

# Parker Series TDC 2-Way High Performance Proportional Throttle Valve Service Manual

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

## Function

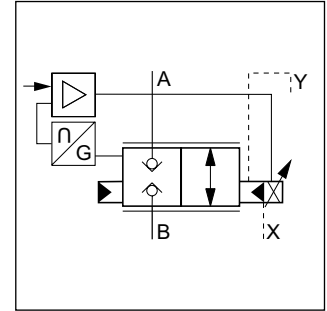
The 2-way high performance proportional throttle valves TDC have a 2-stage design consisting of a proportional pilot valve and a main stage with poppet and LVDT.

With the pilot valve the TDC achieves fast response times: from 20 ms (NG25) up to 31 ms (NG50) with an accuracy of <0.7 % 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.



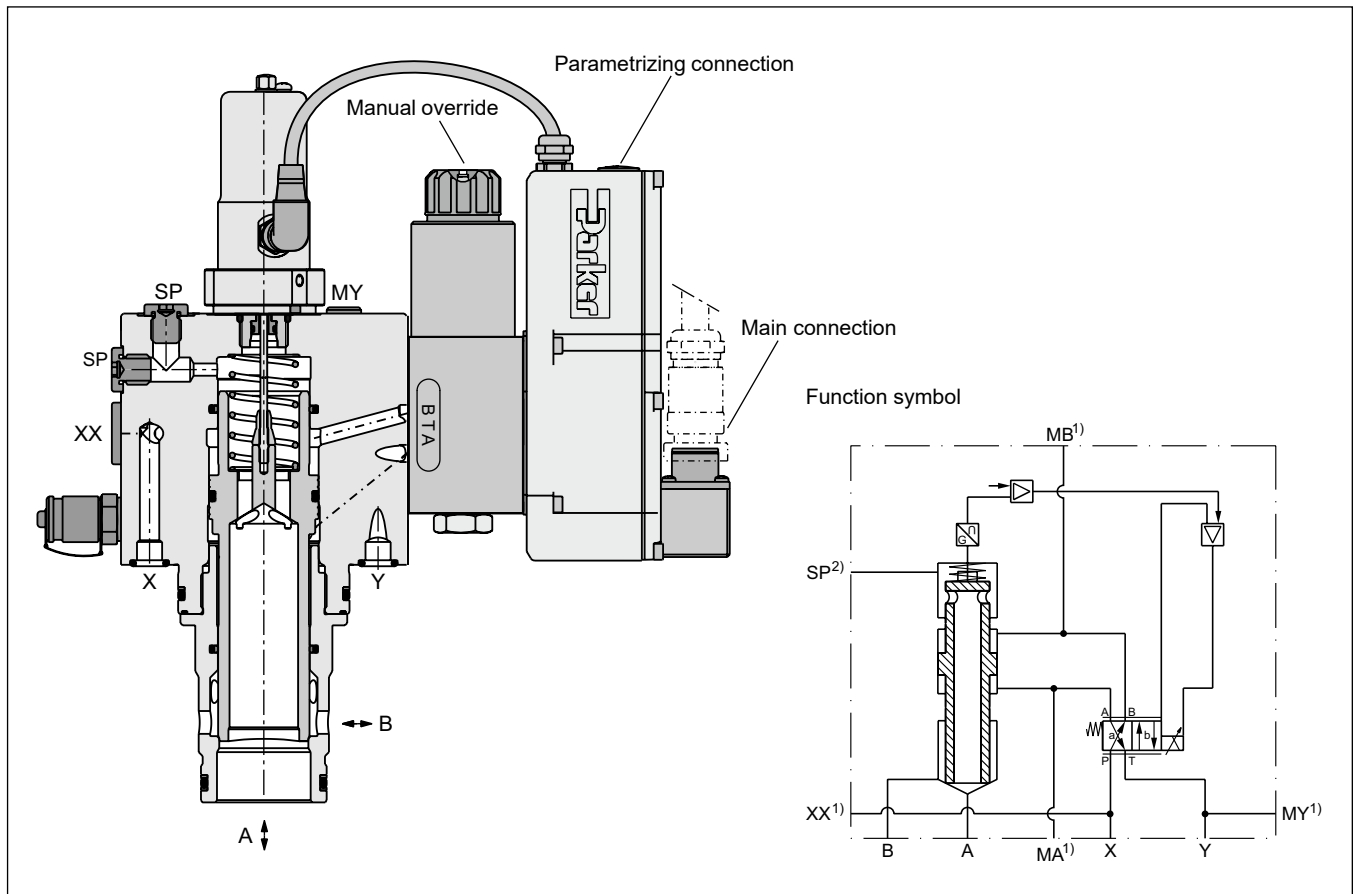
TDC040



## Features

- Active pilot operated 2-way high performance proportional throttle 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.
- 4 sizes NG25 up to NG50

