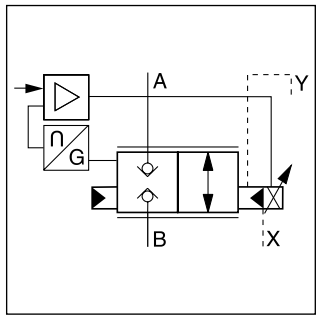
The 2-way servo proportional valves with VCD® technology valves series TDP are used in applications where high flow has to be precisely controlled at maximum dynamics. Typical applications are die casting, injection moulding and hydraulic presses.

Function

The 2-way servo proportional 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 28 ms (NG100) 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.

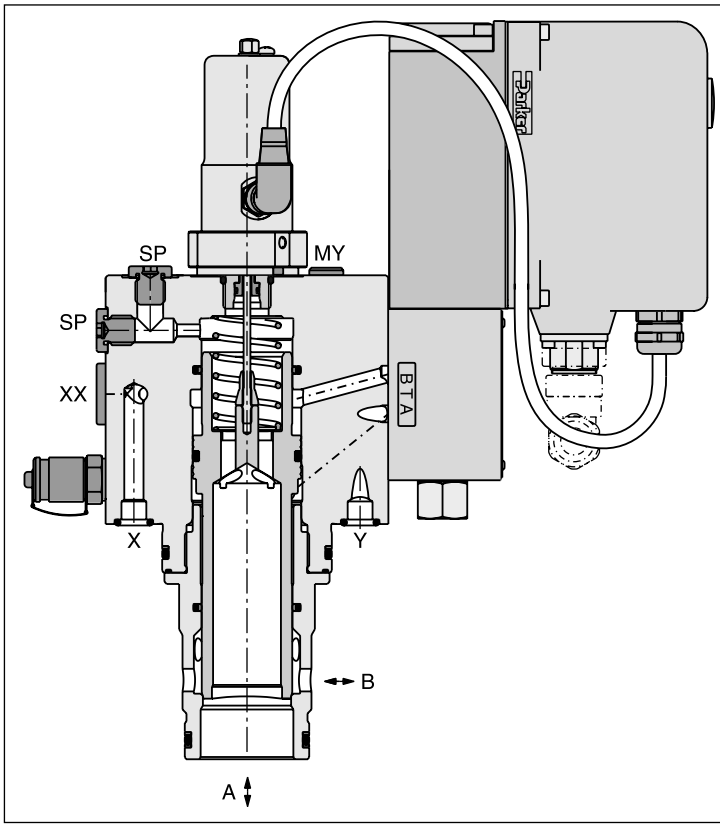


TDP040

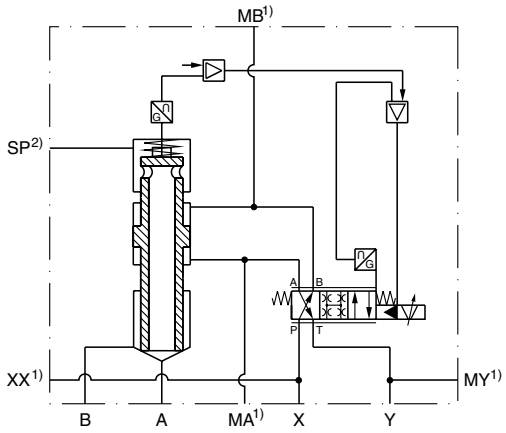
Features

- Active pilot operated 2-way servo proportional valve
- Cavity and mounting pattern according to ISO 7368
- Fast step response
- Flow direction B to A and A to B
- Completely mounted and adapted unit with integrated electronics
- In order to ensure the closed position, pilot pressure is required
- 7 sizes, NG25 up to NG100

TDP040



Function symbol



1) NG25 and NG32 without accu port XX and without port MA, MB and MY.

2) NG25 without suction port SP.

Ordering code

TDP		E			9	C	2				0	
2-way servo proportional valve with LVDT	**Nominal size**	**Slip-in cartridge**	**Performance**	**Flow characteristic**	**Nominal flow**	**Flow direction B → A A → B**	**Pilot oil** (supply external, drain external)	**Seal**	**Command signal**	**Standard electronics**	**Design series** (not required for ordering)	

Code	Nominal size
025	NG25
032	NG32
040	NG40
050	NG50
063	NG63
080	NG80
100	NG100

Code	Command signal
B	0...+10 V
E	0...+20 mA
S	4...+20 mA

Code	Seal
N [1]	NBR
V	FPM

Code	Performance
D	VCD® dynamics especially for closed loop applications
H	VCD® dynamics especially for controlled applications

