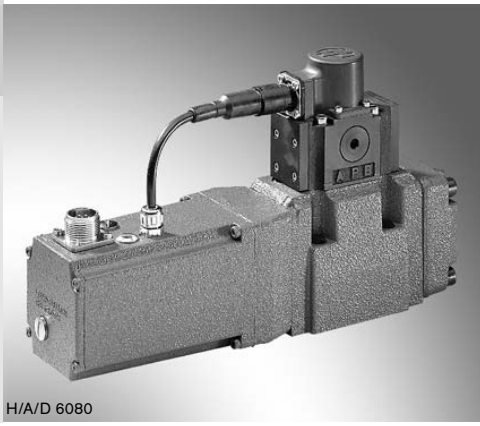
Rexroth
Bosch Group

4/3-way high response directional control valve, pilot operated with electrical feedback and integrated electronics (OBE)

RE 29093/08.04 1/22
Replaces: 01.03

Type 4WRDE



Nominal series 10 to 35
Component series 5X
Maximum operating pressure 350 bar
Maximum flow 3000 L/min

Overview of contents

Features

- Pilot operated 3-stage high response directional control valve with electrical feedback of the main spool and integrated electronics (OBE)
- Acquisition of the main spool position by means of an inductive position transducer
- 2-stage pilot control valve, type 4WS2EM 6-2X/...
- Particularly suitable for closed loop position, velocity, pressure and force control with simultaneous high requirements in dynamic response and response sensitivity
- Subplate mounting:
  Porting pattern to ISO 4401 (NS10 to 35)
  (NS10 supplemented with ports X and Y)
- Signal integration of the valve's closed loop control circuit, the supply to the position measuring system and the control of the pilot control valve are carried out via the integrated control electronics

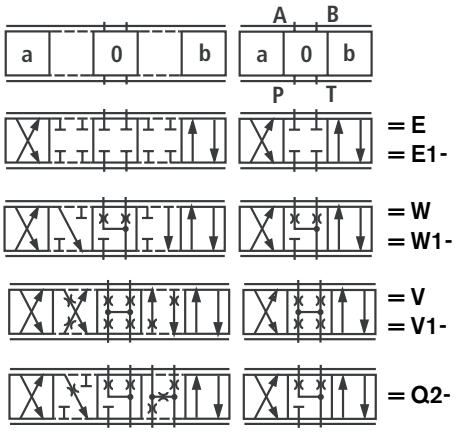
Ordering details

4WRDE				−5X/	6L	24		K9/			R	*

Electrically operated 3-stage high response directional control valve of 4-way design with integrated electronics

Nominal size 10 = **10**
Nominal size 16 = **16**
Nominal size 25 = **25**
Nominal size 27 = **27**
Nominal size 32 = **32**
Nominal size 35 = **35**

Symbols



= **E**
= **E1-**
= **W**
= **W1-**
= **V**
= **V1-**
= **Q2-**

With symbol E1-, W1-, V1-:

P → A : q_{Vmax} B → T: $q_V/2$
P → B: $q_V/2$ A → T: q_{Vmax}

Note:
With spools W, W1-, there is, in the neutral position, a connection from A to T and B to T with approx. 3 % of the relevant cross-section.

Further details in clear text

R = R-rings

M = [2] NBR seals
V = FKM seals

No code = Without sandwich plate directional valve

WG152 = With sandwich plate directional valve
24 V =, Plug-in connector Z4
Plug-in connector – separate order, see page 6

Electrical connections

K9 = **Without** plug-in connector with component plug
Plug-in connector – separate order see pages 6, 7

Pilot oil supply and drain

No code = External pilot oil supply, external pilot oil drain
E = Internal pilot oil supply, external pilot oil drain
ET = Internal pilot oil supply, internal pilot oil drain
T = External pilot oil supply, internal pilot oil drain

Supply voltage

24 = + 24 V DC

6L = Nominal size 6 servo pilot control valve

5X = Component series 50 to 59
(50 to 59: unchanged installation and connection dimensions)

Characteristic curve form

L = Linear
P = Linear with fine control range

Ordering detail: Nominal flow – see pages 10 to 14

25 [1] **=**	or	**50 =**	or	**100 =**		For nominal size 10
125 =	or	**200 =**				For nominal size 16
220 =	or	**350 =**				For nominal size 25
500 =						For nominal size 27
400 =	or	**600 =**				For nominal size 32
1000 =						For nominal size 35

[1] Only available with spool variants E-; W and V and with the L (linear) characteristic curve form

[2] Suitable for mineral oil (HL, HLP) to DIN 51524

Preferred types

Type – NS10	Material No.
4WRDE 10 V50L-5X/6L24ETK9/MR	R900246718
4WRDE 10 V50L-5X/6L24K9/MR	R900948785
4WRDE 10 V100L-5X/6L24ETK9/MR	R900978379
4WRDE 10 V100L-5X/6L24K9/MR	R900966563
4WRDE 10 V100L-5X/6L24K9/WG152MR	R900963311
4WRDE 10 V1-100L-5X/6L24K9/WG152MR	R900964258

Type – NS25	Material No.
4WRDE 25 V220L-5X/6L24K9/MR	R900959210
4WRDE 25 V350L-5X/6L24K9/MR	R900978280
4WRDE 25 V350L-5X/6L24K9/WG152MR	R900962078
4WRDE 25 V1-350L-5X/6L24EK9/WG152MR	R900702612

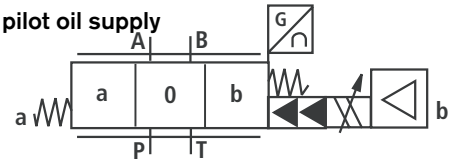
Type – NS16	Material No.
4WRDE 16 V125L-5X/6L24K9/MR	R900959699
4WRDE 16 V125L-5X/6L24K9/WG152MR	R900957525
4WRDE 16 V200L-5X/6L24ETK9/MR	R900951313
4WRDE 16 V200L-5X/6L24K9/MR	R900957581
4WRDE 16 V200L-5X/6L24K9/WG152MR	R900964249

Type – NS32	Material No.
4WRDE 32 V600L-5X/6L24K9/MR	R900757984
4WRDE 32 V600L-5X/6L24K9/WG152MR	R900945479
4WRDE 32 V1-600L-5X/6L24K9/WG152MR	R900956902

Symbols (simplified, detailed)

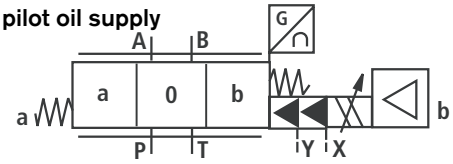
Type 4WRDE…–5X…ET.

Internal pilot oil supply



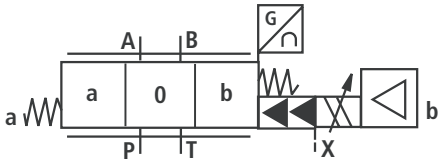
Type 4WRDE…–5X…

External pilot oil supply



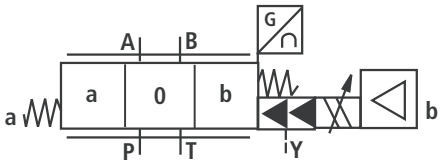
Type 4WRDE . –5X . . T .

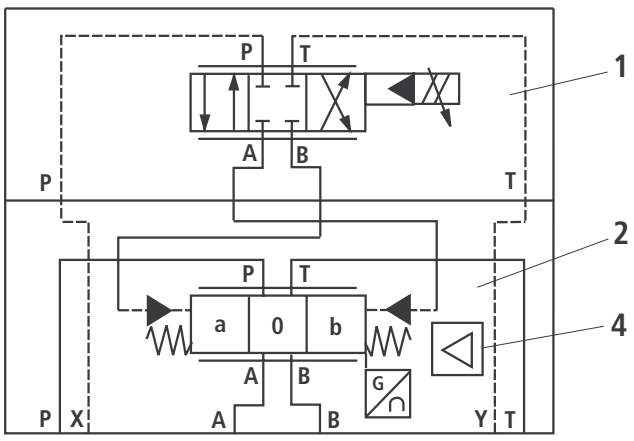
External pilot oil supply; internal pilot oil drain



Type 4WRDE . –5X . . E .

Internal pilot oil supply; external pilot oil drain





Detailed

Example: Type 4WRDE…-5X/…

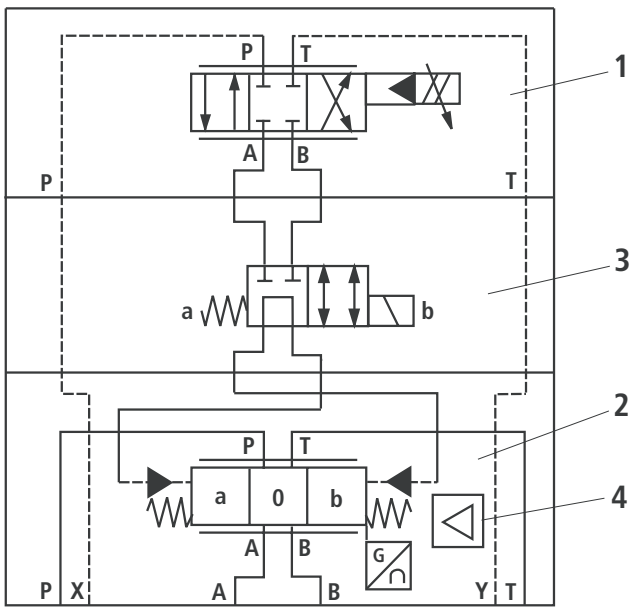
External pilot oil supply, external pilot oil drain

1 Pilot control valve

2 Main valve

3 Sandwich plate directional valve

4 Integrated electronics (OBE)



Example: Type 4WRDE…-5X/…WG152

Sandwich plate directional valve for centralising the main stage

External pilot oil supply, external pilot oil drain

Function, section, valve features

Valve types 4WRDE are 3-stage high response directional control valves.

They control or closed loop control the rate and direction of a fluid flow and are primarily used in closed loop circuits for various tasks.

These valves basically consist of the following assemblies:

– 2-stage pilot control valve comprising of a torque motor (1) and a hydraulic amplifier (5) designed as a flapper jet valve and spool sleeve unit (6) as a flow amplifier stage for the control of the third stage (7),

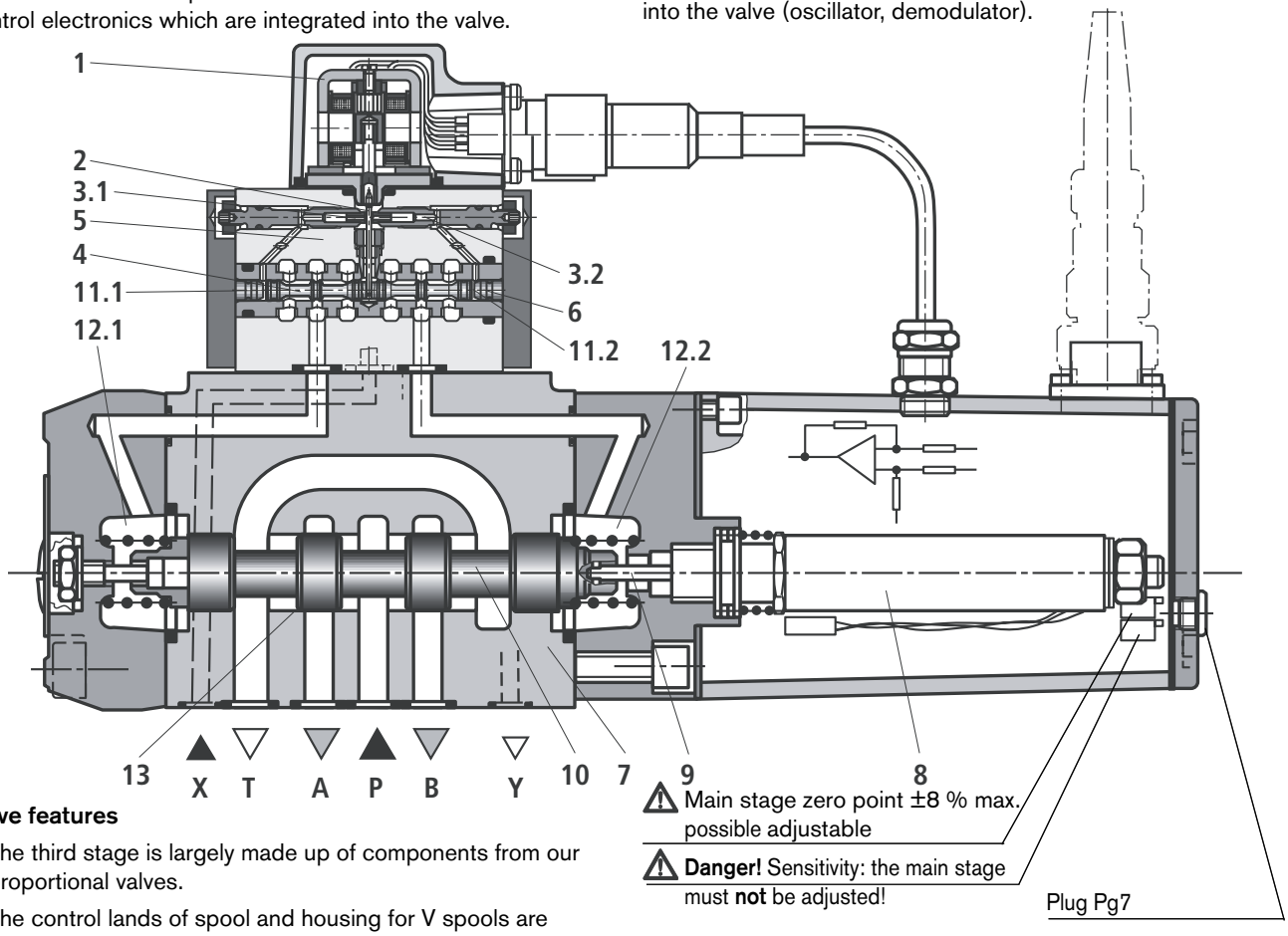
– Third stage (7) for flow control,

– An inductive position transducer (8), the core of (9) which is attached to main spool (10) of the third stage.

