

Parker Series TDW 2-Way Slip-In Cartridge Valve Service Manual

The series of active pilot operated 2/2-way cartridge valves TDW enables to open and close the main poppet solely by pilot pressure, independent of pressure build-up in the main ports A and B.

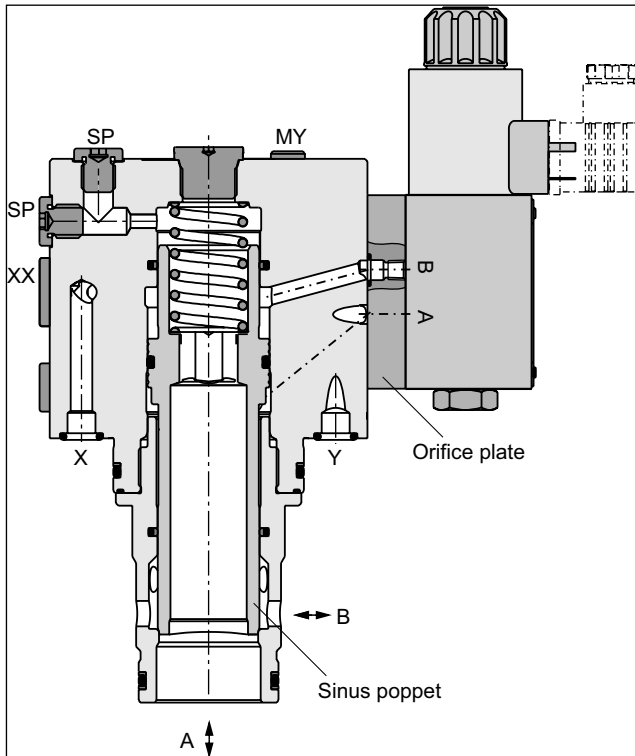
The main poppet is designed hollow and mostly pressure balanced. The operation is accomplished via minimal control surfaces resulting in low pilot oil demand and fast switching operations.

TDW is supplied as one unit to ensure easy installation – sleeve and body are screwed together. Additionally, the lower recess in the standardized mounting cavity is no longer required, providing the possibility to minimize pressure losses in the manifold block.

Features

- Active pilot operated 2/2-way cartridge valves
- Cavity and mounting pattern according to ISO 7368
- Flow direction B to A and A to B
- 7 sizes NG25 up to NG100
- Position monitoring optional
- Stroke limiter optional

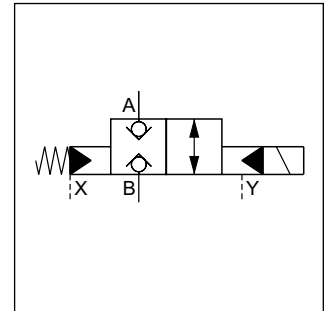
TDW040



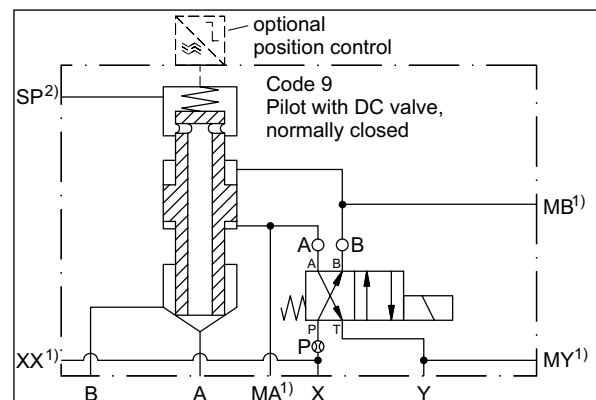
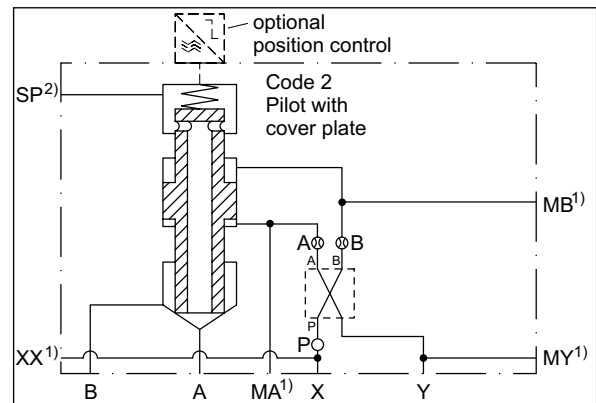
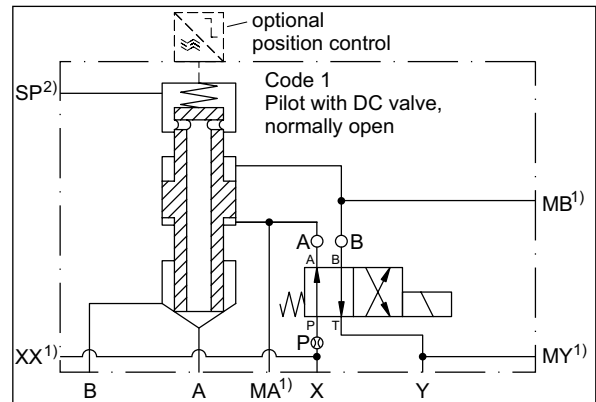
- ¹⁾ NG25 and NG32 without accu port XX and without ports MA, MB and MY.
- ²⁾ NG25 without suction port SP.



