

The 2-way high-response valves series TDP are used in applications where high flow has to be precisely controlled at maximum dynamics. Typical applications are die casting, injection moulding and hydraulic presses.

Function

The 2-way high-response valves TDP have a 2-stage design consisting of a DFplus pilot valve and a main stage with poppet and LVDT.

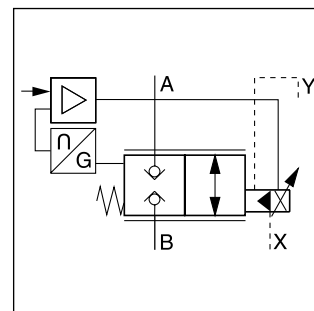
With the DFplus pilot valve the TDP achieves extremely fast response times: from 10.5 ms (NG25) up to 46 ms (NG125) with an accuracy of <0.1 % of the nominal flow. The pilot valve actively controls the poppet - independent of the pressure conditions in the main ports.

It is basically required that the pilot pressure is at the level of the system pressure. At low system pressure the pilot pressure should be min. 140 bar, when high valve dynamics are desired.

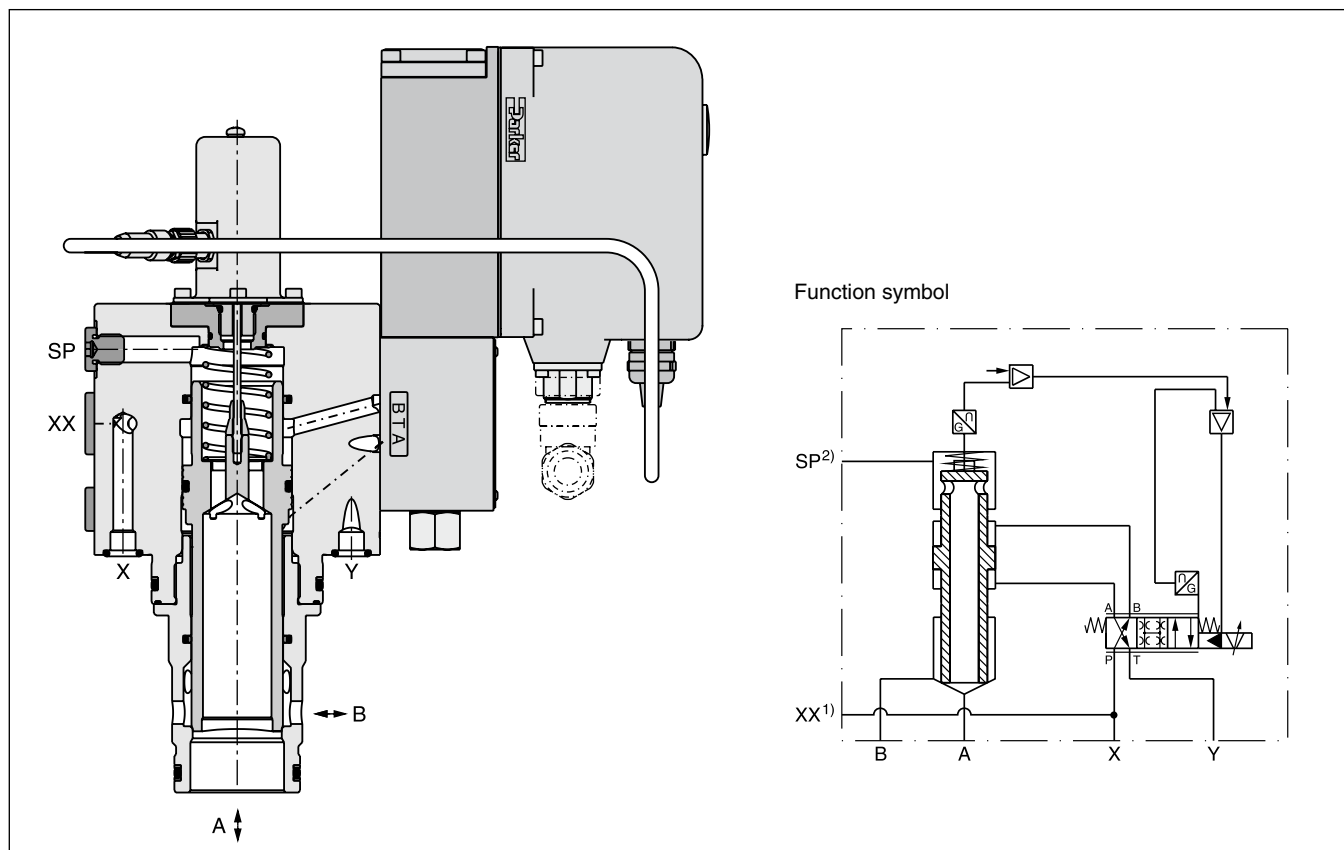
The integrated electronics in the pilot of the TDP has two control loops for the main poppet and the pilot spool.



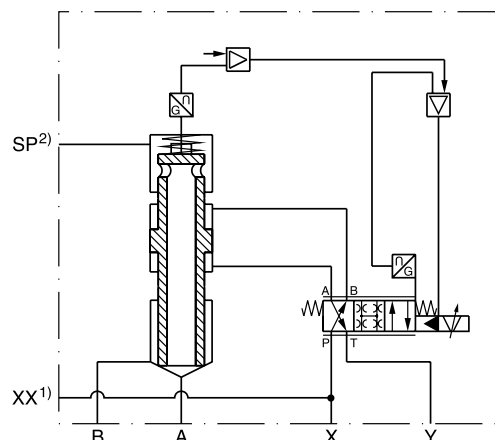
TDP032

**Features**

- Active pilot operated 2-way high-response valve
- Cavity and mounting pattern according to ISO 7368 (except for size NG125)
- Fast step response
- Flow direction B to A and A to B
- Completely mounted and adapted unit with integrated electronics
- 8 sizes NG25 up to NG125

