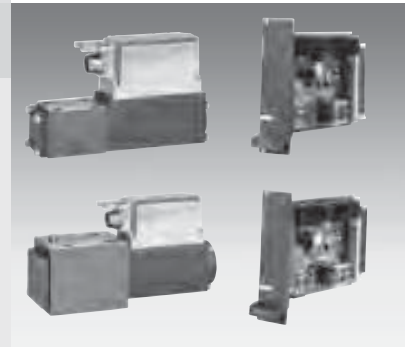


## Servo solenoid valves with electrical position feedback (Lvdt DC/DC) (ruggedized design)

**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)



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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

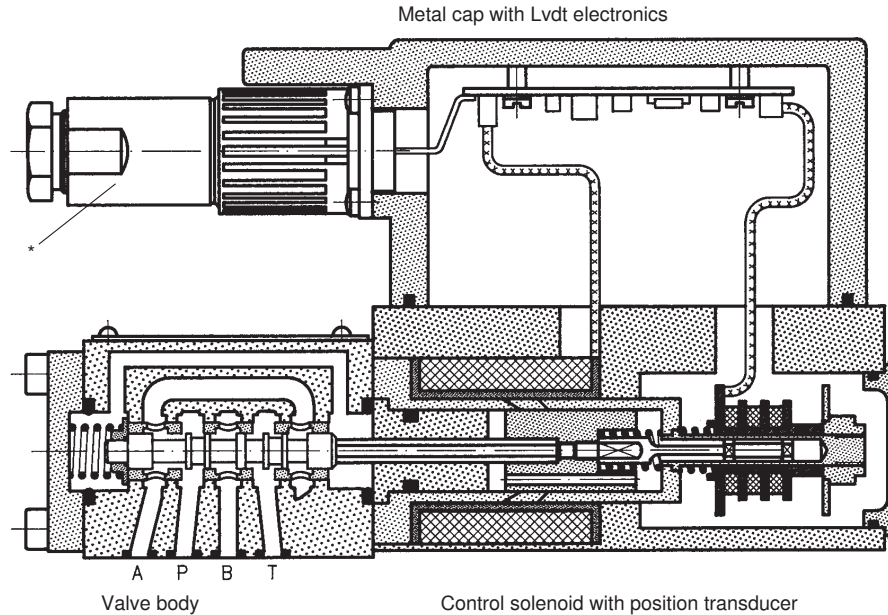
- Directly operated servo solenoid valve NG6, NG10, with control piston and sleeve in servo quality and sturdy design
- Actuated on one side, 4/4 fail-safe position when switched off
- “Ruggedized” design 40 g with central plug
- Suitable for the wood industry and in systems with difficult ambient conditions
- 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					750 = Ruggedized design
Nominal size 6 = 6					M = NBR seals, suitable for mineral oils (HL, HLP) to DIN 51524
Nominal size 10 = 10					K0 = <b>Electrical connection without</b> line socket, with plug to DIN 43563-AM6 Order line socket separately
<b>Symbols</b>					<b>Voltage supply of trigger electronics</b>
4/4-way version					G24 = +24 V DC
					2X = Unit series 20 to 29 (installation and connection dimensions unchanged)
					<b>Flow characteristic</b>
<b>With symbols C5 and C1:</b> <sup>3)</sup>					L = Linear
P → A: $q_v$ B → T: $q_v/2$					P = Non-linear curve <sup>2)</sup>
P → B: $q_v/2$ A → T: $q_v$					
<b>Side of inductive position transducer</b>					
					(Standard) = B
<sup>1)</sup> Only in connection with flow characteristic "p"					<b>Nominal flow rate at 70 bar valve pressure difference</b>
<sup>2)</sup> Kink 60% for NG6 with nominal flow rate "15" and "25", otherwise kink 40%					<b>Nominal Size 6</b>
<sup>3)</sup> $q_v$ 2:1 only with nominal flow rate $\geq 40$ l/min					12 = 12 l/min
					15 <sup>1)</sup> = 15 l/min
					24 = 24 l/min
					25 <sup>1)</sup> = 25 l/min
					40 = 40 l/min
					<b>Nominal Size 10</b>
					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

