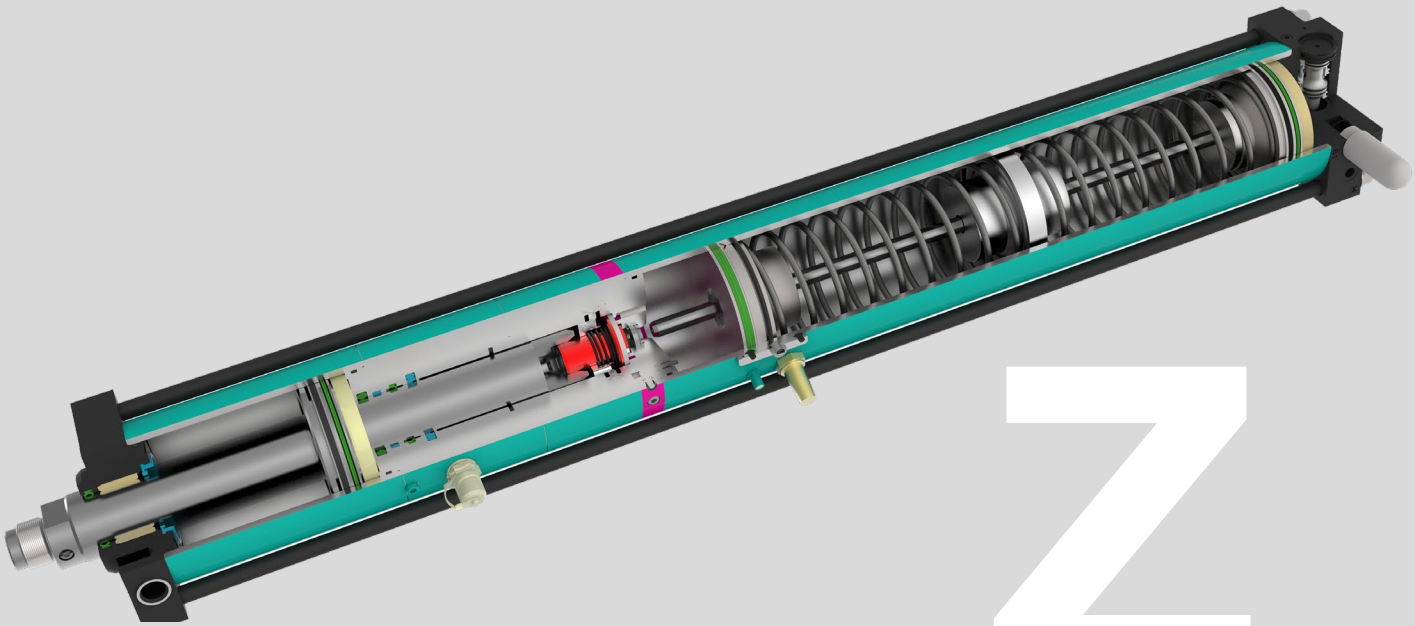
TOX® Powerpackage Accessories

Data sheet 10.10
2026/01



Z

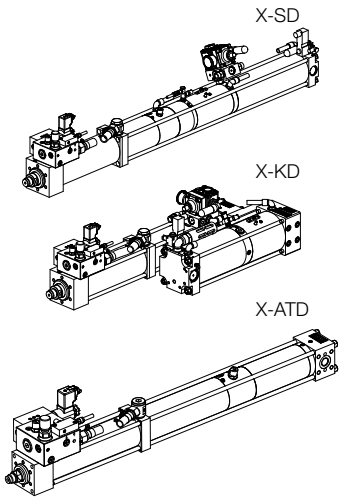
TOX® PRESSOTECHNIK SE & Co. KG, Riedstrasse 4, 88250 Weingarten/Germany
Find your local contact at: www.tox.com

Subject to technical modifications.

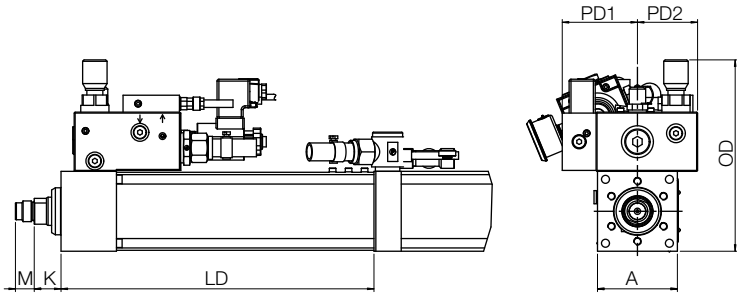
TOX® Powerpackage Accessories

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TOX® Powerpackage with adjustable damping ZED



The TOX® Powerpackage with adjustable damping ZED is ideal for optimal, even pressing and punching with reduced impact. The approach- and return force are lower than for TOX® Powerpackages without adjustable damping ZED.



		at 6 bar air pressure									
Type	Total stroke mm	Approach force N	Return force N	Average approach speed* [mm/s	Average return speed* mm/s	Average power stroke speed* mm/s	L_D mm	O_D mm	P_{D1} mm	P_{D2} mm	For TOX® Powerpackage type
ZED 02	200 300 400	1160	1000	390	383	96	326 426 526	189	80	64	X-S/X-K/X-AT 02
ZED 04	200 300 400	1560	1320	345	299	58	333 433 533	204	80	64	X-S/X-K/X-AT 04
ZED 08	200 300 400	2970	2490	210	252	31	339.5 439.5 539.5	229	72	72	X-S/X-K/X-AT 08
ZED 15	200 300 400	4650	3280	296	241	56	350 450 550	269	84	84	X-S/X-K/X-AT 15
ZED 30	200 300 400	7620	4640	257	221	36	359 459 559	304	84	84	X-S/X-K/X-AT 30
ZED 50	200 300 400	9630	5280	–	–	–	382 482 582	334	84	84	X-S/X-K/X-AT 50

Tolerance of ± 50 N und ± 5 mm/s applies to all force and speed data
*all speed data valid without any opposing force and any tooling weight.

For TOX® pneumatic spring Powerpackages with total strokes different than those shown, the next size damping cylinder for the same capacity will be used, e. g. for a stroke of 100 mm, the cylinder with 200 mm stroke equal press force.