TDP040

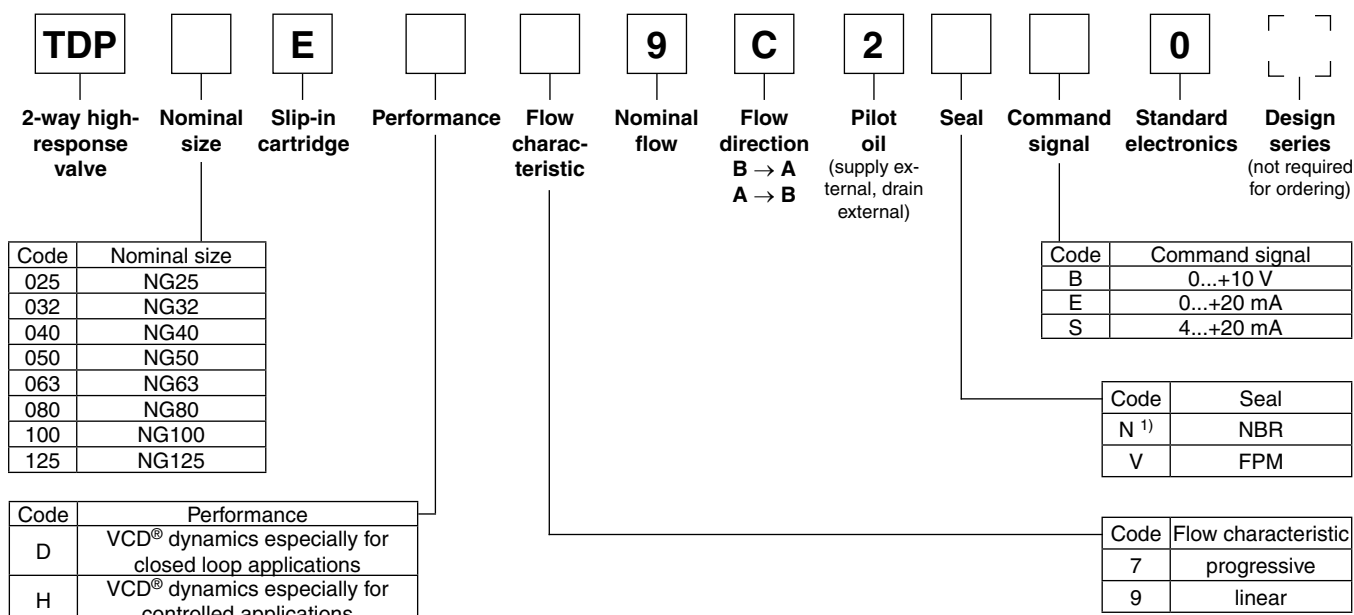
Function symbol



¹⁾ NG25 and NG32 without accu port XX.

²⁾ NG25 without suction port SP.

Ordering code

¹⁾ HFC fluids suitable

The DFplus pilot valve is also available with EtherCAT interface, see chapter 3, D*FP and D*1FP with EtherCAT.

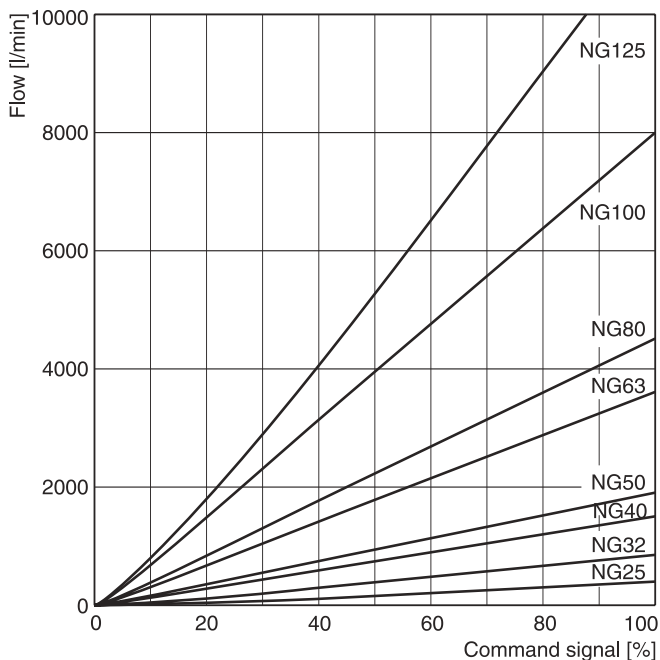
Please order connector separately.
Angle female connector must be used for NG25 to NG50.

8

Characteristic flow/signal line

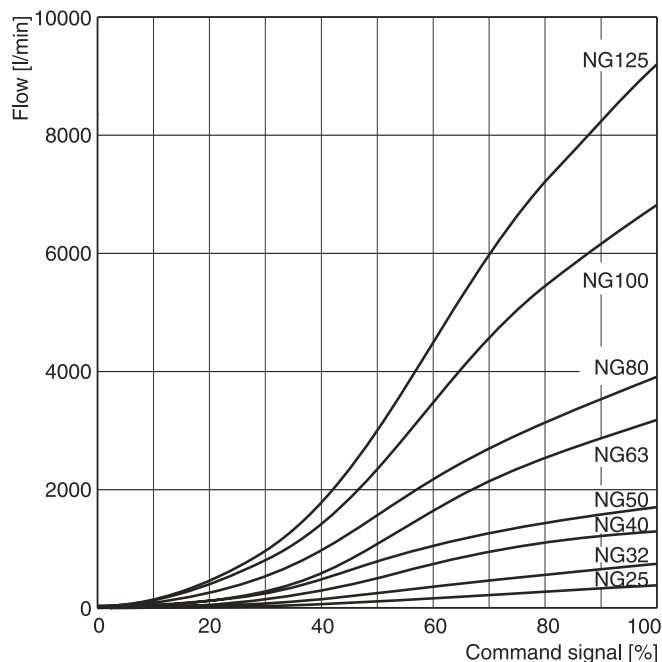
 $\Delta p = 5 \text{ bar}$

Linear (code 9)



Opening point factory set to 3 %

Progressive (code 7)
(for TDL replacement)



Flow at different Δp $Q_{\text{actual}} = Q_{\text{nominal}} \cdot \sqrt{\Delta p_{\text{actual}} / \Delta p_{\text{nominal}}}$

Characteristic curve measured with HLP46 at 50 °C.

