

# Proportional directional control valve, pilot operated with on-board electronics (OBE) and inductive position transducer

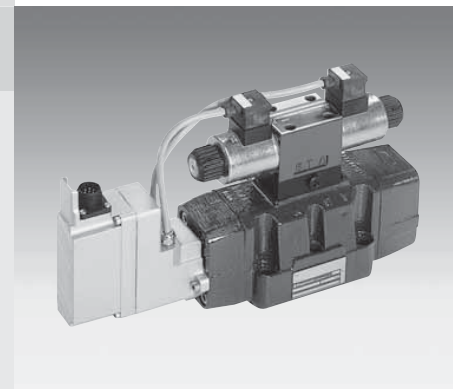
RE 29076/12.05

1/24

## Type 4WRBKE

Nominal size (NG) 10, 16, 27, 35

Unit series 1X

Maximum working pressure NG10, 16, 35 P, A, B 350 bar  
NG27 P, A, B 280 barNominal flow rate  $Q_{nom}$  85...1100 l/min

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### Different versions on request

- For standard applications
- Special symbols for plastics machines

## Features

- Pilot operated proportional directional control valves NG10 to NG35 with approx. 20% positive overlap, see symbols E./W./R5 and characteristic curves
- Adjusted by position-controlled main stage with on-board electronics (OBE) and inductive position transducer, calibrated at the factory
- Electronically compensated and calibrated overlap, see characteristic curve range  $\pm 0.5$  V
- Spool with linear guidance, with anti-rotation element
- Flow characteristic
  - S = Progressive
- Pilot valve without position control, 4/3-way function, optimized metering edges ensuring the stability of the position-controlled main stage, safe mid position on switch-off
- Suitable for electrohydraulic controllers in production systems with more demanding requirements
- For subplate attachment, mounting hole configuration NG10 to ISO 4401-05-05-0-94, NG16 to ISO 4401-07-06-0-94, NG25 (high flow NG27) to ISO 4401-08-07-0-94 and NG32 (high flow NG35) to ISO 4401-10-08-0-94
- Subplates as per catalog sheet, NG10 RE 45055, NG16 RE 45057, NG25 (27) RE 45059 and NG32 (35) RE 45060 (order separately)
- Plug-in connectors to DIN 43563-AM6, see catalog sheet RE 08008 (order separately).

Ordering data

4WRBKE			S	J	-1X/6Z	G24		K31/A1	D3	M	*
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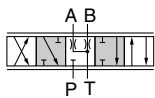
Electrically actuated 2-stage proportional directional control valve in 4-way design with on-board trigger electronics

NG10	= 10
NG16	= 16
NG27 <sup>1)</sup>	= 27
NG35 <sup>1)</sup>	= 35

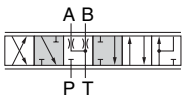
Symbols = E, E1



= W, W1



= R5



Transitional symbols

With symbol E1, W1, R5

P → A:  $q_v$  B → T:  $q_v/2$

P → B:  $q_v/2$  A → T:  $q_v$

<sup>1)</sup> NG27 is a high-flow version of NG25.

NG35 is a high-flow version of NG32.

In the high-flow versions, the ports in the customer's control block may be larger, see unit dimensions on pages 20 and 21.

-903 = <sup>2)</sup> Further information in plain text

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

D3 = With pressure reducing valve (fixed setting)

Interface for trigger electronics

A1 = Setpoint input ±10 V

Electrical connection

K31 = without plug-in connector, with unit plug to EN 175201-804

Order plug-in connector separately

Control oil supply "x", control oil outlet "y"

No code = "x" = external, "y" = external

E = "x" = internal, "y" = external

ET = "x" = internal, "y" = internal

T = "x" = external, "y" = internal

Voltage supply of trigger electronics

+24 V DC

G24 =

Proportional solenoid with removable coil

1X = Unit series 10 to 19 (10 to 19: installation and connection dimensions unchanged)

J =

Overlap compensating signal

See characteristic curve range: ±0.5 V

S =

Flow characteristic

Progressive

Nominal flow rate at 10 bar valve pressure difference

NG

10 = 85 l/min

16 = 180 l/min

27 = 250 l/min or 430 l/min

35 = 1100 l/min

<sup>2)</sup> -903

Geometry:

Switching point at 55% stroke,

B-P opens at 50%,




B-T closes at 65%.

## Preferred types

Type 4WRBKE	Material No.
<b>E, E1, W, W1, R5</b>	<b>NG10</b>
4WRBKE10E85SJ-1X/6ZG24K31/A1D3M	0 811 404 911
4WRBKE10E85SJ-1X/6ZG24EK31/A1D3M	0 811 404 913
4WRBKE10E1-85SJ-1X/6ZG24K31/A1D3M	0 811 404 912
4WRBKE10E1-85SJ-1X/6ZG24EK31/A1D3M	0 811 404 914
4WRBKE10W85SJ-1X/6ZG24K31/A1D3M	0 811 404 915
4WRBKE10W85SJ-1X/6ZG24EK31/A1D3M	0 811 404 917
4WRBKE10W1-85SJ-1X/6ZG24K31/A1D3M	0 811 404 916
4WRBKE10W1-85SJ-1X/6ZG24EK31/A1D3M	0 811 404 918
4WRBKE10R5-85SJ-1X/6ZG24K31/A1D3M-903	0 811 404 920
<b>E, E1, W, W1, R5</b>	<b>NG16</b>
4WRBKE16E180SJ-1X/6ZG24K31/A1D3M	0 811 404 926
4WRBKE16E180SJ-1X/6ZG24EK31/A1D3M	0 811 404 928
4WRBKE16E1-180SJ-1X/6ZG24K31/A1D3M	0 811 404 927
4WRBKE16E1-180SJ-1X/6ZG24EK31/A1D3M	0 811 404 929
4WRBKE16W180SJ-1X/6ZG24K31/A1D3M	0 811 404 930
4WRBKE16W180SJ-1X/6ZG24EK31/A1D3M	0 811 404 932
4WRBKE16W1-180SJ-1X/6ZG24K31/A1D3M	0 811 404 931
4WRBKE16W1-180SJ-1X/6ZG24EK31/A1D3M	0 811 404 933
4WRBKE16R5-180SJ-1X/6ZG24K31/A1D3M-903	0 811 404 937
<b>E, E1</b>	<b>NG27</b>
4WRBKE27E250SJ-1X/6ZG24K31/A1D3M	0 811 404 952
4WRBKE27E250SJ-1X/6ZG24EK31/A1D3M	0 811 404 956
4WRBKE27E1-250SJ-1X/6ZG24K31/A1D3M	0 811 404 953
4WRBKE27E1-250SJ-1X/6ZG24EK31/A1D3M	0 811 404 957
4WRBKE27E430SJ-1X/6ZG24K31/A1D3M	0 811 404 950
4WRBKE27E430SJ-1X/6ZG24EK31/A1D3M	0 811 404 954
4WRBKE27E1-430SJ-1X/6ZG24K31/A1D3M	0 811 404 951
4WRBKE27E1-430SJ-1X/6ZG24EK31/A1D3M	0 811 404 955

Type 4WRBKE	Material No.
<b>W, W1, R5</b>	<b>NG27</b>
4WRBKE27W250SJ-1X/6ZG24K31/A1D3M	0 811 404 960
4WRBKE27W250SJ-1X/6ZG24EK31/A1D3M	0 811 404 964
4WRBKE27W1-250SJ-1X/6ZG24K31/A1D3M	0 811 404 961
4WRBKE27W1-250SJ-1X/6ZG24EK31/A1D3M	0 811 404 965
4WRBKE27W430SJ-1X/6ZG24K31/A1D3M	0 811 404 958
4WRBKE27W430SJ-1X/6ZG24EK31/A1D3M	0 811 404 962
4WRBKE27W1-430SJ-1X/6ZG24K31/A1D3M	0 811 404 959
4WRBKE27W1-430SJ-1X/6ZG24EK31/A1D3M	0 811 404 963
4WRBKE27R5-430SJ-1X/6ZG24EK31/A1D3M-903	0 811 404 969
<b>E, E1, W, W1</b>	<b>NG35</b>
4WRBKE35E1100SJ-1X/6ZG24K31/A1D3M	0 811 404 975
4WRBKE35E1100SJ-1X/6ZG24EK31/A1D3M	0 811 404 977
4WRBKE35E1-1100SJ-1X/6ZG24K31/A1D3M	0 811 404 976
4WRBKE35E1-1100SJ-1X/6ZG24EK31/A1D3M	0 811 404 978
4WRBKE35W1100SJ-1X/6ZG24K31/A1D3M	0 811 404 979
4WRBKE35W1100SJ-1X/6ZG24EK31/A1D3M	0 811 404 981
4WRBKE35W1-1100SJ-1X/6ZG24K31/A1D3M	0 811 404 980
4WRBKE35W1-1100SJ-1X/6ZG24EK31/A1D3M	0 811 404 982

## Accessories (not included in scope of delivery)

Type	NG	Cheese-head bolts ISO 4762	Material No.
	10	4x M6x40	2 910 151 209
	16	2x M6x45	2 910 151 211
		4x M10x50	2 910 151 301
	27	6x M12x60	2 910 151 354
	35	6x M20x90	2 910 151 532
* (see page 4)	Plug-in connectors 2P+PE, see also RE 08008	KS	1 834 482 022
		KS	1 834 482 026
		MS	1 834 482 023
		MS	1 834 482 024
		KS 90°	1 834 484 252
	ISA adapter for external solenoid switch-off, see page 12		1 834 484 245

## Testing and service equipment

Test box type VT-PE-TB3, see RE 30065

Test adapter 6P+PE type VT-PA-2, see RE 30068

## Function, sectional diagram

### General

Type 4WRBKE proportional directional control valves are pilot operated with overlap on the main spool, see symbols E., W. and R5 in mid position (page 6). The pressure for the pilot valve is supplied via X and Y (external), but may also be delivered internally via the P-T connection (without plug). Here, please note  $p_{max}$  in X and Y. The valve electronics (OBE) are situated on the main stage and also incorporate the inductive position transducer. The main spool is position-controlled and the mechanical overlap is reduced in the electronics to  $\pm 5\%$  for the valve signal by means of a jump in compensation. The valves are calibrated at the factory (see characteristic curves), so that the manufacturing tolerance is extremely minimal. The main stage is pilot operated by a 4/3-way directional control valve without position control. The solenoid current "a" indirectly causes the deflection of the main spool P-A, while solenoid current "b" deflects the main spool P-B. This "Or function" enables the higher level switch-off of "a desired direction" by means of an ISA adapter (see page 12). With this function, the solenoid and main stage are protected at the same time. This feature can be employed e.g. for the "Emergency Stop function" or for "Setup" mode.

