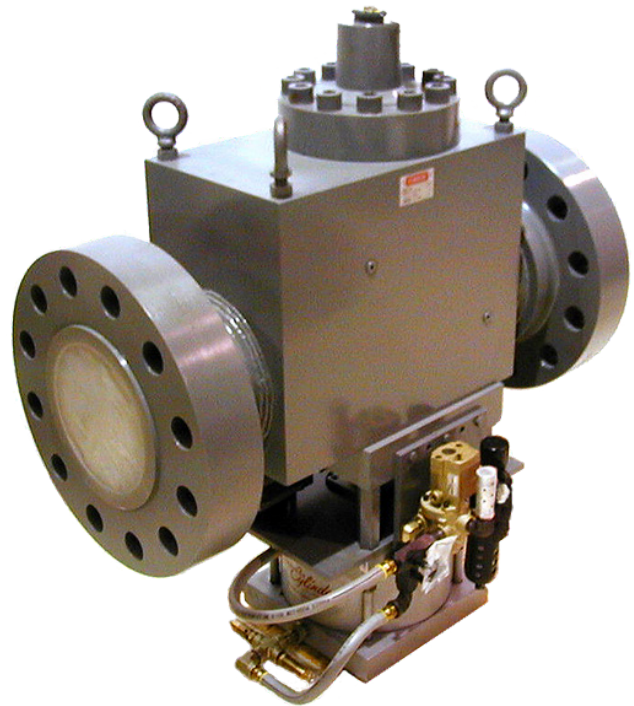
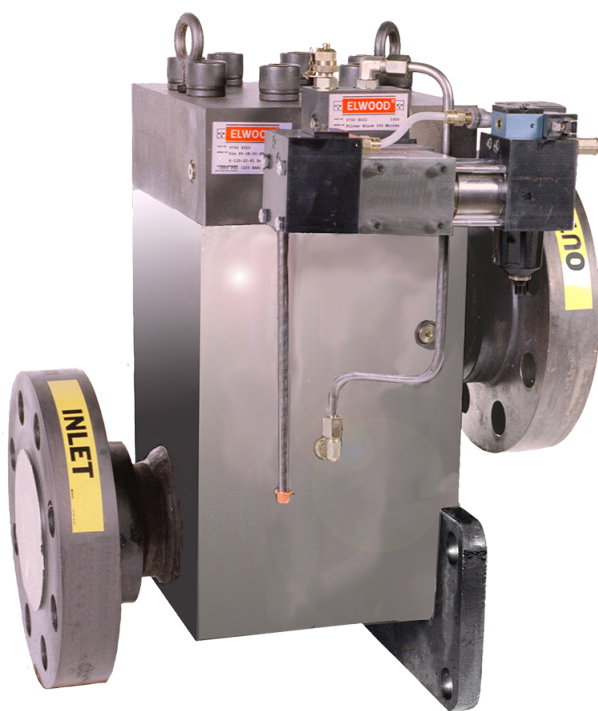


2-WAY VALVES



2-Way Valve Features & Applications

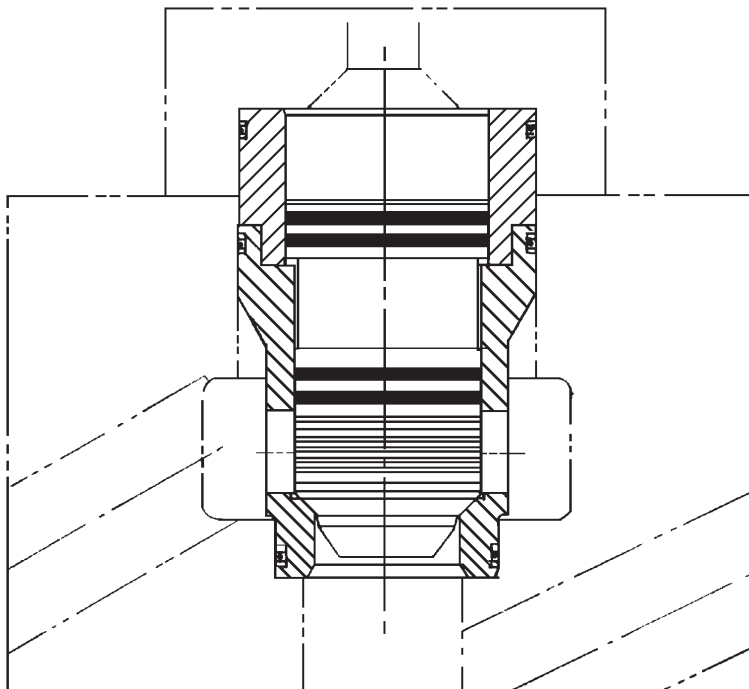
This unique 2-way valve has proved itself unequalled for sustained, low maintenance service under the most severe high pressure operating conditions. It is widely used in steel mills for shut-off service, descaling, service, and for pump bypass control. The valve can be controlled by any standard 3-way air pilot valve, manually or solenoid operated. All wearing parts are removable when necessary.

