

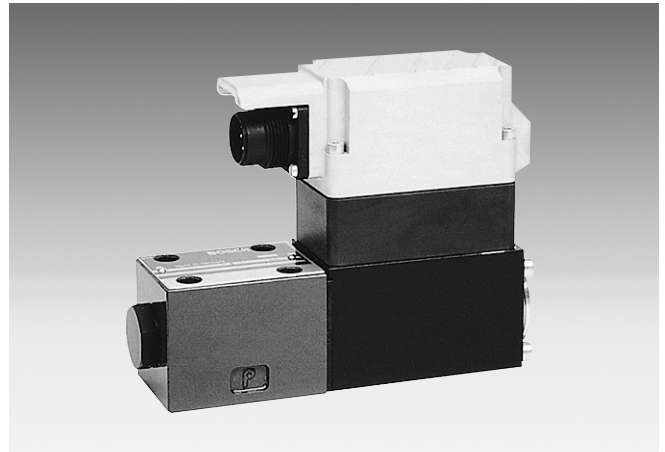
RE 29 041/11.02

**Servo solenoid valves with on-board
electronics (OBE)
Type 4WRREH 6**

Size 6

Series 1X

Maximum working pressure 315 bar

Maximum flow rate 40 l/min (Δp 70 bar)

00103593

Type 4WRREH 6 ..B..-1X/G24...

List of contents

Contents	Page
Features	1
Ordering data	2
Preferred types	2
Function, sectional diagram	3
Symbols	3
Technical data	4 to 6
On-board trigger electronics	7
Performance curves	8 and 9
Device dimensions	10

Features

- Directly operated High Response servo solenoid valve NG 6, with control piston and sleeve in servo quality
- Double-stroke solenoid with integral position feedback and on-board electronics (OBE), calibrated at the factory
- Prepared as a pilot valve, e.g. for 3/2 control cartridge with position transducer, position-controlled
- Electrical connection 11P+PE
Signal input difference amplifier with interface $B5 \pm 10 V$
- Suitable for electrohydraulic controllers in production and testing systems
- For subplate attachment, mounting hole configuration to DIN 24 340 Form A, ISO 4401 and CETOP-RP 121 H
- Subplates as per catalogue section RE 45 053 (order separately)
- Line sockets to DIN 43 563-AM6, see catalogue section RE 08 008 (order separately)

Variants on request

- For standard applications
- Special symbols for extending the module.



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Ordering data

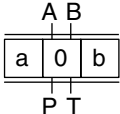
4WRR	E	H	6		B			-1X/G24	K0/	B5	M	*
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With **on-board** trigger electronics = **E**

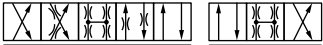
Control piston/sleeve = **H**

Size 6 = **6**

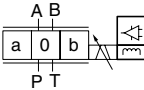
Symbols
4/3-way version



= V



Side of inductive position transducer



(Standard) = **B**

¹⁾ Only in connection with flow characteristic "p"
²⁾ Kink 60% for NG 6 with nominal flow rate "15" and "25", otherwise kink 40%

Further information in plain text

M = NBR seals, suitable for mineral oils (HL, HLP) to DIN 51 524

Interface for trigger electronics
B5 = Setpoint input ±10 V

Electrical connection
K0 = without line socket, with plug to DIN 43 563-AM6
 Order line socket separately

Voltage supply of trigger electronics
G24 = +24 V DC

1X = Series 20 to 29 (installation and connection dimensions unchanged)

Flow characteristic
L = Linear
P = ²⁾ Non-linear curve

Nominal flow rate at 70 bar valve pressure difference (35 bar / metering notch)