### Basic principle

Proportional directional control valves with symbols E., W. and R5 are available with  $Q_A:Q_B$  in 1:1 or 2:1 versions. The position of the main spool is determined by the closed-loop controlled flow of control oil on the one hand, and by the return force of the spring on the other hand. During this process, the valve electronics regulate the force compensation for a precise spool position (hysteresis  $\leq 0.3\%$ ). Precise details are contained in the Technical Data (see page 8).

#### Switch-off behavior:

After electrical switch-off, both the pilot valve and the main stage move into the spring-centered mid position. The control oil at the main spool is relieved of pressure to T or Y.

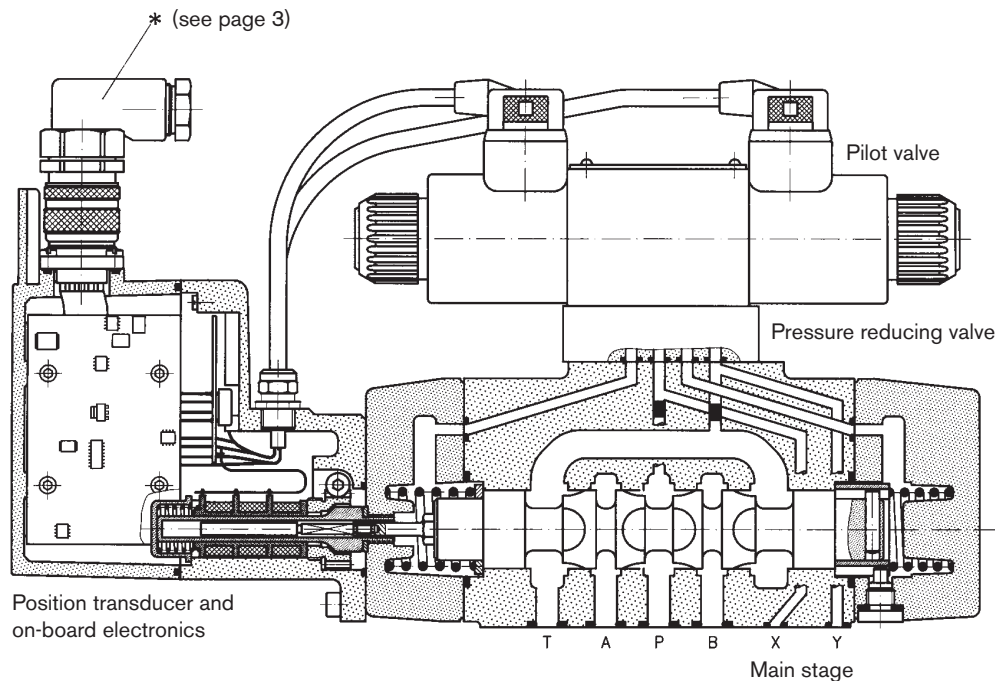
#### Note:

- NG27 is a high-flow version with mounting hole configuration NG25
- NG35 is a high-flow version with mounting hole configuration NG32.

For high-flow versions, ports P, A, B and T may be larger in the customer's control block.

The max. hole  $\varnothing$  are described in the dimensions of NG27 on page 20 and NG35 on page 21.

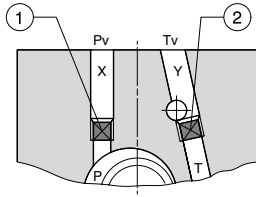
CE EN 61000-6-2: 2002-08  
EN 61000-6-3: 2002-08



\* 90° plug 1 834 484 252 should preferably be used, not included in scope of delivery.

### Control oil supply

NG10, 27, 35



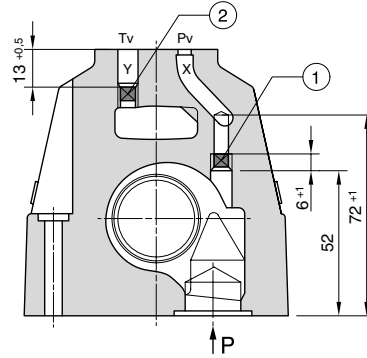
Plug

① ②

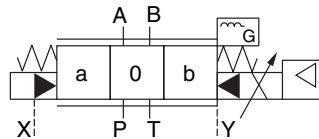
NG10...27 1 813 464 007 SW3

NG35 1 813 464 001 SW4

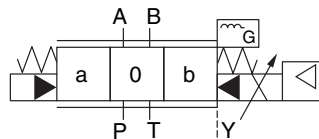
NG16



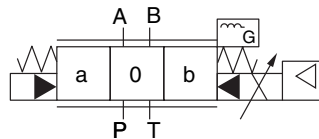
Type ... no code



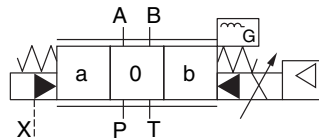
Type ... - ... E ...



Type ... - ... ET ...



Type ... - ... T ...



No code =

"x" = external, "y" = external

E =

"x" = internal, "y" = external

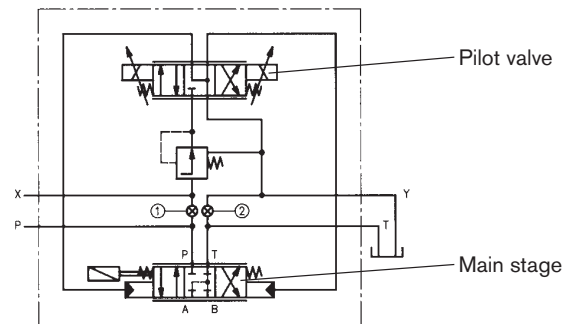
ET =

"x" = internal, "y" = internal

T =

"x" = external, "y" = internal

Symbol in detail



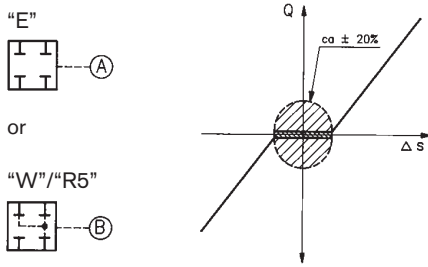
#### Conversion

The pilot valve can be supplied with oil both via ports X and Y (external) and from the main flow ducts P and T. In the basic version, the valve is equipped with the plugs ① and ②, i.e. X and Y are external.

Valve versions with X and/or Y as internal (see ordering data) may be achieved by means of a conversion (see diagram above).

When the control oil supply or outlet is changed, the part number must also be changed.

### Symbols in mid position "E", "W", "R5"



#### Spool valves with overlap

With symbol "E", leakage oil in the two work chambers A and B of the control piston results in a buildup of pressure in A or B, which then causes a connecting cylinder to drift out of position. In many cases, the "W" or "R5" symbol is a better solution.

With a setpoint of "0", the control piston moves into the overlapped mid position.

In this mid position, ports A and B are then relieved of pressure with small openings to T.

This also supports the function of external check valves.

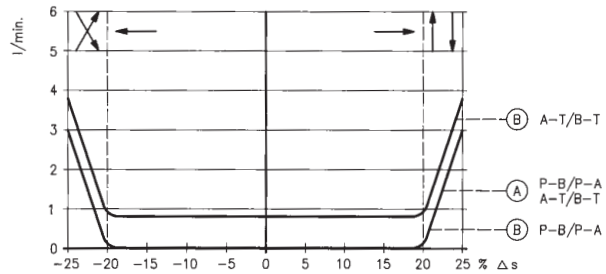
#### Flow in mid position "leakage pressure relief"

$$Q = f(\Delta s)$$

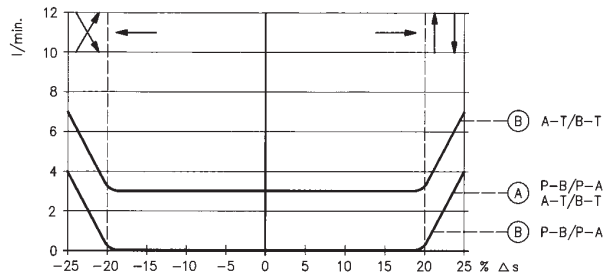
$$0 \dots \pm 25\%$$

$$Q_x = Q_{nom} \cdot \sqrt{\frac{\Delta p_x}{5 \text{ bar}}}$$

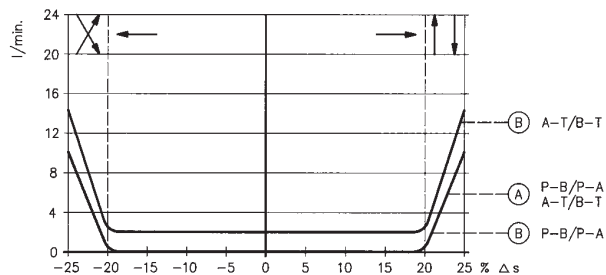
NG10



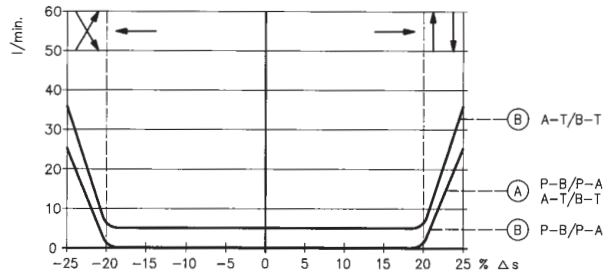
NG16



NG27



NG35



## Valve spools

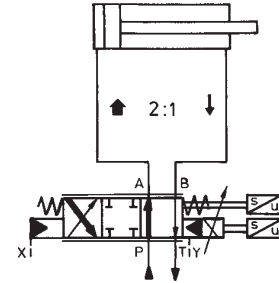
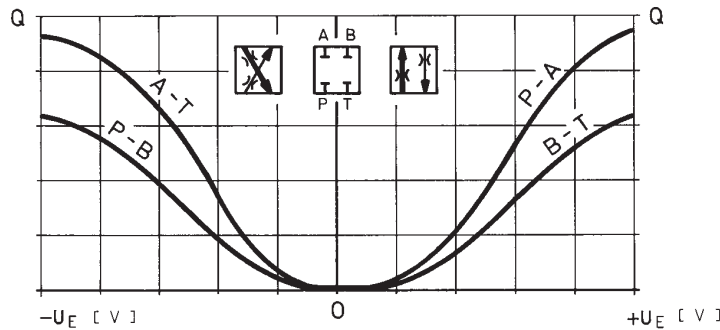
### Asymmetrical valve spools

$$Q_A : Q_B = 2 : 1$$

The two throttling cross-sections of proportional directional control valves are usually symmetrical.