- Styles
 - DIN Poppet
 - Spindle
- Normally Closed
 - Descaling Valves
 - Shut-Off Service
- Normally Open
 - Pump Bypass

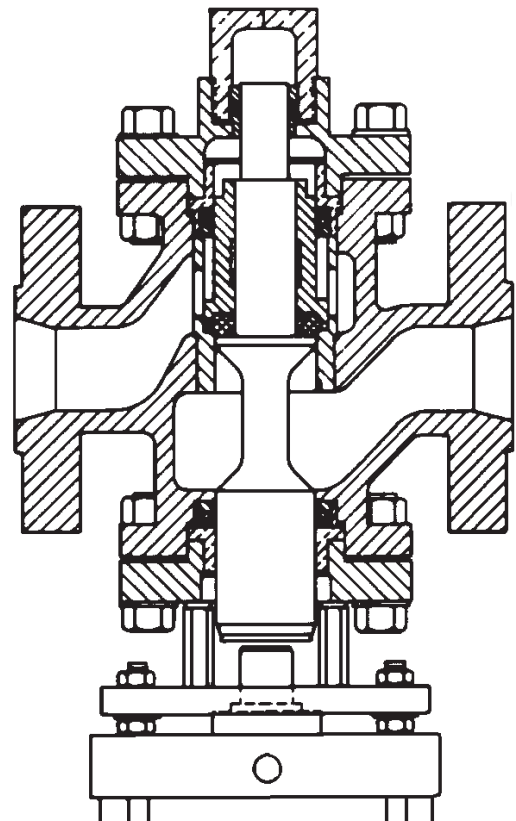
Features

- DIN Poppet Style Sizes 16 through 200
- Spindle Style Sizes 2" through 10"
- Capacities to 6,000 GPM (23,000 LPM)
- Working pressures to 6,000 PSI (414 bar)
- Designed to operate with low viscosity fluids and raw water
- Reversible Soft Composite Disc
- Inverse Fluid Flow
- V-Notch Throttle Ports
- Removable Stainless Steel Internals
 - Serviceability
 - Excellent corrosion resistance
 - High reliability
 - Long-lasting performance
- Consult factory for custom specifications

