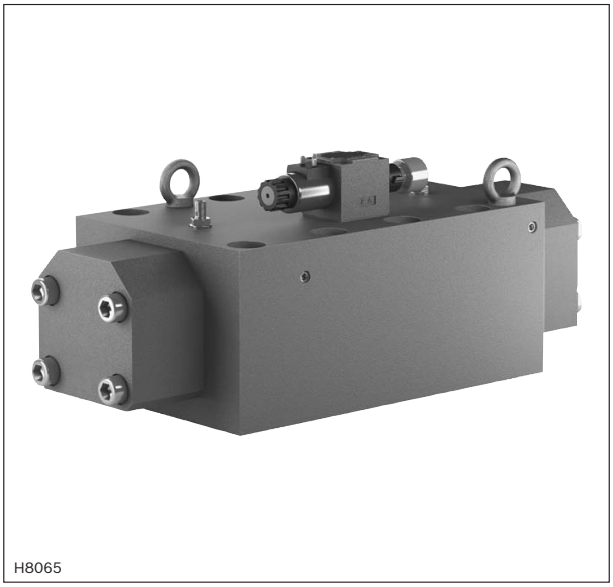
The Drive & Control Company

Rexroth
Bosch Group

Directional spool valves, pilot operated, with electro-hydraulic actuation

Type LS 1376

RE 24781
Edition: 2015-05



H8065

- Size 62
- Component series 1X
- Max. operating pressure: 250 bar
- Max. flow: 1500 l/min

Features

- 6/2-way version
- For sub-plate mounting
- Wet-pin DC solenoid
- Electrical connection as individual connection
- Manual override
- Spool position monitoring

Contents

Ordering data

01	02		03		04	05	06	07	08		09	10	11
LS 1376	**X201**	**–**	**1X**	**/**	**10S**	**C**	**G110**	**N9**	**K4**	**/**	**B22**		*****

01	Directional spool valve, pilot operated, electro-hydraulically operated, with spool position monitoring	**LS 1376**
02	For symbol, see below	**X201**
03	Component series 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	**1X**

Pilot control valve

04	Directional seat valve (data sheet 22045)	**10S**
05	Direct current 110 V	**G110**
	For more voltages, frequencies and electrical data, please refer to data sheet 22045	
07	**With** concealed manual override	**N9**
	Other models upon request	

Electrical connection

08	**Without** mating connector; connector according to DIN EN 175301-803	**K4** [1]
	For further electrical connections, see data sheet 22045	

Throttle insert

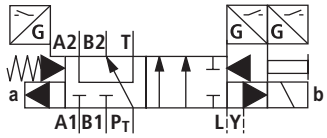
09	Throttle Ø 2.2 mm	**B22**

Sealing material

10	NBR seals	**no code**
	FKM seals	**V**
	Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	
11	Further details in the plain text	*****

[1] Mating connectors, separate order, see pages 08006 and 22045

Symbols



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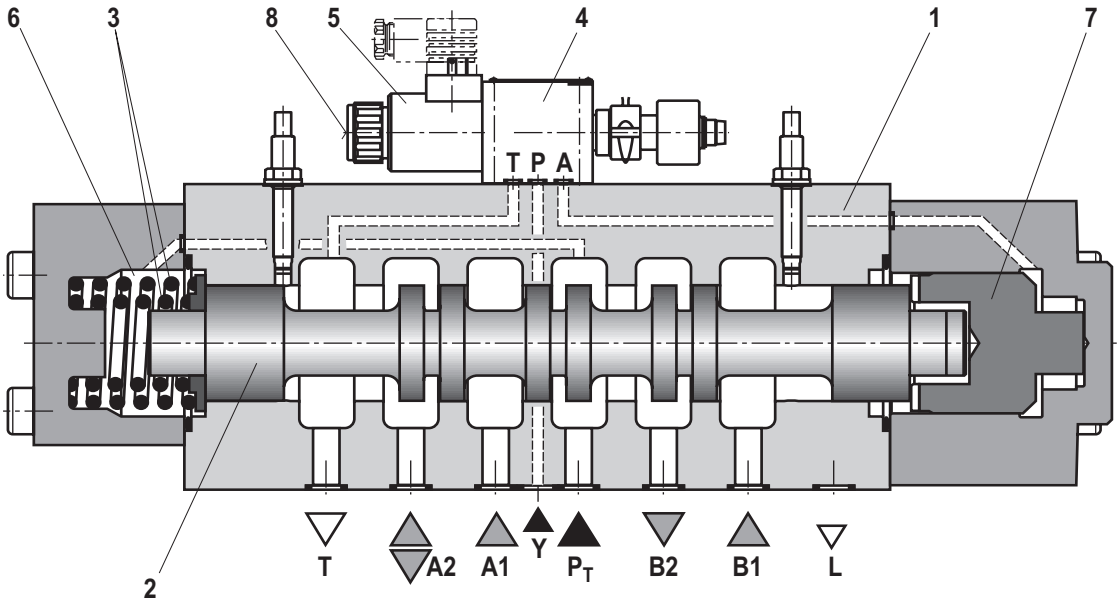
Function, cross-section

