

Characteristics

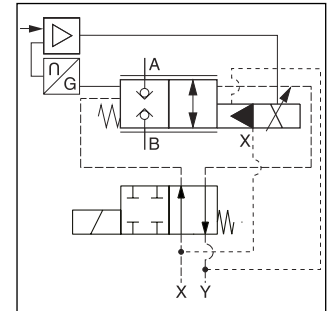
2-way high-response valves series TEP base on the TDP range. Additionally, TEP valves are equipped with a direction control valve for shutting off the pilot system.

Features

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



TEP040



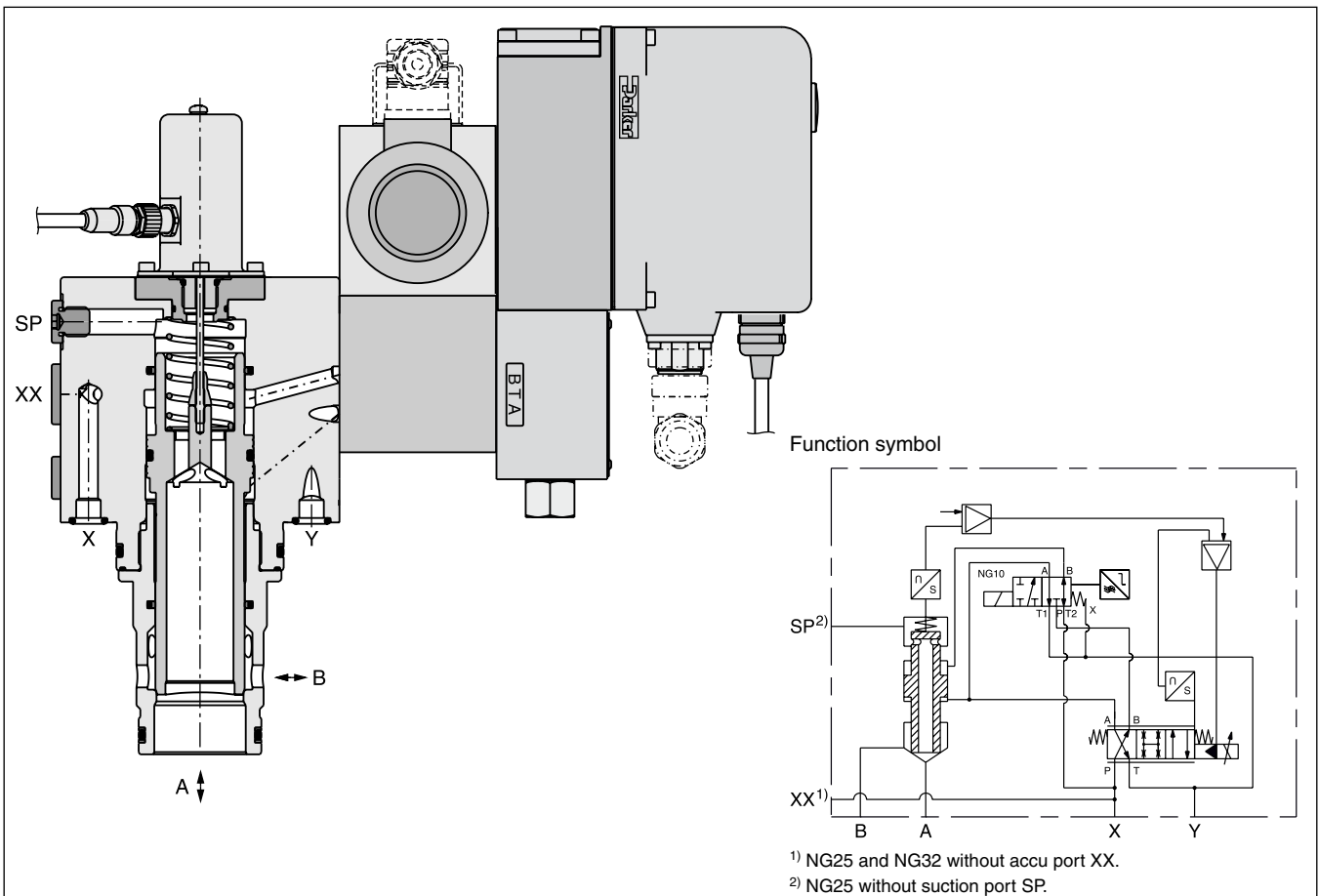
Structure and function

In the de-energized position of the shut-off valve, the upper pilot control surface of the main spool is pressurized, the lower one is relieved to tank. Without pilot pressure, the main spool is closed by spring force. Independent of the DFplus pilot valve, the main spool remains always closed, if the shut-off valve is not activated.

If the solenoid of the shut-off valve is energized, the position of the main spool is controlled by DFplus pilot valve and LVDT.

The shut-off valve can be ordered with position control optionally.

TEP040



¹⁾ NG25 and NG32 without accu port XX.