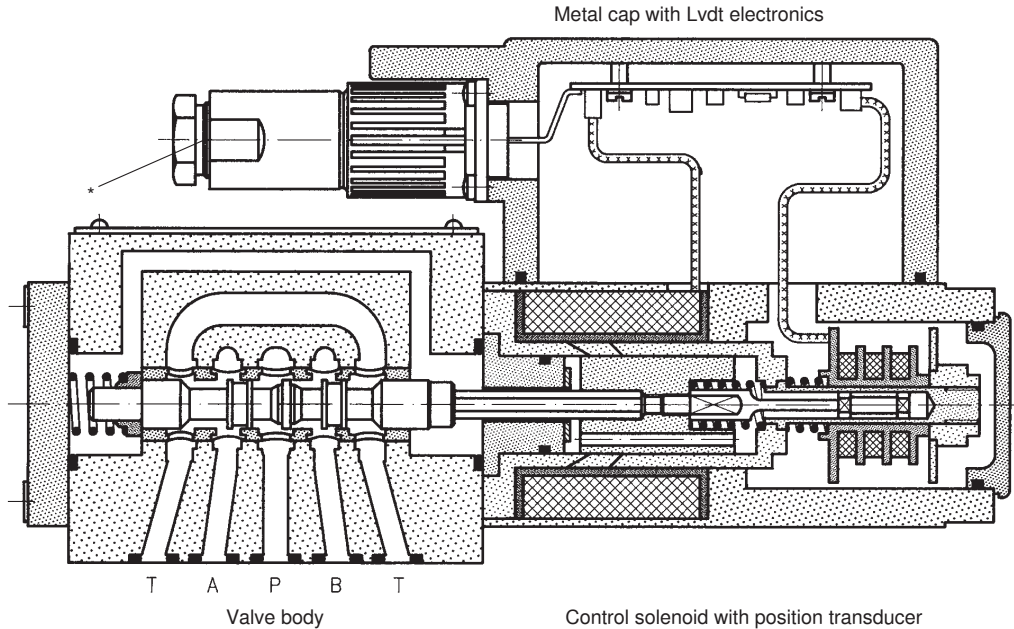
(4 x)  M5 x 30 DIN 912-10.9	Fastening screws	2 910 151 166
	VT-VRRA1-527-20/V0, see RE 30041	0 811 405 060
	VT-VRRA1-527-20/V0/K60-AGC, see RE 30040	0 811 405 066
	VT-VRRA1-527-20/V0/K40-AGC, see RE 30040	0 811 405 065
*	Line socket not included in scope of delivery, see also RE 08008	1 834 482 024
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

### 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 %
	C3, C4	C5, C1

## Accessories

(4 x)  M6 x 40 DIN 912-10.9	Fastening screws	2 910 151 209
	VT-VVRA1-537-20/V0, see RE 30041	0 811 405 061
	VT-VVRA1-537-20/V0/K40-AGC, see RE 30040	0 811 405 067
*	Line socket not included in scope of delivery, see also RE 08008	1 834 482 024
	6P + PE (Pg16)	

## 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 <sup>2</sup> /s	20...100		
	max. permitted	mm <sup>2</sup> /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 <sup>1)</sup>				
Flow direction	See symbol				
Nominal flow at $\Delta p = 35\text{ bar}$ per notch <sup>2)</sup>	l/min	12	15	24	40
Max. working pressure	bar	Port P, A, B: 315			
Max. pressure	bar	Port T: 250			
Operating limits at $\Delta p$ Pressure drop at valve	 bar	315	315	315	160
$Q_{Vnom} > Q_N$ valves	 bar	315	280	250	100
Leakage at 100 bar	 cm <sup>3</sup> /min	< 300	-	< 500	< 900
	 cm <sup>3</sup> /min	-	< 180	< 300	< 450

### Electrical

Cyclic duration factor	%	100		
Power supply	24 V <sub>nom</sub> (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	%	$\leq 0.2$
Manufacturing tolerance for $Q_{max}$	%	< 10
Response time for signal change 0...100%	ms	< 10
Thermal drift	Zero point displacement < 1% at $\Delta T = 40\text{ °C}$	

<sup>1)</sup> 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.





