

RE 29 184/12.02

Replaces: 12.98

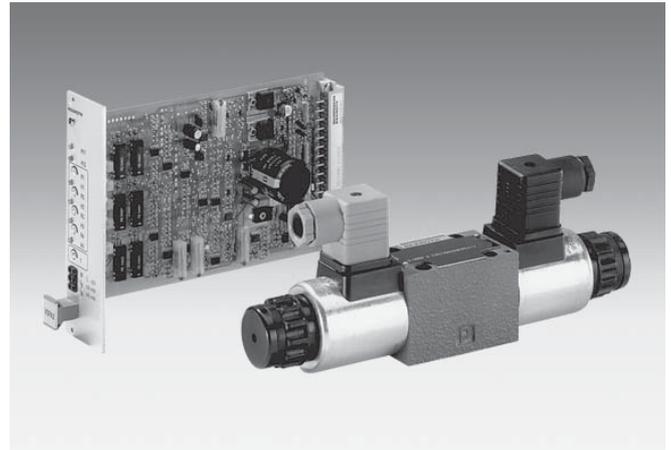
**Proportional pressure reducing valve
of 3-way design
Types 3DREP and 3DREPE**

Nominal size 6

Series 2X

Maximum operating pressure 100 bar

Maximum flow 15 L/min

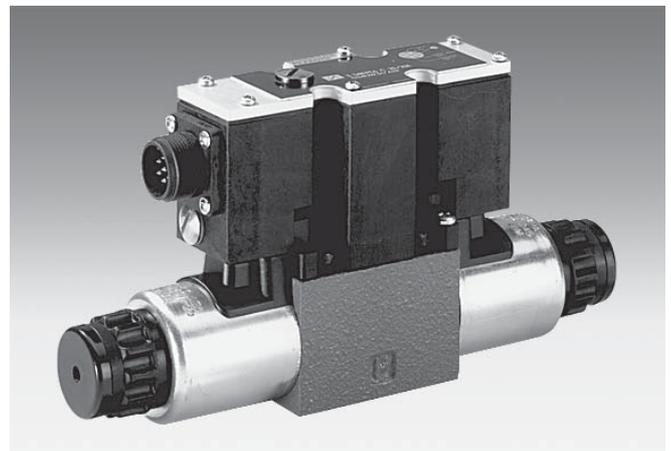


H/A/D 5735/97

Type 3DREP 6 .-2X/..EG24N9K4... with plug-in connectors and associated control electronics (separate order)

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H/A/D 5737/97

Type 3DREPE 6 .-2X/..EG24N9K31... with integrated control electronics

Features

- Directly controlled proportional valves for the control of the pressure and direction of a flow
- Operated via proportional solenoids with central thread and removable coil
- For subplate mounting:
 - Porting pattern to DIN 24 340 part 2 Form A, ISO 4401 and CETOP-RP121H
 - Subplates to catalogue sheet RE 45 052 (separate order), see pages 8 to 10
- Hand override, optional
- Spring centred control spool
- Type 3DREPE with integrated control electronics, interface A1
- External control electronics for type 3DREP:
 - Analogue amplifier type VT-VSPA2-50-1X/... in Euro-card format (separate order), see page 5
 - Digital amplifier type VT-VSPD-1-1X/... in Eurocard format (separate order), see page 5
 - Electrical amplifier type VT 11118 of modular design (separate order), see page 5



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Ordering details

	3DREP	6	-2X /	E	G24						*
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For **external** control electronics = **No code**
 With **integrated** control electronics = **E**
 Nominal size 6 = **6**

Symbols (simplified)

= **A**
 = **B**
 = **C**

Series 20 to 29 = **2X**
 (20 to 29: unchanged installation and connection dimensions)

Pressure stage 16 bar = **16**
 Pressure stage 25 bar = **25**
 Pressure stage 45 bar = **45**

1) Suitable for mineral oil (HL, HLP) to DIN 51 524
 2) For version "J" = sea water resistance only state "K31"
 3) For version "J" = "N" instead of "N9"

Special types of electrical protection on request!

No code = Without special protection
J = Sea water resistant

No code = Without hand override
N9 = With protected hand override

Supply voltage for the control electronics
G24 = 24 V DC

E = Proportional solenoid with removable coil

Further details in clear text
M = ¹⁾ NBR seals
V = FKM seals

No code = For 3DREP
For 3DREPE
A1 = Com. value input ±10 V

Electrical connections
For 3DREP
K4 = ²⁾ **Without** plug-in connector, with component plug to DIN EN 175 301-803
 Plug-in connector - separate order, see page 5

For 3DREPE
K31 = ²⁾ **Without** plug-in connector, with component plug to DIN EN 175 201-804
 Plug-in connector - separate order, see page 5

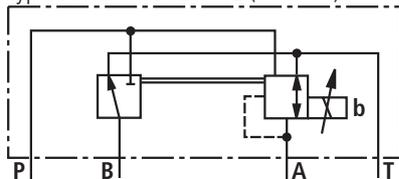
Preferred types (readily available)

