Hengli®

4.11

Sandwich flow control valve

Type Z2FRM6

Flow control valve

Type 2FRM6K

Size 6
Up to 315 bar
Up to 32 L/min

Contents

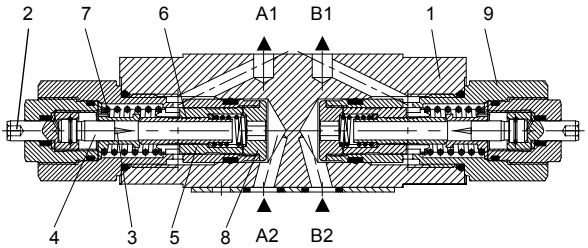
Features

- Sandwich plate valve
- Porting pattern to DIN 24 340 Form A, without locating pin hole (standard)
- Porting pattern to ISO 4401 and CETOP–RP 121 H
- With 1 or 2 flow control cartridges
- Adjustment element with internal hexagon

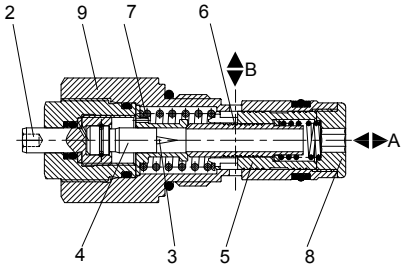
Function and configuration

The valve type Z2FRM is a 2-way flow control valve of sandwich plate design and type 2FRM6K is a 2-way flow control cartridge valve. The former is used for maintaining a constant flow and is independent of the pressure and temperature.
The valve basically consists of a housing (1) and one or two flow control cartridges type 2FRM6K (9).
The throttling of the flow from port A2/B2(A) to portA1/B1(B) occurs at the throttle area (3). The throttle bolt (4) is driven by the adjustment element (2). To maintain a constant flow in port A1/B1(B) which is independent of pressure, a pressure compensator (5) is fitted downstream of the throttle area (3).
The pressure compensator (5) is pressed against the plug (8) , via a compression spring (7). When there is no oil flow, pressure compensator (5) keeps in open position. If there is flow through the valve then the pressure in port A2/B2(A) acts on the pressure compensator (5). Then the pressure compensator (5) moves until the forces are balanced. If the pressure in port A2/B2(A) increases, then the pressure compensator (5) moves in the closing direction until the forces are balanced again. Due to the continuous compensation by the pressure compensator, a constant flow is achieved.
Free flow from port A1/B1(B) to port A2/B2 (A) is via check valve (6).

Type Z2FRM 6 C...
(meter-out flow control)



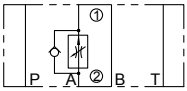
Flow control valve
Type 2FRM 6 K...



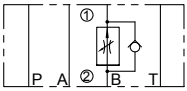
Symbols (① =valve side ② = sub-plate side)

· Sandwich flow control valve Type Z2FRM6

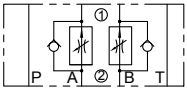
Type Z2FRM 6 A...
(meter-out flow control)



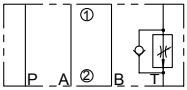
Type Z2FRM 6 B...
(meter-out flow control)



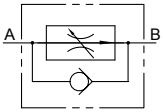
Type Z2FRM 6 C...
(meter-out flow control)



Type Z2FRM 6 T...
(port T flow control)



· Flow control valve Type 2FRM6K...



Note: Meter-in flow control refer to page 06/08.

