

### DATA SHEET - SERVICE MANUAL

#### APPLICATION

6-way section directional valves type **6URRE6...** are used to change direction of fluid flow in hydraulic system and thus it allows change direction of movement of a receiver (mostly piston rod or hydraulic motor) and also to use two functions: *on* and *off*. They are also used to set pressure independently in ports (cavities) **A** and **B** and to set maximum pressure in a system. These directional valves allow for free oil drain to a tank via additional port when the system is unloaded in neutral position of directional valve. The directional valves are intended for threaded mounting in any position in hydraulic systems.

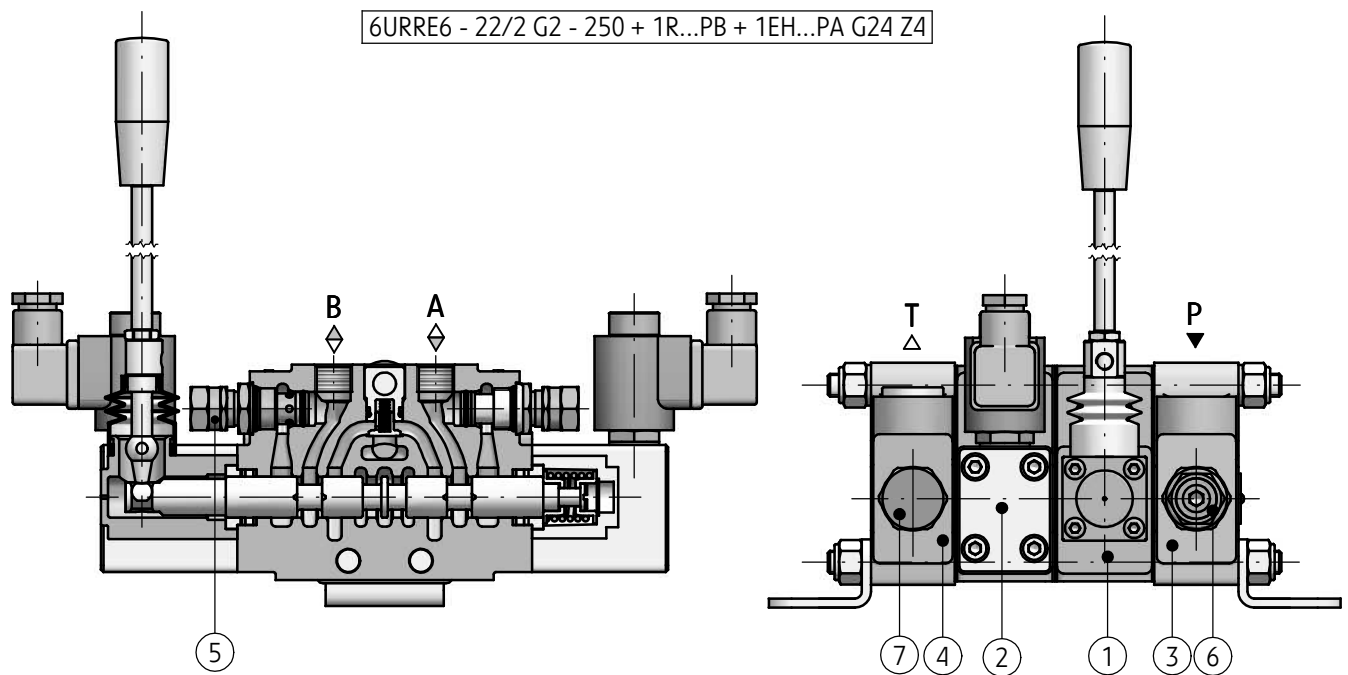


#### DESCRIPTION OF OPERATION

6-way section directional valves type **6URRE6...** consist of the following main controls: flow direction control section and covers. Sections with various types of adjustment – versions shown in the picture: – hand lever (1) operated and electro-hydraulically (2) operated are sandwich-mounted versions. They are closed outside with supply cover **P** (3) and outlet cover **T** (4). In sections (1) and (2) are cavities which serve to be connected to receivers (hydraulic cylinders). Sections (1) and (2) may be equipped with pressure relief valves (5) – nominal size 4 (NS4) – type **UZPS4** – according to data sheet **WK 420 260** used to set pressure separately

in ports (cavities) **A** and **B** or check valves – type **UZZD4** according to data sheet **WK 396 370**. Covers (3) and (4) include suitably located supply port **P** and outlet (drain) port **T**. In supply cover **P** (3) is mounted pressure relief valve (6) – type **UZPS6** according to data sheet **WK 492 860** used to set maximum pressure in a system. In outlet (drain) cover **T** (4), however, there is mounted pressure relief valve (7) type **UZMD6** according to data sheet **WK 499 967** which is used to maintain pressure – only for electro-hydraulically operated version **6URRE6.../...EH**.

6URRE6 - 22/2 G2 - 250 + 1R...PB + 1EH...PA G24 Z4



## TECHNICAL DATA

Directional valve is complied with the regulations of directive **2006/95/WE** for the following voltages:

- 50 – 250 V for AC
- 75 – 250 V for DC

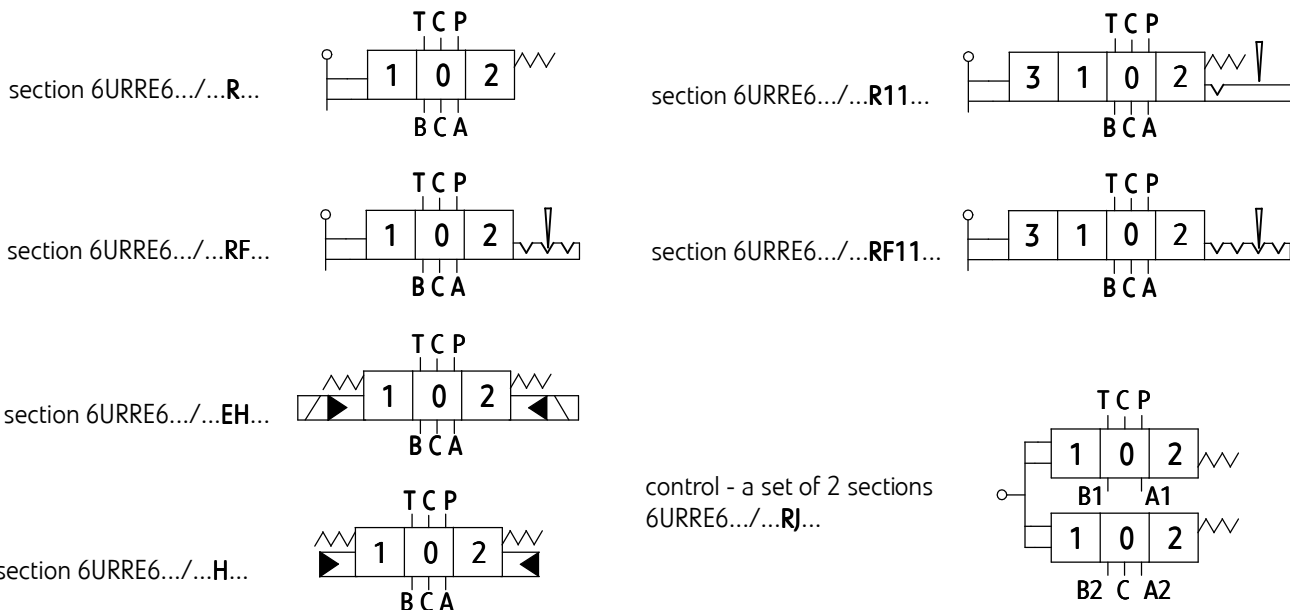
Hydraulic fluid	mineral oil	
<b>Required filtration</b>	<b>up to 16 µm</b>	
Recommended filtration	up to 10 µm	
Nominal fluid viscosity	37 mm <sup>2</sup> /s at temperature 55 °C	
Viscosity range	2,8 up to 380 mm <sup>2</sup> /s	
Fluid temperature range (in a tank)	recommended	40 °C up to 55 °C
	max	-20 °C up to +70 °C
Ambient temperature range - for versions with electro-hydraulically operated sections	- 30 °C up to +50 °C	
Ambient temperature range - for versions without electro-hydraulically operated sections	- 30 °C up to +70 °C	
<b>Maximum operating pressure</b>	ports P, A, B	<b>25 MPa</b>
	port T	<b>5 MPa</b>
<b>Minimum control pressure in port P</b> (on pressure relief valve maintaining pressure only for version 6URRE6 - 22/...EH...)	<b>1 MPa</b>	

## ASSEMBLY AND APPLICATION REQUIREMENTS

1. Only valve working properly and suitably installed may be connected to an electric system. Only skilled workers are allowed to connect and disconnect electric system.
2. Ground connection ( $\perp$ ) must be connected with protective earth wire (PE  $\perp$ ) in supply system according to appropriate instructions.
3. It is forbidden to apply directional valve if the supply cable in the gland of plug-in-connector is not properly tightened.
4. It is forbidden to apply directional valve if the plug-in-connector is not properly tightened to the solenoid socket and is not secured by screwing bolt tightly.
5. Due to heating solenoid coils, directional valves should be placed in order to eliminate the possibility of incidental touch while using, or, they should be equipped with the coil covers (in accordance with the European standards PN - EN ISO 13732-1 and PN - EN 982).