TDP UK.INDD CM 14.09.15

General										
Design		Proportional throttle valve, slip-in cartridge according to ISO 7368 (except for size NG125)								
Nominal size		DIN	NG25	NG32	NG40	NG50	NG63	NG80	NG100	NG125
Mounting position			unrestricted							
Ambient temperature		[°C]	-20...+50							
MTTF _D value ¹⁾		[years]	75							
Weight		[kg]	11	13	15	26	52	105	157	193
Vibration resistance		[g]	10 sinus 5...2000 Hz acc. IEC 68-2-6 30 random noise 20...2000 Hz acc. IEC 68-2-36 15 shock acc. IEC 68-2-27							
Hydraulic										
Max. operating pressure		[bar]	Ports A, B, X and SP up to 350, XX observe accumulator pressure rating; port Y: max. 35							
Fluid			Hydraulic oil according to DIN 51524							
Fluid temperature		[°C]	-20...+60 (NBR: -25...+60)							
Viscosity		recommended [cSt] / [mm²/s] permitted [cSt] / [mm²/s]	30 ... 80 20 ... 400							
Filtration			ISO 4406 (1999); 18/16/13							
Nominal flow at Δp = 5 bar (linear)		[l/min]	420	850	1500	1900	3600	4500	8000	11500
Recommended max. flow (linear)		[l/min]	800	2000	3000	4500	8000	13000	20000	29000
Nominal flow at Δp = 5 bar (progressive)		[l/min]	380	750	1300	1700	3200	3900	6800	9200
Recommended max. flow (progressive)		[l/min]	700	1750	2600	4000	7000	11250	17000	23000
Flow direction			B to A / A to B							
Pilot pressure		[bar]	must be as high as system pressure							
Pilot oil		supply drain	external via X external via Y							
Leakage in pilot valve at 100 bar		[ml/min]	<400							
Pilot valve size			NG06				NG10			
Max. pilot flow at 140 bar pilot pr.		[l/min]	23	30	40	40	70	80	100	100
Static/dynamic										
(for optimal dynamics see installation recommendation)										
Step response at pilot press. >140 bar		[ms]	10.5	12	14	20	17	23	28	46
Frequency response at pilot press. >140 bar										
Amplitude -3 dB; 10 % ±5 %		[Hz]	95	80	74	66	52	46	41	23
Phase -90°; 10 % +5 %		[Hz]	85	63	59	52	56	51	47	45
Hysteresis		[%]	< 0.1							
Sensitivity		[%]	< 0.05							
Temperature drift		[%/K]	< 0.025							

Electrical									
Duty ratio	[%]	100							
Protection class		IP65 in accordance with EN 60529 (with correctly mounted plug-in connector)							
Supply voltage / ripple	[V]	DC 22 ... 30, electric shut-off at < 19, ripple < 5 % eff., surge free							
Current consumption max.	[A]	3.5							
Pre-fusing	[A]	4.0 A medium lag							
Input signal									
Code B Voltage	[V]	0...+10, ripple < 0,01 % eff., surge free							
Impedance	[kOhm]	100							
Code E Current	[mA]	0...+20, ripple < 0,01 % eff., surge free							
Impedance	[Ohm]	< 250							
Code S Current	[mA]	4...20, ripple < 0,01 % eff., surge free							
Impedance	[Ohm]	< 3,6 mA = disable, > 3,8 mA = enable on according to NAMUR NE43							
Differential input max.	[V]	30 for terminal D and E against PE (terminal G) 11 for terminal D and E against 0V (terminal B)							
Enable signal	[V]	5...30, Ri = 9 kOhm							
Diagnostic signal	[V]	0...+10 / +12.5 error detection, rated max. 5 mA							
EMC		EN 61000-6-2, EN 61000-6-4							
Electrical connection		6 + PE acc. EN 175201-804							
Wiring min.	[mm²]	7 x 1.0 (AWG16) overall braid shield							
Wiring length max.	[m]	50							

¹⁾ If valves with onboard electronics are used in safety-related parts of control systems, in case the safety function is requested, the valve electronics voltage supply is to be switched off by a suitable switching element with sufficient reliability.

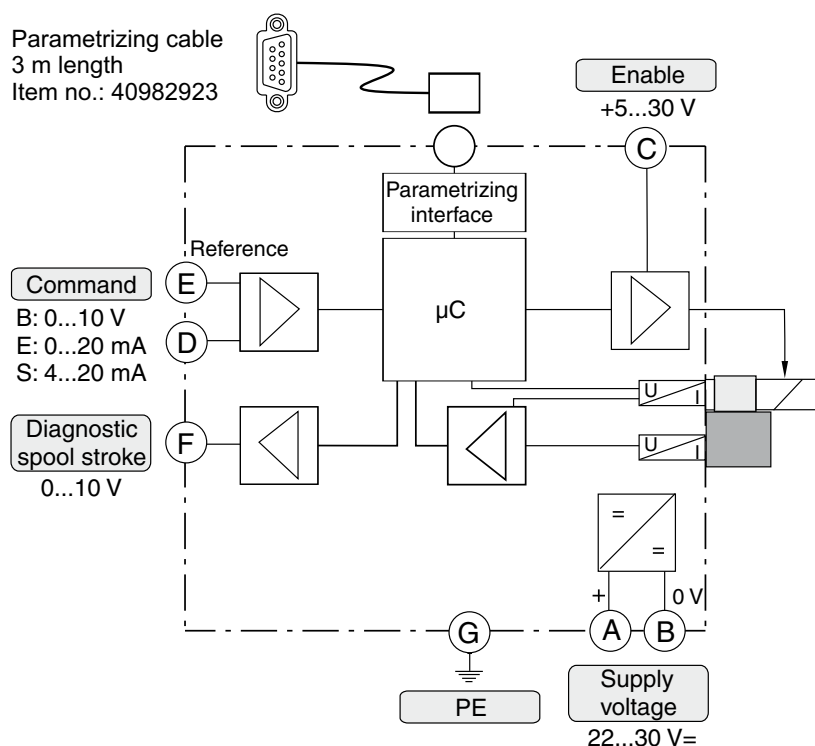
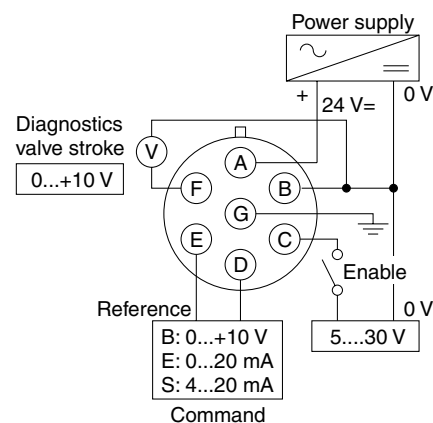
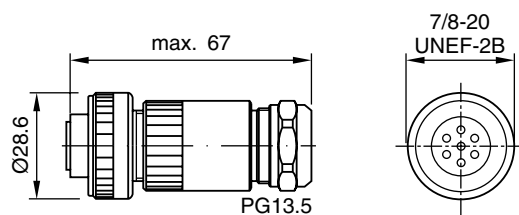
Installation recommendations

The maximum pilot flow is given in the technical data. At insufficient pilot oil supply – e.g. because of long distances and/or small diameters – an accumulator can be connected to port XX. See selection guide for correct dimensions.

