顶立弹簧
DLS

Japanese Technology
Precision Craftsmanship

Professional Die Spring
Manufacturer

慈溪市顶立弹簧有限公司
Cixi Dingli Spring Co., Ltd.

慈溪市顶立弹簧有限公司

Cixi Dingli Spring Co., Ltd.

Cixi Dingli Spring Co., Ltd. was established in August 1995 and is a professional manufacturer specializing in the production of die springs. Our core products include die springs (covering JIS Japanese standard and ANSI American standard series) as well as various types of wire springs, including compression springs, extension springs, torsion springs, and wire forming springs.

With more than 30 years of continuous development, the company now covers an area of 20,000 square meters and has over 100 employees, with management and technical personnel accounting for 30% of the workforce. Our spring manufacturing capabilities cover wire diameters from φ0.2mm to φ20mm and outer diameters from φ1mm to φ400mm, meeting the requirements of various specifications and high-precision production.

With outstanding product quality and professional service, we have earned the trust and support of customers worldwide. Our products are widely used in industries such as automotive, electronics, machinery, automation, medical equipment, hydraulics, and power transmission. We are able to respond quickly within 24 hours and provide tens of thousands of commonly used standard springs for fast delivery. Meanwhile, our experienced engineering team provides professional spring design and customized solutions according to customers' specific requirements.

Cixi Dingli Spring Co., Ltd.

SINCE 1995 | PRECISION MANUFACTURING

Professional Precision Spring Solutions

Company Profile

Founded in 1995, Dingli Spring is a national-level supporting enterprise specializing in the R&D, manufacturing and servicing of precision springs. Covering 20,000 square meters, we deliver high-precision solutions to clients worldwide.

- Wire Diameter: Φ0.2mm – Φ20.0mm
- Outer Diameter: Φ1.0mm – Φ400mm
- 10,000+ SKUs in stock: standard parts shipped within 24H
- Talent assurance: technical staff account for 30%

Core Values

"People-Oriented, Striving for Excellence"

Backed by our "Xindongfazhu®" brand, we provide domestic alternatives of imported quality, significantly enhancing our customers' product competitiveness.

MILESTONES

1995
Official Founding · The Journey Begins

Established in August, entering the spring manufacturing industry. Set the foundation of building the company on quality and deep-rooted commitment to the precision industrial market.

2006
Brand Rise · Strategic Expansion

Launched the "Xindongfazhu®" brand and compiled an industry-leading spring selection catalog, establishing leadership in the standardization field.

2016
Smart Manufacturing · Global Vision

Implemented a 24-hour response mechanism. Products penetrated deeply into global industrial chains including automotive safety, high-end medical and power transmission.

FUTURE
Innovation-Driven · Sustainable Growth

Continuously deepening our digital brand strategy. With high-quality manufacturing capability and exceptional service, we strive to become a century-long benchmark in the spring industry.

Die Springs
Full range: JIS / ISO / US standards

Round Wire Compression Springs
High fatigue-life design

Custom Forming
Spring design & machining

Address: No. 211 Wei'er West Road, Cixi, Zhejiang, China Web: https://www.dinglispring.com Tel: +86-574-63221800

Company Qualifications

副 本

质量管理体系认证证书

证书号：52924Q10367R1M

兹证明

慈溪市顶立弹簧有限公司

统一社会信用代码：91330282668495699L

地址：浙江省宁波市慈溪市崇寿镇纬二西路211号 邮编：315334

管理体系符合标准

GB/T 19001-2016/ISO 9001:2015

认证范围

弹簧的制造

在国家规定的各行政许可、资质许可有效期内使用有效。

本证书持有者的质量管理体系持续符合上述标准的运行条件下，认证有效期为三年。

（证书的有效性需经华企合信认证通过定期的监督审核确认保持；证书有效信息请登陆国家认证认可监督管理委员会官方网站http://www.cnca.gov.cn和http://www.hqhx.org.cn进行查询；本张证书使用期限至[redacted]）

HQHX

华企合信认证有限公司

中国·浙江·宁波市慈溪市崇寿镇纬二西路211号1幢1-1室

COPY

Quality Management System Certificate

Certificate No.: 52924Q10367R1M

Certify that

Cixi Dingli Spring Co., Ltd.

