General Description

Series TDP 2/2 way, proportional throttle valves are used in applications where high flow has to be precisely controlled at maximum dynamics. Typical applications are die casting, injection molding and hydraulic presses.

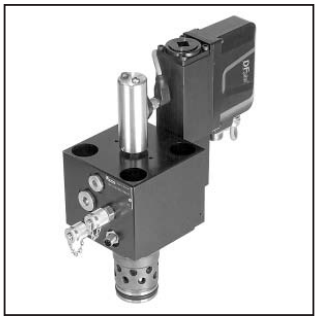
Function

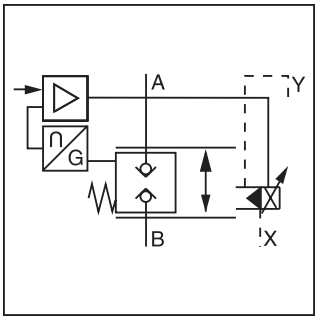
The TDP valve has a 2-stage design consisting of a DFplus pilot valve and a main stage with poppet and LVDT.

With the DFplus pilot valve the TDP achieves extremely fast response times: from 12ms (NG32) up to 28ms (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 (2030 PSI), when high valve dynamics are desired.

The TDP has integrated electronics controlling both the position of the main poppet and the spool position of the DFplus pilot valve.

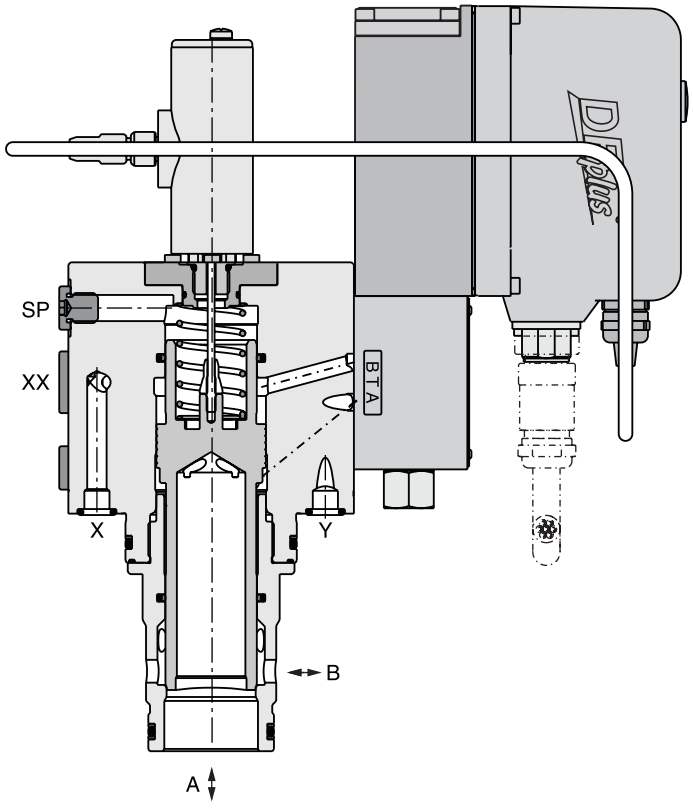




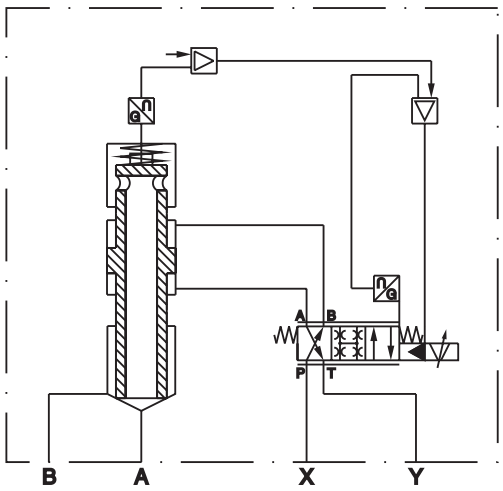
Features

- Active pilot operated 2/2 way 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.
- Fail save position in case of electrical and/or hydraulic power down.
- 6 sizes NG32 up to NG100.

TDP040



Function Symbol



Ordering Information

TDP		E	H	9	9	C	2		B	0	
Proportional Throttle Valve with LVDT	Nominal Size	Slip-in Cartridge	Closed Pilot Loop, Fast Valve Type, Intgegrated Electroniccs	Sinus Poppet	Nominal Flow	Flow Direction A to B B to A	Pilot Oil Supply External Drain External	Seal	Command Signal 0...+10V	Standard Electronics	Design Series NOTE: Not required when ordering.

Code	Description
032	NG32
040	NG40
050	NG50
063	NG63
080	NG80
100	NG100

Code	Description
N*	Nitrile
V	Fluorocarbon

* HFC fluids suitable.