The position of spool (10) is acquired via the inductive position transducer (8). The signal integration of the valve closed loop control circuit, the supply to the position measuring system and the control of the pilot control valve is carried out via the control electronics which are integrated into the valve.

The differential voltage generated by the command/actual value comparison is amplified within the control electronics and is passed onto the first stage of the valve as a control deviation. This signal moves the flapper plate (2) between the two control jets (3.1, 3.2). A pressure differential is thereby generated between the two control chambers (11.1, 11.2). Control spool (4) is thereby moved and passes a corresponding oil flow into spring chamber (12.1 or 12.2). Spool (10) and the attached core (9) of the inductive position transducer (8) are moved until the actual value signal once more agrees with the command value signal. In the controlled condition the spool (10) is held in the position defined by the command value.

The spool stroke is proportional to the command value. To control the flow there is a relevant control opening to which the flow is proportional. this the result of the position of the control spool (10) with regard to the control lands (13), to which the flow is proportional. The valve dynamics are optimised via the electrical amplification. The control electronics are integrated into the valve (oscillator, demodulator).



Valve features

– The third stage is largely made up of components from our proportional valves.

– The control lands of spool and housing for V spools are ground to match each other.

– The zero point adjustment at the **„main stage zero point“** is factory pre-set and can via a potentiometer in the control electronics be adjusted within a range of ± 8 % of the zero stroke. The integrated control electronics can be accessed by removing a plug in the housing.

– If the pilot control valve or the control electronics are exchanged then these have to be recalibrated. All calibrations must only be carried out by trained personnel.

– Maintenance work on the pilot control valve may only be carried out by Bosch Rexroth personnel. However, the replacement of the filter elements is excluded from this – see RE 29563 for series 50/51 or RE 29564 from series 52; Material No. **R900218621** and seal Material No. **R900012505**. Care must be taken to ensure that the seal is correctly located and that the plugs are correctly tightened. The tightening torque of the cover screws is 20 Nm.

⚠ **Changing the zero point can lead to damage to the system and must only be carried out by trained personnel!**

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

General

Nominal sizes			NS	**10**	**16**	**25**	**27**	**32**	**35**
Installation and commissioning guidelines				Preferably horizontal, see RE 07700					
Storage temperature range			°C	– 20 to + 80					
Ambient temperature range			°C	– 20 to + 60					
Weight			kg	6.8	8.9	15.2	15.5	35.2	71

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

Operating pressure	Pilot control valve	Pilot oil supply [1]	bar	25 to 315					
	Main valve, ports P, A, B		bar	Up to 315	Up to 350	Up to 350	Up to 210	Up to 350	Up to 350
Return pressure	Port T	Pilot oil drain, internal	bar	Pressure peak < 100 permissible					
		Pilot oil drain, external	bar	Up to 315	Up to 250	Up to 250	Up to 210	Up to 250	Up to 250
	Port Y		bar	Pressure peak < 100 permissible					
Nominal flow q_{Vnom} ± 10% at $\Delta p = 10$ bar [2] Δp = valve pressure differential in bar			L/min	25 50 100	– 125 200	– 220 350	– – 500	– 400 600	– – 1000
Flow in the main valve (max. permissible)			L/min	170	460	870	1000	1600	3000
Pilot oil flow at ports X or Y with a stepped form of input signal from 0 to 100 % (315 bar)			L/min	2.7	5.4	6.5	6.5	18.2	24.2
Pressure fluid				Mineral oil (HL, HLP) to DIN 51524 Other pressure fluids on request.					
Pressure fluid temperture range			°C	– 20 to + 80; preferably +40 to +50					
Viscosity range			mm^2/s	20 to 380					
Max. permissible degree of pressure fluid contamination Cleanliness class to ISO 4406 (c)		Pilot control valve		Class 17/15/12 [3]					
		Main valve		Class 20/18/15 [3]					
Hysteresis (dither optimised)			%	≤ 0.2					
Response sensitivity (dither optimised)			%	≤ 0.1					
Zero point calibration (factory pre-set) [4]			%	≤ 1					
Zero point drift with change in:	Pressure fluid temperature		% / 20 ° K	≤ 0.7					
	Operating pressure		% / 100 bar	≤ 0.5					
	Return flow pressure 0 to 10 % from p		%	≤ 0.2					

[1] For optimum system characteristics we recommend, with pressures over 210 bar, an external pilot oil supply

[2] q_{Vnom} = Nominal flow (of the entire valve) in L/min with a V spool

[3] 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 50070, RE 50076, RE 50081, RE 50086 and RE 50088.

[4] Referring to the pressure signal characteristic curve (V spool)

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

Electrical

Voltage type		DC
Signal type		Analogue
Nominal current per coil	mA	30
Resistance per coil	Ω	85
Inductivity (measured at 60 Hz and $I_{Nom.}$)	H	0.25
Valve protection to EN 60529		IP65 with mounted and fixed plug-in connector
Control electronics		Integrated in the valve , see page 8

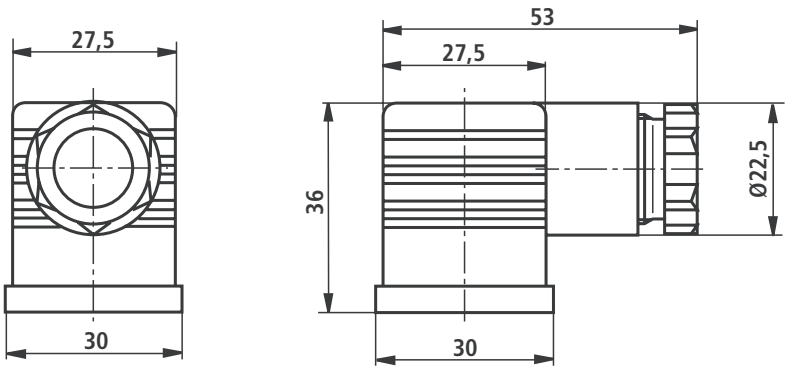
☞ **Note!**
For details regarding the environmental simulation test covering EMC (electro-magnetic compatibility), climate and mechanical loading see RE 29093-U (declaration regarding environmental compatibility).

Electrical connections, plug-in connector

Plug-in connector for sandwich plate directional valves e.g. WG152

Plug-in connector to DIN EN 175301-803 and ISO 4400

Separate order under Material No. **R901017011** (plastic version)

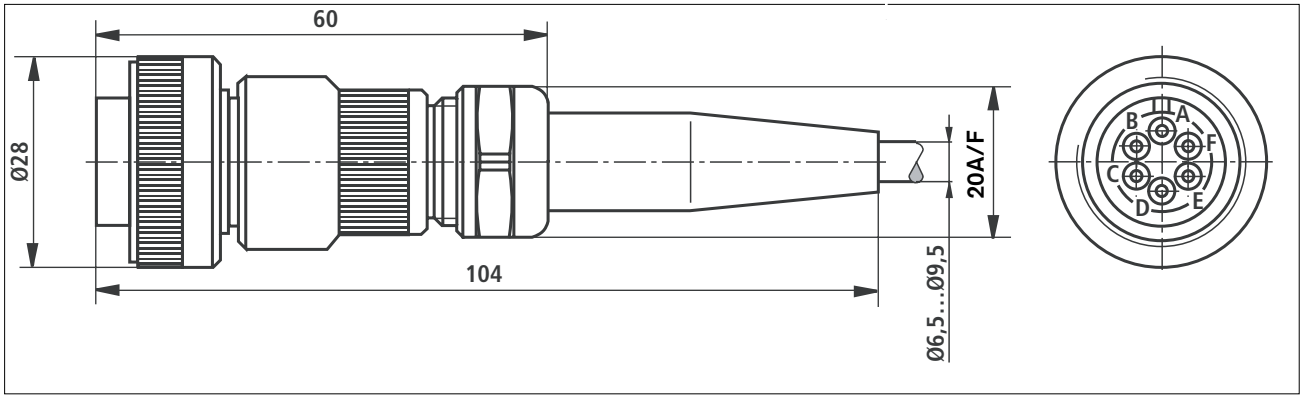


Plug-in connector

Plug-in connector compatible to VG 95 328, size 14-6S

separate order under Material No. **R900013159/9** (metal version)

For pin allocation see block circuit diagram on page 8



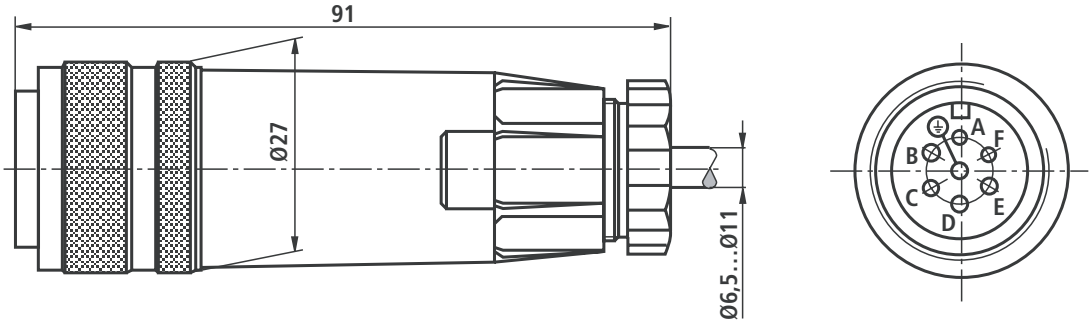
Electrical connections, plug-in connector

Plug-in connector

Plug-in connector to DIN EN 175201-804

Separate order under Material No. **R900021267** (plastic version)

For pin allocation see block circuit diagram on page 8

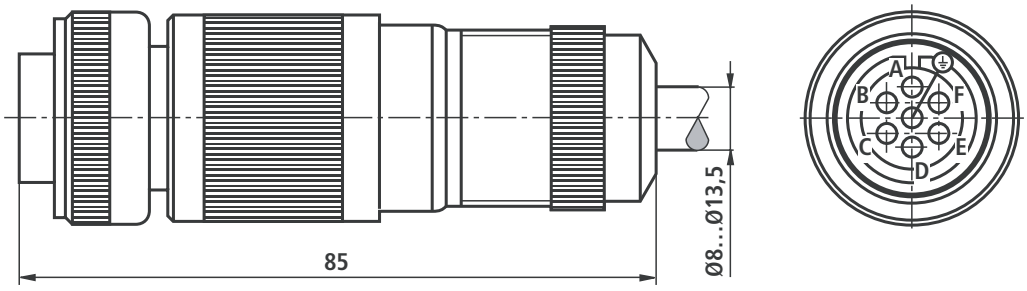


Plug-in connector

Plug-in connector to DIN EN 175201-804

Separate order under Material No. **R9000223890** (metal version)

For pin allocation see block circuit diagram on page 8



Component plug allocation	Contanct	Signal
Supply voltage	A	24 VDC (20 to 28 VDC); full bridge rectification with 2200 µF smoothed; I_{max} 270 mA
	B	0 V
[1] Enable (the valve circuit is activated)	C	4 to 24 VDC
Differential amplifier input (command value)	D	± 10 V [2; 3]
	E	
Actual value	F	± 10 V (to contact „B“)