Material No.	Type 3DREP
R900954474	3DREP 6 A-2X/16EG24K4/M
R900954417	3DREP 6 A-2X/25EG24K4/M
R900954418	3DREP 6 A-2X/45EG24K4/M
R900954419	3DREP 6 C-2X/16EG24K4/M
R900954420	3DREP 6 C-2X/25EG24K4/M
R900954421	3DREP 6 C-2X/45EG24K4/M

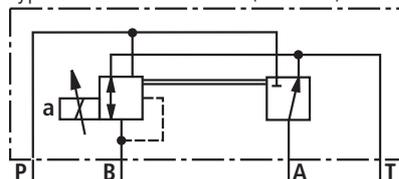
Material No.	Type 3DREPE
R900954422	3DREPE 6 A-2X/16EG24K31/A1M
R900954423	3DREPE 6 A-2X/25EG24K31/A1M
R900954424	3DREPE 6 A-2X/45EG24K31/A1M
R900954425	3DREPE 6 C-2X/16EG24K31/A1M
R900954427	3DREPE 6 C-2X/25EG24K31/A1M
R900954428	3DREPE 6 C-2X/45EG24K31/A1M

Symbols

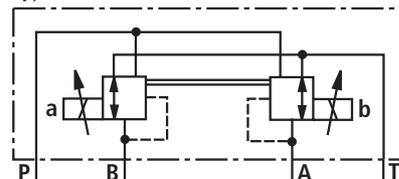
Type 3DREP.. 6 **A** 2X/...E (detailed)



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

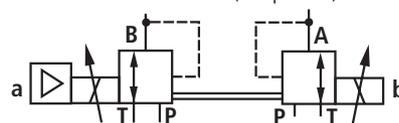


Type 3DREP.. 6 **C** 2X/...E (detailed)



Example of a valve with integrated control electronics

Type 3DREPE.. 6 **C** 2X/...E (simplified)



Function, section

The 3-way pressure reducing valve type 3DREP 6.. is directly operated by proportional solenoids. They convert an electrical input signal into a proportional pressure output signal.

The proportional solenoids are controllable wet pin DC solenoids with central thread and removable coil. The solenoids are controlled optionally via external control electronics (type 3DREP) or by integrated control electronics (type 3DREPE).

Design:

The valve mainly comprises of:

- Housing (1) with mounting surface
- Control spool (2) with pressure measuring spools (3 and 4)
- Solenoids (5 and 6) with central thread
- Optional integrated valve electronics (7).

Function:

- With the solenoids (5 and 6) de-energised the control spool (2) is held in its centre position by compression springs
- The control spool (2) is directly operated when one of the solenoids is energised.

E. g. by energising solenoid "a" (5).

→ The pressure measuring spool (3) and control spool (2) moves to the right in proportion to the electrical input signal.

→ The connection from P to B and A to T is via orifice form cross-sections with progressive flow characteristics.

- De-energising of the solenoid (5).

→ The control spool (2) is returned to its centre position by the compression springs.

