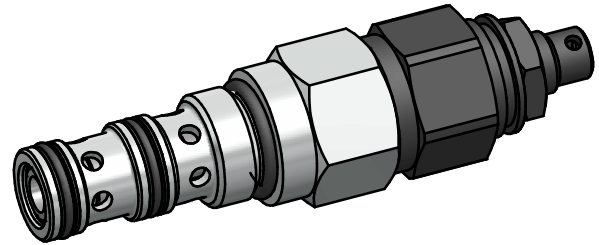


DATA SHEET - OPERATION MANUAL

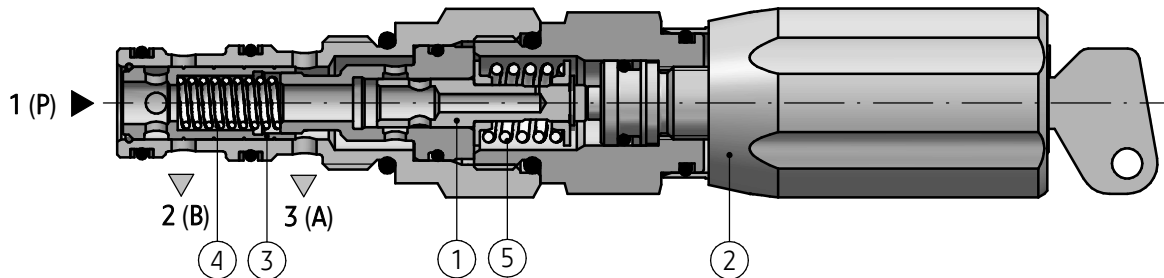
APPLICATION

3-way cartridge flow control valve type UDUD6... is intended for independent from pressure on supply side of (pump) setting flow rate in hydraulic system. It allows to control the velocity of the actuator movement – mostly of the piston rod or hydraulic motor. Supply stream (port 1) is divided into priority stream directed to port 3 and residual discharged by port 2 to run-off or supply other receiver. Flow control valve type UDUD6... is intended for assembly in connection cavities in hydraulic blocks in any working position.



DESCRIPTION OF OPERATION

UDUD6 - 02/20 - 3 M1



The principle of valve operation is to divide the supply stream (port 1) into priority stream directed to port 3 and residual stream (port 2).

Flow control valve type UDUD6... consists of two principal valves: throttle and differential.

Throttle valve measures, and consists of a choke (1) made in form of spool with appropriately selected holes, and setting (2). The spring (5) enables the return movement of the choke (1) in case the valve setting is reduced. Differential valve acts as control valve and consists of spool (3) and spring (4). Hydraulic fluid flowing through the valve from port 1 to 3 causes drop

of pressure on the choke (1), which depends on setting and current flow value through the choke (1). Pressure difference before and after choke (1) acts on spool (3) and after overcoming spring preload (4) causes opening the way from port 1 to port 2 enabling residual stream flow. Spool (3) gets position of balance at the moment when pressure drop on measuring throttle (1) is corresponding to spring preload (4). It means that stream value flowing through port 3 is constant, independently from pressure on supply side (port 1), and is dependent only on position of valve setting.

TECHNICAL DATA

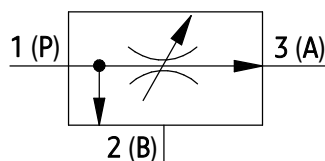
Hydraulic fluid	mineral oil		
Required fluid cleanliness class	ISO 4406 class 20/18/15		
Nominal fluid viscosity	37 mm ² /s at temperature 55 °C		
Viscosity range	2,8 up to 380 mm ² /s		
Fluid temperature range (in a tank)	recommended	40°C up to 55°C	
	max	-20°C up to +70°C	
Ambient temperature range	- 20°C up to +70°C		
Max operating pressure	35 MPa		
Min operating pressure	1,8 MPa		
Max flow rate	valve version (flow range)	flow in port 1 (P)	flow in port 3 (A)
	UDUD6.../15...	40 dm ³ /min	15 dm ³ /min
	UDUD6.../20...	40 dm ³ /min	20 dm ³ /min
	UDUD6.../25...	40 dm ³ /min	25 dm ³ /min
Weight	valve version (adjustment element)	adjustment element	valve weight
	UDUD6.../...1...	hand knob	0,4 kg
	UDUD6.../...2...	set screw	0,3 kg
	UDUD6.../...3...	lockable hand knob	0,5 kg