In order to adapt to differential cylinders with different surface areas, valve spools with asymmetrical metering edges are available.

A comparison of the flow rates can be found in the product range overview "Preferred types, characteristic curves".



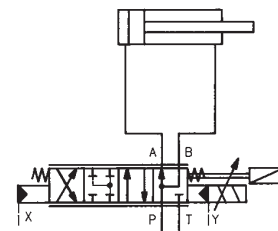
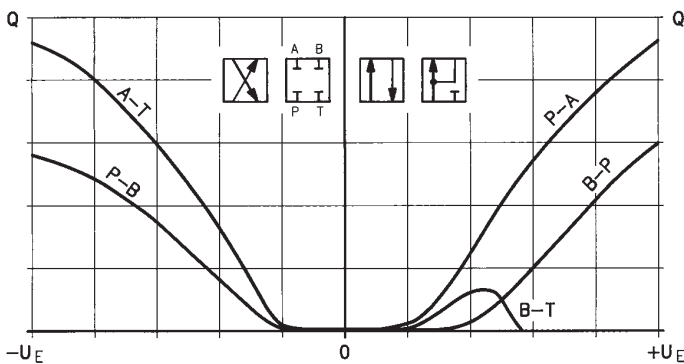
### Valve spools in a differential circuit, symbol "R5"

$$Q_A : Q_B = 2 : 1$$

In order to produce differential circuits, valve spools with an additional "4th position" are available (see diagram).

A check valve must be installed in the consumer lines, but not in the case of symbol B-P with internal connection.

We recommend that you consult the BRH Application Center with regard to using these special symbols for your application. As a rule, a simulation or knowledge of this type of system is required.



## Technical data

General					
Construction	Spool type valve, pilot operated				
Actuation	Pilot operated, proportional 4/3 directional control valve NG6 without position control				
Main stage	Position-controlled, with OBE on the main stage				
Type of mounting	Subplate, mounting hole configuration to ISO 4401				
Installation position	Optional				
Ambient temperature range	°C	-20...+50			
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 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			
Max. permitted degree of contamination of pressure fluid	Class 18/16/13 <sup>1)</sup>				
Purity class to ISO 4406 (c)					
Direction of flow	See symbol				
Nominal flow rate at $\Delta p = 5\text{ bar}$ per edge <sup>2)</sup>	l/min	NG10	NG16	NG27	NG35
		85	180	430	1100
Weight	kg	9.1	11	18.8	80.8
Max. working pressure in P, A, B	bar	350	350	280	350
Max. pressure in X (ext.)	bar	280			
Max. pressure in P (X = int.)		280			
Max. pressure in T (Y = ext.)		250			
Max. pressure in T (Y = int.)		50			
Max. pressure in Y (ext.)		50			
Min. control oil pressure of "pilot stage"		15			
$Q_{max}$	l/min	170	450	1200	3000
$Q_N$ pilot valve (supply pressure) $\Delta p = 5\text{ bar}$	l/min	5	6.5	22	22
Leakage of pilot valve at 100 bar	cm <sup>3</sup> /min	<240	<260	<300	<300
Leakage of main stage Sb E at 100 bar $Q_N$ : Sb W/R5, see page 6	l/min	<0.25	<0.4	<0.6	<1.2
Static/Dynamic					
Overlap in mid position	≈ 18...22% of spool stroke, electrically compensated for $U_{D-E} \pm 0.5\text{ V}$				
Spool stroke, main stage	± mm	4	7	10	12.5
Control oil volume of main stage 100%	cm <sup>3</sup>	1.1	4.3	11.3	41.5
Control oil requirement 0...100%, x = 100 bar	l/min	2.2	4.7	11.7	15.6
Hysteresis	%	<0.3			
Positioning accuracy	%	<0.5			
Manufacturing tolerance	%	<±5			
Response time for signal change 0...100% (x = 100 bar)	ms	<35	<55	<60	<140
Switch-off behavior	After electrical shut-off (pilot valve in mid position), the main stage moves to spring-centered mid position (Sb E., W or R5)				
Thermal drift	<1% at $\Delta T = 40\text{ °C}$				
Calibration	Factory-set ±1%, see flow curves				

<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 catalog sheets RE 50070, RE 50076 and RE 50081.


<sup>2)</sup> Flow rate at a different

$$\Delta p Q_x = Q_{nom} \cdot \sqrt{\frac{\Delta p_x}{5}}$$



## Technical data

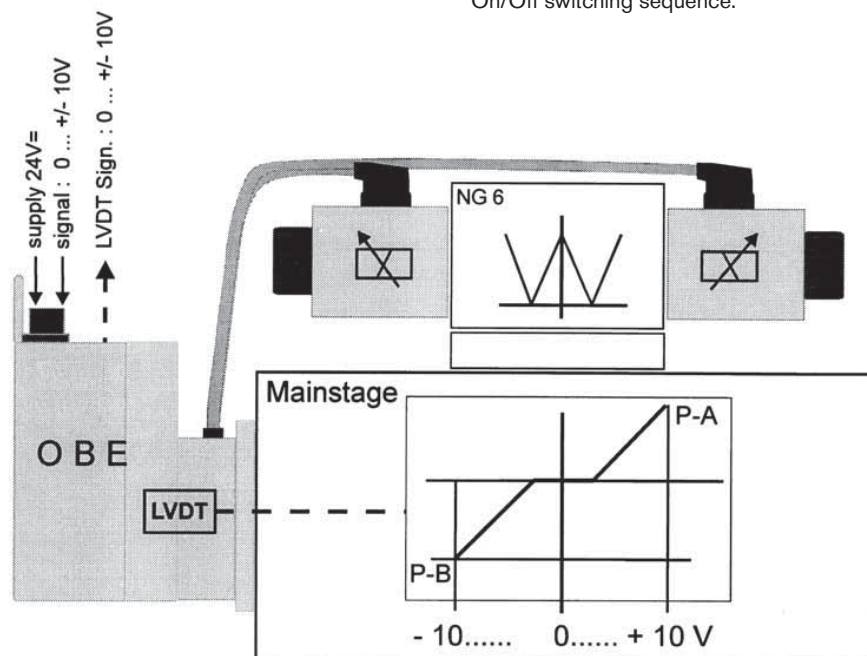
### Electrical, valve with on-board electronics

Cyclic duration factor	%	100
Degree of protection		IP 65 to DIN 40050 and IEC 14434/5
Connection		Plug-in connector 6P+PE, DIN 43563
Power supply Terminal A: Terminal B: 0 V		24 V DC min. 21 V DC <sup>nom</sup> /max. 40 V DC Ripple max. 2 V DC
Power consumption		40 VA max.
External fuse		2.5 A <sub>F</sub>
Input, "Standard" version Terminal D: $U_{D-E}$ Terminal E:		Differential amplifier, $R_i = 100 \text{ k}\Omega$ 0...±10 V 0 V
Max. differential input voltage at 0 V		$\left. \begin{array}{l} D \rightarrow B \\ E \rightarrow B \end{array} \right\} \text{max. } 18 \text{ V DC}$
Test signal, "Standard" version Terminal F: $U_{\text{Test}}$ Terminal C:		LVDT 0...±10 V Reference 0 V
Protective conductor and screen		See pin assignment (installation conforms to CE)
Recommended cable		See pin assignment up to 20 m 7 x 0.75 mm <sup>2</sup> up to 40 m 7 x 1 mm <sup>2</sup>
Calibration		Overlap and $Q_{P-A}$ at +8 V calibrated at the factory, see valve characteristic curve
Conformity		 EN 61000-6-2: 2002-08 EN 61000-6-3: 2002-08

### Note

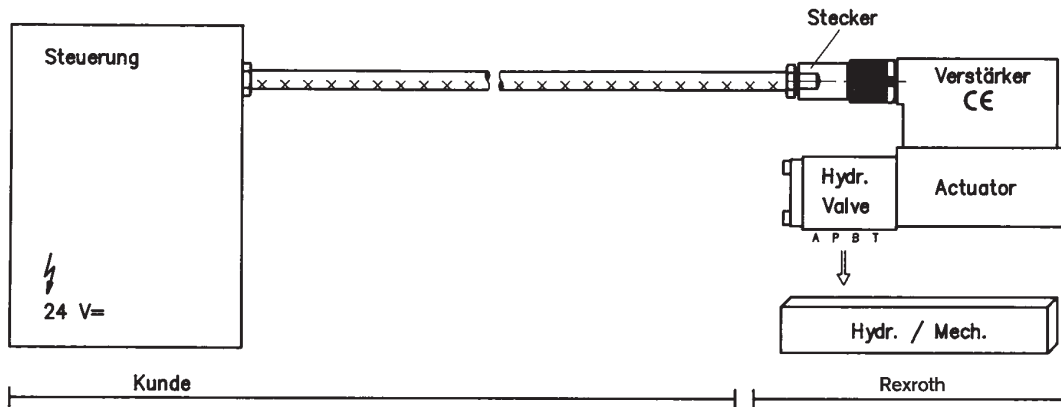
Pilot operated proportional directional control valves with positive overlap perform their function in open or closed-loop-controlled axes and have approx. 20% overlap when switched off.

This state does not constitute a safe, active basic position. For this reason, many applications require the use of "external check valves" or – in the case of this valve – the ISA adapter on the solenoid, which must be taken into account during the On/Off switching sequence.



## Connection

For electrical data, see page 9 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 assignments
- Cable Ø:**
- 0.75 mm<sup>2</sup> up to 20 m long
  - 1.0 mm<sup>2</sup> up to 40 m long
- Outside Ø:**
- 9.4...11.8 mm – Pg11
  - 12.7...13.5 mm – Pg16

### Note

Voltage supply 24 V DC nom., if voltage drops below 18 V DC, rapid shutdown resembling "Enable OFF" takes place internally.