Scope of delivery:

- Stroke sensing ZHU (without sensors) up to version 30.
- Power bypass ZHD with end position damping for all series X-S, X-K, X-AT and starting from EL 04. For EL 02 and EK cylinders including power bypass ZLB.
- Positive stop with elastomeric damping FUD
- Additional HP connection for damping pressure monitoring
- External power stroke initiation including pneumatic valve (solenoid operated) and power stroke valve mounted on cylinder
- All necessary electrical connectors (without cables)
- Flow control valve provides throttling

Note:

For older Powerpackages of the series EL, EK and AT, the total stroke is reduced by 10 mm due to the signal transducer of the stroke monitoring.

Accessories and options:

The TOX® Powerpackage options are also available for these units (see TOX® data sheet 10.20).

Order no:

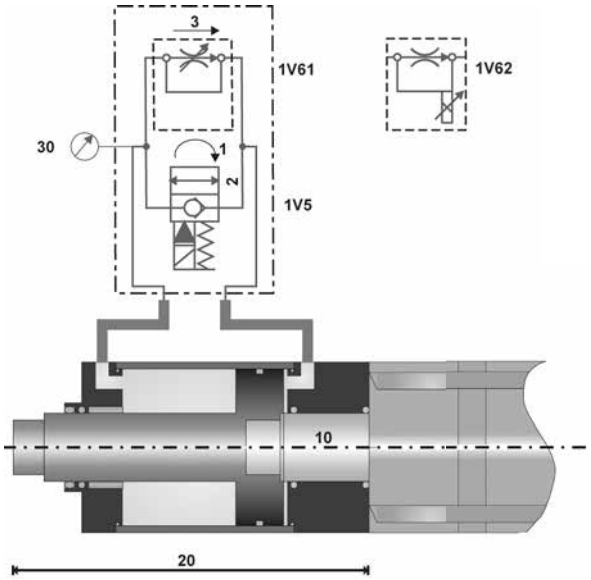
X-S 008.2030.100.12 – ZED
- ZED: Adjustable damping
- X-S 008.2030.100.12: TOX® Powerpackage

TOX® Powerpackage Accessories

TOX® Powerpackage with adjustable damping ZED

Function
The TOX® Powerpackage type ZED can be ordered either with a manually adjustable flow control valve or with a solenoid operated proportional flow control valve.

Solenoid operated proportional flow control valve:
- Positional accuracy for damping in approach and power strokes < +/- 0.03 mm. In order to achieve this accuracy, the desired position must be approached slowly (e. g. over a speed ramp).
- Minimum speed adjustment for closed flow control valve during power stroke: < 0.1 mm/s
- Minimum operating air pressure: 3.0 bar



The pneumatic activation of the approach stroke occurs in the same way as for a TOX® Powerpackage with air spring. The power stroke activation is done electrically over a position sensor, as well as the switching on and off of the damping function (solenoid valve **1V5**). A magnetic piston guarantees for the timely switch point. The sensors are to be ordered separately.

The damping effect can be adjusted manual at the flow control valve **1V61** or electrically using a solenoid operated proportional flow control valve **1V62**. As option, this can be monitored over a display **30**.

Manual flow control valve:
- Reaction time and reaction distance when switching the damping during approach:
  Reaction time
  ZED 02/04/08 < 0.07 sec
  ZED 15/30 < 0.14 sec
- Reaction distance dependent on the approach speed
  ZED 02/04/08 min. 6 mm to max. 34 mm
  ZED 15/30 min. 6 mm to max. 38 mm
  (high approach speeds result in increased reaction distance)
- Switching repeatability during approach at max. speed:
  ZED 02/04/08 < 4 mm
  ZED 15/30 < 7 mm
- Minimum speed adjustment for closed flow control valve during power stroke:
  ZED 02/04/08 < 0.1 mm/s
  ZED 15/30 < 0.18 mm/s
- Minimum operating air pressure: 3.0 bar

The return stroke can be activated over a position signal or a force signal at any time due to the inteagrated check valve independent of the switching position of the solenoid valve **1V5**.

Function:
A hydraulic damping cylinder **20** is mounted on the working rod **10** of a standard TOX® pneumatic spring Powerpackage.

During the approach stroke, the oil flows, depending on the cylinder version either through a bi-directional manual flow control valve **1V61** or an electrically operated proportional flow control valve **1V62** from one side of the piston to the opposite side, thereby creating a constant, throttled volume stream **3** and thus a dampened movement.

For a rapid fast approach stroke, the solenoid valve **1V5** can be switched electrically **1** and the oil can flow without being throttled **2**.

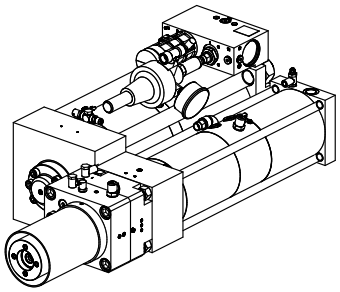
Caution:
For TOX® Powerpackages with the damping option ZED, the oil pressure can not be used to measure the force and to switch the valve.