Unified social credit Code: 91330282668495699L

Add. :No.211 Wei 'erxi Road, Chongshou Town, Cixi City, Ningbo City, Zhejiang Province

Zip Code: 315334

The management system is in conformity with standard

GB/T19001-2016 / ISO9001:2015

SCOPE OF CERTIFICATION

Manufacture of springs

In the provisions of the state's administrative, qualification with a valid license validity

Subject to operation in consistent conformity with the above criteria this certificate valid for three years on effective date

Validity Of Certification: Jun.22, 2024 To: Jun.21, 2027

Date of First Registration: Jun.22, 2021 Date of Issue/Reissue: Dec.30, 2023

(The validity of the certificate shall be maintained by huaqihexin certification through regular supervision and audit. Conditions on effectiveness of certificate see official website of Certification and Accreditation Administration of People's of Republic of China http://www.cnca.gov.cn and http://www.hqhx.org.cn , This certificate is valid until [redacted])

HQHX

Huaqihexin Certification Co., Ltd.

<16-1>,Building 1,Wisdom Valley,Gutang Street,Cixi,Ningbo,P.R.C.

ISO 9001 质量体系认证

ISO 9001 quality system certification

副 本 AENOR

IATF16949 汽车行业质量管理体系认证证书

AENOR QUALITY IN AUTOMOTIVE SECTOR IATF 16949

RA02-0034/2022

IATF:0567779

兹证明

慈溪市顶立弹簧有限公司

（统一社会信用代码：91330282668495699L）

已根据 IATF16949:2016 标准建立并实施质量管理体系

生产地址： 中国浙江省慈溪市崇寿镇纬二西路 211 号

IATF USI: GTPYYC

认证范围： 冷卷精密弹簧的生产

删减： 产品设计

首次签发日期：[redacted]

证书有效日期：[redacted]

此中文认证证书系认证号 RA02-0034/2022、IATF: 0567779 翻译件。

Rafael GARCÍA MEIRO

CEO

AENOR CONFIA, S.A.U.

Génova, 6. 28004 Madrid. España

Tel. 91 432 60 00. www.aenor.com

COPY AENOR

IATF 16949 Certificate

AENOR QUALITY IN AUTOMOTIVE SECTOR IATF 16949

RA02-0034/2022

IATF: 0567779

AENOR certifies that the organization

CIXI DINGLI SPRING CO., LTD

has a quality management system according to the IATF 16949:2016 Standard

At the following site of production: NO. 211, WEIERXI ROAD, CHONGSHOU TOWN, 315334 - CIXI (ZHEJIANG - China)
IATF USI: GTPYYC

For the following activities: Production of cold coil precision spring

Exclusion: Product design

Last issued: [redacted]

Validity date: [redacted]

Rafael GARCÍA MEIRO

CEO

AENOR CONFIA, S.A.U.

Génova, 6. 28004 Madrid. España

Tel. 91 432 60 00. - www.aenor.com

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IATF 16949 汽车行业质量体系认证

IATF 16949 automotive industry quality management system certification

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Technical Notes:

1. Page content is for reference only; specific specifications shall be subject to the data in the main text.
2. Please use the colour of the model prefix to quickly identify the corresponding spring stiffness.

Product Overview

Type	Features	Load	Color	Brand	Catalog No.	Outer Diameter (φ)		Free Length (mm)		Compression Rate (F/L)		
						min.	max.	min.	max.	Light Duty (1,000,000 Cycles)	Medium Duty (500,000 Cycles)	Heavy Duty (300,000 Cycles)
High Compression Type	相对于直径,负载设为恒定值。	Light	Light Green	Dingli	DLY	11	42	20	300	65%		
			Light Blue		DLU	10.5	43	15	300	60%		
			Ivory		DLR	10.5	50	15	400	50%		
		Heavy	Orange		DLS	10.5	52	20	300	40%		
			Purple		DLC	6	30	15	200	50%	55%	60%
High Load Type		Light	Yellow	Dingli	DTF	6	70	10	350	40%	45%	50%
			Blue		DTL	6	70	10	350	32%	36%	40%
			Red		DTM	6	70	10	350	25.6%	28.8%	32%
			Green		DTH	6	70	10	350	19.2%	21.6%	24%
		Heavy	Brown		DTB	6	70	10	350	16%	18%	20%
			Black		DTG	10	50	15	200	16%	18%	20%