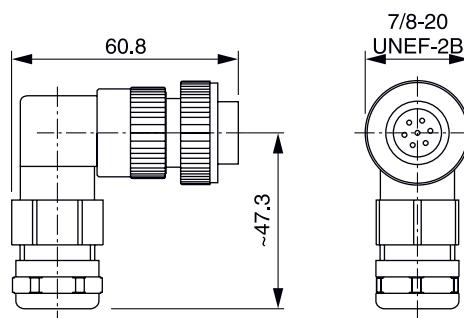
Selection guide

Size	Capacity [l]	Product type	Max. operating pressure [bar]	Recommended precharge pressure [bar]	Accu port XX
NG40	0.243	ADE016-25R	250	126	G ½
NG50	0.243	ADE032-21R	210	126	G ½
NG63	0.405	ADE050-21R	210	126	G ¾
NG80	0.647	ADE075-21R	210	126	G ¾
NG100	0.944	ADE100-21R	210	126	G ¾
NG125	on request				G 1

Maximum operating pressure and precharge pressure of the accumulator must be adapted to the pilot pressure.

Block circuit diagram electronics**Connection diagrams electronics****Female connector
(EMC conform)**

ID no. 5004072

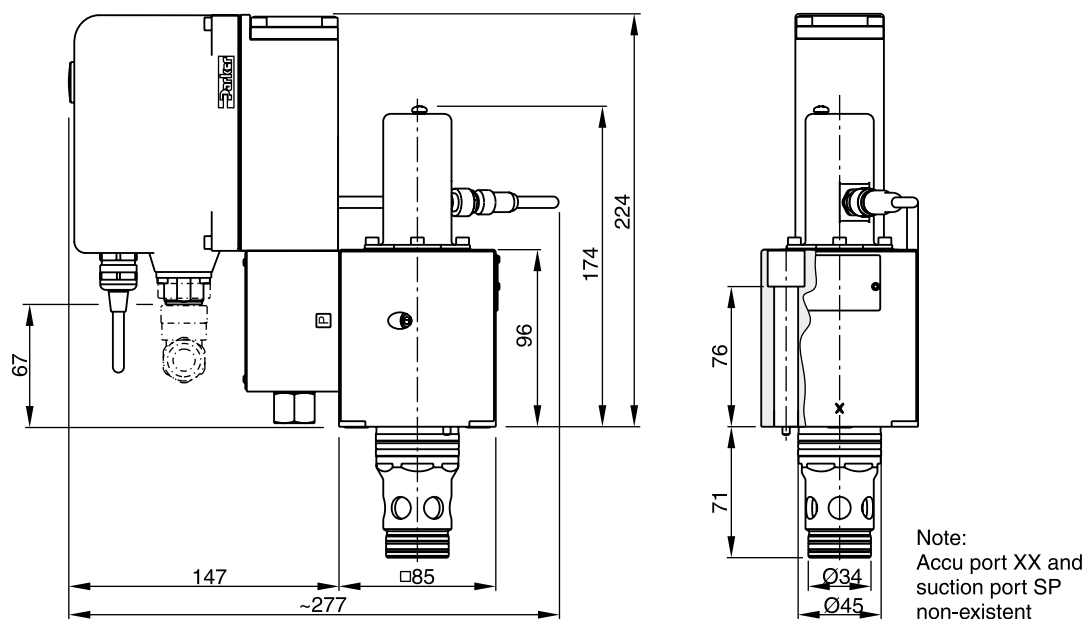
**Angle female connector
(EMC conform)**

ID no. 5005160

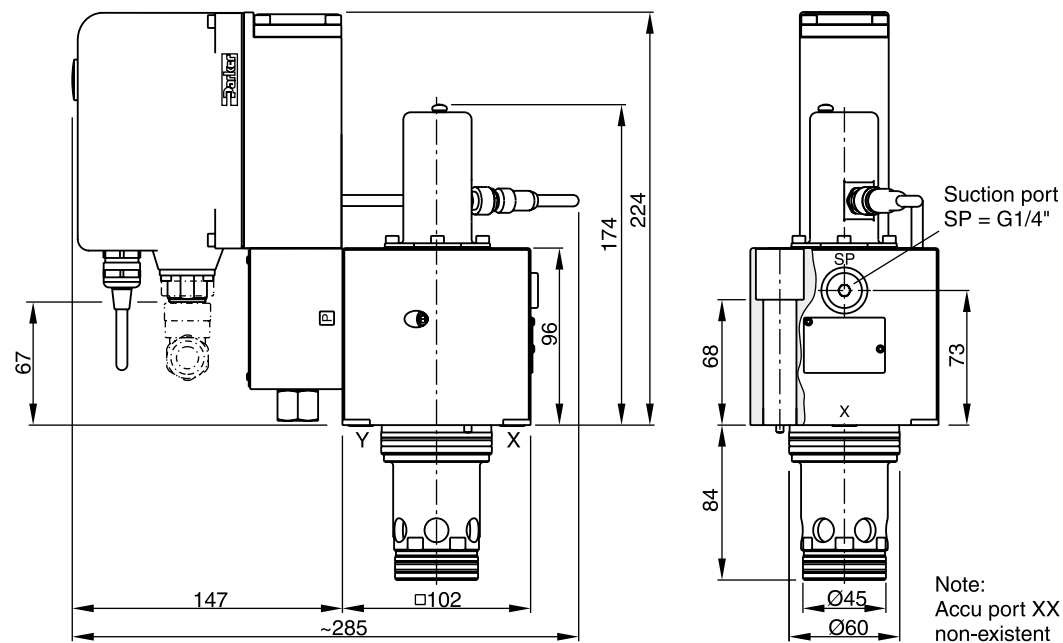
Please order plugs separately.