The valve type LS 1376 is a directional spool valve with electro-hydraulic actuation. It controls the start, stop and direction of a flow.
The directional control valve basically consists of the main valve with housing (1), the main control piston (2), the compression spring (3), as well as the pilot control valve (4) with a solenoid (5).
The spring chamber (6) is internally connected to the P_T connection. The pilot valve (4) is supplied externally with pilot oil via channel Y and feeds the control room of control piston (7).
The main control piston (2) is held in the spool position “b” with the same pilot pressure by the pressurization of the two end faces.
In this spool position, the activation piston (7) is propped up in the housing and locks the position of the main control piston (2). By relieving the pressure on the surface of the activation piston (7), the main control piston (2) is brought into the spool position “a”. The relieved surface of the activation piston (7) displaces the pilot oil flowing back through the pilot control valve (4) internally into channel T.

Upon actuation of the pilot control valve (4) via the solenoid (5), the activation piston (7) and, thus, the main control piston (2) are shifted to the left.
The manual override (8) on the pilot control valve (4) allows the seat cone to open without solenoid excitation.

☞ **Notes:**
The compression springs (3) do not have a reset function in this valve. Instead, they hold the main control piston (2) in the home position when the valve is in an unpressurized state and horizontally-mounted.
When establishing the minimum pilot pressure, the pressure in the reservoir line must be considered.



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

General		
Mass	kg	167
Installation position		horizontal
Ambient temperature range	°C	-30 ... +50
Storage temperature range	°C	-20 ... +70
Surface protection (valve body)		Paintwork
$MTTF_d$ value according to EN ISO 13849	Years	150

Hydraulics		
Max. operating pressure	bar	250
Maximum pilot pressure	bar	250
Minimum pilot pressure	bar	25
Max. flow	l/min	1500
Hydraulic fluid		See table below
Hydraulic fluid temperature range (at the valve operating ports)	°C	-30 ... +70
Viscosity range	mm^2/s	2.8 ... 380
Maximum permissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)		Class 20/18/15 [1]

Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral base oils		HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524	90220
Bio-degradable	▶ Water insoluble	HETG	NBR, FKM	ISO 15380	90221
		HEES	FKM		
	▶ Water soluble	HEPG	FKM	ISO 15380	
Flame-resistant	▶ Water-free	HFDU, HFDR	FKM	ISO 12922	90222

Important information on hydraulic fluids:
- For more information and data about the use of other hydraulic fluids, refer to data sheets above or contact us!
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.
- **Bio-degradable and flame resistant:** When using these hydraulic fluids that are simultaneously zinc-solvent, zinc may accumulate (700 mg zinc per pole tube).

Electrical			
Switching response time according to ISO 6403 [2]	– ON	s	1.2
	– OFF	s	1.8

[1] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.
For the selection of the filters see www.boschrexroth.com/filter.

[2] The switching response times were established at a hydraulic fluid temperature of 40 °C and a viscosity of 46 cSt. Deviating hydraulic fluid temperatures can result in different switching response times. Switching response times change depending on operating time and application conditions.

When establishing the electrical connection, the protective earthing conductor (PE ⏚) has to be connected correctly.

