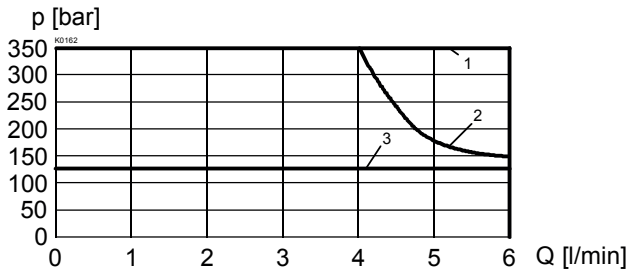
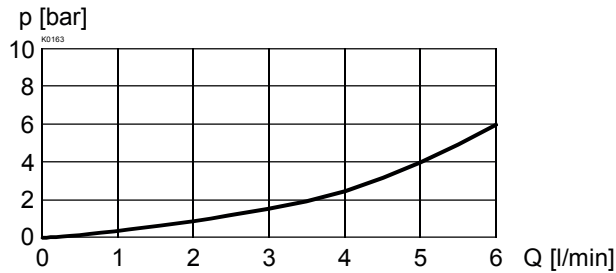


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%



Type	Flow direction	
	1 → 2	2 → 1
M2203	3	3
S2203	1	2

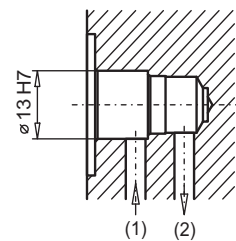
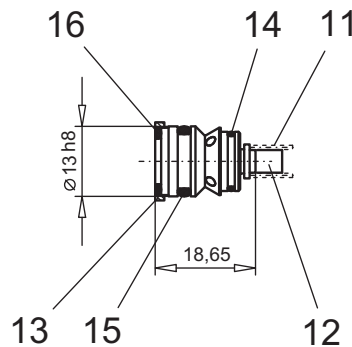
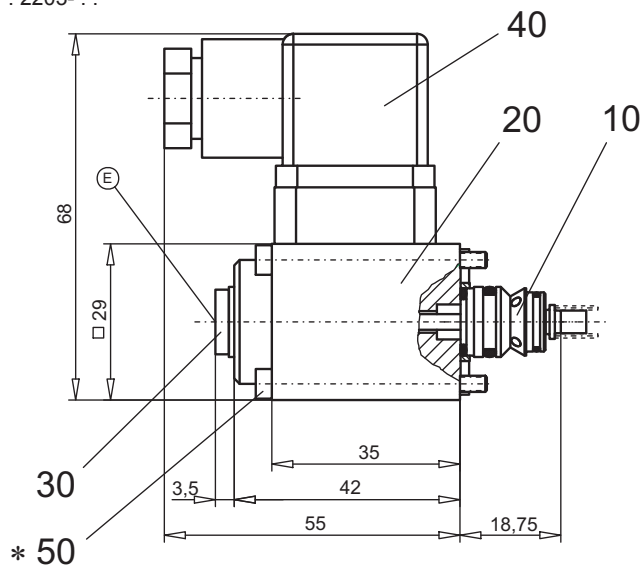
$\Delta p = f(Q)$ Pressure loss / flow characteristics



DIMENSIONS

. 2203-...

2203



For detailed cavity drawing and cavity tools see data sheet 2.13-1012

PARTS LIST

Position	Article	Description
10	500.0002	Poppet valve cartridge 2203
11	052.1607	Spring 0,8x6x8
12	222.0097	Pin
13	212.1580	Washer
14	160.2090	O-ring ID 9,00x1,00
15	160.2093	O-ring ID 9,25x1,78
16	160.1095	O-ring ID 9,50x1,6
20	260.2... 260.3...	Medium-solenoid SIN29V Super-solenoid SIS29V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.0141	Socket head cap screw M3x40 DIN 912

* Cartridge supplied with fastening screw M3x40 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

E = air bleed screw

ACCESSORIES

Cartridge built-in flange- or sandwich body:

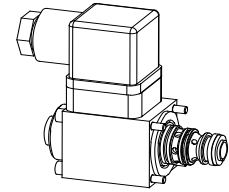
Flange Register 1.11
 Sandwich Register 1.11

Special tool 983.2005 to poppet valve cartridge 2203

Explications techniques voir feuille 1.0-100

Solenoid poppet valve cartridge

- normally open
- $Q_{max} = 6 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG3

DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet onto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

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ACCESSORIES.....	2

TYPE CODE

Poppet valve cartridge				2	2	03	0-S1265	#	<input type="checkbox"/>	
Poppet valve cartridge with solenoid				<input type="checkbox"/>	2	2	03	0-S1265-	#	<input type="checkbox"/>
Medium-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Super-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
2-way (Connections)										
2 Position										
Nominal size 3										
Normally open										
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110				
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115				
				230 VAC	<input type="checkbox"/>	R230				

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG3
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form
	4 solenoid fixing screws M3
Ambient temperature	-20... +50 °C
Mounting position	any
Fastening torque	$M_D = 1,2 \text{ Nm}$ (quality 8.8)
Weight: 22030-S1265	$m = 0,02 \text{ kg}$
22030-S1265- . . .	$m = 0,23 \text{ kg}$
Volume flow direction	any

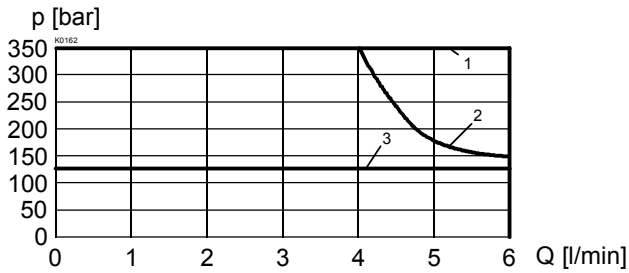
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	$U_N = 12 \text{ VDC}, 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$ $AC = 50 \text{ to } 60 \text{ Hz}$ * Rectifier integrated in the plug
Voltage tolerance	Other nominal voltages and nominal performances on request
Protection class	$\pm 10\%$ of nominal voltage
Relative duty factor	IP 65 to EN 60529
Switching cycles	100% DF (see data sheet 1.1-430)
Operating life	15 000/h
Connections/Power supply	10^7 (number of switching cycles, theoretically)
Solenoid:	Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request
	- Medium SIN29V (data sheet 1.1-80)
	- Super SIS29V (data sheet 1.1-85)

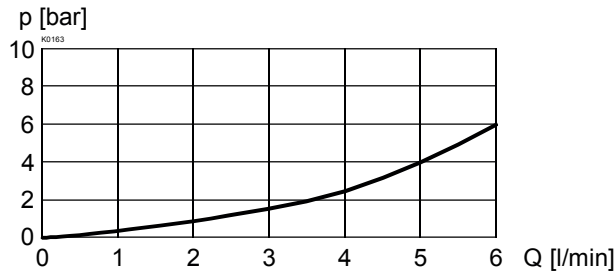
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10} \dots 16 \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 125 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 6 \text{ l/min}$, see characteristics

SYMBOLS

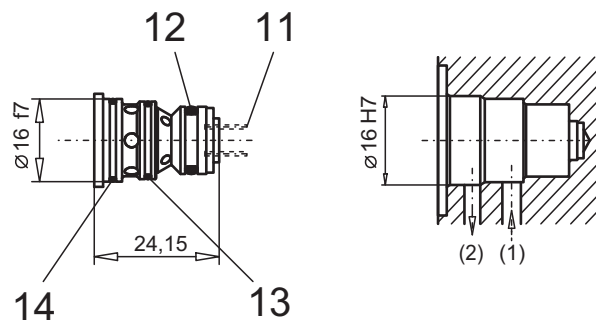
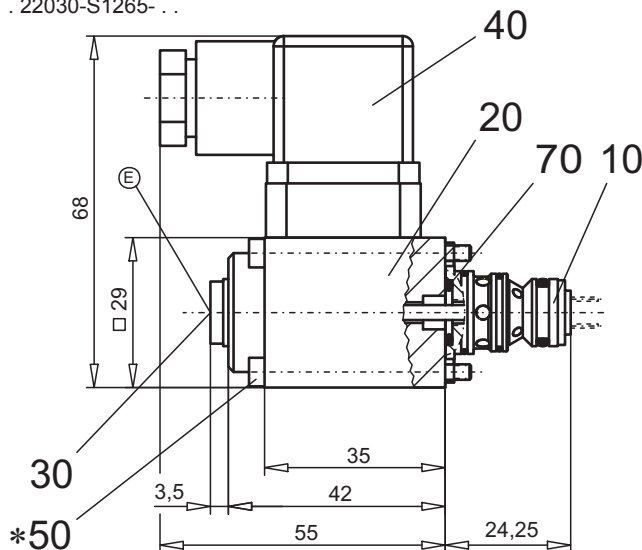

CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%


Type	Flow direction	
	1 → 2	2 → 1
M22030-S1265	3	3
S22030-S1265	1	2

 $\Delta p = f(Q)$ Pressure loss / flow characteristics

DIMENSIONS

22030-S1265-...

22030-S1265



For detailed cavity drawing and cavity tools see data sheet 2.13-1016

E = air bleed screw

PARTS LIST

Position	Article	Description
10	500.0001	Poppet valve cartridge 22030-S1265
11	052.1607	Spring 0,8x6x8
12	160.2093	O-ring ID 9,25x1,78
13	160.1131	O-ring ID 13,00x1,00
14	160.1142	O-ring ID 14,00x1,00
20	260.2... 260.3...	Medium-solenoid SIN29V Super-solenoid SIS29V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.0141	Socket head cap screw M3x40 DIN 912
70	160.1095	O-ring ID 9,50x1,6

* Cartridge supplied with fastening screw M3x40 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

 Cartridge built-in sandwich body:
 Sandwich

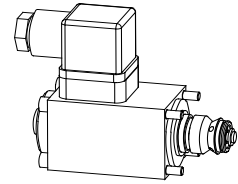
Register 1.11

Special tool 983.2007 to poppet valve cartridge 22030-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge

- normally closed
- $Q_{max} = 15 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG4

DESCRIPTION

The 2/2-way seating valve in slip-in cartridge form is the central control element of virtually all directly-controlled seating valves in nominal size 4-Mini. The poppet valve cartridge, the stroke limiting piston and the spring are supplied separately. A solenoid (VDE standard 0580) is an optional addition.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The poppet valve piston is held against the spring by the pressure-tight control solenoid. Because the seat-piston design has equal surface areas on both sides and since the seat/piston construction is balanced in terms of pressure, no undesirable closing and opening forces are generated. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

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TYPE CODE

Poppet valve cartridge				2	2	04K	#	<input type="checkbox"/>
Poppet valve cartridge with solenoid				2	2	04	-	<input type="checkbox"/>
Medium-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Super-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
2-way (Connections)								
2 Position								
Nominal size 4								
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	110 VAC	<input type="checkbox"/>				
	24 VDC	<input type="checkbox"/>	115 VAC	<input type="checkbox"/>				
			230 VAC	<input type="checkbox"/>				

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG4
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form
	4 solenoid fixing screws M4
Ambient temperature	-20...+50°C
Mounting positions	any
Fastening torque	$M_D = 2,6 \text{ Nm}$ (quality 8.8)
Weight: 2204K	$m = 0,035 \text{ kg}$
. 2204- . .	$m = 0,5 \text{ kg}$
Volume flow direction	any

ELECTRICAL CONTROL

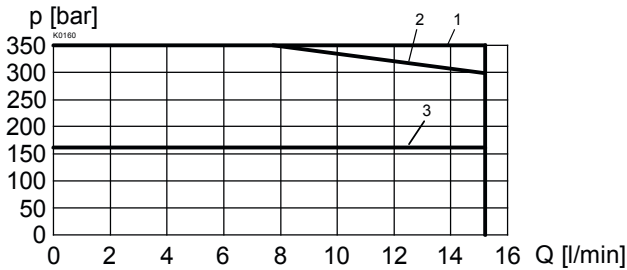
Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	$U_N = 12 \text{ VDC}$ $U_N = 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*$ $U_N = 115 \text{ VAC}^*$ $U_N = 230 \text{ VAC}^*$ AC = 50 to 60 Hz
	* Rectifier integrated in the plug
	Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15'000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	- Medium SIN35V (data sheet 1.1-105) - Super SIS35V (data sheet 1.1-110)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade $\beta_{10} \dots 16 \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70°C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 15 \text{ l/min}$, see characteristics

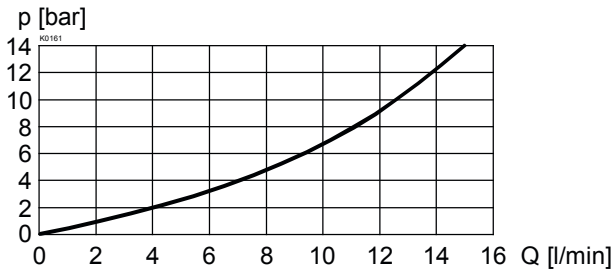
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%

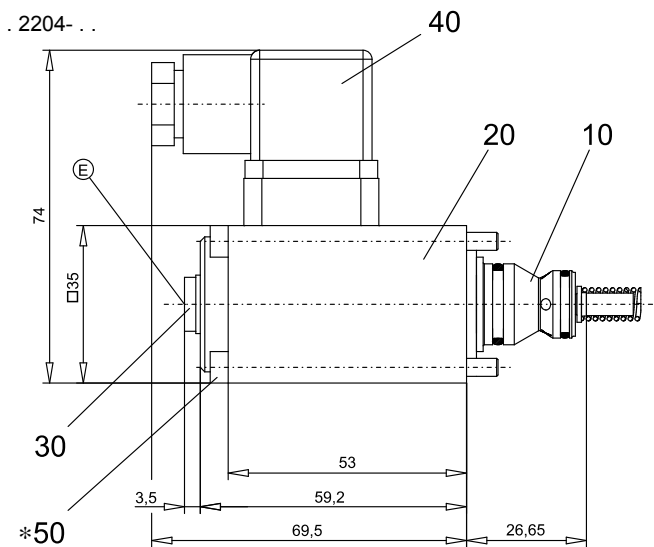


Type	Flow direction	
	1 → 2	2 → 1
M2204	3	3
S2204	1	2

$\Delta p = f(Q)$ Pressure loss / flow characteristics

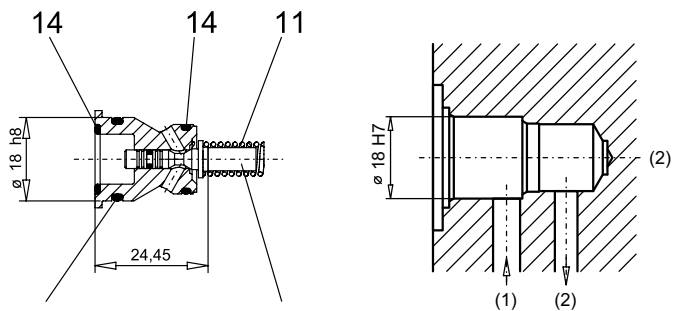


DIMENSIONS



E = air bleed screw

2204K



For detailed cavity drawing and cavity tools see data sheet 2.13-1013

PARTS LIST

Position	Article	Description
10	500.9111	Poppet valve cartridge 2204K
11	053.2101	Spring 1x7,4x16,5
12	222.0056	Pin
14	160.2121	O-ring ID 12,00x1,5
15	160.2140	O-ring ID 14,00x1,78
20	260.4...	Medium-solenoid SIN35V
	260.5...	Super-solenoid SIS35V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.1161	Socket head cap screw M4x60 DIN 912

* Cartridge supplied with fastening screw M4x60 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built-in flange- or sandwich body:

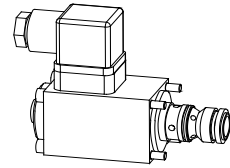
Flange Register 1.11
 Sandwich Register 1.11

Special tool 983.2000 to poppet valve cartridge 2204K

Technical explanation see data sheet 1.0-100E

Solenoid poppet valve cartridge

- normally open
- $Q_{max} = 15 \text{ l/min}$
- $p_{max} = 250 \text{ bar}$

NG4

DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet onto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

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ACCESSORIES.....	2

TYPE CODE

Poppet valve cartridge				2	2	04	0-S1265	#	<input type="checkbox"/>	
Poppet valve cartridge with solenoid				<input type="checkbox"/>	2	2	04	0-S1265 -	#	<input type="checkbox"/>
Medium-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Super-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
2-way (Connections)										
2 Position										
Nominal size 4										
Normally open										
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110				
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115				
				230 VAC	<input type="checkbox"/>	R230				

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG4
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form
	4 solenoid fixing screws M4
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	$M_D = 2,6 \text{ Nm}$ (quality 8.8)
Weight: 22040-S1265	$m = 0,045 \text{ kg}$
. 22040-S1265- . .	$m = 0,5 \text{ kg}$
Volume flow direction	any

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 250 \text{ bar}$
Max. volume flow	$Q_{max} = 15 \text{ l/min}$, see characteristics

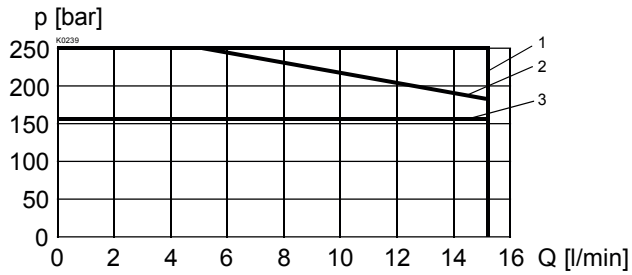
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	$U_N = 12 \text{ VDC}, 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$ AC = 50 to 60 Hz * Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10 ⁷ (number of switching cycles, theoretically)
Connections/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	- Medium SIN35V (data sheet 1.1-105) - Super SIS35V (data sheet 1.1-110)

SYMBOLS

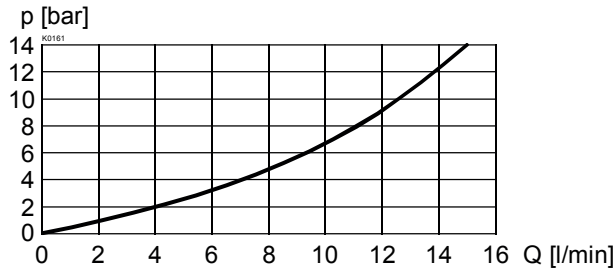
22040-S1265	. 22040-S1265- . .
	

CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%



Type	Flow direction	
	1 → 2	2 → 1
M22040-S1265	3	3
S22040-S1265	1	2

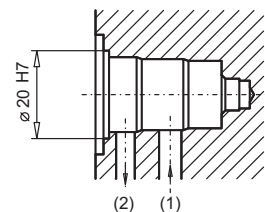
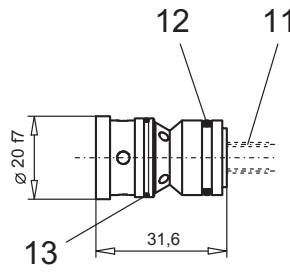
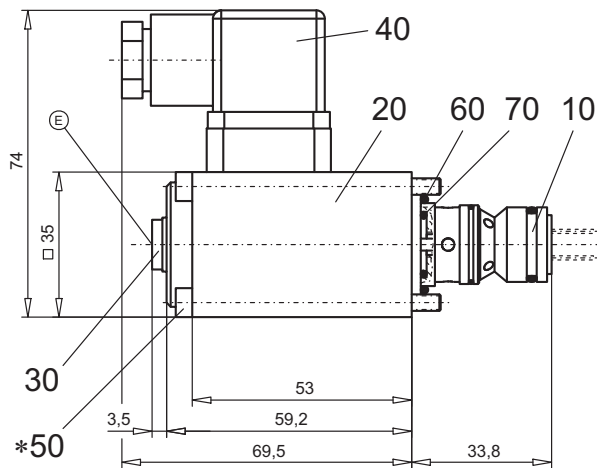
$\Delta p = f(Q)$ Pressure loss / flow characteristics



DIMENSIONS

. 22040-S1265- . .

