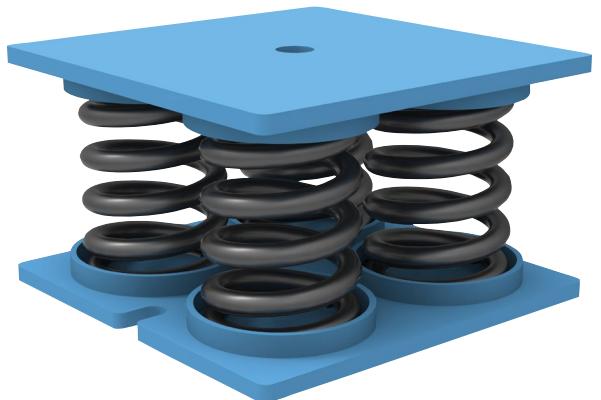


Product catalogue

VICODA®
SMALL SPRING ELEMENTS





Innovative solutions:

Vibration isolation for small and medium-sized plants and machinery

Appropriate vibration isolation and/or structure-borne noise damping in machinery, components, aggregates and buildings is becoming increasingly important to protect humans and material assets against vibrations.

VICODA® spring elements and damped spring elements ensure that the vibration induced by the equipment – the source of the vibration – is not transmitted to the environment (isolation of source). Spring elements can also be used to isolate a vibratory system against vibrations induced by the environment (isolation of recipient). We offer spring elements with or without integrated CRD type damping covering frequencies between 2.5 and 5Hz. All spring elements can be additionally equipped with viscoelastic dampers to adapt to increased damping requirements.

Contact us to benefit from our expertise.

Design

VICODA® spring elements are designed as follows:

- same total height within a series
- large load range between 90 and 72,200N
- frequencies from 2.5Hz
- pressure- and form-locking height adjustment (also available in stainless steel) (optional)
- high-quality corrosion protection (CDP coated springs)
- CRD type damping using the same dimensions (optional)
- structure-borne noise damping (optional)
- lift-off device (optional)

LISEGA is pleased to provide you support when selecting spring elements.



Example Spring Element: Structure-borne noise damping with Calenberg Cisador® and VICODA® CRD damping

Fields of application

VICODA® spring elements are suitable for use in a variety of applications. They provide the best solution for vibration and structure-borne noise isolation, for example in:

- fans or ventilation systems
- air-conditioning systems
- pumps or pumping systems
- electronic equipment
- measuring devices
- small and medium-sized power presses

Application examples

Spring element S-U17-4

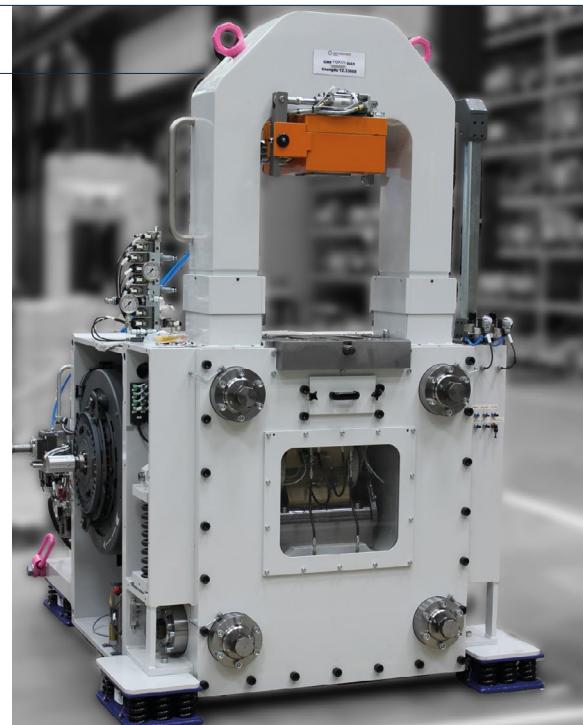
Project	Vibration-isolated installation of a radial fan at a fertilizer plant
Country	Hungary
Brief description	Limiting vibrational amplitudes and ground reactions by vibration-isolated installation of a radial fan weighing approx. 13 t in total.
Challenge	Previous elastic installations at the plant were accompanied by major horizontal movements during operation due to resonances in horizontal direction.
Solution	Using 11 VICODA® spring elements with a bearing capacity of approx. 50kN and special coating for highly corrosive media. Vertical tuning frequency of installation approx. 7Hz, isolation degree 55%. Reducing vibration movements by increasing horizontal stiffness.