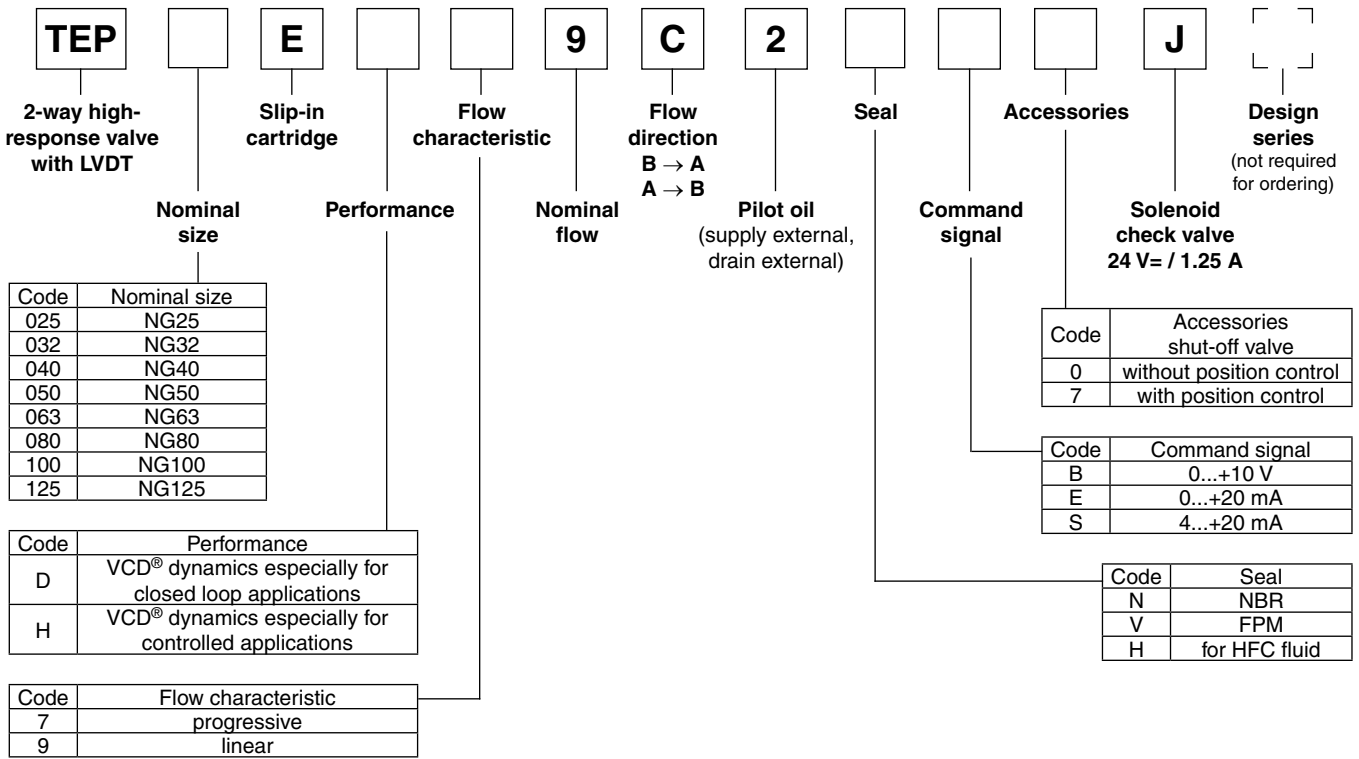
²⁾ NG25 without suction port SP.

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Ordering Code / Performance Curves

Ordering code



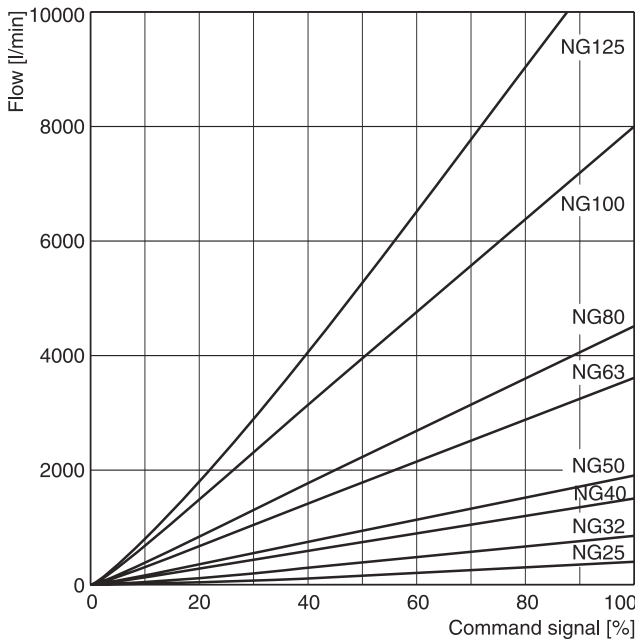
The DFplus pilot valve is also available with EtherCAT interface, see chapter 3, D*FP and D*1FP with EtherCAT.

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

Characteristic flow/signal line

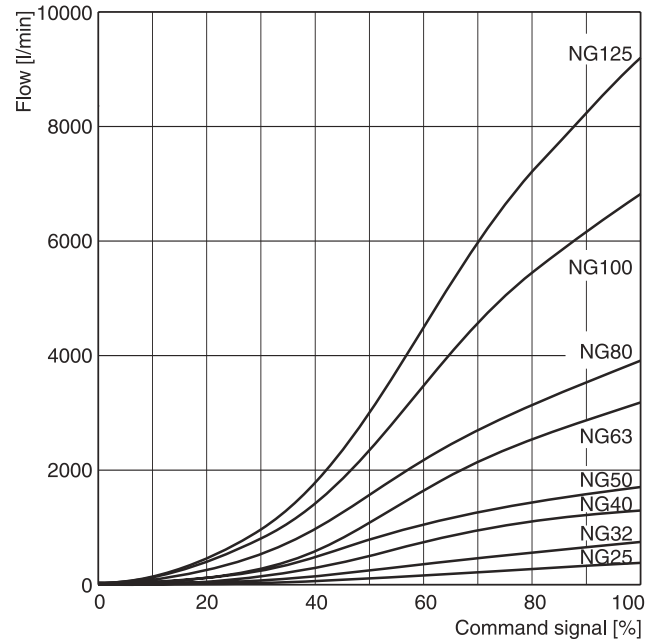
Δp = 5 bar

Linear (code 9)



Opening point factory set to 3 %

Progressive (code 7)



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

Characteristic curve measured with HLP46 at 50 °C.

Technical Data

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] / [mm ² /s]	30 ... 80							
	permitted	[cSt] / [mm ² /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	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	external via X								
	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	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 <3.6 mA = disable, >3.8 mA = enable 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.	[mm ²]	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