Ordering code

· Sandwich flow control valve Type Z2FRM6

Z2FRM	6		B	2	– L2X /	R		*

Sandwich plate 2-way
Flow control valve

Size 6 = 6

Flow control function
(meter-out control) in
Port A = A
Port B = B
Ports A and B = C
Port T [1] = T

Without closing external of the
pressure compensator = B

Adjustment element with internal hexagon =2

L2X= Series L20 to L29
(L20 to L29: unchanged installation and
connection dimensions)

6Q = Flow A to B up to 6.0 L/min
32Q = Flow A to B up to 32.0 L/min

R = With check valve

No code = NBR seals
V = FKM seals

Further details in clear text

· Flow control valve Type 2FRM6K

2FRM	6	K	2	– L1X /	R		*

Flow control valve

Size 6 = 6

Insert cartridge =K

Internal hexagon adjustment unit =2

Series L10 to L19 = L1X
(L10 to L19: unchanged installation
and connection dimensions)

6Q = Flow A to B up to 6.0 L/min
32Q = Flow A to B up to 32.0 L/min

R = With check valve

No code = NBR seals
V = FKM seals

Further details in clear text

Technical data

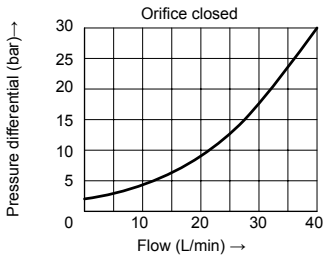
		Sandwich flow control valve type Z2FRM 6	Flow control valve type 2FRM6K
Mounting type		Flat mounting interface	Install position:optional
Connection type		Indirect connection via a subplate or block, porting pattern to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H	
Weight	kg	1.3 (flow control function in ports A, B or T)	0.2
		1.5 (flow control function in ports A and B)	
Nominal pressure	bar	315	
Fluid		Mineral oil,Phosphoric acid ester	
Fluid temperature range	℃	-20 to +80	
Viscosity range	mm^2/s	10 to 800	
Flow range	L/min	0.05~6; 0.25~32	
Degree of contamination		Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406	
Min.pressure drawdown	bar	18 (Flow control valve type 2FRM6K)	
Pressure stability to ΔP=315 bar	%	±3 (Qmax)	

04

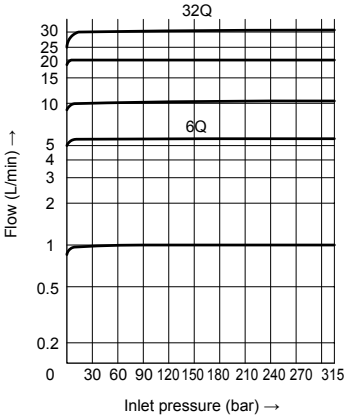
Characteristic curves (Measured at ϑ_{oil}=40℃ ±5℃ , using HLP46)

· Sandwich flow control valve Type Z2FRM6

ΔP-Q-characteristic curve via check valve

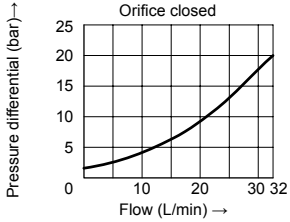


Flow Q in relation to the inlet pressure P



· Flow control valve Type 2FRM6K

ΔP-Q-characteristic curve via check valve(B→A)

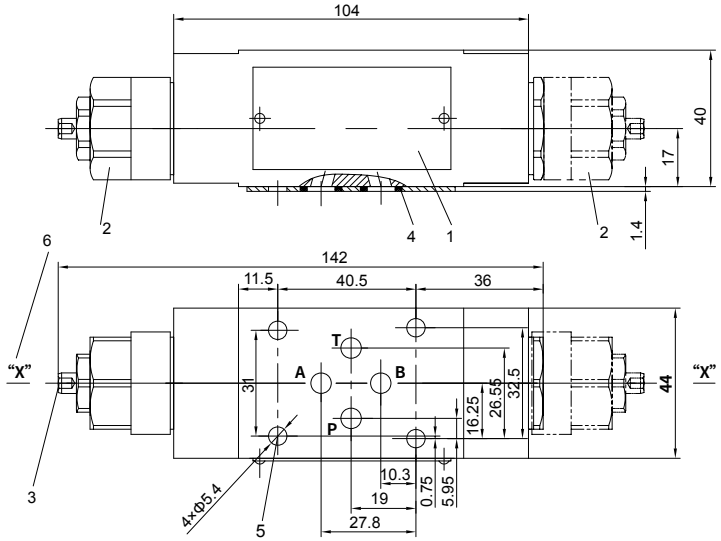


Unit dimensions:

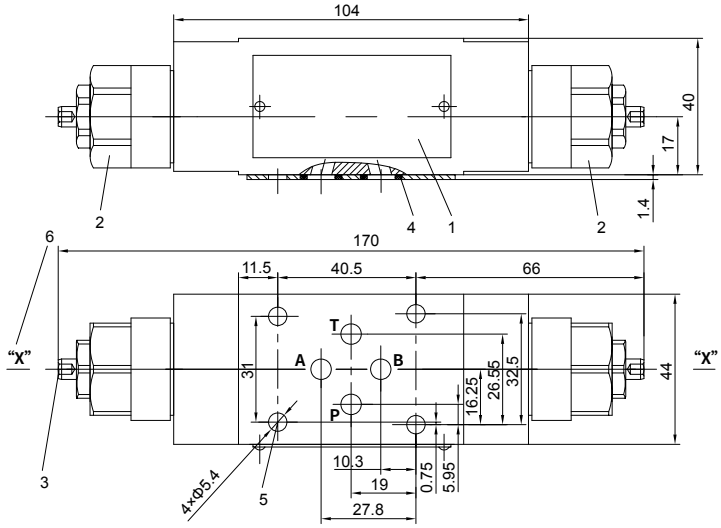
(Dimensions in mm)

· Sandwich flow control valve Type Z2FRM6

Type Z2FRM6A... and Z2FRM 6 B...



Type Z2FRM 6 C...

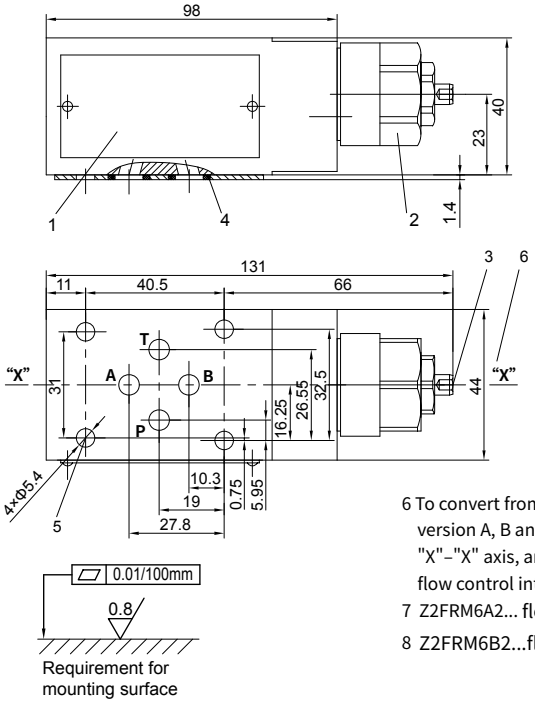


Unit dimensions:

(Dimensions in mm)

· Sandwich flow control valve Type Z2FRM6

Type Z2FRM 6 T



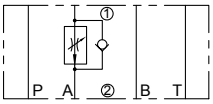
1 Name plate
2 Flow control cartridge type 2FRM6K hexagon 27A/F, M_A = 50 Nm
3 Adjustment element with internal hexagon 3A/F
4 O-rings 9.25×1.78 (Ports A2, B2, P2, T2)
5 Valve fixing holes
Valve fixing screws M5×** GB/T70.1-10.9 tightening torque M_A = 50 Nm, the screws length accords to the sandwich valves

6 To convert from meter-out into meter-in control for version A, B and C, rotate the component about the "X"–"X" axis, and for version T, convert from Port T flow control into Port P flow control.
7 Z2FRM6A2... flow control in port A
8 Z2FRM6B2...flow control in port B

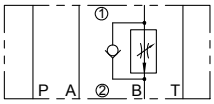
Symbols of rotation the component about the "X"–"X" axis