Allowable Tolerances for Heavy Load Springs

Outer Diameter (OD)		Inner Diameter (ID)		Free Length		Load	Squareness	Winding Direction
⩽60mm	⩾70mm	⩽33mm	⩾38.5mm	⩽50mm	⩾55mm			
+0 mm -0.7 mm	+0 mm -1.0 mm	+0.7 mm +0.1 mm	-0 mm +1.0 mm	± 0.5mm	± 1%	± 10%	⩽2 °	Right Hand Winding

Allowable Tolerances for High Compression Springs

Outer Diameter (OD)	Inner Diameter (ID)	Free Length		Load	Squareness	Winding Direction
		50mm 以下	55mm 以上			
+ 0.5mm - 1.0mm	+ 0.7mm + 0.1mm	± 0.5mm	± 1.5%	± 10%	⩽3 °	Right Hand Winding

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×65%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTY 11-20	11	7	20	2.26	0.23	5.0	13.0	29.4 {3.0}
25			25	1.81	0.18	6.3	16.3	
30			30	1.51	0.15	7.5	19.5	
35			35	1.29	0.13	8.8	22.8	
40			40	1.13	0.12	10.0	26.0	
45			45	1.01	0.1	11.3	29.3	
50			50	0.91	0.092	12.5	32.5	
55			55	0.82	0.084	13.8	35.8	
60			60	0.75	0.077	15.0	39.0	
65			65	0.7	0.071	16.3	42.3	
70			70	0.65	0.066	17.5	45.5	
75			75	0.6	0.061	18.8	48.8	
80			80	0.57	0.058	20.0	52.0	
90			90	0.5	0.051	22.5	58.5	
100			100	0.45	0.046	25.0	65.0	
DTY 12.5-20	12.5	8.5	20	3.09	0.32	5.0	13.0	40.2 {4.1}
25			25	2.47	0.25	6.3	16.3	
30			30	2.06	0.21	7.5	19.5	
35			35	1.77	0.18	8.8	22.8	
40			40	1.55	0.16	10.0	26.0	
45			45	1.37	0.14	11.3	29.3	
50			50	1.24	0.13	12.5	32.5	
55			55	1.12	0.11	13.8	35.8	
60			60	1.03	0.11	15.0	39.0	
65			65	0.95	0.1	16.3	42.3	
70			70	0.88	0.09	17.5	45.5	
75			75	0.82	0.084	18.8	48.8	
80			80	0.77	0.079	20.0	52.0	
90			90	0.69	0.07	22.5	58.5	
100			100	0.62	0.063	25.0	65.0	
110			110	0.56	0.057	27.5	71.5	
120			120	0.52	0.053	30.0	78.0	
125			125	0.49	0.05	31.3	81.3	
DTY 16.5-20	16.5	10.5	20	7.02	0.72	5.0	13.0	91.2 {9.3}
25			25	5.61	0.57	6.3	16.3	
30			30	4.68	0.48	7.5	19.5	
35			35	4.01	0.41	8.8	22.8	
40			40	3.51	0.36	10.0	26.0	
45			45	3.12	0.32	11.3	29.3	
50			50	2.81	0.29	12.5	32.5	
55			55	2.55	0.26	13.8	35.8	
60			60	2.34	0.24	15.0	39.0	
65			65	2.16	0.22	16.3	42.3	
70			70	2	0.2	17.5	45.5	
75			75	1.87	0.19	18.8	48.8	
80			80	1.75	0.18	20.0	52.0	
90			90	1.56	0.16	22.5	58.5	
100			100	1.4	0.14	25.0	65.0	
110			110	1.28	0.13	27.5	71.5	
120			120	1.17	0.12	30.0	78.0	
125			125	1.12	0.11	31.3	81.3	
150			150	0.94	0.1	37.5	97.5	
DTY 20.5-20	20.5	13.5	30	5.58	0.57	7.5	19.5	108.9 {11.1}
35			35	4.78	0.49	8.8	22.8	
40			40	4.19	0.43	10.0	26.0	
45			45	3.72	0.38	11.3	29.3	
50			50	3.35	0.34	12.5	32.5	
55			55	3.04	0.31	13.8	35.8	
60			60	2.79	0.28	15.0	39.0	
65			65	2.58	0.26	16.3	42.3	
70			70	2.39	0.24	17.5	45.5	
75			75	2.23	0.23	18.8	48.8	
80			80	2.09	0.21	20.0	52.0	
90			90	1.86	0.19	22.5	58.5	
100			100	1.67	0.17	25.0	65.0	
110			110	1.52	0.16	27.5	71.5	
120			120	1.4	0.14	30.0	78.0	
125			125	1.34	0.14	31.3	81.3	
130			130	1.29	0.13	32.5	84.5	
140			140	1.2	0.12	35.0	91.0	