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Spring element S-P with additional damping

Project	Vibration-isolated installation of a forming press, Medal press GMP 360
Country	Germany
Brief description	Vibration-isolated installation of a medal press (GMP 360 type) while minimizing press movements during operation.
Challenge	Coins up to 50 mm in diameter are minted at a stroke rate of 80 strokes/min. If the installation is too soft and undamped, press movements would fall in the intolerable range.
Solution	Mounting the press on 4 spring elements (S-P type) with additionally integrated viscoelastic damping provided an optimum compromise between vibration isolation and press movement during operation. A damping degree of 10% was achieved with a maximum bearing capacity of 130 kN per element.



MINIMUM INFORMATION

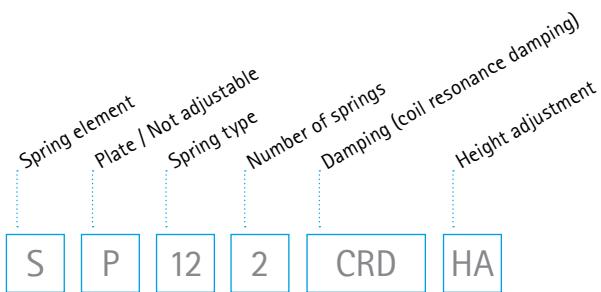


To calculate the dimensions of an elastic mounting for your facility/equipment, we require the following information:

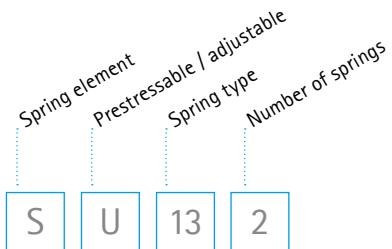
- Type of system/equipment requiring vibration-isolated installation
- Total mass of system/equipment or individual weight of components in kN
- Centre of gravity of system/equipment or individual centres of gravity of components (if not available, we will assume a central centre of gravity)
- Frequency of excitation or rotational speed in Hz or rotations/min
- Desired isolation efficiency
- Indoor or outdoor installation
- Special features to be considered in the calculation

Description of type designation, for example

S-P12-2-CRD-HA



S-U13-2



NOTE: This legend is valid for all following data sheets. The drawings are not true to scale. Other load ranges and natural frequencies on request.
All data and dimensions are subject to change.

Spring element type: S-P5 to S-P21

LEGEND

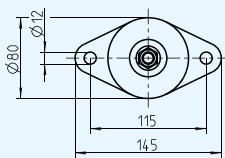
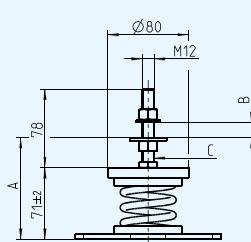
H_0 : unloaded height

H_n : height at nominal load

Standard spring element for the vibration control of structure-borne noise and vibrations.

