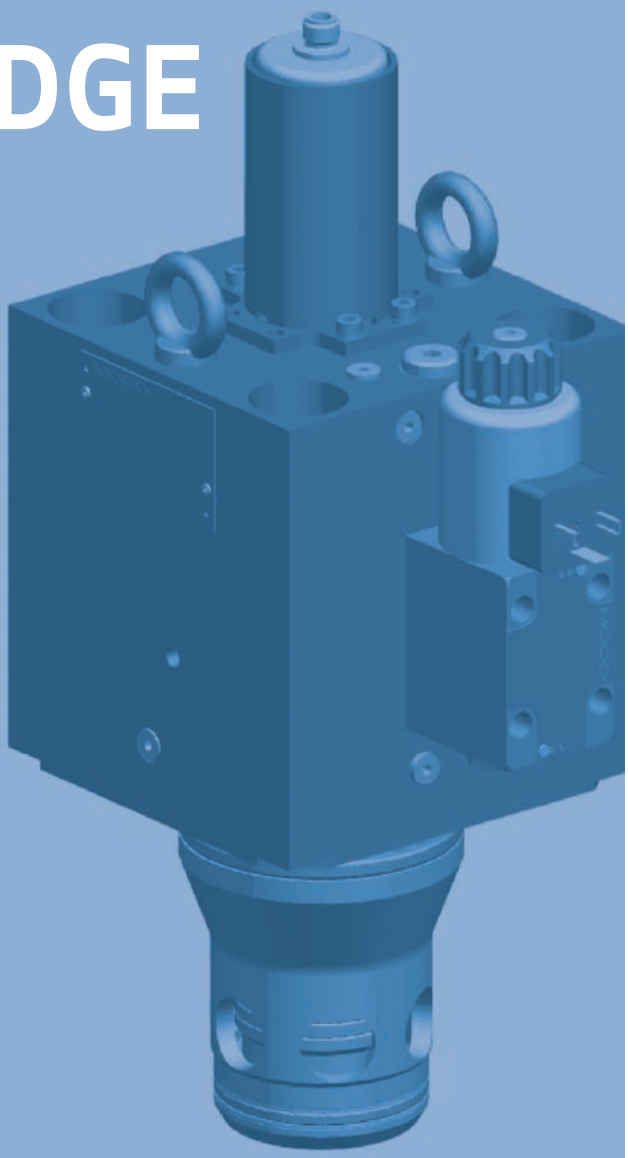
POSITION-MONITORED ACTIVE CARTRIDGE

MODEL RSE - SERIES H



DIMENSIONS ACCORDING TO ISO 7368
NOMINAL SIZE NB16 TO NB100

WHAT MOVES YOUR WORLD

MOOG

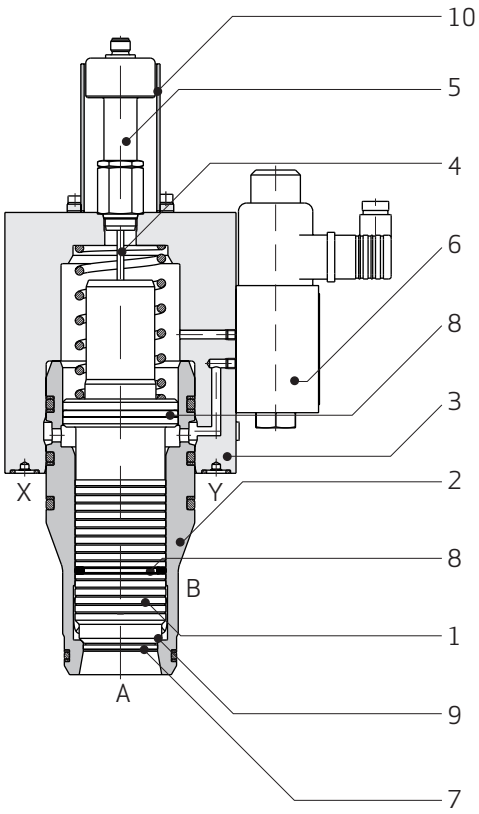
Whenever the highest levels of motion control performance and design flexibility are required, you'll find Moog expertise at work. Through collaboration, creativity and world-class technological solutions, we help you overcome your toughest engineering obstacles. Enhance your machine performance. And help take your thinking further than you ever thought possible.

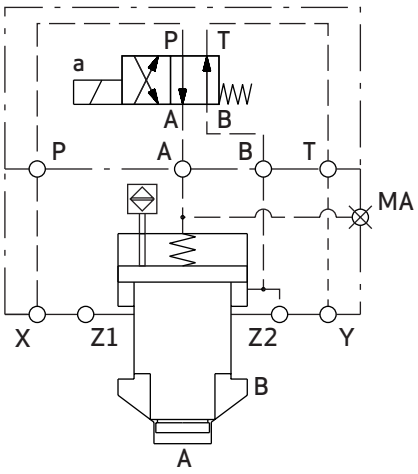
Our Quality Standard conforms to DIN EN ISO 9001.

Dimensions in mm

Position-monitored active cartridge for manifold mounting

Switching on and off of flow from ports A to B or B to A through monitoring the closed position of the main stage of the valve.





Warning

The valves are set, tested and sealed by Moog. If these settings are tampered with, the certificate issued by the German Accident Prevention and Insurance Association (BG) is voided.

Valve design and function

The main valve comprises a sleeve (2) and seated cone (1) with integrated pushing rod (4) and contactless position switch (5), enclosed in a valve body (3). The seated cone (1) can be controlled by an integrated pilot valve (6) mounted on the cover (3) or externally controlled via ports X and Y. This active control reduces opening and closing times significantly. The contactless position switch (5) gives the open signal when the seated cone (1) is raised from the seat (9) but the cylindrical overlap (7) of the cone is yet to open ports A and B. The position switch (5) is mechanically shielded by a protective sleeve (10).

Advantages

- No seals required for moving parts of position switch as it is contactless
- Direct monitoring of closed valve position
- Reliable, active closing behaviour due to excess surface area
- Long lifecycle
- Controlled opening behaviour with optional sandwich valve
- Zero leakage at working ports due to metal seat (9)
- Zero leakage at control ports due to seals (8) (disregarding leakage from pilot valve)

Applications

Protection from adverse movements caused by systems containing hydraulically operated cylinders and motors and by pressure build-up in the system.

Application examples

Presses, injection moulding machines, lifting equipment and accumulator systems.

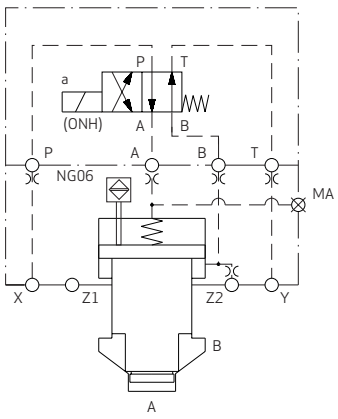
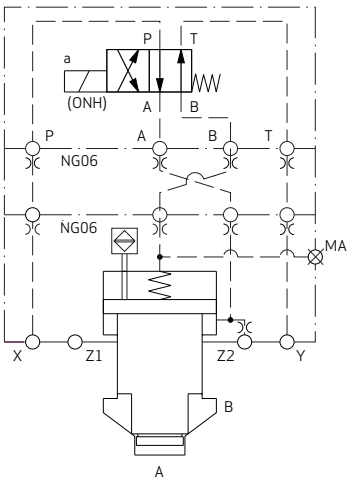
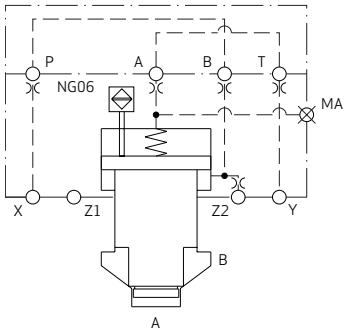
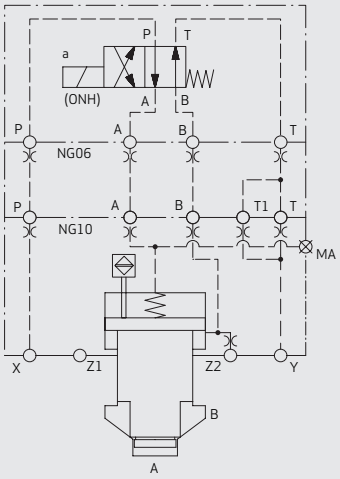
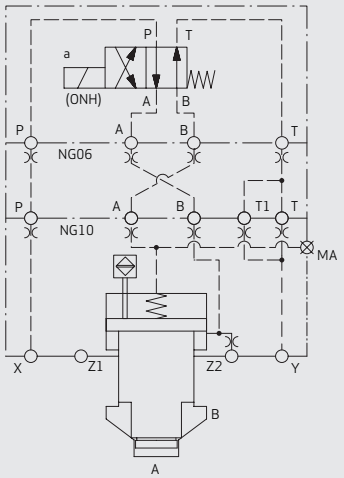
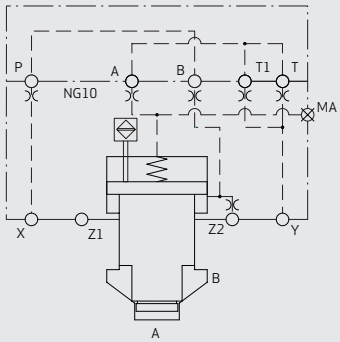
Note

Certificate of approval from the German Accident Prevention and Insurance Association (BG) for all sizes (see page 28):

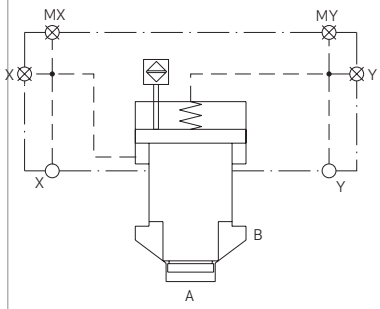
Approval includes the interconnecting plate for the WX6 version.

For the WX1 and WX2 versions, approval applies to the main valve only.

