



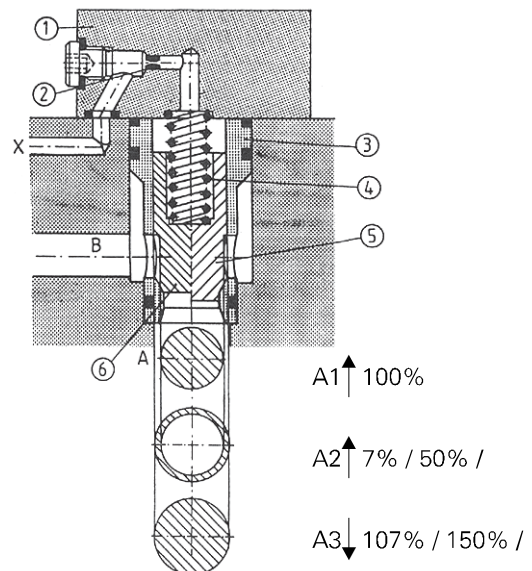
2/2 way cartridge valve type URZS 16 can be used to build hydraulic systems as a pilot operated check valve or by combination several elements as a multiple directional control block.

## DESCRIPTION OF OPERATION

2/2 way cartridge valves - inserts comprise the cartridge assembly and the cover 1 with the control bores. The cartridge assembly is composed of the sleeve 3, the spring 4 and poppet with an optional dumping nose 5 or without it 6.

The valve poppet is held on its seat by means of the spring 4. There is free flow from A to B or reversely from B to A. The valve poppet is graded, so that there are three important surfaces for the operation. The area of the seat A1 is assumed as 100 %. The annulus area A2, resulting from the grading is 7 % or 50 % of area A1, depending on the version. The area ratio A1 : A2 is therefore either 14.3 : 1 or 2 : 1. The area A3 is A1 + A2 and can be either 107 % or 150 % of area A1. The area A3 remains unchanged. When the annulus area changes, then the surface area A1, which is regarded as 100 % also changes. The valve opens in both flow directions ( port X is unpressurized ) if surface A3 is not affected by pressure force affecting the adequate surfaces A1 and A2 exceeds the spring force. If control pressure affects surface A3, the valve poppet is pushed onto its seat, irrespective of the spring force.

The valve may be opened by unloading surface A3 or by suitably high pressure in port A or B. An orifice 2 fitted in port X allows to select the opening curve and the valve opening time.