DIMENSIONS

S-P5 to S-P12



A Unloaded height from 91 to max. 101 mm
B Thickness of fastening plate max. 15 mm
C Height adjustment max. 10 mm

S-P5 TO S-P12

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n,\min}$	$F_{n,\max}$		
S-P5	0.410	1.465	70	3.4 - 6.5	71	50
S-P6	0.480	1.875		3.3 - 6.5		48
S-P7	0.575	1.760		3.7 - 6.5		53
S-P8	0.710	2.425		3.5 - 6.5		51
S-P9	0.830	2.675		3.6 - 6.5		54
S-P10	1.015	2.770		4.0 - 6.5		55
S-P11	1.160	3.160		4.0 - 6.5		55
S-P12	1.430	3.895		4.0 - 6.5		55

max. weight: 1.2kg

Spring element without height adjustment

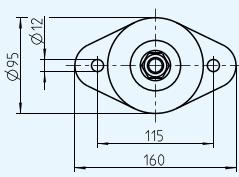
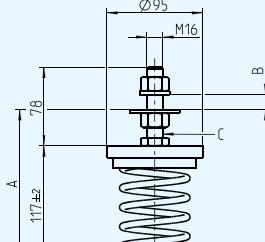


Spring element with height adjustment



DIMENSIONS

S-P13 to S-P21



A Unloaded height from 143 to max. 153 mm
B Thickness of fastening plate max. 15 mm
C Height adjustment max. 10 mm

S-P13 TO S-P21

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n,\min}$	$F_{n,\max}$		
S-P13	0.090	0.750	15	2.4 - 6.5	117	67
S-P14	0.160	1.350		2.4 - 6.5		67
S-P15	0.205	1.680		2.4 - 6.5		69
S-P16	0.435	2.800		2.6 - 6.5		79
S-P17	0.845	5.160		2.6 - 6.5		81
S-P18	1.415	5.060		3.4 - 6.5		96
S-P19	1.830	8.080		3.1 - 6.5		91
S-P20	2.310	10.220		3.1 - 6.5		91
S-P21	2.970	12.120		3.2 - 6.5		93

max. weight: 2.7kg

REMARKS:

- 1) calculated according to DIN EN 13906-1
for -CRD type: dynamic stiffening factor approx. 1.2 to 1.4
- 2) Natural frequency range: 2.4 Hz to 6.5 Hz
- 3) Casing made of carbon steel, corrosion protection galvanized.
Long-term corrosion protection on request.

- 4) Damping (CRD) and height adjustment (HA) are optional equipment and have to be ordered separately (addition -CRD and/or -HA to the type e.g. S-P13-CRD-HA).

Spring element type: S-P5-2 to S-P21-2

LEGEND

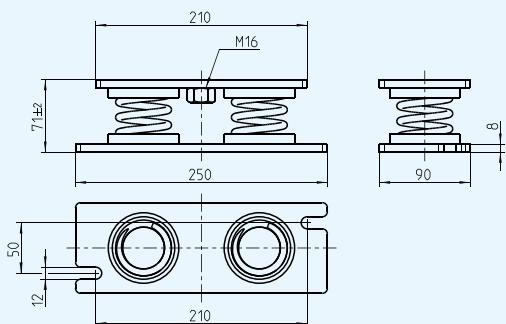
H_0 : unloaded height

H_n : height at nominal load

Standard spring element for the vibration control of structure-borne noise and vibrations.

DIMENSIONS

S-P5-2 to S-P12-2

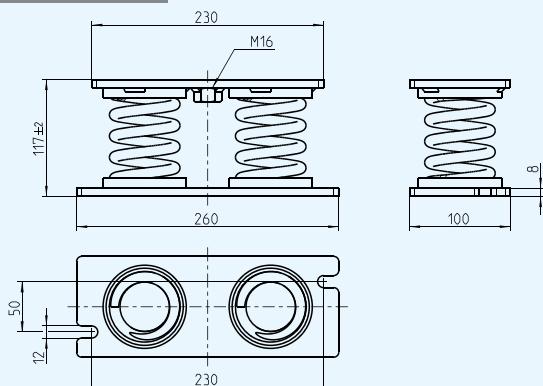


S-P5-2 TO S-P12-2

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n_{\min}}$	$F_{n_{\max}}$		
S-P5-2	0.820	2.920	140	3.4 - 6.5	71	50
S-P6-2	0.965	3.750	163	3.3 - 6.5		48
S-P7-2	1.160	3.530	196	3.7 - 6.5		53
S-P8-2	1.430	4.840	242	3.5 - 6.5		51
S-P9-2	1.665	5.340	281	3.6 - 6.5		54
S-P10-2	2.050	5.535	346	4.0 - 6.5		55
S-P11-2	2.340	6.320	395	4.0 - 6.5		55
S-P12-2	2.880	7.790	487	4.0 - 6.5		55
max. weight: 3.6kg						