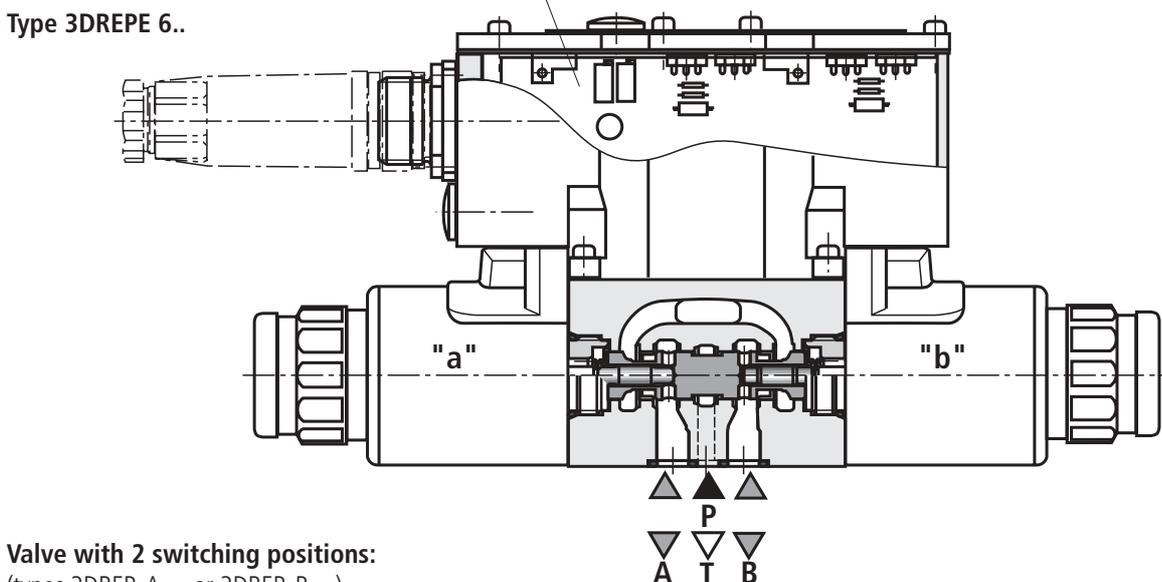
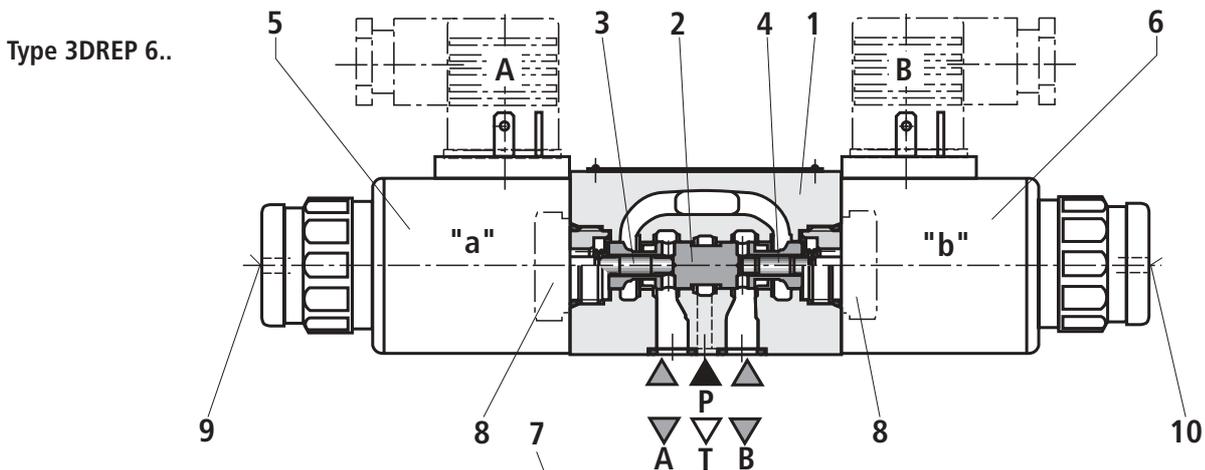
In the middle position the connections A and B to T are open, therefore the pressure fluid can freely flow to tank.

An optional hand override (9 and 10), makes it possible to move the control spool (2) without energising the solenoid.



Attention!

Unintended use of the hand override can cause uncontrolled machine movement!



Valve with 2 switching positions:

(types 3DREP..A... or 3DREP..B...)

The function of this version of the valve is basically the same as that of the valve with 3 switching positions. The 2 position valves are however only fitted with either solenoid "a" (5) or solenoid "b" (6). A plug (8) is fitted in place of the second solenoid.

Note:

Draining of the tank line is to be prevented. Taking the installation conditions into account a back pressure valve is to be fitted (back pressure approx. 2 bar).

Technical data (for applications outside these parameters, please consult us!)**General**

Valve type		3DREP	3DREPE
Installation		Optional, preferably horizontal	
Storage temperature range	°C	– 20 to + 80	
Ambient temperature range	°C	– 20 to + 70	–20 to + 50
Weight	kg	2.0	2.2

Hydraulic

Operating pressure range	Port P	bar	20 to 100 for pressure stage 16
		bar	30 to 100 for pressure stage 25
		bar	50 to 100 for pressure stage 45
	Port T	bar	0 to 30
Max. flow		L/min	15 ($\Delta p = 50$ bar)
Pressure fluid			Mineral oil (HL, HLP) to DIN 51 524 Further fluids on request!
Pressure fluid temperature range		°C	– 20 to + 80 (preferably + 40 to + 50)
Viscosity range		mm ² /s	20 to 380 (preferably 30 to 46)
Cleanliness class to ISO code			Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 class 17/15/12 ¹⁾
Hysteresis		%	≤ 5
Repeatability accuracy		%	≤ 1
Response sensitivity		%	≤ 0.5
Reversal span		%	≤ 1

Electrical, solenoid

Valve type			3DREP	3DREPE
Voltage type			DC	
Signal type			Analogue	
Command value signal	Voltage input „A1“	V	–	± 10
Max. current per solenoid		A	1.5	2.5
Solenoid coil resistance	Cold value at 20 °C	Ω	4,8	2
	Max. warm value	Ω	7.2	3
Duty		%	100	
Coil temperature		°C	Up to 150	
Electrical connections	3DREP		With component plug to DIN EN 175 301-803	
			Plug-in connector to DIN EN 175 301-803 ²⁾	
	3DREPE		With component plug to E DIN 43 563-AM6-3	
			Plug-in connector E DIN 43 563-BF6-3/Pg11 ²⁾	
Protection to DIN EN 60 529/VDE 0470 part 1			IP65 with mounted and fixed plug-in connector	

¹⁾ The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

²⁾ Separate order, see page 5

Technical data (for applications outside these parameters, please consult us!)