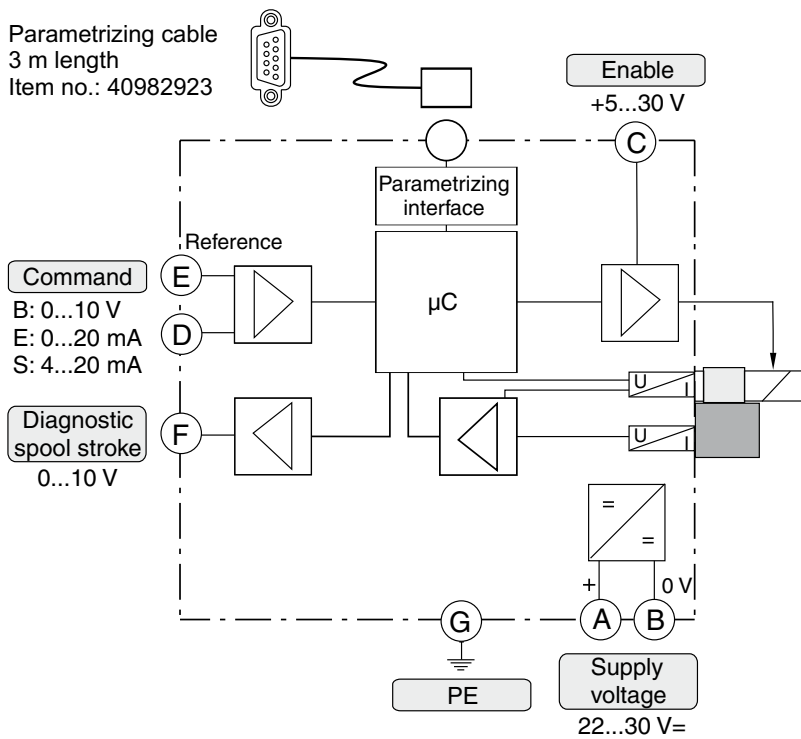
The maximum pilot flow is given in the technical data. At insufficient pilot oil supply - e.g. because of long distances and/or small diameters - an accumulator can be connected to port XX. See selection guide for correct dimensions.

Selection guide

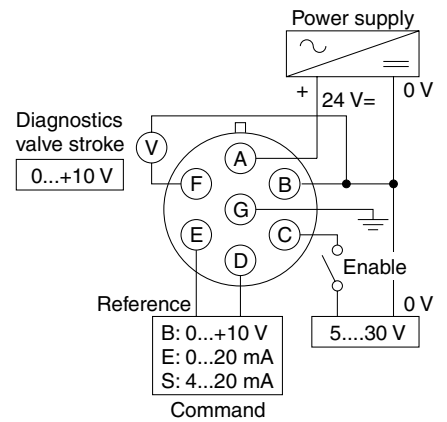
Size	Capacity [l]	Product type	Max. operating pressure [bar]	Recommended precharge pressure [bar]	Accu port XX
NG40	0.243	ADE016-25R	250	126	G 1/2
NG50	0.243	ADE032-21R	210	126	G 1/2
NG63	0.405	ADE050-21R	210	126	G 3/4
NG80	0.647	ADE075-21R	210	126	G 3/4
NG100	0.944	ADE100-21R	210	126	G 3/4
NG125			on request		G 1

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

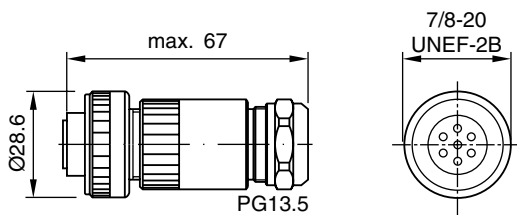
Block circuit diagram electronics



Connection diagrams electronics

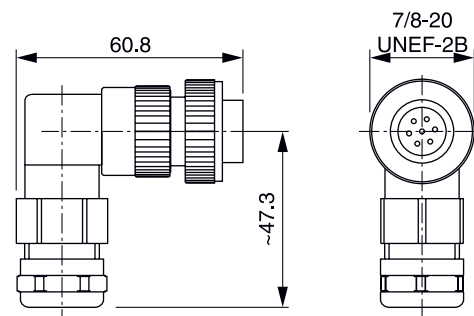


**Female connector for NG63 to NG125
 (EMC conform)**



ID no. 5004072

**Angle female connector for NG25 to NG50
 (EMC conform)**



ID no. 5005160

Please order plugs separately.

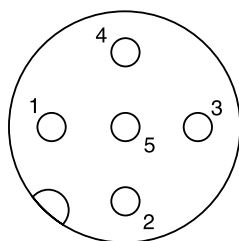
TEP UK.indd CM 14.09.15

Position Control

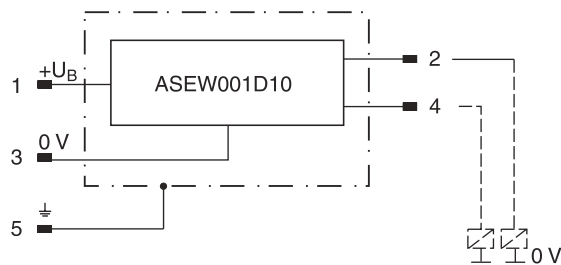
Electrical characteristics of position control as per IEC 61076-2-101 (M12x1)

Protection class	IP65 in accordance with EN 60529 (with correctly mounted plug-in connector)	
Ambient temperature	[°C]	0...+50
Supply voltage U_s / ripple	[V]	18...42 / 10 %
Current consumption without load	[mA]	≤ 30
Max. output current per channel, ohmic	[mA]	400
Min. output load per channel, ohmic	[kOhm]	100
Max. output drop at 0.2 A	[V]	≤ 1.1
Max. output drop at 0.4 A	[V]	≤ 1.6
EMC	EN50081-1 / EN50082-2	
Max. tolerance ambient field strength	[A/m]	<1200
Min. distance to next AC solenoid	[m]	>0.1
Interface	M12x1 acc. to IEC 61076-2-101	
Wiring min.	[mm ²]	5 x 0.25 braid shield recommended
Wiring length max.	[m]	50 recommended