TDP UK.INDD CM 14.09.15

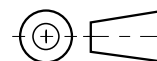
NG25



NG32

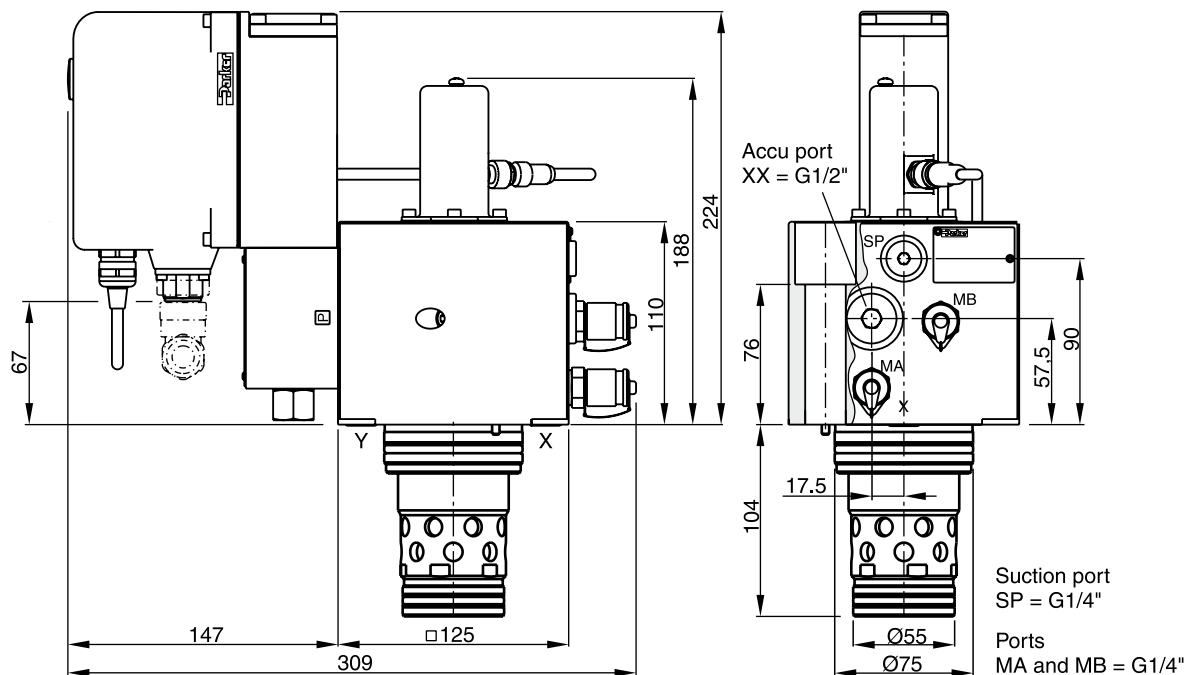


Suction port SP: Contact Parker for installation recommendation.

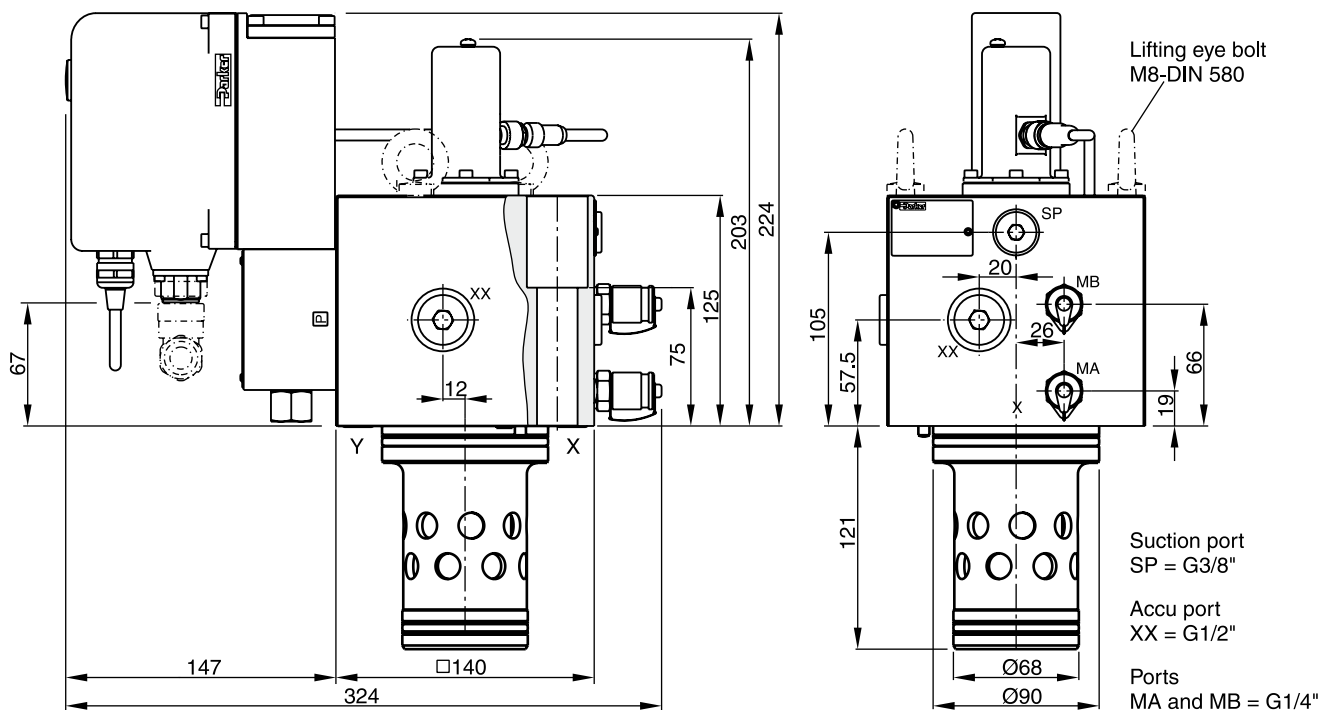


NG	Bolt kit - 		NBR 	Kit 	FPM
25	BK504 4 x M12x100 ISO 4762-12.9	108 Nm	SK-TDP025EN30		SK-TDP025EV30
32	BK529 4 x M16x100 ISO 4762-12.9	264 Nm	SK-TDP032EN30		SK-TDP032EV30