Code	Flow characteristic
7	progressive
9	linear

[1] HFC fluids suitable

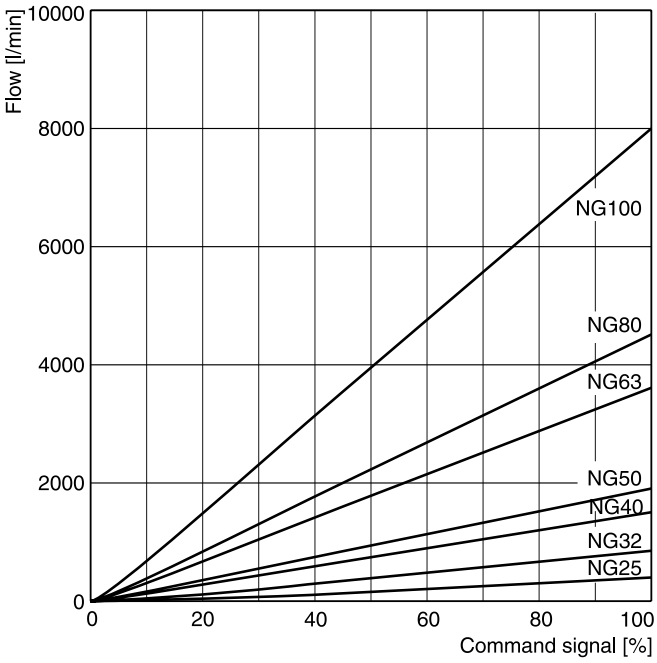
The DFplus pilot valve is also available with EtherCAT interface, see chapter 3, D*FP and D*1FP with EtherCAT.

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

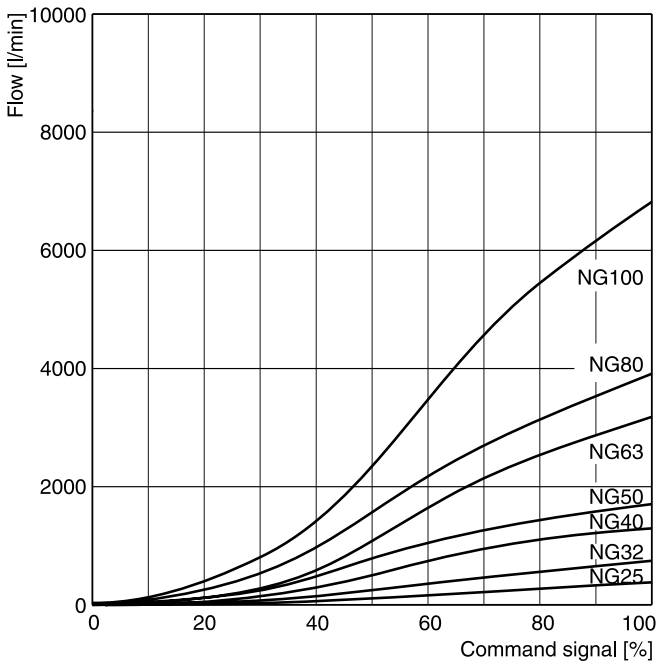
8

Characteristic flow/signal line, Δp = 5 bar

Linear (code 9)



Progressive (code 7)
(for TDL replacement)



Opening point factory set to 3 %

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

Characteristic curve measured with HLP46 at 50 °C.

TDP UK.INDD CM 26.07.17

General								
Design		Proportional throttle valve with LVDT and integrated electronics, slip-in cartridge according to ISO 7368						
Nominal size	DIN	**NG25**	**NG32**	**NG40**	**NG50**	**NG63**	**NG80**	**NG100**
Mounting position		unrestricted						
Ambient temperature	[°C]	-20...+50						
$MTTF_D$ value [1]	[years]	75						
Weight	[kg]	11	13	15	26	52	105	157
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]	30 ... 80						
Viscosity permitted	[cSt] / [mm²/s]	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
Recommended max. flow (linear)	[l/min]	800	2000	3000	4500	8000	13000	20000
Nominal flow at Δp = 5 bar (progressive)	[l/min]	380	750	1300	1700	3200	3900	6800
Recommended max. flow (progressive)	[l/min]	700	1750	2600	4000	7000	11250	17000
Flow direction		B to A / A to B						
Pilot pressure	[bar]	must be as high as system pressure						
Pilot oil supply		external via X						
Pilot oil drain		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
Static/dynamic								
(for optimal dynamics see installation recommendation)								
Step response at pilot press. >140 bar	[ms]	10.5	12	14	20	17	23	28
Frequency response at pilot press. >140 bar								
Amplitude -3 dB; 10 % ±5 %	[Hz]	95	80	74	66	52	46	41
Phase -90°; 10 % +5 %	[Hz]	85	63	59	52	56	51	47
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 <3,6 mA = disable, , >3,8 mA = enble on according to NAMUR NE43
Impedance	[Ohm]	< 250
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