M12 pin assignment



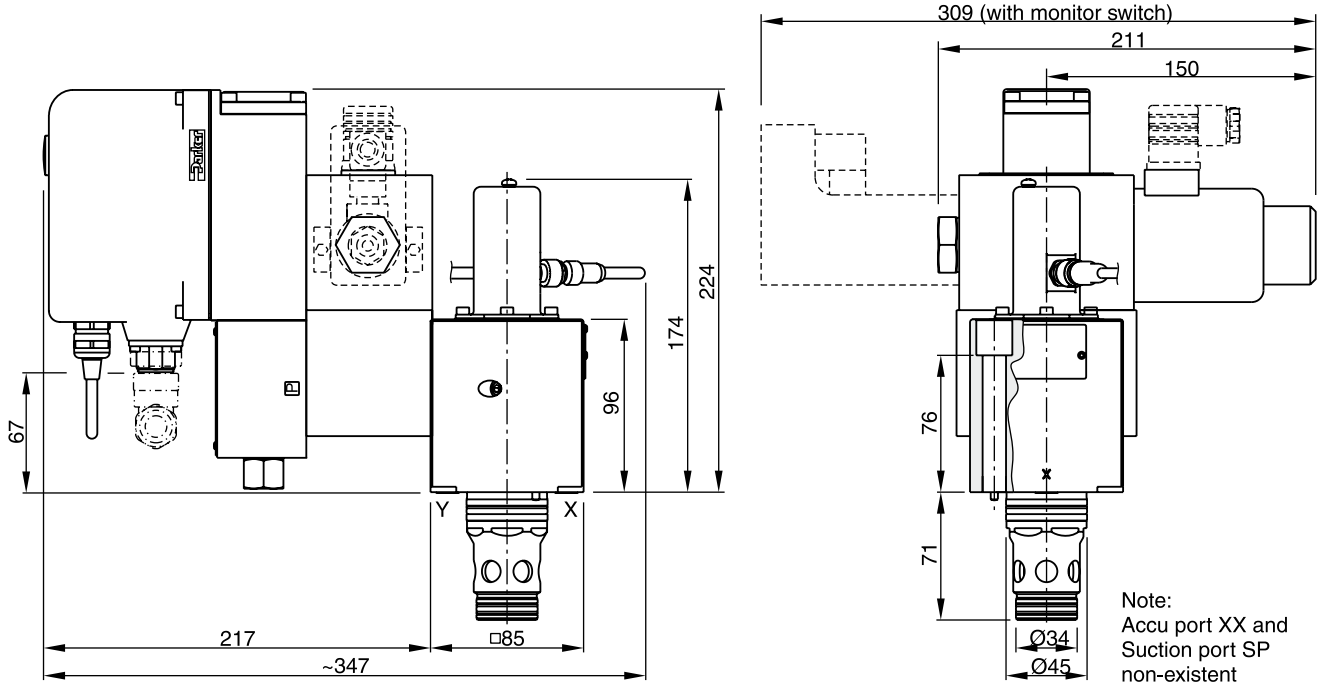
- 1 U_s 18...42 V
- 2 Out B: normally open
- 3 0 V
- 4 Out A: normally closed
- 5 Earth ground



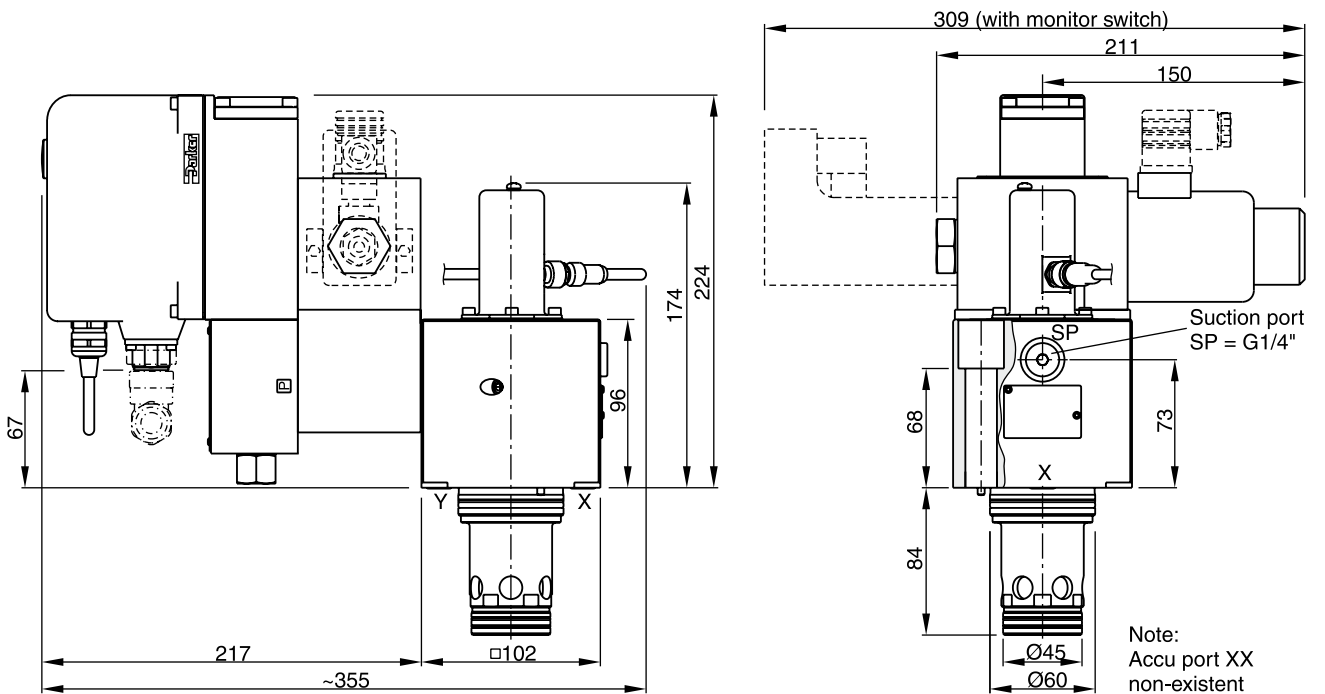
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Dimensions