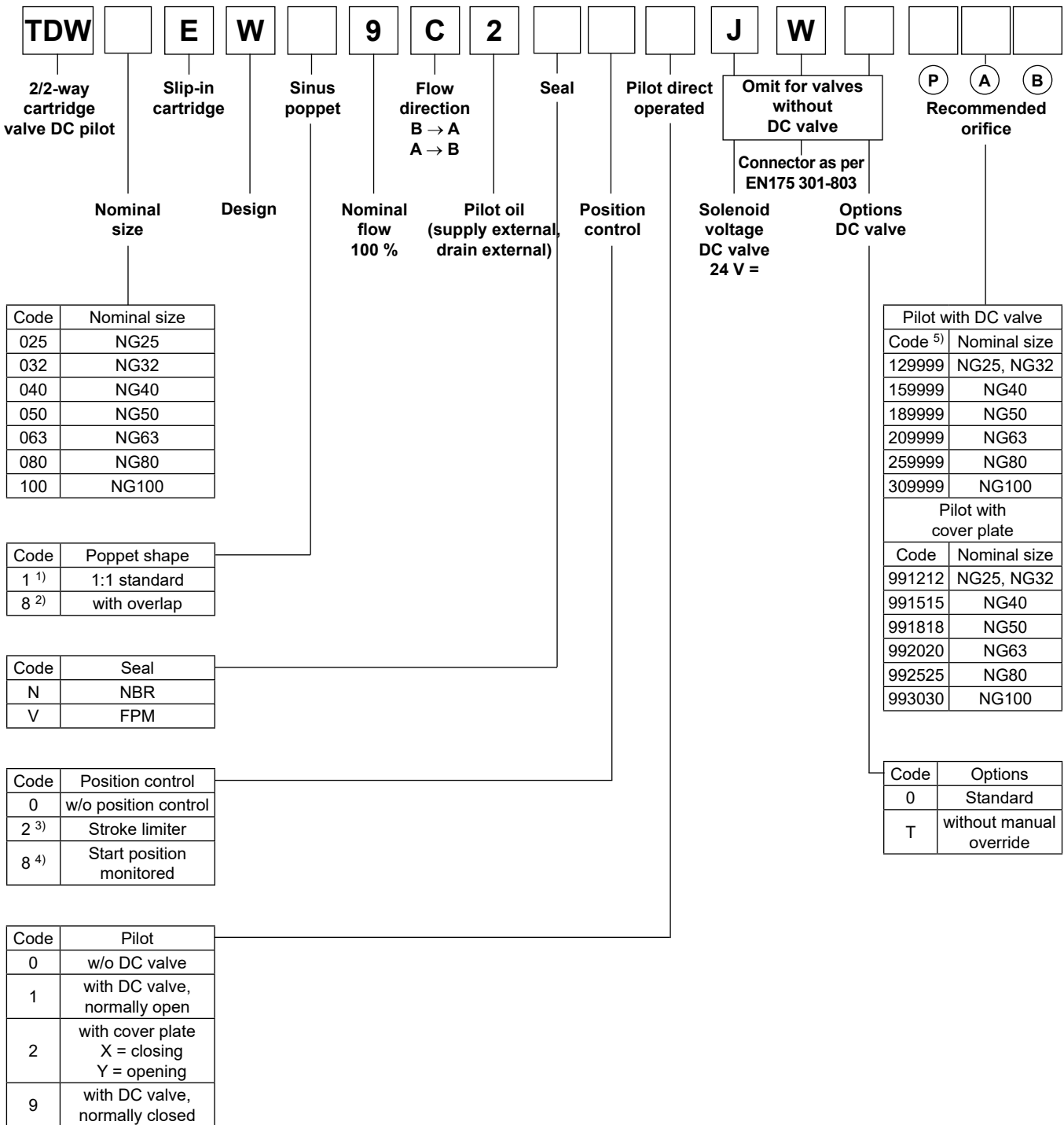
TDW025



Function symbols



Ordering Code



8

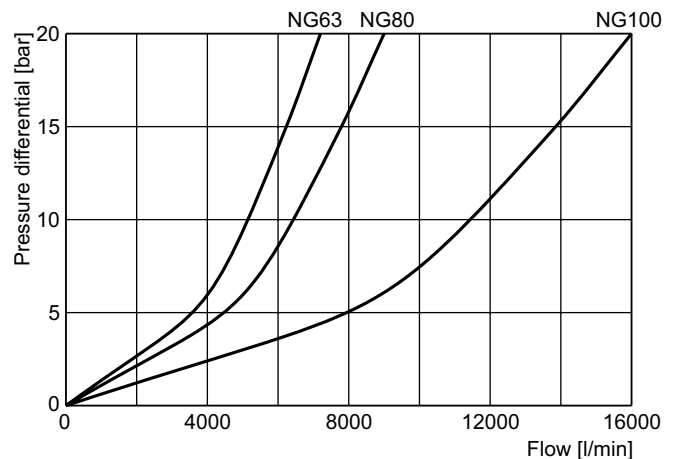
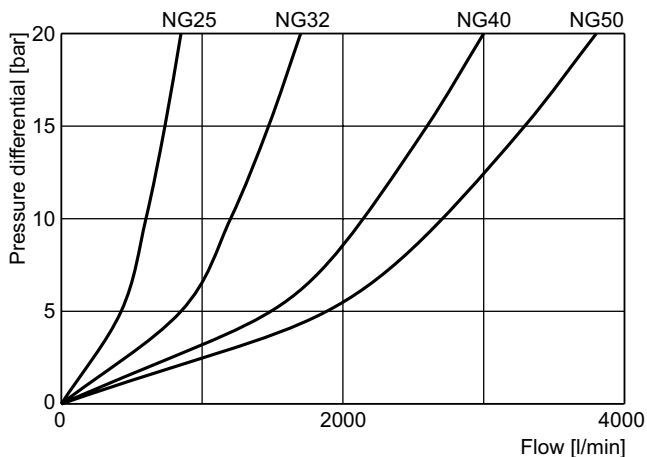
1) Not for start position monitored, Code 8.
 2) Only in combination with start position monitored, code 8).
 3) Only for NG25 to NG63.
 4) Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).
 5) Example code 129999: 12 = dia. 1.2 mm, 99 = without orifice.