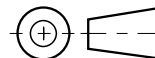
NG40



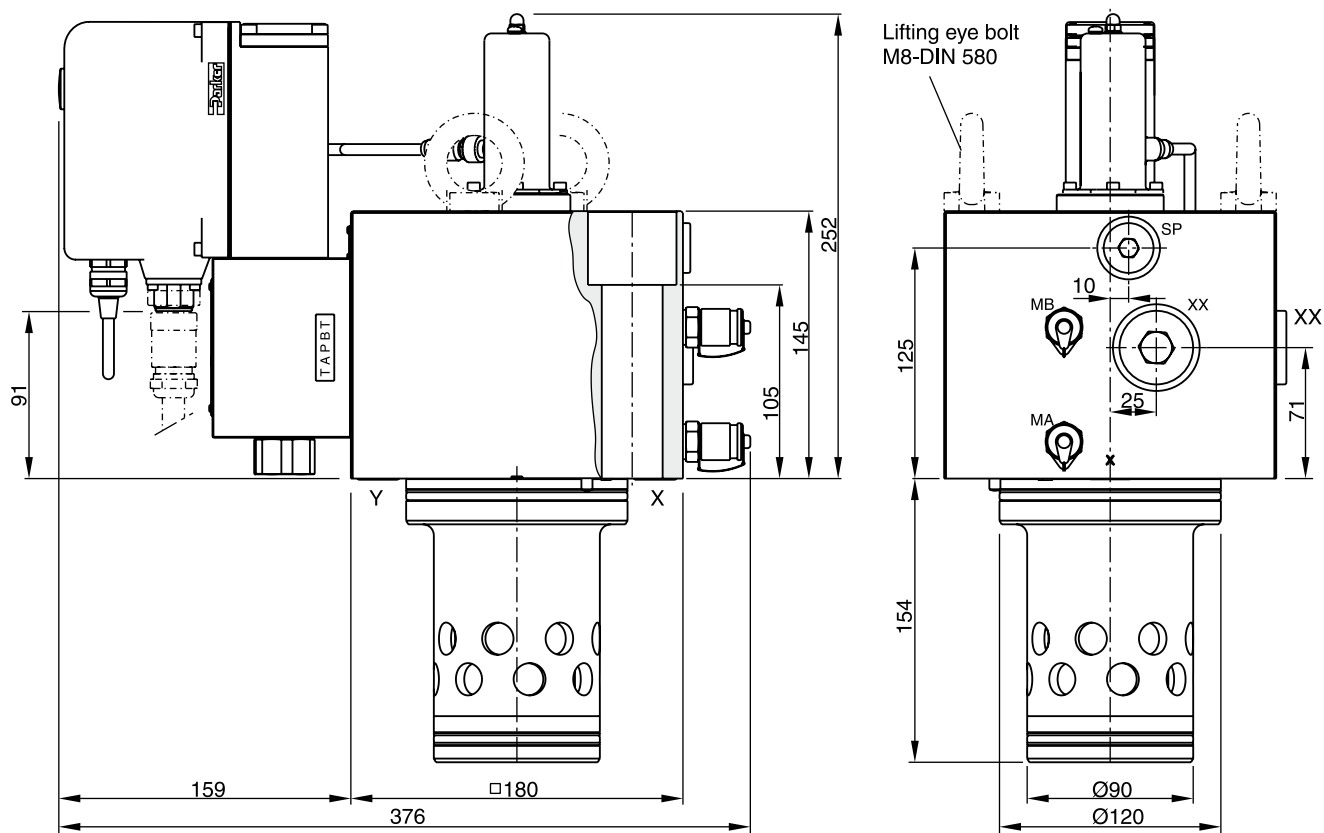
NG50



Lifting thread for disassembly M12

**Suction port SP:** Contact Parker for installation recommendation.

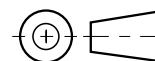
NG	Bolt kit - 		NBR 	Kit 
40	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TDP040EN30	SK-TDP040EV30
50	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TDP050EN30	SK-TDP050EV30

NG63

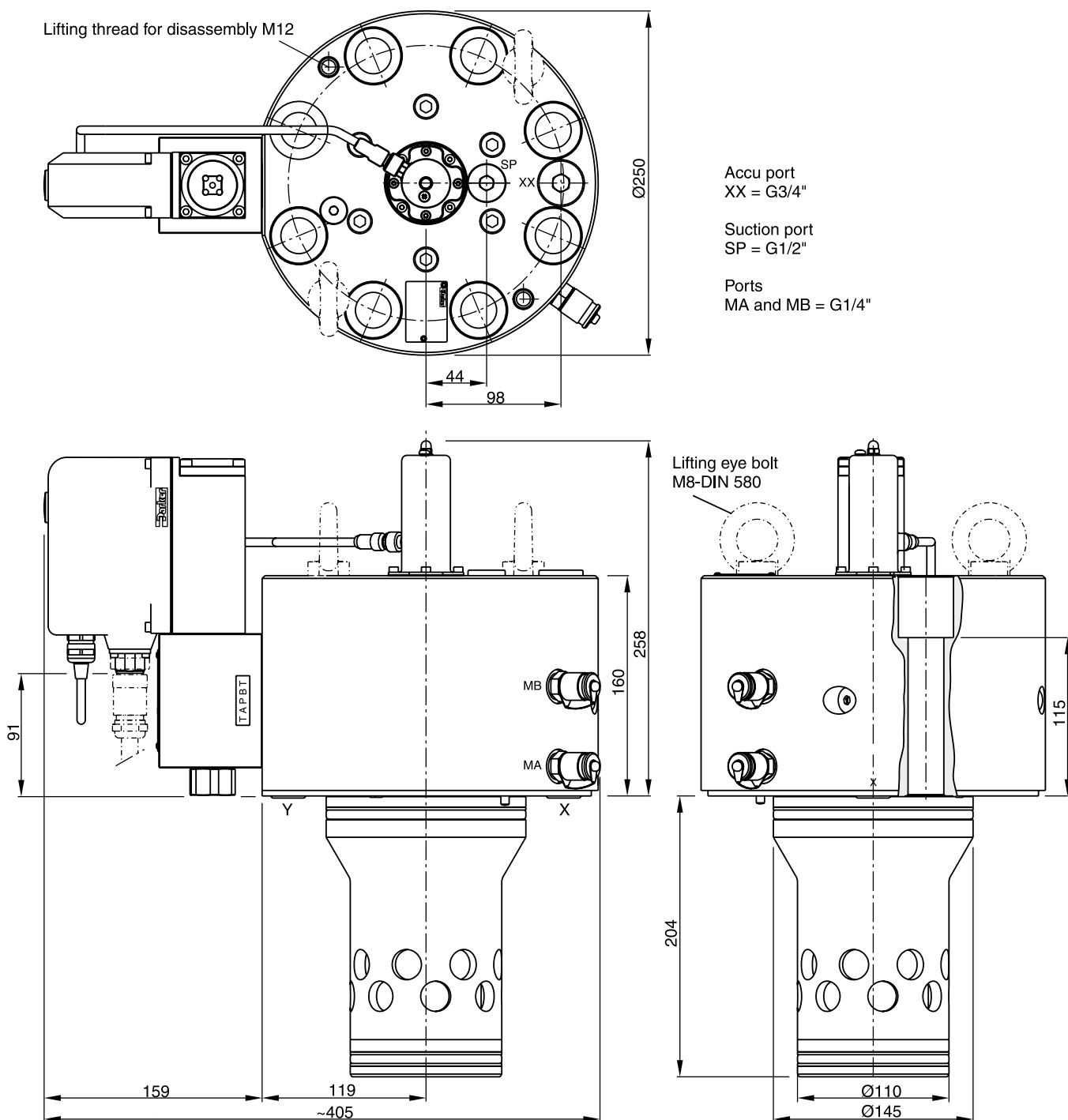
Suction port Accu port Ports
 SP = G1/2" XX = G3/4" MA and MB = G1/4"

Lifting thread for disassembly M12

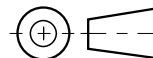
Suction port SP: Contact Parker for installation recommendation.