(① =valve side ② =sub-plate side)

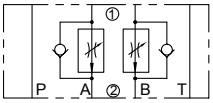
Type Z2FRM 6 A...
(meter-in flow control)



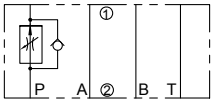
Type Z2FRM 6 B...
(meter-in flow control)



Type Z2FRM 6 C...
(meter-in flow control)



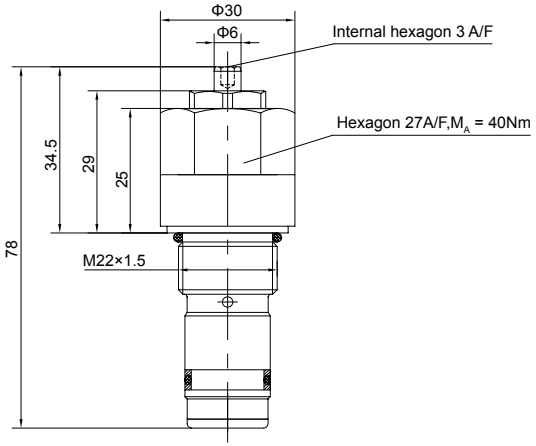
Type Z2FRM 6 T...
(meter-in flow control)



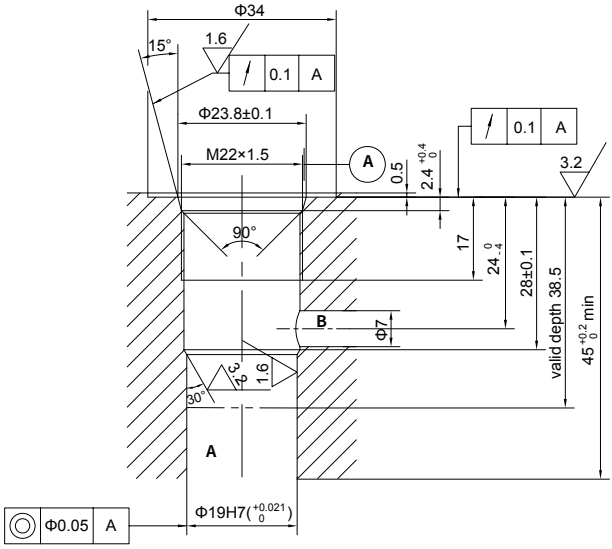
Unit dimensions:

(Dimensions in mm)

· Flow control valve Type 2FRM6K



Insert hole DIN ISO 7789



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Hengli®

4.12

Sandwich flow control valve

Type Z2FRM10

Flow control valve

Type 2FRM10K

Size 10
Up to 210 bar
Up to 60L/min

Contents

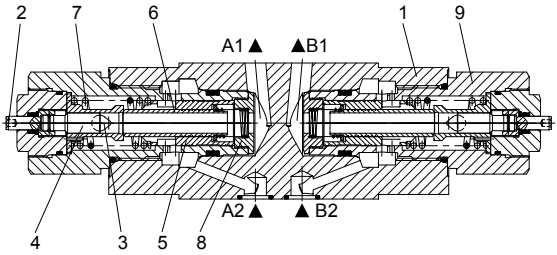
Features

- Sandwich plate valve
- Porting pattern to DIN 24 340 Form A, without locating pin hole (standard)
- Porting pattern to ISO 4401 and CETOP–RP 121 H
- With 1 or 2 flow control cartridges
- Adjustment element with internal hexagon