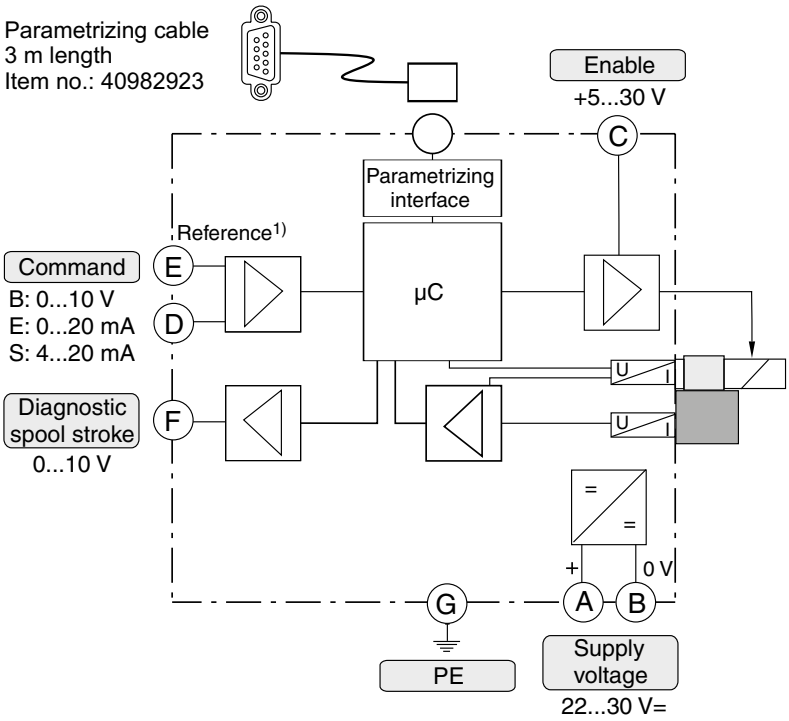
The maximum pilot flow is given in the technical data. At insufficient pilot oil supply – e.g. because of long distances and/or small diameters – an accumulator can be connected to port XX. See selection guide for correct dimensions.

Selection guide

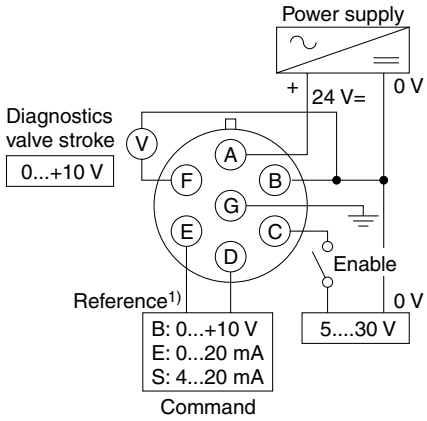
Size	Capacity [l]	Product type	Max. operating pressure [bar]	Recommended precharge pressure [bar]	Accu port XX
NG40	0.243	ADE016-25R	250	126	G ½
NG50	0.243	ADE032-21R	210	126	G ½
NG63	0.405	ADE050-21R	210	126	G ¾
NG80	0.647	ADE075-21R	210	126	G ¾
NG100	0.944	ADE100-21R	210	126	G ¾

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

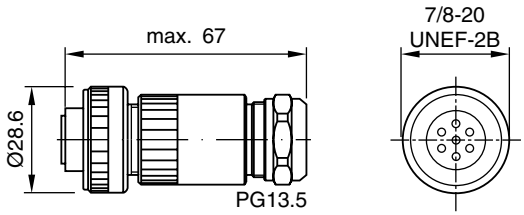
Block circuit diagram electronics



Connection diagrams electronics



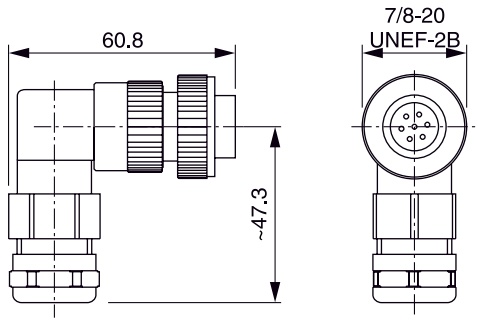
Female connector for NG63 to NG100
(EMC conform)



ID no. 5004072

Please order plugs separately.

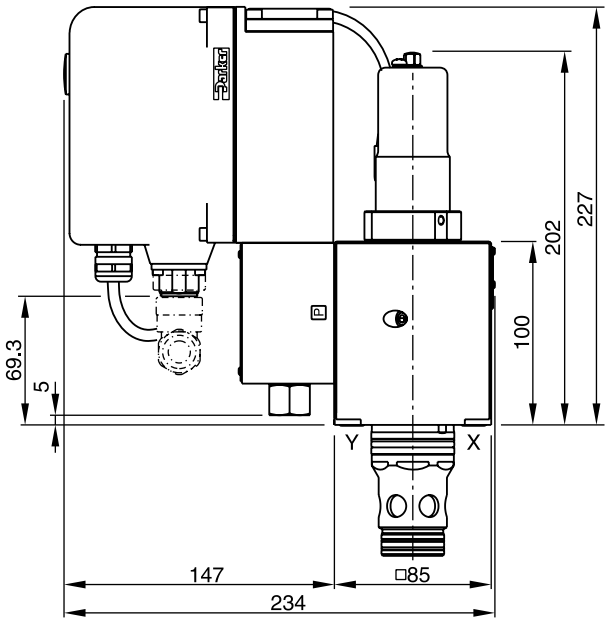
Angle female connector for NG25 to NG50
(EMC conform)