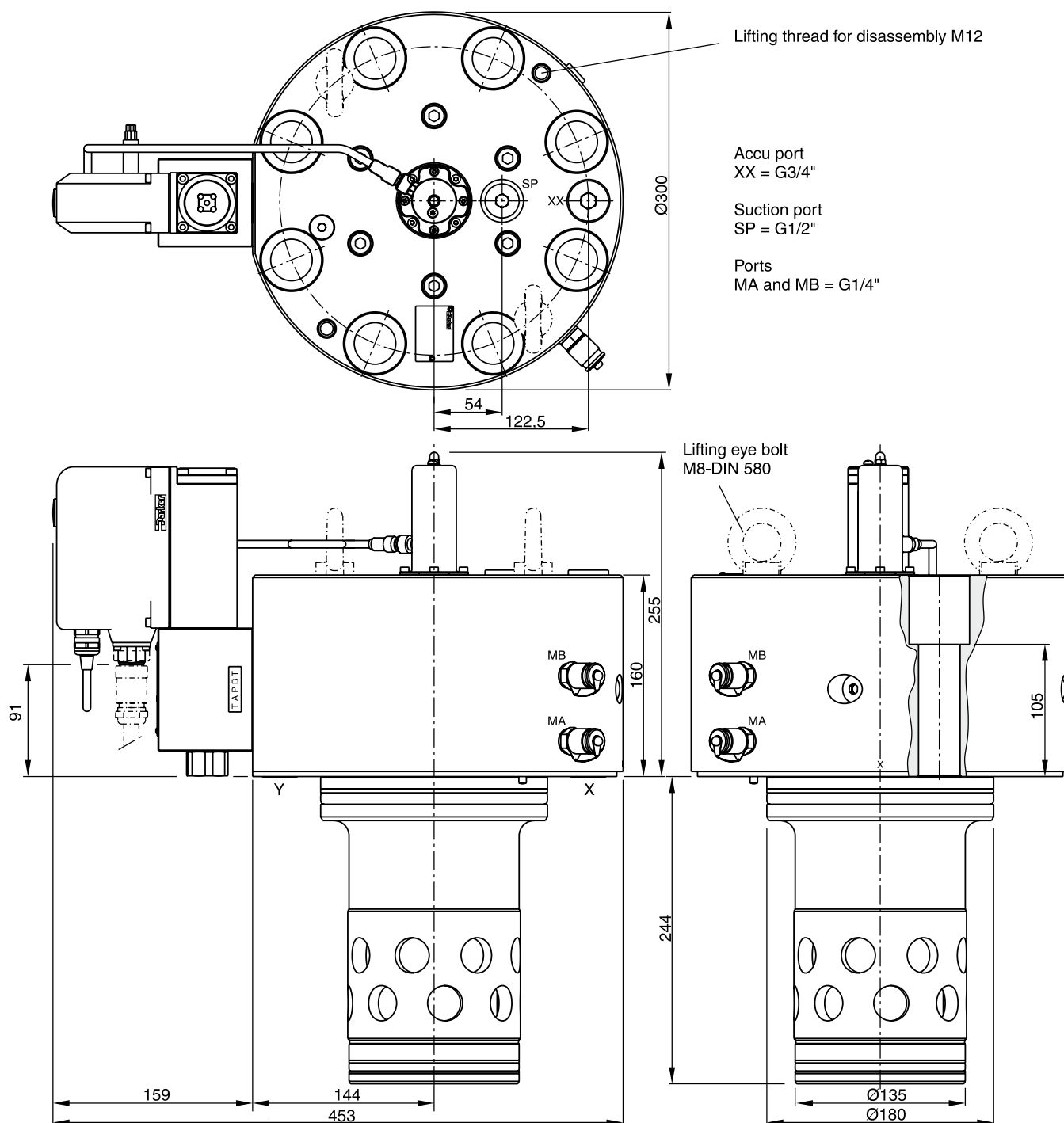
NG	Bolt kit - 		NBR 	Kit	FPM
63	BK518 4 x M30x160 ISO 4762-12.9	1775 Nm	SK-TDP063EN30		SK-TDP063EV30

NG80

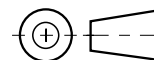
Suction port SP: Contact Parker for installation recommendation.



