

The 3-way high-response valves series TPQ 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

TPQ has a 2-stage design consisting of a DFplus pilot valve and a main stage with spool and LVDT.

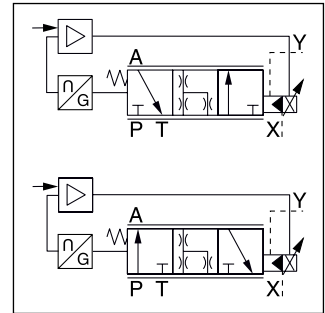
With the DFplus pilot valve the TPQ achieves extremely fast response times: from 7 ms (NG25) up to 20 ms (NG80) with an accuracy of <0.1 % of the nominal flow. The pilot valve actively controls the spool – independent of the pressure conditions in the main ports.

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.

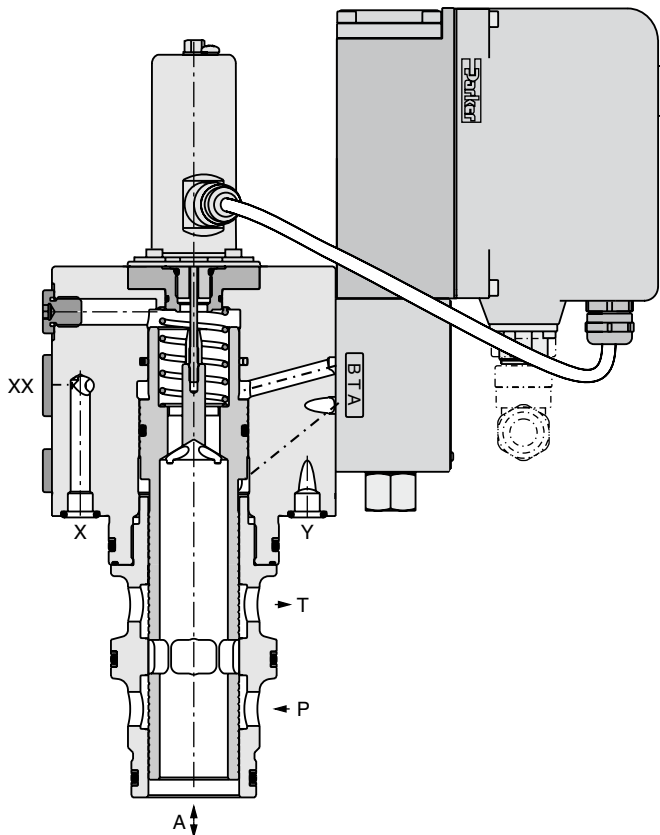
The integrated electronics in the pilot of the TPQ has two control loops for the main cone and the pilot spool.



TPQ 040

**Features**

- Active pilot operated 3-way high-response valve
- Cavity according to Parker house norm
- Fast step response
- Flow direction A to T and P to A
- Completely mounted adapted unit with integrated electronics
- 6 sizes NG25 up to NG80

TPQ 040 P**8**

Failsafe position:

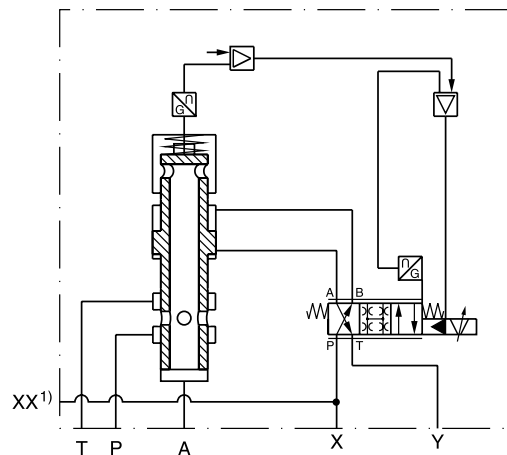


Zero position:



Function symbol

Fail safe position spool type P



1) NG25 and NG32 without accu port XX

Ordering code

TPQ		W	H	2	5		2			0	
3-way high-response valve with LVDT	Nominal size	Parker Slip-in cartridge	Closed loop, VCD® performance, integrated electronics	Linear spool	Nominal flow	Spool type	Pilot oil supply external, drain external	Seal	Input signal	Standard electronics	Design series (not required for ordering)
Code	Nominal size								Code	Signal range	
025	NG25								B	0...±10 V	
032	NG32								E	0...±20 mA	
040	NG40								S	4...+20 mA	
050	NG50										
063	NG63										
080	NG80										
Zerolap											
Code	Spool type	Input signal	-	0	+	Fail save					
P						P → A					
T						A → T					