In addition, with the "mA signal" version:

$I_{D-E} \geq 3 \text{ mA}$  – valve is active

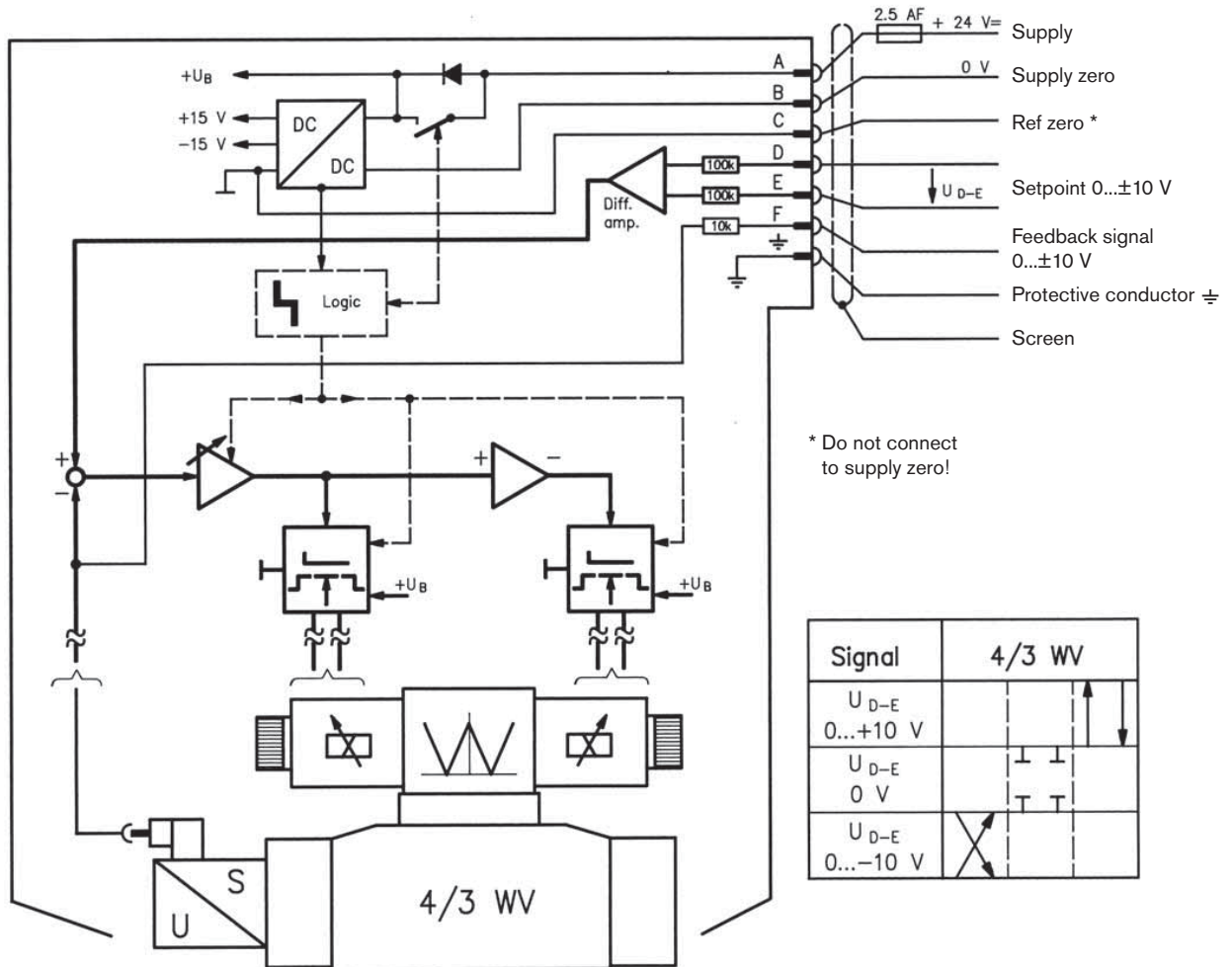
$I_{D-E} \leq 2 \text{ mA}$  – valve is deactivated.

Electrical signals emitted via the trigger electronics (e.g. feedback signal) 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).

### On-board trigger electronics

#### Block diagram/pin assignment

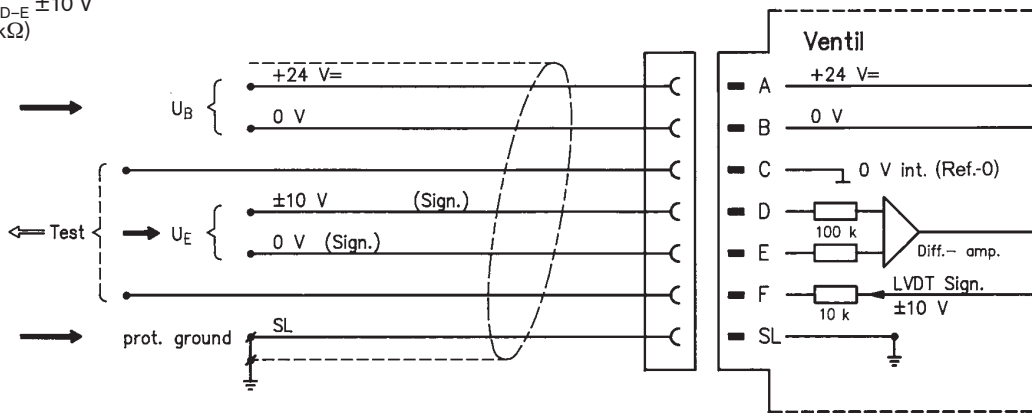
Version:  $U_{D-E} \pm 10\text{ V}$



#### Pin assignment

Version:  $U_{D-E} \pm 10\text{ V}$

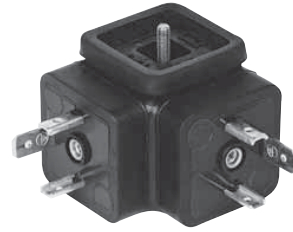
( $R_i = 100\text{ k}\Omega$ )



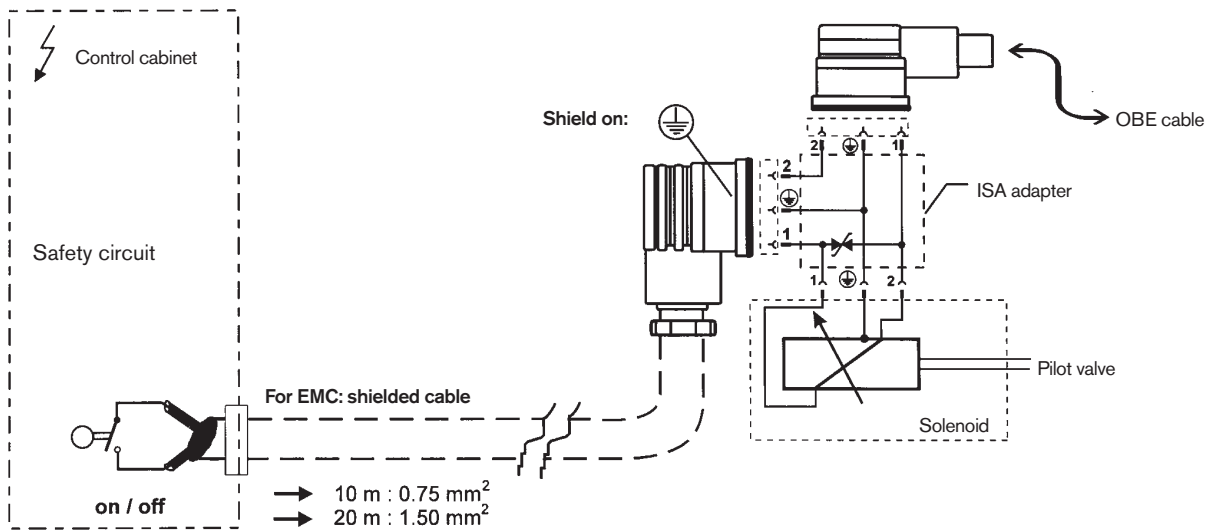
## Accessories for external switch-off (ISA adapter)

### Function

Interrupt **Safety Adapter**, protective circuit and plug connection for external solenoid switch-off (Emergency Off circuit).



### Circuit with ISA adapter



### Note

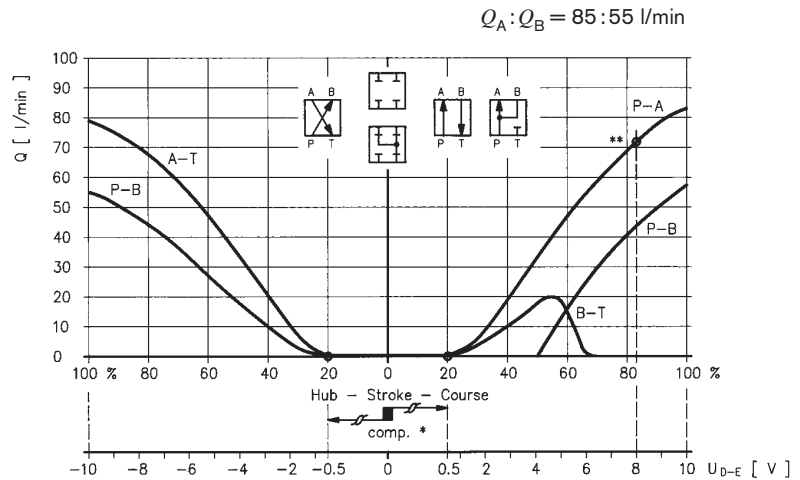
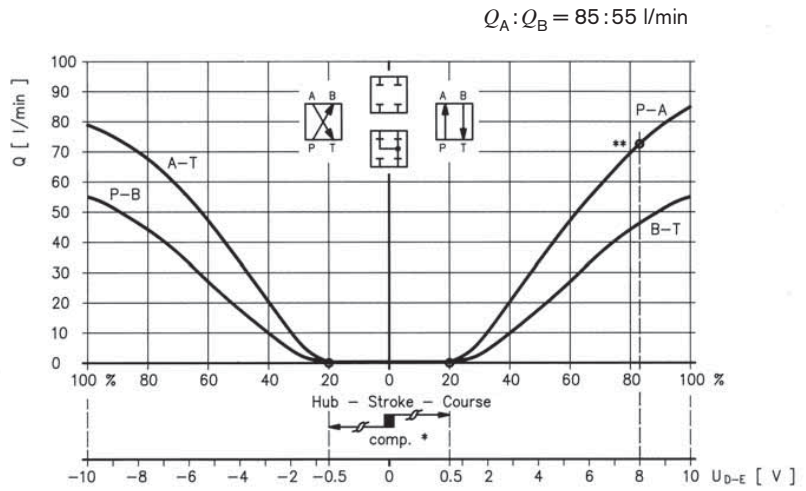
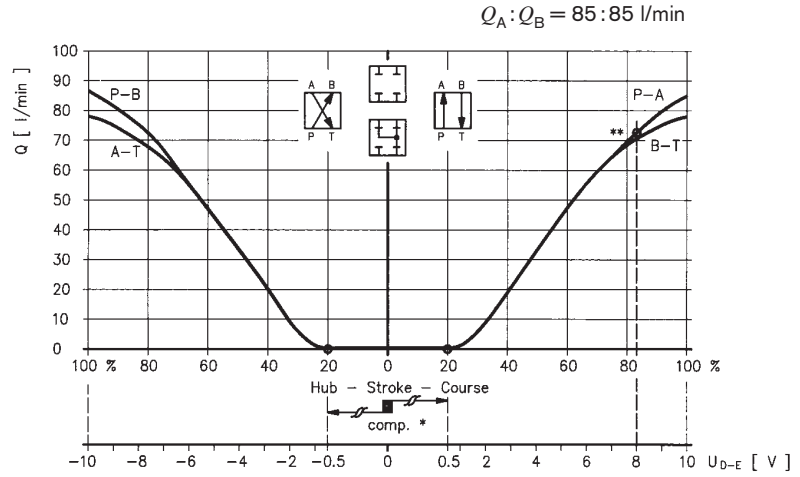
The manufacturer of the complete system is responsible for ensuring that installation conforms to EMC guidelines.

