Pneumatic cylinder

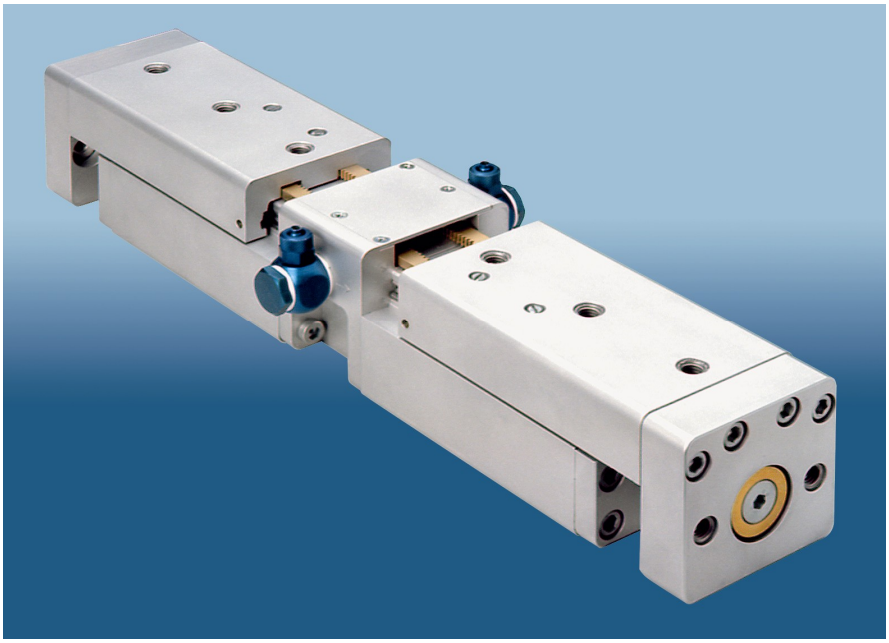
TOSS®

Type B, Boxer

Force-actuated

double-acting

Linear ball guide
∅ 32/40 mm



The forced actuation by racks ensures exact opening and closing of the two cylinders (e.g. suitable for symmetrical clamping and pressing).

Technical data:

Type	32 - BBZ	40 - BBZ
Design type	Pneumatic cylinder with linear ball guide, opposed double stroke, force-actuated via racks	
Stroke length [mm]	10, 25, 50, 80, 100, 125, 160, 200 (2 x)	
Fitting position	Any (as long as extended position is always possible)	
Adm. temperature range [°C]	-10 to +70	
Medium	Filtered, oiled or non-oiled compressed-air (min. fineness 40 µm)	
Compressed-air supply	Centre position (only lateral)	
Compressed-air [bar]	min. 2 ... max. 6	
Materials	Base body, upper part, mounting plate, cover, piston plate: Al Guides: 100 Cr 6, piston rod: Ck 45 SL f7 Piston: NBR Seals: NBR, cylinder barrel: Ms 63 Spur gear, racks: Ms 58	
The external stops (stroke length limits) must be mounted on both sides!		

Weights: (gramme)

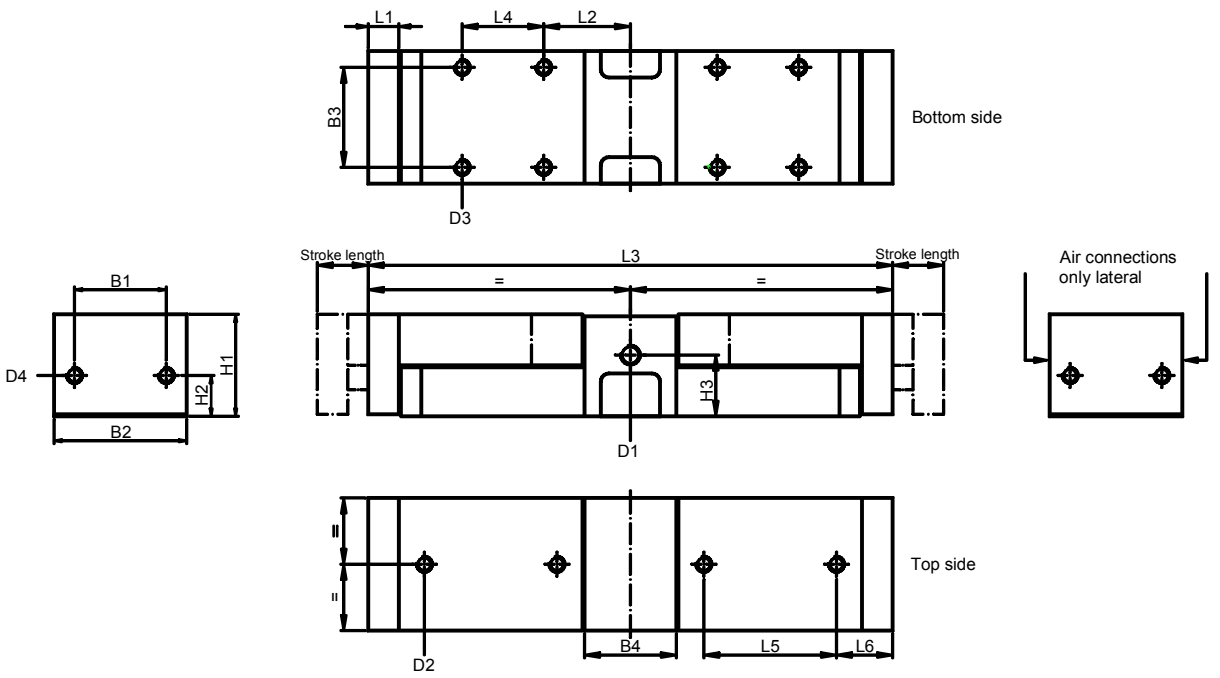
Piston - ∅ [mm]	Stroke length 2 x [mm]							
	10	25	50	80	100	125	160	200
32	1960	2160	2760	3660	4260	4960	5860	7060
40	2850	3250	3950	5150	5950	6750	8050	9450

