

TOX®-Powerpackage:

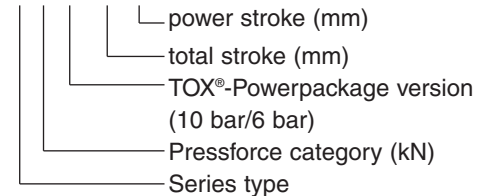
The complete drive family for pressforces from 2 – 2000 kN

The TOX®-Powerpackage is available with different pressforces, strokes and structural shapes.

Selection criterions:

- 1) Pressforce required for the application
- 2) Available air pressure
- 3) Required total stroke of the TOX®-Powerpackage
- 4) Required power stroke of the TOX®-Powerpackage
- 5) Type of application as e.g. punching, embossing etc.
- 6) Available installation space

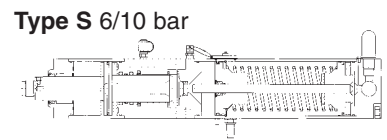
Description for ordering the TOX®-Powerpackage
S 4.30.50.6



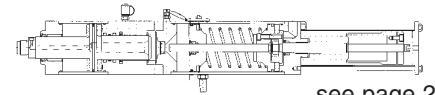
Data sheet 10.00
06/08

A series overview

Type S (standard) 2 bar – 6 bar series	2 bar – 10 bar series
up to 1740 kN pressforce up to 300 mm total stroke up to 20 mm power stroke	up to 1730 kN pressforce up to 400 mm total stroke up to 80 mm power stroke



Type S 6/10 bar
Version .50 with power stroke setting



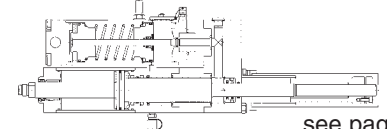
see page 2 – 10

Patented power bypass with integrated retract hydraulic cushion is a standard feature for all TOX®-Powerpackages type S4 to S170.
Option: version S. 50 with power stroke setting
For further executions see our data sheets 10.06 and 10.08.

Type K (compact) 2 bar – 6 bar series	2 bar – 10 bar series
up to 1600 kN pressforce up to 200 mm total stroke up to 10 mm power stroke	up to 1710 kN pressforce up to 400 mm total stroke up to 50 mm power stroke



Type K 6/10 bar
Version .51 with total stroke setting

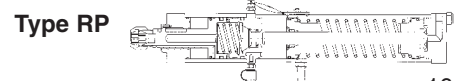
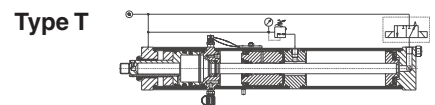


see page 11 – 15

Patented power bypass with integrated retract hydraulic cushion is available on request.
Option: version K. 51 with total stroke setting

For further executions see our data sheet 10.06.

Type T, the turbo cylinder: up to 550 strokes/min, only power stroke 3 bar – 10 bar series type T	Type RP embossing cylinder with anti-rotation lock 3 bar – 10 bar series type RP
up to 120 kN pressforce up to 12 mm total stroke up to 12 mm power stroke	up to 159 kN pressforce up to 32 mm total stroke up to 2 mm power stroke



see page 16 – 17

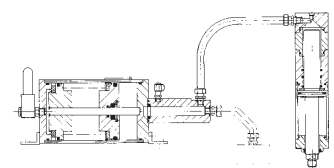
Accessories/specials
Mounting instructions / tables / notes

Accessories/special version

see page 18 – 35

Type KT flexible solution for small mounting dimensions, long powerstrokes 2 bar – 6 bar series	2 bar – 10 bar series
up to 1994 kN pressforce up to 400 mm total stroke up to 400 mm power stroke	up to 1994 kN pressforce up to 400 mm total stroke up to 400 mm power stroke

Type KT, see TOX® Pneumo-Hydraulic Intensifier System leaflet.

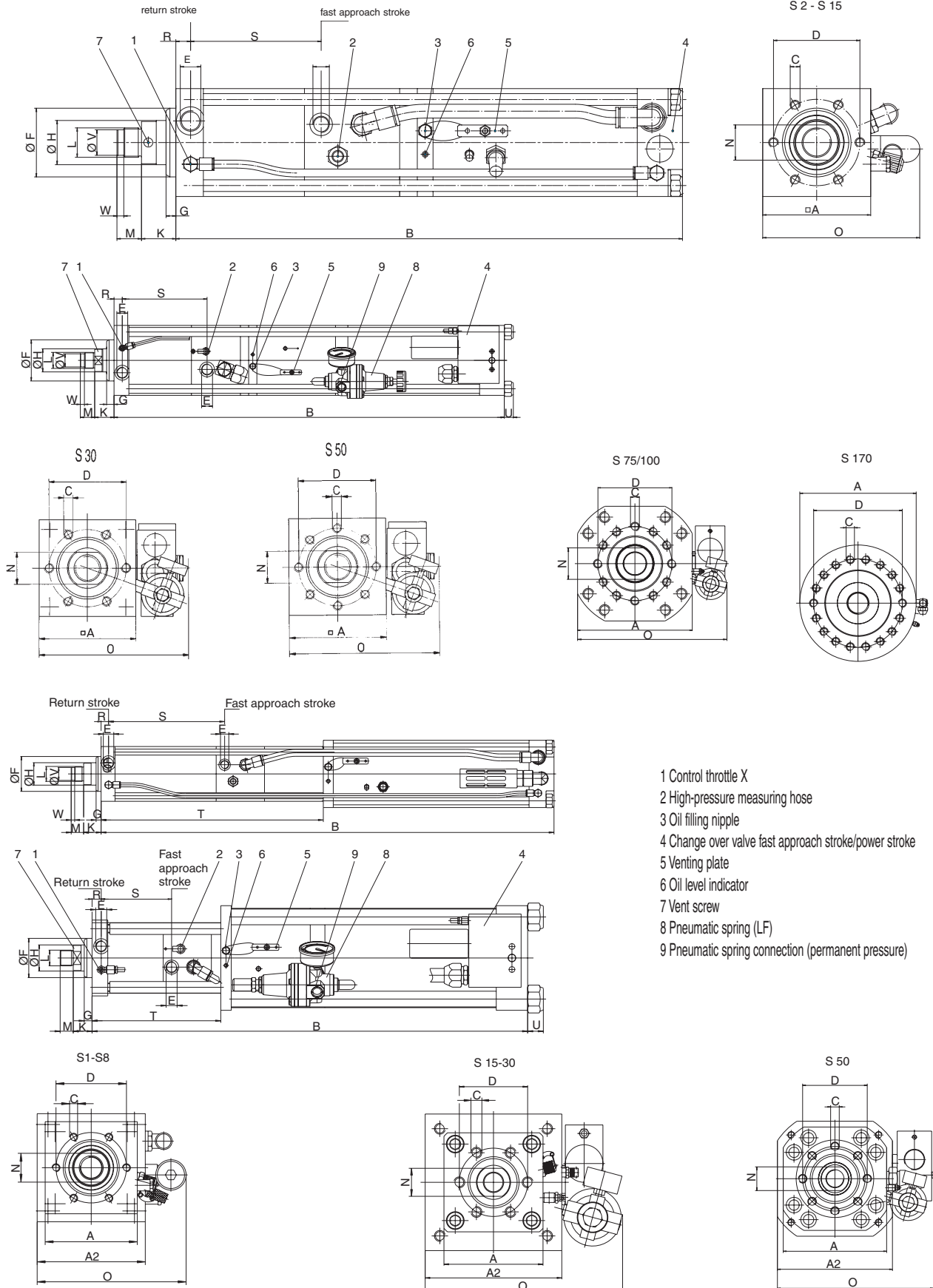


The TOX®-Powerpackage welding cylinder
Please ask for our information material.

TOX®-Powerpackage type S. 6 bar

Version .30, 11 – 1740 kN

Patented power bypass with integrated retract hydraulic cushion is a standard feature for all TOX®-Powerpackages type S4 to S170.



TOX®-Powerpackage type S. 6 bar

Version .30, 11 – 1740 kN

Order no. type	incl. total stroke	incl. power stroke	max. force at 6 bar/com- pressed air kN	fast ap- proach force daN	retract- ing force daN	Note our preferred series: short lead time, favorable price																						
						A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	R	S	T	U	Vg6	W	*LF	**IV	
S 1.30. 50. 12			10,7	69	74	50	70	479	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	106,5	197	-	-	-	-	x	
S 1.30. 100. 12			10,7	69	74	50	70	589	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	156,5	297	-	-	-	-	x	
S 1.30. 150. 12			10,7	69	74	50	70	694	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	206,5	397	-	-	-	-	x	
S 1.30. 200. 12			10,7	69	74	50	70	794	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	256,5	497	-	-	-	-	x	
S 2.30. 50. 6			17,1	140	150	70	-	474	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	107	13	116	-	-	-	-	x		
S 2.30. 100. 6			17,1	140	150	70	-	589	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	107	13	166	-	-	-	-	x		
S 2.30. 50. 12			15,7	140	150	70	85	519	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	116	210	-	-	-	-	x	
S 2.30. 100. 12			15,7	140	150	70	85	649	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	166	310	-	-	-	-	x	
S 2.30. 150. 12			15,7	140	150	70	85	763	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	216	410	-	-	-	-	x	
S 2.30. 200. 12			15,7	140	150	70	85	870	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	266	510	-	-	-	-	x	
S 4.30. 50. 6 D			31	180	195	85	-	558	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	125	-	-	18	7	-	x	
S 4.30. 100. 6 D			31	180	195	85	-	679	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	175	-	-	18	7	-	x	
S 4.30. 50. 12 D			38	180	195	90	110	591	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	125	226	-	18	7	-	x	
S 4.30. 100. 12 D			38	180	195	90	110	691	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	175	326	-	18	7	-	x	
S 4.30. 150. 12 D			38	180	195	90	110	826	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	225	426	-	18	7	-	x	
S 4.30. 200. 12 D			38	180	195	90	110	926	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	275	526	-	18	7	-	x	
S 8.30. 50. 6 D			74	320	330	110	-	611	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	133	-	-	26	7	-	x	
S 8.30. 100. 6 D			74	320	330	110	-	726	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	183	-	-	26	7	-	x	
S 8.30. 50. 12 D			69	320	330	115	135	679	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	190	15	133	246	-	26	7	-	x	
S 8.30. 100. 12 D			69	320	330	115	135	794	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	190	15	183	346	-	26	7	-	x	
S 8.30. 150. 12 D			69	320	330	115	135	909	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	190	15	233	446	-	26	7	-	x	
S 8.30. 200. 12 D			69	320	330	115	135	1024	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	190	15	283	546	-	26	7	-	x	
S 15.30. 50. 6 D			134	450	540	135	-	680	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	190	17,5	134,5	-	-	26	7	-	x	
S 15.30. 100. 6 D			134	450	540	135	-	805	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	190	17,5	184,5	-	-	26	7	-	x	
S 15.30. 200. 6 D			134	450	540	135	-	1062	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	190	17,5	284,5	-	-	26	7	-	x	
S 15.30. 50. 12 D			130	450	530	145	170	867	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	134,5	246	22	26	7	x	-	
S 15.30. 100. 12 D			130	450	530	145	170	967	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	184,5	346	22	26	7	x	-	
S 15.30. 150. 12 D			130	450	530	145	170	1067	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	234,5	446	22	26	7	x	-	
S 15.30. 200. 12 D			130	450	530	145	170	1207	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	284,5	546	22	26	7	x	-	
S 30.30. 70. 6 D			264	660	890	170	-	948	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	206	-	22	-	-	x	-	
S 30.30. 150. 6 D			264	660	890	170	-	1204	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	286	-	22	-	-	x	-	
S 30.30. 70. 12 D			261	660	890	200	-	1002	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	206	327	30	-	-	-	x	-
S 30.30. 150. 12 D			261	660	890	200	-	1248	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	286	487	30	-	-	-	x	-
S 30.30. 200. 12 D			261	660	890	200	-	1428	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	336	587	30	-	-	-	x	-
S 50.30. 70. 6 D			406	710	1100	200	-	1010	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	213	-	30	-	-	-	x	-
S 50.30. 150. 10 D			498	710	1100	240	267	1231	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	293	498	16	-	-	-	x	-
S 50.30. 300. 15 D			395	710	1100	240	324	1621	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	23	443	798	22	-	-	-	x	-
S 75.30. 200. 13 D			806	1270	2040	310	-	1917	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	353	-	30	-	-	-	x	-
S 75.30. 300. 20 D			806	1270	2040	310	-	2417	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	-	-	-	x	-
S100.30. 200. 10 D			1030	1270	2040	310	-	1917	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	353	-	30	-	-	-	x	-
S100.30. 300. 12 D			1030	1270	2040	310	-	2417	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	-	-	-	x	-
S170.30. 200. 10 D			1740	2000	2560	420	-	2318	18xM30x55	320	G1"	240	35	150	70	M80x2	80	4xØ16	593,5	99	349	-	36	-	-	-	x	-

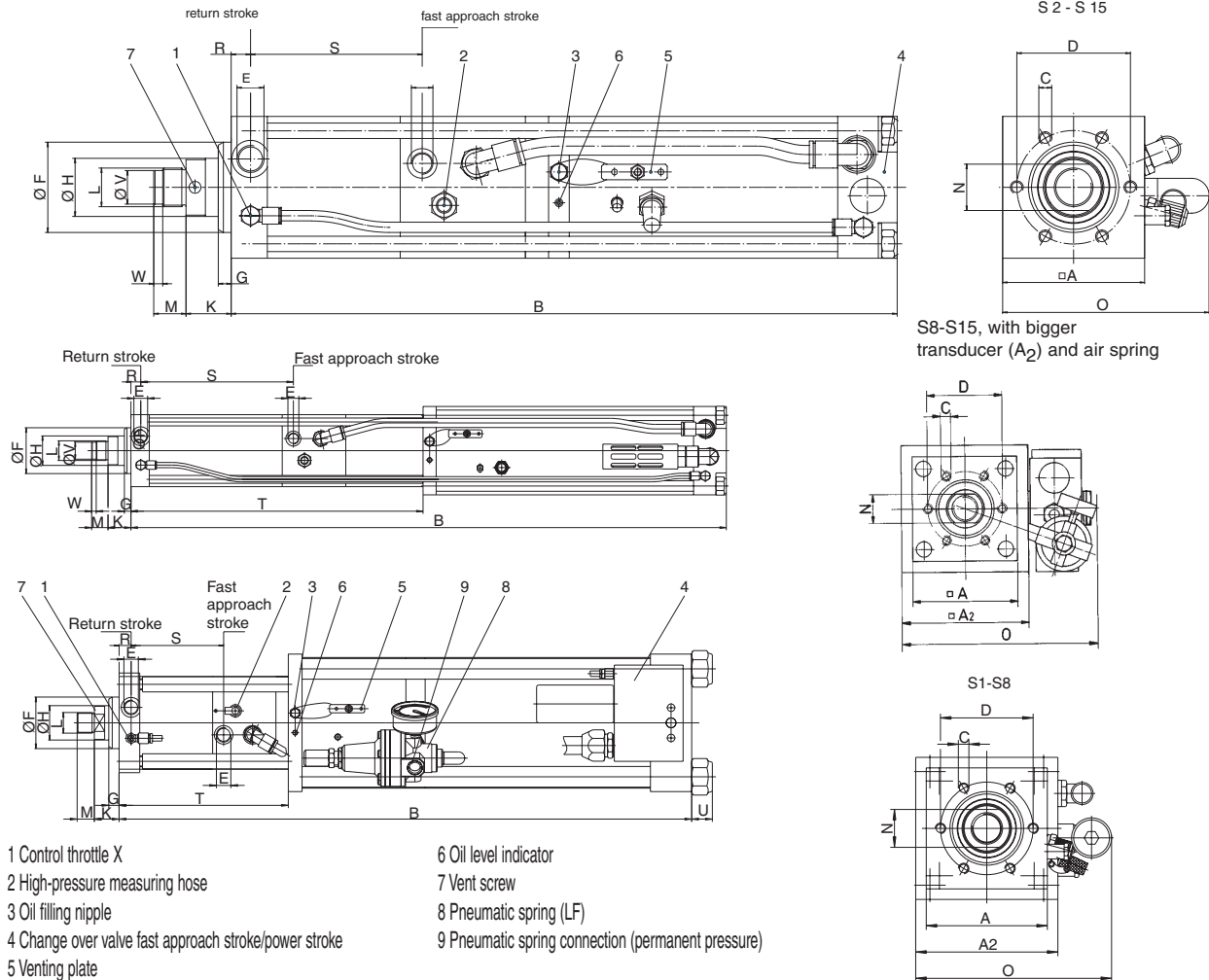
*LF: Series incorporating pneumatic spring. See page 8.
 **IV: Integrated valve

D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units.
 A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

TOX®-Powerpackage type S. 10 bar

10 – 150 kN

Patented power bypass with integrated retract hydraulic cushion is a standard feature for all TOX®-Powerpackages type S4 to S170.



- 1 Control throttle X
- 2 High-pressure measuring hose
- 3 Oil filling nipple
- 4 Change over valve fast approach stroke/power stroke
- 5 Venting plate
- 6 Oil level indicator
- 7 Vent screw
- 8 Pneumatic spring (LF)
- 9 Pneumatic spring connection (permanent pressure)

Order no.	incl. total stroke	power stroke	max. force at		fast approach force	retracting force	Note our preferred series: short lead time, favorable price																										
			compressed air 6 bar	compressed air 10 bar			A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	R	S	T	U	Vg6	W	*LF	**IV					
S1.	32.	6	5,6	10	115	120	50	-	360	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	88,5	-	-	-	-	-	-	-	-	-	x	
S1.	100.	6	5,6	10	115	120	50	-	527	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	156,5	-	-	-	-	-	-	-	-	-	x	
S1.	150.	6	5,6	10	115	120	50	-	647	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	206,5	-	-	-	-	-	-	-	-	-	x	
S1.	200.	6	5,6	10	115	120	50	-	767	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	256,5	-	-	-	-	-	-	-	-	-	x	
S1.	50.	12	5,6	10	115	120	50	-	434	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	106,5	-	-	-	-	-	-	-	-	-	x	
S1.	100.	12	5,6	10	115	120	50	-	565	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	156,5	-	-	-	-	-	-	-	-	-	x	
S1.	150.	12	5,6	10	115	120	50	-	685	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	206,5	-	-	-	-	-	-	-	-	-	x	
S1.	200.	12	5,6	10	115	120	50	-	805	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	11,5	256,5	-	-	-	-	-	-	-	-	-	x	
S1.	250.	12	7	12	115	120	50	70	880	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	306,5	597	-	-	-	-	-	-	-	-	x	
S1.	50.	24	7	12	115	120	50	70	479	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	106,5	197	-	-	-	-	-	-	-	-	x	
S1.	100.	24	7	12	115	120	50	70	589	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	156,5	297	-	-	-	-	-	-	-	-	-	x
S1.	150.	24	7	12	115	120	50	70	694	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	206,5	397	-	-	-	-	-	-	-	-	-	x
S1.	200.	24	7	12	115	120	50	70	794	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	102	11,5	256,5	497	-	-	-	-	-	-	-	-	-	x

*LF: Series incorporating pneumatic spring. See page 8.

