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[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

# WATER AND SPECIAL HYDRAULICS

**System solutions for Industry**



Since 1934 valves and components for fluids and gases have been manufactured under the trade name SCHRUPP for the international market.

HL Hydraulik GmbH now owns all rights to the Schrupp program. Continuous development allows improvements to this program to follow the requirements of the market.

The valves are designed for use with water, water and oil emulsions, oil and gases. Their robust construction and compact design provide long life, ease of maintenance, and high performance. The sealed poppet design provides drop tight, leak free shut off.

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We reserve the right to make technical modifications without prior notification



### **Stainless Steel Cartridge valves according to DIN24342**

The valves are designed for use with water, water and oil emulsions, oil and gases. Their robust construction and compact design provide long life, ease of maintenance, and high performance.

These slip in cartridge type valves can be combined in many different ways to satisfy the requirements of a wide variety of applications. The sealed poppet design provides drop tight, leak free shut off.

### **Product range:**

#### **Cartridges for directional functions**

Soft seated ND10 to 100 for water, oil and pneumatic applications up to 350bar

Soft seated ND10 to 250 for water, descaling water and oil up to 350bar

Soft seated ND10 to 40 for water, oil and pneumatic applications up to 800bar

Hard seated ND 16 to 32 water and oil up to 350bar

#### **Cartridges for pressure relief functions**

Hard seated ND 16 to 32 for water and oil up to 350bar

#### **Cartridges for pressure reducing functions**

Hard seated ND 16 to 32 for water and oil up to 350bar

## CARTRIDGE PROGRAM

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

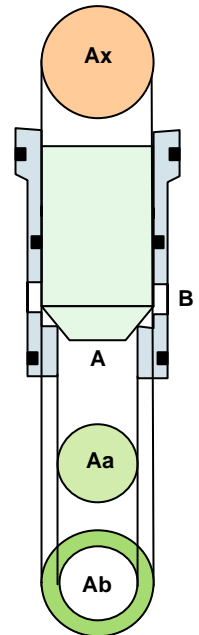
### Functional description

These valves are designed for use with special fluids:

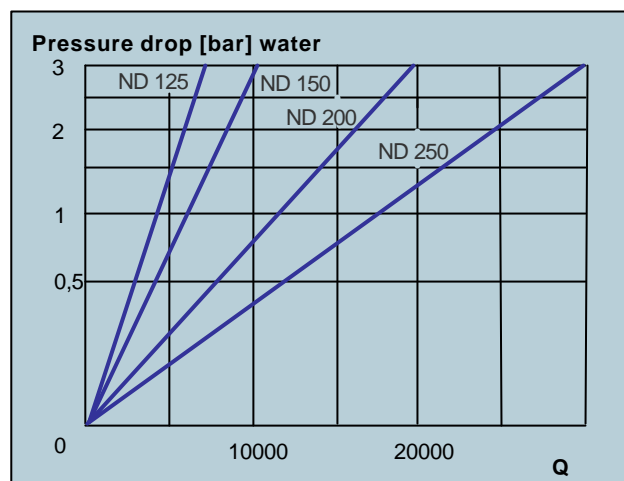
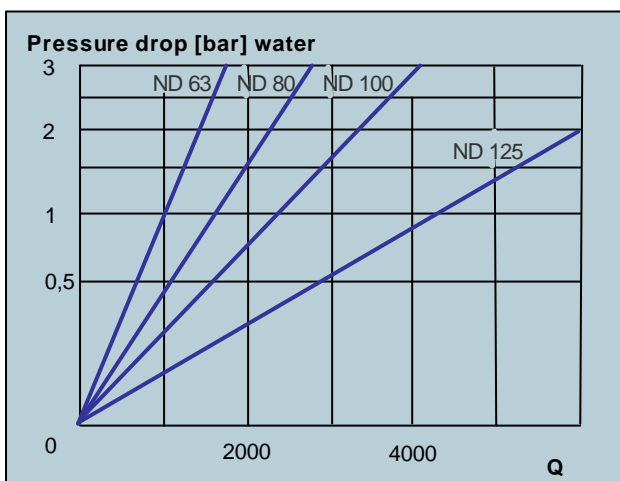
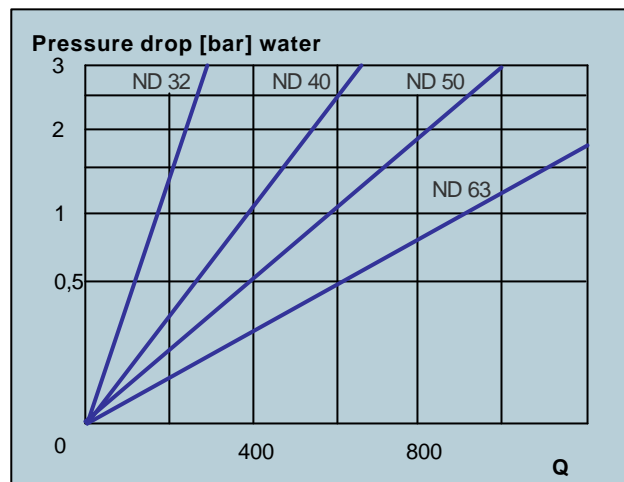
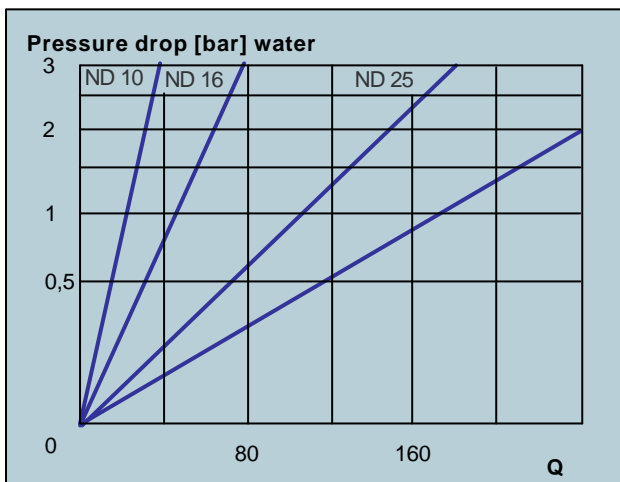
- No metal to metal contact at the sliding surfaces.
  - the use of non-lubricating mediums is possible.
- All pressurized areas are separated by soft seals
  - for thin fluids and gases under high pressure.
- Special geometry and non-corroding material
  - for water and descaling applications.

An important dimension for the function of cartridge valves is the surface ratio of the seat area  $A_a$  and the annulus area  $A_b$  to the pilot area  $P_x$ . By using a surface ratio of 1:1 the valve can be operated only in one direction. By using a surface ratio of 1:1.6 or 1:2 the valve can be operated in both directions, but cannot be used for pressure functions because of the pressure ratio which creates pre-opening of the pilot valve.

Soft-seated valves are suitable for use in shut-off and directional functions. These valves are absolutely leak-free even for long-term operation in gas or high-pressure circuits. Hard seated valves are suitable for use in pressure control functions. Because of their robust seats they can be used also in high pressure water hydraulic circuits.



### Diagrams





## CARTRIDGE PROGRAM

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

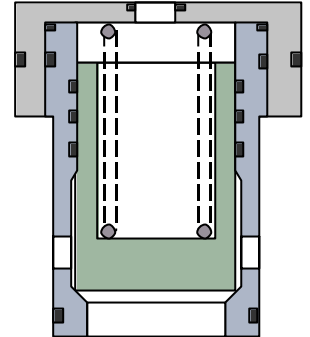
### Cartridge Valve Type 1

For directional, pressure and flow-control applications  
Dimension according to DIN 24342  
Material: stainless steel  
Hard seated  
Area ratio 1:1 / 45°

Example / Order code

**EO - 025 - 00 - 0.0 - 1D / 0**

└─ Nominal size 016, 025, 032



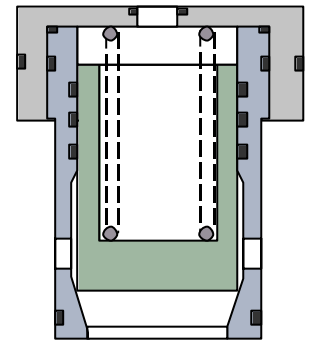
### Cartridge Valve Type 2

For pressure-control applications  
Dimension according to DIN 24342  
Material: stainless steel  
Hard seated  
Area ratio 1:1 / 15°

Example / Order code

**EO - 025 - 00 - 0.0 - 2D / 0**

└─ Nominal. size 016, 025, 032



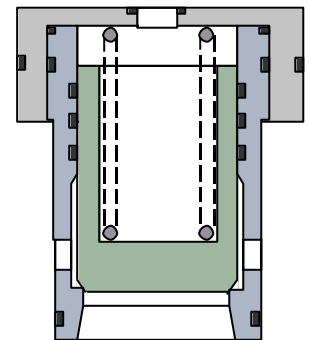
### Cartridge Valve Type 3

For directional and shut off applications  
Dimension according to DIN 24342  
Material: stainless steel  
Hard seated  
Area ratio 1:1.6 / 45°

Example / Order code

**EO - 025 - 00 - 0.0 - 3D / 0**

└─ Nominal. size 016, 025, 032



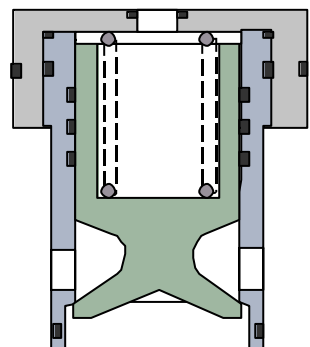
### Cartridge Valve Type 4

For pressure reducing, check and flow control functions  
Dimensions according to DIN 24342  
Material: stainless steel  
Hard seated  
Area ratio 1:1

Example / Order code

**EO - 025 - 00 - 0.0 - 4D / 0**

└─ Nomn. size 016, 025, 032





**CARTRIDGE PROGRAM**

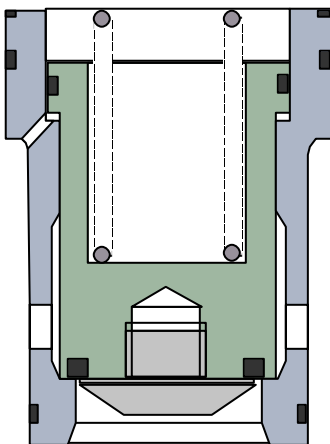
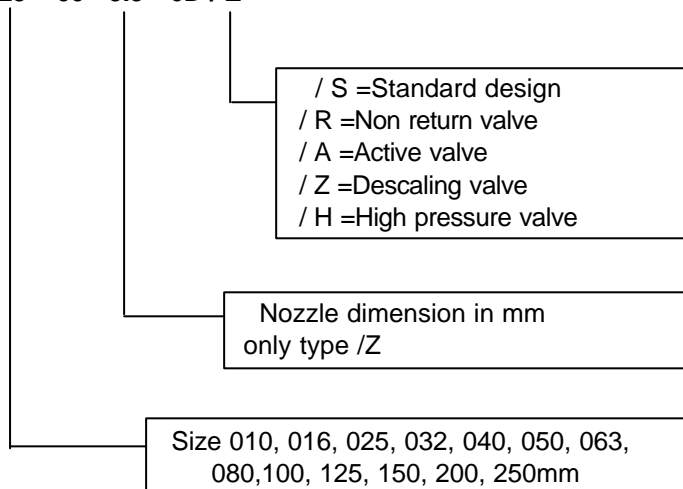
[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

**Cartridge Valve Type 6**

For directional and shut off applications  
Dimensions according to DIN 24342  
Material: stainless steel, soft seated, metal support  
area ratio 1:2, Type /Z 1:1.6

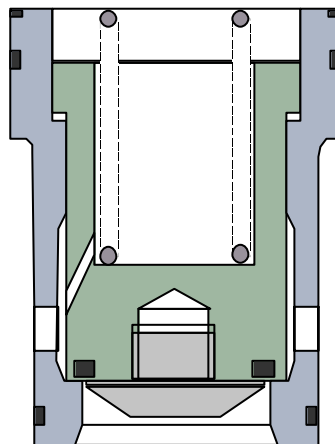
Example / Order code

**EO - 125 - 00 - 5.5 - 6D / Z**



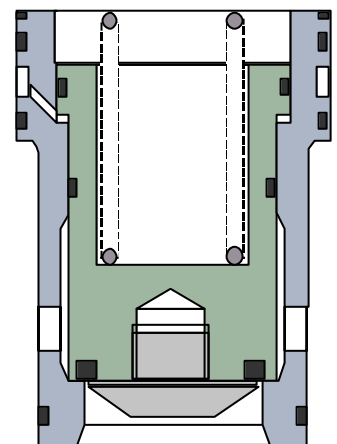
**Standard design  
Type 6D / S**

350bar - ND 010 to 100  
for water, oil and gas.  
For descaling applications up  
to size ND 250



**Non return valve  
Type 6D / R**

Up to 350bar - ND 010, 016, 025  
for water, descaling water, oil  
and gas.



**Active valve  
Type 6D / A**

Up to 350 bar - ND 16 to 100  
for water, oil and gas



## CARTRIDGE PROGRAM

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### High pressure valve Type 6D / H

Size ND 016 to 040 for water and oil.

These valves are designed for pressures up to 800bar. Pressurized opening and closing is possible with the following pressure ratings:

Oil up to 800bar Water with more than 5% oil up to 600bar Water up to 500 bar

Compressed air up to 800bar (nozzle in serial necessary)

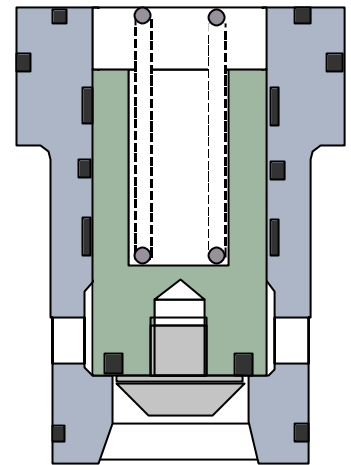
Because of the stronger wall thickness the flow rate is reduced. For calculation please use the following flow curves:

ND 16 = flow curve ND 10

ND 25 = flow curve ND 16

ND 32 = flow curve ND 25

ND 40 = flow curve ND 32



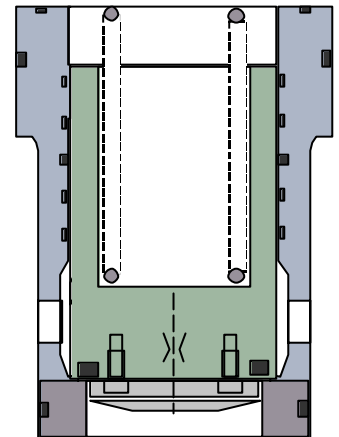
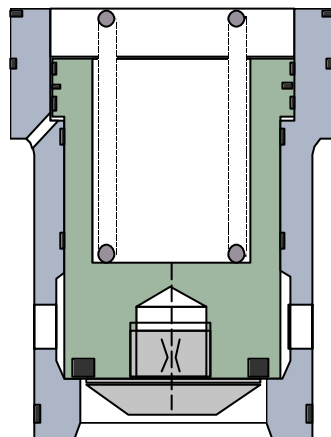
### Descaling valve Type 6D / Z

Up to 350bar - ND 063 to 250

ND 62 – 100mm area ratio 1:2

ND125 – 250mm area ratio 1:1,6

for water, descaling water and oil



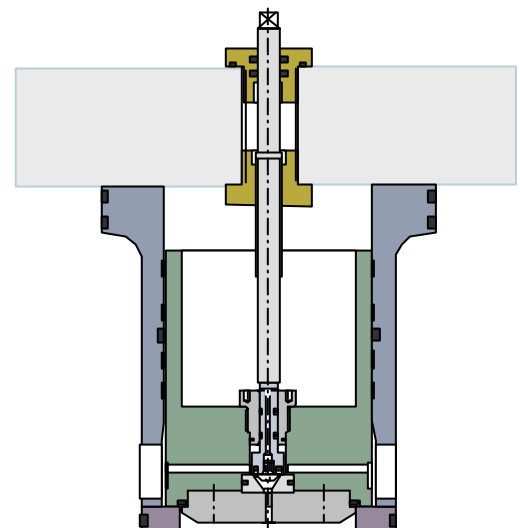
### Manual operated Valve Typ 7D

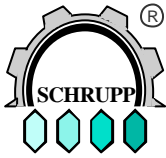
Up to 350bar - ND 063 bis 150

for Water and Oil

These valves are designed for shut off functions. The servo system reduces the necessary manual power so that the valve can be operated under high pressures.

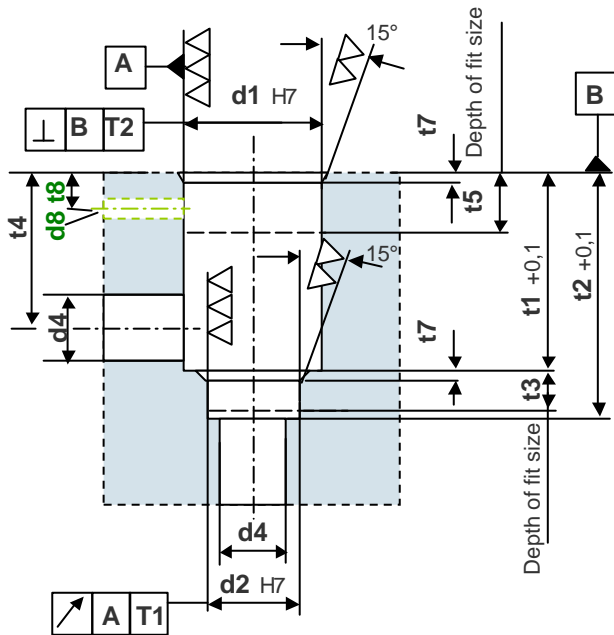
The manual spindle locks the piston in closed position even und pressure.



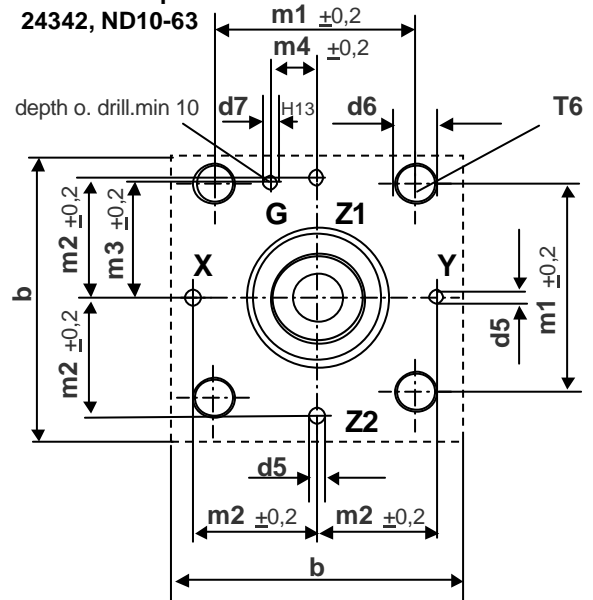


CARTRIDGE PROGRAM

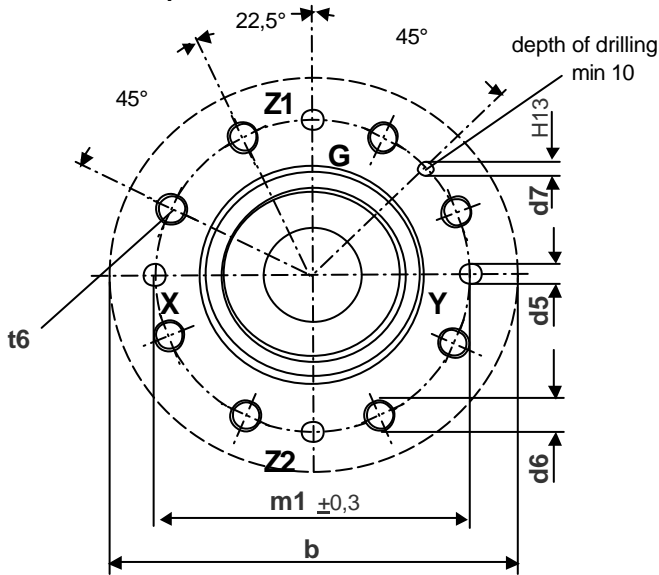
www.hl-hydraulik.de



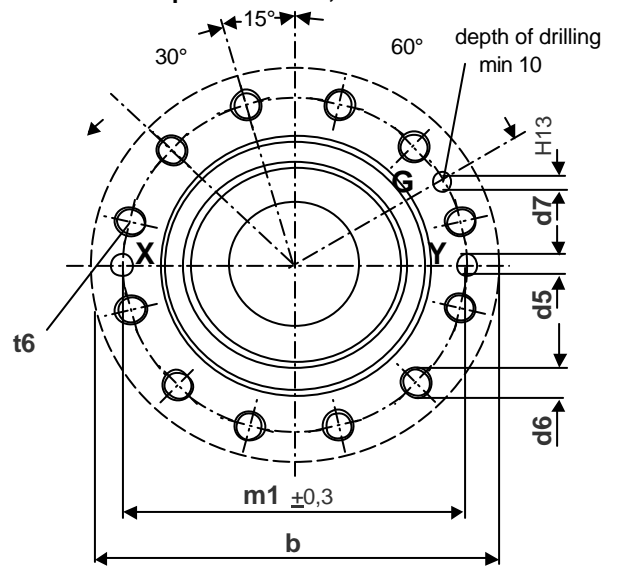
Dimensions per DIN 24342, ND10-63



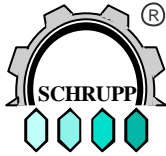
Dimensions per DIN 24342, ND80-100



Dimensions per DIN 24342, ND125-250



DN	b	d1	d2	d4	d5	d6	d7	d8	m1	m2	m3	m4	t1	t2	t3	t4	t5	t6	t7	t8	T1	T2
10	52	20	16,5	10	3	M5	3	-	40	19	17	12	26	36	8	20	13	10	2	-	0,03	0,05
16	65	32	25	16	4	M8	4	4	46	25	23	10,5	43	56	11	34	24	20	2	12	0,03	0,05
25	85	45	34	25	6	M12	6	6	58	33	29	16	58	72	12	44	30	25	2,5	16	0,03	0,05
32	102	60	45	32	8	M16	6	6	70	41	35	17	70	85	13	52	34	35	2,5	20	0,03	0,1
40	125	75	55	40	10	M20	6	6	85	50	42,5	23	87	105	15	64	42	35	3	27	0,05	0,1
50	140	90	68	50	10	M20	8	8	100	58	50	30	100	122	17	72	46	40	4	28	0,05	0,1
63	180	120	90	63	12	M30	8	8	125	75	62,5	38	130	155	20	95	62	55	4	40	0,05	0,2
80	250	145	110	80	16	M24	10	10	200	-	-	-	175	205	25	130	88	45	5	55	0,05	0,2
100	300	180	135	100	20	M30	10	10	245	-	-	-	210	245	29	155	110	55	5	60	0,05	0,2
125	360	220	180	125	20	M33	10	-	290	-	-	-	264	305	41	188	50	70	5	-	0,05	0,2
150	400	255	210	150	20	M36	10	-	330	-	-	-	310	355	41	225	55	70	5	-	0,05	0,2
200	530	355	275	200	20	M48	10	-	435	-	-	-	410	455	41	300	55	95	5	-	0,05	0,2
250	625	430	306	250	20	M48	10	-	530	-	-	-	510	555	41	375	60	95	5	-	0,05	0,2



## CARTRIDGE COVERS

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

These stainless steel cartridge covers are used for complete valve assemblies with Schrupp cartridge valves according to DIN 24342 and Schrupp pilot valves.

In addition to the standard types shown it is possible to produce special versions for individual applications:

Special covers for descaling valves

Cover with integrated functions such as position indicators, pilot combinations, special dimensions.

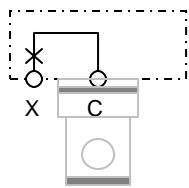
Covers for compressed air pilot valve ND6

Covers for filter

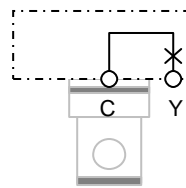
Covers with stroke limiter

### Hydraulic piloting and non return function

**Type HX**



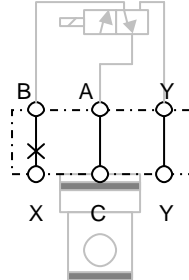
**Type HY**



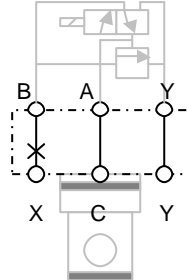
10	16	25	32	40	50	63	SIZE
25	35	35	35	40	45	50	HEIGHT
M5x 30	M8x4 0	M12x 40	M16x 45	M20x 55	M20x 60	M30x 70	FIXING SCREWS

### Pressure and directional functions

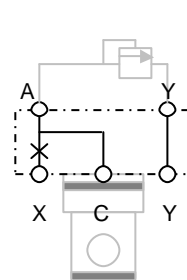
**Type WX**



**Type WX**



**Type DX**



16	25	32	SIZE
35	35	35	HEIGHT
M8x4 0	M12x 40	M16x 45	FIXING SCREWS

### Example / Ordering Code

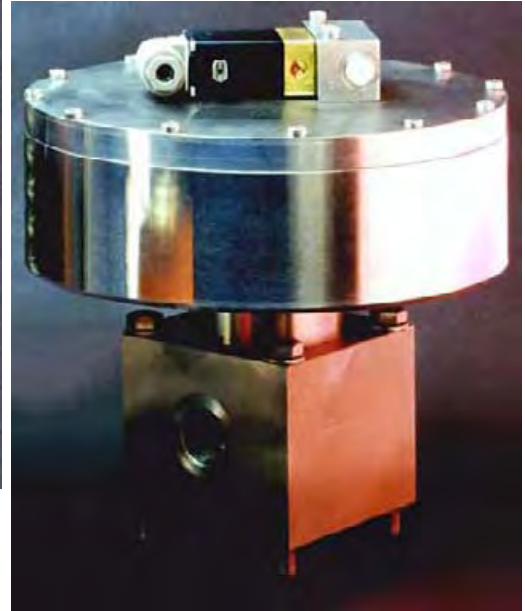
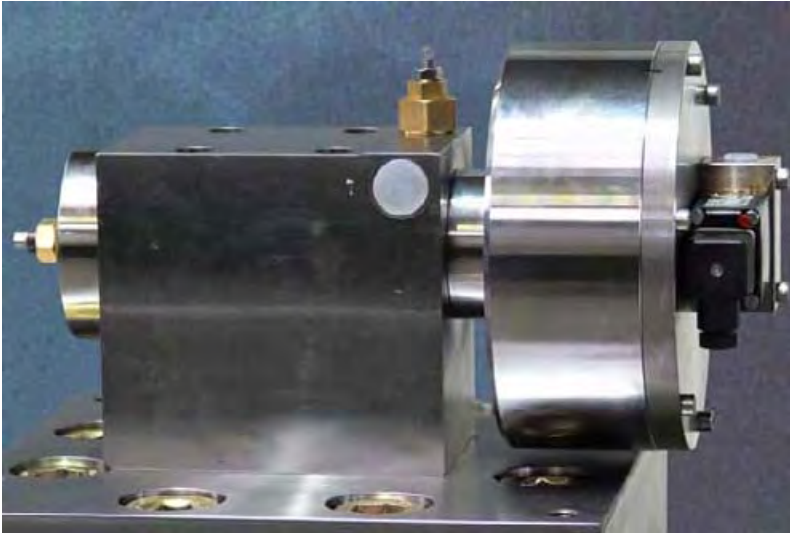
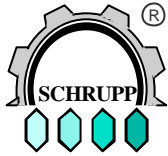
WX - 025 - 0.5

Orifice 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2

Sizes 010, 025, 032, 040, 050, 063 for HX and HY

016, 025, 032 for WX and DX

Cover type WX, DX, HX, HY



## Valves for water hydraulic and descaling applications

These pilot valves can be used to operate cartridge valves from size 10 to 250mm.

