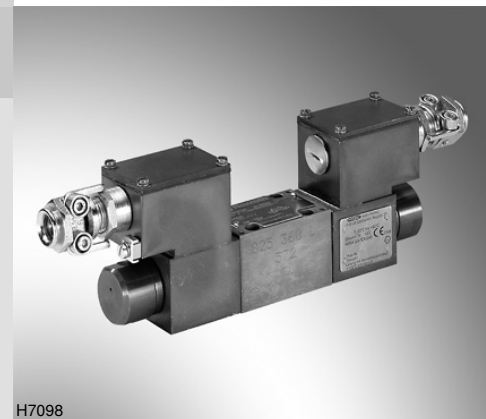


Proportional pressure reducing valve in 3-way version

RE 29184-XE-B2/09.13
Replaces: 12.03

Type 3DREP 6 ../..XE...

Size 6
Component series 2X
Maximum operating pressure 100 bar
Maximum flow 15 l/min



H7098

Actual product may differ

ATEX units
For explosive areas

Part II Data sheet



Information on the explosion protection:

- Area of application in accordance with the Explosion Protection Directive 94/9/EC: **II 2G**
- Type of protection of the valve solenoid:
Ex e mb IIC T4 Gb according to
EN 60079-7:2007/EN 60079-18:2009

Special features of seawater-resistant valves

- The exterior of the valve housing is galvanically coated.
- The seawater-resistance is defined by "J" in the ordering code.

What you need to know about these operating instructions

These operating instructions apply to the explosion-proof version of Rexroth valves and consist of the following three parts:

- | | | | |
|----------|---|---|---|
| Part I | General information 07010-X-B1 | } | Operating instructions 29184-XE-B0 |
| Part II | Data sheet 29184-XE-B2 | | |
| Part III | Product-specific instructions 29184-XE-B3 | | |

You can find further information on the correct handling of Rexroth hydraulic products in our publication "General product information on hydraulic products" 07008.

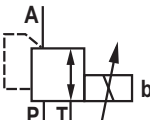
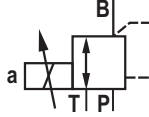
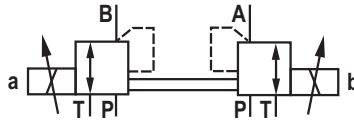
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Features

- Direct operated proportional pressure reducing valve with solenoid actuation for proper use in explosive atmospheres
- For subplate mounting:
Porting pattern according to ISO 4401-03 -02-05
- Subplates available in FE/ZN version (see page 9)
- Wet-pin DC solenoids
- Solenoid coil can be rotated by 90°
- Electrical connection as individual connection with cable gland

Ordering code and scope of delivery

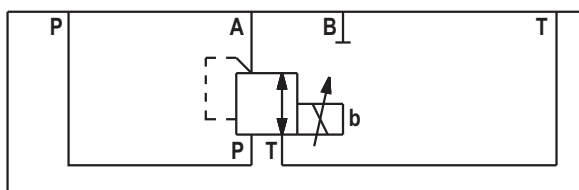
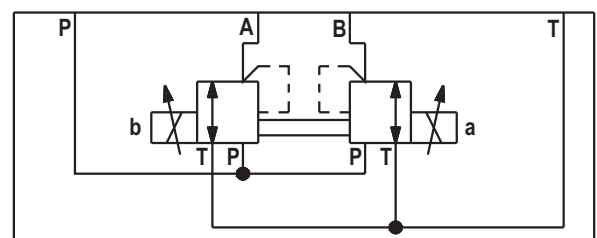
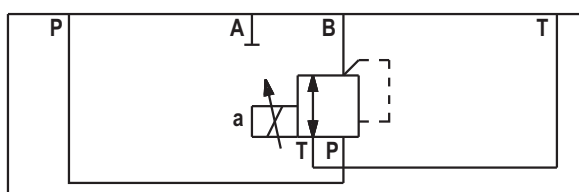
3DREP		6	-2X/	E	G24	XE	J /
Size	= 6						
Symbols (simplified)							M = NBR seals ¹⁾ V = FKM seals Important: Observe compatibility of seals with hydraulic fluid used! J = Surface protection Seawater-resistant, galvanized XE = Explosion protection "increased safety", for details see information on the explosion protection page 6 Supply voltage of the control electronics G24 = 24 V direct voltage E = Proportional solenoid
 = A							
 = B							
 = C							
Component series 20 to 29	= 2X						
(20 to 29: Unchanged installation and mounting dimensions)							
Pressure rating 16 bar	= 16						
Pressure rating 25 bar	= 25						
Pressure rating 45 bar	= 45						