Configurations

	Normally closed (WX1 - version)	Normally open (WX2 version)	Externally pilot operated via X and Y (WX6 version)
NB16, NB25, NB32, NB40, NB50			
NB63			

- ONH: Without manual override

			Externally pilot operated via X and Y (WX3 version)
NB80, NB100			

- Orifices for adjusting switching times must be provided on the manifold
- X and Y diameter are 2 mm larger than specified in ISO 7368

General information

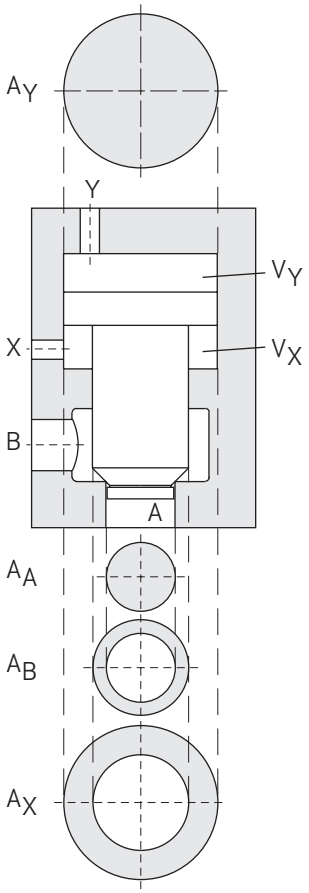
Designation	Position-monitored active cartridge
Type designation	See order information (page 21)
Mode of construction	Pilot operated 2/2 way seat valve
Mounting style	Manifold mounting according to ISO 7368
Mounting dimensions	See page 12
Mounting position	Any
Flow direction	A to B or B to A (preferably A to B)
Seals for hydraulic fluids*	FKM + PU ➜ M-RSE, mineral oil-based hydraulic fluids FKM ➜ V-RSE, mineral oil-based hydraulic fluids, HFD hydraulic fluids NBR ➜ N-RSE, mineral oil-based hydraulic fluids, HFA-, HFB-, HFC-based hydraulic fluids Others on request

Operating parameters

Port A	$p_{max.}$	35 MPa
Port B	$p_{max.}$	35 MPa
Port X	$p_{max.}$	35 MPa
Port Y	$p_{max.}$	21 MPa with pilot valve (WX1, WX2)
	$p_{max.}$	35 MPa without pilot valve (WX3, WX6)
Port Z2	$p_{max.}$	35 MPa
Fluid temperature range	$T_{min.}$	-20 °C (NBR) -10 °C (FKM/PU)
	$T_{max.}$	80 °C
Ambient temperature range	$T_{min.}$	-20 °C (NBR) -10 °C (FKM/PU)
	$T_{max.}$	80 °C
Viscosity range	$\nu_{min.}$	2.8 mm^2/s [cSt]
	$\nu_{max.}$	380 mm^2/s [cSt]
Operational viscosity	ν	15 to 46 mm^2/s [cSt]
ISO cleanliness code		Max. ISO 4406 (C) class 20/18/15

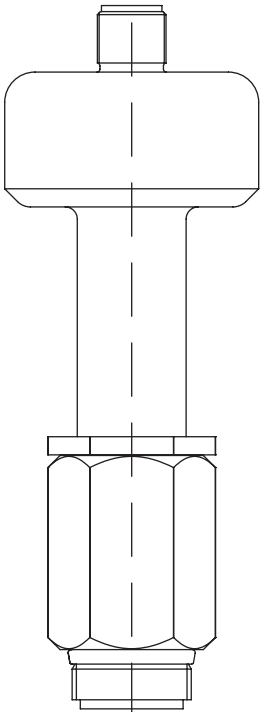
* FKM: Fluoroelastomer (Viton®); NBR: Nitrile Rubber (Buna N); PU: Polyurethane Elastomer

Area ratios

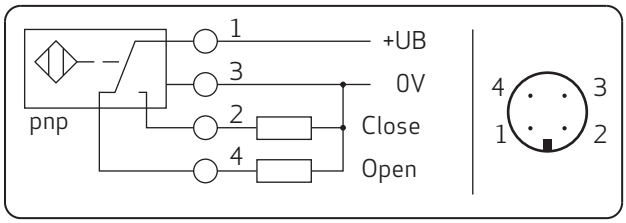


NB	16	25	32	40	50	63	80	100
Stroke [mm]	9.5	11	17.5	17	22.5	28	30	36.5
V_Y [cm³]	3.6	10	20.4	33.4	86.6	178.1	285.1	507.1
V_X [cm³]	1.7	5.8	7.7	14.1	33.1	70.4	114.9	160.2
A_A [mm²]	122.7	227	452.4	804.2	1590.4	2642.1	3848.4	5674.5
A_A/A_A	1	1	1	1	1	1	1	1
A_B/A_A	0.64	0.67	0.56	0.41	0.49	0.46	0.47	0.67
A_Y/A_A	3.1	4	2.51	2.44	2.42	2.41	2.47	2.45
A_X/A_A	1.46	2.33	0.94	1.03	0.93	0.95	0.99	0.77

Technical data of the inductive position switch



Contact assignment of connector on limit switch



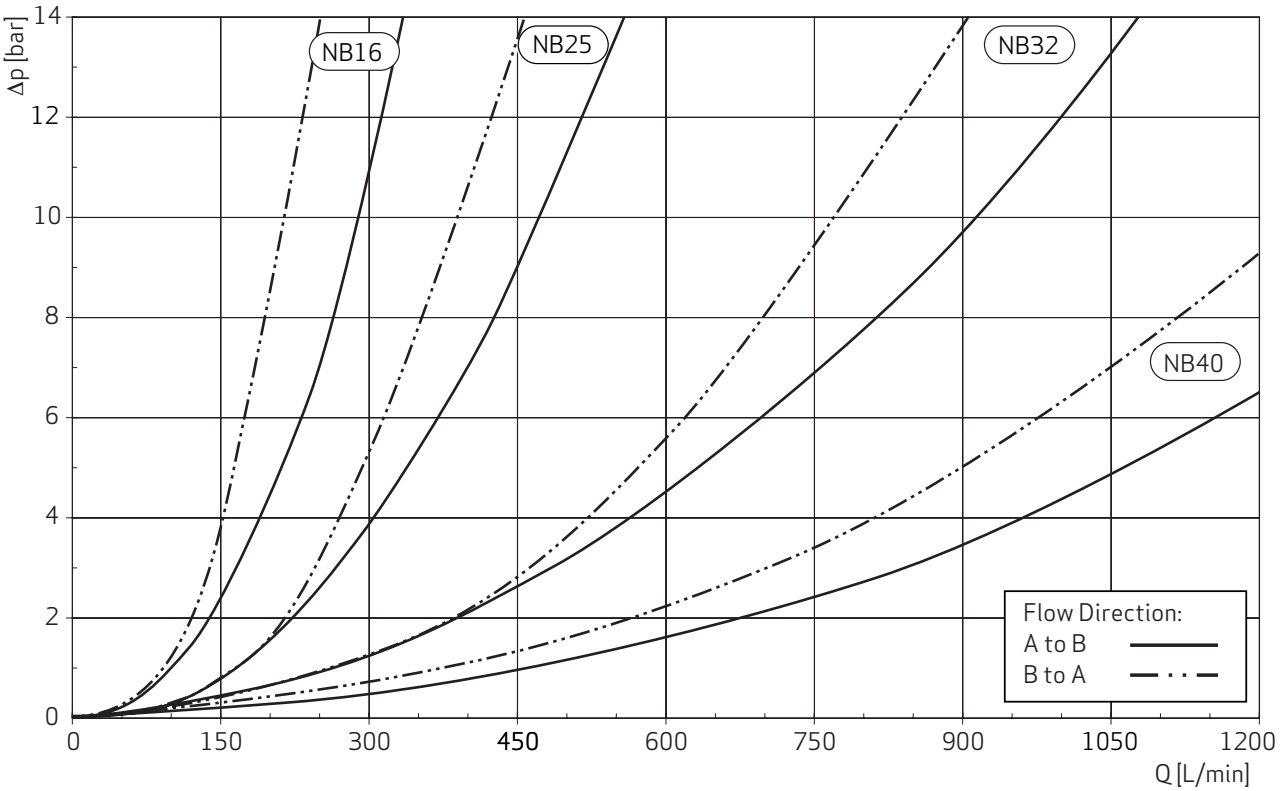
1: + 24 V DC
2: Low signal when the valve is in the closed position.
3: 0 V
4: High signal when the valve is in the closed position.

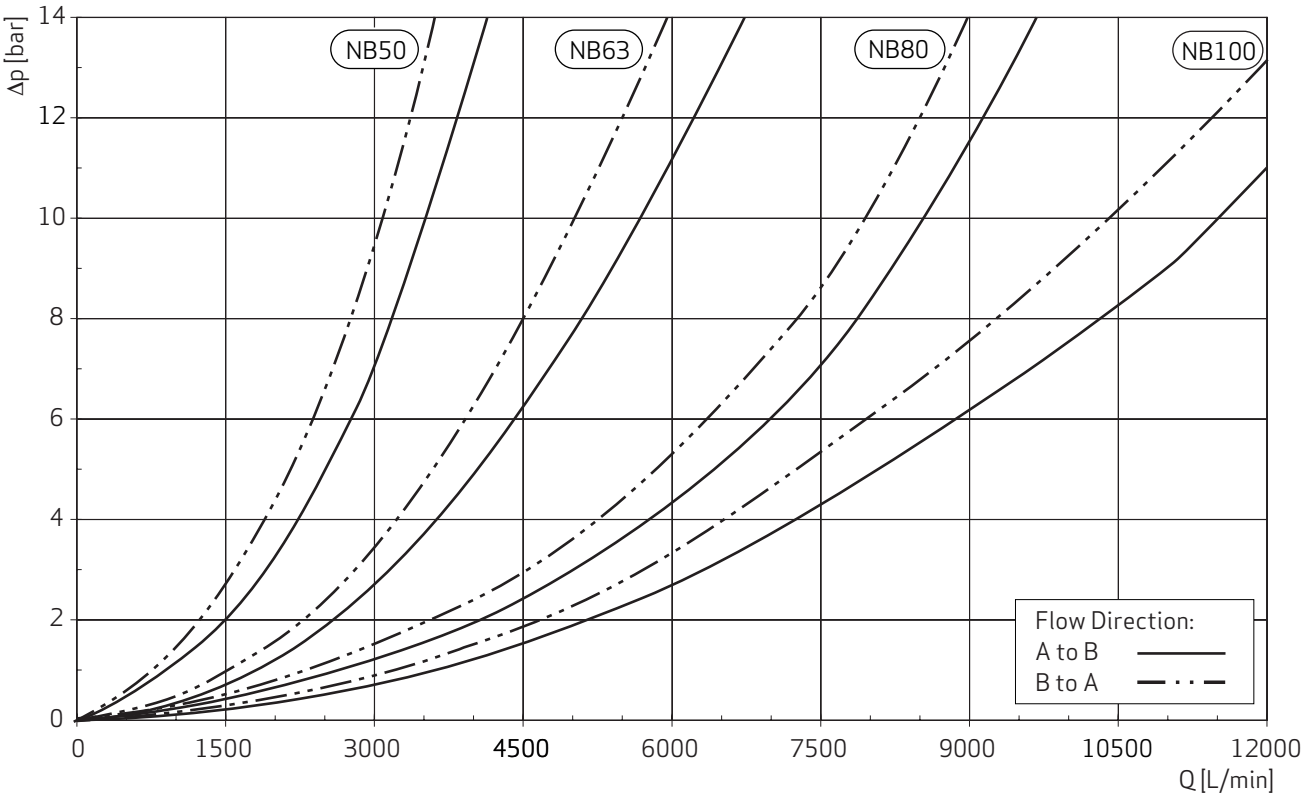
- The limit switch has no PE connection.
- The connector is not included in delivery but can be ordered separately .
(see page 22 – Accessories)

Supply voltage	U_B = 24 V ± 20 %
Residual ripple	≤ 10 %
Maximum output voltage	U_B – 2.5 V
Reverse polarity protection	≤ 300 V
Maximum consumption (without load current)	20 mA
Switching point hysteresis	≤ 0.06 mm
Repetitive accuracy (at T_U= 25 °C)	± 0.02 mm
Temperature drift	0.002 mm/°C (static)
Maximum output current	250 mA
Leak current at blocked output	< 10 µA
Outputs	High side, overload protected
Operating temperature	-20 to +85 °C
Vibration tolerance	Sinus, 20 g (5 min), 40 to 250 Hz (12 h)
Protection according to DIN 40050	IP 65 (with mounted plug)
Pressure resistance	35 MPa, 5 Hz / swelling
EMV (Electromagnetic Vulnerability)*	according to 89/336/EWG

* EMV only ensured through use of insulated cables and plug shielding.