Electrical, control electronics

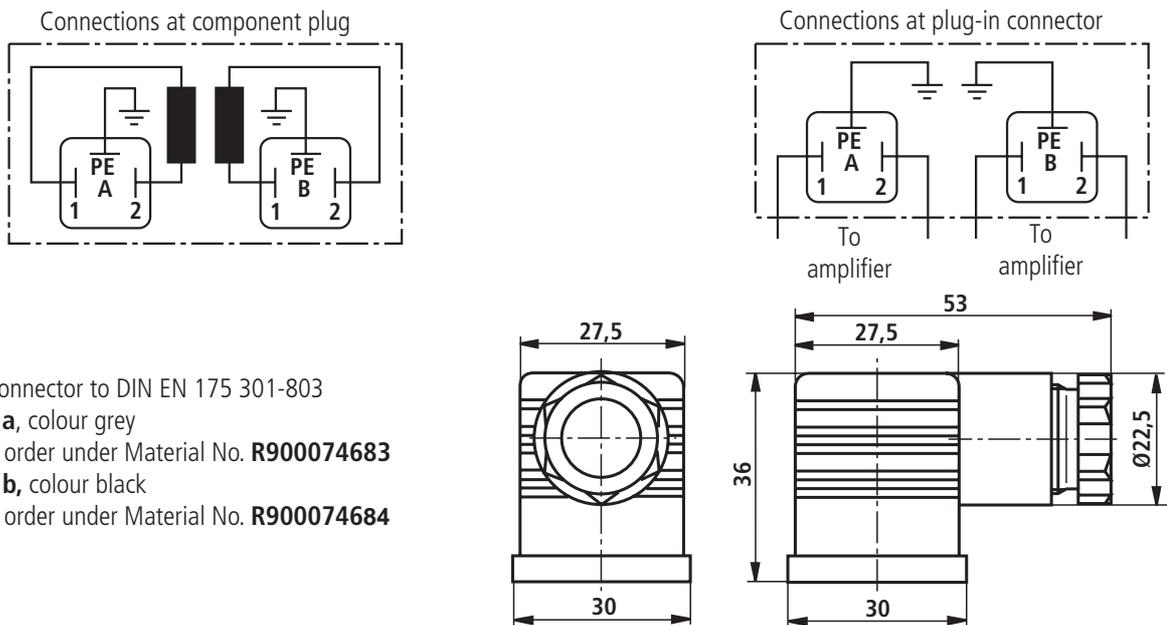
Integrated, control electronics for type 3DREPE			Integrated into the valve, see page 6
Supply voltage	Nominal voltage	VDC	24
	Lower limiting value	V	19
	Upper limiting value	V	35
Amplifier current consumption	I_{max}	A	1.8
	Impulse current	A	4
External, control electronics for type 3DREP			
Analogue amplifier in Eurocard format ¹⁾	– With 1 ramp time		VT- VSPA2-50-1X/T1, to catalogue sheet RE 30 113
	– With 5 ramp times		VT- VSPA2-50-1X/T5, to catalogue sheet RE 30 113
Digitale amplifier in Eurocard format ¹⁾			VT-VSPD-1-1X/..., to catalogue sheet RE 30 123
Amplifier of modular design ¹⁾			VT 11118-1X/..., to catalogue sheet RE 30 218

¹⁾ Separate order

 **Note:** For details regarding the **environmental simulation test** covering EMC (electro-magnetic compatibility), climate and mechanical loading see RE 29 184-U (declaration regarding environmental compatibility).

Electrical connections, plug-in connectors (dimensions in mm)

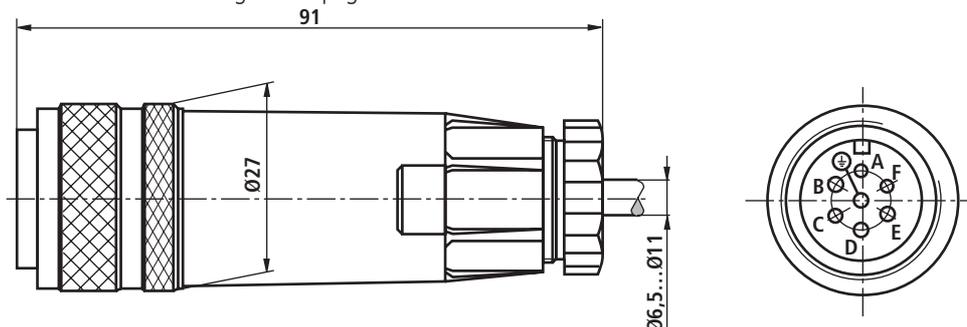
For **type 3DREP** (for **external** control electronics - not for version "J" = sea water resistant)



Plug-in connector to DIN EN 175 301-803
 Solenoid **a**, colour grey
 Separate order under Material No. **R900074683**
 Solenoid **b**, colour black
 Separate order under Material No. **R900074684**

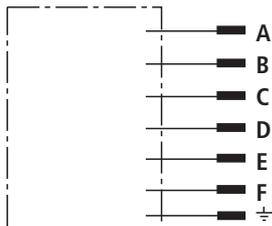
For **type 3DREPE** (with **integrated** control electronics and for version „J“ = sea water resistant)