Included in the scope of delivery:

Valve operating instructions with declaration of conformity in Part III

¹⁾ Suitable for mineral oils (HL, HLP) according to DIN 51524

Symbols

Type 3DREP.. 6 **A** 2X/... (detailed)Type 3DREP.. 6 **C** 2X/... (detailed)Type 3DREP.. 6 **B** 2X/... (detailed)

Function, section

The 3-way pressure reducing valve type 3DREP 6.. is direct operated by proportional solenoids. It converts an electrical input signal into a proportional pressure output signal.

The proportional solenoids are controllable wet-pin DC solenoids. The solenoids are actuated by external control electronics.

Set-up:

The valve basically consists of:

- Housing (1) with connection surface
- Control spool (2) with pressure measuring pins (3 and 4)
- Solenoids (5 and 6) with central thread

Functional description:

The pressure in A or B is set by means of the proportional solenoids. The amount of the pressure depends on the current.

With de-energized solenoids (5, 6), the control spool (2) is held in the central position by means of the compression springs (8). Ports A and B are connected with T so that the hydraulic fluid can flow off to the tank without obstructions.

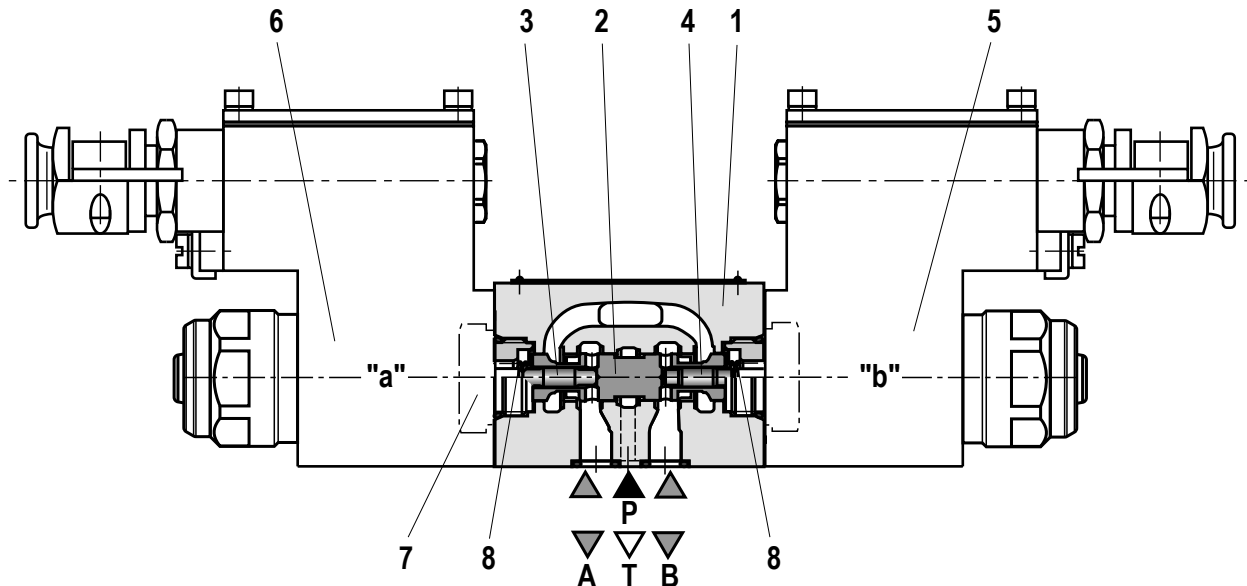
When one proportional solenoid is actuated, e.g. solenoid "b" (5), the pressure measuring pin and the control spool (2) are moved to the left. This opens the connection from P to A and B to T via orifice-type cross-sections with progressive flow characteristics. With the surface of the pressure measuring pin (3) the pressure that builds up in channel A acts on the control spool and against the solenoid force. The pressure measuring pin (3) is supported by the solenoid "a". If the pressure exceeds the value set at solenoid "b", the control spool (2) is pushed back against the solenoid force and connects A with T until the set pressure is achieved again. The pressure is proportional to the solenoid current.