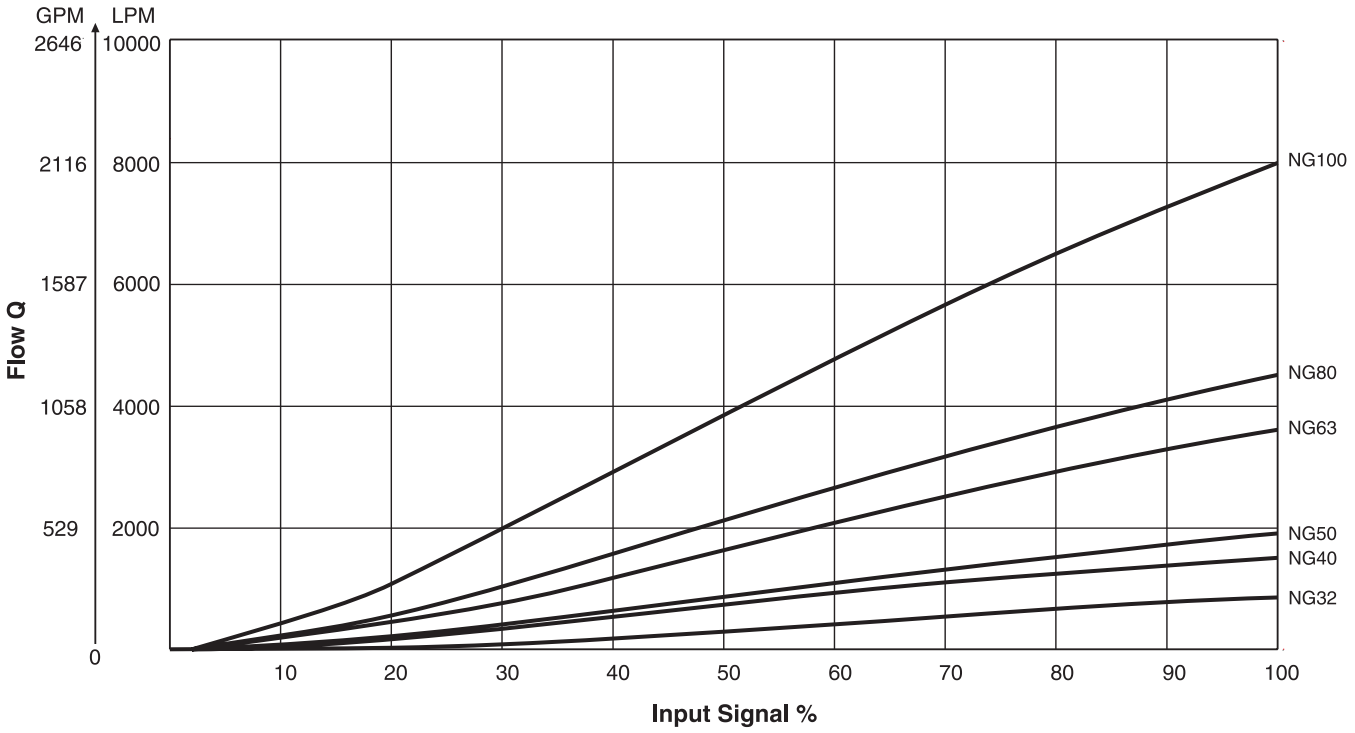
Please order connector separately.

Weight:

TDA032	13.0 kg (28.7 lbs.)
TDA040	15.0 kg (33.1 lbs.)
TDA050	26.0 kg (57.3 lbs.)
TDA063	52.0 kg (114.6 lbs.)
TDA080	105.0 kg (231.5 lbs.)
TDA100	157.0 kg (346.1 lbs.)

Performance Curves

Flow / Signal Line



Opening point factory set to 3%

Characteristic curve measured with HLP46 at 50°C.

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

General						
Size	**NG32**	**NG40**	**NG50**	**NG63**	**NG80**	**NG100**
Interface	Proportional Throttle Valve, Slip-in Cartridge according to ISO 7368					
Mounting Position	Unrestricted					
Ambient Temperature	-20°C to +50°C (-4°F to +122°F)					
MTTF$_D$	50 years					
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						
Maximum Operating Pressure	Ports A, B, X, XX and SP, up to 350 Bar (5075 PSI), Port Y, maximum 35 Bar (507.5 PSI)					
Nominal Flow LPM **Δp = 10 Bar (145 PSI) GPM**	850 (224.5)	1500 (396.3)	1900 (501.9)	3600 (951.0)	4500 (1188.8)	8000 (2113.4)
Maximum Flow LPM **Recommended** **GPM**	2000 (528.3)	3000 (792.5)	4500 1188.8)	8000 2113.4)	13000 (3434.2)	20000 (5283.4)
Fluid	Hydraulic oil according to DIN 51524 ... 51525					
Fluid Temperature	0°C to +60°C (+32°F to +140°F)					
Viscosity Recommended	30 to 80 cSt (mm^2/s)					
Viscosity Permitted	20 to 380 cSt (mm^2/s)					
Filtration	ISO 4406 (1999); 18/16/13 (meet NAS 1638:7)					
Flow Direction	B to A and A to B					
Pilot Pressure	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 (1450 PSI)	<400 LPM (105.7 GPM)					
Pilot Valve Size	NG6			NG10		
Maximum Pilot Flow at 140 Bar (2030 PSI) Pilot Press.	30 LPM (7.9 GPM)	40 LPM (10.6 GPM)	40 LPM (10.6 GPM)	70 LPM (18.5 GPM)	80 LPM (21.1 GPM)	100 LPM (26.4 GPM)
Static / Dynamic [1]						
Step Response at Pilot Pressure >140 Bar (2030 PSI)	12 ms	14 ms	20 ms	17 ms	23 ms	28 ms
Frequency Resp. at Pilot Press. >140 Bar (2030 PSI) **Amplitude -3dB; 10% ±5%** **Phase -90°; 10% +5%**	 80 Hz 63 Hz	 74 Hz 59 Hz	 66 Hz 52 Hz	 52 Hz 56 Hz	 46 Hz 51 Hz	 41 Hz 47 Hz
Hysteresis	< 1%					
Sensitivity	< 0.05%					
Temperature Drift	< 0.025%K					

[1] For optimal dynamics see installation recommendation.