**IV: Integrated valve

A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

TOX®-Powerpackage type S. 10 bar

10 – 150 kN

Order no.	incl. total power stroke	max. force at compressed air		fast approach		retracting		Note our preferred series: short lead time, favorable price																				
		6bar	10 bar	force	force	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	R	S	T	U	Vg6	W	*LF**IV		
S1.	100.	48	7	12	115	120	50	85	665	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	11,5	156,5	297	-	-	-	-	x
S1.	150.	48	7	12	115	120	50	85	765	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	11,5	206,5	397	-	-	-	-	x
S1.	200.	48	7	12	115	120	50	85	865	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	11,5	256,5	497	-	-	-	-	x
S1.	150.	60	7	12	115	120	50	85	797	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	11,5	206,5	397	-	-	-	-	x
S1.	200.	60	7	12	115	120	50	85	897	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	11,5	256,5	497	-	-	-	-	x
S1.	250.	60	7	12	115	120	50	85	997	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	11,5	306,5	597	-	-	-	-	x
S2.	32.	6	11	20	235	250	70	-	386	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	98	-	-	-	-	x	
S2.	100.	6	11	20	235	250	70	-	552	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	166	-	-	-	-	x	
S2.	150.	6	11	20	235	250	70	-	672	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	216	-	-	-	-	x	
S2.	200.	6	11	20	235	250	70	-	792	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	266	-	-	-	-	x	
S2.	50.	12	11	20	235	250	70	-	474	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	116	-	-	-	-	x	
S2.	100.	12	11	20	235	250	70	-	589	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	166	-	-	-	-	x	
S2.	150.	12	11	20	235	250	70	-	709	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	216	-	-	-	-	x	
S2.	200.	12	11	20	235	250	70	-	829	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	105	13	266	-	-	-	-	x	
S2.	250.	12	11	20	235	250	70	85	944	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	316	610	-	-	-	-	x
S2.	50.	24	11	20	235	250	70	85	519	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	116	210	-	-	-	-	x
S2.	100.	24	11	20	235	250	70	85	649	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	166	310	-	-	-	-	x
S2.	150.	24	11	20	235	250	70	85	763	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	216	410	-	-	-	-	x
S2.	200.	24	11	20	235	250	70	85	870	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	13	266	510	-	-	-	-	x
S2.	100.	44	12	20	235	250	70	110	675	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	13	166	310	-	-	-	-	x
S2.	150.	44	12	20	235	250	70	110	775	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	13	216	410	-	-	-	-	x
S2.	200.	44	12	20	235	250	70	110	875	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	13	266	510	-	-	-	-	x
S2.	150.	65	12	20	235	250	70	110	835	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	13	216	410	-	-	-	-	x
S2.	200.	65	12	20	235	250	70	110	935	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	13	266	510	-	-	-	-	x
S2.	250.	65	12	20	235	250	70	110	1035	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	13	316	610	-	-	-	-	x
S4.	32.	6 D	23	40	300	330	85	-	449	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	107	-	-	18	7	-	x
S4.	100.	6 D	23	40	300	330	85	-	625	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	175	-	-	18	7	-	x
S4.	150.	6 D	23	40	300	330	85	-	755	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	225	-	-	18	7	-	x
S4.	200.	6 D	23	40	300	330	85	-	885	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	275	-	-	18	7	-	x
S4.	50.	12 D	23	40	300	330	85	-	558	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	125	-	-	18	7	-	x
S4.	100.	12 D	23	40	300	330	85	-	679	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	175	-	-	18	7	-	x
S4.	150.	12 D	23	40	300	330	85	-	809	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	225	-	-	18	7	-	x
S4.	200.	12 D	23	40	300	330	85	-	939	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	120	14	275	-	-	18	7	-	x
S4.	300.	12 D	23	40	300	330	90	110	1089	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	375	726	-	18	7	-	x
S4.	400.	12 D	23	40	300	330	90	110	1323	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	475	926	-	18	7	-	x
S4.	50.	24 D	23	40	300	330	90	110	591	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	125	226	-	18	7	-	x
S4.	100.	24 D	23	40	300	330	90	110	691	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	175	326	-	18	7	-	x
S4.	150.	24 D	23	40	300	330	90	110	826	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	225	426	-	18	7	-	x
S4.	200.	24 D	23	40	300	330	90	110	926	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	14	275	526	-	18	7	-	x
S4.	100.	44 D	23	40	300	330	90	135	760	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	175	326	-	18	7	-	x
S4.	150.	44 D	23	40	300	330	90	135	860	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	225	426	-	18	7	-	x
S4.	200.	44 D	23	40	300	330	90	135	960	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	275	526	-	18	7	-	x
S4.	300.	44 D	23	40	300	330	90	135	1180	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	375	726	-	18	7	-	x
S4.	400.	44 D	23	40	300	330	90	135	1380	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	475	926	-	18	7	-	x
S4.	200.	65 D	23	40	300	330	90	135	1059	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	275	526	-	18	7	-	x
S4.	300.	65 D	23	40	300	330	90	135	1279	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	375	726	-	18	7	-	x
S4.	400.	65 D	23	40	300	330	90	135	1479	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	14	475	926	-	18	7	-	x

*LF: Series incorporating pneumatic spring. See page 8.
 **IV: Integrated valve

D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units.
 A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

TOX®-Powerpackage type S. 10 bar

10 – 150 kN

Order no.	incl. total power stroke	max. force at compressed air		fast approach retracting force		Note our preferred series: short lead time, favorable price																							
		6bar	10 bar	force daN	force daN	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	R	S	T	U	Vg6	W	*LF*IV			
S 8.	32.	6 D	44	77	530	560	110	-	486	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	115	-	-	26	7	-	x	
S 8.	100.	6 D	44	77	530	560	110	-	658	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	183	-	-	26	7	-	x	
S 8.	150.	6 D	44	77	530	560	110	-	788	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	233	-	-	26	7	-	x	
S 8.	200.	6 D	44	77	530	560	110	-	918	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	283	-	-	26	7	-	x	
S 8.	50.	12 D	44	77	530	560	110	-	611	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	133	-	-	26	7	-	x	
S 8.	100.	12 D	44	77	530	560	110	-	726	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	183	-	-	26	7	-	x	
S 8.	150.	12 D	44	77	530	560	110	-	846	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	233	-	-	26	7	-	x	
S 8.	200.	12 D	44	77	530	560	110	-	964	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	15	283	-	-	26	7	-	x	
S 8.	300.	12 D	44	77	530	560	115	135	1162	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	15	383	746	-	-	26	7	-	x
S 8.	400.	12 D	44	77	530	560	115	135	1409	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	15	483	946	-	-	26	7	-	x
S 8.	50.	24 D	44	77	530	560	115	135	684	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	15	133	251	-	-	26	7	-	x
S 8.	100.	24 D	44	77	530	560	115	135	794	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	15	183	346	-	-	26	7	-	x
S 8.	150.	24 D	44	77	530	560	115	135	909	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	15	233	446	-	-	26	7	-	x
S 8.	200.	24 D	44	77	530	560	115	135	1024	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	15	283	546	-	-	26	7	-	x
S 8.	100.	48 D	44	77	530	550	115	170	967	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	290	15	183	346	22	26	7	x	-	
S 8.	150.	48 D	44	77	530	550	115	170	1067	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	290	15	233	446	22	26	7	x	-	
S 8.	200.	48 D	44	77	530	550	115	170	1167	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	290	15	283	546	22	26	7	x	-	
S 8.	300.	48 D	44	77	530	550	115	170	1407	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	290	15	383	746	22	26	7	x	-	
S 8.	400.	48 D	44	77	530	550	115	170	1607	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	290	15	483	946	22	26	7	x	-	
S 8.	200.	80 D	44	77	530	550	115	200	1245	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	320	15	283	546	30	26	7	x	-	
S 8.	300.	80 D	44	77	530	550	115	200	1445	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	320	15	383	746	30	26	7	x	-	
S 8.	400.	80 D	44	77	530	550	115	200	1593	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	320	15	483	946	30	26	7	x	-	
S15.	32.	6 D	85	148	760	910	135	-	532	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	116,5	-	-	26	7	-	x	
S15.	100.	6 D	85	148	760	910	135	-	715	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	184,5	-	-	26	7	-	x	
S15.	150.	6 D	85	148	760	910	135	-	845	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	234,5	-	-	26	7	-	x	
S15.	200.	6 D	85	148	760	910	135	-	985	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	284,5	-	-	26	7	-	x	
S15.	50.	12 D	85	148	760	910	135	-	680	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	134,5	-	-	26	7	-	x	
S15.	100.	12 D	85	148	760	910	135	-	805	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	184,5	-	-	26	7	-	x	
S15.	150.	12 D	85	148	760	910	135	-	920	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	234,5	-	-	26	7	-	x	
S15.	200.	12 D	85	148	760	910	135	-	1062	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	17,5	284,5	-	-	26	7	-	x	
S15.	300.	12 D	85	148	760	900	145	170	1373	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	384,5	746	22	26	7	x	-	
S15.	400.	12 D	85	148	760	900	145	170	1643	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	484,5	946	22	26	7	x	-	
S15.	50.	24 D	85	148	760	900	145	170	867	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	134,5	246	22	26	7	x	-	
S15.	100.	24 D	85	148	760	900	145	170	967	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	184,5	346	22	26	7	x	-	
S15.	150.	24 D	85	148	760	900	145	170	1067	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	234,5	446	22	26	7	x	-	
S15.	200.	24 D	85	148	760	900	145	170	1207	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	290	17,5	284,5	546	22	26	7	x	-	
S15.	100.	40 D	85	150	760	900	145	200	1045	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	184,5	346	30	26	7	x	-	
S15.	150.	40 D	85	150	760	900	145	200	1145	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	234,5	446	30	26	7	x	-	
S15.	200.	40 D	85	150	760	900	145	200	1245	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	284,5	546	30	26	7	x	-	
S15.	300.	40 D	85	150	760	900	145	200	1497	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	384,5	746	30	26	7	x	-	
S15.	400.	40 D	85	150	760	900	145	200	1777	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	484,5	946	30	26	7	x	-	
S15.	150.	60 D	85	150	760	900	145	200	1245	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	234,5	446	30	26	7	x	-	
S15.	200.	80 D	85	150	760	900	145	200	1445	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	284,5	546	30	26	7	x	-	
S15.	300.	80 D	85	150	760	900	145	200	1747	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	384,5	746	30	26	7	x	-	
S15.	400.	80 D	85	150	760	900	145	200	2027	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	17,5	484,5	946	30	26	7	x	-	

*LF: Series incorporating pneumatic spring. See page 8.

**IV: Integrated valve

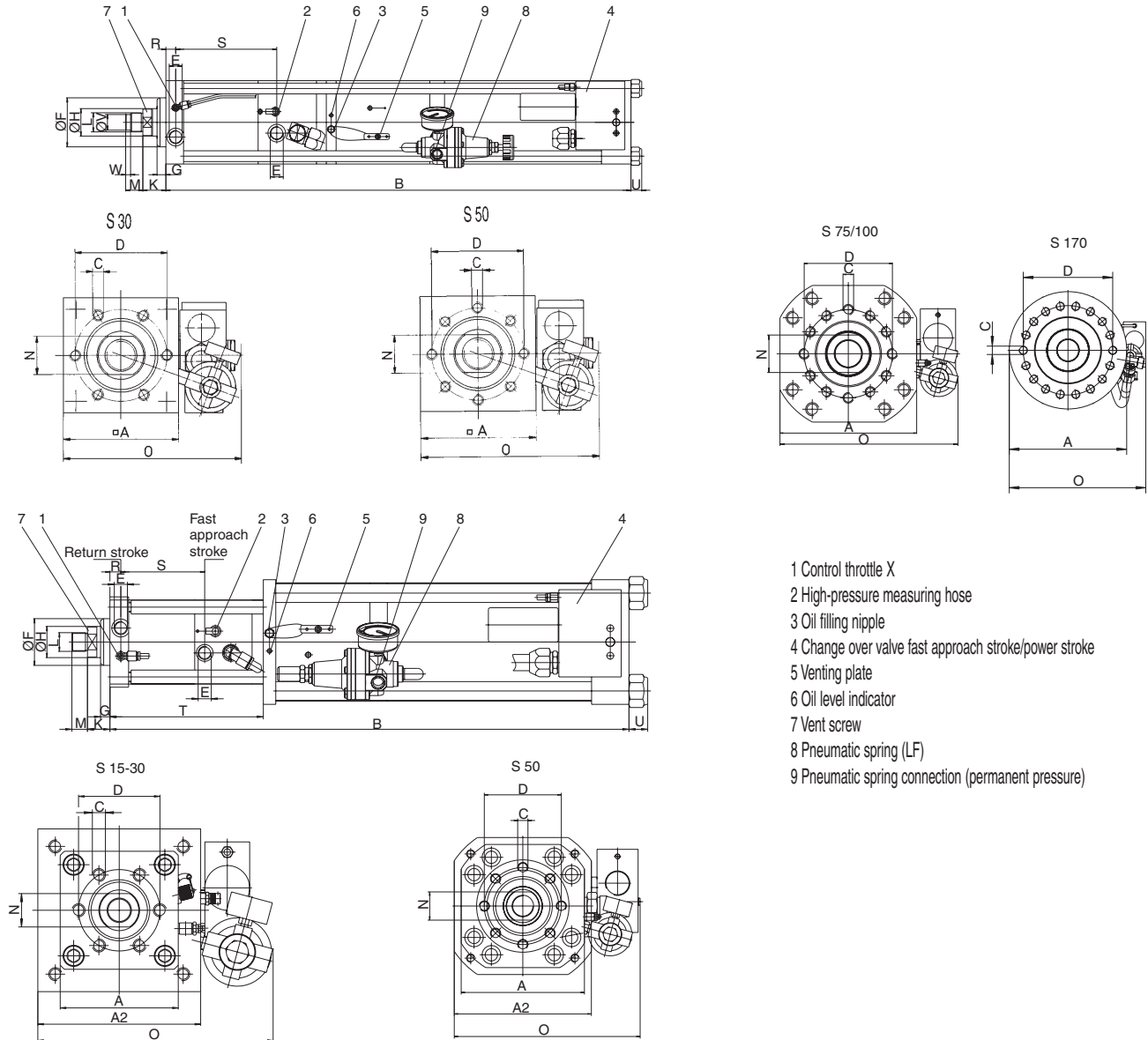
D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units.

A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

TOX®-Powerpackage type S. 10 bar

310 – 1680 kN

Patented power bypass with integrated retract hydraulic cushion is a standard feature for all TOX®-Powerpackages type S4 to S170.



- 1 Control throttle X
- 2 High-pressure measuring hose
- 3 Oil filling nipple
- 4 Change over valve fast approach stroke/power stroke
- 5 Venting plate
- 6 Oil level indicator
- 7 Vent screw
- 8 Pneumatic spring (LF)
- 9 Pneumatic spring connection (permanent pressure)

Order no.	incl. total stroke	power stroke	max. force at compressed air		fast approach stroke		Note our preferred series: short lead time, favorable price																			
			6 bar	10 bar	force	force	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	R	S	T	U	*LF	
S30.	50.	6	D	170	297	1100	1530	170	-	788	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	186	-	22	x
S30.	100.	6	D	170	297	1100	1530	170	-	958	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	236	-	22	x
S30.	150.	6	D	170	297	1100	1530	170	-	1114	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	286	-	22	x
S30.	200.	6	D	170	297	1100	1530	170	-	1284	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	336	-	22	x
S30.	70.	12	D	170	297	1100	1530	170	-	948	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	206	-	22	x
S30.	100.	12	D	170	297	1100	1530	170	-	1048	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	236	-	22	x
S30.	150.	12	D	170	297	1100	1530	170	-	1204	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	286	-	22	x
S30.	200.	12	D	170	297	1100	1530	170	-	1374	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	290	20	336	-	22	x
S30.	300.	12	D	170	300	1100	1530	200	-	1611	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	436	787	30	x
S30.	400.	12	D	170	300	1100	1530	200	-	1931	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	536	987	30	x
S30.	70.	20	D	170	300	1100	1530	200	-	1002	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	206	327	30	x
S30.	100.	20	D	170	300	1100	1530	200	-	1072	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	236	387	30	x
S30.	150.	20	D	170	300	1100	1530	200	-	1248	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	286	487	30	x

*LF: Series incorporating pneumatic spring. See page 8.

D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units.
 A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

TOX®-Powerpackage type S. 10 bar

310 – 1730 kN

Order no.	incl. total power stroke	incl. power stroke	max. force at compressed air		fast approach		retracting		Note our preferred series: short lead time, favorable price																			
			6 bar	10 bar	force daN	force daN	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	R	S	T	U	*LF			
S 30.	200.	20 D	170	300	1100	1530	200	-	1428	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	336	587	30	x			
S 30.	300.	20 D	170	300	1100	1530	200	-	1721	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	436	787	30	x			
S 30.	400.	20 D	170	300	1100	1530	200	-	2101	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	320	20	536	987	30	x			
S 30.	150.	28 D	170	313	1100	1530	190	267	1115	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	20	286	487	16	x			
S 30.	200.	28 D	170	313	1100	1530	190	267	1250	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	20	336	587	16	x			
S 30.	300.	44 D	170	313	1100	1530	190	267	1610	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	20	436	787	16	x			
S 30.	400.	44 D	170	313	1100	1530	190	267	1810	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	20	536	987	16	x			
S 50.	50.	6 D	263	464	1180	1920	200	-	827	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	193	-	30	x			
S 50.	100.	6 D	263	464	1180	1920	200	-	1003	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	243	-	30	x			
S 50.	150.	6 D	263	464	1180	1920	200	-	1183	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	293	-	30	x			
S 50.	200.	6 D	263	464	1180	1920	200	-	1376	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	343	-	30	x			
S 50.	70.	12 D	263	464	1180	1920	200	-	1010	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	213	-	30	x			
S 50.	100.	12 D	263	464	1180	1920	200	-	1122	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	243	-	30	x			
S 50.	150.	12 D	263	464	1180	1920	200	-	1302	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	293	-	30	x			
S 50.	200.	12 D	263	464	1180	1920	200	-	1495	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	320	23	343	-	30	x			
S 50.	300.	12 D	262	484	1180	1920	240	267	1571	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	443	798	16	x			
S 50.	400.	12 D	262	484	1180	1920	240	267	1871	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	543	998	16	x			
S 50.	70.	20 D	262	484	1180	1920	240	267	996	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	213	338	16	x			
S 50.	100.	20 D	262	484	1180	1920	240	267	1051	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	243	398	16	x			
S 50.	150.	20 D	262	484	1180	1920	240	267	1231	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	293	498	16	x			
S 50.	200.	20 D	262	484	1180	1920	240	267	1361	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	343	598	16	x			
S 50.	300.	20 D	262	484	1180	1920	240	267	1671	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	443	798	16	x			
S 50.	400.	20 D	262	484	1180	1920	240	267	1971	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	470	23	543	998	16	x			
S 50.	300.	30 D	283	515	1180	1920	240	324	1623	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	23	443	798	22	x			
S 50.	400.	40 D	283	515	1180	1920	240	324	1968	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	23	543	998	22	x			
S 75.	100.	12 D	486	835	2100	3500	310	-	1207	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	253	-	30	x			
S 75.	200.	12 D	486	835	2100	3500	310	-	1617	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	353	-	30	x			
S 75.	300.	12 D	486	835	2100	3500	310	-	1917	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	x			
S 75.	300.	20 D	486	835	2100	3500	310	-	2147	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	x			
S 75.	100.	22 D	486	835	2100	3500	310	-	1367	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	253	-	30	x			
S 75.	200.	30 D	486	835	2100	3500	310	-	1917	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	353	-	30	x			
S 75.	300.	40 D	486	835	2100	3500	310	-	2417	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	x			
S100.	300.	8 D	540	1000	2100	3500	310	-	1917	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	x			
S100.	100.	10 D	540	1000	2100	3500	310	-	1207	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	253	-	30	x			
S100.	200.	10 D	540	1000	2100	3500	310	-	1617	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	353	-	30	x			
S100.	100.	18 D	540	1000	2100	3500	310	-	1367	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	253	-	30	x			
S100.	300.	18 D	540	1000	2100	3500	310	-	2147	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	x			
S100.	200.	24 D	540	1000	2100	3500	310	-	1917	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	353	-	30	x			
S100.	300.	30 D	540	1000	2100	3500	310	-	2417	12xM24x40	200	G1	150	20	100	60	M64x2	60	85	510	35	453	-	30	x			
S170.	200.	10 D	950	1680	2620	4400	420	-	1898	18xM30x55	320	G1*	240	35	150	70	M80x2	80	4xØ16	590	99	349	-	36	x			

*LF: Series incorporating pneumatic spring.

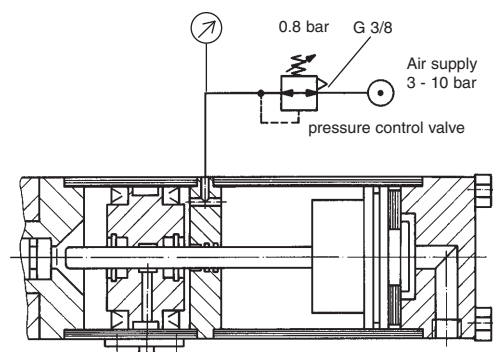
D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units.

A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

Pneumatic spring LF

Installation instructions:

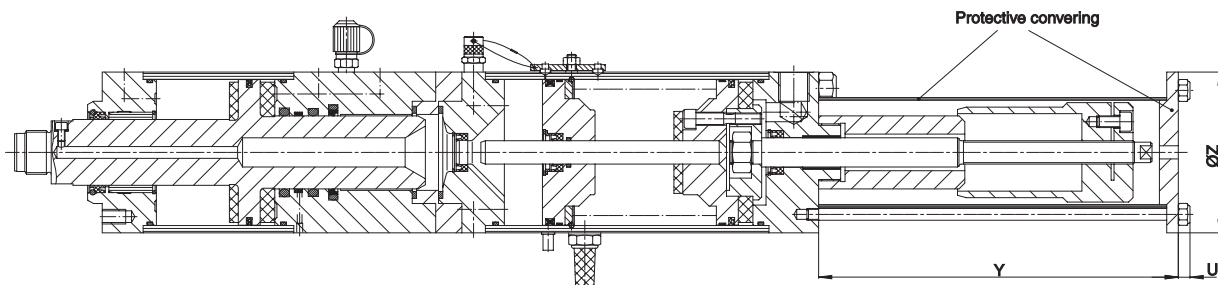
In TOX®-Powerpackages with pneumatic spring, the conventional pressure spring is replaced by the so-called pneumatic spring, for technical reasons. The oil volume is pre-loaded by the pressurized air volume in the spring chamber. The regulator is supplied with the unit.



TOX®-Powerpackage type S. 10 bar and 6 bar

version .50, with power stroke adjustment 10 – 1000 kN (6 bar on request, version .80)

Patented power bypass with integrated retract hydraulic cushion is a standard feature for all TOX®-Powerpackages type S4 to S170.