INSTALLATION AND OPERATION REQUIREMENTS

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Only fully functional and operational valve must be used. 2. During the operation one must maintain the recommended fluid viscosity acc. to requirements defined in this Data Sheet - Operation Manual 3. In order to ensure failure free and safe operation the following must be checked: <ul style="list-style-type: none"> • proper working of the valve • cleanliness of the hydraulic fluid 4. Due to heating of valve body to high temp., the valve shall be placed in such way to eliminate the risk of accidental contact with the valve body during | <ol style="list-style-type: none"> 5. operation or suitable covers shall be applied acc. to European standards PN - EN ISO 13732 - 1 and PN - EN 4413 6. In order to provide proper tightness of the valve connection to the hydraulic system, one should keep the dimensions of the sealing rings, tightening torques values and valve operation parameters, specified in this Data Sheet - Operation Manual. 7. A person that operates the valve must be thoroughly familiar with this Data Sheet - Operation Manual. |
|--|--|

DIAGRAMS

Graphic symbol of flow control valve type UDUD6...

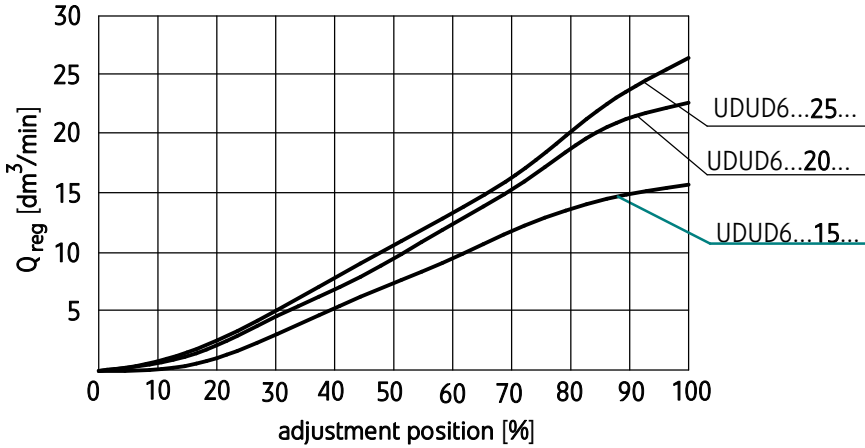


PERFORMANCE CURVES

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

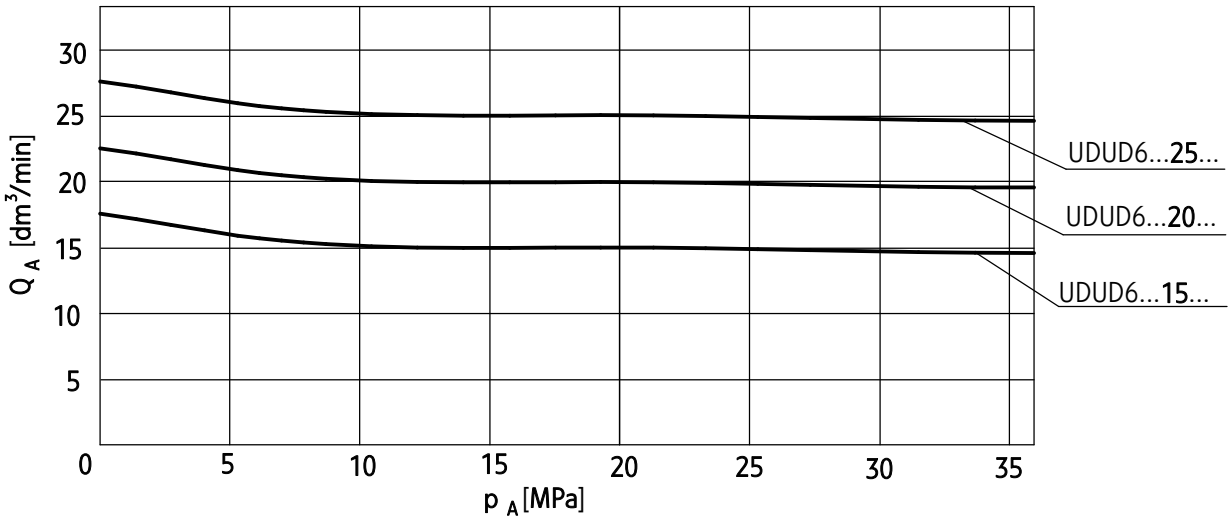
Performance curves for flow rate depending on adjustment position