## TDC040



<sup>1</sup>) NG25 and NG32 without accu port XX and without ports MA, MB and MY.

<sup>2</sup>) NG25 without suction port SP.

Ordering Code / Performance Curves

Ordering code

<b>TDC</b>		<b>E</b>	<b>S</b>		<b>9</b>	<b>C</b>	<b>2</b>			<b>0</b>	
2-way high performance proportional throttle valves	Nominal size	Slip-in cartridge	Performance standard response for controlled applications	Flow characteristics	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

Code	Flow characteristics
7	progressive
9	linear

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

Code	Seal
N <sup>1)</sup>	NBR
V	FPM

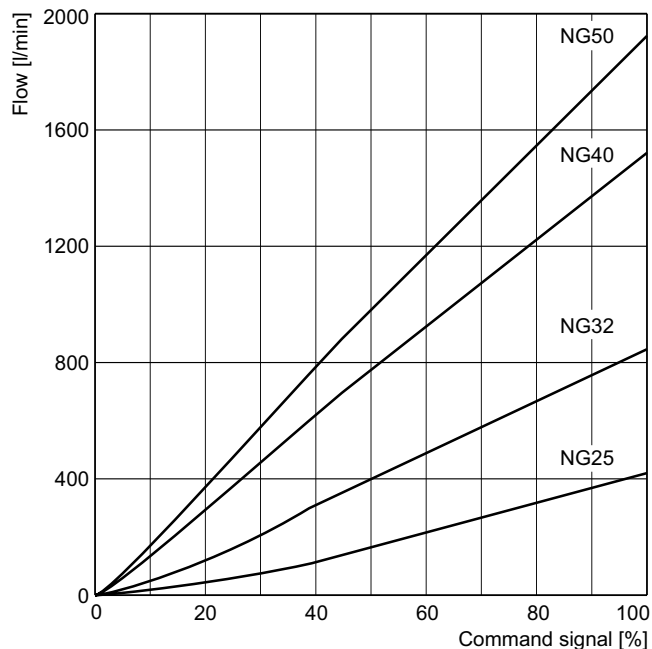
<sup>1)</sup> HFC fluids suitable

Please order connector separately.

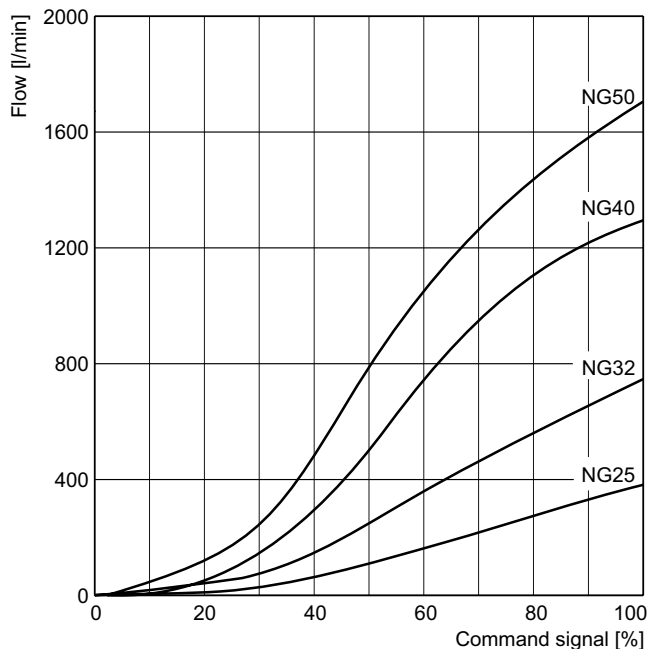
**Characteristic flow/signal lines**  
**Δp = 5 bar**