The robust construction and compact design provide direct operation in circuits. Available as pressure and directional control valves up to 350bar.

**2/2 and 3/2 way directional control valves ND 2 to 32mm**

**Pressure relief and reducing valves ND 2mm**

Please also see our catalogues:

Cartridge program up to 350bar/pressure valves ND16 to 3/2 directional valves ND10 to 250

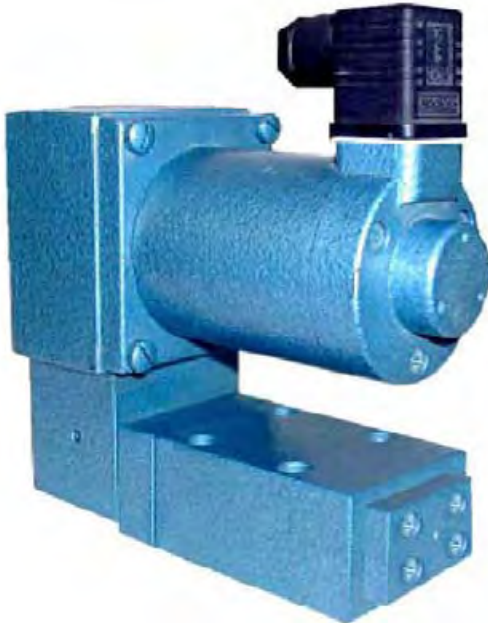
Complete Valves

Descaling Valves

High Pressure Valves up to 800bar

PILOT VALVES

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**3/2 Directional Valves Type 500002**

can be used with oil, water and emulsions up to pressures of 400bar. This robust and smooth operating valve can be used also in descaling or dirty water applications. It can be used for flows in all directions. All ports can be pressurised with 400bar. The valve is equipped with soft seats for a leak-free function. The piston is spring forced in the closed position and allows a fail safe operation so that the valve can be used for accumulator safety valves.

This valve replaces the version P3P and Vo122

Variations:

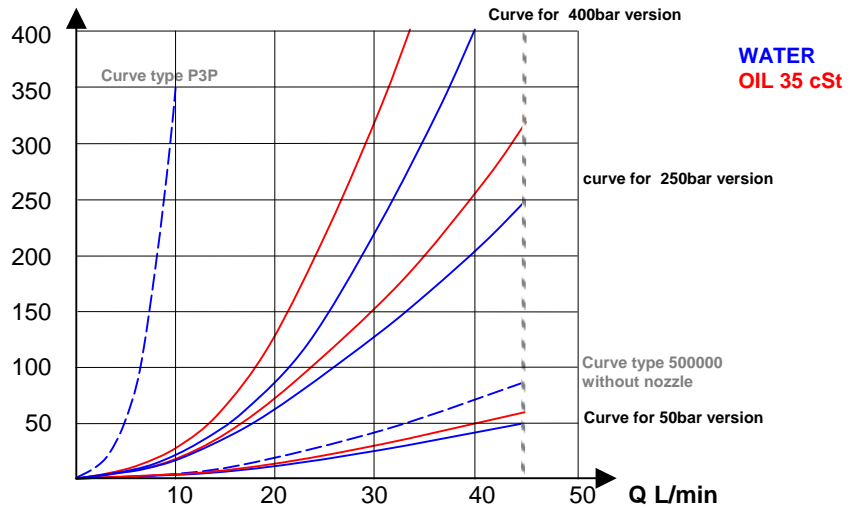
- solenoid operated
- electro pneumatically operated
- manual operated

**Pressure- flow diagrams**

**Diagram for high flow rates**

Tested with water 30°C and oil 35cSt. Pressure drop for flows in both directions A-B or A-C. Solenoid operated valves are equipped with different nozzles depending on the max operating pressure.

P bar (Differential pressure)

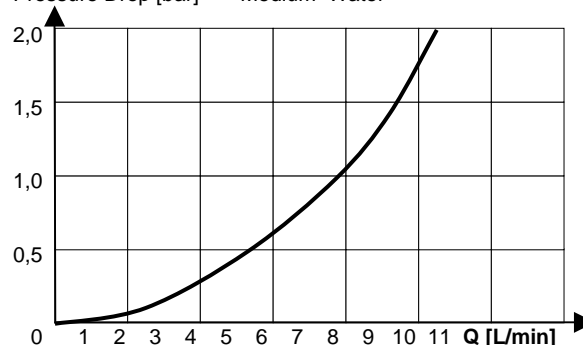


**Diagram for low flow rates**

Tested without nozzle

water 30°C and oil 35cSt. Pressure drop for flows in both directions A-B or A-C.

Pressure Drop [bar] Medium Water





PILOT VALVES

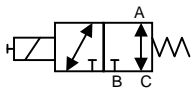
www.hl-hydraulik.de

Solenoid Operated Valves

Type 500002

MATERIAL Stainless Steel, PTFE, PEEK, Viton

TECHNISCHE DATA



Operating Pressure	0-400 bar
Size	DN4
Operating Temperature	-20 to +80 °C
Ambient Temperature	max 45 °C
Medium	Gas, Water, Oil
Filtration min	50 mic
Voltage	12-220 V Gs/ Ws
Max. Power consumption	42 W
ED	100%
Protection Class	IP 65
Voltage Tolerance	+5 / -10% VDE580
Manual override	Yes
Opening and closing time (medium water)	
Q = 25L/min	1 sec
Q = 45L/min	3 sec

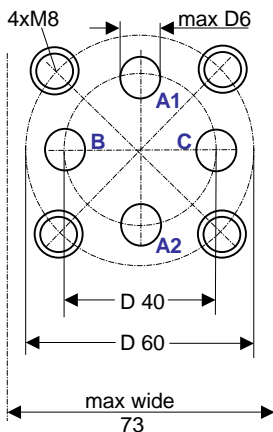
Ordering Code

(for orders please submit max pressure drop)

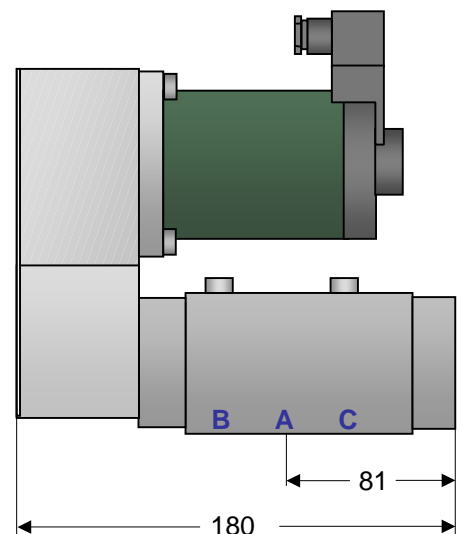
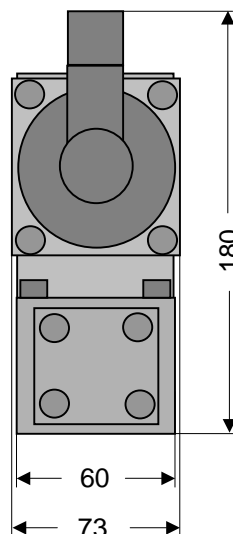
24V DC	<b>500002-01 24V</b>
48V DC	<b>500002-01 48V</b>
110-120V 50/60Hz *	<b>500002-01 120V</b>
220-240V 50/60Hz *	<b>500002-01 240V</b>

Others on request

\* DC solenoid with rectifier



Ports A1 und A2 are bridged



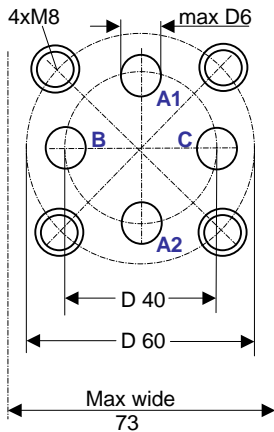


PILOT VALVES

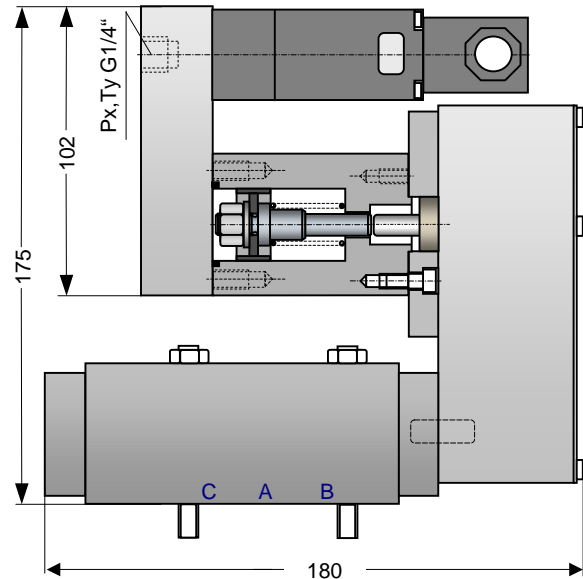
www.hl-hydraulik.de

Electro – pneumatically operated Valves

Type 500002



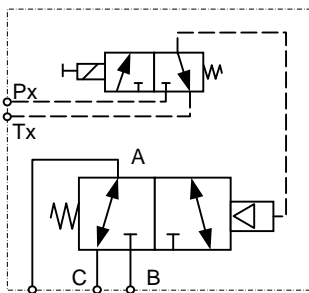
Ports A1 und A2 are bridged



MATERIAL

Stainless Steel, PTFE, PEEK, Viton

TECHNICAL DATA

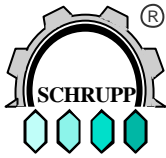


Operating Pressure	0-400 bar
Size	DN4
Pneumatically Pressure	4 – 10bar
Operating Temperature	-20 to +80 °C
Ambient Temperature	max 45 °C
Medium	Gas, Water, Oil
Filtration min	50 mic
Voltage	12-220 V Gs/ Ws
Max. Power consumption	8 W
ED	100%
Protection Class	IP 65
Voltage Tolerance	+5 / -10% VDE580
Manual override	Yes
Opening and closing time (medium water)	0,5 sec
Q = 25L/min	
Q = 45L/min	

Ordering Code

24V DC	<b>500002-04 24V</b>
110-120V 50/60Hz	<b>500002-04 120V</b>
220-240V 50/60Hz	<b>500002-04 240V</b>

Others on request

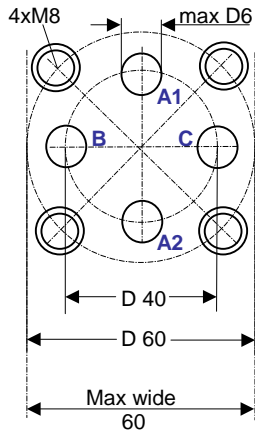


PILOT VALVES

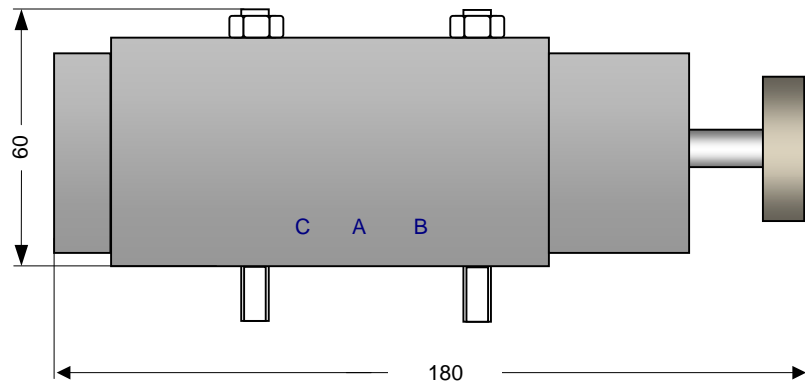
www.hl-hydraulik.de

Manual Operated Valves

Type 500002



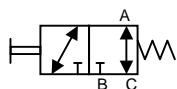
Ports A1 und A2 are bridged



Material

Stainless Steel, PTFE, PEEK, Viton

TECHNICAL DATA



Operating Pressure  
Size  
Operating Temperature  
Ambient Temperature  
Medium  
Filtration min.

0-400 bar  
DN4  
-20 bis +80 °C  
max 45 °C  
Gas, Water, Oil  
50 mic

Ordering Code

Incl. Handwheel

500002-05

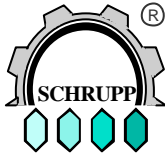
Others on request

Adaptors (on request)

Adaptor plate with thread connections G1/4" (850434)

Adaptor plate for connection P3P and VO122 (850247)

Adaptor plate for connection according to CETOP03, ISO4401 (850248)

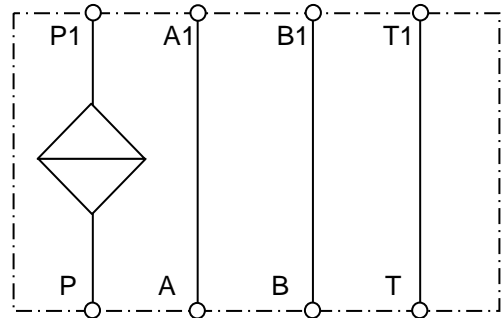


PILOT VALVES

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

**Filter Sandwich Plates Type 851014**

Are used to protect type 500000 and 500002 pilot valves against contermination of dirt particles in compressed air, water or oil medium up to an operating pressure of 350bar. The spiral wound metal filter elements can be cleaned easily and have an filtration rate of 80 micr. This sandwich filters are used in systems with long distances between the central filter system and the pilot valves so that corosion and dirt particles from the piping can not penetrate into the pilot systems. The central filter system should have an filtration rate of 80micr or better.



MATERIAL

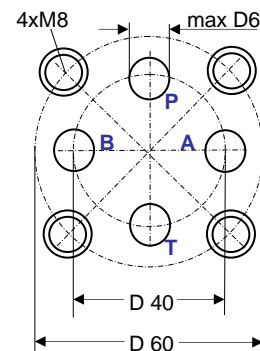
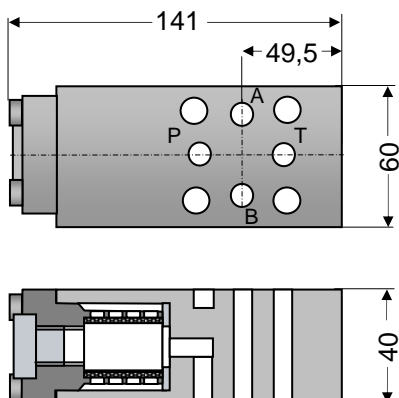
Stainless Steel, PTFE, PEEK, Viton

TECHNICAL DATA

Operating pressure	0-350 bar
Nominal size	DN4
Operating temperature	-20 to +80 °C
Ambient temperature	max 45 °C
Medium	Air, Water, Oil
Filtration	80 micr
Spiral wound metal filter-element, cleanable	

ORDERNO:

Sandwichfilter complete	<b>851014</b>
Spare filter-element	<b>157346</b>





PILOT VALVES

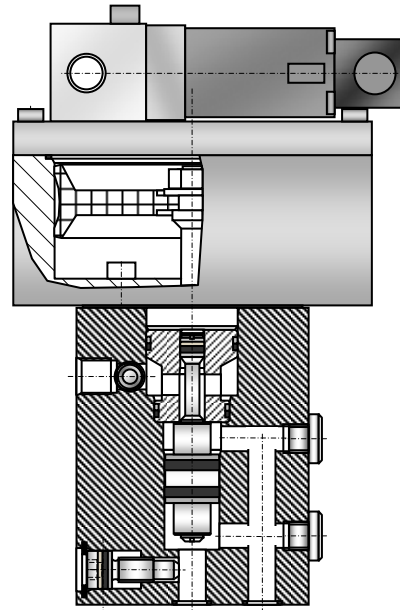
www.hl-hydraulik.de

3/2 Directional Pilot Valves

Type 851037

Schrupp pilot valves are soft seated with metal support especially designed to withstand the high pressures and levels of contamination found in typical steel mill descaling systems. The integrated throttle valves allow an adjustment of the opening and closing speed of the main valve. The valves are designed for fail safe operations, which means that the main valve will close automatically even if the electric or pneumatic power is off

(i.e accumulator shut off valves).



Technical Data:

ND	10 mm
Hydraulically oper, pressure	15-350bar
Pneumatic Pressure	2-10bar
Filtration	50-100 mic
Power Consumption	8W
Tolerance Voltage	10%
Protection Class	IP65

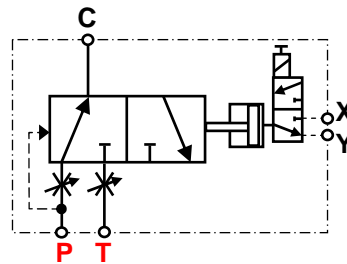
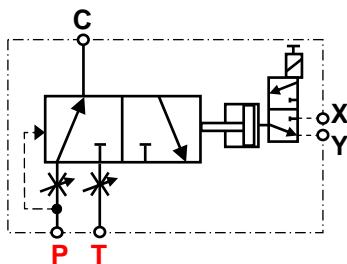
Ordering Code

Version with speed adjustment	
24V GL	851037 24V
110-120V 50/60Hz	851037 120V
220-240V 50/60Hz	851037 240V

Diagram

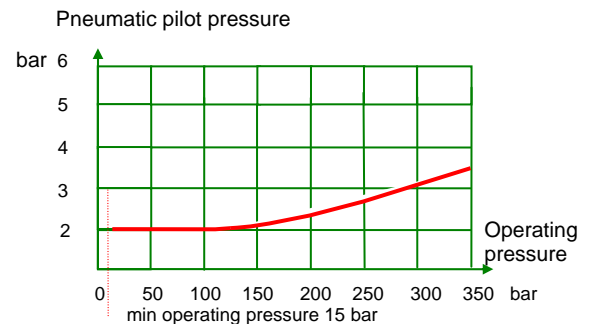
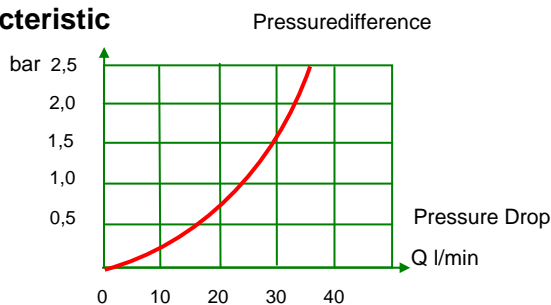
Version with integrated opening and closing speed adjustment

Version without speed adjustment



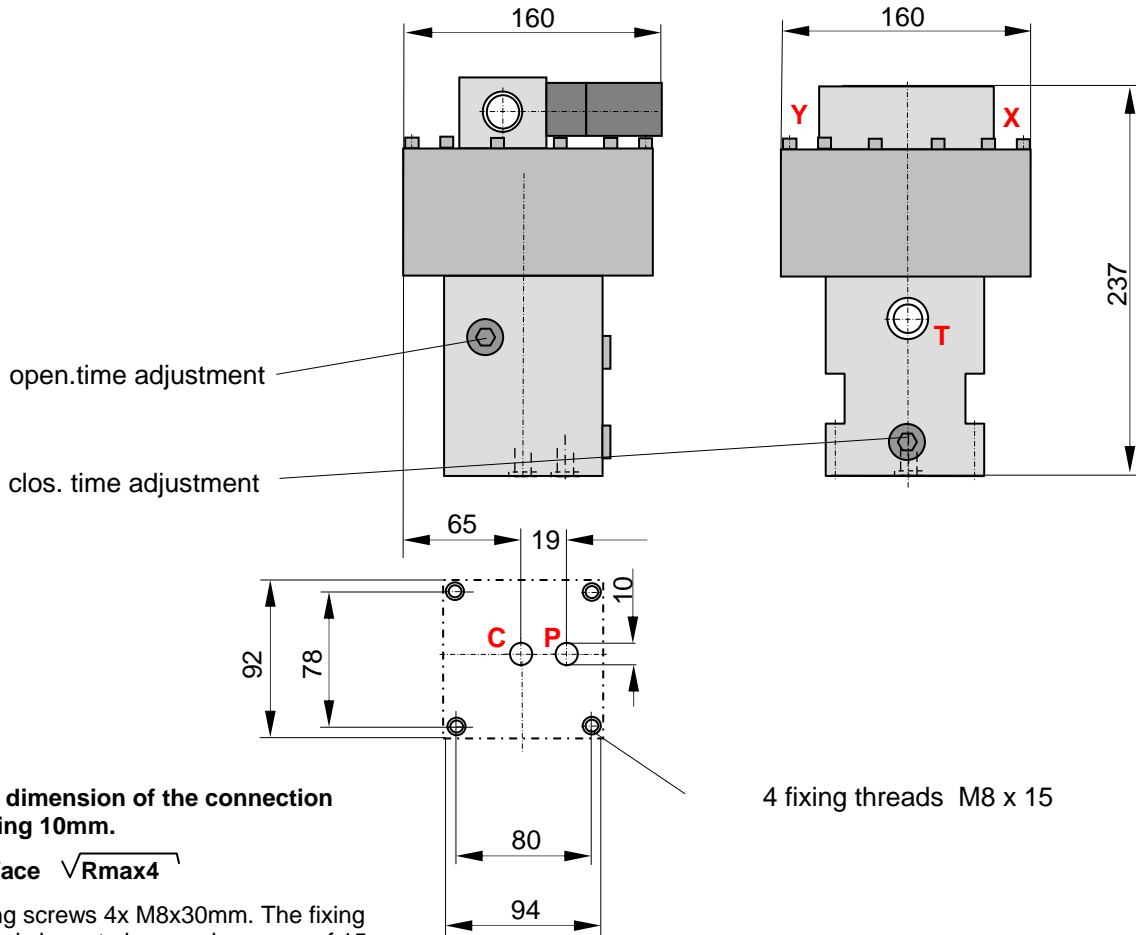
Special designs:  
F.e. manual override, position indicator, different pilot pressure range, special materials

Characteristic



PILOT VALVES

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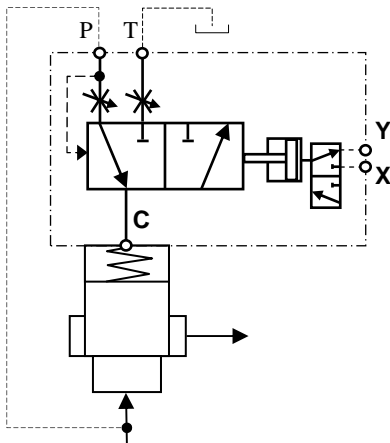


Max dimension of the connection drilling 10mm.

Surface  $\sqrt{Rmax4}$

Fixing screws 4x M8x30mm. The fixing threads have to have a deepness of 15mm min.

Altern. thread and screws 5/16" – 18 UNC

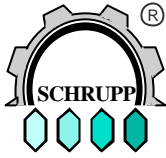


Example

Typical application for an ND10 pilot valve in combination with a large cartridge valve.

The valve is spring loaded and closed without electrical or pneumatical power.

The pilot valve can be used for cartridges ND50 to ND100mm



PILOT VALVES

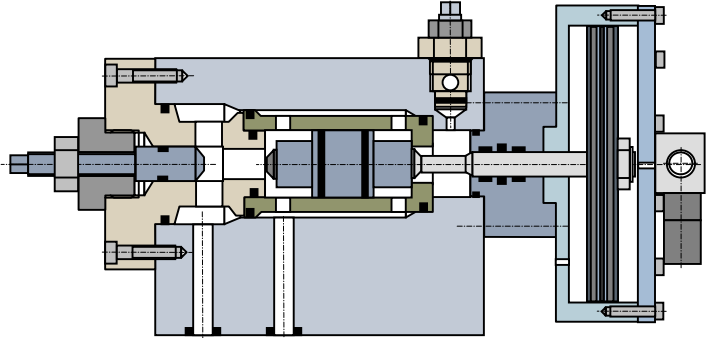
www.hl-hydraulik.de

3/2 Directional Pilot Valve

Schrupp pilot valves are soft seated with metal support especially designed to withstand the high pressures and levels of contamination found in typical steel mill descaling systems. The integrated throttle valves allow an adjustment of the opening and closing speed of the main valve. The valves are designed for fail safe operations, which means that the main valve will close automatically even if the electric or pneumatic power is off

(i.e accumulator shut off valves).