22040-S1265



For detailed cavity drawing and cavity tools see data sheet 2.13-1017

E = air bleed screw

PARTS LIST

Position	Article	Description
10	500.1005 500.1006	Poppet valve cart. 22040-S1265 Medium Poppet valve cart. 22040-S1265 Super
11	053.2101 053.2107	Spring 1 x 7,4 x 16,5 Medium Spring 1 x 7,4 x 19,25 Super
12	160.2140	O-ring ID 14,00 x 1,78
13	160.1161	O-ring ID 16,00 x 1,00
20	260.4... 260.5...	Medium-solenoid SIN35V Super-solenoid SIS35V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.1161	Socket head cap screw M4 x 60 DIN 912
60	160.2204	O-ring ID 20,35 x 1,78
70	160.2120	O-ring ID 12,42 x 1,78

* Cartridge supplied with fastening screw M4 x 60 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built-in sandwich body:
Sandwich

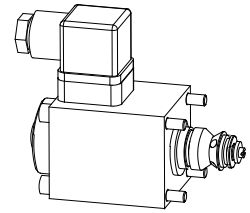
Register 1.11

Special tool 983.2006 to poppet valve cartridge 22040-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge

- normally closed
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG6

DESCRIPTION

The 2/2-way seating valve in slip-in cartridge form is the central control element of virtually all directly-controlled seating valves in nominal size 6. The seating valve cartridge, the stroke limiting piston, the spring, one O-ring and a washer are supplied separately. A solenoid (VDE standard 0580) is an optional addition. **Important:** at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The seating valve piston is held against the spring by the pressure-tight control solenoid. Because the seat-piston design has equal surface areas on both sides and since the seat/piston construction is balanced in terms of pressure, no undesirable closing and opening forces are generated. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

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TYPE CODE

Poppet valve cartridge			2	2	06	#	<input type="checkbox"/>
Poppet valve cartridge with solenoid			2	2	06	-	# <input type="checkbox"/>
Medium	<input type="checkbox"/>	<input type="checkbox"/>					
Super		<input type="checkbox"/>					
2-way (Connections)							
2 Positions							
Nominal size 6							
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110	
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115	
				230 VAC	<input type="checkbox"/>	R230	
Design-Index (Subject to change)							

GENERAL SPECIFICATIONS

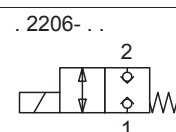
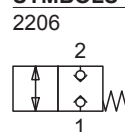
Description	2/2-way poppet valve cartridge
Nominal size	NG6
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form
	4 solenoid fixing screws M5
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	$M_D = 5,2 \text{ Nm}$ (quality 8.8)
Weight: 2206	$m = 0,04 \text{ kg}$
. 2206- . .	$m = 0,8 \text{ kg}$
Volume flow direction	any

ELECTRICAL CONTROL

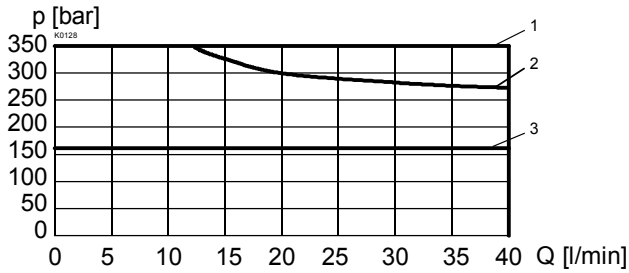
Construction	Solenoid, wet pin push, pressure tight
Standard-nominal flow	$U_N = 12 \text{ VDC}, 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$ AC = 50 to 60 Hz
	* Rectifier integrated in the plug
	Other nominal voltages and nominal performances on request
Voltage tolerance	$\pm 10\%$ of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request
Solenoid:	- Medium SIN45V (1.1-120) - Super SIS45V (1.1-125)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10} \dots 16 \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 40 \text{ l/min}$, see characteristics

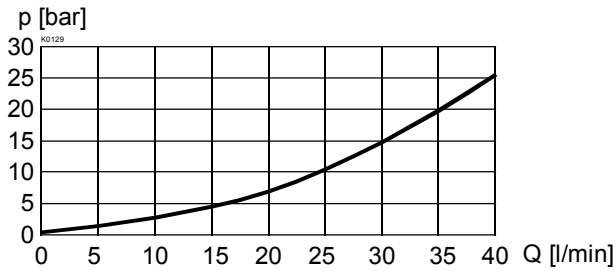
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%

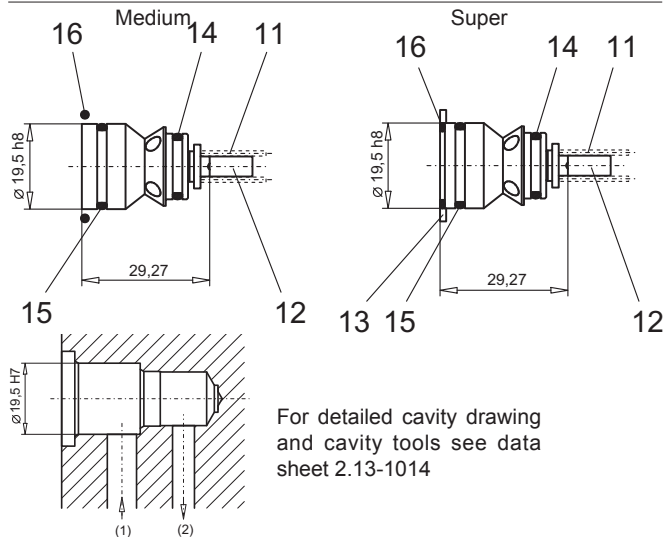


Type	Flow directions	
	1 → 2	2 → 1
M2206	3	3
S2206	1	2

$\Delta p = f(Q)$ Pressure loss / flow characteristics



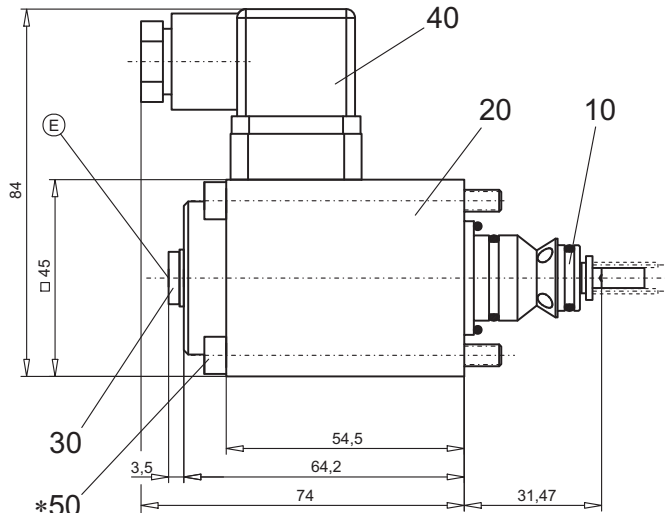
DIMENSIONS



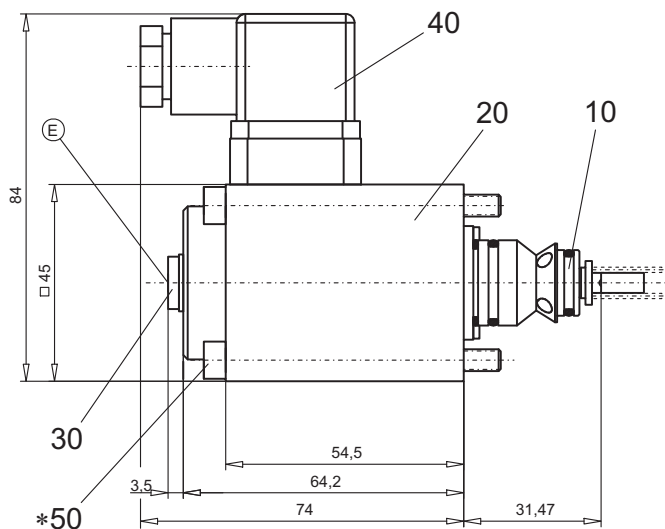
PARTS LIST

Position	Article	Description
10	500.3000 500.3013	Poppet valve cartridge 2206 Medium Poppet valve cartridge 2206 Super
11	053.2600 052.2605	Spring 1,2x7,2x15 Medium Spring 1,2x7,2x16 Super
12	222.0041	Pin
13	212.0502	Washer (only for Super)
14	160.2108	O-ring ID 10,82x1,78
15	160.2156	O-ring ID 15,60x1,78
16	160.2236 160.2161	O-ring ID 23,52x1,78 Medium O-ring ID 16,00x1,5 Super
20	260.6 . . . 260.7 . . .	Medium-solenoid SIN45V Super-solenoid SIS45V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	249.2001	Socket head cap screw M5x63

Medium



Super



E = air bleed screw

* Cartridge supplied with fastening screw M5x63 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built in flange- or sandwich body:

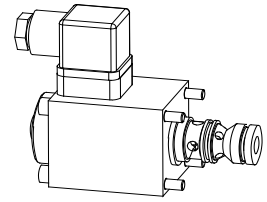
Flange Register 1.11
 Sandwich Register 1.11

Special tool 983.2001 to poppet valve cartridge 2206.

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge

- normally open
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 315 \text{ bar}$

NG6

DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet auto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

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ACCESSORIES.....	2

TYPE CODE

Poppet valve cartridge				2	2	06	0-S1265	#	<input type="checkbox"/>
Poppet valve cartridge with solenoid	<input type="checkbox"/>			2	2	06	0-S1265-	#	<input type="checkbox"/>
Medium-solenoid	<input type="checkbox"/>	<input type="checkbox"/>							
Super-solenoid		<input type="checkbox"/>							
2-way (Connections)									
2 Position									
Nominal size 6									
Normally open									
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110			
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115			
				230 VAC	<input type="checkbox"/>	R230			

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG6
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form
	4 solenoid fixing screws M5
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	$M_D = 5,2 \text{ Nm}$ (quality 8.8)
Weight: 22060-S1265	$m = 0,06 \text{ kg}$
. 22060-S1265- . .	$m = 0,8 \text{ kg}$
Volume flow direction	any (see characteristics)

ELECTRICAL CONTROL

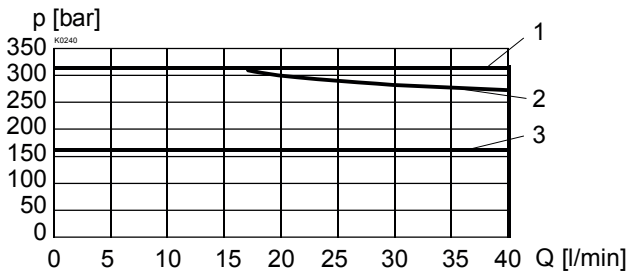
Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	$U_N = 12 \text{ VDC}, 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$ AC = 50 to 60 Hz * Rectifier integrated in the plug
Voltage tolerance	Other nominal voltages and nominal performances on request
Protection class	$\pm 10\%$ of nominal voltage
Relative duty factor	IP 65 to EN 60529
Switching cycles	100% DF (see data sheet 1.1-430)
Operating life	15000/h
Connections/Power supply	10^7 (number of switching cycles, theoretically)
Solenoid:	Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request – Medium SIS45V (1.1-120) – Super SIS45V (1.1-125)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 315 \text{ bar}$
Max. volume flow	$Q_{max} = 40 \text{ l/min}$, see characteristics

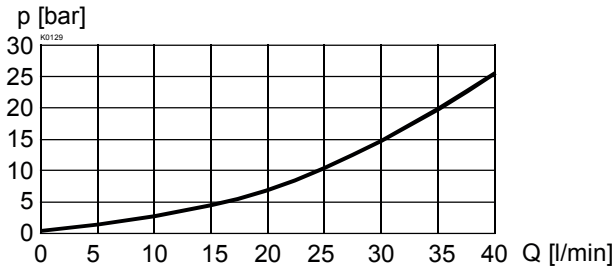
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%



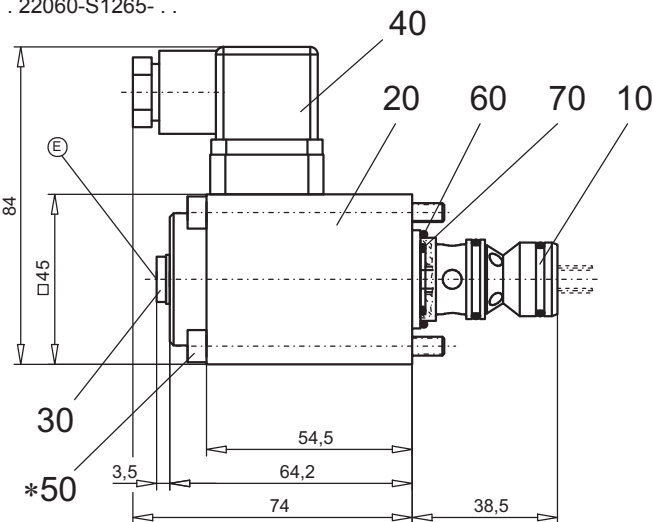
Type	Flow direction	
	1 → 2	2 → 1
M22060-S1265	3	3
S22060-S1265	1	2

$\Delta p = f(Q)$ Pressure loss / flow characteristics

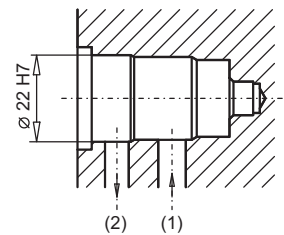
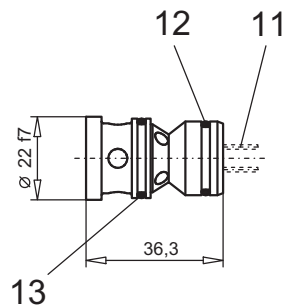


DIMENSIONS

. 22060-S1265- ...



22060-S1265



For detailed cavity drawing and cavity tools see data sheet 2.13-1018

E = air bleed screw

PARTS LIST

Position	Article	Description
10	500.3002 500.3017	Poppet valve cart. 22060-S1265 Medium Poppet valve cart. 22060-S1265 Super
11	053.2600 052.2605	Spring 1,2x7,2x15 Medium Spring 1,2x7,2x16 Super
12	160.2156	O-ring ID 15,60x1,78
13	160.2170	O-ring ID 17,17x1,78
20	260.6... 260.7...	Medium-solenoid SIN45V Super-solenoid SIS45V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	249.2001	Socket head cap screw M5x63
60	160.2236	O-ring ID 23,52x1,78
70	160.2156	O-ring ID 15,60x1,78

* Cartridge supplied with fastening screw M5x63 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built-in sandwich body:
Sandwich

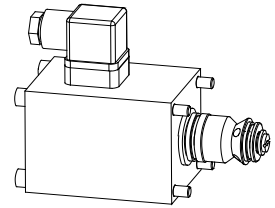
Register 1.11

Special tool 983.2003 to poppet valve cartridge 22060-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge

- normally closed
- $Q_{max} = 80 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG10

DESCRIPTION

The 2/2-way seating valve in slip-in cartridge form is the central control element of virtually all directly-controlled seating valves in nominal size 10. The seating valve cartridge, the stroke limiting piston, the spring, one O-ring and a washer are supplied separately. A solenoid (VDE standard 0580) is an optional addition. **Important:** at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The seating valve piston is held against the spring by the pressure-tight control solenoid. Because the seat-piston design has equal surface areas on both sides and since the seat/piston construction is balanced in terms of pressure, no undesirable closing and opening forces are generated. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

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TYPE CODE

Poppet valve cartridge				2	2	10	#	<input type="checkbox"/>
Poppet valve cartridge with solenoid				2	2	10	-	<input type="checkbox"/>
Medium-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>
Super-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>
2-way (Connections)								
2 Position								
Nominal size 10								
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110		
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115		
				230 VAC	<input type="checkbox"/>	R230		
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

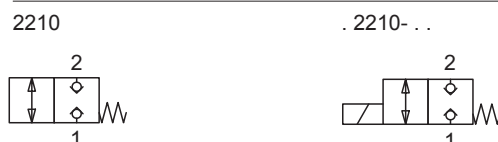
Description	2/2-way poppet valve cartridge
Nominal size	NG10
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form
	4 solenoid fixing screws M6
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	$M_D = 8,9 \text{ Nm}$ (quality 8.8)
Weight: 2210	$m = 0,12 \text{ kg}$
. 2210- . .	$m = 1,98 \text{ kg}$
Volume flow direction	any (see characteristics)

ELECTRICAL CONTROL

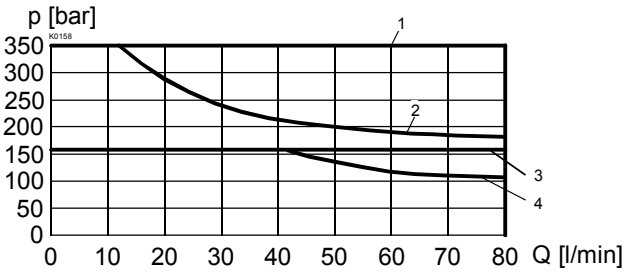
Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	$U_N = 12 \text{ VDC}$, $U_N = 24 \text{ VDC}$ $U_N = 110 \text{ VAC}$ *, $U_N = 115 \text{ VAC}$ * $U_N = 230 \text{ VAC}$ * AC = 50 to 60 Hz * Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Overdevice plug connection to ISO4400/DIN 43650, (2P+E), other connections on request
Solenoid:	- Medium SIS60V (data sheet 1.1-145) - Super SIS60V (data sheet 1.1-150)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10} \dots \beta_{75} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 80 \text{ l/min}$, see characteristics

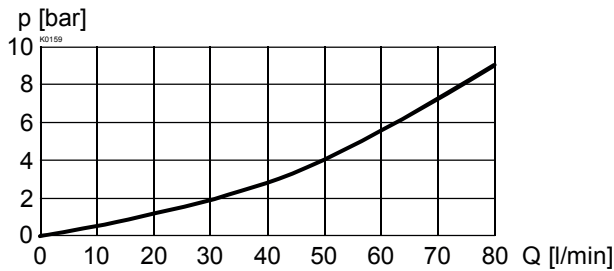
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%

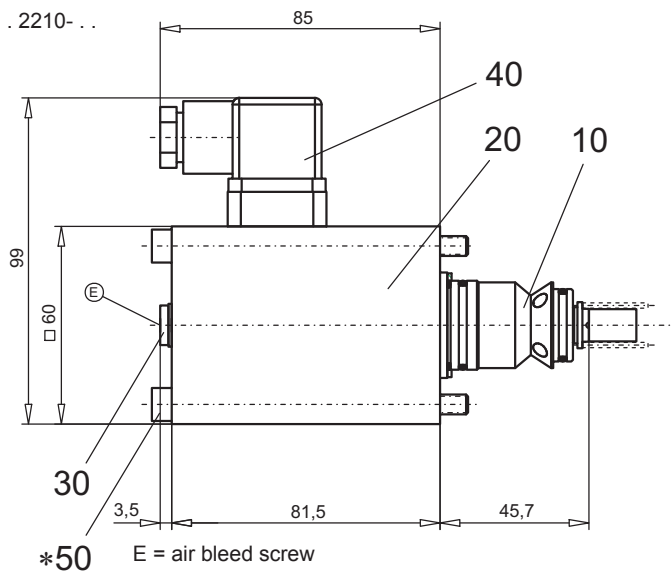


Type	Flow direction	
	1 → 2	2 → 1
M2210	3	4
S2210	1	2

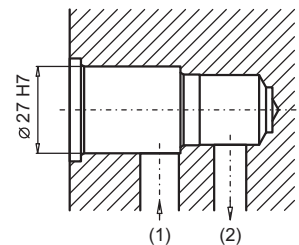
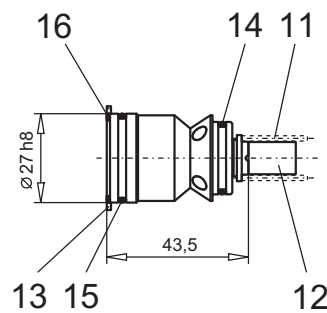
$\Delta p = f(Q)$ Pressure loss / flow characteristics



DIMENSIONS



2210



For detailed cavity drawing and cavity tools see data sheet 2.13-1015

PARTS LIST

Position	Article	Description
10	500.4010	Poppet valve cartridge 2210
11	052.4202	Spring 1,6 x 13,6 x 26
12	222.0042	Pin
13	212.0504	Washer
14	160.2188	O-ring ID 18,77 x 1,78
15	160.2236	O-ring ID 23,52 x 1,78
16	160.2230	O-ring ID 23,00 x 1,5
20	260.8... 260.9...	Medium-solenoid SIN60V Super-solenoid SIS60V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.3190	Socket head cap screw M6 x 90 DIN 912

* Cartridge supplied with fastening screw M6 x 90 for steel bodies / blocs. For aluminium bodies / blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built-in flange- or sandwich body:

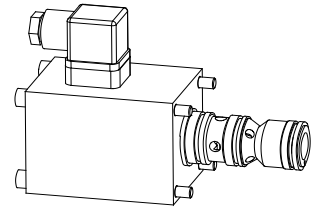
Flange Register 1.11
 Sandwich Register 1.11

Special tool 983.2002 to poppet valve cartridge 2210.

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge

- normally open
- $Q_{max} = 80 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG10

DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet auto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

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ACCESSORIES.....	2

TYPE CODE

Poppet valve cartridge				2	2	10	0-S1265	#	<input type="checkbox"/>	
Poppet valve cartridge with solenoid				<input type="checkbox"/>	2	2	10	0-S1265 -	#	<input type="checkbox"/>
Medium-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Super-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-way (Connections)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nominal size 10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Normally open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110				
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115				
				230 VAC	<input type="checkbox"/>	R230				

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG10
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form
	4 solenoid fixing screws M6
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	$M_D = 8,9 \text{ Nm}$ (quality 8.8)
Weight: 22100-S1265	$m = 0,21 \text{ kg}$
. 22100-S1265- . .	$m = 2,07 \text{ kg}$
Volume flow direction	any (see characteristics)

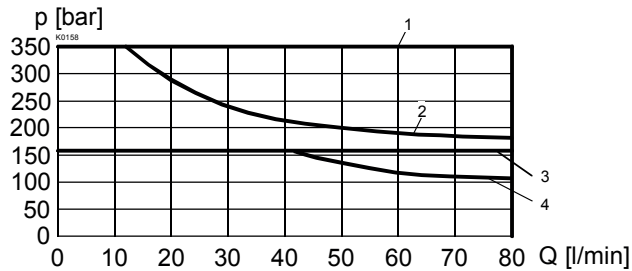
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	$U_N = 12 \text{ VDC}, 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$ AC = 50 to 60 Hz * Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request – Medium SIN60V (Data sheet 1.1-145) – Super SIS60V (Data sheet 1.1-150)
Solenoid:	

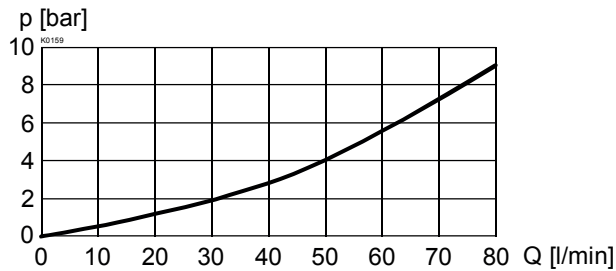
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10} \dots 16 \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 80 \text{ l/min}$, see characteristics

SYMBOLS

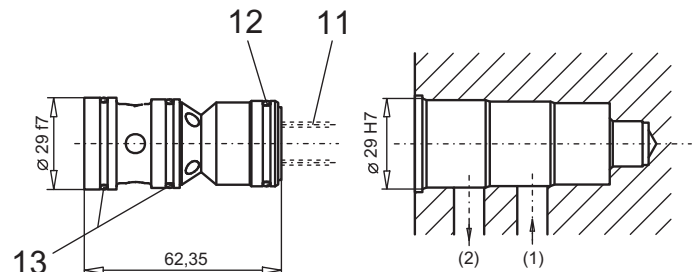
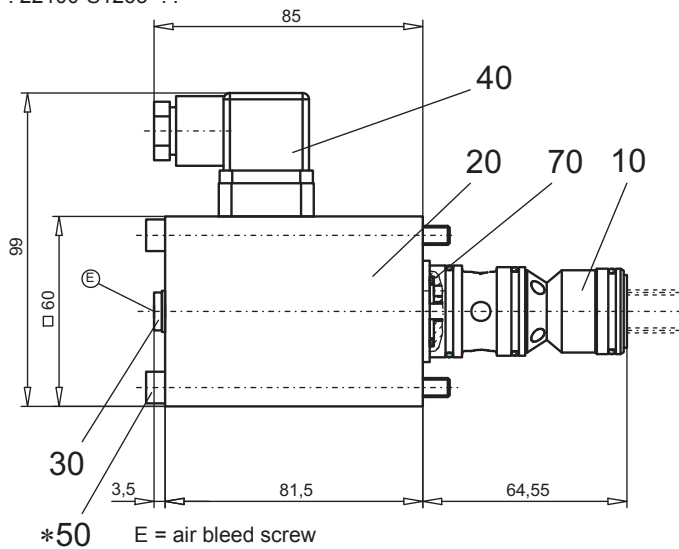

CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%


Type	Flow direction	
	1 → 2	2 → 1
M22100-S1265	3	4
S22100-S1265	1	2

 $\Delta p = f(Q)$ Pressure loss / flow characteristics

DIMENSIONS

22100-S1265-...

22100-S1265



For detailed cavity drawing and cavity tools see data sheet 2.13-1019

PARTS LIST

Position	Article	Description
10	500.4003	Poppet valve cart. 22100-S1265
11	052.4202	Spring 1,6 x 13,6 x 26
12	160.2236	O-ring ID 23,52 x 1,78
13	160.2252	O-ring ID 25,12 x 1,78
20	260.8... 260.9...	Medium-solenoid SIN60V Super-solenoid SIS60V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.3190	Socket head cap screw M6 x 90 DIN 912
70	160.2188	O-ring ID 18,77 x 1,78

* Cartridge supplied with fastening screw M6x90 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built-in sandwich body:

Sandwich

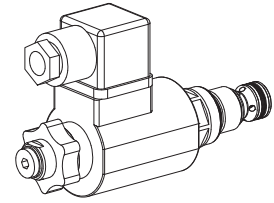
Register 1.11

Special tool 983.2004 to poppet valve cartridge 22100-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2- and 3/2-way version

- Direct operated
- $Q_{max} = 20 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

M18x1,5
 ISO 7789

DESCRIPTION

Direct operated 2/2- and 3/2-way poppet valve in screw-in cartridge with thread M18 x 1,5 for cavity to ISO 7789, (3/2-way type to Wandfluh standard). The 2/2-way type can be supplied in a „normally closed“ and „normally open“ version. There are two versions of the slip-on coil. The coil type „M“ with steel housing and the more economical type „K“ with plastic moulded coil with the same performance as the steel type. The coil may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION

The pressure tight switching solenoid and in turn the spring on the opposite side shift the guided poppet into an either open or closed position. Due to the equal-area- and balanced-poppet-design there are no undesired opening or closing forces. Fluid may pass the poppet valve in both directions. The poppet piston is sealed by an o-ring. The seat with metallic seal closes leak free in both directions.