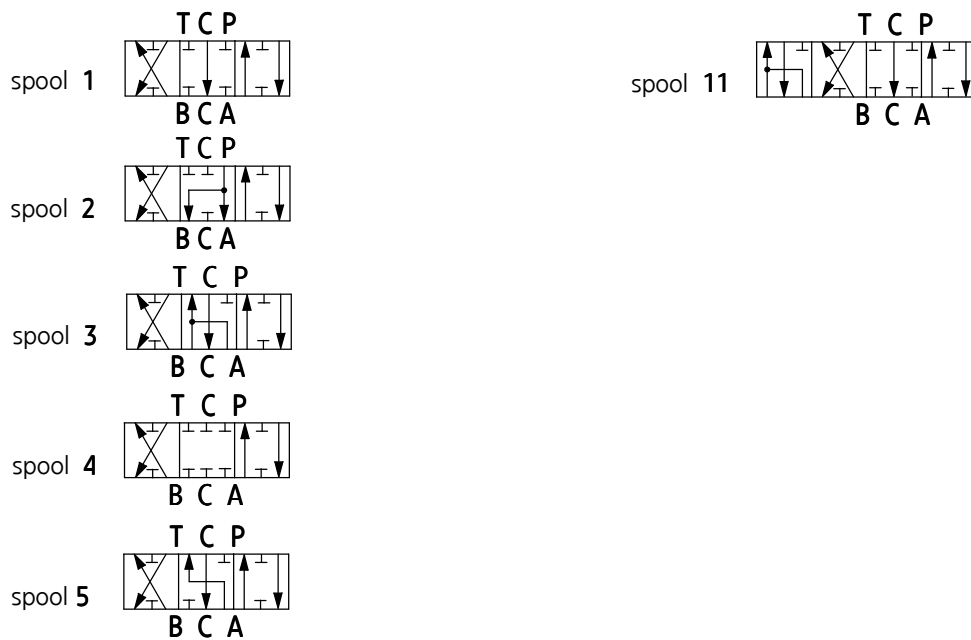
## SCHEMES

Hydraulic schemes of sections/controls of directional valve



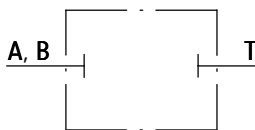
# SCHEMES

## Hydraulic spool schemes

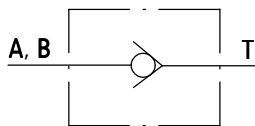


## Hydraulic schemes of accessories

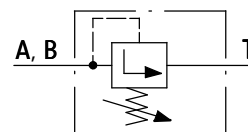
(valves in ports A and B - mounting options on page 15)



standard version 6URRE6.../...  
(with no accessory)



options: 6URRE6.../...Z...  
6URRE6.../...ZA...  
6URRE6.../...ZB...

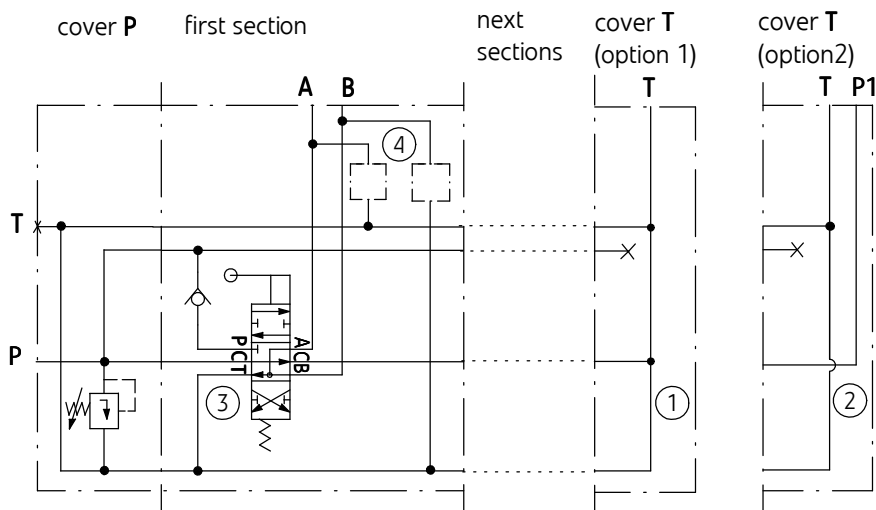


options: 6URRE6.../...P...  
6URRE6.../...PA...  
6URRE6.../...PB...

# SCHEMES

Examples of detailed hydraulic schemes of sections (controls) of directional valve type 6URRE6...

versions: 6URRE6.../...R...; 6URRE6.../...L...R...

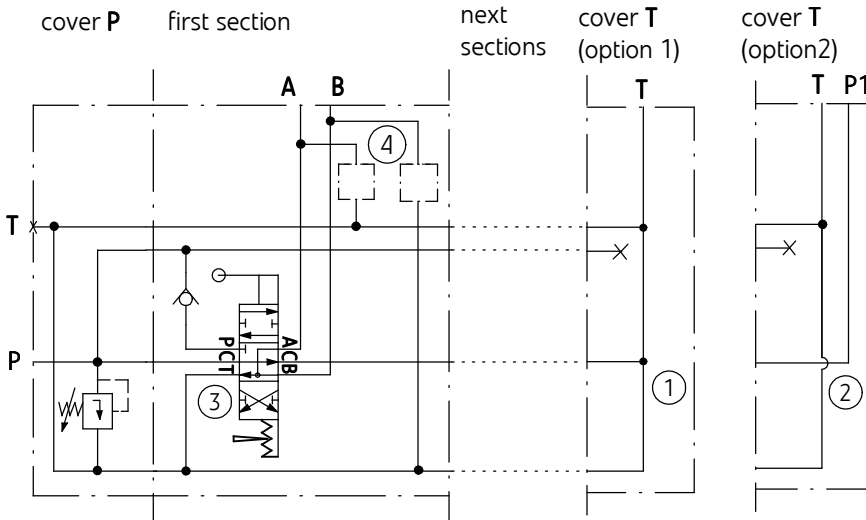


- ① - version 6URRE6.../...R...
  - ② - version 6URRE6.../...L...R...
  - ③ - spool (options: 1,2,3\*,4,5,11 on page 3)
  - ④ - accessories (options - on page 3, 15)
- NOTE:**  
(\* ) - option shown in the scheme

# SCHEMES

Examples of detailed hydraulic schemes of sections (controls) of directional valve type 6URRE6...

versions: 6URRE6...22/...RF... ; 6URRE6.../...L...RF...

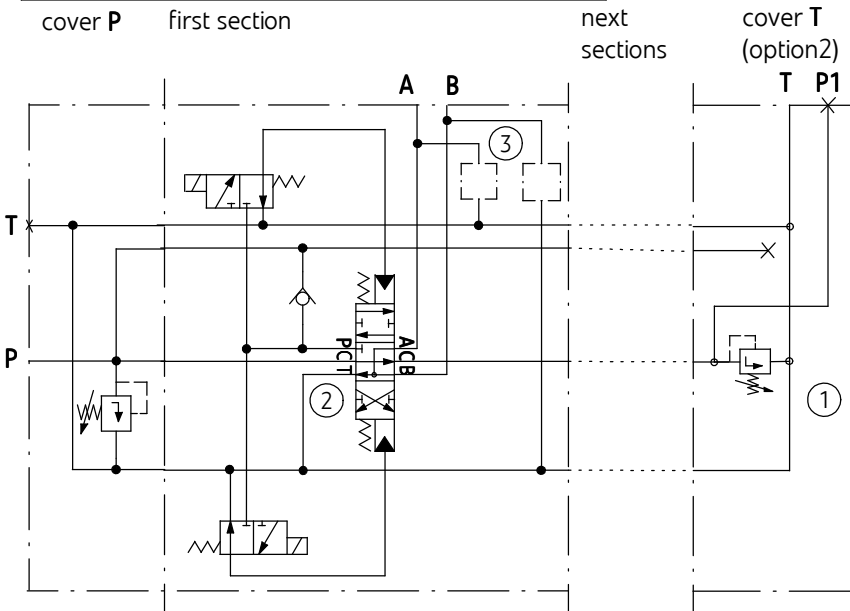


- ① - version 6URRE6.../...RF...
- ② - version 6URRE6.../...L...RF...
- ③ - spool (options: 1,2,3\*,4,5.11 on page 3)
- ④ - accessories (options - on page 3, 15)

**NOTE:**

(\*) - option shown in the scheme

version 6URRE6.../...EH...