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Linear (code 9)



Progressive (code 7)



Opening point factory set to 3 %

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 with LVDT and integrated electronics, slip-in cartridge according to ISO 7368		
Nominal size	DIN	<b>NG25</b>	<b>NG32</b>	<b>NG40</b>
Mounting position		unrestricted		
Ambient temperature	[°C]	-20...+60		
Weight	[kg]	11	13	15
Vibration resistance	[g]	10 sinus 5...2000 Hz acc. IEC 68-2-6 10 (RMS) 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. 210		
Fluid		Hydraulic oil according to DIN 51524		
Fluid temperature	[°C]	-20...+60 (NBR: -25...+60)		
Viscosity	recommended [cSt] / [mm <sup>2</sup> /s] permitted [cSt] / [mm <sup>2</sup> /s]	30 ... 80 20 ... 400		
Filtration		ISO 4406; 18/16/13		
Nominal flow at $\Delta p = 5$ bar (linear)	[l/min]	420	850	1500
Recommended max. flow (linear)	[l/min]	800	2000	3000
Nominal flow at $\Delta p = 5$ bar (progressive)	[l/min]	380	750	1300
Recommended max. flow (progressive)	[l/min]	700	1750	2600
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		<b>NG06</b>		
Max. pilot flow at 140 bar pilot pr.	[l/min]	23	30	40
Static/dynamic				
(for optimal dynamics see installation recommendation)				
Step response at pilot press. >140 bar	[ms]	20	22	27
Hysteresis	[%]	< 0.1		
Sensitivity	[%]	< 0.5		

Electrical				
Duty ratio	[%]	100		
Protection class		IP65 in accordance with EN 60529 (with correctly mounted plug-in connector)		
Supply voltage / ripple	[V]	DC 18 ... 30, electric shut-off at < 17, ripple < 5 % eff., surge free		
Current consumption max.	[A]	2.0		
Pre-fusing	[A]	2.5 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		
Differential input max.	[V]	30 for terminal D and E against PE (terminal G) 11 for terminal D and E against 0V (terminal B)		
Adjustment ranges	Min. [°] Max. [°] Ramp [s]	0...50 50...100 0...32.5		
Enable signal	[V]	5...30		
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 <sup>2</sup> ]	7 x 1.0 (AWG16) overall braid shield		
Wiring length max.	[m]	50		

**Installation Recommendations / Electronics**

**Installation recommendation (NG40 + NG50)**

An insufficient pilot oil supply (e.g. due to long distances and/or small diameters) can negatively influence the dynamics of the TDC valve.