APPLICATION

Wandfluh solenoid operated poppet valves are applied where an absolutely leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks. To machine the cavities in steel or aluminium blocks cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13

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CHARACTERISTICS.....	2
DIMENSIONS/ SECTIONAL DRAWING.....	3/4
CAVITIES.....	3/4
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ACCESSORIES.....	4

TYPE CODE

		S D S PM18 -		-		/		35 #		□	
Poppet valve											
Direct operated											
Super											
Screw-in cartridge M18x1,5											
2/2-way, „normally closed“				BA							
2/2-way, „normally open“				AB							
3/2-way				FG							
Standard-nominal voltage U_N :	12 VDC	G12	110 VAC	R110							
	24 VDC	G24	115 VAC	R115							
			230 VAC	R230							
Slip-on coil:	Plastic moulded	K	(only for 12 VDC and 24 VDC available)								
	Steel	M									
Connector socket:	ISO 4400 / DIN 43650	D									
	AMP Junior-Timer	J									
Coil types											
Design-Index (Subject to change)											

GENERAL SPECIFICATIONS

Description	Direct operated 2/2- and 3/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity to ISO 7789 (3/2-way type to Wandfluh standard)
Operation	Solenoid with exchangeable slip-on coil
Mounting	Screw-in thread M18x1,5
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	$M_D = 30 \text{ Nm}$ for cartridge $M_{Dmax} = 5 \text{ Nm}$ or coil retaining nut $m = 0,43 \text{ kg}$ version with plastic coil $m = 0,57 \text{ kg}$ version with steel coil
Masse	
Volume flow	any (note performance limits)

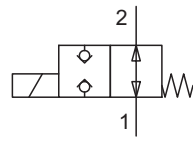
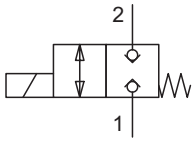
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) see data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	$p_{max} = 350 \text{ bar}$
Nominal flow	$Q_N = 15 \text{ l/min}$
Max. volume flow	$Q_{max} = \text{up to } 20 \text{ l/min}$
Pressure drop	$\Delta p = < 16 \text{ bar}$ with 15 l/min

SYMBOLS

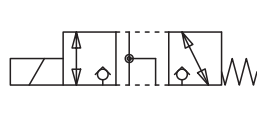
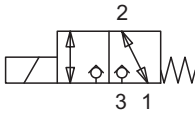
SDSPM18-BA...

SDSPM18-AB...



SDSPM18-FG...

Transitional function „FG“


ELECTRICAL CONTROL

Construction

solenoid, wet pin, push type, pressure tight with exchangeable slip-on coil

Standard nominal voltage:

 $U_N = 12 \text{ VDC}, 24 \text{ VDC}$
 $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$
 $\text{AC} = 50 \text{ up to } 60 \text{ Hz}$

* Rectifier integrated in connector socket

Other nominal voltages and wattages on request

Voltage tolerance

 $\pm 10\%$ of nominal voltage

Protection class

IP 65 acc. to EN 60529

(if correctly mounted)

Relative duty cycle

100% DF (see data sheet 1.1-430)

Switching cycles

5000/h

Operating life

 10^7 (number of switching cycles, theoretically)

Connections/Power supply

Versions see type code

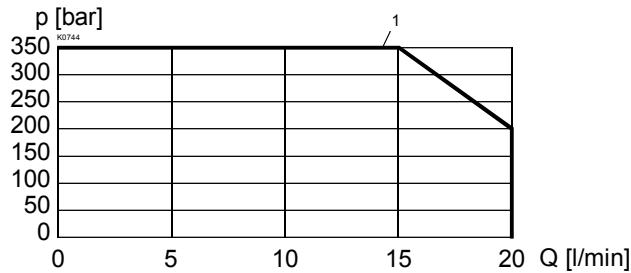
Solenoid type:

– Steel coil (M.35/16)

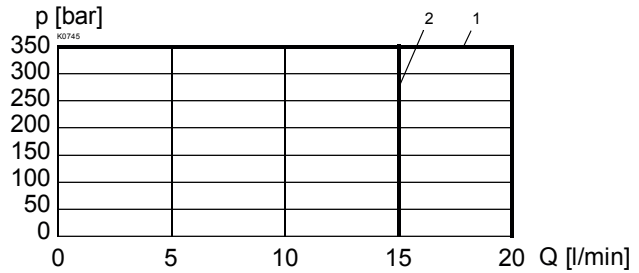
data sheet 1.1-170

– Plastic coil (K.35/16)

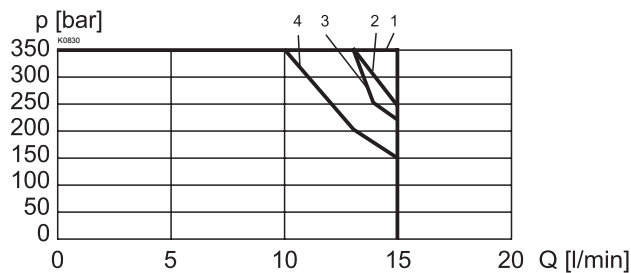
data sheet 1.1-172

CHARACTERISTICS oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limits at 10% under voltage and max. ambient temperature
 2/2-way type, „normally closed“ [BA]


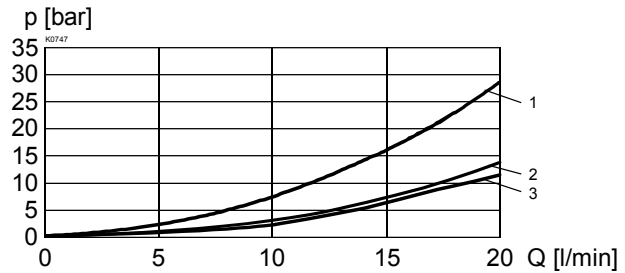
Version	Flow direction	
	1 → 2	2 → 1
SDSPM18-BA-.../„M“	1	1
SDSPM18-BA-.../„K“	1	1

 $p = f(Q)$ Performance limits at 10% under voltage and max. ambient temperature
 2/2-way type, „normally open“ [AB]


Version	Flow direction	
	1 → 2	2 → 1
SDSPM18-AB-.../„M“	2	1
SDSPM18-AB-.../„K“	2	1

 $p = f(Q)$ Performance limits at 10% under voltage and max. ambient temperature
 3/2-way type [FG]


Version	Flow direction			
	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM18-FG-.../„M“	3	1	1	2
SDSPM18-FG-.../„K“	3	1	1	4

 $\Delta p = f(Q)$ Pressure volume flow characteristics


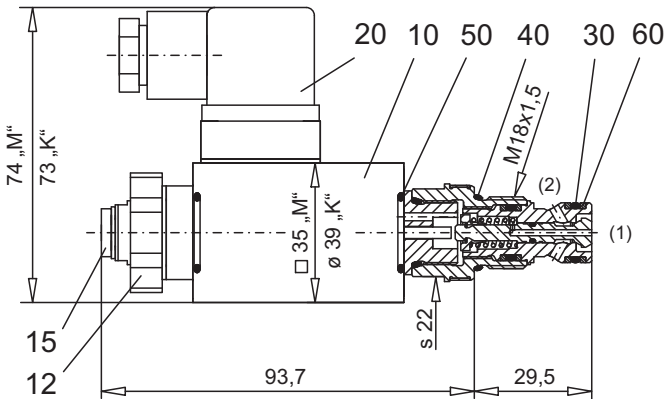
Version	Flow direction		
	1 → 2	2 → 1	3 → 2
SDSPM18-BA-...	2	2	–
SDSPM18-AB-...	2	2	–
SDSPM18-FG-...	3	3	1

REMARK!

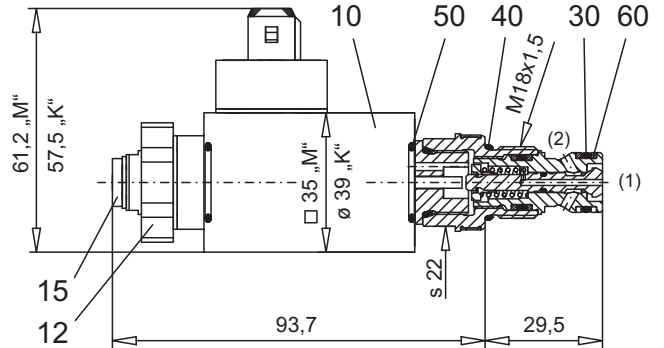
 Depending on application the volume flow may be increased but during shifting the total volume flow (3 → 2 and 2 → 1) must not be higher than $Q = 20 \text{ l/min}$

DIMENSIONS / SECTIONAL DRAWING

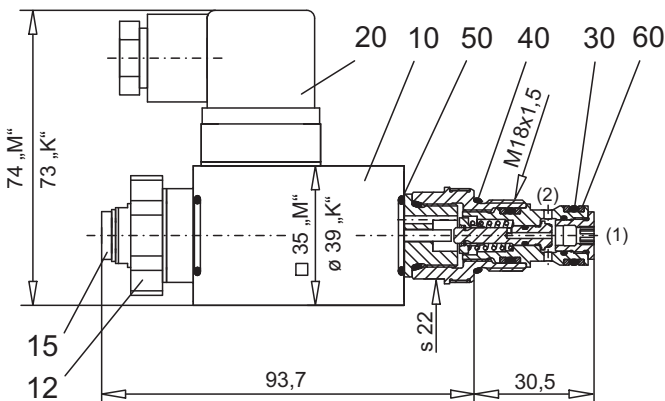
2/2-way version, „normally closed“ [BA]
with DIN connector socket



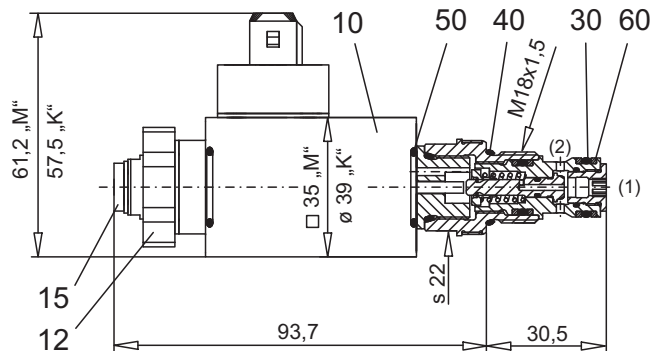
2/2-way version, „normally closed“ [BA]
with Junior-Timer connector socket



2/2-way version „normally open“ [AB]
with DIN connector socket

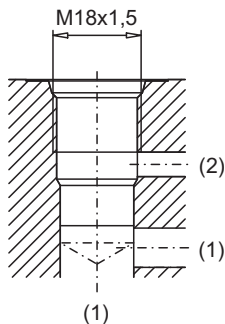


2/2-way version „normally open“ [AB]
with Junior-Timer connector socket



CAVITY

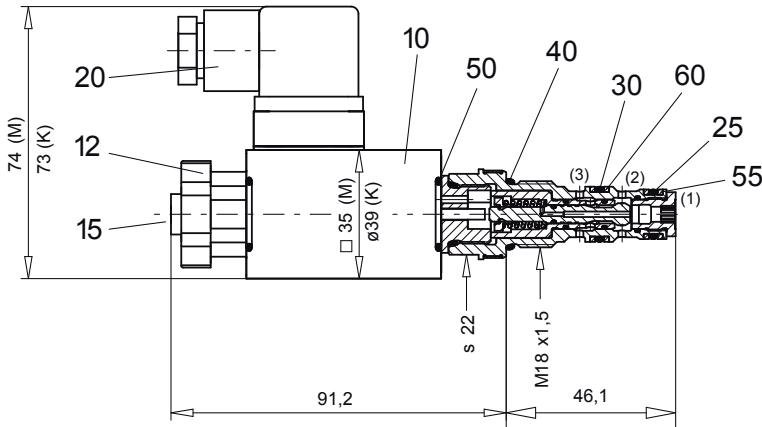
Cavity drawing for 2/2-way version
to ISO 7789-18-01-0-98



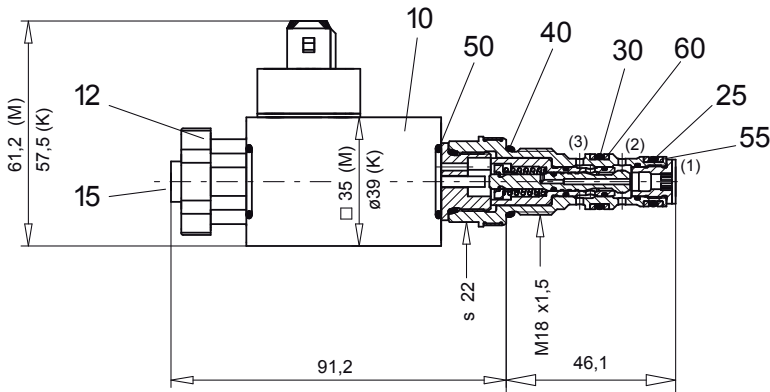
For detailed cavity drawing and cavity tools
see data sheet 2.13-1002

DIMENSIONS / SECTIONAL DRAWING

3/2-way version
with DIN connector socket

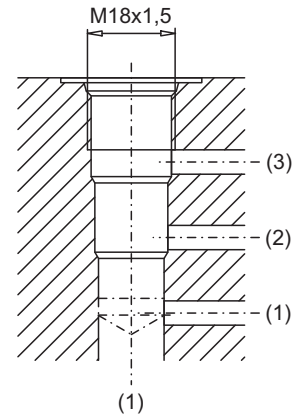


3/2-way version
with Junior-Timer connector socket



CAVITY

Cavity drawing for 3/2-way version
to Wandfluh standard



For detailed cavity drawing and cavity tools
see data sheet 2.13-1020

PARTS LIST

Position	Article	Description
10	260.4... 260.4... 206.23... 206.23..	Coil complete MD35/16-... Coil complete MJ35/16-... Coil complete KD35/16-... Coil complete KJ35/16-...
12	154.2601	Knurled nut M16 x 1 x 18
15	239.2033	Plug HB0 (incl. seal)
20	219.2002	Plug
25	160.2093	O-ring ID 9,25 x 1,78
30	160.2111	O-ring ID 11,11 x 1,78
40	160.2156	O-ring ID 15,60 x 1,78
50	160.6156	O-ring viton ID 15,60 x 1,78
55	049.3137	Back-up ring RD 10,6 x 13,5 x 1,4
60	049.3156	Back-up ring RD 12,1 x 15 x 1,4

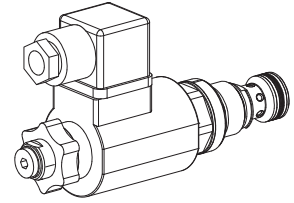
ACCESSORIES

Cartridge built-in flange- or sandwich body
Flange valve on request
Sandwich valve on request

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
 2/2- and 3/2-way version

- Direct operated
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

M22x1,5
 ISO 7789

DESCRIPTION

Direct operated 2/2- and 3/2-way poppet valve in screw-in cartridge with thread M22x1,5 for cavity to ISO 7789. The 2/2-way type can be supplied in a „normally closed“ and „normally open“ version. There are two versions of the slip-on coil. The coil type „M“ with steel housing and the more economical type „K“ with plastic moulded coil and a somewhat reduced performance compared to the steel type. The coil may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION

The pressure tight switching solenoid and in turn the spring on the opposite side shift the guided poppet into an either open or closed position. Due to the equal-area- and balanced-poppet-design there are no undesired opening or closing forces. Fluid may pass the poppet valve in both directions. The poppet piston is sealed by an o-ring. The seat with metallic seal closes leak free in both directions.

APPLICATION

Wandfluh solenoid operated poppet valves are applied where an absolutely leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks and in size NG4 and NG6 flange and sandwich bodies. To machine the cavities in steel or aluminium blocks cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13

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CAVITIES.....	3/4
PARTS LIST.....	4
ACCESSORIES.....	4

TYPE CODE

		S		D		S		PM22		-		-		/				35	#	
Poppet valve																				
Direct operated																				
Super																				
Screw-in cartridge M22x1,5																				
2/2-way, „normally closed“											BA									
2/2-way, „normally open“											AB									
3/2-way											FG									
Standard-nominal voltage U_N :		12 VDC									G12	110 VAC								
		24 VDC									G24	115 VAC								
												230 VAC								
Slip-on coil:	Plastic moulded										K	(only for 12 VDC and 24 VDC available)								
	Steel										M									
Connector	ISO 4400 / DIN 43650										D									
socket:	AMP Junior-Timer										J									
Coil types																				
Design-Index (Subject to change)																				

GENERAL SPECIFICATIONS

Description	Direct operated 2/2- and 3/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity to ISO 7789
Operation	Solenoid with exchangeable slip-on coil
Mounting	Screw-in thread M22x1,5
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	$M_D = 50 \text{ Nm}$ for cartridge $M_{Dmax} = 5 \text{ Nm}$ or coil retaining nut
Masse	$m = 0,49 \text{ kg}$ 2/2-way valve with plastic coil $m = 0,63 \text{ kg}$ 2/2 valve with steel coil $m = 0,51 \text{ kg}$ 3/2-way valve with plastic coil $m = 0,65 \text{ kg}$ 3/2-way valve with steel coil
Volume flow	any (note performance limits)

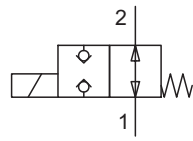
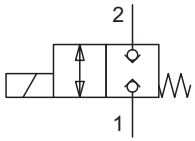
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) see data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	$p_{max} = 350 \text{ bar}$
Nominal flow	$Q_N = 20 \text{ l/min}$
Max. volume flow	$Q_{max} = \text{up to } 40 \text{ l/min}$
Pressure drop	$\Delta p = < 7 \text{ bar}$ with 20 l/min

SYMBOLS

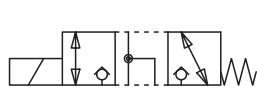
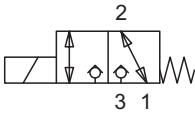
SDSPM22-BA...

SDSPM22-AB...



SDSPM22-FG...

Transitional function „FG“


ELECTRICAL CONTROL

Construction

solenoid, wet pin, push type, pressure tight with exchangeable slip-on coil

Standard nominal voltage:

 $U_N = 12 \text{ VDC}, 24 \text{ VDC}$
 $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$

AC = 50 up to 60 Hz

* Rectifier integrated in connector socket

Other nominal voltages and wattages on request

Voltage tolerance

 $\pm 10\%$ of nominal voltage

Protection class

IP 65 acc. to EN 60529

(if correctly mounted)

Relative duty cycle

100% DF (see data sheet 1.1-430)

Switching cycles

5000/h

Operating life

 10^7 (number of switching cycles, theoretically)

Connections/Power supply

Versions see type code

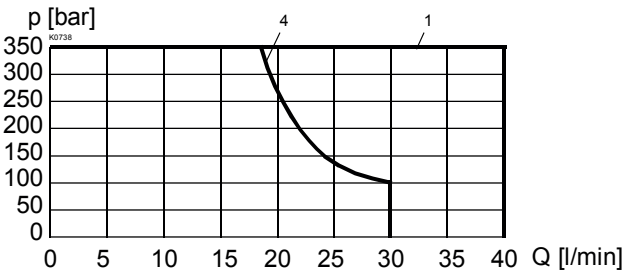
Solenoid type:

– Steel coil (M.35/16)

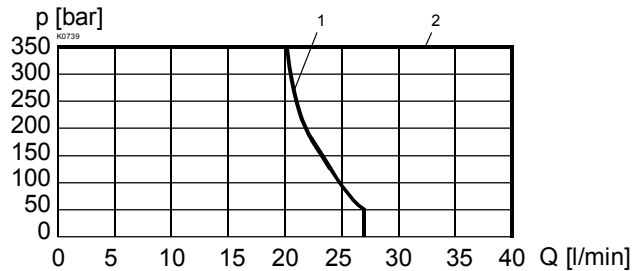
data sheet 1.1-170

– Plastic coil (K.35/16)

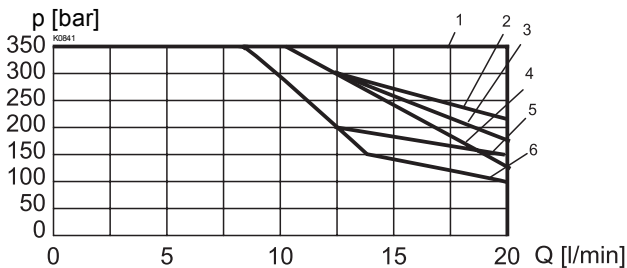
data sheet 1.1-172

CHARACTERISTICS oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limits at 10% under voltage and max. ambient temperature
 2/2-way type, „normally closed“ [BA]


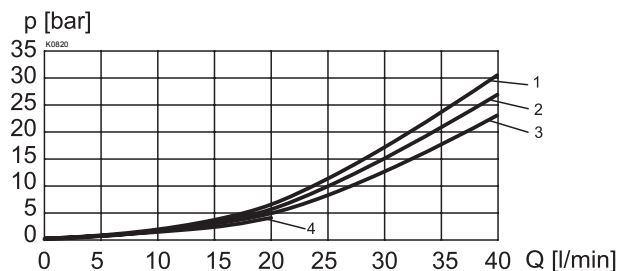
Version	Flow direction	
	1 → 2	2 → 1
SDSPM22-BA-.../„M“	1	2
SDSPM22-BA-.../„K“	3	4

 $p = f(Q)$ Performance limits at 10% under voltage and max. ambient temperature
 2/2-way type, „normally open“ [AB]


Version	Flow direction	
	1 → 2	2 → 1
SDSPM22-AB-.../„M“	1	2
SDSPM22-AB-.../„K“	1	2

 $p = f(Q)$ Performance limits at 10% under voltage and max. ambient temperature
 3/2-way type [FG]


Version	Flow direction			
	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-FG-.../„M“	4	1	2	3
SDSPM22-FG-.../„K“	4	1	5	6

 $\Delta p = f(Q)$ Pressure volume flow characteristics


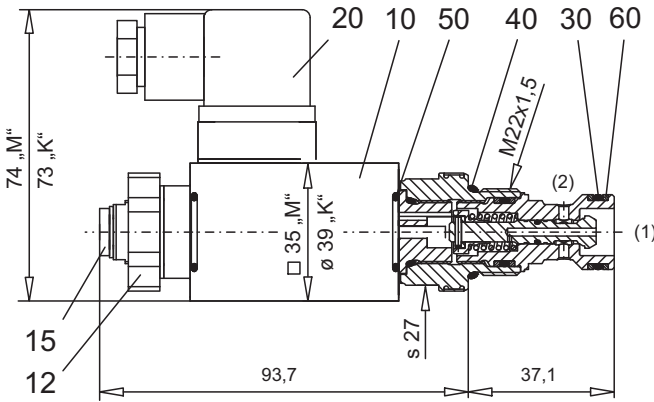
Version	Flow direction			
	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-BA-...	1	2	–	–
SDSPM22-AB-...	3	4	–	–
SDSPM22-FG-...	4	4	1	1

REMARK!