Type 850885



Technical Data:

ND	16 mm
Hydraulically oper, pressure	7-350bar
Pneumatic Pressure	3-10bar
Filtration	50-100 mic
Power Consumption	8W
Tolerance Voltage	10%
Protection Class	IP65

Ordering Code

Version with speed adjustment

24V GL	850885 24V
110-120V 50/60Hz	850885 120V
220-240V 50/60Hz	850885 240V

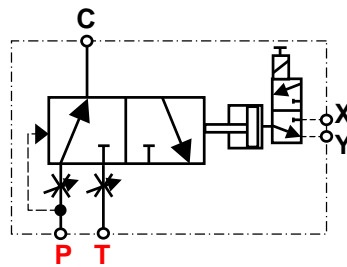
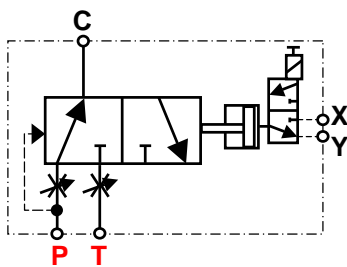
Version without speed adjustment

24V GL	850885-01 24V
110-120V 50/60Hz	850885-01 120V
220-240V 50/60Hz	850885-01 240V

Diagram

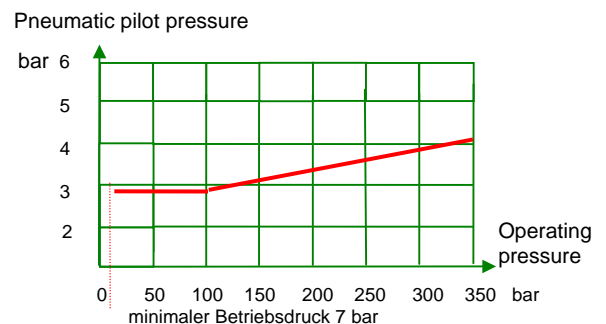
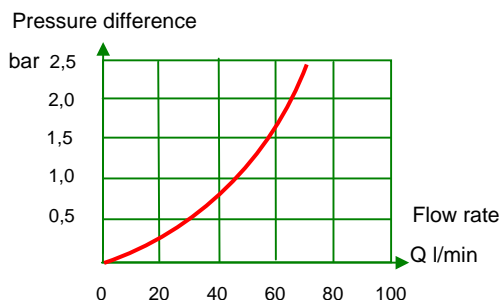
Version with integrated opening and closing speed adjustment

Version without speed adjustment



Special designs:  
F.e. manual override, position indicator,  
different pilot pressure range, special materials

Characteristic



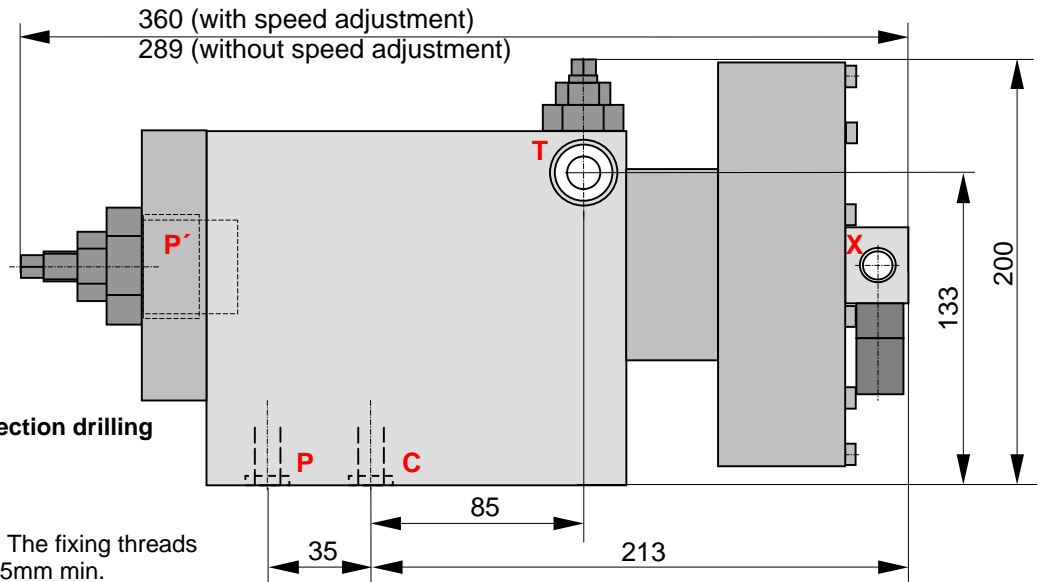
PILOT VALVES

www.hl-hydraulik.de

Dimensions

Connections:

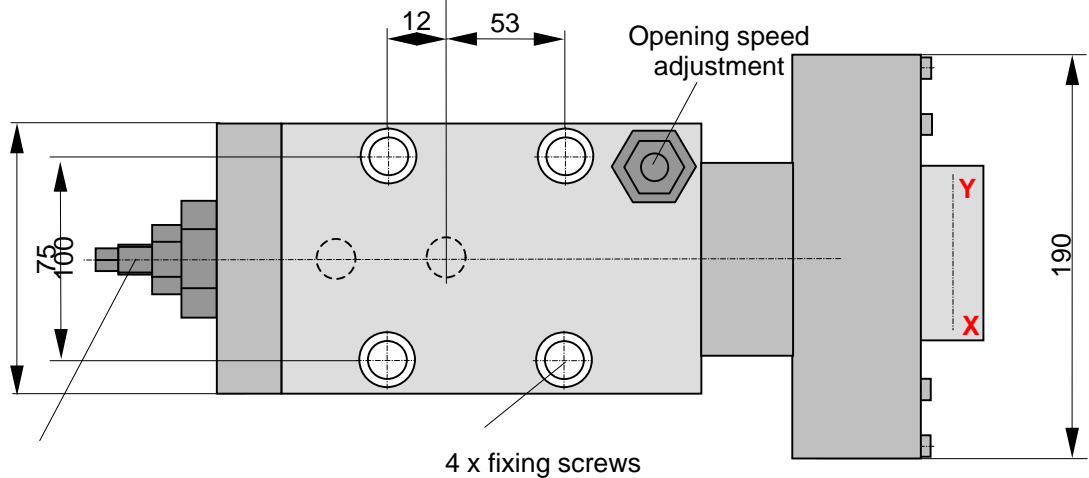
X, Y = G1/4"  
T = G1/2"  
P' = G1" (only for version without speed adjustment)



Max dimension of the connection drilling 25mm.

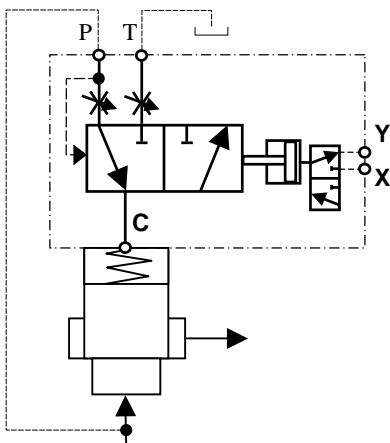
Surface  $\sqrt{R_{max}4}$

Fixing screws 4x M10x40mm. The fixing threads have to have a deepness of 15mm min.



Closing speed adjustment

4 x fixing screws



Example

Typical application for a P6P valve in combination with a large cartridge valve.

The valve is spring loaded and closed without electrical or pneumatical power.

The pilot valve can be used for cartridges ND65 to ND250mm



PILOT VALVES

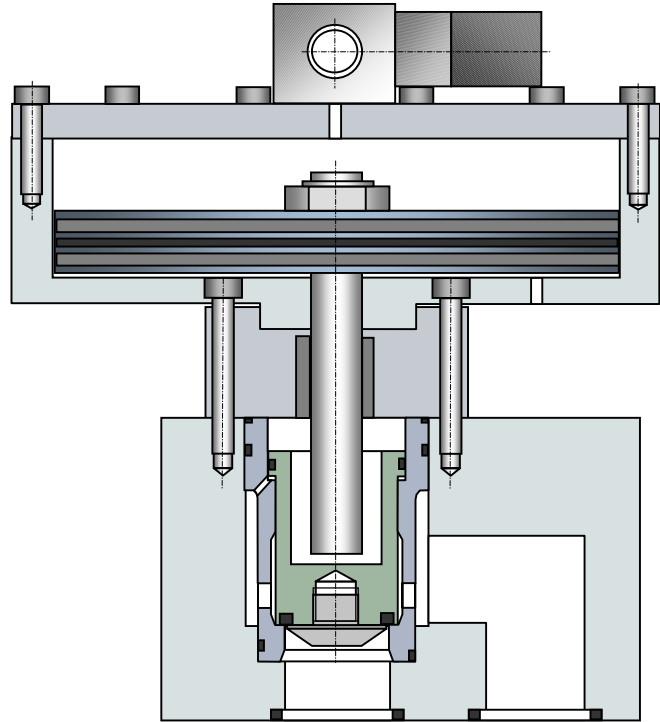
2/2 Directional Pilotvalve

Type P2P

Pilot valves Type 2 are used for control of Schrupp water hydraulic valves, especially in those systems with contaminated media such as descaling systems. These robustly designed valves are frequently used without pilot filtration and can also be used as 2/2 way directional control valves.

Technical Data:

Size	10,16, 25 mm
Hydraulic pressure	350bar
Pneumatic pressure	2-10bar
Recommended filtration	50 mic
Electrical power consumption	8W
Voltage tolerance	10%
Electrical protection	IP65



Ordering Code

Diagrams

**P2P 16 - 6 - 1 - F - 024G**

- S V Ratio if spezial

024 G = 24v DC  
220 W = 220v/50Hz

F = Fluid  
G = Gas

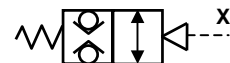
0 = without Pilot  
1 = normal open  
2 = normal close

3 = Hard Seat  
6 = Soft Seat (Standard)

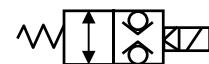
16 = Size 10,16, 25 (mm)

P2P = for supplate mounting  
P2R = with thread connections (on request)

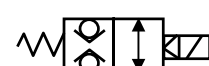
Without Pilot Ventil



Normally Open



Normally Closed

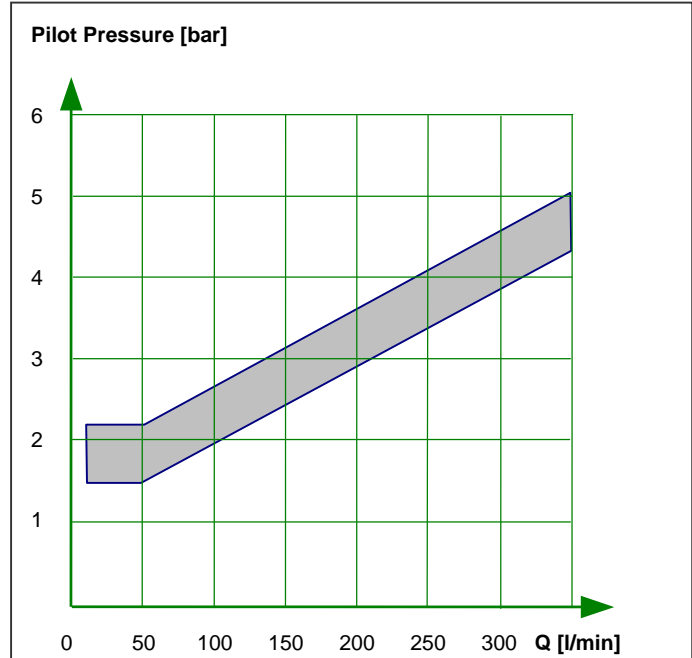
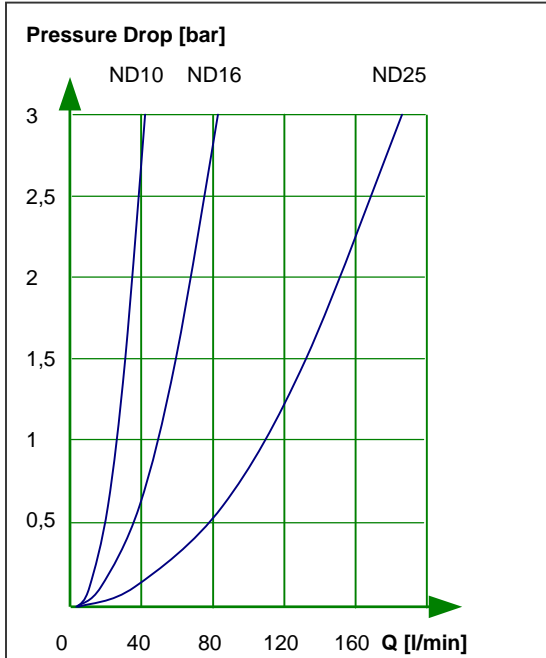


Others on request

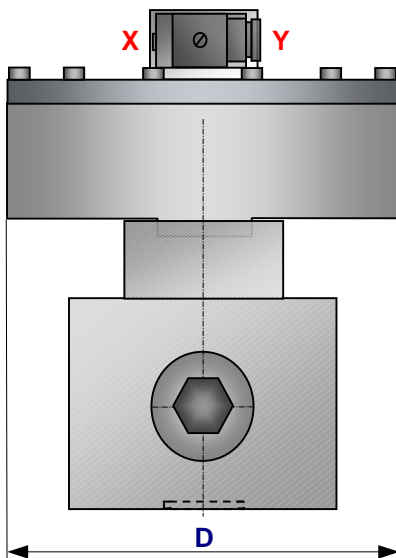
## PILOT VALVES

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

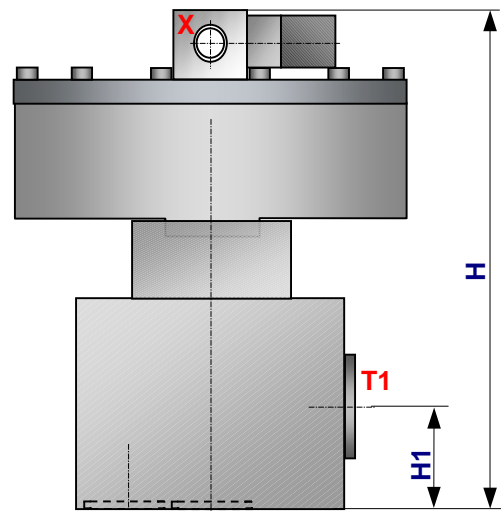
### Characteristics



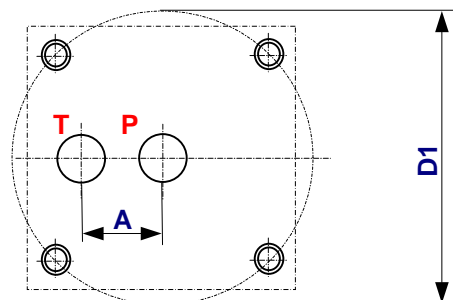
### Dimensions



Connections:  
X Pilot Pressure = G1/4"  
Y Vent = G1/4"  
T,P main connections  
T1 Alternative connection



ND	D	D1	H	H1	A	T, P	T1	Fixing Bolts	
								thread	Thread depth
25	275	140	268	(51)	38,5	D25	(G3/4")	M12	20
16	211	112	176	29	28	D16	G3/8"	M10	20
10	130	74	139	22,5	22	D10	G1/8"	M8	12







PILOT VALVES

Type PDBP/PDBZ

Pressure Valves

Valves DBP, DBZ are used to pilot cartridge valves in pressure control functions. Because of their robust design they were also used for direct operations.

Technical Data:

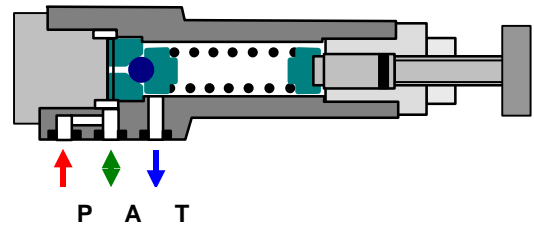
Size	2 mm
Pressure	350bar / 400 bar max
Filtration min	10 mic
Installation	vertical (others possible)

Example / Ordering Code

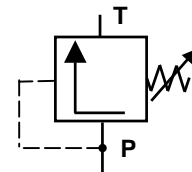


PDBP2 = Relief valve sub plate for mounting NW 2  
PDBZ2 = Sandwich type relief valve

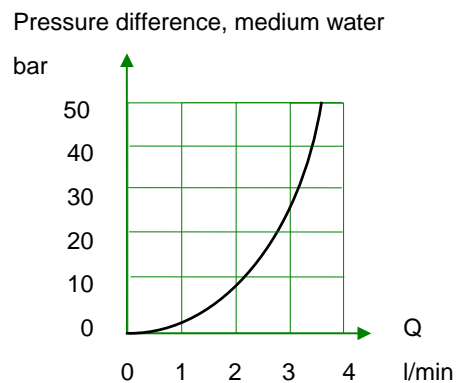
Type



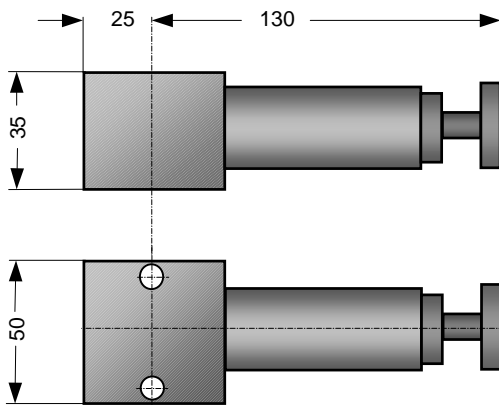
Symbol



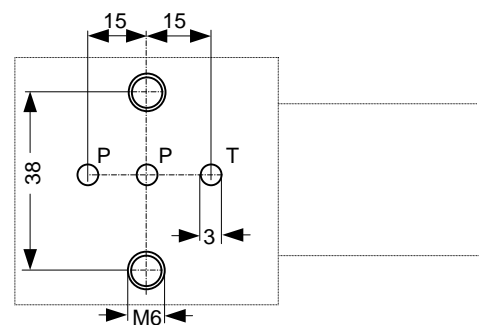
Diagram

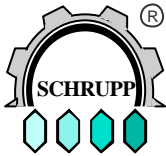


Dimensions



Connections



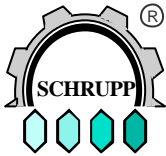


COMPLETE VALVES

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Cartridge type valves can be combined in many different ways. This selection gives an overview of the most popular valves. Special designs on request.

Pos	Type	Medium	Pilot	Press. max	Size	Symbol	Page
KV 12	Directional valve	Water, Air, Oil	Electro-hydraulically operated x,y internal or external ND6 Type WEV06	350bar	25 mm 40,50 mm		2 3,4
KV 2	Directional valve	Water, Air, Oil	Electro-hydraulically ND6 Type WEV06	250bar	10-40mm		5
KV 3	Directional Valve	Water, Air, Oil	Electro-hydraulically ND6 Type WEV06	250bar	16-32mm		6
KV 4	Directional Valve with mainstream filter	Water, Air, Oil	Electro-hydraulically ND6 Type WEV06	250bar	16		7
KV 5	Directional Valve	Water	Electro-hydraulically ND2 Type P3P	350bar	16-32mm		8
KV 6	Pressure relief valve with bypass valve	Water	Pressure relief NDG2 Type DBP2 Elect. -hydraulically ND2 Type P3P	350bar	16-32mm		9
KV 7	Pressure relief valve	Water	Pressure relief NDG2 Type DBP2	350bar	16-32mm		10
KV 8	Pressure reducing valve	Water	Pressure relief NDG2 Type DBP2	350bar	16-32mm		11
KV 9	Medium operated valves, non-return valves, stroke limiter,	Water, Air, Oil	Medium operated	350bar	10-40mm		12
KV 13	Throttle Valves	Water Emulsion Oil	Manual operated with servo-hydraulically assistance	350bar	16-32mm		13
KV 10	Directional valve	Water, Air, Oil	Electro-pneumatic-hydraulically	800bar	10-25mm		14
KV 11	Directional valve	Water, Air, Oil	Electro-hydraulically	800bar	10-25mm		15



**COMPLETE VALVES**

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

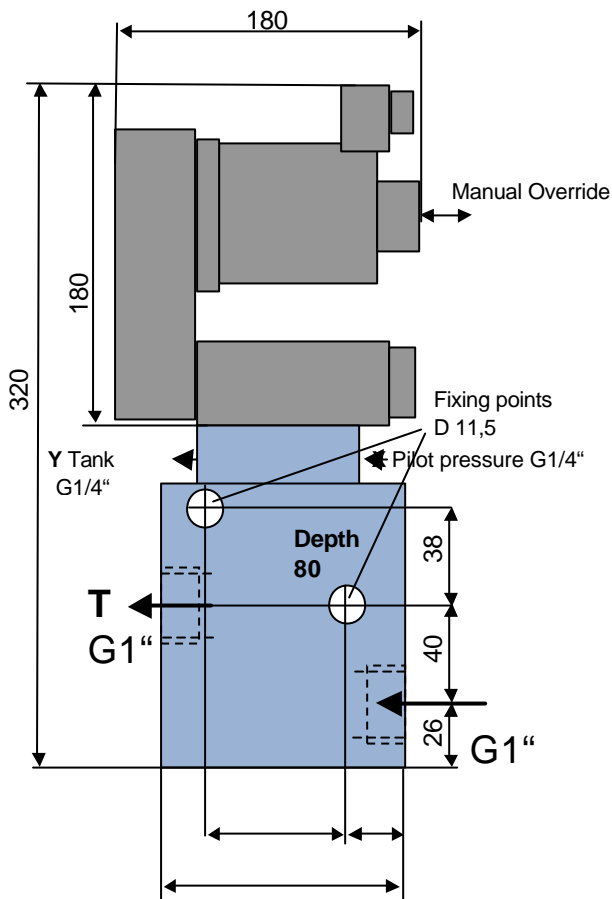
**Type 2/2 Directional Valve 850233**

This robust soft seated valves can be used for the directional control of gases and fluids.

Replacement for V2003

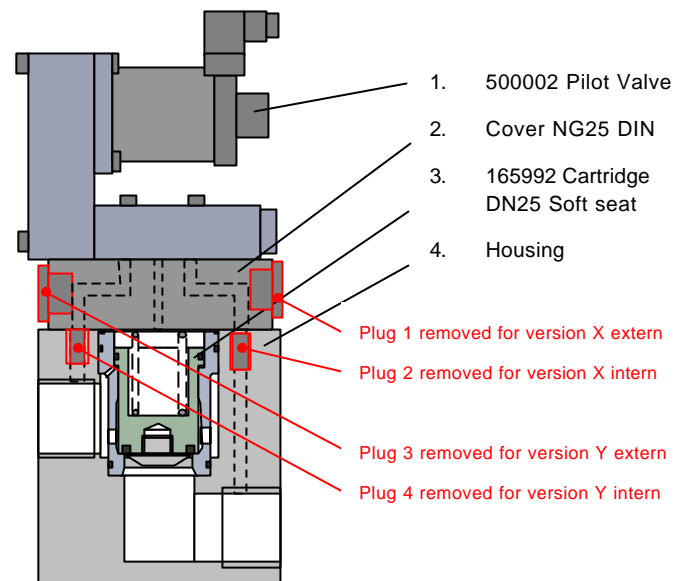
**Technical Data:**

Nominal Pressure: 3 - 350bar  
 Nominal Size: 25mm  
 Media: Water Emulsion, Oil, compressed Air, others on request  
 Pilot pressure has to be equal or higher than the operating pressure. Pilot pressure max 400bar  
 Pressure at port y-for internal operation at port T, has to be min 5bar below the operating pressure at P.  
 Material: Stainless Steel, Viton, Teflon  
 Soft seated with metal support  
 Ambient temperature: 0-50°C  
 Protection Class IP65



**Ordering Code**

<b>850233</b>	<b>x-internal / y-internal</b>	<b>024GL</b>	<b>KV12</b>
	x-external / y-internal	220 WS	
	x-internal / y-external	110 WS	
	x-external / y-external	048 GL	





**COMPLETE VALVES**

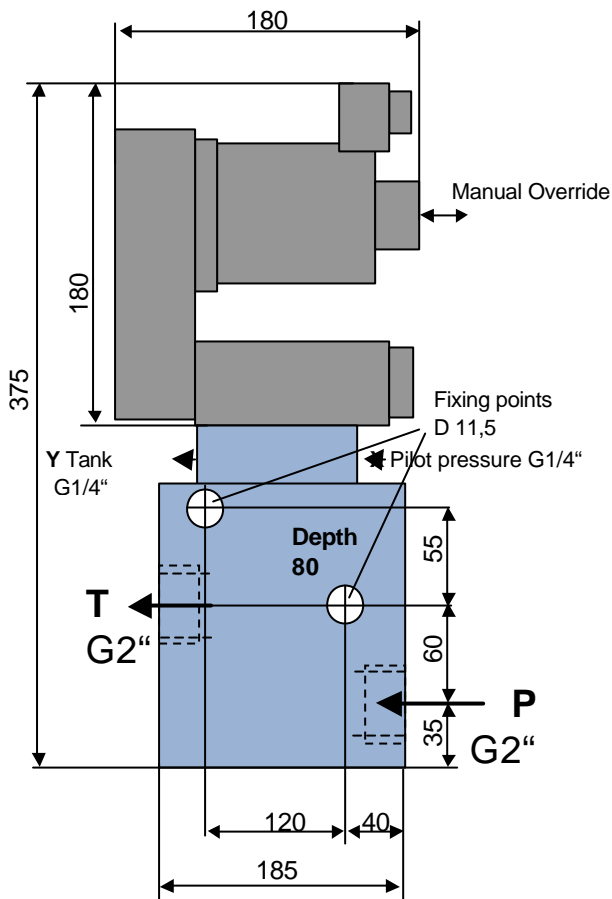
[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

**Type 2/2 Directional Valve 850269**

This robust soft seated valves can be used for the directional control of gases and fluids.  
 Replacement for V2006

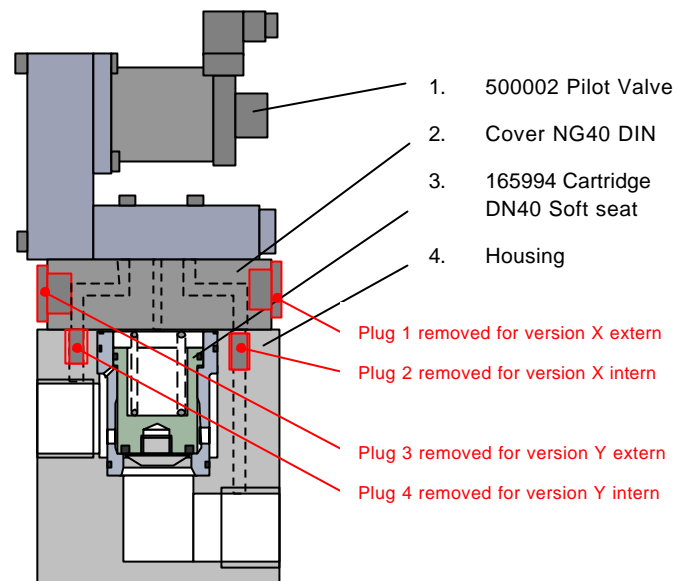
**Technical Data:**

Nominal Pressure: 3 - 350bar  
 Nominal Size: 50mm  
 Media: Water Emulsion, Oil, compressed Air, others on request  
 Pilot pressure has to be equal or higher than the operating pressure. Pilot pressure max 400bar  
 Pressure at port y-for internal operation at port T, has to be min 5bar below the operating pressure at P.  
 Material: Stainless Steel, Viton, Teflon  
 Soft seated with metal support  
 Ambient temperature: 0-50°C  
 Protection Class IP65