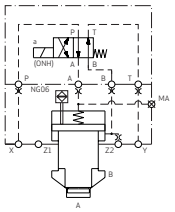
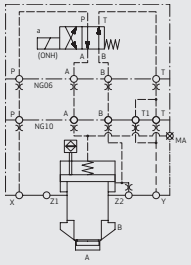
Δp-Q curves



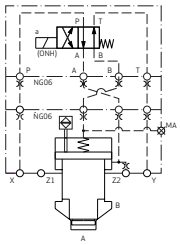
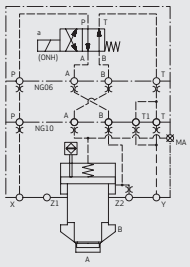


Test conditions: actively opened, oil viscosity 32 mm^2/s, oil temperature: 40 °C

Normally closed

Symbol	Function	NB	Mass [kg]	Article	Order number
 NB16 - NB50	WX1	16	6.6	M-RSE16HV6T0WX1BO0/Z2	XSB10360-106M01
		25	8.7	M-RSE25HV6T0WX1BO0/Z2	XSB10361-106M01
		32	12.5	M-RSE32HV6T0WX1BO0/Z2	XSB10362-106M01
 NB63		40	18.6	M-RSE40HV6T0WX1BO0/Z2	XSB10363-106M01
		50	26.0	M-RSE50HV6T0WX1BO0/Z2	XSB10364-106M01
		63	47.2	M-RSE63HL6T0WX1BO0/Z2	XSB10365-103M01

Normally open

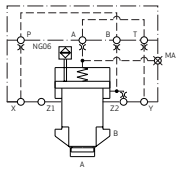
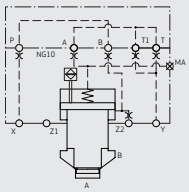
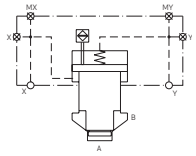
Symbol	Function	NB	Mass [kg]	Article	Order number
 NB16 - NB50	WX2	16	7.3	M-RSE16HV6T0WX2BO0/Z2	XSB10360-206M01
		25	9.4	M-RSE25HV6T0WX2BO0/Z2	XSB10361-206M01
		32	13.1	M-RSE32HV6T0WX2BO0/Z2	XSB10362-206M01
 NB63		40	19.2	M-RSE40HV6T0WX2BO0/Z2	XSB10363-206M01
		50	26.6	M-RSE50HV6T0WX2BO0/Z2	XSB10364-206M01
		63	47.2	M-RSE63HL6T0WX2BO0/Z2	XSB10365-203M01

Warning

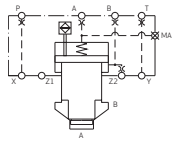
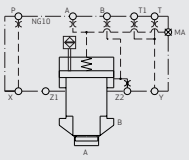
The listed valves of the WX1 and WX2 versions includs solenoid pilot valves without manual override is standard in Moog models. Safety requirements of the German version of EN 201 and EN 698 for injection moulding machines and presses require solenoid valves without manual override.

For further details, see order information on page 23.

Externally pilot operated via X and Y port

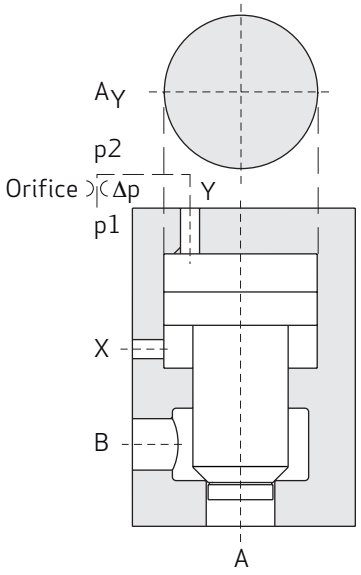
Symbol	Function	NB	Mass [kg]	Article	Order number
 NB16 - NG50	WX6	16	4.8	M-RSE16HV6T0WX6/Z2	XSB10360-606M01
		25	6.8	M-RSE25HV6T0WX6/Z2	XSB10361-606M01
		32	10.6	M-RSE32HV6T0WX6/Z2	XSB10362-606M01
 NB63		40	16.7	M-RSE40HV6T0WX6/Z2	XSB10363-606M01
		50	24.1	M-RSE50HV6T0WX6/Z2	XSB10364-606M01
		63	44.6	M-RSE63HL6T0WX6/Z2	XSB10365-603M01
 NB80 - NG100	WX3	80	79.2	M-RSE80HT6T0WX3	XSB10366-302M01
		100	127.1	M-RSE100HT6T0WX3	XSB10367-302M01

Standard models without pilot valve

Symbol	Function	NB	Mass [kg]	Article	Order number
 NB16 - NB50	without pilot valve	16	4.3	M-RSE16HV6T0WX_/OP;Z2	XSB10360-006M01
		25	6.4	M-RSE25HV6T0WX_/OP;Z2	XSB10361-006M01
		32	10.1	M-RSE32HV6T0WX_/OP;Z2	XSB10362-006M01
 NB63		40	16.3	M-RSE40HV6T0WX_/OP;Z2	XSB10363-006M01
		50	23.7	M-RSE50HV6T0WX_/OP;Z2	XSB10364-006M01
		63	43.3	M-RSE63HL6T0WX_/OP;Z2	XSB10365-003M01

All configuation listed are not provided with orifices. The standard seal configuration is a mix of Fluoroelastomer (Viton®) and (axial) Polyurethane Elastomer seals. Other options are available on request.

Suggested orifices for standard applications

Pilot area	NB	Orifice diameter as per DIN 913*
	16	1.0 mm
	25	1.5 mm
	32	2.0 mm
	40	2.5 mm
	50	2.5 mm
	63	2.5 mm (for NB06 pilot valve) 3.0 mm (for NB10 pilot valve)

*for orifice locations and orifice diameters, see dimensions from page 12.

Orifice selection

For precise orifice dimensions, use the following formula.

A sandwich plate is available for regulating opening times (see pages 23 to 27).

The following formula is used to calculate the maximum permitted average closing time of the valve poppet from v = 0.3 m/s:

$$d\,[mm] \leq \sqrt{\frac{K}{\sqrt{\Delta\, p\,[bar]}}} \qquad \Delta\, p = |\, p1 - p2\,| \qquad \text{(see above)}$$

NB	16	25	32	40	50	63	80	100
K [-]	11.4	27.4	34.1	58.2	116.1	192	290.1	417.4
Q [L/min]	7	17	21	36	70	115	171	250

Note:

In determining orifice dimensions, the switching capacity of the chosen pilot valve must be taken into account. The required flowrate should be extracted from the table.

Sample orifice dimension calculations for opening main valve

An active cartridge of size NB 50 with pressure in A of 140 bar, in B of 5 bar and in X of 100 bar, and with a 6 bar spring produces the following:

$$p_1 = \frac{(p_A \bullet A_A + p_B \bullet A_B + p_X \bullet A_X - p_F \bullet A_A)}{A_Y} = 95bar$$

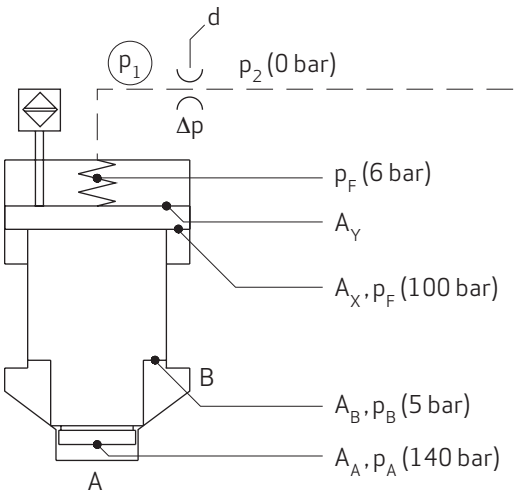
and with p_2 of 0 bar and Δp of 95 bar

$$d\,[mm] \leq \sqrt{\frac{K}{\sqrt{\Delta\, p\,[bar]}}}$$

$$d\,[mm] \leq \sqrt{\frac{116{,}1}{\sqrt{95\ bar}}}$$

$$d\,[mm] \leq 3{,}5$$

requires an orifice of diameter ≤ 3.5mm.



(Area ratios: see page 5)