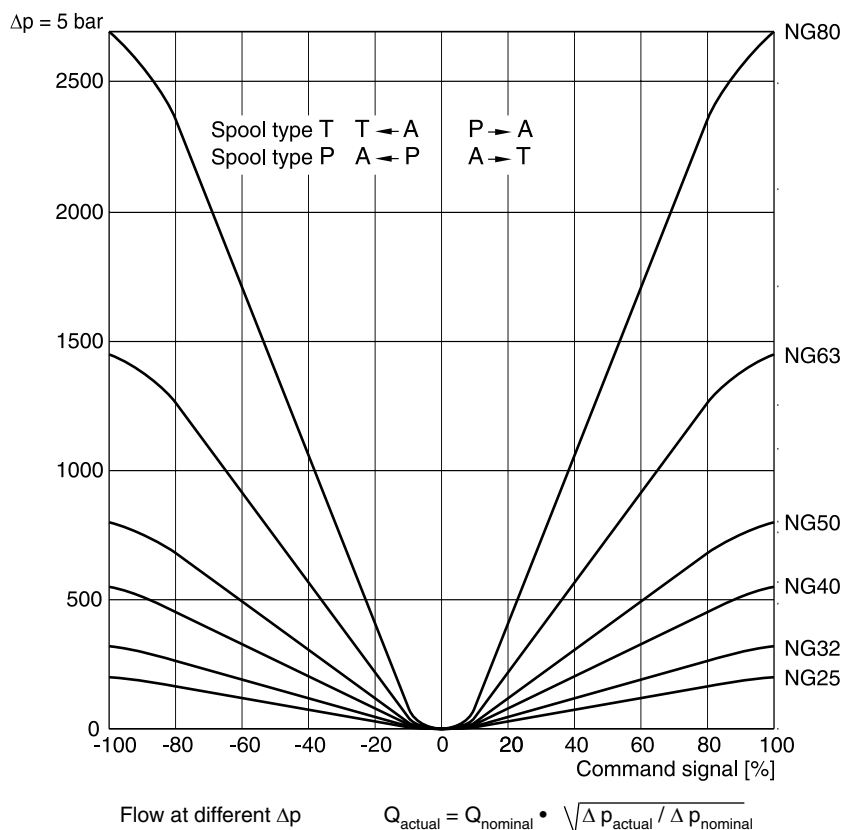
Code	Seal
N	NBR
V	FPM
H	for HFC fluid

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.

Performance curves

Characteristic flow/signal line

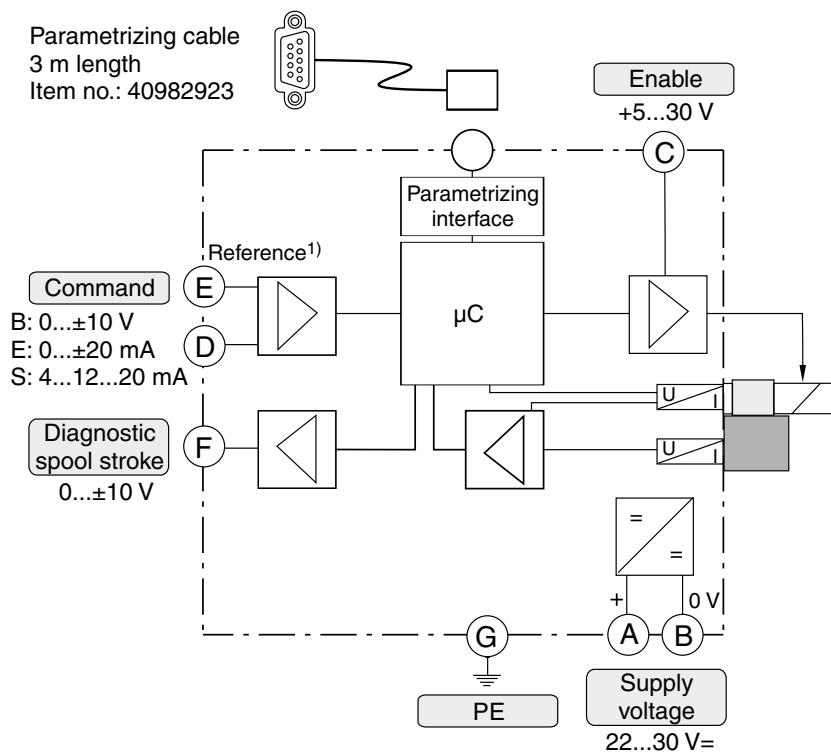
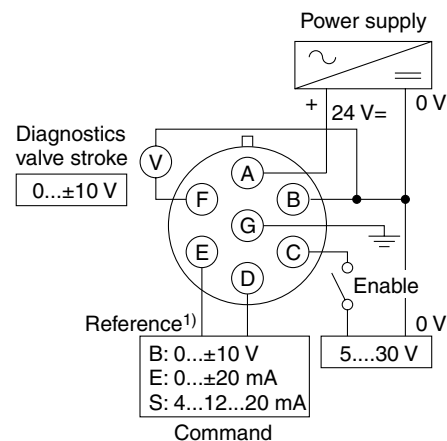
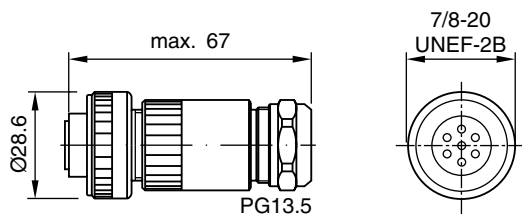