**Ordering Code**

<b>850269</b>	<b>x-internal / y-internal</b>	<b>024GL</b>	<b>KV12</b>
	x-external / y-internal	220 WS	
	x-internal / y-external	110 WS	
	x-external / y-external	048 GL	





COMPLETE VALVES

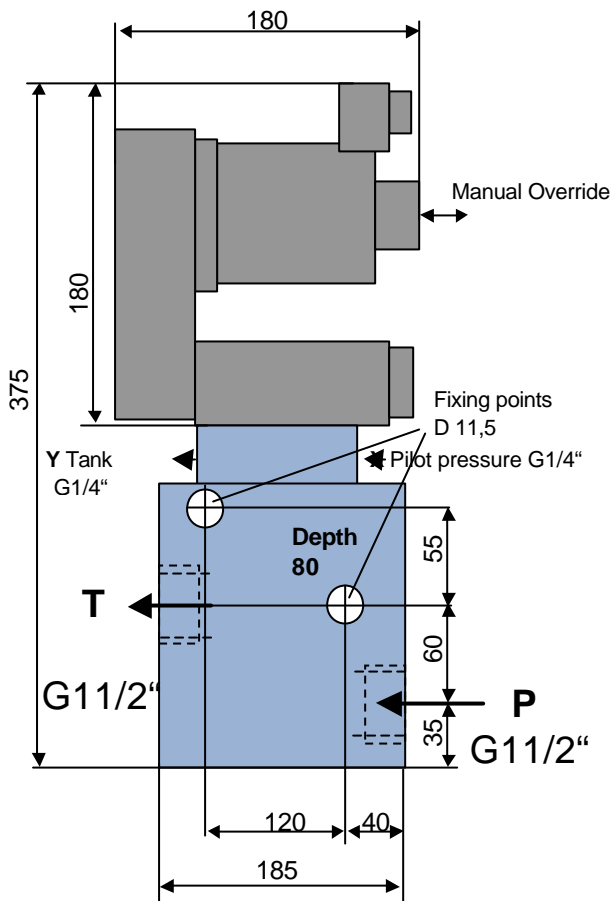
www.hl-hydraulik.de

Type 2/2 Directional Valve 850312

This robust soft seated valves can be used for the directional control of gases and fluids.  
 Replacement for V2005

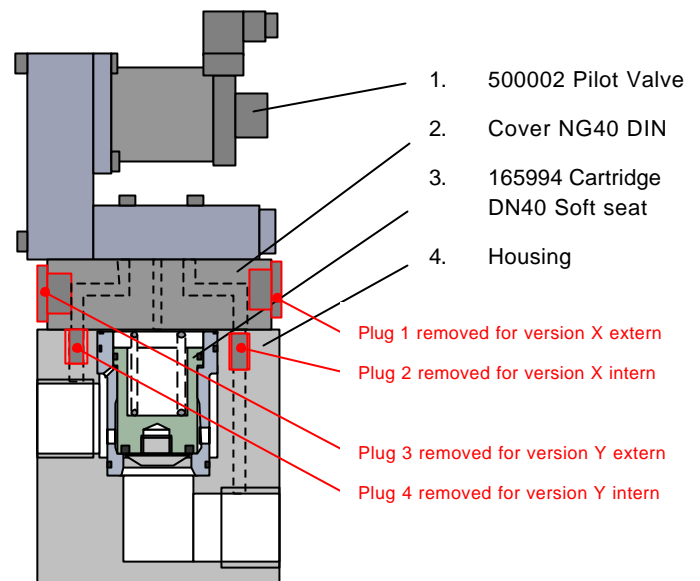
Technical Data:

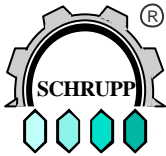
Nominal Pressure: 3 - 350bar  
 Nominal Size: 40mm  
 Media: Water Emulsion, Oil, compressed Air, others on request  
 Pilot pressure has to be equal or higher than the operating pressure. Pilot pressure max 400bar  
 Pressure at port y-for internal operation at port T, has to be min 5bar below the operating pressure at P.  
 Material: Stainless Steel, Viton, Teflon  
 Soft seated with metal support  
 Ambient temperature: 0-50°C  
 Protection Class IP65



Ordering Code

850312	x-extern / y-extern	024GL	KV12
	x-extern / y-extern	220 WS	
	x-extern / y-extern	110 WS	
	x-extern / y-extern	048 GL	





COMPLETE VALVES

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Type 2/2 Way Directional Valve

Medium	Air, water, oil	Material	SS. brass
Oper. Press.	250bar	Sizes*	10. 16. 25. 32. 40 mm
Filtration	25mic	Voltage*	24V, 48V, 98V, 196V dc
Sealing	Soft seat, metal supported	Additional rectifier	110V/50Hz, 220V/50Hz ac

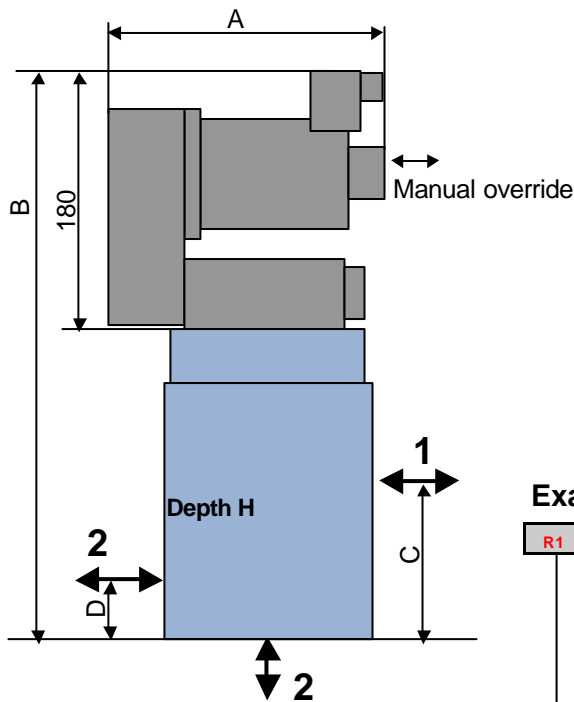
Not applicable for descaling water (please see our catalogue Descaling Valves, Pilot Valves)

\*Other voltages on request.

Symbol



Dimensions



ND	Connections			A	B	C	D	H
10		G1/2"		180	280	55	26	60
16	G1/2"	G3/4"	SAE 3/4" Standard	180	320	71	32	65
25	G3/4"	G1"	SAE 1" Standard	180	345	86	36	85
32	G1"	G1 1/4"	SAE 1 1/4" Standard	180	370	103	39	102
40		G1 1/2"	SAE 1 1/2" Standard	180	400	116	47	125

Example / Ordering Code

R1 016 17 024G B KV2

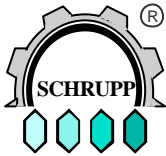
- 010 = Size 10
- 016 = Size 16
- 025 = Size 25
- 032 = Size 32
- 040 = Size 40

- B = Square ac connector small
- D = Square dc connector large
- F = Square conn. for ac and dc with ign.light

- R10 = ND10 thread-connections G1/2"
- R12 = ND10 flanges SAE 1/2"
- R1 = ND16 thread-connections G1/2"
- R2 = ND16 thread-connections G3/4"
- R3 = ND16 flanges SAE 3/4"
- R4 = ND25 thread-connections G3/4"
- R5 = ND25 thread-connections G1"
- R6 = ND25 flanges SAE 1
- R7 = ND32 thread-connections G1"
- R8 = ND32 thread-connections G1 1/4"
- R9 = ND32 flanges SAE 1 1/4"
- R13 = ND32 thread-connect. G1 1/2"
- R14 = ND32 flanges SAE 1 1/2"

- 024G = 24V dc
- 098G = 98V dc
- 196G = 196V dc
- 110W = 110V ac
- 220W = 220V ac

- 17 = Normally closed (NC)
- 18 = Normally open (NO)



COMPLETE VALVES

www.hl-hydraulik.de

Type 2/2 Way Directional Valve

Medium Air  
Oper. Press. 250bar  
Filtration 80mic  
Sealing Soft seat, metal supported

Material SS. brass  
Sizes\* 16, 25, 32mm  
Voltage\* 24V, 48V, 98V, 196V dc  
Additional rectifier 110V/50Hz, 220V/50Hz ac

\*Other voltages and sizes on request.

Symbol

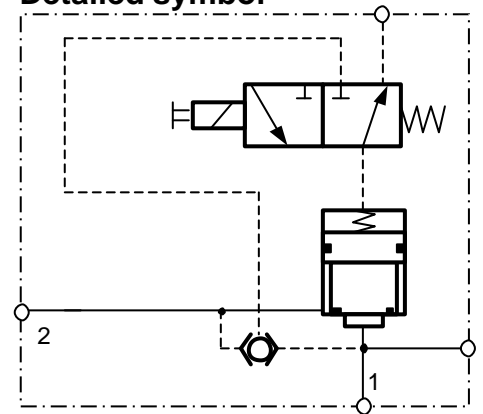


Description

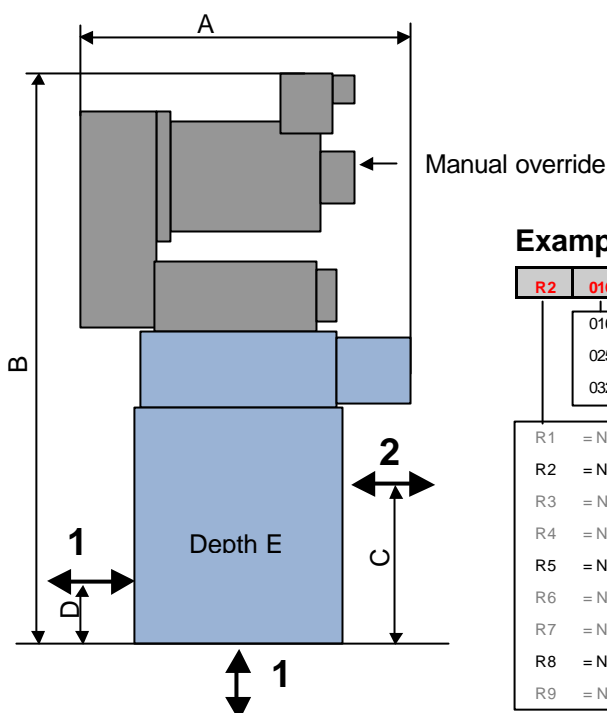
This valve can be used where air has to be sluiced from a high into a low-pressure reservoir. A pilot pressure input from the inlet and outlet side makes sure that the valve stays closed in case of failure even when the pressure in high-pressure port 1 is lower than in port 2.

The robust and compact design allows use of the valve in various fields of applications.

Detailed symbol



Dimensions



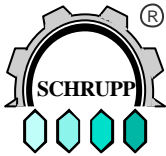
ND	Connections			A	B	C	D	E
16	G1/2"	G3/4"	SAE 3/4" Standard	180	325	71	32	68
25	G3/4"	G1"	SAE 1" Standard	180	350	86	36	85
32	G1"	G1 1/4"	SAE 1 1/4" Standard	180	375	103	43	102

Example / Ordering Code

**R2 016**      **17**      **024G B KV3**

- 016 = Size 16
- 025 = Size 25
- 032 = Size 32
- B = Square ac connector small
- D = Square dc connector large
- F = Square conn. for ac and dc with ign.light
- 024G = 24V dc
- 098G = 98V dc
- 196G = 196V dc
- 110W = 110V ac
- 220W = 220V ac
- 17 = normally closed (NC)
- 18 = normally open (NO)

R1 = ND16 thread-connections G1/2"  
R2 = ND16 thread-connections G3/4"  
R3 = ND16 flanges SAE 3/4"  
R4 = ND25 thread-connections G3/4"  
R5 = ND25 thread-connections G1"  
R6 = ND25 flanges SAE 1  
R7 = ND32 thread-connections G1"  
R8 = ND32 thread-connections G1 1/4"  
R9 = ND32 flanges SAE 1 1/4"



COMPLETE VALVES

www.hl-hydraulik.de

Type **2/2 Way Directional Valve**

Medium Air  
Oper. Press. 250bar  
Filtration 80mic integrated  
Sealing Soft seat, metal supported

Material SS. brass  
Sizes\* 16mm  
Voltage\* 24V, 48V, 98V, 196V dc  
Additional rectifier 110V/50Hz, 220V/50Hz ac

\*Other voltages on request.

Symbol

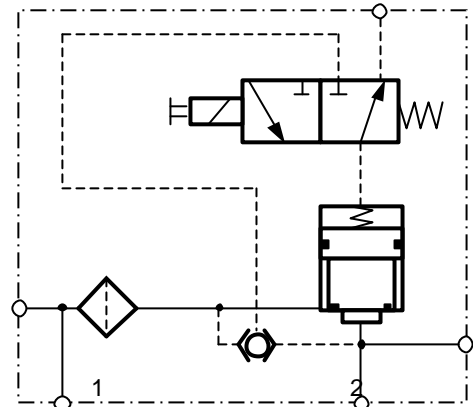


Description

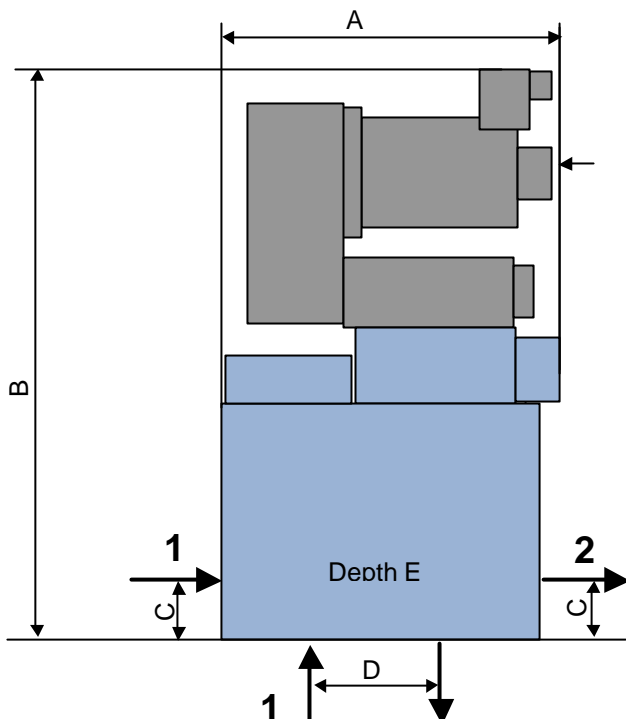
This valve can be used where air has to be sluiced from a high into a low-pressure reservoir. A pilot pressure input from the inlet and outlet side makes sure that the valve stays closed in case of failure even when the pressure in high-pressure port 1 is lower than in port 2. An 80micron filter is integrated to protect main and pilot valve.

The robust and compact design allows use of the valve in various fields of applications.

Detailed symbol



Dimensions



ND	Connections	A	B	C	D	E
16	G1/2" G3/4" SAE 3/4" Standard	200	325	32	70	70

Manual override

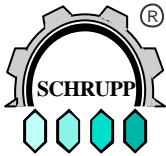
Example / Ordering Code

R11	016	17	024G	B	KV4
-----	-----	----	------	---	-----

B = Square ac connector small  
D = Square dc connector large  
F = Square conn. for ac and dc with ign.light

024G = 24V DC  
098G = 98V DC  
196G = 196V DC  
110W = 110V AC  
220W = 220V AC

17 = Normally Closed (NC)  
18 = Normally open (NO)



COMPLETE VALVES

www.hl-hydraulik.de

Type 2/2 Way Directional Valve

Medium Water  
Oper. Press. 350bar  
Filtration 25mic  
Sealing Soft seat, metal supported

Material SS. brass  
Sizes\* 16, 25, 32mm  
Voltage\* 24V, 48V, 98V, 196V dc  
Additional rectifier 110V/50Hz, 220V/50Hz ac

\*Other voltages and sizes on request.

Symbol

NC or NO possible

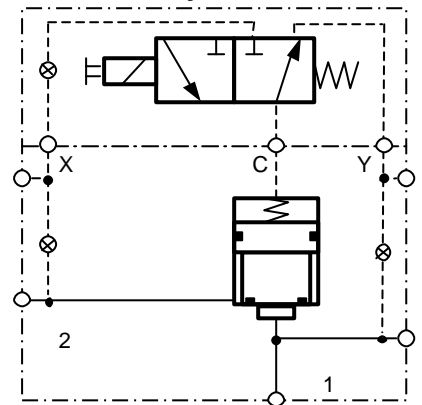


Description

This leak free directional control valve can be used for flows in both directions. NC and NO versions are available. Internal and external x and y ports are integrated.

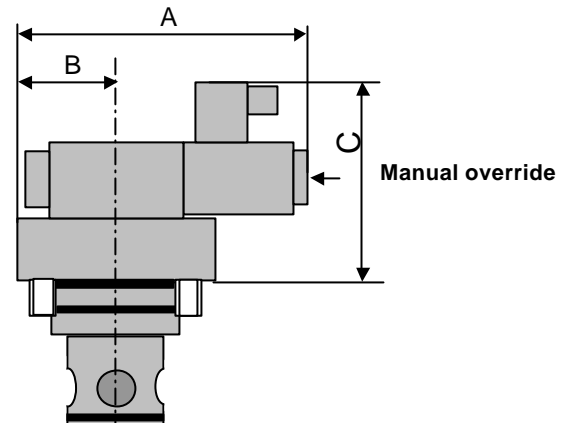
The robust and compact design allows use of the valve in various fields of applications.

Detailed Symbol



Dimensions

ND	Connections 1,2			A	B	C	D	E	F	G	H
16	G1/2"	G3/4"	SAE 3/4" Standard	180	33	130	32	71	235	190	65
25	G3/4"	G1"	SAE 1" Standard	190	43	130	36	86	260	200	85
32	G1"	G1 1/4"	SAE 1 1/4" Standard	198	51	130	43	103	285	207	102



Example / Ordering Code

EO	016	WX	08	6	D	17	FS	024G	B	KV5
----	-----	----	----	---	---	----	----	------	---	-----

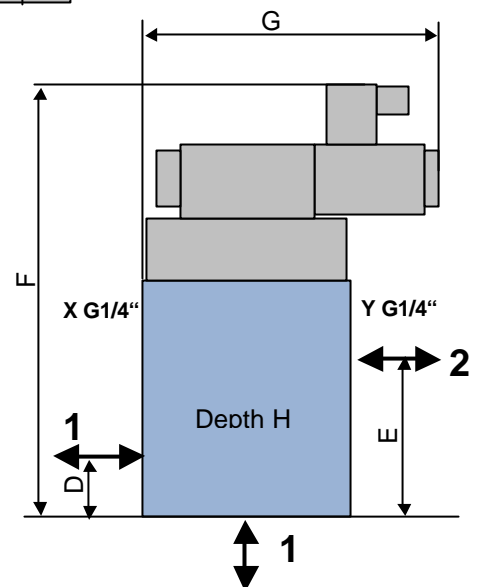
- 016 = Size 16
- 025 = Size 25
- 032 = Size 32

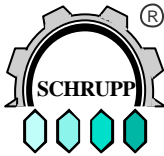
- B = Square ac connector small
- D = Square dc connector large
- F = Square conn. For ac and dc with ign.light

- EO = for manifold mounting
- R1 = ND16 thread-connections G1/2"
- R2 = ND16 thread-connections G3/4"
- R3 = ND16 flanges SAE 3/4"
- R4 = ND25 thread-connections G3/4"
- R5 = ND25 thread-connections G1"
- R6 = ND25 flanges SAE 1
- R7 = ND32 thread-connections G1"
- R8 = ND32 thread-connections G1 1/4"
- R9 = ND32 flanges SAE 1 1/4"

- 024G = 24V DC
- 098G = 98V DC
- 196G = 196V DC
- 110W = 110V AC
- 220W = 220V AC

- 17 = Normally closed (NC)
- 18 = Normally open (NO)





COMPLETE VALVES

www.hl-hydraulik.de

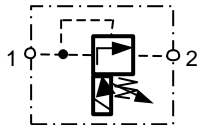
Type Pressure Relief Valve with Bypass

Medium Water  
Oper. Press. 350bar  
Filtration 25mic  
Sealing Hard seated

Material SS. brass  
Sizes\* 16, 25, 32mm  
Voltage\* 24V, 48V, 98V, 196V dc  
Additional rectifier 110V/50Hz, 220V/50Hz ac

\*Other voltages and sizes on request.

Symbol



NC and NO possible

Description

This valve can be used to protect a system against overpressure. Also it is possible to remotely operate the valve by an external pressure. An electrical operated pilot valve for a pressure less bypass function is integrated. NO and NC versions are available.

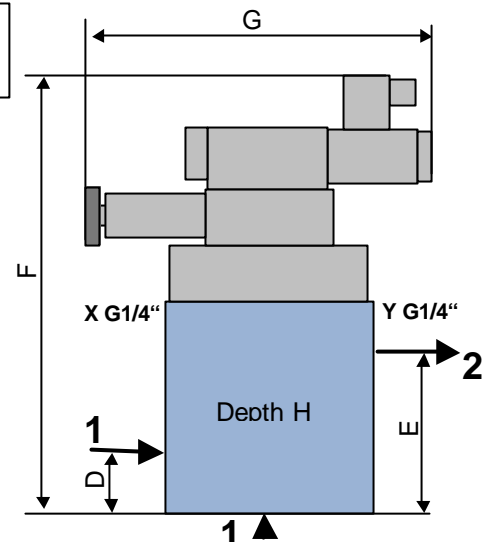
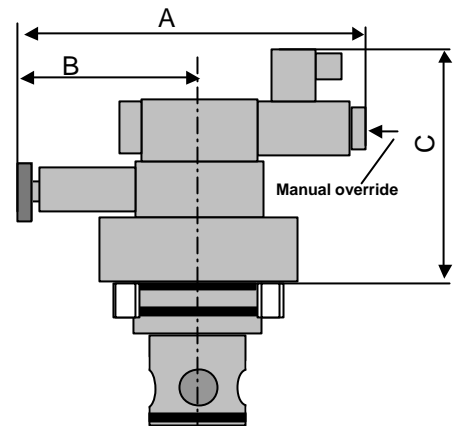
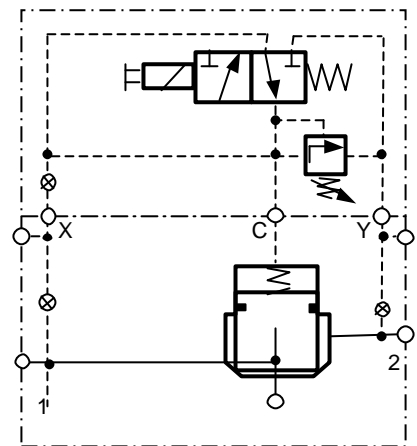
The robust and compact design allows use of the valve in various fields of applications.

Dimensions

ND	Connections 1,2			A	B	C	D	E	F	G	H
16	G1/2"	G3/4"	SAE 3/4" Standard	275 (180)	128 (43)	165	32	70	210	275 (190)	65
25	G3/4"	G1"	SAE 1" Standard	275 (190)	128 (53)	165	36	85	235	275 (200)	85
32	G1"	G1 1/4"	SAE 1 1/4" Standard	275 (198)	128 (60)	165	43	102	260	275 (207)	102

Version NO is shown, Version NC – electrical solenoid is located in direction of the adjustment of the pressure valve – see dimensions in blue.

Detailed Symbol



Example / Ordering Code

EO 016 WX 05 2 D 25 FS 024G B H KV6

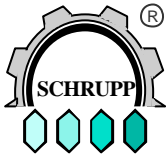
016 = Size 16  
025 = Size 25  
032 = Size 32

B = Square ac connector small  
D = Square dc connector large  
F = Square conn. for ac and dc with ign.light

EO = for manifold mounting  
R1 = ND16 thread-connections G1/2"  
R2 = ND16 thread-connections G3/4"  
R3 = ND16 flanges SAE 3/4"  
R4 = ND25 thread-connections G3/4"  
R5 = ND25 thread-connections G1"  
R6 = ND25 flanges SAE 1  
R7 = ND32 thread-connections G1"  
R8 = ND32 thread-connections G1 1/4"  
R9 = ND32 flanges SAE 1 1/4"

024G = 24V DC  
098G = 98V DC  
196G = 196V DC  
110W = 110V AC  
220W = 220V AC

25 = Normally closed (NC)  
26 = Normally open (NO)



COMPLETE VALVES

www.hl-hydraulik.de

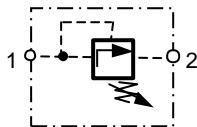
**Type Pressure Relief Valve with Bypass**

Medium Water  
Oper. Press. 350bar  
Filtration 25mic  
Sealing Hard seated

Material SS. brass  
Sizes\* 16, 25, 32mm

\*Other sizes on request.

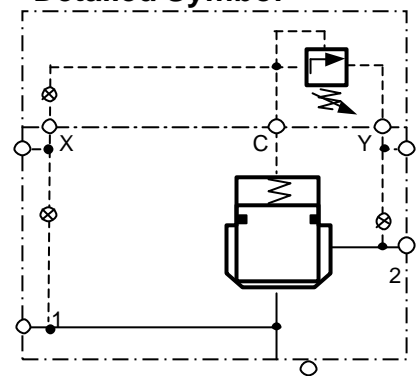
**Symbol**



**Description**

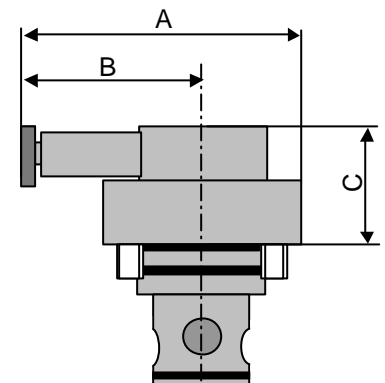
This valve can be used to protect a system against overpressure. Also it is possible to remotely operate the valve by an external pressure.  
The robust and compact design allows use of the valve in various fields of applications.