Leakage at switching point

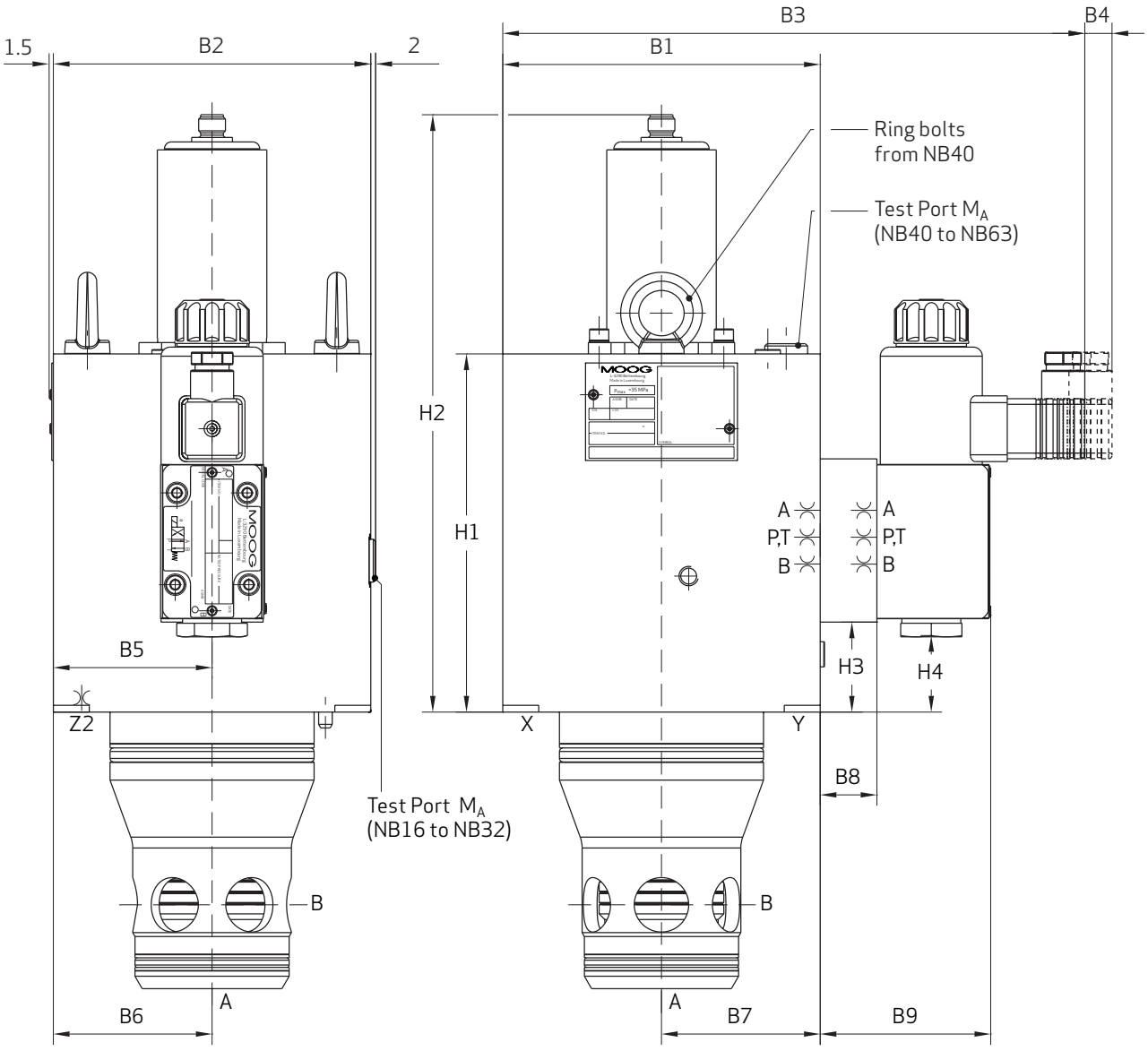
Maximum leakage at the switching point when $\Delta p = 100$ bar ($\Delta p = |\, p_A - p_B \,|$) and with kinematic oil viscosity of 46 mm^2/s can be found in the following table:

NB	16	25	32	40	50	63	80	100
Maximum leakage [L/min]	0.23	0.7	1.25	1.72	2.6	4.4	9.3	21

Note:

Maximal admissible leakage is established on the basis of the admissible movement of hydraulically driven components (e.g. cylinders) according to the specific machine guidelines or relevant regulations.

Dimensions for WX1 + WX2 – NB16 to NB63



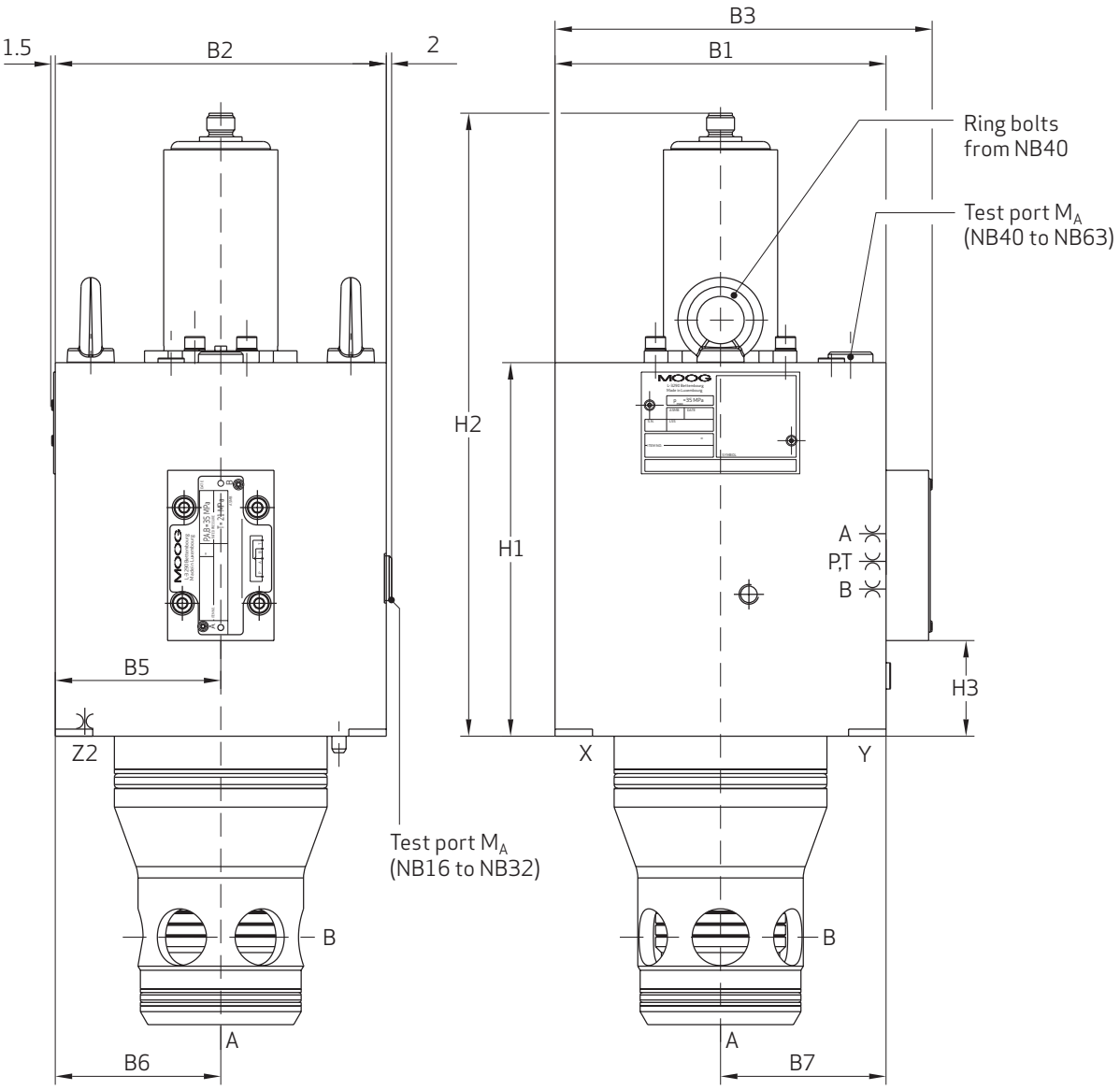
Dimensions for WX1 + WX2 – NB16 to NB63

Size	NB16	NB25	NB32	NB40	NB50	NB63
B1 [mm]	75	90	102	125	140	200**
B2 [mm]	65	85	102	125	140	180
B3 [mm]	170 (WX1) 195 (WX2)	185 (WX1) 210 (WX2)	195 (WX1) 220 (WX2)	217 (WX1) 242 (WX2)	232 (WX1) 257 (WX2)	320 (WX1) 325 (WX2)
B4 [mm]	12	12	12	12	12	12
B5 [mm]	32.5	39.15	47	54.5	70	100
B6 [mm]	32.5	42.5	51	62.5	70	90
B7 [mm]	42.5	47.5	51	62.5	70	100
B8 [mm]	- (WX1) 25 (WX2)	- (WX1) 25 (WX2)	- (WX1) 25 (WX2)	- (WX1) 25 (WX2)	- (WX1) 25 (WX2)	27 (WX1) 32 (WX2)
B9 [mm]	50 (WX1) 75 (WX2)	50 (WX1) 75 (WX2)	50 (WX1) 75 (WX2)	50 (WX1) 75 (WX2)	50 (WX1) 75 (WX2)	77 (WX1) 82 (WX2)
H1 [mm]	100	100	109	131	158	151
H2 [mm]	210	200	215	237	265	250
H3 [mm]	- (WX1) 22 (WX2)	- (WX1) 28 (WX2)	- (WX1) 34 (WX2)	- (WX1) 40 (WX2)	- (WX1) 39 (WX2)	29 (WX1) 29 (WX2)
H4 [mm]	16	22	28	34	33	40 (WX1) 23 (WX2)
Test port M_A	G 1/4“	G 1/4“	G 1/4“	G 1/4“	G 1/4“	G 1/4“
Tightening torque [Nm]	27 ± 1.3	27 ± 1.3	27 ± 1.3	27 ± 1.3	27 ± 1.3	27 ± 1.3
Allen key [mm]	6	6	6	6	6	6
Orifice thread in P, A, B, T (in cover)	M6	M6	M6	M6	M6	M10
Orifice thread in Z2 (see drawing)	M5	M6	M6	M8	M8	M10
Mass [kg]	6.6 (WX1) 7.3 (WX2)	8.7 (WX1) 9.4 (WX2)	12.5 (WX1) 13.1 (WX2)	18.6 (WX1) 19.2 (WX2)	26.0 (WX1) 26.6 (WX2)	47.2 (WX1) 47.5 (WX2)
Mounting bolts * DIN EN ISO 4762-12.9	M8 x 95	M12 x 100	M16 x 100	M20 x 140	M20 x 120	M30 x 150
Tightening torque [Nm]	30 ± 1.5	100 ± 5	300 ± 15	550 ± 27	550 ± 27	1800 ± 90
Allen key [mm]	6	10	14	17	17	22

