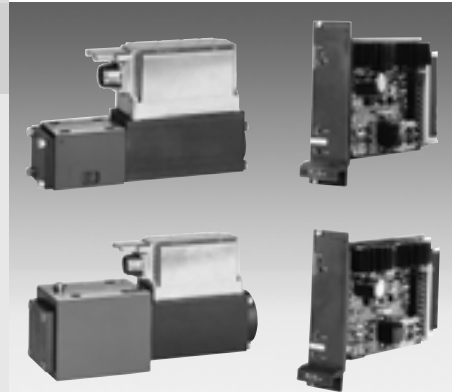


Servo solenoid valves with electrical position feedback (Lvdt DC/DC) (ruggedized design)

RE 29026/07.08
Replaces: 01.05

Type 4WRPH

Nominal size (NG) 6, 10
Unit series 2X
Maximum working pressure P, A, B 315 bar, T 250 bar
Nominal flow rate 12...40 l/min (NG6), 50...100 l/min (NG10)



List of contents

Contents	Page
Features	1
Ordering data	2
Function, Sectional diagram, Symbols, Accessories	3 and 4
Technical data	5 and 6
Valve with external trigger electronics	7 and 8
Performance curves	9 to 11
Unit dimensions	12 and 13

Features

- Directly operated servo solenoid valve NG6, NG10, with control piston and sleeve in servo quality and sturdy design
- Actuated on one side, 4/4 fail-safe position when switched off
- “Ruggedized” design 40 g with central plug
- Suitable for the wood industry and in systems with difficult ambient conditions
- For subplate attachment, mounting hole configuration NG6 to ISO 4401-03-02-0-05 and NG10 to ISO 4401-05-04-0-05
- Subplates as per catalogue section NG6 RE 45053 and NG10 RE 45055 (order separately)

Ordering data

4WRP		H		B		-2X/G24	K0/M	-750
------	--	---	--	---	--	---------	------	------

For external trigger electronics = no design.

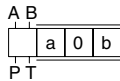
Control piston/sleeve = H

Nominal size 6 = 6

Nominal size 10 = 10

Symbols

4/4-way version

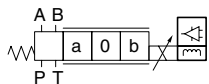


With symbols C5 and C1:³⁾

P → A: q_v B → T: $q_v/2$

P → B: $q_v/2$ A → T: q_v

Side of inductive position transducer



(Standard) = B

¹⁾ Only in connection with flow characteristic "p"

²⁾ Kink 60% for NG6 with nominal flow rate "15" and "25", otherwise kink 40%

³⁾ q_v 2:1 only with nominal flow rate ≥ 40 l/min

Ruggedized design

750 =

M = NBR seals, suitable for mineral oils (HL, HLP) to DIN 51524

Electrical connection

K0 = without line socket, with plug to DIN 43563-AM6
Order line socket separately

Voltage supply of trigger electronics

G24 = +24 V DC

2X = Unit series 20 to 29 (installation and connection dimensions unchanged)