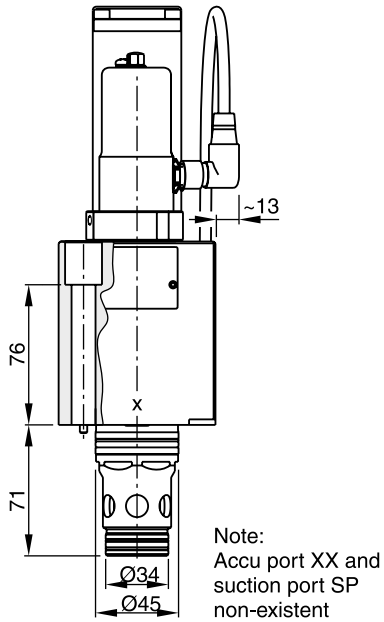


ID no. 5005160

[1] Do not connect with the supply voltage zero.

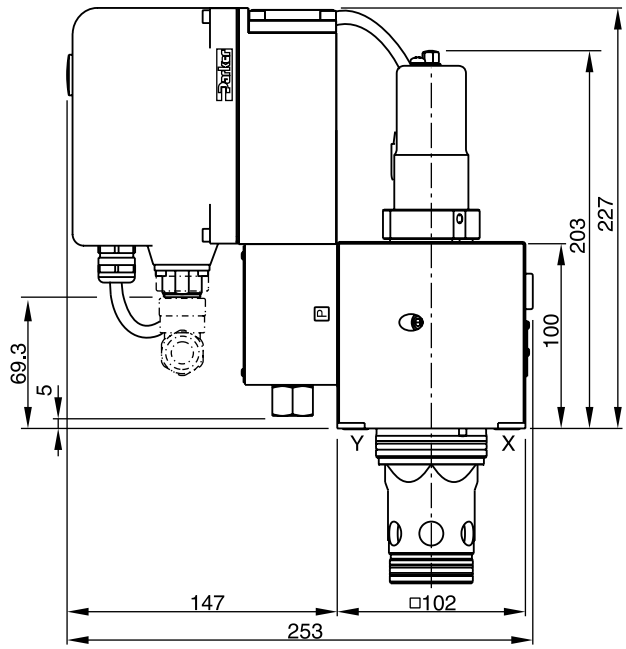
NG25

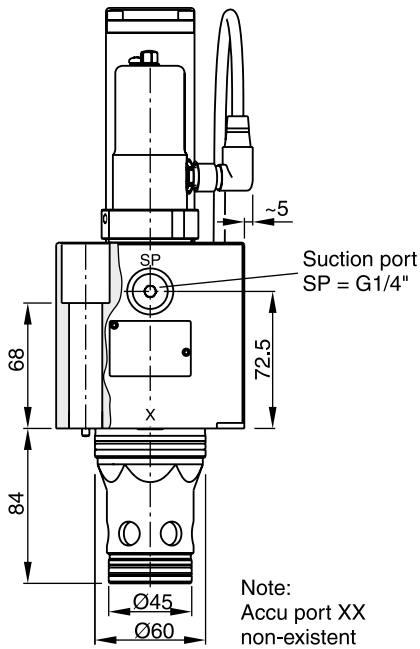




Note:
Accu port XX and
suction port SP
non-existent

NG32





Note:
Accu port XX
non-existent

Suction port SP: Contact Parker for installation recommendation.