2-Way DIN Poppet Style

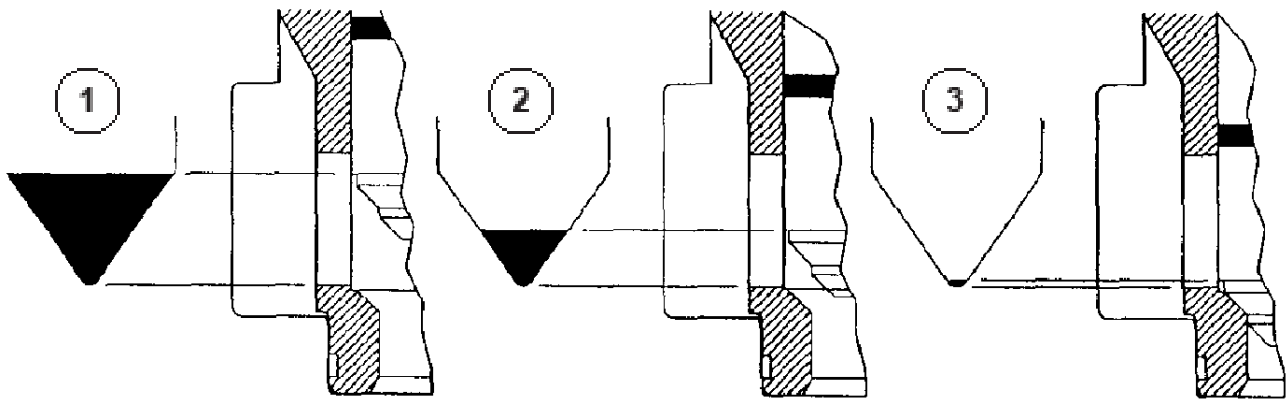


2-Way Spindle Style



V-Notch Technology

- V-notch technology reduces harmful shock & water hammer in DIN Poppet Style valves.
 - Fluid enters through the connection below the seat.
 - As the valve is opened, fluid flows upward past the disc and is discharged through the special V-notch orifices machined in the integral annular sleeve which forms the upper part of the valve seat.
1. As the valve closes, the upper telescoping member rapidly reduces the V-notch area
 2. For each increment of valve stem movement, the V-notch area reduces at a decreasing rate.
 3. At the very peak of the V, flow is stopped before the disc is seated.
 - Fluid is gradually brought to rest, eliminating harmful shock or water hammer.



Reversible Disc

- The soft composition disc in the Elwood 2-Way Valve does not allow leaks to start.
- Designed to close drop-tight around any foreign particles, scratches, or scoring.
- Foreign particles trapped between the disc and the seat are harmlessly embedded in the disc without damaging the stainless steel seat and are washed away when the valve is opened.

Inverse Fluid Flow

- The fluid flow in the Elwood 2-Way Valve opposes the movement of the valve poppet as it closes.
- Prevents slamming as the poppet approaches the fully closed position.

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DIN Poppet Series

Brochure 395

Cartridge Design

- Outer sleeve with integral seat and poppet assembly.

Pilot Valve Actuated Plunger

- Pneumatically-operated hydraulic spool valve.
- Controlled by solenoid-operated air valve.

Features

- Hardened Stainless Steel Seat
- Stainless Steel Poppet
- Polymer Static & Dynamic Seals
- Drop Tight Sealing

Applications

- Steel Mill Industry
- Shut-Off Service
- Descaling Service

Functionality

- Signal to the solenoid valve commands pilots to shift.
- High-pressure fluid enters pilot valve.
- Normally Open
 - Fluid directed to pressurize.
- Normally Closed
 - Fluid acting on poppet is vented.

For DIN poppet manifold mounted 2-way valves, see brochure 395.

MODEL CODE EXAMPLE

DIN 63 - 3.6K - 20 - SR15 - 3 - N - 3 - 11B

Model Pressure Function Connection Type Connection Size Style Voltage Valve Accessory

MODEL		
CODE NO.	Connection Size	Cv
DIN 50	3"	63
DIN 63	3"	98
DIN 80	4"	144
DIN 100	6"	265
DIN 150	6" or 8"	430
DIN 200	6" or 8"	924

Custom sizing available upon request.

PRESSURE	
CODE NO.	DESCRIPTION
3.6K	3,600 PSI / 250 BAR
6K	6,000 PSI / 415 BAR

FUNCTIONS			
TYPE	CODE NO.	NFPA Hydraulic Symbol	Neutral Position Description
2-WAY VALVE	20		Normally Closed
	21		Normally Open
	22		No Neutral Position

CONNECTION TYPE	
CODE NO.	DESCRIPTION
SR15	SR1500 Flange Face
SR25	SR2500 Flange Face

Custom connections available upon request.