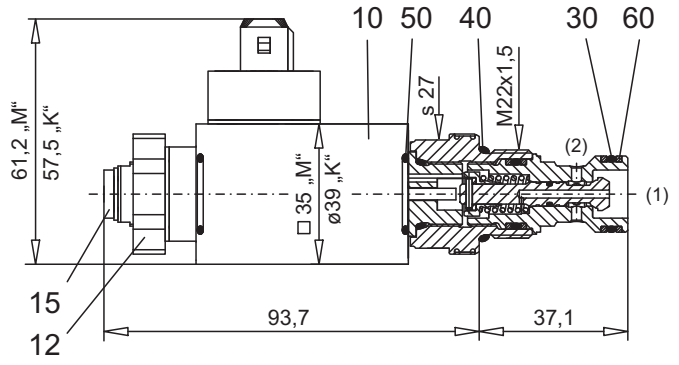
 Depending on application the volume flow may be increased but during shifting the total volume flow (3 → 2 and 2 → 1) must not be higher than $Q = 30 \text{ l/min}$

DIMENSIONS / SECTIONAL DRAWING

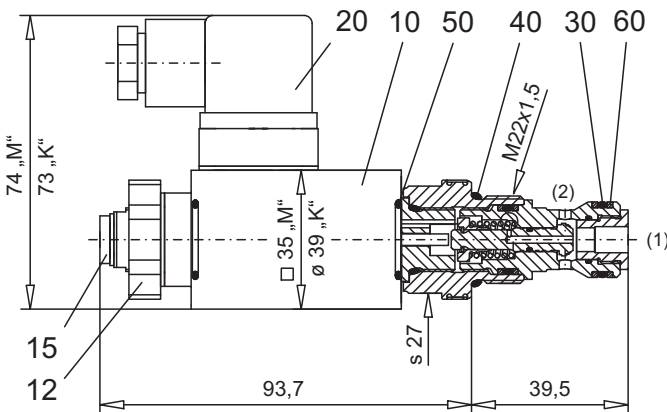
2/2-way version, „normally closed“ [BA]
with DIN connector socket



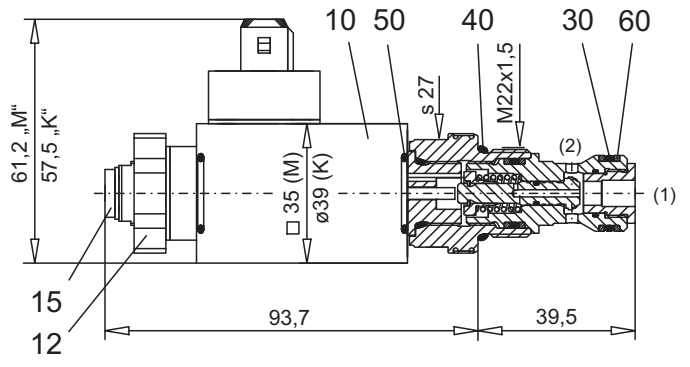
2/2-way version, „normally closed“ [BA]
with Junior-Timer connector socket



2/2-way version „normally open“ [AB]
with DIN connector socket

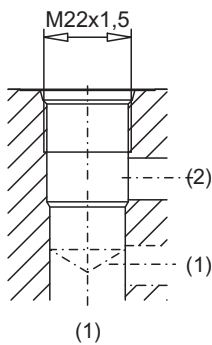


2/2-way version, „normally open“ [AB]
with Junior-Timer connector socket



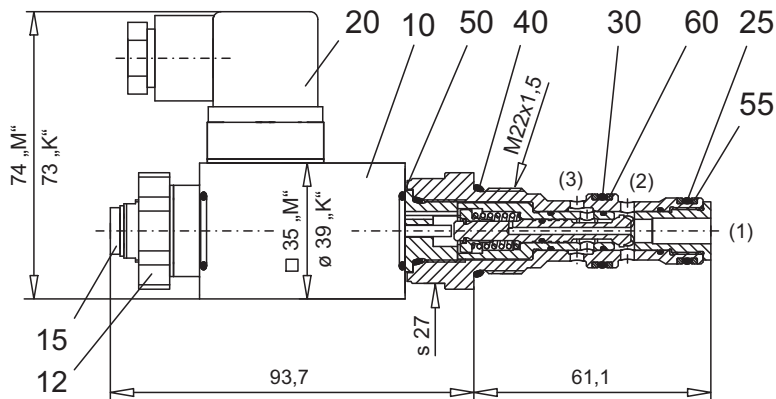
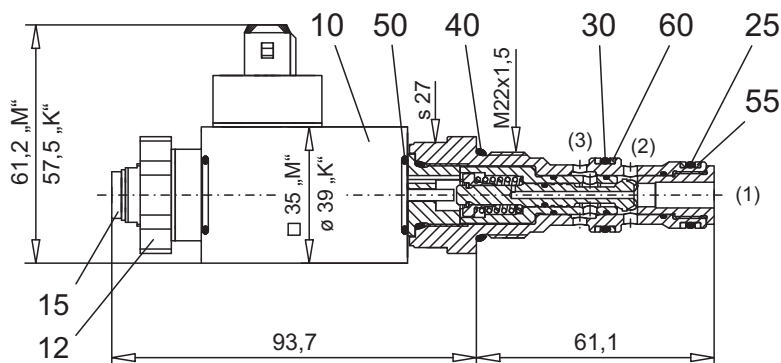
CAVITY

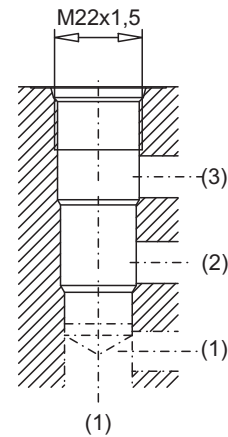
Cavity drawing for 2/2-way version
to ISO 7789-22-01-0-98



For detailed cavity drawing and cavity tools
see data sheet 2.13-1008

DIMENSIONS / SECTIONAL DRAWING

 3/2-way version
 with DIN connector socket

 3/2-way version
 with Junior-Timer connector socket

CAVITY

 Cavity drawing for 3/2-way version
 to ISO 7789-22-04-0-98

 For detailed cavity drawing and cavity tools
 see data sheet 2.13-1004

PARTS LIST

Position	Article	Description
10	260.4... 260.4... 206.23... 206.23..	Coil complete MD35/16-... Coil complete MJ35/16-... Coil complete KD35/16-... Coil complete KJ35/16-...
12	154.2601	Knurled nut M16 x 1 x 18
15	239.2033	Plug HB0 (incl. seal)
20	219.2002	Plug
25	160.2140	O-ring ID 14,00 x 1,78
30	160.2156	O-ring ID 15,60 x 1,78
40	160.2188	O-ring ID 18,77 x 1,78
50	160.6156	O-ring viton ID 15,60 x 1,78
55	049.3176	Back-up ring RD 14,1 x 17 x 1,4
60	049.3196	Back-up ring RD 16,1 x 19 x 1,4

ACCESSORIES

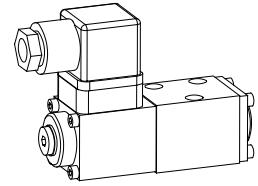
 Cartridge built-in flange- or sandwich body
 Flange valve
 Sandwich valve

 register 1.11
 register 1.11

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 6 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG3-Mini[®]

DESCRIPTION

Poppet valve, flanged design NG3-Mini, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG3-Mini series is the poppet valve cartridge NG3. See data sheet 1.11-2010. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG3-mini valves are used where a light, compact unit is needed.

CONTENT

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HYDRAULIC SPECIFICATIONS.....	1
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CHARACTERISTICS.....	2
DIMENSIONS.....	2
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ACCESSORIES.....	2

TYPE CODE

2/2- or 3/2-way construction	B	<input type="checkbox"/>	<input type="checkbox"/>	2	03	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	B	<input type="checkbox"/>	3	4	03	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
Mounting interface										
Medium-solenoid	M	<input type="checkbox"/>								
Super-solenoid	S	<input type="checkbox"/>								
2-way (connections)	2	<input type="checkbox"/>								
3-way (connections)	3	<input type="checkbox"/>								
2 position										
4 position										
Nominal size 3-Mini										
Normally closed, solenoid on A-side								1a		
Normally open, solenoid on B-side								0b		
Standard nominal voltage U_N : 12VDC						G12		110VAC	R110	
24VDC						G24		115VAC	R115	
								230VAC	R230	
Design-Index (Subject to change)										

GENERAL SPECIFICATIONS

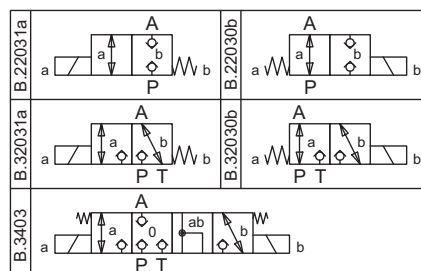
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG3-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 3 holes for socket cap screws M4 x 30
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 2,8 \text{ Nm}$ (quality 8.8)
Weight 2/2-, 3/2-way	$m = 0,46 \text{ kg}$
3/4-way	$m = 0,72 \text{ kg}$
Volume flow direction	any, (see characteristics)

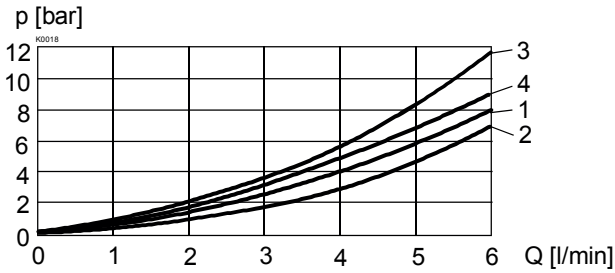
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push, pressure tight
Standard-nominal voltage	$U_N = 12 \text{ VDC}, 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$ AC = 50 to 60 Hz * Rectifier integrated in the plug
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Overdevice plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request
Solenoid:	- Medium SIN29V (data sheet 1.1-80) - Super SIS29V (data sheet 1.1-85)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 125 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 6 \text{ l/min}$ see characteristics

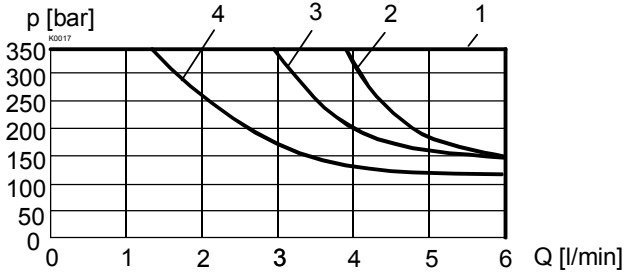
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $\Delta p = f(Q)$ Pressure loss/flow characteristics


Type	Flow direction			
	P - A	A - T	A - P	T - A
B.2203..	1	-	2	-
B.3203..	3	4	4	3
B.3403	1	1	2	2

 $p = f(Q)$ Performance limit at -10%

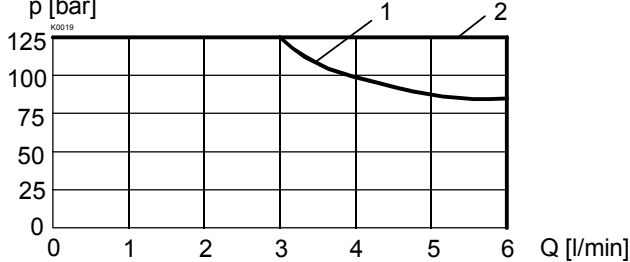
Super



Type	Flow direction			
	P - A	A - T	A - P	T - A
BS22031a	1	-	2	-
BS22030b	1	-	3	-
BS32031a	1	2	4	1
BS32030b	1	2	4	1
BS3403	1	1	2	4

 $p = f(Q)$ Performance limit at -10%

Medium



1: 3/2 way valve flow direction from A --> P

2: all other valves and flow directions

PARTS LIST

Position	Article	Description
10	260.2... 260.3...	Medium-solenoid SIN29V Super-solenoid SIS29V
20	239.2033	Plug (incl. seal ring) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug A (grey)
40	056.4203	Cover
50	246.0141	Socket head cap screw M3x40 DIN 912
60	246.0109	Socket head cap screw M3x8 DIN 912
70	160.2045	O-ring ID 4,50x1,50

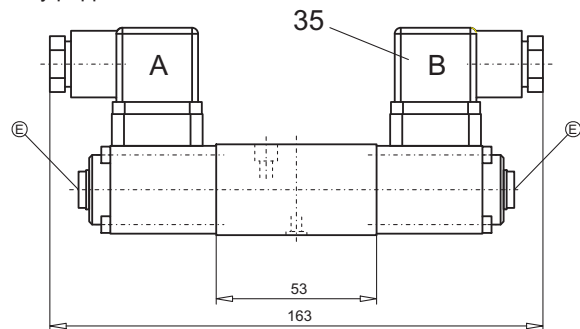
ACCESSORIES

 Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

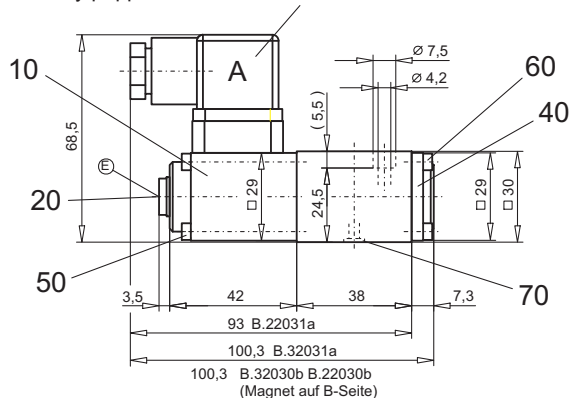
DIMENSIONS

3/4-way poppet valve

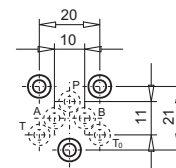


2/2-way poppet valve

3/2-way poppet valve

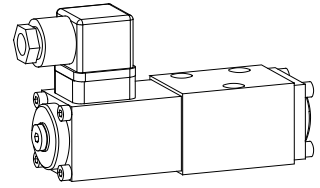


E = air bleed screw



Solenoid poppet valve

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 15 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG4-Mini[®]

DESCRIPTION

Poppet valve, flanged design NG4-Mini according to Wandfluh standard, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG4-Mini series is the poppet valve cartridge NG4. See data sheet 1.11-2020. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

CONTENT

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HYDRAULIC SPECIFICATIONS.....	1
ELECTRICAL CONTROL.....	1
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DIMENSIONS.....	2
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ACCESSORIES.....	2

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG4-mini valves are used where a light, compact unit is needed.

TYPE CODE

2/2- or 3/2-way construction	B	<input type="checkbox"/>	<input type="checkbox"/>	2	04	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	B	<input type="checkbox"/>	3	4	04	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
Mounting interface										
Medium-solenoid	M	<input type="checkbox"/>								
Super-solenoid	S	<input type="checkbox"/>								
2-way (connections)	2	<input type="checkbox"/>								
3-way (connections)	3	<input type="checkbox"/>								
2 position										
4 position										
Nominal size 4-Mini										
Normally closed, solenoid on A-side									1a	
Normally open, solenoid on B-side									0b	
Standard nominal voltage U_N :										
12 VDC	G12	<input type="checkbox"/>							R110	
24 VDC	G24	<input type="checkbox"/>							R115	
110 VAC									R230	
115 VAC										
230 VAC										
Design-Index (Subject to change)										

GENERAL SPECIFICATIONS

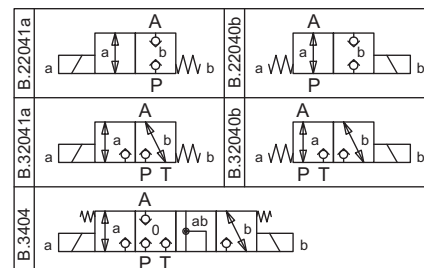
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG4-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 3 holes for socket cap screws M5x40
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quality 8.8)
Weight 2/2-, 3/2-way	$m = 0,95 \text{ kg}$
3/4-way	$m = 1,45 \text{ kg}$
Volume flow direction	any (see characteristics)

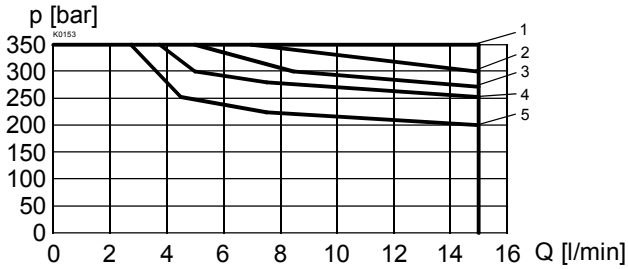
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure high
Standard-nominal voltage $U_N = 12 \text{ VDC}, 24 \text{ VDC}$	
$U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$	
AC = 50 bis 60 Hz	
	*Rectifier integrated in the plug
	Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	- Medium SIN35V (data sheet 1.1-105) - Super SIS35V (data sheet 1.1-110)

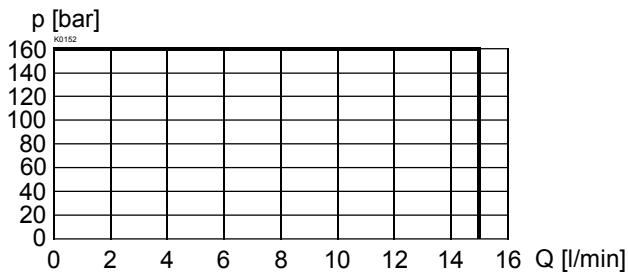
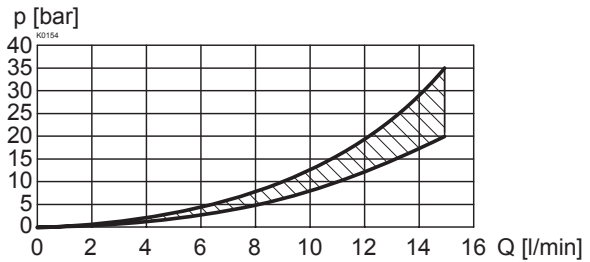
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 15 \text{ l/min}$ see characteristics

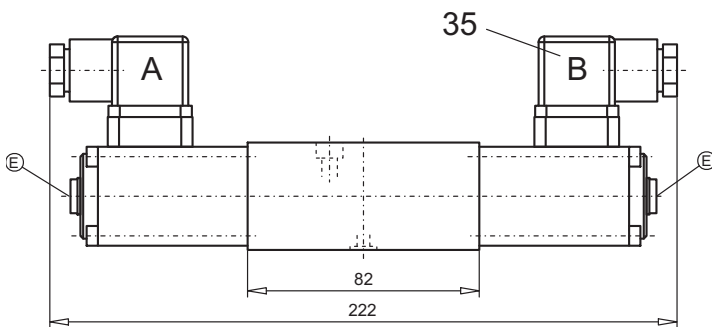
SYMBOLS


CHARACTERISTICS Oilviscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit by standard voltage at -10 % Super


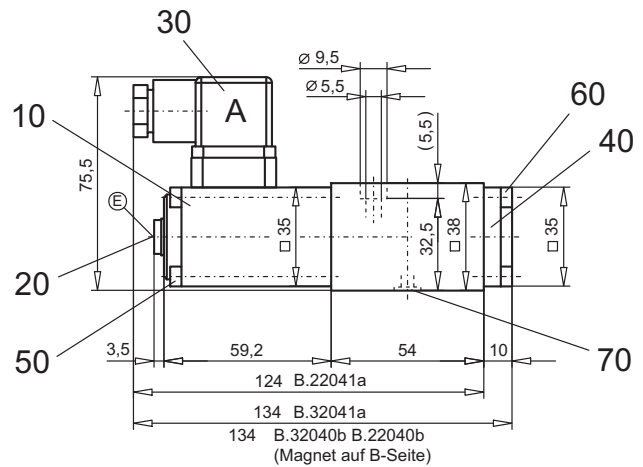
Type	Flow direction			
	P - A	A - T	A - P	T - A
BS22041a	1	-	2	-
BS22040b	1	-	4	-
BS32041a	1	3	5	1
BS32040b	1	4	5	1
BS3404	1	1	2	2

 $p = f(Q)$ Performance limit by standard voltage at -10 % Medium

 $\Delta p = f(Q)$ Pressure loss/flow characteristics

DIMENSIONS

3/4-way poppet valve

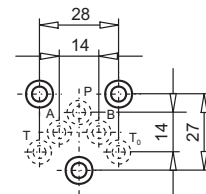


E = air bleed screw

 2/2-way poppet valve
 3/2-way poppet valve

PARTS LIST

Position	Article	Description
10	260.4... 260.5...	Medium-solenoid SIN35V Super-solenoid SIS35V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	057.4201	Cover
50	246.1161	Socket head cap screw M4 x 60 DIN 912
60	246.1113	Socket head cap screw M4 x 12 DIN 912
70	160.2052	O-ring ID 5,28 x 1,78

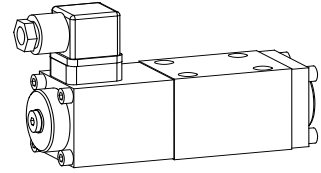
ACCESSORIES

 Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9


Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG6
 ISO 4401-03

DESCRIPTION

Poppet valve, flanged design NG6, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

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DIMENSIONS.....	2
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ACCESSORIES.....	2

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

2/2- or 3/2-way construction	A	<input type="checkbox"/>	<input type="checkbox"/>	2	06	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	A	<input type="checkbox"/>	3	4	06	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
International mounting interface ISO										
Medium	M	<input type="checkbox"/>								
Super	S	<input type="checkbox"/>								
2-way (connections)	2	<input type="checkbox"/>								
3-way (connections)	3	<input type="checkbox"/>								
2 position										
4 position										
Nominal size 6										
Normally closed, solenoid on A-side								1a		
Normally open, solenoid on B-side								0b		
Standard nominal voltage U_N :										
12 VDC	G12	<input type="checkbox"/>							R110	<input type="checkbox"/>
24 VDC	G24	<input type="checkbox"/>							R115	<input type="checkbox"/>
									R230	<input type="checkbox"/>

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

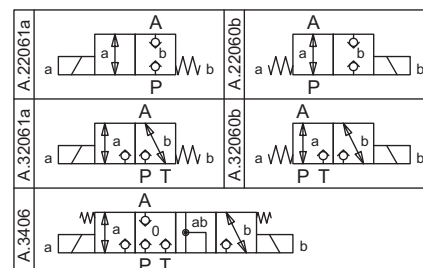
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 4 holes for socket cap screws M5x45
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_0 = 5,5 \text{ Nm}$ (quality 8.8)
Weight 2/2-, 3/2-way	$m = 1,8 \text{ kg}$
3/4-way	$m = 2,8 \text{ kg}$
Volume flow direction	any (see characteristics)