NG25






NG32



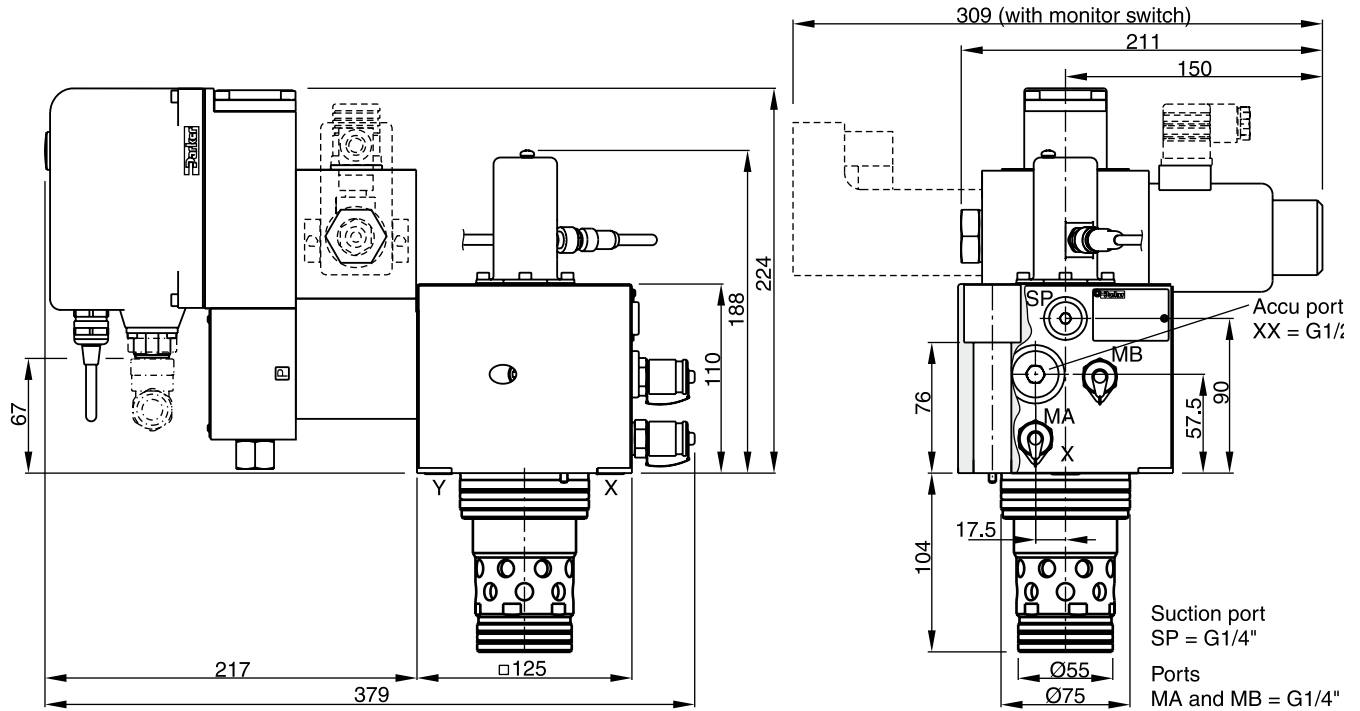
Suction port SP: Contact Parker for installation recommendation.



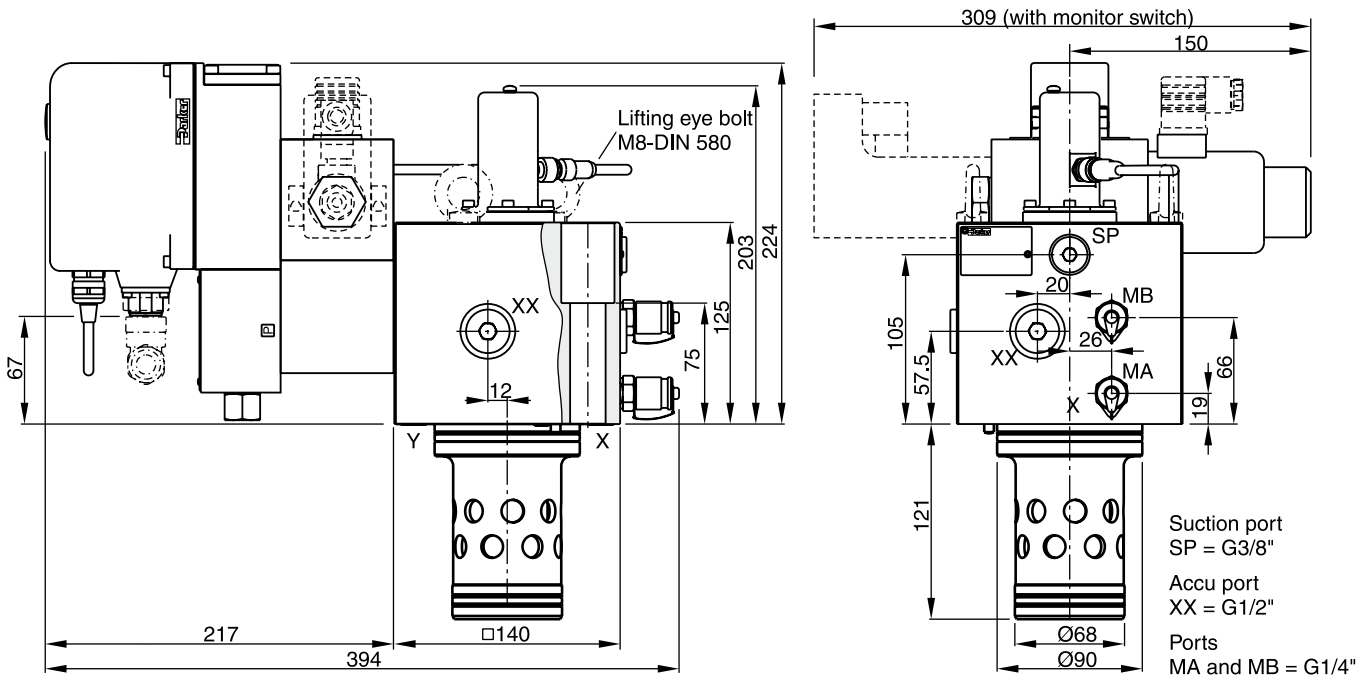
NG	Bolt kit - 		NBR	 Kit	FPM
25	BK504 4 x M12x100 ISO 4762-12.9	108 Nm	SK-TEP025EN30		SK-TEP025EV30
32	BK529 4 x M16x100 ISO 4762-12.9	264 Nm	SK-TEP032EN30		SK-TEP032EV30