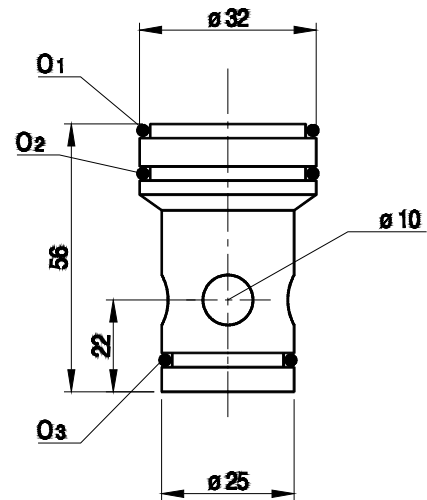


## TECHNICAL DATA

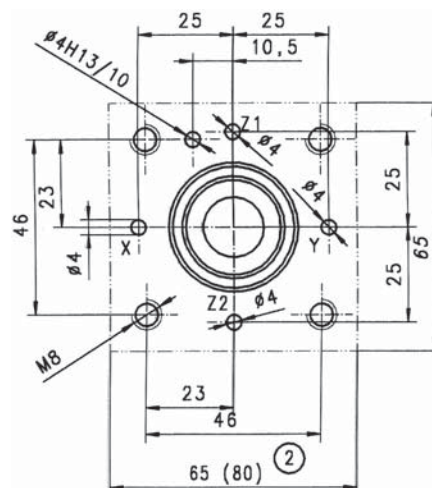
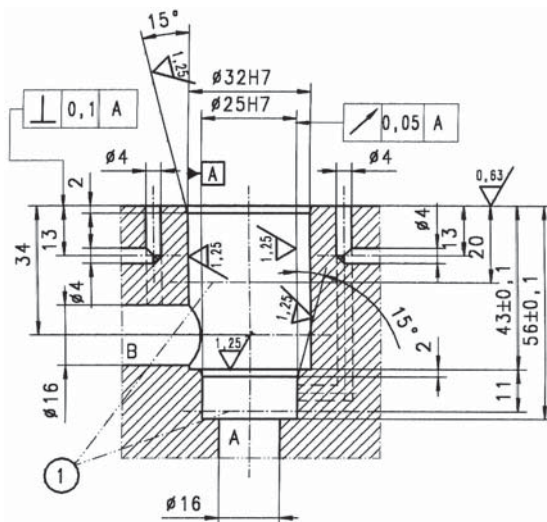
Hydraulic fluid	Mineral oil or phosphate ester
Working pressure at port A, B, X	up to 42 MPa
Maximum flow	140 dm <sup>3</sup> /s
Optimum working temperature ( fluid in a tank )	313 - 328 K
Fluid temperature range	243 - 343 K
Nominal fluid viscosity	37 mm <sup>2</sup> /s at the temperature of 328 K
Viscosity range	2.8 to 380 mm <sup>2</sup> /s
Required filtration	16 μm
Recommended filtration	10 μm

## OVERALL DIMENSIONS FOR URZS 16

O<sub>1</sub> - O-ring 26,2 × 3 - 1 piece  
 O<sub>2</sub> - O-ring 27,3 × 2,4 - 1 piece  
 O<sub>3</sub> - O-ring 20,3 × 2,4 - 1 piece  
 Weight of URZS 16 - 0.2 kg



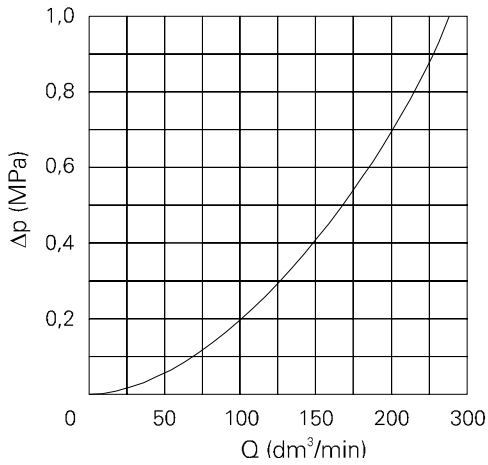
## VALVE SEAT DIMENSIONS FOR URZS 16



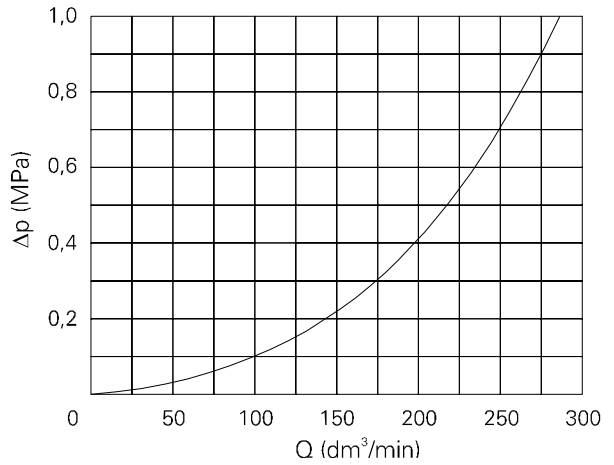
1 - fit depth  
 2 - for ULZS 16 WE

Cover is mounted to the valve seat by means of 4 bolts M8 x 40 - 10,9 PN - 87 / M-82302 (DIN 912 - 10,9)  
 Tightening torque  $M_d=32$  Nm.  
 The mounting bolts must be ordered separately.