Technical Data / Performance Curves

General		2-way slip-in cartridge valve according to ISO 7368							
Design		2-way slip-in cartridge valve according to ISO 7368							
Nominal size	DIN	NG25	NG32	NG40	NG50	NG63	NG80	NG100	
Mounting position		unrestricted							
Ambient temperature	[°C]	-20...+60							
MTTF _D value	[years]	75							
Weight	[kg]	8	10	12	23	49	102	154	
Hydraulic									
Max. operating pressure	[bar]	Ports A, B, X up to 350, port Y: max. 210 (350 bar with cover plate)							
Fluid		Hydraulic oil according to DIN 51524							
Fluid temperature	[°C]	-25...+70 (NBR: -25...+60)							
Viscosity	permitted	20...400							
	recommended	30...80							
Filtration		ISO 4406 (1999); 18/16/13							
Nominal flow at $\Delta p = 5$ bar	[l/min]	420	850	1500	1900	3600	4500	8000	
Recommended max. flow	[l/min]	800	2000	3000	4500	8000	13000	20000	
Flow direction		B to A / A to B							
Pilot pressure	[bar]	must be as high as system pressure							
Overlap (for poppet code 8)	[mm]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	
Electrical characteristics									
Duty ratio		100 % ED; CAUTION: coil temperature up to 150 °C possible							
Protection class		IP 65 in accordance with EN 60529 (with correctly mounted plug-in connector)							
	Code	J							
Supply voltage	[V]	24 V =							
Tolerance supply voltage	[%]	±10							
Current consumption	hold	[A]	1.29						
Current consumption	in rush	[A]	1.29						
Power consumption	hold		31 W						
Power consumption	in rush		31 W						
Solenoid connection		Connector as per EN 175301-803, solenoid identification as per ISO 9461 (code W).							
Wiring min.	[mm ²]	3 x 1.5 recommended							
Wiring length max.	[m]	50 recommended							

With electrical connections the protective conductor (PE ↓) must be connected according to the relevant regulations.

p/Q Performance curves (sinus poppet code 1 and 8)



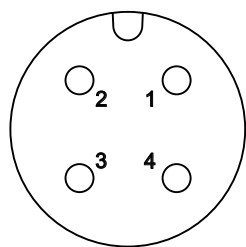
All characteristic curves measured with HLP46 at 50 °C.

Electrical characteristics of position control M12x1 as per IEC 61076-2-101, NG25 to NG100

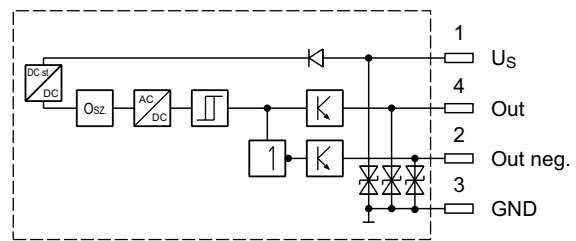
Supply voltage	[VDC]	24
Tolerance supply voltage	[%]	±20
Ripple supply voltage	[%]	≤10
Polarity protection	[V]	300
Current consumption without load	[mA]	≤20
Switching hysteresis	[mm]	<0.06
Max. output current per channel, ohmic	[mA]	250
Ambient temperature	[°C]	-20 ... +60
Protection		IP65 acc. EN 60529 (with correctly mounted plug-in connector)
Min. distance to next AC solenoid	[m]	0.1
Interface		M12x1 to IEC 61076-2-101
CE conform		EN 61000-4-2 / EN 61000-4-4 / EN 61000-4-6 ¹⁾ / ENV 50140 / ENV 50204

¹⁾ Only guaranteed with screened cable and female connector

M12 pin assignment



- 1 + U_S 19.2...28.8 V
- 2 Out B: normally open
- 3 0V
- 4 Out A: normally closed

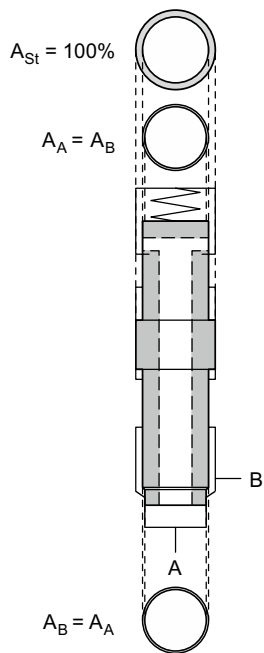


Outputs: Open collector

8

Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

Control surfaces



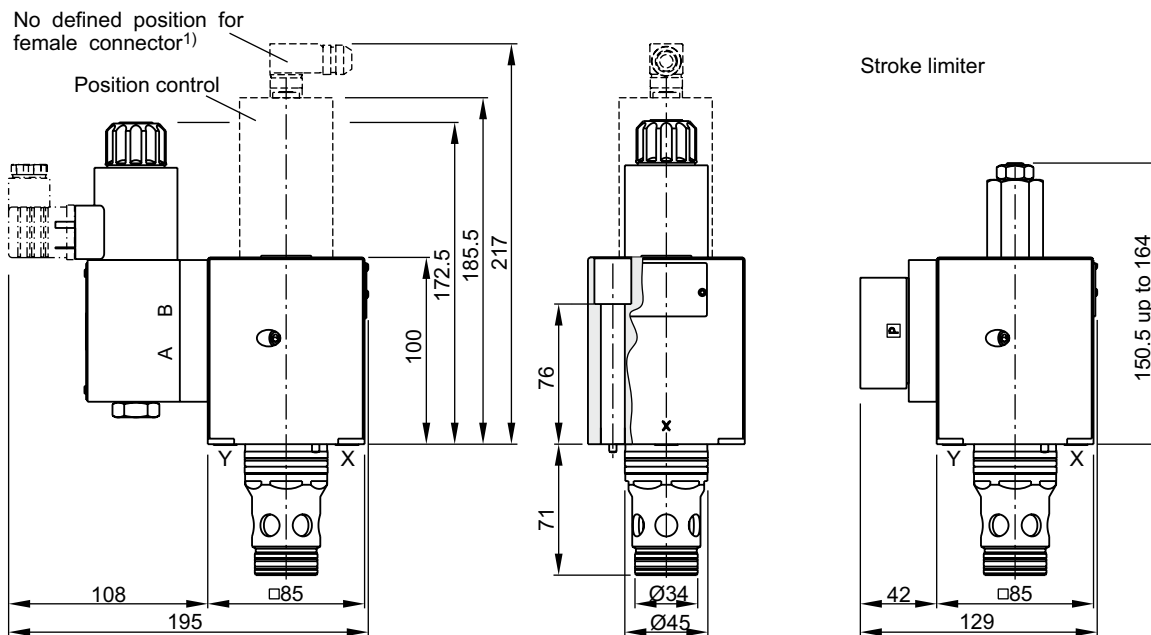
NG	Pilot oil volume for full stroke [cm ³]	A _{ST} [%]	Standard poppet 1 A _B / A _{ST} [%]	Overlapped poppet 8 A _B / A _{ST} [%]
25	4.7	100	0	10.6
32	5.3	100	0	10.9
40	8.3	100	0	11.2
50	12.9	100	0	11.5
63	18.9	100	0	11.7
80	28.5	100	0	11.8
100	35.3	100	0	12.0