Dimensions

NG40

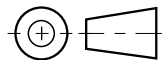





NG50



Lifting thread for disassembly M12

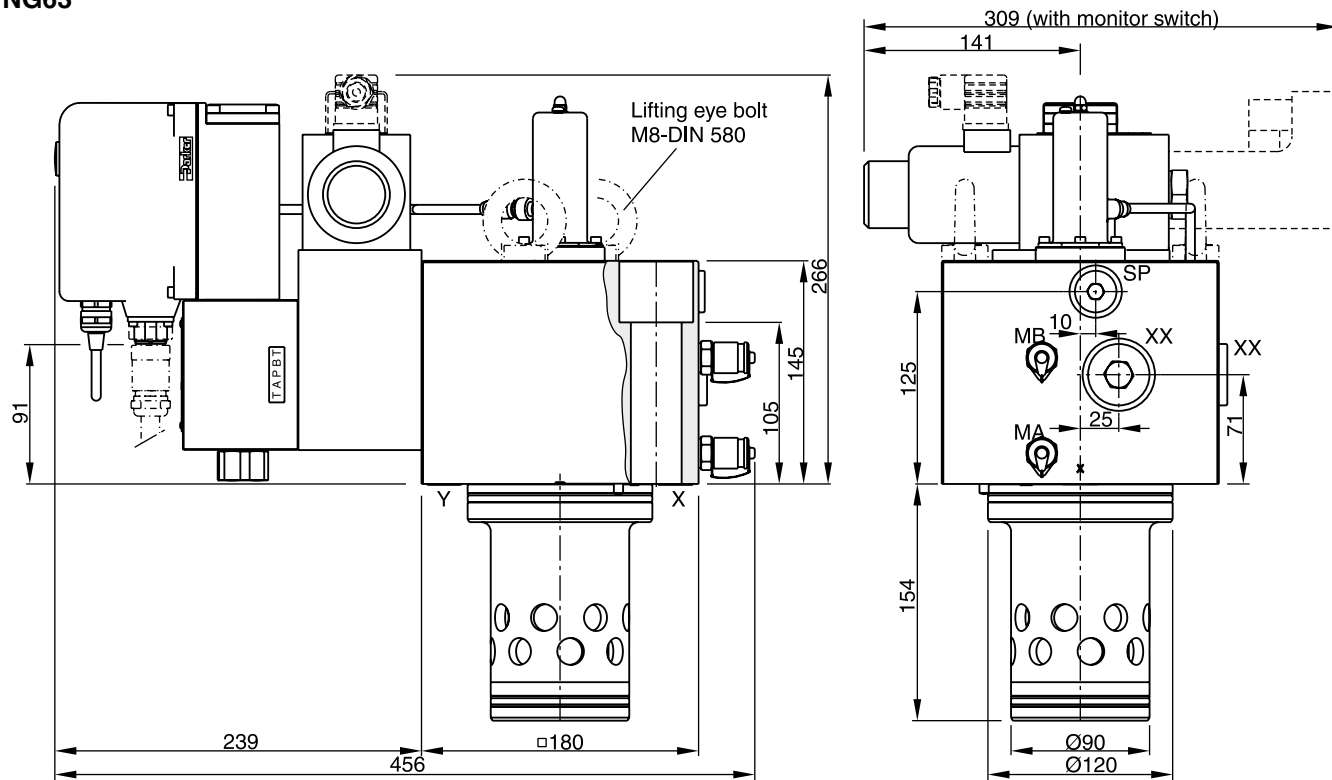
Suction port SP: Contact Parker for installation recommendation.



NG	Bolt kit - 		NBR	 Kit	FPM
40	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TEP040EN30		SK-TEP040EV30
50	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TEP050EN30		SK-TEP050EV30

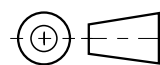
Dimensions

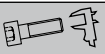


NG63



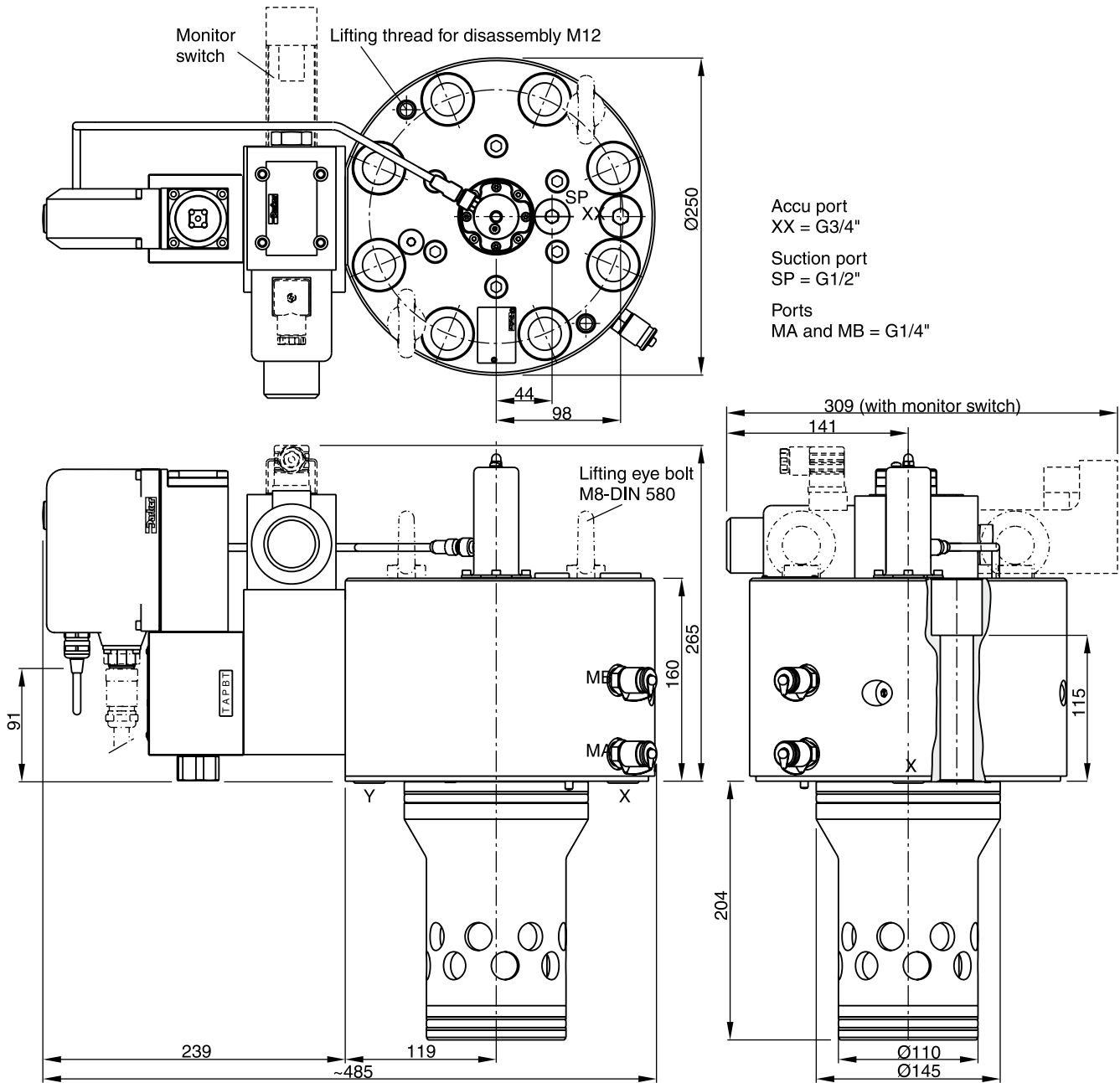
Suction port Accu port Ports
 SP = G1/2" XX = G3/4" MA and MB = G1/4"
 Lifting thread for disassembly M12

Suction port SP: Contact Parker for installation recommendation.