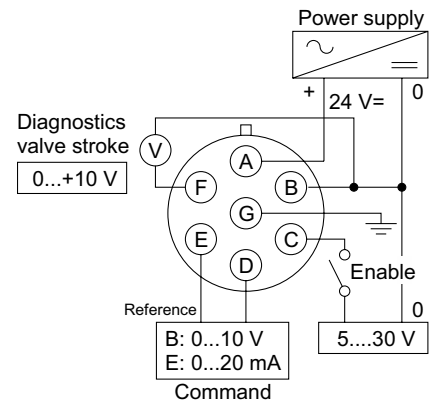
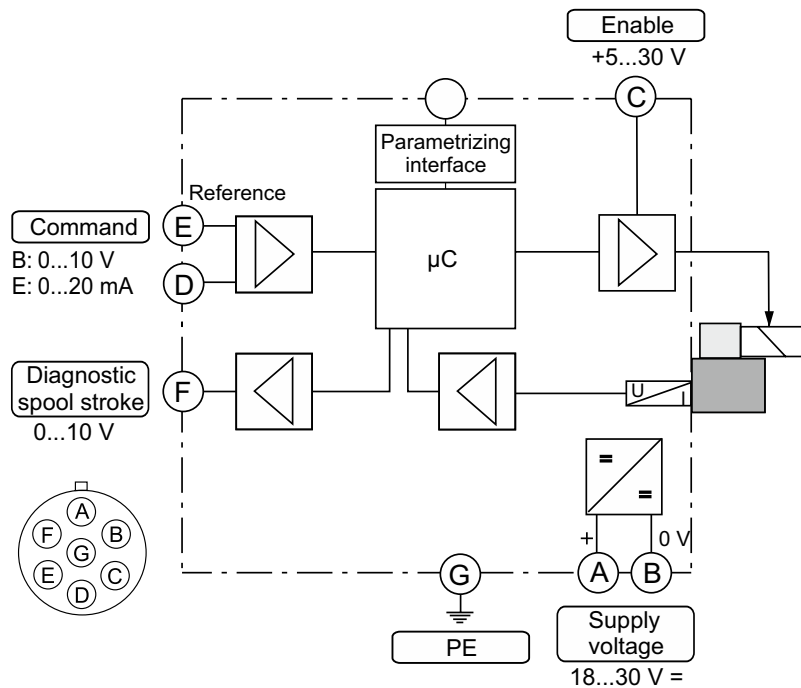
To avoid this, an accumulator can be connected to port XX at the valve body of the TDC. A short-term undersupply with pilot oil can be compensated via this accumulator.

Sizing data: see operation manual.

Please also consider the Parker accumulator product range and the Parker Accumulator Sizing Software.

**Block circuit diagram electronics**

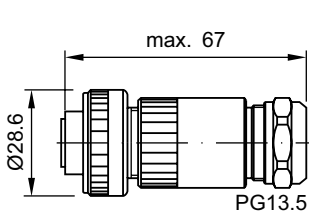
**Connection diagrams electronics**



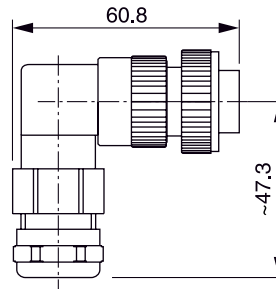
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**Female connector (EMC conform)**

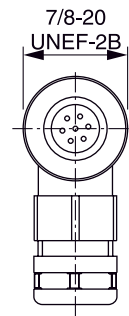
**Angle female connector (EMC conform)**



ID no. 5004072



ID no. 5005160



Please order plugs separately.

# Interface Program

## ProPxD interface program

The ProPxD software allows quick and easy setting of the digital valve electronics. Individual parameters as well as complete settings can be viewed, changed and saved via the comfortable user interface. Parameter sets saved in the non-volatile memory can be loaded to other valves of the same type or printed out for documentation purposes.

The PC software can be downloaded free of charge at [www.parker.com/isde](http://www.parker.com/isde) – see page “Support” or directly at