performance curves for regulated flow Q_{reg} depending on **adjustment position** for valve type UDUD6... and for various flow rates.



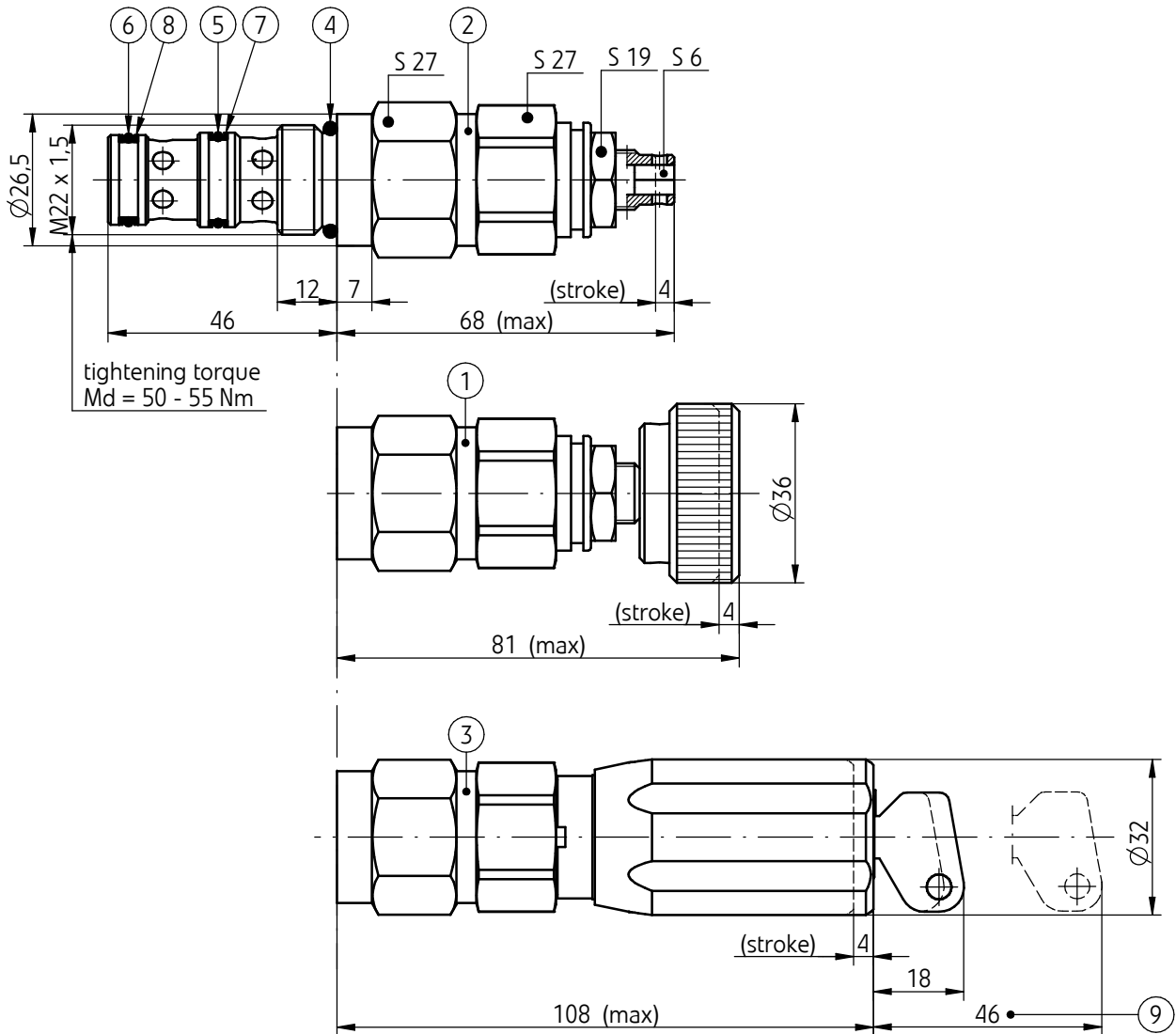
Performance curves of stable flow rate

performance curves of flow Q_A depending on pressure p_A for valve type UDUD6... and for various flow rates



OVERALL AND CONNECTION DIMENSIONS

version UDUD6...M1...



- 1 - Adjustment 1 (hand knob)
- 2 - Adjustment 2 (set screw with hexagon socket)
- 3 - Adjustment 3 (lockable hand knob)
- 4 - Sealing ring **o-ring 18 x 2,65** - pcs 1/set
- 5 - Sealing ring **o-ring 15,6 x 1,78** - pcs 1/set
- 6 - Sealing ring **o-ring 15 x 1,8** - pcs 1/set
- 7 - Back-up ring **19 x 16,2 x 0,7** - pcs 2/set
- 8 - Back-up ring **18 x 15,2 x 0,7** - pcs 2/set
- 9 - Space required to remove the key from the lock of the adjustment - item 3