The 1:1 standard poppet (Code 1) is pressure balanced. The overlapped poppet (Code 8) shows smaller areas A_A respectively A_B.

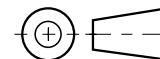
E.g. for NG100




$$\begin{aligned}
 A_{Nom} &= 7854 \text{ mm}^2 = 600 \% \\
 A_{St} &= 1307 \text{ mm}^2 = 100 \% \\
 A_A=A_B &= 157 \text{ mm}^2 = 12 \%
 \end{aligned}$$

Dimensions NG25



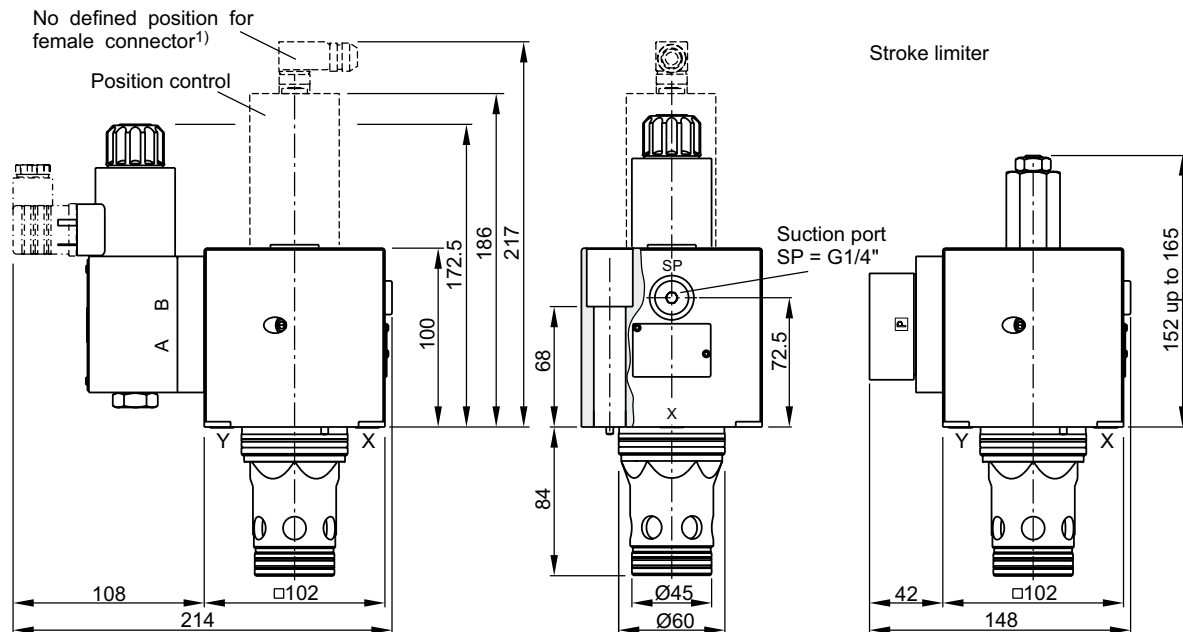
Note:
 Accu port XX and suction port SP non-existent



NG	Bolt kit 		NBR 	Kit	FPM
25	BK504 4x M12x100 ISO 4762-12.9	108 Nm	SK-TDW025EN	SK-TDW025EV	

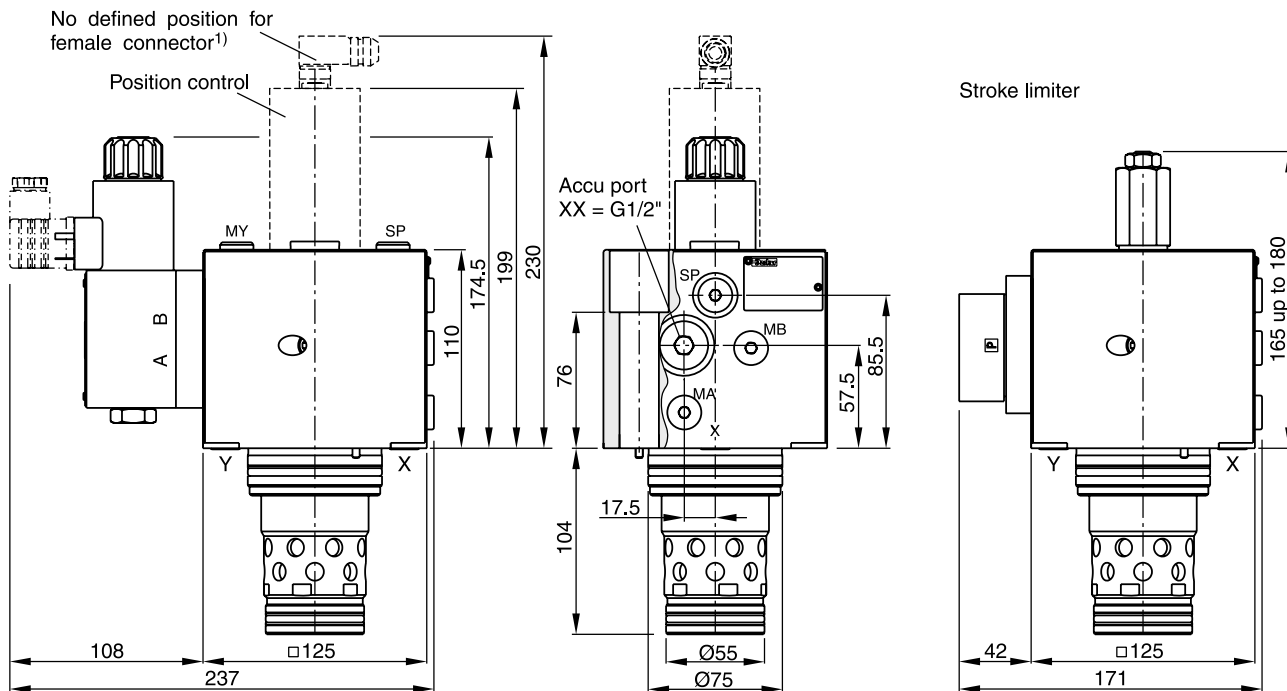
¹⁾ Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