(Continued on next page)

Specifications (Continued from previous page)

Electrical	
Duty Ratio	100% ED
Protection Class	IP65 in accordance with EN 60529 (with correctly mounted plug-in connector)
Supply Voltage / Ripple	22...30V, ripple < 5% eff., surge free
Current Consumption Max.	3.5 A
Pre-fusing	4.0 A medium lag
Input Signal **Voltage** **Impedance** **Input Capacitance Typ.**	 0...+10V, ripple < 0.01 % eff., surge free 100 kOhm 1 nF
Differential Input Maximum	30V for terminal D and E against PE (terminal G), 11V for terminal D and E against 0V (terminal B)
Enable Signal	5...30V, Ri = 9 kOhm
Diagnostic Signal	0...+10V, rated max. 5mA
EMC	EN 61000-6-2, EN 61000-6-4
Electrical Connection	6 + PE as per EN 175201-804
Wiring Minimum mm^2	7 x 1.0 (AWG16) overall braid shield
Wiring Length Maximum	50 m (164 ft.)

Installation Recommendations

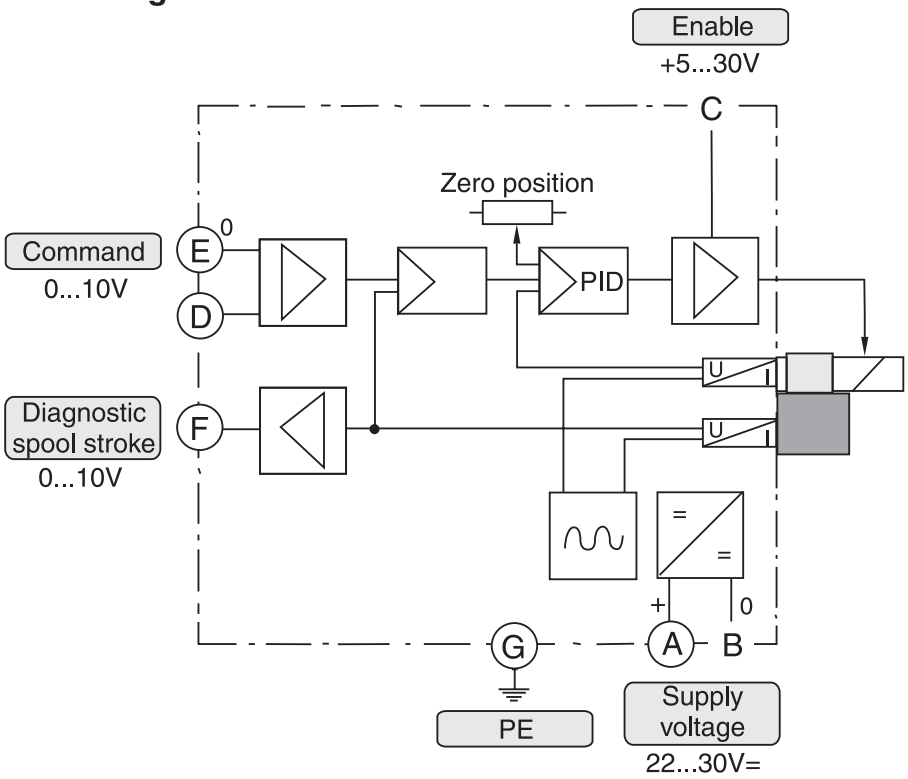
The maximum pilot flow is given in the technical data. At insufficient pilot oil supply – e.g. because of long distances and/or small diameters – an accumulator can be connected to port XX. See selection guide for correct dimensions.

Selection Guide

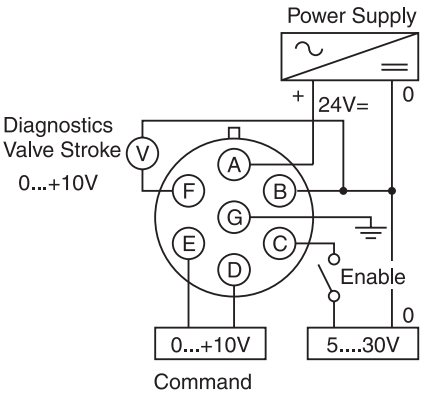
Size	Capacity	Product Type	Pressure Rating	Accu port XX
NG40	0.162 Liters (0.0428 Gallons)	ADE016-25R	126 Bar (1827.5 PSI)	G 1/2
NG50	0.243 Liters (0.0642 Gallons)	ADE032-21R	126 Bar (1827.5 PSI)	G 1/2
NG63	0.405 Liters (0.1070 Gallons	ADE050-21R	126 Bar (1827.5 PSI)	G 1
NG80	0.647 Liters (0.1709 Gallons)	ADE075-21R	126 Bar (1827.5 PSI)	G 3/4
NG100	0.944 Liters (0.2494 Gallons)	ADE100-21R	126 Bar (1827.5 PSI)	G 3/4

Suction Port SP: Contact Parker for installation recommendation.

Block Diagram

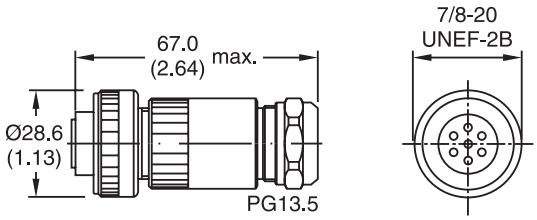


Electronics Connection Code B



Female Connector

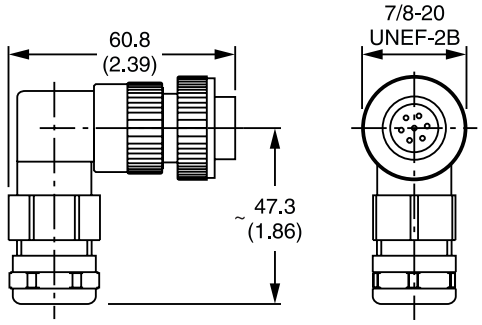
(EMC conform)