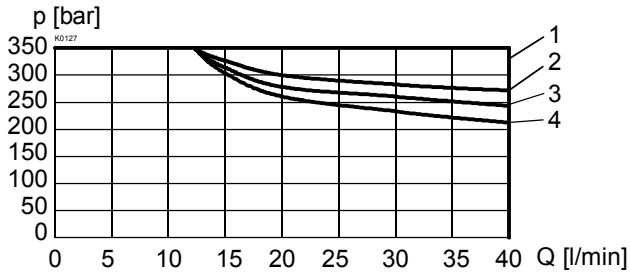
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure high
Standard-nominal voltage	$U_N = 12 \text{ VDC}, 24 \text{ VDC}$ $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$ AC = 50 to 60 Hz * Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	- Medium SIN45V (1.1-120) - Super SIS45V (1.1-125)

HYDRAULIC SPECIFICATIONS

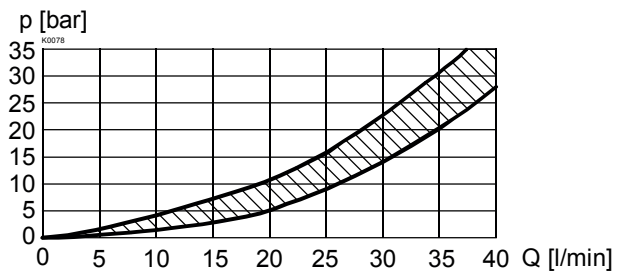
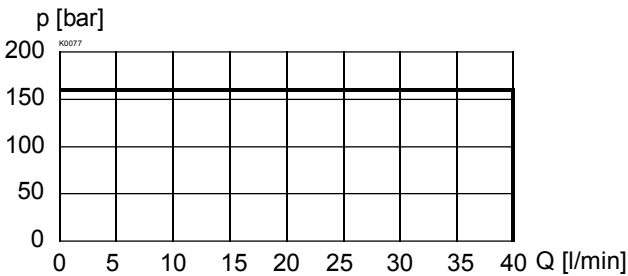
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 40 \text{ l/min}$ see characteristics

SYMBOLS


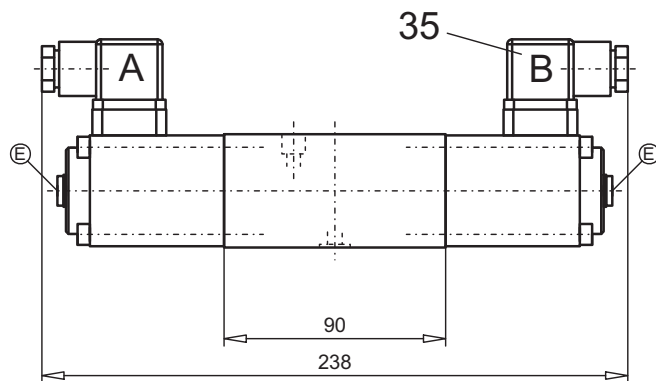
CHARACTERISTICS Oilviscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit by standard voltage at -10 %
Super


Type	Flow direction			
	P - A	A - T	A - P	T - A
AS22061a	1	-	2	-
AS22060b	1	-	4	-
AS32061a	1	2	3	1
AS32060b	1	2	3	1
AS3406	1	1	2	2

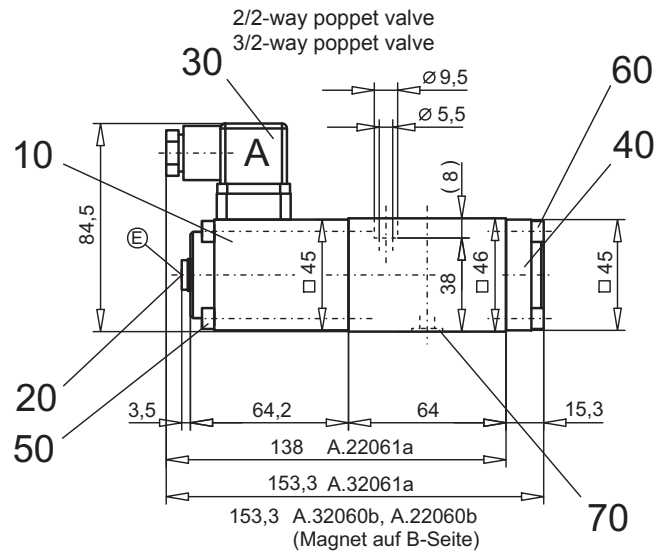
 $\Delta p = f(Q)$ Pressure loss/flow characteristics

 $p = f(Q)$ Performance limit by standard voltage at -10 %
Medium

DIMENSIONS

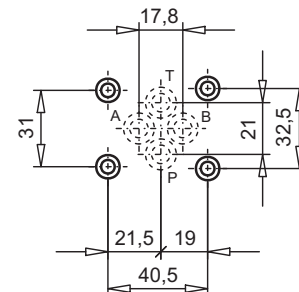
3/4-way poppet valve



E = air bleed screw


PARTS LIST

Position	Article	Description
10	260.6... 260.7...	Medium-solenoid SIN45V Super-solenoid SIS45V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	058.4215	Cover
50	246.2160	Socket head cap screw M5x60 DIN 912
60	246.2117	Socket head cap screw M5x16 DIN 912
70	160.2093	O-ring ID 9,25x1,78

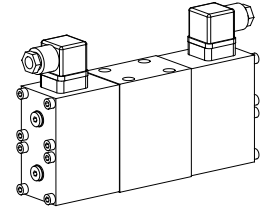

ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 4/3-way construction
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG6
 ISO 4401-03

DESCRIPTION

Poppet valve, flanged design NG6 to ISO 4401-03. The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The poppet valve is opened by wet pin push type solenoids and closed by springs. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

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PARTS LIST	2
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TYPE CODE

4/3-way construction	A	<input type="checkbox"/>	4	3	06	-	<input type="checkbox"/>	#	<input type="checkbox"/>
International mounting interface ISO									
Medium		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Super		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-way (connections)									
3 position									
Nominal size 6									
Standard nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110			
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115			
				230 VAC	<input type="checkbox"/>	R230			
Design-Index (Subject to change)									

GENERAL SPECIFICATIONS

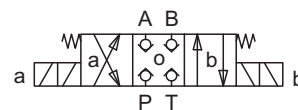
Description	4/3-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 4 holes for socket cap screws M5x90
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 9,7 \text{ Nm}$ (quality 12.9)
Weight	$m = 5,4 \text{ kg}$

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage U_N	12 VDC, 24 VDC $U_N = 110 \text{ VAC}^*$, 115 VAC*, 230 VAC* AC = 50 to 60 Hz
	* Rectifier integrated in the plug
	Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	- Medium SIN45DV (1.1-122) - Super SIS45DV (1.1-127)

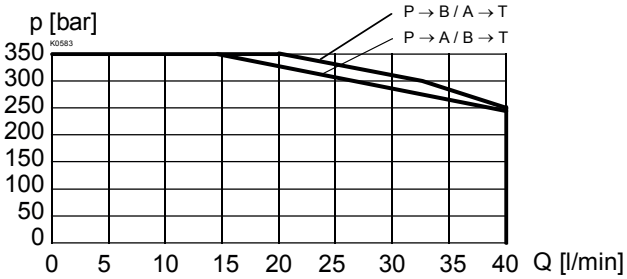
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 40 \text{ l/min}$ see characteristics

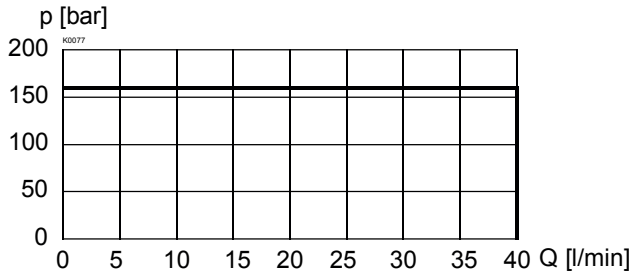
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

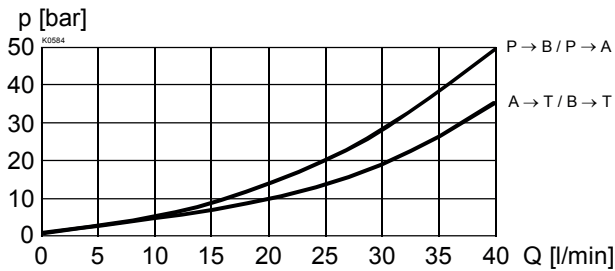
$p = f(Q)$ Performance limit by standard voltage at -10 %
 Super



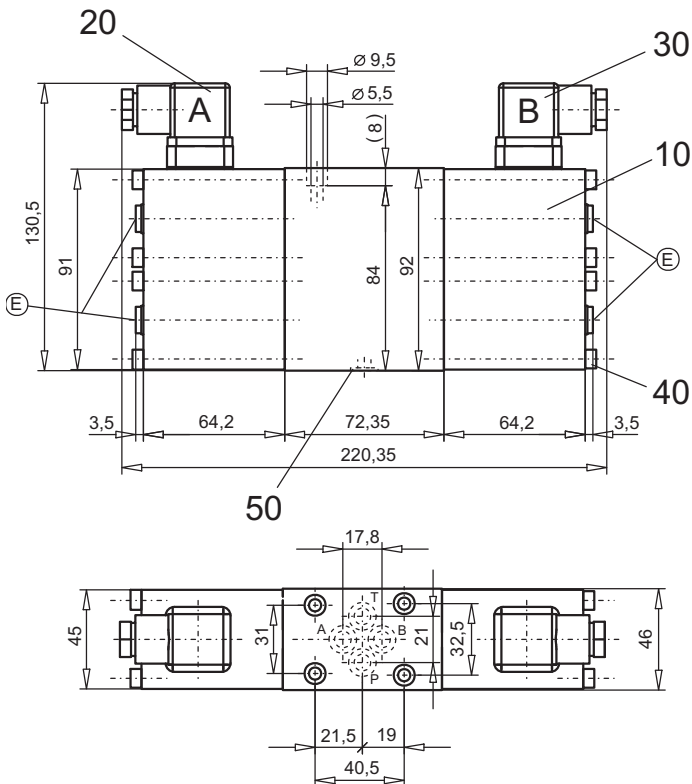
$p = f(Q)$ Performance limit by standard voltage at -10 %
 Medium



$\Delta p = f(Q)$ Pressure loss/flow characteristics


DIMENSIONS

4/3-way poppet valve


PARTS LIST

Position	Article	Description
10	260.6... 260.7...	Medium solenoid SIN45DV-...-M40-HB0 Super solenoid SIS45DV-...-M40-HB0
20	219.2001	Plug A (grey)
30	219.2002	Plug B (black)
40	246.2171	Cyl. screw M5x70 DIN 912
50	160.2093	O-ring ID 9,25x 1,78

E = air bleed screw

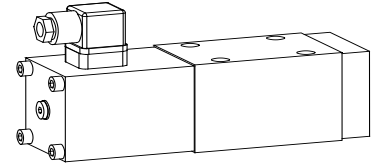
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 80$ l/min
- $p_{max} = 350$ bar

NG10
 ISO 4401-05

DESCRIPTION

Poppet valve, flanged design NG10, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG10 series is the poppet valve cartridge NG10. See data sheet 1.11-2040. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG10 valves are used where a light, compact unit is needed.

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ACCESSORIES.....	2

TYPE CODE

2/2- or 3/2-way construction	A	<input type="checkbox"/>	<input type="checkbox"/>	2	10	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	A	<input type="checkbox"/>	3	4	10	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
International mounting interface ISO										
Medium-solenoid	M	<input type="checkbox"/>								
Super-solenoid	S	<input type="checkbox"/>								
2-way (connections)	2	<input type="checkbox"/>								
3-way (connections)	3	<input type="checkbox"/>								
2 position										
4 position										
Nominal size 10										
Normally closed, solenoid on A-side								1a		
Normally open, solenoid on B-side								0b		
Standard nominal voltage U_N : 12 VDC	G12	<input type="checkbox"/>						110 VAC	R110	<input type="checkbox"/>
24 VDC	G24	<input type="checkbox"/>						115 VAC	R115	<input type="checkbox"/>
								230 VAC	R230	<input type="checkbox"/>

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

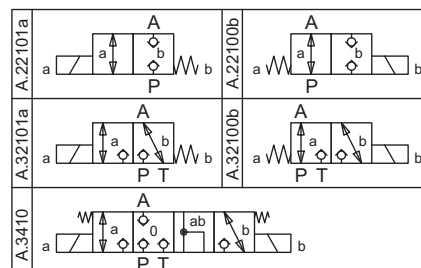
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG10 acc. to ISO 4401-05
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 4 holes for socket cap screws M6x65
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 9,5$ Nm (quality 8.8)
Weight 2/2-, 3/2-way	$m = 4,6$ kg
3/4-way	$m = 6,4$ kg
Volume flow direction	any (see characteristics)

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage $U_N = 12$ VDC, 24 VDC	$U_N = 110$ VAC*, 115 VAC*, 230 VAC*
	AC = 50 to 60 Hz
	* Rectifier integrated in the plug
	Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% FD (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	- Medium SIN60V (dataasheet 1.1-145) - Super SIS60V (data sheet 1.1-150)

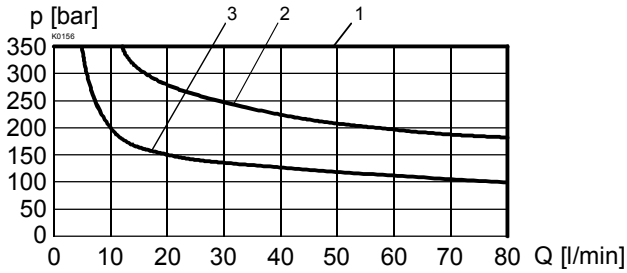
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160$ bar Super: $p_{max} = 350$ bar
Max. volume flow	$Q_{max} = 80$ l/min see characteristics

SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit at -10%

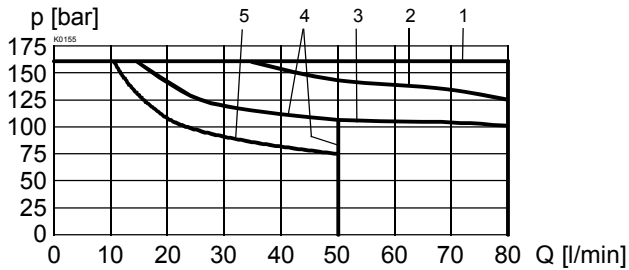
Super



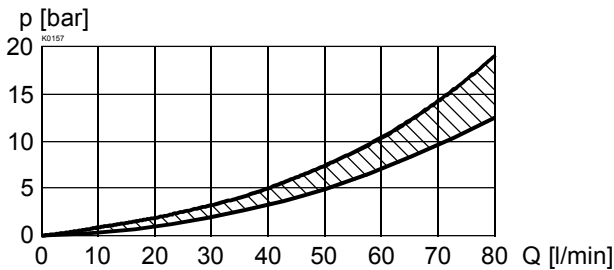
Type	Flow direction			
	P - A	A - T	A - P	T - A
AS22101a	1	-	2	-
AS22100b	1	-	2	-
AS32101a	1	2	3	1
AS32100b	1	2	3	1
AS3410	1	1	2	2

 $p = f(Q)$ Performance limit at -10%

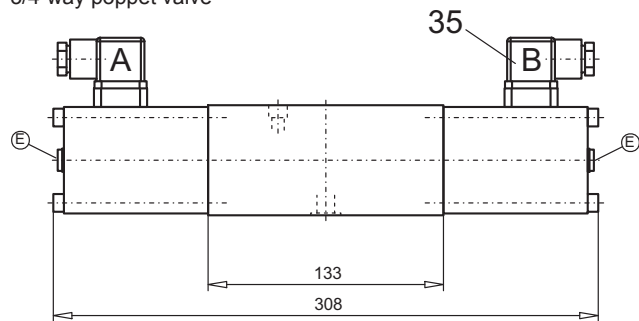
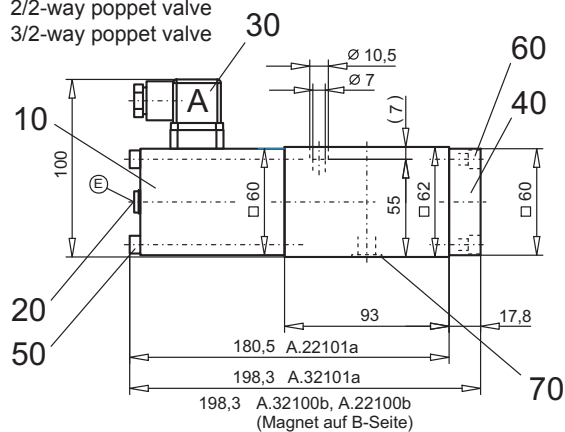
Medium



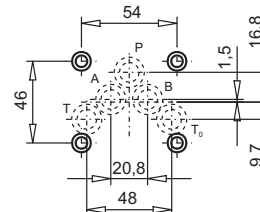
Type	Flow direction			
	P - A	A - T	A - P	T - A
AM22101a	1	-	4	-
AM22100b	1	-	2	-
AM32101a	1	3	5	1
AM32100b	1	3	3	1
AM3410	1	1	4	4

 $\Delta p = f(Q)$ Pressure loss/flow characteristics

DIMENSIONS

3/4-way poppet valve


 2/2-way poppet valve
 3/2-way poppet valve


E = air bleed screw


PARTS LIST

Position	Article	Description
10	260.8... 260.9...	Medium-solenoid SIN60V Super-solenoid SIS60V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	059.2200	Cover
50	246.3190	Socket head cap screw M6x90 DIN 912
60	246.3121	Socket head cap screw M6x20 DIN 912
70	160.2140	O-ring ID 14,00x1,78

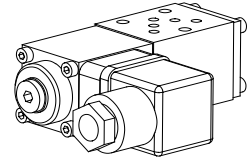
ACCESSORIES

 Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-way sandwich construction
- $Q_{max} = 6 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG3-Mini[®]

DESCRIPTION

Poppet valve, sandwich design NG3-Mini according to Wandfluh standard, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG3 series is the poppet valve cartridge NG3. See data sheet 1.11-2010. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. NG3-mini valves are used where a light, compact unit is needed.

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DIMENSIONS.....	3
PARTS LIST.....	3
ACCESSORIES.....	3

TYPE CODE

Z	<input type="checkbox"/>	2	2	03	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>	
Poppet valve construction sandwich											
Medium	<input type="checkbox"/> M										
Super	<input type="checkbox"/> S										
2-way (connections)											
2 positions											
Nominal size 3											
Normally closed,	<input type="checkbox"/> 1										
Normally open,	<input type="checkbox"/> 0										
Poppet valve in:	P	<input type="checkbox"/> P	T	<input type="checkbox"/> T							
	A and B	<input type="checkbox"/> AB	A	<input type="checkbox"/> A	B	<input type="checkbox"/> B					
Standard nominal voltage U_N :	12 VDC	<input type="checkbox"/> G12	110 VAC	<input type="checkbox"/> R110							
	24 VDC	<input type="checkbox"/> G24	115 VAC	<input type="checkbox"/> R115							
			230 VAC	<input type="checkbox"/> R230							
Design-Index (Subject to change)											

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG3-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich constr., 3 mounting holes for socket head screws or locking screws M4
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 2,8 \text{ Nm}$ (quality 8.8)
Masse poppet valve in:	
A, B, P or T	$m = 0,46 \text{ kg}$
A and B normally closed.	$m = 0,56 \text{ kg}$
A and B normally open	$m = 0,62 \text{ kg}$
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s... 320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 125 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$ to ZS22030AB $p_{max} = 315 \text{ bar}$
Max. volume flow	$Q_{max} = 6 \text{ l/min}$ see characteristics

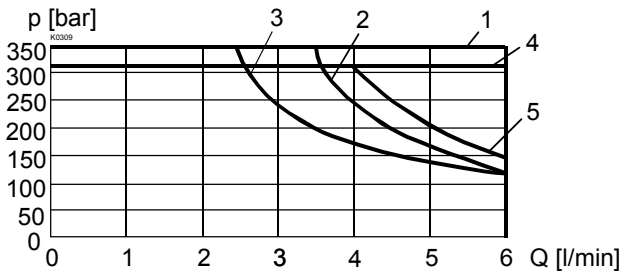
ELECTRICAL CONTROL

Construction Solenoid, wet pin push type, pressure tight
 Standard-nominal voltage $U_N = 12 \text{ VDC}, 24 \text{ VDC}$
 $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$
 $AC = 50 \text{ to } 60 \text{ Hz}$
 * Rectifier integrated in the plug
 Other nominal voltages and nominal performances on request
 Voltage tolerance $\pm 10\%$ of nominal voltage
 Protection class IP 65 to EN 60 529
 Relative duty factor 100% DF (see data sheet 1.1-430)

Switching cycles 15000/h
 Operating life 10^7 (number of switching cycles, theoretically)
 Connection/Power supply Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request
 Solenoid:
 – Medium SIN29V (1.1-80)
 – Super SIS29V (1.1-85)

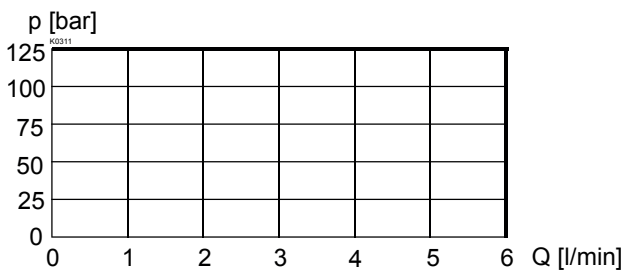
CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

$p = f(Q)$ Performance limit by standard voltage at -10 % Super

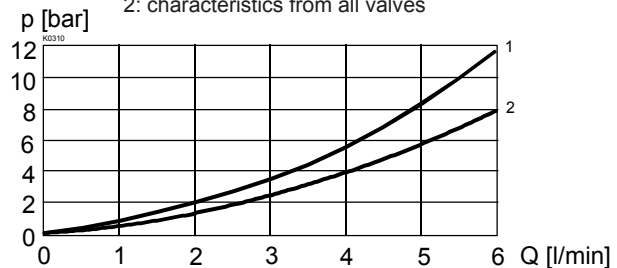


Type	Flow direction	
	1 → 2	2 → 1
ZS22031P	1	2
ZS22031T	1	2
ZS22031A	1	2
ZS22031B	1	2
ZS22031AB	1	2
ZS22030P	1	3
ZS22030T	1	3
ZS22030A	1	3
ZS22030B	1	3
ZS22030AB	4	5

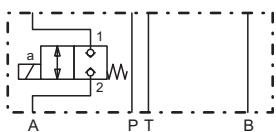
$p = f(Q)$ Performance limit by standard voltage at -10 % Medium



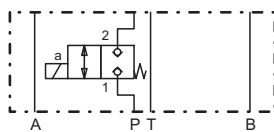
$\Delta p = f(Q)$ Pressure loss/flow characteristics
 1: characteristics from Z.22030AB
 2: characteristics from all valves