Flow characteristic

L = Linear

P = Non-linear curve²⁾

Nominal flow rate at 70 bar valve pressure difference

Nominal Size 6

12 = 12 l/min

15¹⁾ = 15 l/min

24 = 24 l/min

25¹⁾ = 25 l/min

40 = 40 l/min

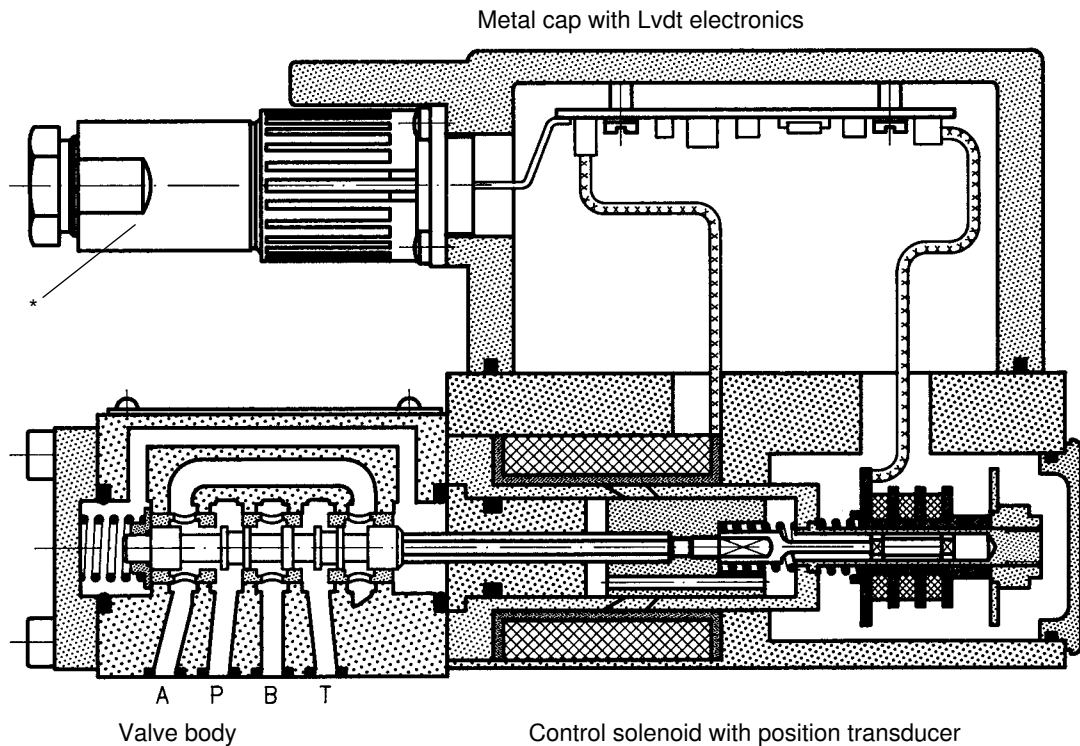
Nominal Size 10

50 = 50 l/min

100 = 100 l/min

Function, Sectional diagram

Servo solenoid valve 4WRPH6...-750



Symbols

	Linear	p: kink 60%	p: kink 40%
	C3, C4	C5, C1	C5, C1

Accessories

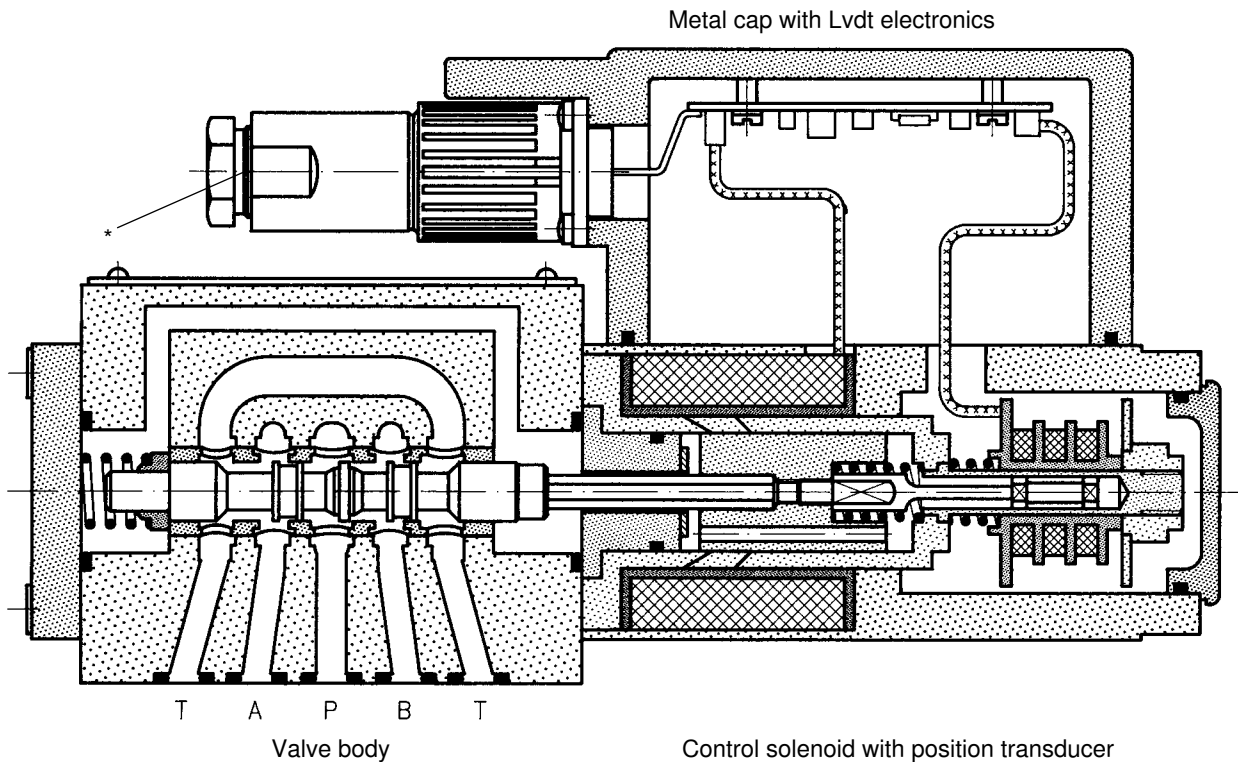
(4 x) M5 x 30 DIN 912-10.9	Fastening screws	2 910 151 166
	VT-VRRA1-527-20/V0, see RE 30041	0 811 405 060
	VT-VRRA1-527-20/V0/K60-AGC, see RE 30040	0 811 405 066
	VT-VRRA1-527-20/V0/K40-AGC, see RE 30040	0 811 405 065
<p>6P + PE (Pg16)</p>	Line socket not included in scope of delivery, see also RE 08008	1 834 482 024

Testing and service equipment

- Test box type VT-PE-TB2, see RE 30064.
- Test adapter type VT-PA-3, see RE 30070.

Function, Sectional diagram

Servo solenoid valve 4WRPH 10...-750



Symbols

	Linear	p: kink 40%
<p>C3, C5</p> <p>C4, C1</p>		
	C3, C4	C5, C1

Accessories

(4 x) M6 x 40 DIN 912-10.9	Fastening screws	2 910 151 209
	VT-VRRA1-537-20/V0, see RE 30041	0 811 405 061
	VT-VRRA1-537-20/V0/K40-AGC, see RE 30040	0 811 405 067
<p>*</p> <p>6P + PE (Pg16)</p>	Line socket not includes in scope of delivery, see also RE 08008	1 834 482 024

Testing and service equipment




- Test box type VT-PE-TB2, see RE 30064.
- Test adapter type VT-PA-3, see RE 30070.

Technical data (Type 4WRPH 6)

General

Construction	Spool type valve, operated directly, with steel sleeve		
Actuation	Proportional solenoid with position control, external amplifier		
Type of mounting	Subplate, mounting hole configuration NG6 (ISO 4401-03-02-0-05)		
Installation position	Optional		
Ambient temperature range	°C	-20...+60	
Weight	kg	2.5	
Vibration resistance, test condition	Max. 40 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 51524...535, other fluids after prior consultation					
Viscosity range	recommende	mm ² /s	20...100			
	max. permitted	mm ² /s	10...800			
Pressure fluid temperature range	°C	-20...+70				
Maximum permissible degree of contamination of pressure fluid Purity class to ISO 4406 (c)	Class 18/16/13 ¹⁾					
Flow direction	See symbol					
Nominal flow at $\Delta p = 35 \text{ bar per notch}^2)$	l/min	12	15	24	40	
Max. working pressure	bar	Port P, A, B: 315				
Max. pressure	bar	Port T: 250				
Operating limits at Δp Pressure drop at valve		bar	315	315	315	160
		bar	315	280	250	100
$Q_{Vnom} > Q_N$ valves		bar	315	280	250	100
		bar	315	280	250	100
Leakage at 100 bar		cm ³ /min	< 300	-	< 500	< 900
		cm ³ /min	-	< 180	< 300	< 450

Electrical

Cyclic duration factor	%	100			
Power supply	24 V _{nom} (external amplifier)				
Degree of protection	IP 66 to DIN 40050, line socket 1 834 482 024, mounted				
Connectors for solenoid and position transducer	To DIN 43563-AM6 (line socket 1 834 482 024) Pg16 For pin assignment see block diagram on pages 7 and 8				
Max. solenoid current	A	2.7			
Coil resistance R_{20}	Ω	2.5			
Max. power consumption at 100% load and operational temperature	VA	40			
Position transducer DC/DC technology	Supply: +15 V/35 mA -15 V/25 mA			Signal: 0...±10 V ($R_L \geq 10 \text{ k}\Omega$)	

Static/Dynamic

Hysteresis	%	≤ 0.2			
Manufacturing tolerance for Q_{max}	%	< 10			
Response time for signal change 0...100%	ms	< 10			
Thermal drift	Zero point displacement < 1% at $\Delta T = 40 \text{ °C}$				

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 50070, RE 50076 and RE 50081.