**PERFORMANCE CURVES FOR URZS 16** measured at  $v = 41 \text{ mm}^2/\text{s}$  and  $T = 323 \text{ K}$

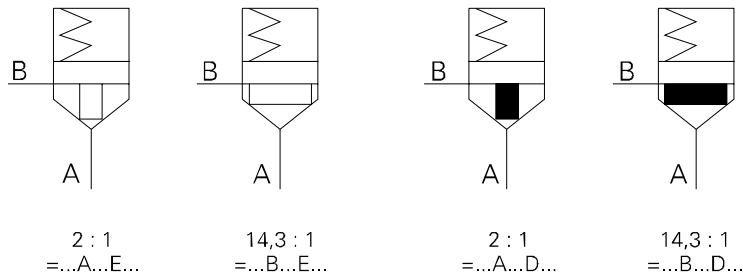


With dumping nose



Without dumping nose

**HYDRAULIC SCHEME FOR URZS 16**



**HOW TO ORDER URZS 16**

Orders coded in the way showed below should be forwarded to the manufacturer.



**Area ratio**  
 2 : 1 ( 50 % ) = A  
 13.4 : 1 ( 7 % ) = B

**Cracking pressure**  
 0 MPa ( without spring ) = 00  
 0.05 MPa = 05  
 0.10 MPa = 10  
 0.20 MPa = 20  
 0.40 MPa = 40

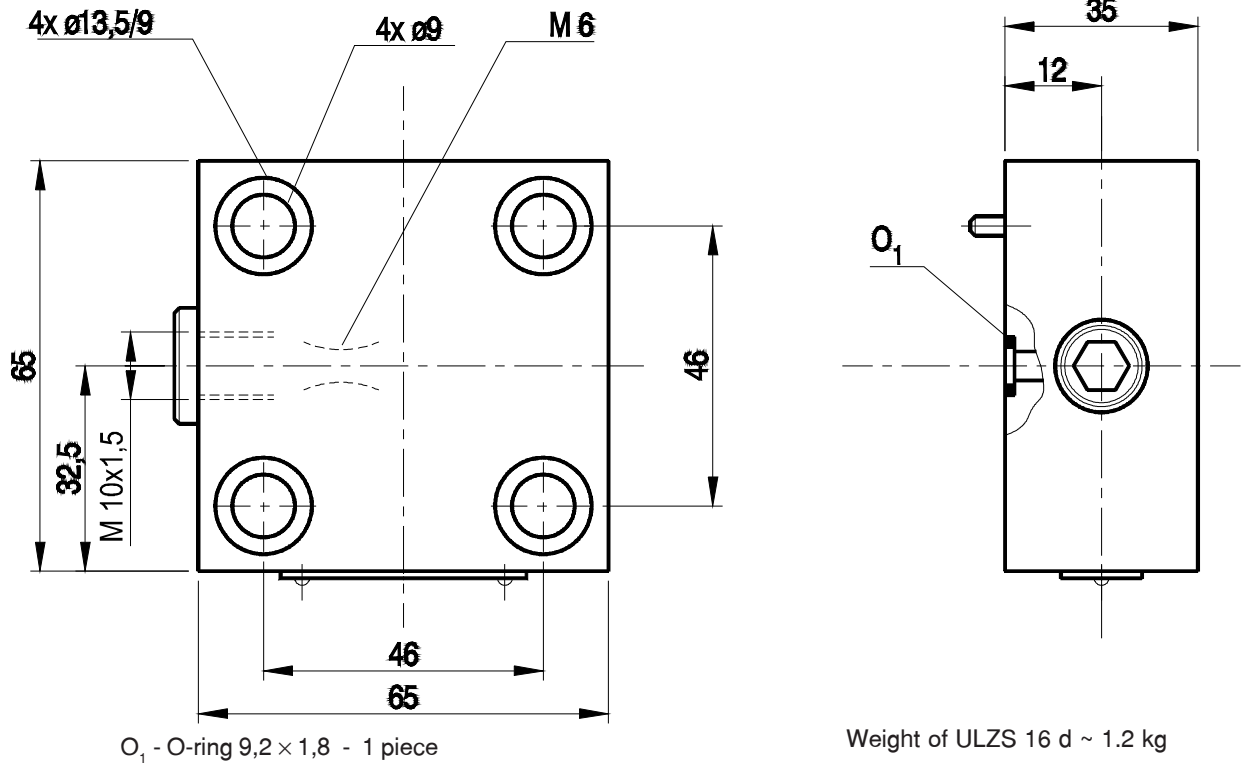
**Valve poppet**  
 without dumping nose = E  
 with dumping nose = D