Part No. 5004072

Angle Female Connector

(EMC conform)

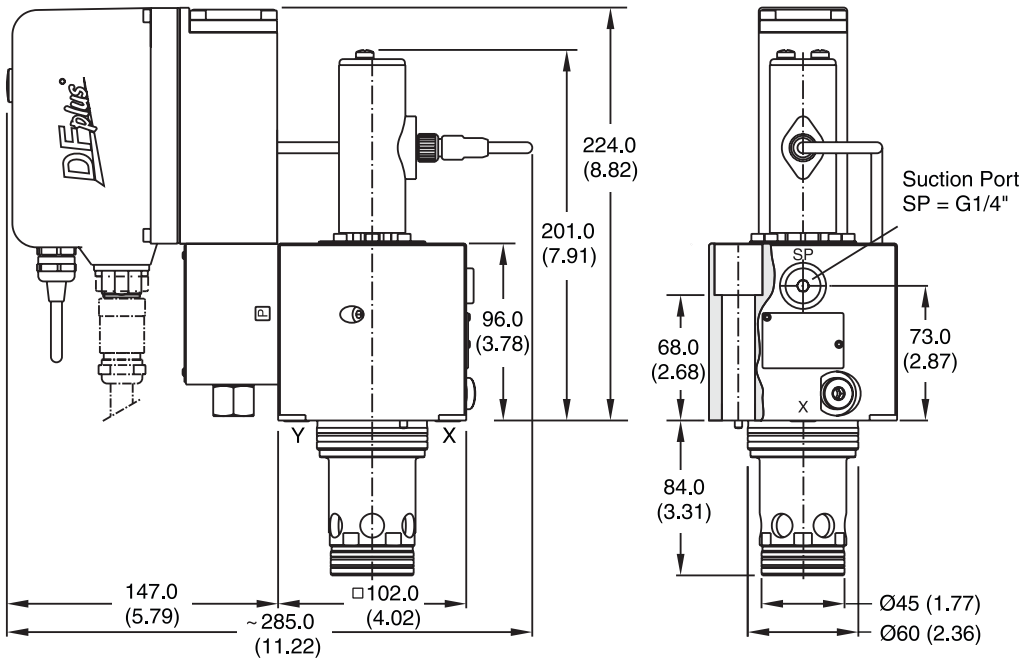


Part No. 5005160

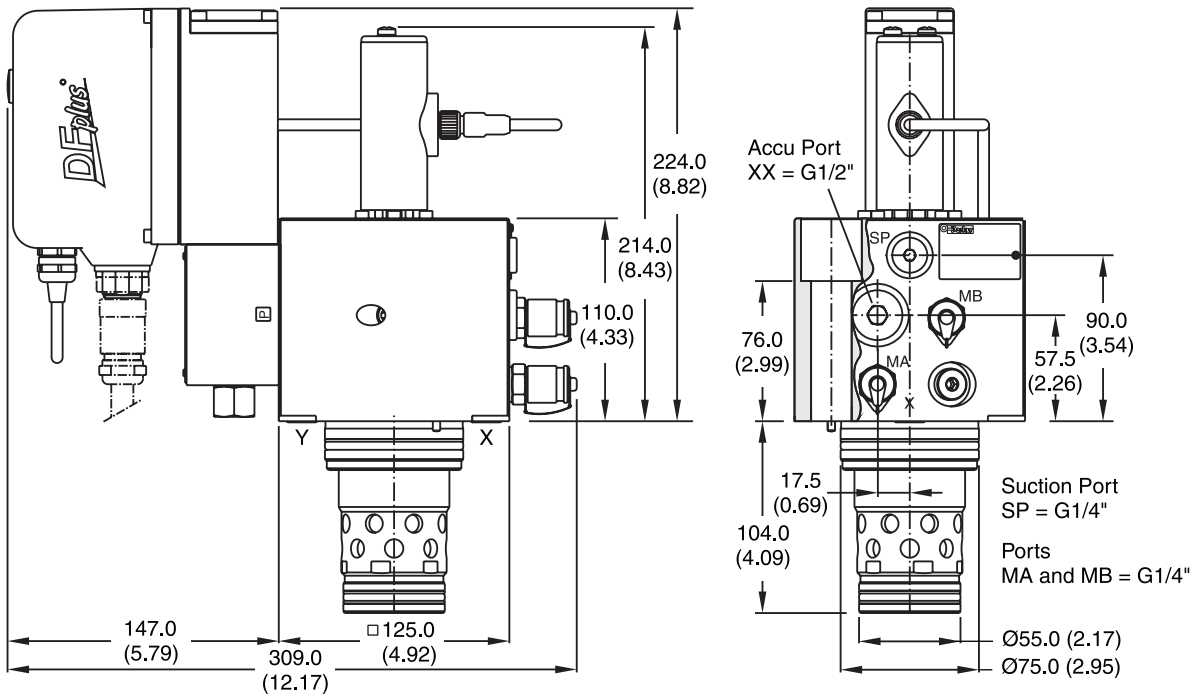
Please order plugs separately.