²⁾ Flow rate at a different Δp $Q_x = Q_{nom} \cdot \sqrt{\frac{\Delta p_x}{35}}$

Technical data (Type 4WRPH 10)

General

Construction	Spool type valve, operated directly, with steel sleeve		
Actuation	Proportional solenoid with position control, external amplifier		
Type of mounting	Subplate, mounting hole configuration NG10 (ISO 4401-05-04-0-05)		
Installation position	Optional		
Ambient temperature range	°C	-20...+60	
Weight	kg	7.0	
Vibration resistance, test condition	Max. 40 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 51524...535, other fluids after prior consultation					
Viscosity range	recommended	mm ² /s	20...100			
	max. permitted	mm ² /s	10...800			
Pressure fluid temperature range	°C	-20...+70				
Maximum permissible degree of contamination of pressure fluid Purity class to ISO 4406 (c)	Class 18/16/13 ¹⁾					
Flow direction	See symbol					
Nominal flow at $\Delta p = 35\text{ bar}$ per notch ²⁾	l/min	50 (1:1)	50 (2:1)	100 (1:1)	100 (2:1)	
Max. working pressure	bar	Port P, A, B: 315				
Max. pressure	bar	Port T: 250				
Operating limits at Δp Pressure drop at valve		bar	315	315	160	160
		bar	250	250	100	100
$Q_{Vnom} > Q_N$ Ventile		bar	250	250	100	100
Leakage at 100 bar		cm ³ /min	< 1,200	< 1,200	< 1,500	< 1,000
		cm ³ /min	< 600	< 500	< 600	< 600

Electrical

Cyclic duration factor	%	100			
Power supply	24 V _{nom} (external amplifier)				
Degree of protection	IP 66 to DIN 40050, line socket 1 834 482 024, mounted				
Connectors for solenoid and position transducer	To DIN 43563-AM6 (line socket 1 834 482 024) Pg16 For pin assignment see block diagram on pages 7 and 8				
Max. solenoid current	A	3.7			
Coil resistance R_{20}	Ω	2.4			
Max. power consumption at 100% load and operational temperature	VA	60			
Position transducer DC/DC technology	Supply: +15 V/35 mA -15 V/25 mA			Signal: 0...±10 V ($R_L \geq 10\text{ k}\Omega$)	

Static/Dynamic

Hysteresis	%	≤ 0.2			
Manufacturing tolerance for Q_{max}	%	< 10			
Response time for signal change 0...100%	ms	≤ 25			
Thermal drift	Zero point displacement <1% at $\Delta T = 40\text{ °C}$				

¹⁾ The purity classes stated for the components must be complied with in hydraulic systems.

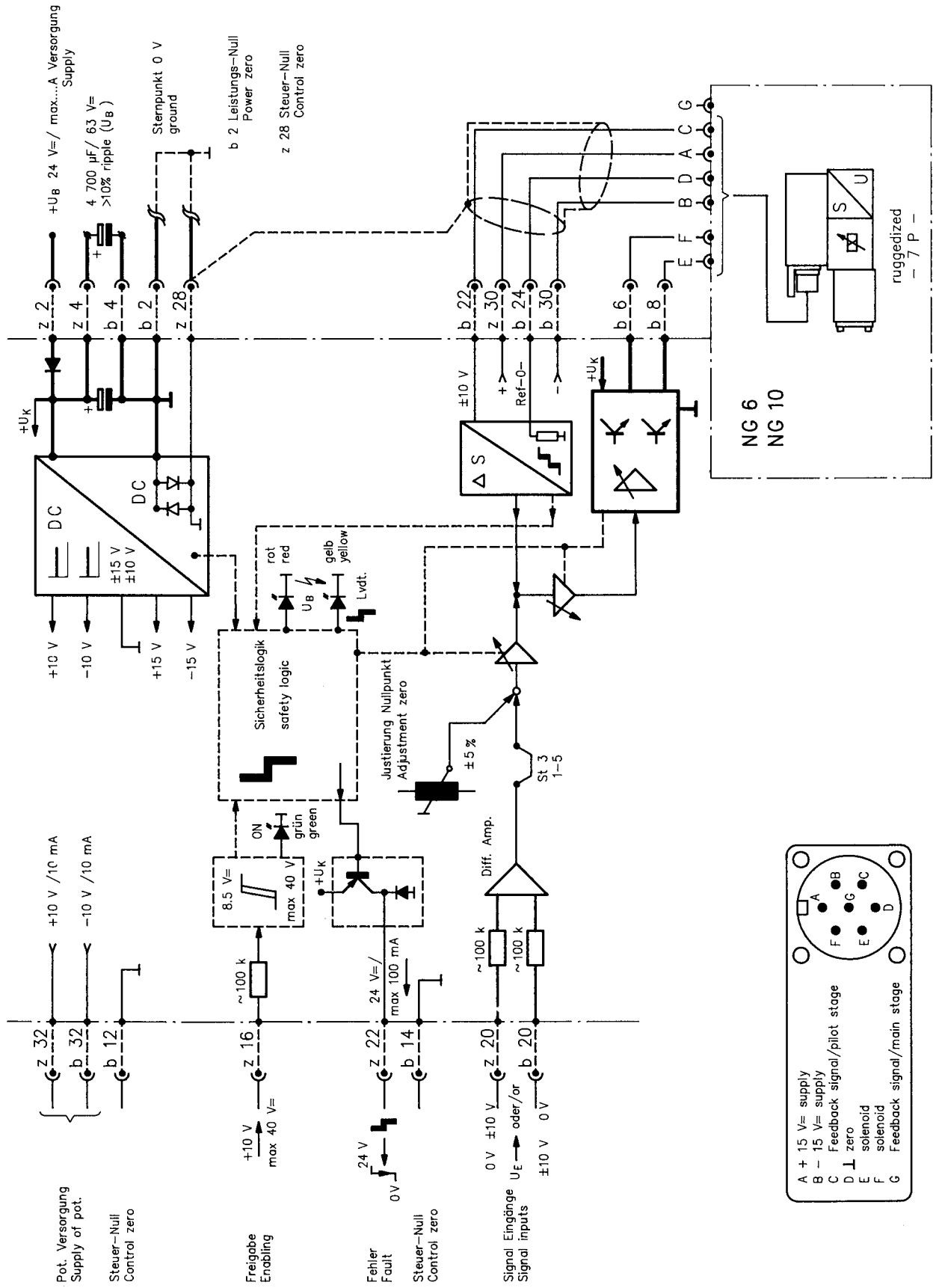
Effective filtration prevents problems and also extends the service life of components.