**Detailed Symbol**



**Dimensions**

ND	Connections 1,2			A	B	C	D	E	F	G	H
16	G1/2"	G3/4"	SAE 3/4" Standard	160	128	70	32	71	175	170	65
25	G3/4"	G1"	SAE 1" Standard	170	128	70	36	86	200	180	85
32	G1"	G1 1/4"	SAE 1 1/4" Standard	180	128	70	43	103	225	187	102

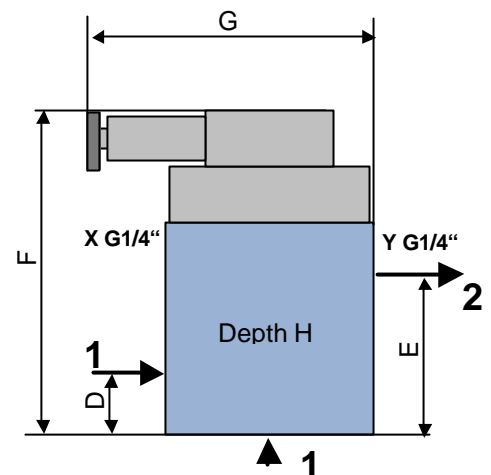


**Example / Ordering Code**

EO 016 DX 05 2 D 23 FS 0000 0 H KV7

- 016 = Size 16
- 025 = Size 25
- 032 = Size 32

- EO = for manifold mounting
- R1 = ND16 thread-connections G1/2"
- R2 = ND16 thread-connections G3/4"
- R3 = ND16 flanges SAE 3/4"
- R4 = ND25 thread-connections G3/4"
- R5 = ND25 thread-connections G1"
- R6 = ND25 flanges SAE 1
- R7 = ND32 thread-connections G1"
- R8 = ND32 thread-connections G1 1/4"
- R9 = ND32 flanges SAE 1 1/4"





COMPLETE VALVES

www.hl-hydraulik.de

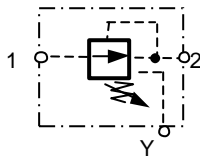
Type Pressure Reducing Valve

Medium Water  
Ope. pressure 350bar  
Filtration 25mic  
Sealing Hard seated

Material SS. brass  
Sizes\* 16. 25. 32mm

\*Other sizes on request.

Symbol

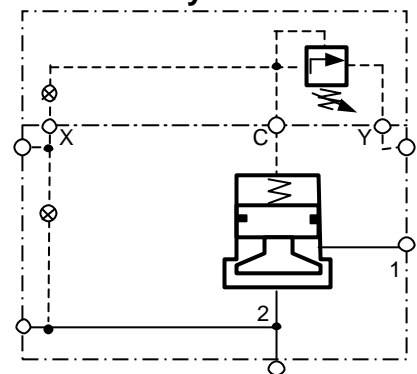


Description

This valve can be used to reduce a pressure from a high-pressure circuit to a constant lower pressure, without any pressure influence from the feeding pressure system. Also it is possible to remotely operate the valve by an external pressure.

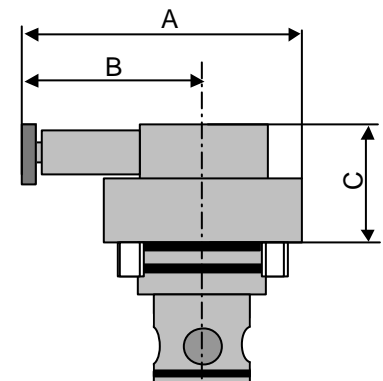
The robust and compact design allows use of the valve in various fields of applications.

Detailed Symbol



Dimensions

ND	Connections 1,2			A	B	C	D	E	F	G	H
16	G1/2"	G3/4"	SAE 3/4" Standard	160	128	70	32	71	175	170	65
25	G3/4"	G1"	SAE 1" Standard	170	128	70	36	86	200	180	85
32	G1"	G1 1/4"	SAE 1 1/4" Standard	180	128	70	43	103	225	187	102

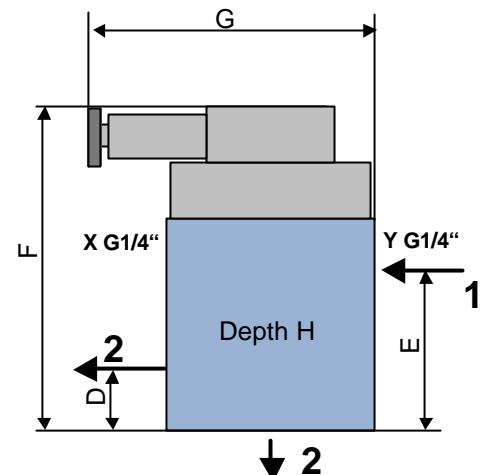


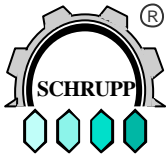
Example / Ordering Code

EO 016 DX 05 2 D 24 FS 0000 0 H KV8

- 016 = Size 16
- 025 = Size 25
- 032 = Size 32

- EO = for manifold mounting
- R1 = ND16 thread-connections G1/2"
- R2 = ND16 thread-connections G3/4"
- R3 = ND16 flanges SAE 3/4"
- R4 = ND25 thread-connections G3/4"
- R5 = ND25 thread-connections G1"
- R6 = ND25 flanges SAE 1
- R7 = ND32 thread-connections G1"
- R8 = ND32 thread-connections G1 1/4"
- R9 = ND32 flanges SAE 1 1/4"





COMPLETE VALVES

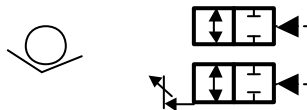
www.hl-hydraulik.de

Type Non Return and hydraulically operated Valves, Stroke Limiters

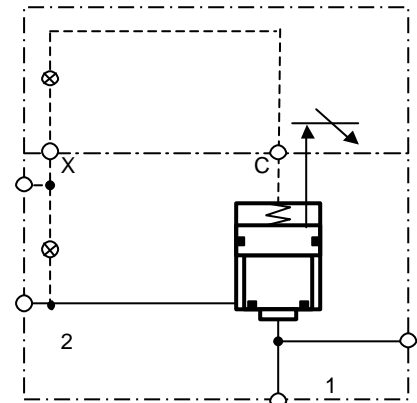
Medium Water, oil, air  
Ope. pressure 350bar  
Filtration 25mic  
Sealing Soft seat, metal supported  
\*Other sizes on request.

Material SS. brass  
Sizes\* 10, 16, 25, 32, 40 mm

Symbol



Detailed Symbol



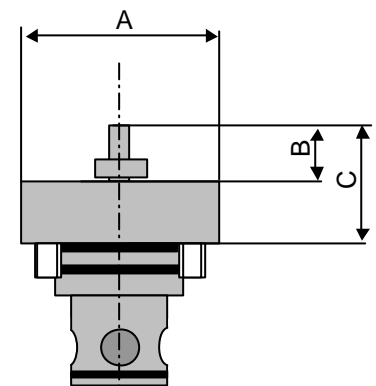
Description

These valves are used for directional control and shut off functions. Additional stroke limiters allow also a throttling of the flow.

The robust and compact design allows use of the valve in various fields of applications.

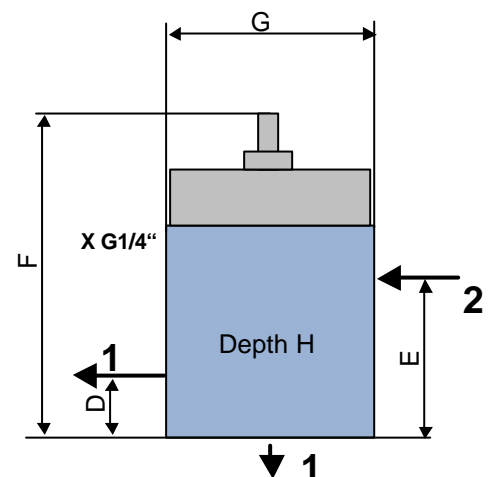
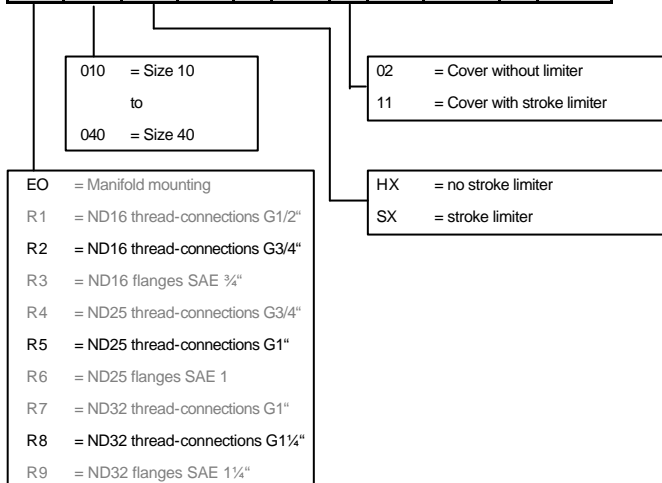
Dimensions

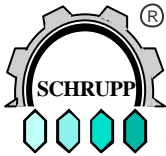
ND	Connections			A	C	B	D	E	F	G	H
10		G1/2"		52	50	25	26	55	125	70	52
16	G1/2"	G3/4"	SAE 3/4" Standard	65	75	40	32	71	180	85	65
25	G3/4"	G1"	SAE 1" Standard	85	92	57	36	86	222	105	85
32	G1"	G1 1/4"	SAE 1 1/4" Standard	102	114	79	39	103	269	120	102
40		G1 1/2"	SAE 1 1/2" Standard	125	120	80	47	116	300	145	125



Example / Ordering Code

EO 016 SX 08 6 D 11 F0 0000 0 0 KV9





## COMPLETE VALVES

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)

### Type 2/2 Throttle Valve 850193

These robust valves are used for shut-off and throttle functions in water and descaling-water circuits.

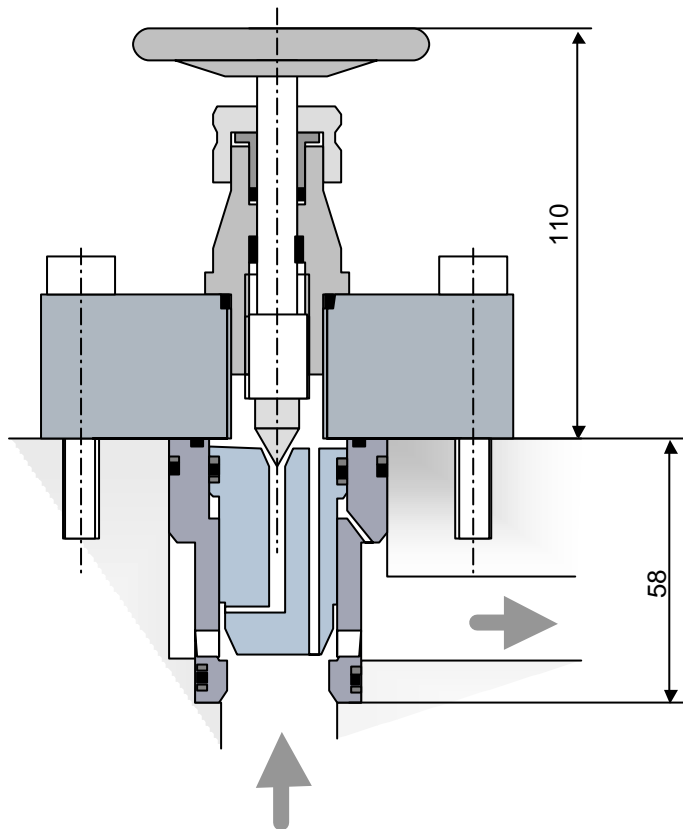
The pilot spindle controls the position of the main piston, so that the valve can be operated with very low torque.

Even after a long shut-down period it is possible to operate the valve without any sticking or grinding effects.

A patented damping system prevents the valve from pulsation in water or thin fluid systems.

#### Technical data:

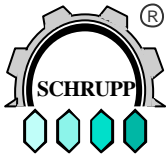
Max operating pressure:	350bar
Sizes:	16,25,32mm
Medium:	water, emulsions, oil, others on request
Material:	stainless steel, viton, teflon
Ambient temperatur:	0-50°C



#### Orderno.:

**850193** cartridge valve ND25mm  
dimension as per DIN 24342 (see page E2.1.6)

housings and other sizes on request



COMPLETE VALVES

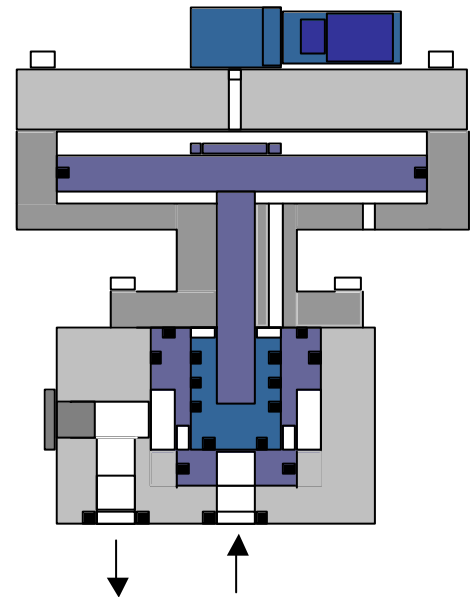
www.hl-hydraulik.de

2/2 Way directional Valve

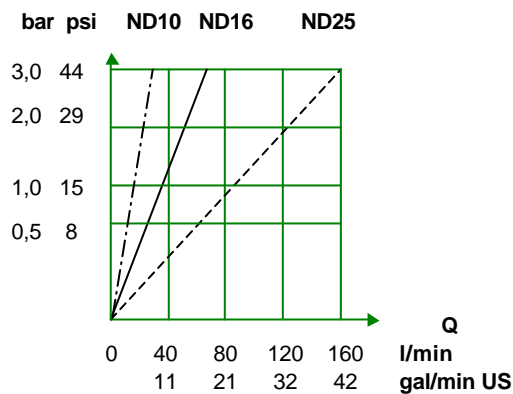
These electro-pneumatically piloted valves are designed for use in the harsh environments found in the steel and aluminum industries. Housing and the leak free soft seat cartridge are manufactured from stainless steel. Housings are available with flange connections or for manifold mounting.

Technical Data:

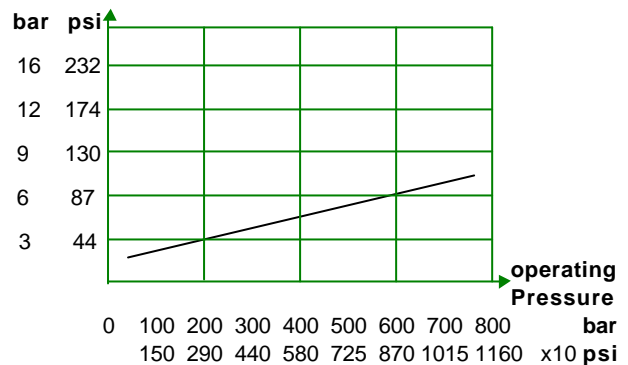
Nominal Dimension	10,16, 25 mm	3/8" 5/8", 1"
Hydraulically Pressure	800bar max	11600psi max
Medium	water, emulsions, oil, air	
Sealings	Viton/Teflon	
Pneumatic Pilot Pressure	2-10bar	30 – 145psi
Filtration rate	50 micron	
Electrical Power consumption	8W	



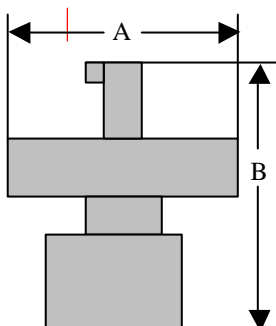
Pressure Drop Water



Pilot pressure



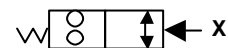
Dimensions



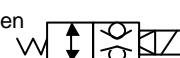
ND	10(3/8)	16 (5/8)	25 ( 1 )
A	180(7.2)	220(8.7)	425(17)
B	180(7.2)	220(8.7)	455(18.2)
	mm / (in)		

Symbol

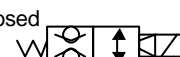
Hydraulically piloted

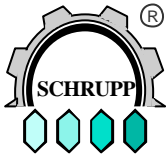


Normally open



Normally closed





COMPLETE VALVES

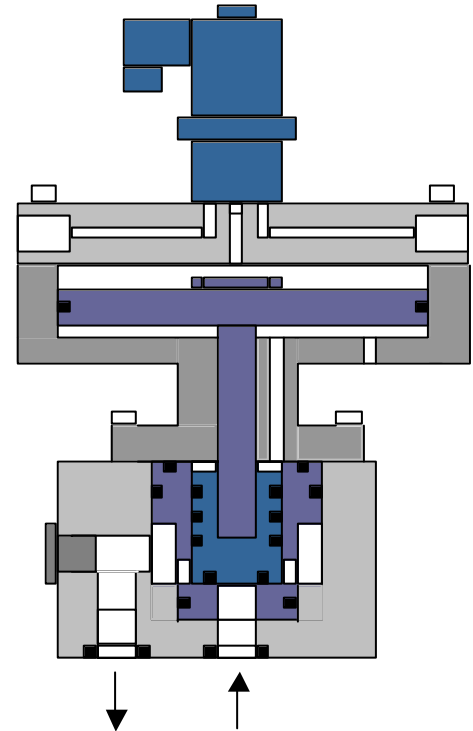
www.hl-hydraulik.de

2/2 Wegeventil

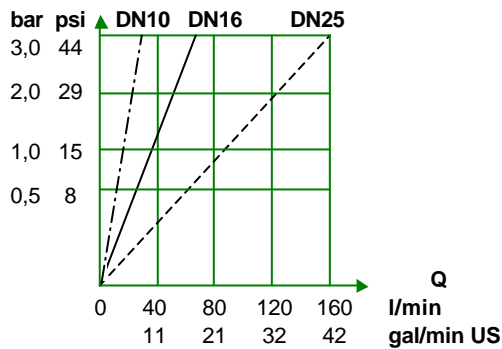
These electro-pneumatically piloted valves are designed for use in the harsh environments found in the steel and aluminum industries. Housing and the leak free soft seat cartridge are manufactured from stainless steel. Housings are available with flange connections or for manifold mounting.

Technical Data:

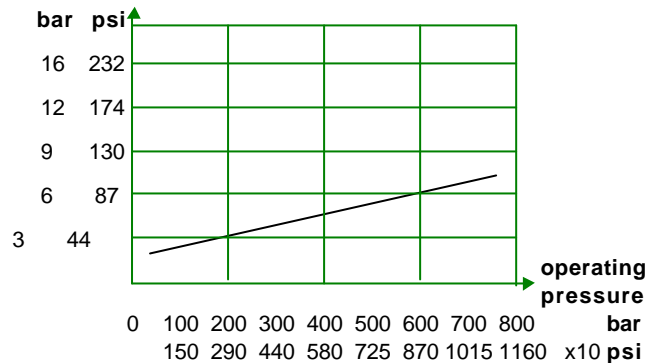
Nominal Dimension	10,16, 25 mm	3/8" 5/8", 1"
Hydraulically Pressure	800bar max	11600psi max
Medium	water, emulsions, oil, air	
Sealings	Viton/Teflon	
Pilot medium	water, emulsions, oil, air	
Pilot Pressure	2-10bar	30– 145psi
Filtration rate	50 micron	
Electrical Power consumption	45W	



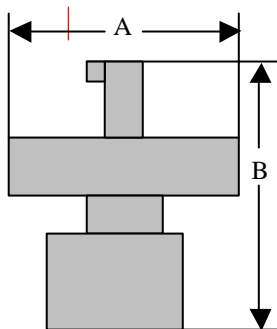
Pressure Drop Water



Pilot Pressure



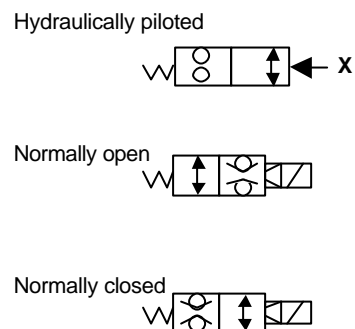
Dimensions



ND	10(3/8)	16 (5/8)	25 ( 1 )
A	180(7.2)	220(8.7)	425(16.7)
B	200 (8)	240 (9.5)	475(18.7)

mm / (in)

Symbol





## Entzunderungstechnik – Descaling Technology



Entzunderungssysteme werden in Stahlwerken benötigt, um nach jedem Walzvorgang die Zunderschicht von der Materialoberfläche zu entfernen. Ohne ein effektives Entzunderungssystem können die heutigen Qualitätsanforderungen an Stahlprodukte nicht mehr erfüllt werden. HL Hydraulik GmbH fertigt und vertreibt unter dem Handelsnamen Schrupp die hierzu erforderlichen Ventile sowie mehrstufige Bypass Düsen.

Das Produktprogramm umfasst

- Absperrventile
- Rückschlagventile
- Magnetbetätigte Ventile
- Ventilkombinationen
- Düsenpakete
- 2- und 3- Wege Vorsteuerungen

Die Ventile sind einsetzbar bis zu Drücken von 350bar (Sonderanwendungen bis 800bar) und Volumenströmen bis 30.000 l/min

Descaling systems are used in steel rolling mills to remove the scale after each rolling procedure. Without a modern descaling system it is not possible to produce a high quality steel product. HL Hydraulik GmbH manufactures all kinds of valves and multistage break down orifices under the trade name Schrupp for this application.

The product range includes:

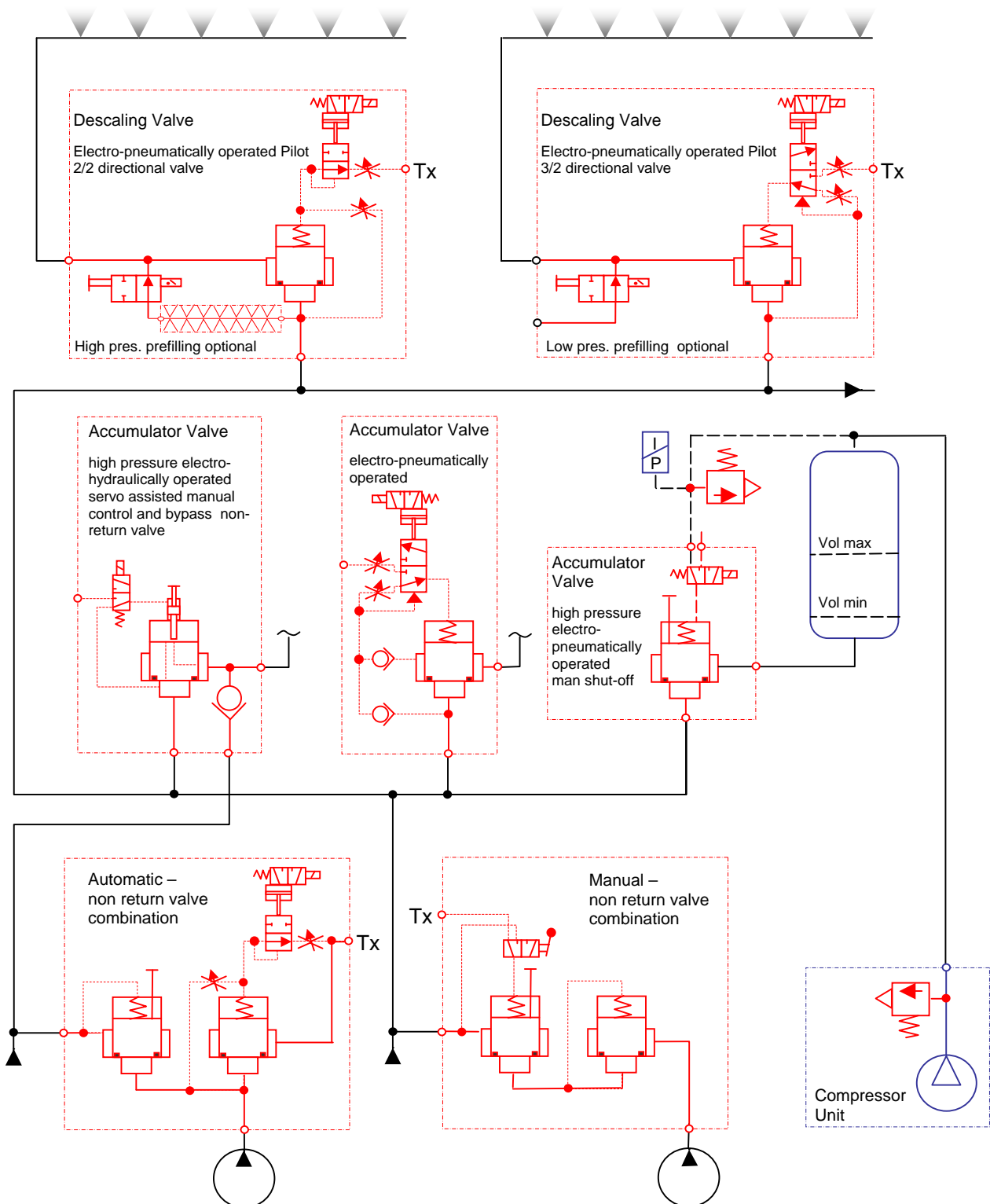
- On Off valves (Descaling Valves)
- Non Return Valves (Check Valves)
- Automatic Valves (Accumulator Safety Shut Off Valves)

- Valve Combinations
- Multistage Break Down Orifices
- 2 and 3 Way Pilot Valves

The valves are suitable for pressures up to 350bar (special applications up to 800bar) and flow rates up to 30.000 l/min

## Entzunderungstechnik – Descaling Technology

### Systeme mit Konstantpumpen (Kolben Pumpen) Systems for pumps with continuous flow rates (plunger pumps)

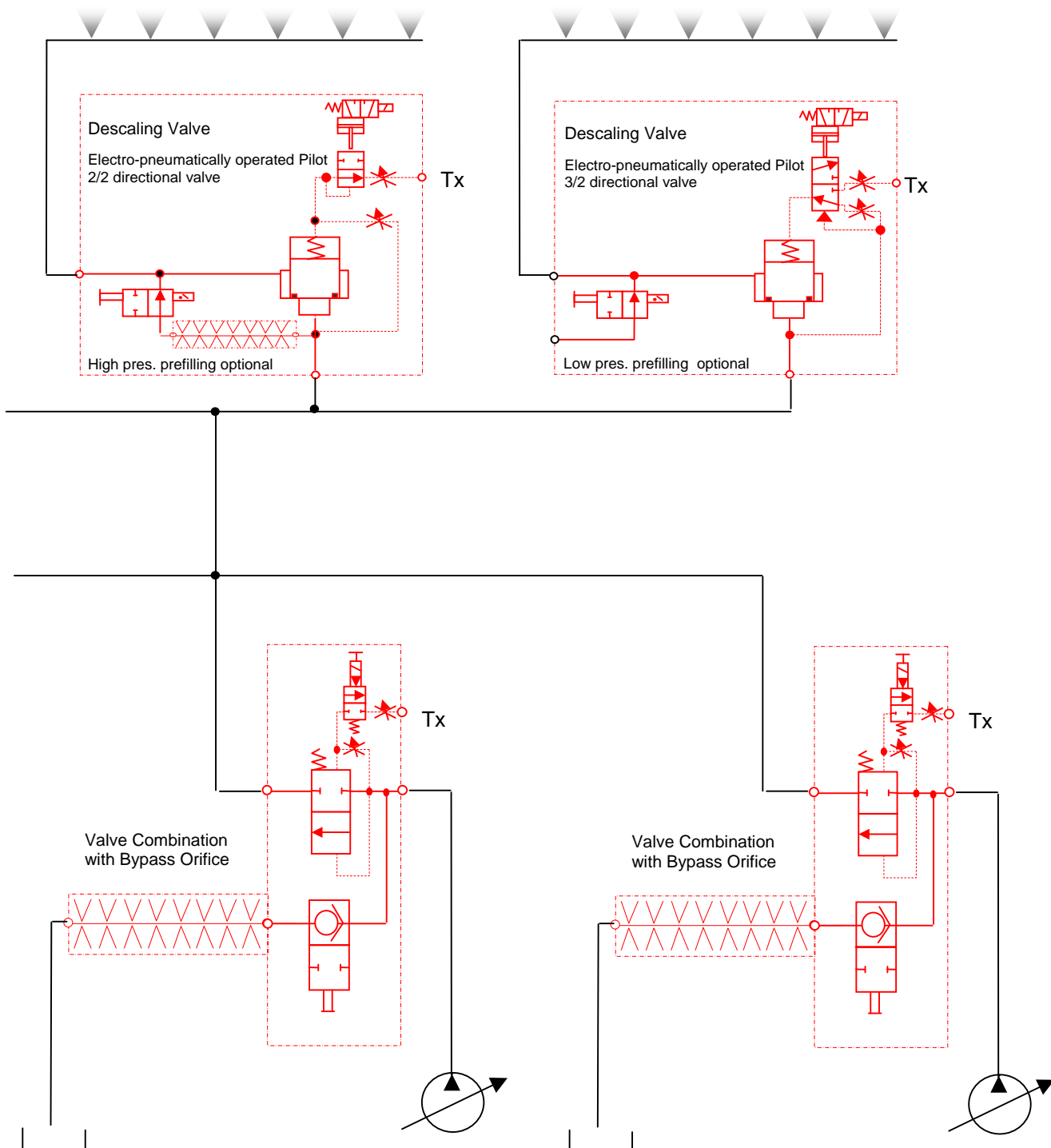


Beispiele für eine typische Anwendungen. Rot dargestellte Komponenten stellen HL Hydraulik GmbH Produkte dar, blau dargestellte Komponenten können ebenso angeboten werden.