CONNECTION SIZE		
CODE NO.	Connection Size	Model
3	3"	DIN 50, 63
4	4"	DIN 80
6	6"	DIN 100, 150, 200
8	8"	DIN 100, 150, 200

STYLE	
CODE NO.	DESCRIPTION
N	Inline
D	90°
Z	Offset

VOLTAGE ①	
CODE NO.	DESCRIPTION
1	6 VDC
2	12 VDC
3	24 VDC
5	110 VDC
6	110/120VAC 50/60Hz
8	220/240VAC 50/60Hz
9	410/460VAC 50/60Hz
10	200VAC 50/60Hz
11	440/480VAC 60Hz
12	24VAC 50/60Hz

VALVE ACCESSORIES ②	
CODE NO.	DESCRIPTION
11B	ELECTRICAL QUICK DISCONNECT MALE - INDUSTRIAL, 3-BLADE PATTERN
11D	ELECTRICAL QUICK DISCONNECT MALE - DIN# 43650, 3-BLADE PATTERN
11E	ELECTRICAL QUICK DISCONNECT MALE - BRAD HARRISON 3-PIN

INDICATOR LIGHTS ARE STANDARD

Spindle Series

Counter-Balanced Spindle Design

- Internal hydraulic cylinder acting on top of spindle used to close valve.
- Pneumatic air cylinder located on bottom of valve actuates to open valve.

Pilot-Operated

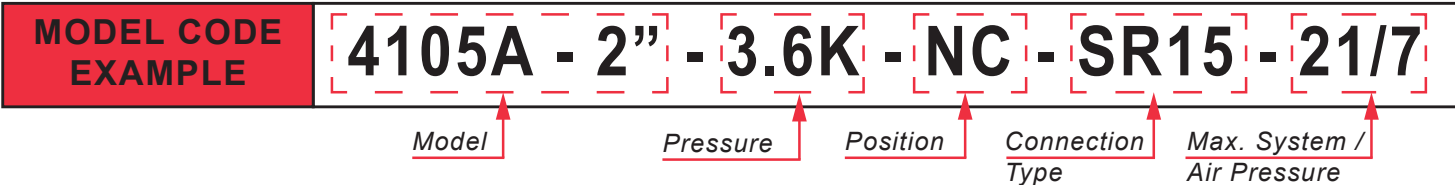
- Use with any standard 3-way pneumatic pilot valve, manually or solenoid operated.
- Supplies air to the pneumatic cylinder.
- Control opening and closing speed by regulating air flow to pneumatic cylinder.

Features

- Shielded seat design
- Inverse fluid flow & V-notch throttle ports - Virtually eliminates shock upon closure
- Unparalleled Service & Shock Control

Applications

- Steel Processing Industry
- Shut-Off Service
- Descaling Service
- Pump Bypass Control



MODEL		
CODE NO.	Description	Connection Size
4102A - 1"	Pressure Rating 3,600 PSI, Spring Loaded Standard, Hydraulically Loaded Available	1"
4102A - 1 1/4"	Pressure Rating 3,600 PSI, Spring Loaded Standard, Hydraulically Loaded Available	1-1/4"
4103A - 1 1/2"	Pressure Rating 3,600 PSI, Spring Loaded Standard, Hydraulically Loaded Available	1-1/2"
4105A - 2"	Pressure Rating 3,600 PSI, Spring Loaded Standard, Hydraulically Loaded Available	2"
4105A - 2 1/2"	Pressure Rating 3,600 PSI, Spring Loaded Standard, Hydraulically Loaded Available	2-1/2"
4106A - 3"	Pressure Rating Options 4,500 PSI & 6,000 PSI, Hydraulically Loaded Only	3"
4108A - 4"	Pressure Rating Options 4,500 PSI & 6,000 PSI, Hydraulically Loaded Only	4"
4110A - 6"	Pressure Rating Options 4,500 PSI & 6,000 PSI, Hydraulically Loaded Only	6"
4112A - 8"	Pressure Rating Options 4,500 PSI & 6,000 PSI, Hydraulically Loaded Only	8"

Custom sizing available upon request.

PRESSURE	
CODE NO.	DESCRIPTION
3.6K	3,600 PSI / 250 BAR
4.5K	4,500 PSI / 310 BAR
6K	6,000 PSI / 415 BAR

POSITION	
CODE NO.	DESCRIPTION
NC	Normally Closed
NO	Normally Open

CONNECTION TYPE	
CODE NO.	DESCRIPTION
SR15	SR1500 Flange Face
SR25	SR2500 Flange Face

Custom connections available upon request.