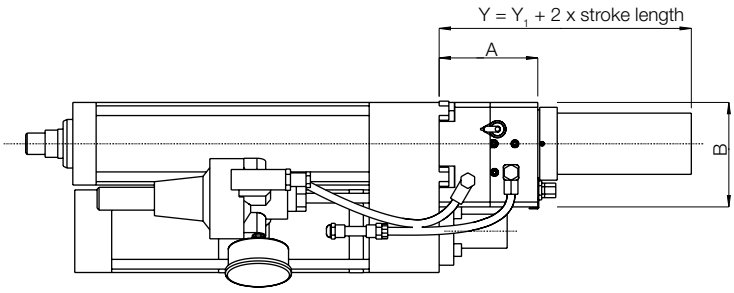
Valve data

	Electric 2-way valve	Manual 2-way flow control valve	Electric proportional 2-way flow control valve	Proportional plug amplifier, mounted directly to 1V62
	1V5	1V61	1V62	–
Ambient temperature	Up to + 50° C	Up to + 50° C	Up to + 50° C	–
Hydraulic temperature	Up to + 70° C	Up to + 70° C	Up to + 70° C	–
Mounting orientation	Any	Any	Any	–
Function / operating modet	Solenoid, direct operated, normally closed	Manual, mechanic key actuation via open end wrench and screwdriver Operating distance = 2.5 mm Operating range = 900° (2.5 turns) Adjusting accuracy <= 1 %	Proportional solenoid push type	Proportional amplifier with clocked current regulator. The dither amplitude is variable. Min. and max. solenoid current separately adjustable. Integrated linear ramping. The input free/block allows for the block function. Stabilized output voltage provides an external setpoint device.
Electric parameters	Standard nominal voltage UN = 24 VDC Nominal power = 26 W Current tolerance +/-10 % dependent on nominal voltage Relative switch-on time 100 % ED	–	Standard nominal voltage UN = 24 VDC Max. current IG = 680 mA Relative switch-on time 100 % ED Repeatability <= 2 % * Hysteresis <= 5 % * * under optimum dither signal	Supply voltage UN = 24 VDC (Tolerance 22 – 36 VDC) Setpoint input 0 – +10 VDC Input resistance >= 100 kOhm Stabilized output voltage 10 VDC, max. load 2 mA Dither: Adjustable frequency 60 – 250 Hz Preset at 200 Hz No-load power 0.3 W Min. current Imin adjustable 30 – 400 mA Preset at 150 mA Max. current Imax adjustable Imin – 1200 mA Preset at 700 mA Ramp up/down are set by the trimming potentiometers Ramp time 0.25 – 6 sec
Connection type	Cable socket ISO 4400 / DIN 43650	–	Cable socket EN 17501-803 / ISO 4400	Power plug can be rotated 180°, with 1.5 m long cable
Protection class	IP 65 per EN 60529	–	IP 65	IP 65, mounted per DIN 40050

TOX® Powerpackage Accessories

TOX® Powerpackage with cutting impact damping ZSD





Type	A	B	Y_1	Y	For TOX® Powerpackage type K*/AT with total stroke limiter version 51/81
ZSD 04	101.5	107.5	60	$Y = Y_1 + 2$ x stroke length	for K/AT 04... from stroke 100 mm
ZSD 08	101.5	145	67		for K/AT 08... from stroke 100 mm
ZSD 15	120.5	181.5	83		for K/AT 15... from stroke 100 mm
ZSD 30	120.5	251	100		for K/AT 30... from stroke 100 mm
ZSD 50	122.5	295	105		for K/AT 50... from stroke 100 mm
ZSD 75/100	130	395	130		for K/AT 75.../K/AT 100 from stroke 100 mm

Further dimensions for total stroke adjustment on request. *Type K in pneumatic spring execution Dimensions in mm

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

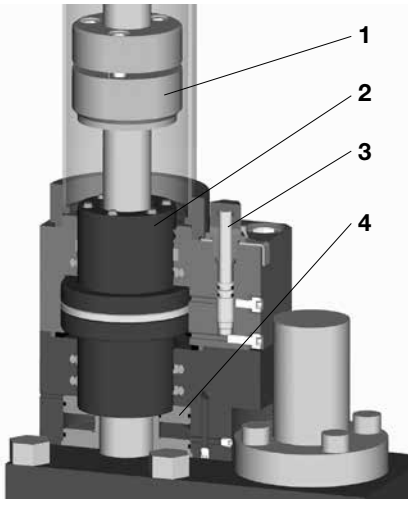
Function:
The adjusting nut (total stroke limiter) **1** contacts the damping piston **2** during approach or power stroke depending on the adjustment position. The damping piston **2** compresses hydraulic oil through the throttling needle **3**. The damping effect can be adjusted with the throttling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

Can be mounted in any orientation. The adjustable cutting impact damping works in any position.

The adjustable cutting impact damping is completely installed on the cylinder. No plumbing is required by customer.

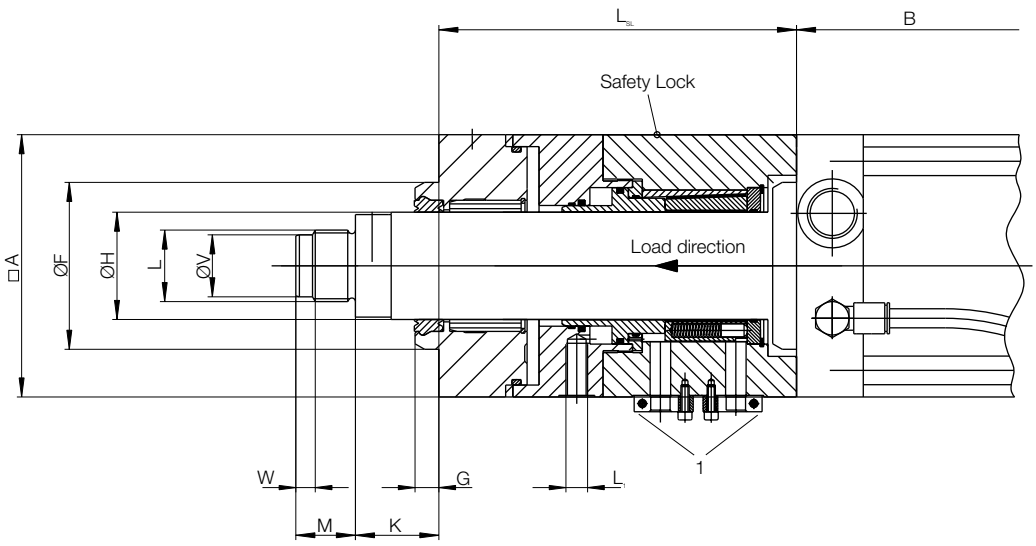
Advantages:

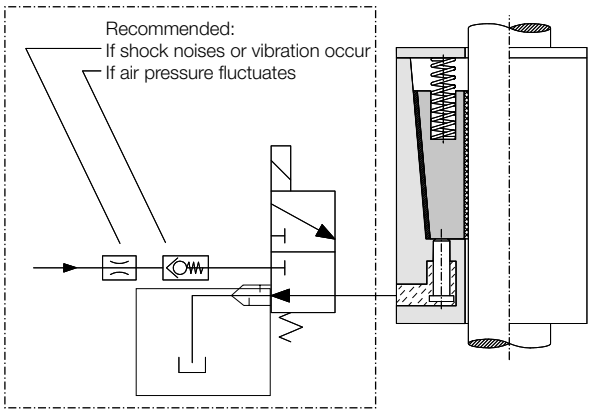
- Hydraulic damping of end of stroke
- Cushioning infinitely adjustable
- Total stroke infinitely adjustable
- Can be mounted in any orientation
- Protects tooling and machine
- Reduces noise levels
- Maintenance-free



Order no.
K 04.51.200.20 - ZSD
Cutting impactdamping
Order no. TOX® Powerpackage

TOX® Powerpackage with holding brake „safety rod catcher“ ZSL





Not included

Electrical control

The electrical control of single acting locking brakes must be realized by the customer observing all applicable local and national safety regulations for power driven presses.

