

**HAHN tension springs are used for all applications where normal gas springs cannot be used for lack of space.**

- ▶ Tension springs work in the opposite way as gas springs, i.e. the piston rod is pulled towards the inside by means of the gas pressure in the cylinder. The spring force  $F_1$  results from the internal pressure (160 bars without load at the most) in the cylinder, which is generated by the filling medium nitrogen. In the tension spring, the piston ring area between the piston rod and the inside cylinder diameter is decisive. When no load is applied, the piston rod always is compressed. The tension springs of series 'Z' have no damping. The series ZD is available with damping and series ZX is available as locking tension spring.

HAHN tension springs are available in steel, in AISI 303/304 and AISI 316L/316Ti.



## Tension springs

Experienced engineers and technicians support you in implementing your projects and develop optimum solutions.



### Standard product range

Type	Ø Rod	Ø Cylinder	Stroke	Standard length	Tension force	Progression
<b>Z 04-15</b>	4 mm	15 mm	20 - 200 mm	2 x stroke + 63	50 - 300 N	22 %
<b>Z 06-19</b>	6 mm	19 mm	30 - 400 mm	2 x stroke + 100	30 - 350 N	10 %
<b>Z 10-28</b>	10 mm	28 mm	60 - 600 mm	2 x stroke + 100	150 - 1200 N	20 %
<b>Z 10-40</b>	10 mm	40 mm	10 - 590 mm	2 x stroke + 150	200 - 2000 N	78 %
<b>Z 28-40</b>	28 mm	40 mm	50 - 700 mm	2.5 x stroke + 125	500 - 5000 N	40 %

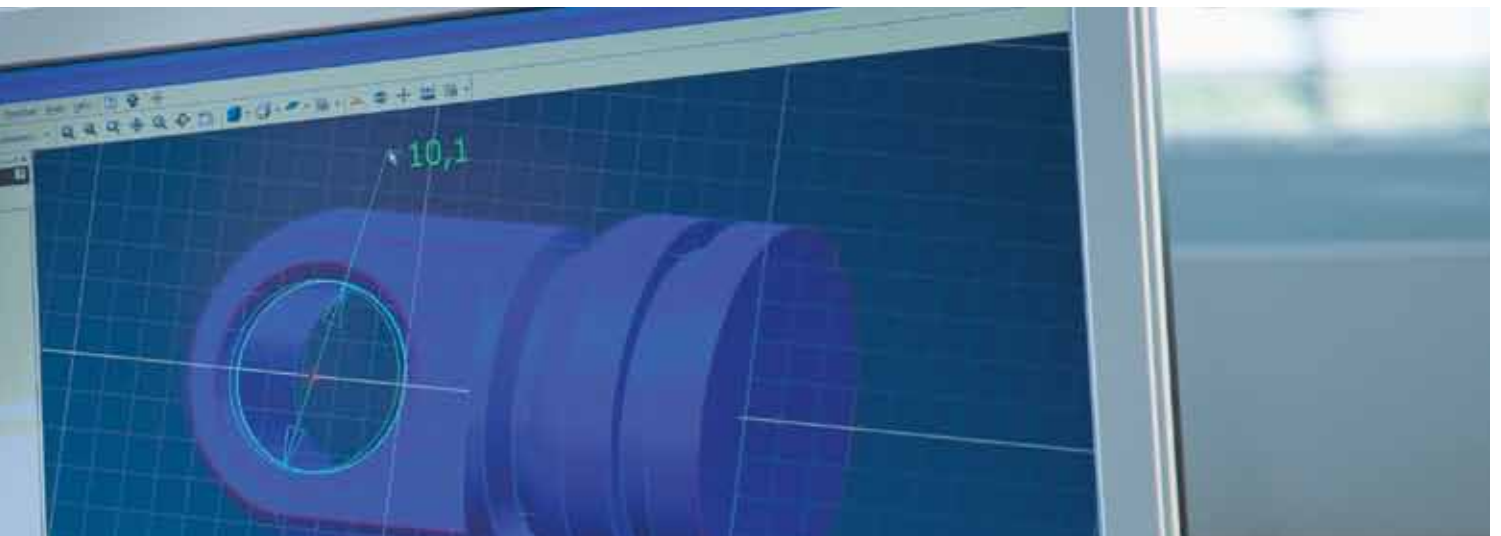
### Tension spring with damping

Type	Ø Rod	Ø Cylinder	Stroke	Standard length	Tension force	Progression
<b>ZD 10-28</b>	10 mm	28 mm	20 - 600 mm	3 x stroke + 90	100 - 1200 N	36 %

### Tension spring with locking

Type	Ø Rod	Ø Cylinder	Stroke	Standard length	Tension force	Progression
<b>ZX 10-28</b>	*	*	*	*	*	*

\* Technical design on request



Thread rod	Thread cylinder	Extras	Steel	AISI 303/304	AISI 316L/316 Ti
M 3.5	M 3.5	-	•	-	•
M 5	M 5	4, 6, NT	•	•	•
M 8	M 8	2, 4, 6, NT, HT	•	•	•
M 14 x 1.5	M 14 x 1.5	4, 6	•	•	•
M 14 x 1.5	M 14 x 1.5	2, 6	•	•	•

Thread rod	Thread cylinder	Extras	Steel	AISI 303/304	AISI 316L/316 Ti
M 8	M 8	4, 6	•	o. r.	o. r.

Thread rod	Thread cylinder	Extras	Steel	AISI 303/304	AISI 316L/316 Ti
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