Function:

The transducer piston of the TOX®-powerpackage has a spindle attached to it. On this spindle there is an adjusting nut, which accurately limits the stroke of the transducer piston and hence the power stroke, irrespective of the fast approach stroke.

Applications:

Engraving of wear marks with tolerances within the hundredth-of-a-millimetre range. Stamping of parts with

varying heights or a large height tolerance at a constant stamping depth. Pressing-in of bushes with an accurately defined depth.

Advantage:

The adjustment or limitation relates to the power stroke only, i.e. directly to the application, and not to the approach stroke. This means that the height differences and tolerances of the component are irrelevant. The repeating accuracy is extremely exact.

Quality/monitoring:

Due to the total stroke of the TOX®-powerpackage, the transducer piston and with it the adjusting spindle cover a long distance by comparison with the power stroke (ratio approx. 1:10). If the distance travelled by the adjusting spindle is scanned via limit switches, this ensures a very precise checking of the power stroke at the same time.

Order no.	ver-	total	incl.				Order no.	ver-	total	incl.				Order no.	ver-	total	incl.			
type	sion	stroke	power stroke	Y	Z	U	type	sion	stroke	power stroke	Y	Z	U	type	sion	stroke	power stroke	Y	Z	U
S 1.	50.	32.	6	202	55	5	S 2.	50.	32.	6	216	75	8	S 4.	50.	32.	6 D	261	78	8
S 1.	50.	100.	6	234	55	5	S 2.	50.	100.	6	246	75	8	S 4.	50.	100.	6 D	301	78	8
S 1.	50.	150.	6	254	55	5	S 2.	50.	150.	6	266	75	8	S 4.	50.	150.	6 D	331	78	8
S 1.	50.	200.	6	274	55	5	S 2.	50.	200.	6	286	75	8	S 4.	50.	200.	6 D	361	78	8
S 1.	50.	50.	12	278	55	5	S 2.	50.	50.	12	290	75	8	S 4.	50.	50.	12 D	379	78	8
S 1.	50.	100.	12	310	55	5	S 2.	50.	100.	12	320	75	8	S 4.	50.	100.	12 D	409	78	8
S 1.	50.	150.	12	330	55	5	S 2.	50.	150.	12	340	75	8	S 4.	50.	150.	12 D	439	78	8
S 1.	50.	200.	12	350	55	5	S 2.	50.	200.	12	360	75	8	S 4.	50.	200.	12 D	469	78	8
S 1.	50.	250.	12	308	75	8	S 2.	50.	250.	12	341	78	8	S 4.	50.	300.	12 D	398	110	8
S 1.	50.	50.	24	326	75	8	S 2.	50.	50.	24	333	78	8	S 4.	50.	400.	12 D	436	110	8
S 1.	50.	100.	24	346	75	8	S 2.	50.	100.	24	393	78	8	S 4.	50.	50.	24 D	412	110	8
S 1.	50.	150.	24	356	75	8	S 2.	50.	150.	24	409	78	8	S 4.	50.	100.	24 D	412	110	8
S 1.	50.	200.	24	356	75	8	S 2.	50.	200.	24	423	78	8	S 4.	50.	150.	24 D	482	110	8
S 1.	50.	100.	48	445	78	8	S 2.	50.	100.	44	412	110	8	S 4.	50.	200.	24 D	482	110	8
S 1.	50.	150.	48	445	78	8	S 2.	50.	150.	44	412	110	8	S 4.	50.	100.	44 D	498	138	8
S 1.	50.	200.	48	445	78	8	S 2.	50.	200.	44	412	110	8	S 4.	50.	150.	44 D	498	138	8
S 1.	50.	150.	60	509	78	8	S 2.	50.	150.	65	532	110	8	S 4.	50.	200.	44 D	498	138	8
S 1.	50.	200.	60	509	78	8	S 2.	50.	200.	65	532	110	8	S 4.	50.	300.	44 D	538	138	8
S 1.	50.	250.	60	509	78	8	S 2.	50.	250.	65	532	110	8	S 4.	50.	400.	44 D	538	138	8
														S 4.	50.	200.	65 D	652	138	8
														S 4.	50.	300.	65 D	692	138	8
														S 4.	50.	400.	65 D	692	138	8

For all other dimensions see type S.

D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units. A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

TOX®-Powerpackage type S. 10 bar and 6 bar

version .50, with power stroke adjustment, 10 – 1000 kN (6 bar on request, version .80)

Order no.	ver-	total	incl.				Order no.	ver-	total	incl.				Order no.	ver-	total	incl.			
type	sion	stroke	power	Y	Z	U	type	sion	stroke	power	Y	Z	U	type	sion	stroke	power	Y	Z	U
S 8.	50.	32.	6 D	286	110	8	S 15.	50.	32.	6 D	344	138	8	S 30.	50.	50.	6 D	411	138	8
S 8.	50.	100.	6 D	326	110	8	S 15.	50.	100.	6 D	394	138	8	S 30.	50.	100.	6 D	451	138	8
S 8.	50.	150.	6 D	356	110	8	S 15.	50.	150.	6 D	428	138	8	S 30.	50.	150.	6 D	491	138	8
S 8.	50.	200.	6 D	386	110	8	S 15.	50.	200.	6 D	464	138	8	S 30.	50.	200.	6 D	531	138	8
S 8.	50.	50.	12 D	421	110	8	S 15.	50.	50.	12 D	498	138	8	S 30.	50.	70.	12 D	611	138	8
S 8.	50.	100.	12 D	442	110	8	S 15.	50.	100.	12 D	548	138	8	S 30.	50.	100.	12 D	631	138	8
S 8.	50.	150.	12 D	472	110	8	S 15.	50.	150.	12 D	578	138	8	S 30.	50.	150.	12 D	671	138	8
S 8.	50.	200.	12 D	502	110	8	S 15.	50.	200.	12 D	618	138	8	S 30.	50.	200.	12 D	707	138	8
S 8.	50.	300.	12 D	454	138	8	S 15.	50.	300.	12 D	481	138	8	S 30.	50.	300.	12 D	751	138	8
S 8.	50.	400.	12 D	504	138	8	S 15.	50.	400.	12 D	521	138	8	S 30.	50.	400.	12 D	871	138	8
S 8.	50.	50.	24 D	488	138	8	S 15.	50.	50.	24 D	697	138	8	S 30.	50.	70.	20 D	621	138	8
S 8.	50.	100.	24 D	518	138	8	S 15.	50.	100.	24 D	617	138	8	S 30.	50.	100.	20 D	795	138	8
S 8.	50.	150.	24 D	548	138	8	S 15.	50.	150.	24 D	617	138	8	S 30.	50.	150.	20 D	831	138	8
S 8.	50.	200.	24 D	578	138	8	S 15.	50.	200.	24 D	655	138	8	S 30.	50.	200.	20 D	891	138	8
S 8.	50.	100.	48 D	611	138	8	S 15.	50.	100.	40 D	801	138	8	S 30.	50.	300.	20 D	971	138	8
S 8.	50.	150.	48 D	611	138	8	S 15.	50.	150.	40 D	801	138	8	S 30.	50.	400.	20 D	1091	138	8
S 8.	50.	200.	48 D	611	138	8	S 15.	50.	200.	40 D	801	138	8	S 30.	50.	150.	28 D	560	185	10
S 8.	50.	300.	48 D	655	138	8	S 15.	50.	300.	40 D	837	138	8	S 30.	50.	200.	28 D	640	185	10
S 8.	50.	400.	48 D	705	138	8	S 15.	50.	400.	40 D	891	138	8	S 30.	50.	300.	44 D	800	185	10
S 8.	50.	200.	80 D	801	138	8	S 15.	50.	150.	60 D	1001	138	8	S 30.	50.	400.	44 D	800	185	10
S 8.	50.	300.	80 D	801	138	8	S 15.	50.	200.	80 D	1201	138	8							
S 8.	50.	400.	80 D	801	138	8	S 15.	50.	300.	80 D	1337	138	8							
							S 15.	50.	400.	80 D	1391	138	8							
S 50.	50.	50.	6 D	479	138	8	S 75.	50.	100.	12 D	740	185	8	S 100.	50.	300.	8 D	860	185	10
S 50.	50.	100.	6 D	545	138	8	S 75.	50.	200.	12 D	860	185	8	S 100.	50.	100.	10 D	740	185	10
S 50.	50.	150.	6 D	599	138	8	S 75.	50.	300.	12 D	860	185	8	S 100.	50.	200.	10 D	1060	185	10
S 50.	50.	200.	6 D	659	138	8	S 75.	50.	300.	20 D	1260	185	8	S 100.	50.	100.	18 D	1260	185	10
S 50.	50.	70.	12 D	747	138	8	S 75.	50.	100.	22 D	1060	185	8	S 100.	50.	300.	18 D	1460	185	10
S 50.	50.	100.	12 D	783	138	8	S 75.	50.	200.	30 D	1460	185	8	S 100.	50.	200.	24 D	1860	185	10
S 50.	50.	150.	12 D	837	138	8	S 75.	50.	300.	40 D	1860	185	8	S 100.	50.	300.	30 D	1860	185	10
S 50.	50.	200.	12 D	897	138	8														
S 50.	50.	300.	12 D	660	185	8														
S 50.	50.	400.	12 D	660	185	8														
S 50.	50.	70.	20 D	660	185	8														
S 50.	50.	100.	20 D	660	185	8														
S 50.	50.	150.	20 D	740	185	8														
S 50.	50.	200.	20 D	740	185	8														
S 50.	50.	300.	20 D	860	185	8														
S 50.	50.	400.	20 D	860	185	8														
S 50.	50.	300.	30 D	792	185	8														
S 50.	50.	400.	40 D	900	185	8														

For all other dimensions see type S.

D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units.

A more comprehensive TOX®-Powerpackage program with pneumatic spring EL you will find on data sheet 10.06.

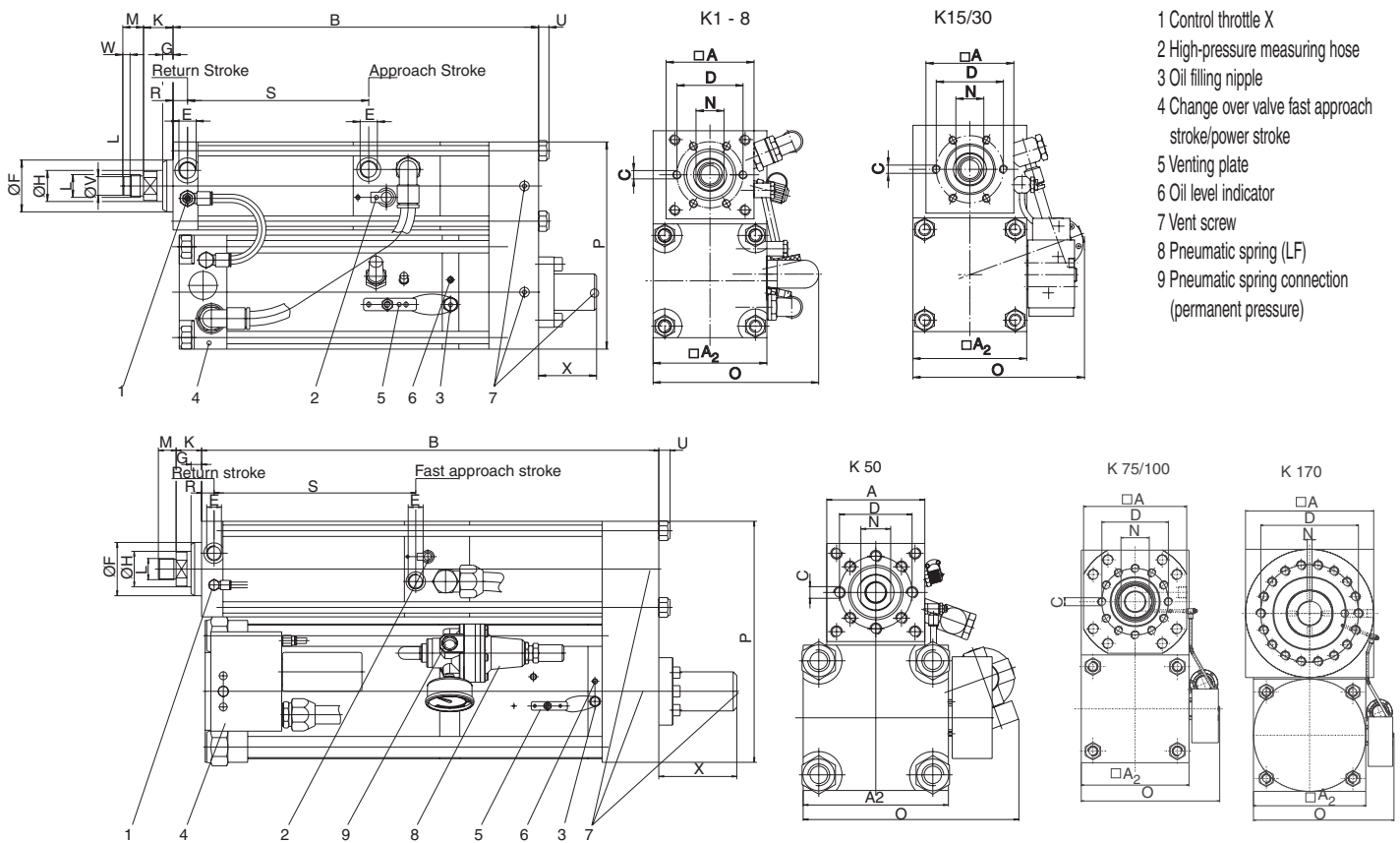
Note:

TOX®-Powerpackages version .50 with long power strokes have a great overall length due to design reasons. If this is inconvenient for your application we recommend to use a KT-system with transducer model .50 and working part AT or hydraulic cylinder HZ.

TOX®-Powerpackage type K. 6 bar

version .30, compact design, 10 – 1600 kN

Patented power bypass with integrated retract hydraulic cushion is available on request.



Order no. incl. total power type stroke stroke	max. force at 6 bar/com- pressed air kN	fast ap- proach force daN	retract- ing force daN	Note our preferred series: short lead time, favorable price																						
				A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	P	R	S	U	Vg6	W	X	*LF**IV	
K 1.30. 100. 6	10,7	69	74	50	70	322	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	156,5	6	-	-	23	-	x
K 1.30. 200. 10	10,7	69	74	50	70	514	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	256,5	6	-	-	-	-	x
K 2.30. 100. 5	15,7	141	150	70	85	327	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	166	8	-	-	25	-	x
K 2.30. 200. 12	15,7	141	150	70	85	527	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	266	8	-	-	-	-	x
K 4.30. 100. 5	38,0	180	197	85	110	353	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	175	10	18	7	23	-	x
K 4.30. 200. 10	38,0	180	197	85	110	553	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	275	10	18	7	-	-	x
K 8.30. 100. 05	69,0	324	331	110	135	365	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	183	12	26	7	56	-	x
K 8.30. 200. 10	69,0	324	331	110	135	565	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	17	283	12	26	7	30	-	x
K 15.30. 100. 10	130,0	450	520	135	200	585	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	184,5	16	26	7	110	x	-
K 15.30. 200. 10	130,0	450	520	135	200	645	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	284,5	16	26	7	110	x	-
K 30.30. 200. 10	321,0	660	890	170	267	740	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	336	22	-	-	175	x	-
K 50.30. 100. 10	395,0	710	1110	200	324	715	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	243	30	-	-	140	x	-
K 50.30. 200. 10	395,0	710	1110	200	324	785	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	343	30	-	-	160	x	-
K 75.30. 200. 10 D	800,0	1270	2040	310	368	979	12xM24x40	200	G1"	150	20	100	60	M64x2	60	85	589,5	681	35	353	30	-	-	147	x	x
K100.30. 200. 10 D	1000,0	1270	2040	310	368	1109	12xM24x40	200	G1"	150	20	100	60	M64x2	60	85	589,5	681	35	353	30	-	-	236	x	x
K170.30. 200. 10 D	1600,0	2000	2560	420	368	1404	18xM30x55	320	G1"	240	35	150	70	M80x2	80	4xØ16	589,5	792	99	843	30	-	-	433	x	x

*LF: Series incorporating pneumatic spring. See page 8.

**IV: Integrated valve

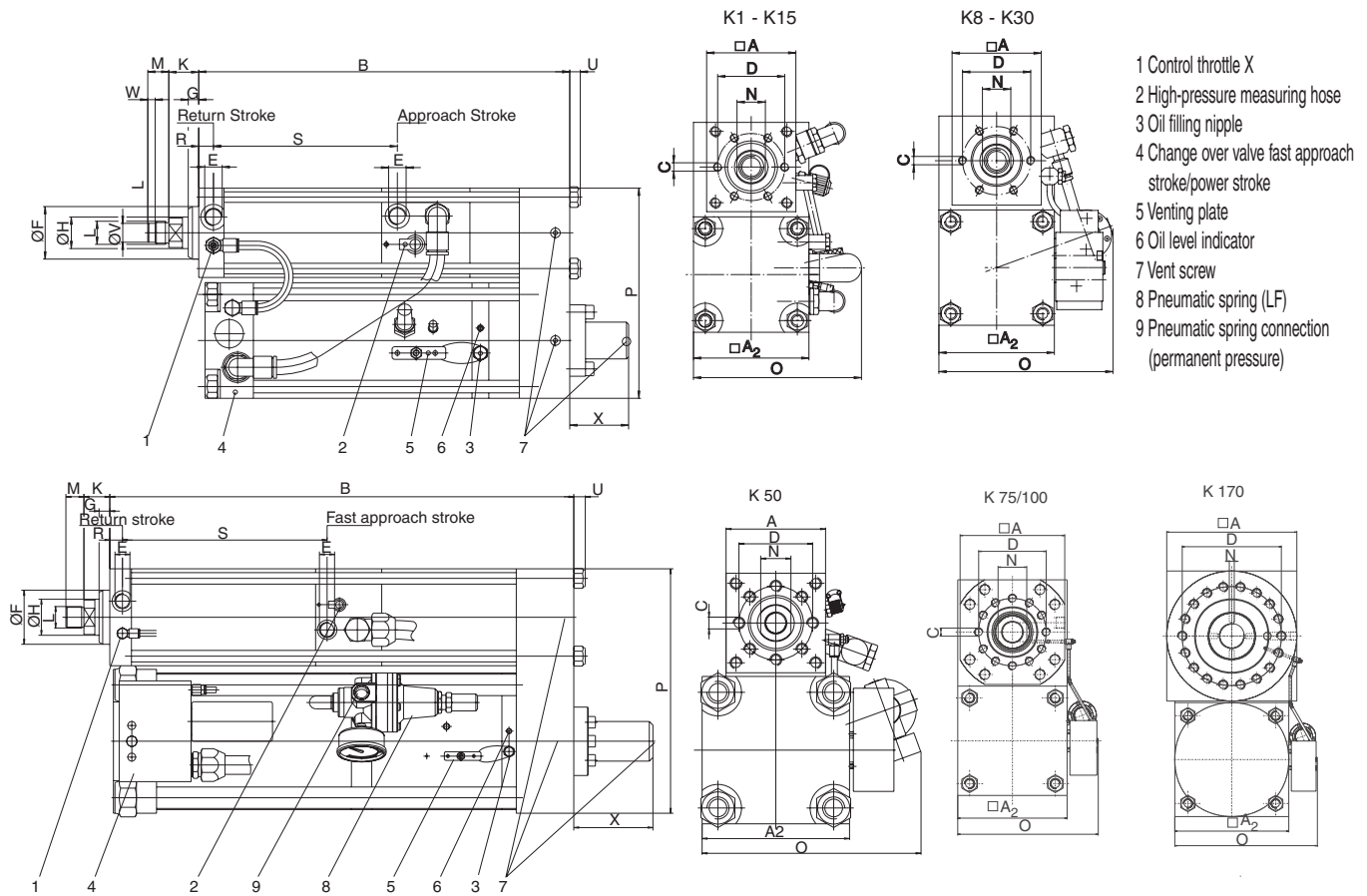
D: Patented power bypass with integrated hydraulic end position cushion is standard. Available on request for other units.

A more comprehensive TOX®-Powerpackage program with pneumatic spring EK you will find on data sheet 10.06.

TOX®-Powerpackage type K. 10 bar

compact design, 10 – 1710 kN

Patented power bypass with integrated retract hydraulic cushion is available on request.