TYPE CHARTS

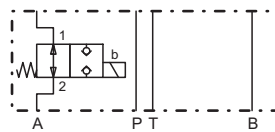
Z.22031A



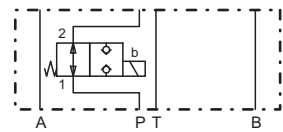
Z.22031P



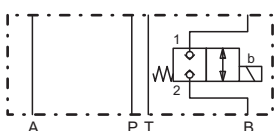
Z.22030A



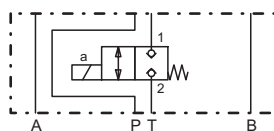
Z.22030P



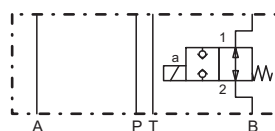
Z.22031B



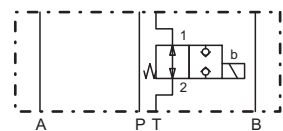
Z.22031T



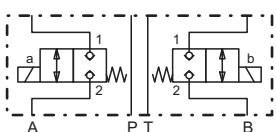
Z.22030B



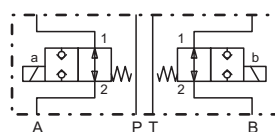
Z.22030T



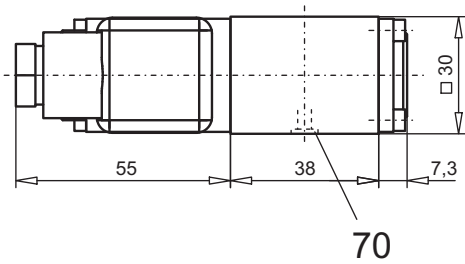
Z.22031AB



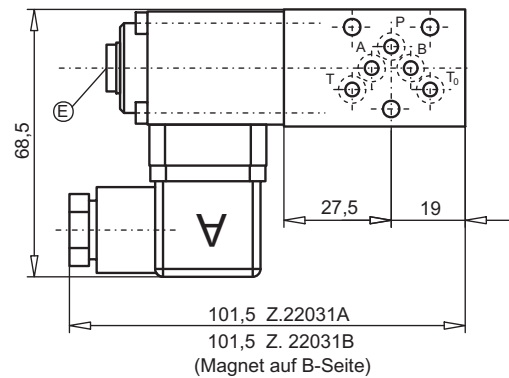
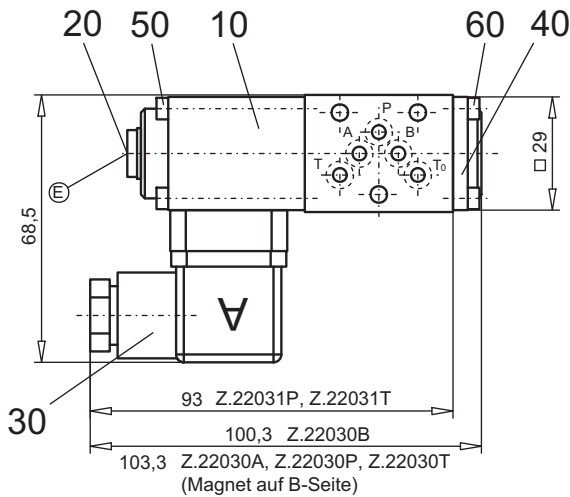
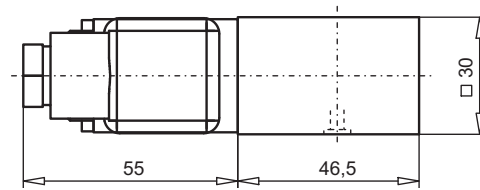
Z.22030AB



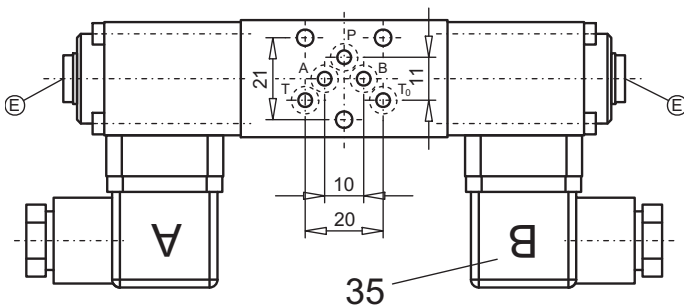
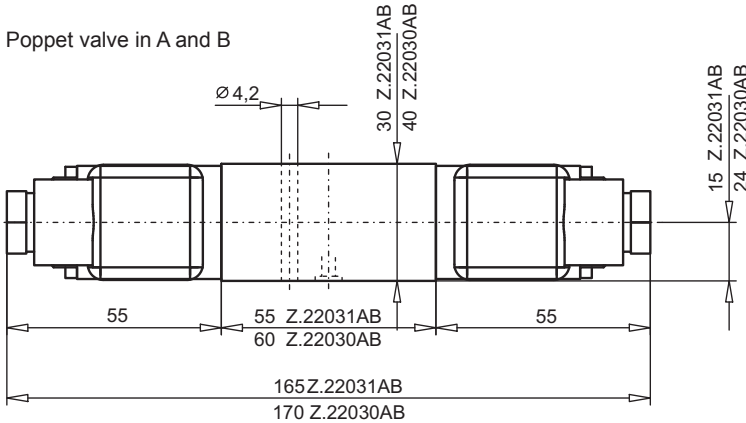
DIMENSIONS

 Poppet valve in A, B, P or T normally open
 Poppet valve in P or T normally closed


Poppet valve in A or B normally closed



Poppet valve in A and B



E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.2... 260.3...	Medium-solenoid SIN29V Super-solenoid SIS29V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug A (grey)
40	056.4203	Cover
50	246.0141	Socket head cap screw M3x40 DIN 912
60	246.0109	Socket head cap screw M3x8 DIN 912
70	160.2045	O-ring ID 4,50x1,50

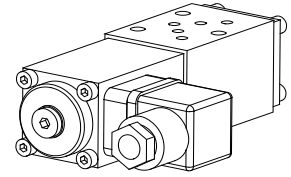
ACCESSORIES

 Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-way sandwich construction
- $Q_{max} = 15 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG4-Mini[®]

DESCRIPTION

Poppet valve, sandwich design NG4-Mini according to Wandfluh standard, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG4 series is the poppet valve cartridge NG4. See data sheet 1.11-2020. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. NG4-Mini valves are used where a light, compact unit is needed.

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TYPE CODE

Z	<input type="checkbox"/>	2	2	04	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>	
Poppet valve construction sandwich											
Medium	<input type="checkbox"/>	M									
Super	<input type="checkbox"/>	S									
2-way (connections)											
2 positions											
Nominal size 4											
Normally closed,	<input type="checkbox"/>	1									
Normally open,	<input type="checkbox"/>	0									
Poppet valve in:	P	<input type="checkbox"/>	T	<input type="checkbox"/>							
A and B	AB	<input type="checkbox"/>	A	AB	B	<input type="checkbox"/>					
Standard nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12	110 VAC	<input type="checkbox"/>	R110					
	24 VDC	<input type="checkbox"/>	G24	115 VAC	<input type="checkbox"/>	R115					
				230 VAC	<input type="checkbox"/>	R230					
Design-Index (Subject to change)											

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG4-Mini to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich Constr., 3 mounting holes for socket head screws or locking screws M5
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quality 8.8)
Masse poppet valve in:	
A, B, P or T	$m = 0,95 \text{ kg}$
A and B normally closed	$m = 1,45 \text{ kg}$
A and B normally open	$m = 1,85 \text{ kg}$
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160 \text{ bar}$ Super: $p_{max} = 350 \text{ bar}$ to ZS220404AB $p_{max} = 250 \text{ bar}$
Max. volume flow	$Q_{max} = 15 \text{ l/min}$ see characteristics

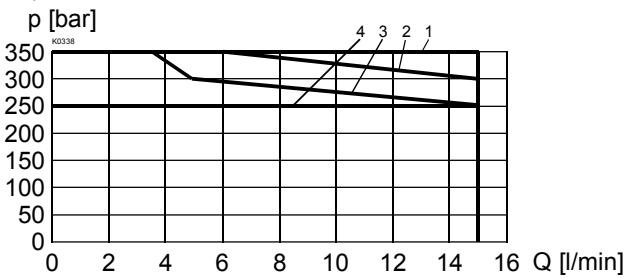
ELECTRICAL CONTROL

Construction Solenoid, wet pin push type, pressure tight
 Standard-nominal voltage $U_N = 12 \text{ VDC}, 24 \text{ VDC}$
 $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$
 $AC = 50 \text{ to } 60 \text{ Hz}$
 * Rectifier integrated in the plug
 Other nominal voltages and nominal performances on request
 Voltage tolerance $\pm 10\%$ of nominal voltage
 Protection class IP 65 to EN 60529
 Relative duty factor 100% DF (see data sheet 1.1-430)

Switching cycles 15000/h
 Operating life 10^7 (number of switching cycles, theoretically)
 Connection/Power supply Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
 Solenoid:
 – Medium SIN35V (1.1-105)
 – Super SIS35V (1.1-110)

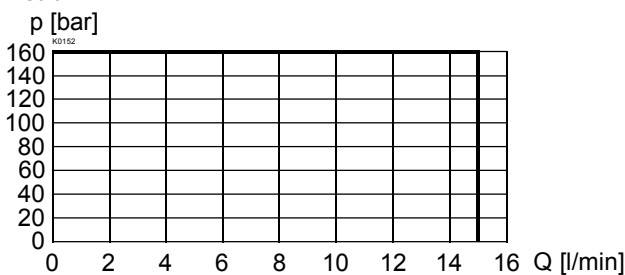
CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

$p = f(Q)$ Performance limit by standard voltage at -10 %
 Super

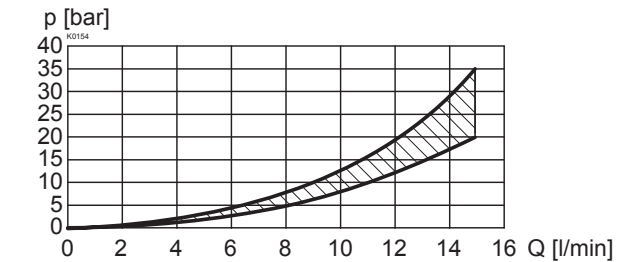


Type	Flow direction	
	1 → 2	2 → 1
ZS22041P	1	2
ZS22041T	1	2
ZS22041A	1	2
ZS22041B	1	2
ZS22041AB	1	2
ZS22040P	1	3
ZS22040T	1	3
ZS22040A	1	3
ZS22040B	1	3
ZS22040AB	4	4

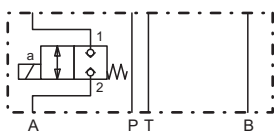
$p = f(Q)$ Performance limit by standard voltage at -10 %
 Medium



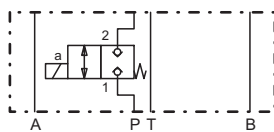
$\Delta p = f(Q)$ Pressure loss/flow characteristics


TYPE CHARTS

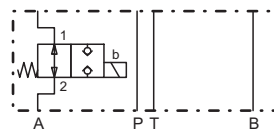
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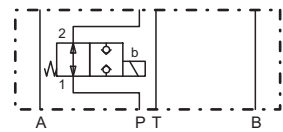
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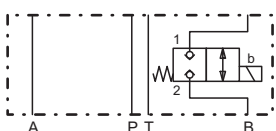
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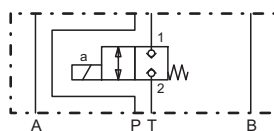
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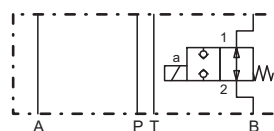
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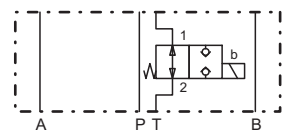
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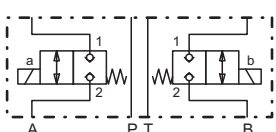
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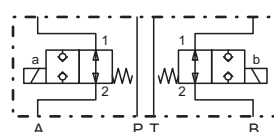
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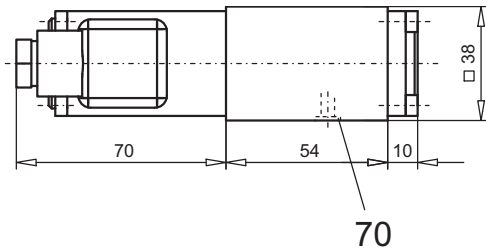
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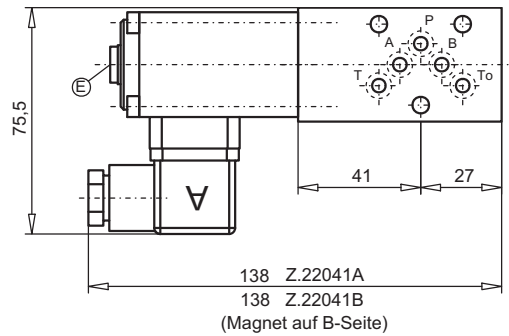
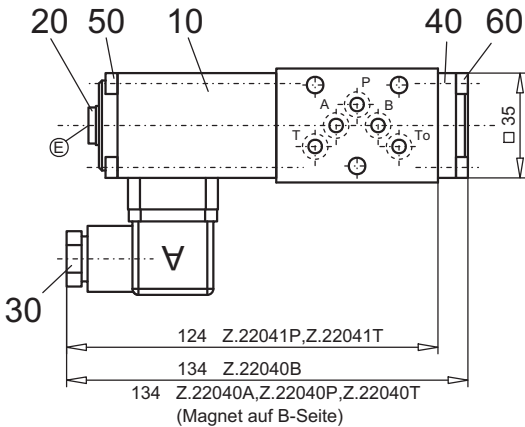
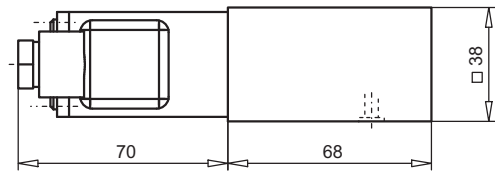
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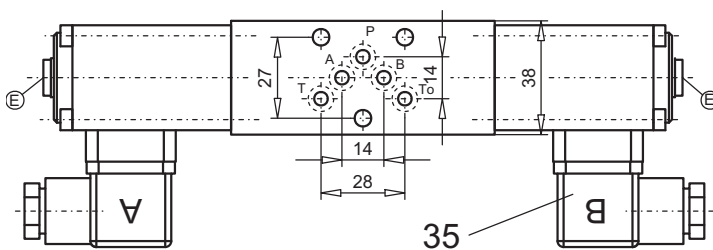
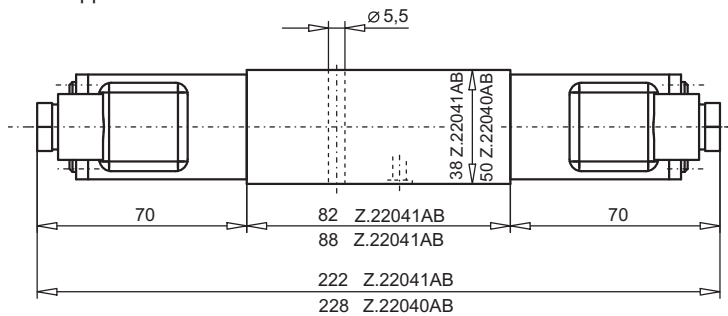
DIMENSIONS

 Poppet valve in A, B, P or T normally open
 Poppet valve in P or T normally closed


Poppet valve in A or B normally closed



Poppet valve in A and B



E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.4... 260.5...	Medium-solenoid SIN35V Super-solenoid SIS35V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	057.4201	Cover
50	246.1161	Socket head cap screw M4x60 DIN 912
60	246.1113	Socket head cap screw M4x12 DIN 912
70	160.2052	O-ring ID 5,28x1,78

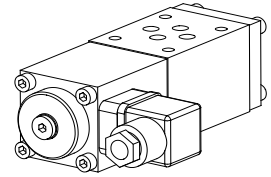
ACCESSORIES

 Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-way sandwich construction
- $Q_{max} = 40$ l/min
- $p_{max} = 350$ bar

NG6
 ISO 4401-03

DESCRIPTION

Poppet valve, sandwich design NG6, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform.

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TYPE CODE

	Z	<input type="checkbox"/>	2	2	06	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
Poppet valve construction sandwich											
Medium		<input type="checkbox"/>									
Super		<input type="checkbox"/>									
2-way (connections)											
2 positions											
Nominal size 6											
Normally closed,		<input type="checkbox"/>									
Normally open,		<input type="checkbox"/>									
Poppet valve in:	P	<input type="checkbox"/>	T	<input type="checkbox"/>							
	A and B	<input type="checkbox"/>	A	<input type="checkbox"/>	B	<input type="checkbox"/>					
Standard nominal voltage U_N :	12 VDC	<input type="checkbox"/>	110 VAC	<input type="checkbox"/>							
	24 VDC	<input type="checkbox"/>	115 VAC	<input type="checkbox"/>							
			230 VAC	<input type="checkbox"/>							

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich constr., 4 mounting holes for socket head screws or locking screws M5
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 5,5$ Nm (Quality 8.8)
Masse poppet valve in:	
A, B, P or T	$m = 1,8$ kg
A and B normally closed.	$m = 2,8$ kg
A and B normally open	$m = 3,3$ kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160$ bar Super: $p_{max} = 350$ bar to ZS22060AB $p_{max} = 315$ bar
Max. volume flow	$Q_{max} = 40$ l/min see characteristics

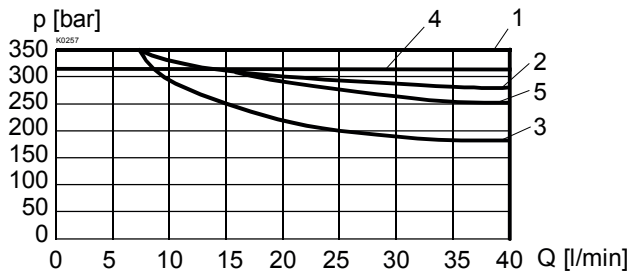
ELECTRICAL CONTROL

Construction Solenoid, wet pin push type, pressure tight
 Standard-nominal voltage $U_N = 12 \text{ VDC}, 24 \text{ VDC}$
 $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$
 $AC = 50 \text{ to } 60 \text{ Hz}$
 * Rectifier integrated in the plug
 Other nominal voltages and nominal performances on request
 Voltage tolerance $\pm 10\%$ of nominal voltage
 Protection class IP 65 to EN 60529
 Relative duty factor 100% DF (see data sheet 1.1-430)

Switching cycles 15000/h
 Operating life 10^7 (number of switching cycles, theoretically)
 Connection/Power supply Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
 Solenoid:
 – Medium SIN45V (1.1-120)
 – Super SIS45V (1.1-125)

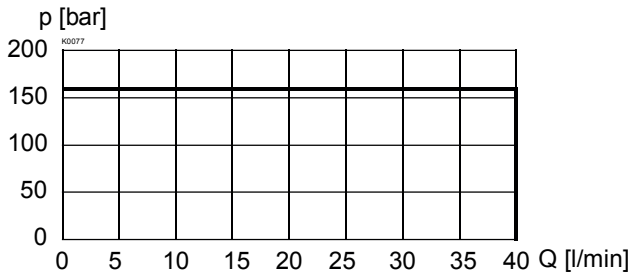
CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

$p = f(Q)$ Performance limit by standard voltage at -10 % Super

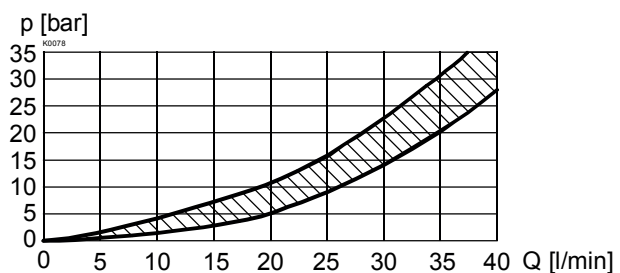


Type	Flow direction	
	1 → 2	2 → 1
ZS22061P	1	2
ZS22061T	1	2
ZS22061A	1	2
ZS22061B	1	2
ZS22061AB	1	2
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ZS22060T	1	3
ZS22060A	1	3
ZS22060B	1	3
ZS22060AB	4	5

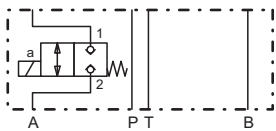
$p = f(Q)$ Performance limit by standard voltage at -10 % Medium



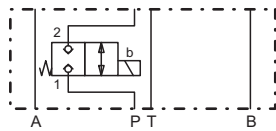
$\Delta p = f(Q)$ Pressure loss/flow characteristics


TYPE CHARTS

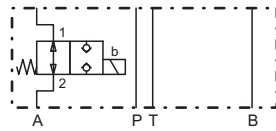
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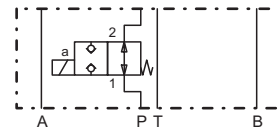
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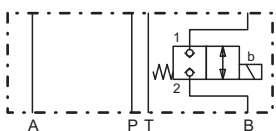
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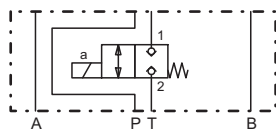
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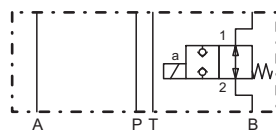
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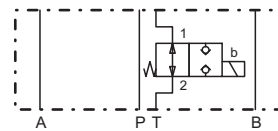
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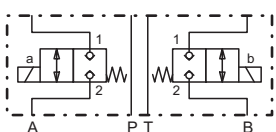
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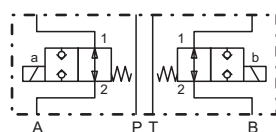
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Z.22061AB

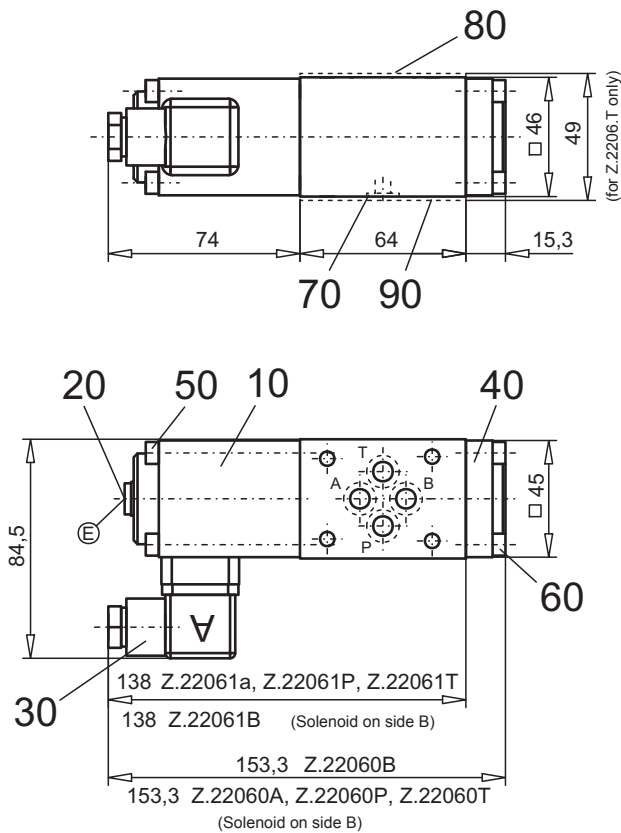


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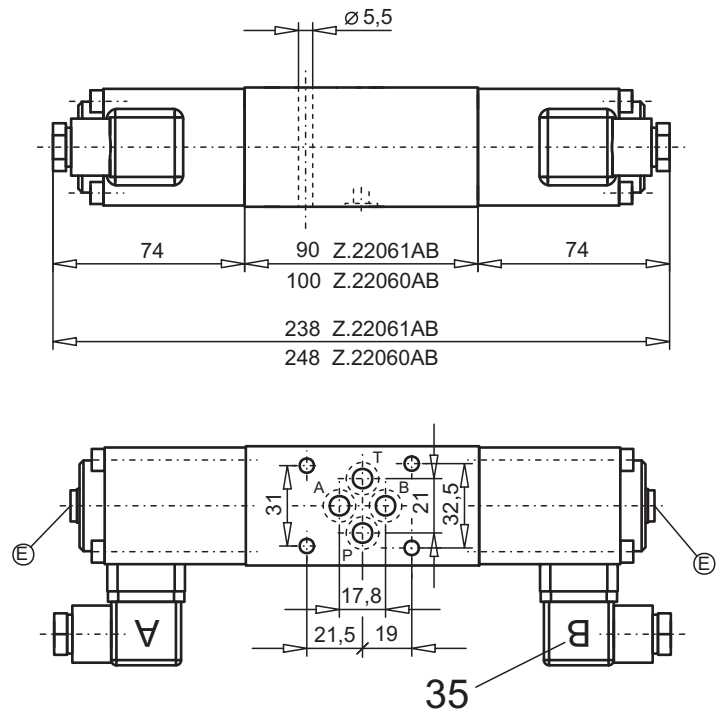


DIMENSIONS

Poppet valve in A, B, P or T



Poppet valve in A and B



E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.6... 260.7...	Medium-solenoid SIN45V Super-solenoid SIS45V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	058.4210	Cover
50	246.2160	Socket head cap screw M5x60 DIN 912
60	246.2116	Socket head cap screw M5x16 DIN 912
70	160.2093	O-ring ID 9,25x1,78
80	173.7700	Intermediate plate AZB6 only for Z.2206.T
90	173.3650	Sealing plate ADB6 only for Z.2206.T

ACCESSORIES

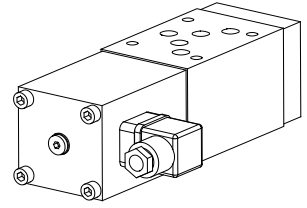
 Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-way sandwich construction
- $Q_{max} = 80$ l/min
- $p_{max} = 350$ bar

NG10
ISO 4401-05


DESCRIPTION

Poppet valve, sandwich design NG10 according to ISO 4401-05, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG10 series is the poppet valve cartridge NG10. See data sheet 1.11-2040. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform.