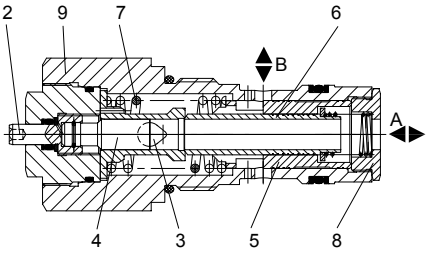
Function and configuration

The valve type Z2FRM10 is a 2-way flow control valve of sandwich plate design and type 2FRM10K is a 2-way flow control cartridge valve. The former is used for maintaining a constant flow and is independent of the pressure and temperature.
The valve basically consists of a housing (1) and one or two flow control cartridges type 2FRM10K (9).
The throttling of the flow from port A1/B1 (A) to port A2/B2 (B) occurs at the throttle area (3). The throttle bolt (4) is driven by the adjustment element (2). To maintain a constant flow in port A2/B2(B) which is independent of pressure, a pressure compensator (5) is fitted downstream of the throttle area (3). The pressure compensator (5) is pressed against the plug (8), via a compression spring (7). When there is no oil flow, pressure compensator (5) keeps in open position. If there is flow through the valve then the pressure in port A1/B1 (A) acts on the pressure compensator (5). Then the pressure compensator (5) moves until the forces are balanced. If the pressure in port A1/B1 (A) increases, then the pressure compensator (5) moves in the closing direction until the forces are balanced again. Due to the continuous compensation by the pressure compensator, a constant flow is achieved.
Free flow from port A2/B2 (B) to port A1/B1 (A) is via check valve (6).

Type Z2FRM 10 C...



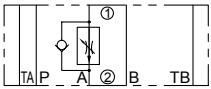
Flow control valve
Type 2FRM 10 K...



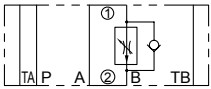
Symbols (① =valve side ② = sub-plate side)

· Sandwich flow control valve Type Z2FRM10

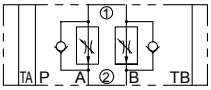
Type Z2FRM 10 A...



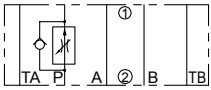
Type Z2FRM 10 B...



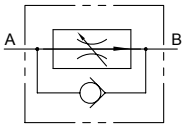
Type Z2FRM 10 C...



Type Z2FRM 10 P...



· Flow control valve Type 2FRM10K...



Ordering code

· Sandwich flow control valve Type Z2FRM10

Z2FRM	10		2	–	L2X	/	60	R		*

- Sandwich flow control valve
- Size 10 = 10
- Flow control function (meter-out control) in
  - Port A = A
  - Port B = B
  - Ports A and B = C
  - Port P = P
- Adjustment element with internal hexagon =2
- L2X = Series L20 to L29 (L20 to L29: unchanged installation and connection dimensions)
- 60Q = Flow A to B up to 60 L/min
- R = With check valve
- No code = NBR seals
- V = FKM seals
- Further details in clear text

· Flow control valve Type 2FRM10K

2FRM	10	K	2	–	L1X	/	60Q	R		*

- Flow control valve
- Size 10 = 10
- Insert cartridge =K
- Internal hexagon adjustment unit =2
- Series L10 to L19 = L1X (L10 to L19: unchanged installation and connection dimensions)
- 60Q = Flow A to B up to 60 L/min
- R = With check valve
- No code = NBR seals
- V = FKM seals
- Further details in clear text

Technical data

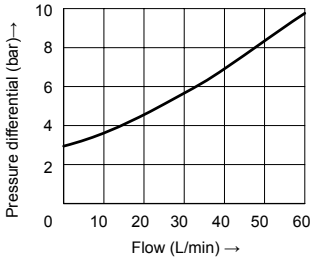
		Sandwich flow control valve type Z2FRM10	Flow control valve type 2FRM10K
Mounting style		Flat mounting interface	Install position:optional
Connection type		Indirect connection via a subplate or block, porting pattern to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H	
Weight	kg	4.7 (flow control function in ports A, B or P)	0.6
		5.3 (flow control function in ports A and B)	
Nominal pressure	bar	210	
Fluid		Mineral oil, Phosphoric acid ester	
Fluid temperature range	°C	-20 to +80	
Viscosity range	mm^2/s	10 to 800	
Flow range	L/min	0.5~60	
Degree of contamination		Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406	
Min.pressure drawdown	bar	18 (Flow control valve type 2FRM6K)	
Pressure stable up to ΔP=210 bar	%	±3 (Qmax)	

Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

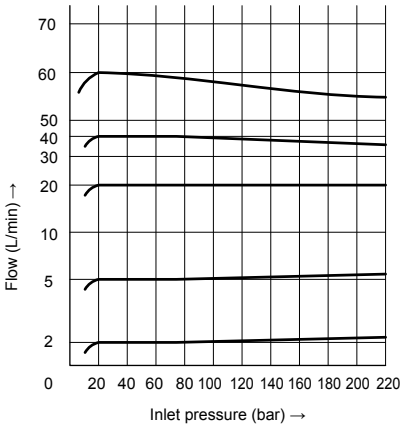
· Flow control valve Type Z2FRM10K

ΔP-Q-characteristic curve via check valve(B→A)

Orifice closed



Flow Q in relation to the inlet pressure P

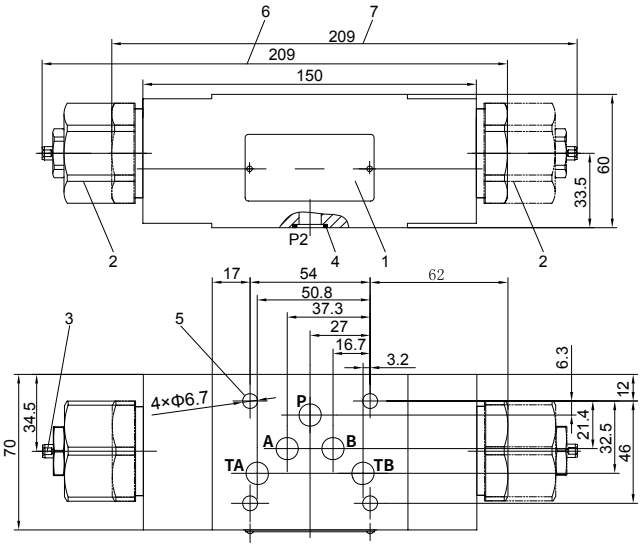


Unit dimensions:

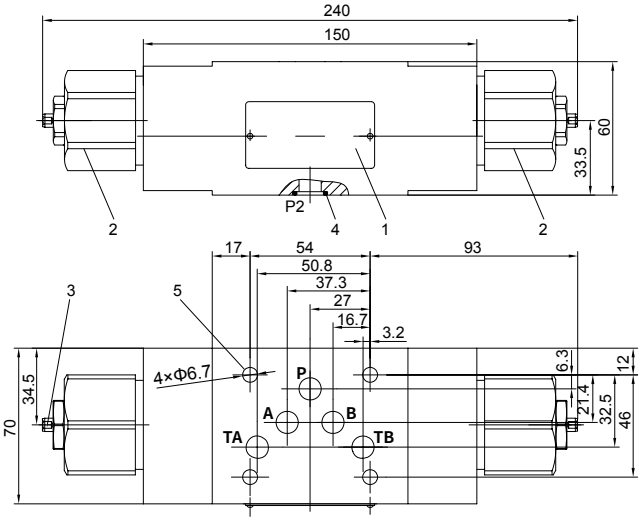
(Dimensions in mm)

· Sandwich flow control valve Type Z2FRM10

Type Z2FRM 10 A... and Z2FRM 10 B...



Type Z2FRM 10 C...