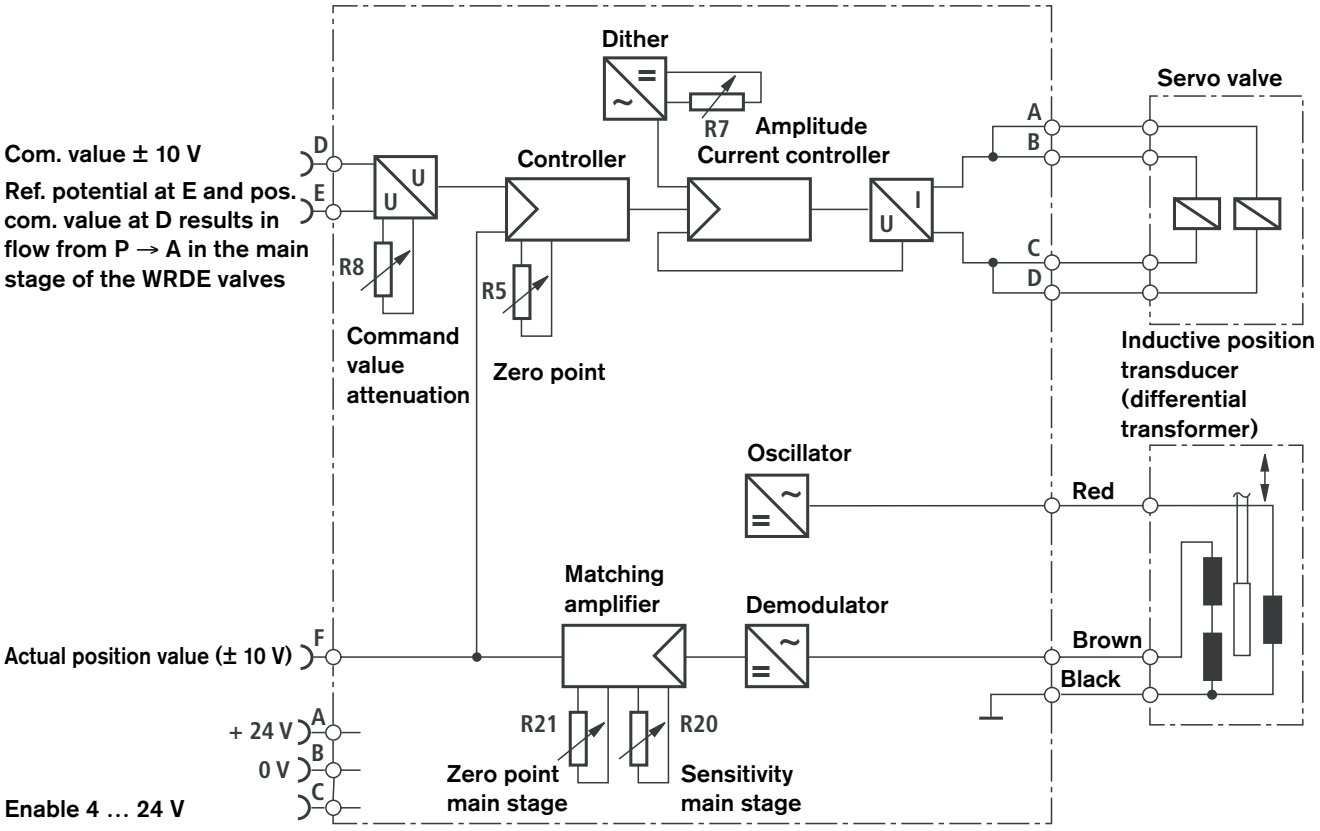
[1] With hydraulic pressure present and a **non activated enable**, the spool of the main stage is moved into the end position and the cylinder axis moves out of its position with its **maximum velocity**. By using a WG152 sandwich plate directional valve between the pilot valve and main stage, the control chambers from the pilot control valve to the main spool are unloaded, and the spool of the main stage is centered in the middle position or held in a preferred position by springs.

As a result the cylinder axis moves out of its position at its **minimum velocity**.

[2] **A positive command value at D with respect to E results in a flow from P to A in the main stage!**

[3] **Current input ± 10 mA** optional, input resistance 1 kΩ; state „**– 280**“ in the ordering details.

Connection allocation / Block circuit diagram for the integrated electronics (OBE)

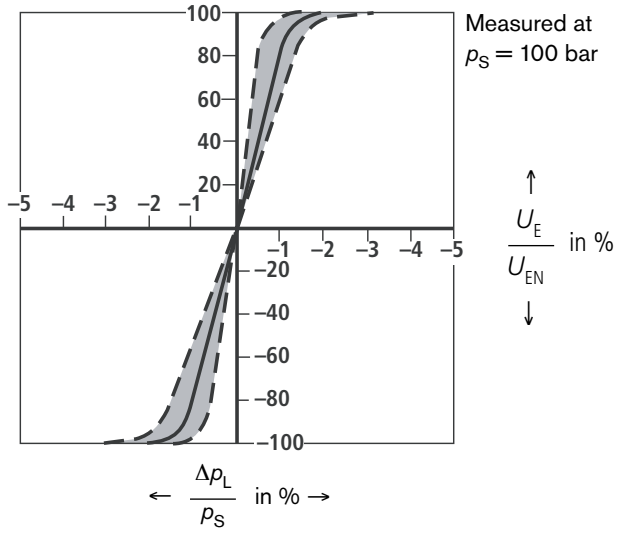


Note: **Electrical signals (e.g. actual value or enable) taken via valve control electronics must not be used to switch off the machine safety functions!**

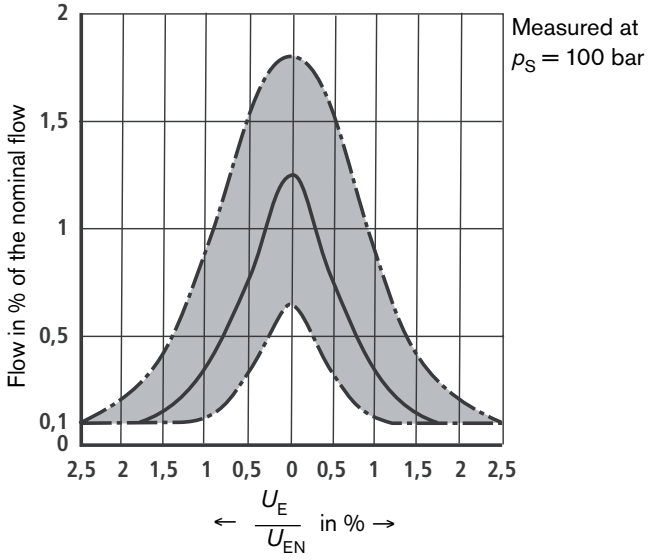
(See also the European Standard "Safety requirements of fluid technology systems and components – hydraulics", EN 982!)

Characteristic curves (measured at $\nu = 32\ mm^2/s$ and $\vartheta = 40\ °C$)

Pressure-signal-characteristic curves (V spool)

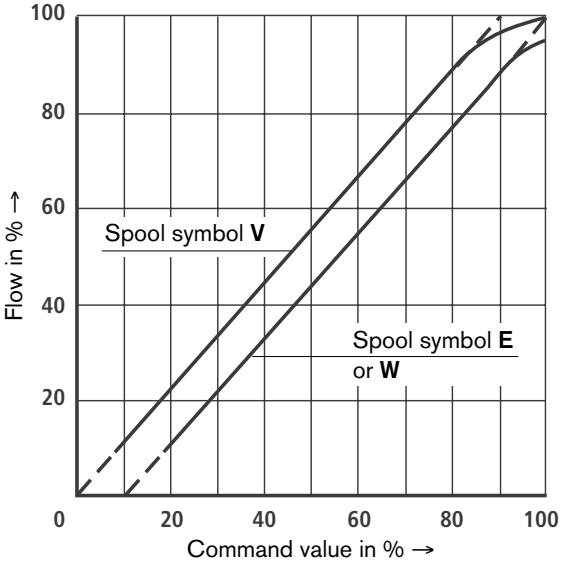


Zero flow of the main stage (V spool) without pilot control valve

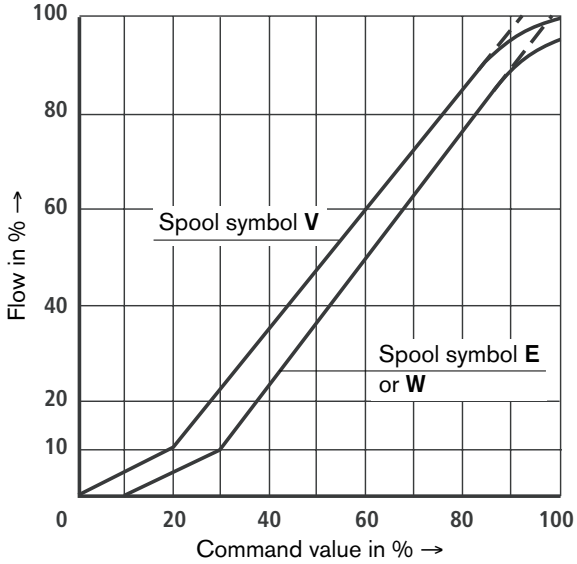


Flow-command value functions (at 10 bar valve pressure differential or 5 bar per control land)

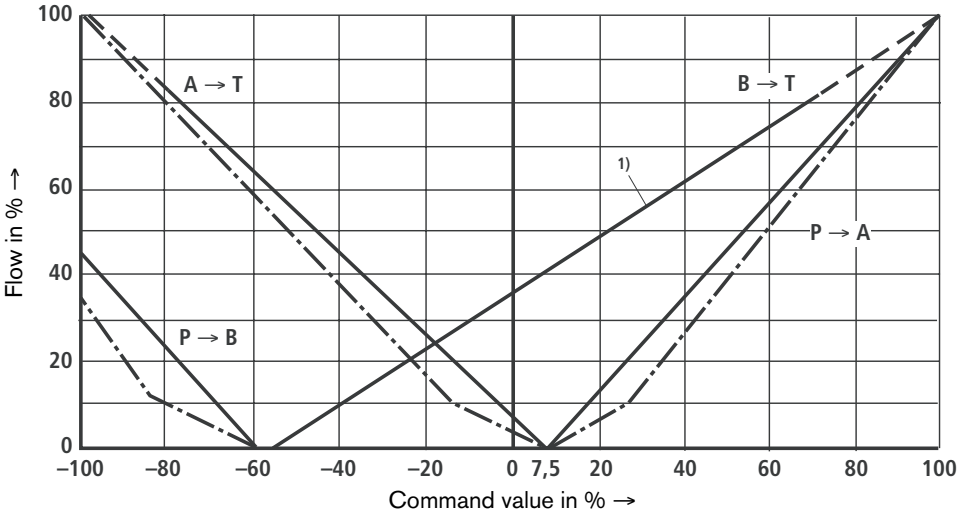
Spool with characteristic curve **L**



Spool with characteristic curve **P**



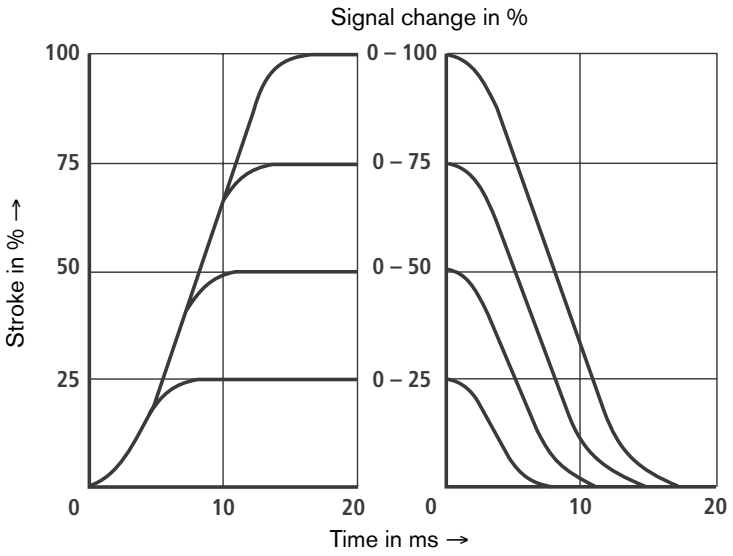
Spool symbol Q2- ... P —·—·— **Spool symbol Q2- ... L** ———