Inch equivalents for millimeter dimensions are shown in (**)

NG32



NG40



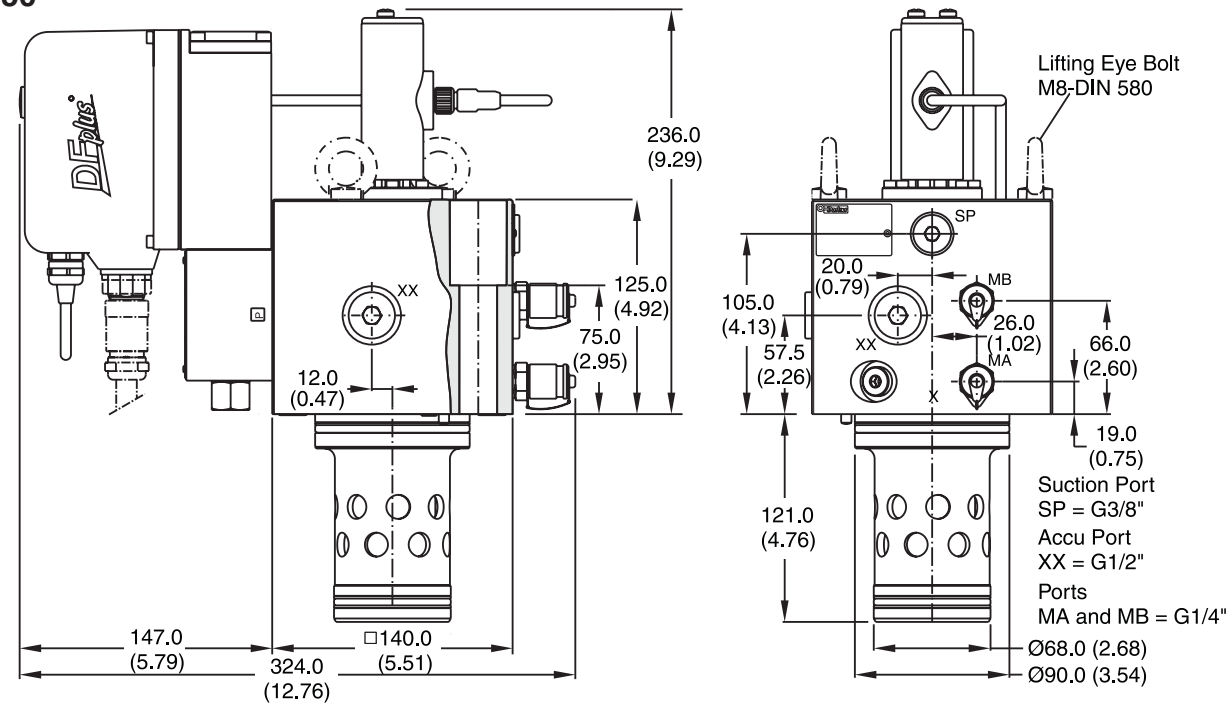
NG	Bolt Kit - DIN912 12.9		Kit	
			Nitrile	Fluorocarbon
32	BK529 4 x M16x100 DIN 912 12.8	281 Nm (207.2 lb-ft.)	SK-TDP032EN	SK-TDP032EV
40	BK513 4 x M20x120 DIN 912 12.8	553 Nm (407.8 lb.-ft.)	SK-TDP040EN	SK-TDP040EV

TDP.indd, ddp

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

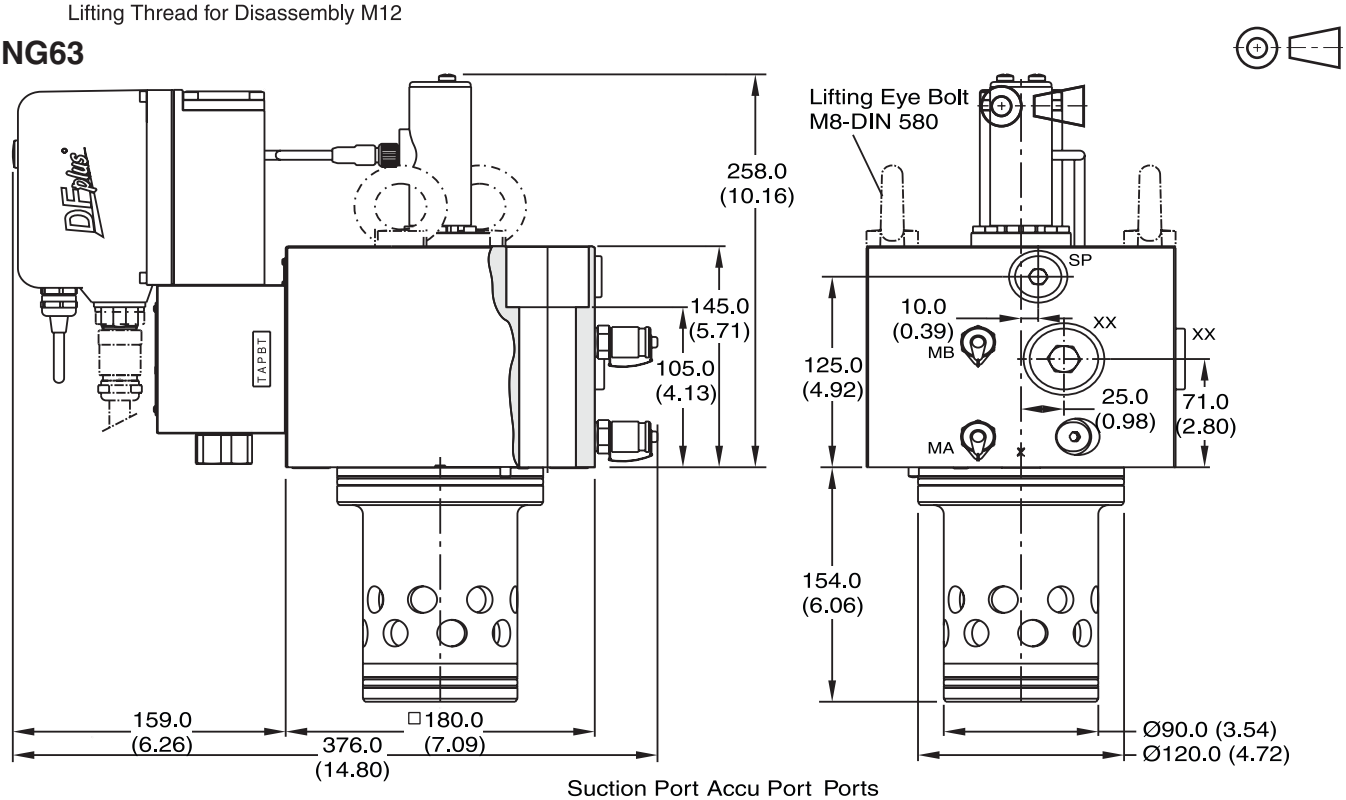
Inch equivalents for millimeter dimensions are shown in (**)