150			150	1.12	0.11	37.5	97.5	
DTY 24.5-30	24.5	16.5	30	6.99	0.71	7.5	19.5	136.3 {13.9}
35			35	5.99	0.61	8.8	22.8	
40			40	5.24	0.53	10.0	26.0	
45			45	4.66	0.48	11.3	29.3	
50			50	4.19	0.43	12.5	32.5	
55			55	3.81	0.39	13.8	35.8	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×65%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTY 24.5-60	24.5	16.5	60	3.5	0.36	15.0	39.0	136.3 {13.9}
65			65	3.23	0.33	16.3	42.3	
70			70	3	0.31	17.5	45.5	
75			75	2.8	0.29	18.8	48.8	
80			80	2.62	0.27	20.0	52.0	
90			90	2.33	0.24	22.5	58.5	
100			100	2.1	0.21	25.0	65.0	
110			110	1.91	0.19	27.5	71.5	
120			120	1.75	0.18	30.0	78.0	
125			125	1.68	0.17	31.3	81.3	
130			130	1.61	0.16	32.5	84.5	
140			140	1.5	0.15	35.0	91.0	
150			150	1.4	0.14	37.5	97.5	
175			175	1.2	0.12	43.8	113.8	
200			200	1.05	0.11	50.0	130.0	
DTY 30-35	30	21	35	8.79	0.9	8.8	22.8	200.1 {20.4}
40			40	7.69	0.78	10.0	26.0	
45			45	6.84	0.7	11.3	29.3	
50			50	6.16	0.63	12.5	32.5	
55			55	5.6	0.57	13.8	35.8	
60			60	5.13	0.52	15.0	39.0	
65			65	4.74	0.48	16.3	42.3	
70			70	4.4	0.45	17.5	45.5	
75			75	4.1	0.42	18.8	48.8	
80			80	3.85	0.39	20.0	52.0	
90			90	3.42	0.35	22.5	58.5	
100			100	3.08	0.31	25.0	65.0	
110			110	2.8	0.29	27.5	71.5	
120			120	2.56	0.26	30.0	78.0	
125			125	2.46	0.25	31.3	81.3	
130			130	2.37	0.24	32.5	84.5	
140			140	2.2	0.22	35.0	91.0	
150			150	2.05	0.21	37.5	97.5	
160			160	1.92	0.2	40.0	104.0	
170			170	1.81	0.18	42.5	110.5	
175			175	1.76	0.18	43.8	113.8	
180			180	1.71	0.17	45.0	117.0	
190			190	1.62	0.17	47.5	123.5	
200			200	1.54	0.16	50.0	130.0	
250			250	1.23	0.13	62.5	162.5	
300			300	1.03	0.1	75.0	195.0	
DTY 37-40	37	26	40	11.32	1.15	10.0	26.0	294.2 {30.0}
45			45	10.06	1.03	11.3	29.3	
50			50	9.05	0.92	12.5	32.5	
55			55	8.23	0.84	13.8	35.8	
60			60	7.54	0.77	15.0	39.0	
65			65	6.96	0.71	16.3	42.3	
70			70	6.47	0.66	17.5	45.5	
75			75	6.03	0.62	18.8	48.8	
80			80	5.66	0.58	20.0	52.0	
90			90	5.03	0.51	22.5	58.5	
100			100	4.53	0.46	25.0	65.0	
110			110	4.11	0.42	27.5	71.5	
120			120	3.77	0.38	30.0	78.0	
130			130	3.48	0.36	32.5	84.5	
140			140	3.23	0.33	35.0	91.0	
150			150	3.02	0.31	37.5	97.5	
160			160	2.83	0.29	40.0	104.0	
170			170	2.66	0.27	42.5	110.5	
180			180	2.51	0.26	45.0	117.0	
190			190	2.38	0.24	47.5	123.5	
200			200	2.26	0.23	50.0	130.0	
225			225	2.01	0.21	56.3	146.3	
250			250	1.81	0.18	62.5	162.5	
275			275	1.65	0.17	68.8	178.8	
300			300	1.51	0.15	75.0	195.0	
DTY 42-50	42	31	50	12.07	1.23	12.5	32.5	392.3 {40.0}
60			60	10.06	1.03	15.0	39.0	
70			70	8.62	0.88	17.5	45.5	
80			80	7.54	0.77	20.0	52.0	
90			90	6.71	0.68	22.5	58.5	
100			100	6.03	0.62	25.0	65.0	
110			110	5.49	0.56	27.5	71.5	
120			120	5.03	0.51	30.0	78.0	
130			130	4.64	0.47	32.5	84.5	
140			140	4.31	0.44	35.0	91.0	
150			150	4.02	0.41	37.5	97.5	

