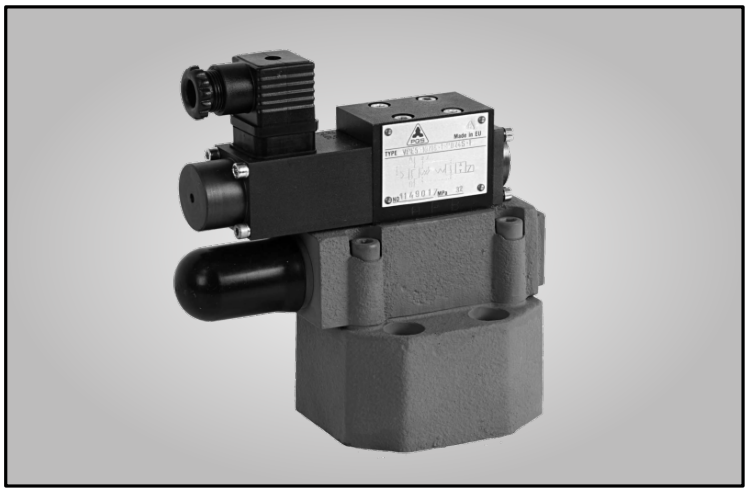
VP(E)5

PRESSURE RELIEF VALVES

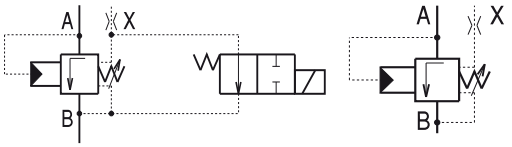
|KE 3012| 01/15|

D_n 10; 20 | p_{max} 32 MPa | Q_{max} 200; 400 dm^3/min



Pilot operated pressure relief valve VP(E)5 are used to limit pressure in hydraulic circuit.

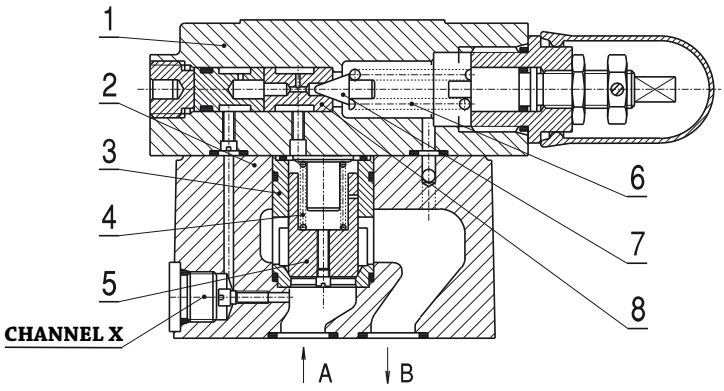
Installation dimensions according to ISO 5781/ ISO 6264 - DIN 24 340 | 3 pressure ranges | avaible with unloading directional control valve



FUNCTIONAL DESCRIPTION

Pressure relief valves consist of the main valve of spool design and control pilot valve. Until the pressure in channel A exceeds the adjusted value by adjusting screw the interconnection between channel A and B is closed. As soon as the presssure exceeds the preadjusted value, the cone **7** lifts from the seat **8**. Thus A pressure drop at the orifice disbalance the spool **5** which is moved towards the opened position. The pressure in channel A is defined by the pilot setting and depends on the flow according to static flow characteristics. When the eletric control of pressure unloading is required type VPE5 with solenoid operated directional control valve is avaible.