When the solenoid is switched off, the control spool (2) is returned into the central position by the compression springs (8).

Important:

Regarding valves of the version 3DREP 6 C, only one solenoid may be actuated at a time.

Type 3DREP 6..2X/..XE..



Valve with two spool positions

(type 3DREP 6...A...)

The function of this valve version basically corresponds to the valve with three spool positions. This 2 spool position valve is, however, only equipped with solenoid "b" (5). Instead of the 2nd proportional solenoid, there is a plug screw (7).

Important:

The tank line must not be allowed to run empty. With corresponding installation conditions, a preload valve (preload pressure approx. 2 bar) must be installed.

Technical data

general

Installation position		Any; preferably horizontal
Storage temperature range	°C	-20 ... +50
Ambient temperature range	°C	-20 ... +60
Weight	3DREP6 A/B	kg 2.7
	3DREP6 C	kg 4.4
Surface protection		Galvanized coating

hydraulic

Operating pressure range	Port P	bar	20 ... 100 for pressure rating 16
		bar	30 ... 100 for pressure rating 25
		bar	50 ... 100 for pressure rating 45
	Port T	bar	0 ... 30
Maximum flow P → A or P → B		l/min	15 ($\Delta p = 50$ bar) see characteristic curves page 7
Hydraulic fluid			Mineral oil (HL, HLP) according to DIN 51524 Additional hydraulic fluids upon request! Ignition temperature > 180 °C
Hydraulic fluid temperature range	°C		-20 ... +80 (NBR seals)
			-15 ... +80 (FKM seals)
Viscosity range	mm ² /s		20 ... 380 (preferably 30 ... 46)
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			Class 17/15/12 ¹⁾
Hysteresis	%		≤ 6
Repetition accuracy	%		≤ 2
Response sensitivity	%		≤ 1
Range of inversion	%		≤ 2

electric

Voltage type		Direct current or pulse-width modulated signal with pulse voltage ≤ 28 V and frequency ≥ 160 Hz up to max. 500 Hz
Type of signal		Analog
Maximum current per solenoid	A	1.03
Duty cycle	%	100
Coil temperature	°C	up to 125

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components. For the selection of the filters see www.boschrexroth.com/filter.

Information on the explosion protection

Area of application in accordance with the Explosion Protection Directive 94/9/EC	II 2G
Type of protection Valve according to EN 13463-1:2009 / EN 13463-5:2011	c T4 X
Type of protection Valve solenoid according to EN 60079-7:2007 / EN 60079-18:2009	Ex e mb IIC T4 Gb ¹⁾
Type examination certificate Solenoid	KEMA 02ATEX2240 X
"IECEX Certificate of Conformity" Solenoid	IECEX DEK 12.0068X
Special operating conditions for a safe application	– In case of bank assembly, only one solenoid of all valves may be energized at a time. – In case of valves with two solenoids, maximally one of the solenoids may be energized at a time. – For the operation, only direct current or a pulse-width modulated signal with pulse voltage ≤ 28 V and frequency ≥ 160 Hz up to max. 500 Hz may be used.

Control electronics ²⁾

Amplifier module for the control of explosion-proof proportional directional valves 4WRA...XE, 3DREP 6...XE and 4WRZ...XE	VT-MSPA2-200-1X/V0/0 according to data sheet 30228-200
Module for monitoring and limiting the solenoid currents with proportional valves	VT-MUXA2-2-1X/V0/1A according to data sheet 30290

¹⁾ Surface temperature > 50 °C, provide contact protection

²⁾ **Important:**

A monitoring circuit is to be provided for the monitoring of the solenoid current. We recommend operating the valves with the assemblies described herein.

Electrical connection

The type-examination tested valve solenoid is equipped with a terminal box and a type-tested cable gland.

The connection is polarity-independent.

