Directional seated valve type SVNE, SVSE

Product documentation

Operating pressure p_{max}:	350 bar
Flow rate Q_{max}:	100 lpm

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HAWE HYDRAULIK

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1 Overview of directional seated valve type SVNE, SVSE

Directional seated valves are a type of directional valve. Their function is to direct the flow of hydraulic medium in certain directions, therefore connecting the relevant connections, or shutting off the flow with zero leakage. By this means they control the movement of the actuators in a hydraulic system.

Directional seated valves type SVNE, SVSE are hydraulically pilot-controlled 2/2-way directional seated valves. They are screw-in valves. All connections can be subjected to the same pressures. As they are cone-seated valves, they offer high switching reliability even after remaining in position under high pressure for longer periods.

Type SVNE..U, SVSE..U also features inductive position monitoring for its idle position. Switching time was optimised for type SVSE.

Features and advantages

- compact design
- short switching times
- zero leakage in closed switching position
- partly with manual override

Intended applications

- Machine tool
- Handling and assembly technology

Directional seated valve type SVNE 12..U

Directional seated valve type SVNE 8, SVSE 8

2 Available versions

Ordering example

SVNE 12 SVNE 8	S RU	-WG 230 -G 24	H	- 3/8

2.5 "Single connection block"

2.4 "Manual override"

2.3 "Solenoid voltage and connectors"

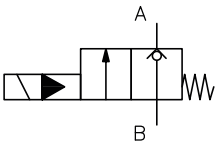
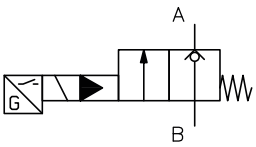
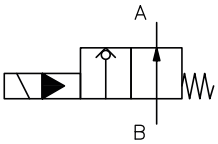
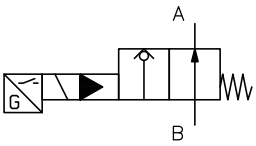
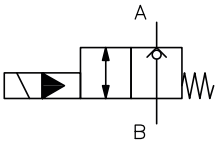
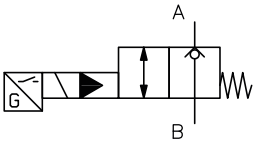
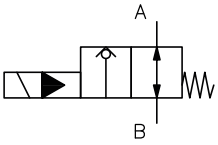
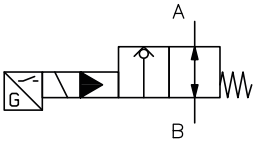
2.2 "Circuit symbols"

2.1 "Basic type and size"

2.1 Basic type and size

Type	Description	Flow rate Q_{max} (lpm)	Pressure p_{max} (bar)
SVNE 8 SVSE 8 SVNE 8..U	Directional seated valve, ▪ Type SVSE.. optimised switching time version ▪ Type ..U with inductive switching position monitoring see Chapter 6.1, "Functional diagram SVNE..U"	30	350
SVNE 12		100	350
SVNE 12..U			

2.2 Circuit symbols

Coding	Circuit symbol	SVNE 8 / SVSE 8	SVNE 12	SVNE 8..U	SVNE 12..U
R		X/X	X	--	--
RU		--	--	X	X
S		X/--	X	--	--
SU		--	--	X	X
R2		X/X	--	--	--
R2U		--	--	X	X
S2		X/--	--	--	--
S2U		--	--	X	X

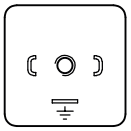
2.3 Solenoid voltage and connectors

Coding	Electrical connection	Nominal voltage		Protection class (IEC 60529)	SVNE 8 / SVSE 8	SVNE 12	SVNE 8..U	SVNE 12..U
		V AC	V DC					
X 12, G 12	EN 175 301-803 A	--	12 V DC	IP 65	X/X	X	X	X
L 12, L 24, L5K 12(24)	▪ **X:** without line connector	--	12 V DC / 24 V DC		X/X	X	X	X
X 24, G 24	▪ **G:** with line connector MSD3-309	--	24 V DC		X/X	X	X	X
X 102, G 102	▪ **L:** with LED connector	--	102 V DC					
X 205, G 205		--	205 V DC					
WG 115	▪ **L5K:** with LED connector and moulded-on cable 5 m long	115 V AC 50/60 Hz	102 V DC					
WG 230	▪ **WG:** with alternating rectifier in line connector	230 V AC 50/60 Hz	205 V DC		X/X	X	--	--
	see D 7163							

NOTICE
The specifications regarding the IP protection class apply for versions featuring a properly assembled male connector.