For a selection of filters, see catalogue sections RE 50070, RE 50076 and RE 50081.

²⁾ Flow rate at a different Δp $Q_x = Q_{nom} \cdot \sqrt{\frac{\Delta p_x}{35}}$

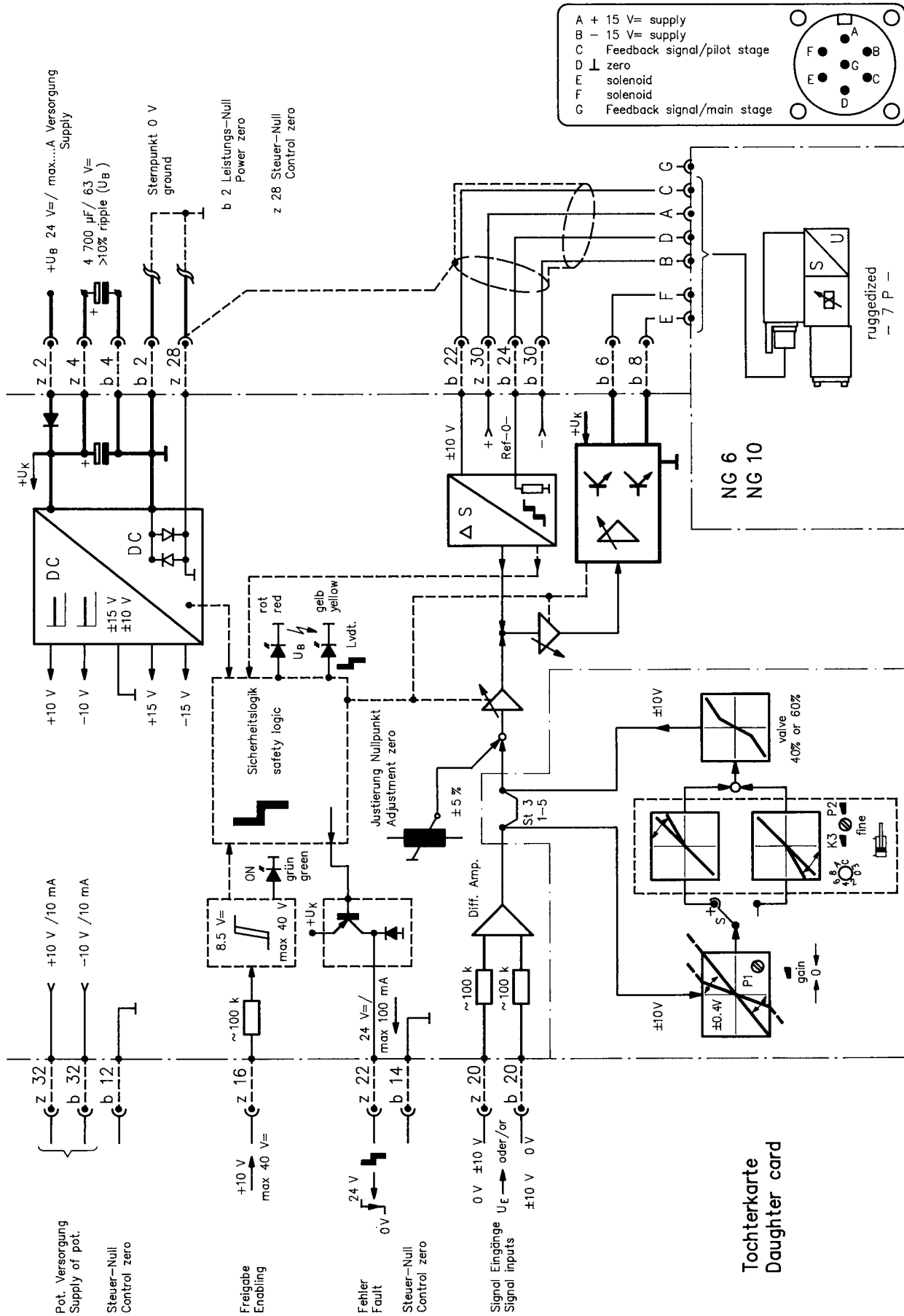
Valve with external trigger electronics (standard linear curve: L)

Block diagram/pin assignment



Valve with external trigger electronics (standard non-linear curve: P)

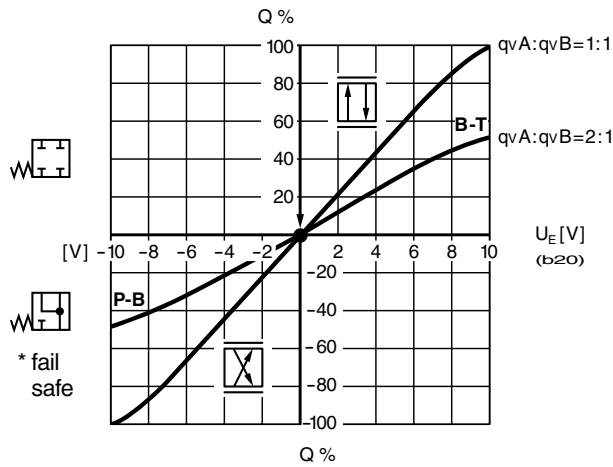
Block diagram/pin assignment



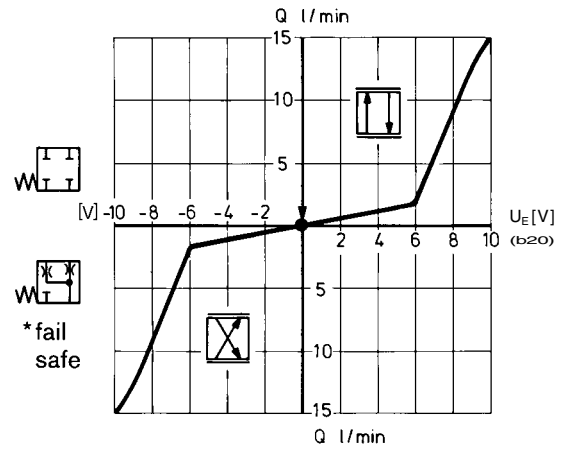
Performance curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Flow rate/Signal function (with 70 bar pressure drop at valve)