Clamps 1 for Ø12 mm sensors are included with unit (sensors are not included). Nominal switching distance of 2 mm (flush mountable).

Type	L_{SL}	L_1	permissible load* kN	For TOX® Powerpackage	Required length of sensors
ZSL 04	200	G1/4	10	S/K/X-S/X-K/X-AT 04	45
ZSL 08	200	G1/4	10	S/K/X-S/X-K/X-AT 08	45
ZSL 15	250	G1/4	15	S/K/X-S/X-K/X-AT 15	45
ZSL 30	256	G1/4	20	S/K/X-S/X-K/X-AT 30	70
ZSL 50	275	G3/8	25	S/K/X-S/X-K/X-AT 50	70
ZSL 100	on request	G3/8	on request	S/K/X-S/X-K/X-AT 75, 100	
ZSL 170	414	G3/8	60	S/K/X-S/X-K/X-AT 170	

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

Dimensions in mm

Accessories

to be ordered separately:

- Sensor M12x1x45
- Sensor M12x1x70
- Cable box incl. cable (5 m)

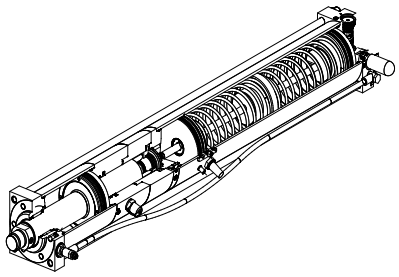
Order no.

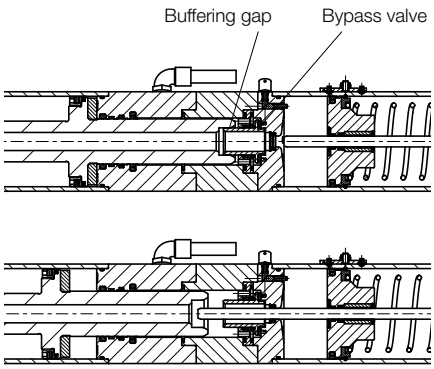
S04.100.06D - ZSL

- ZSL: safety rod catcher
- S04.100.06D: Order no. TOX® Powerpackage

TOX® Powerpackage Accessories

TOX® Powerpackage with power bypass ZLB with hydraulic end position cushion ZHD in return stroke





A patented further development of the power bypass ZLB, the integrated hydraulic end position dampening (non adjustable) provides optimum cushioning of the working piston 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.

Compatible with:

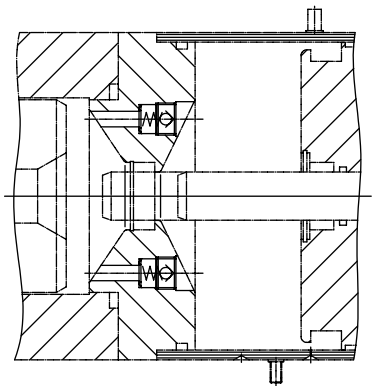
- The TOX® Powerpackages Q-S, Q-K, X-S, X-K, X-AT, S 4 – S 170, K 75 – K 170 are equipped as standard with bypass and end position dampening.
- TOX® Powerpackages type K 2 – K 50 are available with ZHD on request. Please note: The overall length of the TOX® Powerpackage K type will be increased.

Example for ordering

K 4.100.10 - ZHD

- ZHD: Power bypass with hydraulic end position cushion
- K 4.100.10: Order no. of TOX® Powerpackage

TOX® Powerpackage with power bypass ZLB



In the event of control errors, or in 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. This allows fast sequential power strokes with only partial back stroke. e.g. for pressing in bushings.
When using the application, please consider the reduced working speed.

Compatible with:

- The ZLB option can be ordered for the types K and S 1 – S 2.
- All other TOX® Powerpackages are equipped as standard with ZHD or can be ordered with this type of option (see above).

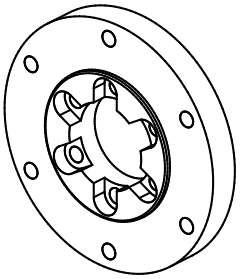
Order no.

S 1.32.6 - ZLB

- ZLB: Power bypass
- S 1.32.6: Order no. TOX® Powerpackage

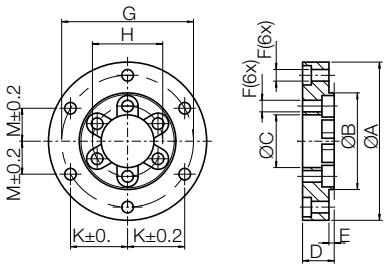
For TOX® Powerpackages, different mounting options are available:

Front mounting plate ZFV



Compatible with:

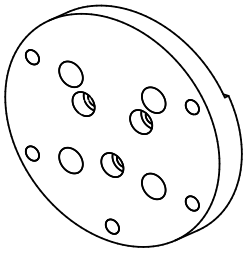
- TOX® Powerpackages line-Q, line-X and type S/K/AT
- TOX® Powerpackages with larger intensifier section A_2 > A: Dimensions on request.