NG	Bolt kit -		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

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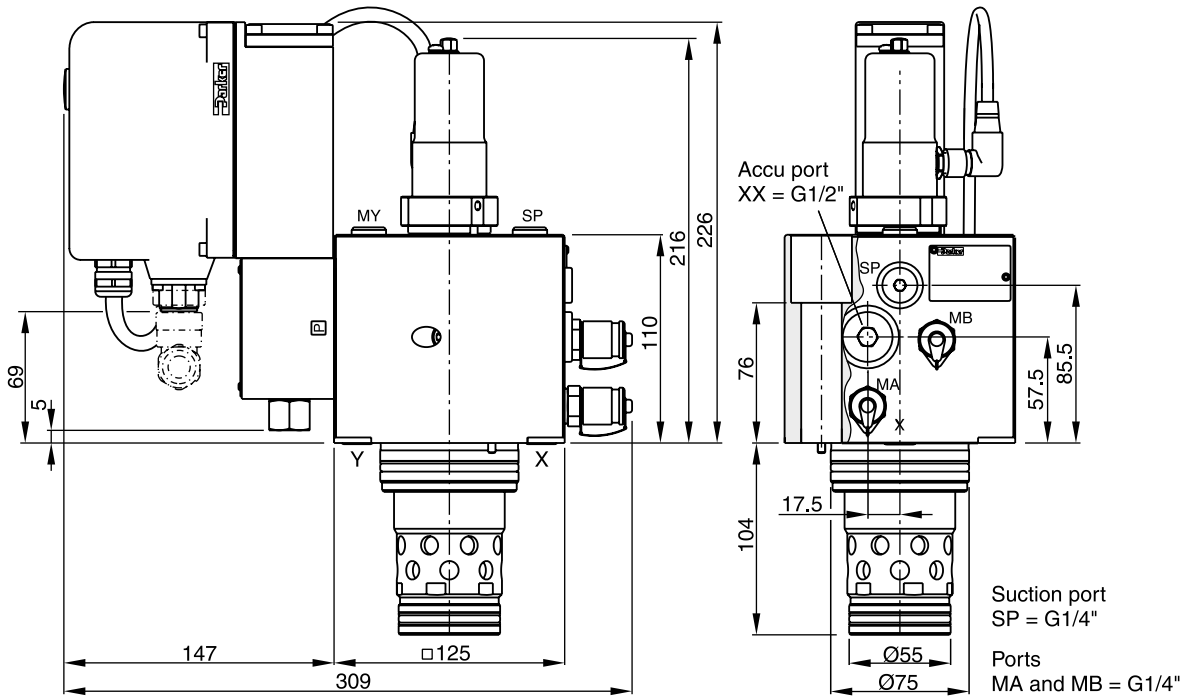
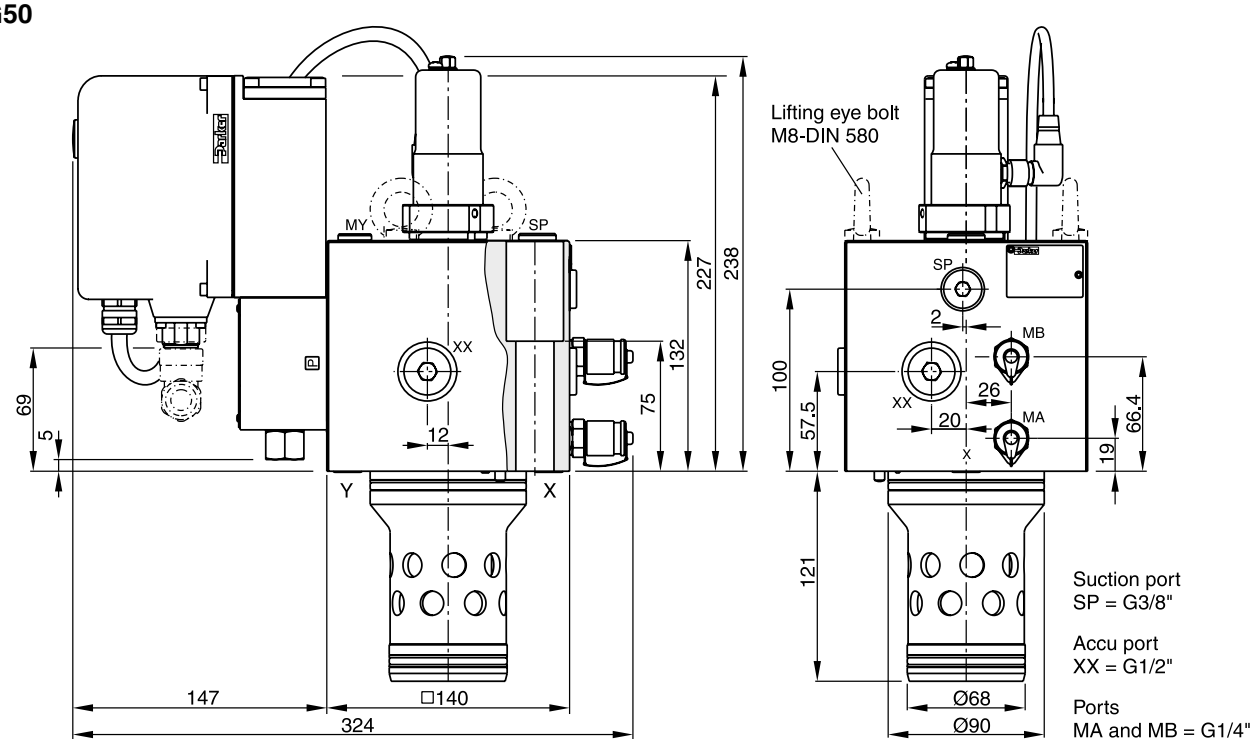
NG40



NG50



Lifting thread for disassembly M12

Suction port SP: Contact Parker for installation recommendation.