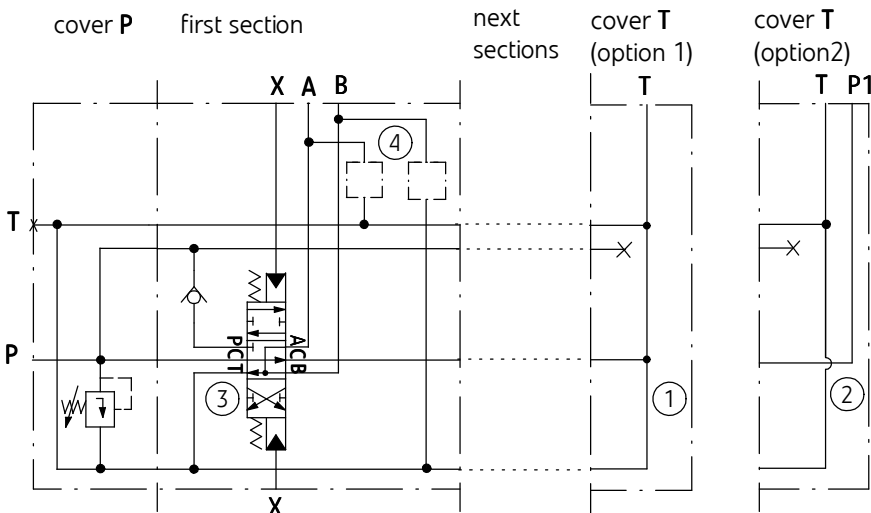


- ① - version 6URRE6.../...EH...
- ② - spool (options: 1,2,3\*,4,5 on page 3)
- ③ - accessories (options - on page 3, 15)

**NOTE:**

(\*) - option shown in the scheme

versions: 6URRE6.../...H... ; 6URRE6.../...L...H...



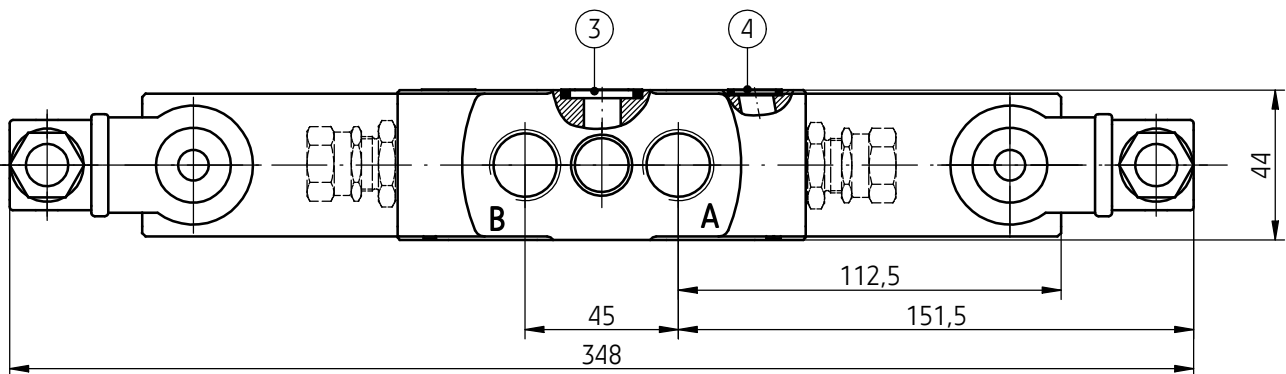
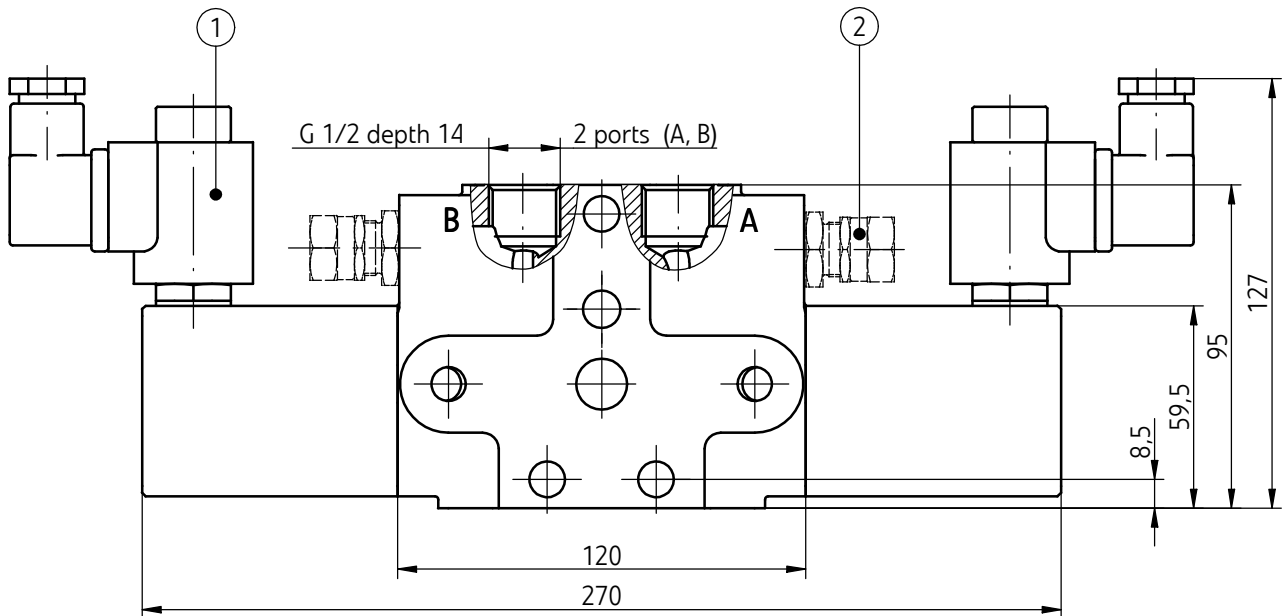
- ① - version 6URRE6.../...H...
- ② - version 6URRE6.../...L...H...
- ③ - spool (options: 1,2,3\*,4,5 on page 3)
- ④ - accessories (options - on page 3, 15)

**NOTE:**

(\*) - option shown in the scheme

## OVERALL AND CONNECTION DIMENSIONS

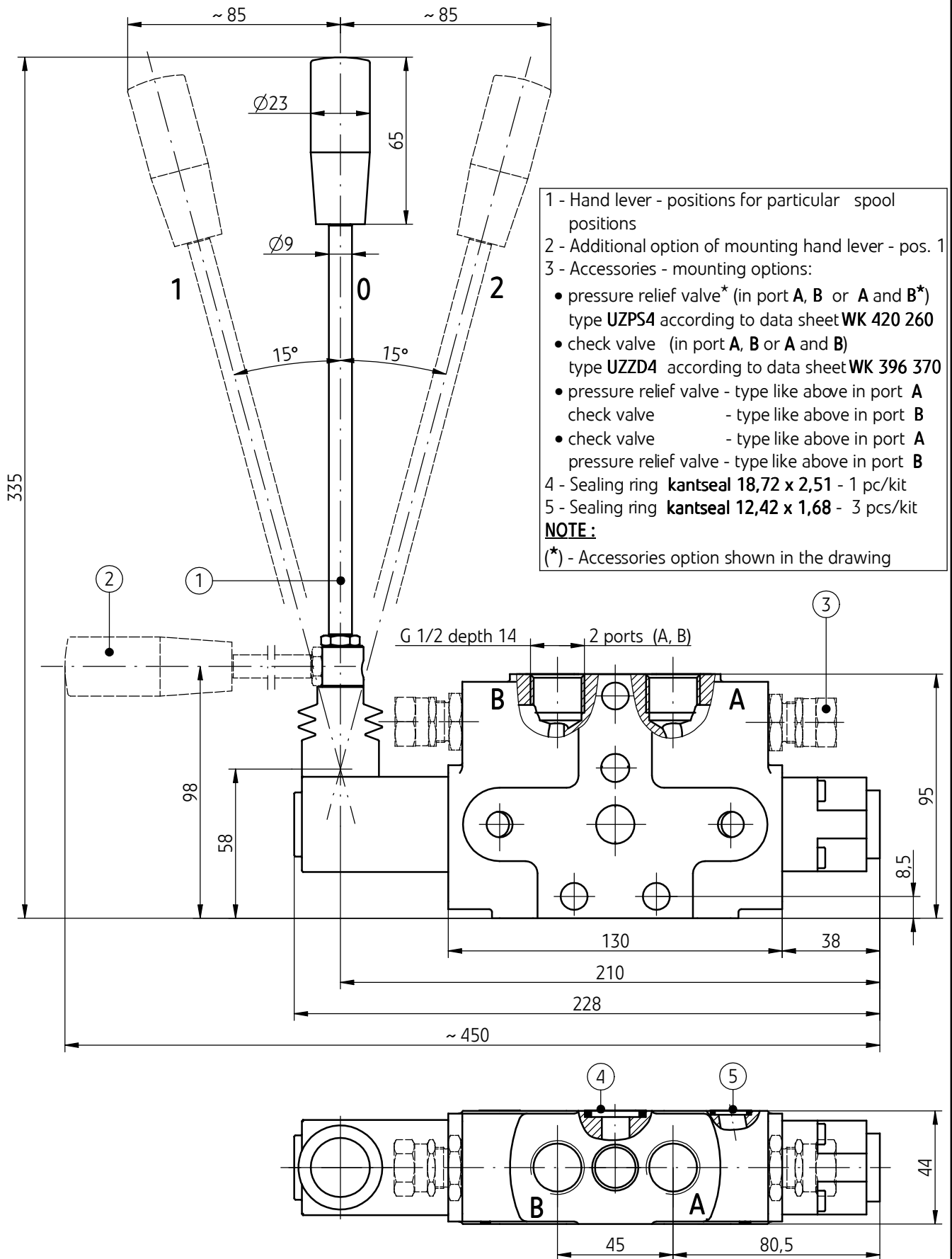
version 6URRE6.../...EH... - dimensions of 1 section