<sup>2)</sup> Flow rate at a different  $\Delta p$   $Q_x = Q_{nom} \cdot \sqrt{\frac{\Delta p_x}{35}}$

## 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 <sup>2</sup> /s	20...100			
	max. permitted mm <sup>2</sup> /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 <sup>1)</sup>				
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 $\Delta p$ Pressure drop at valve	 bar	315	315	160	160
$Q_{Vnom} > Q_N$ Ventile	 bar	250	250	100	100
Leakage at 100 bar	 cm <sup>3</sup> /min	< 1,200	< 1,200	< 1,500	< 1,000
	 cm <sup>3</sup> /min	< 600	< 500	< 600	< 600

### Electrical

Cyclic duration factor	%	100		
Power supply	24 V <sub>nom</sub> (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	%	$\leq 0.2$
Manufacturing tolerance for $Q_{max}$	%	< 10
Response time for signal change 0...100 %	ms	$\leq 25$
Thermal drift	Zero point displacement <1 % at $\Delta T = 40\text{ °C}$	

<sup>1)</sup> 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.

<sup>2)</sup> Flow rate at a different  $\Delta p$   $Q_x = Q_{nom} \cdot \sqrt{\frac{\Delta p_x}{35}}$



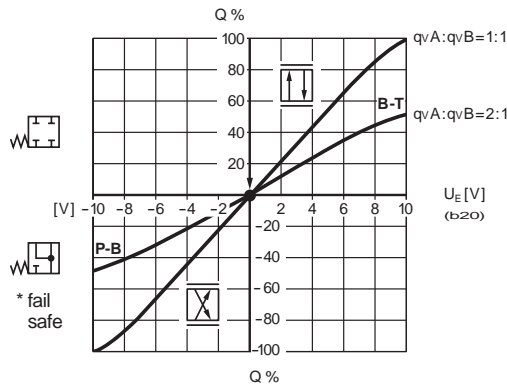


## Performance curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ )

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

