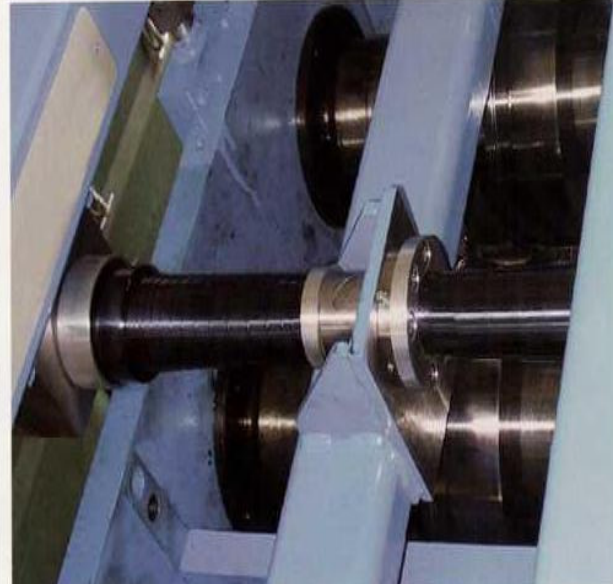
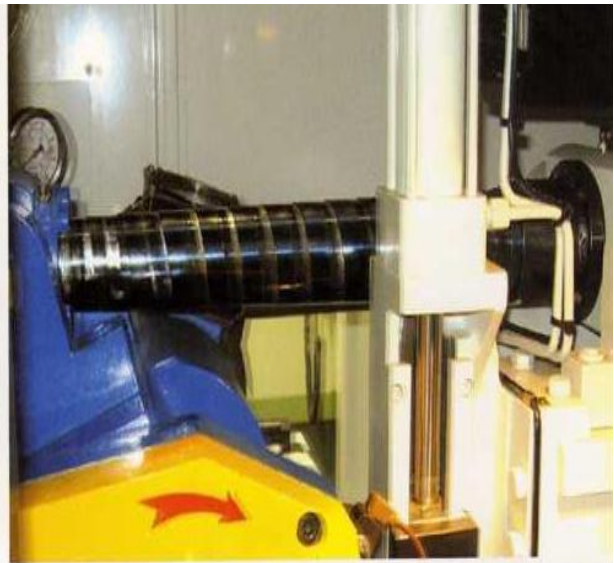


Telescopic Springs



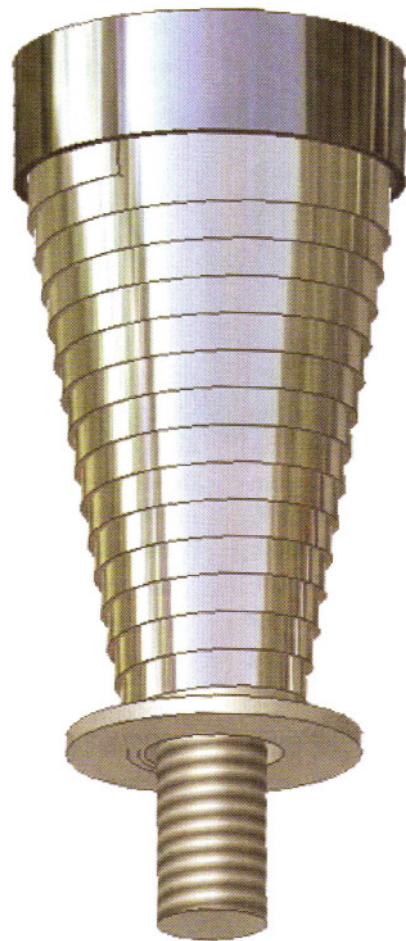
Telescopic Springs

Accident Prevention – Spindle Protection – Chip protection

Telescopic Springs have been developed to protect against accidents, soiling and mechanical damage wherever there are rotating parts, such as spindles or shafts. They have proven high reliability even after many years of practical use in heavy-duty conditions.

Our Telescopic Springs are designed so that they follow the motion of the machine by spring force. They can be used for vertical, horizontal or diagonal motion. Some of these springs can also be retrofitted.

Telescopic Springs are available in more than 1,000 proven dimensions.



Material

High-quality blue spring steel strip (55-58 Rockwell) with rounded edges and a strength of up to 1800N/m². Where coolants with high water content are regularly used, we recommend telescopic springs made of stainless steel (material No. 1.4.310). However, these have less spring force and therefore cannot be made in all sizes. Available stainless-steel springs are highlighted yellow in our list of spring types.