Symbol	Application	kg	Material No.
	ISA adapter for Rexroth control solenoids up to 50 VA	0.07	1 834 484 245

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

**NG10**

$\Delta p = 5 \text{ bar}$   
 $v = 36 \text{ mm}^2/\text{s}$



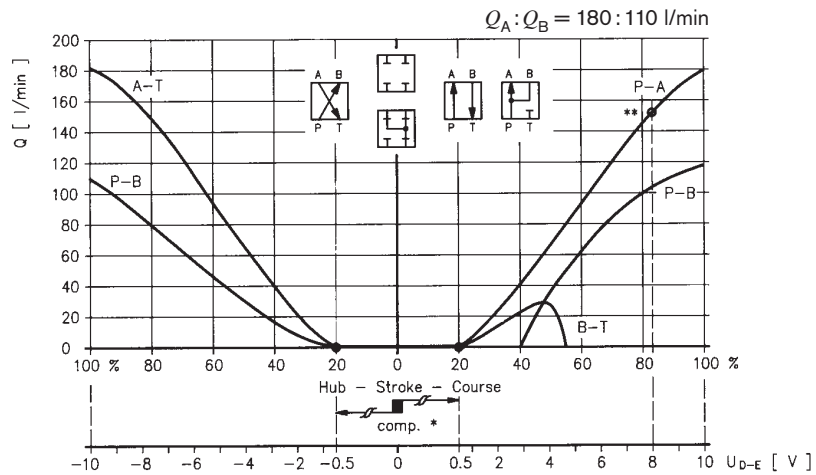
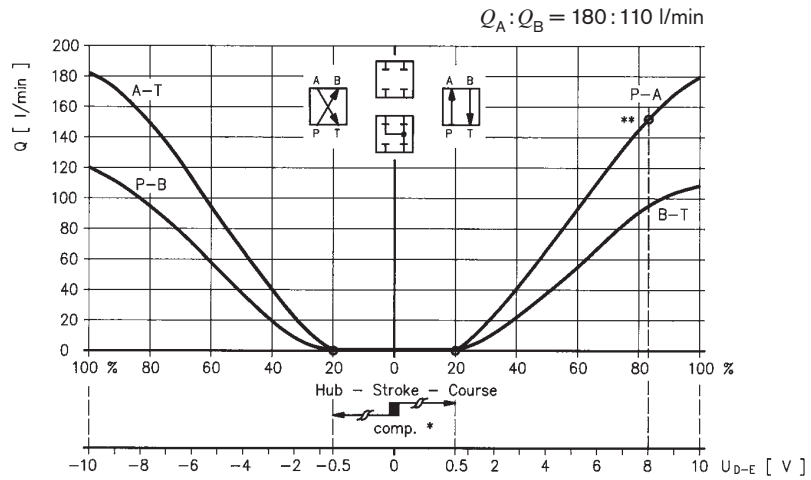
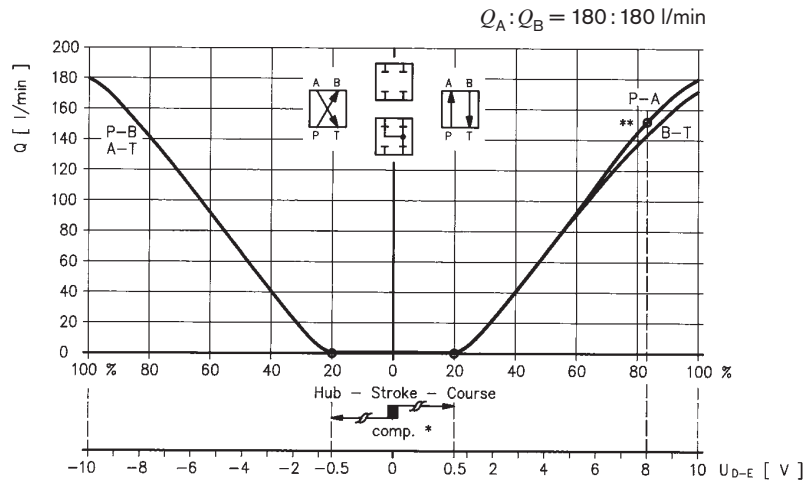
\* Comp.  $U_{D-E} \pm 0.5 \text{ V}$   
 Factory setting  $\pm 1\%$

\*\*  $Q_{P-A}$  at  $+8 \text{ V } [U_{D-E}]$   
 Manufacturing tolerance  $Q_{max} \leq \pm 5\%$

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

**NG16**

$\Delta p = 5 \text{ bar}$   
 $v = 36 \text{ mm}^2/\text{s}$



\* Comp.  $U_{D-E} \pm 0.5 \text{ V}$   
 Factory setting  $\pm 1\%$

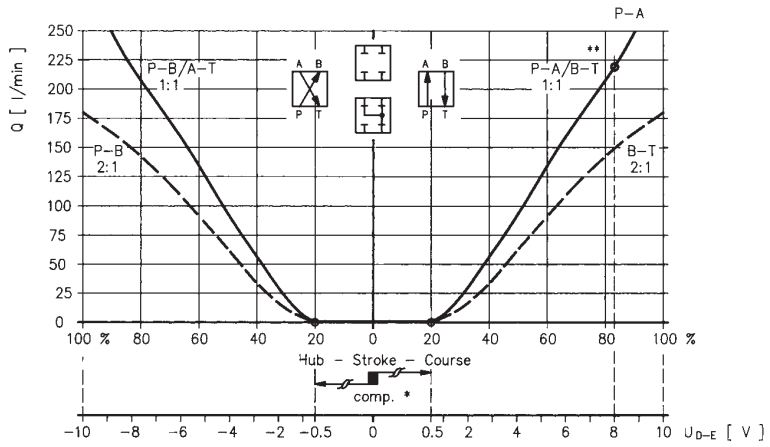
\*\*  $Q_{P-A}$  at  $+8 \text{ V } [U_{D-E}]$   
 Manufacturing tolerance  $Q_{max} \leq \pm 5\%$

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

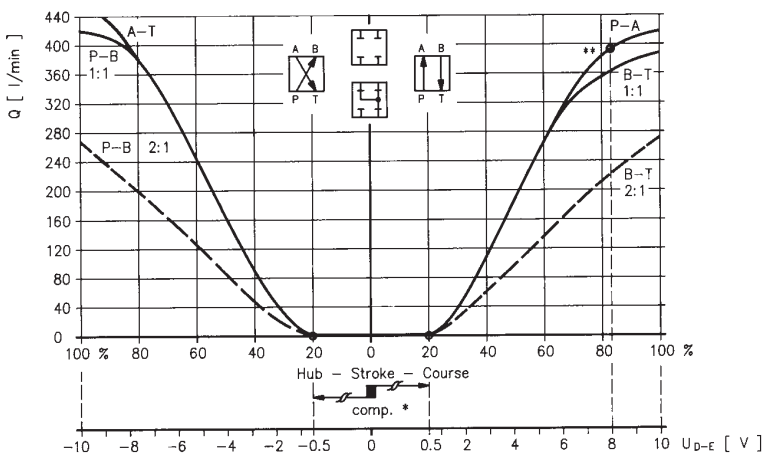
**NG27**

$\Delta p = 5 \text{ bar}$   
 $v = 36 \text{ mm}^2/\text{s}$

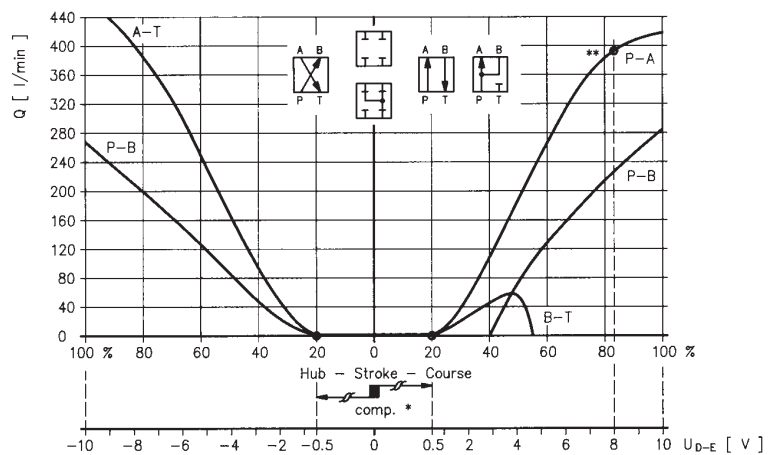
$Q_A : Q_B = 250 : 250 \text{ l/min}$   
 $Q_A : Q_B = 250 : 170 \text{ l/min}$