Valves VP5 consist of:
1 - pilot valve housing
2 - main valve housing
3 - sleeve
4 - spring of spool
5 - spool
6 - spring of cone
7 - cone
8 - seat



ORDERING CODE

V P ☐ **5** - ☐ / ☐ - ☐ ☐ - ☐ ☐ ☐

V P Pressure relief valve

no code without unloading directional valve
E with unloading directional valve

5 Innovation stage

SIZE
1 0 Dn 10
2 0 Dn 20

PRESSURE RANGE
0 6 up to 6.3MPa
1 6 up to 16 MPa
3 2 up to 32 MPa

PRESSURE ADJUSTMENT
1 screw with square head
2 screw with handwheel (except VPE)

INSTALLATION DIMENSIONS
1 DIN 24 340 Form D
2 DIN 24 340 Form E

VPE only

UNLOADING PILOT DIRECTIONAL CONTROL VALVE SOLENOID VOLTAGE
230U 230V AC, 50/60Hz
115U 115V AC, 50/60Hz
024S 24V DC
012S 12V DC

INITIAL STATE OF UNLOADING VALVE
P interconnected - de-energized valve is balanced
N not interconnected - de-energetized valve is under pressure

UNLOADING PILOT DIRECTIONAL CONTROL VALVE OIL DRAIN
no code internal
Y external

INSTALLATION, SERVICE AND MAINTENANCE

Pressure reducing valves VP(E)5 can be installed in any working position. Dimensions, quality and recommended class of fixing bolts is specified in the following table.

Type	Screw size and quantity	Torque [Nm]
VP(E)5 - 10...1	M10x60 DIN912-8.8 (4 pcs)	32
VP(E)5 - 10...2	M12x30 DIN912-8.8 (4 pcs)	52
VP(E)5 - 20...1	M10x40 DIN912-8.8 (4 pcs)	32
VP(E)5 - 20...2	M16x40 DIN912-8.8 (4 pcs)	112

Flatness deviation and surface roughness of the mounting surface shall not exceed 0.01/100 mm and Ra = 1.6 µm. It is required that the contact surfaces must be intact before installation. All "O"-rings must not be disshaped and damaged by any means. Adjustment of reduced outlet pressure is carried out by adjusting screw (with handwheel) and loosening jam nut. When the pressure is adjusted the adjusting screw must be locked by jam nut against loosening. Reliability of the valve is conditional upon use of prescribed working fluid, especially its temperature and purity.

DELIVERY

Pressure reducing valves VP(E)5 are delivered assembled with "O"-rings on the contact surface. Spare parts and mounting screws are not included in the package. These must be ordered separately.

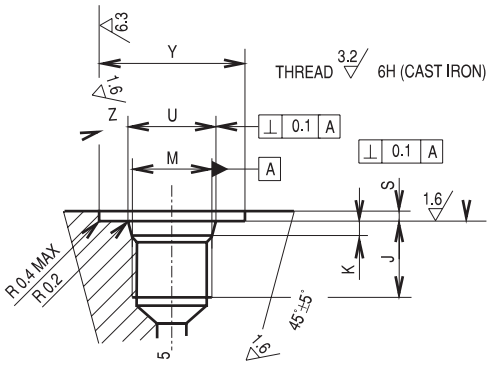
TECHNICAL DATA

Technical data	Symbol	Unit	VPE5 - 10...1 VPE5 - 10...2	VPE5 - 20...1 VPE5 - 20...2
Nominal size	Dn	mm	10	20
Max. input pressure	p_{MAX}	MPa	32	32
Max. flow	Q_{MAX}	dm^3/min	200	400
Pressure ranges		MPa	6.3; 16; 32	
Max. pressure in port B	$p_{MAX,B}$	MPa	32	
Max. pressure in port Y (type VPE)	$p_{MAX,Y}$	MPa	6.3	
Reccommended hydraulic fluid	Hydraulic oils of power classes (HL, HLP) according to DIN 51524			
Hydraulic fluid viscosity range	ν	mm^2/s	10 ... 400	
Ambient temperature range	t_A	°C	-20 ... +70	
Ambient temperature range (type VPE)	t_A	°C	-20 ... +40	
Hydraulic fluid temperature range	t_{PO}	°C	-20 ... +80	
Hydraulic fluid temperature range (type VPE)	t_{PO}	°C	-20 ... +70	
Maximum degree of fluid contamination	Class 21/18/15 according to ISO 4406 (1999)			