	08	12	15 ¹⁾	24	25 ¹⁾	40
l/min	8	12	15	15	25	40

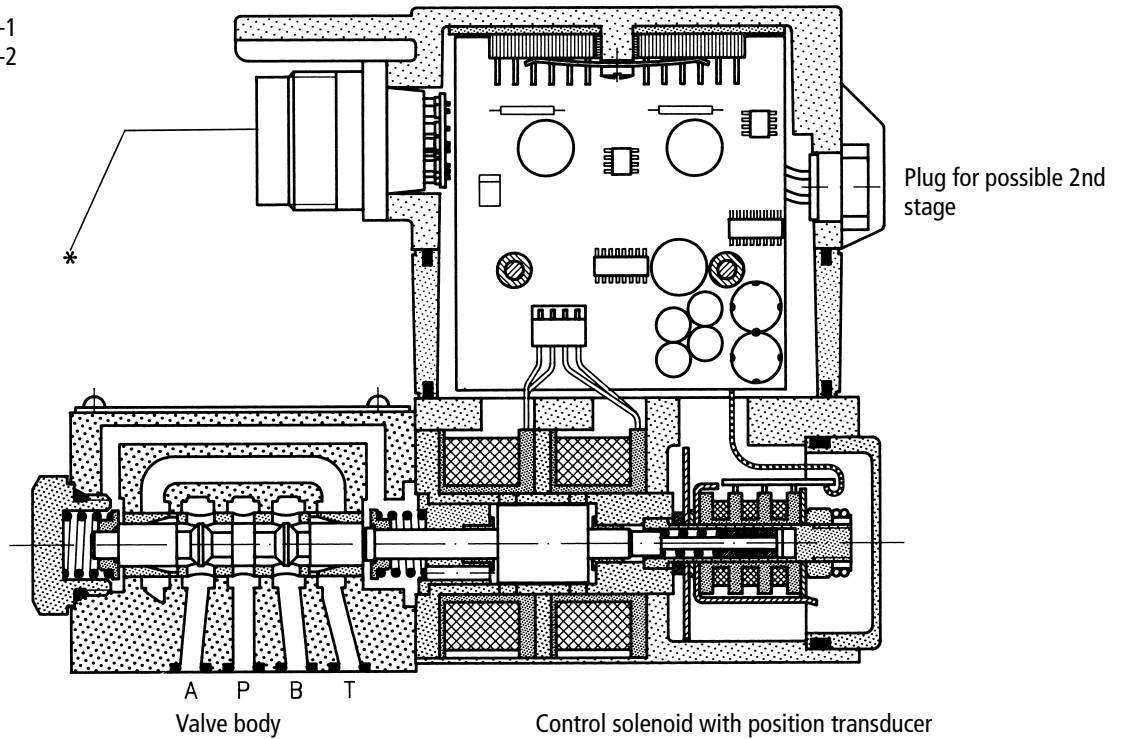
Size 6

Preferred types (available at short notice)

Material no.	Type 4WRREH 6
0 811 404 723	4WRREH 6 VB08L -1X/G24K0 / B5M
0 811 404 722	4WRREH 6 VB12L -1X/G24K0 / B5M
0 811 404 721	4WRREH 6 VB24L -1X/G24K0 / B5M
0 811 404 720	4WRREH 6 VB40L -1X/G24K0 / B5M
0 811 404 725	4WRREH 6 VB15P -1X/G24K0 / B5M
0 811 404 726	4WRREH 6 VB25P -1X/G24K0 / B5M
0 811 404 727	4WRREH 6 VB40P -1X/G24K0 / B5M

Servo solenoid valve 4WRREH 6

CE EN 50 081-1
EN 50 082-2



Symbols

	Linear	p: kink 60 % [q_n 15, 25 l/min]	p: kink 40 % [q_n 40 l/min]
	V		
	Standard = 1:1		

Accessories, not included in scope of delivery

(4 x) M 5 x 30 DIN 912–10.9	Fastening screws	2 910 151 166
	Line sockets 11P+PE	KS 1 834 482 142



Testing and service equipment

- Test box type VT-PE-TB3, see RE 30 065
- Test adapter 11P+PE type VT-PA-1, see RE 30 067


Technical data (For device applications beyond the stated values, please consult us!)**General**

Construction	Spool type valve, operated directly, with steel sleeve
Actuation	Proportional double-stroke solenoid with position control, OBE
Type of mounting	Subplate, mounting hole configuration NG 6 (ISO 4401 and CETOP-RP 121 H)
Installation position	Optional
Ambient temperature range	−20 ... +50 °C
Weight	2.5 kg
Vibration resistance, test condition	Max. 25 g, shaken in 3 dimensions (24 h)

Hydraulic (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Pressure fluid	Hydraulic oil to DIN 51 524 ... 535, other fluids after prior consultation					
Viscosity range, recommended max. permitted	20 ... 100 mm ² /s 10 ... 800 mm ² /s					
Pressure fluid temperature range	−20 ... +65 °C					
Purity class to ISO code	Maximum permitted degree of contamination of pressure fluid to ISO 4406 (C) Class 18/16/13 ¹⁾					
Flow direction	See symbol					
Nominal flow [l/min] at $\Delta p = 35\text{ bar}$ per notch*	8	12	15	24	25	40
Max. working pressure	Port P, A, B: 315 bar					
Max. pressure	Port T: 100 bar					
Operating limits at Δp [bar]	315	315	315	315	315	250
Leakage [cm ³ /min] at 100 bar		< 250	< 300	–	< 500	< 900
		–	–	< 180	< 250	–