Order no.	incl. total power stroke	max. force at compressed air		fast approach		retracting		Note our preferred series: short lead time, favorable price																						
		6 bar	10 bar	force	force	force	force	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	P	R	S	U	Vg6	W	X	*LF	**IV
K1. 50. 5	5,6	10	115	120	50	-	219	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	106,5	-	-	-	17	-	-	-	-	x
K1. 100. 10	5,6	10	115	120	50	-	319	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	156,5	-	-	-	30	-	-	-	-	x
K1. 150. 10	5,6	10	115	120	50	-	411	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	206,5	-	-	-	-	-	-	-	-	x
K1. 200. 10	5,6	10	115	120	50	-	511	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	256,5	-	-	-	-	-	-	-	-	x
K1. 100. 15	7	12	115	120	50	70	322	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	156,5	6	-	-	23	-	-	-	-	x
K1. 150. 20	7	12	115	120	50	70	414	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	206,5	6	-	-	-	-	-	-	-	x
K1. 200. 20	7	12	115	120	50	70	514	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	256,5	6	-	-	-	-	-	-	-	x
K1. 250. 20	7	12	115	120	50	70	614	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	124	11,5	306,5	6	-	-	-	-	-	-	-	x
K1. 250. 40	7	12	115	120	50	85	620	6xM6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	140	11,5	306,5	6	-	-	-	-	-	-	-	x
K2. 50. 4	11	20	235	250	70	-	227	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	116	8	-	-	23	-	-	-	-	x
K2. 100. 8	11	20	235	250	70	-	327	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	166	8	-	-	30	-	-	-	-	x
K2. 100. 12	11	20	235	250	70	85	327	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	166	8	-	-	25	-	-	-	-	x
K2. 150. 12	11	20	235	250	70	-	427	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	216	8	-	-	30	-	-	-	-	x
K2. 200. 12	11	20	235	250	70	-	527	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	266	8	-	-	30	-	-	-	-	x
K2. 150. 20	11	20	235	250	70	85	427	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	216	8	-	-	23	-	-	-	-	x
K2. 200. 24	11	20	235	250	70	85	527	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	266	8	-	-	-	-	-	-	-	x
K2. 300. 20	11	20	235	250	70	85	727	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	366	8	-	-	-	-	-	-	-	x
K2. 300. 50	12	20	235	250	70	110	740	6xM8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	185	13	366	8	-	-	-	-	-	-	-	x
K4. 100. 6	23	40	300	330	85	-	345	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	116	175	14	175	10	18	7	-	-	-	-	-	x
K4. 150. 8	23	40	300	330	85	-	445	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	116	175	14	225	10	18	7	43	-	-	-	-	x
K4. 200. 12	23	40	300	330	85	-	545	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	116	175	14	275	10	18	7	-	-	-	-	-	x
K4. 100. 10	23	40	300	330	85	110	353	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	175	10	18	7	23	-	-	-	-	x
K4. 150. 20	23	40	300	330	85	110	453	6xM8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	225	10	18	7	23	-	-	-	-	x

*LF: Series incorporating pneumatic spring. See page 8.

**IV: Integrated valve

A more comprehensive TOX®-Powerpackage program with pneumatic spring EK you will find on data sheet 10.06.

TOX®-Powerpackage type K. 10 bar

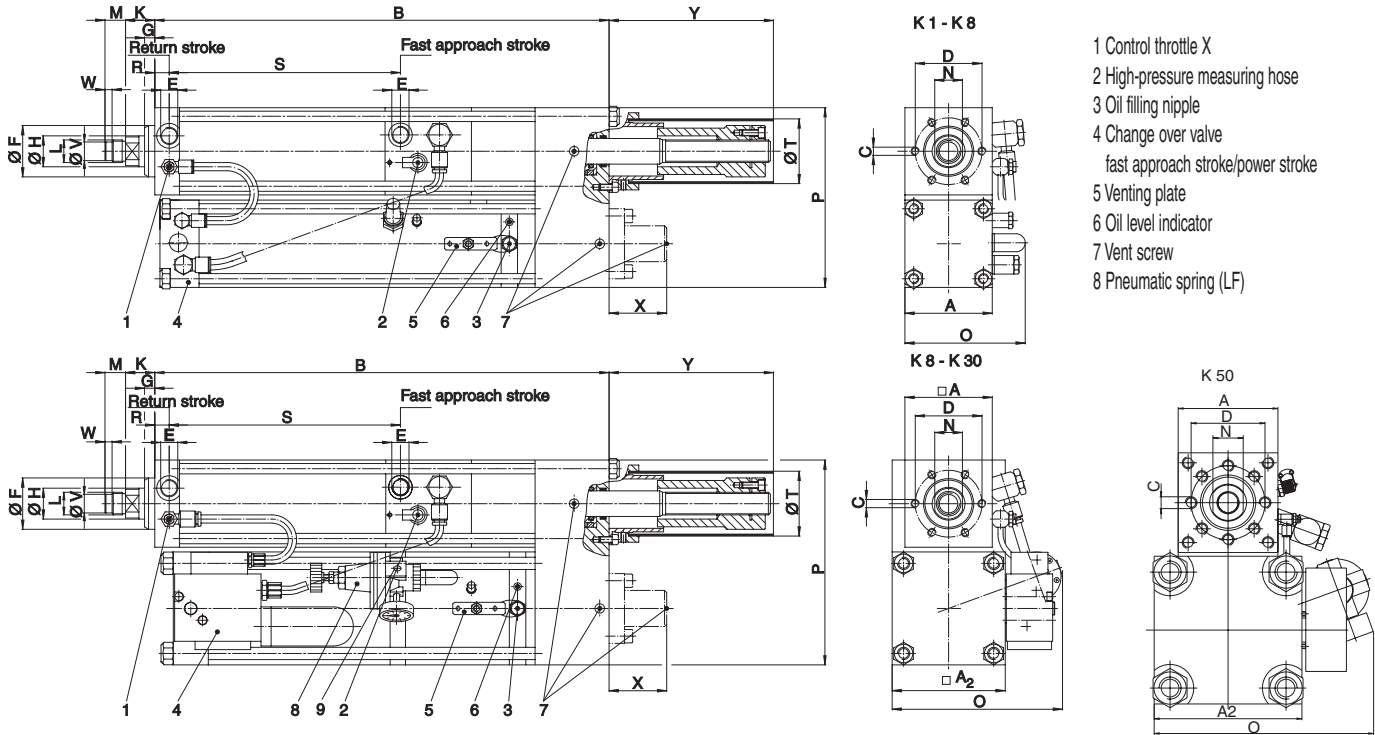
compact design, 10 – 1710 kN

Order no.	incl. total power stroke	max. force at compressed air		fast approach		retracting		Note our preferred series: short lead time, favorable price																				
		6 bar	10 bar	force daN	force daN	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	P	R	S	U	Vg6	W	X	*LF**IV	
K4. 200. 20		23	40	300	330	85	110	553	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	275	10	18	7	-	-	x
K4. 300. 20		23	40	300	330	85	110	753	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	375	10	18	7	-	-	x
K4. 400. 20		23	40	300	330	85	110	953	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	475	10	18	7	-	-	x
K4. 300. 50		23	40	300	330	85	135	759	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	225	14	375	10	18	7	-	-	x
K4. 400. 50		23	40	300	330	85	135	959	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	225	14	475	10	18	7	-	-	x
K8. 100. 5		44	77	530	560	110	-	359	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	225	15	183	12	26	7	23	-	x
K8. 100. 10		44	77	530	560	110	135	365	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	183	12	26	7	56	-	x
K8. 150. 5		44	77	530	560	110	-	459	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	225	15	233	12	26	7	23	-	x
K8. 200. 10		44	77	530	560	110	-	559	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	225	15	283	12	26	7	23	-	x
K8. 150. 15		44	77	530	560	110	135	465	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	233	12	26	7	35	-	x
K8. 200. 20		44	77	530	560	110	135	565	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	283	12	26	7	30	-	x
K8. 300. 20		44	77	530	560	110	135	765	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	383	12	26	7	-	-	x
K8. 400. 20		44	77	530	560	110	135	965	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	483	12	26	7	-	-	x
K8. 300. 50		44	80	530	550	110	170	765	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	290	285	15	383	12	26	7	143	x	-
K8. 400. 50		44	80	530	550	110	170	965	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	290	285	15	483	12	26	7	-	x	-
K15. 150. 5		85	150	760	910	135	-	470	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	275	17,5	234,5	16	26	7	46	-	x
K15. 200. 5		85	150	760	910	135	-	570	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	275	17,5	284,5	16	26	7	46	-	x
K15. 100. 10		85	150	760	900	135	200	525	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	184,5	16	26	7	40	x	-
K15. 200. 10		85	150	760	900	135	200	585	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	284,5	16	26	7	40	x	-
K15. 300. 10		85	150	760	900	135	200	785	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	384,5	16	26	7	26	x	-
K15. 400. 10		85	150	760	900	135	200	985	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	484,5	16	26	7	26	x	-
K15. 100. 20		85	150	760	900	135	200	585	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	184,5	16	26	7	110	x	-
K15. 200. 20		85	150	760	900	135	200	645	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	284,5	16	26	7	110	x	-
K15. 300. 20		85	150	760	900	135	200	785	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	384,5	16	26	7	105	x	-
K15. 400. 20		85	150	760	900	135	200	985	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	320	340	17,5	484,5	16	26	7	26	x	-
K15. 100. 40		85	155	760	900	135	267	670	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	470	410	17,5	184,5	16	26	7	150	x	-
K15. 200. 40		85	155	760	900	135	267	670	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	470	410	17,5	284,5	16	26	7	150	x	-
K15. 300. 40		85	155	760	900	135	267	785	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	470	410	17,5	384,5	16	26	7	100	x	-
K15. 400. 40		85	155	760	900	135	267	985	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	470	410	17,5	484,5	16	26	7	26	x	-
K30. 100. 5		170	310	1100	1530	170	267	555	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	236	22	-	-	30	x	-
K30. 150. 5		170	310	1100	1530	170	267	555	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	286	22	-	-	30	x	-
K30. 200. 5		170	310	1100	1530	170	267	645	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	336	22	-	-	30	x	-
K30. 100. 10		170	310	1100	1530	170	267	585	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	236	22	-	-	45	x	-
K30. 200. 10		170	310	1100	1530	170	267	645	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	336	22	-	-	50	x	-
K30. 300. 10		170	310	1100	1530	170	267	840	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	436	22	-	-	30	x	-
K30. 400. 10		170	310	1100	1530	170	267	1040	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	536	22	-	-	30	x	-
K30. 200. 20		170	310	1100	1530	170	267	740	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	336	22	-	-	170	x	-
K30. 300. 20		170	310	1100	1530	170	267	840	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	436	22	-	-	82	x	-
K30. 400. 20		170	310	1100	1530	170	267	1040	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	536	22	-	-	40	x	-
K30. 200. 40		170	310	1100	1530	170	267	880	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	336	22	-	-	310	x	-
K30. 300. 40		170	310	1100	1530	170	267	940	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	436	22	-	-	310	x	-
K30. 400. 40		170	310	1100	1530	170	267	1040	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	470	445	20	536	22	-	-	300	x	-
K50. 100. 10		280	515	1180	1920	200	324	635	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	243	30	-	-	50	x	-
K50. 200. 10		280	515	1180	1920	200	324	705	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	343	30	-	-	70	x	-
K50. 300. 10		280	515	1180	1920	200	324	855	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	443	30	-	-	50	x	-
K50. 100. 20		280	515	1180	1920	200	324	715	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	243	30	-	-	140	x	-
K50. 200. 20		280	515	1180	1920	200	324	785	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	343	30	-	-	160	x	-
K50. 300. 20		280	515	1180	1920	200	324	855	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	443	30	-	-	210	x	-
K50. 100. 40		280	515	1180	1920	200	324	875	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	243	30	-	-	310	x	-
K50. 200. 40		280	515	1180	1920	200	324	945	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	343	30	-	-	310	x	-
K50. 300. 40		280	515	1180	1920	200	324	1015	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	540	530	23	443	30	-	-	340	x	-
K75. 200 10 D		440	784	2100	3500	310	368	877	12xM24x40	200	G1"	150	20	100	60	M64x2	60	85	589,5	681	35	353	30	-	-	45	x	-
K100. 200. 10 D																												

TOX®-Powerpackage type K. 10 bar and 6 bar

version .51, compact design with total stroke adjustment, 10 – 500 kN (6 bar on request, version .81)

Stroke length and hence LDC position adjustable. For pulling operations a special execution is available. Patented power bypass with integrated retract hydraulic cushion is available on request.



Order no.	incl. version	total stroke	power stroke	max. force at compressed		fast approach		retracting																								
				6 bar kN	10 bar kN	force daN	force daN	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	P	R	S	T	Vg6	W	X	Y	*LF**IV		
K1. 51. 50. 5	5	50	5	5	9	100	120	50	-	241	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	106,5	40	-	-	-	139	-	x	
K1. 51. 100. 10	5	100	10	5	9	100	120	50	-	341	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	156,5	40	-	-	-	239	-	x	
K1. 51. 150. 10	5	150	10	5	9	100	120	50	-	441	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	206,5	40	-	-	-	339	-	x	
K1. 51. 200. 10	5	200	10	5	9	100	120	50	-	541	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	86	104	11,5	256,5	40	-	-	-	439	-	x	
K1. 51. 100. 15	6	11	100	15	6	11	100	120	50	70	341	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	156,5	40	-	-	-	239	-	x
K1. 51. 150. 20	6	11	100	20	6	11	100	120	50	70	441	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	206,5	40	-	-	-	339	-	x
K1. 51. 200. 20	6	11	100	20	6	11	100	120	50	70	541	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	106	124	11,5	256,5	40	-	-	-	439	-	x
K1. 51. 250. 20	6	11	100	20	6	11	100	120	50	70	641	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	140	11,5	306,5	40	-	-	-	539	-	x
K1. 51. 250. 40	6	11	100	40	6	11	100	120	50	85	641	6xM 6x11	40	G1/8	30	10	16	24	M12x1,5	12	14	116	140	11,5	306,5	40	-	-	-	539	-	x
K2. 51. 50. 4	11	20	200	4	11	20	200	250	70	-	266	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	116	63	-	-	-	154	-	x
K2. 51. 100. 8	11	20	200	8	11	20	200	250	70	-	366	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	166	63	-	-	-	254	-	x
K2. 51. 150. 12	11	20	200	12	11	20	200	250	70	-	466	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	216	63	-	-	-	354	-	x
K2. 51. 200. 12	11	20	200	12	11	20	200	250	70	-	566	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	106	145	13	266	63	-	-	-	454	-	x
K2. 51. 100. 12	11	20	200	12	11	20	200	250	70	85	366	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	166	63	-	-	-	254	-	x
K2. 51. 150. 20	11	20	200	20	11	20	200	250	70	85	466	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	126	63	-	-	-	354	-	x
K2. 51. 200. 24	11	20	200	24	11	20	200	250	70	85	566	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	116	160	13	266	63	-	-	-	454	-	x
K2. 51. 300. 20	11	20	200	20	11	20	200	250	70	85	766	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	185	13	366	63	-	-	-	654	-	x
K2. 51. 300. 50	11	20	200	50	11	20	200	250	70	110	766	6xM 8x12	54	G1/4	40	10	20	26	M16x1,5	15	17	165	185	13	366	63	-	-	-	654	-	x
K4. 51. 100. 6	24	42	250	6	24	42	250	330	85	-	377	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	116	175	14	175	63	18	7	70	260	-	x
K4. 51. 150. 8	24	42	250	8	24	42	250	330	85	-	477	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	116	175	14	225	63	18	7	70	360	-	x
K4. 51. 200. 12	24	42	250	12	24	42	250	330	85	-	577	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	116	175	14	275	63	18	7	70	460	-	x
K4. 51. 100. 10	24	42	250	10	24	42	250	330	85	110	377	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	175	63	18	7	-	260	-	x
K4. 51. 150. 20	24	42	250	20	24	42	250	330	85	110	477	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	225	63	18	7	-	360	-	x

*LF: Series incorporating pneumatic spring. See page 8.

**IV: Integrated valve

A more comprehensive TOX®-Powerpackage program with pneumatic spring EK you will find on data sheet 10.06.

TOX®-Powerpackage type K. 10 bar and 6 bar

version .51, compact design with total stroke adjustment, 10 – 500 kN (6 bar on request, version .81)

Order no.	incl. power stroke	max. force at compressed air		fast approach		retracting																Vg6	W	X	Y	*LF**IV		
		6 bar	10 bar	force	force	A	A ₂	B	C	D	E	F ₁₇	G	H	K	L	M	N	O	P	R						S	T
K 4. 51. 200. 20	24	42	250	330	85	110	577	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	275	63	18	7	-	460	-	x
K 4. 51. 300. 20	24	42	250	330	85	110	777	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	375	63	18	7	-	660	-	x
K 4. 51. 400. 20	24	42	250	330	85	110	977	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	165	200	14	475	63	18	7	-	860	-	x
K 4. 51. 300. 50	24	42	250	330	85	135	777	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	225	14	375	63	18	7	-	660	-	x
K 4. 51. 400. 50	24	42	250	330	85	135	977	6xM 8x15	64	G3/8	50	10	30	28,5	M22x2	20	24	176	225	14	475	63	18	7	-	860	-	x
K 8. 51. 100. 5	45	78	450	560	110	-	392	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	225	15	183	90	26	7	-	267	-	x
K 8. 51. 100. 10	45	78	450	560	110	-	392	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	183	90	26	7	47	267	-	x
K 8. 51. 150. 5	45	78	450	560	110	-	492	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	225	15	233	90	26	7	-	367	-	x
K 8. 51. 200. 10	45	78	450	560	110	-	592	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	165	225	15	283	90	26	7	-	467	-	x
K 8. 51. 150. 15	45	78	450	560	110	135	492	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	233	90	26	7	47	367	-	x
K 8. 51. 200. 20	45	78	450	560	110	135	592	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	283	90	26	7	47	467	-	x
K 8. 51. 300. 20	45	78	450	560	110	135	792	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	383	90	26	7	-	667	-	x
K 8. 51. 400. 20	45	78	450	560	110	135	992	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	176	250	15	483	90	26	7	-	867	-	x
K 8. 51. 300. 50	45	78	450	550	110	170	792	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	241	285	15	383	90	26	7	92	667	x	x
K 8. 51. 400. 50	45	78	450	550	110	170	992	6xM10x16	88	G1/2	70	10	45	35	M30x2	25	36	241	285	15	483	90	26	7	-	867	x	x
K15. 51. 150. 5	89	155	580	910	135	-	506	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	275	17,5	234,5	110	26	7	46	383	-	x
K15. 51. 200. 5	89	155	580	910	135	-	606	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	176	275	17,5	284,5	110	26	7	46	483	-	x
K15. 51. 100. 10	89	156	580	900	135	200	535	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	184,5	110	26	7	50	283	x	-
K15. 51. 200. 10	89	156	580	900	135	200	655	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	284,5	110	26	7	70	483	x	-
K15. 51. 300. 10	89	156	580	900	135	200	855	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	384,5	110	26	7	26	683	x	-
K15. 51. 400. 10	89	156	580	900	135	200	1055	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	484,5	110	26	7	26	883	x	-
K15. 51. 100. 20	89	156	580	900	135	200	595	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	184,5	110	26	7	110	283	x	-
K15. 51. 200. 20	89	156	580	900	135	200	655	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	284,5	110	26	7	110	483	x	-
K15. 51. 300. 20	89	156	580	900	135	200	855	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	384,5	110	26	7	105	683	x	-
K15. 51. 400. 20	89	156	580	900	135	200	1055	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	271	340	17,5	484,5	110	26	7	26	883	x	-
K15. 51. 100. 40	89	163	580	900	135	267	655	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	410	410	17,5	184,5	110	26	7	100	283	x	-
K15. 51. 200. 40	89	163	580	900	135	267	655	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	410	410	17,5	284,5	110	26	7	100	483	x	-
K15. 51. 300. 40	89	163	580	900	135	267	855	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	410	410	17,5	384,5	110	26	7	100	683	x	-
K15. 51. 400. 40	89	163	580	900	135	267	1055	6xM16x25	100	G1/2	75	15	50	36	M30x2	25	41	410	410	17,5	484,5	110	26	7	100	883	x	-
K30. 51. 100. 5	162	300	950	1530	170	267	575	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	236	125	-	-	35	300	x	-
K30. 51. 150. 5	162	300	950	1530	170	267	575	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	286	125	-	-	35	400	x	-
K30. 51. 200. 5	162	300	950	1530	170	267	660	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	386	125	-	-	35	500	x	-
K30. 51. 100. 10	162	300	950	1530	170	267	605	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	236	125	-	-	65	300	x	-
K30. 51. 200. 10	162	300	950	1530	170	267	700	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	336	125	-	-	50	500	x	-
K30. 51. 300. 10	162	300	950	1530	170	267	860	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	436	125	-	-	26	700	x	-
K30. 51. 400. 10	162	300	950	1530	170	267	1060	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	536	125	-	-	26	900	x	-
K30. 51. 200. 20	162	300	950	1530	170	267	760	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	336	125	-	-	170	500	x	-
K30. 51. 300. 20	162	300	950	1530	170	267	860	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	436	125	-	-	110	700	x	-
K30. 51. 400. 20	162	300	950	1530	170	267	1060	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	536	125	-	-	40	900	x	-
K30. 51. 200. 40	162	300	950	1530	170	267	900	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	336	125	-	-	310	500	x	-
K30. 51. 300. 40	162	300	950	1530	170	267	960	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	436	125	-	-	330	700	x	-
K30. 51. 400. 40	162	300	950	1530	170	267	1060	6xM20x30	132	G3/4	100	18	56	47	M39x2	35	50	410	445	20	536	125	-	-	300	900	x	-
K50. 51. 100. 10	277	500	900	1900	200	324	660	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	243	140	-	-	90	305	x	-
K50. 51. 200. 10	277	500	900	1900	200	324	730	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	343	140	-	-	45	505	x	-
K50. 51. 300. 10	277	500	900	1900	200	324	880	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	443	140	-	-	50	705	x	-
K50. 51. 100. 20	277	500	900	1900	200	324	740	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	243	140	-	-	140	305	x	-
K50. 51. 200. 20	277	500	900	1900	200	324	810	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	343	140	-	-	160	505	x	-
K50. 51. 300. 20	277	500	900	1900	200	324	880	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	443	140	-	-	210	705	x	-
K50. 51. 100. 40	277	500	900	1900	200	324	900	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	243	140	-	-	330	305	x	-
K50. 51. 200. 40	277	500	900	1900	200	324	970	8xM20x30	150	G3/4	115	25	63	52	M42x2	40	55	500	530	23	343	140	-	-	350	505	x	-
K50. 51																												

TOX®-Powerpackage type T

The "Turbo" Cylinder with cycle speeds up to 550 strokes / min.
Includes integrated power bypass.