$Q_A : Q_B = 430 : 430 \text{ l/min}$   
 $Q_A : Q_B = 430 : 250 \text{ l/min}$



$Q_A : Q_B = 430 : 430 \text{ l/min}$   
 $Q_A : Q_B = 430 : 250 \text{ l/min}$



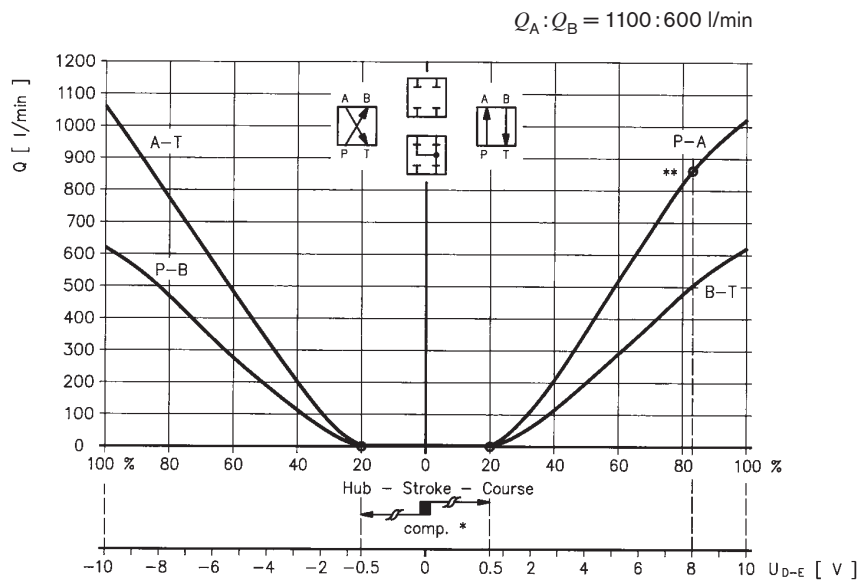
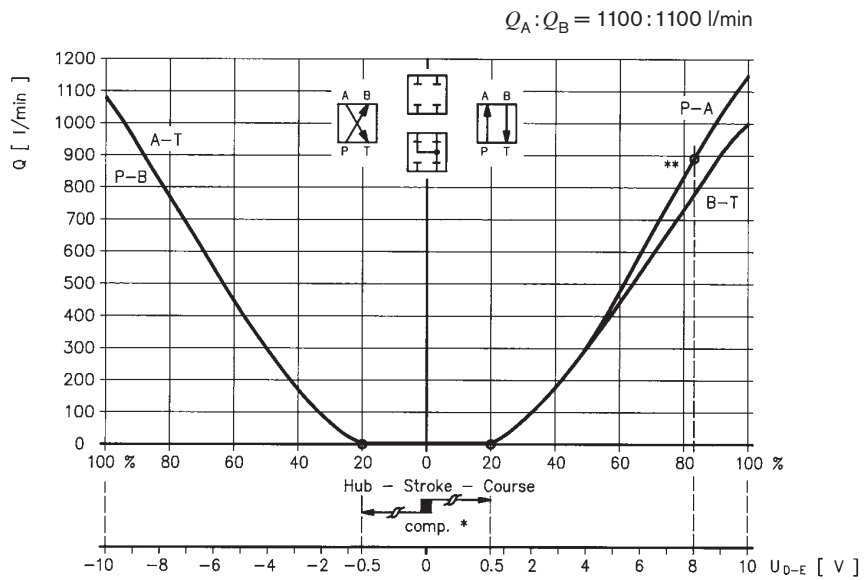
\* Comp.  $U_{D-E} \pm 0.5 \text{ V}$   
 Factory setting  $\pm 1\%$

\*\*  $Q_{P-A}$  at  $+8 \text{ V } [U_{D-E}]$   
 Manufacturing tolerance  $Q_{max} \leq \pm 5\%$

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

**NG35**

$\Delta p = 5\text{ bar}$   
 $v = 36\text{ mm}^2/\text{s}$



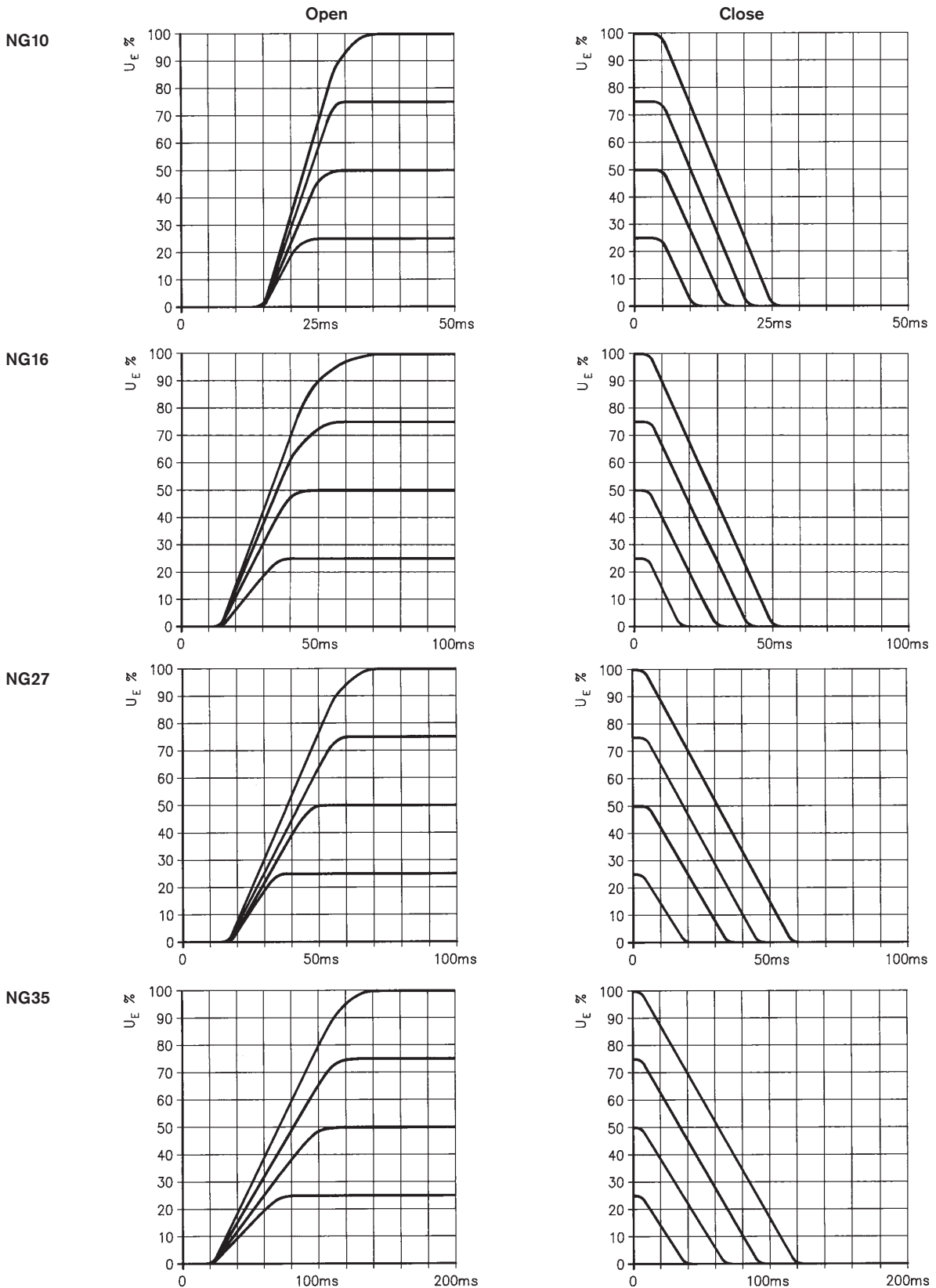
\* Comp.  $U_{D-E} \pm 0.5\text{ V}$   
 Factory setting  $\pm 1\%$

\*\*  $Q_{P-A}$  at  $+8\text{ V } [U_{D-E}]$   
 Manufacturing tolerance  $Q_{max} \leq \pm 5\%$