MAXIMUM SYSTEM OPERATING PRESSURE
Example: Code No. 21 = 2,100 PSI

AVAILABLE AIR PRESSURE
Example: Code No. 7 = 70 PSI

Pump Bypass & Unloading Valve

Single Valve Assembly

- Pump bypass designed without pump flow check valve.
- Check valve is attached to the pump bypass valve if required.

Fail Open Design

- If air or electrical power loss, the valve will open to the bypass position.
- In the bypass position, the valve opens to allow flow over a series of orifices, reducing fluid flow.

Summary of Operational Features & Benefits

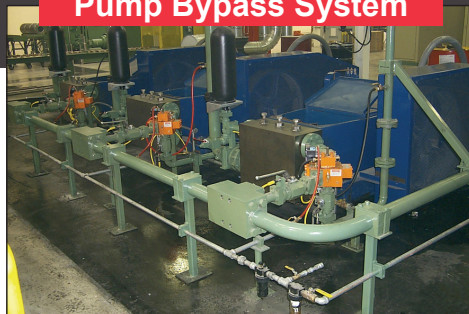
- Individually profiled and sized DIN orifice cartridges of hardened stainless steel.
 - Designed for long life
 - Field replaceable
 - Can be changed for varying flow rates
- 9 to 16 major pressure drop areas with adjustment on the bypass valve for added pressure drop.
- Large particles can pass without clogging.
- Cavitation eliminated with multistaging.
- Low noise level.
- Standard Elwood components.
- All hardened stainless steel internals with polymer disc on bypass poppet.
- Poppet position indicator available for electrical interlock insuring valve is opened.

Elwood Pump Bypass Control Options

In order to assure that the bypass valve is open when system valves are closed and to monitor performance, the following list of options, in various combinations should be used:

- Flow meter on the inlet to the pump.
- Flow meter on the discharge of the bypass valve.
- Proximity sensors on the check valve and bypass poppet.
- Pressure transducer on second to last orifice cartridge.
- Elwood control panel, designed to interface with a main computer, when desired, will perform the following functions:
 1. Display pump status, bypass valve and all system valve statuses as needed.
 2. Provide a command signal to shut down pumps and sound an alarm in the event of a system malfunction.

Pump Bypass System



Pump Bypass & Unloading Features

Brochure 2213

- Available in DIN Poppet Series
- Capacities to 2,350 GPM (9,000 LPM)
- Manifold Mounted DIN 25 through 100
- V-Notch Technology
- - DIN 80 & 100 Modular Inline System
- Consult factory for custom specifications

Pump Bypass Valve Options

Style

- Circuit 1, 2, 3, or 4
- Bypass Valve Sizing
- System Pressure
- Outlet Pressure
- Bypass flow required
- Inlet Flange Size
- Outlet Flange Size

System Check Sizing

- System Flow (Max)
- Inlet/Outlet flange sizes
- Max allowable ΔP across valve
- Optional hydraulically assisted lock-down feature (y/n)

System 2-Way Sizing (Circuits 3 or 4)

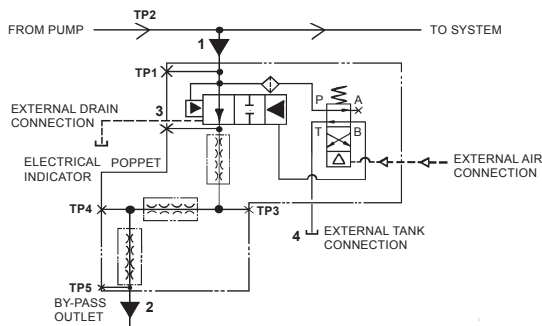
- System Flow (Max)
- Inlet/Outlet flange sizes
- Max allowable ΔP across valve
- Single interconnected pilot for both systems and bypass 2-way

OR

- Dual Pilots (separate 2-way control)
- Electrical poppet indicator on system 2-Way (optional)