Type	VP5 - 10...1	VPE5 - 10...1	VP5 - 20...1	VPE5 - 20...1
Weight [kg]	4.6	5.8	4.85	6.05
Type	**VP5 - 10...2**	**VPE5 - 10...2**	**VP5 - 20...2**	**VPE5 - 20...2**
Weight [kg]	3.6	4.75	4.6	5.75

Electrical data	Symbol	Unit	110V AC | 230V AC	24V DC | 12V DC
Nominal frequency	f	Hz	50	
Voltage fluctuation		%	±10	±10
Nominal current	I	A	0.23 | 0.16	0.8 | 1.7
Enclosure type according to EN 60 529		MPa	IP 65	

REMOTE CONTROL PORT (PORT X)



all dimensions in [mm]

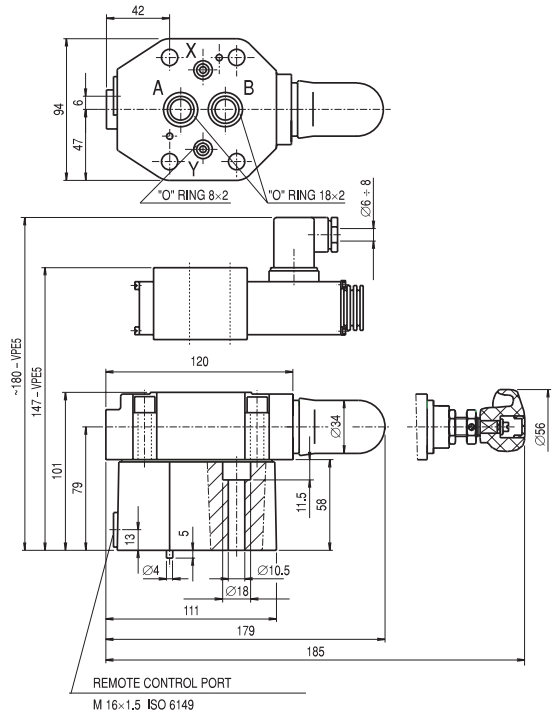
M	J_{min}	K	S_{max}	U	Y_{min}	Z
M16×1.5	13	$2.4^{+0.4}_{-0.0}$	1.5	$17.8^{+0.1}_{-0.0}$	27	15°±1°
M10×1	10	$1.6^{+0.4}_{-0.0}$	1	$11.1^{+0.1}_{-0.0}$	20	12°±1°

Rougness Ra=12.5µm

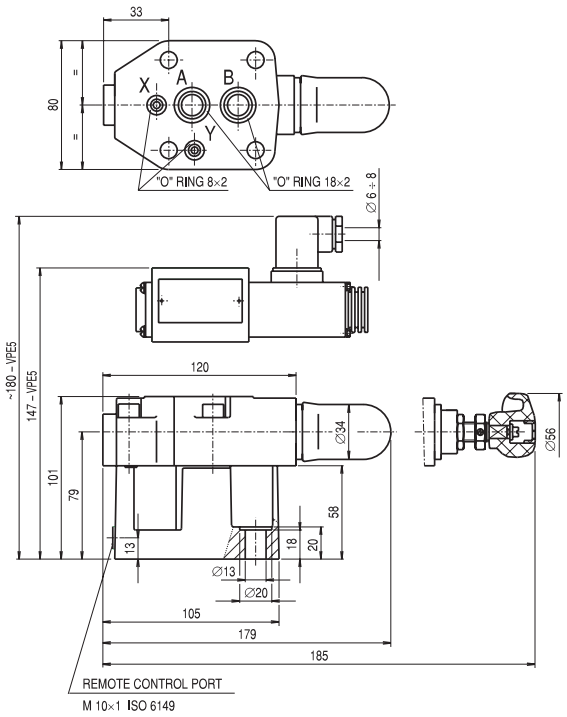
DIMENSIONS

all dimensions in [mm]