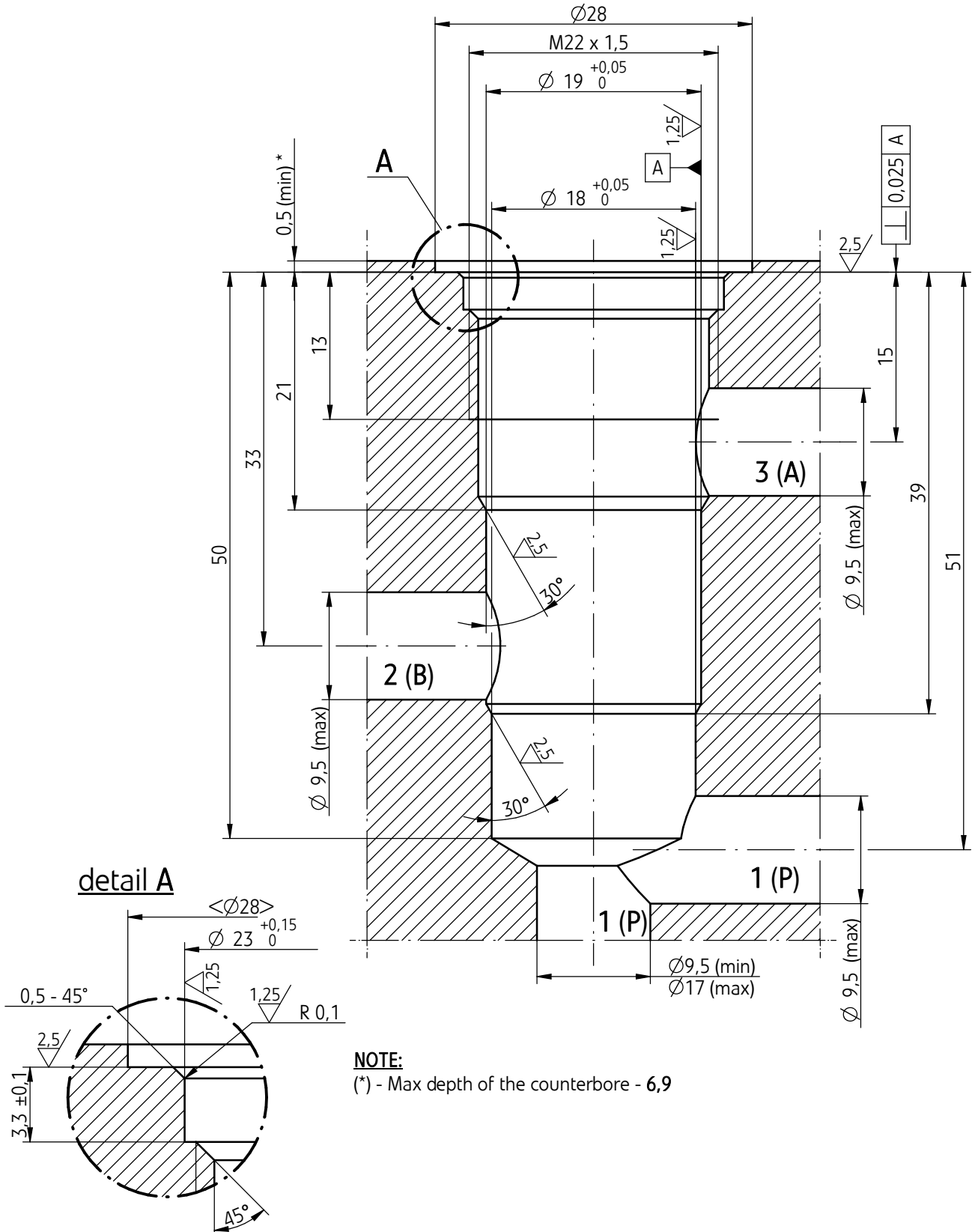
OVERALL AND CONNECTION DIMENSIONS

version UDUD6...M1...

cavity M-06-3 (M22 x 1,5; 3-way)

tightening torque 50 - 55 Nm

$\text{⊘} \text{ } \varnothing 0,025$ - refers to all diameters of the main hole and chamfers