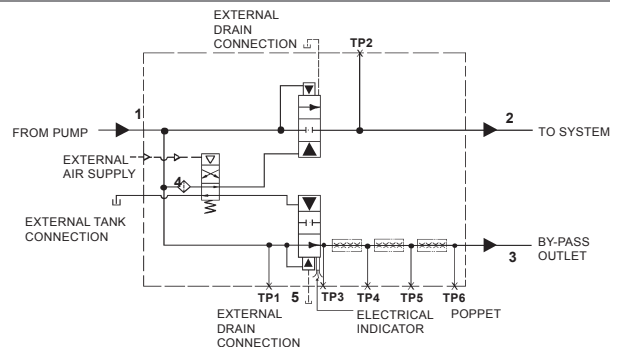
Circuit 1

Bypass Valve Only



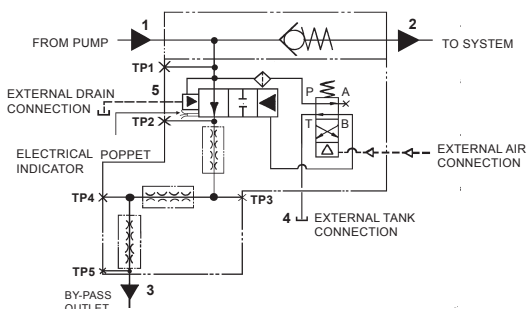
Circuit 3

System 2-Way w/ Bypass Valve (Single Pilot)



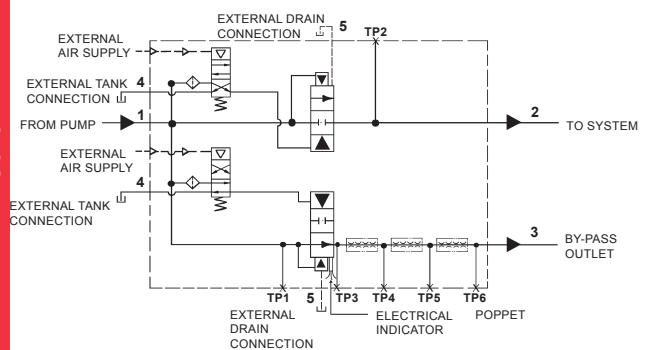
Circuit 2

System Check w/ Bypass Valve



Circuit 4

System 2-Way w/ Bypass Valve (Dual Pilots)



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Descaling Valve

Widely used in the steel processing industry worldwide, Elwood's Descaling Valve is specifically designed for the descale environment providing unparalleled service and shock control. Available in normally open or closed positions with a variety of sizes and mounting configurations to provide our customers with the complete solution.

Features

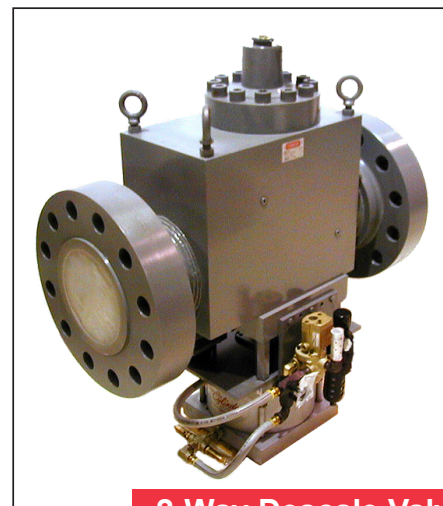
- Cartridge Design
 - Outer Sleeve
 - Integral Seat
 - Poppet Assembly
- Pilot Valve Actuated
 - Pneumatically-operated
 - Hydraulic spool valve
- Reversible Soft Disc
- V-Notch Shock Control
- Velocity Control Ports
- Inverse Fluid Flow

Operation

- Signal to the solenoid commands pilots to shift, allowing high pressure hydraulic fluid to enter the pilot valve.
- Fluid acting on the poppet is pressurized or vented based on valve configuration (normally open or closed), which controls the fluid flow on the main pressure line.