Electrical connection

X, G, WG



2.4 Manual override

Coding	Actuation type	Description	For type
without coding	--	without manual override	--
H	Lever	emergency manual unit HE30357A	only SVNE..S (S2)

2.5 Single connection block

Coding	Description	Ports (ISO 228-1) A, B	SV.E 8	SVNE 12
- 3/8	Pipe connection	G 3/8	●	
- 3/4		G 3/4		●

INFORMATION
see Chapter 6.2, "Design and planning information for connection blocks"

3 Parameters

3.1 General data

Designation	2/2-way directional seated valves
Design	Conical seat valve pilot-controlled, with and without switching position monitoring
Model	Screw-in valve
Material	Steel; galvanised zinc coating with Cr(VI)-free passivation, sleeve SVNE 12 burnished (DIN 50938)
Tightening torque	see Chapter 4, "Dimensions"
Installation position	Any
Flow direction	A, B according to circuit symbol see Chapter 2.2, "Circuit symbols"
Hydraulic fluid	Hydraulic fluid, according to DIN 51 524 Parts 2 to 3; ISO VG 10 to 68 according to DIN ISO 3448 Viscosity range: 10 - 600 mm^2/s Other media on request
Cleanliness level	permissible degree of contamination: ▪ **SVNE, SVSE** according to ISO 4406 max. class 22/19/16 ▪ **SVNE...U** according to ISO 4406 max. class 21/18/15
Filter recommendation	Filter retention rate β25 > 75
Temperatures	Environment: approx. -30 ... +50 °C, hydraulic fluid: -25 ... +70 °C, ensure the correct viscosity range.

3.2 Pressure and volumetric flow

Operating pressure p_{max}	▪ SVNE 8(12), SVSE 8, SVNE 8(12)..U: 350 bar
Flow rate Q_{max}	▪ SVNE 8, SVSE 8, SVNE 8..U: 30 lpm ▪ SVNE 12, SVNE 12..U: 100 lpm

3.3 Weight

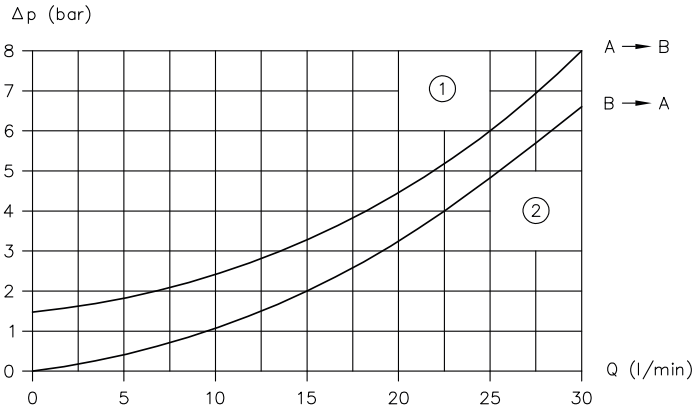
Type	
SVNE 8, SVSE 8	= 0.4 kg
SVNE 12	= 0.6 kg
SVNE 8..U	= 0.5 kg
SVNE 12..U	= 0.7 kg

3.4 Characteristic lines

Viscosity of the hydraulic fluid approx. 46 mm²/s, tolerance ± 10 %

SVNE 8, SVSE 8

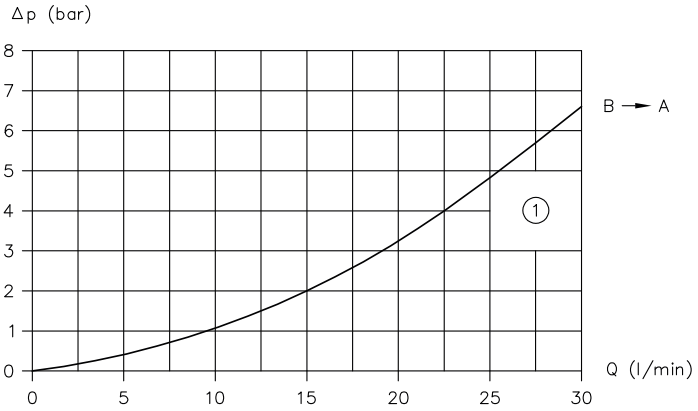
R, R2



Q flow rate (lpm); Δp pressure difference (bar)

1 in position a
2 in position b

S, S2

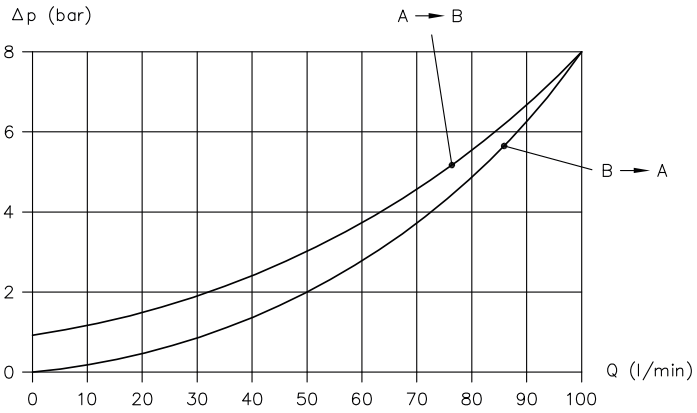


Q flow rate (lpm); Δp pressure difference (bar)