NG	Bolt kit -		Kit NBR	Kit FPM
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

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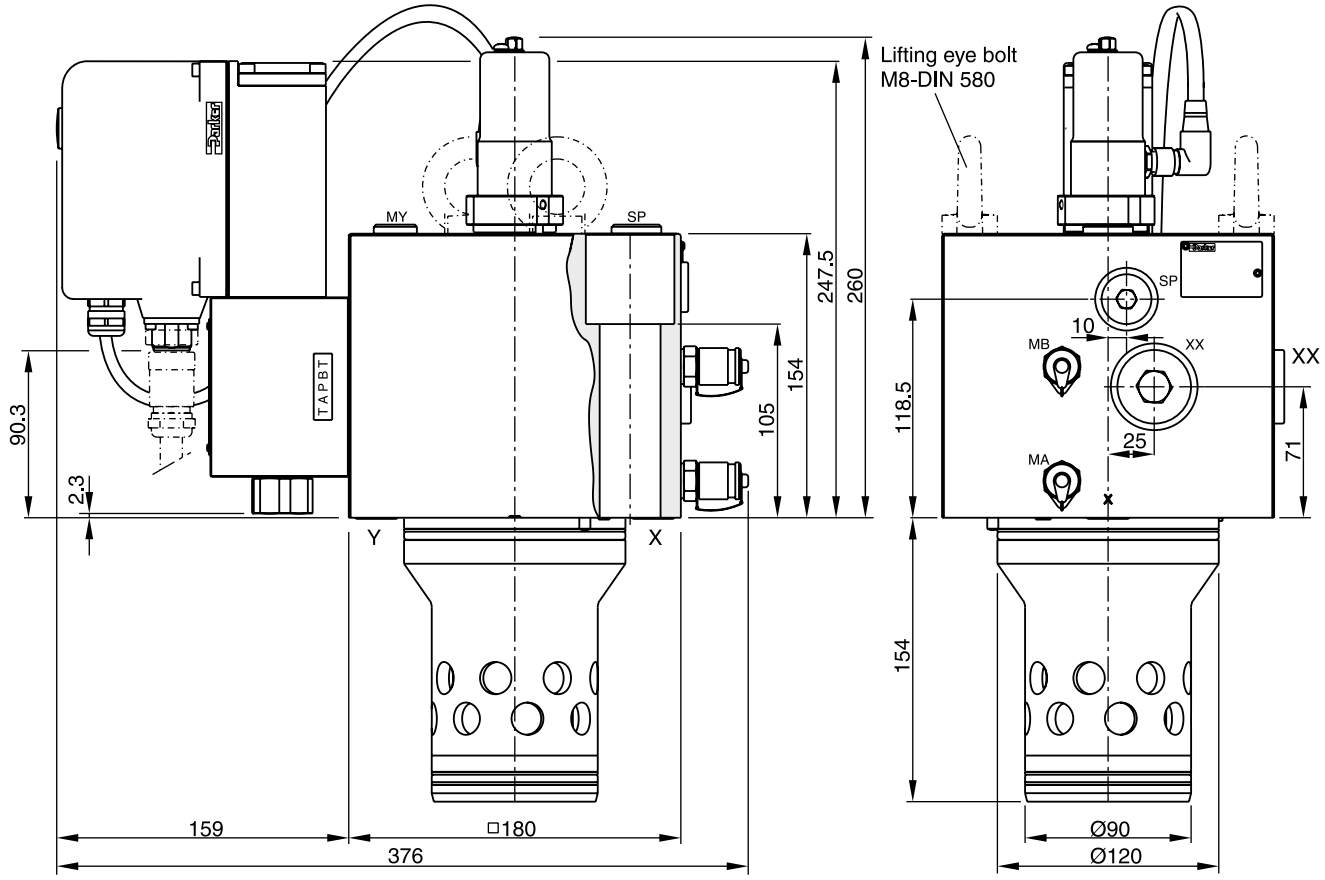
NG63



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

Lifting thread for disassembly M12

Suction port SP: Contact Parker for installation recommendation.