Static/Dynamic













Hysteresis	$\leq 0.2\text{ %}$
Manufacturing tolerance for $q_{max.}$	< 10 %
Response time for signal change 0 ... 100 %	$\leq 5\text{ ms}$
Thermal drift	Zero point displacement < 1 % at $\Delta T = 40\text{ °C}$
Zero adjustment	Factory-set $\pm 1\text{ %}$
Conformity	 EN 50 081-1 EN 50 082-2

- ¹⁾ The purity classes stated for the components must be complied with in hydraulic systems.
Effective filtration prevents problems and also extends the service life of components.
For a selection of filters, see catalogue sections RE 50 070, RE 50 076 and RE 50 081.

* Flow rate at a different Δp

$$q_x = q_{nom.} \cdot \sqrt{\frac{\Delta p_x}{35}}$$

Electrical, trigger electronics integrated in the valve

Cyclic duration factor	100 %, max. current input 30 VA (24 V DC)	
Degree of protection	IP 65 to DIN 40 050 and IEC 14 434/5	
Connection	Plug, 11P+PE	Data
Power supply 24 V DC _{nom.}	¹⁾ 	+24 V DC _{nom.} , fuse 2.5 A _F (output stages)
		0 V power ground
	²⁾ 	+24V DC _{nom.} signal part
		0 V signal ground
Input signal ±10 V	³⁾ 	$\frac{U_{IN}}{U_{IN}}$ } Difference amplifier, $R_i = 100 \text{ k}\Omega$
		
Feedback signal (LVDT)		±10 V DC, $R_a = 1 \text{ k}\Omega$
		0 V, reference point
Enabling input		> 8,5 V to 24 V DC _{nom.} (max. 40 V DC) $R_i = 10 \text{ k}\Omega$
Signals	⁴⁾ 	Enabling acknowledgement +24 V DC
		Fault signal: no fault +24 V DC
Protective conductor		Only connect when transformer of 24 V DC system does not conform to standard VDE 0551
Connecting cable	Recommended Ø 12 ... 14 mm: screened max. 20 m 0.75 mm ² max. 40 m 1.0 mm ²	

24 V DC_{nom.} – min. 21 V DC
– max. 40 V DC

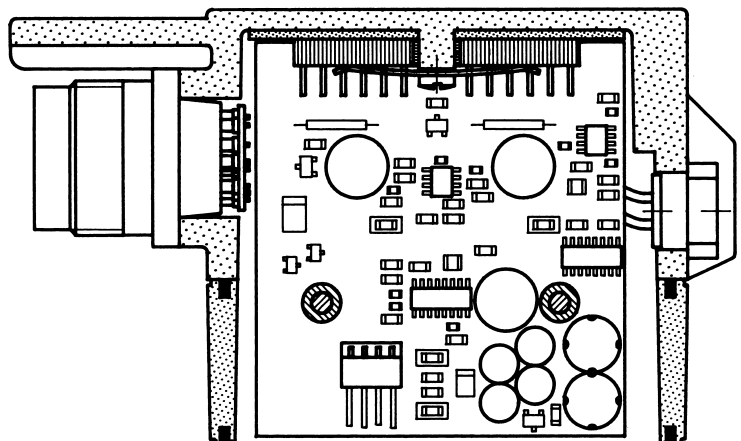
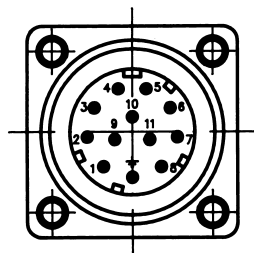
¹⁾ U_B (Pin 1) = output stage supply
– Valve "OFF" < 13.4 V DC
– Valve "ON" > 16.8 V DC
No fault signal (Pin 11)

²⁾ U_S (Pin 9) = signal electronics supply
– Valve "OFF" < 16.8 V DC
Fault signal (Pin 11)
– Valve "ON" > 19.5 V DC
No fault signal (Pin 11)

³⁾ Inputs: dielectric strength to withstand up to max. 50 V.