Order no.	For TOX® Powerpackage	A	B_{fr}	C^{H8}	D	E	F	G	H	K	M
ZFV 1	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 1	90	55	30	18	3	6.6	75	40	32.5	18.75
ZFV 2	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 2	125	75	40	18	3	9	105	54	45.5	26.25
ZFV 4	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 4	145	85	50	21	3	9	125	64	54.1	31.25
ZFV 8	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 8	180	110	70	24	4	11	155	88	67.1	38.75
ZFV 15	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 15	225	135	75	29	4	18	195	100	84.4	48.75

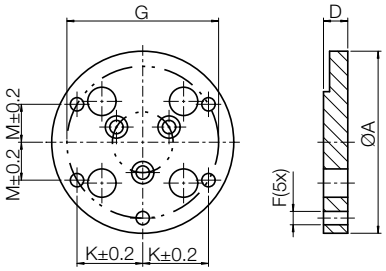
Dimensions in mm

Rear mounting plate ZFH



Compatible with:

- TOX® Powerpackages type S/K/AT
- Non retrofittable

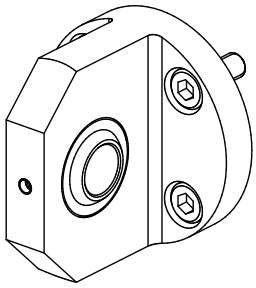


Order no.	For TOX® Powerpackage	A	B_{fr}	C^{H8}	D	E	F	G	H	K	M
ZFH 1	S/K/AT 1	90	55	30	18	3	6.6	75	40	32.5	18.75
ZFH 2	S/K/AT 2	125	75	40	18	3	9	105	54	45.5	26.25
ZFH 4	S/K/AT 4	145	85	50	21	3	9	125	64	54.1	31.25
ZFH 8	S/K/AT 8	180	110	70	24	4	11	155	88	67.1	38.75
ZFH 15	S/K/AT 15	225	135	75	29	4	18	195	100	84.4	48.75

Dimensions in mm

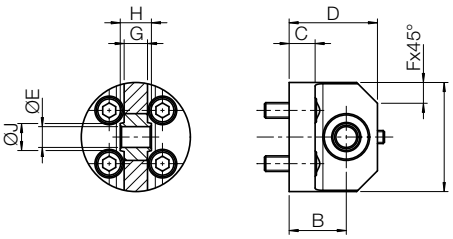
TOX® Powerpackage Accessories

Rear spherical bearing mount ZGH



Compatible with:

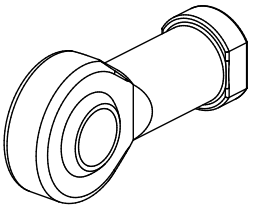
- TOX® Powerpackages type S/K/AT/X-AT/X-K
- TOX® Powerpackages with larger intensifier sections A_2 > A: Dimensions on request.
- Non retrofittable



Order no.	For TOX® Powerpackage	A	B	C	D	E^{H7}	F	G	H	J
ZGH 1	S/K/AT/X-K 1	42	22	10	34	8	8	9	12	10.4
ZGH 2	S/K/AT/X-K/X-AT 2	62	30	10	50	12	12	12	16	15.4
ZGH 4	S/K/AT/X-K/X-AT 4	72	40	12	64	16	16	15	21	19.3
ZGH 8	S/K/AT/X-K/X-AT 8	90	45	12	70	22	20	20	28	25.8
ZGH 15	S/K/AT/X-K/X-AT 15	100	50	15	84	30	20	25	37	34.8

Dimensions in mm

Front spherical rod end ZGK

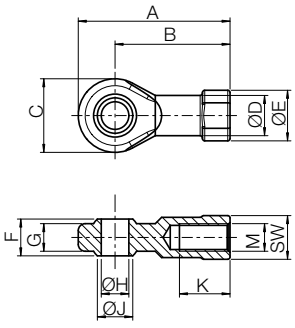


Compatible with:

- Retrofittable for all TOX® Powerpackages

Attention:

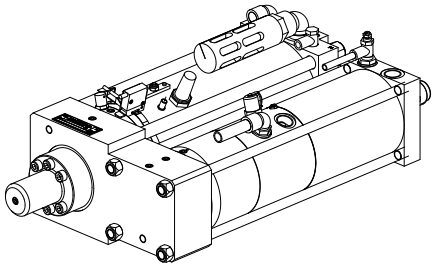
The rod end must be screwed securely against the shoulder on the working piston. Length compensation over the thread is not permissible.

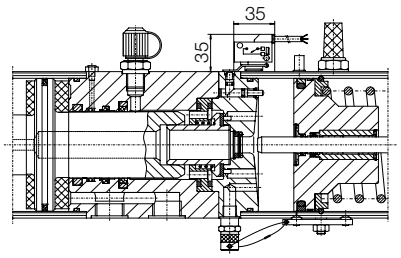


Order no.	For TOX® Powerpackage	A	B	C	D	E	F	G	H^{H7}	J	K	M	SW
ZGK 1	S/K/Q-S/Q-K/X-S/X-K/AT 1	66	50	32	17.5	22	16	12	12	15.4	22	M12x1.5	19
ZGK 2	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 2	85	64	42	22	27	21	15	16	19.3	28	M16x1.5	22
ZGK 4	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 4	111	84	54	30	37	28	20	22	25.8	37	M22x2	32
ZGK 8	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 8	145	110	70	40	50	37	25	30	34.8	51	M30x2	41
ZGK 15	S/K/Q-S/Q-K/X-S/X-K/X-AT/AT 15	145	110	70	40	50	37	25	30	34.8	51	M30x2	41

Dimensions in mm

Oil level monitor ZU





Dimensions in mm

If the minimum oil level is reached, the indicator pin integrated in the TOX® Powerpackage actuates a switch (pneumatic or electric). Mounted via steel strip. Manual reset.

Type ZU 01 = potential-free 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 (normally open contact) connecting thread M5

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

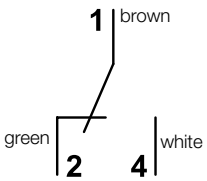
Compatible with:

- Can be retrofitted to all TOX® Powerpackages.

Order no.

ZU 01 electric
ZU 02 pneumatic (connecting thread M5)
ZU 03 pneumatic (quick connector)

Pin assignment switch



Positive stop FUD

A positive stop is required in the TOX® Powerpackage if the working piston in power stroke meets the internal end stop in the front flange. This is necessary, if the end stop in the power stroke cannot be realized by the tool or the bow. Especially for punching processes, where the working piston moves through to the internal end stop at high speed after punching, a positive stop is recommended.