Mounting

Horizontal mounting position:

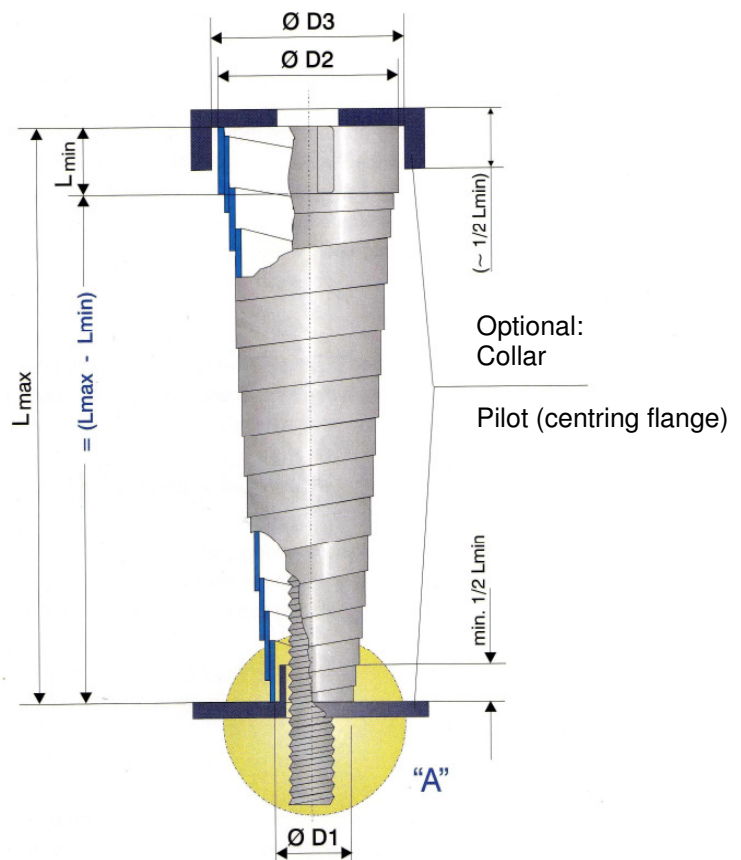
To avoid “sagging” Telescopic Springs designed for horizontal use have greater overlap of coils than springs used vertically.

The larger diameter (D2) should be where most chips occur.

Vertical and diagonal mounting position:

The high extensions forces involved mean that these springs (which act against the force of gravity) require greater extended length than horizontal springs.

The larger diameter (D2) should be at the top. This avoids dirt falling into the coils and has a self-cleaning effect.



- D = Max diameter of the part to be protected
- D1 = Inside diameter of spring ± 1 mm
- D2 = Outside diameter of spring ± 2 mm
- D3 = Inside diameter of collar (D2 + 6 mm)
- D4 = Outside diam. of centring flange (D1 – 6mm)
- Lmin = Compressed length (=bandwidth)

Travel speed

Standard Telescopic Springs are designed for speeds up to 40m/min. We would be happy to discuss any requirements for springs to be used at higher speeds.

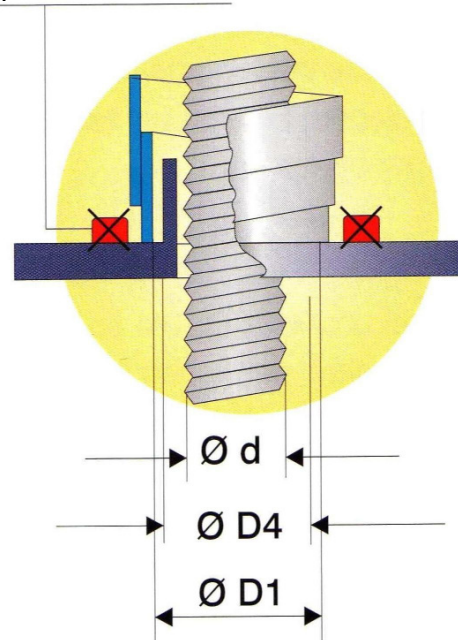
Centring Flanges/Collars

Centring should be at the ends of the springs to allow these to turn. The springs must be able to move freely and must not be fixed (e.g. screwed down or riveted). The mounting sleeve and centring flange are normally supplied with the springs. However, these flanges can also be supplied as optional accessories. You have the option of making your own centring flange, please be sure to provide sufficient space for the latter between the part to be protected (d) and the inside diameter of the Telescopic Spring (D1). Based on our experience, we would recommend 6-8 mm (depending on the size of the spring).

In this case, please allow for the fact that the outer coils of the spring may contract upon compression and extend upon reversal of the motion, whilst they should not be fixed (e.g. screwed down or riveted).

Excerpt „A“

No protruding parts (e.g. screws) in this part.



Safety Note

Telescopic Springs are supplied fixed with wire. As a result, they are under a considerable amount of tension and must only be opened with care, after having been slipped onto the part to be protected (e.g. spindle). To avoid the risk of injury, the springs come with mounting instructions that should be followed with the utmost care.