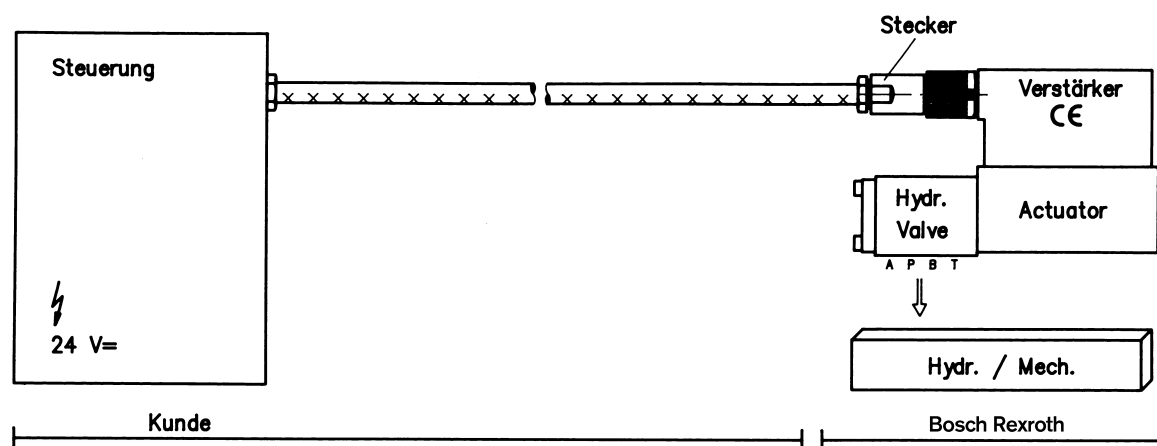
⁴⁾ Signals can bear a load of max. 20 mA and are resistant to shorts to ground.

11P+PE



Connection

For electrical data, see page 5 and
Operating Instructions 1 819 929 083



Technical notes on the cable

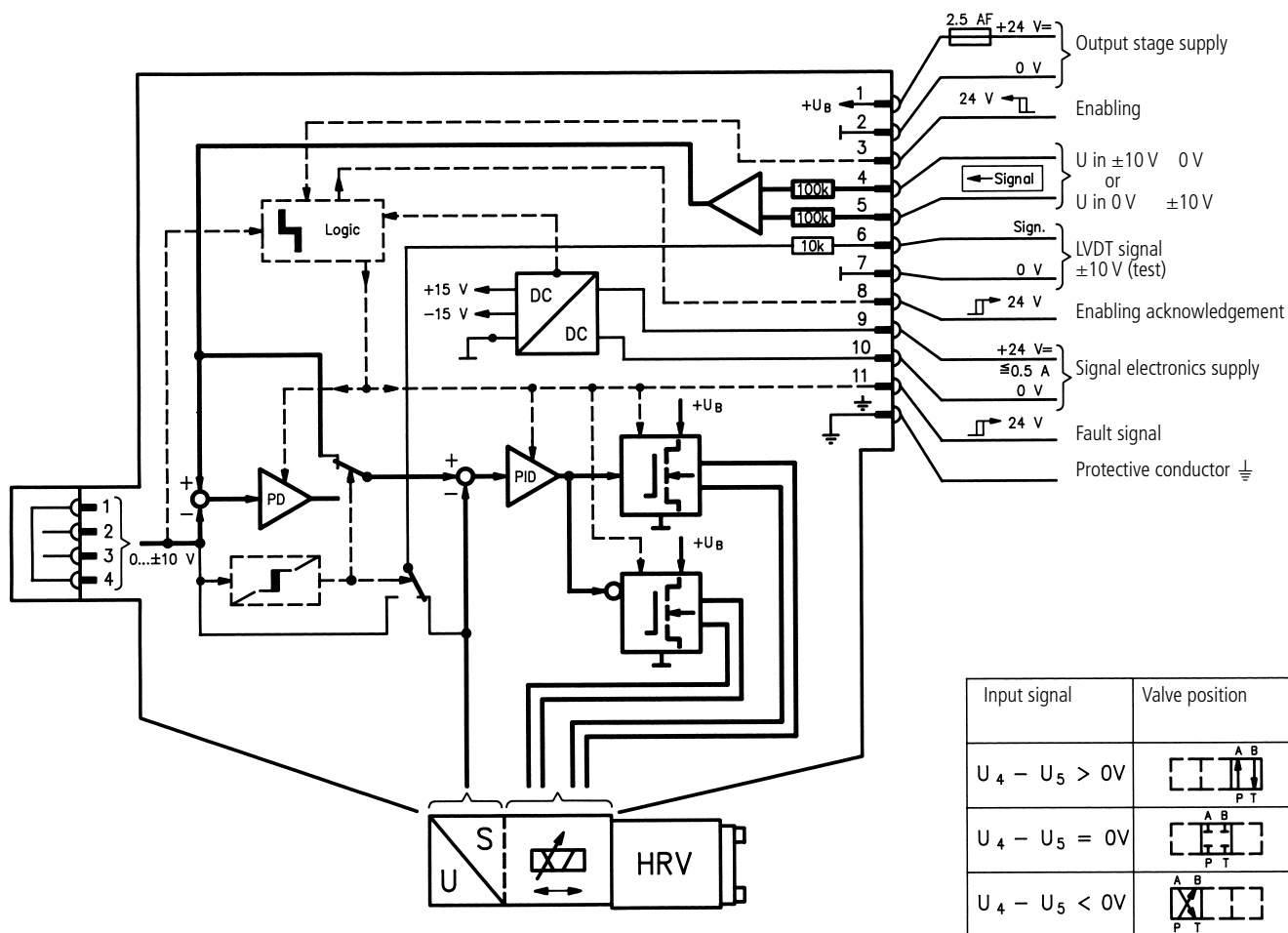
- Version:**
- Multi-wire cable
 - Extra-finely stranded wire to VDE 0295, Class 6
 - Protective conductor, green/yellow
 - Cu braided screen
- Types:**
- e.g. Ölflex-FD 855 CP (from Lappkabel company)
- No. of wires:**
- Determined by type of valve, plug types and signal assignment
- Cable Ø:**
- 0.75 mm² up to 20 m length
 - 1.0 mm² up to 40 m length
- Outside Ø:**
- 9.4 ... 11.8 mm – Pg 11
 - 12.7 ... 13.5 mm – Pg 16