Note:
For further technical data see data sheet 22045

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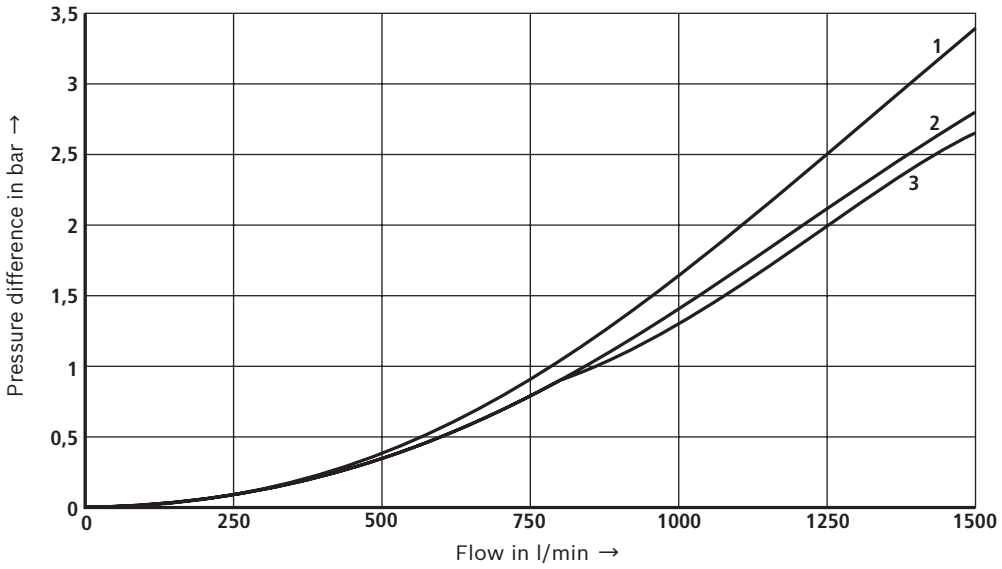
Characteristic curves

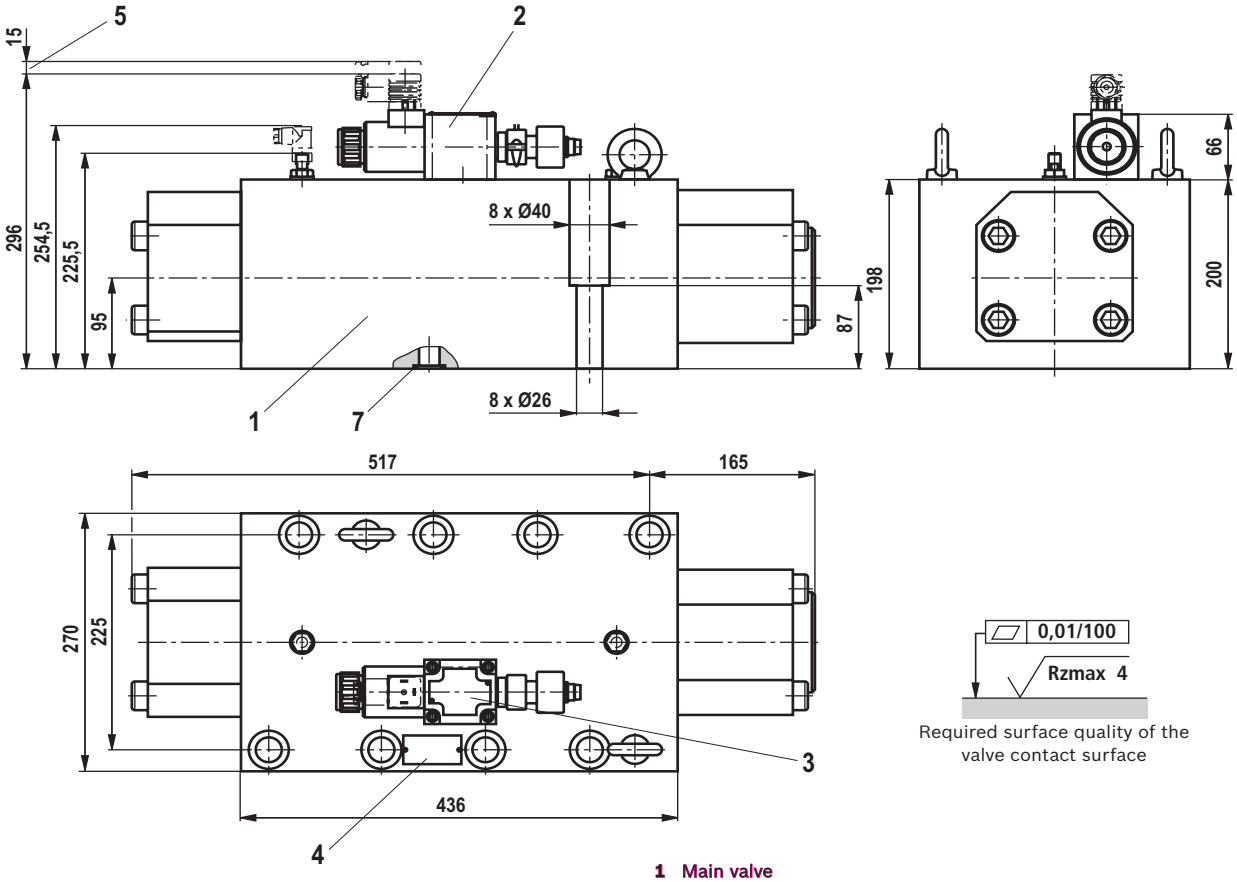
(measured with HLP46, ϑ_{Oil} = 40 ± 5 °C)