2-Way Descale Valve

DIN Style



Spindle Style

2-Way Descale Valve

Descaling Application Features

Brochure 2218 & 2219

DIN Poppet Series

- DIN sizes 32 through 200
- Capacities to 6,000 GPM (23,000 LPM)
- V-Notch Technology

Spindle Series

- Sizes 2" through 10"
 - Capacities to 1,900 GPM (7,200 LPM)
- Consult factory for custom specifications

Header Pre-Fill Valve Assemblies

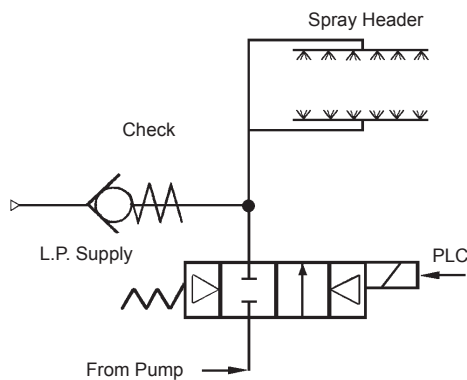
- Maintains water in descaling header & associated pipelines
 - Minimizes hydraulic shock when main descaling valve opens.
- Circuit may be fed directly from the low pressure mill water supply system, or at high pressure from the descaling system pump.

Elwood can customize a pre-fill valve assembly to fit application requirements with the following information:

- Style
 - Circuit 1, 2, 3, or 4 (see below)
- Configuration of header(s)
 - Round, octagonal, straight upper/lower
- Quantity of nozzles
- Desired header pre-fill pressure

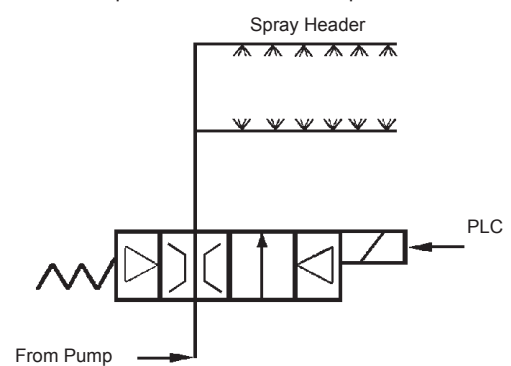
Low Pressure Header Pre-Fill w/ Check Valve

Low pressure supply via check valve located between descaling valve and header. Low pressure flow to the headers keep them full when the descaling valve is in the closed position. When the system calls for high pressure descaling flow, the descale valve opens and the check valve in the low pressure supply line is forced closed by the higher pressure.



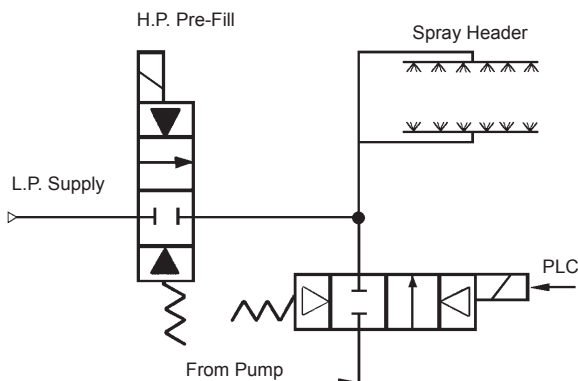
High Pressure Pre-Fill w/ Internal Orifice

Pressure reducing orifice combined with descaling valve. Flow from the descaling pump is delivered to the headers either at low pressure through the reducing orifice or at full flow high pressure depending on the position of the 2-way descaling valve. This eliminates the need for a low pressure supply connection but provides no control over pre-fill flow.



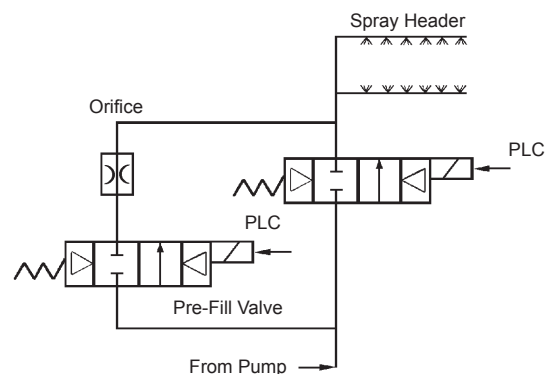
Low Pressure Header Pre-Fill w/ High Pressure Valve

Low pressure supply via electrically actuated 2-way shut-off valve. The shut-off valve replaces the check valve shown in circuit 1 to provide more control over pre-fill flow. The pre-fill 2-way valve closes when the descaling valve opens.