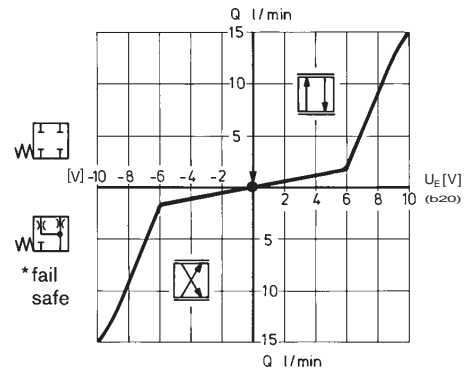
NG6, NG10

L: Linear 1:1 and 2:1



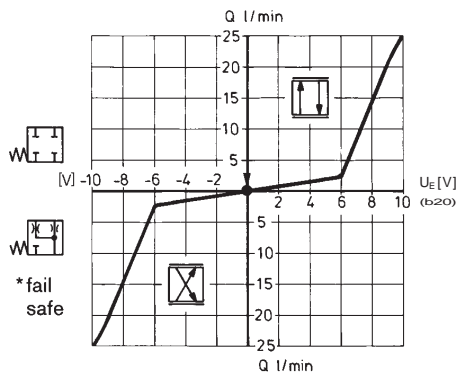
NG6

P: (kink 60%)\*\*



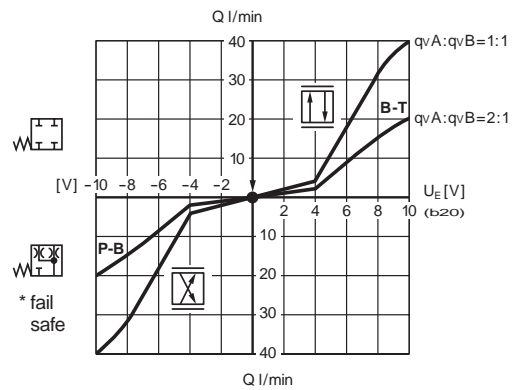
NG6

P: (kink 60%)\*\*



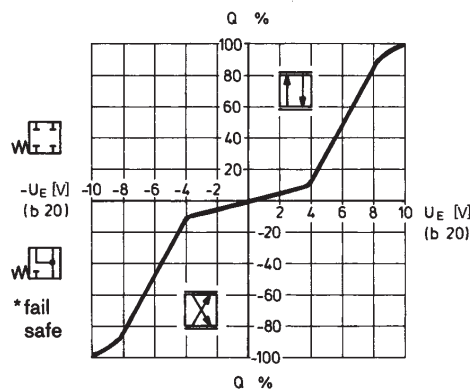
NG6

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



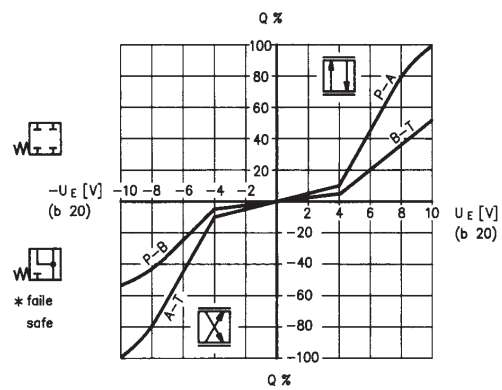
NG10

P: (kink 40%)\*\*



NG10

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



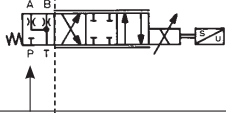
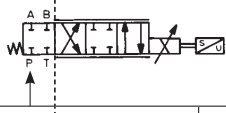
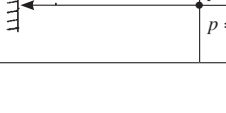
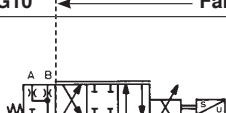
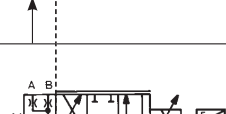

\*Fail-safe, when enabling is not released.

\*\*Q-kink = 10%  $Q_N$ .

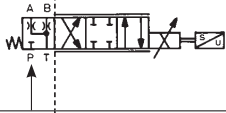
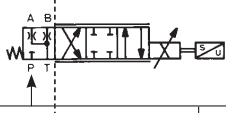
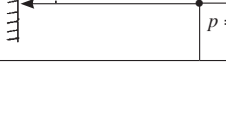
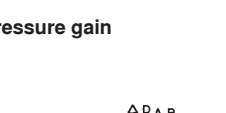
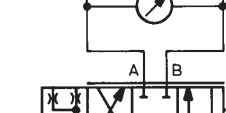
## Performance curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ )

### Fail-safe position

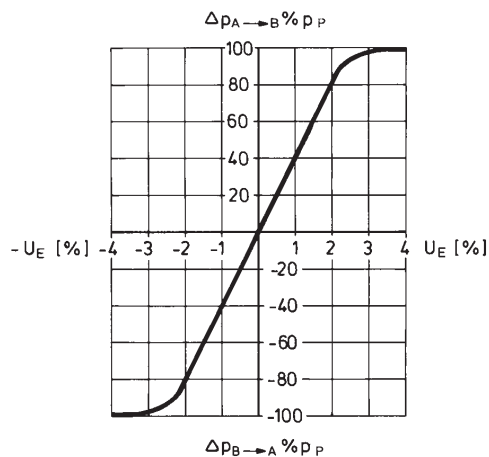
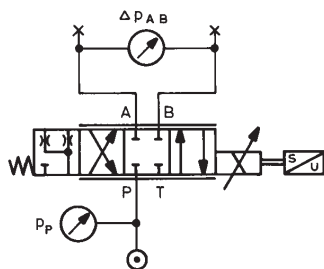
#### NG6 ← Fail-safe position