NG32






Note:
 Accu port XX non-existent

NG40



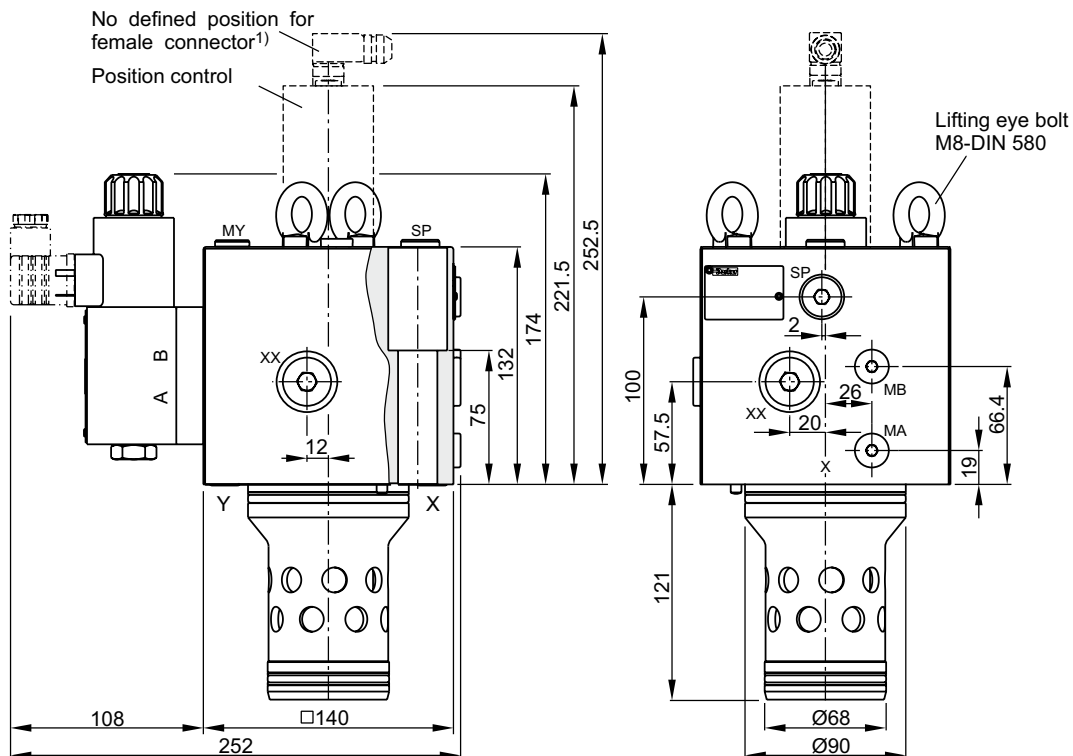
Suction port SP = G1/4" Ports MA and MB = G1/4"



NG	Bolt kit 		NBR	Kit 	FPM
32	BK529 4 x M16x100 ISO 4762-12.9	264 Nm	SK-TDW032EN		SK-TDW032EV
40	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TDW040EN		SK-TDW040EV

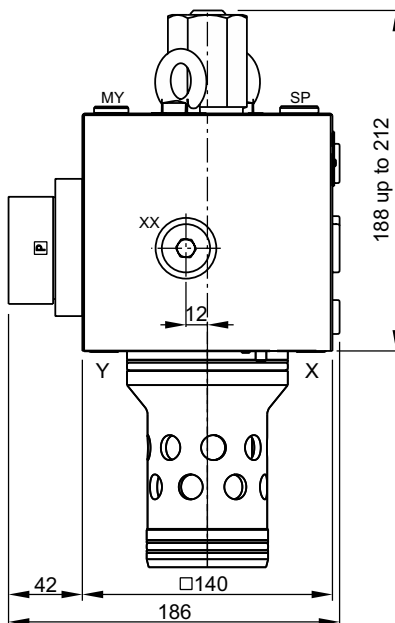
¹⁾ Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

NG50



Lifting thread for disassembly M12

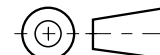
Stroke limiter






Suction port
 SP = G3/8"

Accu port
 XX = G1/2"