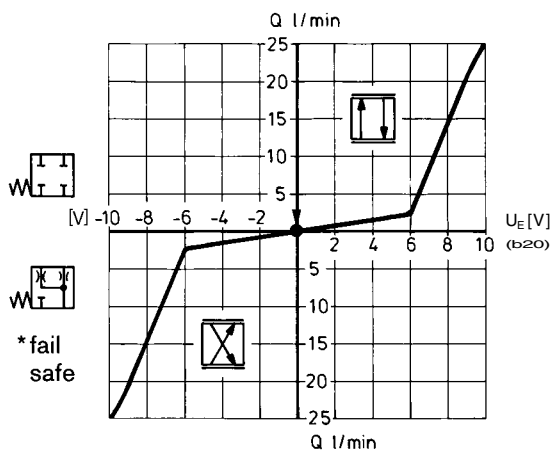
NG6, NG10
L: Linear 1:1 and 2:1



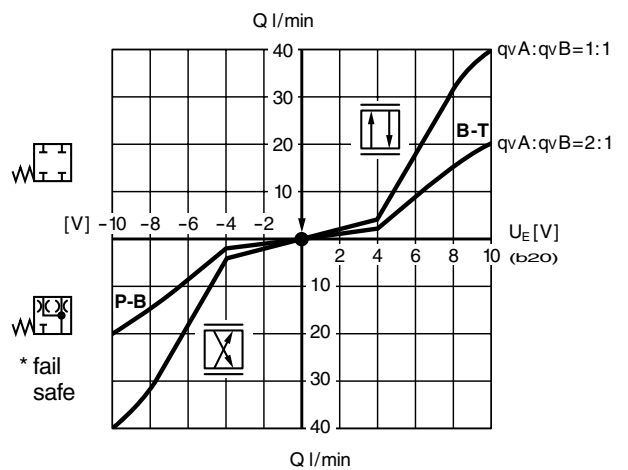
NG6
P: (kink 60%)**



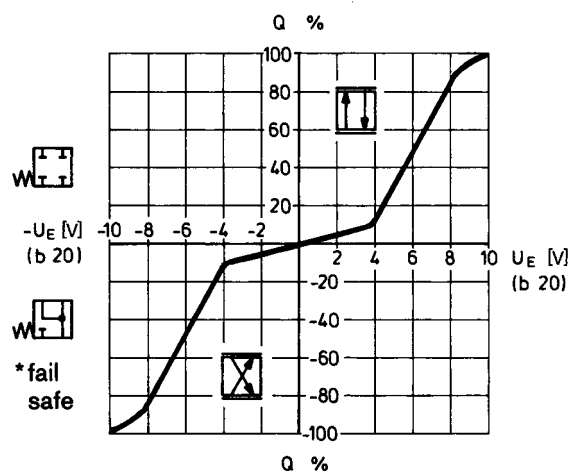
NG6
P: (kink 60%)**



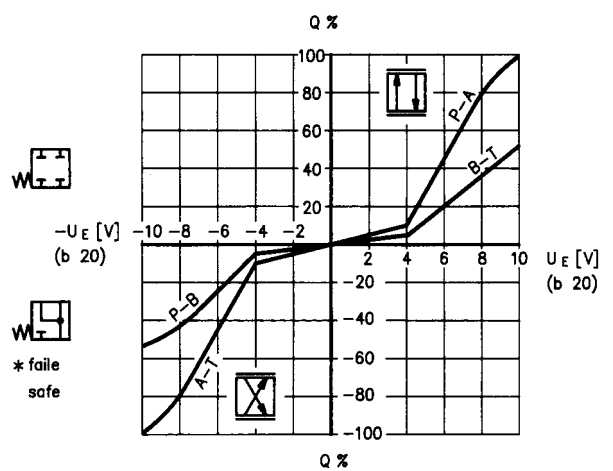
NG6
P: (kink 40%) 1:1 and 2:1**



NG10
P: (kink 40%)**






NG10
P: (kink 40%) 1:1 and 2:1**

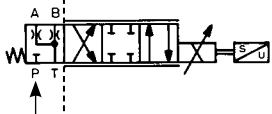
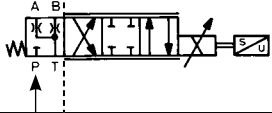



*Fail-safe, when enabling is not released.
**Q-kink = 10% Q_N.

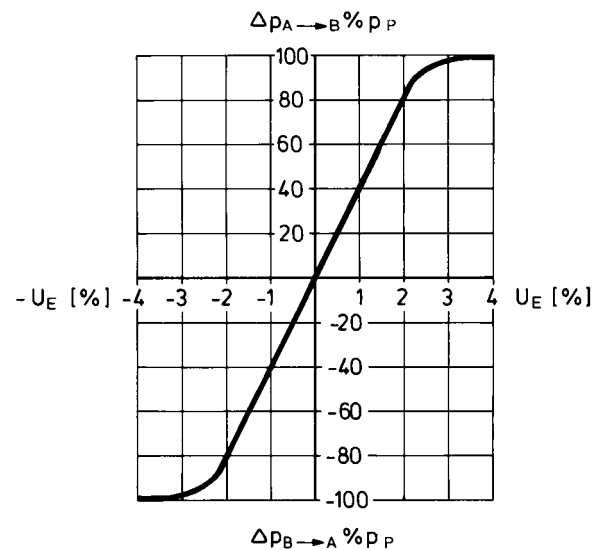
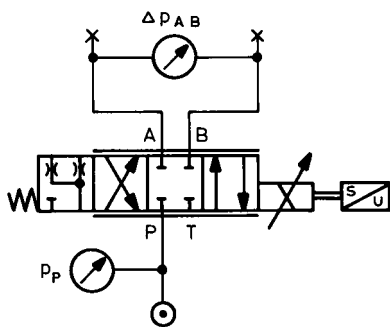
Performance curves (measured with HLP 46, $\vartheta_{oil} = 40 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$)