VP(E)5 - 10...1

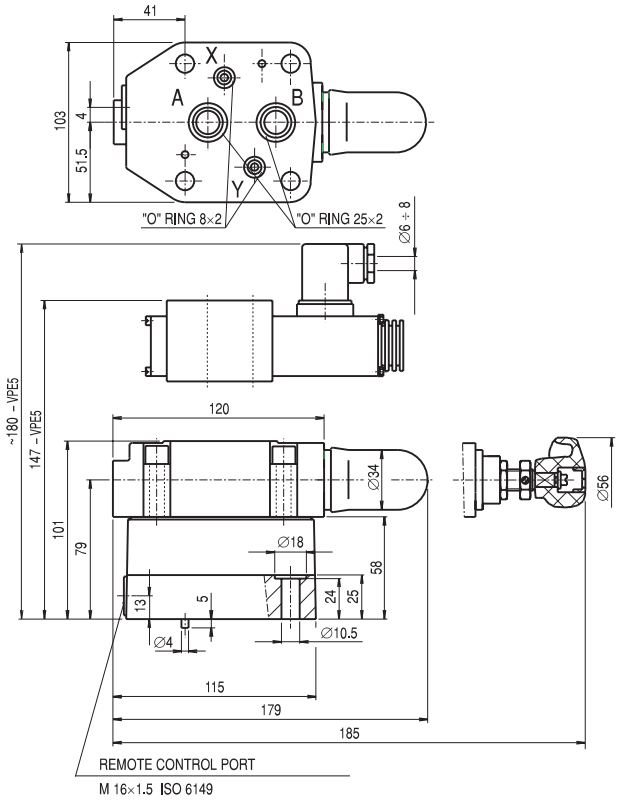


VP(E)5 - 10...2



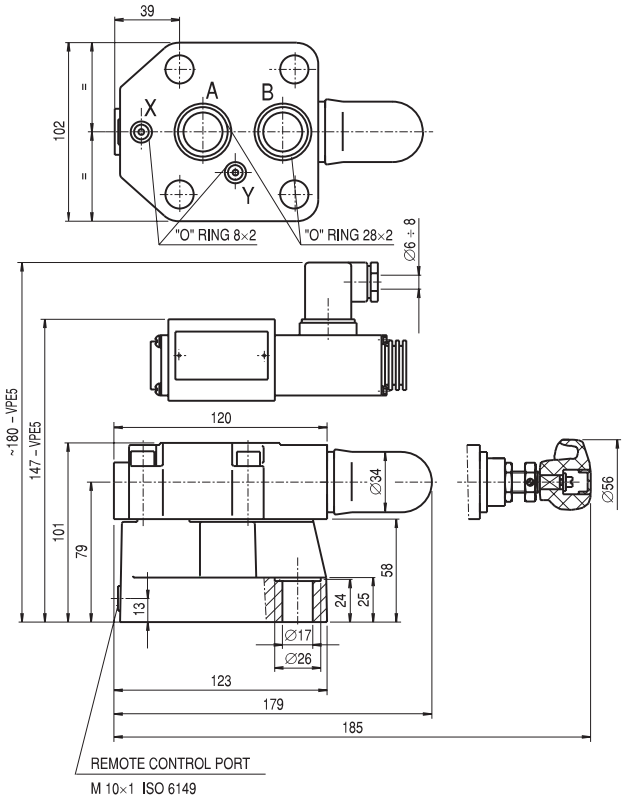
DIMENSIONS

VP(E)5 - 20...1



VP(E)5 - 20...2