- 1 - Cartridge directional valve type **3URED4**  
according to data sheet **WK 496 380** - 2 pcs/kit
- 2 - Accessories - mounting options:
- pressure relief valve\* (in port **A**, **B** or **A and B\***)  
type **UZPS4** according to data sheet **WK 420 260**
  - check valve (in port **A**, **B** or **A and B**)  
type **UZZD4** according to data sheet **WK 396 370**
  - pressure relief valve - type like above in port **A**  
check valve - type like above in port **B**
  - check valve - type like above in port **A**  
pressure relief valve - type like above in port **B**
- 3 - Sealing ring **kantseal 18,72 x 2,51** - 1 pc/kit
- 4 - Sealing ring **kantseal 12,42 x 1,68** - 3 pcs/kit
- NOTE:**  
(\* ) - Accessories option shown in the drawing

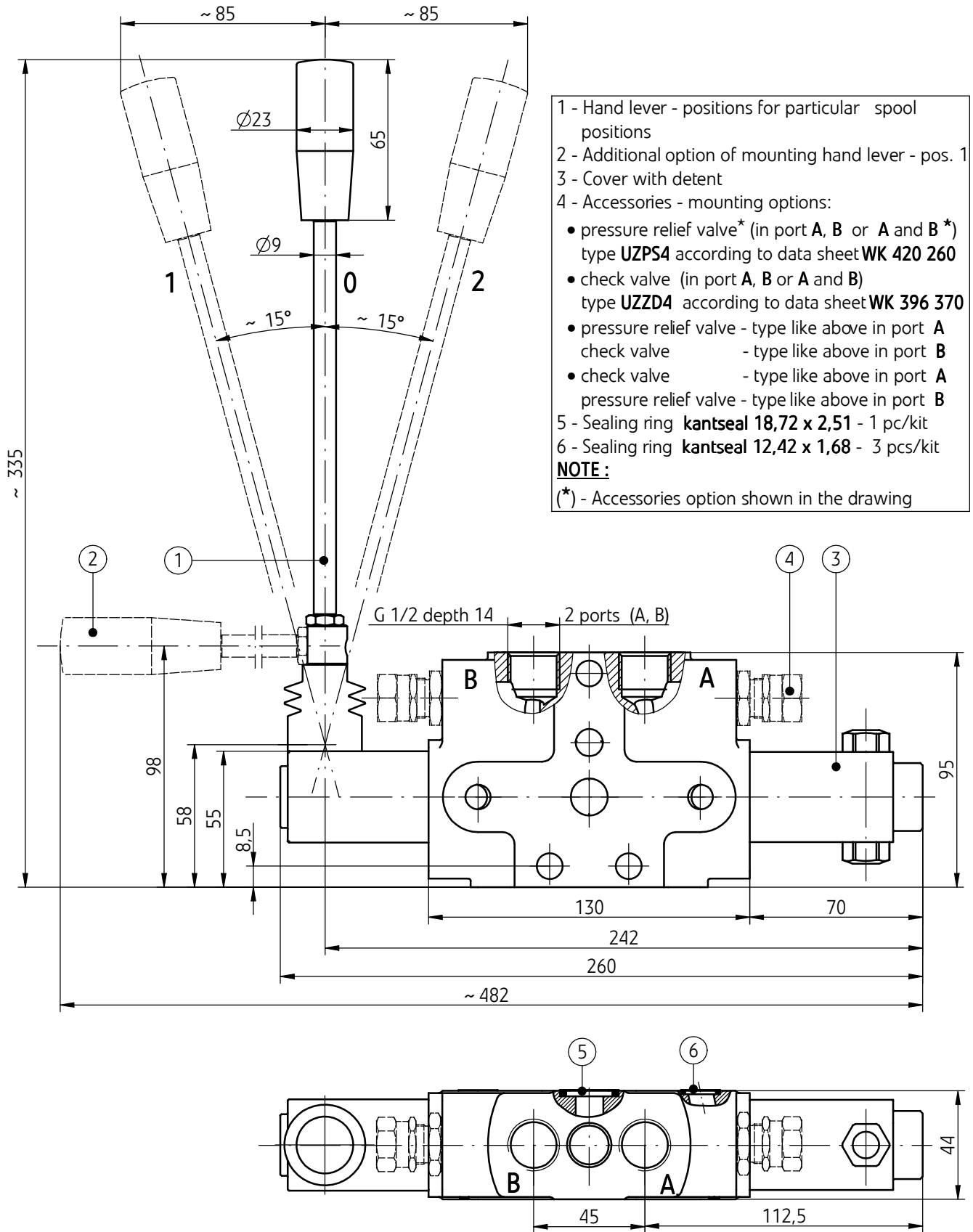
# OVERALL AND CONNECTION DIMENSIONS

version 6URRE6.../...R... - dimensions of 1 section



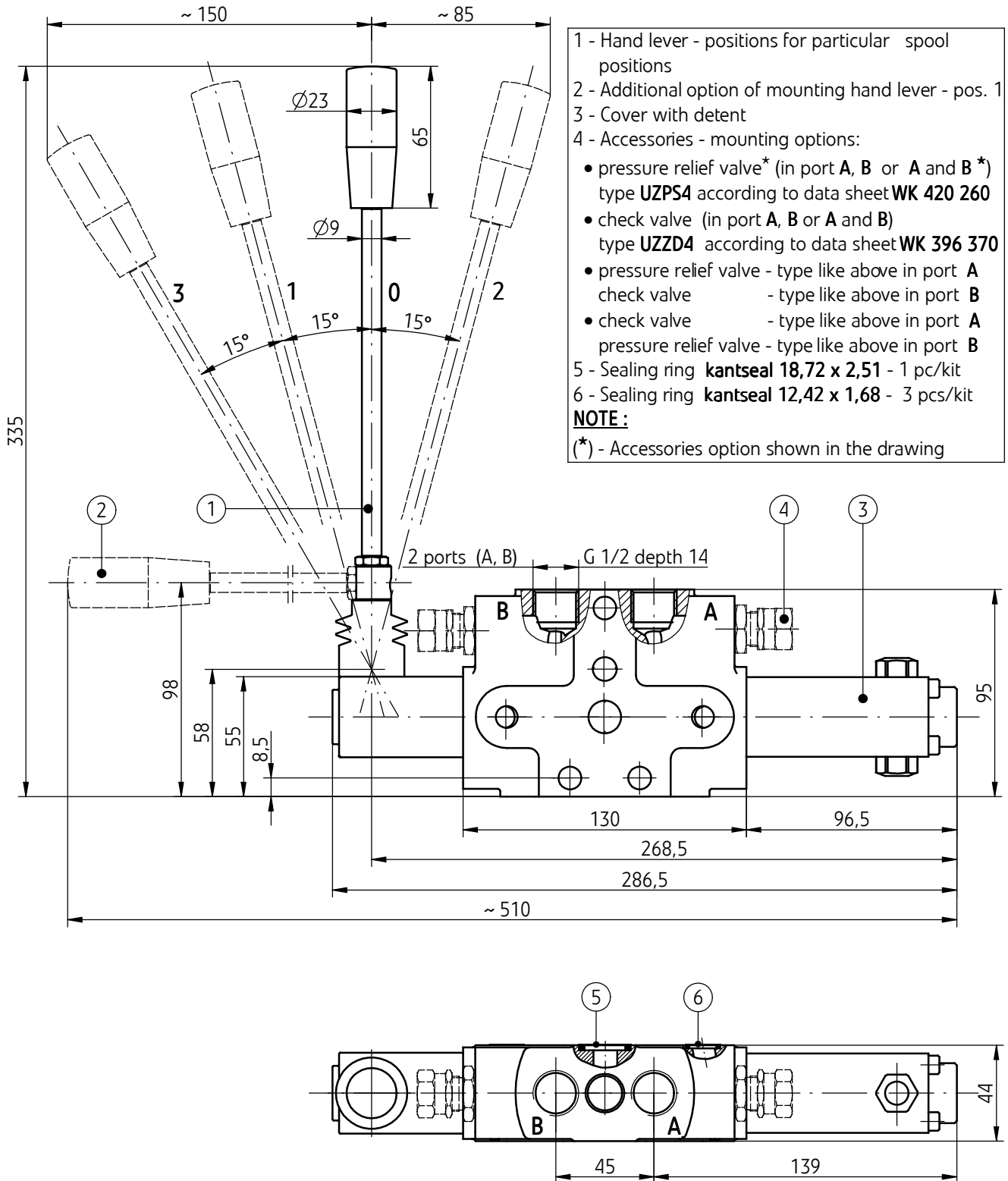
# OVERALL AND CONNECTION DIMENSIONS

version 6URRE6.../...RF...- dimensions of 1 section



# OVERALL AND CONNECTION DIMENSIONS

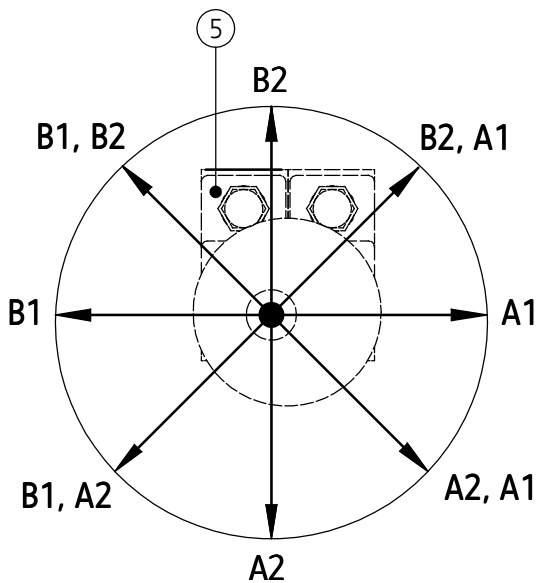
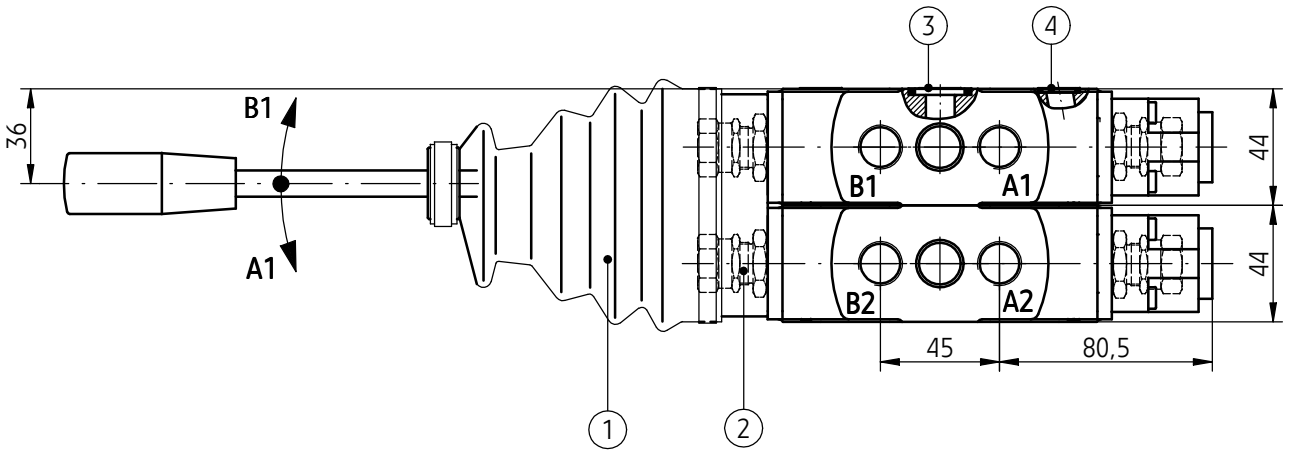
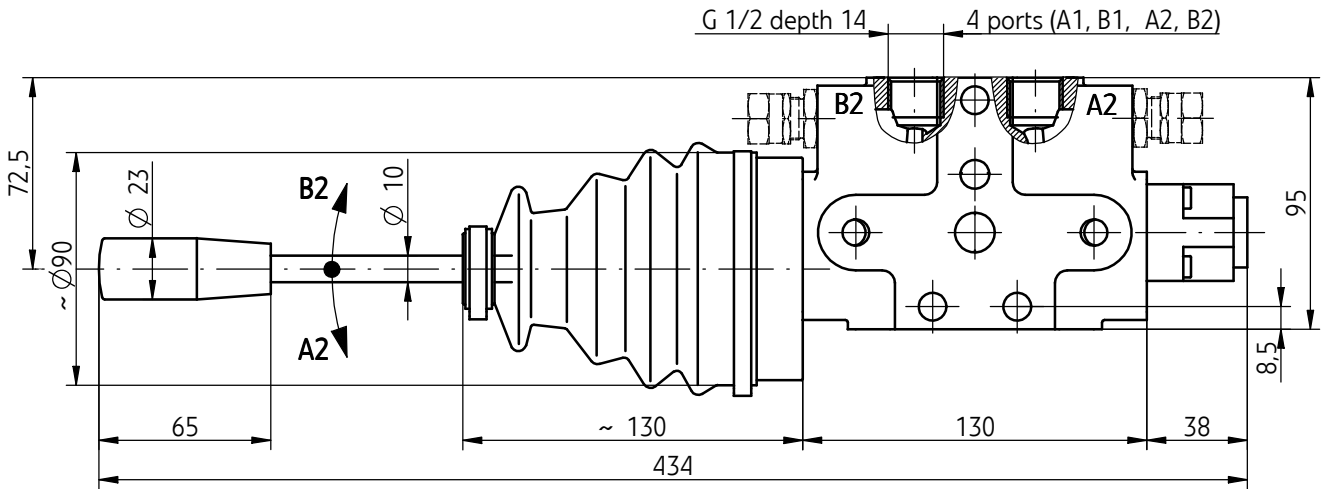
version 6URRE6.../...RF...- dimensions of 1 section





# OVERALL AND CONNECTION DIMENSIONS

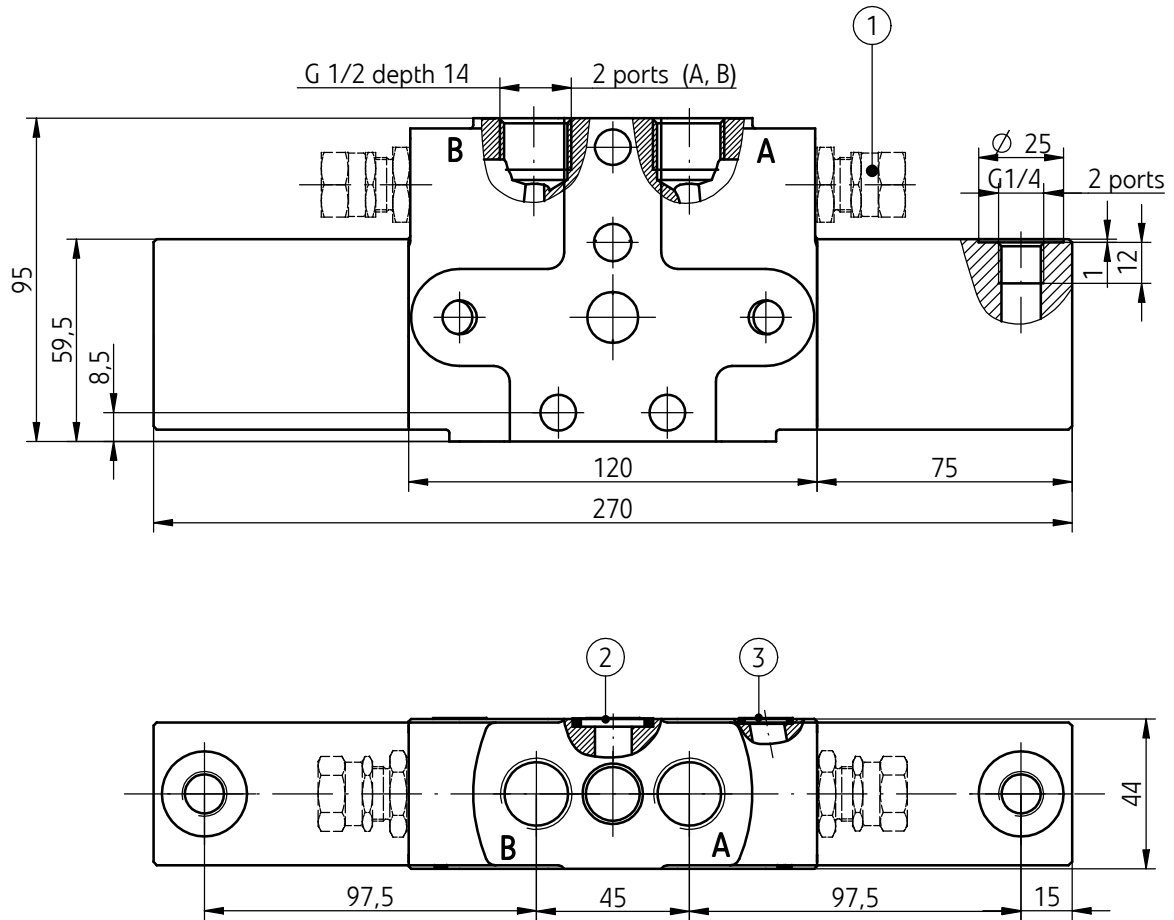
version 6URRE6.../...R]... - dimensions of a set of 2 sections