Fail-safe position

NG6		Fail-safe position			
	Leakage at	100 bar	P-A	50 cm ³ /min	
			P-B	70 cm ³ /min	
	Flow at	$\Delta p = 35 \text{ bar}$	A-T	10...20 l/min	
			B-T	7...20 l/min	
	Leakage at	100 bar	P-A	50 cm ³ /min	
			P-B	70 cm ³ /min	
			A-T	70 cm ³ /min	
			B-T	50 cm ³ /min	
	Fail-safe	$p = 0 \text{ bar} \rightarrow 7 \text{ ms}$	Enable off		
		$p = 100 \text{ bar} \rightarrow 10 \text{ ms}$			

NG10		Fail-safe position			
	Leakage at	100 bar	P-A	50 cm ³ /min	
			P-B	70 cm ³ /min	
	Flow at	$\Delta p = 35 \text{ bar}$ $Q_N 50/100 \text{ l/min}$	A-T	10...100 l/min	
			B-T	10... 25 l/min	
	Leakage at	100 bar	P-A	50 cm ³ /min	
			P-B	70 cm ³ /min	
			A-T	70 cm ³ /min	
			B-T	50 cm ³ /min	
	Fail-safe	$p = 0 \text{ bar} \rightarrow 12 \text{ ms}$	Enable off		
		$p = 100 \text{ bar} \rightarrow 16 \text{ ms}$			

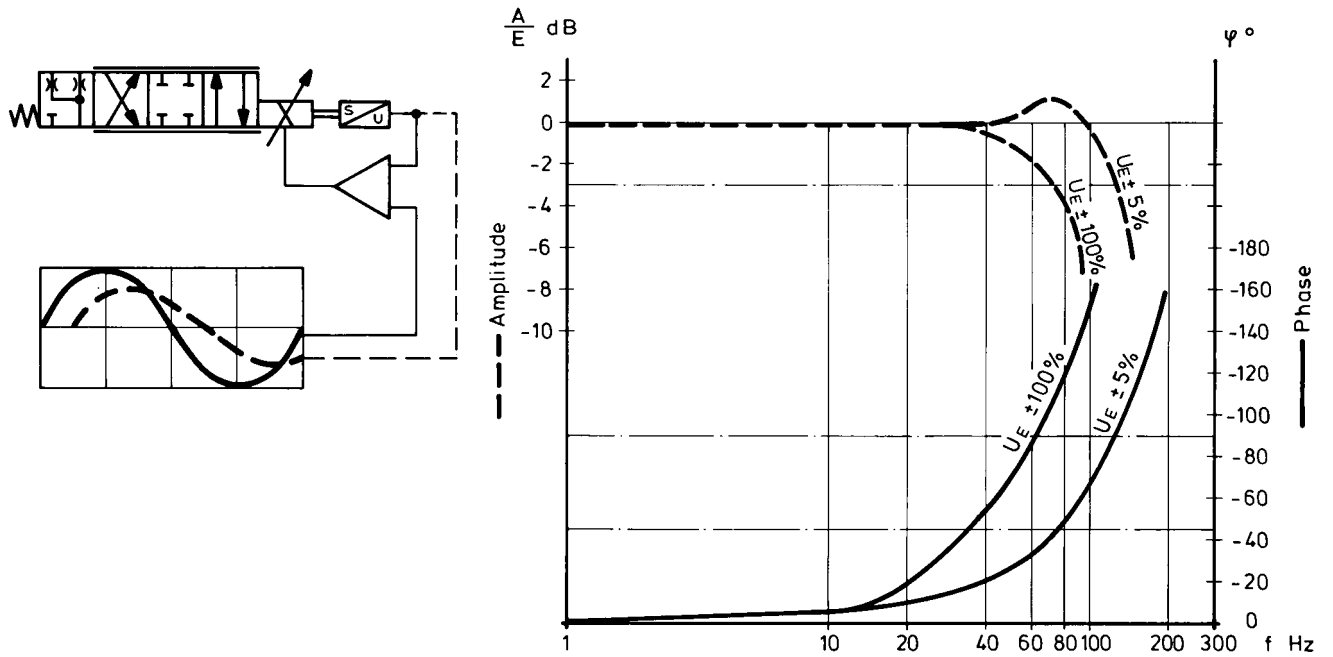
Pressure gain



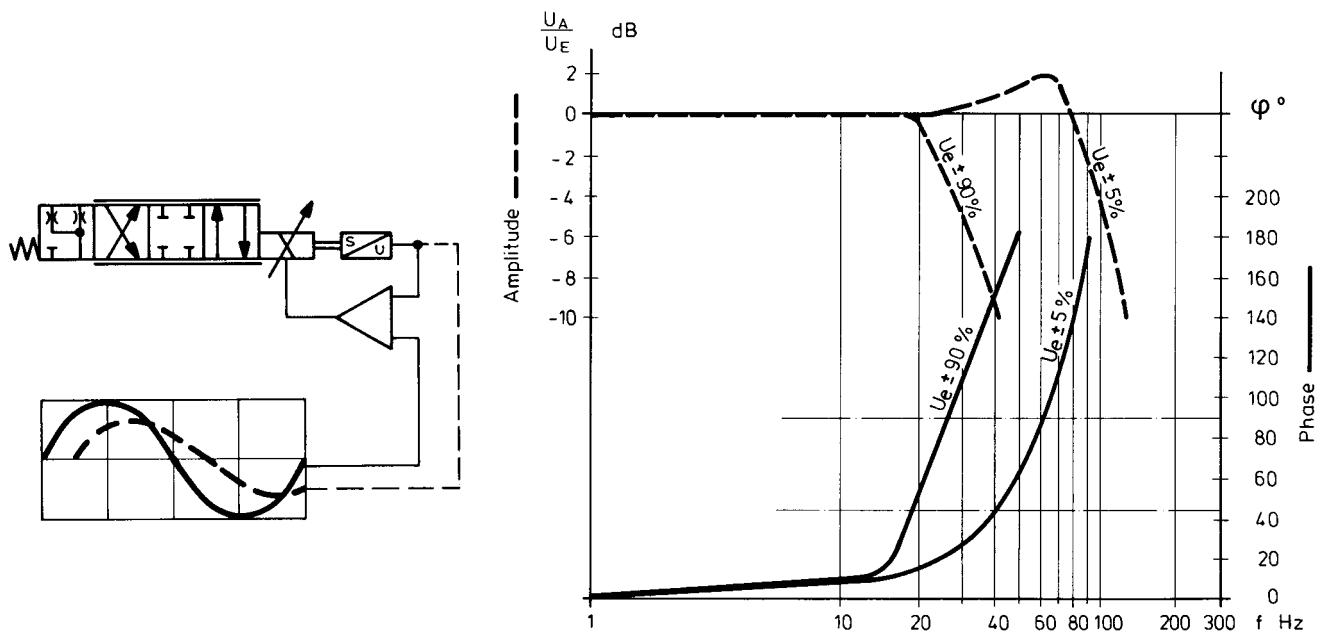
Performance curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$)