DIMENSIONS

S-P13-2 to S-P21-2



S-P13-2 TO S-P21-2

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n_{\min}}$	$F_{n_{\max}}$		
S-P13-2	0.180	1.300	30	2.4 - 6.5	117	74
S-P14-2	0.320	2.330	54	2.4 - 6.5		74
S-P15-2	0.410	2.970	70	2.4 - 6.5		74
S-P16-2	0.870	5.585	147	2.6 - 6.5		79
S-P17-2	1.690	10.330	286	2.6 - 6.5		81
S-P18-2	2.835	10.120	482	3.4 - 6.5		96
S-P19-2	3.655	16.145	622	3.1 - 6.5		91
S-P20-2	4.625	20.435	786	3.1 - 6.5		91
S-P21-2	5.940	24.240	1010	3.2 - 6.5		93
max. weight: 8.5kg						

REMARKS:

- 1) calculated according to DIN EN 13906-1
for -CRD type: dynamic stiffening factor approx. 1.2 to 1.4
- 2) Natural frequency range: 2.4 Hz to 6.5 Hz
- 3) Casing made of carbon steel, corrosion protection C3-RAL 5012.
Long-term corrosion protection on request.

- 4) Damping (CRD) and height adjustment (HA) are optional equipment and have to be ordered separately (addition -CRD and/or -HA to the type e.g. S-P13-2-CRD-HA).

Spring element type: S-P5-4 to S-P21-4

LEGEND

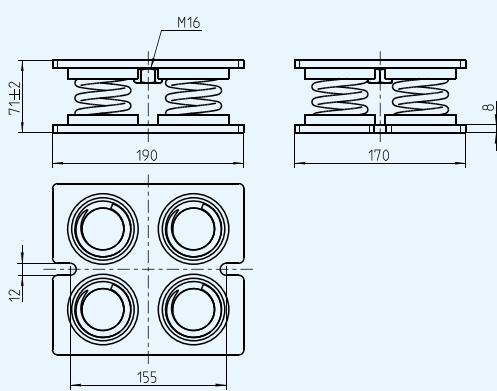
H_0 : unloaded height

H_n : height at nominal load

Standard spring element for the vibration control of structure-borne noise and vibrations.

DIMENSIONS

S-P5-4 to S-P12-4

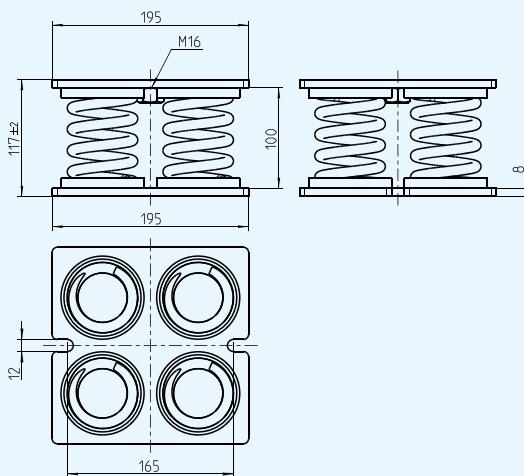


S-P5-4 TO S-P12-4

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
S-P5-4	1.650	5.860	280	3.4 - 6.5	71	50
S-P6-4	1.930	7.500				48
S-P7-4	2.315	7.040				53
S-P8-4	2.870	9.700				51
S-P9-4	3.330	10.700				54
S-P10-4	4.090	11.055				55
S-P11-4	4.675	12.640				55
S-P12-4	5.760	15.570				55
max. weight approx.: 6.6 kg						