Examples of typical applications. Red items are products of HL-Hydraulik GmbH blue Items can also be quoted.

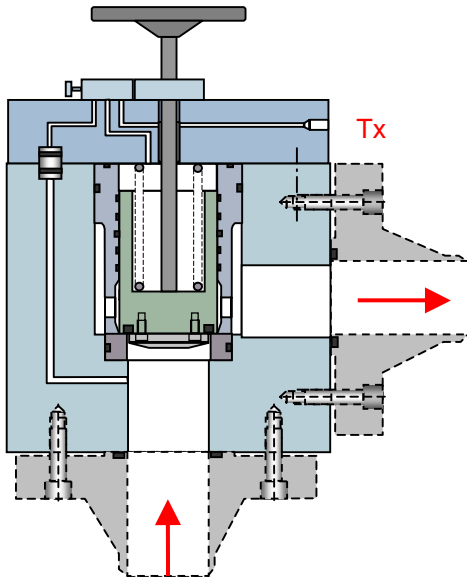
## Entzunderungstechnik – Descaling Technology

### Systeme mit Pumpen mit veränderlichen Volumenströmen (Zentrifugal Pumpen) Systems for pumps with variable flow rates (centrifugal pumps)



Beispiel für eine typische Anwendung. Rot dargestellte Komponenten stellen HL Hydraulik GmbH Produkte dar.  
Example of a typical application. Red items are products of HL Hydraulik GmbH.

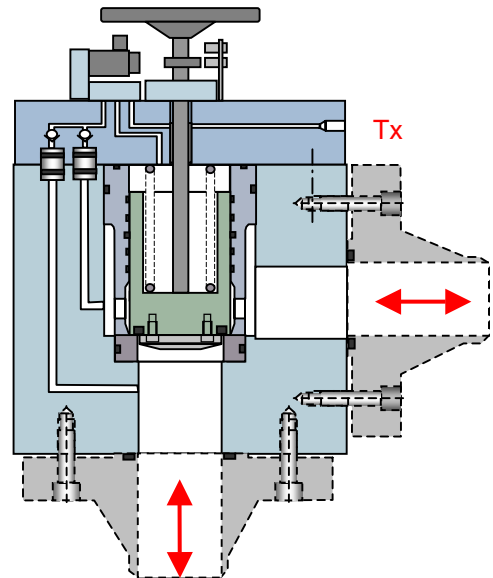
## Entzunderungstechnik – Descaling Technology



### Handabsperrventil

Einfach aufgebautes Ventil zur Absperrung von Rohrleitungen für eine Strömungsrichtung. Betätigung erfolgt durch 3/2 Wege hand- oder elektrisch betätigtes Ventil. Verriegelung erfolgt durch mechanische Spindel. Anders als bei handelsüblichen Spindelventilen sind die Bedienkräfte gering.

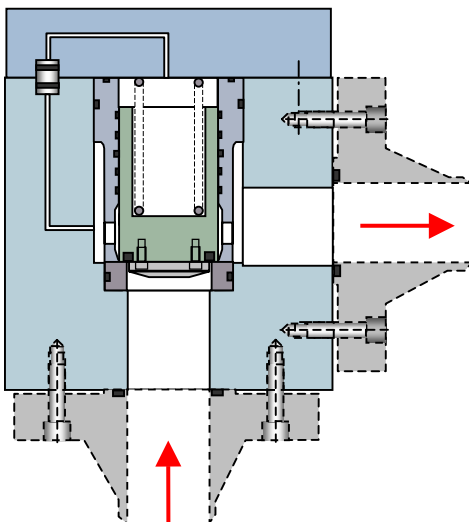
- Optionen:
- Rückschlagventile für Ventile mit beidseitiger Durchströmung
  - elektrisch betätigtes Ventil
  - Endschalter



### Manual Shut Off Valve

robust design for flows in one (both) direction. The valve will be operated hydraulically by a manually or electrically operated 3/2 directional valve and can be locked by a spindle. The operating force is much lower than for a standard spindle operated valve.

- Options:
- Check valves for flows in both directions
  - electrically operated pilot valve
  - limit switches



### Rückschlagventil

Einfach aufgebautes Ventil zur einseitigen Absperrung von Rohrleitungen.

- Option: - Spindel zur Verriegelung in geschlossener Position.

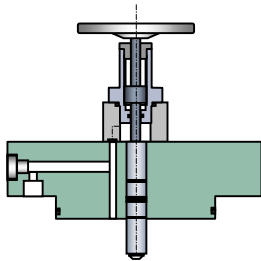
### Non Return Valve

Robust design to allow flows only in one direction

- Option: - locking spindle for closed position.



## Entzunderungstechnik – Descaling Technology

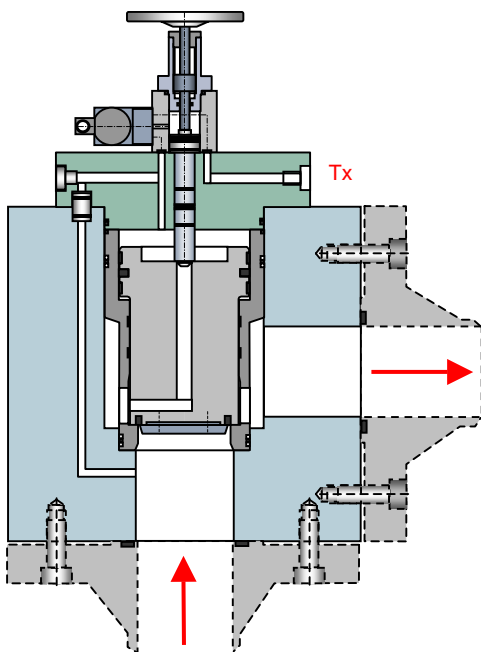


### Absperrventil mit Servounterstützung

Diese robusten dichtschließenden Ventile mit patentierter servo-hydraulischer Verstellung ermöglichen eine zuverlässige Betätigung selbst nach langen Stillstandszeiten mit geringstem Kraftaufwand. In Kombination mit einem elektrischen Vorsteuerventil ist es für den Einsatz als Speicherschnellschlussventil bestens geeignet. Das Ventil schließt bei Stromausfall automatisch (fail safe) und kann jederzeit ebenso manuell geschlossen werden. Bei Wartungsarbeiten am System kann die manuelle Betätigung als Sicherheitsverriegelung genutzt werden, so dass das Ventil selbst bei Betätigung der elektrischen Vorsteuerung nicht geöffnet werden kann.

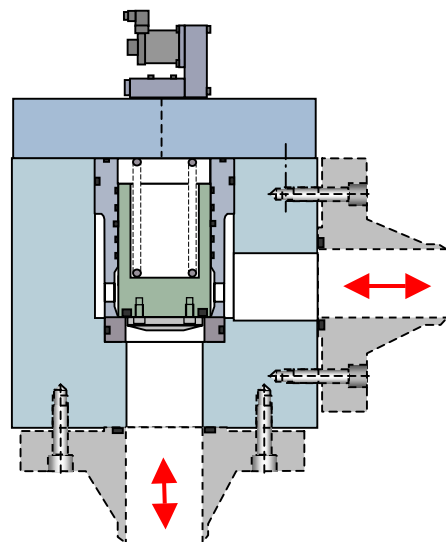
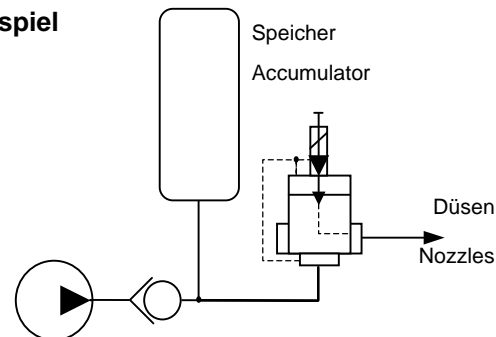
### Shut- Off Valve with Servo Assistance

This robust and leak-free closing valve with patented servo assistance allow an easy operation with very low manual force even after long periods non use. For accumulator shut off functions the valve can be operated in combination together with an electrically operated pilot valve. Without electrical power the valve will close automatically (fail safe). It is always possible to close it manually or in case of maintaining the system to secure it in closed position even if the pilot valve will be energized.



### Anwendungsbeispiel

#### Example

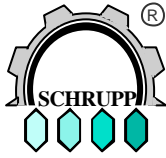


### Absperrventil mit elektro- hochdruckpneumatischer Vorsteuerung - fail safe

Dieses preiswerte, robuste und dichtschließende Ventil wird für Anwendungen mit hoher Schalhäufigkeit wie zum Beispiel als Speicherabsperr- und Automatikventil eingesetzt. Da der pneumatische Vorsteuerdruck mindestens so hoch sein muss wie der Betriebsdruck wird das Vorsteuerventil in vielen Fällen direkt mit dem Windkessel der Entzunderungsanlage verbunden.

### Shut - Off Valve with Electro- High Pressure Pneumatic Pilot - fail safe

This robust and leak-free closing, low cost valve, is designed for the continuous use as an accumulator or automatic valve. The pneumatic pilot pressure has to be min the same as the hydraulic pressure, so that oftentimes the pilot valve is connected to the pressure vessel of the descaling system.



## Entzunderungstechnik – Descaling Technology

### Absperrventil mit elektro-pneumatischem 2/2 Wege Vorsteuerventil

Diese robuste dichtschließenden Ventile wird für den Einsatz mit in verschmutzten Wässern und mit hoher Schalthäufigkeit, zum Beispiel als Entzunderungs- oder Automatikventil eingesetzt. Durch die im Hauptkolben eingesetzte Düse wird eine Selbstreinigung erzielt

Der pneumatische Versorgungsdruck beträgt 4-10bar, andere Ausführungen möglich.

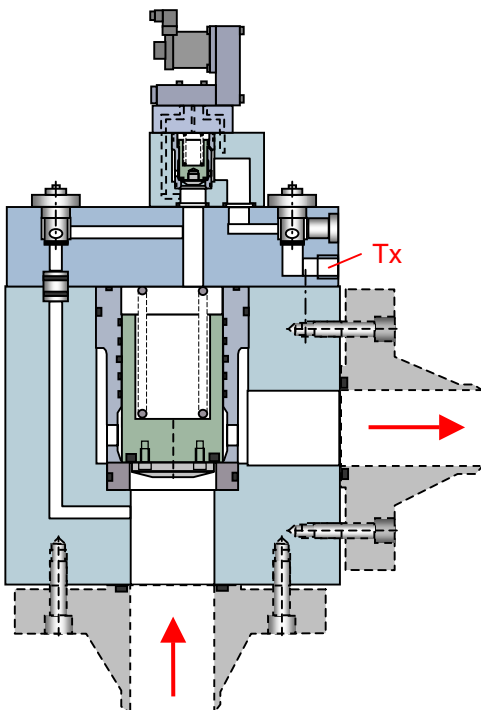
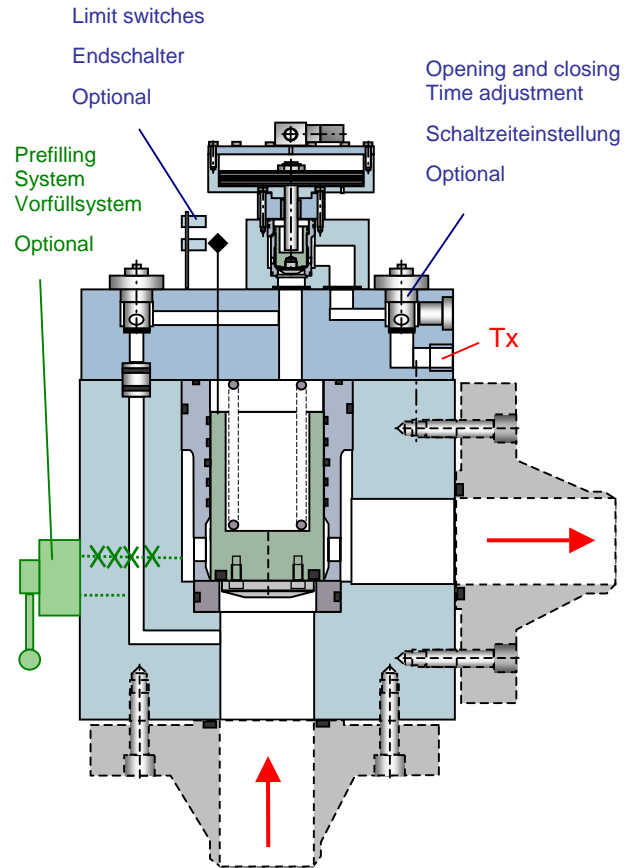
Option: -Endschalter  
-Schaltzeiteinstellung  
-Vorfüllsystem manuell oder elektrisch betätigt.

### Shut - Off Valve with Electro- Pneumatic 2/2 Directional Pilot Valve

This robust and leak-free closing valve is designed for the use in Systems with low water quality and continuous service i.e as descaling-, automatic valve. A nozzle at the main piston effects a continuous cleaning.

The pneumatically operated pilot power is 4-10bar other pressures on request.

Option: - Limit switches  
- opening and closing speed control  
- manual or electrically operated prefilling system



### Absperrventil mit elektrischer Vorsteuerung

Dieses robuste dichtschließende Ventil wird für Anwendungen mit hoher Schalthäufigkeit wie zum Beispiel als Entzunderungs- oder Automatikventil eingesetzt. Statt des wasserhydraulischen Vorsteuerventils kann auch ein ölhydraulisches Vorsteuerventil eingesetzt werden und dieses mit einer externen Druckölversorgung betreiben werden. Der Vorsteuerdruck hierbei muß mindestens dem Betriebsdruck entsprechen.

Option: -Endschalter  
-Schaltzeiteinstellung  
-Vorfüllsystem manuell oder elektrisch betätigt.

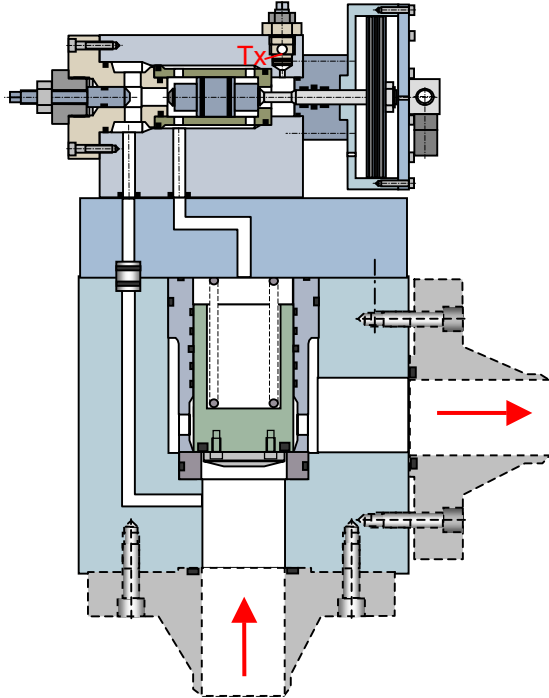
### Shut - Off Valve with Electro- Pneumatic Pilot

This robust and leak-free closing valve is designed for continuous use as descaling- and automatic valve. Instead of a water hydraulic pilot an oilhydraulic pilot can be used which will be serviced by an external hydraulic pumping unit. The pilot pressure has to be equal or higher than the operating pressure.

Option: - Limit switches  
- opening and closing speed control  
- manual or electrically operated prefilling system



## Entzunderungstechnik – Descaling Technology



### Absperrventil mit elektro- pneumatischer 3/2 Wege Vorsteuerung – fail safe

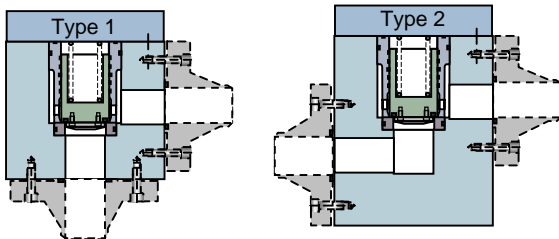
Dieses robuste dichtschließende Ventil wird für Anwendungen mit hoher Schalthäufigkeit wie zum Beispiel als Speicherabsperr- oder Automatikventil eingesetzt. Die Vorsteuerung ermöglicht eine deutliche Reduzierung der Leckagemenge am Ausgang Tx und eine komfortablere Einstellung der Schaltzeiten. Der pneumatische Versorgungsdruck beträgt 4-10bar, andere Ausführungen möglich.

Option: -Endschalter  
-Schaltzeiteinstellung  
-Vorfüllsystem manuell oder elektrisch betätigt.

### Shut - Off Valve with 3/2 directional Electro-Pneumatically Pilot – fail safe

This robust and leak-free closing valve is designed for the continuous use as an accumulator shut-off or automatic valve. The design allows for the reduction of leakage flow at port Tx to a minimum and a more comfortable adjustment of the opening and closing times.

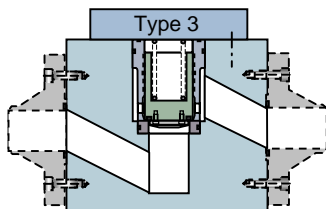
Option: - Limit switches  
- opening and closing speed control  
- manual or electrically operated prefilling system



### Ventilgehäuse

Unabhängig von der Funktion können die standardisierten Einbaukomponenten in verschiedenen individuell hergestellten Gehäusen untergebracht werden. Abmessungen, Material sowie Flanschgeometrie können auf den jeweiligen Bedarfsfall abgestimmt werden.

Gehäuse Typ 1 stellt die preisgünstigste und kompakteste Bauform dar. Typ 2 und 3 bieten gegenüberliegende Abgänge.



### Valve Housings

The standardised components can be integrated into individual housings. Housing dimension, material and flange type are according to customer's specification.

Housing Type 1 is the most compact and economically version Type 2 and 3 are inline versions.



## Entzunderungstechnik – Descaling Technology

### Ventilkombinationen

Unabhängig von der Funktion und Nennweite können die standardisierten Einbaukomponenten in Kombinationsblöcken untergebracht werden.

Vorteile:

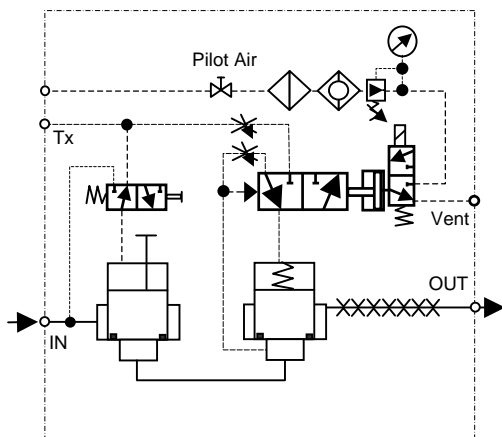
- Kompakte Bauweise
- Geringere Kosten bei der Montage und Wartung vor Ort
- Entfall zusätzlicher Verrohrungen und Montagerahmen

### Valve Combinations

The standardised components can be integrated into combination manifolds. It is possible to combine different valve sizes and functions.

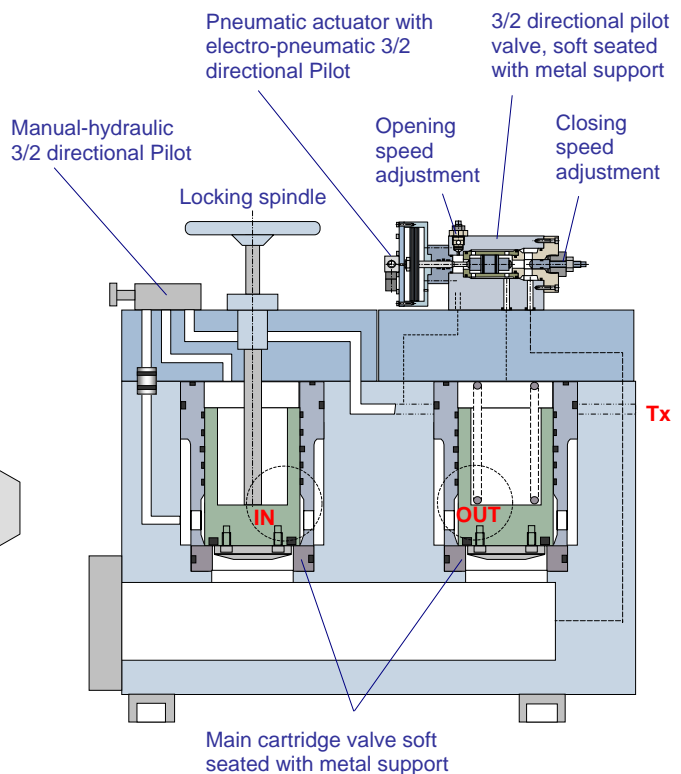
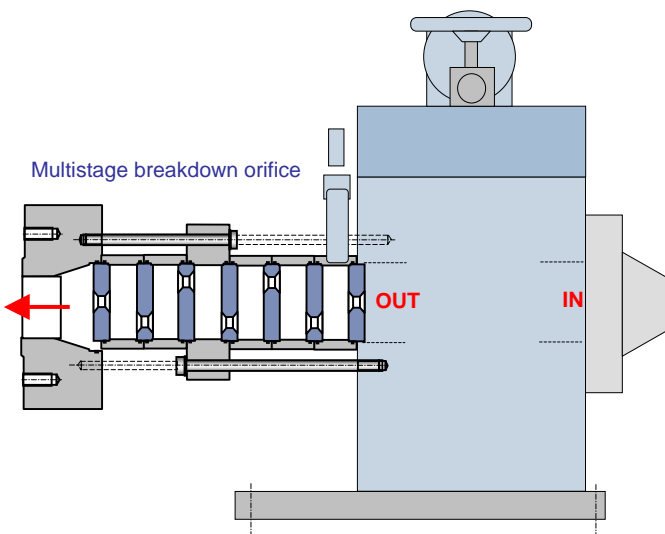
Benefits

- Compact design.
- Less installation and maintenance costs.
- Reduction of intermediate piping



Beispiel eines elektrisch betätigten Pumpen Bypassventiles mit mehrstufiger Entlastungsdüse und Handabsperrenteil mit Verriegelungsspindel.

Example of an electrically controlled pump-bypass-valve with multistage breakdown orifice and man shut-off valve with locking spindle.

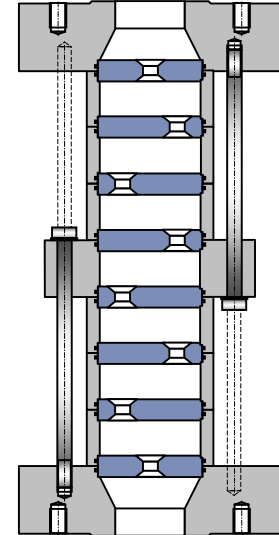




## Entzunderungstechnik – Descaling Technology

### Mehrstufige Düsen / Multistage Breakdown Orifice

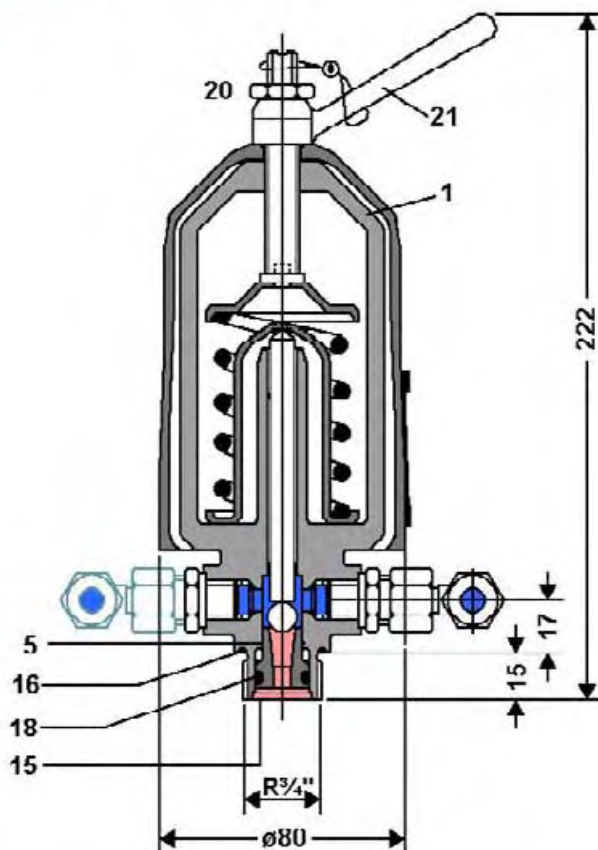
Betriebsdruck / Operating pressure up to 360/720bar  
 Druckdifferenz / Pressure difference max 360bar  
 Durchflußmenge / Flow rate up to 5000l/min  
 Druckdifferenz pro Stufe 4 bis 12 stufig max 30bar  
 Pressure difference for each stage max 30 bar 4 to 12 stages  
 Flansche / Flanges DIN or ANSI



### Material

Gehäuse, Flansche: 1.4104  
 Drosselplatte: Messing (2.0405/Ms58),  
 Alt. Edelstahl gehärtet, auf Wunsch TIC beschichtet  
 Housing, Flanges: Stainless Steel (1.4104)  
 Orifice plates: Brass (2.0405/Ms58)  
 Altn. Stainless Steel, hardened, TIC coating possible

■ = Primary Pressure  
■ = Relieved Pressure



### Speichersicherheitsventil

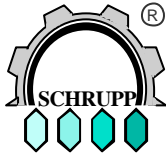
Federbelastetes Druckluftsicherheitsventil zur Absicherung von Behältern.  
 Konformität gemäß Druckgeräterichtlinie 97/23/EC Gase Gruppe 2, Kategorie IV. Baumusterprüfung nach Modul B (TÜV).