- 1 - Joystick - one joystick may be installed into **a set of 2 sections sandwich mounted** (like in above drawing)
  - 2 - Accessories - mounting options:
    - pressure relief valve\* (in port **A**, **B** or **A and B** \*) type **UZPS4** according to data sheet **WK 420 260**
    - check valve (in port **A**, **B** or **A and B**) type **UZZD4** according to data sheet **WK 396 370**
    - pressure relief valve - type like above in port **A**
    - check valve - type like above in port **B**
    - check valve - type like above in port **A**
    - pressure relief valve - type like above in port **B**
  - 3 - Sealing ring **kantseal 18,72 x 2,51** - 1 pc/kit
  - 4 - Sealing ring **kantseal 12,42 x 1,68** - 3 pcs/kit
  - 5 - Graph of a function for a set of 2 sections joystick operated
- NOTE:**  
 (\*) - Accessories option shown in the drawing

# OVERALL AND CONNECTION DIMENSIONS

version 6URRE6.../...H... - dimensions of 1 section



- 1 - Accessories - mounting options:
- pressure relief valve\* (in port A, B or A and B\*) type **UZPS4** according to data sheet **WK 420 260**
  - check valve (in port A, B or A and B) type **UZZD4** according to data sheet **WK 396 370**
  - pressure relief valve - type like above in port A  
check valve - type like above in port B
  - check valve - type like above in port A  
pressure relief valve - type like above in port B
- 2 - Sealing ring **kantseal 18,72 x 2,51** - 1 pc/kit  
3 - Sealing ring **kantseal 12,42 x 1,68** - 3 pcs/kit
- NOTE:**  
(\* ) - Accessories option shown in the drawing

# OVERALL AND CONNECTION DIMENSIONS

example of version of 2-section directional valve

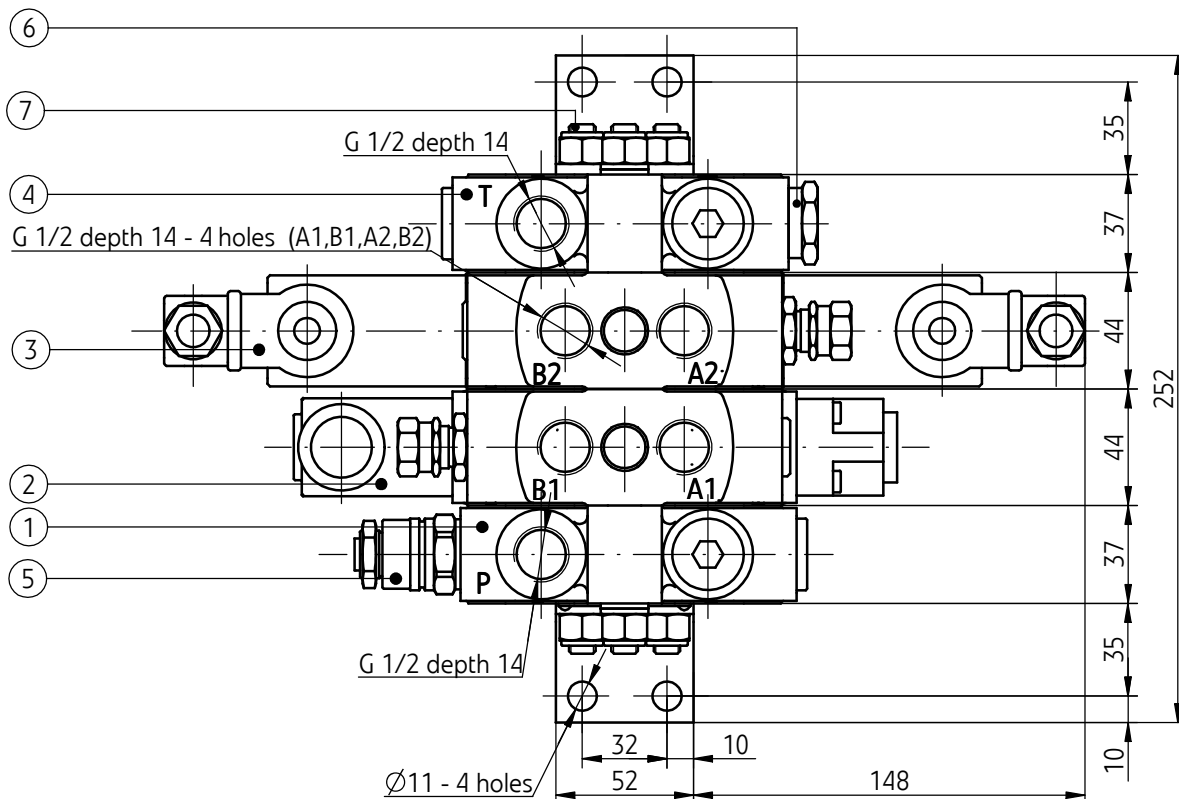
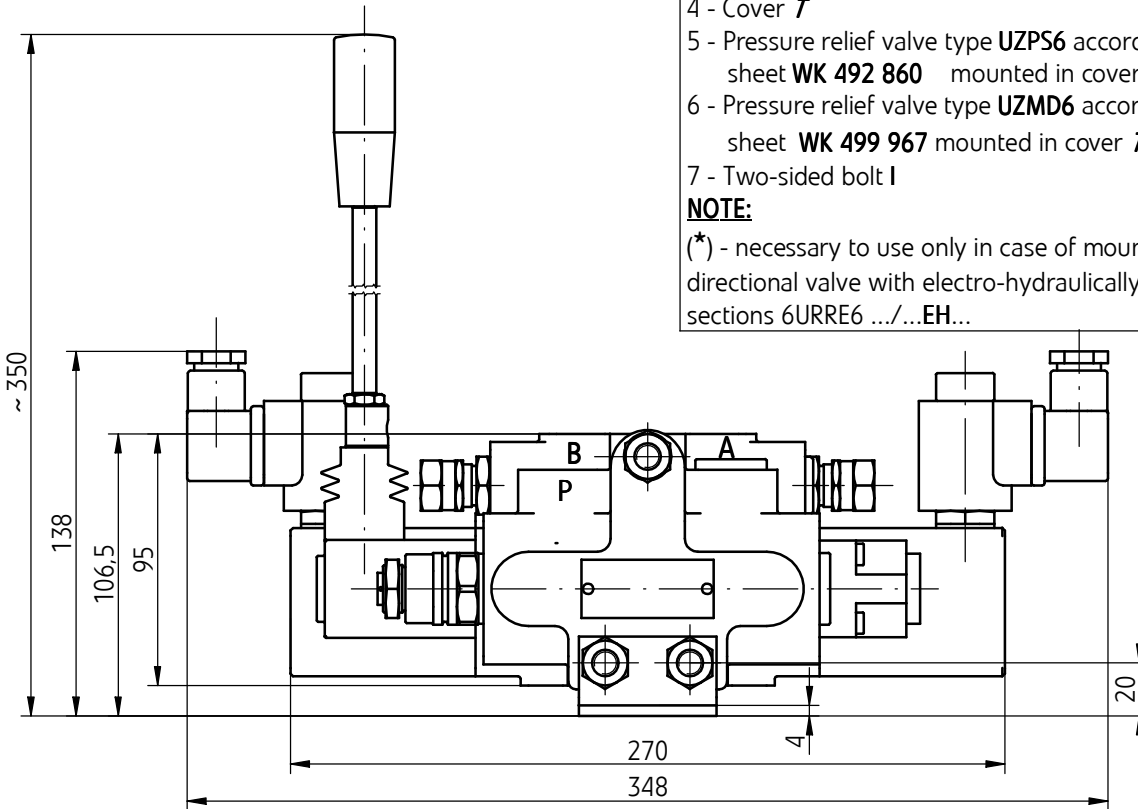
(version with various type of control of sections without the option of controlling by means of joystick)

6URRE6 - 22/2 G2- 250 + 1R...PB +1EH...PA G24 Z4)

- 1 - Cover *P*
- 2 - Section 6URRE6.../...R...
- 3 - Section 6URRE6.../...EH...
- 4 - Cover *T*
- 5 - Pressure relief valve type **UZPS6** according to data sheet **WK 492 860** mounted in cover *P* - 1 pc/kit
- 6 - Pressure relief valve type **UZMD6** according to data sheet **WK 499 967** mounted in cover *T\** - 1 pc/kit
- 7 - Two-sided bolt I

**NOTE:**

(\*) - necessary to use only in case of mounting directional valve with electro-hydraulically operated sections 6URRE6 .../...EH...