Compatible with:

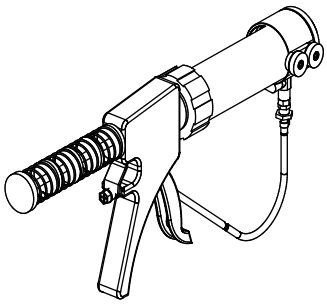
- TOX® Powerpackages of the series Q-S, Q-K, X-S, X-K, X-AT, RZS, RZK are equipped with a positive stop with elastomer damping by default. For these devices, the positive stop can be used at any time. The elastomer damping occurs approx. 2 mm before impact and the design of the damping allows compression only in power stroke. As a result, the dampening stroke of the TOX® Powerpackage is reduced by approx. 2 mm in fast approach stroke.
- For the following series, the positive stop FUD is available as an option: S, K, HZL, AT.

Order no.

S 08.00.100.06 – FUD
- FUD: Positive stop
- S 08.00.100.06: TOX® Powerpackage

TOX® Powerpackage Accessories

Oil pump ZP



Pumping medium: hydraulic oil DIN 51524 HL or HPL with 32 cSt viscosity at 40° C.

- Pump capacity: 9 ml/stroke
- Container filling volume 0.3 l
- Max. permissible back pressure 10 bar
- Hose length 800 mm
- Magnetic fixture

It guarantees the optimum maintenance concept and extended maintenance intervals. For easy, air-free refilling and reduction of the oil volume of the TOX® Powerpackage. Clear body and refill hose allow easy monitoring of the oil level in the pump. Little operator effort required.

Order no.
ZP 20.000

Version for special oil types on request.

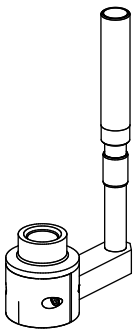
Tool set ZWS



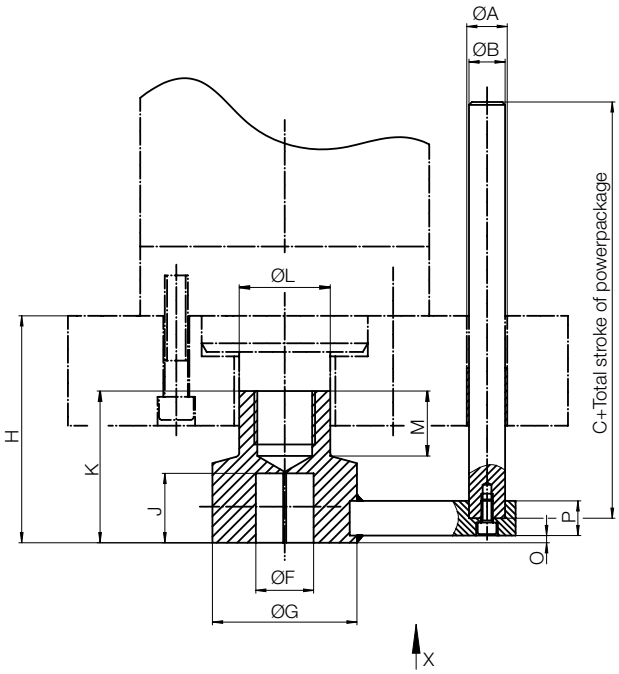
Special tools for seal kit of TOX® Powerpackage facilitate the removal and installation of seals.

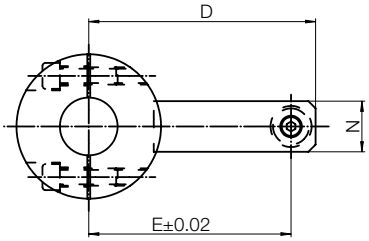
Order no.
ZWS 01

Tool holding fixture with anti-rotation 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.





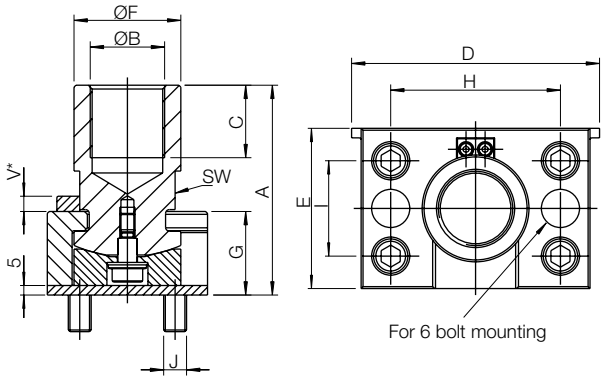
View X

Order no.	For TOX® Powerpackage	A[1]	B	C	D	E	F[1]	G	H	J	K	L	M	N	O	P
V 1	S/K/AT 1	14	12	60	94	75	20	38	69.0	30	45	16	10	16	5	17
V 2	Q-S/Q-K/X-S/X-K 1 Q-S/Q-K/X-S/X-K/S/K/X-AT/AT 2	14	12	62	109	90	20	38	71.0	30	45	20	10	16	5	17
V 4	Q-S/Q-K/X-S/X-K/S/K/X-AT/AT 4	18	16	77	132	110	20	48	88.5	30	60	30	25	25	5	20
V 8	Q-S/Q-K/X-S/X-K/S/K/X-AT/AT 8	23	20	105	145	120	40	68	115.0	50	80	45	22	30	5	24
V 15	Q-S/Q-K/X-S/X-K/S/K/X-AT/AT 15	23	20	106	165	140	40	68	116.0	50	80	50	23	30	5	24
V 30	Q-S/Q-K/X-S/X-K/S/K/X-AT/AT 30	28	25	125	195	170	40	88	137.0	50	90	56	30	35	5	24
V 50	X-S/X-K/S/K/X-AT/AT 50	28	25	145	205	180	40	98	157.0	50	105	63	45	35	5	24
V 75	X-S/X-K 75	28	25	67	255	235	40	98	190.0	50	136	98	–	35	5	24
V 100	X-S/X-K/X-AT 100	28	25	67	255	235	40	98	190.0	50	136	98	–	35	5	24

Dimensions in mm

TOX® Powerpackage Accessories

Coupling ZWK



This coupling provides a flexible connection between the TOX® Powerpackage and die set, thereby preventing any side loads. Includes anti-rotation device. Is threaded directly on the working rod of the TOX® Powerpackage.