DLY Super High Deflection Type

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×65%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTY 42-160	42	31	160	3.77	0.38	40.0	104.0	392.3 {40.0}
170			170	3.55	0.36	42.5	110.5	
180			180	3.35	0.34	45.0	117.0	
190			190	3.18	0.32	47.5	123.5	
200			200	3.02	0.31	50.0	130.0	
225			225	2.68	0.27	56.3	146.3	
250			250	2.41	0.25	62.5	162.5	
275			275	2.19	0.22	68.8	178.8	
300			300	2.01	0.21	75.0	195.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×60%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTU 10.5-15	10.5	6.0	15	7.63	0.78	4.5	9.0	68.6 {7.0}
20			20	5.72	0.58	6.0	12.0	
25			25	4.58	0.47	7.5	15.0	
30			30	3.81	0.39	9.0	18.0	
35			35	3.27	0.33	10.5	21.0	
40			40	2.86	0.29	12.0	24.0	
45			45	2.54	0.26	13.5	27.0	
50			50	2.29	0.23	15.0	30.0	
55			55	2.08	0.21	16.5	33.0	
60			60	1.91	0.19	18.0	36.0	
65			65	1.76	0.18	19.5	39.0	
70			70	1.63	0.17	21.0	42.0	
75			75	1.53	0.16	22.5	45.0	
80			80	1.43	0.15	24.0	48.0	
DTU 12.5-15	12.5	7.0	15	8.72	0.89	4.5	9.0	78.5 {8.0}
20			20	6.54	0.67	6.0	12.0	
25			25	5.23	0.53	7.5	15.0	
30			30	4.36	0.44	9.0	18.0	
35			35	3.74	0.38	10.5	21.0	
40			40	3.27	0.33	12.0	24.0	
45			45	2.91	0.3	13.5	27.0	
50			50	2.62	0.27	15.0	30.0	
55			55	2.38	0.24	16.5	33.0	
60			60	2.18	0.22	18.0	36.0	
65			65	2.01	0.21	19.5	39.0	
70			70	1.87	0.19	21.0	42.0	
75			75	1.74	0.18	22.5	45.0	
80			80	1.63	0.17	24.0	48.0	
90			90	1.45	0.15	27.0	54.0	
100			100	1.31	0.13	30.0	60.0	
DTU 14.5-15	14.5	8.5	15	10.9	1.11	4.5	9.0	98.1 {10.0}
20			20	8.17	0.83	6.0	12.0	
25			25	6.54	0.67	7.5	15.0	
30			30	5.45	0.56	9.0	18.0	
35			35	4.67	0.48	10.5	21.0	
40			40	4.09	0.42	12.0	24.0	
45			45	3.63	0.37	13.5	27.0	
50			50	3.27	0.33	15.0	30.0	
55			55	2.97	0.3	16.5	33.0	
60			60	2.72	0.28	18.0	36.0	
65			65	2.51	0.26	19.5	39.0	
70			70	2.33	0.24	21.0	42.0	
75			75	2.18	0.22	22.5	45.0	
80			80	2.04	0.21	24.0	48.0	
90			90	1.82	0.19	27.0	54.0	
100			100	1.63	0.17	30.0	60.0	
110			110	1.49	0.15	33.0	66.0	
120			120	1.36	0.14	36.0	72.0	
125			125	1.31	0.13	37.5	75.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×60%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTU 14.5-150	14.5	8.5	150	1.09	0.11	45.0	90.0	98.1 {10.0}