- Advantages:**
- Patented power bypass
 - Constant press-force
 - Can be mounted in any orientation
 - Internal positive stop

This cylinder is ideal for punching and nibbling machines providing optimum performance. External dampening is recommended.

Function: the full stroke of the cylinder is power stroke. Constant air supply on retract side. Force is generated by the integrated air to oil intensifier. Features complete air to oil separation, integrated oil reservoir, precisely defined end positions, oil level indicator, standard oil refill nipple and high pressure measuring connection.

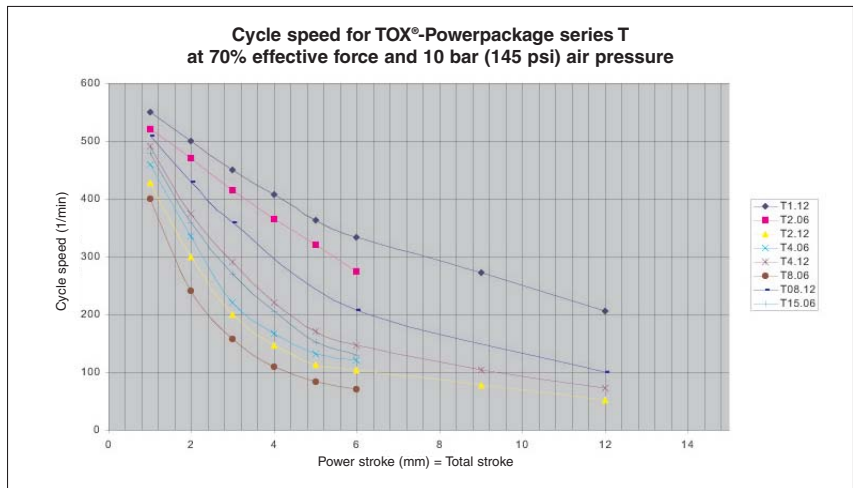
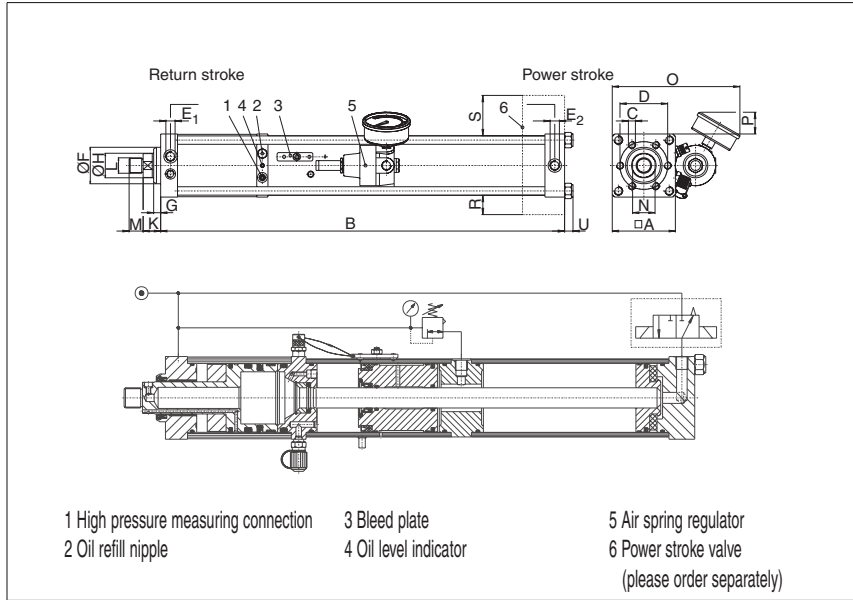
Controls: simple – like any single acting pneumatic cylinder. Return port is connected to a constant air supply. Min. air supply 3 bar.

Mounting: can be mounted in any orientation. Side loads on working rod are not permitted. We recommend use of a flexible coupling from our TOX®-Powerpackage accessories.

Accessories: high frequency pneumatic valve ZVT.

Order No.:

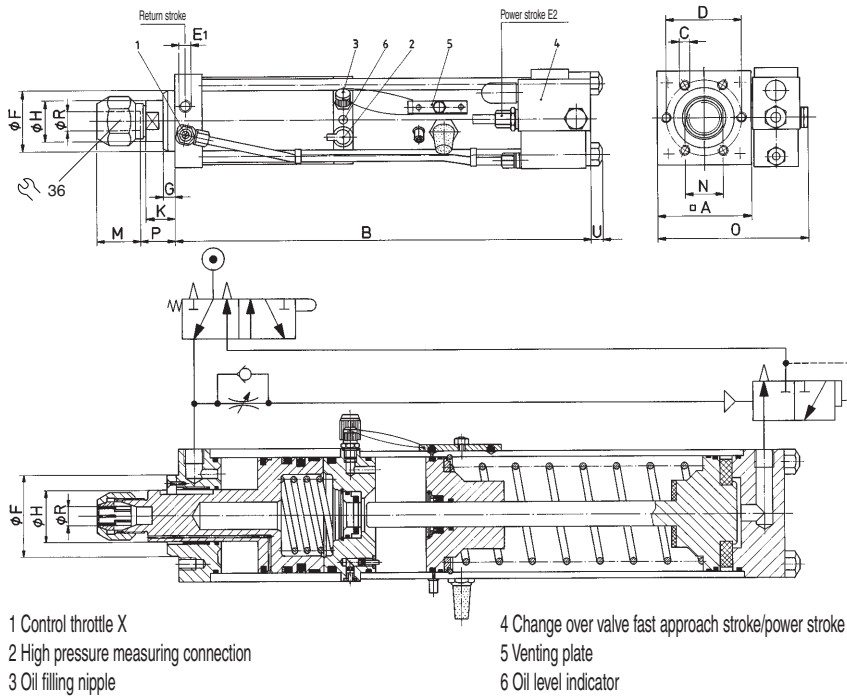
- ZVT - 1/4" (double solenoid 24V)
- ZVT - 1/2" (double solenoid 24V)



Order-No.	Type	Stroke	Power stroke	max. force at air pressure		Retract force		Dimensions																		
				6 bar	10 bar	daN at 6 bar	daN at 10 bar	A	B	C	D	E ₁	E ₂	F ₁₇	G	H	K	L	M	N	O	P	R	S	U	
T 1.12	12	12	7	12,5	30	59	65	465	6xM 6x12	54	G1/8	G1/4	45	10	30	25	M16x1,5	15	27	160	40	93	93	8		
T 2.06	6	6	13	23	30	59	65	465	6xM 6x12	54	G1/8	G1/4	45	10	30	25	M16x1,5	15	27	160	40	93	93	8		
T 2.12	12	12	11	20	77	150	80	514	6xM 8x12	65	G1/8	G1/4	52	10	35	25	M22x2	20	32	165	35	80	80	10		
T 4.06	6	6	22	39	77	150	80	514	6xM 8x12	65	G1/8	G1/4	52	10	35	25	M22x2	20	32	165	35	80	80	10		
T 4.12	12	12	23	41	128	245	90	576	6xM10x16	68	G1/4	G1/4	52	10	35	25	M22x2	20	32	185	25	75	75	12		
T 8.06	6	6	45	80	128	245	90	576	6xM10x16	68	G1/4	G1/4	52	10	35	25	M22x2	20	32	185	25	75	75	12		
T 8.12	12	12	35	63	230	445	110	582	6xM10x16	88	G1/4	G1/2	70	10	45	25	M30x2	25	36	220	40	110	110	12		
T15.06	6	6	68	120	230	445	110	582	6xM10x16	88	G1/4	G1/2	70	10	45	25	M30x2	25	36	220	40	110	110	12		

TOX®-Powerpackage type RP for embossing operation

With anti-torsion device and spring chuck



Function: fast approach via built-in spring. Pneumatic-hydraulic power stroke activated at any point of fast approach. Return stroke entirely pneumatic. Force generated via pressure transducer, absolute air/oil separation, integrated oil reservoir, oil level indicator and oil filling nipple, measuring and control connection for pressure gauge or pressure switch. This allows sequential functions to be controlled, such as return stroke activation, stamping depth adjustment, etc.

Change-over control from fast approach to power stroke takes place automatically according to the ram pressure principle. Valves included in the TOX®-Powerpackage as a standard supply. The speed of the change-over control can be regulated with throttle X.

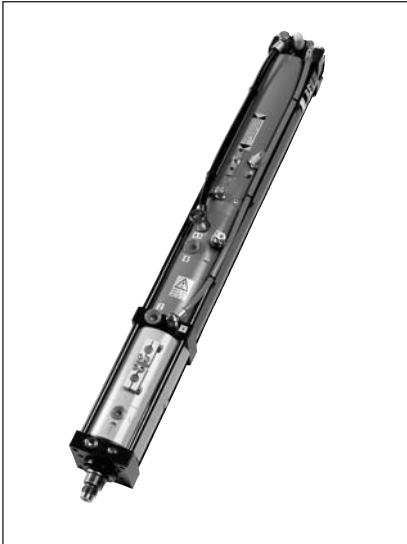
Attention: in the pressureless state the piston rod extends due to the spring-driven fast approach force. Return stroke air pressure: minimum 5 bar.

Order no.	incl. total stroke	incl. power stroke	max. force at compressed air		fast ap-retracting proach force		retracting force		A	B	C	D	E ₁	E ₂	F ₁₇	G	H	K	M	N	O	P	R	U
			6 bar kN	10 bar kN	force daN	at 6 bar daN	at 10 bar daN																	
RP 8.	32.	3	44	79	40	51	86	80	474	6xM 8x12	65	G1/8	G1/4	52	10	35	25	46,5	30	130	20	16	10	
RP15.	32.	3	91	159	50	92	154	90	512	6xM10x16	68	G1/4	G1/4	52	10	35	25	46,5	30	140	20	16	12	

TOX®-Powerpackage with "Safety Rod Lock"

Type ZSL

Safe locking of cylinder rod in the event of air pressure loss



Function:

The safety rod lock is held open with air pressure. Loss of air pressure will cause the unit to clamp on the cylinder rod. The energy of the drifting or falling load is used to generate the clamping force. The clamping force increases as the load increases. Internal springs force wedges to clamp the cylinder rod once the air pressure drops. The rod lock will prevent the cylinder rod from extending unless the static holding force is surpassed. The clamping force is released by applying air pressure and retracting the load.

Unlocking pressure: min. 2 bar
 Release pressure: 4 bar
 Max. operating pressure: 10 bar

Controls:

Requires a 3/2 -way valve.

For most applications, use the diagram shown below. During each cycle, the 3/2-way valve is actuated electrically and releases the rod lock unit. In cases of air pressure loss, power failure, emergency stop, or other failure mode, the rod lock clamps the cylinder rod and stops the load.

The clamp position can be monitored with proximity sensors. We offer appropriate sensors of 45 and 70 mm length.

Recommendations:

If the plant air pressure fluctuates, such as a pressure drop at the start of cycle, it is recommended to install a check valve in the air supply line to the rod lock control valve.

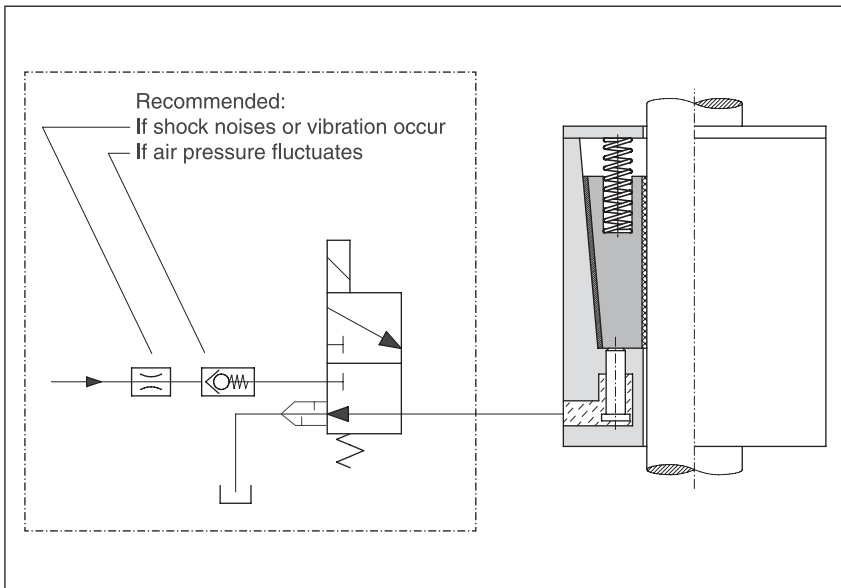
If shock noises or vibration occur during the release operation, a flow control valve can be installed in the air supply line to the rod lock control valve.

Electrical control

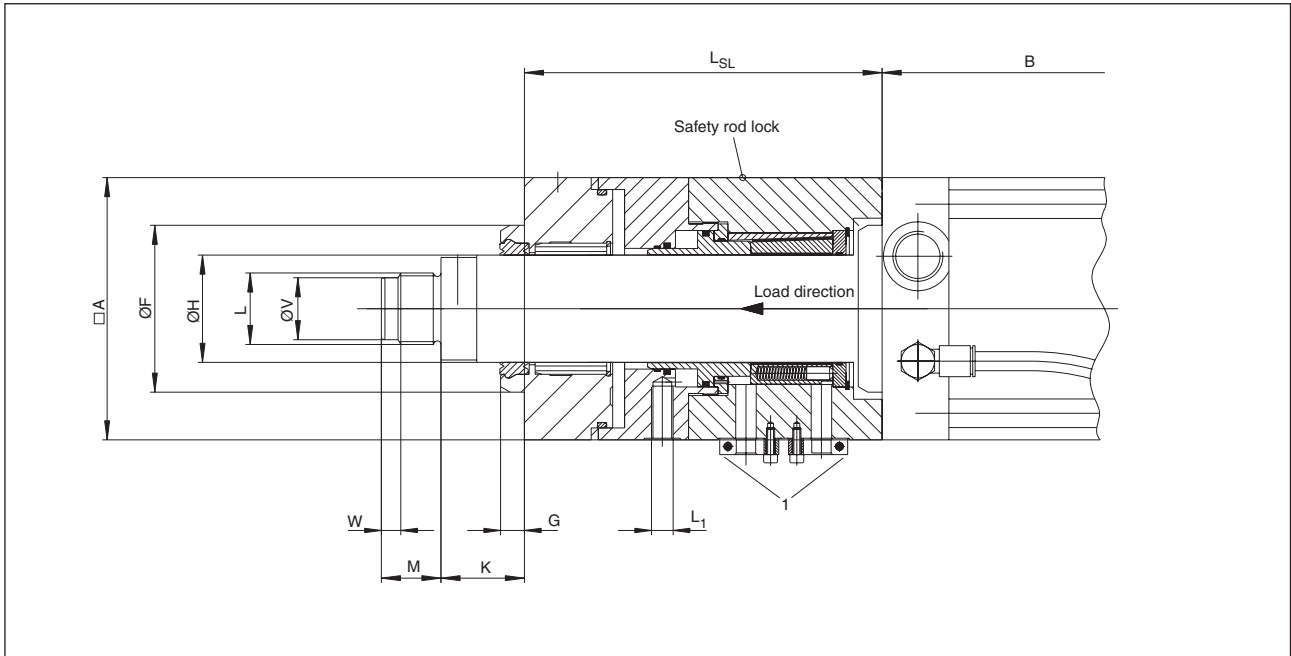
Electrical controls must conform to all applicable local and national regulations for presses. The buyer is responsible for correct installation and maintenance of safety systems.

Advantages:

- Rod lock integrated on cylinder front flange
- Compact design
- Stroke independent
- Simple controls
- Clamps tighter with increasing load
- Clamps rod for unlimited time
- Approved by the German Occupational Safety Administration



----- Not included



Clamps 1 for Ø 12 mm sensors included with unit. Sensors are not included with unit. Sensors should have > 2 mm sensing range.

Type	L _{SL} [mm]	L ₁	Allowable Load* [kN]	For TOX®-Power-package type	Required length of initiator [mm]
ZSL 04	200	G1/4	10	S 04, K 04, AT 04	45
ZSL 08	200	G1/4	10	S 08, K 08, AT 08	45
ZSL 15	250	G1/4	15	S 15, K 15, AT 15	45
ZSL 30	256	G1/4	20	S 30, K 30, AT 30	70
ZSL 50	275	G3/8	25	S 50, K 50, AT 50	70
ZSL 100	on request	G3/8	on request	S 100, K 100, AT 100	
ZSL 170	414	G3/8	60	S 170, K 170, AT 170	

* Attention: max. retraction force of the cylinder must be considered.

All TOX®-Powerpackages type S and K, except for S1, S2, K1 and K2, can be supplied with the "Safety Rod Lock" option.

Order-No.:

S04.100.06D - ZSL

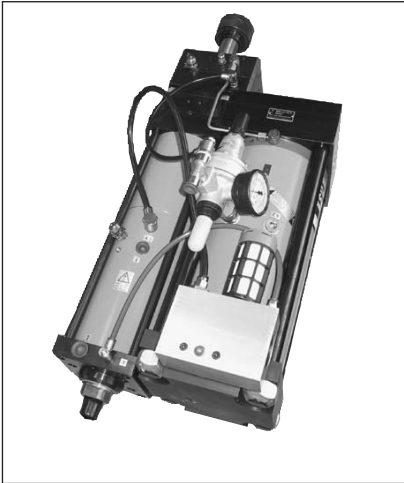
└─ Accessory Rod Lock
└─ TOX®-Power-package Order-No.

Accessories (to be ordered separately):

Initiator M12x1x45
Initiator M12x1x70
Cable box including 5 m cable.

TOX® Powerpackage type EK with Total Stroke Limiter and Adjustable End of Stroke Cushion

Type ZSD, Cutting impact dampening



Ideal for dampening in punching applications and for smooth operation of machines during approach or power strokes. Available for all TOX®-Powerpackages type EK with total stroke limiter.