Technical Data

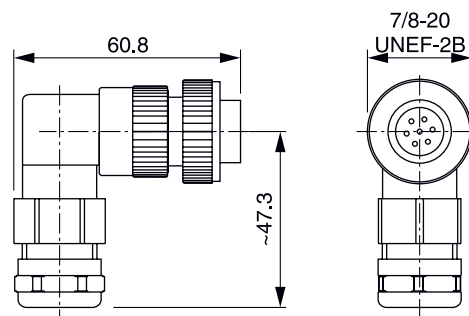
General								
Design			Proportional throttle valve, slip-in cartridge					
Nominal size		DIN	NG25	NG32	NG40	NG50	NG63	NG80
Mounting position			unrestricted					
Ambient temperature		[°C]	-20...+50					
MTTF _D value ¹⁾		[years]	75					
Weight		[kg]	11	13	15	26	52	105
Vibration resistance		[g]	10 sinus 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, P, T, X up to 350, XX ²⁾ 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					
	permitted	[cSt]/[mm²/s]	20...400					
Filtration			ISO 4406 (1999); 18/16/13					
Nominal flow at Δp = 5 bar		[l/min]	200	320	550	800	1450	2700
Recommended max. flow		[l/min]	500	1000	1600	2250	3500	6500
Nominal overlap		[%]	< 1.5					
Flow direction			A to T or P to A					
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					
Leakage in main stage at 100 bar		[l/min]	NG32 to 63 <2.5; NG80 <4.0					
Pilot valve size			NG06			NG10		
Max. pilot flow at 140 bar pilot press.		[l/min]	25	25	25	25	50	60
Static/dynamic								
Step response at pilot press. >140 bar		[ms]	7	11	11	18	19	20
Frequency response at pilot press. >140 bar								
	Amplitude -3 dB; ±5 %	[Hz]	210	105	70	45	35	30
	Phase -90°; ±5 %	[Hz]	170	125	110	95	75	70
Hysteresis		[%]	< 0.1					
Sensitivity		[%]	< 0.05					
Temperature drift of center position		[%/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]	+10...0...-10, ripple < 0.01 % eff., surge free				
		Impedance	[kOhm]	100				
	Code E	Current	[mA]	+20...0...-20, ripple <0.01 % eff., surge free				
		Impedance	[Ohm]	<250				
	Code S	Current	[mA]	4...12...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),					
		[V]	11 for terminal D and E against 0V (terminal B)					
Diagnostic signal		[V]	0...±10 rated max. 5 mA					
Enable signal		[V]	+10...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]	7x1.0 (AWG16) overall braid shield					
Wiring length		[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.

²⁾ Accu port XX: Please contact Parker for installation recommendation.

Block circuit diagram electronics**Connection diagrams electronics****Female connector for NG63 to NG80
(EMC conform)**

ID no. 5004072

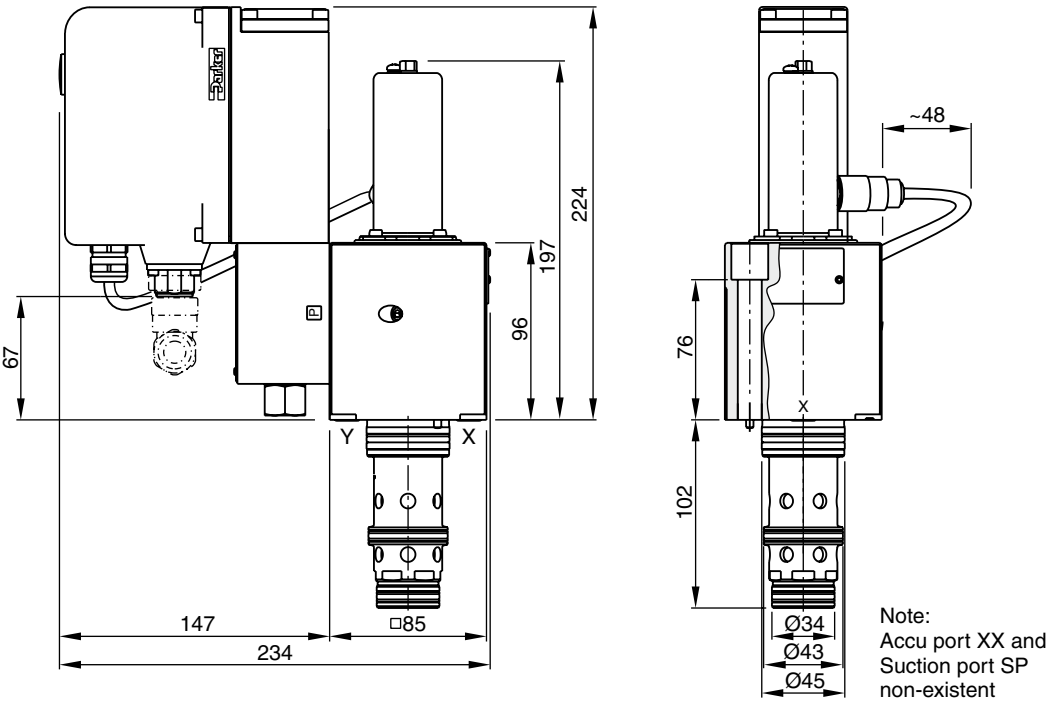
**Angle female connector for NG25 to NG50
(EMC conform)**