DTU 17-20	17	10.5	20	12.26	1.25	6.0	12.0	147.1 {15.0}
25			25	9.81	1	7.5	15.0	
30			30	8.17	0.83	9.0	18.0	
35			35	7	0.71	10.5	21.0	
40			40	6.13	0.63	12.0	24.0	
45			45	5.45	0.56	13.5	27.0	
50			50	4.9	0.5	15.0	30.0	
55			55	4.46	0.45	16.5	33.0	
60			60	4.09	0.42	18.0	36.0	
65			65	3.77	0.38	19.5	39.0	
70			70	3.5	0.36	21.0	42.0	
75			75	3.27	0.33	22.5	45.0	
80			80	3.06	0.31	24.0	48.0	
90			90	2.72	0.28	27.0	54.0	
100			100	2.45	0.25	30.0	60.0	
110			110	2.23	0.23	33.0	66.0	
120			120	2.04	0.21	36.0	72.0	
125			125	1.96	0.2	37.5	75.0	
150			150	1.63	0.17	45.0	90.0	
175			175	1.4	0.14	52.5	105.0	
DTU 21-25	21	13.5	25	15.04	1.53	7.5	15.0	225.6 {23.0}
30			30	12.53	1.28	9.0	18.0	
35			35	10.74	1.1	10.5	21.0	
40			40	9.4	0.96	12.0	24.0	
45			45	8.35	0.85	13.5	27.0	
50			50	7.52	0.77	15.0	30.0	
55			55	6.83	0.7	16.5	33.0	
60			60	6.27	0.64	18.0	36.0	
65			65	5.78	0.59	19.5	39.0	
70			70	5.37	0.55	21.0	42.0	
75			75	5.01	0.51	22.5	45.0	
80			80	4.7	0.48	24.0	48.0	
90			90	4.18	0.43	27.0	54.0	
100			100	3.76	0.38	30.0	60.0	
110			110	3.42	0.35	33.0	66.0	
120			120	3.13	0.32	36.0	72.0	
125			125	3.01	0.31	37.5	75.0	
130			130	2.89	0.29	39.0	78.0	
140			140	2.69	0.27	42.0	84.0	
150			150	2.51	0.26	45.0	90.0	
175			175	2.15	0.22	52.5	105.0	
200			200	1.88	0.19	60.0	120.0	
DTU 26-30	26	16.5	30	16.34	1.67	9.0	18.0	294.2 {30.0}
35			35	14.01	1.43	10.5	21.0	
40			40	12.26	1.25	12.0	24.0	
45			45	10.9	1.11	13.5	27.0	
50			50	9.81	1	15.0	30.0	
55			55	8.92	0.91	16.5	33.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×60%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTU 26-60	26	16.5	60	8.17	0.83	18.0	36.0	294.2 {30.0}
65			65	7.54	0.77	19.5	39.0	
70			70	7	0.71	21.0	42.0	
75			75	6.54	0.67	22.5	45.0	
80			80	6.13	0.63	24.0	48.0	
90			90	5.45	0.56	27.0	54.0	
100			100	4.9	0.5	30.0	60.0	
110			110	4.46	0.45	33.0	66.0	
120			120	4.09	0.42	36.0	72.0	
125			125	3.92	0.4	37.5	75.0	
130			130	3.77	0.38	39.0	78.0	
140			140	3.5	0.36	42.0	84.0	
150			150	3.27	0.33	45.0	90.0	
175			175	2.8	0.29	52.5	105.0	
200			200	2.45	0.25	60.0	120.0	
225			225	2.18	0.22	67.5	135.0	
250			250	1.96	0.2	75.0	150.0	
DTU 31-35	31	21	35	17.75	1.81	10.5	21.0	372.7 {38.0}
40			40	15.53	1.58	12.0	24.0	
45			45	13.8	1.41	13.5	27.0	
50			50	12.42	1.27	15.0	30.0	