1 in position a

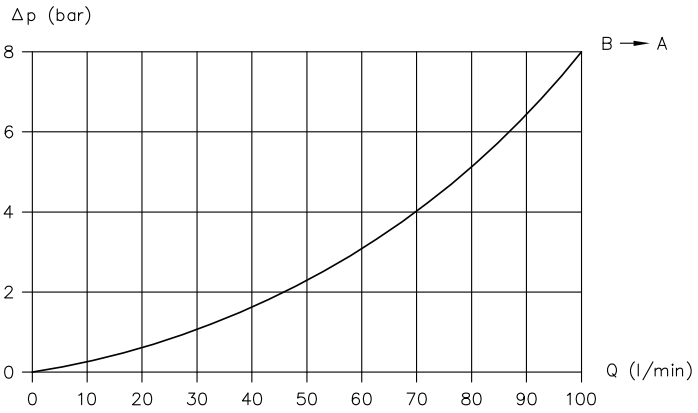
SVNE 12

R



Q flow rate (lpm); Δp pressure difference (bar)

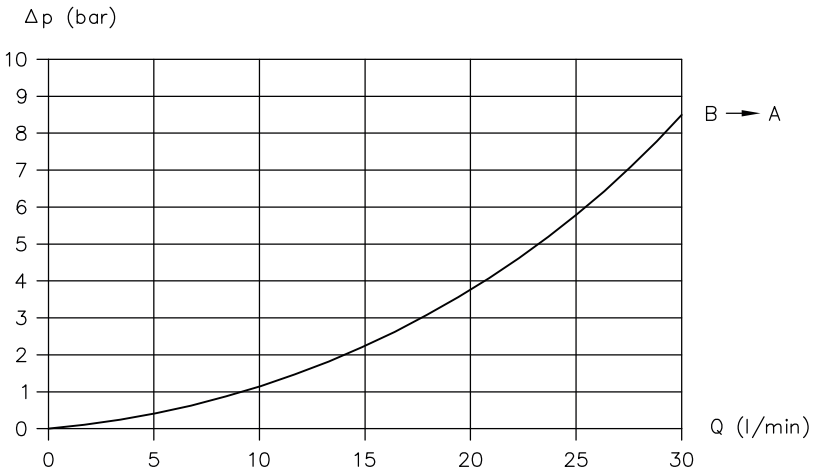
S



Q flow rate (lpm); Δp pressure difference (bar)

SVNE 8..U

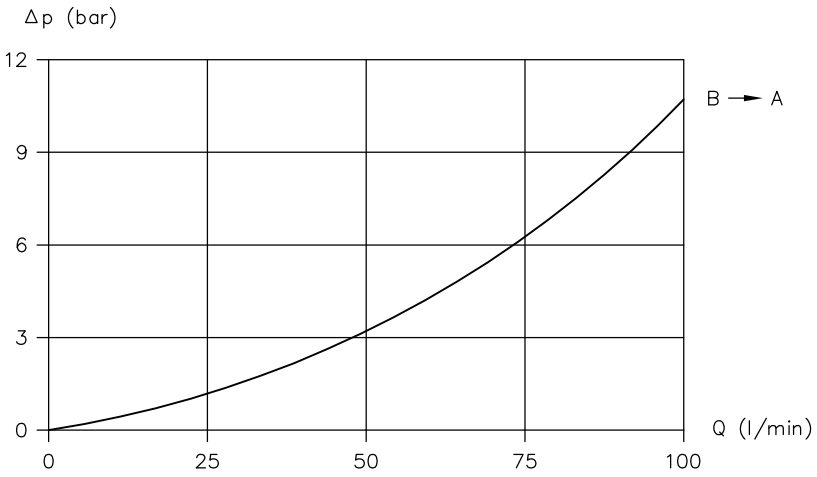
R, S, R2, S2



Q flow rate (lpm); Δp pressure difference (bar)

SVNE 12..U

R, R2, S, S2

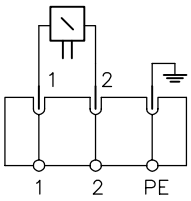
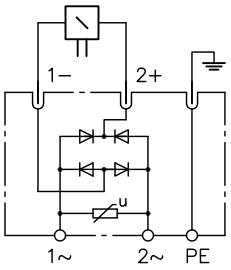


Q flow rate (lpm); Δp pressure difference (bar)

3.5 Electrical data

		12 V DC	24 V DC	102 V DC 115 V AC 50/60 Hz	205 V DC 230 V AC 50/60 Hz
Nominal power P_N					
	SVNE 8 R, R2	16 W	16 W	18 W	18 W
	SVNE 8 RU, R2U **SVNE 8 S, SU, S2, S2U** **SVSE 8 R, R2** **SVNE 12 R, RU, R2U** **SVNE 12 S, SU, S2U**	26 W	26 W	26 W	26 W
Nominal current I_N	**16 W**	1.33 A	0.66 A	--	--
	18 W	--	--	0.18 A	0.09 A
	26 W	2.17 A	1.08 A	0.25 A	0.13 A
Switching times	on 50 to 60 ms off 50 to 60 ms for version WG.. approx. 2 – 3 times greater				
Switching operations	approx. 2000/h, to be seen as approximately evenly distributed				
Contact temperature	Approx. 85 - 95 °C (mantle), at 20° ambient temperature				
Insulation material class	F In adhering to the reference values for % duty cycle in operation, the permissible winding limit temperature of approx. 150 °C according to insulation material class F is approximately reached as a steady-state temperature. The thermal load on the coil can be reduced by means of an economy circuit, for example, see Chapter 5.5, "Maintenance information"				
Relative duty cycle **100% duty cycle (specified on solenoid)**	100% duty cycle up to ambient temperature 50 °C				
Protection class	Depending on the actuating solenoid see Chapter 2.3, "Solenoid voltage and connectors"				
Electrical connection	Depending on the actuating solenoid see Chapter 2.3, "Solenoid voltage and connectors"				