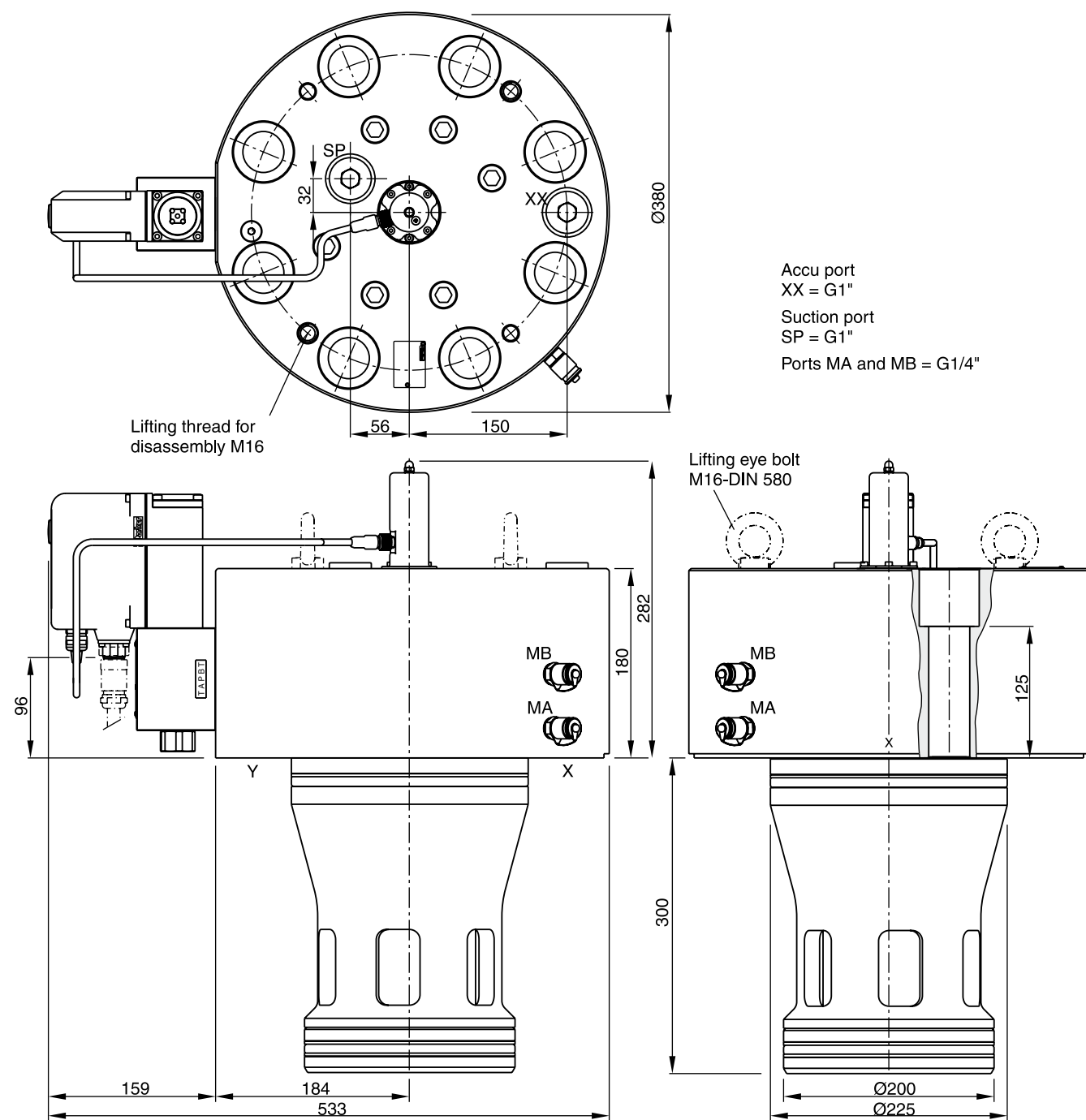
NG	Bolt kit - 		NBR	 Kit	FPM
80	BK530 8x M24x160 ISO 4762-12.9	890 Nm	SK-TDP080EN30		SK-TDP080EV30

NG100

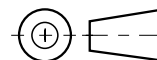
Suction port SP: Contact Parker for installation recommendation.



NG	Bolt kit - 		NBR 	Kit
100	BK531 8x M30x150 ISO 4762-12.9	1775 Nm	SK-TDP100EN30	FPM SK-TDP100EV30

NG125

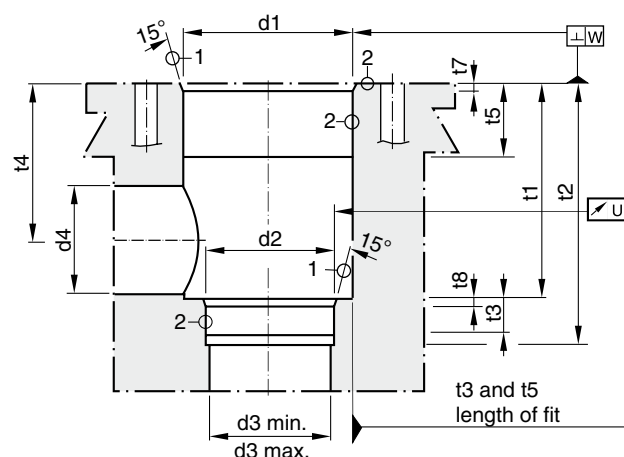
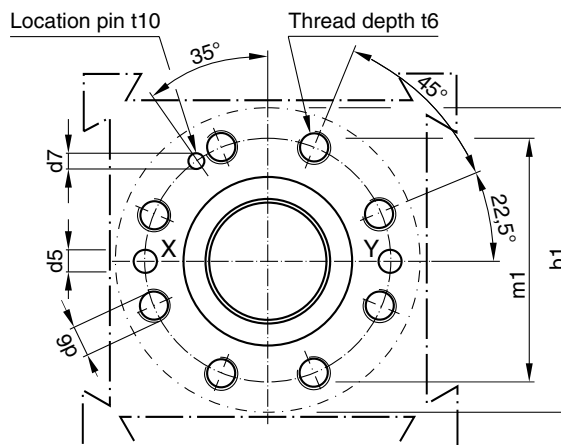
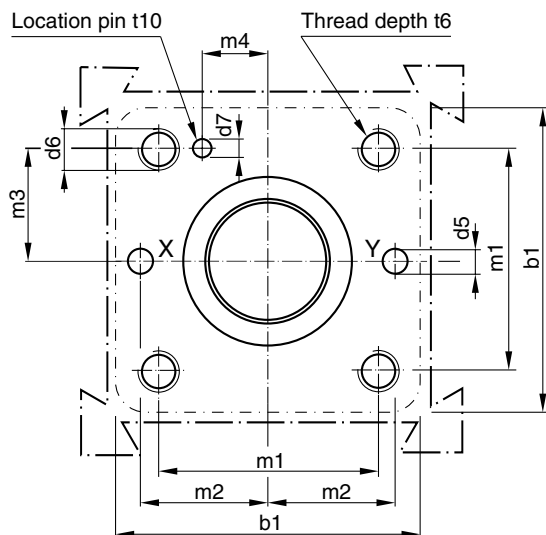
Suction port SP: Contact Parker for installation recommendation.



NG	Bolt kit - 		NBR	Kit 	FPM
125	BK537 8x M36x180 ISO 4762	3100 Nm	SK-TDP125EN30		SK-TDP125EV30

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

Code: ISO 7368-B*-2-A (except for size NG125)
NG80 to NG125



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 d_3 , d_4 and d_5 .

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	M12	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	—	—
125	380	225	200	125	150	150	32	M 36	9	300	—	—

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	25	25	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
125	—	257	300 ^{+0.15}	31	192	180	40	62	5.5	7	10	0.05	0.2

1) Only in combination with d4max and t4max.