55			55	11.29	1.15	16.5	33.0	
60			60	10.35	1.06	18.0	36.0	
65			65	9.56	0.97	19.5	39.0	
70			70	8.87	0.9	21.0	42.0	
75			75	8.28	0.84	22.5	45.0	
80			80	7.76	0.79	24.0	48.0	
90			90	6.9	0.7	27.0	54.0	
100			100	6.21	0.63	30.0	60.0	
110			110	5.65	0.58	33.0	66.0	
120			120	5.18	0.53	36.0	72.0	
125			125	4.97	0.51	37.5	75.0	
130			130	4.78	0.49	39.0	78.0	
140			140	4.44	0.45	42.0	84.0	
150			150	4.14	0.42	45.0	90.0	
160			160	3.88	0.4	48.0	96.0	
170			170	3.65	0.37	51.0	102.0	
175			175	3.55	0.36	52.5	105.0	
180			180	3.45	0.35	54.0	108.0	
190			190	3.27	0.33	57.0	114.0	
200			200	3.11	0.32	60.0	120.0	
250			250	2.48	0.25	75.0	150.0	
300			300	2.07	0.21	90.0	180.0	
DTU 37-40	37	26	40	19.2	1.96	12.0	24.0	460.9 {47.0}
45			45	17.07	1.74	13.5	27.0	
50			50	15.36	1.57	15.0	30.0	
55			55	13.97	1.42	16.5	33.0	
60			60	12.8	1.31	18.0	36.0	
65			65	11.82	1.21	19.5	39.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×60%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTU 37-70	37	26	70	10.97	1.12	21.0	42.0	460.9 {47.0}
75			75	10.24	1.04	22.5	45.0	
80			80	9.6	0.98	24.0	48.0	
90			90	8.54	0.87	27.0	54.0	
100			100	7.68	0.78	30.0	60.0	
110			110	6.98	0.71	33.0	66.0	
120			120	6.4	0.65	36.0	72.0	
130			130	5.91	0.6	39.0	78.0	
140			140	5.49	0.56	42.0	84.0	
150			150	5.12	0.52	45.0	90.0	
160			160	4.8	0.49	48.0	96.0	
170			170	4.52	0.46	51.0	102.0	
180			180	4.27	0.44	54.0	108.0	
190			190	4.04	0.41	57.0	114.0	
200			200	3.84	0.39	60.0	120.0	
225			225	3.41	0.35	67.5	135.0	
250			250	3.07	0.31	75.0	150.0	
275			275	2.79	0.28	82.5	165.0	
300			300	2.56	0.26	90.0	180.0	
DTU 43-50	43	31	50	19.61	2	15.0	30.0	588.4 {60.0}
60			60	16.34	1.67	18.0	36.0	
70			70	14.01	1.43	21.0	42.0	
80			80	12.26	1.25	24.0	48.0	
90			90	10.9	1.11	27.0	54.0	
100			100	9.81	1	30.0	60.0	
110			110	8.92	0.91	33.0	66.0	
120			120	8.17	0.83	36.0	72.0	
130			130	7.54	0.77	39.0	78.0	
140			140	7	0.71	42.0	84.0	
150			150	6.54	0.67	45.0	90.0	
160			160	6.13	0.63	48.0	96.0	
170			170	5.77	0.59	51.0	102.0	
180			180	5.45	0.56	54.0	108.0	
190			190	5.16	0.53	57.0	114.0	
200			200	4.9	0.5	60.0	120.0	
225			225	4.36	0.44	67.5	135.0	
250			250	3.92	0.4	75.0	150.0	
275			275	3.57	0.36	82.5	165.0	
300			300	3.27	0.33	90.0	180.0	