Example for ordering

ZWK 001.060.040

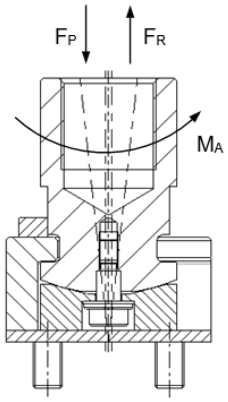
- Version
- Coupling height in mm
- Force
- Coupling set

Basic dimensions of standard versions

Order no.	For TOX® Powerpackage	A	ØB	C	D	E	ØF	G	H	I	J	V*	SW
ZWK 001.060.040		60											
ZWK 001.070.040	S/K/AT 1	70	M12x1.5	16	74	44	22	27.9	43.5	22	4xM6x9	8	19
ZWK 001.080.040		80											
ZWK 002.060.040	Q-S/Q-K/X-S/X-K 1	60											
ZWK 002.070.040	Q-S/Q-K/X-S/X-K/	70	M16x1.5	16	74	44	22	27.9	43.5	22	4xM6x9	8	19
ZWK 002.080.040	S/K/X-AT/AT 2	80											
ZWK 004.060.040		60											
ZWK 004.070.040		70											
ZWK 004.080.040	Q-S/Q-K/X-S/X-K/	80	M22x2	21	84	52	30	28.0	52.5	30	4xM8x12	8	27
ZWK 004.090.040	S/K/X-AT/AT 4	90											
ZWK 004.100.040		100											
ZWK 008.070.040		70											
ZWK 008.080.040		80											
ZWK 008.090.040	Q-S/Q-K/X-S/X-K/	90	M30x2	26	108	74	45	31.2	72.0	44	4xM10x15	8	41
ZWK 008.100.040	S/K/X-AT/AT 8	100											
ZWK 008.110.040		110											
ZWK 008.120.040		120											
ZWK 015.070.040		70											
ZWK 015.090.040		90											
ZWK 015.100.040		100											
ZWK 015.110.040	Q-S/Q-K/X-S/X-K/	110	M30x2	26	108	74	50	33.5	74.0	44	4xM10x15	8	46
ZWK 015.120.040	S/K/X-AT/AT 15	120											
ZWK 015.140.040		140											
ZWK 015.150.040		150											
ZWK 015.180.040		180											
ZWK 030.110.040		110											
ZWK 030.130.040		130											
ZWK 030.160.040		160											
ZWK 030.180.040	Q-S/Q-K/X-S/X-K/	180	M39x2	36	130	84	56	43.8	89.0	50	4xM12x19	20	50
ZWK 030.190.040	S/K/X-AT/AT 30	190											
ZWK 030.210.040		210											
ZWK 030.240.040		240											
ZWK 050.120.040		120											
ZWK 050.140.040		140											
ZWK 050.160.040		160											
ZWK 050.180.040	X-S/X-K/S/K/	180	M42x2	41	130	84	63	47.2	92.5	56	6xM12x19	20	55
ZWK 050.210.040	X-AT/AT 50	210											
ZWK 050.230.040		230											
ZWK 050.240.040		240											
ZWK 100.150.040		150											
ZWK 100.170.040		170											
ZWK 100.190.040		190											
ZWK 100.210.040		210											
ZWK 100.230.040	X-S/X-K 75	230	M64x2	63	170	124	100	54.5	130.5	90	6xM12x19	25	85
ZWK 100.250.040	X-S/X-K/X-AT/	250											
ZWK 100.270.040	AT 100	270											
ZWK 100.310.040		310											
ZWK 100.330.040		330											
ZWK 200.180.040		180											
ZWK 200.200.040		200											
ZWK 200.220.040		220											
ZWK 200.240.040	X-S/X-K 170	240	M80x2	85	240	190	150	80.5	191.0	140	6xM16x25	25	140
ZWK 200.260.040		260											
ZWK 200.280.040		280											
ZWK 200.300.040		300											
ZWK 200.320.040		320											

*anti-rotation device (can be removed if necessary)

Dimensions in mm



The thread of the tool holding fixture (pos. 1) must be cleaned with Loctite SF 7063 cleaner (material no. 169431) or a comparable cleaner, and the lower section (approx. 2/3) must be lubricated with UH1 14-151 food grade grease (material no. 174061) or comparable grease, and the upper section up to approx. 10 mm from the contact surface must be secured against loosening on the piston rod with Loctite 222 screw locking (material no. 241755) or comparable screw locking.

The contact surface between the tool holding fixture (pos. 1) and the thrust piece (pos. 3) must be lubricated with UH1 14-151 food grade grease (material no. 174061) or a comparable grease during assembly.

Note: In case of an exchange (also of single parts), the complete tool holder ZWK should always be replaced."

Basic data

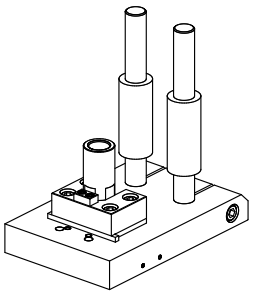
Type	Total length of assembly A [mm]	Type piston rod thread ØB	Max. press force F_P [kN]	Max. retracting force statically* F_R [kN]	Tightening torque on the piston rod M_A [Nm]	Max. compensable linear offset [mm]	Max. compensable angular offset [*]
ZWK 001	≥60	M12x1.5	13	2.5	10	±0.3	±0.1
ZWK 002	≥60	M16x1.5 M12x1.5	23	2.5	15 10	±0.3	±0.1
ZWK 004	≥60	M22x2 M16x1.5 M12x1.5	52	3.5	40 15 10	±0.3	±0.1
ZWK 008	≥70	M30x2 M24x1.5 M22x2	108	6	180 40 40	±0.3	±0.1
ZWK 015	≥70	M30x2 M24x1.5 M22x2	192	9.5	210 40 40	±0.3	±0.1
ZWK 030	≥110	M39x2 M30x2	325	16	230 210	±0.3	±0.1
ZWK 050	≥120	M42x2 M39x2 M30x2	515	20	290 230 210	±0.3	±0.1
ZWK 100	≥150	M64x2 M42x2 M39x2	1030	40	500 290 230	±0.5	±0.1
ZWK 200	≥180	M80x2 M64x2	2122	50	500 500	±0.5	±0.1

*Take additional process application factors for the retracting force into account ($F_{Rdynamic}$ = F_R / process application factor). See the table below for guide values. The final decision and responsibility lies with the designer.