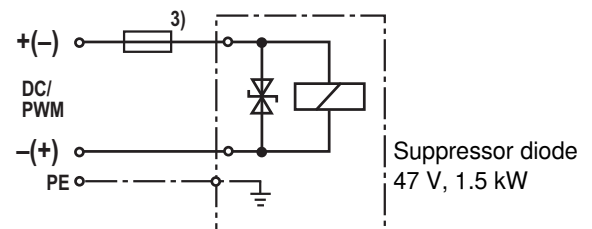
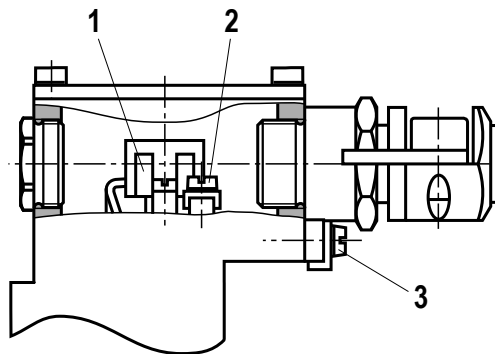
Important:

Corresponding to the rated current, a fuse according to DIN 41571 and EN / IEC 60127 has to be connected ahead of every valve solenoid (max. $3 \times I_{\text{rated}}$).

The shut-off threshold of the fuse has to match the prospective short-circuit current of the supply source.

The prospective short-circuit current of the supply source may amount to a maximum of 1500 A.

This fuse may only be installed outside the explosive area or must be of an explosion-proof design.



³⁾ Recommended pre-fuse

Characteristics medium time-lag according to DIN 41571; 1.25 A

Properties of the connection terminals

Position	Function	Connectable line cross-section
1	Operating voltage connection	Single-wire 0.75 ... 2.5 mm ² Finely stranded 0.75 ... 1.5 mm ²
2	Connection for protective earthing conductor	Single-wire max. 2.5 mm ² Finely stranded max. 1.5 mm ²
3	Connection for potential equalization conductor	Single-wire 4 ... 6 mm ² Finely stranded 4 mm ²

Cable gland

Type approval	II 2G Ex e IIC Gb
Threaded connection	M20 x 1.5
Protection class according to EN 60529	IP66 ¹⁾
Line diameter	mm 9 ... 11
Sealing	Outer sheath sealing

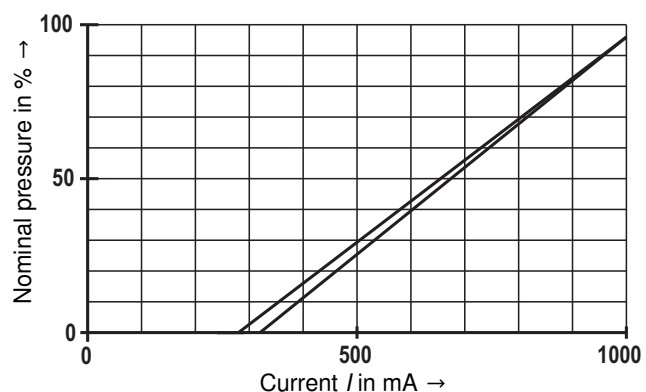
Connection line

Line type	Non-armored cables and lines (outer sheath sealing)
Temperature range	°C -30 ... > +110

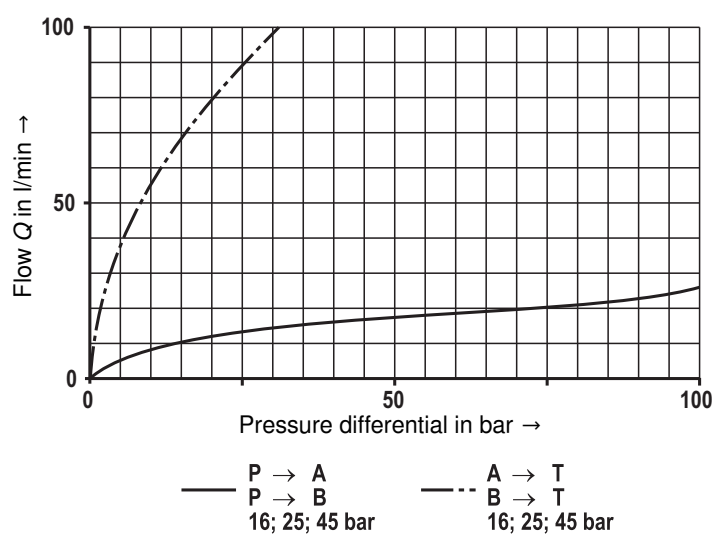
¹⁾ If installed properly

Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ and $p = 100\text{ bar}$)