Note

Electrical signals emitted via the trigger electronics (e.g. actual values) must not be used to shut down safety-relevant machine functions! (See European Standard, "Technical Safety Requirements for Fluid-Powered Systems and Components – Hydraulics", EN 982.)

Block diagram / pin assignment

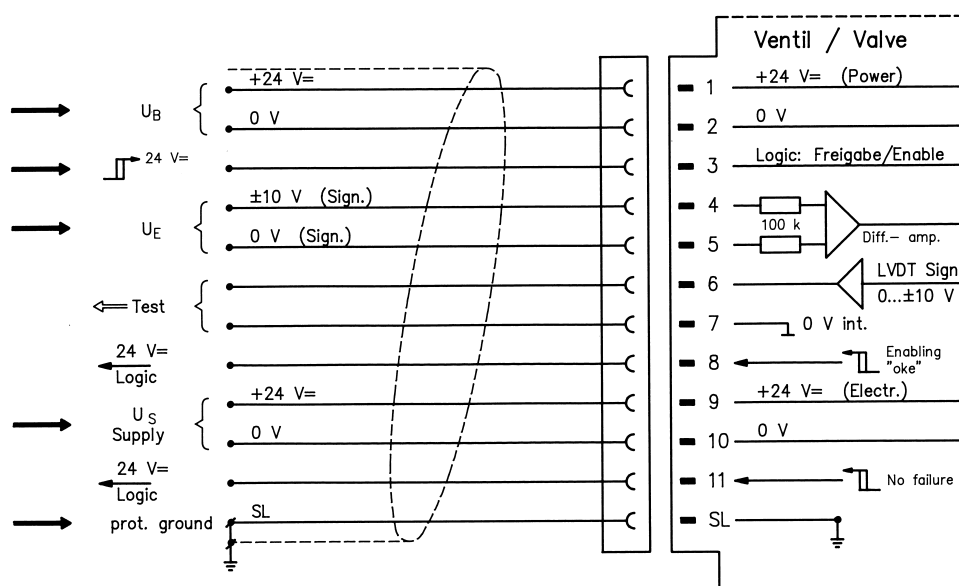
Version B5: $U_E \pm 10\text{ V}$



Pin assignment 11P + PE

Version B5: $U_E \pm 10\text{ V}$

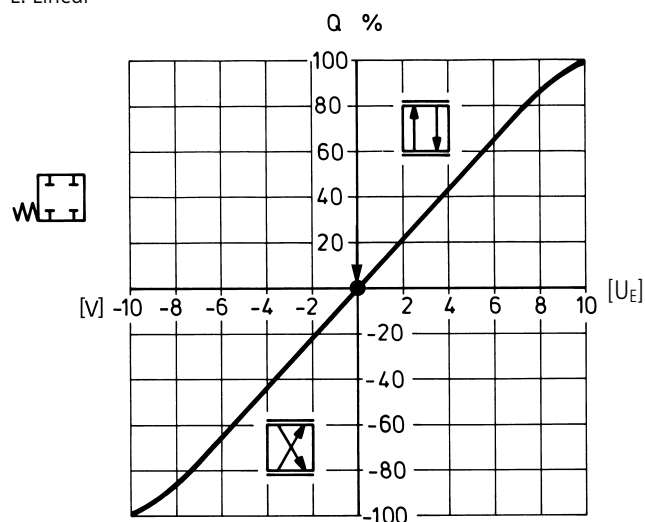
($R_i = 100\text{ k}\Omega$)