***Δp-q*$_V$ characteristic curves**

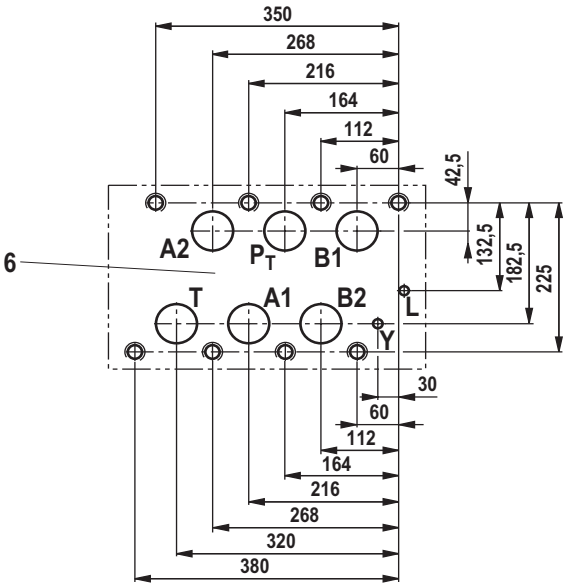


1 P → B2; A1 → A2
2 A2 → T
3 B1 → B2

Dimensions
(dimensions in mm)



Required surface quality of the valve contact surface



1 Main valve
2 Pilot control valve type M-3SED 10 ...; For dimensions see data sheets 22045 and 24830
3 Name plate for pilot control valve
4 Name plate for complete valve
5 Space required to remove the mating connector
6 Machined valve mounting face
7 Seal rings

Valve mounting screws (separate order)
8 hexagon socket head cap screws
ISO 4762 - M24 x 120 - 10.9-flZn-240h-L
(friction coefficient μ_{total} = 0.09 to 0.14);
Tightening torque M_A = 760 Nm ± 10%,
Material no. **R913000522**

Note:
The dimensions are nominal dimensions which are subject to tolerances.

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Further information

▶ Directional seat valve	Data sheet 22045
▶ Inductive position switch and proximity sensors (solid-state)	Data sheet 24830
▶ Mineral-oil-based hydraulic fluids	Data sheet 90220
▶ Environmentally compatible hydraulic fluids	Data sheet 90221
▶ Flame-resistant, water-free hydraulic fluids	Data sheet 90222
▶ Flame-resistant hydraulic fluids - contains water (HFAE, HFAS, HFB, HFC)	Data sheet 90223
▶ Hydraulic valves for industrial applications	
▶ General product information on hydraulic products	
▶ Assembly, commissioning and maintenance of industrial valves	
▶ Selection of the filters	

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