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TYPE CHARTS.....	2
DIMENSIONS.....	3
PARTS LIST.....	3
ACCESSORIES.....	3

TYPE CODE

	Z		2	2	10			-		#	
Poppet valve construction sandwich											
Medium		M									
Super		S									
2-way (connections)											
2 positions											
Nominal size 10											
Normally closed,		1									
Normally open,		0									
Poppet valve in:	P	P	T	T							
	A and B	AB	A	A	B	B					
Standard nominal voltage U_N :	12 VDC	G12	110 VAC	R110							
	24 VDC	G24	115 VAC	R115							
			230 VAC	R230							
Design-Index (Subject to change)											

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG10 acc. to ISO 4401-05
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich constr., 4 mounting holes for socket head screws or locking screws M6
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 9,5$ Nm (Quality 8.8)
Masse poppet valve in:	
A, B, P or T	m = 4,6 kg
A and B normally closed.	m = 6,4 kg
A and B normally open	m = 10,8 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	Medium: $p_{max} = 160$ bar Super: $p_{max} = 350$ bar
Max. volume flow	$Q_{max.} = 80$ l/min see characteristics

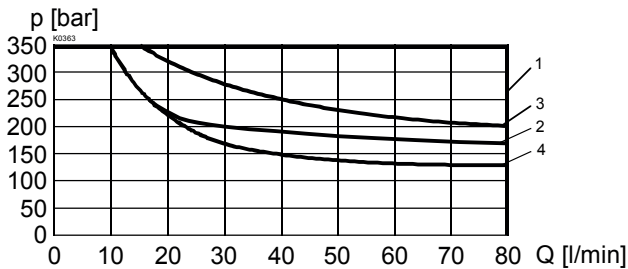
ELECTRICAL CONTROL

Construction Solenoid, wet pin push type, pressure tight
 Standard-nominal voltage $U_N = 12 \text{ VDC}, 24 \text{ VDC}$
 $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$
 $AC = 50 \text{ to } 60 \text{ Hz}$
 * Rectifier integrated in the plug
 Other nominal voltages and nominal performances on request
 Voltage tolerance $\pm 10\%$ of nominal voltage
 Protection class IP 65 to EN 60529
 Relative duty factor 100% DF (see data sheet 1.1-430)

Switching cycles 15000/h
 Operating life 10^7 (number of switching cycles, theoretically)
 Connection/Power supply Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
 Solenoid:
 – Medium SIN60V (1.1-145)
 – Super SIS60V (1.1-150)

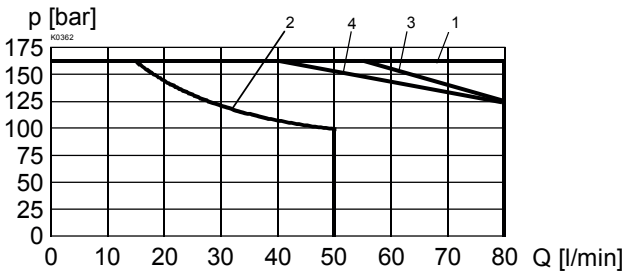
CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

$p = f(Q)$ Performance limit by standard voltage at -10 % Super

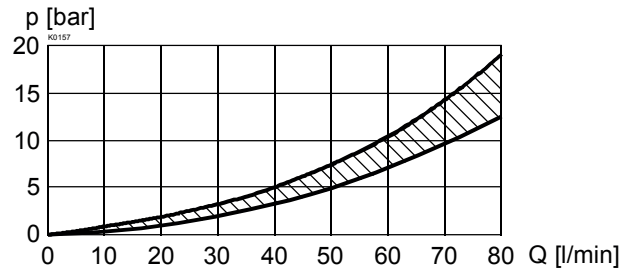


Type	Flow direction	
	1 → 2	2 → 1
Z.22101P	1	2
Z.22101T	1	2
Z.22101A	1	2
Z.22101B	1	2
Z.22101AB	1	2
Z.22100P	1	3
Z.22100T	1	3
Z.22100A	1	3
Z.22100B	1	3
Z.22100AB	1	4

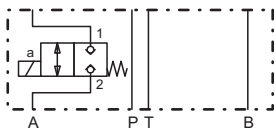
$p = f(Q)$ Performance limit by standard voltage at -10 % Medium



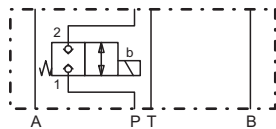
$\Delta p = f(Q)$ Pressure loss/flow characteristics


TYPE CHARTS

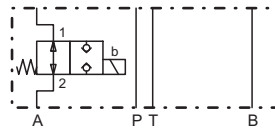
Z.22101A



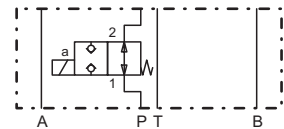
Z.22101P



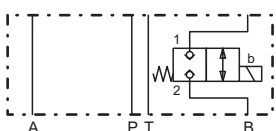
Z.22100A



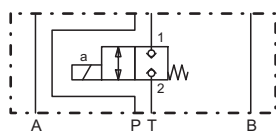
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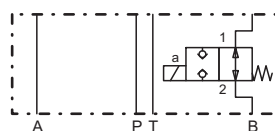
Z.22101B



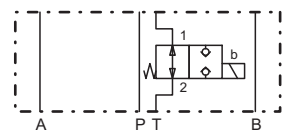
Z.22101T



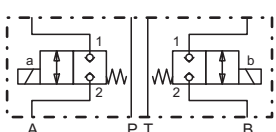
Z.22100B



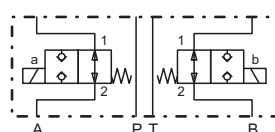
Z.22100T



Z.22101AB



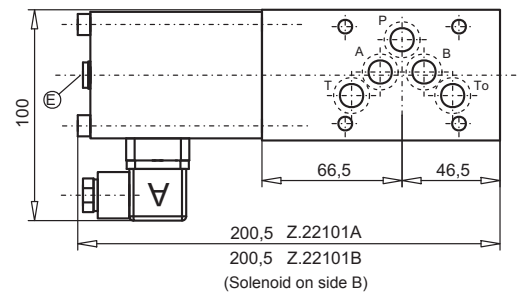
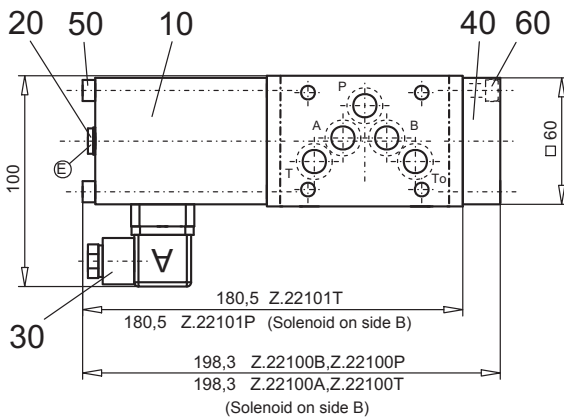
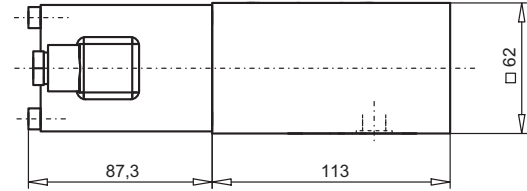
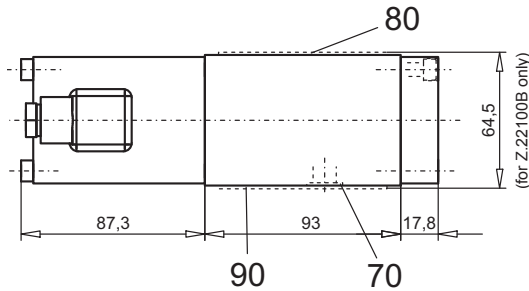
Z.22100AB



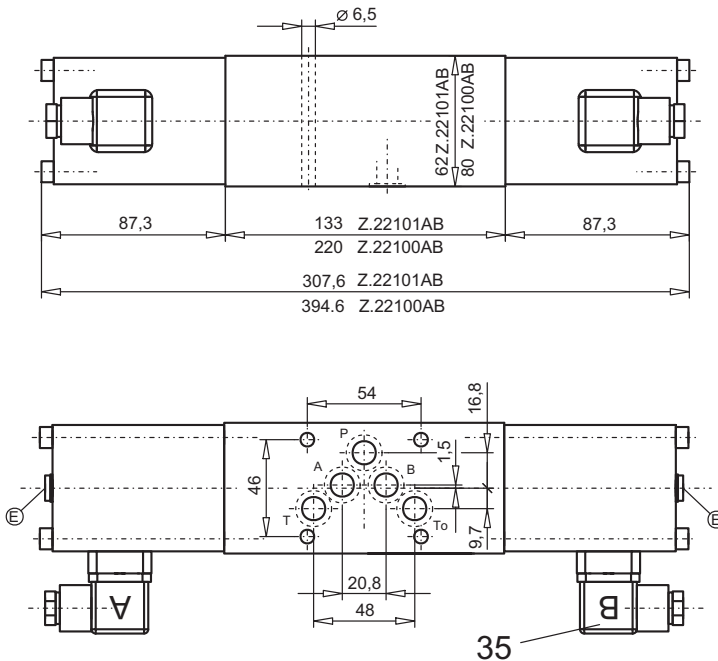
DIMENSIONS

 Poppet valve in A, B, P or T normally open
 Poppet valve in P or T normally closed

Poppet valve in A or B normally closed



Poppet valve in A and B



E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.8... 260.9...	Medium-solenoid SIN60V Super-solenoid SIS60V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	059.2200	Cover
50	246.3190	Socket head cap screw M6x90 DIN 912
60	246.3121	Socket head cap screw M6x20 DIN 912
70	160.2140	O-ring ID 14,00x1,78
80	173.4700	Intermediate plate AZB10 only to Z.22100B
90	173.4650	Sealing plate ADB10 only to Z.22100B

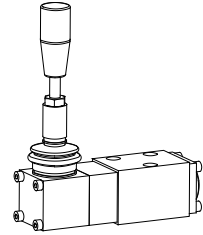
ACCESSORIES

 Threaded connection plates, Multi-flange subplates and
 Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve manually operated

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 15 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG4-Mini[®]

DESCRIPTION

Poppet valve, flanged design NG4-Mini according to Wandfluh standard, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG4-Mini series is the poppet valve cartridge NG4. See data sheet 1.11-2020.

FUNCTION

The valve is manual lever which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG4-mini valves are used where a light, compact unit is needed.

CONTENT

GENERAL SPECIFICATIONS.....	1
HYDRAULIC SPECIFICATIONS.....	1
CONTROL MECHANICAL.....	1
SYMBOLS.....	1
CHARACTERISTICS.....	2
DIMENSIONS.....	2
PARTS LIST.....	2
ACCESSORIES.....	2

TYPE CODE

2/2- or 3/2-way construction	B	H	<input type="checkbox"/>	2	04	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	B	H	3	4	04		#	<input type="checkbox"/>
Mounting interface								
Manual lever								
2-way (connections)			<input type="checkbox"/>					
3-way (connections)			<input type="checkbox"/>					
2 position								
4 position								
Nominal size 4-Mini								
Normally closed,	Manual lever on A-side		<input type="checkbox"/>					
Normally open,	Manual lever on B-side		<input type="checkbox"/>					
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

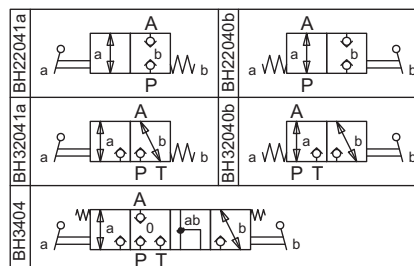
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG4-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	manually operated
Mounting	Flange, 3 mounting holes for socket head screws M5x40
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quality 8,8)
Weight: 2/2-, 3/2-way	$m = 0,95 \text{ kg}$
3/4-way	$m = 1,45 \text{ kg}$
Volume flow direction	any (see characteristics)

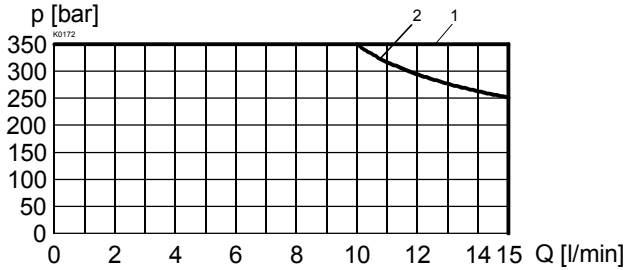
CONTROL MECHANICAL

Force	$F_{b,max.} = 20-120 \text{ N}$ (depending on flow direction and pressure)
Angle	$\alpha_b = 5^\circ$

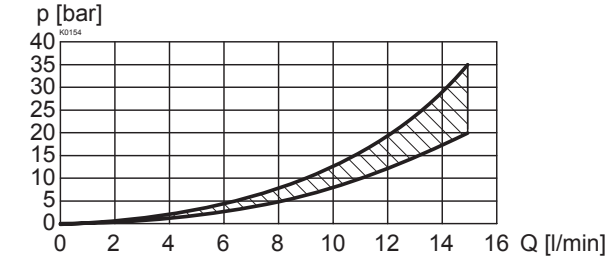
HYDRUALIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Working pressure	$p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max.} = 15 \text{ l/min}$ see characteristics

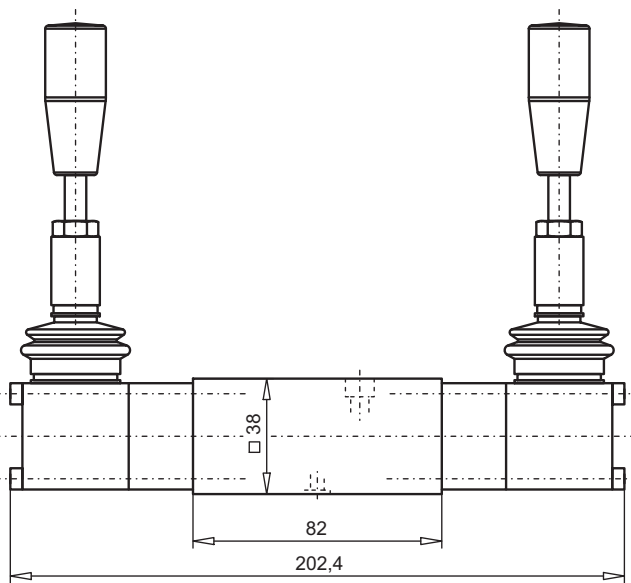
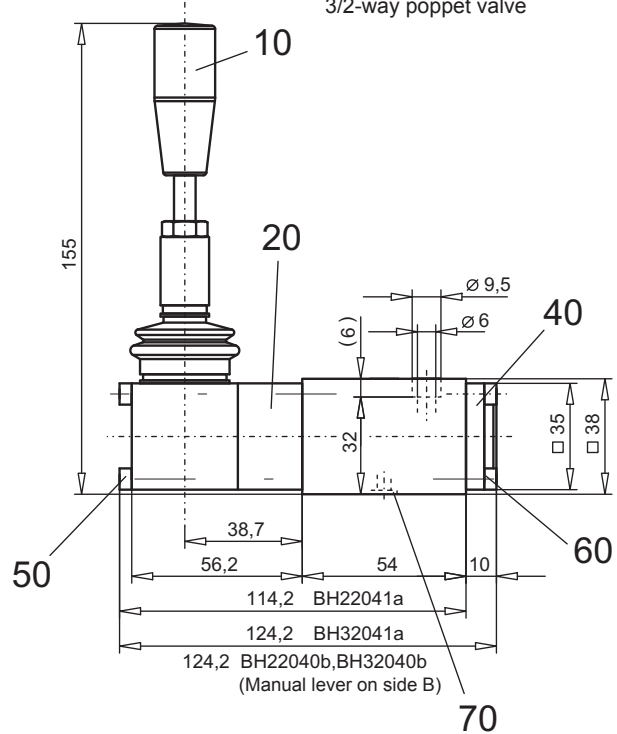
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit


Type	Flow direction			
	P - A	A - T	A - P	T - A
BH22041a	1	-	1	-
BH22040b	1	-	2	-
BH32041a	1	2	1	1
BH32040b	1	1	2	1
BH3404	1	1	1	1

 $\Delta p = f(Q)$ Pressure loss/flow characteristics

DIMENSIONS

3/4-way poppet valve


 2/2-way poppet valve
 3/2-way poppet valve

PARTS LIST

Position	Article	Description
10	253.2000	Manual pilot head BH11
20	074.2703	Flange
40	057.4201	Cover
50	249.1000	Socket head cap screw M4x63 DIN 912
60	246.1113	Socket head cap screw M4x12 DIN 912
70	160.2052	O-ring ID 5,28x1,78

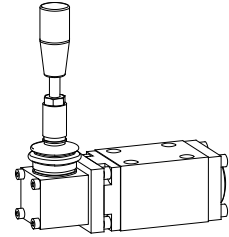
ACCESSORIES

Threaded connection plates, Multi-flange subplates and Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve manually operated

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG6
 ISO 4401-03

DESCRIPTION

Poppet valve, flanged design NG6 according to ISO 4401-03, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030.