NG50



Lifting Thread for Disassembly M12

NG63



Lifting Thread for Disassembly M12

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

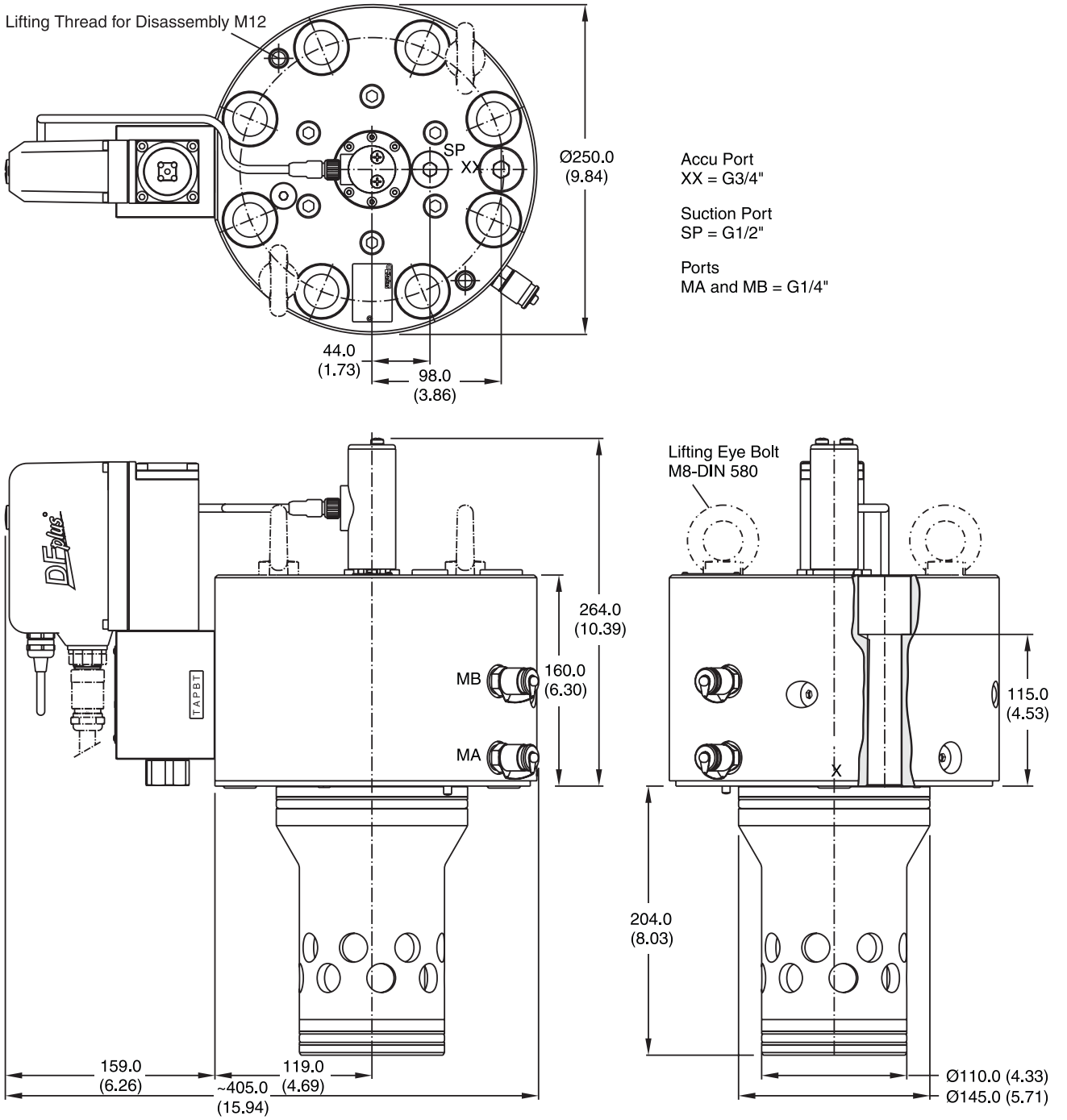
NG	Bolt Kit - DIN912 12.9		Kit Nitrile	Kit Fluorocarbon
50	BK513 4 x M20x120 DIN 912 12.8	553 Nm (407.8 lb-ft.)	SK-TDP050EN	SK-TDP050EV
63	BK420 4 x M30x140 DIN 912 12.9	1910 Nm (1408.6 lb.-ft.)	SK-TDP063EN	SK-TDP063EV

TDP.indd, ddp

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

Inch equivalents for millimeter dimensions are shown in (**)

