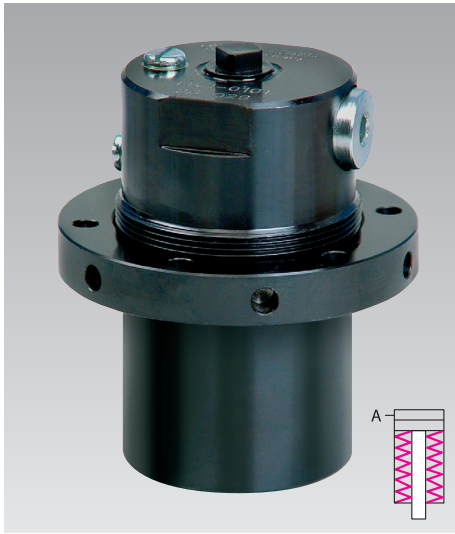




Spring Clamping Cylinders
pulling, with hydraulic return



Application

Spring clamping cylinders are used for unpressurised long-term clamping of moveable machine parts, dies, fixtures, pallets and work-pieces.

Advantages

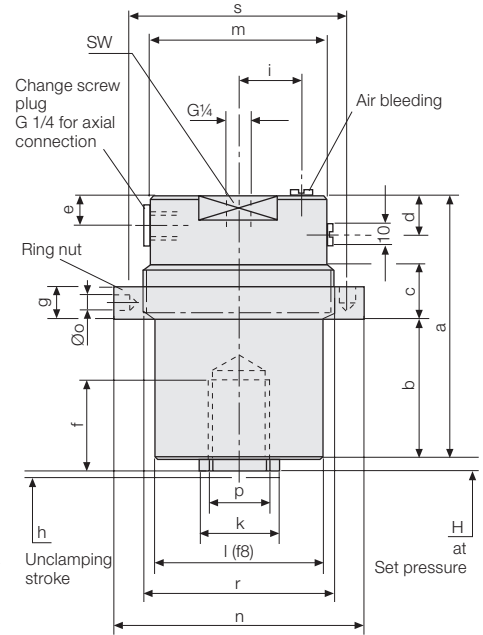
- Large choice of clamping forces
- Long service life by low-friction Belleville springs placed between hardened and ground thrust washers
- Piston secured against rotation
- Oil ports radial and axial
- Easy installation

Description

The force of the spring clamping cylinder is mechanically transmitted to the tie rod or the clamping spindle by a pre loaded Belleville spring assembly. The hydraulic connection is only required for unclamping the clamping cylinder.

Adjustment of clamping force, clamping and unclamping

1. Apply set pressure to spring clamping cylinder.
2. Adjust clamping position to be free from play by means of ring nut.
3. Secure ring nut against torsion. If necessary, secure cylinder against sliding.
4. For clamping, reduce set pressure.
5. For unclamping, apply unclamping pressure.
6. Check play of clamping point after approx. 1000 load changes at set pressure. If necessary, retighten ring nut and secure again.