[1] For spool symbols Q2- ... P and Q2- ... L

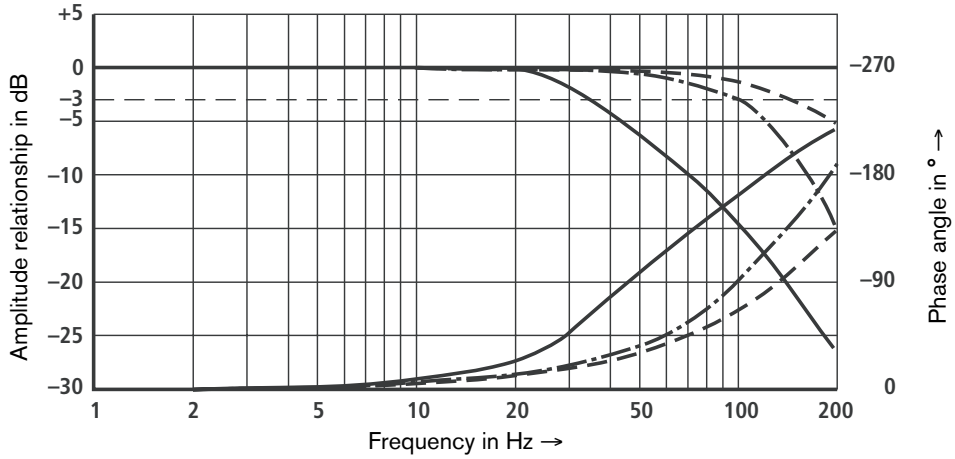
Charaacteristic curves (measured with HLP 46 at 40 °C ± 5 °C) **NS10**

Transient function with a stepped form of electrical input signal



Measured at:
- Pilot control valve port „X“ = 140 bar
- Main valve port „P“ = 10 bar

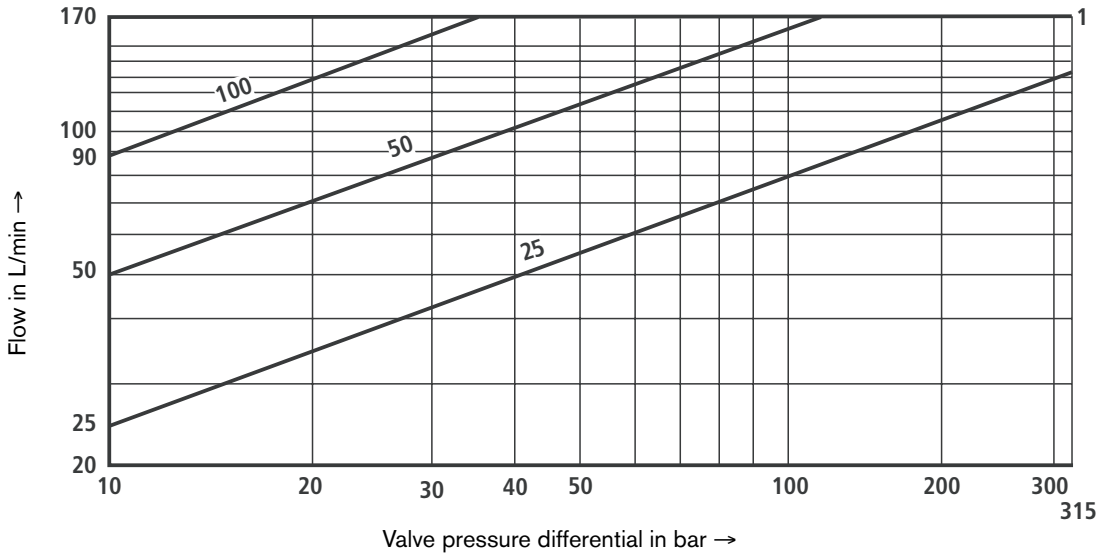
Frequency response characteristic curves



Measured at:
- Pilot control valve port „X“ = 140 bar
- Main valve port „P“ = 10 bar

Signal ± 100%
Signal ± 25%
Signal ± 5%

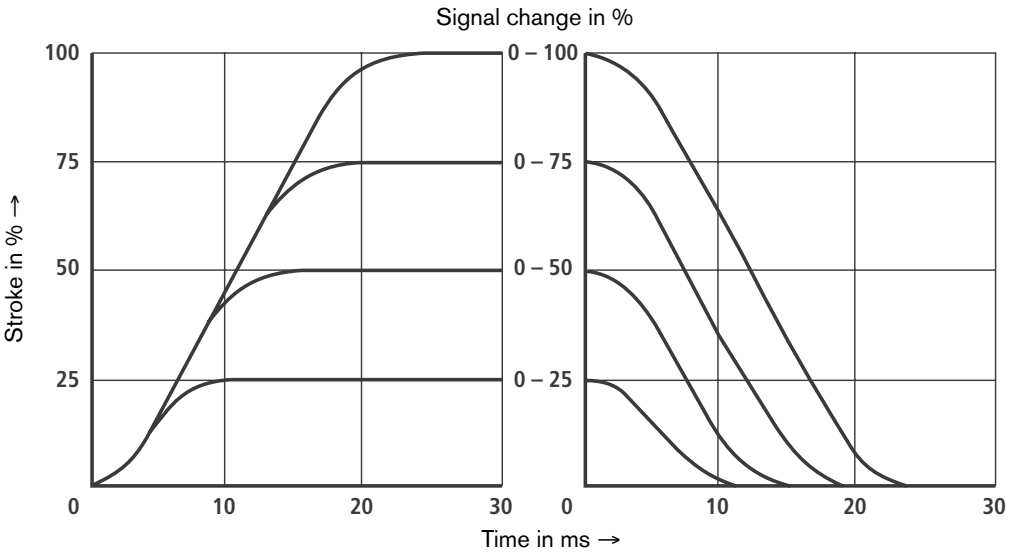
Flow-load function at max. valve opening
(tolerance ± 10 %)



1 = Recommended flow limitation (flow velocity 30 m/s)

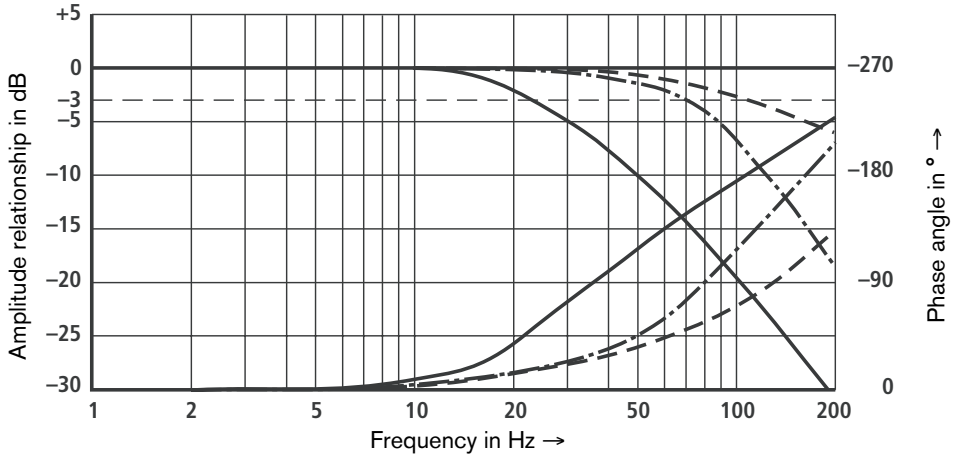
Characteristic curves (measured with HLP 46 at 40 °C ± 5 °C) NS16

Transient function with a stepped form of electrical input signal



Measured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

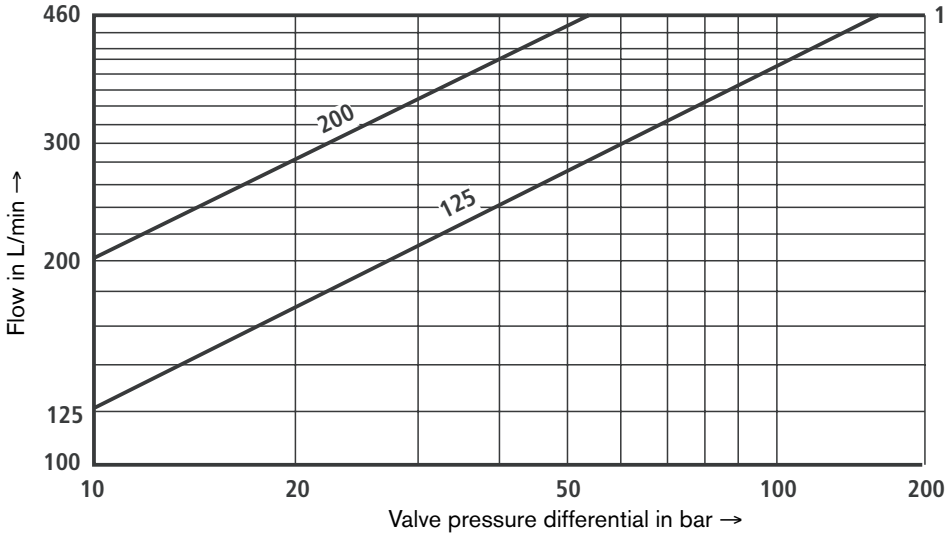
Frequency response characteristic curves



Measured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

——— Signal ± 100%
—·— Signal ± 25%
– – – Signal ± 5%

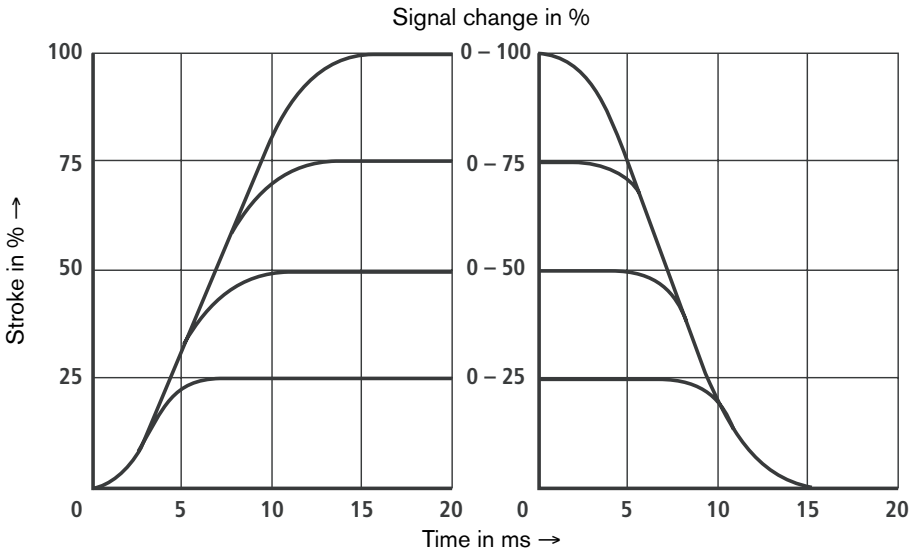
Flow-load function at max. valve opening
(tolerance ± 10 %)



1 = Recommended flow limitation (flow velocity 30 m/s)

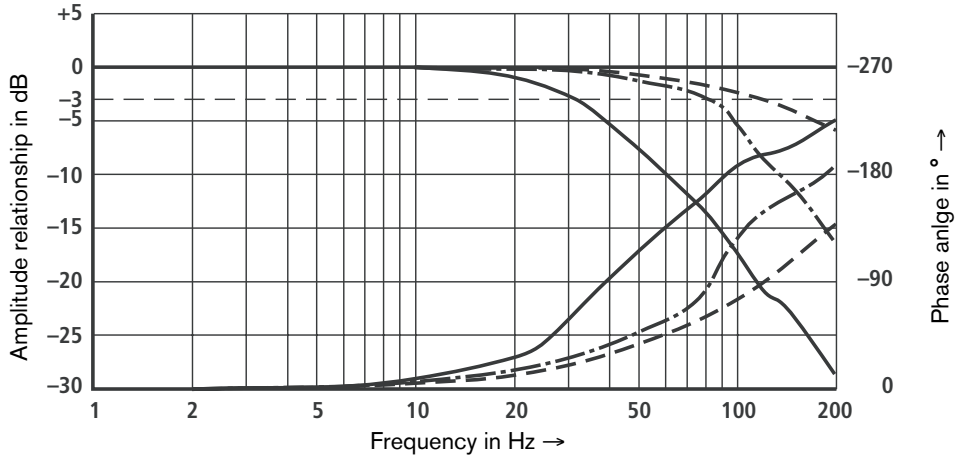
Characteristic curves (measured with HLP 46 at 40 °C ± 5 °C) **NS25 and 27**