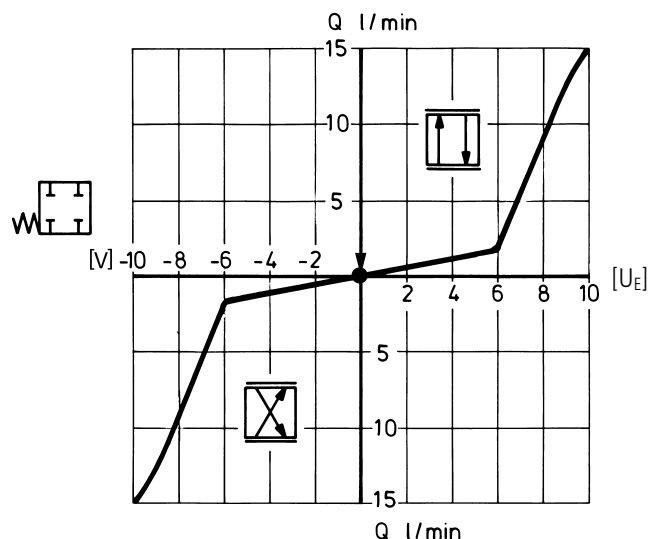
Flow rate/Signal function

$$Q = f(U_E)$$

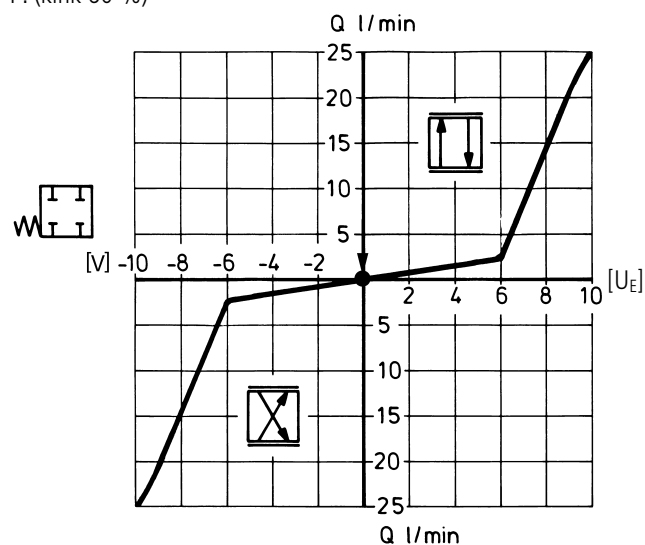
L: Linear



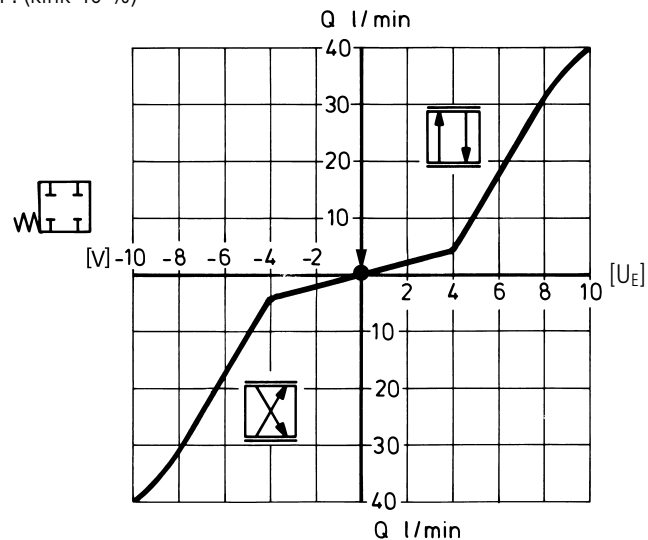
P: (kink 60 %)



P: (kink 60 %)



P: (kink 40 %)