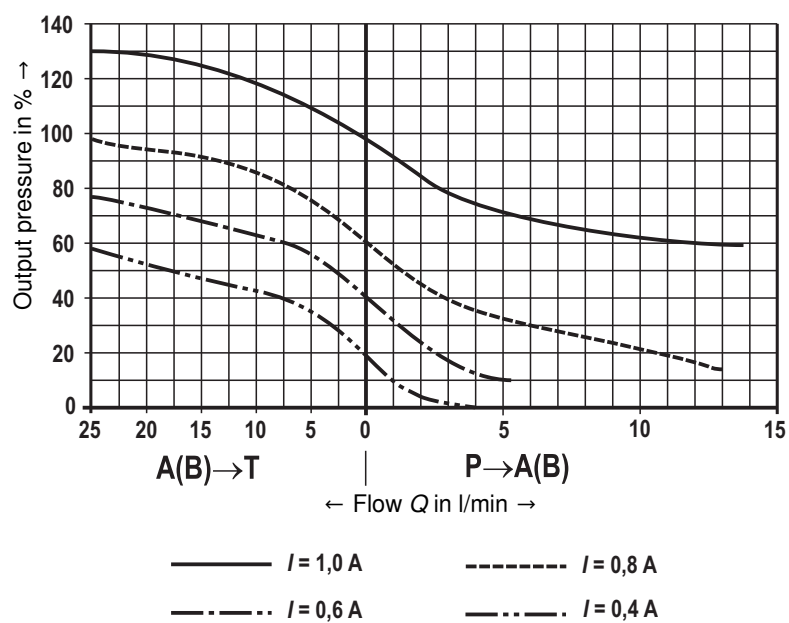
Pressure ratings 16, 25, and 45 bar



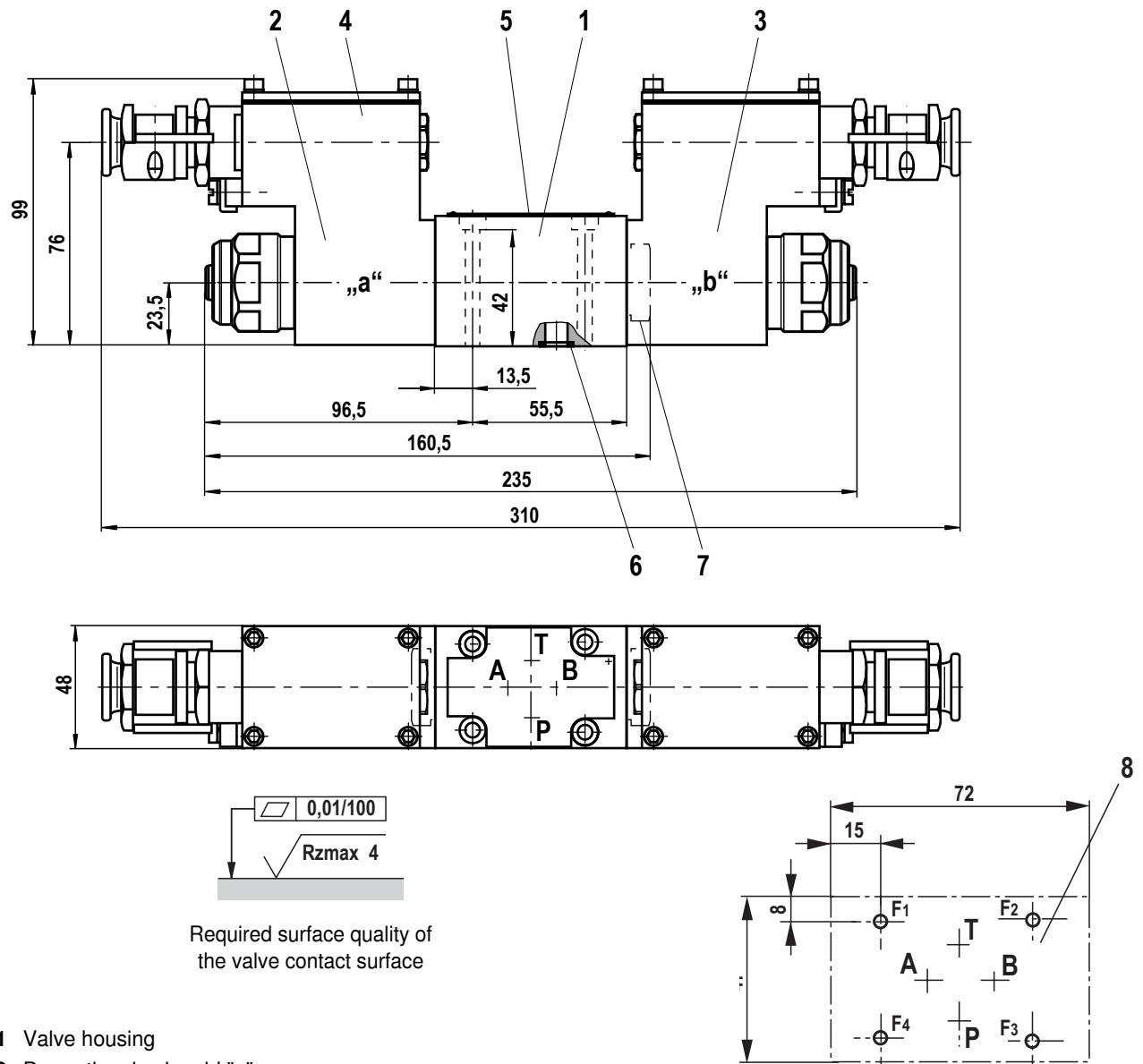
Pressure ratings 16, 25, and 45 bar



Pressure as a function of flow



Dimensions (dimensions in mm)



- 1 Valve housing
- 2 Proportional solenoid "a"
- 3 Proportional solenoid "b"
- 4 Terminal box
- 5 Name plate
- 6 Identical seal rings for A, B, P and T
- 7 Plug screw for valve with one solenoid
(2 spool positions, version A or B)
- 8 Porting pattern according to ISO 4401-03-02-0-05

Valve mounting screws

For reasons of stability, exclusively use the following valve mounting screws:

4 hexagon socket head cap screws

ISO 4762-M5x50-10.9-fIZn-240h-L

(friction coefficient 0.09 – 0.14 according to VDA 235-101)

Material no. **R913000064**

(must be ordered separately)

Subplates

(**without** locating hole)

G 341/01 FE/ZN (G1/4)

G 342/01 FE/ZN (G3/8)

G 502/01 FE/ZN (G1/2)

with dimensions as in the data sheet 45052