Transient function with a stepped form of input signal



Measured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

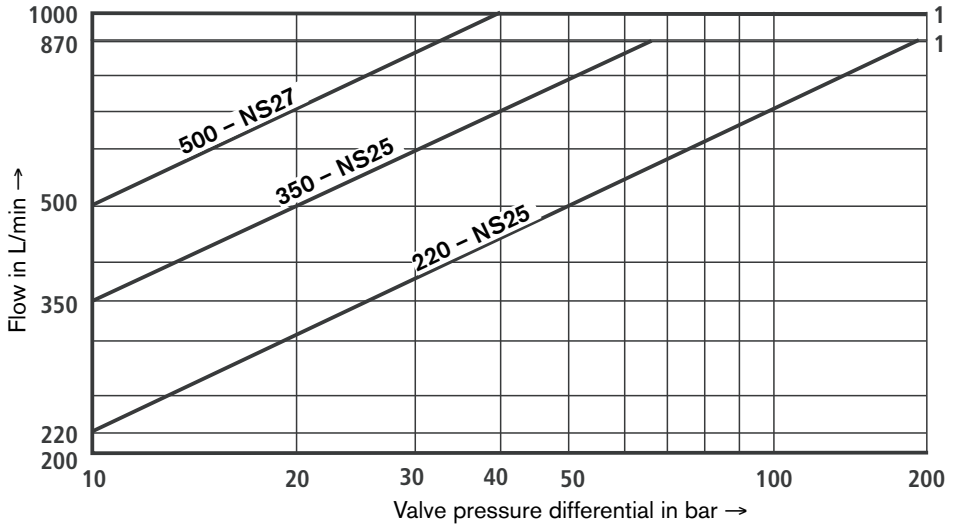
Frequency response characteristic curves



Meassured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

Signal ± 100%
Signal ± 25%
Signal ± 5%

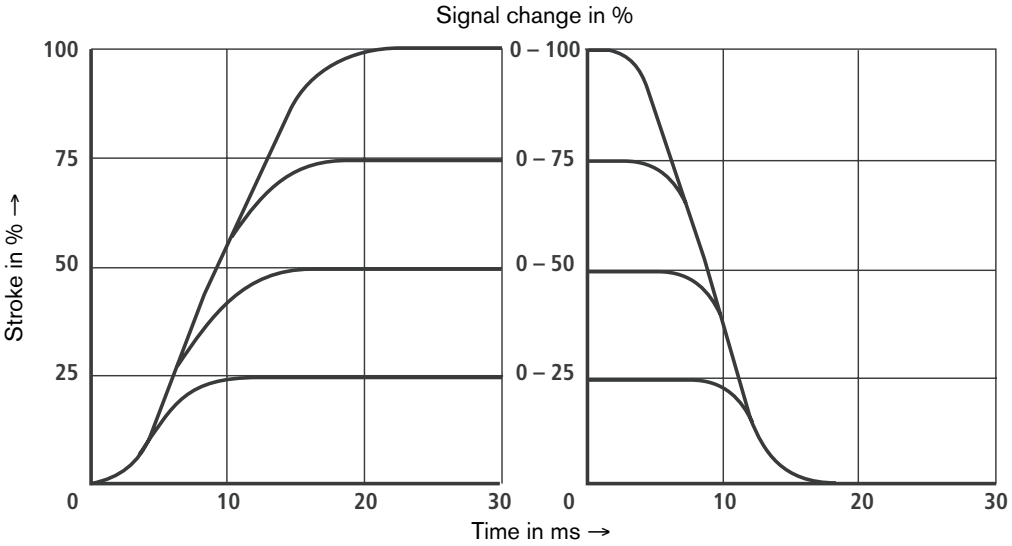
Flow-load function at max. valve opening
(tolerance ± 10 %)



1 = Recommended flow limitation (flow velocity 30 m/s)

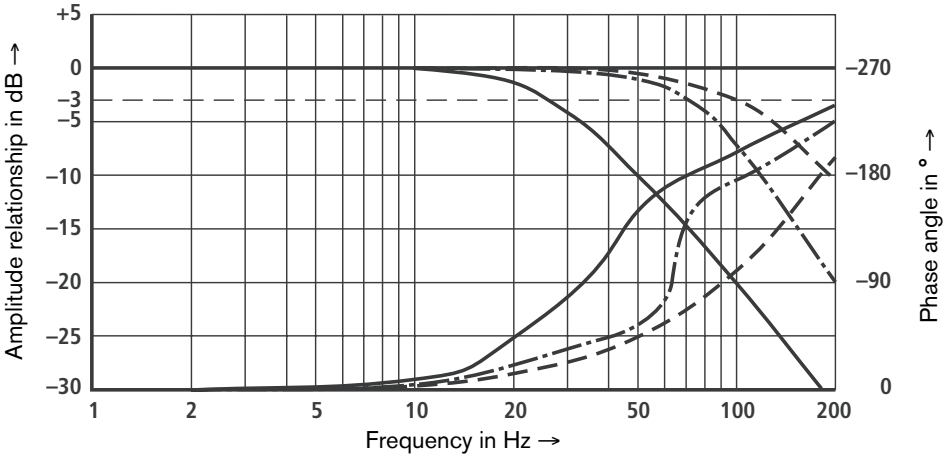
Characteristic curves (measured with HLP 46 at 40 °C ± 5 °C) NS32

Transient function with a stepped form of electrical input signal



Measured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

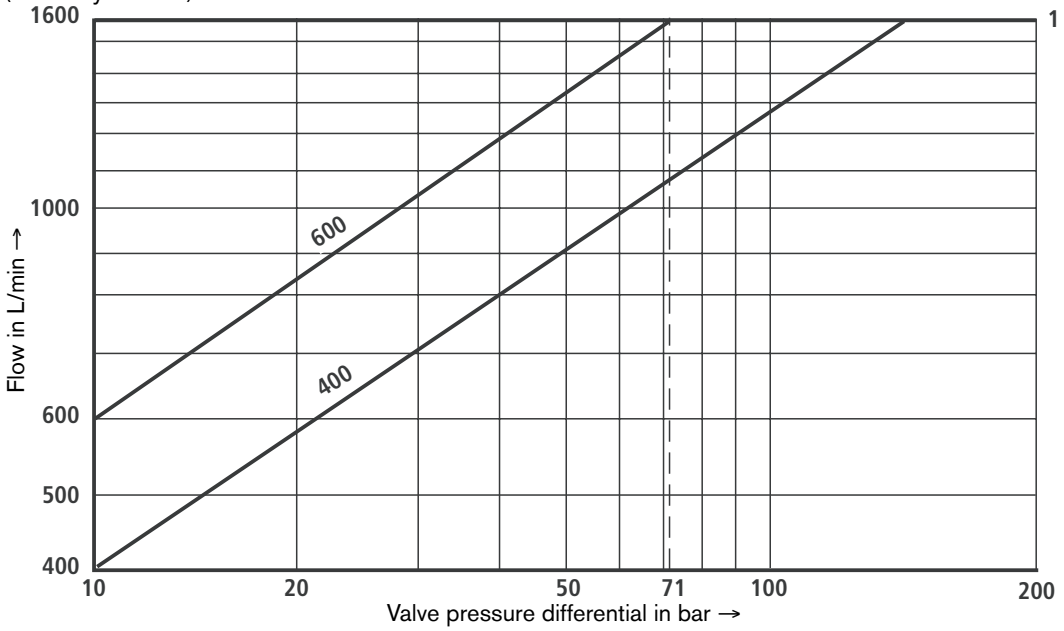
Frequency response characteristic curves



Measured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

Signal ± 100%
Signal ± 25%
Signal ± 5%

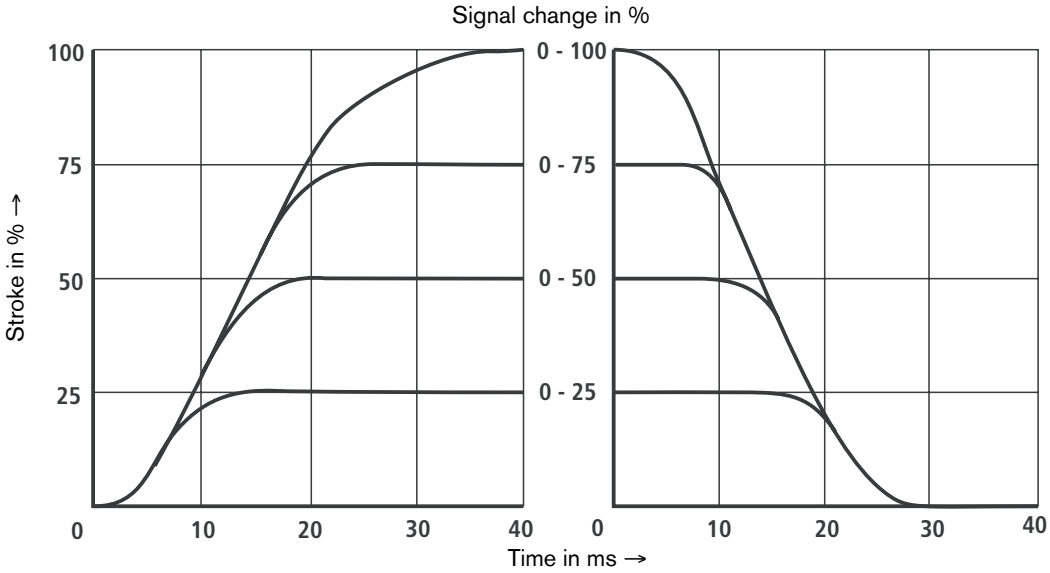
Flow-load function at max. valve opening
(tolerancy ± 10 %)



1 = Recommended flow limitation (flow velocity 30 m/s)

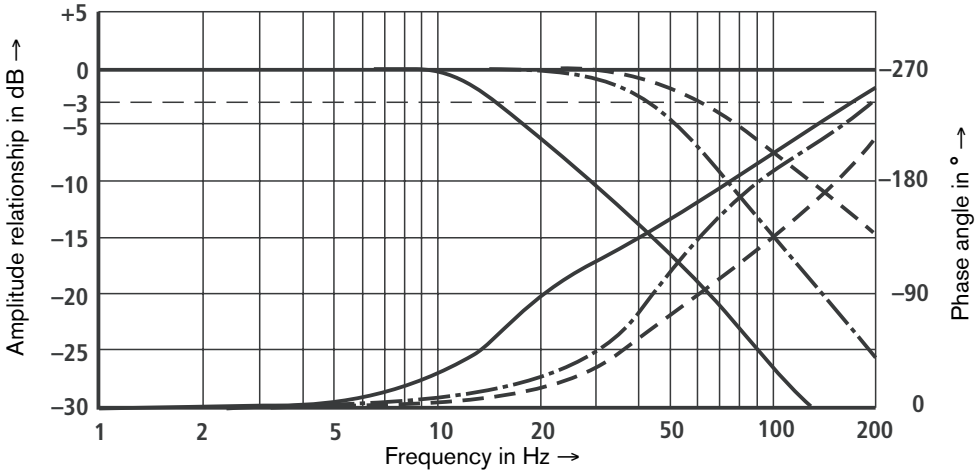
Characteristic curves (measured with HLP 46 at 40 °C ± 5 °C) **NS35**

Transient function with a stepped form of electrical input signal



Measured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

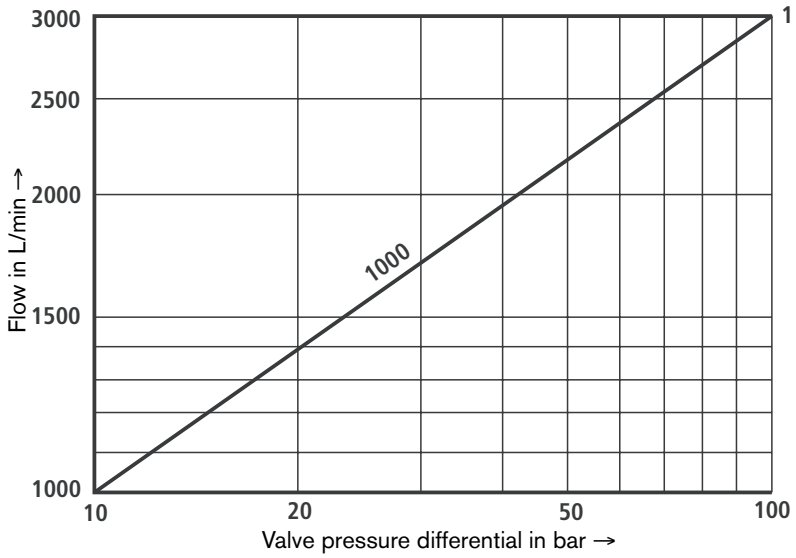
Frequency response characteristic curves



Measured at:
- Pilot control valve Port „X“ = 140 bar
- Main valve Port „P“ = 10 bar