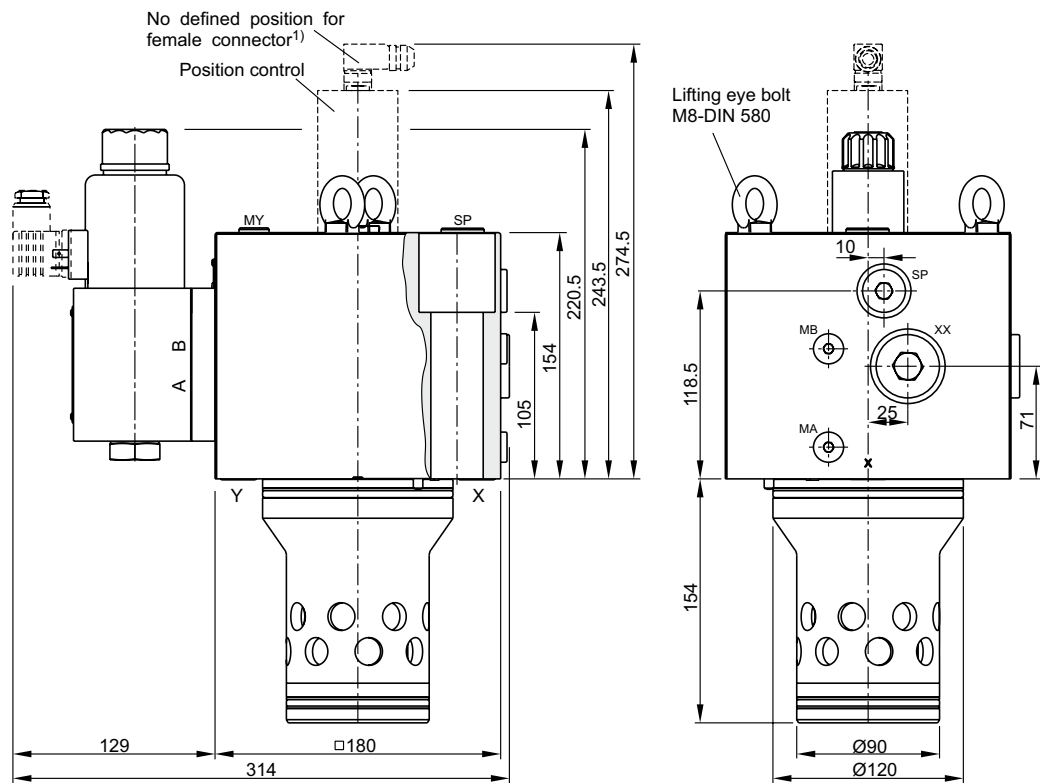
Ports
 MA and MB = G1/4"



NG	Bolt kit 		NBR	Kit 	FPM
50	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TDW050EN	SK-TDW050EV	

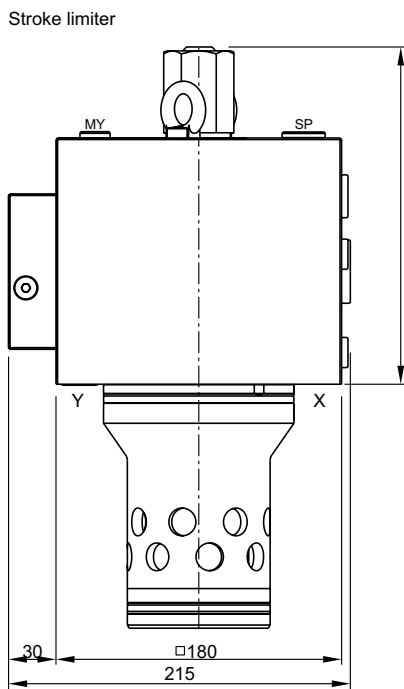
¹⁾ Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

NG63



Lifting thread for disassembly M12

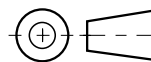
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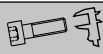




Suction port
 SP = G1/2"

Accu port
 XX = G3/4"

Ports
 MA and MB = G1/4"

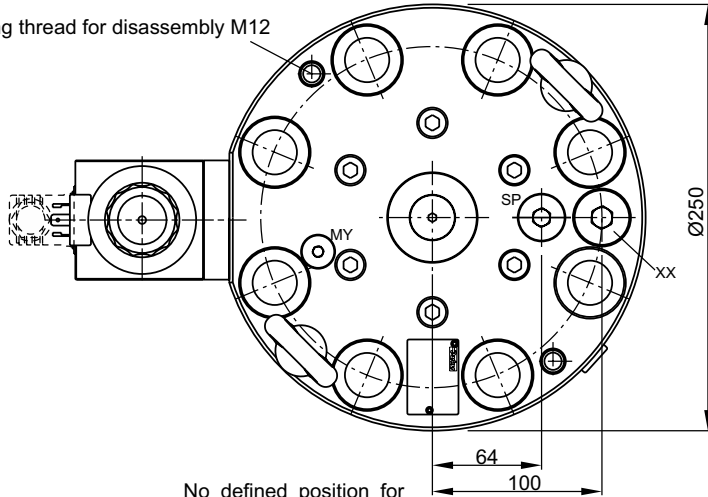


NG	Bolt kit 		NBR	Kit 	FPM
63	BK518 4 x M30x160 ISO 4762-12.9	1775 Nm	SK-TDW063EN		SK-TDW063EV