Technical data

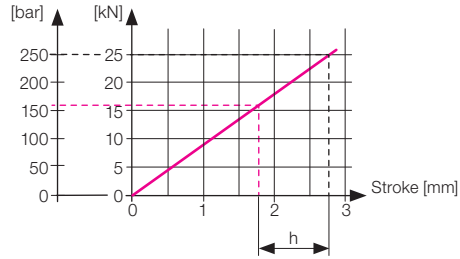
Clamping force	[kN]	16	25	40	63	100	160	250	400
at set pressure	[bar]	165	165	185	215	250	230	230	215
Unclamping pressure, h = 0.5 mm	[bar]	210	200	210	235	275	265	250	235
Unclamping pressure, h = 1.0 mm	[bar]	255	235	235	255	315	300	270	255
Max. operating pressure	[bar]	270	250	250	270	320	320	285	270
Oil volume per 1 mm stroke	[cm ³]	1.3	2.0	2.9	3.9	5.0	9.5	14.3	25.4
a	[mm]	95	105	120	132	147	170	230	280
b	[mm]	45	50	60	70	80	75	100	130
c	[mm]	20	20	25	25	30	45	55	65
d	[mm]	22	22	22	23	23	33	62	65
e	[mm]	11	11	11	12	12	28	57	62
f	[mm]	24	30	36	45	45	50	60	65
g	[mm]	13	14	14	16	16	18	20	50
i	[mm]	18	20.5	27	32	36	34	38	50
k	[mm]	20	25	30	40	40	50	70	90
l f8	[mm]	55	65	75	85	95	142	170	220
m	[mm]	55	65	75	89	99	137	163	212
n	[mm]	85	95	110	125	140	180	220	270
o	[mm]	6	8	8	8	8	10	10	15
p	[mm]	M 14 x 1.5	M 18 x 1.5	M 22 x 1.5	M 30 x 1.5	M 30 x 1.5	M 38 x 1.5	M 45 x 1.5	M 58 x 2
r	[mm]	M 58 x 1.5	M 68 x 1.5	M 78 x 1.5	M 92 x 1.5	M 102 x 1.5	M 140 x 2	M 168 x 3	M 218 x 4
H	[mm]	4	4	4	6	6	6	6	6
SW	[mm]	50	60	70	80	90	130	-	-
s	[mm]	72	82	94	109	121	165	194	244
Weight	[kg]	1.8	2.6	3.9	5.7	7.8	18.7	36.3	83
Part no.		1401010	1402010	1403010	1404010	1405010	1406010	1407010	814080102