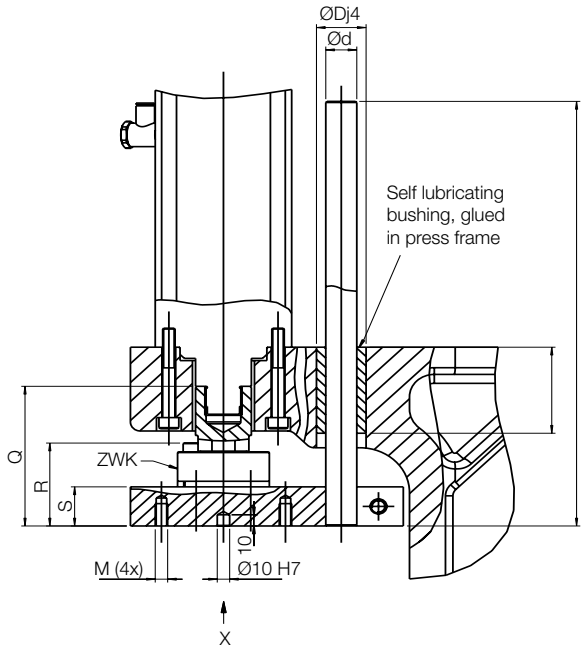
Guide values for process application factors (only valid for retracting force)

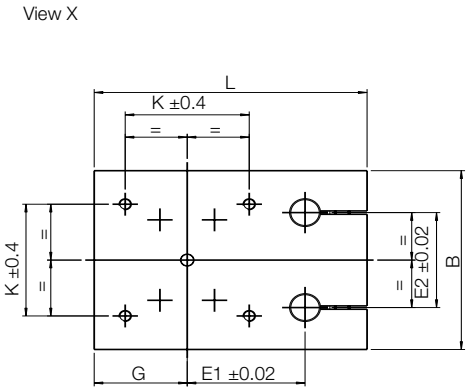
Application	Guide values for process application factors	Possible additional reduction of process application factors
Clinching	3.0	- Application fixed stop in the tool: -0.25 - Application damping in the drive: -0.25 - Application damping in the tool: -0.5
Embossing, marking	3.0	
Forming	3.0	
Assembling, press fitting in bushings and bearings	3.5	
Self-piercing riveting HSN	3.5	
Einpressen Funktionselemente ohne Stanzanteil	3.5	
Solid punch riveting VSN	4.0	
Pressing in functional elements with stamped parts	4.5	
Punching, piercing	4.5	
Unknown or universal	4.5	

Mini ram guide ZMS with coupling ZWK



The center of the guide bushing bore must be set at dimension E1 from the centerline of the cylinder. The bushings, posts and the coupling ZWK are included in the delivery package. The centering hole allows accurate alignment of the ram plate for fini-shing work.



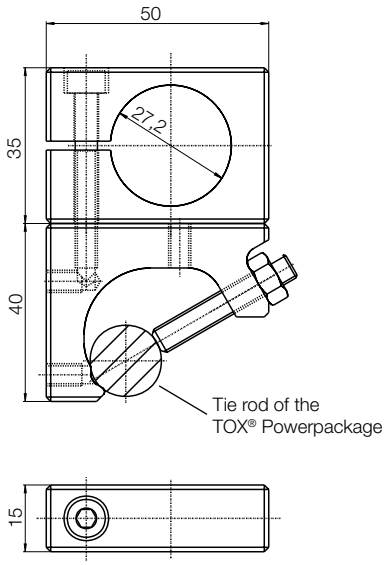


Order no.	For frame type	For TOX® Power-package	Correspon-ding ZWK	Max. load capacity	L	B	Q	R	S	G	E1	E2	ØD	Ød	K	M	N	T
ZMS 02.02.250-200	MCC 002	Q-S/Q-K/X-S/X-K 1 Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 2	ZWK 002	see schedule coupling ZWK	140	100	100	65.9	30	45	70	45	32	20	60	M8	340	77
ZMS 02.04.250-200	MCC 002	Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 4	ZWK 004				100	66.0										
ZMS 04.04.250-200	MCC 004	Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 4	ZWK 004		207	130	110	66.0	30	62	90	60	32	20	100	M8	360	77
ZMS 04.08.250-200	MCC 004	Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 8	ZWK 008				110	69.2										
ZMS 08.08.250-200	MCC 008	Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 8	ZWK 008		220	160	125	74.2	35	75	95	85	40	25	100	M10	380	77
ZMS 08.15.250-200	MCC 008	Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 15	ZWK 015				125	76.5										
ZMS 15.15.250-200	MCC 015	Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 15	ZWK 015		240	200	160	81.5	40	95	105	120	40	25	150	M10	415	77
ZMS 15.30.250-200	MCC 015	Q-S/Q-K/X-S/X-K/ S/K/X-AT/AT 30	ZWK 030				170	91.8										

Dimensions in mm

TOX® Powerpackage Accessories

Mounting bracket ZMP 001.002



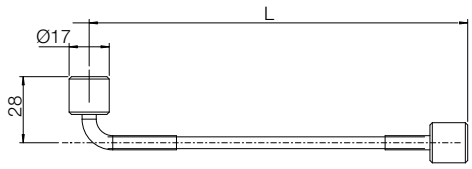
Dimensions in mm

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; for connection in case the pressure switch is mounted in other position. Connection 1 x 90°, compl. assem-bled, filled and bled, secured against leaking of oil (optional 400, 1000, 1500, 2000 mm)

High-pressure measuring hose ZHM 630



Pressure range up to 400 bar. Available lengths: 400, 630, 1000, 1500, 2000, 2500, 3000, 3500 mm. On request also available with 90° end connectors on both sides or straight end connectors on both sides, up to L = 2000 mm.

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 hose length of 400 mm):

- Q-S/X-S 1/Q-K/X-K 1 = 0.8 mm,
- Q-S/X-S 2/Q-K/X-K 2 = 0.5 mm,
- Q-S/X-S 4/Q-K/X-K 4 = 0.25 mm,
- Q-S/X-S 8/Q-K/X-K 8 = 0.13 mm,
- Negligible for larger TOX® Powerpackages

Order no.

ZHM 630-90
- 90 — Connection 90°
- 630 — Lenght 630 mm