¹⁾ Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

NG80

Lifting thread for disassembly M12



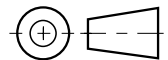
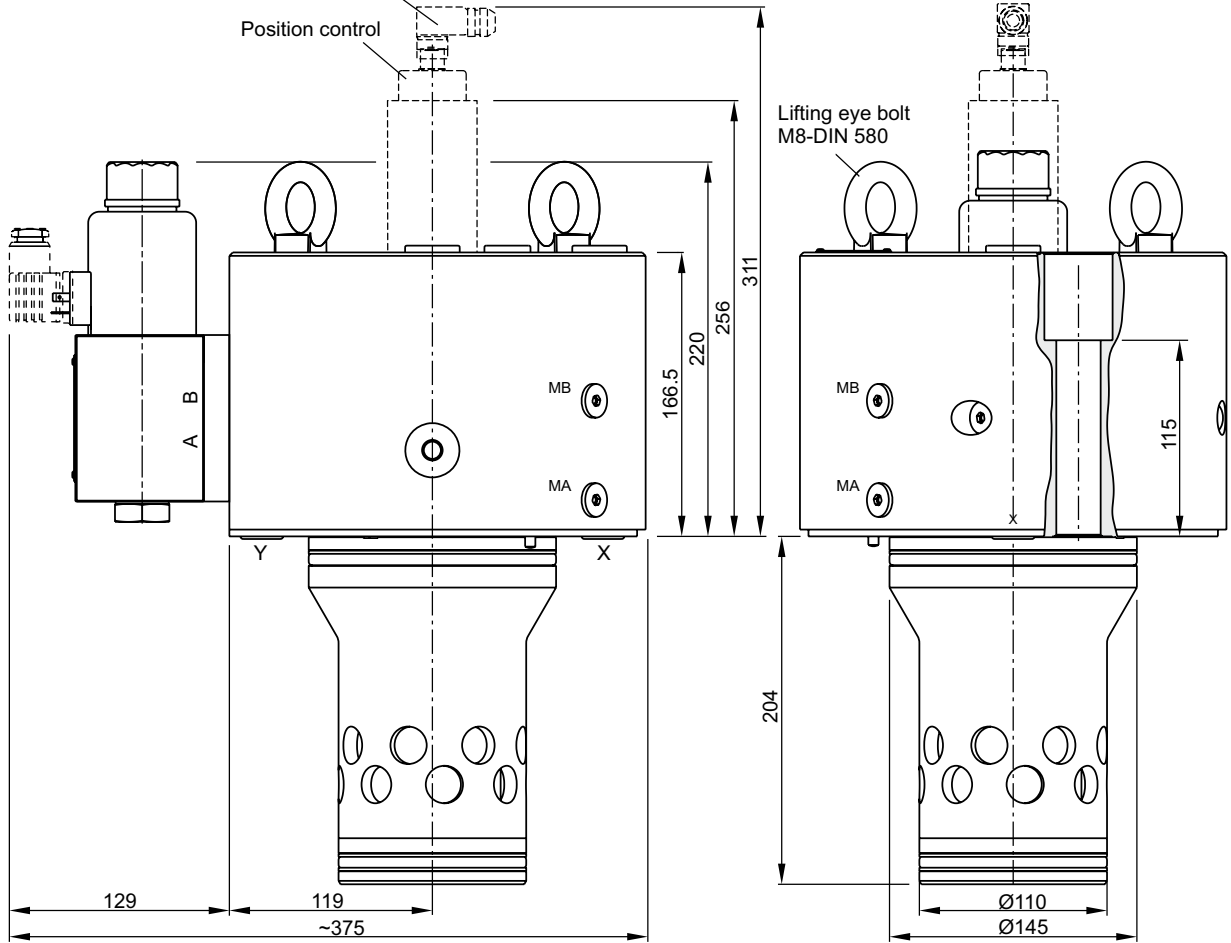
Accu port
 XX = G3/4"




Suction port
 SP = G1/2"

Ports
 MA and MB = G1/4"