Bode diagram

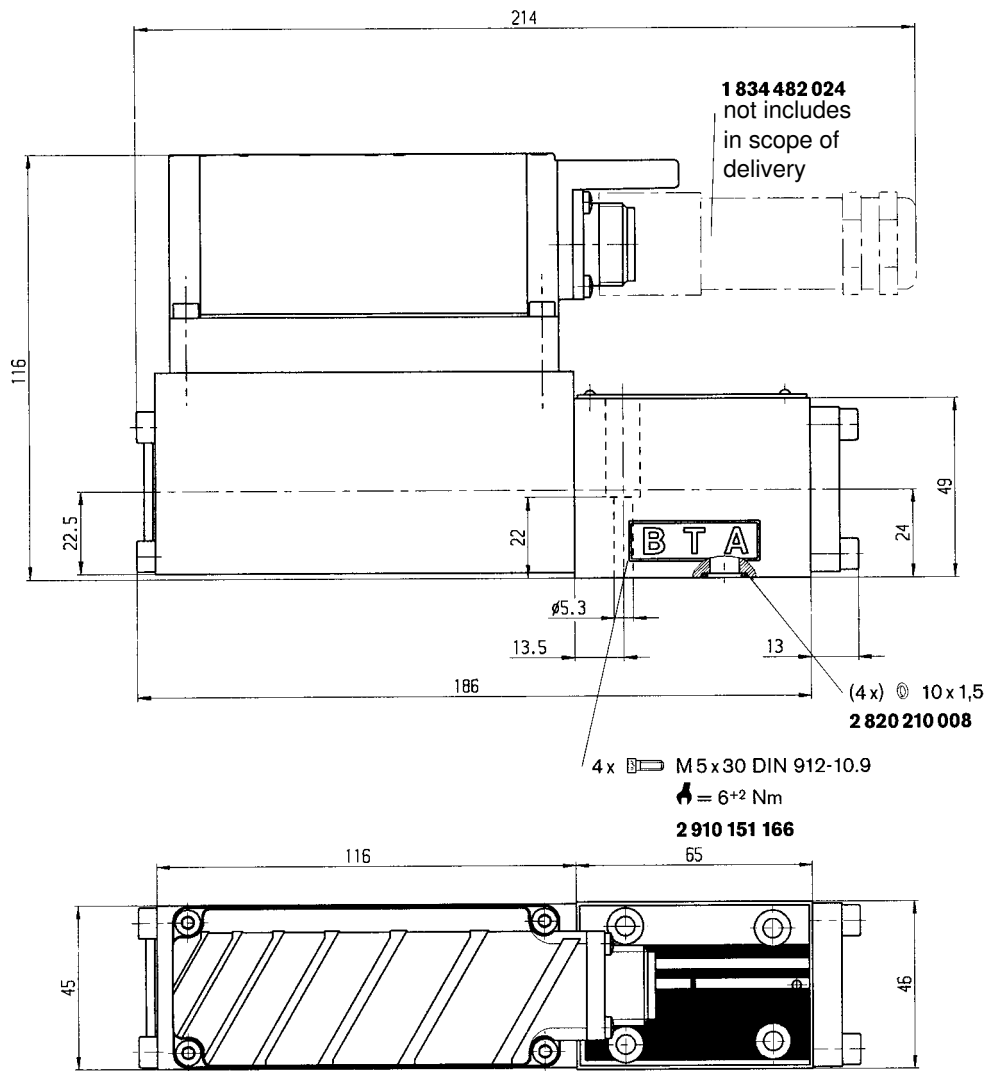
NG6



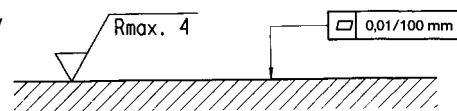
NG10



Unit dimensions for NG6 (in mm)