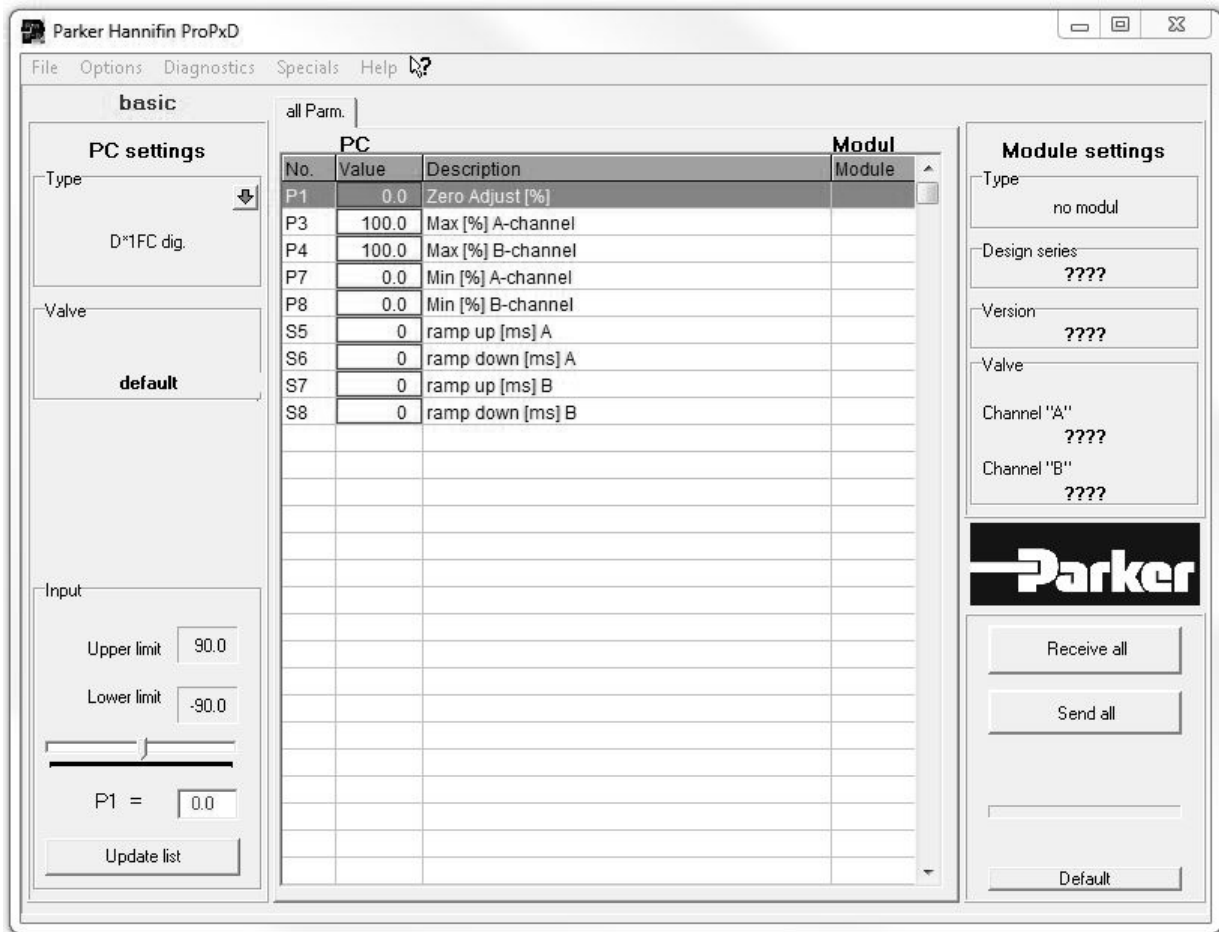
[www.parker.com/propxd](http://www.parker.com/propxd).

### Features

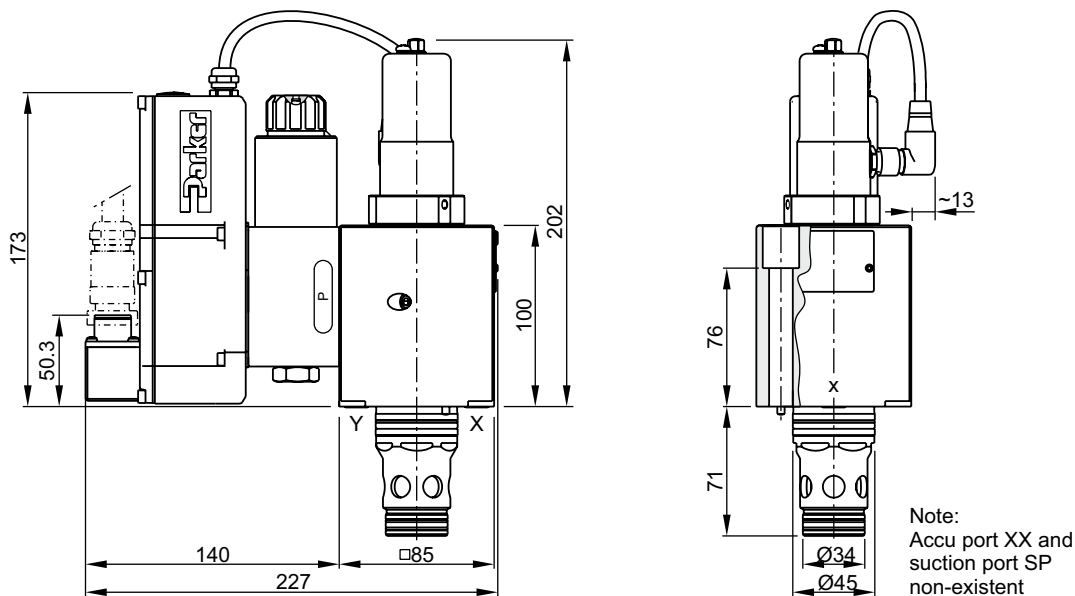
- Comfortable editing of valve parameters
- Saving and loading of customized parameter sets
- Executable with all Windows® operating systems from Windows® XP upwards
- Simple communication between PC and valve electronics via serial interface RS232C