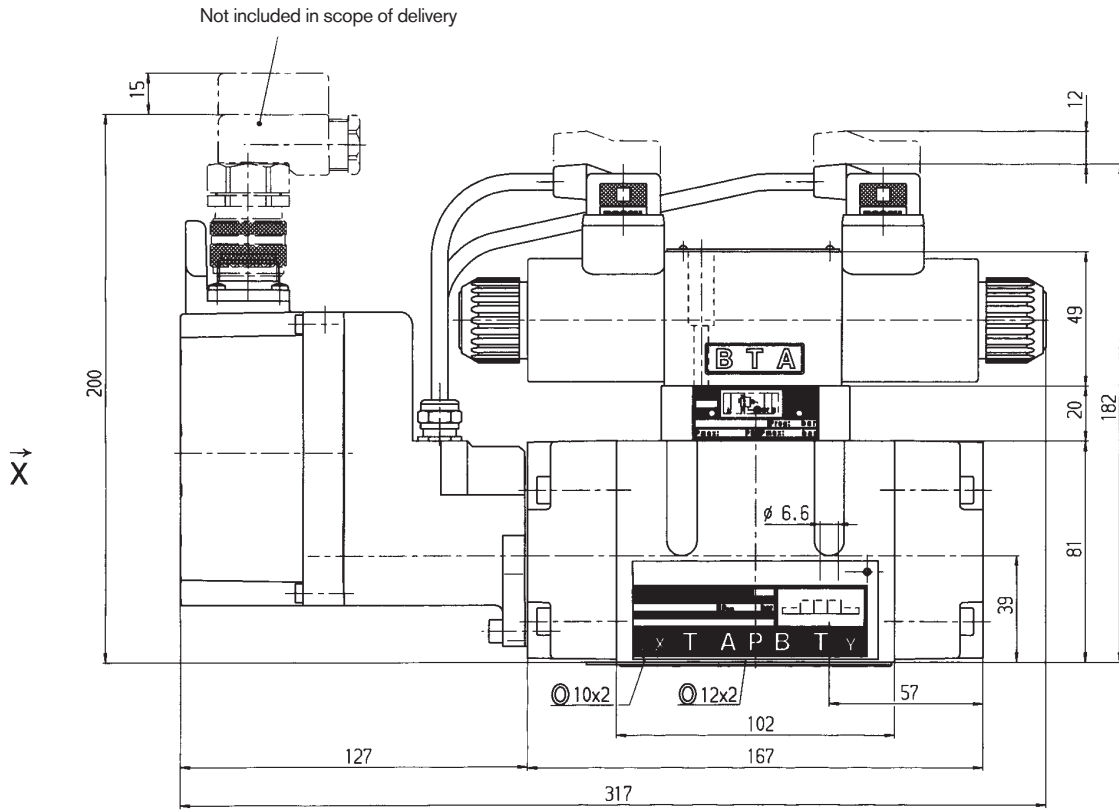


## Characteristic curves (measured with HLP 46, $\vartheta_{oil} = 40^\circ\text{C} \pm 5^\circ\text{C}$ )

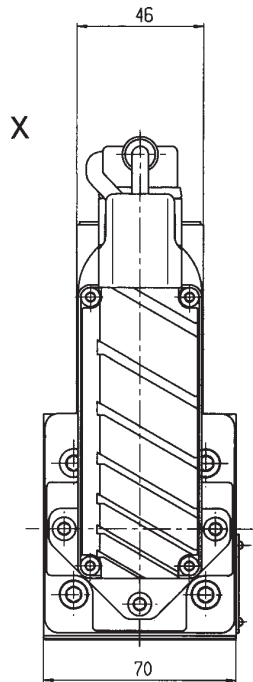
Response time  $x = 100 \text{ bar}$



**Unit dimensions NG10 (nominal dimensions in mm)**



Set 1817010280

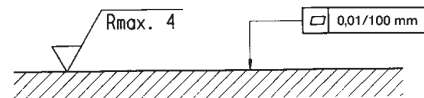


4x M6x40  
= 11<sup>+3</sup> Nm

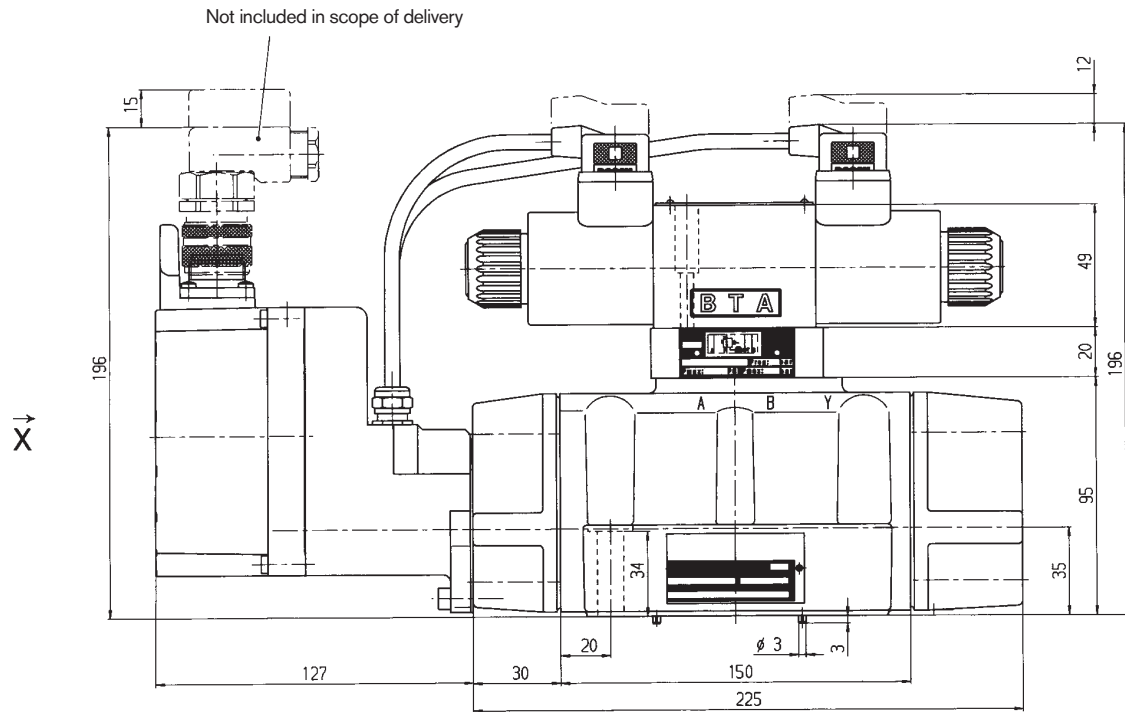
2910151209

**Mounting hole configuration:**  
NG10 (ISO 4401-05-05-0-94),  
see page 22  
For subplates, see catalog sheet RE 45055

Required surface quality  
of mating component



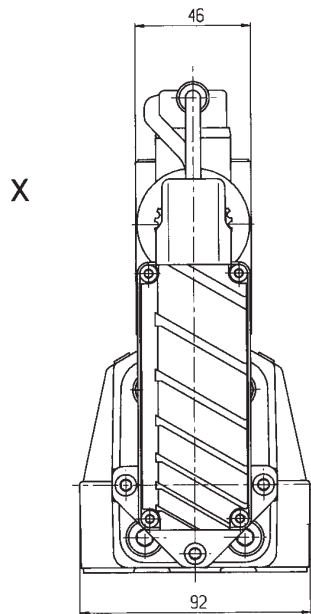
**Unit dimensions NG16 (nominal dimensions in mm)**



- ⊙ X, Y  $\varnothing 9 \times 2$
- ⊙ P, A, B, T  $\varnothing 23 \times 2.5$
- ⊙ Set **1817 010 275**

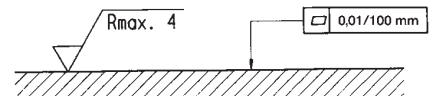
- 2 x M 6 x 45
- 4 x M 10 x 50
- 11 Nm
- 40 Nm

- M 6 x 45 **2910 151 211**
- M 10 x 50 **2910 151 301**

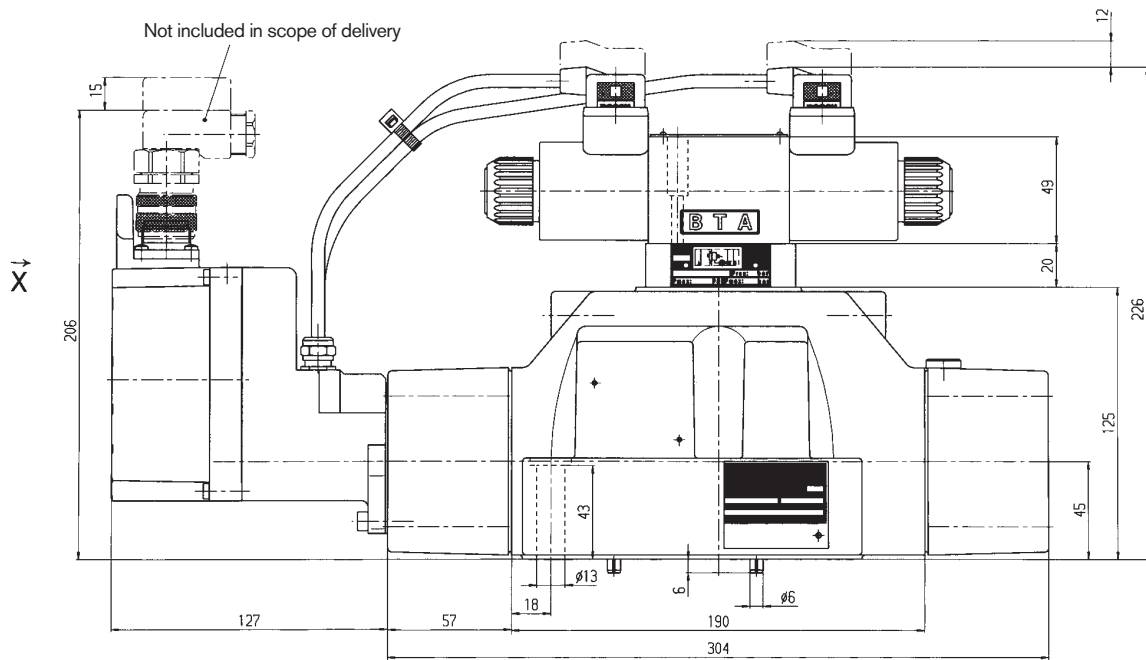


**Mounting hole configuration:**  
**NG16** (ISO 4401-07-06-0-94),  
 see page 22  
 For subplates, see catalog sheet RE 45057

Required surface quality  
 of mating component

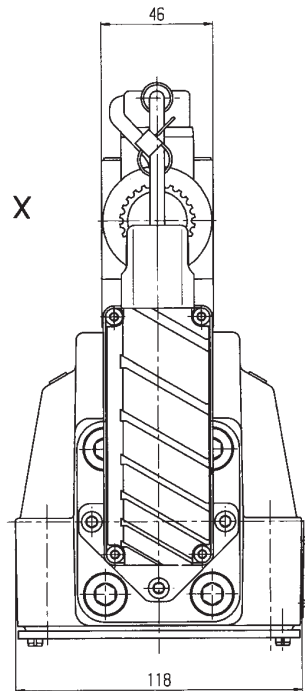


**Unit dimensions NG27 (nominal dimensions in mm)**



- ⊙ X, Y  $\varnothing 15 \times 2,5$
- ⊙ P, A, B, T  $\varnothing 34,6 \times 2,62$
- ⊙ Set 1 817 010 344

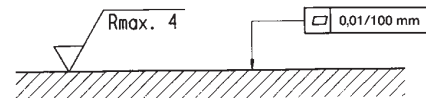
- 6 x M 12 x 60
- =  $90^{+30}$  Nm
- 2910151354**



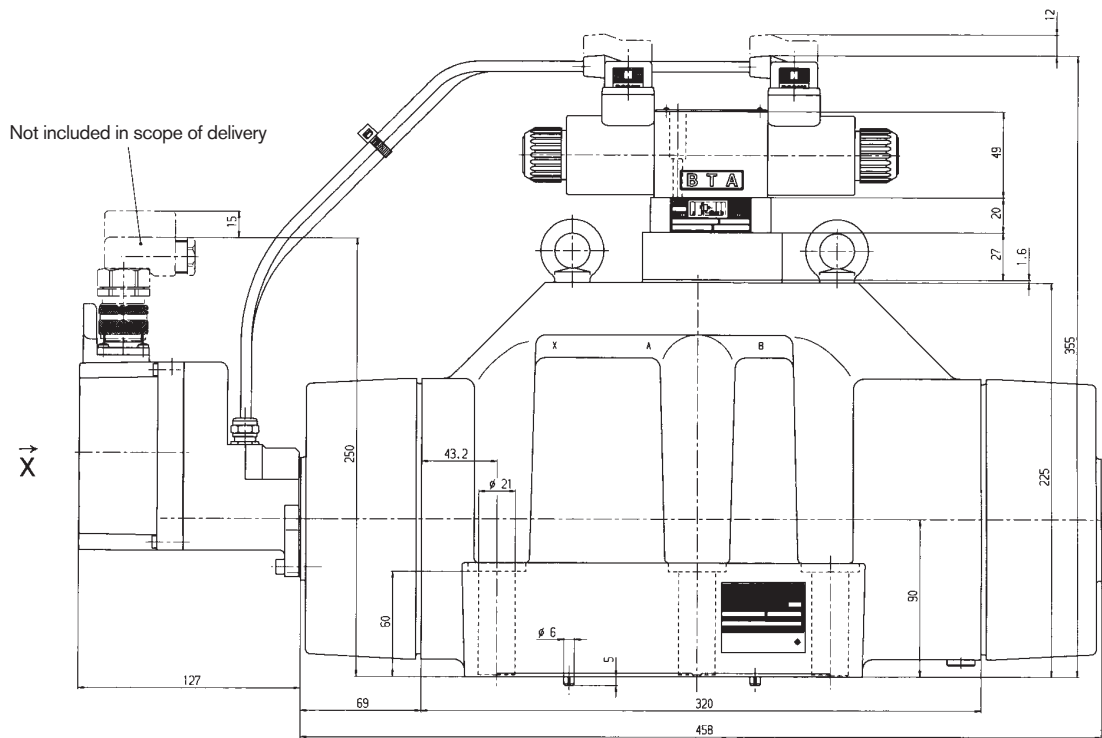
**Note**  
 NG27 is a high-flow version of NG25, holes P, A, B and T have a diameter of 32 mm in the main stage. Contrary to the standard, ports P, A, B and T may have a max. diameter of 32 mm in the control block. The control block with  $\varnothing 32$  mm holes and the NG27 valve together achieve higher flow rates at a low  $\Delta p$ .