Advantages:

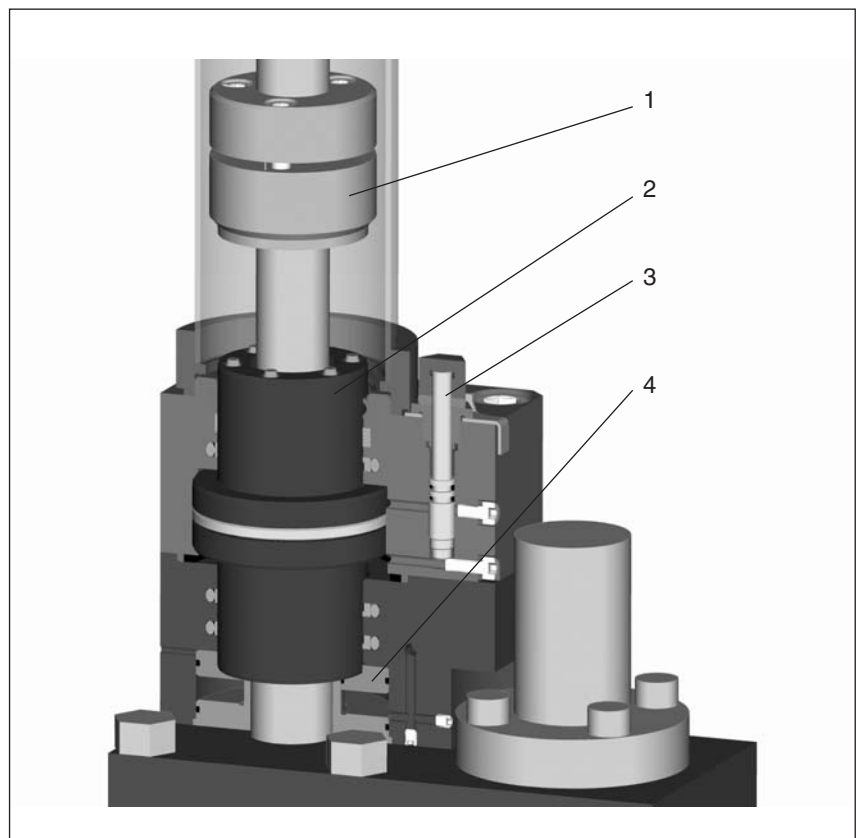
- Hydraulic dampening of end of stroke
- Cushioning infinitely adjustable
- Total stroke infinitely adjustable
- Can be mounted in any orientation
- Protects tooling and machine
- Reduces noise levels
- Maintenance-free

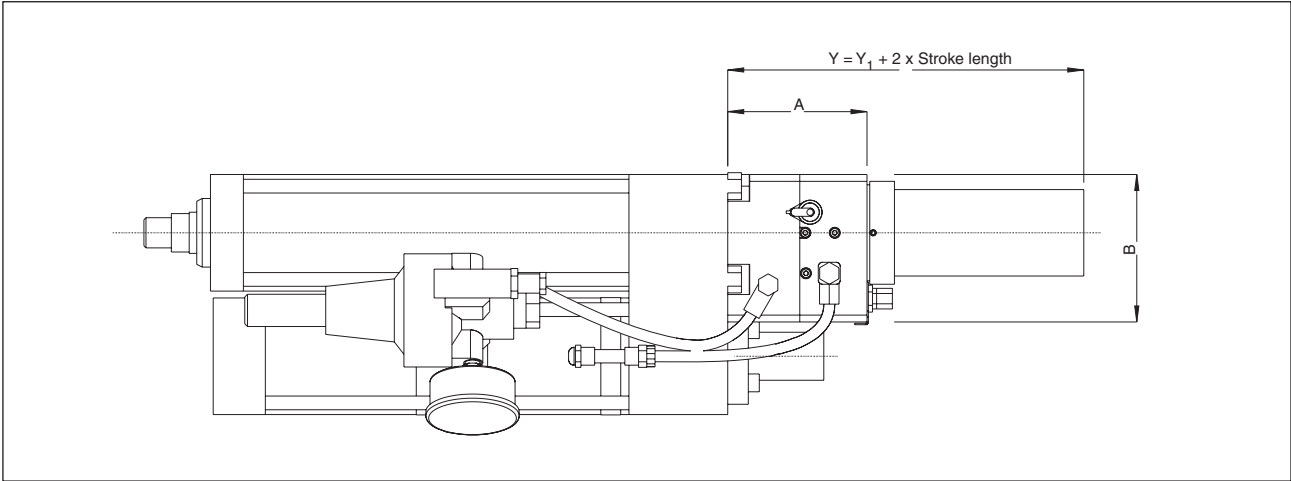
Function:

The adjusting nut (total stroke limiter) **1** contacts the dampening piston **2** during approach or power stroke depending on the adjustment position. The dampening piston **2** compresses hydraulic oil through the throttling needle **3**. The dampening effect can be adjusted with the throttling needle **3**. During the return stroke, the dampening piston **2** is pushed back to its original position by the pneumatic piston **4** and through the integrated bypass valves. The maximum dampening stroke is approximately 7 mm.

Controls:

Pneumatic controls same as for the TOX®-Powerpackage.





Type	A	B	Y ₁	Y	For TOX®-Powerpackage type EK with total stroke limiter
ZSD 02	106	100	54	Y = Y ₁ + 2 x stroke length	for EK 02... for stroke 100 mm
ZSD 04	101,5	107,5	60		for EK 04... for stroke 100 mm
ZSD 08	101,5	145	67		for EK 08... for stroke 100 mm
ZSD 15	120,5	181,5	83		for EK 15... for stroke 100 mm
ZSD 30	120,5	251	100		for EK 30... for stroke 100 mm
ZSD 50	122,5	295	105		for EK 50... for stroke 100 mm
ZSD 75/100	130	395	130		for EK 75.../EK100... for stroke 100 mm

Dimensions for all TOX®-Powerpackages type EK with total stroke limiter on request.
For stroke length, see data sheet 10.06 TOX®-Powerpackage with air spring.

Mounting:

Can be mounted in any orientation.
The hydraulic cushion works in any position.

The adjustable hydraulic cushion is completely installed on the cylinder.
No plumbing is required by customer.

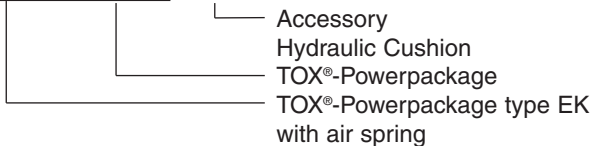
TOX®-Powerpackages with ZSD:

All TOX®-Powerpackages type EK with total stroke limiter, except for EK 01 in version 51 or 81, can be supplied with the ZSD option.

Please refer to data sheet 10.06 for the complete TOX®-Powerpackage program with air spring EK.

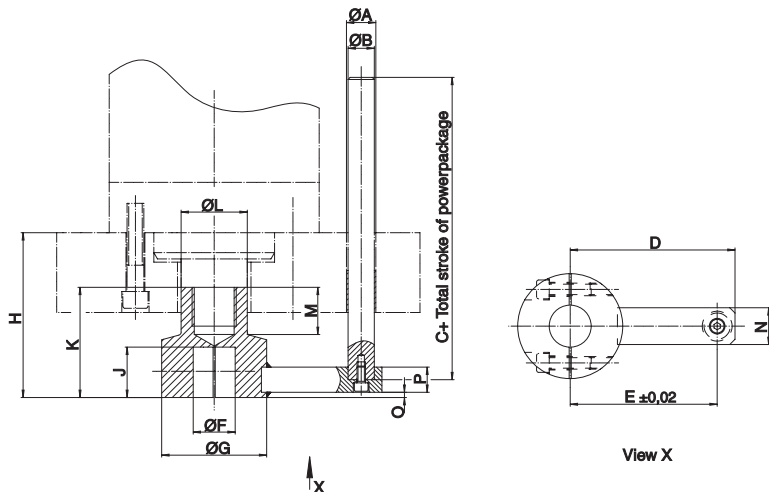
Order-No.:

EK04.51.200.20 - ZSD



Subject to changes.

TOX®-Powerpackage Accessories - Special Models

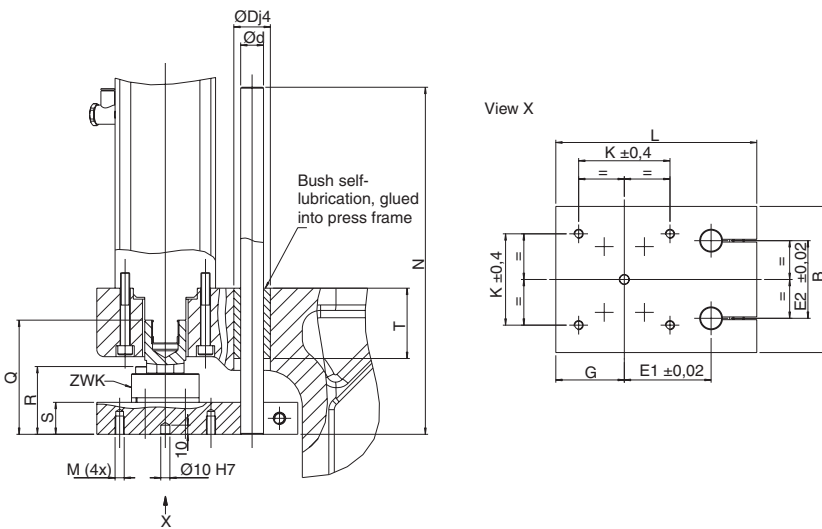


Tool holding fixture with anti-torsion lock V

The guide pin and bushing are included in the delivery package. Please indicate the total travel of the TOX®-Powerpackage when ordering. The center of the guide bushing bore must be set at dimension E from the centerline of the cylinder.

Secure V/working rod with Loctite 222.

Order no.	Suitable for TOX®-Powerpackage	A ^{H7}	B	C	D	E	F ^{H7}	G	H	J	K	L	M	N	O	P
V 1	S 1/K 1	14	12	60	94	75	20	38	69	30	45	16	10	16	5	17
V 2	S 2/K 2	14	12	62	109	90	20	38	71	30	45	20	10	16	5	17
V 4	S 4/K 4	18	16	77	132	110	20	48	88,5	30	60	30	25	25	5	20
V 8	S 8/K 8	23	20	105	145	120	40	68	115	50	80	45	22	30	5	24
V 15	S 15/K 15	23	20	106	165	140	40	68	116	50	80	50	23	30	5	24
V 30	S 30/K 30	28	25	125	195	170	40	88	137	50	90	56	30	35	5	24
V 50	S 50/K 50	28	25	145	205	180	40	98	157	50	105	63	45	35	5	24
V 75	S 75/-	28	25	67	255	235	40	98	190	50	136	98	-	35	5	24
V 100	S 100/-	28	25	67	255	235	40	98	190	50	136	98	-	35	5	24



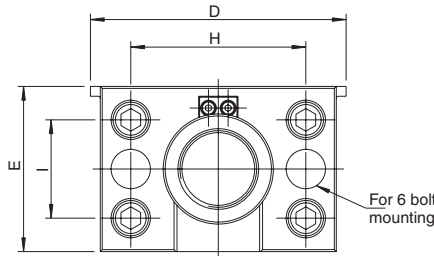
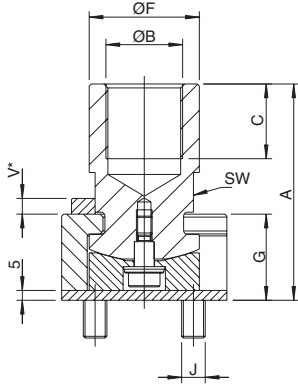
Mini ram ZMS with coupling ZWK

The center of the guide bushing bore must be set at dimension E1 from the centerline of the cylinder. The bushes, shafts and the coupling ZWK are included in the delivery package.

The centering hole allows accurate alignment of the ram plate for finishing work. Secure ZWK with Loctite 222.

Order no.	Suitable for type	Corresponding ZWK	max. load capacity	L	B	Q	R	S	G	E1	E2	ØD	Ød	K	M	N	T
ZMS 02.02.250-200	S 2 / K 2	ZWK 002	see schedule coupling ZWK	140	100	100	65,9	30	45	70	45	32	20	60	M8	310	77
ZMS 02.04.250-200	S 4 / K 4	ZWK 004		207	130	110	66	30	62	90	60	32	20	100	M8	330	77
ZMS 04.04.250-200	S 4 / K 4	ZWK 004		220	160	125	74,2	35	75	95	85	40	25	100	M10	345	77
ZMS 04.08.250-200	S 8 / K 8	ZWK 008				125	76,5										
ZMS 08.08.250-200	S 8 / K 8	ZWK 008		240	200	160	81,5	40	95	105	120	40	25	150	M10	375	77
ZMS 08.15.250-200	S15 / K15	ZWK 015				170	91,8										
ZMS 15.15.250-200	S15 / K15	ZWK 015															
ZMS 15.30.250-200	S30 / K30	ZWK 030															

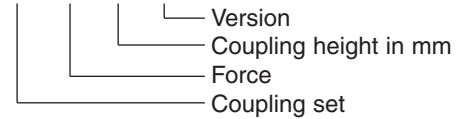
Accessories



Coupling ZWK

is threaded directly on the working rod of the TOX®-Powerpackage and secured with removable Loctite 222. This coupling provides a flexible connection between the TOX®-Powerpackage and die set, thereby preventing any side loads. Includes antirotation device.

ZWK 001.060.000



Order No.	for type	A	ØB	C	D	E	Ø F	G	H	I	J	V*	SW	max. press force [kN]	max. retract force [kN]
ZWK 001.060.000	S1 / K1	60	M12x1,5	16	74	44	22	27,9	43,5	22	4xM6x9	8	19	12	1,5
ZWK 001.070.000		70													
ZWK 001.080.000		80													
ZWK 002.060.000	S2 / K2	60	M16x1,5	16	74	44	22	27,9	43,5	22	4xM6x9	8	19	20	2,5
ZWK 002.070.000		70													
ZWK 002.080.000		80													
ZWK 004.060.000	S4 / K4	60	M22x2	21	84	52	30	28	52,5	30	4xM8x12	8	27	42	3,5
ZWK 004.070.000		70													
ZWK 004.080.000		80													
ZWK 004.090.000		90													
ZWK 004.100.000		100													
ZWK 008.070.000	S8 / K8	70	M30x2	26	108	74	45	31,2	72	44	4xM10x15	8	41	80	6
ZWK 008.080.000		80													
ZWK 008.090.000		90													
ZWK 008.100.000		100													
ZWK 008.110.000		110													
ZWK 008.120.000	120														
ZWK 015.070.000	S15 / K15	70	M30x2	26	108	74	50	33,5	74	44	4xM10x15	8	46	160	9,5
ZWK 015.090.000		90													
ZWK 015.100.000		100													
ZWK 015.110.000		110													
ZWK 015.120.000		120													
ZWK 015.140.000		140													
ZWK 015.150.000		150													
ZWK 015.180.000	180														
ZWK 030.110.010	S30 / K30	110	M39x2	36	130	84	56	43,8	89	50	4xM12x19	8	50	325	16
ZWK 030.130.010		130													
ZWK 030.160.010		160													
ZWK 030.180.010		180													
ZWK 030.190.010		190													
ZWK 030.210.010		210													
ZWK 030.240.010		240													
ZWK 050.120.010	S50 / K50	120	M42x2	41	130	84	63	47,2	92,5	56	6xM12x19	13	55	500	20
ZWK 050.140.010		140													
ZWK 050.160.010		160													
ZWK 050.180.010		180													
ZWK 050.210.010		210													
ZWK 050.230.010		230													
ZWK 050.240.010		240													
ZWK 075.150.010	S75 / K75 S100 / K 100	150	M64x2	63	170	124	100	54,5	130,5	90	6xM12x19	13	85	1000	40
ZWK 075.170.010		170													
ZWK 075.190.010		190													
ZWK 075.210.010		210													
ZWK 075.230.010		230													
ZWK 075.250.010		250													
ZWK 075.270.010		270													
ZWK 075.310.010	310														
ZWK 075.330.010	330														
ZWK 200.180.000	S170 / K170	180	M80x2	85	240	190	150	80,5	191	140	6xM16x25	13	140	2000	50
ZWK 200.200.000		200													
ZWK 200.220.000		220													
ZWK 200.240.000		240													
ZWK 200.260.000		260													
ZWK 200.280.000		280													
ZWK 200.300.000		300													
ZWK 200.320.000	320														

*anti-rotation device

TOX®-Powerpackage Accessory - Rod End Load Cell

Type ZPS



Technical Data:

Rated output:	1,1 mV/V
Temperature effect, zero balance:	± 6 µV/V per 10°C
Temperature range, compensated:	-10° to 65°
Zero balance:	± 2%
Excitation voltage:	10 – 15 V DC
Insulation resistance:	1G Ω
Nominal impedance:	760 Ω
Electrical connection:	M8 x 1
Complex error:	< ± 0,5%

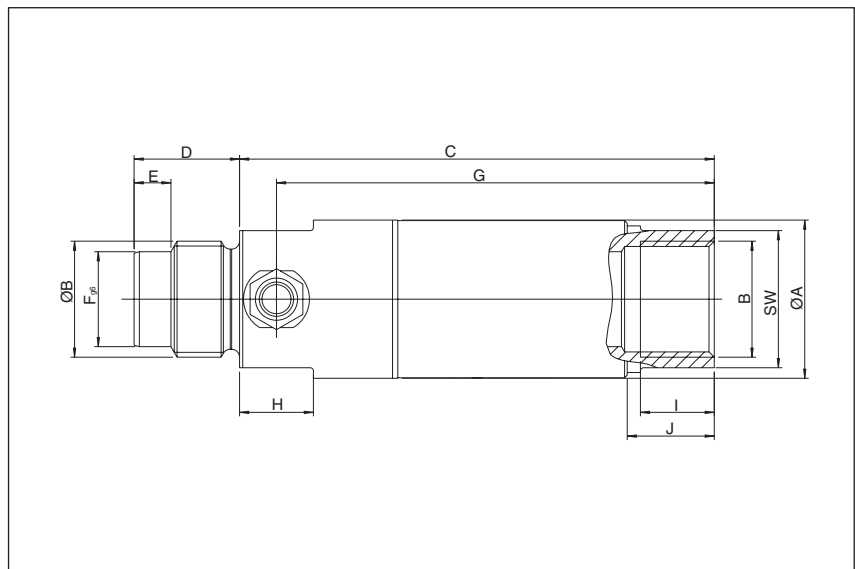
The rod end load cell ZPS can be mounted on the working rod of the TOX®-Powerpackage cylinder.

The load cell ZPS measures forces in the direction of the applied force. It is sealed against dirt and moisture. The load cells are available in various sizes to fit each TOX®-Powerpackage. Mounted on the working rod of the TOX®-Powerpackage and secured with Loctite 222. The sensor should be applied together with antirotation device see page 25.

Advantages:

- Precise
- Robust
- Compact

Available for all TOX®-Powerpackages.



Order-No.	Press force max. kN	Fits TOX®-Powerpackage type	A	B	C	D	E	F ₉₆	G	SW	H	I	J
ZPS 001	13	S 1 / K 1	20	M12x1,5	60	12	-	-	53	16	8	14	10
ZPS 002	21	S 2 / K 2	25	M16x1,5	75	15	-	-	68	21	12	16	13
ZPS 004	42	S 4 / K 4	30	M22x2	90	20	7	18	83	26	14	14	16
ZPS 015*	160	S 8 / K 8 S 15 / K 15	48	M30x2	115	25	7	26	105	41	15	19	22
ZPS 030	325	S 30 / K 30	58	M39x2	130	35	-	-	120	50	20	36	36
ZPS 050	500	S 50 / K 50	68	M42x2	150	40	-	-	136	55	20	42	59
ZPS 100	1.030	S 75 / K 75 S 100 / K 100	on request										
ZPS 170	1.700	S170 / K 170											

* appropriate for 80 and 150 kN

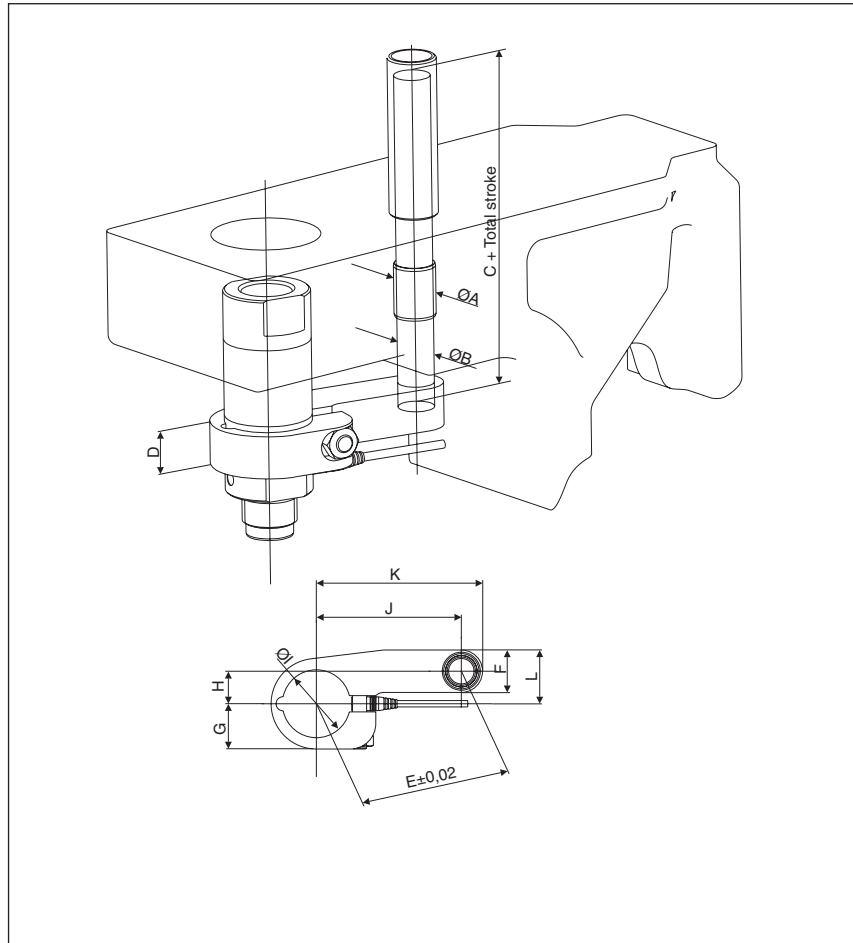
Please order accessories separately (see page 25).

TOX®-Powerpackage Accessory - Antirotation device

Type ZPSV for pressing force sensor type ZPS

Antirotation Device

Prevents damage to load cell cable. The bushing and guide pins are supplied with this option. The center of the guide bushing bore must be set at dimension E from the centerline of the sensor. When ordering, please advise the total stroke of the TOX®-Powerpackage cylinder.