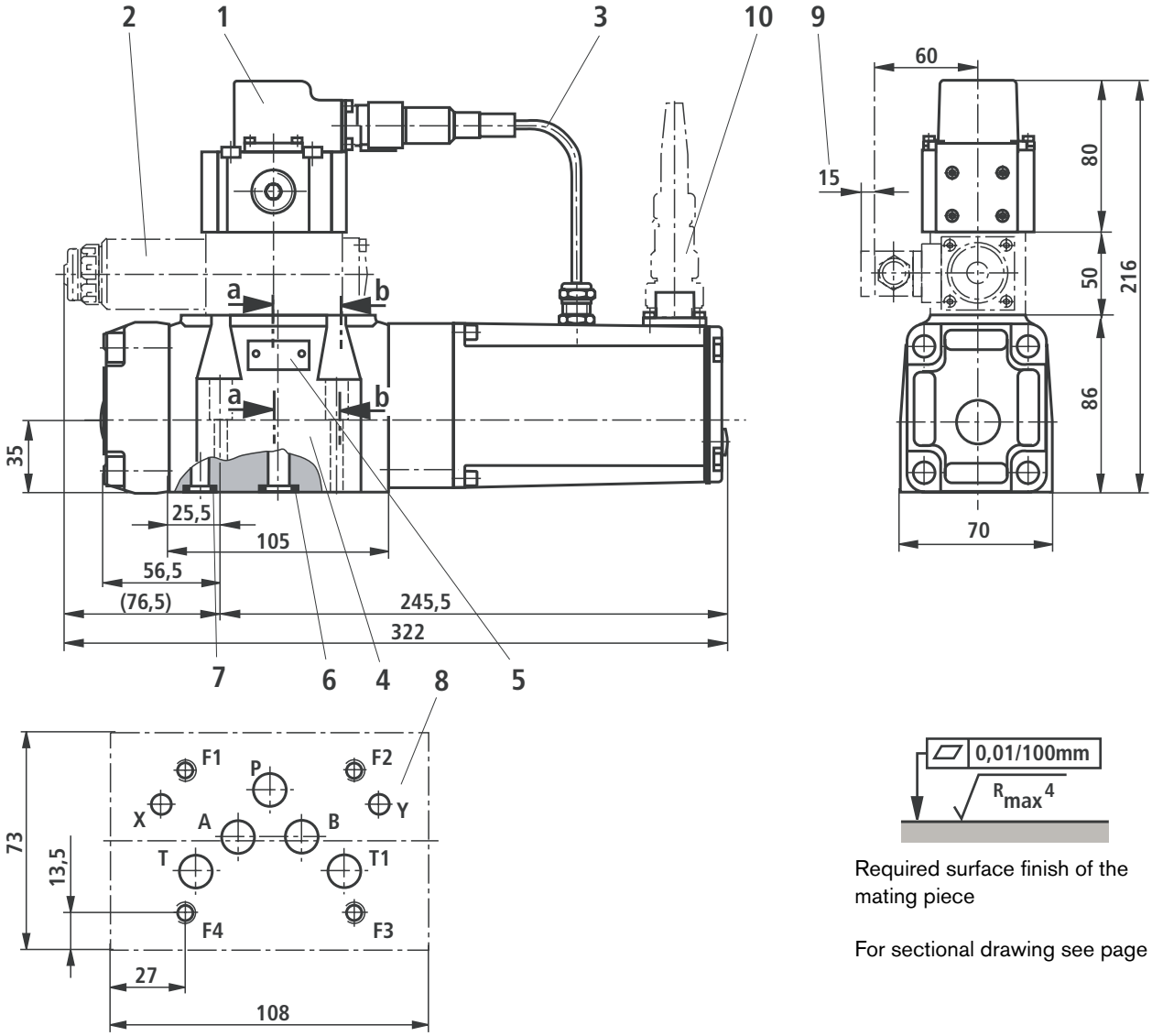
Signal ± 100%
Signal ± 25%
Signal ± 5%

Flow-load function at max. valve opening
(tolerance ± 10 %)



1 = Recommended flow limitation (flow velocity 30 m/s)

Unit dimensions (in mm) **NS10**



Required surface finish of the mating piece

For sectional drawing see page 21

1 Pilot control valve

2 Sandwich plate directional valve
(only included in version "…WG152")

3 Cabling

4 Main valve

5 Name plate

6 Identical seal rings for ports A, B, P and T

7 Identical seal rings for ports X and Y

8 Machined valve mounting surface,
position of the ports to ISO 4401-05-05-0-94
(ports X, Y as required)
Deviation from the standard:
- Ports A, B, T, T1 and P Ø 11 mm

9 Space required to remove the plug-in connector

10 Plug-in connector, separate order, see pages 6, 7

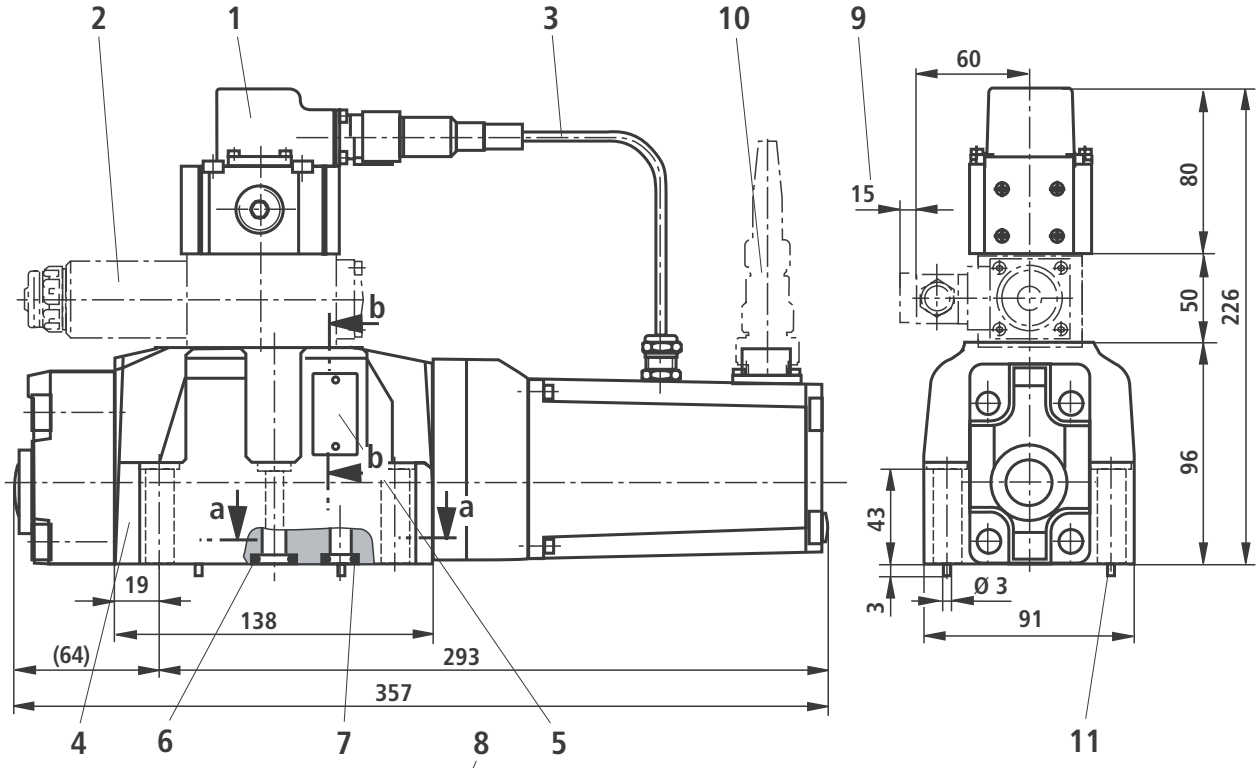
Subplates to catalogue sheet RE 45054 and valve fixing screws must be ordered separately.

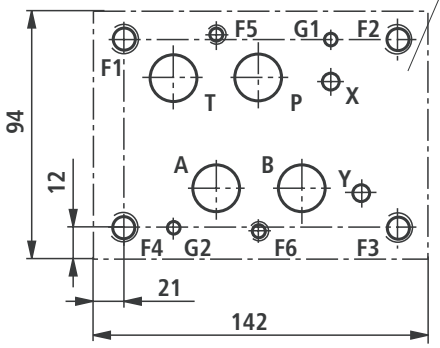
Subplates: G 534/01 (G 3/4)
G 535/01 (G 3/4) with ports X and Y
G 536/01 (G 1) with ports X and Y

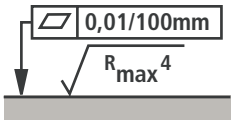
Valve fixing screws:
4 S.H.C.S. DIN 912 - M6 x 45 - 10.9;
Coating to DIN EN ISO 10683 flZn - 240h - L
(friction value 0.09 - 0.14 to VDA 235-102)
M_A = 13.5 Nm,
Tighten with a torque wrench with an accuracy of ± 10%

Note:
The tightening torque relates to the maximum operating pressure!

Unit dimensions (in mm) **NS16**







Required surface finish of the mating piece

For sectional drawing see page 21

1 Pilot control valve

2 Sandwich plate directional valve (only included in version "…WG152")

3 Cabling

4 Main valve

5 Name plate

6 Identical seal rings for ports A, B, P and T

7 Identical seal rings for ports X and Y

8 Machined valve mounting surface, position of the ports to ISO 4401-07-06-0-94 (ports X, Y as requested)
Deviation from the standard:
- Ports A, B, T and P Ø 20 mm

9 Space required to remove the plug-in connector

10 Plug-in connector, separate order, see pages 6, 7

11 Locating pin (2 off)

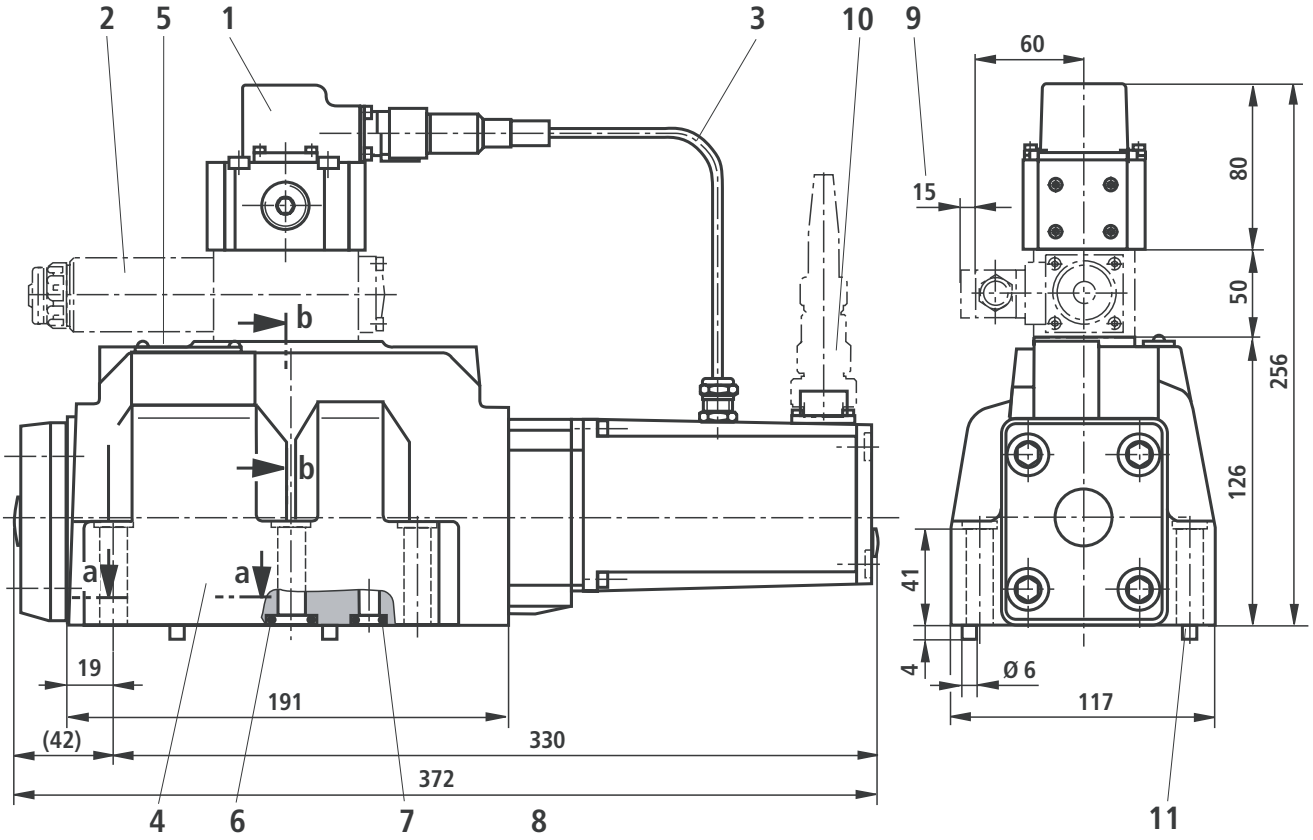
Subplates to catalogue sheet RE 45056 and valve fixing screws must be ordered separately.

