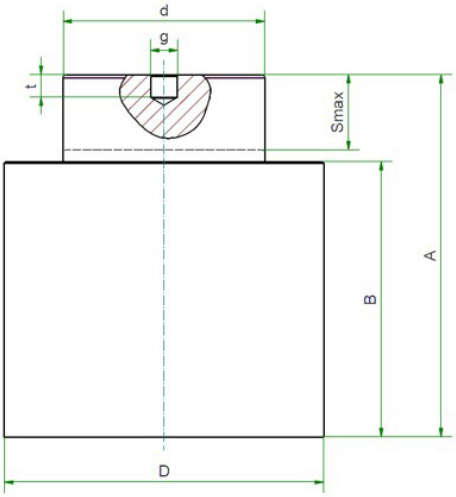
Accessories

Add-on components | Load damper LAD

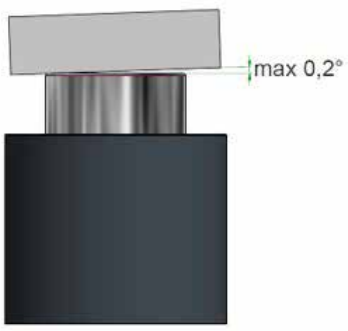
Function

The load damper provides the actuator with a physical buffer that reduces impacts in case of a blockage. Additionally, the motor can be switched off or braked during the spring travel, preventing damage to the system.

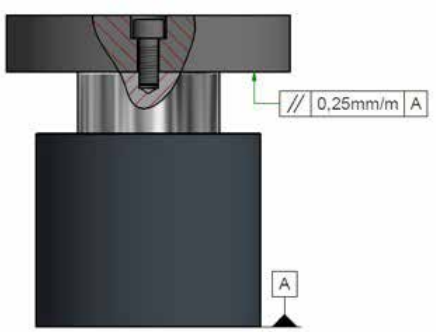


Type	max. dynamic force	max. impacts/min	Smax	A	B	D	d	g	t
ZA	kN	at 20°C	mm	mm	mm	mm	mm	mm	mm
ZA-25-LAD	15	60	22	95	69	75,2	45	M8	6
ZA-50-LAD	30	59	22	108	82	95	60	M8	6
ZA-100-LAD	60	45	22	108	82	120	75	M8	8
ZA-200-LAD	118	34	22	128	100	150	100	M8	18

- The load damper is equipped with a gas pressure spring.
- The system can only absorb compressive loads.
- Available only in combination with ball screw drives.
- Use a unit (e.g., servo motor) with precisely controllable shut-off/braking torque.
- Operational temperature range: 0 to 80°C.
- The maximum spring travel (Smax) must not exceed 22mm.
- Lateral forces are not permitted, as they will damage the load damper.
- The load damper must always act perpendicular to the contact surface (see illustrations).



Load is loosely placed



Screwing for positioning is allowed; no tensile loads or lateral forces permitted

Accessories

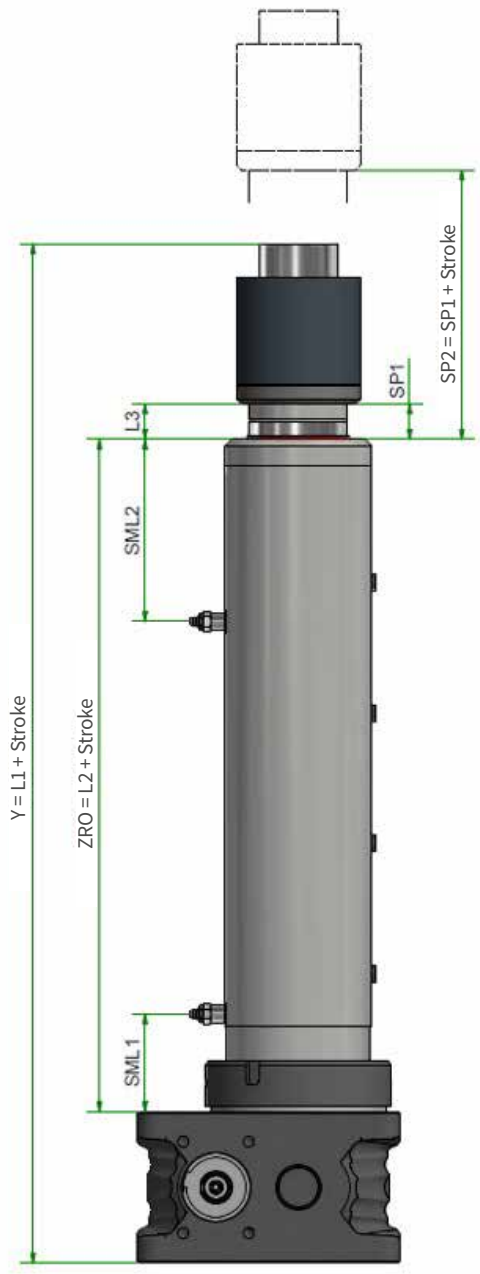
Add-on components | Load damper LAD

Length determination

	KGT32x5	KGT32x10	KGT32x20	KGT40x5	KGT40x10	KGT40x20
ZA	25			50		
L1	451	461	501	540	540	575
L2	234	239	264	269	269	289
L3	29	34	49	32	32	47
SP1	29	34	49	32	32	47
SML1	105	110	125	112	112	127
SML2	129	129	139	157	157	162

	KGT50x10	KGT50x20	KGT80x10	KGT80x20
ZA	100		200	
L1	705	760	838	893
L2	382	417	474	509
L3	37	57	40	60
SP1	37	57	40	60
SML1	156	176	239	259
SML2	226	241	235	250

Lubrication position SP1 corresponds to the standard lubrication length SML1 with safety clearance L3.
For lubrication of the spindle and the anti-rotation mechanism, lubrication positions SP1 (retracted) and SP2 (extended) must be maintained within ±2mm.



Design

1) Calculate the holding force (F_G) of the load damper using the lifting load (F) and the safety factor (S_1 = 1,3): $F_G = F \cdot S_1$
The safety factor also determines the spring stiffness (load pressure).

2) Calculate the cut-off torque (M_S) at which the braking process is initiated. Use the cut-off factor (S_2 = 1,5) and the formula provided below.

$$M_S = \frac{F \times p}{2 \times \pi \times \eta_G \times \eta_{sp} \times i} \times S_2$$

Calculation example: ZA-100 1,11 KGT 50x10

- **Size**
- **Speed**
- **Thread version**
- **Spindle diameter, Spindle pitch**

F=50 kN (dynamic lifting load)
n=1500 rpm
Ambient temperature = 20°C

1) Holding force = Force x Safety factor (S_1) = 50 x 1,3 = 65 kN

2) Calculate cut-off torque:

$$M_S = \frac{F \times p}{2 \times \pi \times \eta_G \times \eta_{sp} \times i} \times S_2 = \frac{50 \times 10}{2 \times \pi \times 0{,}88 \times 0{,}9 \times 9} \times 1{,}5 = 16{,}75 \text{ Nm}$$

Note
These parameters serve as the basis for designing the load damper. Refer to the operating manual during commissioning.