Delivery time on request

Pneumatic cylinder

TOSS®

Type BBZ



Dimensions:

Piston ø [mm]	Piston rod ø [mm]	B1 [mm]	B2 [mm]	B3 [mm]	B4 [mm]	D1	D2/depth [mm]	D3/depth [mm]	D4/depth [mm]	H1 [mm]	H2 [mm]	H3 [mm]	L1 [mm]	L2 [mm]
32	12	45	65	49	45	G1/8	M8/7,5	M8/18	M8/10,5	50	20	30,3	15	42,5
40	15	50	70	54	50	G1/4	M8/10,5	M8/18	M8/10,5	65	27	43,5	20	45,0

Piston - ∅ [mm]		**Stroke length 2 x [mm]**							
		10	**25**	**50**	**80**	**100**	**125**	**160**	**200**
32	L3	217	257	327	437	507	587	697	837
	L4	20	40	75	130	2 x 82,5	2 x 102,5	2 x 130	2 x 165
	L5	45	65	2 x 50	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115
	L6	27,5	27,5	27,5	27,0	27,5	27,0	27,5	32,5
40	L3	242	272	342	452	522	602	712	852
	L4	25	40	75	130	2 x 82,5	2 x 102,5	2 x 130	2 x 165
	L5	50	65	2 x 50	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115
	L6	32,5	32,5	32,5	32,0	32,5	32,0	32,5	37,5

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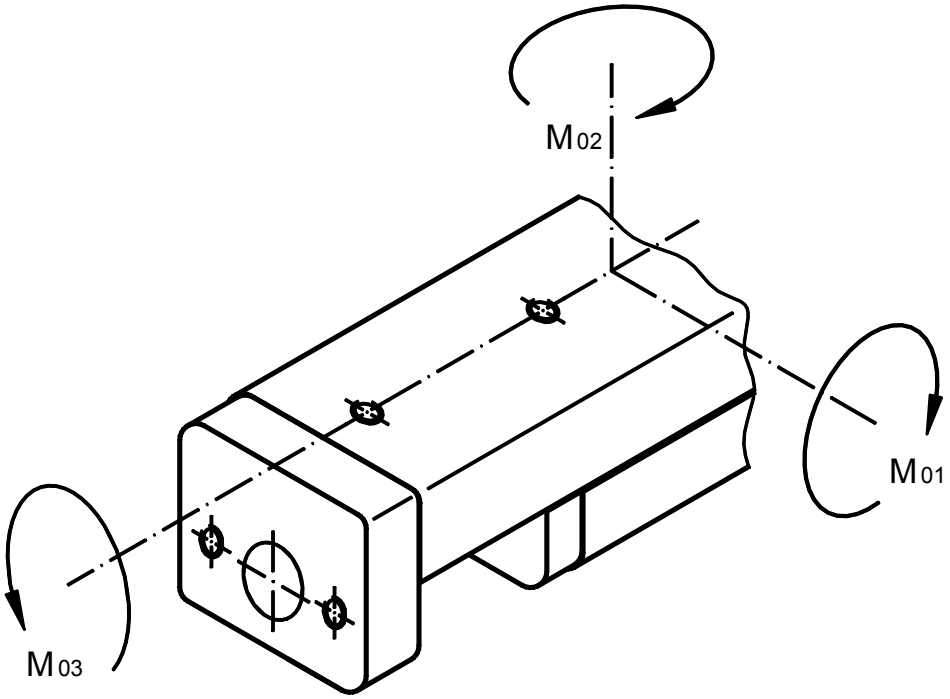
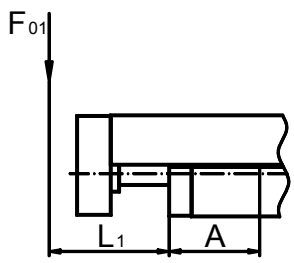
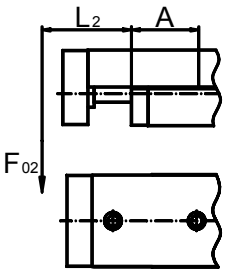
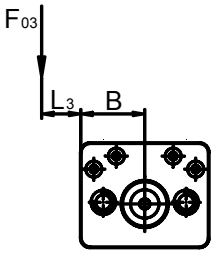
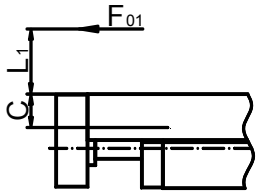
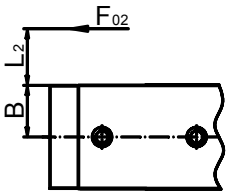
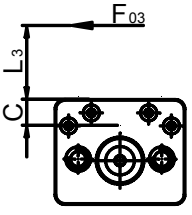
Admissible stress