Further requirements in clear text  
 ( to be agreed with the manufacturer )

**Sealing**  
 Mineral oil = with no code  
 Phosphate ester = V

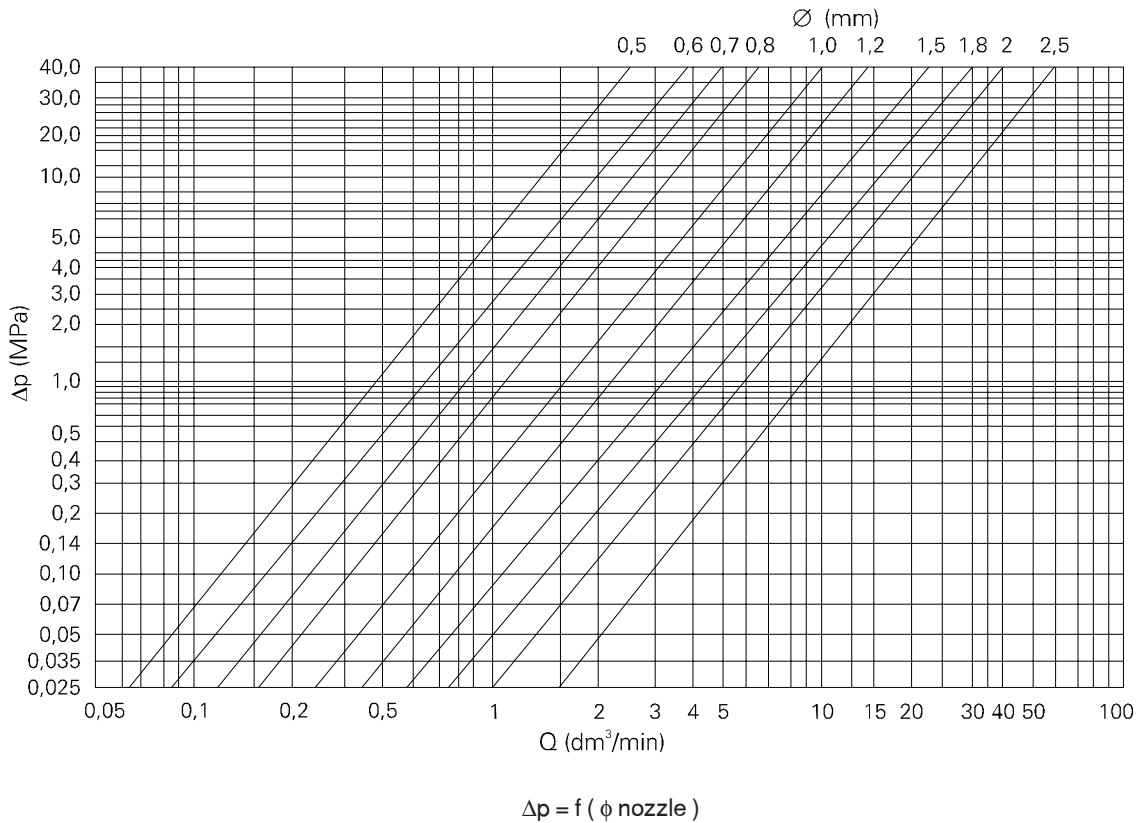
**Series number**  
 10 = 10  
 (10 - 19) - installation and connection dimensions unchanged

**1. COVER ULZS 16 D**  
**DIMENSIONS FOR COVER ULZS 16 D**

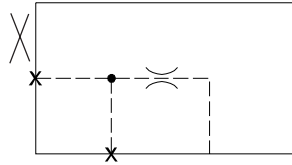


Mounting the cover by means of 4 bolts M8 × 50-10.9 PN - 87/M-82302 ( DIN 912-10.9 ).  
 Tightening torque  $M_d = 32 \text{ Nm}$   
 Mounting bolts must be ordered separately.