Plug-in connector to DIN EN 175 201-804
 Separate order under Material No. **R900021267** (plastic version)
 For pin allocations see block circuit diagram on page 6



Integrated control electronics for type 3DREPE

Plug allocation, component plug



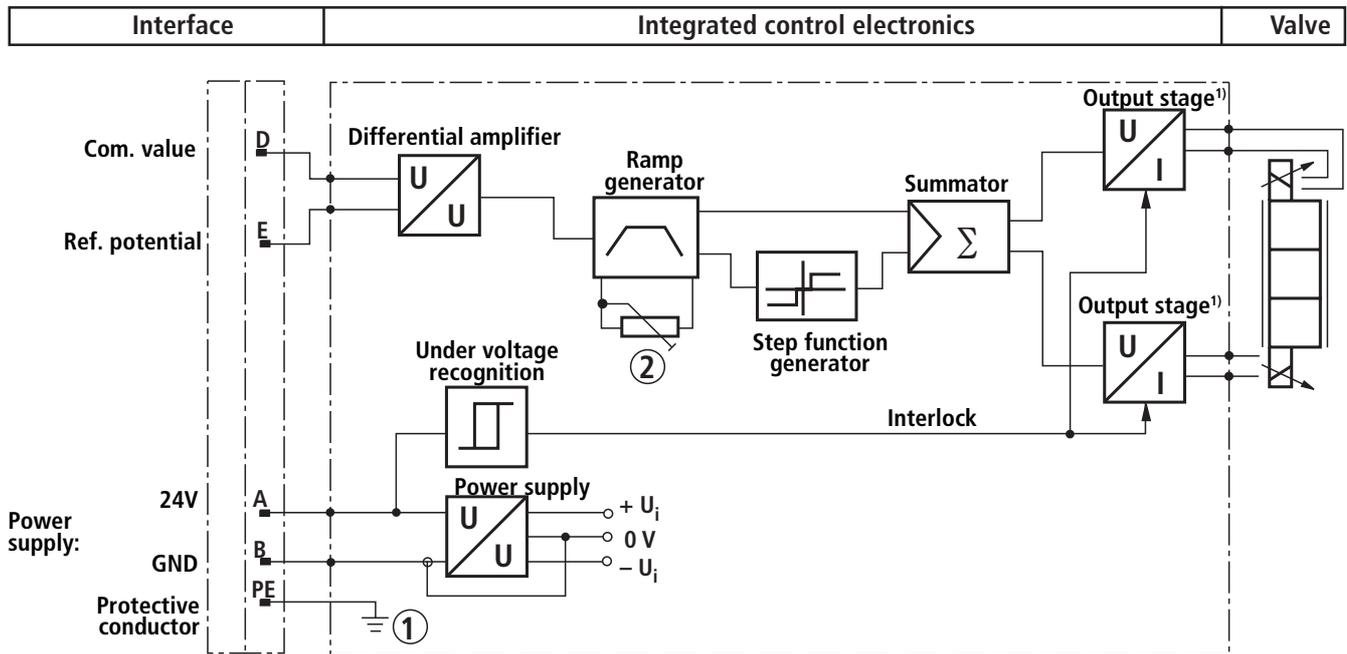
Integrated control electronics
(see below)

	Slot	Signal
Supply voltage	A	24 VDC (19 to 35 VDC) GND
	B	
	C	n.c.
Differential input	D	Com. value ($\pm 10 \text{ V} / 4 \text{ to } 20 \text{ mA}$) ref. potential
	E	
	F	n.c.

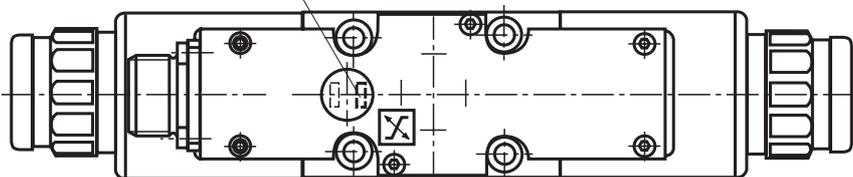
Command value: A positive command value (or 12 to 20 mA) at D and the reference potential at E results in pressure in A.
 A negative command value (or 12 to 4 mA) at D and the reference potential at E results in pressure in B.
 For a valve with one solenoid on side b (version A), a positive command value at D (4 to 20 mA) and the reference potential at E, results in pressure in A and for a valve with one solenoid on side a (version B) a positive command value at D (4 bis 20 mA) and the reference potential at E, results in pressure in B.

Connection cable: Recommended: – Up to 25 m cable length type LiYCY 5 x 0.75 mm²
 – Up to 50 m cable length type LiYCY 5 x 1.0 mm²
 Outside diameter 6.5 to 11 mm
 Only attach the screen to PE on the supply line.