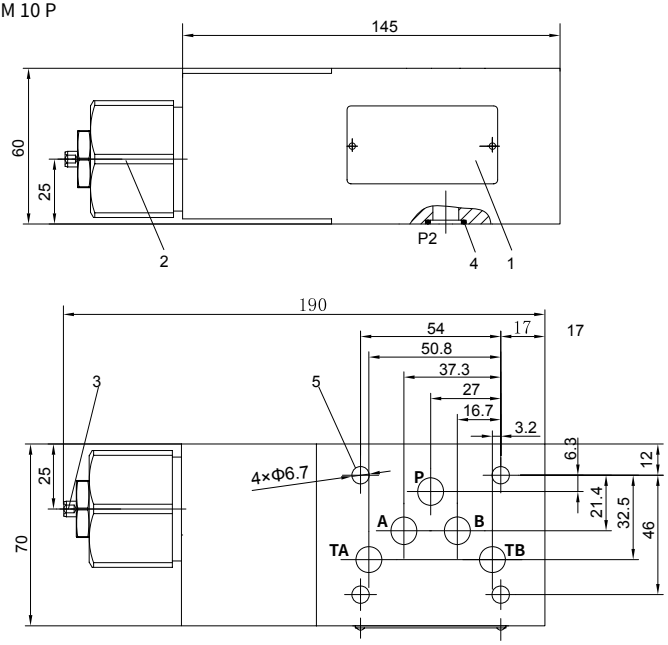


Unit dimensions:

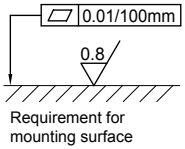
(Dimensions in mm)

· Sandwich flow control valve Type Z2FRM10

Type Z2FRM 10 P



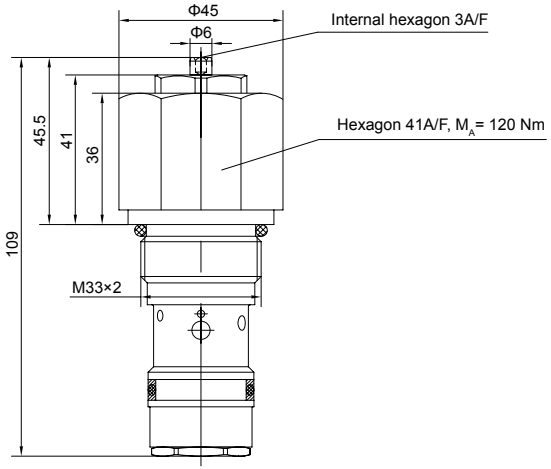
1 Name plate
2 Flow control cartridge type 2FRM10K
hexagon 41A/F, M_A = 120 Nm
3 Adjustment element with internal hexagon 3A/F
4 O-rings 12×2 (Ports A2, B2, P2, TA2, TB2)
5 Valve fixing screws , M6 x ** GB/T70.1-10.9
tightening torque M_A= 15.5 Nm,
the screws length accords to the sandwich valves
6 Z2FRM10A2...flow control in port A
7 Z2FRM10B2...flow control in port B



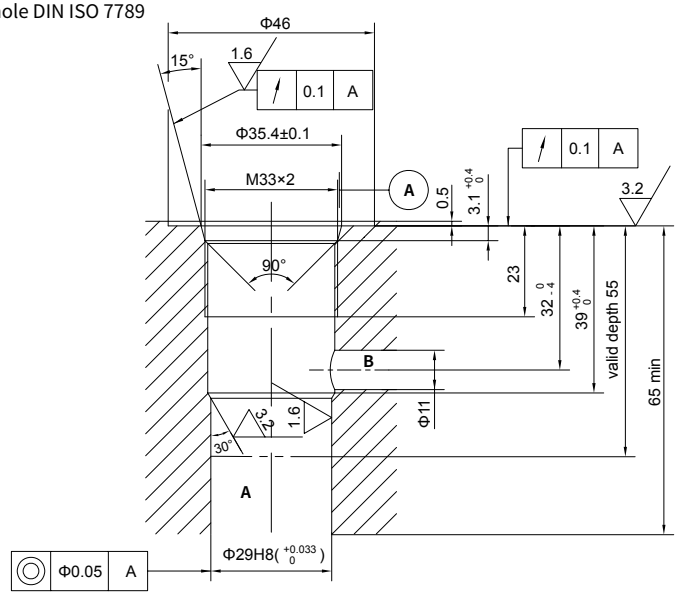
Unit dimensions:

(Dimensions in mm)

· Flow control valve Type 2FRM10K



Insert hole DIN ISO 7789



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