The valve electronics cannot be connected to a PC with a standard USB cable – this can result in damages of PC and/or valve electronics.

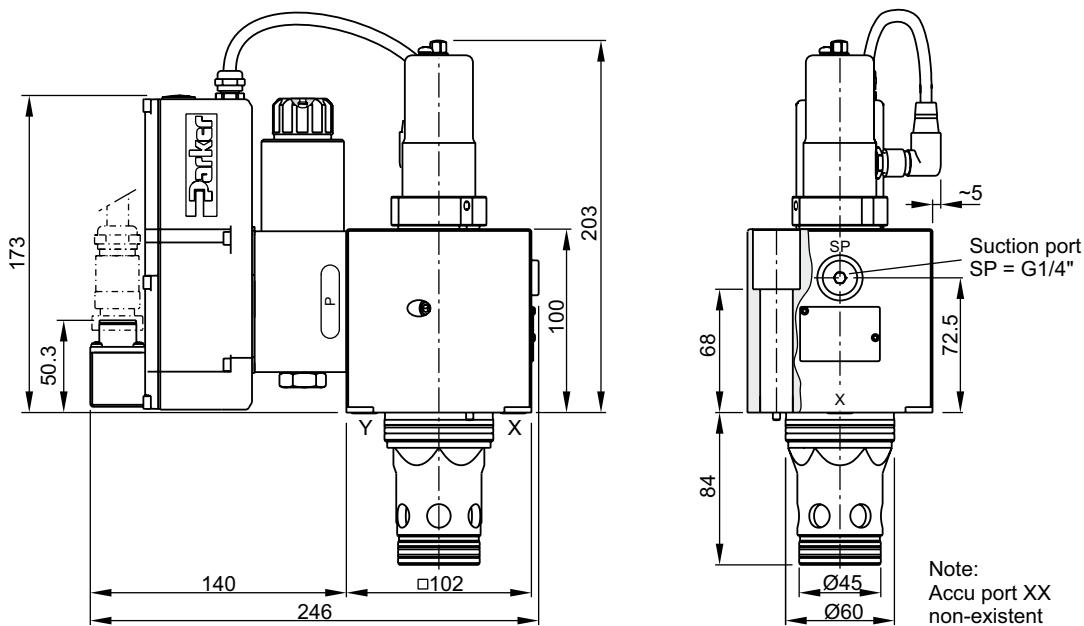
**The parametrizing cable may be ordered under item no. 40982923.**