Block circuit diagram / connection allocation for the integrated electronics

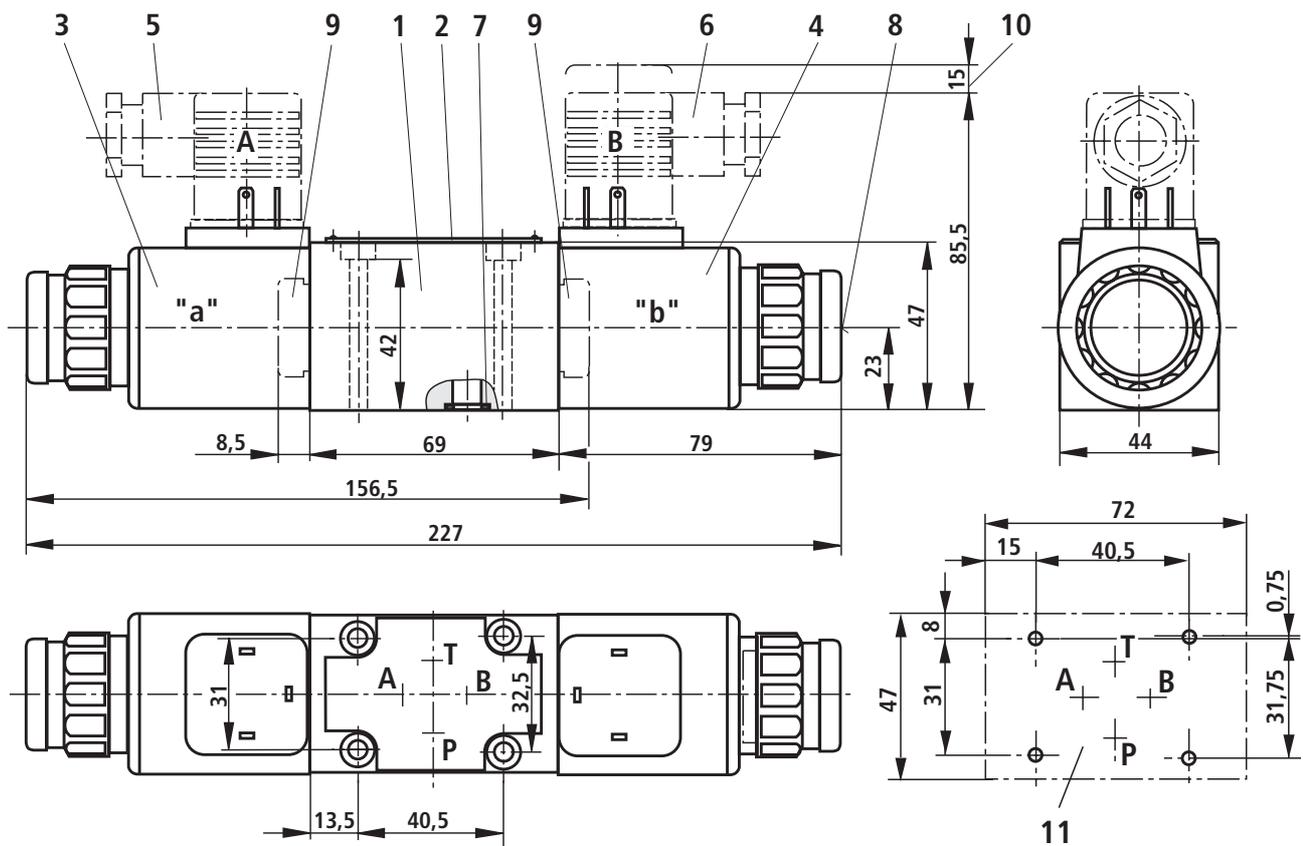


- 1 Protective conductor screwed onto housing and cover
- 2 Ramp from 0 to 5 s can be externally adjusted ($T_{up} \cong T_{down}$)

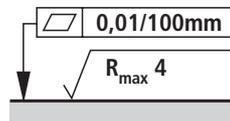


1) Output stages are current controlled

Unit dimensions: type 3DREP (dimensions in mm)



- 1 Valve housing
- 2 Name plate
- 3 Proportional solenoid "a"
- 4 Proportional solenoid "b"
- 5 Plug-in connector "A", colour grey (separate order, see page 5)
- 6 Plug-in connector "B", colour black (separate order, see page 5)
- 7 Identical seal rings for ports A, B, P and T
- 8 Protected hand override "N9"
- 9 Cover for valves with one solenoid (versions "A" or "B")
- 10 Space required to remove the plug-in connector
- 11 Machined valve mounting face and position of the ports