Circuit diagrams

DC voltage	**X, G** 
AC voltage	**WG** 

Sensor electronics

Supply voltage U_B	24 V DC, ±10 %, regulated, residual ripple < 10%
Protected against polarity reversal	integrated, to maximum 60 V DC
Current consumption I_B	< 50 mA (w/o external switching load)

Switch output

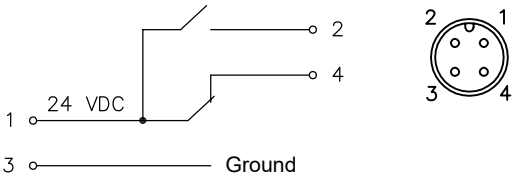
maximum switching current Is	< 150 mA
Residual voltage of the switch output	< 2.5 V
Type	N/C contact/normally open contact, plus switching, overload-proof
minimum load resistance	200 Ω

Electrical connection

Sensor connector	M12x1, 4-pole

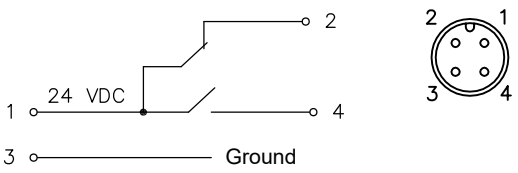
Connection pattern

SVNE..RU
SVNE..R2U



Pin	Connection
1	24 V DC supply
2	Normally open contact +
3	Ground
4	N/C contact +

SVNE..SU
SVNE..S2U



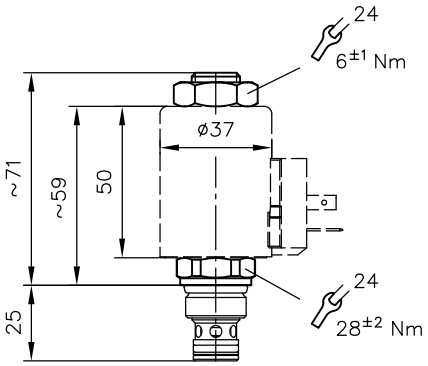
Pin	Connection
1	24 V DC supply
2	N/C contact +
3	Ground
4	Normally open contact +

4 Dimensions

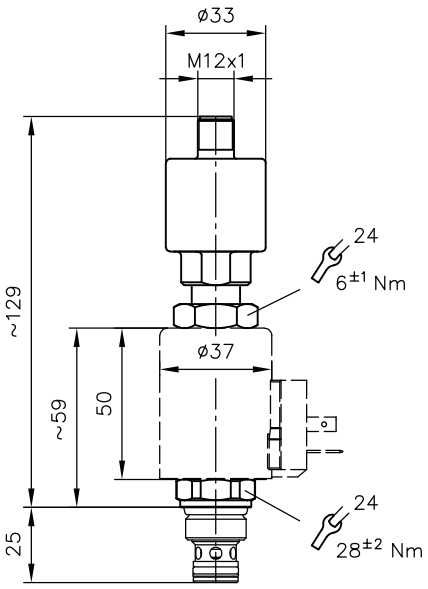
All dimensions in mm, subject to change.