Gutes Ansprechverhalten und Reproduzierbarkeit auch unter extremen Bedingungen  
 Kleine Bauweise  
 Nennweite 6mm  
 Betriebsdruck 55 - 350bar  
 Durchsatz[l/min] = 32,2 x p[bar]  
 Betriebstemperatur 0-70°C  
 Masse 1,3kg

### Accumulator Safety Valve

Spring loaded pneumatic safety relief valve for pressure vessels according to 97/23/EC for gases group 2, Category IV, with TÜV cert module B.

Low hysteresis and good operational control even under adverse conditions.  
 Compact design  
 Size 6mm  
 Operating pressure 55-350bar  
 Flow rate compressed air [l/min] = 32,2 x p(bar)  
 Ambient Temperature 0-70 °C  
 Weight 1.3KG



## Entzunderungstechnik – Descaling Technology

This catalogue gives only an overview of the various possibilities for our cartridge type valve technology. With this modular program an individual solution can be designed for each different application. The standard elements like Cartridge Valves and Pilots are already used worldwide in many systems. Valve housings and covers are custom made according to the individual standards and customers requests.

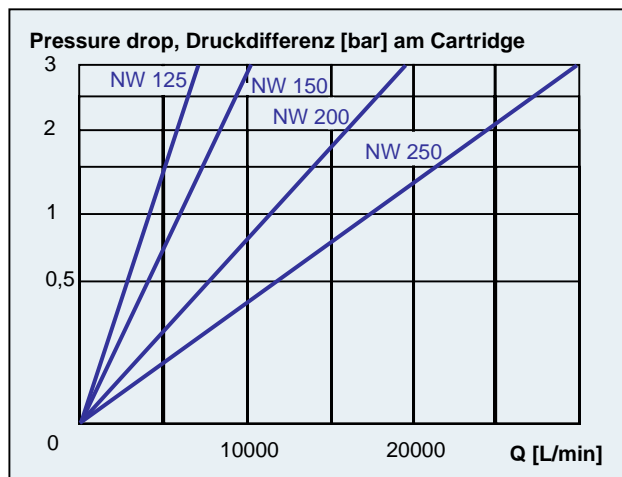
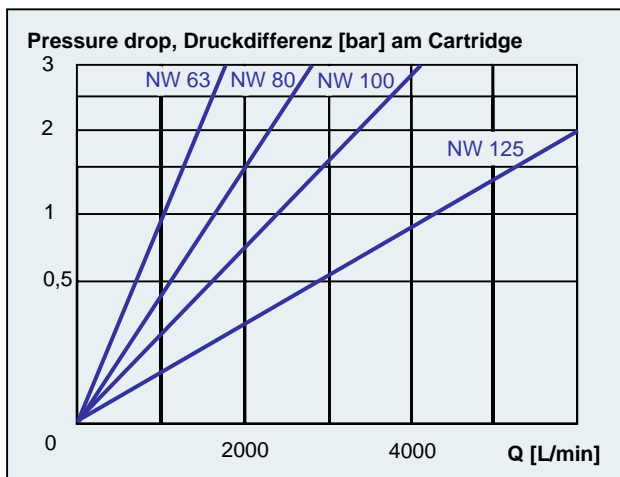
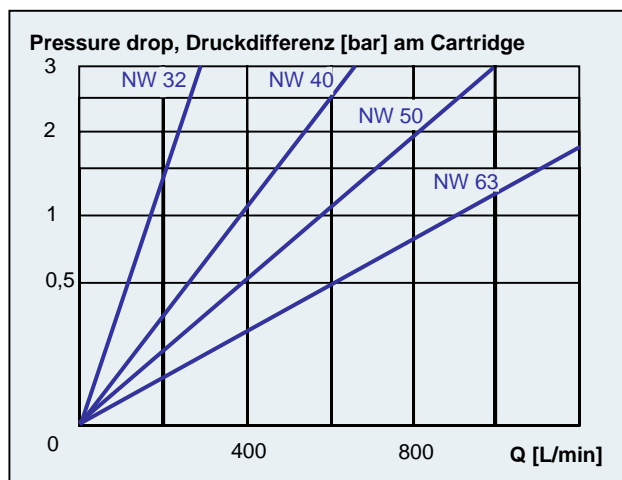
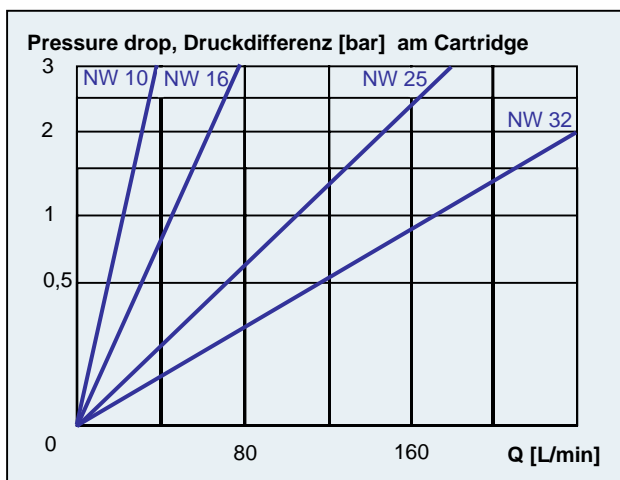
Dieser Katalog kann lediglich einen Überblick über die zahlreichen Kombinationsmöglichkeiten unserer Cartridgeventil geben. Das modular aufgebaute Programm ist bereits in vielen Systemen weltweit im Einsatz. Standardisierte Cartridges und Vorsteuerungen zusammen mit individuell nach Erfordernissen gefertigten Ventilgehäusen erlauben maß- geschneiderte Lösungen für Ihre Anwendungen.

### Technical Information, technische Informationen:

Cartridge Valves DIN Type, Stainless Steel, soft seated with metal support.

Cartridge Ventile mit Einbaumaßen nach DIN, Edelstahl, weichdichtend mit metallischer Abstützung.

### Flow characteristics, Kennlinien



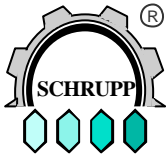
### Benefits, Vorteile

Low maintenance costs because valves and seals can be changed individually without machining. Valve housings can stay in the system during maintenance or repair. Small requirement of stock material because of the modular program.

Gering Wartungskosten, da Ventile und Dichtungen ohne zusätzliche mechanische Bearbeitung separat austauschbar sind. Die Ventilgehäuse können während der Wartung eingebaut bleiben. Durch den Baukastenmäßigen Aufbau sind nur eine geringe Anzahl an verschiedenen Ersatzteilen erforderlich.

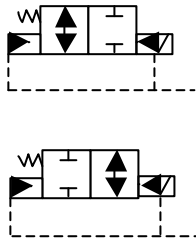
Please find more technical details in our catalogue WATER- and SPECIALHYDRAULICS

Weitere technische Einzelheiten finden Sie in unserem Katalog WASSER- und SONDERHYDRAULIK



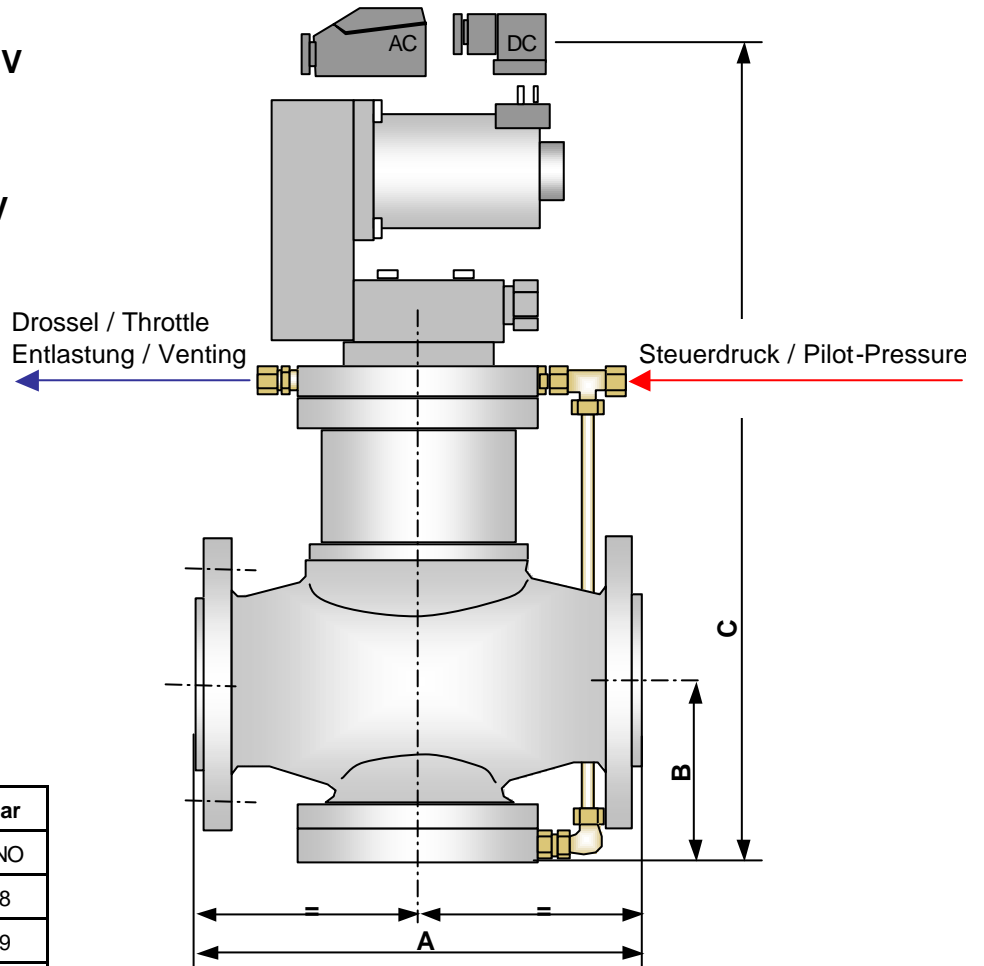
2/2 WEGEVENTILE  
DIRECTIONAL VALVES

www.hl-hydraulik.de



NEGATIV

POSITIV



2/2 Directional valve DIN2635 PN40bar					
DN	A	B	C	MASS	PARTNO
65	290	116	460	350 N	168488
80	310	128	490	400 N	168489
100	350	148	540	650 N	168490

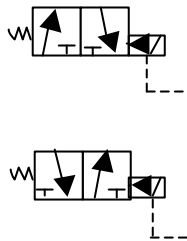
Technische Daten / Technical Data

Medium	Öl, Wasser, Luft	Medium	Oil, water, compressed air
Betriebsdruck	2 – 40 bar	Operating pressure	2 – 40 bar
Nennweite	65 – 100 mm	Nominal size	65 – 100 mm
Betriebstemperatur	0 – 80°C	Operating temperature	32 – 176°F
Umgebungstemperatur	40°C max	Ambient temperature	104°F
Vorsteuerdruck	max 40bar / min. Betriebsdruck	Pilot pressure	Max 40bar / min operat pressure
Vorsteueranschlüsse	Rohr AD8mm	Pilot connections	Pipe AD8mm
Spannung	12 – 260V DC oder AC 100%ED	Voltage	12 – 260V DC or AC 100%ED
Schutzart	IP65	Protection class	IP 65
Stromaufnahme	46W max	Power consumption	46W max
Werkstoff Gehäuse Innenteile Dichtungen	GGG 40 Edelstahl, Messing, Rotguß Perbunan, Delrin	Material housing other parts sealings	GGG 40 Stainless, Brass Buna N, Delrin



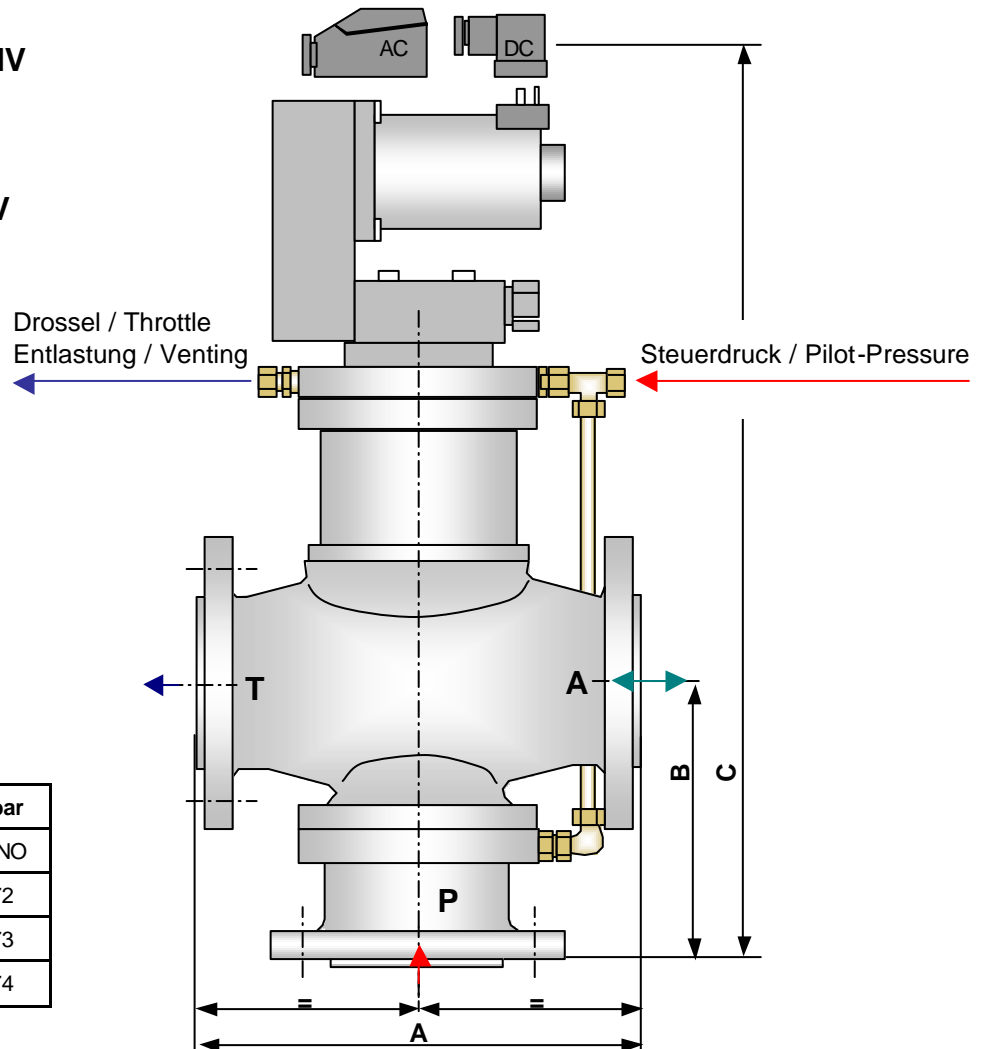
**3/2 WEGEVENTILE  
DIRECTIONAL VALVES**

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)



**NEGATIV**

**POSITIV**



3/2 Directional valve DIN2635 PN40bar					
DN	A	B	C	MASS	PARTNO
65	290	175	610	400 N	168472
80	310	202	640	500 N	168473
100	350	230	700	750 N	168474

**Technische Daten / Technical Data**

Medium	Öl, Wasser, Luft	Medium	Oil, water, compressed air
Betriebsdruck	2 – 40 bar	Operating pressure	2 – 40 bar
Nennweite	65 – 100 mm	Nominal size	65 – 100 mm
Betriebstemperatur	0 – 80°C	Operating temperature	32 – 176°F
Umgebungstemperatur	40°C max	Ambient temperature	104°F
Vorsteuerdruck	max 40bar / min. Betriebsdruck	Pilot pressure	Max 40bar / min operat pressure
Vorsteueranschlüsse	Rohr AD8mm	Pilot connections	Pipe AD8mm
Spannung	12 – 260V DC oder AC 100%ED	Voltage	12 – 260V DC or AC 100%ED
Schutzart	IP65	Protection class	IP 65
Stromaufnahme	46W max	Power consumption	46W max
Werkstoff Gehäuse Innenteile Dichtungen	GGG 40 Edelstahl, Messing, Rotguß Perbunan, Delrin	Material housing other parts sealings	GGG 40 Stainless, Brass Buna N, Delrin



**SPRÜHVENTILE  
SPRAY VALVES**

**HL Hydraulik GmbH**

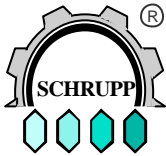
Kupferhütte 5c  
D-57562 Herdorf  
Tel 02744-9324-0  
Fax 02744-9324-56  
schrupp@hl-hydraulik.de

[www.hl-hydraulik.de](http://www.hl-hydraulik.de)



**Leckagefreies Sitzventil  
Beständig gegen übliche Medien zur  
Walzenkühlung  
Sprühdüse kann integriert werden  
Zum direkten An- oder Einbau in Sprühbalken  
Geringe Abmessungen  
Kurze Schaltzeiten  
Lange Lebensdauer**

**Non-leak valve with soft seat  
Resistant to cooling medias  
Spray nozzle can be integrated  
Assembly in or onto spray  
beams  
Small size  
Short actuating time  
Long expected lifetime**

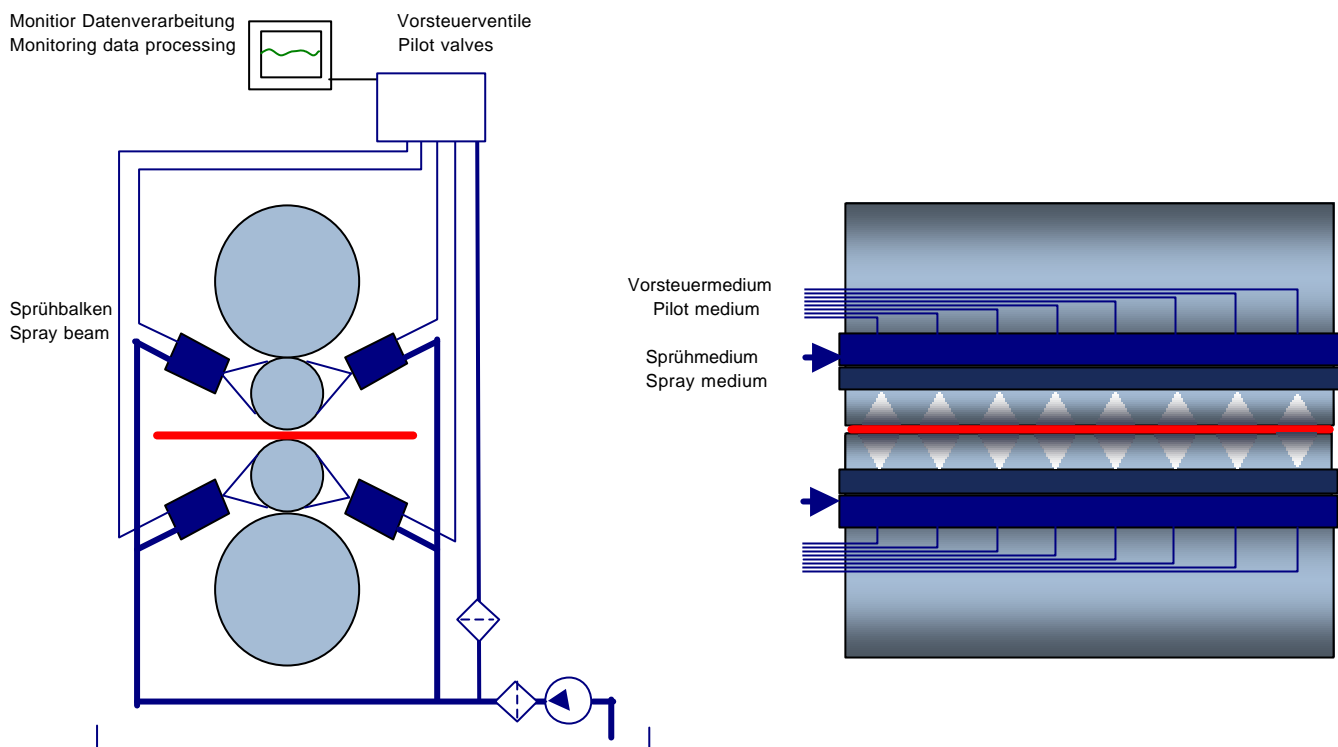


## ANWENDUNG / APPLICATION

Moderne Walzverfahren zur Herstellung von Feinblech aus Aluminium oder Stahl erfordern eine schnell ansprechende partielle Walzenkühlung eng aneinander liegender Walzenzohren.

Schrupp Sprühventile lassen sich direkt in oder auf den Sprühbalken montieren. Die Sprühdüse kann in das Ventil integriert werden. Ein einfacher und robuster Aufbau ermöglicht den Aufbau einer kompakten und schnell reagierenden Walzenkühlung.

Modern rolling processes for the production of aluminium or steel sheets require a quick acting valve to provide partial cooling of roller areas situated close to each other. Schrupp spray valves can be assembled in or onto the spray beam. The spray nozzle can be integrated into the valve. With their ease of maintenance and robust design the valves can be used in rapidly responding compact roller cooling systems.

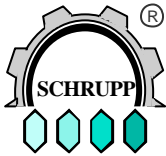


### Zu unserem Lieferprogramm gehören:

Sprühventile  
Sprühbalken  
Vorsteuerventile und Stände  
Verbindungstechnik

### Our manufacturing program includes:

Spray Valves  
Spray Beams  
Pilot Valves and Valve Stands  
Piping and connections



## EINBAUVENTILE / CARTRIDGE TYPE

### FUNKTION / FUNCTION

Die Funktionsweise entspricht der eines normalen 2/2 Wegeventils. Wird der Kolben über die Steuerbohrung (Anschluß Px) entlastet, öffnet der an der Differenzfläche anstehende Betriebsdruck P den Kolben entgegen der Federkraft.

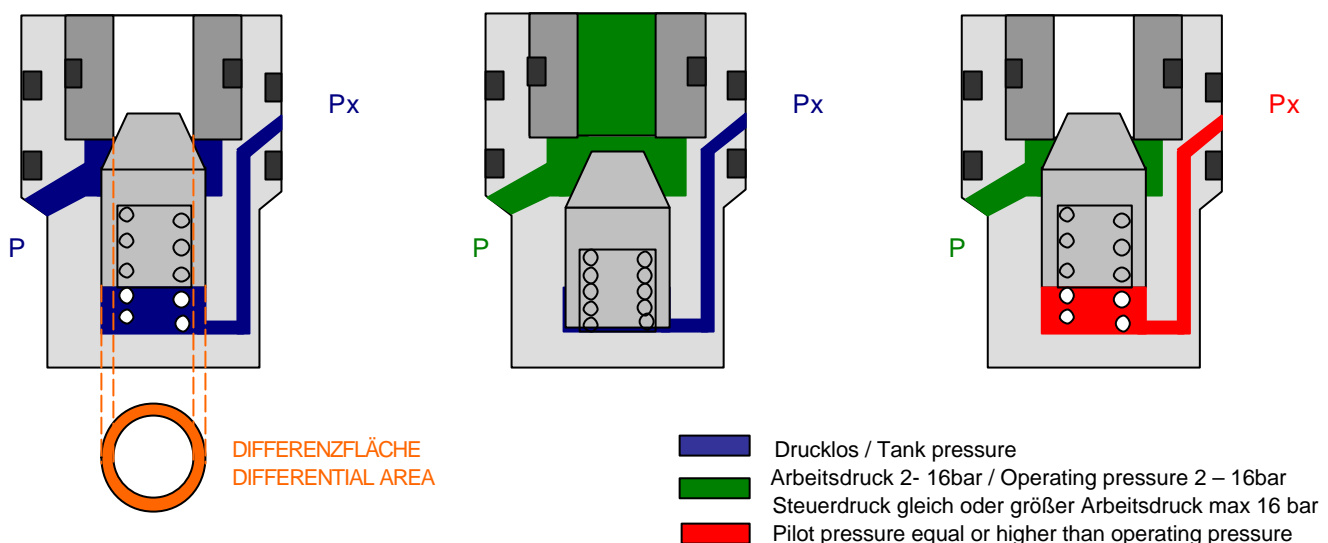
Steht an der Steuerbohrung ein Druck gleich oder größer dem Betriebsdruckes an, schließt das Ventil.

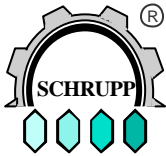
Die Erforderlichen Pilotventile können außerhalb des Walzgerüsts installiert werden und mittels Rohren oder Schläuchen mit den Sprühventilen verbunden werden. Grundsätzlich können die Ventile mit Eigen- oder Fremdmedium vorgesteuert werden. Voraussetzung ist jedoch immer, das der Vorsteuerdruck am Ventil gleich oder größer dem momentan anstehenden Betriebsdruck ist.

The function of the valve is identically to the function of an 2/2 way directional control valve. If the piston is unloaded via the control bore (port Px), the operating pressure P at the differential area is opening the valve against the spring force.

A pressure at Px equal or higher than the operating pressure will close the valve.

The pilot valves can be located separately and outside from the roller stand and can be connected with pipes or hoses to the spray valves. The valves can be piloted by using the spraying media or compressed air or fluids. It is important, that the pilot pressure is always equal or higher than the operating pressure.