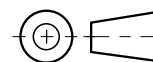
**NG25**






**NG32**



**8**

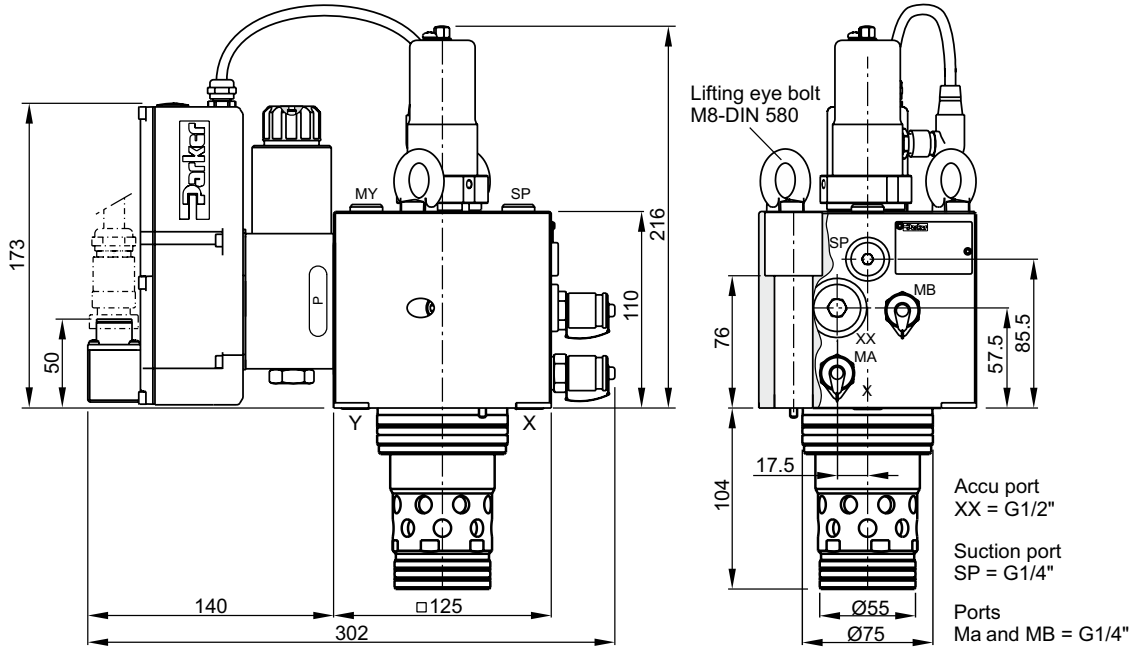


**Suction port SP:** Contact Parker for installation recommendation.

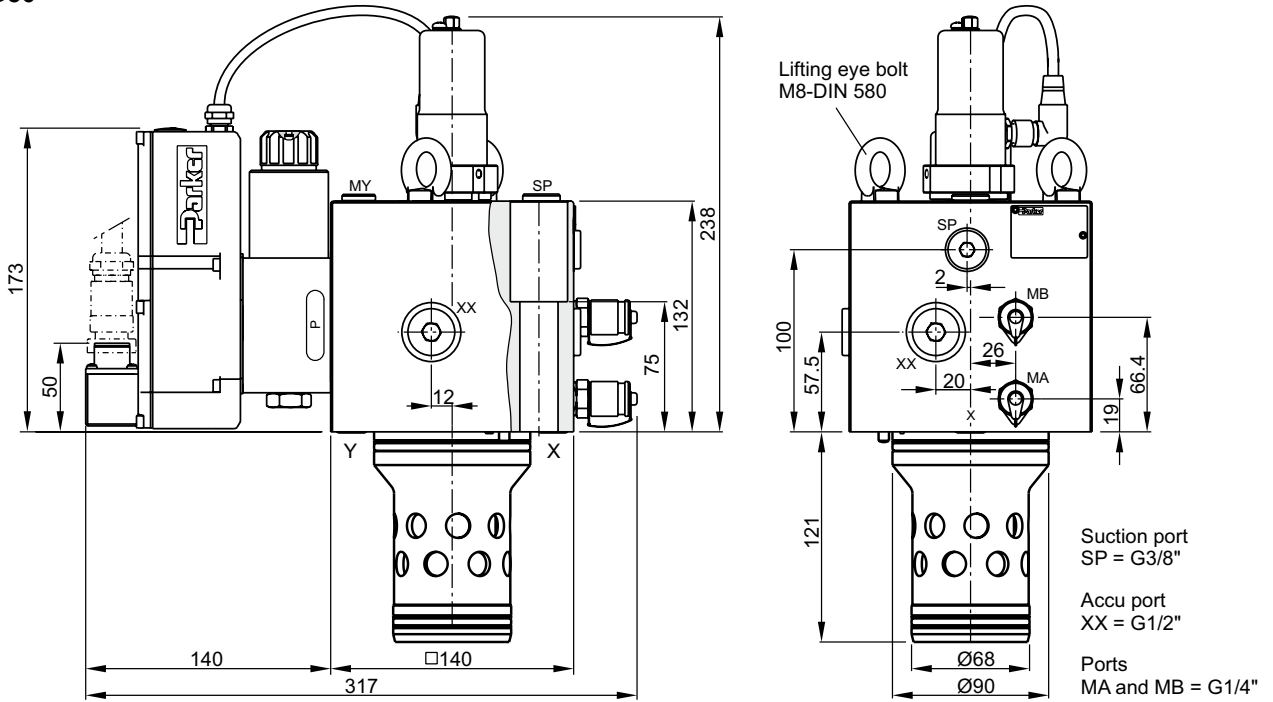
NG	Bolt kit - 		NBR	Kit 	FPM
25	BK504 4 x M12x100 ISO 4762-12.9	108 Nm	SK-TDP025EN30	SK-TDP025EV30	
32	BK529 4 x M16x100 ISO 4762-12.9	264 Nm	SK-TDP032EN30	SK-TDP032EV30	