4.1 Screw-in valve SVNE 8, SVSE 8

SVNE 8, SVSE 8



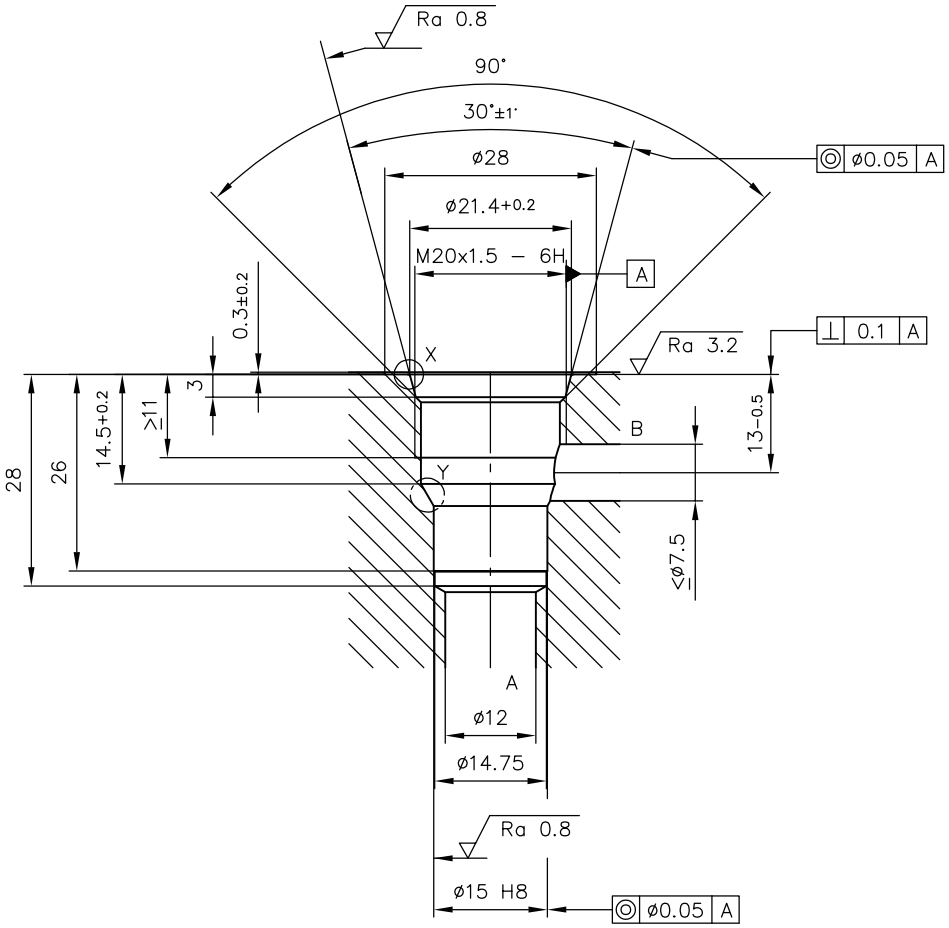
SVNE 8..U, SVSE 8..U



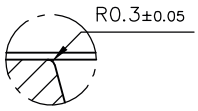
NOTICE

Rectifier circuit in the line connector can be mounted offset by 4x 90°. Solenoid rotatable through 360° after loosening the hexagon nut.