ID no. 5005160

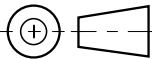
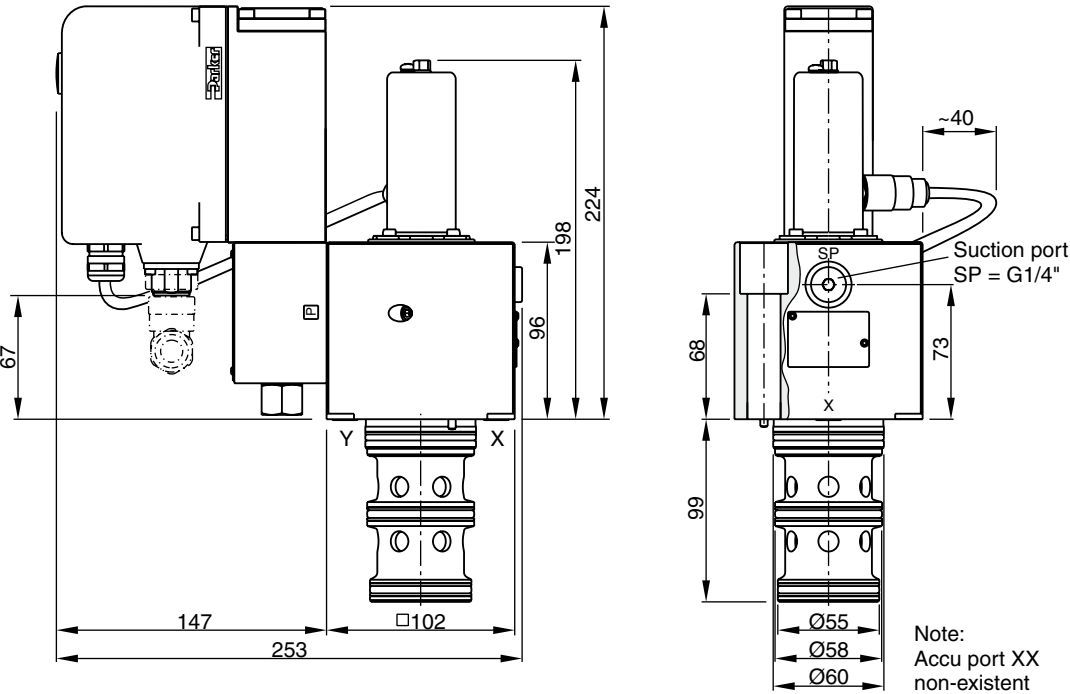
Please order plugs separately.

¹⁾ Do not connect with the supply voltage zero.