**OPERATING CURVES FOR COVER ULZS 16 D**



## DIAGRAM FOR ULZS 16 D



## HOW TO ORDER ULZS 16 D

Orders coded as below should be forwarded to the manufacturer.



**Series number**  
 10 = 10  
 (10 - 19) - Connection and mounting dimensions unchanged

Further details in clear text (to be agreed with the manufacturer)

**Control port**  
 Without nozzle = no code  
 With nozzle = X

**Sealing**  
 Mineral oils. = no code  
 Phosphate ester = V

**Nozzle diameter**

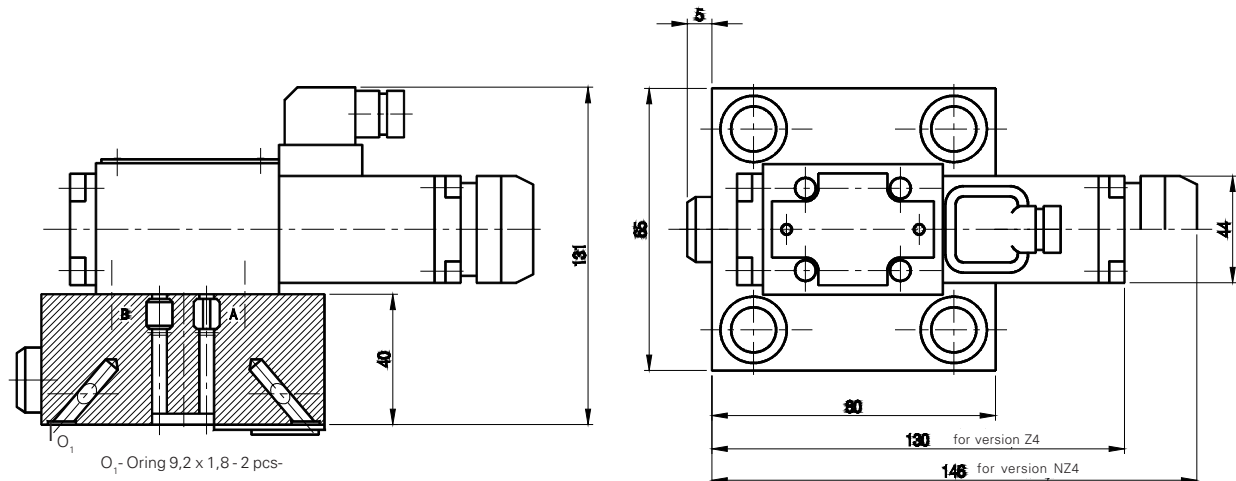
Dia. 0.5 mm	= 05
Dia. 0.6 mm	= 06
Dia. 0.7 mm	= 07
Dia. 0.8 mm	= 08
Dia. 1.0 mm	= 10
Dia. 1.2 mm	= 12
Dia. 1.5 mm	= 15
Dia. 2.0 mm	= 20
Dia. 2.5 mm	= 25

In case of ordering the cover together with the valve, please, quote the codes of the both elements.

Example : ULZS 16D / 10.F - X - 07 + URZS 16 - A - 10 - E - 10

## 2. COVER ULZS 16 WE

### OVERALL DIMENSIONS FOR COVER ULZS 16 WE



# HOW TO ORDER ULZS 16 WE

Orders coded as below should be forwarded to the manufacturer.

<b>ULZS 16 WE</b>		/								*
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**De - energized position**  
 closed = A  
 open = B

**Series number**  
 10 = 10  
 (10 - 19) - connection and mounting dimensions unchanged

**Control port**  
 Without nozzle = no code  
 With nozzle at port „A“ (only for valve A) = A  
 With nozzle at port „B“ (only for valve B) = B  
 With nozzle at port „T“ = T  
 With nozzle at port „P“ = P

**Nozzle diameter**  
 Dia. 0.6 mm = 06  
 Dia. 0.7 mm = 07  
 Dia. 0.8 mm = 08  
 Dia. 1.0 mm = 10  
 Dia. 1.2 mm = 12  
 Dia. 1.5 mm = 15  
 Dia. 2.0 mm = 20  
 Dia. 2.5 mm = 25