Type BBZ



Longitudinal torque	Lateral torque	Transverse torque
		
$F_{01} \leq \frac{M_{01\ zul.}}{L_1 + A}$	$F_{02} \leq \frac{M_{02\ zul.}}{L_2 + A}$	$F_{03} \leq \frac{M_{03\ zul.}}{L_3 + B}$
		
$F_{01} \leq \frac{M_{01\ zul.}}{L_1 + C}$	$F_{02} \leq \frac{M_{02\ zul.}}{L_2 + B}$	$F_{03} \leq \frac{M_{03\ zul.}}{L_3 + C}$

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Admissible stress

Stroke length [mm]	10		25		50		80		100		125	
∅ / Type	M_1/M_2 Nm	M_3 Nm	M_1/M_2 Nm	M_3 Nm	M_1/M_2 Nm	M_3 Nm	M_1/M_2 Nm	M_3 Nm	M_1/M_2 Nm	M_3 Nm	M_1/M_2 Nm	M_3 Nm
32 - BBZ	4,60	3,87	4,78	4,56	6,36	5,88	9,31	8,48	10,84	9,75	13,07	9,75
40 - BBZ	5,06	4,42	5,26	5,17	7,00	6,67	10,24	9,59	11,92	11,04	14,38	11,04

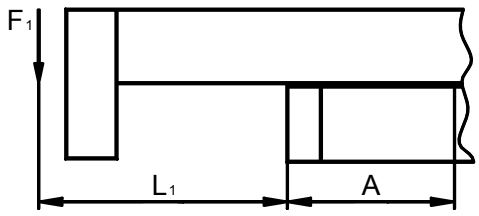
Stroke length [mm]	160		200	
∅ / Type	M_1/M_2 Nm	M_3 Nm	M_1/M_2 Nm	M_3 Nm
32 - BBZ	14,78	9,75	18,48	9,75
40 - BBZ	16,26	11,04	20,32	11,04

Correction factors:

∅ / Type	Stroke length	A	B	C
	[mm]	[mm]	[mm]	[mm]
32 - BBZ	10	49,7	32,25	17,7
	25	57,2		
	50	75,8		
	80	103,2		
	100	119,4		
	125	141,2		
	160	164,9		
	200	200,4		

∅ / Type	Stroke length	A	B	C
	[mm]	[mm]	[mm]	[mm]
40 - BBZ	10	49,7	34,75	20,8
	25	57,2		
	50	75,8		
	80	103,2		
	100	119,4		
	125	141,2		
	160	164,9		
	200	200,4		

Example of calculation:



Stress - longitudinal torque M_1

Given qty: 40 - BBZ with a stroke length of 80 mm
Lever arm L_1 = 65 mm = 0,065 m
Longitudinal torque M_1 = 10,24 Nm
Correction factor A = 103,2 mm = 0,1032 m

Required qty: $F_1 \leq \frac{M_1}{L_1 + A} = \frac{10{,}24\ \text{Nm}}{0{,}065\ \text{m} + 0{,}1032\ \text{m}} = 60{,}8\ \text{N}$

All data based on tests conducted by TOSS.