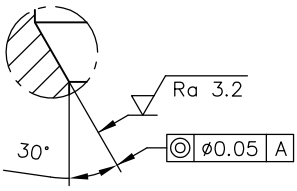
Mounting hole SVNE 8, SVSE 8



Detail X

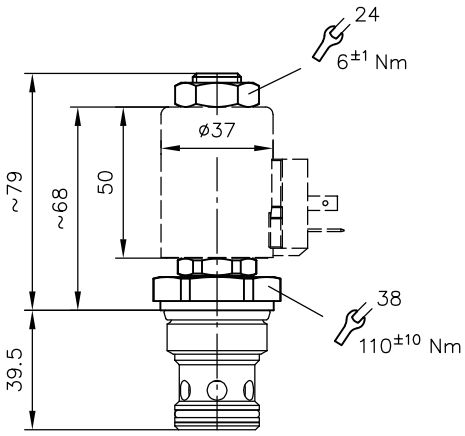


Detail Y

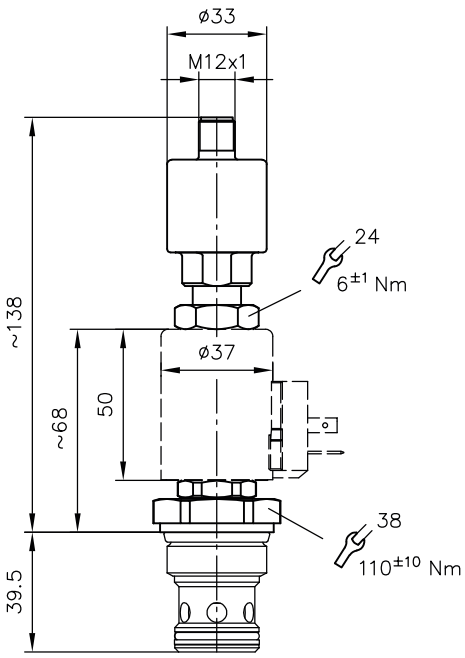


4.2 Screw-in valve SVNE 12

SVNE 12



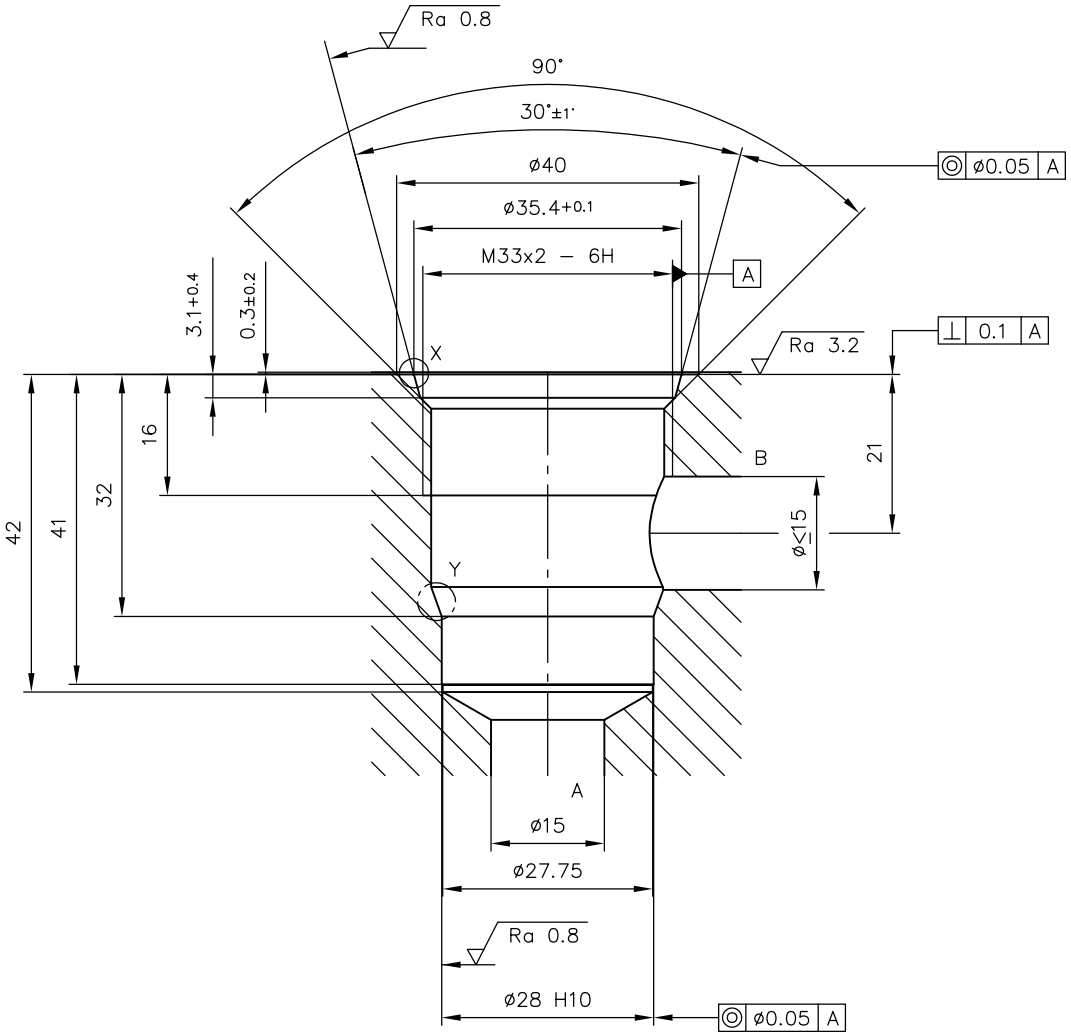
SVNE 12..U



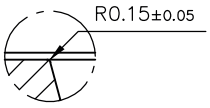
NOTICE

Rectifier circuit in the line connector can be mounted offset by 4x 90°. Solenoid rotatable through 360° after loosening the hexagon nut.

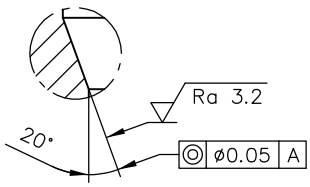
Mounting hole SVNE 12..U



Detail X

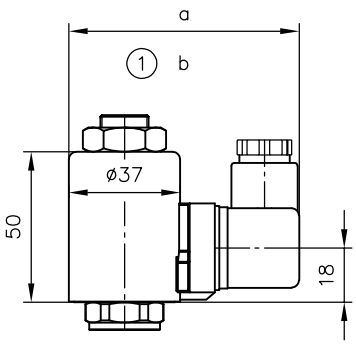


Detail Y



4.3 Solenoid versions

G, WG

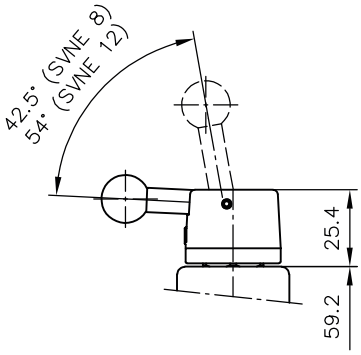


1 with rectifier circuit in the line connector

Version	a	b
G, WG	76,5	79,5

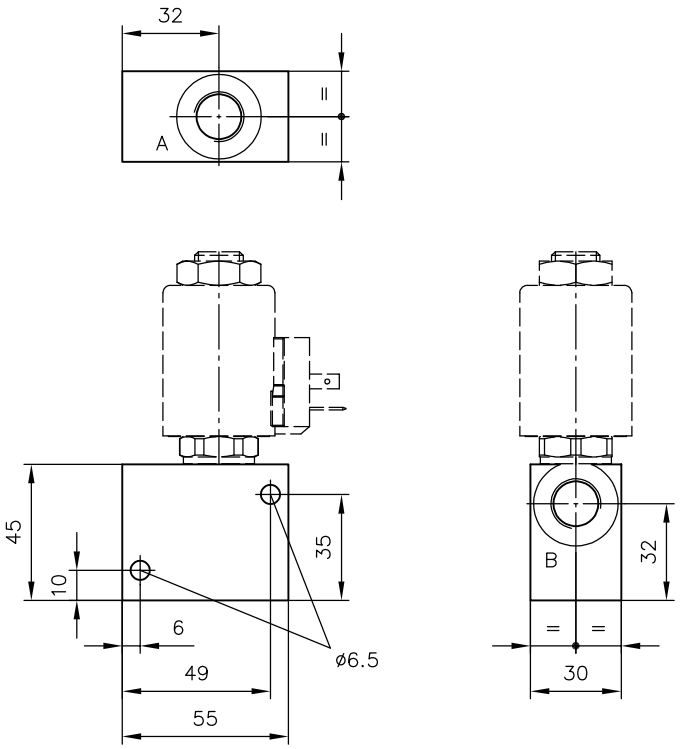
Manual override

H (only for circuit symbol S, S2)