* not part of delivery

** deviates from DIN ISO 7368

Dimensions for WX6 – NG16 to NG63



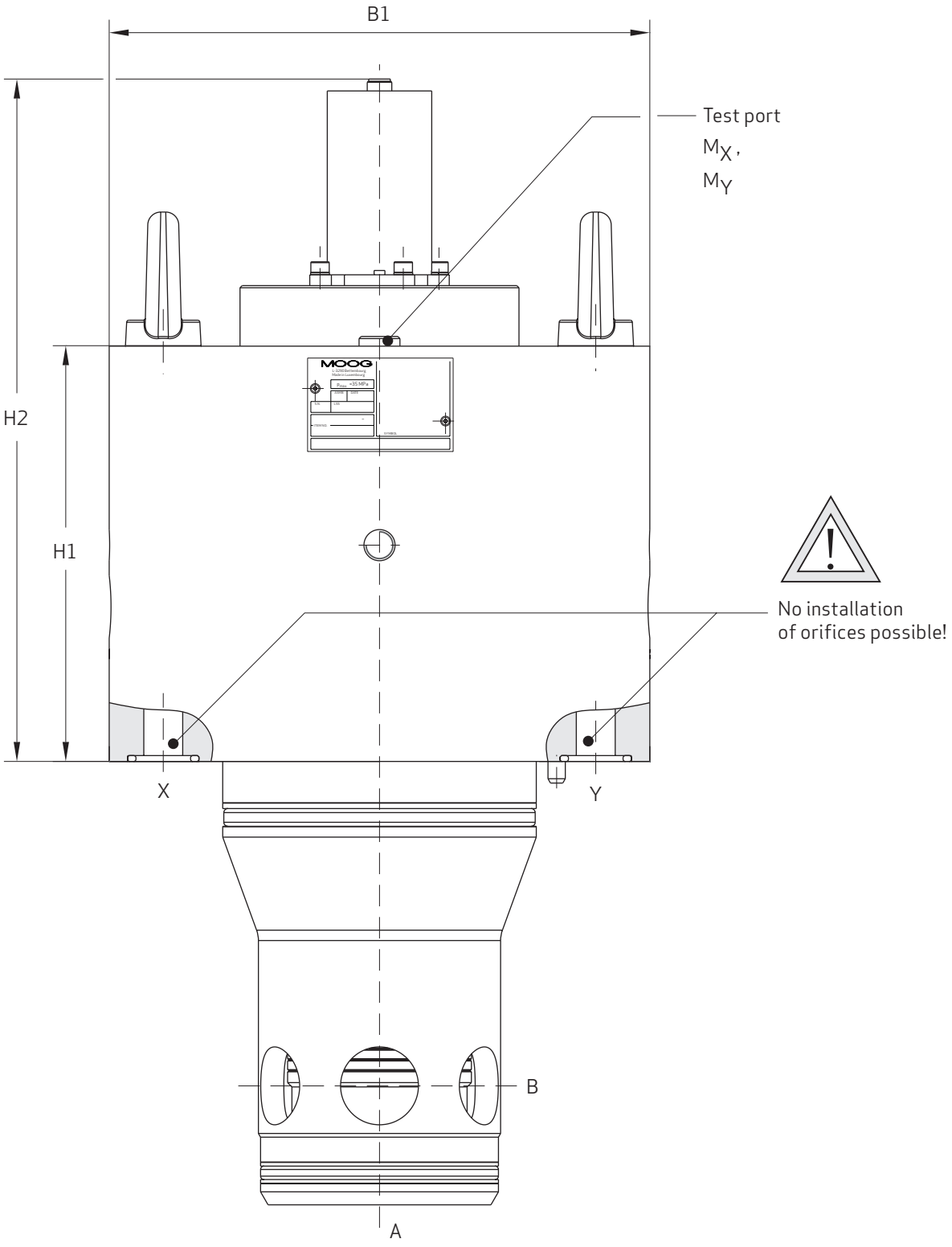
Dimensions for WX6 – NB16 to NB63

Size	NB16	NB25	NB32	NB40	NB50	NB63
B1 [mm]	75	90	102	125	140	200**
B2 [mm]	65	85	102	125	140	180
B3 [mm]	95	108	119	144	160	225
B5 [mm]	32.5	39.15	47	54.5	70	100
B6 [mm]	32.5	42.5	51	62.5	70	90
B7 [mm]	42.5	47.5	51	62.5	70	100
H1 [mm]	100	100	109	131	158	151
H2 [mm]	210	200	215	237	265	250
H3 [mm]	22	29	34	42	40	29
Test port M_A	G 1/4“	G 1/4“	G 1/4“	G 1/4“	G 1/4“	G 1/4“
Tightening torque [Nm]	27 ± 1.3	27 ± 1.3	27 ± 1.3	27 ± 1.3	27 ± 1.3	27 ± 1.3
Allen key [mm]	6	6	6	6	6	6
Orifice thread in P, A, B, T (in cover)	M6	M6	M6	M6	M6	M10
Orifice thread in Z2 (see drawing)	M5	M6	M6	M8	M8	M10
Mass [kg]	6.6	8.7	12.5	18.6	26.0	47.2
Mounting bolts * DIN EN ISO 4762-12.9	M8 x 95	M12 x 100	M16 x 100	M20 x 140	M20 x 120	M30 x 150
Tightening torque [Nm]	30 ± 1.5	100 ± 5	300 ± 15	550 ± 27	550 ± 27	1800 ± 90
Allen key [mm]	6	10	14	17	17	22

* not part of delivery

** deviates from DIN ISO 7368

Dimensions for WX3 – NB80 to NB100

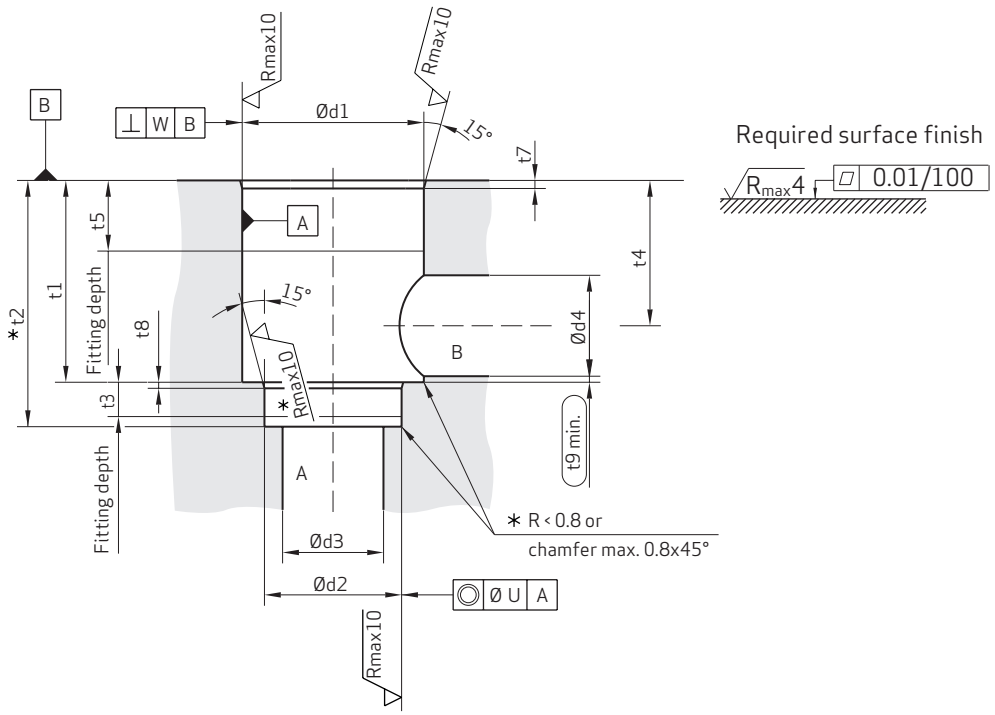


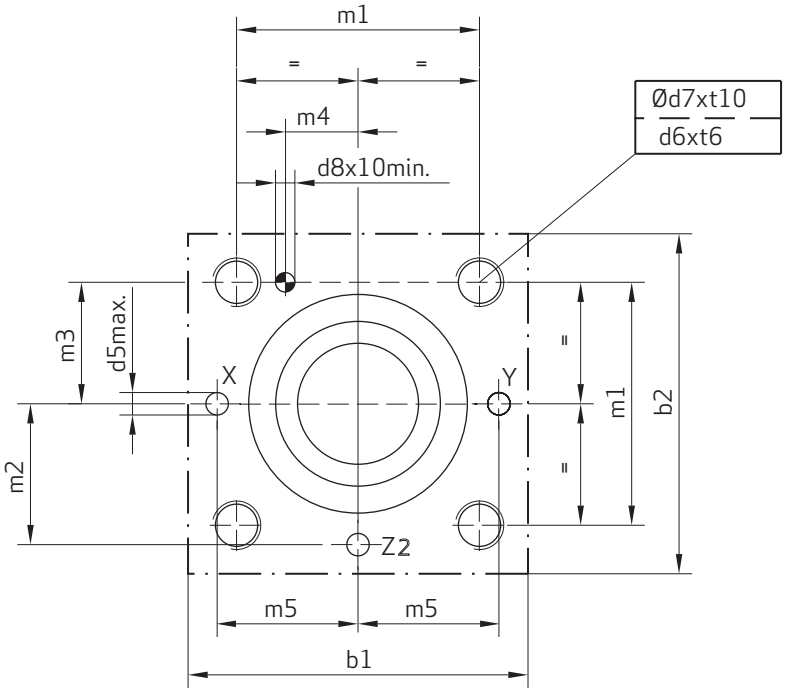
Dimensions for WX3 – NB80 to NB100

Size	NB80	NB100
B1 [mm]	Ø 250	Ø 300
H1 [mm]	192	218
H2 [mm]	317	358
Test port M_X , M_Y	G 1/4“	G 1/4“
Tightening torque [Nm]	27 ± 1.3	27 ± 1.3
Allen key [mm]	6	6
Orifice thread in X, Y (see drawing)	-	-
Mass [kg]	79.2	127.1
Mounting bolts * DIN EN ISO 4762-12.9	M24 x 200	M30 x 170
Tightening torque [Nm]	900 ± 45	1800 ± 90
Allen key [mm]	19	22

* not part of delivery

Connection and mounting dimensions for NB16 to NB63



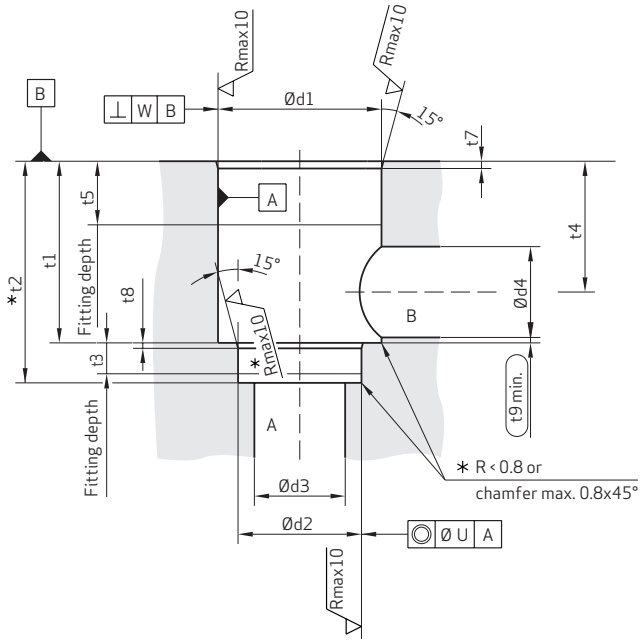


Connection and mounting dimensions for NB16 to NB63

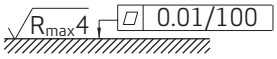
Size		NB16	NB25	NB32	NB40	NB50	NB63
b1	[mm]	75	90	102	125	140	200
b2	[mm]	65	85	102	125	140	180
d1 ^{H7}	[mm]	32	45	60	75	90	120
d2 ^{H7}	[mm]	25	34	45	55	68	90
d3	[mm]	16	25	32	40	50	63
d4	[mm]	16	25	32	40	50	63
$d4_{max.}$ *	[mm]	25	32	40	50	63	80
$d5_{max.}$	[mm]	4	6	8	10	10	12
d6	[mm]	M8	M12	M16	M20	M20	M30
d7	[mm]	6.3	10.2	14	17.5	17.5	26.5
d8 ^{H13}	[mm]	4	6	6	6	8	8
m1 $^{\pm 0.2}$	[mm]	46	58	70	85	100	125
m2 $^{\pm 0.2}$	[mm]	25	33	41	50	58	75
m3 $^{\pm 0.2}$	[mm]	23	29	35	42.5	50	62.5
m4 $^{\pm 0.2}$	[mm]	10.5	16	17	23	30	38
m5 $^{\pm 0.2}$	[mm]	25	33	41	50	58	75
t1 $^{+0.1}$	[mm]	43	58	70	87	100	130
t2 $^{+0.1}$	[mm]	56	72	85	105	122	155
t3	[mm]	11	12	13	15	17	20
t4	[mm]	34	44	52	64	72	95
t4 at $d4_{max.}$ *	[mm]	29.5	40.5	48	59	65.5	86.5
t5	[mm]	20	30	30	30	35	40
t6	[mm]	14	20	26	33	33	50
t7	[mm]	2	2.5	2.5	3	4	4
t8	[mm]	2	2.5	2.5	3	3	4
t9	[mm]	0.5	1.0	1.5	2.5	2.5	3
t10	[mm]	17	24	31	38	38	56
U	[mm]	0.03	0.03	0.03	0.05	0.05	0.05
W	[mm]	0.03	0.05	0.1	0.1	0.1	0.2