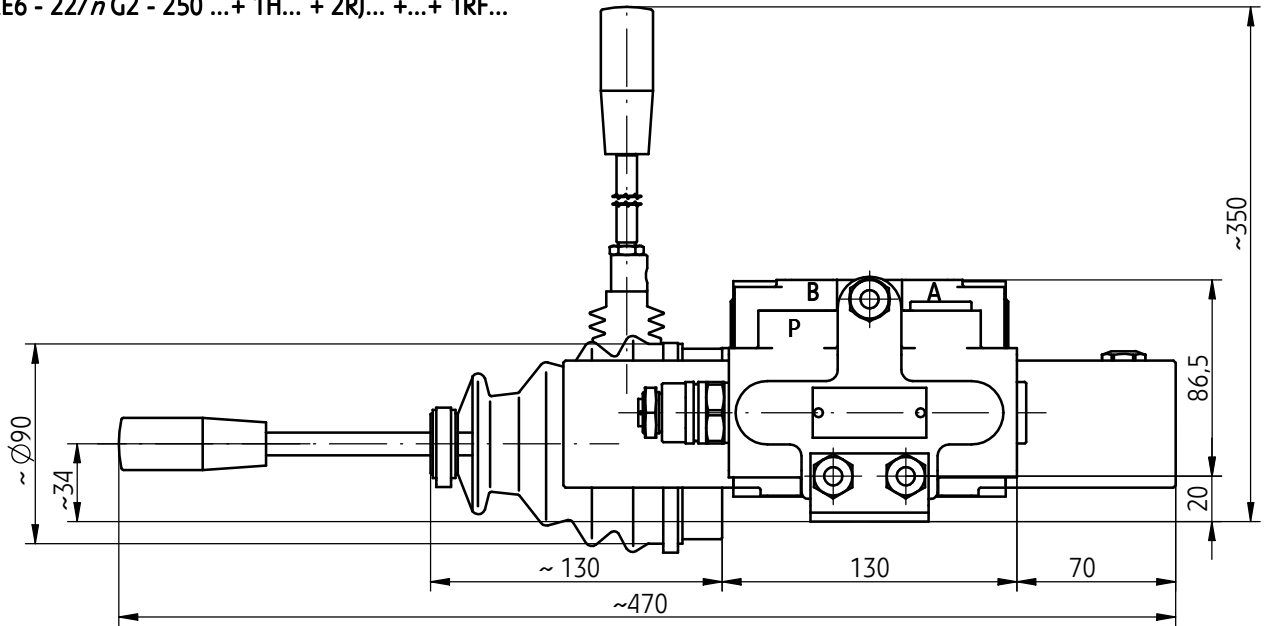


# OVERALL AND CONNECTION DIMENSIONS

example of version of directional valve with  $n$  -sections\*

(version with  $n$  sections with various type of control without the section with the option of electro-hydraulic operation)

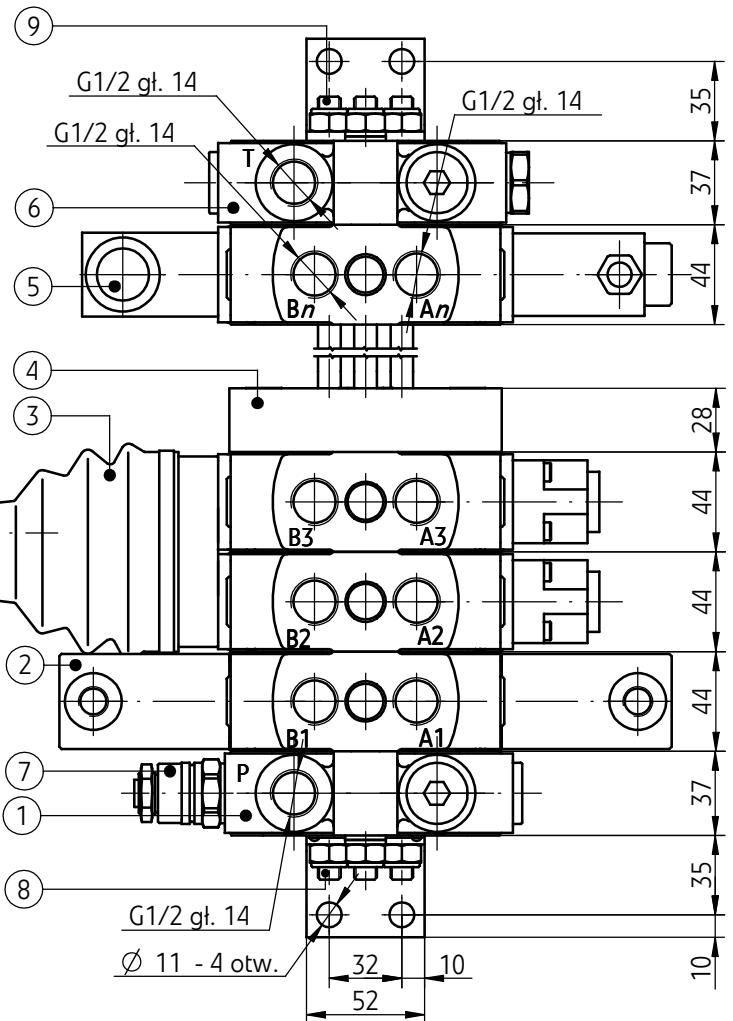
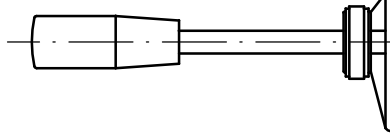
6URRE6 - 22/ $n$ G2 - 250 ... + 1H... + 2RJ... +...+ 1RF...



## NOTES:

(\*) - Technical requirements for mounting directional valve with  $n$  sections

- Joystick - pos. 3 may be installed only into a set of 2 sections sandwich mounted
- When total number of sections is  $n = 1$  to 5 the central plate - pos. 4 is not mounted
- When total number of sections is  $n = 6$  to 10 (max) it is necessary to mount the central plate - pos. 4 according to the below requirements:
  - when **even  $n$  number** the central plate - pos. 4 is mounted in order to provide the same number of sections from the side of cover  $P$  as the number of sections from the side of cover  $T$
  - when **odd  $n$  number** the central plate - pos. 4 is mounted in order to provide 1 section less from the side of cover  $P$  than the number of sections from the side of cover  $T$



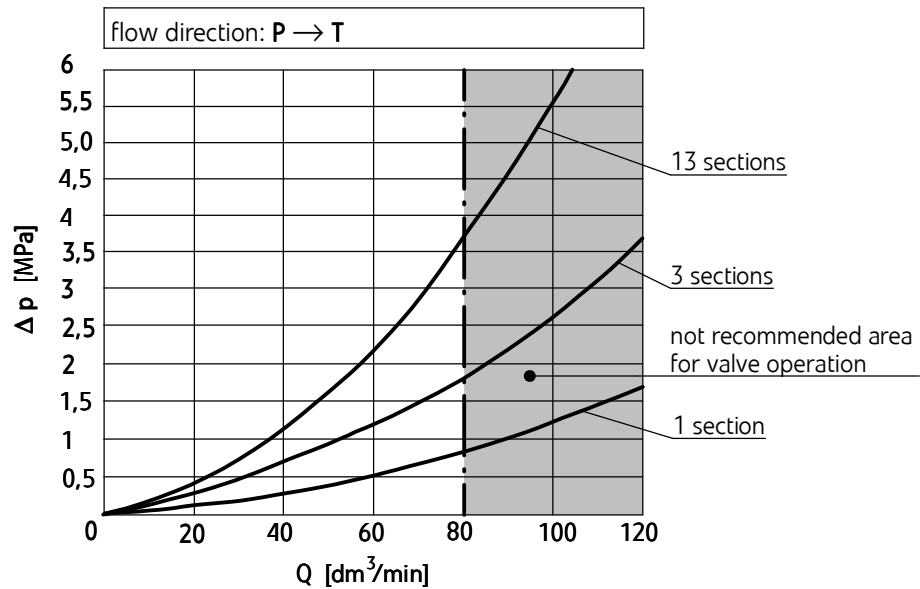
- 1 - Cover  $P$
- 2 - Section 6URRE6.../...H... - 1 pc
- 3 - A set of 2 sections 6URRE6.../...RJ... - 1 pcs - one joystick may be mounted for 2 sections sandwich mounted into a set
- 4 - Central plate - necessary to be applied in directional valves with total number of sections  $n > 5$
- 5 - Section 6URRE6.../...RF... - 1 pc
- 6 - Cover  $T$
- 7 - Pressure relief valve type **UZPS6** according to data sheet **WK 492 860** - 1 pc/kit
- 8 - Two-sided bolt I
- 9 - Two-sided bolt II

## PERFORMANCE CURVES

measured at viscosity  $\nu = 41 \text{ mm}^2/\text{s}$  and temperature  $t = 50^\circ\text{C}$

### Flow resistance curves

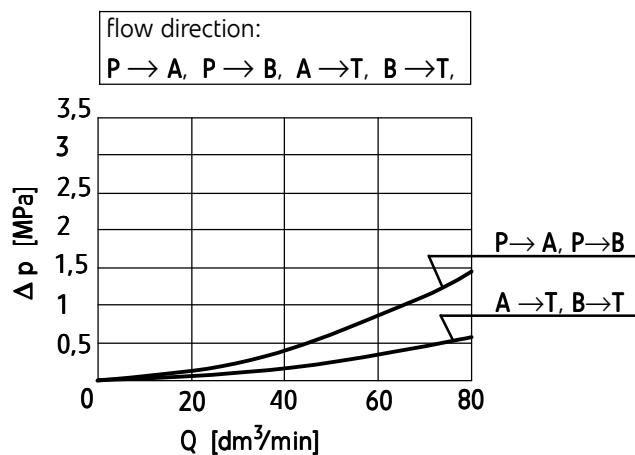
Flow curves  $\Delta p(Q)$  for directional valve type **6URRE6...**  
for various numbers of sections



### NOTE:

For versions with electro-hydraulically operated section (versions 6URRE6.../...EH...) the value of maintaining pressure on pressure relief valve - **1 MPa must be added**.