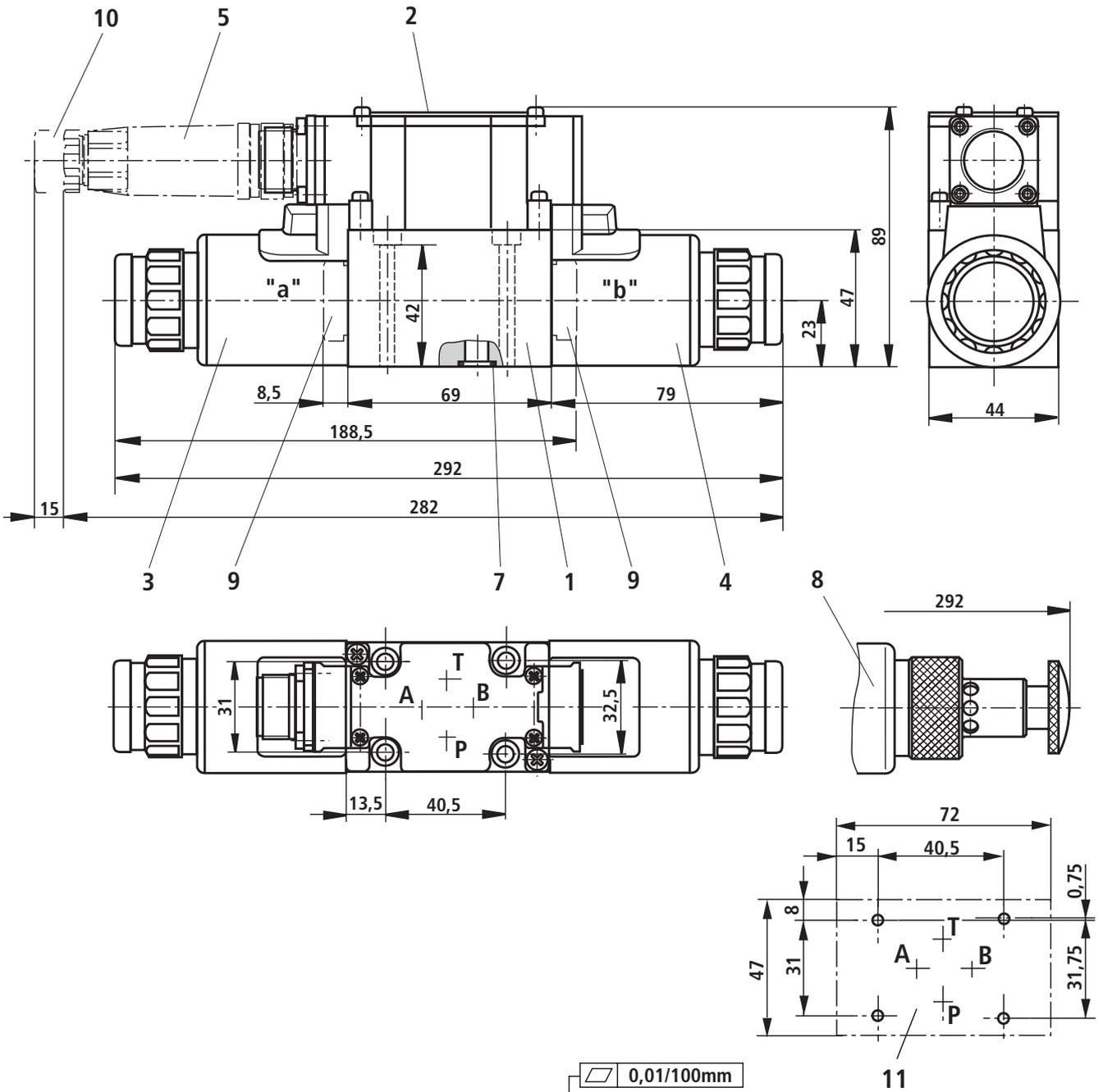
Required surface finish of the mating piece

Subplates G 341/01 (G 1/4)
G 342/01 (G 3/8)
G 502/01 (G 1/2)

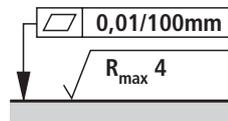
to catalogue sheet RE 45 052 and

Valve fixing screws
M5 x 50 DIN 912-10.9; $M_A = 8.9$ Nm
must be ordered separately.

Unit dimensions: type 3DREP...J – sea water resistant (dimensions in mm)



- 1 Valve housing
- 2 Name plate
- 3 Proportional solenoid "a"
- 4 Proportional solenoid "b"
- 5 Plug-in connector
(separate order, see page 5)
- 7 Identical seal rings for ports A, B, P and T
- 8 Protected hand override "N"
- 9 Cover for valves with one solenoid (versions "A" or "B")
- 10 Space required to remove the plug-in connector
- 11 Machined valve mounting face and position of the ports