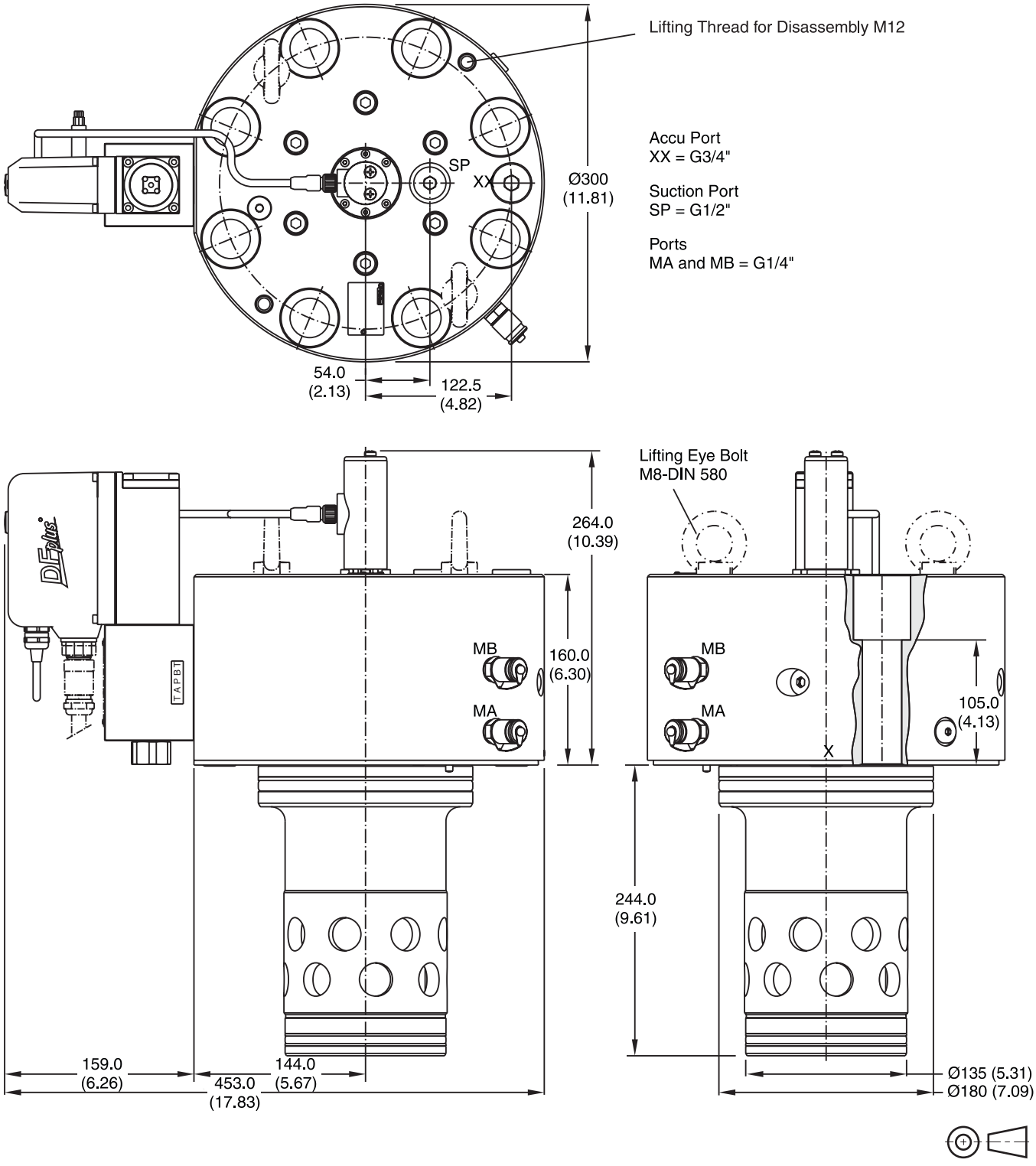
NG80



NG	Bolt Kit - DIN912 12.9		Kit	
			Nitrile	Fluorocarbon
80	BK530 8x M24x160 DIN 912 12.9	955 Nm (704.3 lb.-ft.)	SK-TDP080EN	SK-TDP080EV

Inch equivalents for millimeter dimensions are shown in (**)

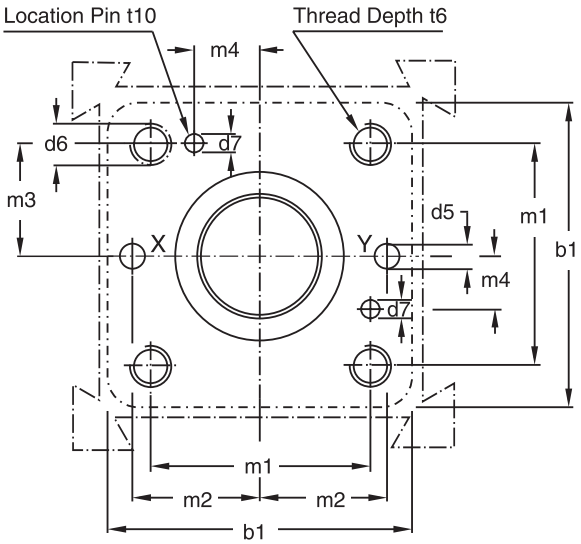
NG100

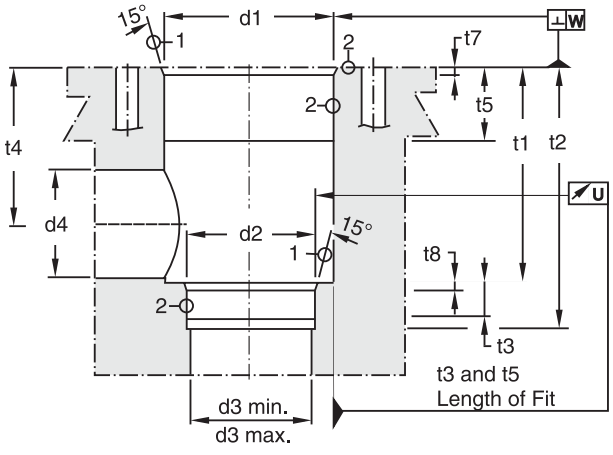


NG	Bolt Kit - DIN912 12.9		Kit Nitrile	Kit Fluorocarbon
100	BK517 8x M30x150 DIN 912 12.9	1910 Nm (1408.6 lb.-ft.)	SK-TDP100EN	SK-TDP100EV