**TECHNISCHE DATEN / TECHNICAL DATA**

Nennndruck	Nominal pressure	16 bar
Betriebsdruck	Operating pressure	2-16 bar
Öffnungsdruck	Opening pressure	2 bar
Betriebstemperatur	Operating temperature	80°C max
Medium	Wasser, Emulsion, Walzöl	Water, emulsion, rolling oil
Nennweiten	Sizes	6, 8, 12, 16 mm

**Werkstoffe**

**Material**

Gehäuse, Kolben, Deckel: Edelstahl    Housing , piston, covers: stainless steel

Sitz: Peek    Seat: peek

Dichtungen: Viton oder Perbunan    Seals: viton or buna-N

Sonderausführungen mit anderen Nennweiten oder Abmessungen auf Anfrage  
Please ask for other valves with different sizes and dimensions

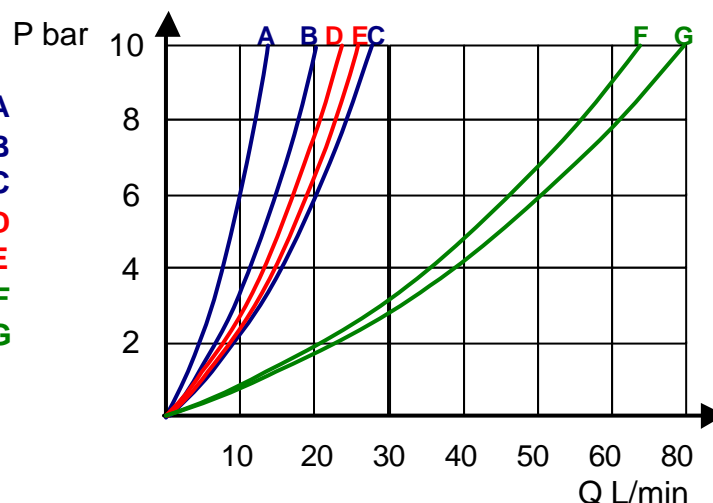
**Lebensdauer / Life expectancy**

Die Lebenserwartung der Ventile ist stark abhängig von den verwendeten Betriebsmedien und deren Zustand. In Prüfstandsversuchen und in der Praxis konnten Lebenserwartungen mit gut gepflegten Medien von über 6Mio Schaltspielen erreicht werden. Der wartungsfreundliche Aufbau der Ventile ermöglicht es Verschleißteile wie Dichtungen und Sitze auszutauschen und damit die Lebenserwartung der Ventile zu verlängern.

The kind and condition of the operating media has strong influence on the expected lifetime of the valves. From test runs and also from customer's experience we know that the lifespan of the valves can be more than 6million cycles by using a high quality medium with good maintenance. The design allow an easy replacement of all critical parts like seats and seals, which helps to increase the life span of the valve.

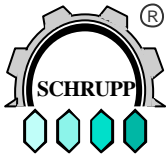
**Kennlinien für Ventile mit Düsen / Diagram for valve including nozzle**

- FU1-652.721    Valve ND 6    **A**
- FU1-652.761    Valve ND 6    **B**
- FU1-562.842    Valve ND 6    **C**
- FU1-652.801    Valve ND 8    **D**
- FU1-652.843    Valve ND 8    **E**
- FU3- 656.962.30 Valve ND 16    **F**
- FU3-656.964    Valve ND 16    **G**



Test Medium Wasser, water

Other flow curves on request / weitere Kennlinien auf Anfrage

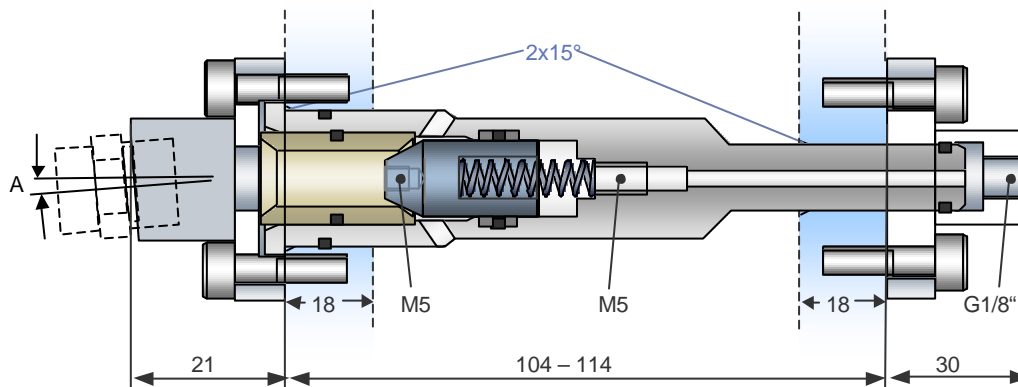


SPRÜHVENTIL / SPRAY VALVE DN 8 PN16

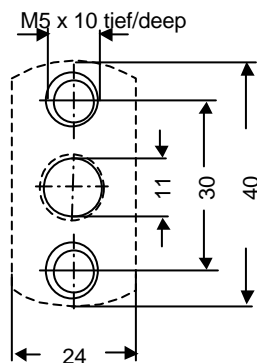
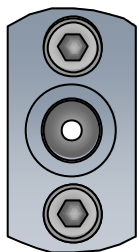
3 Deckel / Cover

1 Grundventil / Valve DN8 PN16

2 Adapter / Adaptor



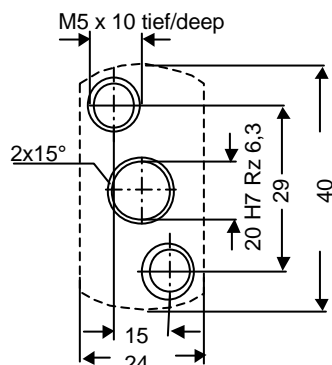
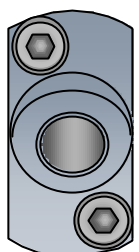
Adapter Adaptor



Bestellbezeichnung / Ordering code

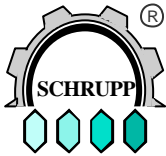
Pos	Bezeichnung Part name	Anschluß- gewinde Connection	Winkel Spray Angle A	Teilenr. Partno.
1	Grundventil /Valve DN8, PN16			<b>850202</b>
2	Adapter / Adaptor	G 1/8"	0	<b>654630</b>
3	Deckel / Cover	RP 1/4	0	<b>654631</b>
3.1	Deckel / Cover	RP 1/4	5°	<b>654632</b>
3.2	Deckel / Cover	RP 1/4	10°	<b>850201</b>
3.3	Deckel / Cover	RP 1/4	15°	<b>645633</b>
Demontagewerkzeug / Disassembling tool				<b>654039</b>

Deckel / Cover



Ein komplettes Sprühventil besteht jeweils aus: 1 Stk Grundventil, 1 Stk Deckel, 1 Stk Adapter. Schrauben und Dichtungen sind enthalten. Die Düse gehört nicht zum Lieferumfang. Vernickelte Deckel, Adapter sowie abweichende Ausführungen auf Anfrage.

A complete Spray Valve consists of: 1pce valve, 1pce cover, 1pce adaptor. Bolts and seals are included. Spray nozzles are not included. Please ask for special designs; for example nickel plated covers and adaptors.

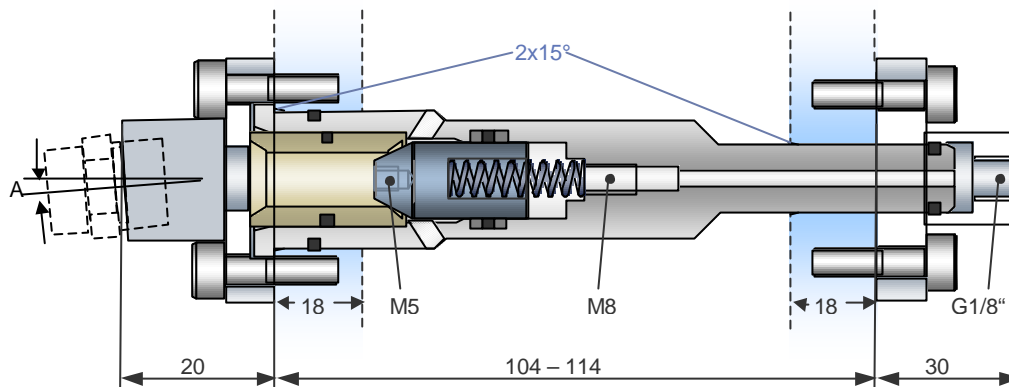


SPRÜHVENTIL / SPRAY VALVE DN12 PN16

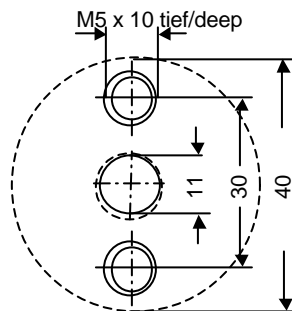
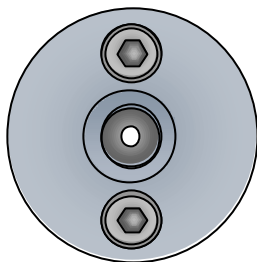
3 Deckel / Cover

1 Grundventil / Valve DN12 PN16

2 Adapter / Adaptor



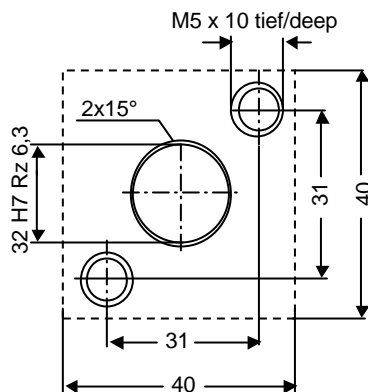
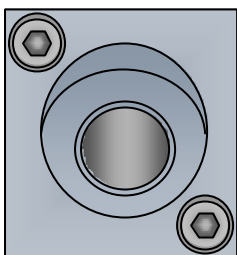
Adapter / Adaptor



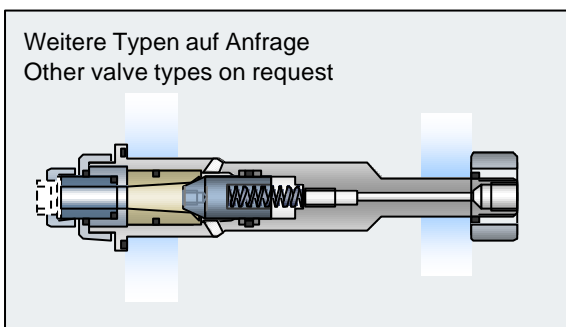
Bestellbezeichnung / Ordering code

Pos	Bezeichnung Part name	Anschluß- gewinde Connection	Winkel Spray Angle A	Teilenr. Partno.
1	Grundventil /Valve DN12, PN16			<b>655043</b>
2	Adapter / Adaptor	G 1/8"	0	<b>655047</b>
3	Deckel / Cover	RP 1/4	0	<b>654653</b>
3.1	Deckel / Cover	RP 1/4	5°	<b>655046</b>
3.2	Deckel / Cover	RP 1/4	10°	<b>655045</b>
3.3	Deckel / Cover	RP 1/4	15°	<b>655044</b>
3.4	Deckel / Cover	G 3/4"	0	<b>850198</b>
Demontagewerkzeug / Disassembling tool				<b>654039</b>

Deckel / Cover



Weitere Typen auf Anfrage  
Other valve types on request



Ein komplettes Sprühventil besteht jeweils aus:

1 Stk Grundventil, 1 Stk Deckel, 1 Stk Adapter. Schrauben und Dichtungen sind enthalten. Die Düse gehört nicht zum Lieferumfang. Vernickelte Deckel, Adapter sowie abweichende Ausführungen auf Anfrage.

A complete Spray Valve consists of:

1pce valve, 1pce cover, 1pce adaptor. Bolts and seals are included. Spray nozzles are not included. Please ask for special designs; for example nickel plated covers and adaptors.

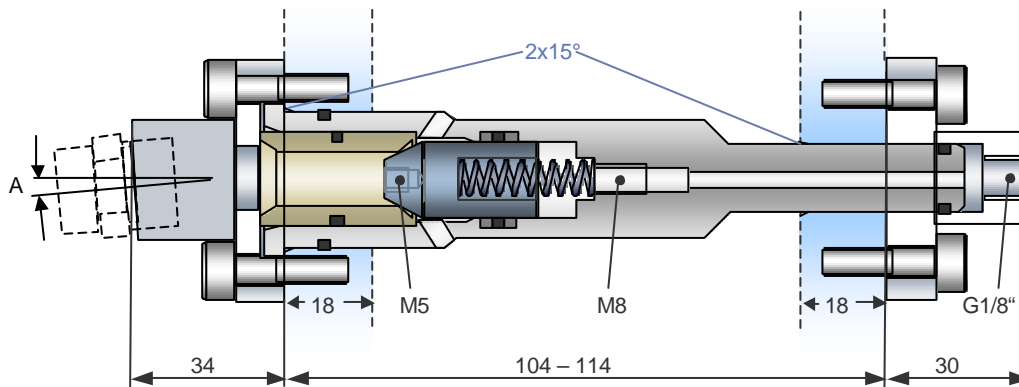


SPRÜHVENTIL / SPRAY VALVE DN16 PN16

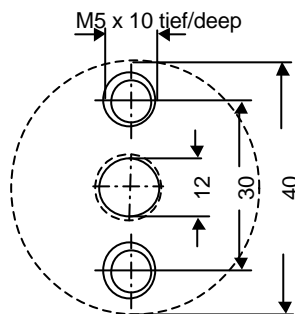
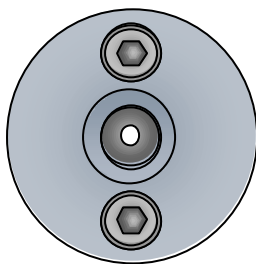
3 Deckel / Cover

1 Grundventil / Valve DN16 PN16

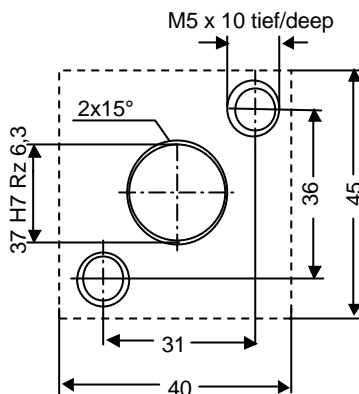
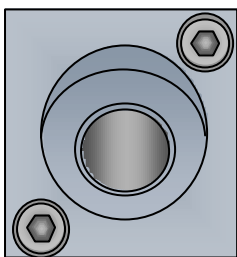
2 Adapter / Adaptor



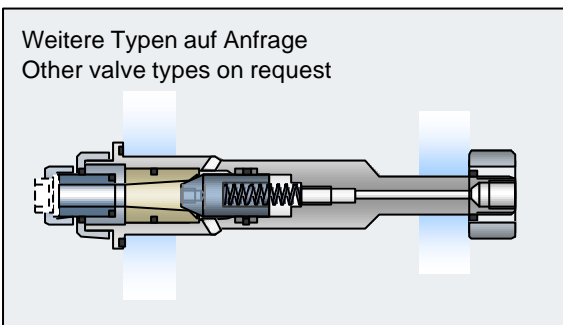
Adapter / Adaptor



Deckel / Cover



Weitere Typen auf Anfrage  
Other valve types on request



Bestellbezeichnung / Ordering code

Pos	Bezeichnung Part name	Anschluß- gewinde	WinkelA	Teilenr. Partno.
1	Grundventil /Valve DN16, PN16			<b>850339</b>
2	Adapter / Adaptor	G 1/8"	0	<b>850350</b>
3	Deckel / Cover	RP 1/4	0	
3.1	Deckel / Cover	RP 1/4	5°	
3.2	Deckel / Cover	RP 1/4	10°	
3.3	Deckel / Cover	RP 1/4	15°	
3.4	Deckel / Cover	G 3/4"	0	<b>850340</b>
Demontagewerkzeug / Disassembling tool				<b>654039</b>

Ein komplettes Sprühventil besteht jeweils aus:  
1 Stk Grundventil, 1 Stk Deckel, 1 Stk Adapter.  
Schrauben und Dichtungen sind enthalten. Die Düse gehört nicht zum Lieferumfang.  
Vernickelte Deckel, Adapter sowie abweichende Ausführungen auf Anfrage.

A complete Spray Valve consists of:  
1pce valve, 1pce cover, 1pce adaptor. Bolts and seals are included. Spray nozzles are not included. Please ask for special designs; for example nickel plated covers and adaptors.



**SPRÜHVENTILE  
SPRAY VALVES**

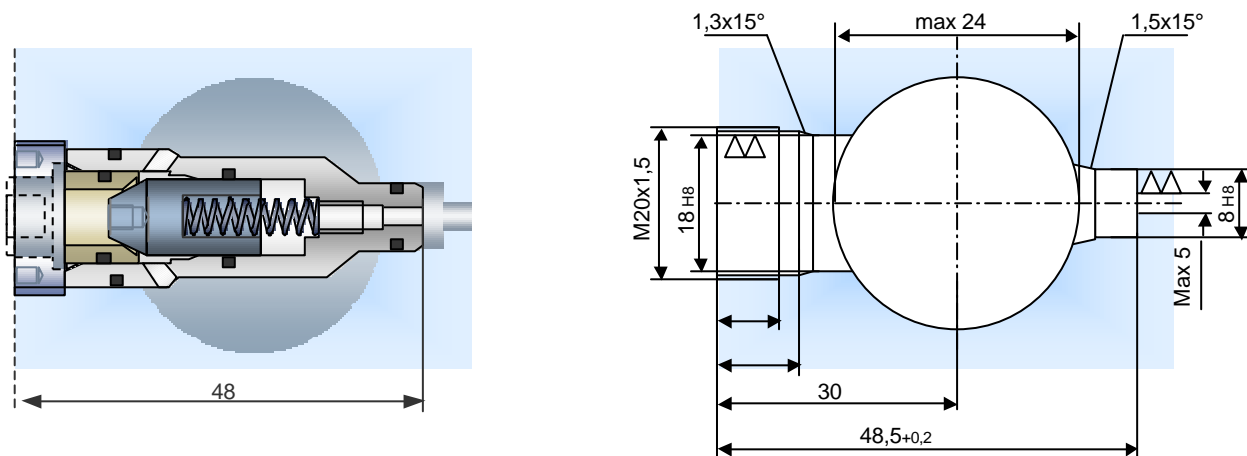
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**SPRÜHVENTIL / SPRAY VALVE DN 6 PN16**

Ein komplettes Sprühventil besteht jeweils aus: 1 Stk Grundventil, 1 Stk Deckel. Schrauben und Dichtungen sind enthalten. Die Düse Typ FU1 gehört nicht zum Lieferumfang. Vernickelte Deckel sowie abweichende Ausführungen auf Anfrage.

A complete Spray Valve consists of: 1pce valve, 1pce cover. Bolts and seals are included. Spray nozzle type FU1 are not included. Please ask for special designs; for example nickel plated covers.

Bestellnr. für Ventil mit Deckel / Orderno. for valve and cover: **501225**



**SPRÜHVENTIL / SPRAY VALVE DN8,12,16 PN16**

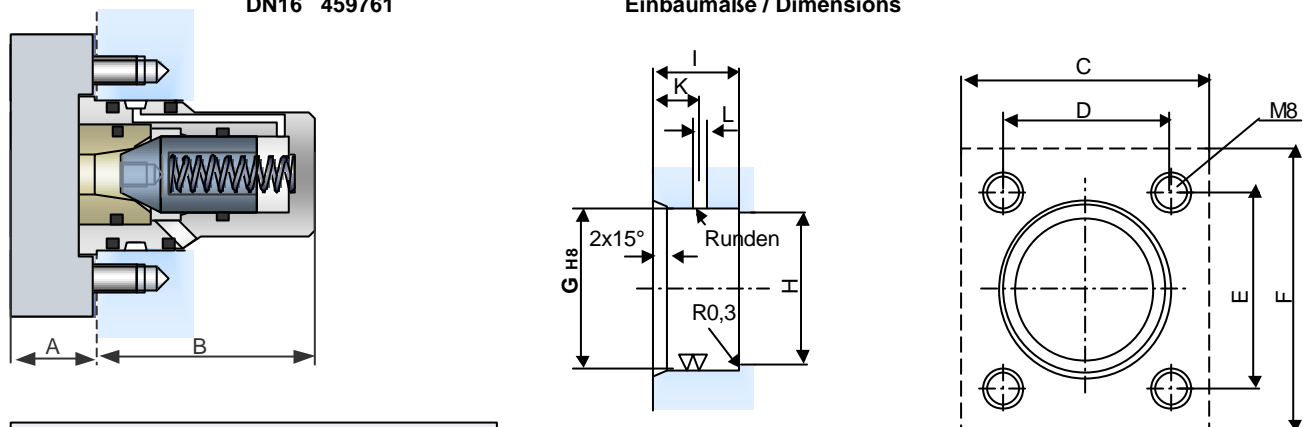
Ein komplettes Sprühventil besteht jeweils aus: 1 Stk Grundventil, 1 Stk Deckel. Schrauben und Dichtungen sind enthalten. Die Düse Typ FU1 gehört nicht zum Lieferumfang. Vernickelte Deckel sowie abweichende Ausführungen auf Anfrage.

A complete Spray Valve consists of: 1pce valve, 1pce cover. Bolts and seals are included. Spray nozzle type FU1 are not included. Please ask for special designs for example nickel plated covers.

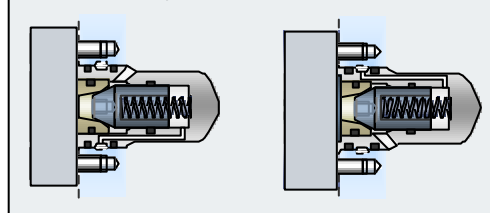
Bestellnr. für Ventil mit Deckel / Order no. for valve and cover:

- DN8 501400
- DN12 501555
- DN16 459761

Einbaumaße / Dimensions



Weitere Typen auf Anfrage  
Other valve types on request



Partno.	Type	A	B	C	D	E	F	G	H	I	K	L
501400	DN8 PN16	20	47	49	36	36	49	37	32,5	18	11	6
501555	DN12 PN16	18	46	49	32	46	65	40	35,5	17,5	11	6
459761	DN16 PN16	18	60	49	34	50	65	45	42,5	19	11	6

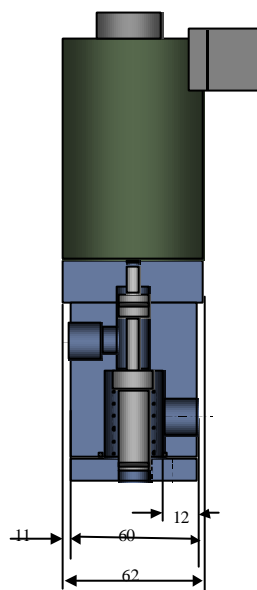
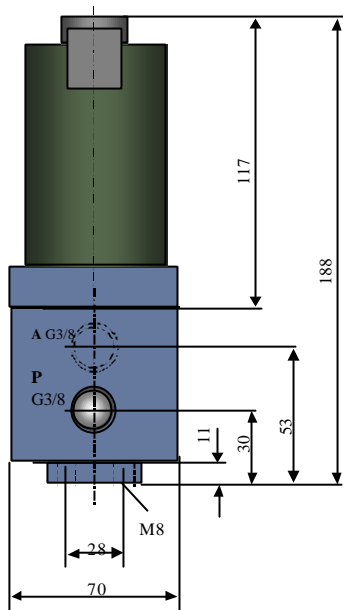


**SONDERVENTILE / VALVES FOR SPECIAL APPLICATIONS**

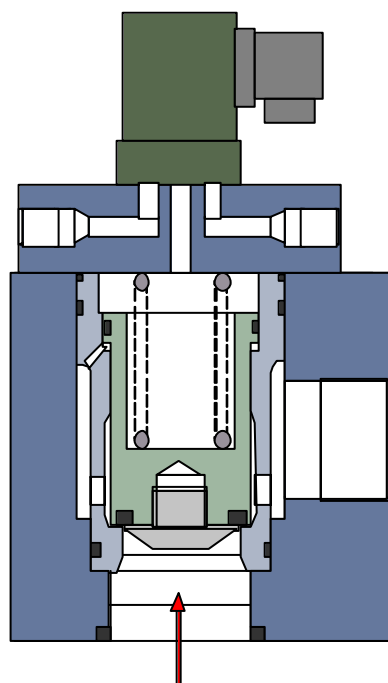
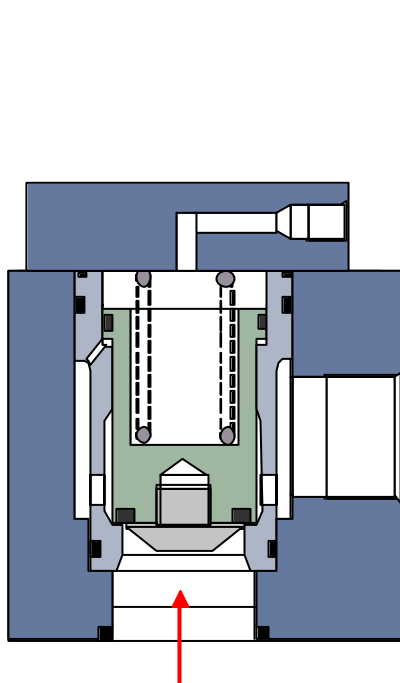
**Sprühventil für Plattenaufbau / Spray valve for sub plate assembling**

Diese Ventile werden in Bereichen eingesetzt, wo hohe Anforderung bezüglich Dichtigkeit und Druckfestigkeit bestehen. Die schmutzunempfindliche Weichdichtung mit metallischer Abstützung ist besonders geeignet für dünnflüssige Medien und Wasser. Lieferbar ist das Ventil in den Nennweiten 10, 16, 25, 32, 40 für Druckbereiche von 5-25bar Sonderausführungen bis 350bar möglich.

The standard valve are available in nominal sizes 10, 16, 25, 32 and 40 for pressures from 5 – 25bar. Special implementations are available with pressures to 350bar. These valves are installed into areas wich require high pressure and limited space. The contamination tolerant soft-seat with metallic piston and housing is suitable for use with thin-fluid media and especially water.



Technische Daten	
Spannung	48V DC
Nenndruck	16bar
Nennweite	12mm
Leistungsaufnahme	43W
Durchflußmenge	50L/min
Ausführung stromlos geschlossen	



Technische Daten:	
PN	5 - 25 bar
DN	10 - 40mm
Weiter Informationen auf Anfrage Additional information on request	