Required surface finish of the mating piece

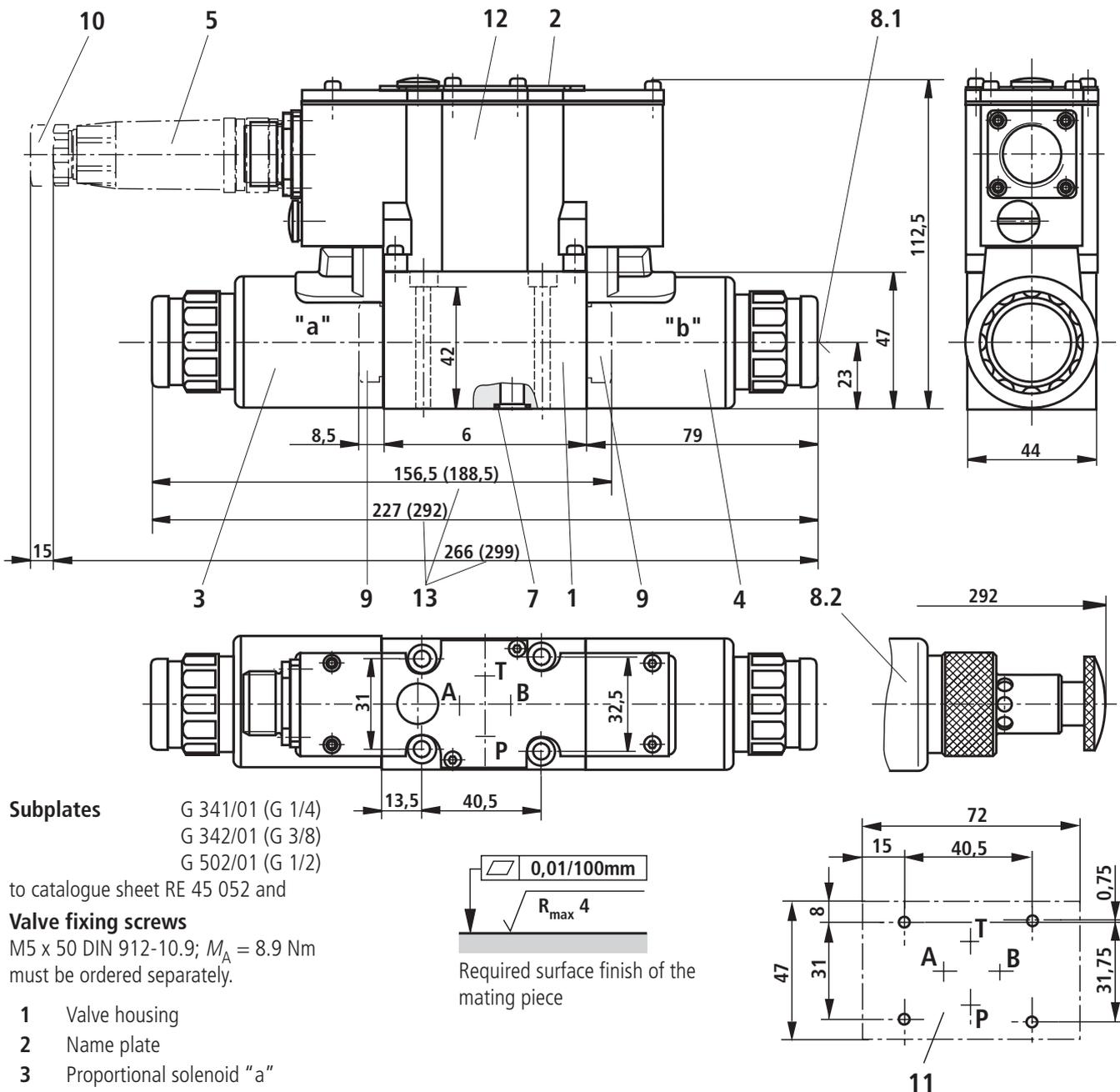
Subplates G 341/01 (G 1/4)
G 342/01 (G 3/8)
G 502/01 (G 1/2)

to catalogue sheet RE 45 052 and

Valve fixing screws

M5 x 50 DIN 912-10.9; $M_A = 8.9$ Nm
must be ordered separately.

Unit dimensions: types 3DREPE and 3DREPE ... J – sea water resistant (dimensions in mm)



Subplates

G 341/01 (G 1/4)
G 342/01 (G 3/8)
G 502/01 (G 1/2)

to catalogue sheet RE 45 052 and

Valve fixing screws

M5 x 50 DIN 912-10.9; $M_A = 8.9 \text{ Nm}$
must be ordered separately.

- 1 Valve housing
- 2 Name plate
- 3 Proportional solenoid "a"
- 4 Proportional solenoid "b"
- 5 Plug-in connector
(separate order, see page 5)
- 7 Identical seal rings for ports A, B, P and T
- 8.1 Protected hand override "N9"
- 8.2 Hand override "N" for sea water resistant version „J"

0,01/100mm
 $R_{\max} 4$
Required surface finish of the mating piece

- 9 Cover for valves with one solenoid
(versions "A" or "B")
- 10 Space required to remove the plug-in connector
- 11 Machined valve mounting face and position of the ports
- 12 Integrated control electronics
- 13 Dim. () for sea water resistant version "J"

Throttle insert

When used with a proportional directional valve type 4WRZ..., then the following throttle inserts are to be used for ports A and B:

NS	10	16	25	32	52
Ø in mm	1.8	2.0	2.8	–	–
Material No.	00158510	00158547	00157948	–	–

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