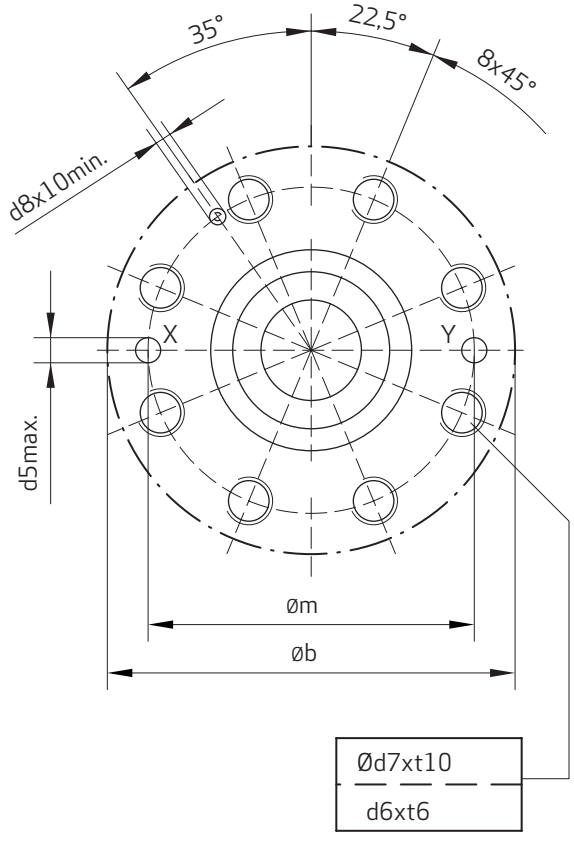
* Recommendation, deviates from ISO 7368

Connection and mounting dimensions for NB80 to NB100



Required surface finish





Size		NB80	NB100
$b_{max.}$	[mm]	250	300
$d1^{H7}$	[mm]	145	180
$d2^{H7}$	[mm]	110	135
d3	[mm]	80	100
d4	[mm]	80	100
$d4_{max.}$*	[mm]	100	125
$d5_{max.}$	[mm]	16	20
d6	[mm]	M24	M30
d7	[mm]	21	26.5
$d8^{H13}$	[mm]	10	10
$t1^{+0.1}$	[mm]	175	210
$t2^{+0.1}$	[mm]	205	245
t3	[mm]	25	29
t4	[mm]	130	155
t4 at $d4_{max.}$*	[mm]	120	142.5
t5	[mm]	40	50
t6	[mm]	39	50
t7	[mm]	5	5
t8	[mm]	5	5
t9	[mm]	3	5
t10	[mm]	45	56
$m^{\pm 0.3}$	[mm]	200	245
U	[mm]	0.05	0.05
W	[mm]	0.2	0.2

* Recommendation, deviates from ISO 7368

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		17
	-	R	S	E		H		6	T	0	W	X					/	

1) Seals material

V	FPM/FKM
M	FPM/FKM + PUR (Standard)
N	NBR

2) Valve type

R	Check valve

3) Valve function

S	Safety valve

4) Mounting style

E	Manifold

5) Nominal size (ISO 7368)

16	NB16
25	NB25
32	NB32
40	NB40
50	NB50
63	NB63
80	NB80
100	NB100

6) Series

7) Spring

T	2.0 bar (Standard for NB80 and NB100)
L	3.0 bar (Standard for NB63)
V	6.0 bar (Standard)

8) Dimensions

6	ISO 7368

9) Cone type

T	Step cone with small seat and damping nose

10) Area ratios

0	Standard

11) Opening

W	Active

12) Pilot oil connection

X	x through mounting surface / y through mounting surface

13) Function

1	Normally closed (active opening with energised solenoid)
2	Normally open (active closing with energised solenoid)
3	Externally pilot operated (only NB80 + NB100)
6	Externally pilot operated via interconnecting plate
-	Without pilot valve

14) Solenoid supply (only for valves with pilot valve)

B	24 V DC

15) Solenoid type (only for valves with pilot valve)

N	Wet solenoid, oil-immersed with manual override
0	Wet solenoid, oil-immersed without manual override (standard)

16) Electrical connection (only for valves with pilot valve)

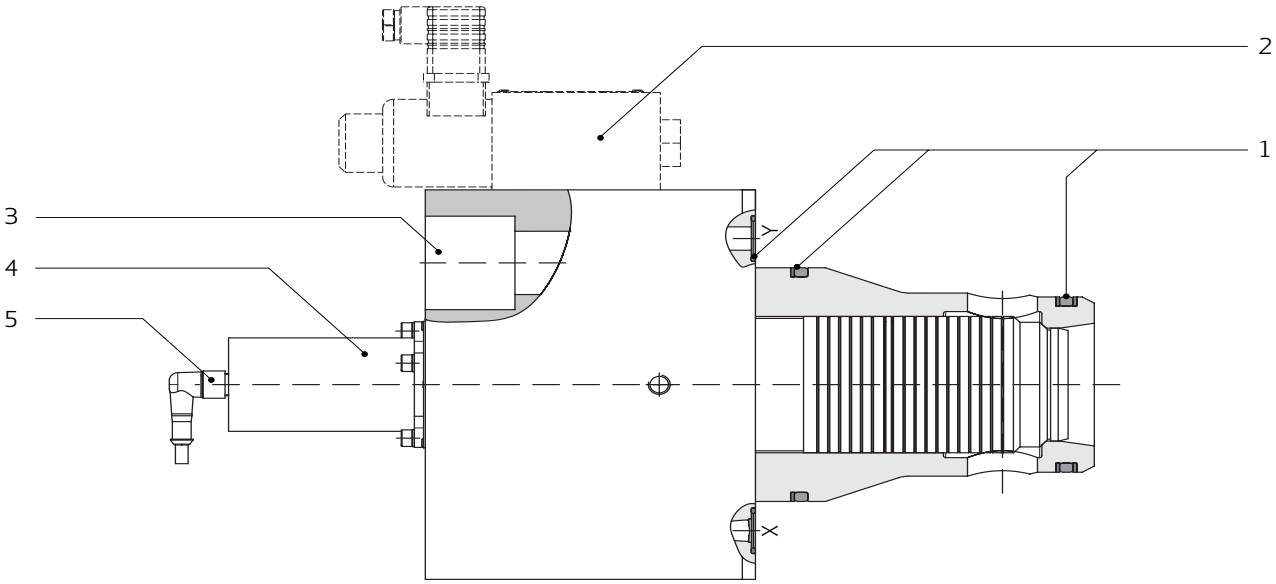
0	Connection as per DIN 43650 without plug

17) Modification

OP	Without pilot valve
Z2	additional Z2 port (standard for NB16 to NB63)

Orifices: Indication in tenths of mm of the diameter and in same order as given in function diagram.
..00 = Plug
..08 = 0.8 mm Ø orifice
..15 = 1.5 mm Ø orifice
e.g.: X08 = 0.8 mm orifice in x
e.g.: Z210 = 1.0 mm orifice in Z2

Spare parts and accessories



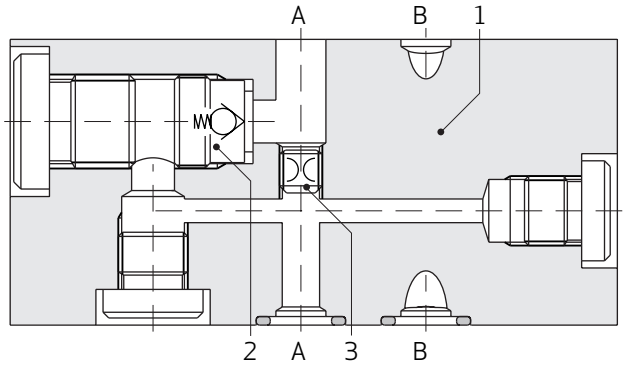
	Position 1			Position 2			Position 3
	Seal kit for main stage			Seal kit for pilot valve NB06			Mounting bolts
	(FKM+PU)	(FKM)	(NBR)	(FKM+PU)	(FKM)	(NBR)	ISO 4762-12.9*
NB16	XSB10360 D000M00	XSB10360 D000V00	XSB10360 D000N00	XEB16512 -000M00	XEB16512 -000-00	XEB16512 -000N00	X784-10819
NB25	XSB10361 D000M00	XSB10361 D000V00	XSB10361 D000N00	XEB16512 -000M00	XEB16512 -000-00	XEB16512 -000N00	X784-11209
NB32	XSB10362 D000M00	XSB10362 D000V00	XSB10362 D000N00	XEB16512 -000M00	XEB16512 -000-00	XEB16512 -000N00	X784-11607
NB40	XSB10363 D000M00	XSB10363 D000V00	XSB10363 D000N00	XEB16512 -000M00	XEB16512 -000-00	XEB16512 -000N00	X784-12016
NB50	XSB10364 D000M00	XSB10364 D000V00	XSB10364 D000N00	XEB16512 -000M00	XEB16512 -000-00	XEB16512 -000N00	X784-12008
NB16 to NB50	Sandwich plate seal kit for WX2			XEB14500 D000M00	XEB14500 D000-00	XEB14500 D000N00	
	Interconnecting plate seal kit for WX6			XEB13051 D000M00	XEB13051 D000-00	XEB13051 D000N00	
NB63	XSB10365 D000M00	XSB10365 D000V00	XSB10365 D000N00	XEB16512 -000M00	XEB16512 -000-00	XEB16512 -000N00	X784-13006
	Seal kit for adapter plate P10-P06			XEB16360 D000M00	XEB16360 D000M00	XEB16360 D000M00	
	Interconnecting plate seal kit for WX6			XEB16116 D000M00	XEB16116 D000M00	XEB16116 D000M00	
NB80	XSB10366 D000M00	XSB10366 D000V00	XSB10366 D000N00	-	-	-	X784-12409
NB100	XSB10367 D000M00	XSB10367 D000V00	XSB10367 D000N00	-	-	-	X784-13004
all	Protective sleeve including mounting screws **(Position 4)**						XEB18975-000-00
	Pin connector with 10m cable** **(Position 5)**						X798-00127

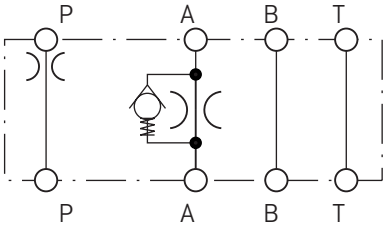
* not part of delivery
** 4-pin and uninsulated with function and supply voltage displayed

Sandwich-throttle check valve

ZFDR sandwich plates are used to control opening times, allowing free flow through the check valve in the closed direction of the cartridge main stage (opening pressure approx. 0.3 bar) and limiting flow in the open direction dependent on orifice size.