Order-No.	fits load cell type	A	B	C	D	E	F	G	H	I	J	K	L
ZPSV 001	ZPS 001	14	12	70	17	52	18	19	17	20	49,14	58,14	26
ZPSV 002	ZPS 002	14	12	85	17	52	18	21	17	25	49,14	58,14	26
ZPSV 004	ZPS 004	18	16	100	19	80	24	23	20	30	77,46	89,46	32
ZPSV 015	ZPS 015	23	20	90	24	105	30	32	23	48	102,45	117,45	38
ZPSV 015	ZPS 015	23	20	90	24	110	30	32	23	48	107,57	122,57	38
ZPSV 030	ZPS 030	28	25	150	24	170	38	37	27	58	167,84	186,84	46
ZPSV 050	ZPS 050	28	25	150	24	180	38	42	27	68	177,96	238,96	46
ZPSV 100	ZPS 100	on request											
ZPSV 170	ZPS 170	on request											

Please observe the corresponding mounting instructions described in our Operating Manual "TOX®-Powerpackage Accessory".

Connection plug

Plug M8 x 1, includes 5 m cable

Pin code:

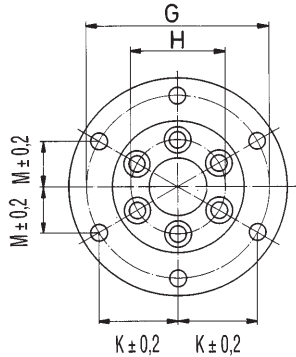
- Pin 1 + excitation
- Pin 2 - excitation
- Pin 3 + signal out
- Pin 4 - signal out

Order-No.: ZPS K

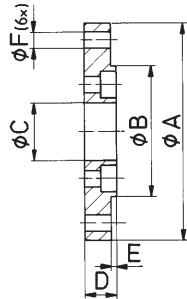
Measuring amplifier on request.

Signal amplifier on request.

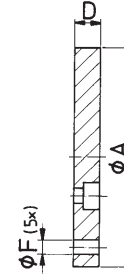
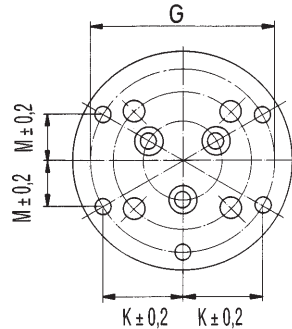
Mounting options



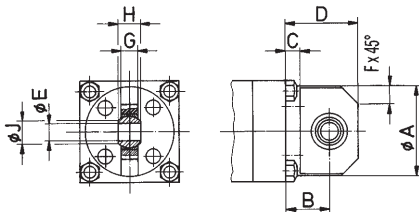
Front mounting plate **ZFV** retrofit-
table, for TOX®-Powerpackages
type S/AT.



Rear mounting plate **ZFH** non retrofitable
Order no. **ZFH 1 - 15** for TOX®-Powerpackages with enlarged transmission
section $A_2 > A$ Dimensions on request.



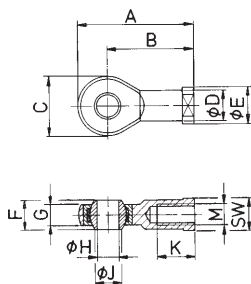
Order no.	Order no.	für Typ	A	B ₇	C ^{H8}	D	E	F	G	H	K	M
ZFV 1	ZFH 1	S/K/AT 1	90	55	30	18	3	6,6	75	40	32,5	18,75
ZFV 2	ZFH 2	S/K/AT 2	125	75	40	18	3	9	105	54	45,5	26,25
ZFV 4	ZFH 4	S/K/AT 4	145	85	50	21	3	9	125	64	54,1	31,25
ZFV 8	ZFH 8	S/K/AT 8	180	110	70	24	4	11	155	88	67,1	38,75
ZFV 15	ZFH 15	S/K/AT15	225	135	75	29	4	18	195	100	84,4	48,75



Rear holding fixture with swing
support **ZGH**, not retrofitable

For TOX®-Powerpackages with enlarged transmission sections $A_2 > A$
Dimensions on request.

Order no.	for type	A	B	C	D	E ^{H7}	F	G	H	J
ZGH 1	S/K 1	42	22	10	34	8	8	9	12	10,4
ZGH 2	S/K 2	62	30	10	50	12	12	12	16	15,4
ZGH 4	S/K 4	72	40	12	64	16	16	15	21	19,3
ZGH 8	S/K 8	90	45	12	70	22	20	20	28	25,8
ZGH 15	S/K 15	100	50	15	84	30	20	25	37	34,8



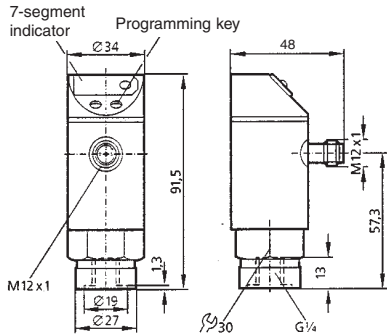
Toggle link socket mounted to front
of piston rod **ZGK**, retrofitable

Order no.	for type	A	B	C	D	E	F	G	H ^{H7}	J	K	M	SW
ZGK 1	S/K 1	66	50	32	17,5	22	16	12	12	15,4	22	M12x1,5	19
ZGK 2	S/K 2	85	64	42	22	27	21	15	16	19,3	28	M16x1,5	22
ZGK 4	S/K 4	111	84	54	30	37	28	20	22	25,8	37	M22x2	32
ZGK 8	S/K 8	145	110	70	40	50	37	25	30	34,8	51	M30x2	41
ZGK 15	S/K 15	145	110	70	40	50	37	25	30	34,8	51	M30x2	41

Attention: the head of the joint rod **must be** screwed even with the working piston. No length compensation via
thread is admitted.

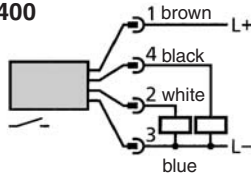
Accessories

Electronic Pressure Switch ZDO

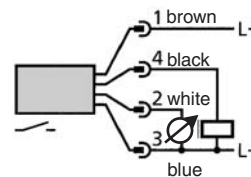


Connection scheme:

- ZDO 01.400



- ZDO-01-400A with analog output



The electronic pressure switch ZDO registers the oil pressure in the high pressure part of the TOX®-Powerpackage as system pressure and displays it by a 4 digit LED display. The pressure sensor registers the system pressure and shows the actual system pressure on a LED display. According to the set switch function (separate selection for each output), 2 output signals are generated: hysteresis, window function, each as make contact or break contact. The hysteresis provides a stable switching condition of the output when the system pressure fluctuates around the nominal value. The window function enables the monitoring of a defined acceptance region. It is also possible to set a delay time (0-50 sec.), a response time for the switch outputs and dampings.

For switch ZDO-01-400A, the second setpoint can be additionally set at 4–20mA or 0–10V.

Additional programming menu

- LED unit display (bar, psi, Pa)
- Switching logic (PNP, NPN)
- Peak hold
- LED-display can be flipped 180°
- LED display can be turned off

In addition, a malfunction signal is displayed if:

- system pressure > 10 % of max. nominal pressure
- short circuit in switch output 1 or switch output 2

The pressure switch is specially adjusted to the pressure characteristic of the TOX®-Powerpackage.

Specifications:

Pressure range	Increment	Order-No.
0,5 - 10 bar	0,01 bar	ZDO 01.010
0 - 400 bar	1 bar	ZDO 01.400
0 - 400 bar	1 bar	ZDO 01.400A
0 - 600 bar	1 bar	ZDO 01.600

Specifications:

- Measuring range: 20 – 400 bar
- Step size: 4 bar
- Repetitive accuracy: ± 0,1% MEW
- Switch point accuracy: ± 1,5% MEW
- Indication:
 - LED-7-segments

Switch function per switch point

Output:	switch function
1	hysteresis/ make contact
2	hysteresis/ break contact
3	window function/ make contact
4	window function/ break contact

In addition, for ZDO-01-400A:

- Output 2: Analog 4-20mA/0-10V

- Working voltage: 18 – 30 V DC
- System of protection: IP 67

Example for ordering

- ZDO-01-400A - with SP2 as analog output
 - └─ max. pressure 400 bar
 - └─ version 01
 - └─ electronic pressure switch

External attachment to the TOX®-Powerpackage with mounting plate, including protective caps for the display and the programming keys as well as the HP measuring terminal.

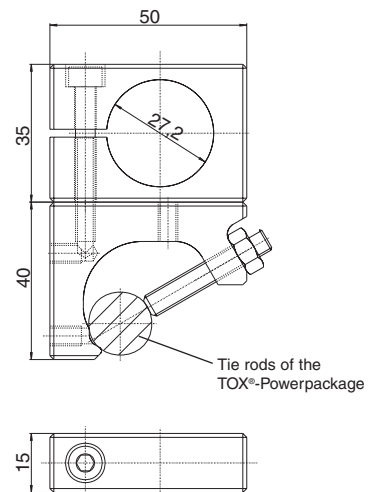
Accessories to be ordered separately:

- two-piece fastening strap with two screws M5, hole distance 44 mm
- ZMP - 001.002
 - └─ Mounting plate for attachment to the service side of TOX®-Powerpackage
- HP measuring hose ZHM 630;
- ZHM 630-90
 - └─ connection 90°
 - └─ length 630 mm
 - └─ connection 1 x 90°, compl. assembled, filled and bled, secured against leaking of oil (optional 400, 1000, 1500, 2000 mm)
- cable socket with 5 m cable

Mounting bracket for ZDO

ZMP-001.002

Attaches switch to tie rod of the TOX®-Powerpackage.

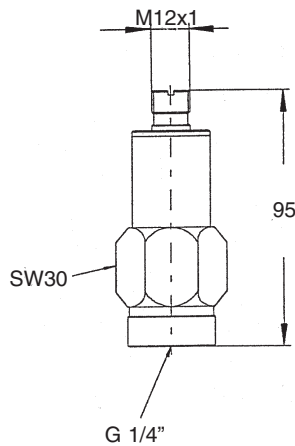


Accessories

Analog pressure indicator ZDA



Transducer ZDS



The oil pressure in the high pressure part of the TOX®-Powerpackage is registered by the pressure sensor as system pressure and indicated by 5 digits on the pressure indicator with integrated sensor supply. Thus the measured value „pressure“ is converted in a ceramic pressure pickup cell into a capacitive signal by the excursion of a diaphragm. The measured value „pressure“ is displayed in “bar”. It is possible to change the

pressing force into kN on site. A freely programmable microprocessor controls the evaluation of the signal. The function keys on the front part of the processor measuring device serve for programming. The function „instantaneous value storage“ is available for receiving variable measuring signals. Further investigations are possible with the peak value memory. A freely selectable analog output (4...20 mA, 0...10 V) is available for connection with a PLC. As option, a serial interface for the transmission of the measured data to a PC is offered as well.

Specifications:

Pressure sensor ZDS:

Pressure range: 0 - 400 bar
 Connection: M 12 plug
 Analog output: 4-20 mA
 Deviation from characteristic: 1% MEW
 Repetive accuracy: 0,1% MEW
 Supply: 12 - 30 DC/
 by processor measuring device

Pressure indicator ZDA:

5 digit display 2-color
 peak value memory
 Analog input
 two programmable limit contacts
 analog output for PLC
 Transformation rate: 10/sec.
 Supply: 90 ... 264 V AC
 50/60Hz
 Structural dimension (WxHxD): 96 x 48 x 187 mm
 Switchboard cutout: 92^{+0.5} x 45^{+0.5} mm

Order no.: ZDA

Pressure indicator and accessories:
 - Pressure indicator ZDA
 - Pressure sensor ZDS, attachment by mounting plate to service side of TOX®-Powerpackage
 - Mounting plate ZMP, adapted to TOX®-Powerpackage
 - HP measuring hose ZHM 630, connection 1 x 90°, compl. assembled, filled and bled, secured against leaking of oil
 - electric connection cable between pressure sensor and pressure indicator (5000 mm)

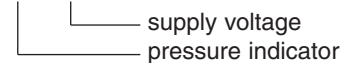
Option:

- serial interface

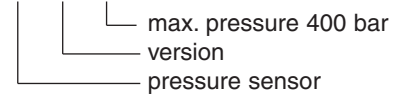
Please do not forget to state type of TOX®-Powerpackage

Example for ordering:

- ZDA-230AC

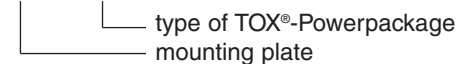


- ZDS-01-400

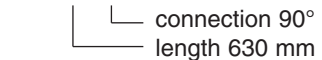


Accessories:

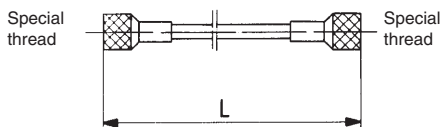
- ZMP-S2.50.12



- ZHM 630-90



- connection cable (5000 mm)
 - serial interface



High-pressure measuring hose ZHM

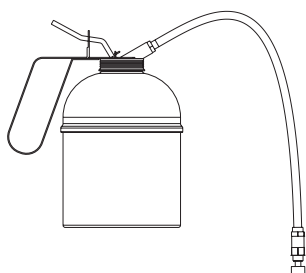
Pressure range up to 400 bar
 Available lengths: 400, 630, 1000, 1500, 2000, 2500, 3000, 3500
 Also supplied with 90° elbow screw

hose length of 400 mm):

S1/K1 = 0,8 mm,
 S2/K2 = 0,5 mm,
 S4/K4 = 0,25 mm,
 S8/K8 = 0,13 mm – negligible in larger TOX®-Powerpackages

Attention: Due to the compressibility of the oil, the following loss of power stroke occurs when the device is fitted to the TOX®-Powerpackage (given a

Order no.	Length
ZHM	See text
Order example:	ZHM 630



Oil pump ZP3/100

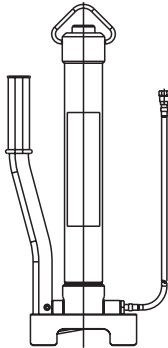
Oil pump of simple construction for refilling the TOX®-Powerpackage with bubble-free oil. Body made of metal, filling hose made of transparent material. Specially suitable for refilling small oil quantities (e.g. for TOX®-Powerpackages up to type S 08). This pump is recommended for refilling large oil quantities only on an occasional base.

Pumping medium hydraulic: oil DIN 52524 HL or HPL with 32 cSt viscosity at 40°C.

- Pump capacity: 2.5 cm³/stroke
 - Container filling volume 1l
 - Max. permissible back pressure 10 bar
 - Hose length 500 mm

Order no.
ZP 3/100

Accessories/Special Models



Oil pump ZP 1/100

Special in-house development for refilling the TOX®-Powerpackage with bubble-free oil, solid construction with pedestal. Frame and filling hose are transparent so that the oil level of the pump can be controlled. As handling requires little force, this pump is specially suitable for refilling larger oil quantities or for the maintenance of a

high number of TOX®-Powerpackages. Pumping medium: hydraulic oil DIN 51524 HL or HPL with 32 cSt viscosity at 40° C.

- Pump capacity: 2.5 cm³/stroke
- Container filling volume 0,35l
- Max. permissible back pressure 10 bar
- Hose length 500 mm

Order no.
ZP 1/100

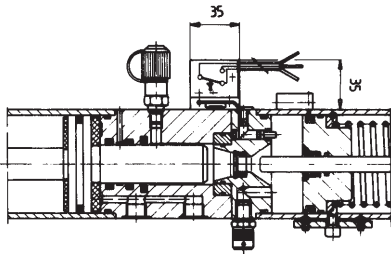


Tool Set to Replace Seals of TOX®-Powerpackage Cylinders

Special tools facilitate the removal and installation of seals.

The carrying case also contains instructions and tips on the use of the tools.

Order No.
ZWS 01



Oil level monitor ZU

When the minimum oil level is reached, the indicator pin integrated in the TOX®-Powerpackage actuates a switch (can be pneumatic or electric). Mounted via steel strip.

Manual reset.

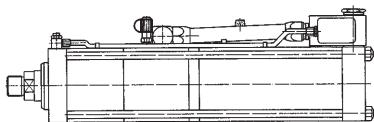
Can be retrofitted to all TOX®-Powerpackages.

Type **ZU 01** = floating contact set with step function (open/close)
Contact load rating 0 - 30 V DC
Constant current 5 A
Cable length 2 m.

Type **ZU 02** = 3/2-way valve with locking zero setting (make contact) Connecting thread M5

Type **ZU 03** = as for **ZU 02**, but with quick connector

Order no.
ZU 01 electric
ZU 02 pneumatic (connecting thread M5)
ZU 03 pneumatic (quick connector)



TOX®-Powerpackage for use in the food industry ZLM

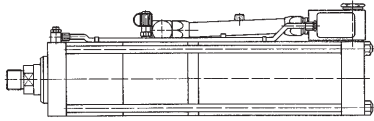
All TOX®-Powerpackages are available on request with food grade oil and grease lubrication. Both lubricants are certified according to USDA-H11 and are used wherever there is a chance of occasional, technically unavoidable contact between foodstuffs and lubricant.

These TOX®-Powerpackages are used in industrial food manufacturing, processing, filling and packaging machines, as well as in the pharmaceutical and cosmetics industry.

Order no.
S 1.32.6 - ZLM

└── Food-grade version
└── Order no. of TOX®-Powerpackage

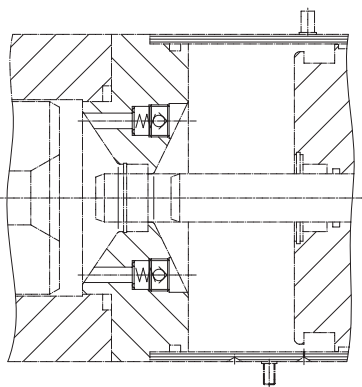
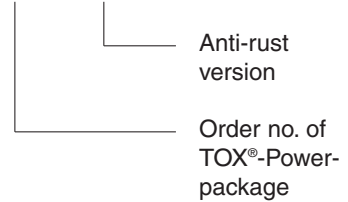
Special Models



Anti-rust execution ZRO

All TOX®-Powerpackages can be supplied with rust protection on request. All individual parts are either chromium-plated, galvanised or primed and painted, whereby stainless steel is not generally used. These devices are particularly suitable for use in the food and packaging industries.

Order no.
S 1.32.6 - **ZRO**



TOX®-Powerpackage with power bypass ZLB

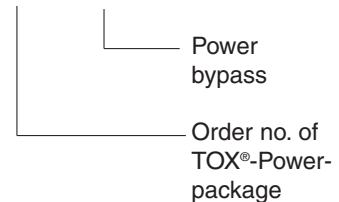
In the event of control errors, or in the case of special applications (particularly punching operations), the strong acceleration of the working piston after punching through the material may cause an underpressure in the high-pressure oil chamber of the TOX®-Powerpackage and so lead to malfunctions. Such an underpressure can be prevented with the patented, integrated power bypass system ZLB available for the TOX®-Powerpackage.

It is also possible to use the **bypass** system for the realization of long power strokes. Thus the characteristics of operation will be: approach stroke - power stroke - approach stroke - power stroke - approach stroke - power stroke - powerstroke etc. which will e.g. be necessary for the mounting of bushes.

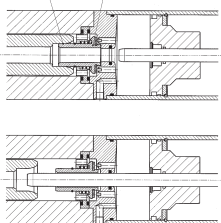
The speeds required for these operations should be kept relatively low, however. Please contact us for more detailed advice if you intend to use your equipment for the above purposes.

A further development of the ZLB, the bypass ZHD with hydraulic dampening is a standard feature on all TOX®-Powerpackage cylinders S 4 – S170 (see below).

Order no.
S 1.32.6 - **ZLB**



Buffering gap Bypass valve



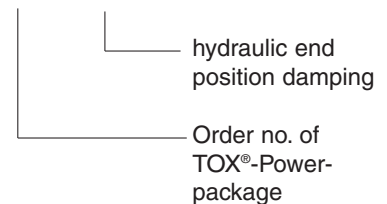
Power bypass ZHD with hydraulic end position cushion

A patented further development of the power bypass ZLB, the integrated hydraulic end position dampening (non adjustable) provides optimum cushioning of the working rod at the end of the return stroke. This feature is especially useful in applications with heavy tooling weight and high cycle speeds. This results in longer tool life and reduced noise level of the TOX®-Powerpackage, even on severe working conditions.

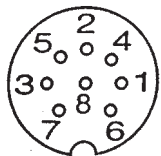
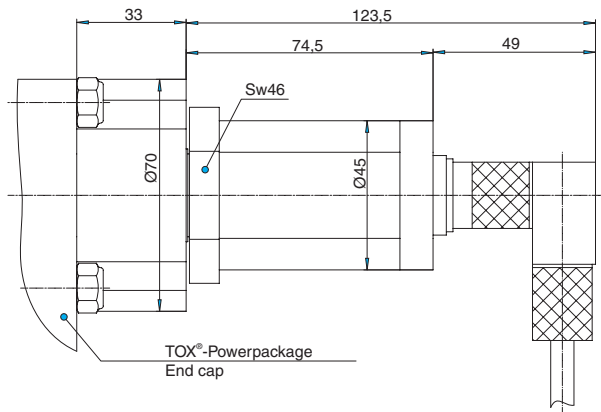
TOX®-Powerpackage cylinders S 4 – S170 come standard equipped with bypass and end position dampening.