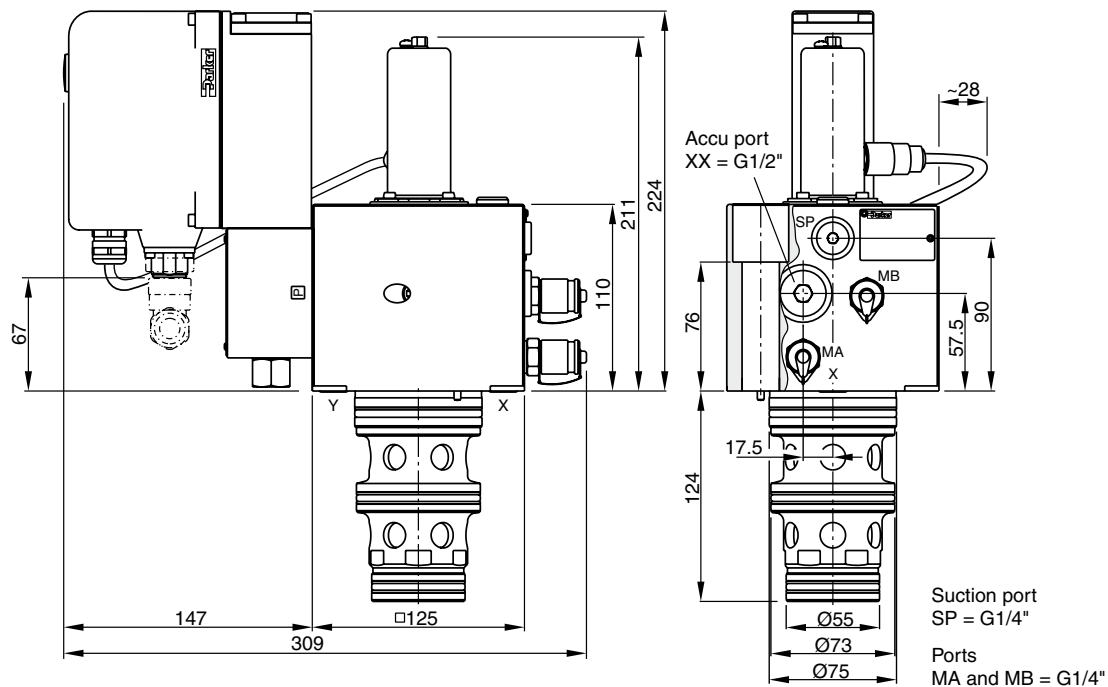
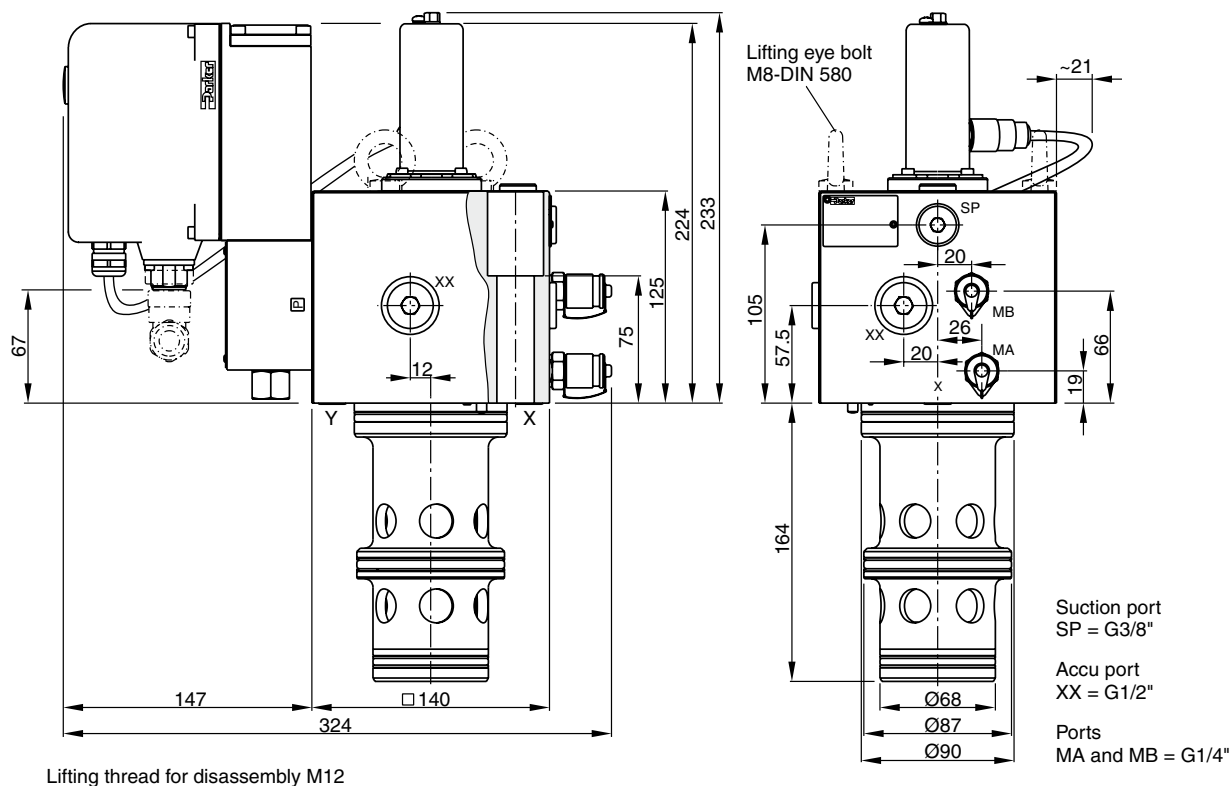
NG25