	Leakage at	100 bar	P-A	50 cm <sup>3</sup> /min
			P-B	70 cm <sup>3</sup> /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 <sup>3</sup> /min
			P-B	70 cm <sup>3</sup> /min
	Leakage at	100 bar	P-A	50 cm <sup>3</sup> /min
			P-B	70 cm <sup>3</sup> /min
			A-T	70 cm <sup>3</sup> /min
			B-T	50 cm <sup>3</sup> /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 <sup>3</sup> /min
			P-B	70 cm <sup>3</sup> /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 <sup>3</sup> /min
			P-B	70 cm <sup>3</sup> /min
			A-T	70 cm <sup>3</sup> /min
			B-T	50 cm <sup>3</sup> /min
	Fail-safe	$p = 0\text{ bar} \rightarrow 12\text{ ms}$	Enable off	
		$p = 100\text{ bar} \rightarrow 16\text{ ms}$		

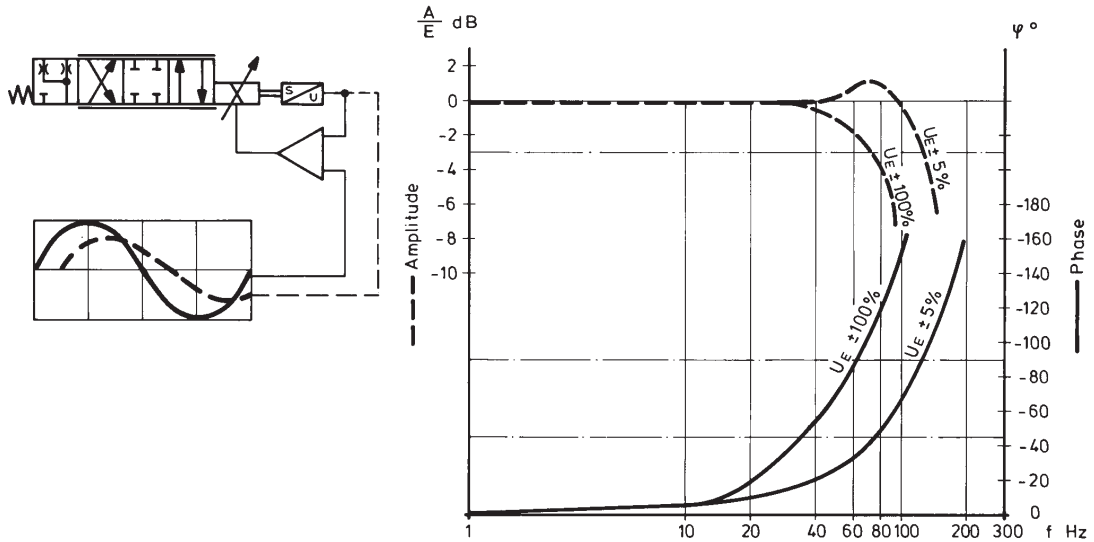
### Pressure gain



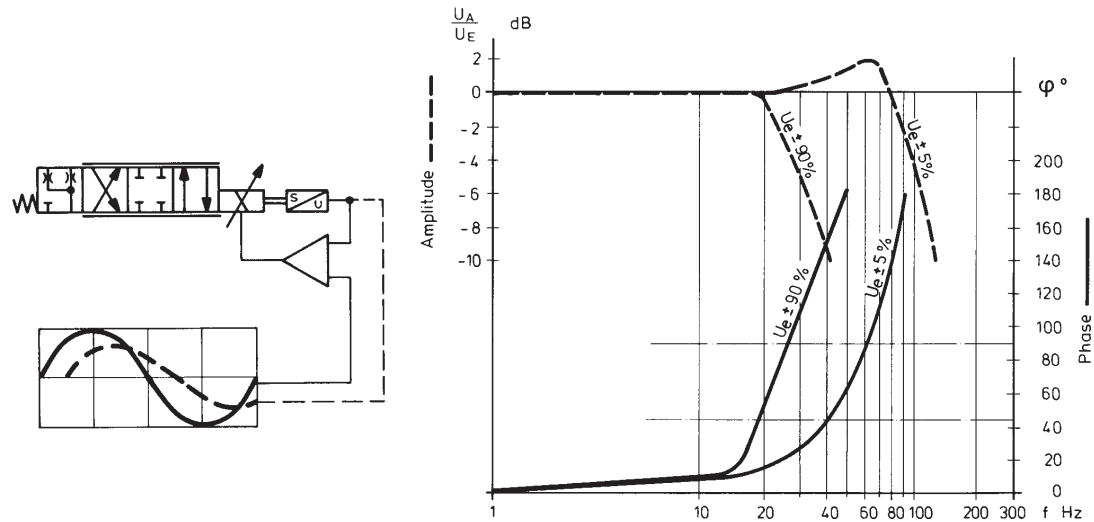
**Performance curves** (measured with HLP 46,  $\vartheta_{oil} = 40\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ )

**Bode diagram**

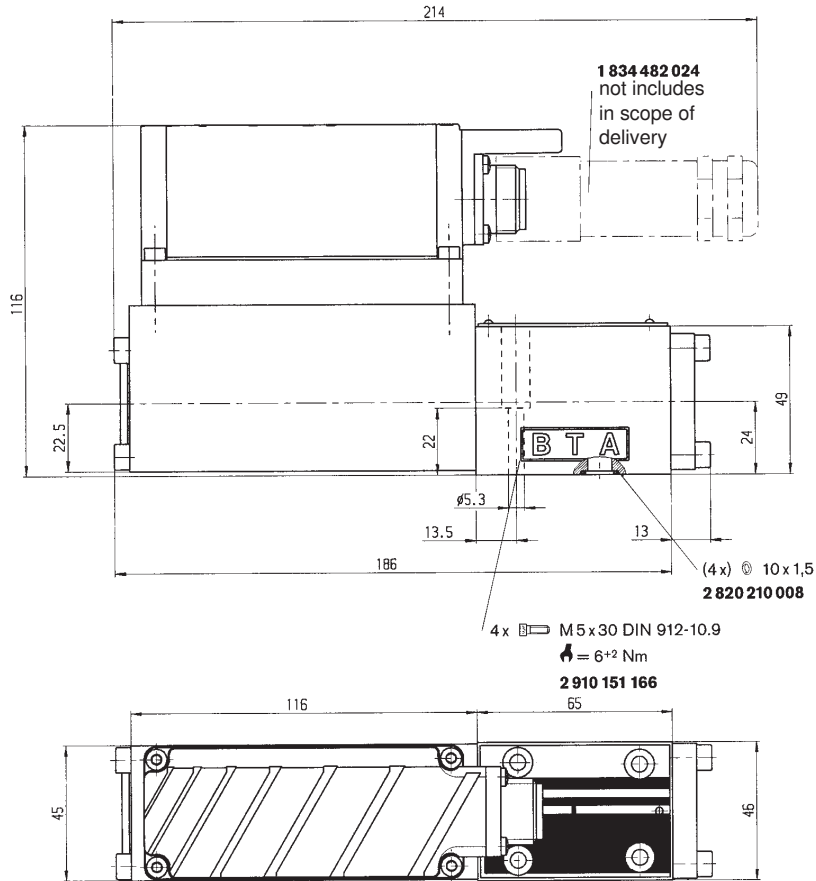
**NG6**



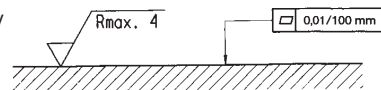
**NG10**



## Unit dimensions for NG6 (in mm)

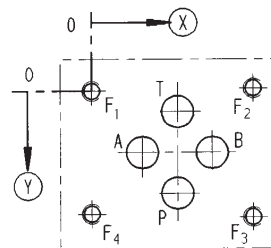


Required surface quality of valve contact surface



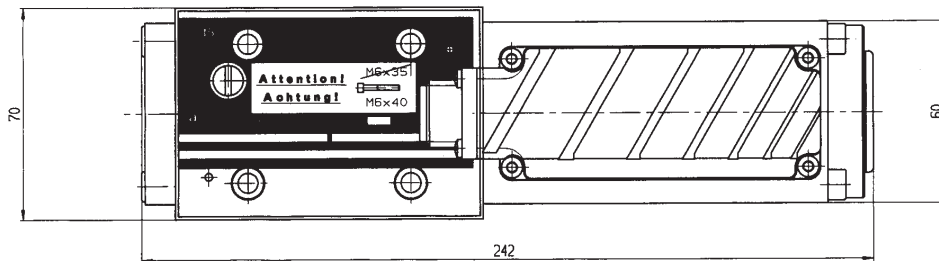
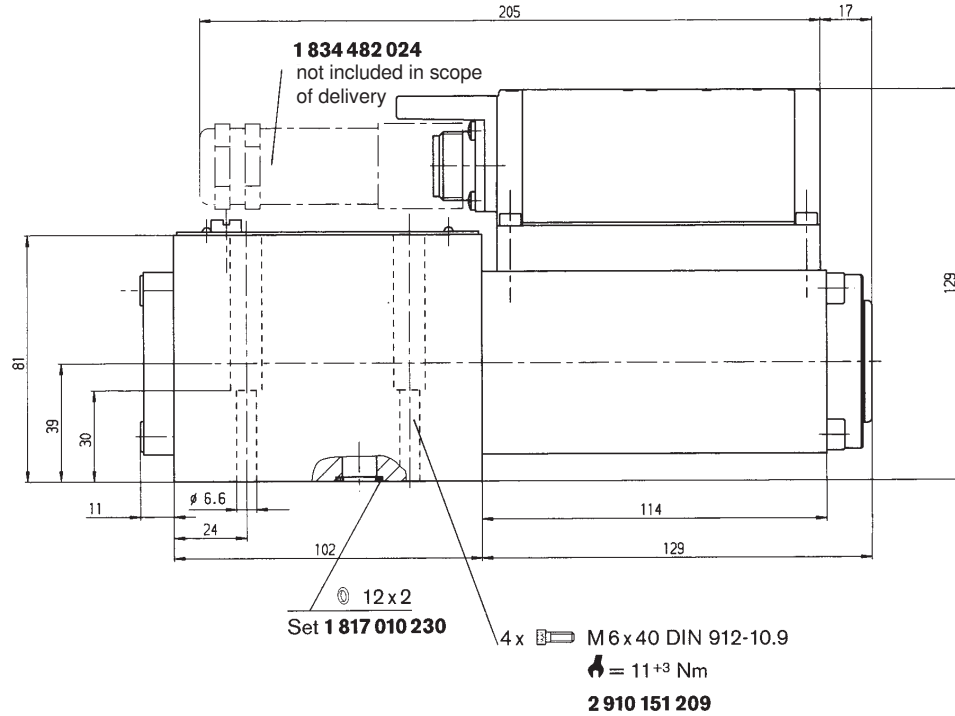
**Mounting hole configuration: NG6 (ISO 4401-03-02-0-05)**  
For subplates, see catalogue section RE 45053

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

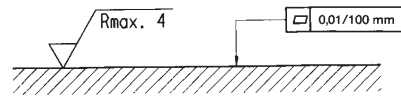


	P	A	T	B	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>
⊗	21.5	12.5	21.5	30.2	0	40.5	40.5	0
⊙	25.9	15.5	5.1	15.5	0	-0.75	31.75	31
∅	8 <sup>1)</sup>	8 <sup>1)</sup>	8 <sup>1)</sup>	8 <sup>1)</sup>	M5 <sup>2)</sup>	M5 <sup>2)</sup>	M5 <sup>2)</sup>	M5 <sup>2)</sup>

## Unit dimensions for NG10 (in mm)

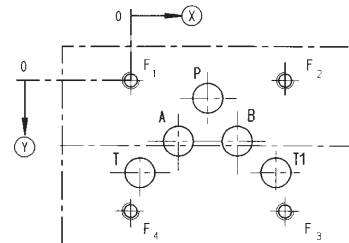


Required surface quality  
of valve contact surface



**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 <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>
Ø	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 <sup>1)</sup>	10.5 <sup>1)</sup>	10.5 <sup>1)</sup>	10.5 <sup>1)</sup>	10.5 <sup>1)</sup>	M6 <sup>2)</sup>	M6 <sup>2)</sup>	M6 <sup>2)</sup>	M6 <sup>2)</sup>

## Notes

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