Maintenance

Regular maintenance is crucial. Depending on the degree of soiling, the springs should be cleaned once a day or once a week, followed by the application of a thin oil film. **Never GREASE telescopic springs.**



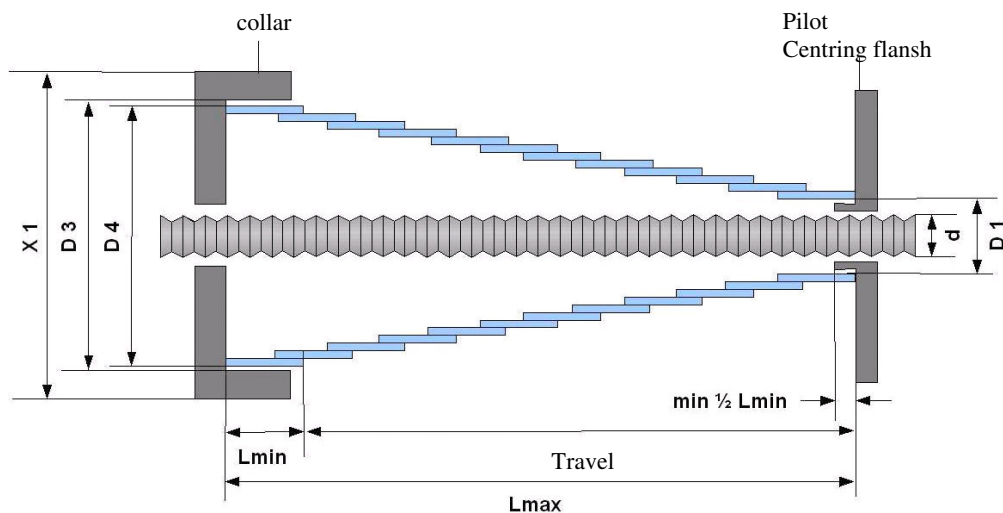
Special Note

Telescopic Springs are optimally suited for use wherever oil is involved. They are not suited for environments involving fine particles (e.g. grinding dust). In the latter case we recommend the use of bellows.

Telescopic Springs data sheet

When ordering, please be sure to indicate whether the spring will be used horizontally, vertically or diagonally because this will determine how they are made (horizontal springs are wound more tightly and have greater overlap than vertical springs).

Special dimensions or stainless steel on request



Ø d	Ø D1	Lmin.	Lmax horizontal		Lmax. vertikal	
			from	to	from	to
11	15	20	60	260	70	300
		20	60	260	100	300
16	20	30	210	360	250	400
		40	360	460	400	500
21	25	20	60	260	100	300
		30	240	390	300	450
		40	370	420	450	500
		50	390	840	450	900
26	30	30	90	390	150	450
		40	370	640	450	700
		50	90	690	150	750
		60	590	1240	650	1300
		75	900	900	1000	1000
31	35	20	60	60	100	100
		30	60	340	100	400
		40	240	490	300	550
		50	290	690	350	750
		60	390	790	450	850
		75	490	790	550	850
		100	1440	1440	1500	1500