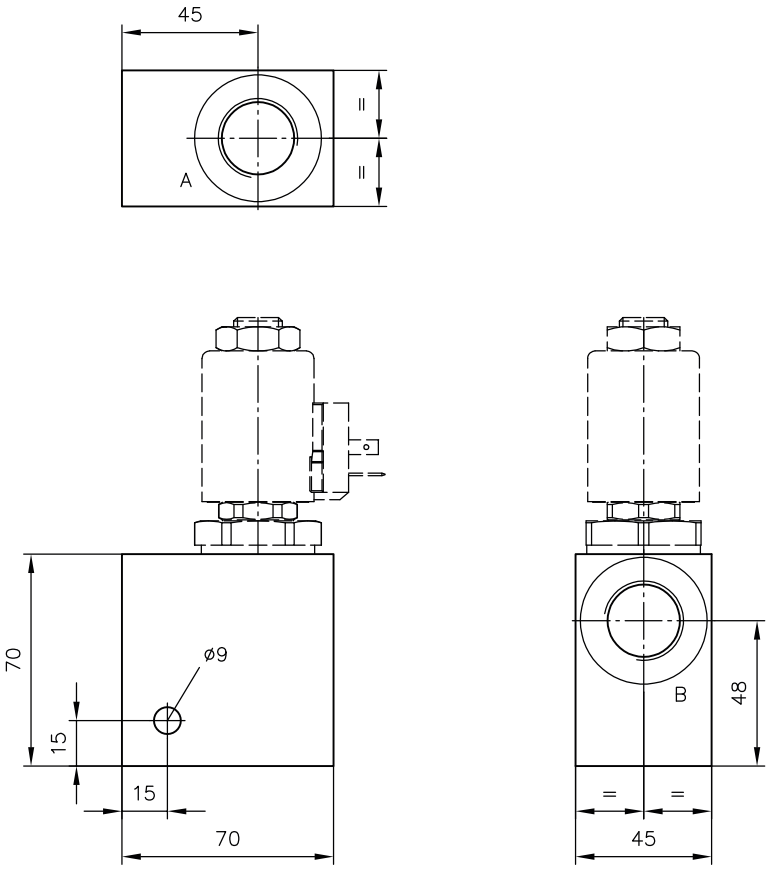
4.4 Version with single connection block

SVNE 8, SVSE 8.. - 3/8



	Ports (ISO 228-1)
A, B	G 3/8

SVNE 12.. - 3/4



	Ports (ISO 228-1)
A, B	G 3/4

5 Installation, operation and maintenance information

Observe the document B 5488 “General operating instructions for assembly, commissioning, and maintenance.”

5.1 Intended use

This product is intended exclusively for hydraulic applications (fluid technology).

The user must observe the safety measures and warnings in this document.

Essential requirements for the product to function correctly and safely:

- ► All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- ► The product must only be assembled and put into operation by specialist personnel.
- ► The product must only be operated within the specified technical parameters described in detail in this document.
- ► All components must be suitable for the operating conditions when using an assembly.
- ► The operating instructions for the components, assemblies and the specific complete system must also always be observed.

If the product can no longer be operated safely:

1. Remove the product from operation and mark it accordingly.
   ✓ It is then not permitted to continue using or operating the product.

5.2 Assembly information

The product must only be installed in the complete system with standard and compliant connection components (screw fittings, hoses, pipes, fixtures etc.).

The product must be shut down correctly prior to disassembly (in particular in combination with hydraulic accumulators).

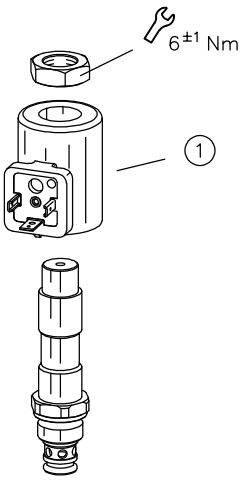
⚠ **DANGER**

Sudden movement of the hydraulic drives when disassembled incorrectly

Risk of serious injury or death

- ► Depressurise the hydraulic system.
- ► Perform safety measures in preparation for maintenance.

5.2.1 Replacing the solenoid



1 Solenoid

Solenoid: see Chapter 6.3, "Accessories, spare and individual parts"

INFORMATION
Coil not exchangeable for version with switching position monitoring type SVNE..U.

5.3 Creating the mounting hole

see Chapter 4, "Dimensions"

Blind plugs / tapped plugs see Chapter 6.3.1, "Accessories, spare and individual parts"

5.4 Operating instructions

Observe product configuration and pressure/flow rate.

The statements and technical parameters in this document must be strictly observed.
The instructions for the complete technical system must also always be followed.

NOTICE
- Read the documentation carefully before usage.
- The documentation must be accessible to the operating and maintenance staff at all times.
- Keep documentation up to date after every addition or update.

