614062

*Valves and probes are ordered separately. Model numbers above do not include probes.

PROBE KIT PART NUMBERS

Prob Length* (inches)	Probe Wall Thickness (inches)*			
	0.028	0.035	0.049	0.065
6	08-03756-01	08-03756-02	08-03756-03	08-03756-04
10	08-03756-07	08-03756-08	08-03756-09	08-03756-10
14	08-03756-11	08-03756-12	08-03756-13	08-03756-14

*Select the probe length and thickness from the probe kit chart above.

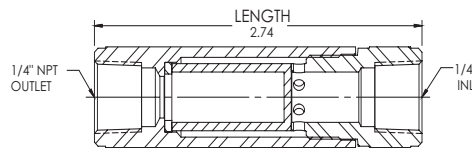
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PNEU-HYDRO -091620-002-30



Figure 1: Inline Filter



Gilmore's Pneu-Hydro Inline Filters uses a minimum number of parts for economy and reliability.

These filters are designed to use a strong, durable element, with a large surface area that reduces the need for frequent cleaning or replacement. A unique assembly retains the filter element solidly, preventing flutter; yet it is easily removed for cleaning or replacement. It will not contribute to system pulsation. A variety of filtration ranges are available.

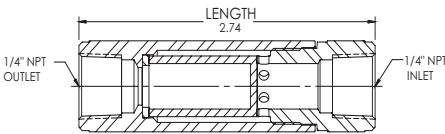
Features & Benefits

- 316 stainless steel construction
- Teflon gasket
- Permit use with a wide variety of corrosive fluids

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PNEU-HYDRO -091620-002-31



FUNCTIONAL DESIGN SPECIFICATION

Working Fluid	Hydraulic
Maximum Allowable Working Pressure	6,000 psi
Operating Temperature	-65° F to 450° F
Inlet	1/4" NPT
Outlet	1/4" NPT

Part Number	Filtration Size (µm)	Repair Kit (Element + Gasket)
PH511F4Q-2	2	PH613511-2
PH511F4Q-5	5	PH613511-5
PH511F4Q-20	20	PH613511-10
PH511F4Q-40	40	PH613511-20
PH511F4Q-50	50	PH613511-40
PH511F4Q-100	100	PH613511-100

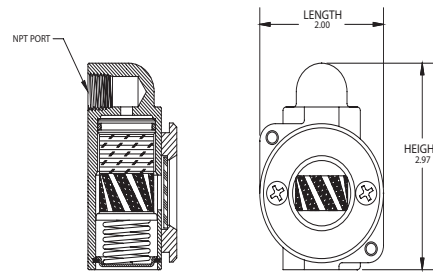
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Figure 1: Pressure Indicator



Gilmore's Pneu-Hydro Pressure Indicator offers easy to read visual notification of the presence or absence of pneumatic pressure in a control circuit.

When pressure rises to approximately 1 bar (14 psi), a solid green band shows through the window. If the pressure drops below 0.5 bar (8 psi), a red and white striped band appears. The colors are reflective for visibility in lighted surroundings. The striped section provides added recognition of system status under dimly lit conditions or when color cannot be distinguished.

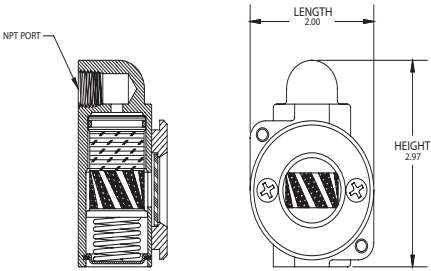
Features & Benefits

- The unit mounts through a 1.75 in. diameter hole and in panels from 17 gauge to 0.18 in. thick
- The indicator is constructed of 316 stainless steel and satisfies NACE MRO175 standard

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FUNCTIONAL DESIGN SPECIFICATION

Working Fluid	Air
Maximum Allowable Working Pressure	250 psi
Proof Pressure	500 psi

Part Number
1/8" NPT Connection

Buna-N	Ethylene	Viton
PH433774-A	PH433774-EPDM	PH433774

Part Number
1/4" NPT Connection

Buna-N	Ethylene	Viton
PH433775-A	PH433774-EPDM	PH433775

Operating Temperature Ranges

Buna-N Seals	Viton Seals	Ethylene Propylene Seals
-40°F to 250°F	-20°F to 400°F	-65°F to 300°F

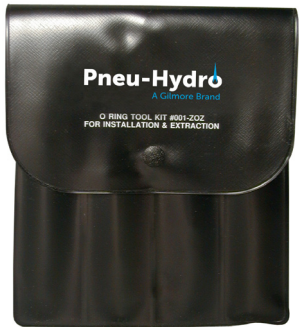
STANDARD REPAIR KIT

Buna-N	Ethylene Propylene	Viton
PH613774-A	PH613774-EPDM	PH6613774

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PNEU-HYDRO -091620-002-34



316 STAINLESS STEEL TOOLS

Part Number	Description
001-ZOZ	Pointed prying tool - 462688-1
	Piercing tool - 462688-2
	Tweezers - 462688-3
	Jogging/prying tool - 462688-4
	Prodding/removal tool - 462688-5
	Vinyl pouch - 462688-6
	Instruction sheet - 462688-7

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