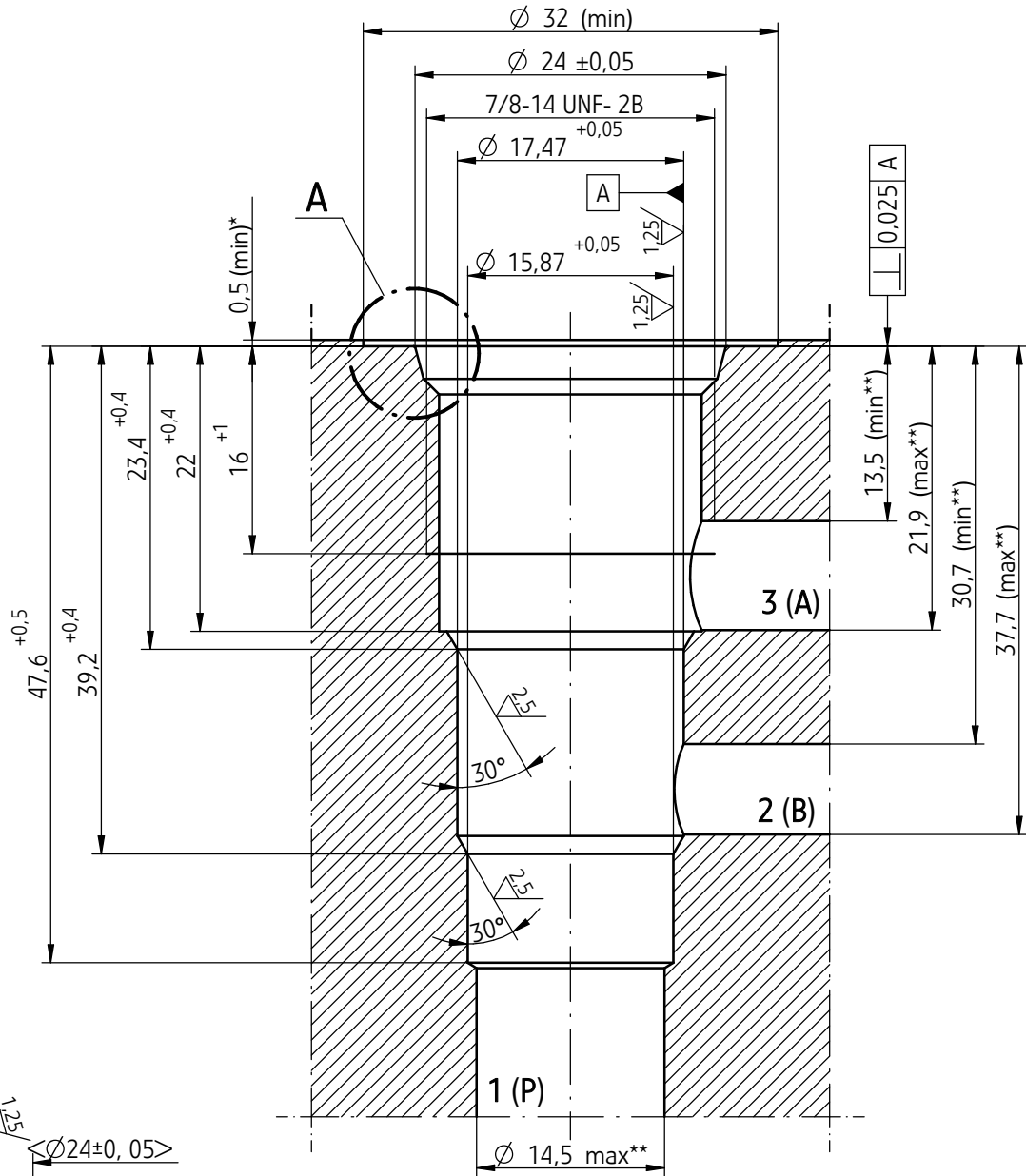
OVERALL AND CONNECTION DIMENSIONS

version UDUD6...U1...

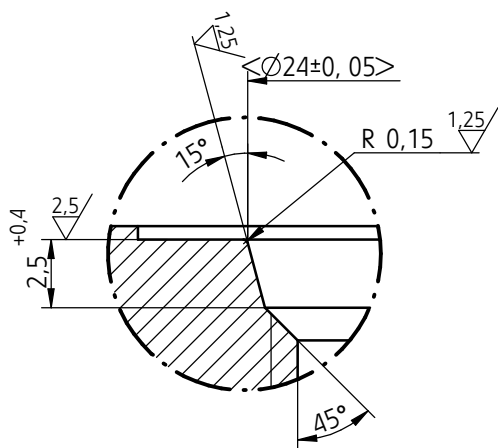
cavity U-06-3 (7/8 -14UNF - 2B; 3-way)

tightening torque 50 - 55 Nm

$\text{⊙} \text{ } \varnothing 0,025$ - refers to all diameters of the main hole and chamfers



detail A



NOTE:

(*) - Max depth of the counterbore - 7,4

(**) - Diameter of ports: 1 (P), 2 (B), 3 (A) located on circuit within specified limit dimensions - min \varnothing 6,5

HOW TO ORDER

UDUD	6	+	/	+				*
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Nominal size (NS) NS6	= 6
Series number (00 - 09) - connection and installation dimensions unchanged	= 0X
series 02	= 02
Flow range up to 15 dm³/min	= 15
up to 20 dm³/min	= 20
up to 25 dm³/min	= 25
Adjustment element hand knob	= 1
set screw with hexagon socket	= 2
lockable hand knob	= 3
Type of connection cavity M22 x 1,5	= M1
cavity 7/8-14 UNF - 2B	= U1
Sealing NBR (for fluids on mineral oil base)	= no designation
FKM (for fluids on phosphate ester base)	= V
Further requirements in dear text (to be agreed with the manufacturer)	