# Dimensions

## NG40






## NG50



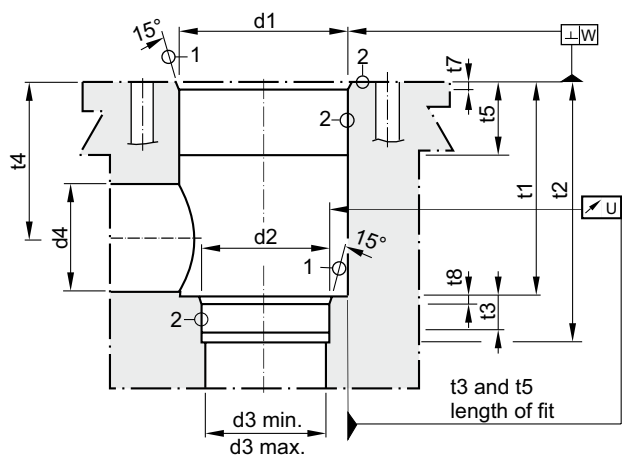
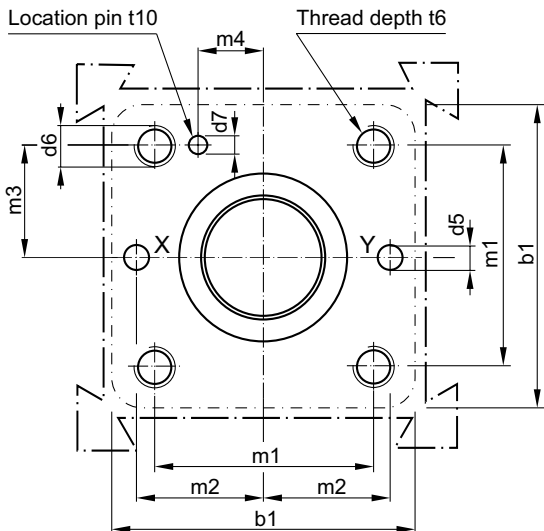
Lifting thread for disassembly M12



**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-TDP040EN30		SK-TDP040EV30
50	BK481 4 x M20x110 ISO 4762-12.9	517 Nm	SK-TDP050EN30		SK-TDP050EV30

**Code: ISO 7368-B\*-2-A/B**  
**NG25 to NG50**



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.

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Size	b1	d1 H7	d2 H7	d3 / d4	d3 max	d4 max <sup>1)</sup>	d5	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

Size	m4±0.2	t1+0.5	t2+1	t3	t4	t4 max. <sup>1)</sup>	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

<sup>1)</sup> d4 max. only in combination with t4 max.