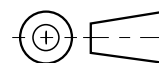
NG32



NG	Bolt kit - 		Kit	
			NBR	FPM
25	BK504 4x M12x100 ISO 4762-12.9	108 Nm	SK-TPQ025EN30	SK-TPQ025EV30
32	BK529 4x M16x100 ISO 4762-12.9	264 Nm	SK-TPQ032EN30	SK-TPQ032EV30

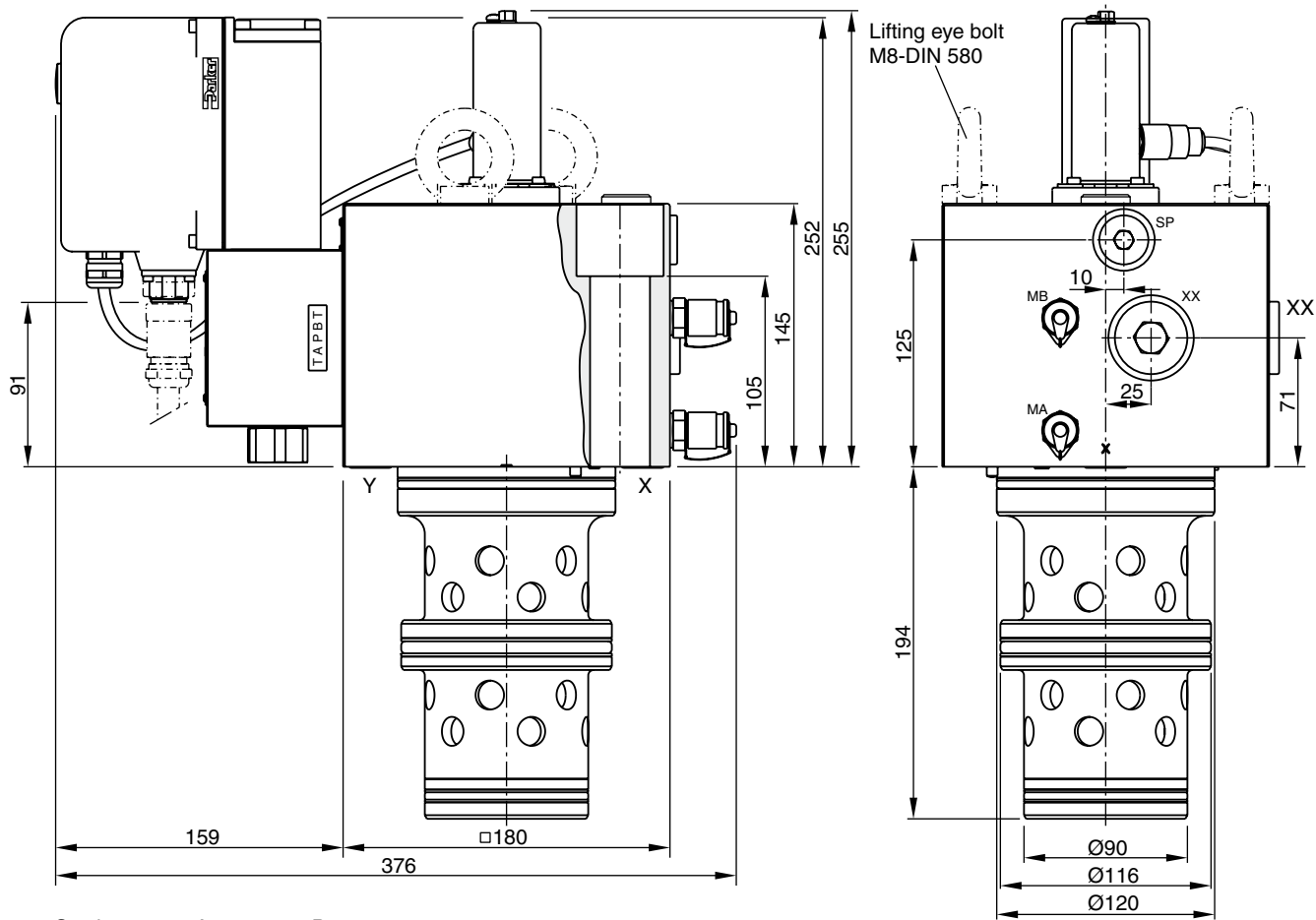
NG40**NG50**

Lifting thread for disassembly M12



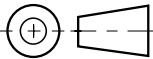
NG	Bolt kit - 		NBR	Kit	FPM
40	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TPQ040EN30		SK-TPQ040EV30
50	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TPQ050EN30		SK-TPQ050EV30