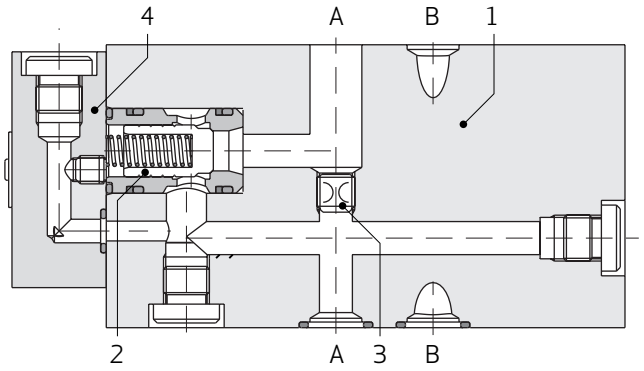
NB06 (CETOP 3)

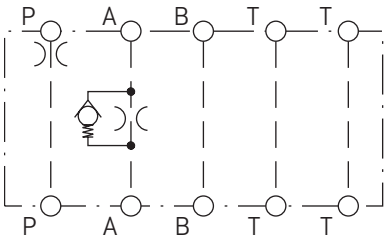




- Body (1)
- Check valve (2)
- Orifice M6 (3) for flow control

NB10 (CETOP 5)

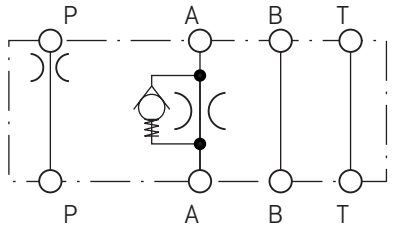




- Body (1)
- Check valve (2)
- Orifice M8 (3) for flow control
- Check valve body (4)

Order information for sandwich-throttle check valve

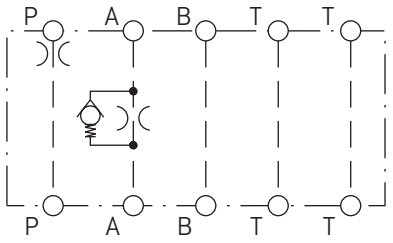
NB06 (CETOP 3)



Article	Order number
M-ZFDRP06A4K0AS/A06	XEB15159-006M01
M-ZFDRP06A4K0AS/A12	XEB15159-002M01
M-ZFDRP06A4K0AS/A15	XEB15159-001M01
M-ZFDRP06A4K0AS/A20	XEB15159-007M01
M-ZFDRP06A4K0AS/A25	XEB15159-008M01

The opening pressure is 0.3 bar, Axx represents the orifice diameter (xx) in tenths of mm in the A port.
(Example: ZFDRP06A4K0AS/A25 ➜ 2.5 mm orifice in A)

NB10 (CETOP 5)

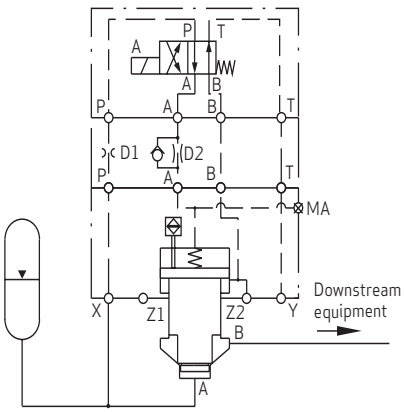


Article	Order number
M-ZFDRP10A4K0AS / CEE10;A20	XEB17522-004M01
M-ZFDRP10A4K0AS / CEE10;A25	XEB17522-005M01
M-ZFDRP10A4K0AS / CEE10;A30	XEB17522-006M01
M-ZFDRP10A4K0AS / CEE10;A35	XEB17522-003M01
M-ZFDRP10A4K0AS / CEE10;A40	XEB17522-002M01

The opening pressure is 0.3 bar, Axx represents the orifice diameter (xx) in tenths of mm in the A port.
(Example: ZFDRP06A4K0AS/A25 ➜ 3.0 mm orifice in A)

Both sandwich plates can be shipped with FKM (V-ZFDRP) or NBR (N-ZFDRP) seals, as well as a combination of FKM and (axial) PU seals (M-ZFDRP). Please specify when ordering.

Example application



In the example shown, a accumulator is controlled by a position-monitored active cartridge. A sandwich-throttle check valve is used to limit the opening speed, with orifice D2 regulating the opening time. The target value for the opening times is > 250 ms. The closing speed can be limited by the metering nozzle D1. The pressure balance in the cartridge cone must be monitored.

Technical data for the sandwich valve

Interface	NB06 (CETOP 3)	NB10 (CETOP 5)	
ISO 4401-03-02-0-94	X		
ISO 4401-05-04-0-94		X	
Mounting dimensions [mm]			See Dimensions
Mounting position			Any
Seals for hydraulic fluids*	FKM + PU ➜	M-ZFDRP	Mineral oil-based hydraulic fluids
	FKM ➜	V-ZFDRP	Mineral oil-based hydraulic fluids, HFD hydraulic fluids
	NBR ➜	N-ZFDRP	Mineral oil-based hydraulic fluids, HFA-, HFB-, HFC-based hydraulic fluids
			Others on request

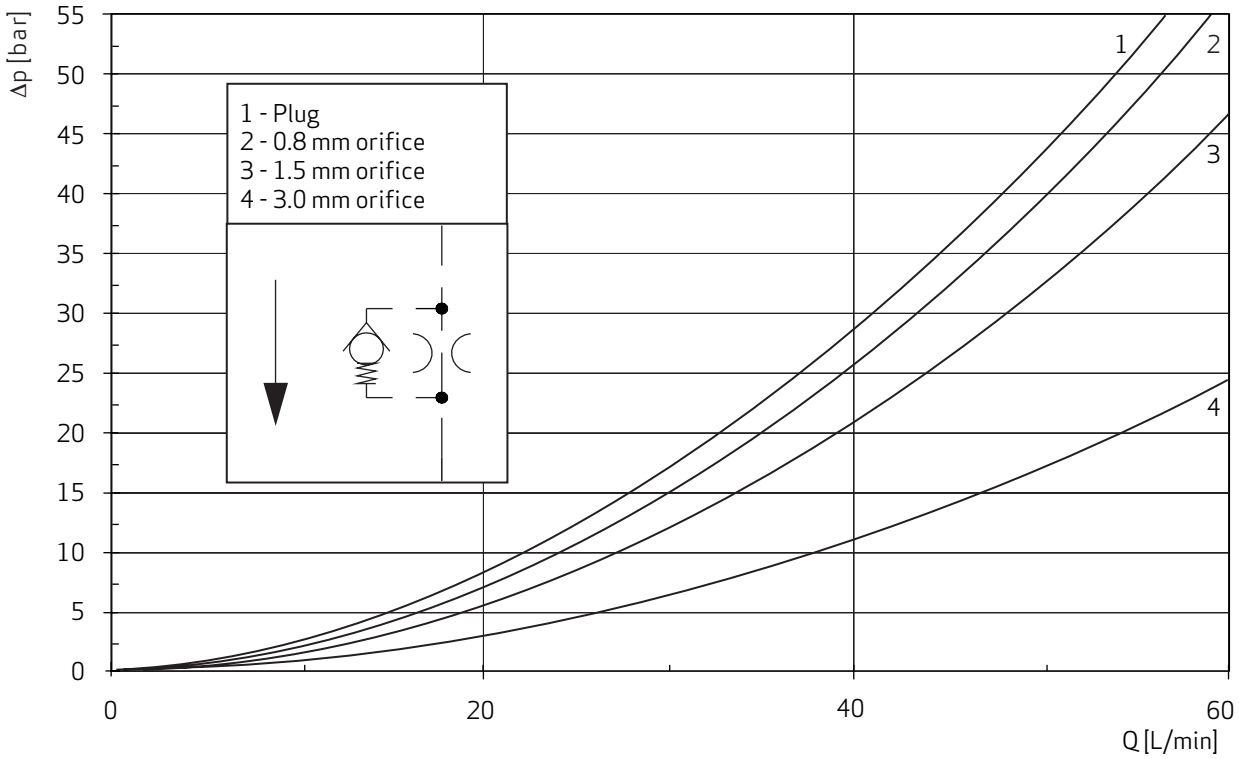
Operating parameters

Maximum operating pressure at input	$p_{max.}$	35 MPa		
Maximum operating pressure at output	$p_{max.}$	35 MPa		
Fluid temperature range	$T_{min.}$	-20 °C (NBR) -10 °C (FKM/PU)		
	$T_{max.}$	80 °C		
Viscosity range	$\nu_{min.}$	2.8 mm^2/s		
	$\nu_{max.}$	380 mm^2/s		
Operational viscosity	ν	35 mm^2/s		
Mass	m	1.2 kg	3.7 kg	
Opening pressure	$p_ö$	0.03 MPa		Other opening pressures on request
ISO cleanliness code				Max. ISO 4406 (C) class 20/18/15