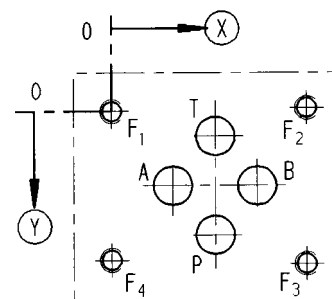


Required surface quality of valve contact surface



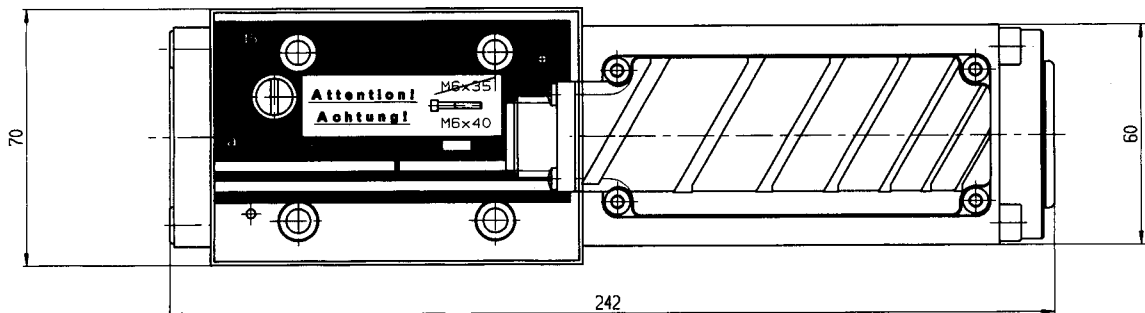
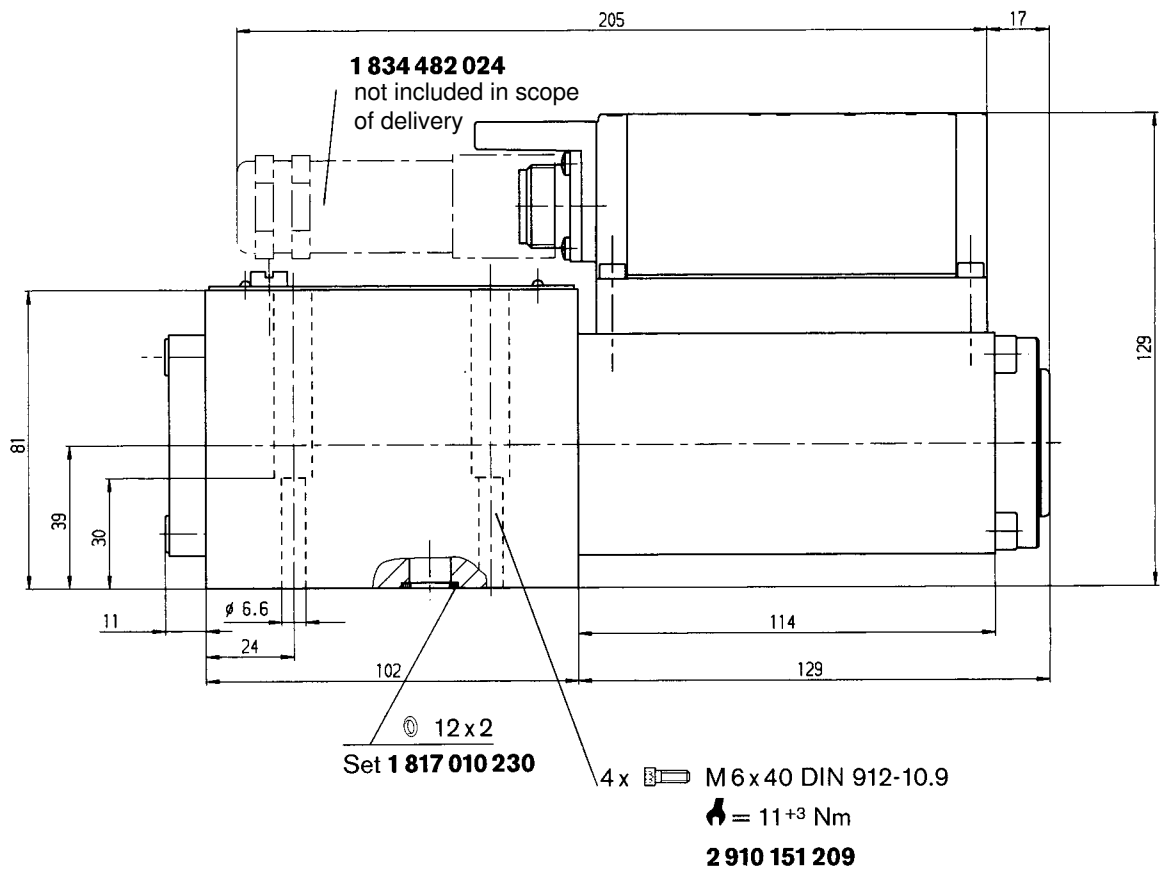
Mounting hole configuration: NG6 (ISO 4401-03-02-0-05)
For subplates, see catalogue section RE 45053

- 1) Deviates from standard
- 2) Thread depth:
Ferrous metal 1.5 x Ø
Non-ferrous 2 x Ø

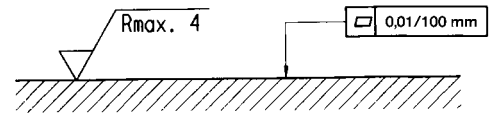


	P	A	T	B	F ₁	F ₂	F ₃	F ₄
⊗	21.5	12.5	21.5	30.2	0	40.5	40.5	0
⊙	25.9	15.5	5.1	15.5	0	-0.75	31.75	31
∅	8 ¹⁾	8 ¹⁾	8 ¹⁾	8 ¹⁾	M5 ²⁾	M5 ²⁾	M5 ²⁾	M5 ²⁾

Unit dimensions for NG10 (in mm)

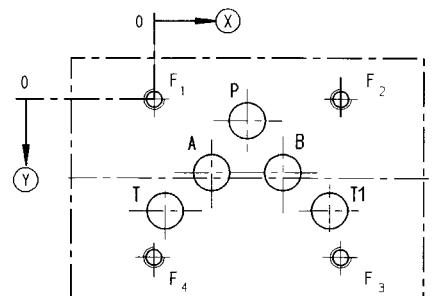


Required surface quality
of valve contact surface



Mounting hole configuration: NG10 (ISO 4401-05-04-0-05)
For subplates, see catalogue section RE 45055

- 1) Deviates from standard
- 2) Thread depth:
Ferrous metal 1.5 x Ø*
Non-ferrous 2 x Ø
- * (NG10 min. 10.5 mm)



	P	A	T	T1	B	F ₁	F ₂	F ₃	F ₄
⊗	27	16.7	3.2	50.8	37.3	0	54	54	0
⊙	6.3	21.4	32.5	32.5	21.4	0	0	46	46
∅	10.5 ¹⁾	10.5 ¹⁾	10.5 ¹⁾	10.5 ¹⁾	10.5 ¹⁾	M6 ²⁾	M6 ²⁾	M6 ²⁾	M6 ²⁾

Notes

Notes

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Telefon +49 (0) 93 52 / 18-0
Telefax +49 (0) 93 52 / 18-23 58
documentation@boschrexroth.de
www.boschrexroth.de

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent.
The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgement and verification. It must be remembered that our products are subject to a natural process of wear and aging.

Notes

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Telefon +49 (0) 93 52 / 18-0
Telefax +49 (0) 93 52 / 18-23 58
documentation@boschrexroth.de
www.boschrexroth.de

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent.
The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgement and verification. It must be remembered that our products are subject to a natural process of wear and aging.