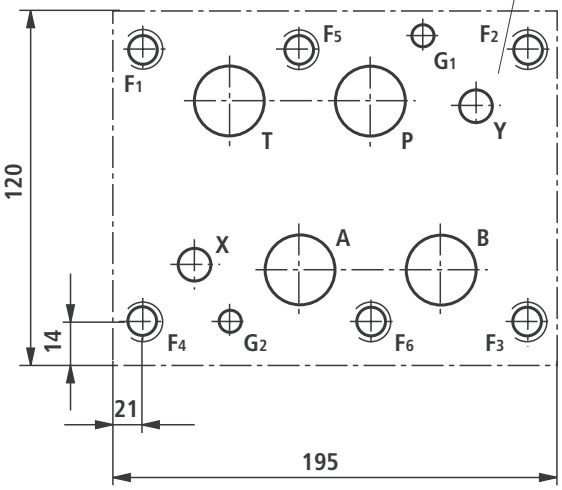
Subplates: G 172/01 (G 3/4) G 172/02 (M27 x 2)
G 174/01 (G 1) G 174/02 (M33 x 2)

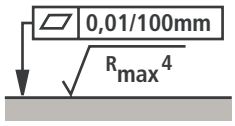
Valve fixing screws:
2 S.H.C.S. DIN 912 - M6 x 60 - 10.9; $M_A = 14$ Nm
4 S.H.C.S. DIN 912 - M10 x 60 - 10.9; $M_A = 58$ Nm
Coating to DIN EN ISO 10683 flZn - 240h - L
(friction value 0.09 - 0.14 to VDA 235-102)
Tighten with a torque wrench with an accuracy of ± 20%

Note:
The tightening torque relates to the maximum operating pressure!

Unit dimensions (in mm) NS25







Required surface finish of the mating piece

For sectional drawing see page 22

1 Pilot control valve

2 Sandwich plate directional valve (only included in version "…WG152")

3 Cabling

4 Main valve

5 Name plate

6 Identical seal rings for ports A, B, P and T

7 Identical seal rings for ports X and Y

8 Machined valve mounting surface, position of the ports to ISO 4401-08-07-0-94 (ports X, Y as required)
Deviations from the standard:
- Ports A, B and T deviates from DIN Ø 25 mm
- Port P deviates from DIN and ISO Ø 24 mm

9 Space required to remove the plug-in connector

10 Plug-in connector, separate order, see pages 6, 7

11 Locating pin (2 off)

Subplates to catalogue sheet RE 45058 and valve fixing screws must be ordered separately.

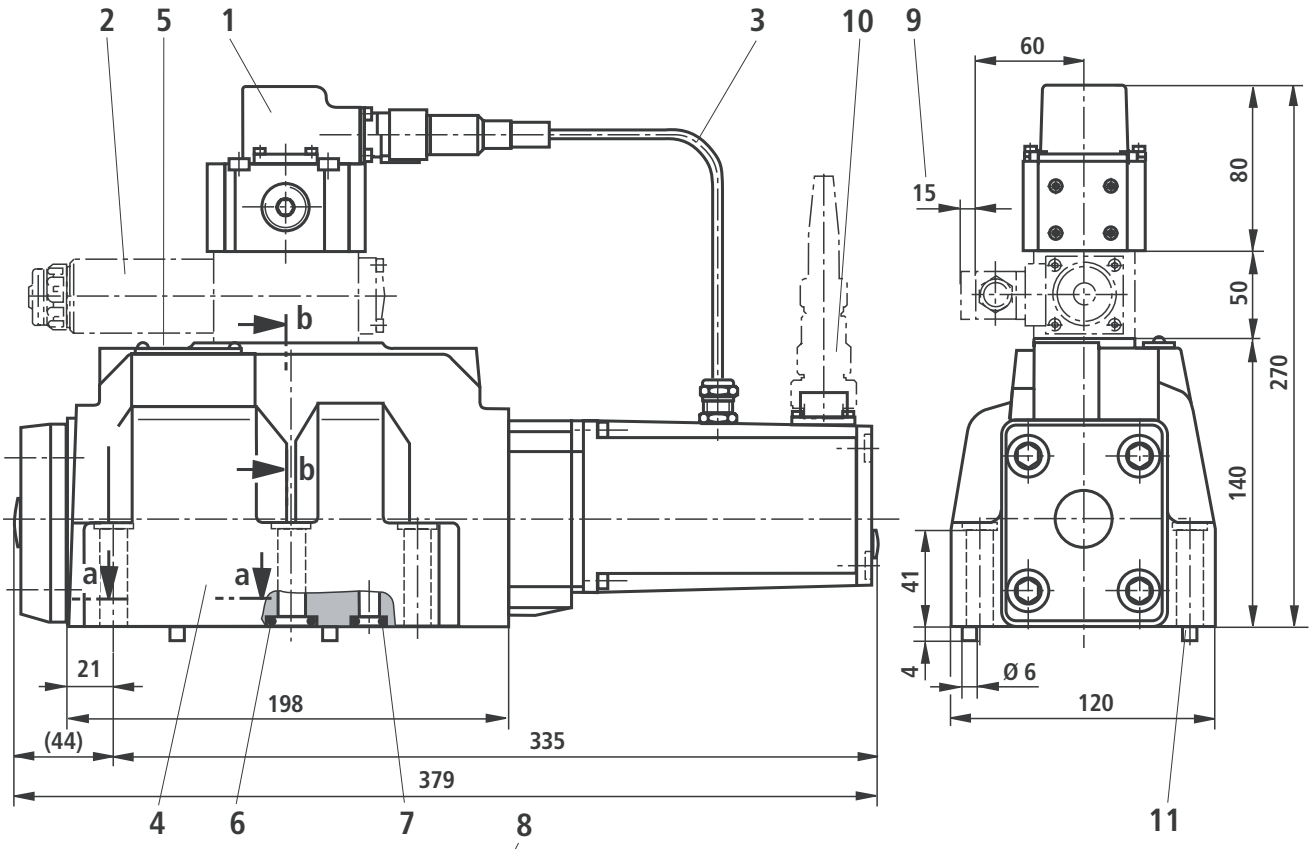
Subplates: G 151/01 (G 1) G 154/01 (G 1 1/4)
G 154/08 (flange) G 156/01 (G 1 1/2)

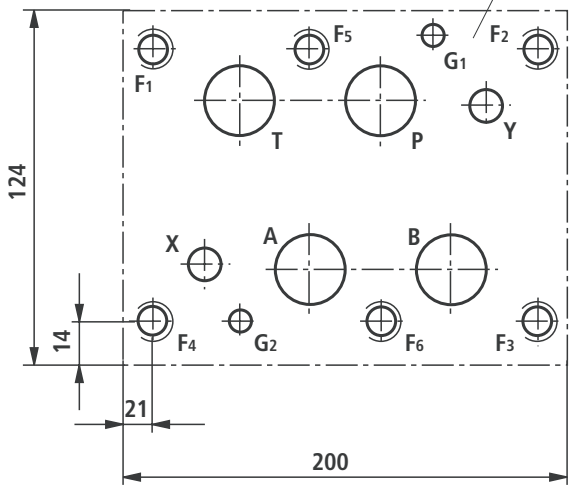
Valve fixing screws:
6 S.H.C.S. DIN 912 - M12 x 60 - 10.9;
Coating to DIN EN ISO 10683 flZn - 240h - L
(friction value 0.09 - 0.14 to VDA 235-102)
M_A =100 Nm,
Tighten with a torque wrench with an accuracy of ± 20%

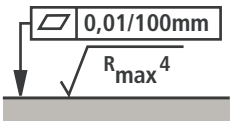
Note:
The tightening torque relates to the maximum operating pressure!

Attention: Only install the sandwich plate directional valve between the main valve and the adaptor plate!

Unit dimensions (in mm) **NS27**







Required surface finish of the mating piece

For sectional drawing see page 22

1 Pilot control valve

2 Sandwich plate directional valve (only included in version "…WG152")

3 Cabling

4 Main valve

5 Name plate

6 Identical seal rings for ports A, B, P and T

7 Identical seal rings for ports X and Y

8 Machined valve mounting surface, position of the ports to ISO 4401-08-07-0-94 (ports X, Y as required)
Deviation from the standard:
- Ports A, B, T and P Ø 32 mm

9 Space required to remove the plug-in connector

10 Plug-in connector, separate order, see pages 6, 7

11 Locating pin (2 off)

Subplates to catalogue sheet RE 45058 and value fixing screws must be ordered separately.

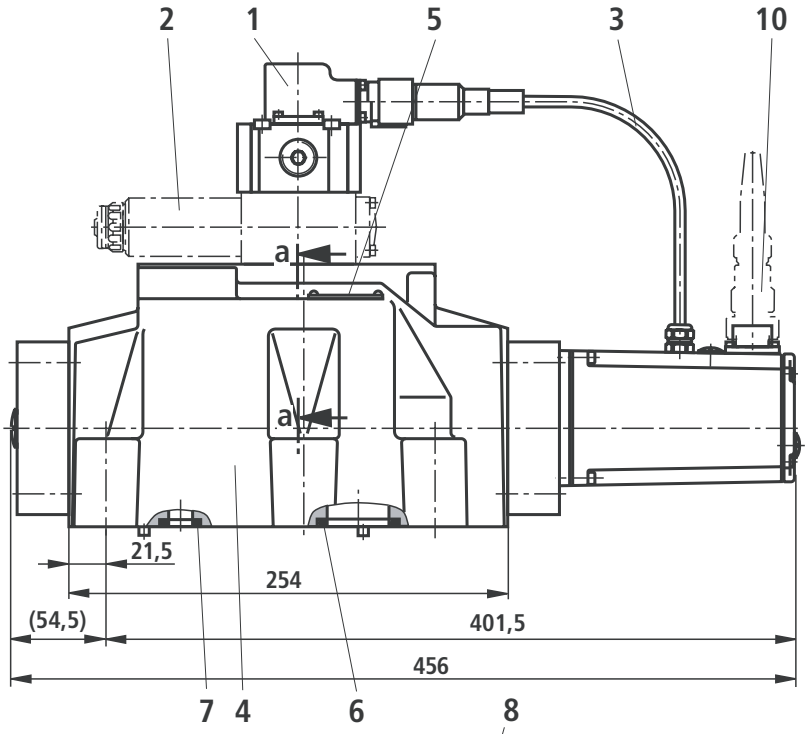
Subplates: G 151/01 (G 1) G 154/01 (G 1 1/4)
G 154/08 (flange) G 156/01 (G 1 1/2)

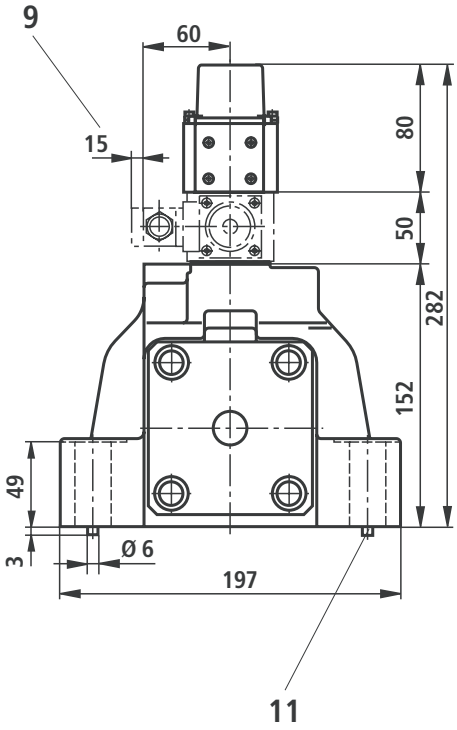
Valve fixing screws:
6 S.H.C.S. DIN 912 - M12 x 60 - 10.9;
Coating to DIN EN ISO 10683 flZn - 240h - L
(friction value 0.09 - 0.14 to VDA 235-102)
M_A =100 Nm,
Tighten with a torque wrench with an accuracy of ± 20%

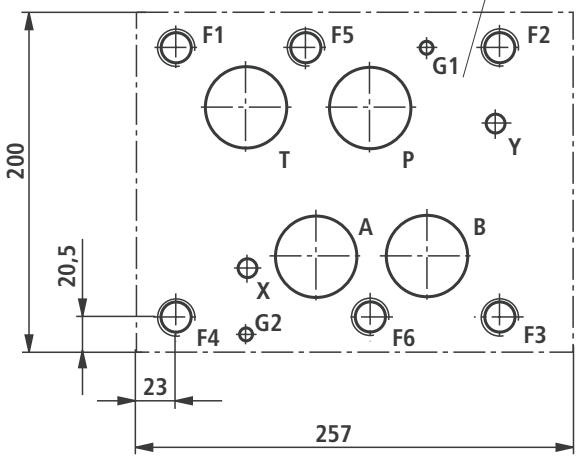
Note:
The tightening torque relates to the maximum operating pressure!