NG63

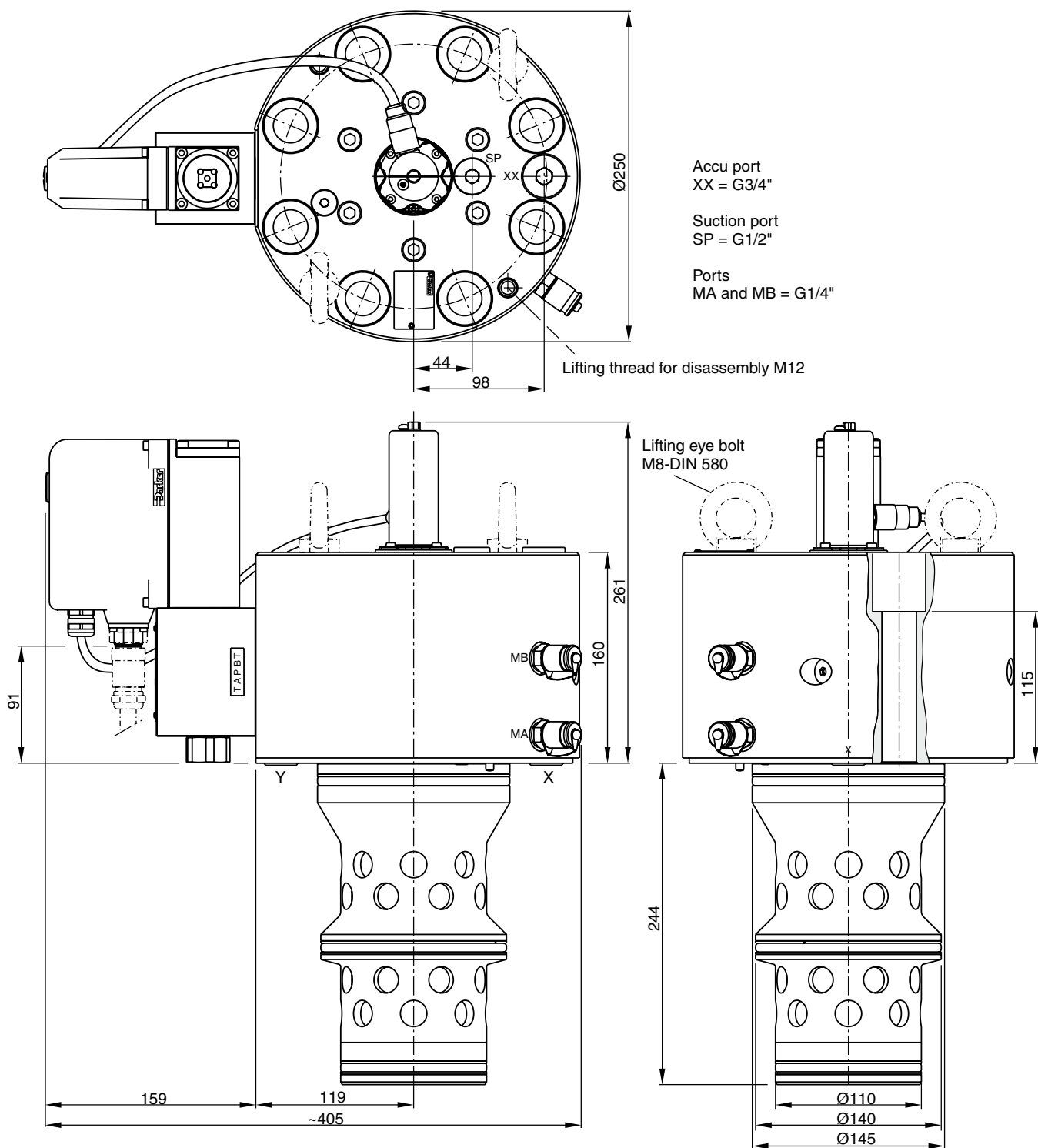
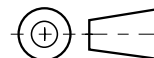


Suction port Accu port Ports
SP = G1/2" XX = G3/4" MA and MB = G1/4"