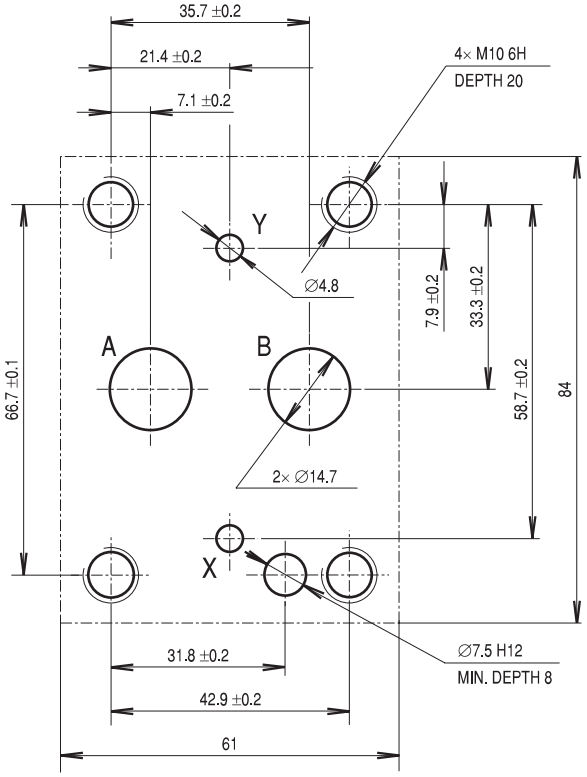
all dimensions in [mm]



INSTALLATION DIMENSIONS

VP(E)5 - 10...1

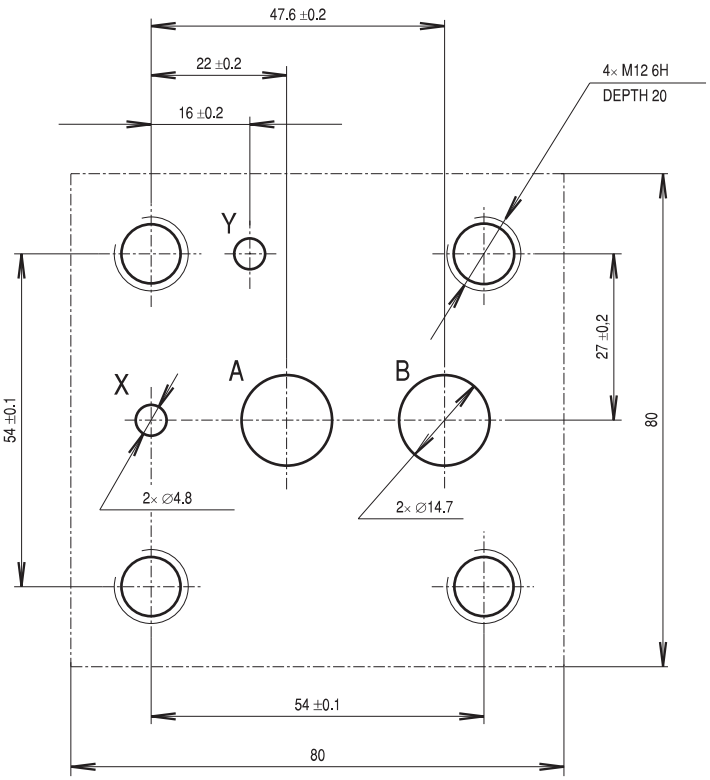
According to DIN 24 340, Form D
ISO 5781-06