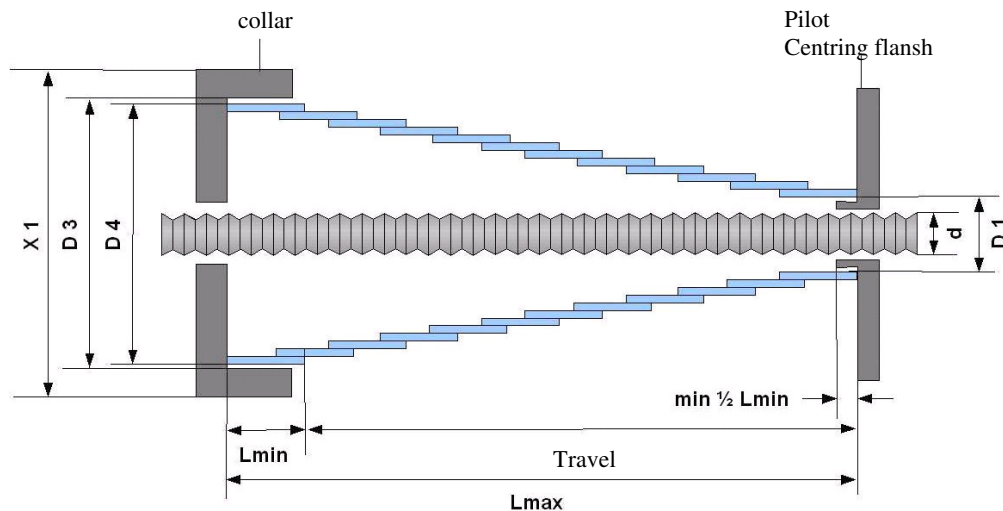
Kühner

Ø d	Ø D1	Lmin.	Lmax horizontal		Lmax. vertikal	
			from	to	from	to
61	65	30	90	190	100	250
		50	150	450	250	550
		60	380	780	500	900
		75	600	1100	750	1500
		100	800	1600	1000	1800
		120	1260	2500	1500	2800
		150	2100	2500	2400	3000
		180	2640	2640	3000	3250
		200	2850	2850	3250	3500
66	70	30	90	290	150	350
		50	150	450	250	550
		60	430	800	550	900
		75	350	900	500	1100
		100	700	1700	700	1800
		120	1260	2200	1500	3000
		150	1700	2100	2000	3000
		180	2440	2500	2800	3250
		200	2500	2500	3250	3500
71	75	30	90	190	150	250
		50	150	400	250	500
		60	430	630	550	750
		75	500	950	650	1100
		100	900	1900	900	2200
		120	1260	2200	1500	2800
		150	1700	2500	2000	3000
		180	2440	2500	2800	3250
		200	2850	2850	3250	3500
76	80	30	90	190	150	250
		50	150	450	250	550
		60	330	630	450	750
		75	400	1000	550	1200
		100	900	1600	900	1800
		120	1060	1700	1300	2800
		150	1700	2300	2000	3000
		180	2440	2440	2800	3250
		200	2600	2500	3000	3500
81	85	30	90	190	150	250
		50	150	450	250	550
		60	530	530	650	650
		75	400	750	550	900
		100	1300	1300	1500	1500
		120	1260	1700	1500	2000
		150	2100	2100	2400	2800
		200	-	-	3500	3500

Kühner

Ø d	Ø D1	Lmin.	Lmax horizontal		Lmax. Vertikal	
			from	to	from	to
86	90	30	90	190	150	250
		50	50	350	150	450
		60	230	330	350	450
		75	300	750	450	900
		100	550	1300	750	1500
		120	1060	1600	1300	2000
		150	1500	1700	1800	3000
		180	2240	2240	2600	3000
		200	2400	2500	2600	4500
96	100	60	130	230	250	350
		75	200	650	350	800
		100	600	1300	800	1500
		120	860	1060	1100	1800
		150	1200	1700	1500	3000
		180	2140	2140	2500	2800
		200	-	-	2800	3000
106	110	50	-	-	250	250
		60	130	330	250	450
		75	200	650	350	800
		100	450	700	650	900
		120	860	1260	1100	1500
		150	1200	1700	1500	2000
		180	1840	1840	2200	2400
		200	2000	2500	2400	3500
116	120	50	-	-	250	350
		60	130	330	250	450
		75	200	450	350	600
		100	450	700	650	900
		120	660	1300	900	1500
		150	1000	1600	1300	2000
		180	1240	1640	1600	2200
		200	1800	2100	2200	2600
126	130	50	-	-	170	170
		60	210	410	250	450
		75	220	410	250	450
		100	600	600	650	800
		120	360	760	600	1100
		150	500	1200	900	1800
		180	1650	1650	1650	1650
		200	2000	2000	2000	2000
136	140	75	150	350	250	600
		100	250	500	350	600
		120	460	460	700	1000
		150	700	1000	1000	1500
		200	1500	1600	1900	2400
146	150	75	-	-	450	600
		150	-	-	750	1300
156	160	60	-	-	250	250
		75	-	-	250	450
		100	350	350	450	450
		120	550	600	650	750
		150	-	-	800	1200
		200	-	-	1200	2000

Telescopic Springs



Dimensions:

Amount:

Required space (Lmax + Pilot+ Collar)	mm
Max diameter of the part to be protected (d)	mm
Compresses length (=bandwidth) (Lmin)	mm
Max length of spring (Lmax)	mm
Inside diameter of spring ± 1 mm (D1)	mm
Outside diameter of spring ± 2 mm (D2)	mm
Inside diameter of collar (D2 + 6mm) (D3)	mm
Outside diameter (X1)	mm

Mounting position: horizontal vertical

The mounting sleeve and centring flange are not normally supplied with the springs. These flanges can be supplied as optional accessories.

The springs are made of high-quality blue spring steel strip (55-58 Rockwell) with rounded edges and strength of up to 1800N/m². Where coolants with high water content are regularly used, we recommend telescopic springs made of stainless steel (material No. 1.4.310).

Material: stainless steel spring steel

Company: _____ Contact partner: _____
 Address: _____
 Phone: _____ fax: _____
 email: _____