Flow curves  $\Delta p(Q)$  for 1 section of directional valve type **6URRE6...**  
for various flow directions



## HOW TO ORDER

<b>6</b>	<b>URRE</b>	<b>6</b>	<b>+</b>	<b>/</b>	<b>+</b>	<b>+</b>		
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<b>Number of service ports</b> <b>6-way</b> = <b>6</b>								
<b>Nominal size (NS)</b> <b>NS6</b> = <b>6</b>								
<b>Series number</b> (20-29) - connection and installation dimensions unchanged =2X <b>series 22</b> = <b>22</b>								
<b>Total number of sections</b> <b>(1, 2, 3, ..., n, ...max 10)</b> = <b>n</b>								
<b>Type of connection</b> <b>inch threads G 1/2</b> according to <b>DIN 3852</b> (P,T, A, B) = <b>G2</b>								
<b>Oil outlet (drain)</b> (according to page 4 only for versions with the following types of control: ...R... / ...RF... / ...RJ...) <b>drain T and C connected</b> = <b>no designation</b> drain T and C separated = <b>L</b>								
<b>Range of supply pressure set</b> (for all versions) <b>and pressure on pressure relief valves in ports A, B</b> (only for versions with accessories options: ...P/...PA... /...PB...) <b>Up to 25 MPa</b> = <b>250</b>								
<b>Number of successive sections</b> (the same code) <b>installed on the side of supply cover P</b> <b>(1, 2, 3, ..., k)</b> = <b>k</b>								
<b>Type of control</b> <b>electro-hydraulic</b> = <b>EH</b> <b>hand lever</b> = <b>R</b> <b>hand lever with detent</b> = <b>RF</b> joystick (manual) for 2 sections = <b>RJ</b> hydraulic = <b>H</b>								
<b>Spool type</b> (spool schemes according to page 3) <b>spool 1</b> = <b>1</b> <b>spool 2</b> = <b>2</b> <b>spool 3</b> = <b>3</b> <b>spool 4</b> = <b>4</b> <b>spool 5</b> = <b>5</b> spool 11 (only for versions: 6URRE6.../...R...; ...RF...) = <b>11</b>								

## HOW TO ORDER



### Coding for successive version

The coding ranging from **Number of successive sections** should be repeated in case of ordering directional valve with various sections

**Electrical connection** (only for version 6URRE6.../...EH...)

**plug-in-connector ISO 4400** (DIN 43650 - A) = **no designation**  
 another type of connector = type to be given

### Supply voltage for solenoids

(only for version 6URRE6.../...EH...)

**12V DC** = **G12**  
**24V DC** = **G24**  
 230V AC 50Hz (plug-in-connector with rectifier) = W230R

### Accessories

#### standard version (without valves)

	= <b>no designation</b>
pressure relief valve in port <b>A</b>	= PA
pressure relief valve in port <b>B</b>	= PB
pressure relief valve in port <b>A</b> and <b>B</b>	= P
check valve in port <b>A</b>	= ZA
check valve in port <b>B</b>	= ZB
check valve in port <b>A</b> and <b>B</b>	= Z
pressure relief valve in port <b>A</b> and check valve in port <b>B</b>	= PAZ
check valve in port <b>A</b> and pressure relief valve in port <b>B</b>	= PBZ

### NOTES:

Directional valve should be ordered according to the above coding. Two-sided bolts mounting sections (controls) of directional valve included in a set of directional valve may be ordered separately according to the table on page 16.

**The symbols in bold are preferred versions in short delivery time.**

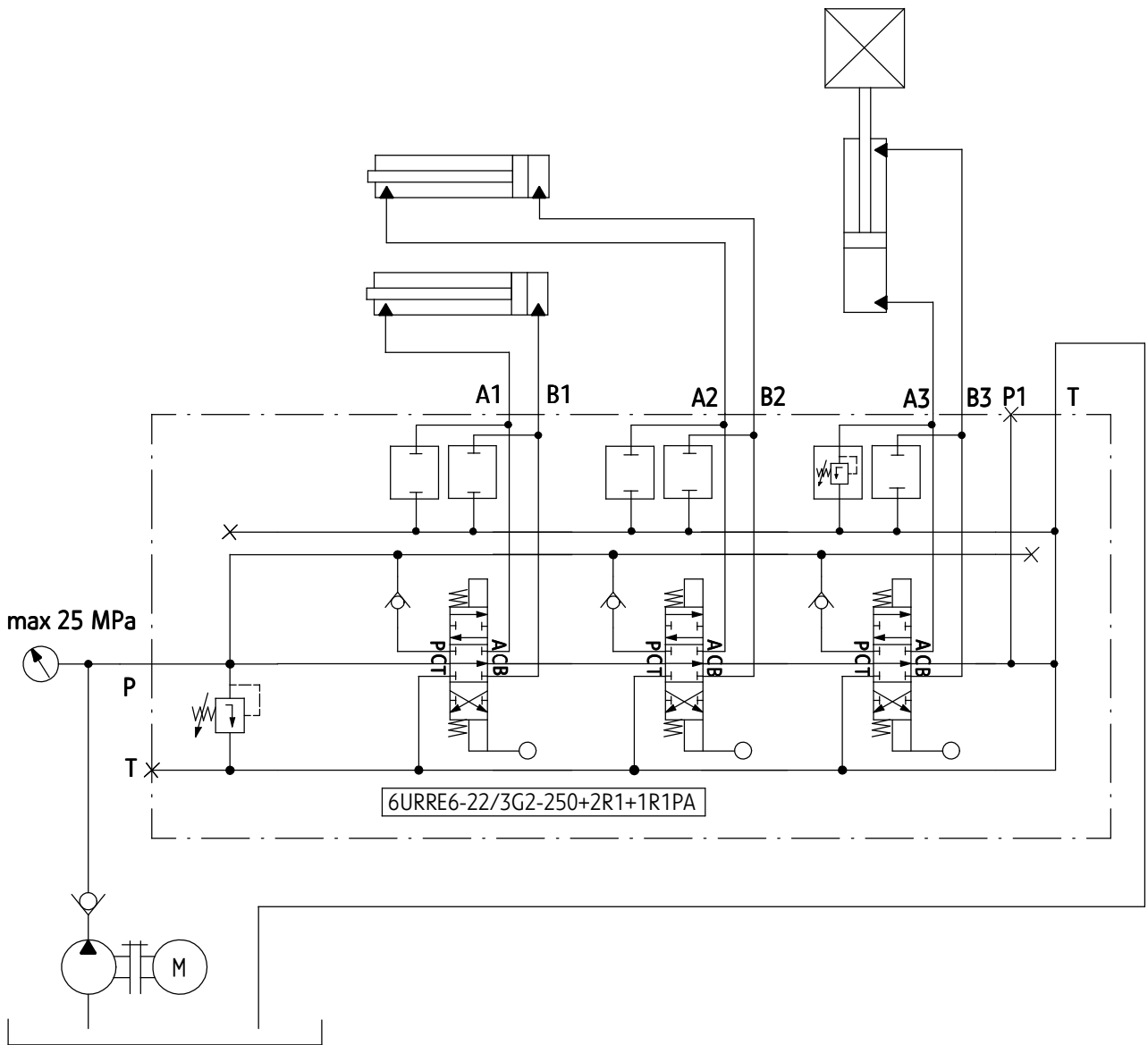
Coding example: 6URRE6-22/5G2-250 +2EH1PG24Z4 +3R1PA

## MOUNTING BOLTS AND NUTS

Number of sections	Two-sided mounting bolt										Nut M10 x 1,25 according to DIN 985	
	Bolt I (pos. 6 on page 11 pos. 8 on page 12)	Code in the catalogue order code	Quantity pcs/kit	Bolt II (pos. 9 on page 12)	Code in the catalogue order code	Quantity pcs/kit	Mechanical features	Material	Quantity pcs/kit	Code in the catalogue order code	Tightening torque	
1 section	M10 x 1,25 x 155	218 677	3	-	-	-	class min 10,9	42 CrMo4	6	052 987	40 Nm	
2 sections	M10 x 1,25 x 200	218 304	3	-	-	6						
3 sections	M10 x 1,25 x 245	218 678	3	-	-	6						
4 sections	M10 x 1,25 x 290	218 679	3	-	-	6						
5 sections	M10 x 1,25 x 330	214 110	3	-	-	6						
6 sections	M10 x 1,25 x 200	218 304	3	M10 x 1,25 x 200	218 304	3						
7 sections	M10 x 1,25 x 200	218 304	3	M10 x 1,25 x 245	218 678	3						
8 sections	M10 x 1,25 x 245	218 678	3	M10 x 1,25 x 245	218 678	3						
9 sections	M10 x 1,25 x 245	218 678	3	M10 x 1,25 x 290	218 679	3						
10 sections	M10 x 1,25 x 290	218 679	3	M10 x 1,25 x 290	218 679	3						



**EXAMPLE OF APPLICATION  
IN HYDRAULIC SYSTEM**



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fax. +48 33 488 21 03  
[www.ponar-wadowice.pl](http://www.ponar-wadowice.pl)