VP(E)5 - 10...2

According to DIN 24 340, Form E,
ISO 6264-06

all dimensions in [mm]
view towards panel

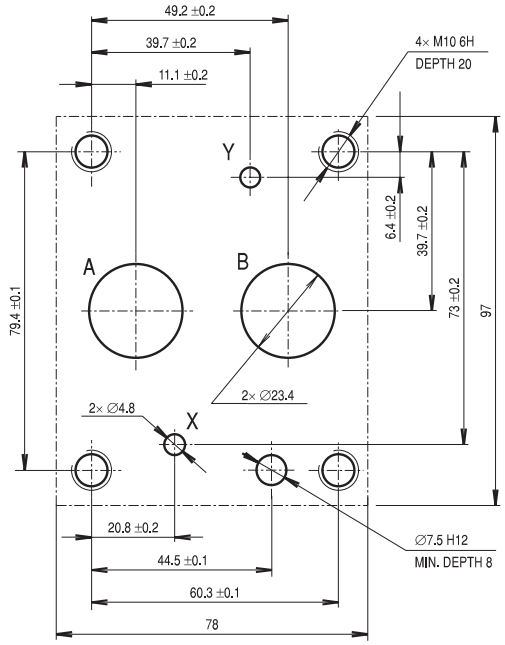


INSTALLATION DIMENSIONS

all dimensions in [mm]
view towards panel

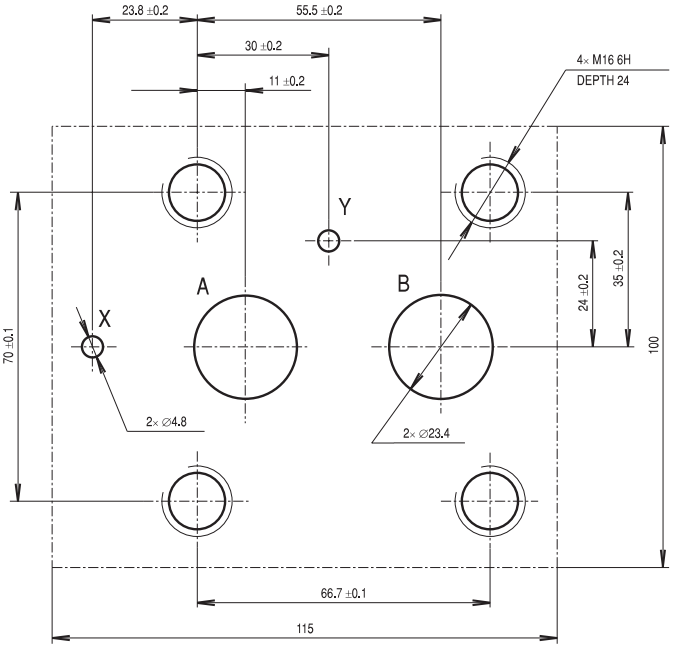
VP(E)5 - 20...1

According to DIN 24 340, Form D
ISO 5781-08



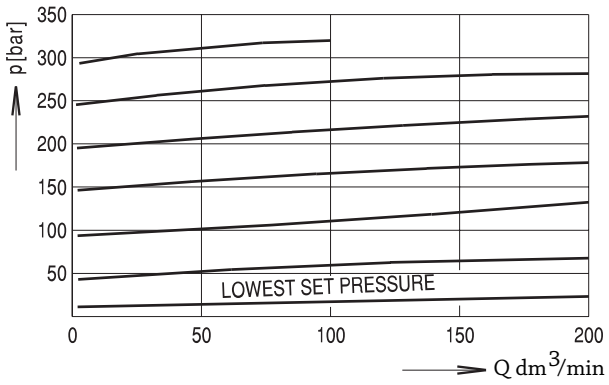
VP(E)5 - 20...2

According to DIN 24 340, Form E
ISO 6264-08

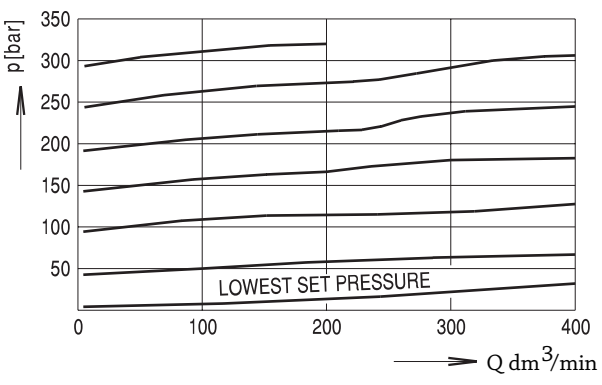


STATIC FLOW CHARACTERISTICS

VP(E)5-10



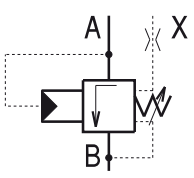
VP(E)5-20



TYPE AND SYMBOLS

VP5-10/06-1-.
VP5-10/16-1-.
VP5-10/32-1-.
VP5-10/06-2-.
VP5-10/16-2-.
VP5-10/32-2-.