DIMENSIONS

S-P13-4 to S-P21-4



S-P13-4 TO S-P21-4

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
S-P13-4	0.355	2.600	60	2.4 - 6.5	117	74
S-P14-4	0.640	4.660				74
S-P15-4	0.815	5.945				74
S-P16-4	1.745	11.210				79
S-P17-4	3.390	20.630				81
S-P18-4	5.700	20.225				96
S-P19-4	7.360	32.320				91
S-P20-4	9.310	40.900				91
S-P21-4	11.960	48.480				93
max. weight: 12 kg						

REMARKS:

- 1) calculated according to DIN EN 13906-1
for -CRD type: dynamic stiffening factor approx. 1.2 to 1.4
- 2) Natural frequency range: 2.4 Hz to 6.5 Hz
- 3) Casing made of carbon steel, corrosion protection C3-RAL 5012.
Long-term corrosion protection on request.

- 4) Damping (CRD) and height adjustment (HA) are optional equipment and have to be ordered separately (addition -CRD and/or -HA to the type e.g. S-P13-4-CRD-HA).

Spring element type: S-P5-6 to S-P21-6

LEGEND

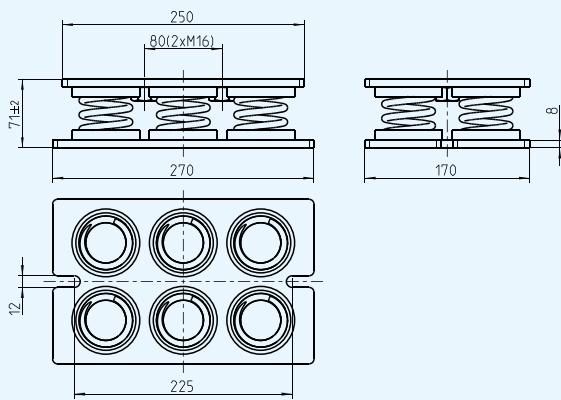
H_0 : unloaded height

H_n : height at nominal load

Standard spring element for the vibration control of structure-borne noise and vibrations.

DIMENSIONS

S-P5-6 to S-P12-6

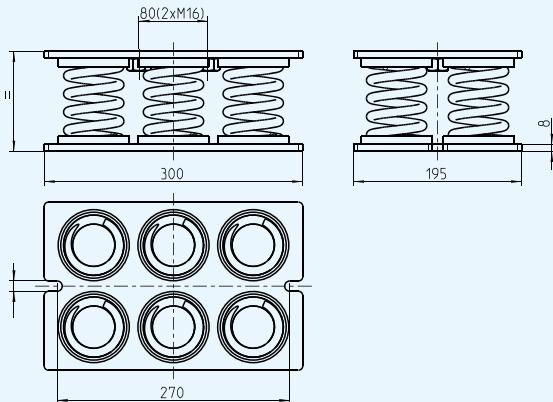


S-P5-6 TO S-P12-6

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n_{\min}}$	$F_{n_{\max}}$		
S-P5-6	2.475	8.775	418	3.4 - 6.5	71	50
S-P6-6	2.890	11.225	488	3.3 - 6.5		48
S-P7-6	3.475	10.565	587	3.7 - 6.5		53
S-P8-6	4.300	14.540	727	3.5 - 6.5		51
S-P9-6	4.995	16.035	844	3.6 - 6.5		54
S-P10-6	6.135	16.590	1037	4.0 - 6.5		55
S-P11-6	7.005	18.940	1184	4.0 - 6.5		55
S-P12-6	8.645	23.360	1460	4.0 - 6.5		55
max. weight approx.: 8.8kg						