No defined position for female connector¹⁾

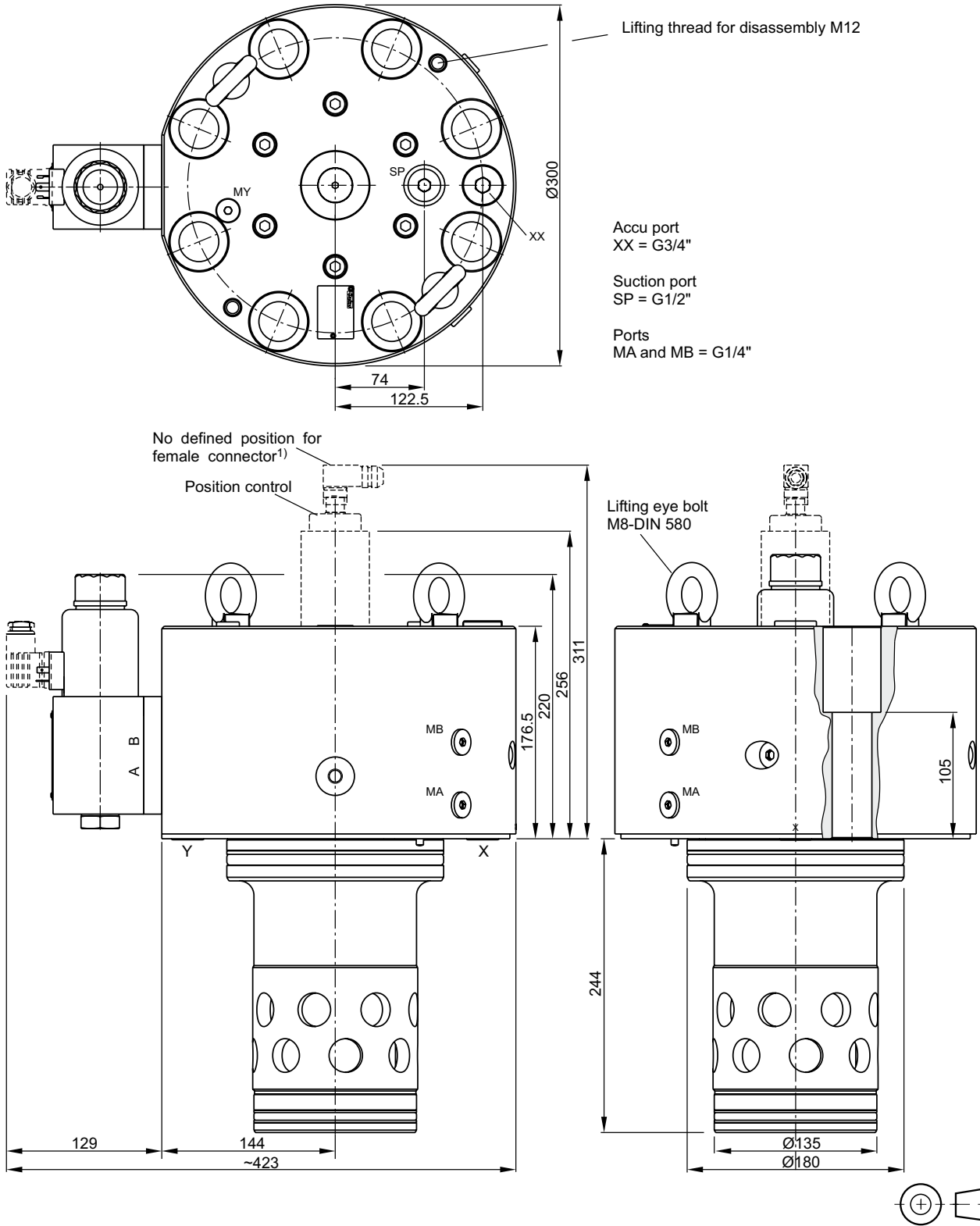
Position control






NG	Bolt kit 		NBR	Kit 	FPM
80	BK530 8x M24x160 ISO 4762-12.9	890 Nm	SK-TDW080EN		SK-TDW080EV

¹⁾ Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

NG100



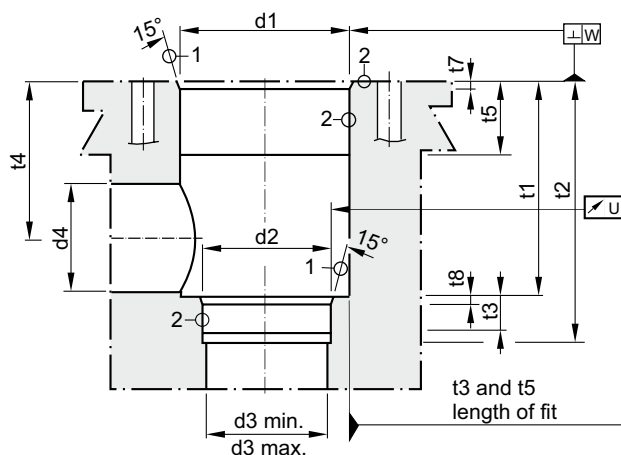
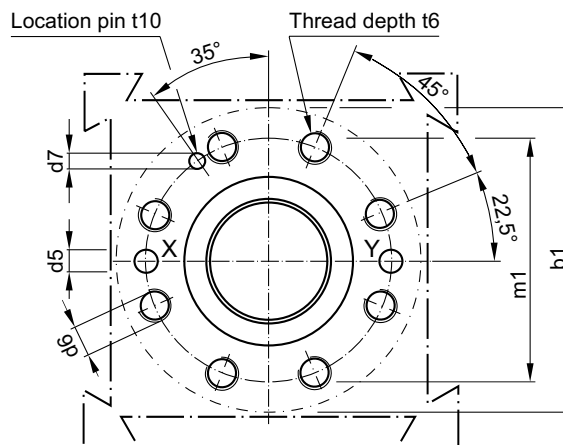
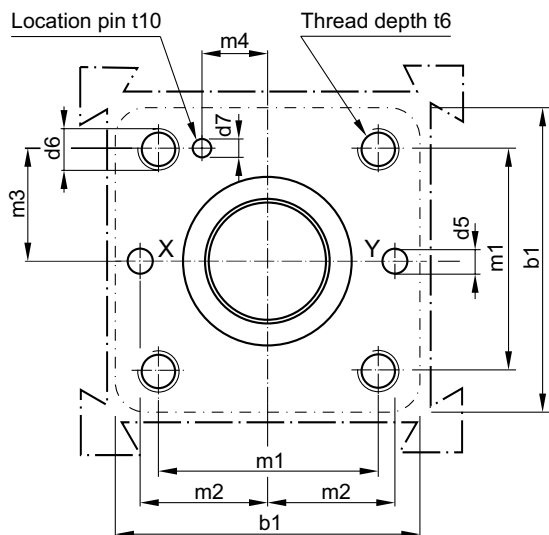
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NG	Bolt kit 		NBR	Kit 	FPM
100	BK531 8x M30x150 ISO 4762-12.9	1775 Nm	SK-TDW100EN		SK-TDW100EV

¹⁾ Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

Code: ISO 7368-B*-2-A/B NG25 to NG63

Code: ISO 7368-B*-2-A NG80 to NG100



Required surface finish:

$$\textcircled{1} = \sqrt{R_{\max} 16}, \textcircled{2} = \sqrt{R_{\max} 8}$$

Deviating from ISO 7368 it is advisable to increase the diameters d3, d4 and d5.

Size	b1	d1 H7	d2 H7	d3	d3 max	d4 max ¹⁾	d5 max	d6	d7 H13	m1±0.2	m2±0.2	m3±0.2
25	85	45	34	25	27	32	6	M 12	4	58	33	29
32	102	60	45	32	44	50	8	M 16	6	70	41	35
40	125	75	55	40	54	63	10	M 20	6	85	50	42.5
50	140	90	68	50	67	80	10	M 20	8	100	58	50
63	180	120	90	63	89	100	12	M 30	8	125	75	62.5
80	250	145	110	80	109	110	16	M 24	10	200	—	—
100	300	180	135	100	134	150	20	M 30	10	245	—	—

Size	m4±0.2	t1+0.5	t2+1	t3	t4	t4 max ¹⁾	t5	t6	t7	t8	t10	U	W
25	16	58	72	12	44	40.5	30	35	2,5	2,5	10	0.03	0.05
32	17	70	85	13	52	44	15	35	2.5	2.5	10	0.03	0.1
40	23	87	105	15	64	54	15	45	3	3	10	0.05	0.1
50	30	100	122	17	72	59	17	45	4	3	10	0.05	0.1
63	38	130	155	20	95	78	19	65	4	4	10	0.05	0.2
80	—	175	205	25	130	115	32	50	5	5	10	0.05	0.2
100	—	210	245	29	155	133	32	53	5	5	10	0.05	0.2

¹⁾ Only in combination with d4max and t4max.