CAUTION
Overloading components due to incorrect pressure settings.
Risk of minor injury.
- Pay attention to the maximum operating pressure of the pump, valves and fittings.
- Always monitor the pressure gauge when setting and changing the pressure.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of the product. Contamination can cause irreparable damage.

Examples of fine contamination include:
- Swarf
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid

NOTICE

New hydraulic fluid from the manufacturer may not have the required purity.

Damage to the product is possible.

- ► Filter new hydraulic fluid to a high quality when filling.
- ► Do not mix hydraulic fluids. Always use hydraulic fluid that is from the same manufacturer, of the same type, and with the same viscosity properties.

For smooth operation, pay attention to the cleanliness level of the hydraulic fluid (cleanliness level see Chapter 3, "Parameters").

Additionally applicable document: D 5488/1 Oil recommendations

5.5 Maintenance information

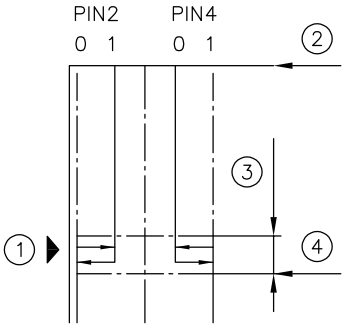
Check regularly (at least once a year) by visual inspection whether the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the surface of the device regularly (at least once a year) (dust deposits and dirt).

Check that the product is securely fastened in the mounting hole at regular intervals, but at least once per year.

6 Other information

6.1 Functional diagram SVNE..U



1 Switching range
2 Open valve
3 Overlap stroke
4 Valve closed with zero leakage

6.2 Design and planning information for connection blocks

Minimum dimensions for the connection block:

- 45 x 55 x 30 mm (SVNE 8)
- 70 x 70 x 45 mm (SVNE 12)

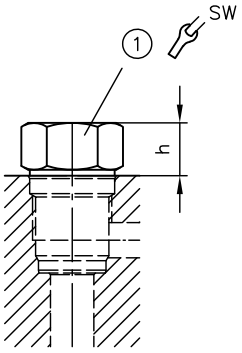
If these minimum dimensions are not met, then trouble-free continuous operation can no longer be guaranteed.

6.3 Accessories, spare and individual parts

To purchase spare parts, please see HAWE Hydraulik interactive contact map.

Blind plugs / tapped plugs

The mounting holes can be sealed with blind plugs or tapped plugs if necessary; for example, if the assembly of standardised basic bodies is to be carried out with or without screw-in valves as required.



SW = Width across flats

1 Tapped plug

Type	Circuit symbol	Order coding	h (mm)	SW (mm)	Tightening torque (Nm)
SVNE 8 SVSE 8		BLIND PLUG SV.E 8 HE30484A	13	24	28 ±2
SVNE 8 SVSE 8		TAPPED PLUG SV.E 8 HE30535A	13	24	28 ±2
SVNE 12		TAPPED PLUG SVNE 12 HE30610A	14	41	115 ±5
SVNE 12		BLIND PLUG SVNE 12 HE30558A	11	38	110 ±5

Solenoid actuation

Excitation system:				Male connector:	
	Coding	Description	Order no.	Coding	Order no.
Solenoid	G 12, L 12, X 12, L5K 12	12 VDC / 26 W	KC3785	G..	6217 0002-00
	G 24, L 24, X 24, L5K 24	24 VDC / 16 W 24 VDC / 26 W	KC3731 KC3732	L	6217 8024-00
	WG 115, X 102, G 102	102 VDC / 18 W 102 VDC / 26 W	KC3743 KC3744	WG..	6217 6002-00
	WG 230, G 205, X 205	205 VDC / 18 W 205 VDC / 26 W	KC3742 KC3733	L5K..	6217 8088-00

Seal kit

Coding	Order no.
SEAL KIT\ .V.221/222..08 (NEW)	HEX0561B
SEAL KIT\ .V.22.BE12	HEX0619B

6.4 Recoding table

NOTICE
The order coding was changed to align with the HAWE standard.

Examples

old	new
SVN222BE08PDH	SVNE 8 S -G 24 H
IVN221BE12ND	SVNE 12 RU -G 12

Basic type

old	new
SVN	SVNE
SVS	SVSE
IVN	SVNE..U

Circuit symbol

old	new
221	R
222	S
223	R2
224	S2

Size

old	new
BE08	8
BE12	12

Supply voltage

old	new
PD 24 V DC with line connector according to D 7163	G 24 with line connector
ND 12 V DC with line connector according to D 7163	G 12 with line connector
VD 115 V 50/60 Hz ~ (AC) with rectifier circuit in the line connector according to D 7163	WG 115 with rectifier circuit in the line connector according to D 7163
WD 230 V 50/60 Hz ~ (AC) with rectifier circuit in the line connector according to D 7163	WG 230 with rectifier circuit in the line connector according to D 7163

Manual override

old	new
– no manual override	– no manual override
H manual override, hand lever mounted	H manual override, hand lever mounted

References

Additional versions

- Directional seated valve type EM and EMP: D 7490/1
- Directional seated valve type BVE: D 7921
- Directional seated valves type SVN222BE08 for higher ambient temperatures: D 6413
- Directional seated valves type SVN222BE12 for higher ambient temperatures: D 6416

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