High Pressure Header Pre-Fill Valve & Orifice

Combination electrically actuated 2-way pre-fill valve with reducing orifice and 2-way descaling valve. All 3 functions can be provided in a combination valve package to provide control of flow to the header as well as eliminate the need for a low pressure supply connection.



Circuit 1

Circuit 3

Circuit 2

Circuit 4

Stop/Isolation Valve

The DIN cartridge style Stop Valve operates using a manual hand wheel in combination with a manually operated pneumatic/hydraulic pilot valve and piston. The pilot valve controls the movement of the piston to open and close the valve. The manual hand wheel is used to provide a positive lock down of the valve.



2-Way Stop Valve

Stop Application Features

- Available in DIN Poppet Series
- DIN Sizes 16 through 200
- Capacities to 3,400 GPM (13,000 LPM)
- Manual or Hydraulically Operated Pilot
- Consult factory for custom specifications

Technical Data		DIN Poppet Series	Spindle Series	
Hydraulic Fluid	Fluid Media	HWCF, 97/3 Soluble Oil in Water, Synthetics, Mineral Oils, & Kerosene		
	Viscosity Range at 100°F (38°C)	20 SSU (1.2 Cst.) to 1,800 SSU (385 Cst.)		
	Temperature	HWFC	35° to 150°F (2° to 65°C)	
		Mineral Oil	5° to 150°F (-15° to 65°C)	
Pressure	Minimum Operating Pressure	400 PSI (28 bar)	40 PSI (3 bar)	
		Consult factory for pressures lower than listed.		
	Maximum Pressure Rating	3,600 PSI (250 bar)		
6,000 PSI (414 bar)				
Other	Minimum Filtration	149 micron (100 mesh)		
	Recommended Filtration	74 micron (200 mesh)		
	Minimum Air Pressure	60 PSI (4 bar)		
	Maximum Air Pressure	120 PSI (8 bar)		

Notes

ELWOOD[®]**FLUID
POWER**

Elwood Fluid Power is proud to provide high pressure hydraulic valves and systems for water and other low viscosity applications. Traditionally, Elwood custom valves have been used in steel mills, aluminum mills, and petrochemical facilities across the world!

Today Elwood is expanding its markets into custom high pressure water or low viscosity applications across many industries. Contact us today to start talking with our team!

Water and Low Viscosity Hydraulics

2-, 3- & 4-Way Directional Control Valves

As one of the most fundamental components in hydraulic and pneumatic machinery, directional control valves are responsible for stopping, allowing, and changing direction of fluid flow from one or multiple sources.

Packed Spool 4-Way Directional Control Valves

Deliver precise valve control through air actuated function.

Pressure Control Valves

Named for their primary function, pressure control valves provide relief, reduce, or stop system pressure.

Isolation Valves

Utilize system maintenance with the ISO-Lock valve by isolating manifold mounted directional control valves without shutting the entire system down.

2-Way Valves

- Descaling applications
- Pump unloading & bypass applications
- Stop applications

Accumulator System Shut-Off Valves

As system pressure builds, this safety valve shuts off pressure when determined levels are reached.

Decoking Control Valves

Assisting the refinery industry since the late 1930's, Elwood's decoking control valves have come a long way. Support provided is for older Nordberg and Rexnord valves. Newer designs feature additional beneficial characteristics. Available in spindle and cartridge designs, customized to fit your needs.

Valve Stands & Manifolds

ELWOOD CORPORATE POLICY STATEMENT

It is the policy of Elwood to provide our customers with products that meet or exceed their expectations for performance, reliability and safety while ensuring compliance with applicable laws and regulations, and to continually improve all aspects of our business.



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