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

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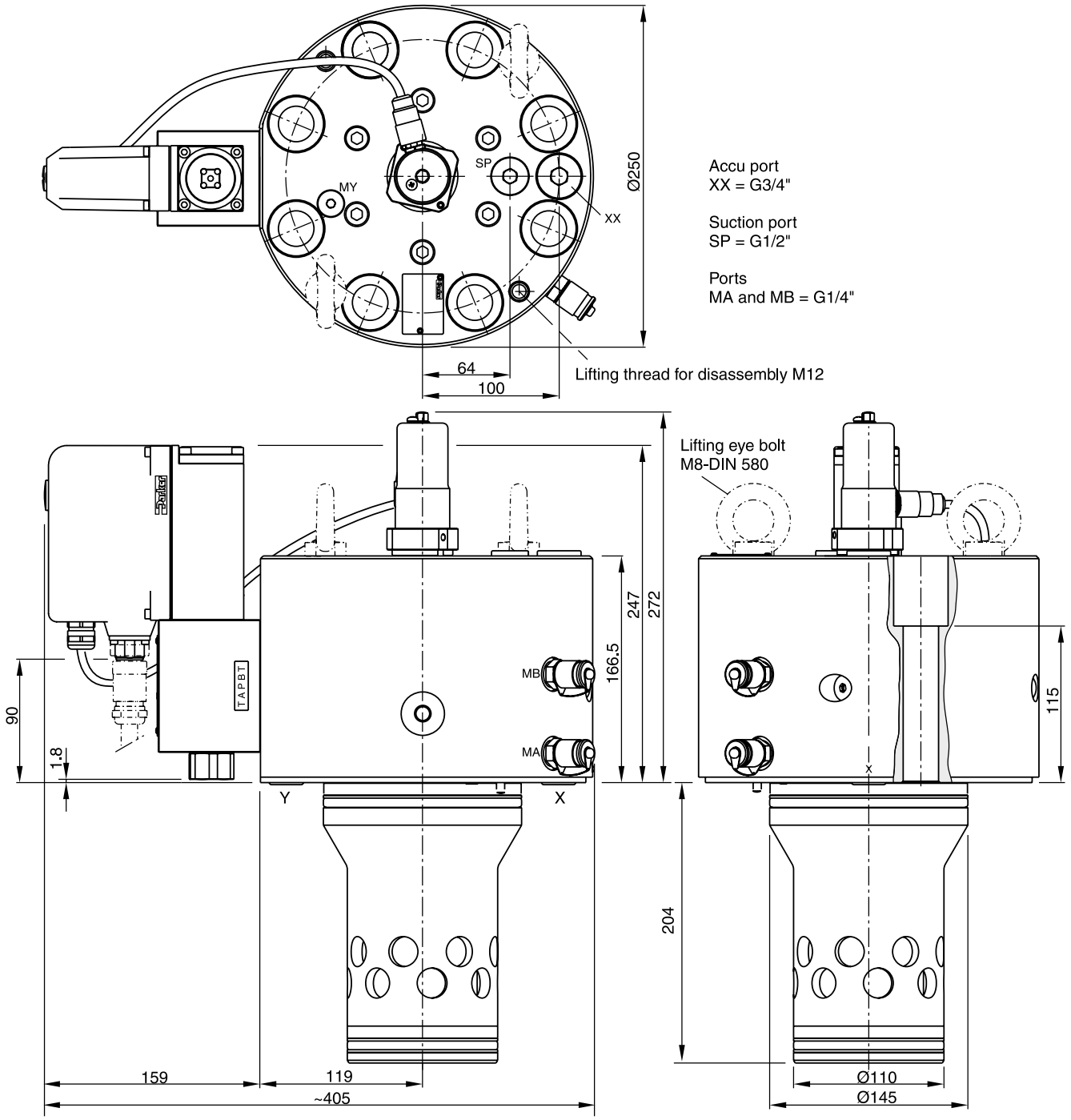
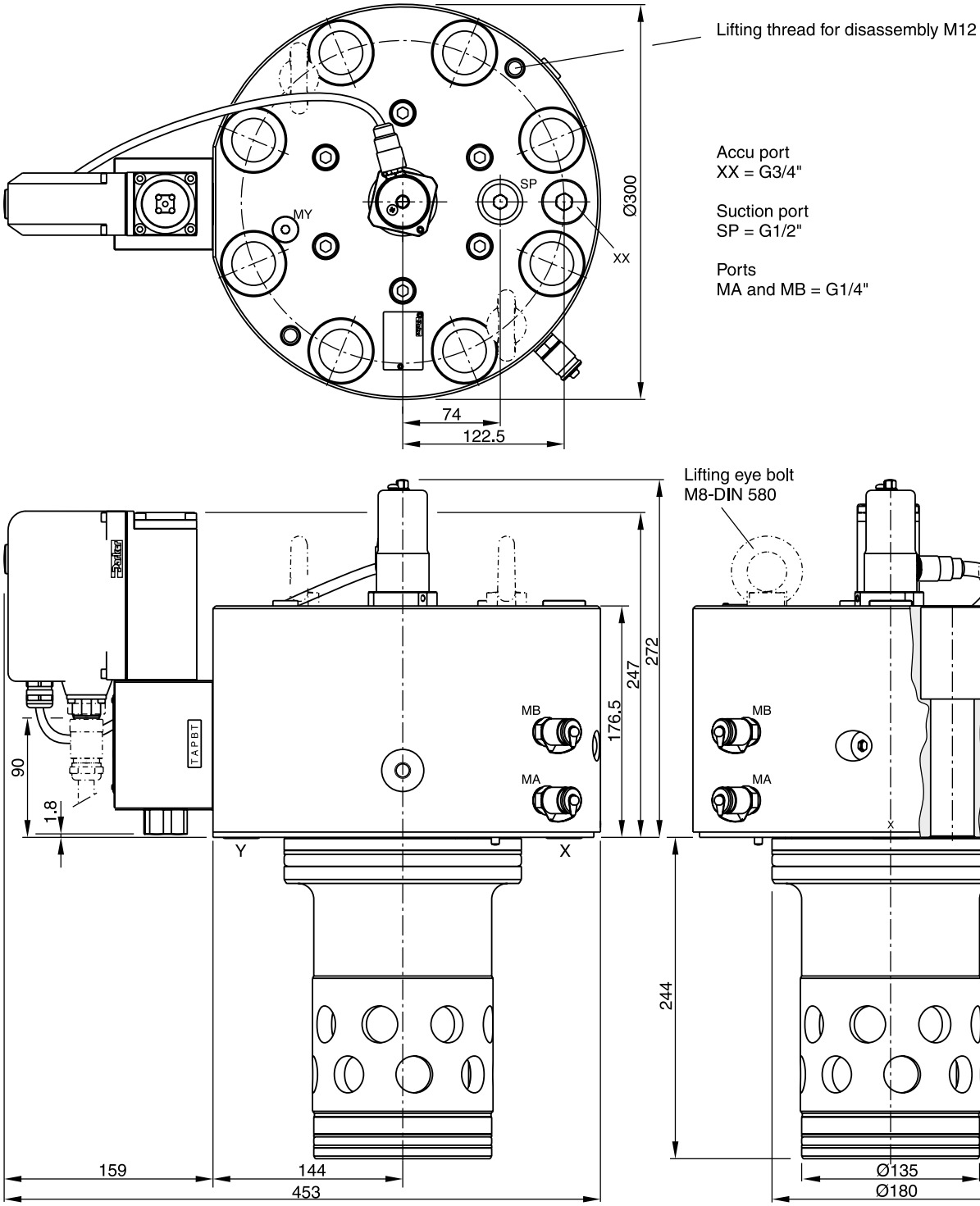
NG80