DIMENSIONS

S-P13-6 to S-P21-6



S-P13-6 TO S-P21-6

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n_{\min}}$	$F_{n_{\max}}$		
S-P13-6	0.540	3.900	90	2.4 - 6.5	117	74
S-P14-6	0.965	6.990	165	2.4 - 6.5		74
S-P15-6	1.225	8.915	205	2.4 - 6.5		74
S-P16-6	2.615	16.795	440	2.6 - 6.5		79
S-P17-6	5.090	30.960	860	2.6 - 6.5		81
S-P18-6	8.555	30.345	1445	3.4 - 6.5		96
S-P19-6	11.035	48.465	1865	3.1 - 6.5		91
S-P20-6	13.965	61.335	2360	3.1 - 6.5		91
S-P21-6	17.940	72.720	3030	3.2 - 6.5		93
max. weight: 17kg						

REMARKS:

- 1) calculated according to DIN EN 13906-1
for -CRD type: dynamic stiffening factor approx. 1.2 to 1.4
- 2) Natural frequency range: 2.4 Hz to 6.5 Hz
- 3) Casing made of carbon steel, corrosion protection C3-RAL 5012.
Long-term corrosion protection on request.

- 4) Damping (CRD) and height adjustment (HA) are optional equipment and have to be ordered separately (addition -CRD and/or -HA to the type e.g. S-P13-6-CRD-HA).

Spring element type: S-U13-2 to S-U21-4

LEGEND

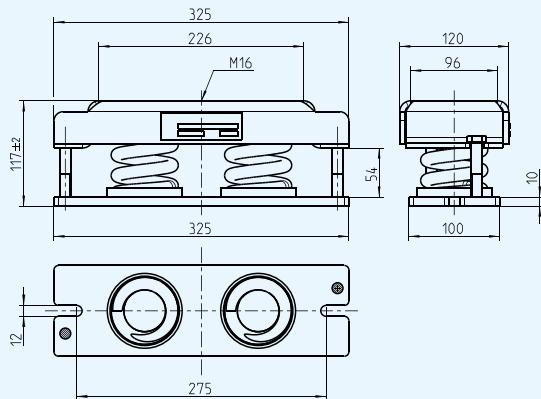
H_0 : unloaded height

H_n : height at nominal load

Standard spring element for the vibration control of structure-borne noise and vibrations.

DIMENSIONS

S-U13-2 to S-U21-2

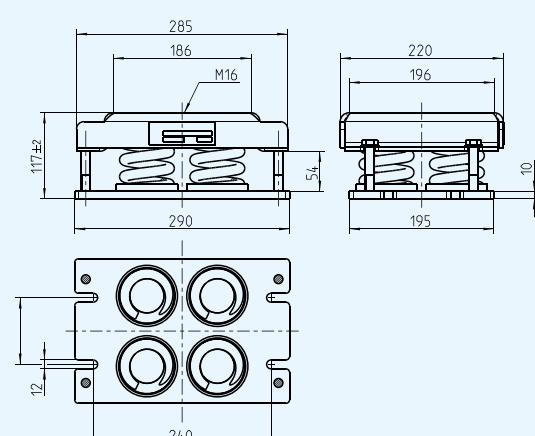


S-U13-2 TO S-U21-2

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n_{\min}}$	$F_{n_{\max}}$		
S-U13-2	0.180	1.300	30	2.4 - 6.5	117	111
S-U14-2	0.320	2.330	54	2.4 - 6.5		
S-U15-2	0.410	2.970	70	2.4 - 6.5		
S-U16-2	0.870	5.585	147	2.6 - 6.5		
S-U17-2	1.690	10.330	286	2.6 - 6.5		
S-U18-2	2.835	10.120	482	3.4 - 6.5		
S-U19-2	3.655	16.145	622	3.1 - 6.5		
S-U20-2	4.625	20.435	786	3.1 - 6.5		
S-U21-2	5.940	24.240	1010	3.2 - 6.5		
max. weight: 8kg						