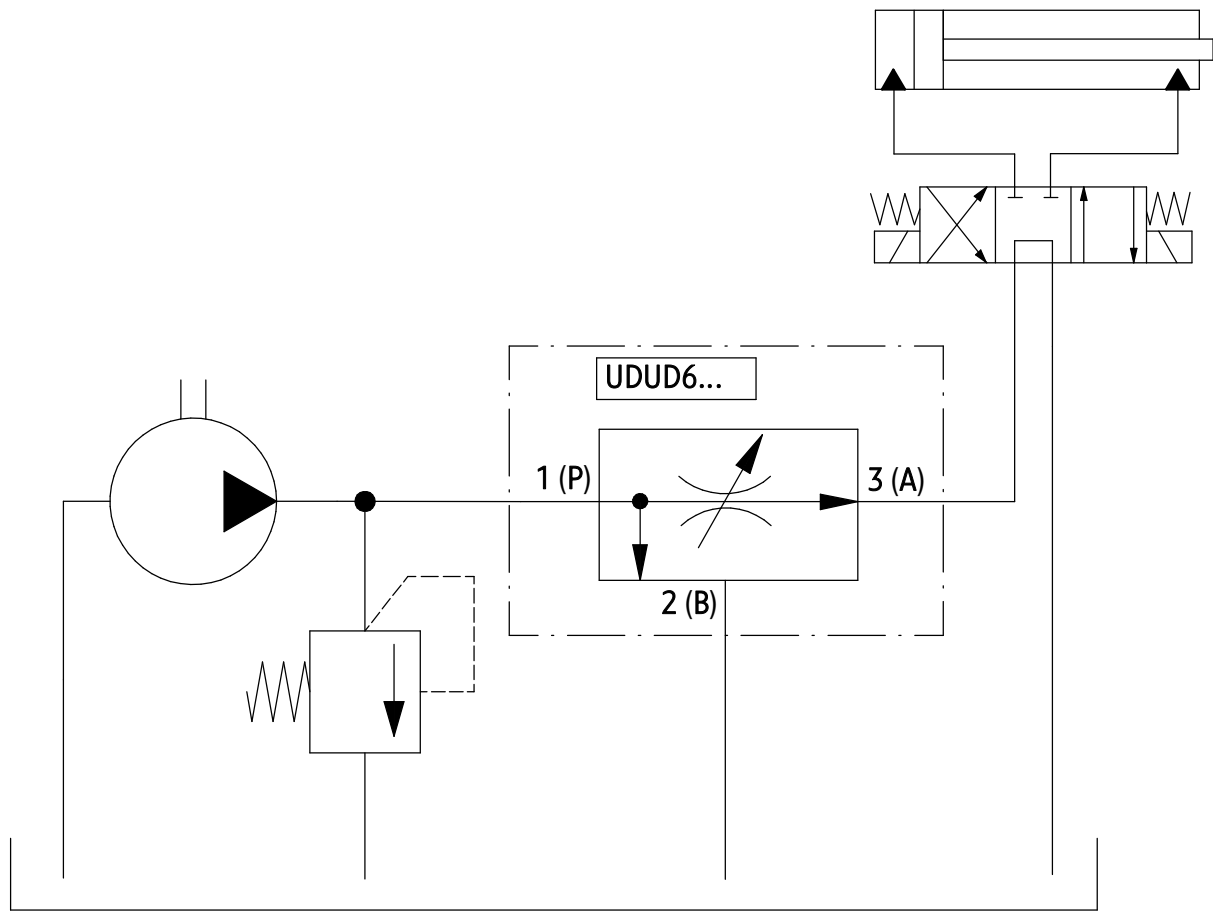
NOTES:

The flow control valve should be ordered according to the above coding.

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

Coding example: UDUD6 - 02/20 - 2 M1

**EXAMPLE OF APPLICATION IN
HYDRAULIC SYSTEM**



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