Further requirements in clear text (to be agreed with the manufacturer)

**Sealing**  
 Mineral oils = with no code  
 Phosphate ester = V

**Electrical connection**  
 Plug-in connector = Z4  
 Plug-in connector with lamp = Z4L

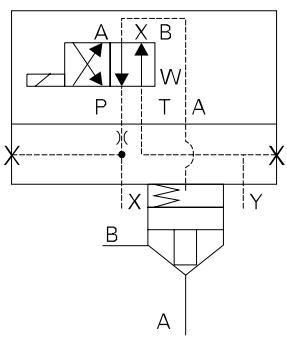
**Version**  
 without emergency operator = no code  
 with emergency operator = N

**Voltage**  
 AC U = 220 V- 50 Hz = W220 - 50  
 AC U = 110 V- 50 Hz = W110 - 50  
 DC U = 110 V = G 110  
 DC U = 24 V = G 24

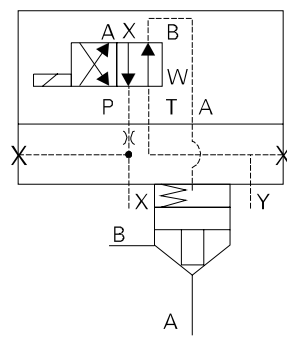
**Control valve version**  
 normal = no code  
 without return spring = O  
 with detent = OF

In case of ordering the cover together with the valve, please, quote the codes of the both elements.