Lifting thread for disassembly M12

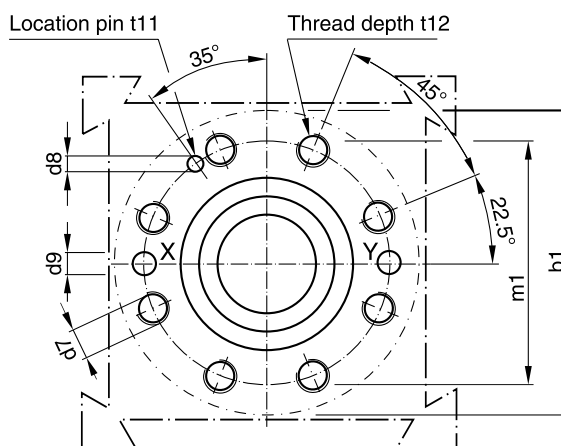
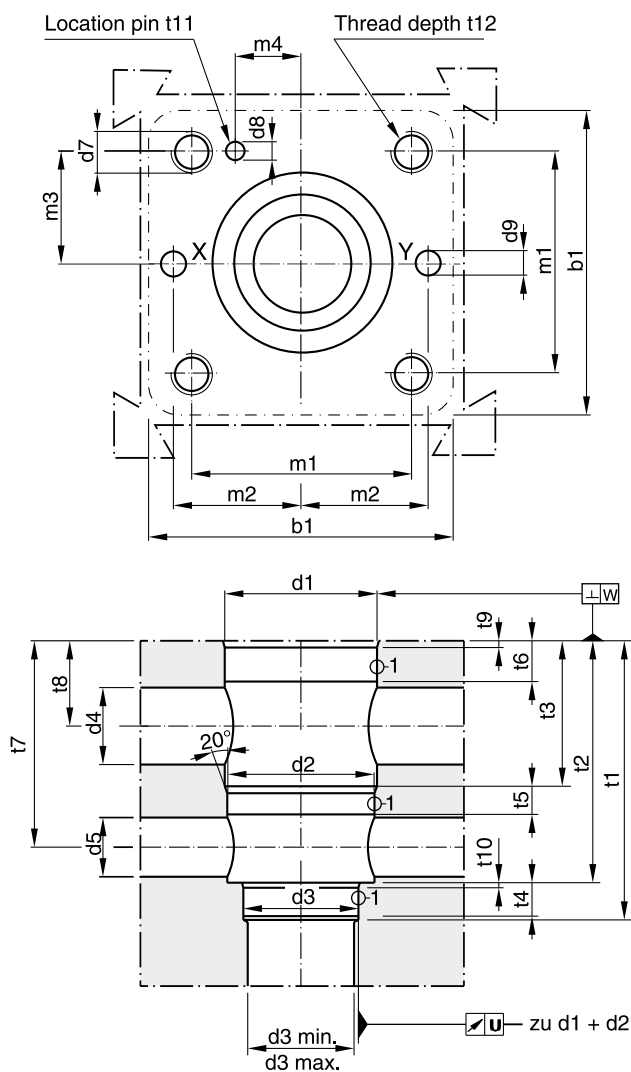


NG	Bolt kit - 		NBR	Kit	FPM
63	BK518 4x M30x160 ISO 4762-12.9	1775 Nm	SK-TPQ063EN30		SK-TPQ063EV30

Dimensions**3-Way High-Response Valve
Series TPQ****NG80****8**

NG	Bolt kit - 		NBR 	Kit 	FPM
80	BK530 8x M24x160 ISO 4762-12.9	517 Nm	SK-TPQ080EN30		SK-TPQ080EV30

TPQ.UK.INDD CM 04.03.16

Dimensions**3-Way High-Response Valve
Series TPQ****NG32 to NG63****NG80**

Required surface finish:

$$\sqrt{R_{\max 25}, (1)} = \sqrt{R_{\max 8}}$$

Size	b1	d1 H7	d2 H7	d3 H7	d3 min.	d3 max.	d4 max.	d5 max.	d7	d8 H13	d9	U	W
25	85	45	43	34	17	25	25	21	M 12	4	7.5	0.03	0.05
32	102	60	58	55	32	54	28	28	M 16	6	8	0.03	0.1
40	125	75	73	55	40	54	38	32	M 20	6	10	0.05	0.1
50	140	90	87	68	50	67	63	38	M 20	8	10	0.05	0.1
63	180	120	116	90	63	89	64	52	M 30	8	12	0.05	0.2
80	250	145	140	110	80	109	70	66	M 24	10	16	0.05	0.2

Size	m1 ±0.2	m2 ±0.2	m3 ±0.2	m4 ±0.2	t1 ⁺³ ₊₁	t2 ±0.2	t3 ±0.2	t4	t5	t6	t7 ±0.2	t8 ±0.2	t9	t10	t11	t12
25	58	33	29	16	103	89 ^{+0.3}	56	11.5	15	17	78	43.5	2.5x15°	2.5x15°	10	35
32	70	41	35	17	100	85	43	13.5	16	18	71	28.5	2.5x15°	2.5x15°	10	35
40	85	50	42.5	23	125	105	54	15	18	21	88	34	3x15°	3x15°	10	45
50	100	58	50	30	165	143	83	18	18	21	122	53	4x15°	3x15°	10	45
63	125	75	62.5	38	195	165	83.5	25	29.5	33	138.5	50	4x15°	4x15°	10	65
80	200	—	—	—	245	215	123	25	27	60	181	87	5x15°	5x15°	10	50