DIMENSIONS

S-U13-4 to S-U21-4



S-U13-4 TO S-U21-4

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n_{\min}}$	$F_{n_{\max}}$		
S-U13-4	0.355	2.600	60	2.4 - 6.5	117	111
S-U14-4	0.640	4.660	110	2.4 - 6.5		
S-U15-4	0.815	5.945	140	2.4 - 6.5		
S-U16-4	1.745	11.210	295	2.6 - 6.5		
S-U17-4	3.390	20.630	575	2.6 - 6.5		
S-U18-4	5.700	20.225	965	3.4 - 6.5		
S-U19-4	7.360	32.320	1245	3.1 - 6.5		
S-U20-4	9.310	40.900	1575	3.1 - 6.5		
S-U21-4	11.960	48.480	2020	3.2 - 6.5		
max. weight: 14kg						

REMARKS:

- 1) calculated according to DIN EN 13906-1
for -CRD type: dynamic stiffening factor approx. 1.2 to 1.4
- 2) Natural frequency range: 2.4 Hz to 6.5 Hz
- 3) Casing made of carbon steel, corrosion protection C3-RAL 5012.
Long-term corrosion protection on request.

- 4) Damping (CRD) and height adjustment (HA) are optional equipment and have to be ordered separately (addition -CRD and/or -HA to the type e.g. S-U13-4-CRD-HA).

Spring element type: S-U13-6 to S-U21-6

LEGEND

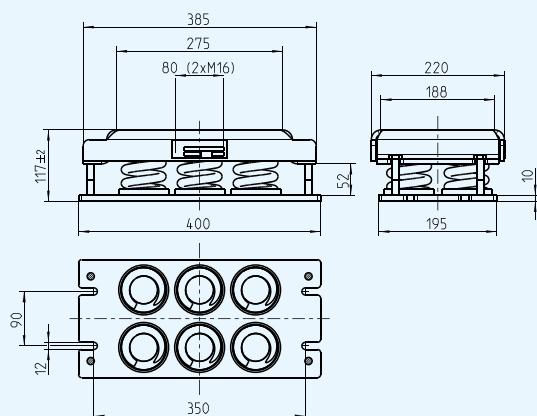
H_0 : unloaded height

H_n : height at nominal load

Standard spring element for the vibration control of structure-borne noise and vibrations.

DIMENSIONS

S-U13-6 to S-U21-6



S-U13-6 TO S-U21-6

Type	Nom. load [kN]		Vertical stiffness ¹⁾ [N/mm]	Natural frequency [Hz]	Height [mm]	
	min.	max.			H_0	H_n
			$F_{n\min}$	$F_{n\max}$		
S-U13-6	0.540	3.900	90	2.4 - 6.5	117	111
S-U14-6	0.965	6.990	165	2.4 - 6.5		
S-U15-6	1.225	8.915	205	2.4 - 6.5		
S-U16-6	2.615	16.795	440	2.6 - 6.5		
S-U17-6	5.090	30.960	860	2.6 - 6.5		
S-U18-6	8.555	30.345	1445	3.4 - 6.5		
S-U19-6	11.035	48.465	1865	3.1 - 6.5		
S-U20-6	13.965	61.335	2360	3.1 - 6.5		
S-U21-6	17.940	72.720	3030	3.2 - 6.5		

max. weight: 22kg

REMARKS:

- 1) calculated according to DIN EN 13906-1
for -CRD type: dynamic stiffening factor approx. 1.2 to 1.4
- 2) Natural frequency range: 2.4 Hz to 6.5 Hz
- 3) Casing made of carbon steel, corrosion protection C3-RAL 5012.
Long-term corrosion protection on request.

- 4) Damping (CRD) and height adjustment (HA) are optional equipment and have to be ordered separately (addition -CRD and/or -HA to the type e.g. S-U13-6-CRD-HA).



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