Suction port SP: Contact Parker for installation recommendation.

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

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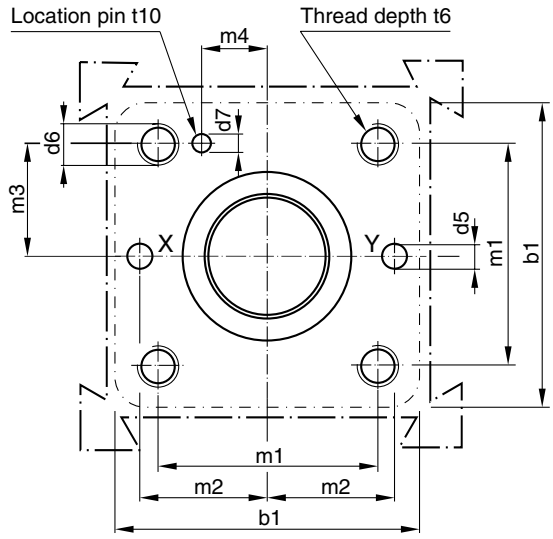
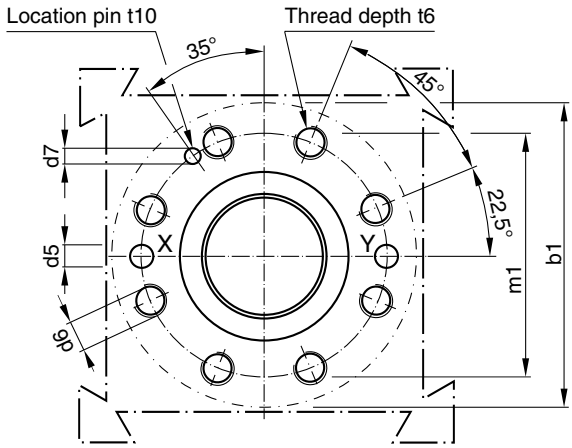
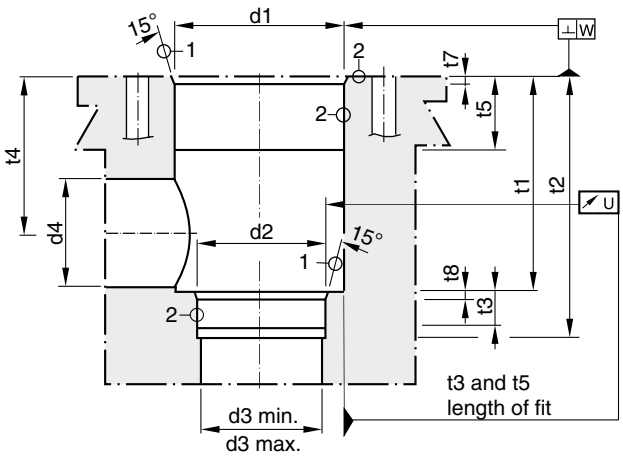
Code: ISO 7368-B*-*-2-A/B
NG25 to NG63



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





Required surface finish:

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

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	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	—	—

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

[1)] Only in combination with d4max and t4max.