VP5-20/06-1-.
VP5-20/16-1-.
VP5-20/32-1-.
VP5-20/06-2-.
VP5-20/16-2-.
VP5-20/32-2-.



VP5-10/06-1Y-.
VP5-10/16-1Y-.
VP5-10/32-1Y-.
VP5-10/06-2Y-.
VP5-10/16-2Y-.
VP5-10/32-2Y-.

VP5-20/06-1Y-.
VP5-20/16-1Y-.
VP5-20/32-1Y-.
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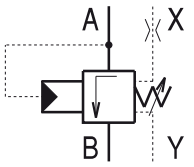
VP5-20/32-2Y-.



VPE5-10/06-1-P110U-.
VPE5-10/16-1-P110U-.
VPE5-10/32-1-P110U-.
VPE5-10/06-1-P220U-.
VPE5-10/16-1-P220U-.
VPE5-10/32-1-P220U-
VPE5-10/06-1-P024S-.
VPE5-10/16-1-P024S-.
VPE5-10/32-1-P024S-.

VPE5-20/06-1-P110U-.
VPE5-20/16-1-P110U-.
VPE5-20/32-1-P110U-.
VPE5-20/06-1-P220U-.
VPE5-20/16-1-P220U-.
VPE5-20/32-1-P220U-.
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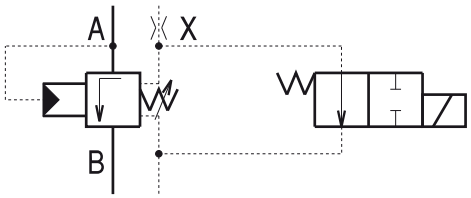
VPE5-20/32-1-P024S-.



VPE5-10/06-1-N110U-.
VPE5-10/16-1-N110U-.
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VPE5-10/16-1-N220U-.
VPE5-10/32-1-N220U-.
VPE5-10/06-1-N024S-.
VPE5-10/16-1-N024S-.
VPE5-10/32-1-N024S-.

VPE5-20/06-1-N110U-.
VPE5-20/16-1-N110U-.
VPE5-20/32-1-N110U-.
VPE5-20/06-1-N220U-.
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VPE5-20/32-1-N220U-.
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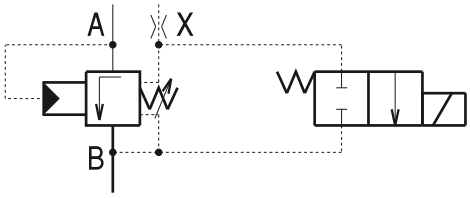

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VPE5-20/32-1Y-P110U-.
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VPE5-20/16-1Y-P220U-.
VPE5-20/32-1Y-P220U-.
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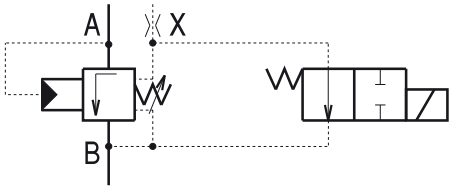

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VPE5-10/16-1Y-N220U-.
VPE5-10/32-1Y-N220U-.
VPE5-10/06-1Y-N024S-.
VPE5-10/16-1Y-N024S-.
VPE5-10/32-1Y-N024S-.

VPE5-20/06-1Y-N110U-.
VPE5-20/16-1Y-N110U-.
VPE5-20/32-1Y-N110U-.
VPE5-20/06-1Y-N220U-.
VPE5-20/16-1Y-N220U-.
VPE5-20/32-1Y-N220U-.
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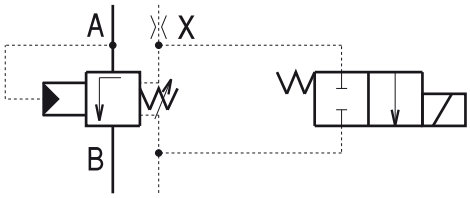

NOTES

NOTES

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