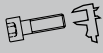


NG	Bolt kit - 		NBR 	Kit	FPM
63	BK518 4x M30x160 ISO 4762-12.9	1775 Nm	SK-TEP063EN30		SK-TEP063EV30

NG80



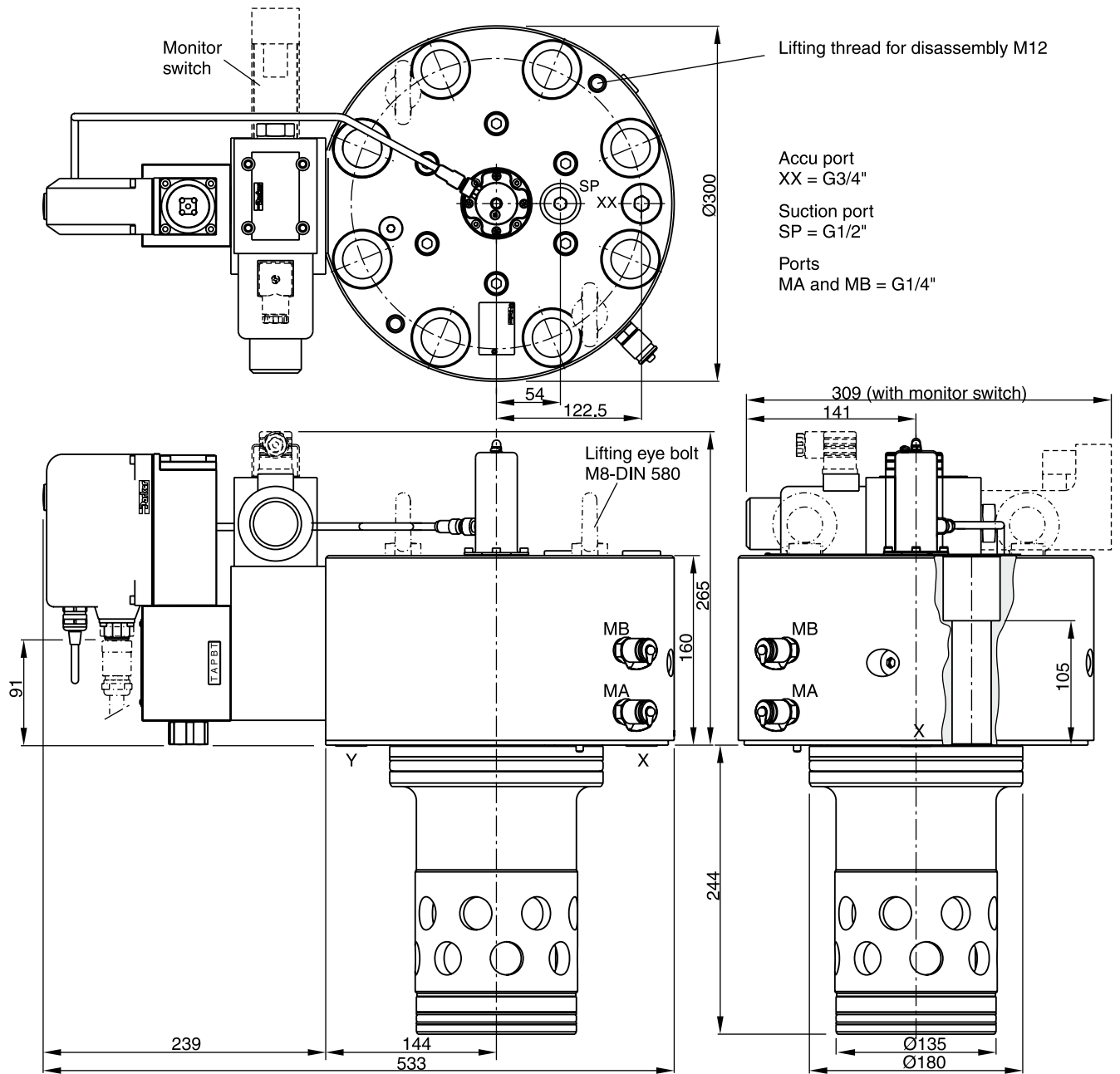
Suction port SP: Contact Parker for installation recommendation.



NG	Bolt kit - 		NBR	 Kit	FPM
80	BK530 8x M24x160 ISO 4762-12.9	890 Nm	SK-TEP080EN30		SK-TEP080EV30