K cylinders are available with ZHD on request.

Order no.
K 4.100.10 - **ZHD**



Special Models



View of soldered connection of the bush body.

Connector S 32 for shielded cable (max. 20 m) Ø 6 to 8 mm.

Output signal

pin	cable	
1	YE yellow	not occupied
2	GY grey	0 V
3	PK pink	10 ... 0 V
4	not occupied	
5	GN green	0 ... 10 V

Distribution voltage (external)

pin	cable	
6	BU blue	GND (1)
7	BN brown	+24 V DC
8	WH white	GND

(1) Reference potential for distribution voltage and EMV-GND.

Analogue absolute position transducer ZKW

The path transducer indicates the absolute actual position of the TOX®-Powerpackage piston, even in the event of a power interruption. The measuring system works contactless. Therefore it is free of wear, insensitive to dirt and interferences. Final values are adjustable. CANopen and PROFIBUS-DP interfaces are available on request.

Technical data:

Reproducibility: $\leq \pm 10 \mu\text{m}$

Current Supply:

Distribution voltage 24V DC $\pm 20\%$ (stabilized)

Remaining ripple: $\leq 0,5 V_{SS}$

Current consumption: $\leq 150 \text{ mA}$

Electric strength

GND against housing 500V.

Exits:

Output voltage 0 ... 10 and 10 ... 0 V

Load $\leq 5 \text{ mA}$

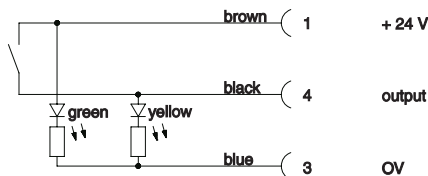
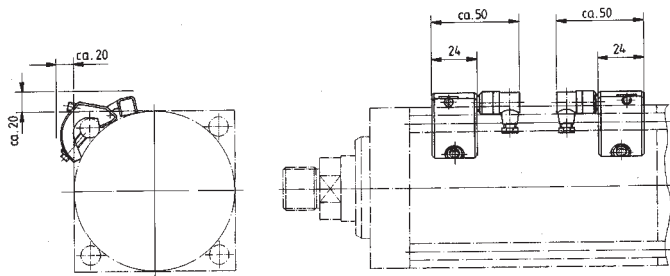
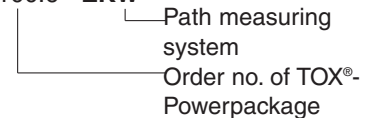
Remaining ripple $\leq 5 \text{ mV}$

System of protection: IP 67

Can be supplied with all type K, AT, HZ TOX®-Powerpackages with the exception of AT1, K1, HZ 2-5.

Order no.:

K 2.100.6 - ZKW



Feed and return stroke monitor ZHU

Attached to the working piston is a permanent magnet which is detected by the sensors through the special tube.

Accessories, please order separately:

- Proximity switch, magnet-sensitive, with LED, ZHS 001.000
- Holding angle for proximity switch ZHU (S/K 1)
- Holding angle for proximity switch ZHU (S/K 2-15)
- Holder for ZHU (S/K 30), ZMP 001.003
- Cable box M8x1 with 5m cable, straight, without LED

Attention

The total stroke of the TOX®-Powerpackage is shortened by the ZHU installation: for types S/K/AT 01-30 by 10 mm and HZ 02-48 with total stroke up to 200 mm by 20 mm. For TOX®-Powerpackages line-Q (Q-S, Q-K, RZS) the full stroke length remains.

Technical data:

Operating voltage: UB 10 30 V DC

Residual ripple: $\leq 15 \%$

Max. admissible

current: 1a 200 mA

Turn-on time: $\leq 0,5 \text{ ms}$

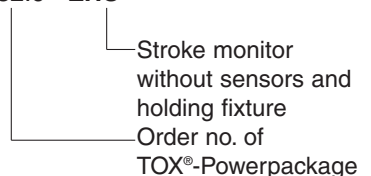
Turn-off time: 20 – 50 ms

Hysteresis: 0,5...1 mm

Plug connection: With LED, M8 according to DIN 43 650 IP 65

Order no.:

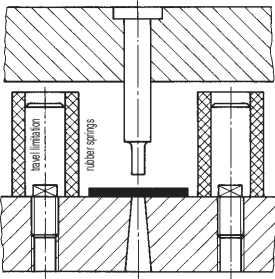
S 1.32.6 - ZHU



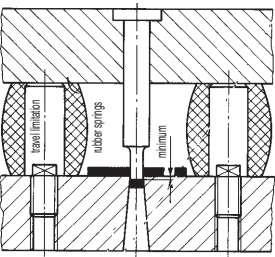
Mounting instructions

Rule for mounting: once the power stroke has been travelled, the stroke of the working piston must be limited. In forming operations such as riveting, stamping, stretching, etc., this is ensured by the nature of the application, whereas in punching, the working piston can continue moving after the punching process.

Tool in starting position UDC
UDC = upper dead centre



Tool after punching LDC
LDC = lower dead centre
The tension of the rubber spring must be adapted to the punching process.



This must be prevented by a stroke limiter in the tool. It can also be prevented by mounting the TOX®-Powerpackage so that the fast approach stroke together with the required power stroke is identical to the total stroke of the TOX®-Powerpackage e.g. S 8.32.6: required power stroke 4 mm, total stroke of TOX®-Powerpackage 32 mm, gives a necessary fast approach of 28 mm. Fast approach 28 mm + power stroke 4 mm = total stroke 32 mm, which is then limited in the TOX®-Powerpackage.

In this case it is necessary to use an aluminium limit stop washer (please specify when ordering). If stroke limitation is not possible in the tool, the TOX®-Powerpackage version .51 with stroke adjustment can be used.

Note: an end of stroke hydraulic damping type ZSD is also available for TOX®-Powerpackage cylinders with total stroke limiter (see page 20).

Generally care must be taken that the power stroke of the TOX®-Powerpackage used for punching operations is only used to a maximum of 80%. Example S 8.32.6 = power stroke 6 mm, used power stroke 80 % = 4.8 mm.

For punching operations only TOX®-Powerpackages with integrated bypass ZLB, ZHD should be used.

Fastening: use only high-quality, high-tensile strength socket head cap screws to mount the TOX®-Powerpackage, grade 12.9 screws.

Pressing force: specified at 10 bar resp. 6 bar compressed air in each case. The pressing force changes in linear relation to the compressed air. Example: S 8 at 10 bar 77 kN pressing force, at 5 bar 36 kN. Force values $\pm 5\%$. Minimum pressure 2 bar. By adding a pressure control valve, the TOX®-Powerpackage can be easily adjusted to the work to be performed. This means a considerable saving on energy costs.

Control: control is done via a 4/2 or 5/2 way valve, as for normal double-action pneumatic cylinders.

Speed: the speed can be regulated as required by installing one-way throttle in the fast approach stroke and return stroke conductor of the unit. The speed of the power stroke can also be regulated, e.g. for pressing in bushes, projecting, drawing, etc.

Attention: The return stroke speed of the working rod must be greater than the approach stroke speed.

The cross section of the valve must correspond with the linkage dimension of the TOX®-Powerpackage (linkage dimension "E"). The cross sections of the compressed air piping should be as large as possible. Otherwise the stroke speed of the cylinder will be reduced, i.e. the cylinder will not run free from stick-slip.

Measuring and control

connection: available on the unit in the form of a screw connection. This enables the oil pressure, proportional to the pressing force, to be either indicated on a pressure gauge or transmitted to a pressure switch in order to generate a switching impulse. See accessories.

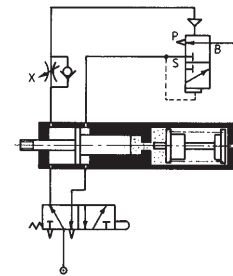
Temperature range:

The TOX®-Powerpackage may be operated between $T_{\min} = 10^{\circ}\text{C}$ and $T_{\max} = 60^{\circ}\text{C}$.

Maintenance: operated with slightly oiled, dry air.

Service: the unit can be easily dismantled should it be necessary to change the seals.

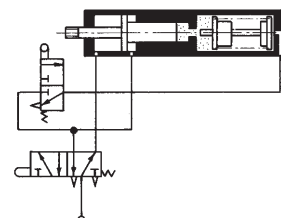
Change-over from fast approach stroke to power stroke takes place automatically according to the ram pressure principle. Valves included in TOX®-Powerpackage as standard feature. The speed of the change-over can be regulated with throttle X (picture 1).



picture 1

Special change-over controls:

the standard ram pressure change-over control can be replaced by a **distance-dependent** control. This should be used if: 1. the TOX®-Powerpackage is used with the piston rod pointing upwards and the tooling is heavy, 2. the fast approach stroke is interrupted due to fixture spring pressure, prior to the necessary power stroke (picture 2).



picture 2

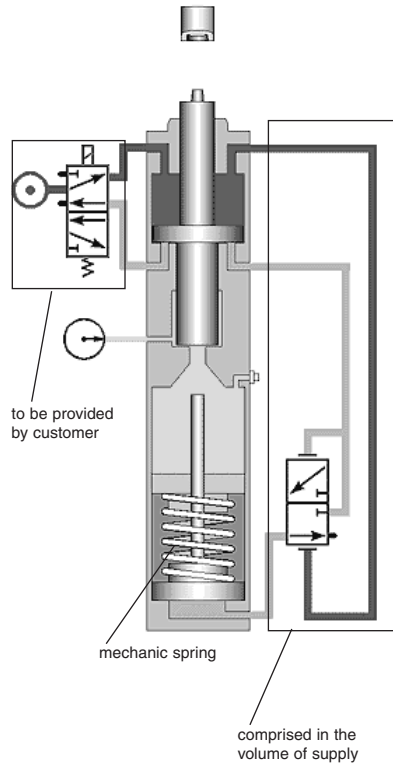
We face up the system comparison

Pressforces from 2 to 2000 kN

Total strokes up to 400 mm, power strokes up to 80 mm

1) Function of the TOX®-Powerpackage

It is handled like a pneumatic cylinder and has the pressforce of a hydraulic cylinder. This means for you: The TOX®-Powerpackage is initiated like a normal double-acting pneumatic cylinder via a 4/2- or 5/2-way valve. The changeover from fast to power stroke takes place automatically whenever the working rod hits an opposing force during its fast approach.



2) Functioning warranty

The standard TOX®-Powerpackages of type S and K have a guaranteed working life of 10 million strokes within 12 months and without shifts limitation.

3) Energy consumption

With the TOX®-Powerpackage up to 90 % energy cost in comparison with pneumatic or hydraulic cylinders can be saved, as only the powerstroke is operated at full power but not the fast and return stroke!

4) Investment

On comparable technical conditions, TOX®-Powerpackages are up to 20 % less expensive than hydraulic, pneumatic or toggle joint systems.

5) Capacity

The TOX®-Powerpackage behaves like a pneumatic cylinder in its operation and with regard to the stroke speed. With smallest dimensions it does hard work at high forces as known from hydraulic systems but, however, without the use of an expensive hydraulic unit, in a clean, reliable way and for a long period of life.

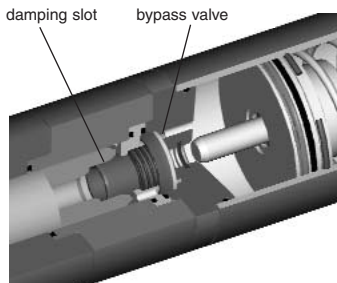
6) Environment

The TOX®-Powerpackage meets clean-room conditions, has an extremely low noise level due to the "soft-touch" approach. Only little noise of outgoing air because of the reduced air consumption. No oil disposal or oil contamination from leakages, no noise creation from a running hydraulic pump.

7) Technology of the TOX®-Powerpackage

- The **patented power bypass** prevents an under-pressure in the oil system. Therefore a universal application as e.g. punching, welding etc. is possible.
The power bypass is the basic requirement for a troublefree application of each pneumo-hydraulic system.
- **Patented, hydraulic end position damping** in the DC for a quiet and material-protecting operation

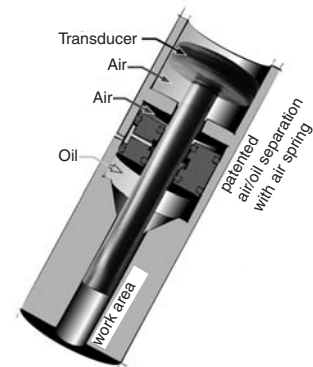
If short fast approach strokes are required, please contact TOX® PRESSOTECHNIK. This is a standard feature for all TOX®-Powerpackages type S 04 – S 170.



- Stroke monitor **type ZHU** and analogue absolute position transducer **type ZKW** to determine the precise position of the working rod.
- **Special types and accessories**
We will find a solution for all your requirements and problems.

- The **ingenious** double function of the **mechanic spring** entails energy savings. No additional air is needed for the return stroke of the transducer and the automatic preloading of the feed piston allows for any mounting position of the cylinder. It is a matter of course that these elements are also included in the 10 million stroke guarantee. Because of the spring, no additional air connection on the unit is required.

- **Patented absolute air/oil separation** is a prerequisite for a troublefree operation over a long period of time. A ring groove connected to the atmosphere avoids the "carry-over" of air into the oil.



- **Sealing system:** The use of longlife seals and a continuous development are guaranteed with the TOX®-Powerpackage, the evidence in the 10 million strokes guarantee.

- The **double-bearing** arrangement of the working rod ensures an extraordinary good guidance.



8) Service maintenance

TOX® companies and agents throughout the world are at your service. If needed e.g., in case of a service, a replacement cylinder can be provided of a nominal charge, during the service period.

TOX®-Powerpackage

Air pressure/oil pressure/pressing force
TOX®-Powerpackage type S, K

Oil pressure - pressing force table for 10 bar

Air pressure (bar)	S 1/K1		S 2/K2		S 4/K4		S 8/K8		S 15/K15		S 30/K30		S 50/K50		S 75		S 100	
	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN
2	35	1,3	50	2,9	55	6,2	55	12	55	23	46	38	48	61	38	101	40	106
3	65	2,4	85	4,9	95	10,6	95	20	95	39	90	74	87	110	81	212	84	220
4	95	3,4	130	7,3	130	14,5	135	29	130	53	130	106	128	161	118	308	125	326
5	125	4,5	162	9,1	170	18,8	170	36	170	69	170	139	168	212	146	382	167	435
6	155	5,6	205	11,5	205	22,7	210	44	210	85	210	171	209	263	186	486	208	542
7	185	6,6	245	13,7	245	27,1	245	52	245	100	250	204	250	315	218	569	258	671
8	210	7,6	285	15,9	285	31,5	285	60	285	116	290	236	291	366	254	663	296	770
9	240	8,6	325	18,1	325	35,8	325	69	325	132	330	269	330	415	286	746	345	897
10	275	9,8	365	20,3	360	39,7	365	77	365	148	365	297	369	464	320	835	385	1000

Specifications only apply to TOX®-Powerpackages of measure A = A₂, all other types on request.

Tolerance ± 5%

Oil pressure - pressing force table for 6 bar

Air pressure (bar)	S 2/K2		S 4/K4		S 8/K8		S 15		S 30		S 50		S 75		S 100	
	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN	P _{oil} bar	F kN
2	90	4,9	75	8,2	100	20,7	95	38,0	77	62	56	71	72	187	98	253
3	145	7,8	135	14,7	165	34,0	155	62,0	141	114	130	163	134	347	172	444
4	200	10,8	190	20,6	235	48,3	215	85,0	201	162	195	244	190	492	246	634
5	260	13,9	240	26,0	300	61,6	275	109,0	264	212	255	318	251	649	325	837
6	320	17,1	290	31,4	360	73,9	335	133,0	328	264	325	406	312	806	400	1030

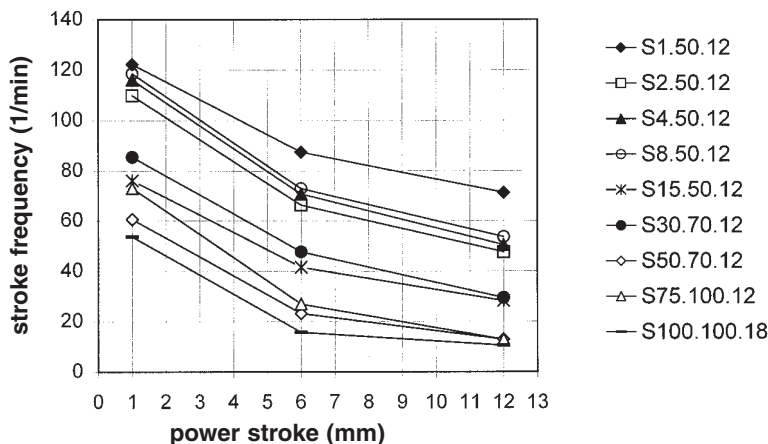
Specifications only apply to TOX®-Powerpackages of measure A = A₂, all other types on request.

Tolerance ± 5%

Stroke frequency of types S and K, series 10 bar

At 70 % effective force, fast approach stroke 38 mm and 10 % use of the fast approach stroke force

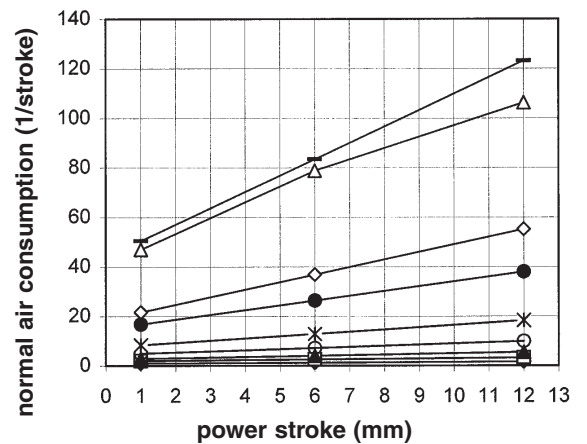
Operation at 6 bar air pressure.
Max. stroke frequency requires ZLB or ZHD.



Air consumption type S and K, series 10 bar

At 70 % effective force, fast approach stroke 38 mm and 10 % of the fast approach stroke force

Operation at 6 bar air pressure



Do you know already the intelligent alternative?

TOX®-ElectricDrive

Main features:

- High speed
- Highly dynamic
- Adjustable force and position
- Precise
- Long lifetime
- Modular design
- Smart Software: TOX®_{soft}Ware
- Almost all Controller interfaces available

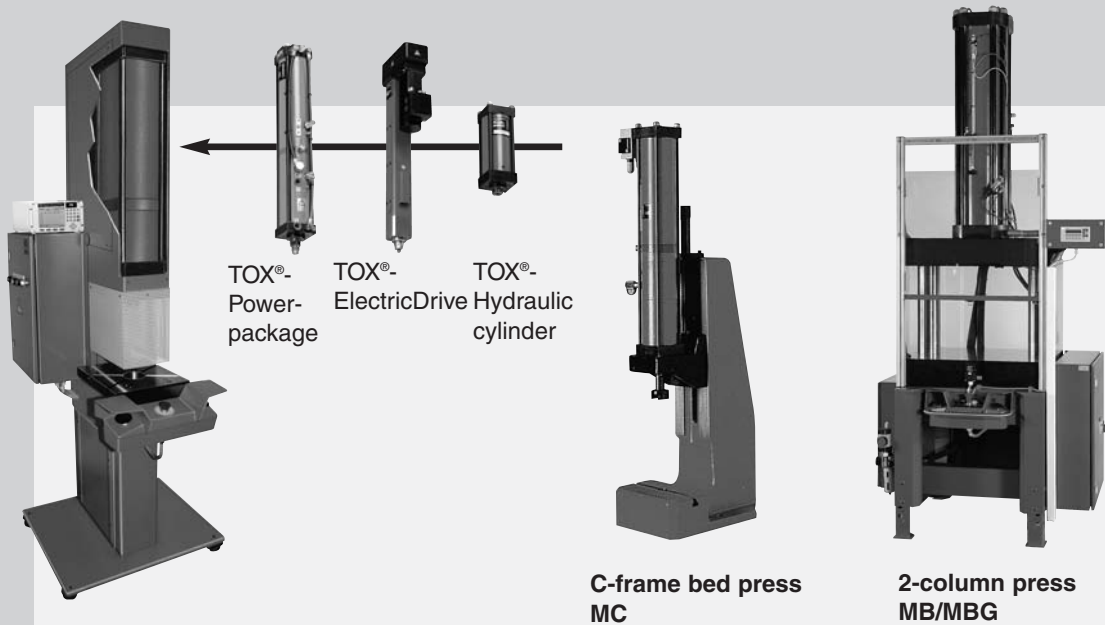


The slim drive
TOX®-Electric Power Module EPMS
 10, 25, 55, 100, 200 kN
 Standard design.



The compact drive
TOX®-Electric Power Module EPMK
 10, 25, 55, 100, 200, 400 kN
 Compact design.

All drive alternatives can be used with the complete range of TOX®-Presses



Would you like to get more information? Get in touch with us.

Subject to technical alterations.