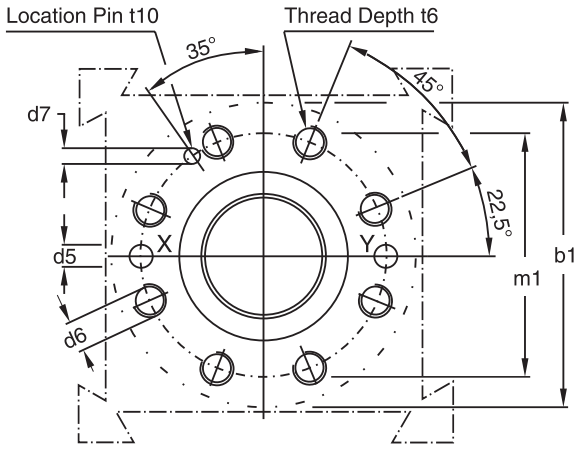
Mounting Patterns

Code: ISO 7368-B*-*-2-A/B
NG32 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.

Inch equivalents for millimeter dimensions are shown in (**)

Size	b1	d1 H7	d2 H7	d3	d3 max.	d4 max.*	d5 max.	d6	d7 H13	m1±0.2	m2±0.2	m3±0.2
32	102.0 (4.02)	60.0 (2.36)	45.0 (1.77)	32.0 (1.26)	44.0 (1.73)	50.0 (1.97)	8.0 (0.31)	M 16	6.0 (0.24)	70.0 (2.76)	41.0 (1.61)	35.0 (1.38)
40	125.0 (4.92)	75.0 (2.95)	55.0 (2.17)	40.0 (1.57)	54.0 (2.13)	63.0 (2.48)	10.0 (0.39)	M 20	6.0 (0.24)	85.0 (3.35)	50.0 (1.97)	42.5 (1.67)
50	140.0 (5.51)	90.0 (3.54)	68.0 (2.68)	50.0 (1.97)	67.0 (2.64)	80.0 (3.15)	10.0 (0.39)	M 20	8.0 (0.31)	100.0 (3.94)	58.0 (2.28)	50.0 (1.97)
63	180.0 (7.09)	120.0 (4.72)	90.0 (3.54)	63.0 (2.48)	89.0 (3.50)	100.0 (3.94)	12.0 (0.47)	M 30	8.0 (0.31)	125.0 (4.92)	75.0 (2.95)	62.5 (2.46)
80	250.0 (9.84)	145.0 (5.71)	110.0 (4.33)	80.0 (3.15)	109.0 (4.29)	110.0 (4.33)	16.0 (0.63)	M 24	10.0 (0.39)	200.0 (7.87)	—	—
100	300.0 (11.81)	180.0 (7.09)	135.0 (5.31)	100.0 (3.94)	134.0 (5.28)	150.0 (5.91)	20.0 (0.79)	M 30	10.0 (0.39)	245.0 (9.65)	—	—

Size	m4±0.2	t1+0.5	t2+1	t3	t4	t4 max.*	t5	t6	t7	t8	t10	U	W
32	17.0 (0.67)	70.0 (2.76)	85.0 (3.35)	13.0 (0.47)	52.0 (2.05)	44.0 (1.73)	15.0 (0.59)	35.0 (1.38)	2.5 (0.10)	2.5 (0.10)	10.0 (0.39)	0.03 (0.001)	0.1 (0.004)
40	23.0 (0.91)	87.0 (3.43)	105.0 (4.13)	15.0 (0.59)	64.0 (2.52)	54.0 (2.13)	15.0 (0.59)	45.0 (1.77)	3.0 (0.12)	3.0 (0.12)	10.0 (0.39)	0.05 (0.002)	0.1 (0.004)
50	30.0 (1.18)	100.0 (3.94)	122.0 (4.80)	17.0 (0.67)	72.0 (2.83)	59.0 (2.32)	17.0 (0.67)	45.0 (1.77)	4.0 (0.16)	3.0 (0.12)	10.0 (0.39)	0.05 (0.002)	0.1 (0.004)
63	38.0 (1.50)	130.0 (5.12)	155.0 (6.10)	20.0 (0.79)	95.0 (3.74)	78.0 (3.07)	19.0 (0.75)	65.0 (2.56)	4.0 (0.16)	4.0 (0.16)	10.0 (0.39)	0.05 (0.002)	0.2 (0.008)
80	—	175.0 (6.89)	205.0 (8.07)	25.0 (0.98)	130.0 (5.12)	115.0 (4.53)	32.0 (1.26)	50.0 (1.97)	5.0 (0.20)	5.0 (0.20)	10.0 (0.39)	0.05 (0.002)	0.2 (0.008)
100	—	210.0 (8.27)	245.0 (9.65)	29.0 (1.14)	155.0 (6.10)	133.0 (5.24)	32.0 (1.26)	53.0 (2.09)	5.0 (0.20)	5.0 (0.20)	10.0 (0.39)	0.05 (0.002)	0.2 (0.008)

* Only in combination with d4max and t4max.

Notes