Special versions on request

Force-stroke-pressure diagrams

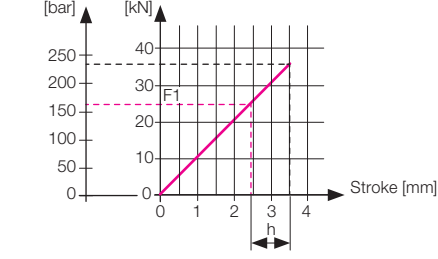
Clamping force 16 kN

Pressure p Clamping force F



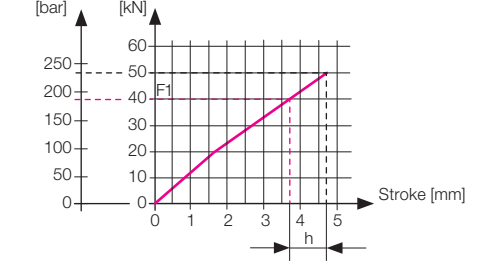
Clamping force 25 kN

Pressure p Clamping force F



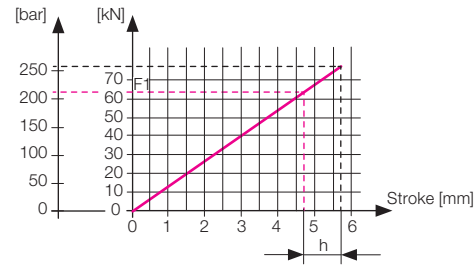
Clamping force 40 kN

Pressure p Clamping force F



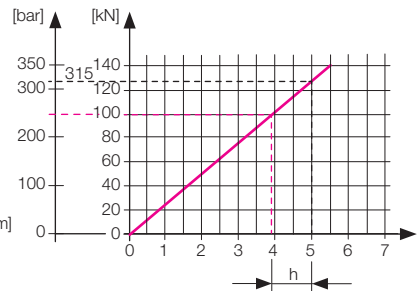
Clamping force 63 kN

Pressure p Clamping force F



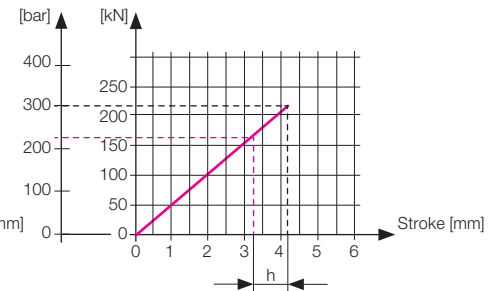
Clamping force 100 kN

Pressure p Clamping force F



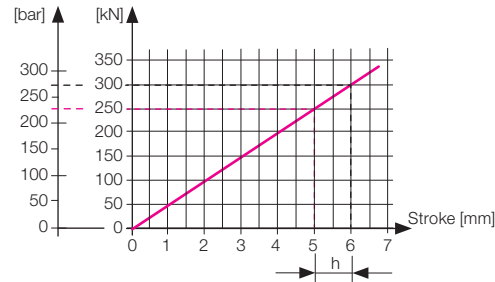
Clamping force 160 kN

Pressure p Clamping force F



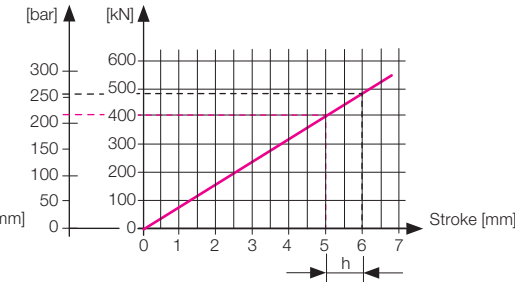
Clamping force 250 kN

Pressure p Clamping force F



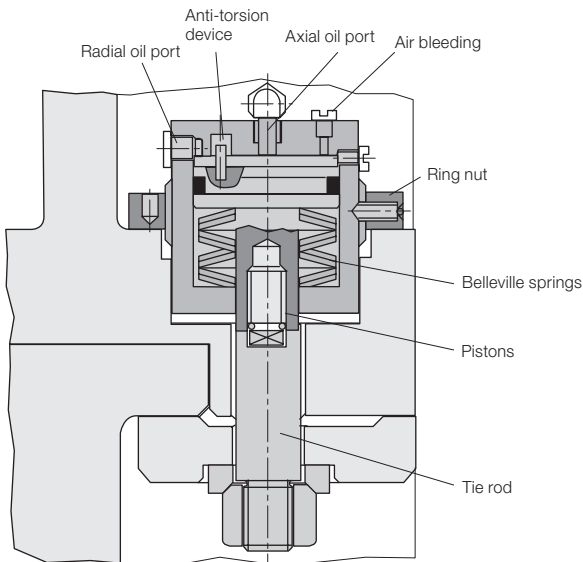
Clamping force 400 kN

Pressure p Clamping force F

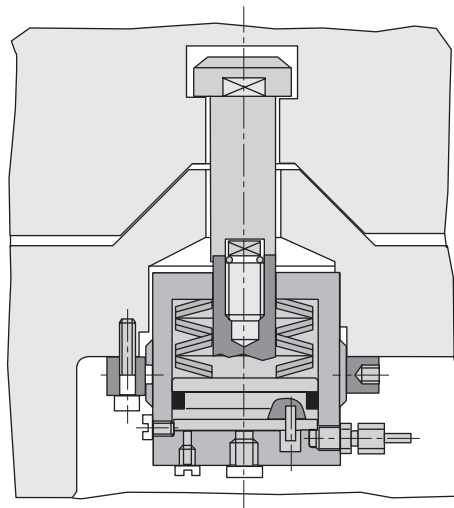


h : Unclamping stroke
 - - - : Unclamping pressure for unclamping stroke h = 1 mm
 - - - : Set pressure

Design



Application example



Please contact us in the case of:

- Changed clamping forces
- Unclamping stroke > 1 mm
- Load change > 1/min
- Aggressive media
- Temperatures below -15 °C or above +60 °C
- Required limitation of the unclamping stroke
- Special versions