FUNCTION

The valve is manual lever which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

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SYMBOLS.....	1
CHARACTERISTICS.....	2
DIMENSIONS.....	2
PARTS LIST.....	2
ACCESSORIES.....	2

TYPE CODE

2/2- or 3/2-way construction	A	H	<input type="checkbox"/>	2	06	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	A	H	<input type="checkbox"/>	3	4	06	#	<input type="checkbox"/>
Mounting interface								
Manual lever								
2-way (connections)			<input type="checkbox"/>	<input checked="" type="checkbox"/>				
3-way (connections)			<input type="checkbox"/>	<input checked="" type="checkbox"/>				
2 position								
4 position								
Nominal size 6								
Normally closed,	Manual level on A-side		<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Normally open,	Manual level on B-side		<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

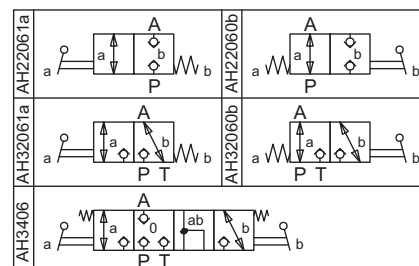
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	manually operated
Mounting	Flange, 4 mounting holes for socket head screws M5x45
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quality 8,8)
Weight: 2/2-, 3/2-way	$m = 1,7 \text{ kg}$
3/4-way	$m = 2,5 \text{ kg}$
Volume flow direction	any (see characteristics)

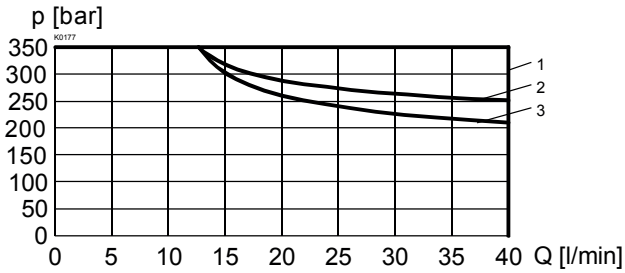
CONTROL MECHANICAL

Force	$F_{b,max} = 20-120 \text{ N}$ (depending on flow direction and pressure)
Angle	$\alpha_b = 6^\circ$

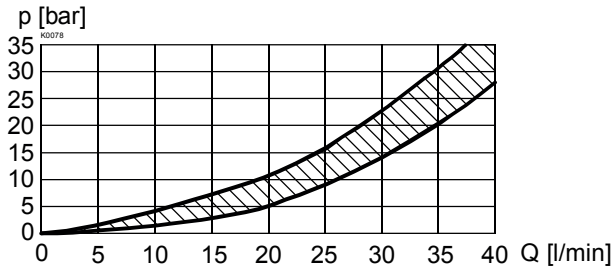
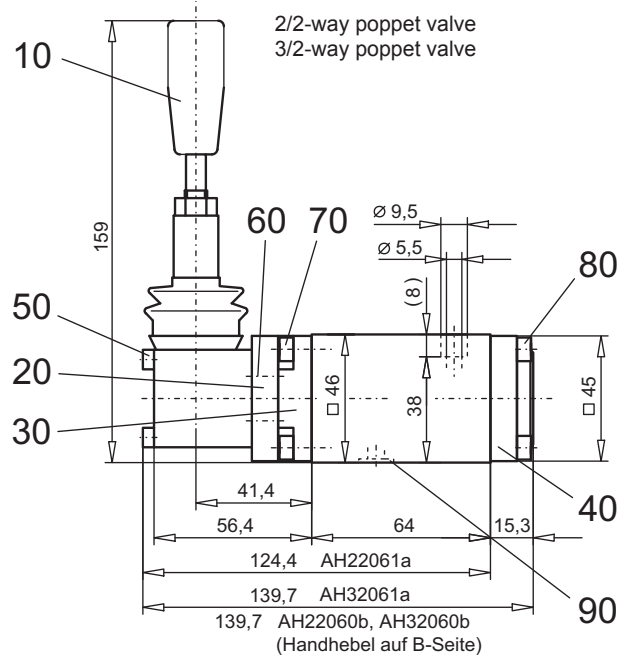
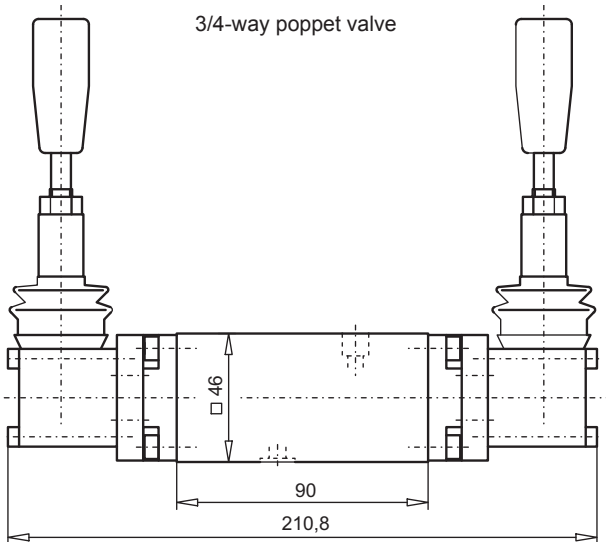
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	$12 \text{ mm}^2/\text{s} \dots 320 \text{ mm}^2/\text{s}$
Fluid temperature	-20...+70 °C
Working pressure	$p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 40 \text{ l/min}$ see characteristics

SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit


Type	Flow direction			
	P - A	A - T	A - P	T - A
AH22061a	1	-	1	-
AH22060b	1	-	3	-
AH32061a	1	2	1	1
AH32060b	1	1	2	1
AH3406	1	1	1	1

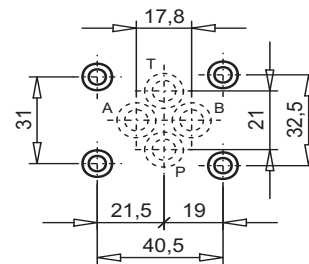
 $\Delta p = f(Q)$ Pressure loss/flow characteristics

DIMENSIONS

PARTS LIST

Position	Article	Description
10	253.2000	Manual pilot head BH11
20	074.1802	Flange
30	074.2702	Flange
40	058.4215	Cover
50	246.1140	Socket head cap screw M4x40 DIN 912
60	246.1010	Socket head cap screw M4x10 DIN 912
70	246.2112	Socket head cap screw M5x12 DIN 912
80	246.2117	Socket head cap screw M5x16 DIN 912
90	160.2093	O-ring ID 9,25x1,78

ACCESSORIES

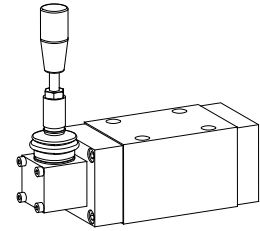
Threaded connection plates, Multi-flange subplates and Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100



Poppet valve manually operated

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 80 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG10
 ISO 4401-05

DESCRIPTION

Poppet valve, flanged design NG10 according to ISO 4401-05, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG10 series is the poppet valve cartridge NG10. See data sheet 1.11-2040.

FUNCTION

The valve is manual lever which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

CONTENT

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CONTROL MECHANICAL.....	1
SYMBOLS.....	1
CHARACTERISTICS.....	2
DIMENSIONS.....	2
PARTS LIST.....	2
ACCESSORIES.....	2

TYPE CODE

2/2- or 3/2-way construction	A	H	<input type="checkbox"/>	2	10	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	A	H	3	4	10		#	<input type="checkbox"/>
Mounting interface								
Manual lever								
2-way (connections)			<input type="checkbox"/>	<input type="checkbox"/>				
3-way (connections)			<input type="checkbox"/>	<input type="checkbox"/>				
2 position								
4 position								
Nominal size 10								
Normally closed,		Manual level on A-side	<input type="checkbox"/>	<input type="checkbox"/>				
Normally open,		Manual level on B-side	<input type="checkbox"/>	<input type="checkbox"/>				
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

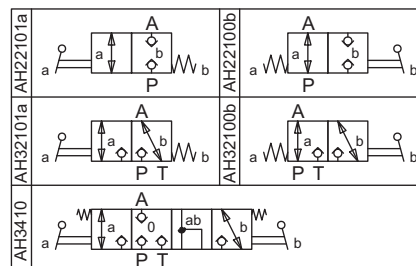
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG10 acc. to ISO 4401-05
Construction	Direct operated poppet valve
Operations	manually operated
Mounting	Flange, 4 mounting holes for socket head screws M6x65
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 9,5 \text{ Nm}$ (quality 8,8)
Weight: 2/2-, 3/2-way	$m = 3,6 \text{ kg}$
3/4-way	$m = 4,4 \text{ kg}$
Volume flow direction	any (see characteristics)

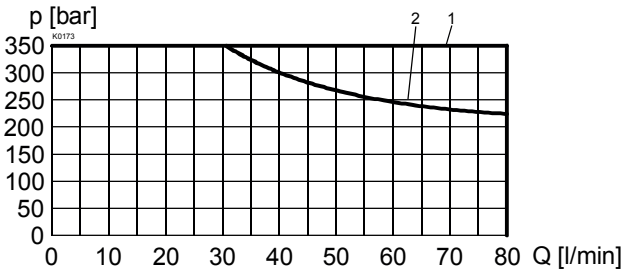
CONTROL MECHANICAL

Force	$F_{b \max} = 20-120 \text{ N}$ (depending on flow direction and pressure)
Angle	$\alpha_b = 11^\circ$

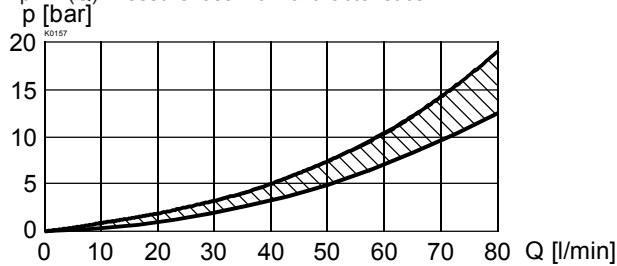
HYDRUALIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20 ... +70 °C
Working pressure	$p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 80 \text{ l/min}$ see characteristics

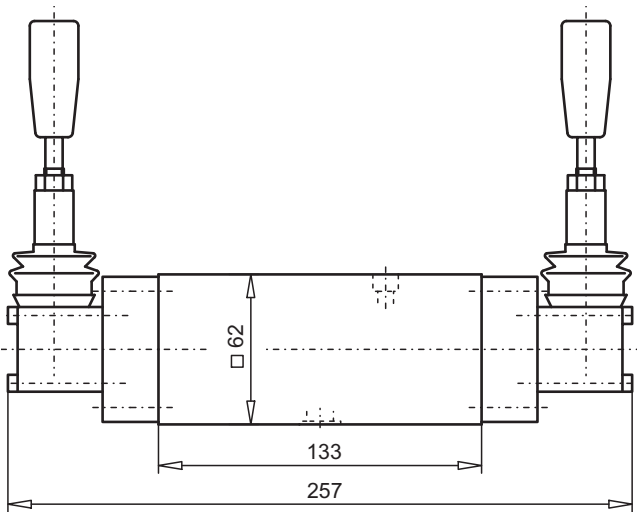
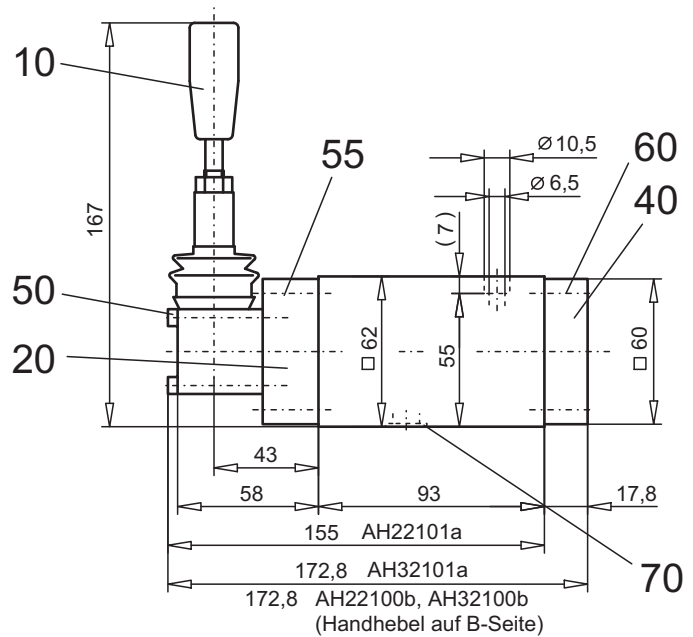
SYMBOLS


CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit


Type	Flow direction			
	P - A	A - T	A - P	T - A
AH22101a	1	-	1	-
AH22100b	1	-	2	-
AH32101a	1	2	1	1
AH32100b	1	1	2	1
AH3410	1	1	1	1

 $\Delta p = f(Q)$ Pressure loss/flow characteristics

DIMENSIONS

3/4-way poppet valve

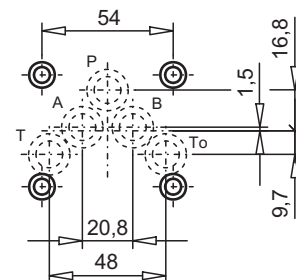

 2/2-way poppet valve
 3/2-way poppet valve

PARTS LIST

Position	Artikel	Beschreibung
10	253.2000	Manual pilot head BHII
20	074.2813	Flange
40	059.2200	Cover
50	246.1140	Socket head cap screw M4 x 40 DIN 912
55	246.3125	Socket head cap screw M6 x 25 DIN 912
60	246.3121	Socket head cap screw M6 x 20 DIN 912
70	160.2140	O-ring ID 14 x 1,78

ACCESSORIES

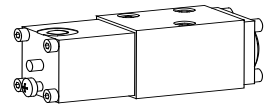
Threaded connection plates, Multi-flange subplates and Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100



Poppet valve pneumatically operated

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 15 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG4-Mini[®]

DESCRIPTION

Poppet valve, flanged design NG4-Mini according to Wandfluh standard, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG4-Mini series is the poppet valve cartridge NG4. See data sheet 1.11-2020.

FUNCTION

The valve is direct operated by a pneumatically operated which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. Mini-4 valves are used where both, reduced dimensions and weight are important.

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TYPE CODE

2/2- or 3/2-way construction	B	K	<input type="checkbox"/>	2	04	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	B	K	3	4	04		#	<input type="checkbox"/>
Mounting interface								
pneumatically operated								
2-way (connections)			<input type="checkbox"/>					
3-way (connections)			<input type="checkbox"/>					
2 position								
4 position								
Nominal size NG4-Mini								
Normally closed,	Pilot head on A-side		<input type="checkbox"/>	1a				
Normally open,	Pilot head on B-side		<input type="checkbox"/>	0b				
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

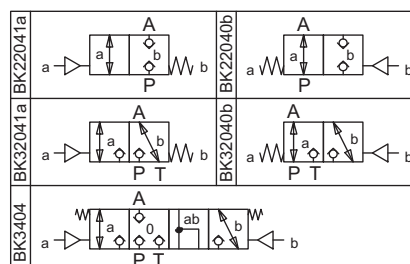
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG4-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	pneumatically operated
Mounting	Flange, 4 mounting holes for socket head screws M5 x 40
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20 ... +50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_b = 5,5 \text{ Nm}$ (Quality 8,8)
Weight: 2/2-, 3/2-way	$m = 0,9 \text{ kg}$
3/4-way	$m = 1,2 \text{ kg}$
Volume flow direction	any (see characteristics)

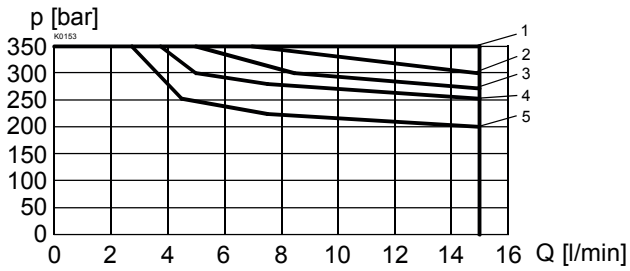
CONTROL PNEUMATIC

Min. pilot pressure	$p_{st \text{ min.}}$ = see characteristics
Max. pilot pressure	$p_{st \text{ max.}}$ = 8 bar
Control volume	V_{st} = 2,5 cm ³

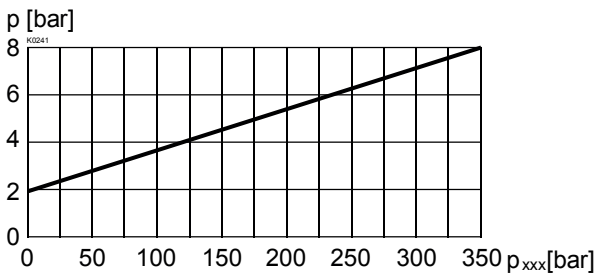
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) see data sheet 1.0-50/2
Viscosity range	12 mm ² /s ... 320 mm ² /s
Fluid temperature	-20 ... +70 °C
Working pressure	$p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max} = 15 \text{ l/min}$ see characteristics

SYMBOLS


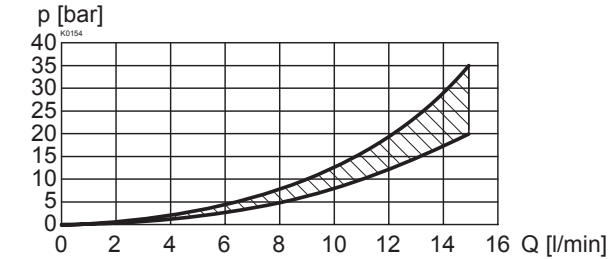
CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit


Type	Flow direction			
	P - A	A - T	A - P	T - A
BK22041a	1	-	2	-
BK22040b	1	-	4	-
BK32041a	1	3	5	1
BK32040b	1	4	5	1
BK3404	1	1	2	2

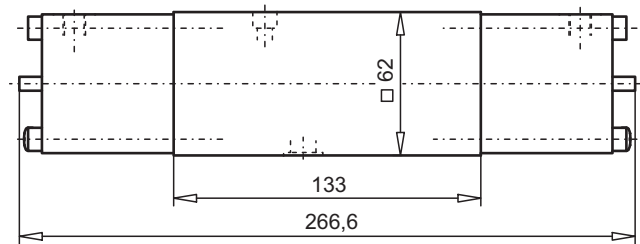
 $p_{st \text{ min}} = f(p_{xxx})$ Min. Pilot pressure characteristics at Q_{max}


Type	Flow direction			
	P - A	A - T	A - P	T - A
BK22041a	A	-	A	-
BK22040b	A	-	A	-
BK32041a	A	A	A	A
BK32040b	A	A	A	A
BK3404	A	T	A	T

 p_{xxx} = pressure in line xxx (see table)

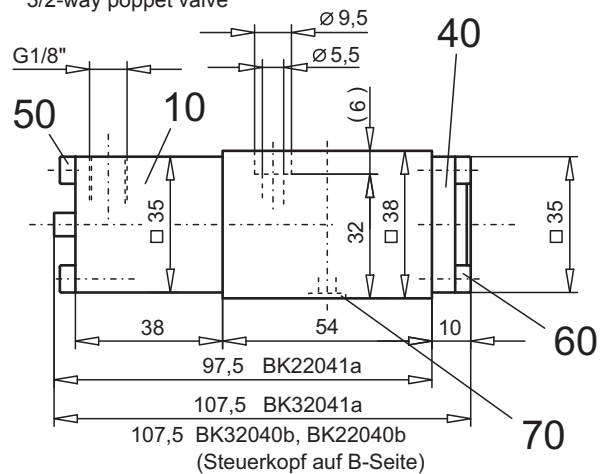
 $\Delta p = f(Q)$ Pressure loss/flow characteristics

DIMENSIONS

3/4-way poppet valve



2/2-way poppet valve

3/2-way poppet valve


PARTS LIST

Position	Article	Description
10	254.2000	Pneumatic pilot head BKII
40	057.4201	Cover
50	246.1146	Socket head cap screw M4 x45 DIN 912
60	246.1113	Socket head cap screw M4 x12 DIN 912
70	160.2052	O-ring ID 5,28 x1,78

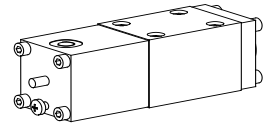
ACCESSORIES

Threaded connections plates, Multi-flange subplates and Longitudinal stacking system see register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve pneumatically operated

- 2/2-, 3/2- and 3/4-way construction
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG6
 ISO 4401-03

DESCRIPTION

Poppet valve, flanged design NG6 according to ISO 4401-03, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030.

FUNCTION

The valve is direct operated by a pneumatically operated which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

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ACCESSORIES.....	2

TYPE CODE

2/2- or 3/2-way construction	A	K	<input type="checkbox"/>	2	06	<input type="checkbox"/>	#	<input type="checkbox"/>
3/4-way construction	A	K	3	4	06		#	<input type="checkbox"/>
International mounting interface ISO								
Pneumatically operated								
2-way (connections)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-way (connections)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 position								
4 position								
Nominal size 6								
Normally closed,		Pilot head on A-side	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Normally open,		Pilot head on B-side	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

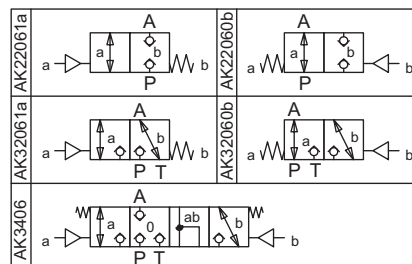
Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	pneumatically operated
Mounting	Flange, 4 mounting holes for socket head screws M5 x 45
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quality 8,8)
Weight: 2/2-, 3/2-way	$m = 1,7 \text{ kg}$
3/4-way	$m = 2,5 \text{ kg}$
Volume flow direction	any (see characteristics)

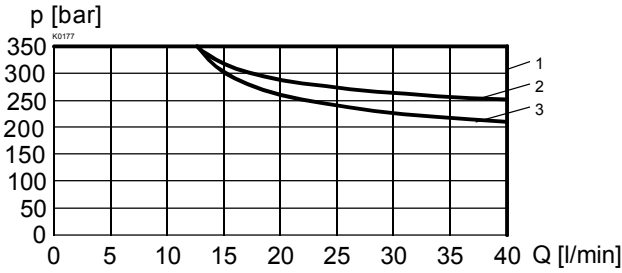
CONTROL PNEUMATIC

Min. pilot pressure	$p_{st \text{ min.}}$ = see characteristics
Max. pilot pressure	$p_{st \text{ max.}}$ = 8 bar
Control volume	V_{st} = 7 cm ³

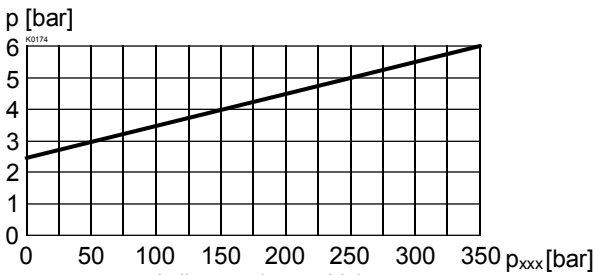
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) see data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20... +70 °C
Working pressure	$p_{max} = 350 \text{ bar}$
Max. volume flow	$Q_{max.} = 40 \text{ l/min}$ see characteristics

SYMBOLS


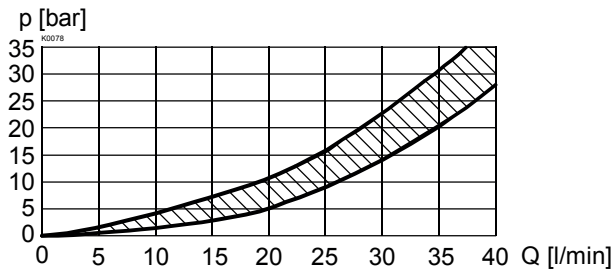
CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limit


Type	Flow direction			
	P - A	A - T	A - P	T - A
AK22061a	1	-	1	-
AK22060b	1	-	3	-
AK32061a	1	2	1	1
AK32060b	1	1	2	1
AK3406	1	1	1	1

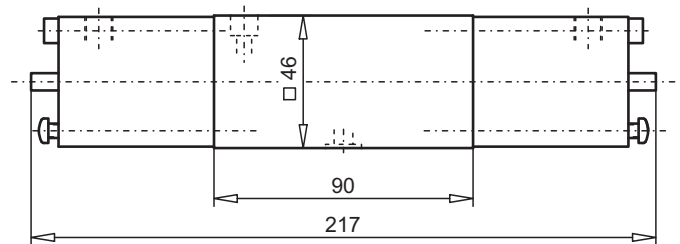
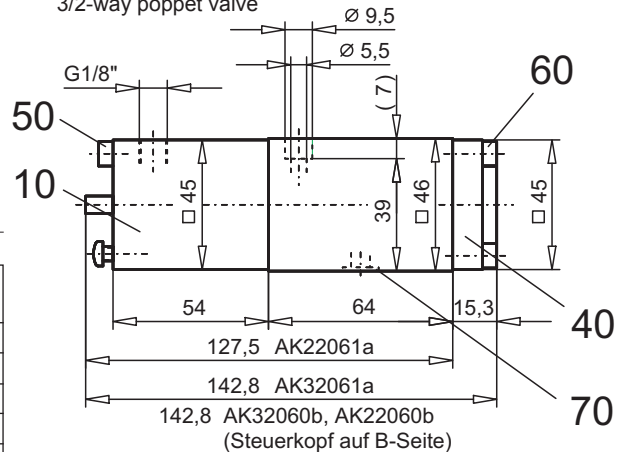
 $p_{st \min} = f(p_{xxx})$ Min. Pilot pressure characteristics at Q_{max}


Type	Flow direction			
	P - A	A - T	A - P	T - A
AK22061a	A	-	A	-
AK22060b	A	-	A	-
AK32061a	A	A	A	A
AK32060b	A	A	A	A
AK3406	A	T	A	T

 p_{xxx} = pressure in line xxx (see table)

 $\Delta p = f(Q)$ Pressure loss/flow characteristics

DIMENSIONS

3/4-way poppet valve


 2/2-way poppet valve
 3/2-way poppet valve

PARTS LIST

Position	Article	Description
10	254.4050	Pneumatic pilot head CKII
40	058.4215	Cover
50	246.2160	Socket head cap screw M5x60 DIN 912
60	246.2117	Socket head cap screw M5x16 DIN 912
70	160.2093	O-ring ID 9,25x1,78

ACCESSORIES

Threaded connections plates, Multi-flange subplates and Longitudinal stacking system see register 2.9

Technical explanation see data sheet 1.0-100