(must be ordered separately)

Important:

Subplates are no components in the sense of directive 94/9/EC and can be used after the manufacturer of the overall system has assessed the risk of ignition.

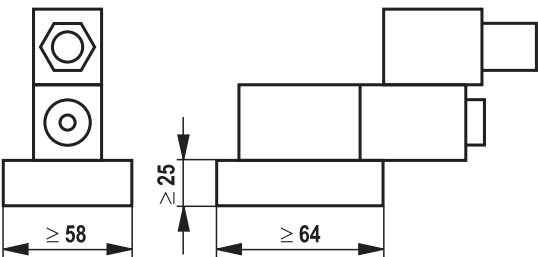
The G...FE/ZN versions are free from aluminum and/or magnesium and galvanized.

Installation conditions (dimensions in mm)

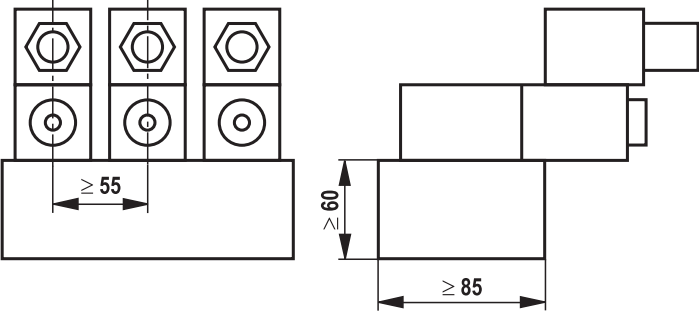
	Individual assembly	Bank assembly
Dimensions of the subplate	Minimum dimensions Length ≥ 64, width ≥ 58, height ≥ 25	Minimum cross-section Height ≥ 60, width ≥ 85
Thermal conductivity of the subplate	≥ 38 W/mK (EN-GJS-500-7)	
Minimum distance between the longitudinal valve axes	≥ 55 mm	

Schematic diagram

Individual assembly



Bank assembly



Important:

In case of bank assembly, only one solenoid of all valves may be energized at a time.

Notes

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Notes