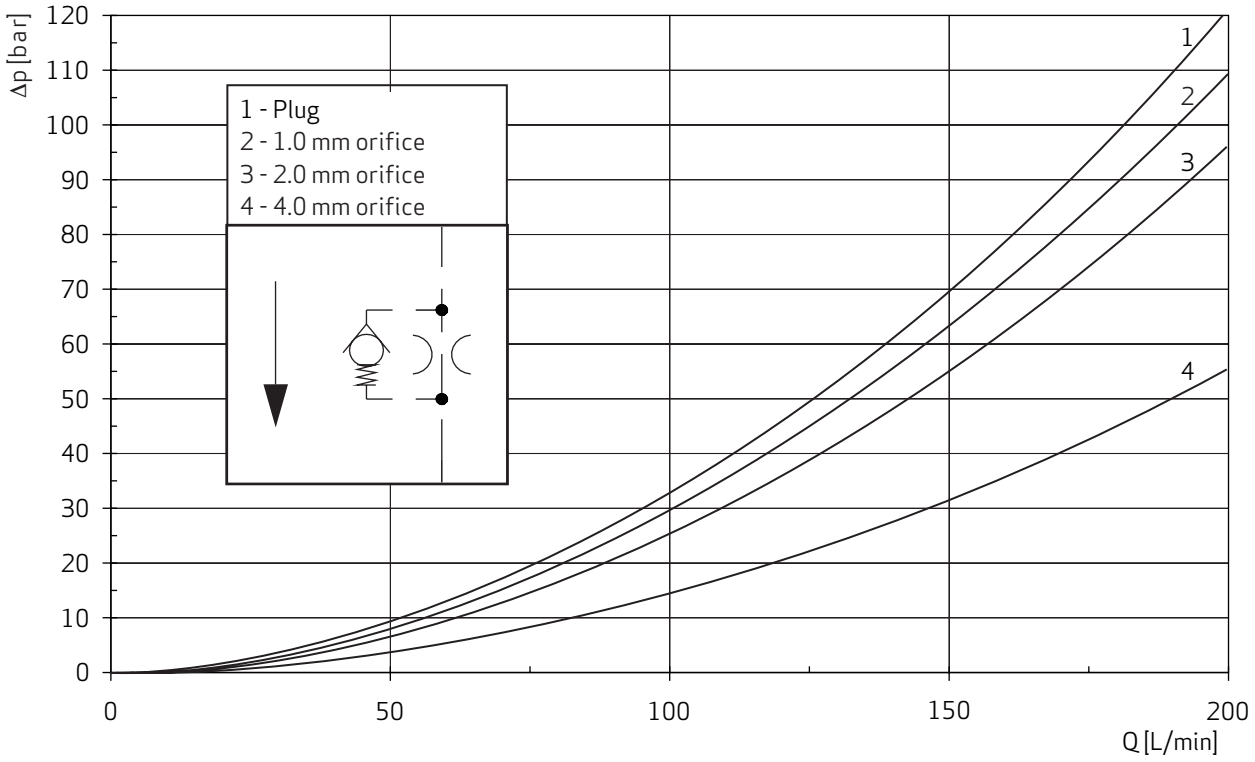
* FKM: Fluoroelastomer (Viton®); NBR: Nitrile rubber (Buna N); PU: Polyurethane Elastomer

Δp-Q curves

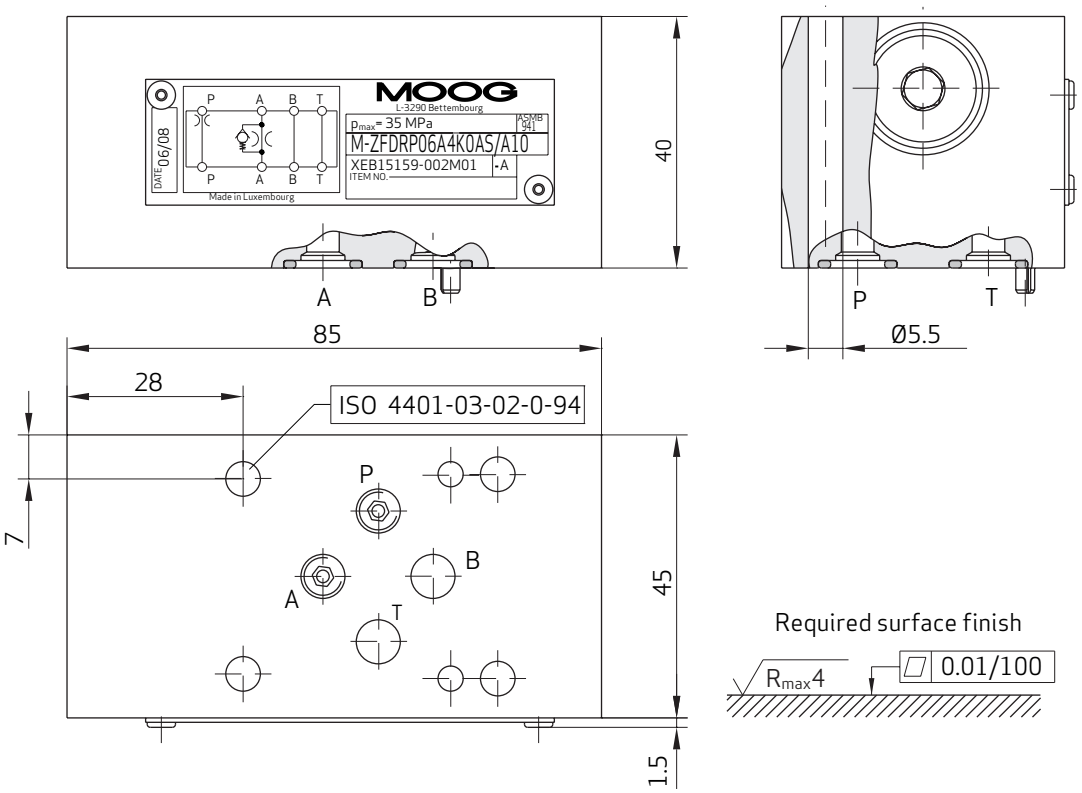
NB06 (CETOP 3)



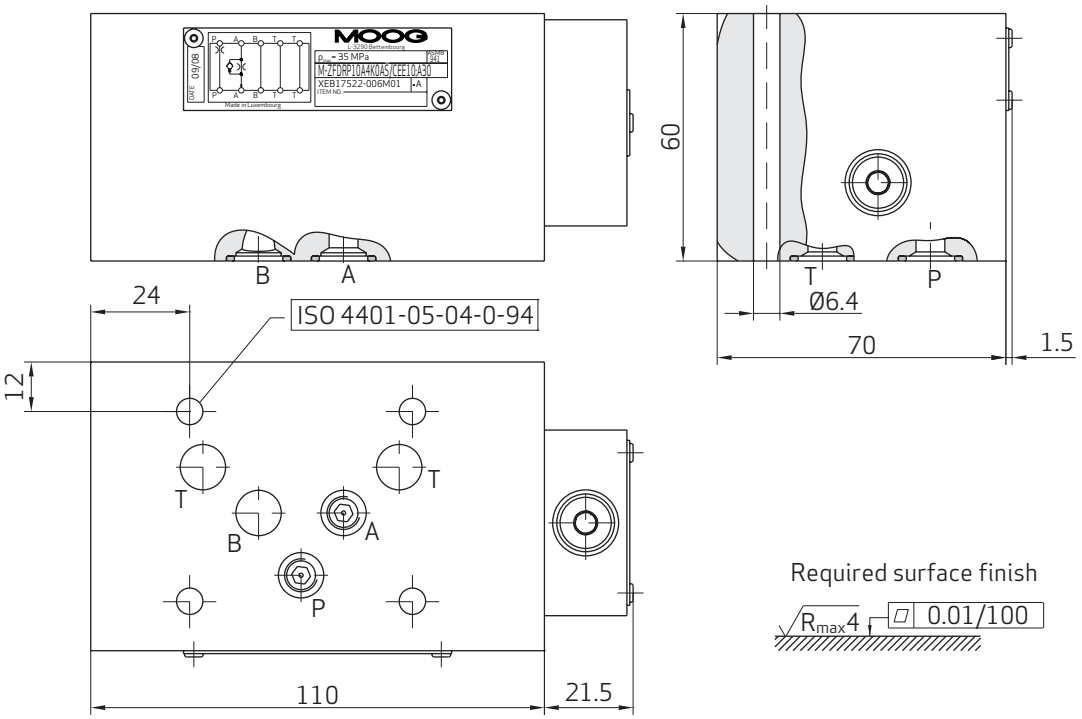
NB10 (CETOP 5)



Dimensions of the NB06 (CETOP 3) sandwich valve



Dimensions of the NB10 (CETOP 5) sandwich valve



For both sizes, the orifice is accessable through the A port from the side where the pilot valve should be mounted.

Deutsche Gesetzliche Unfallversicherung

Bescheinigung
Nr. **MHHW 99 087**
vom **14.04.2008**

Fachausschuss Maschinenbau, Hebezeuge,
Hütten- und Walzwerksanlagen
Prüf- und Zertifizierungsstelle im BG-PRÜFZERT

Baumusterprüfbescheinigung

Name und Anschrift des Bescheinigungsinhabers: (Auftraggeber)	**Moog Luxembourg S.à.r.l.** 1, Zone d'activités économiques Krakelshaff 3290 BETTEMBOURG / LUXEMBOURG
Name und Anschrift des Herstellers:	- siehe oben -
Produktbezeichnung:	**2/2 Wegesitzventil mit induktivem Überwachungsschalter (Standardausführung)**
Typ:	**RSE 16•RSE 25•RSE 32•RSE 40•RSE 50•RSE 63•RSE 80•RSE 100 B(H)_6_ _WX_/(SI1)**
Bestimmungsgemäße Verwendung:	Zur Verwendung für hydraulische Schließsicherungen in Spritzgießmaschinen gemäß Herstellereinbauanleitung
Prüfgrundlage:	• Prüfgrundsätze für die Prüfung der Arbeitssicherheit und des Gesundheitsschutzes von Spritzgießmaschinen (GS-MHHW-20), Ausgabe 07/2002 • EN 201:1997 „Gummi- und Kunststoffmaschinen SPRITZGIEßMASCHINEN – Sicherheitsanforderungen"
Zugehöriger Prüfbericht:	
Bemerkungen:	° Das jeweilige Ventil ist gemäß § 1 Abs. 2b der Unfallverhütungsvorschrift „Spritzgießmaschinen" (VBG 7 ac) bzw. Kapitel 5 der EN 201:1997 „Spritzgießmaschinen – Sicherheitsanforderungen" von der Steuerung der Spritzgießmaschine selbsttätig zu überwachen, so dass auch bei Versagen des Positionsschalters ein erneuter Maschinenzyklus nicht mehr eingeleitet werden kann. ° Die Prüfbescheinigung schließt die Umlenkplatte für WX 6-Ausführung mit ein. ° Die Prüfbescheinigung bezieht sich auf die Hauptstufe. Bei Ausführung des Ventils mit 4/2-Wegevorsteuerventil (WX 1-Ausführung) ist im Rahmen einer Fehlersimulation an der ausgeführten Steuerung nachzuweisen, dass eine ausreichende Überwachung des Vorsteuerventils durch die Überwachung der Hauptstufe gewährleistet ist.

■ **Folgebescheinigung zu der Prüfnummer 99 087 vom 01. September 2007** ■

Das geprüfte Baumuster entspricht den einschlägigen Bestimmungen der Richtlinie 98/37/EG (**Maschinen**).

Diese Bescheinigung wird spätestens ungültig am: **01.09.2010**

Weiteres über die Gültigkeit, eine Gültigkeitsverlängerung und andere Bedingungen regelt die Prüf- und Zertifizierungsordnung vom April 2004.

Prüf- und Zertifizierungsstelle · DGUV · Fachausschuss MHHW

Unterschrift (Dipl.-Ing. HEINKE)

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