Example : ULZS 16 WEA / 10 - A - 07 W220 - 50 Z4 V + URZS 16 - A -10 - E - 10

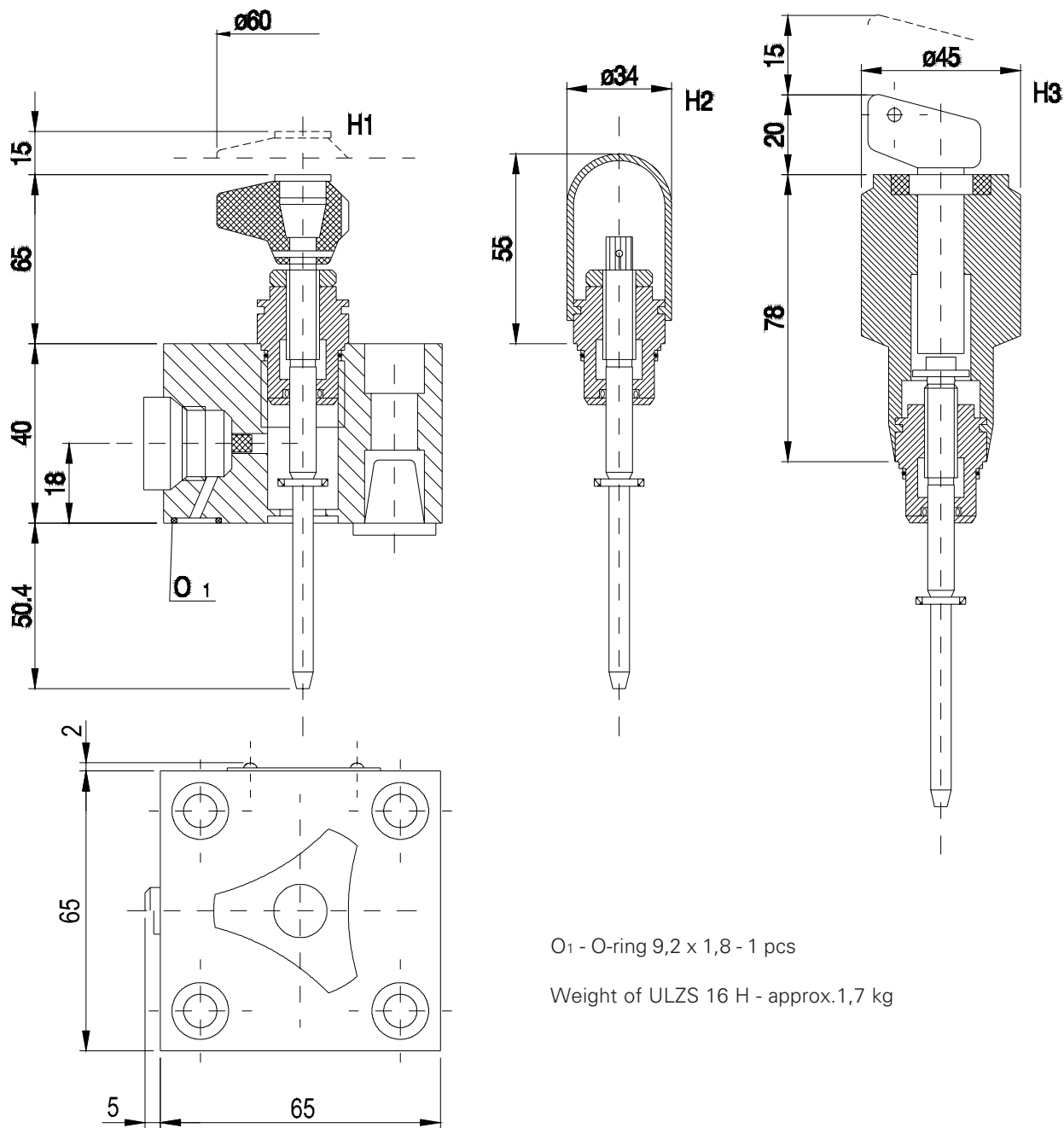


**ULZS - 16WEA 10/P...**



**ULZS - 16WEB 10/P...**

**3. COVER ULZS - 16 H**  
**OVERALL DIMENSIONS FOR COVER ULZS 16 H**

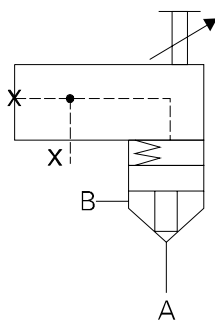


O<sub>1</sub> - O-ring 9,2 x 1,8 - 1 pcs

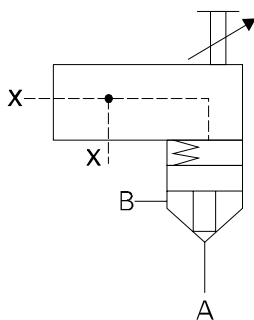
Weight of ULZS 16 H - approx.1,7 kg

**DIAGRAMS FOR ULZS 16 H**

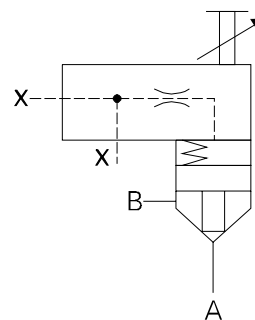
**ULZS - 16 H.../...**



**ULZS - 16 H.../F...**



**ULZS - 16 H.../FX...**



## HOW TO ORDER ULZS 16 H

Orders coded as below should be forwarded to the manufacturer.

<b>ULZS 16</b>		/				*
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<b>Adjustment</b>	
Adjustment 1	= H1
Adjustment 2	= H2
Adjustment 3	= H3

Further requirements in clear text (to be agreed with the manufacturer)
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<b>Series number</b>	
10	= 10
(10 - 19) - connection and mounting dimensions unchanged	

<b>Sealing</b>	
Mineral oils	= no code
Phosphate ester	= V

<b>Pilot supply</b>	
Internal pilot supply	= no code
External pilot supply	= F

<b>Nozzle diameter</b>	
Dia. 0.5 mm	= 05
Dia. 0.6 mm	= 06
Dia. 0.7 mm	= 07
Dia. 0.8 mm	= 08
Dia. 1.0 mm	= 10
Dia. 1.2 mm	= 12
Dia. 1.5 mm	= 15
Dia. 2.0 mm	= 20
Dia. 2.5 mm	= 25

<b>Control port</b>	
Without nozzle	= no code
With nozzle	= X

In case of ordering the cover together with the valve, please, quote the codes of the both elements.

Example : ULZS 16 H1 10/ FX - 07 + URZS 16 - A -10 - E - 10

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