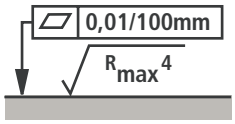
Attention: Only install the sandwich plate directional valve between the main valve and the adaptor plate!

Unit dimensions (in mm) NS32









Required surface finish of the mating piece

For sectional drawing see page 22

1 Pilot control valve

2 Sandwich plate directional valve (only included in version "…WG152")

3 Cabling

4 Main valve

5 Name plate

6 Identical seal rings for ports A, B, P and T

7 Identical seal rings for ports X and Y

8 Machined valve mounting surface, position of the ports to ISO 4401-10-08-0-94 (ports X, Y as required)
Deviation from the standard:
- Ports A, B, T and P Ø 38 mm

9 Space required to remove the plug-in connector

10 Plug-in connector, separate order, see pages 6, 7

11 Locating pin (2 off)

Subplates to catalogue sheet RE 45060 and valve fixing screws must be ordered separately.

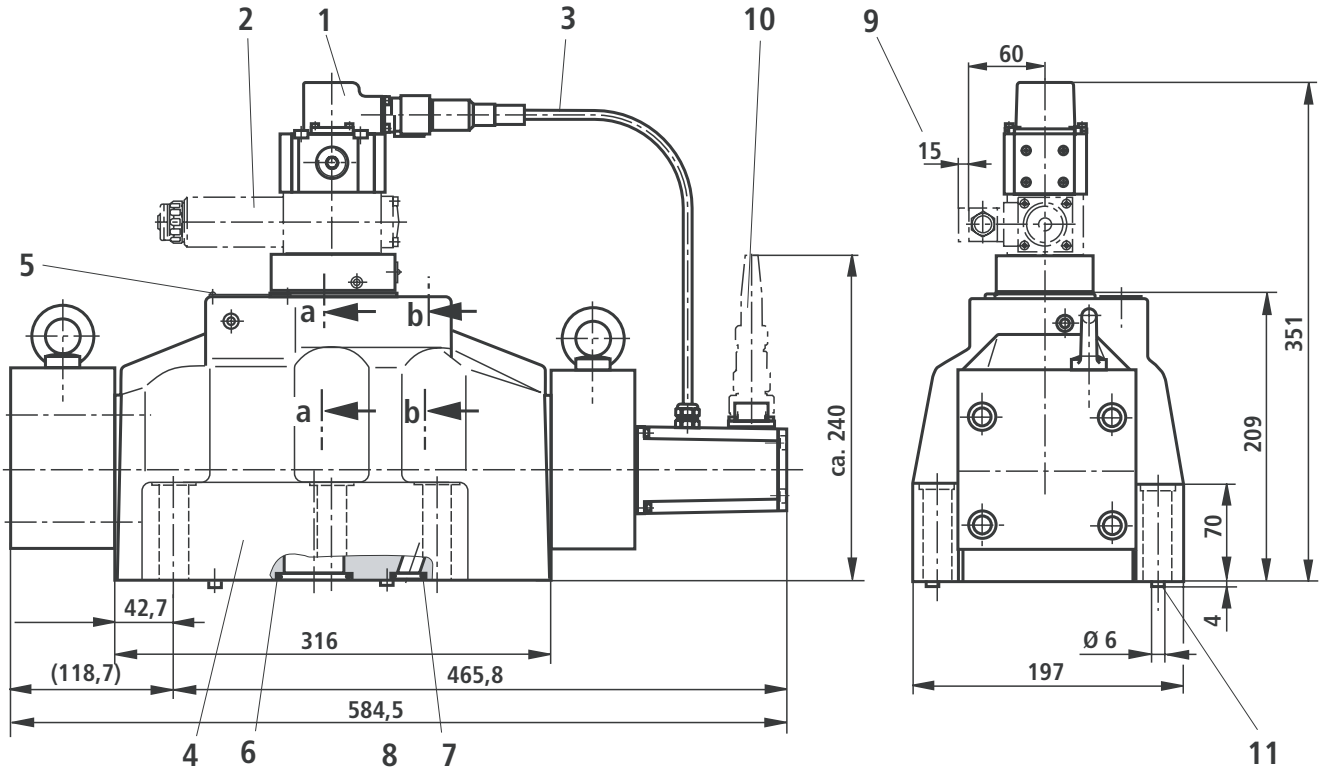
Subplates: G 157/01 (G 1 1/2) G 157/02 (M48 x 2)
G 158/10 (flange)

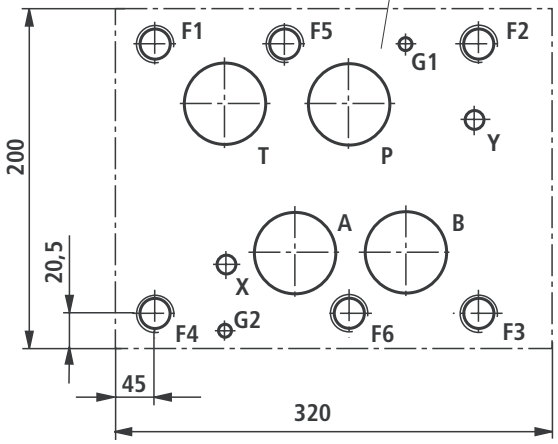
Valve fixing screws:

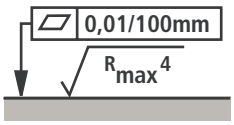
6 S.H.C.S. DIN 912 - M20 x 80 - 10.9;
Coating to DIN EN ISO 10683 flZn - 240h - L
(friction value 0.09 - 0.14 to VDA 235-102)
M_A = 340 Nm,
Tighten with a torque wrench with an accuracy of ± 20%

Note:
The tightening torque relates to the maximum operating pressure!

Unit dimensions (in mm) **NS35**







Required surface finish of the mating piece

For sectional drawing see page 22

1 Pilot control valve

2 Sandwich plate directional valve (only included in version "…WG152")

3 Cabling

4 Main valve

5 Name plate

6 Identical seal rings for ports A, B, P and T

7 Identical seal rings for ports X and Y

8 Machined valve mounting surface, position of the ports to ISO 4401-10-08-0-94 (ports X, Y as required)
Deviation from the standard:
- Ports A, B, T and P Ø 50 mm

9 Space required to remove the plug-in connector

10 Plug-in connector, separate order, see pages 6, 7

11 Locating pin (2 off)

Valve fixing screws:

6 S.H.C.S. DIN 912 - M20 x 80 - 10.9;
Coating to DIN EN ISO 10683 flZn - 240h - L
(friction value 0.09 - 0.14 to VDA 235-102)
M_A = 340 Nm,
Tighten with a torque wrench with an accuracy of ± 20%

Note:
The tightening torque relates to the maximum operating pressure!

Pilot oil supply

Type 4WRDE…-5X/… External pilot oil supply
External pilot oil drain

This version has an external pilot oil supply from a separate control circuit (external).
The pilot oil drain is fed separately via port Y to tank (external) and not into the T port of the main valve.

Type 4WRDE…-5X/…E… Internal pilot oil supply
External pilot oil drain

In this version the pilot oil supply is taken from the P port of the main valve (internal).
The pilot oil drain is fed separately via port Y to tank (external) and not into the T port of the main valve.
Port X in the subplate must be plugged.

Type 4WRDE…-5X/…ET… Internal pilot oil supply
Internal pilot oil drain

In this version the pilot oil supply is taken from the P port of the main valve (internal).
The pilot oil drain is fed directly into the T port of the main valve (internal).
Port Y in the subplate must be plugged.

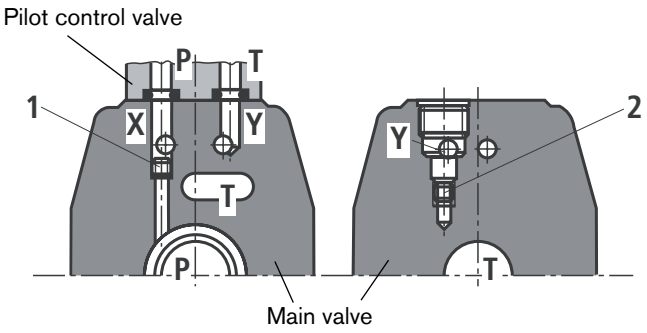
Type 4WRDE…-5X/…T… External pilot oil supply
Internal pilot oil drain

This version has an external pilot oil supply from a separatae control circuit (external).
The pilot oil drain is fed directly into the T port of the main valve (internal).
Port Y in the subplate must be plugged.

Pos. **1** and **2**: Plugs M6 DIN 906-8.8 3A/F

NS10 For cross-section see page 15

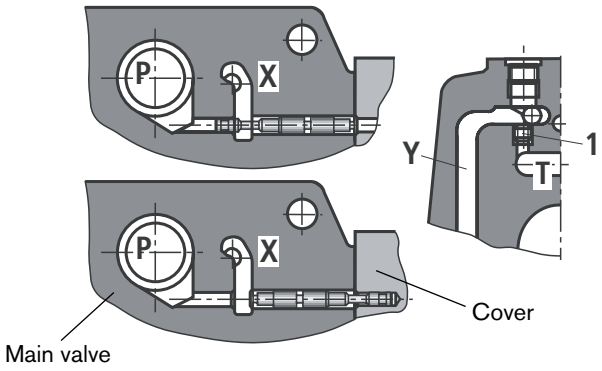
Section a–a **Section b–b**



Pilot oil supply (section a–a)	external:	**1**	closed
	internal:	**1**	open
Pilot oil drain (section b–b)	external:	**2**	closed
	internal:	**2**	open

NS16 For cross-section see page 16

Section a–a **Section b–b**

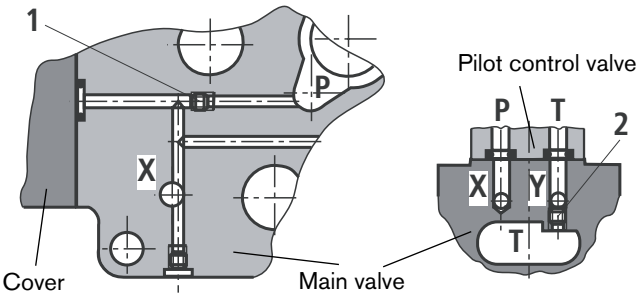


Pilot oil supply (section a–a)	external:	**P**	closed
	internal:	**P**	open
Pilot oil drain (section b–b)	external:	**1**	closed
	internal:	**1**	open

Pilot oil supply

NS25 and 27 For cross-section see pages 17 and 18

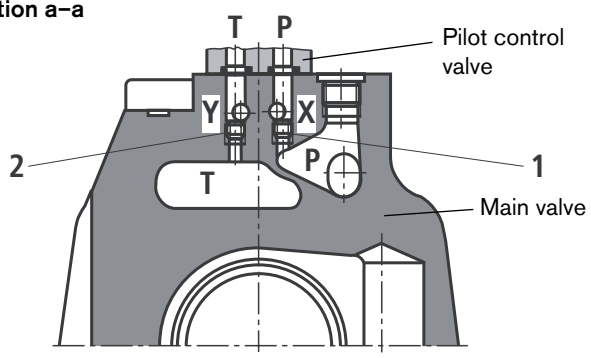
Section a–a **Section b–b**



Pilot oil supply (section a–a)	external:	**1**	closed
	internal:	**1**	open
Pilot oil drain (section b–b)	external:	**2**	closed
	internal:	**2**	open

NS32 For cross-section see page 19

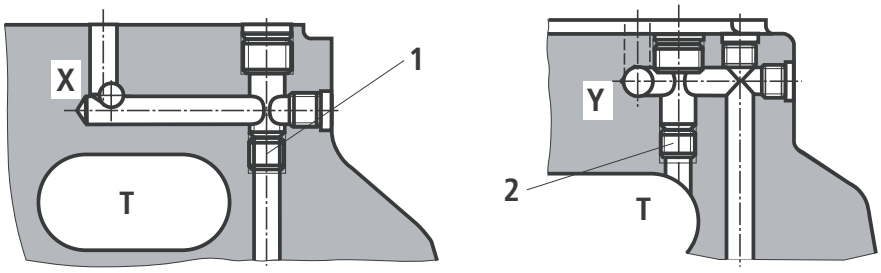
Section a–a



Pilot oil supply	external:	**1**	closed
	internal:	**1**	open
Pilot oil drain	external:	**2**	closed
	internal:	**2**	open

Ns35 For cross-section see page 20

Section a–a **Section b–b**



Pilot oil supply (section a–a)	external:	**1**	closed
	internal:	**1**	open
Pilot oil drain (section b–b)	external:	**2**	closed
	internal:	**2**	open

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Notes

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Notes

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