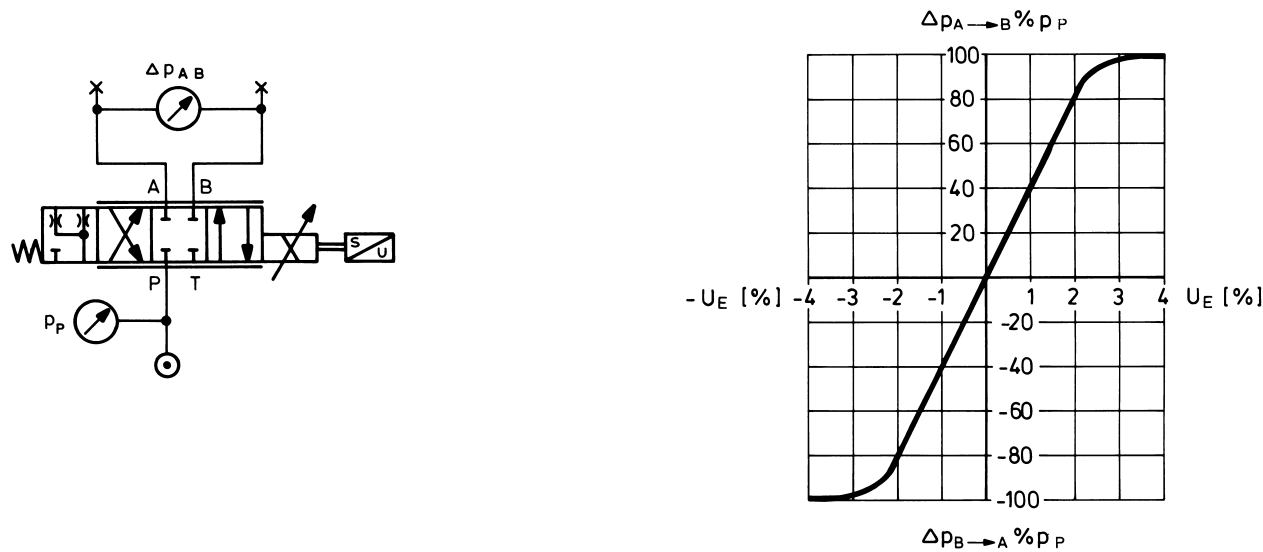
Note

Highly dynamic servo solenoid valves do not have a safe basic position when they are switched off. For this reason, many applications require the use of "additional check valves", which must be taken into account during the On/Off switching sequence.

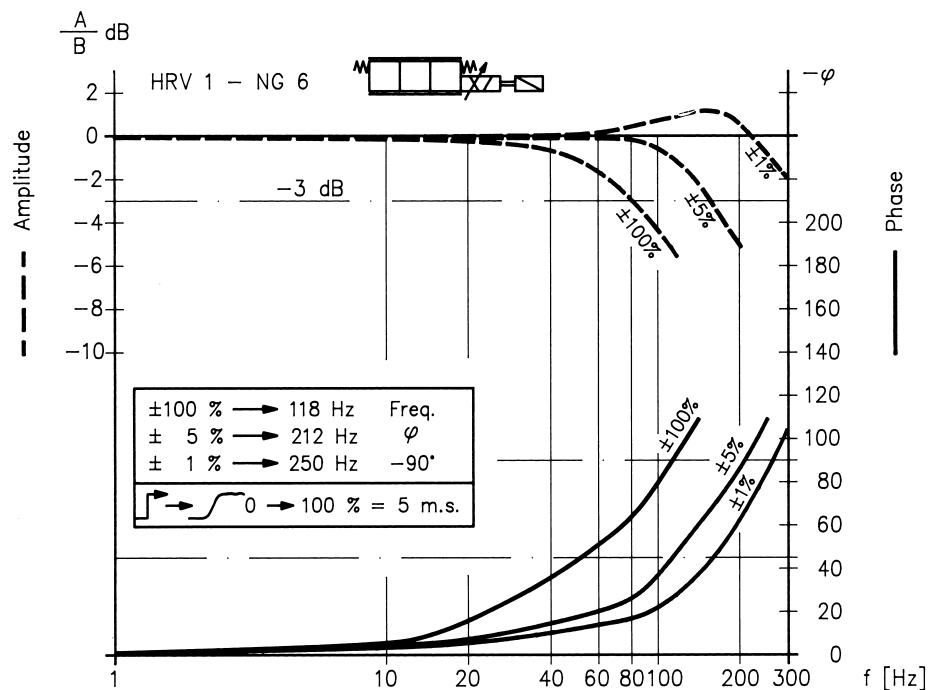
When switched off, the spool tends to rest in the P-B/A-T position.