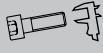


Dimensions

NG100

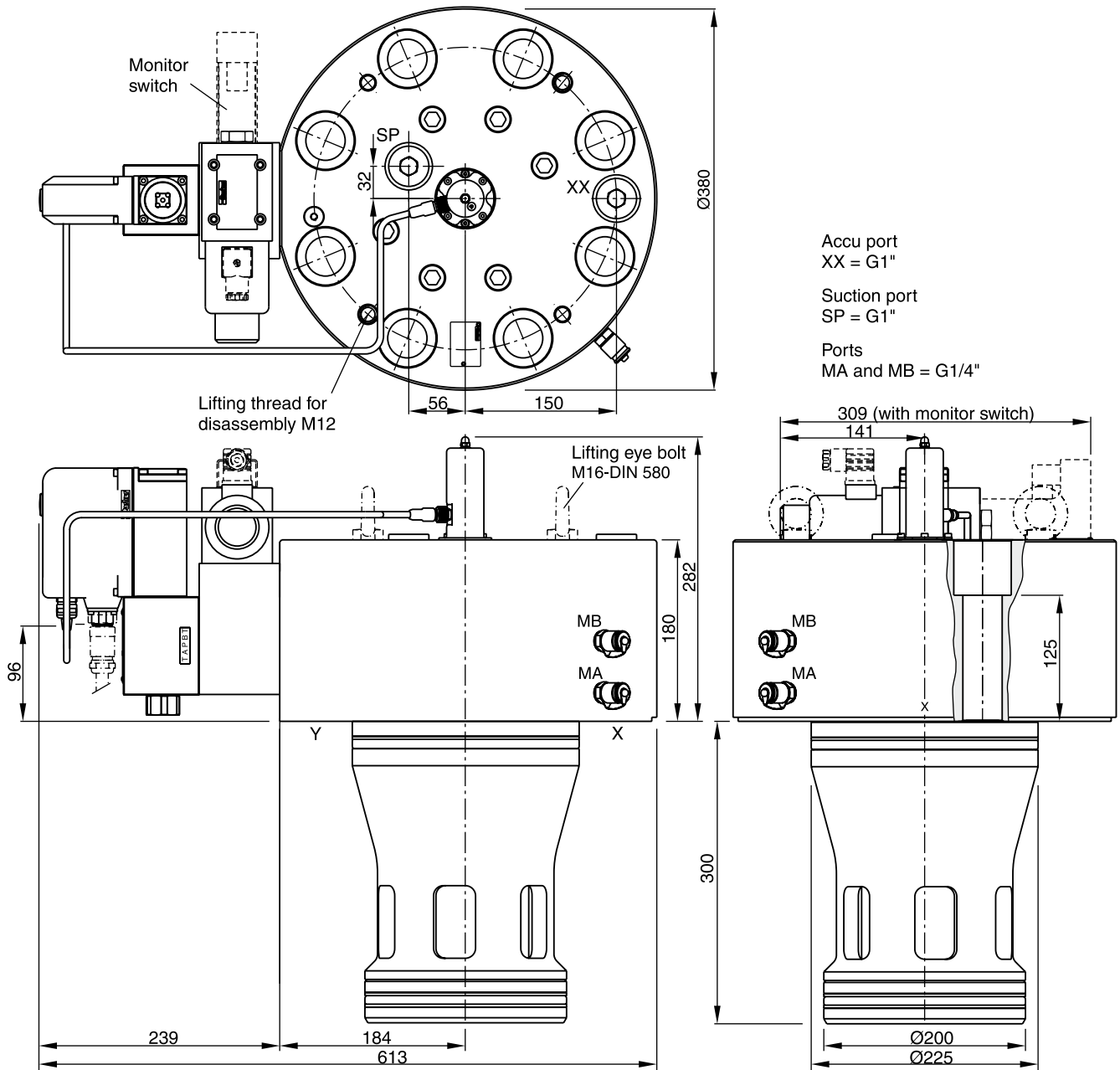


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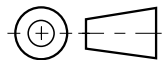
Suction port SP: Contact Parker for installation recommendation.

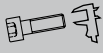


NG	Bolt kit - 		NBR	 Kit	FPM
100	BK531 8x M30x150 ISO 4762-12.9	1775 Nm	SK-TEP100EN30		SK-TEP100EV30

NG125



Suction port SP: Contact Parker for installation recommendation.

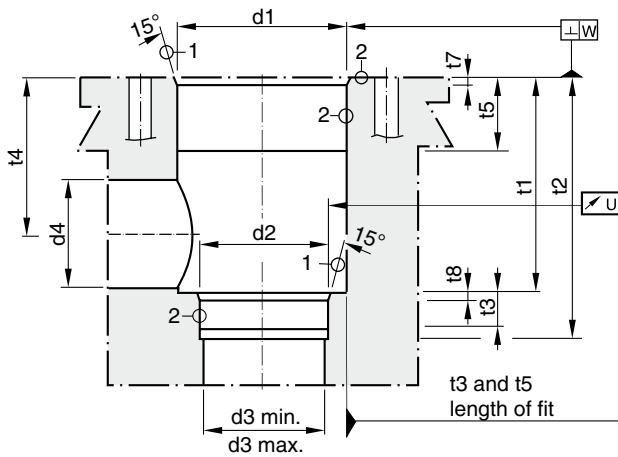
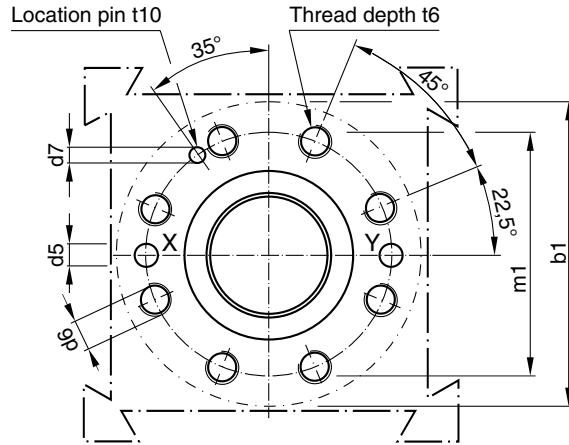
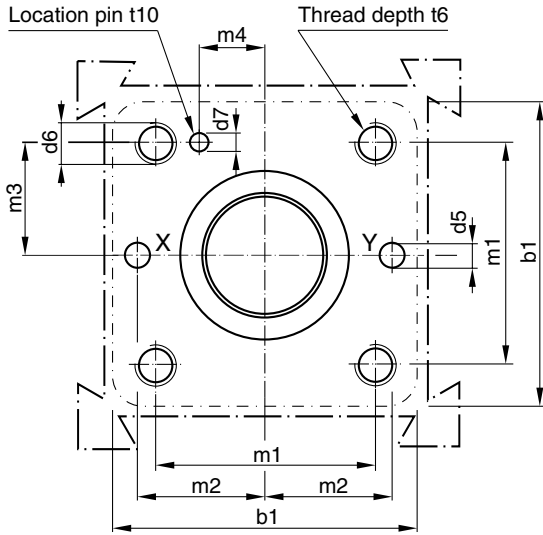


NG	Bolt kit - 		NBR	 Kit	FPM
125	BK537 8x M36x180 ISO 4762-12.9	3100 Nm	SK-TEP125EN30		SK-TEP125EV30

Dimensions

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:

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	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	—	—
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 d4_{max} and t4_{max}