**Mounting hole configuration:**  
 NG25 (ISO 4401-08-07-0-94), see page 23  
 For subplates, see catalog sheet RE 45059



Required surface quality of mating component

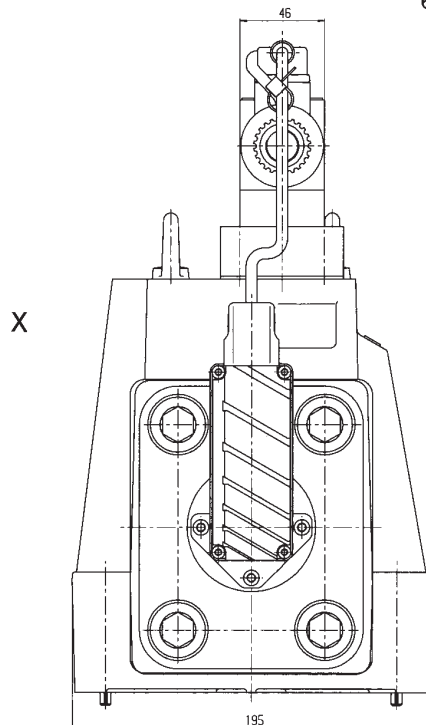


**Unit dimensions NG35** (nominal dimensions in mm)



- ⊙ X, Y  $\varnothing 14 \times 2,5$
- ⊙ P, A, B, T  $\varnothing 53.57 \times 3.53$
- ⊙ Set **1817 010 297**

6 x  M 20 x 90  
 = 450<sup>+110</sup> Nm  
**2910 151 532**



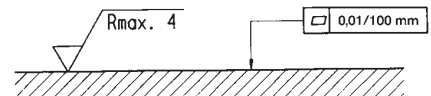
**Note**

NG35 is a high-flow version of NG32, holes P, A, B and T have a diameter of 50 mm in the main stage. Contrary to the standard, ports P, A, B and T may have a max. diameter of 48 mm in the control block. The control block with  $\varnothing 48$  mm holes and the NG35 valve together achieve higher flow rates at a low  $\Delta p$ .

**Mounting hole configuration: NG32**

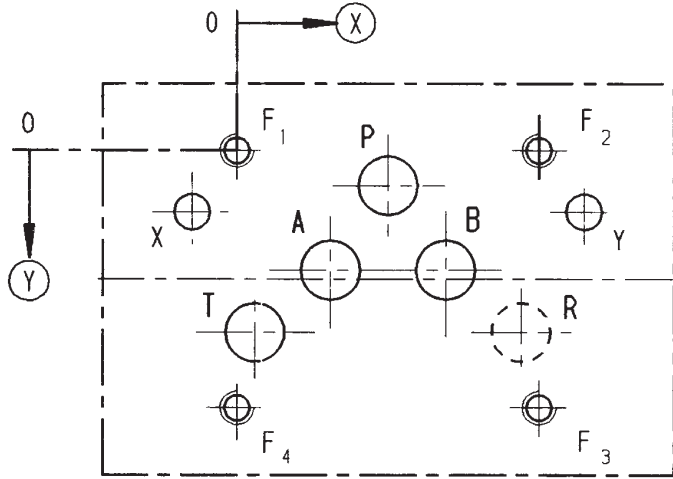
(ISO 4401-10-08-0-94),  
 see page 23  
 For subplates, see catalog sheet RE 45060

Required surface quality  
 of mating component



**Mounting hole configurations** (nominal dimensions in mm)

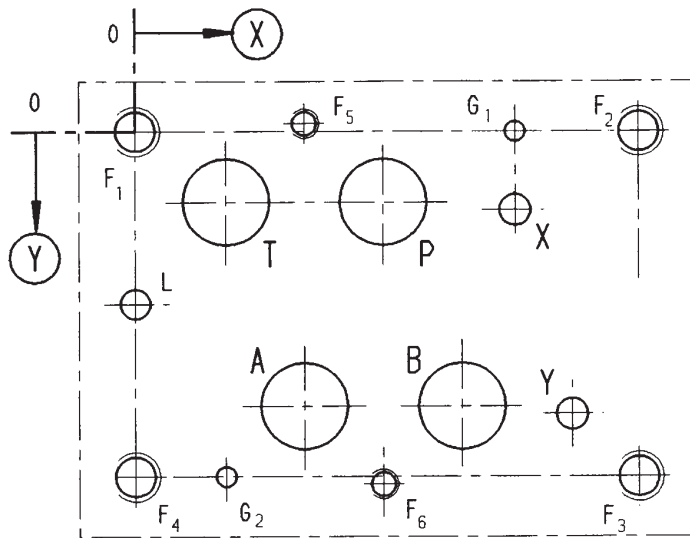
**NG10 – ISO 4401-05-05-0-94**



- 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	B	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	X	Y	R
⊗	27	16.7	3.2	37.3	0	54	54	0	-8	62	50.8
⊙	6.3	21.4	32.5	21.4	0	0	46	46	11	11	32.5
∅	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>	6.3	6.3	10.5 <sup>1)</sup>

**NG16 – ISO 4401-07-06-0-94**

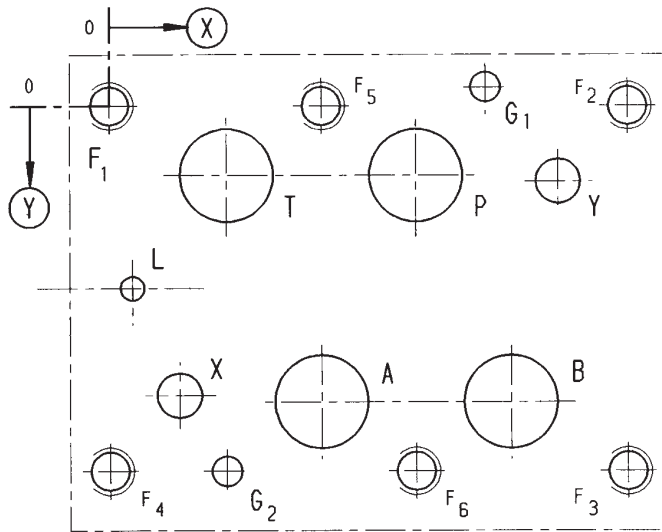


- 1) Deviates from standard
- 2) Thread depth:  
 Ferrous metal 1.5 x Ø  
 Non-ferrous 2 x Ø

	P	A	T	B	L	X	Y	G <sub>1</sub>	G <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>
⊗	50	34.1	18.3	65.9	0	76.6	88.1	76.6	18.3	0	101.6	101.6	0	34.1	50
⊙	14.3	55.6	14.3	55.6	34.9	15.9	57.2	0	69.9	0	0	69.9	69.9	-1.6	71.5
∅	20 <sup>1)</sup>	20 <sup>1)</sup>	20 <sup>1)</sup>	20 <sup>1)</sup>	6.3	6.3	6.3	4	4	M10 <sup>2)</sup>	M10 <sup>2)</sup>	M10 <sup>2)</sup>	M10 <sup>2)</sup>	M6 <sup>2)</sup>	M6 <sup>2)</sup>

**Mounting hole configurations (nominal dimensions in mm)**

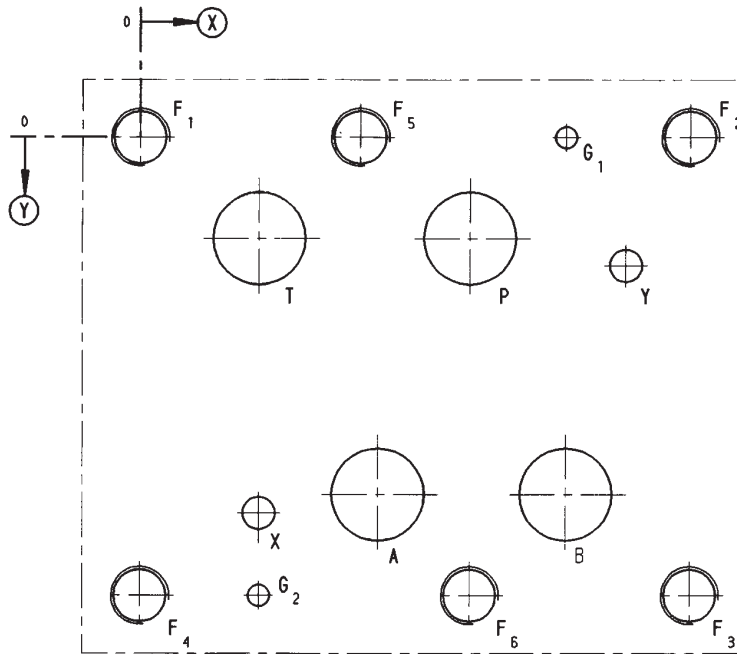
**NG25 – ISO 4401-08-07-0-94**



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

	P	A	T	B	L	X	Y	G <sub>1</sub>	G <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>
⊗	77	53.2	29.4	100.8	5.6	17.5	112.7	94.5	29.4	0	130.2	130.2	0	53.2	77
⊙	17.5	74.6	17.5	74.6	46	73	19	-4.8	92.1	0	0	92.1	92.1	0	92.1
∅	32 <sup>1)</sup>	32 <sup>1)</sup>	32 <sup>1)</sup>	32 <sup>1)</sup>	11.2	11.2	11.2	7.5	7.5	M12 <sup>2)</sup>	M12 <sup>2)</sup>	M12 <sup>2)</sup>	M12 <sup>2)</sup>	M12 <sup>2)</sup>	M12 <sup>2)</sup>

**NG32 – ISO 4401-10-08-0-94**



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

	P	A	T	B	X	Y	G <sub>1</sub>	G <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>
⊗	114.3	82.5	41.3	147.6	41.3	168.3	147.6	41.3	0	190.5	190.5	0	76.2	114.3
⊙	35	123.8	35	123.8	130.2	44.5	0	158.8	0	0	158.8	158.8	0	158.8
∅	48 <sup>1)</sup>	48 <sup>1)</sup>	48 <sup>1)</sup>	48 <sup>1)</sup>	11.2	11.2	7.5	7.5	M20 <sup>2)</sup>	M20 <sup>2)</sup>	M20 <sup>2)</sup>	M20 <sup>2)</sup>	M20 <sup>2)</sup>	M20 <sup>2)</sup>

## Notes

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[Order at: shop.eemtechnologies.com](http://shop.eemtechnologies.com)

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