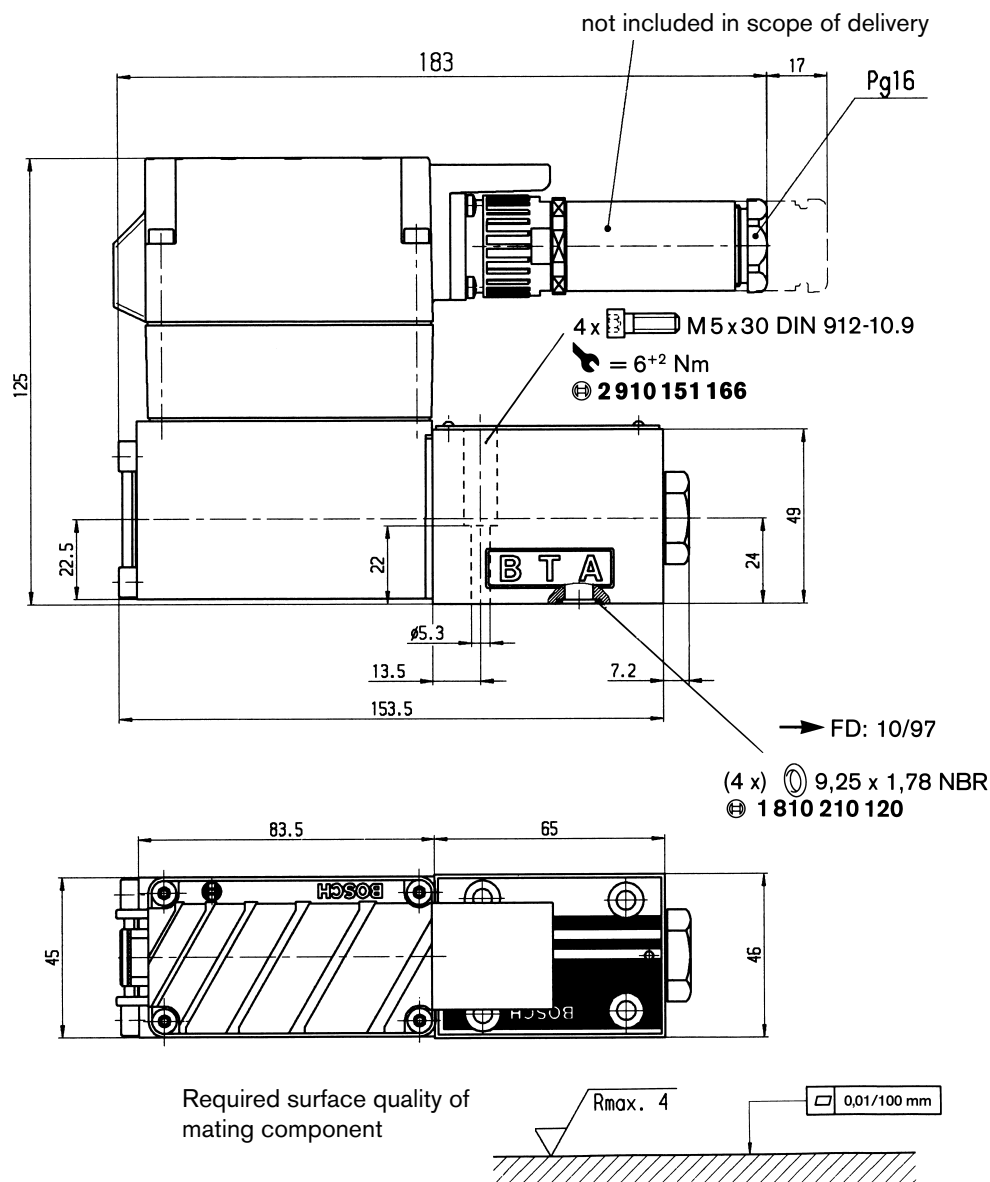
This cannot be guaranteed if dirt is present.

Pressure gain



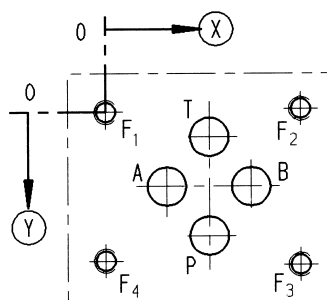
Bode diagram





Mounting hole configuration: NG 6 (DIN 24 340 Form A, ISO 4401 and CETOP-RP 121 H)

For subplates, see catalogue section RE 45 053



¹⁾ Deviates from standard

²⁾ Thread depth: Ferrous metal 1.5 x Ø*

Non-ferrous 2 x Ø

* (NG 10 min. 10.5 mm)

	P	A	T	B	F ₁	F ₂	F ₃	F ₄
⊗	21.5	12.5	21.5	30.2	0	40.5	40.5	0
⊙	25.9	15.5	5.1	15.5	0	-0.75	31.75	31
Ø	8 ¹⁾	8 ¹⁾	8 ¹⁾	8 ¹⁾	M5 ²⁾	M5 ²⁾	M5 ²⁾	M5 ²⁾

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