DLR High Deflection Type

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTR 10.5-15	10.5	6.0	15	10.46	1.07	6.0	7.5	78.5 {8.0}
20			20	7.85	0.8	8.0	10.0	
25			25	6.28	0.64	10.0	12.5	
30			30	5.23	0.53	12.0	15.0	
35			35	4.48	0.46	14.0	17.5	
40			40	3.92	0.4	16.0	20.0	
45			45	3.49	0.36	18.0	22.5	
50			50	3.14	0.32	20.0	25.0	
55			55	2.85	0.29	22.0	27.5	
60			60	2.62	0.27	24.0	30.0	
65			65	2.41	0.25	26.0	32.5	
70			70	2.24	0.23	28.0	35.0	
75			75	2.09	0.21	30.0	37.5	
80			80	1.96	0.2	32.0	40.0	
DTR 12.5-15	12.5	7.0	15	11.77	1.2	6.0	7.5	88.3 {9.0}
20			20	8.83	0.9	8.0	10.0	
25			25	7.06	0.72	10.0	12.5	
30			30	5.88	0.6	12.0	15.0	
35			35	5.04	0.51	14.0	17.5	
40			40	4.41	0.45	16.0	20.0	
45			45	3.92	0.4	18.0	22.5	
50			50	3.53	0.36	20.0	25.0	
55			55	3.21	0.33	22.0	27.5	
60			60	2.94	0.3	24.0	30.0	
65			65	2.72	0.28	26.0	32.5	
70			70	2.52	0.26	28.0	35.0	
75			75	2.35	0.24	30.0	37.5	
80			80	2.21	0.23	32.0	40.0	
90			90	1.96	0.2	36.0	45.0	
100			100	1.77	0.18	40.0	50.0	
DTR 14.5-15	14.5	8.5	15	17	1.73	6.0	7.5	127.5 {13.0}
20			20	12.75	1.3	8.0	10.0	
25			25	10.2	1.04	10.0	12.5	
30			30	8.5	0.87	12.0	15.0	
35			35	7.28	0.74	14.0	17.5	
40			40	6.37	0.65	16.0	20.0	
45			45	5.67	0.58	18.0	22.5	
50			50	5.1	0.52	20.0	25.0	
55			55	4.64	0.47	22.0	27.5	
60			60	4.25	0.43	24.0	30.0	
65			65	3.92	0.4	26.0	32.5	
70			70	3.64	0.37	28.0	35.0	
75			75	3.4	0.35	30.0	37.5	
80			80	3.19	0.33	32.0	40.0	
90			90	2.83	0.29	36.0	45.0	
100			100	2.55	0.26	40.0	50.0	
125			125	2.04	0.21	50.0	62.5	
150			150	1.7	0.17	60.0	75.0	
DTR 17-20	17	10.5	20	19.61	2	8.0	10.0	196.1 {20.0}
25			25	15.69	1.6	10.0	12.5	
30			30	13.08	1.33	12.0	15.0	
35			35	11.21	1.14	14.0	17.5	

DLR High Deflection Type

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							**1.000.000 Cycles**	
DTR 17-40	17	10.5	40	9.81	1	16.0	20.0	196.1 {20.0}
45			45	8.72	0.89	18.0	22.5	
50			50	7.85	0.8	20.0	25.0	
55			55	7.13	0.73	22.0	27.5	
60			60	6.54	0.67	24.0	30.0	
65			65	6.03	0.62	26.0	32.5	
70			70	5.6	0.57	28.0	35.0	
75			75	5.23	0.53	30.0	37.5	
80			80	4.9	0.5	32.0	40.0	
90			90	4.36	0.44	36.0	45.0	
100			100	3.92	0.4	40.0	50.0	
125			125	3.14	0.32	50.0	62.5	
150			150	2.62	0.27	60.0	75.0	
175			175	2.24	0.23	70.0	87.5	
DTR 21-25	21	13.5	25	23.54	2.4	10.0	12.5	294.2 {30.0}
30			30	19.61	2	12.0	15.0	
35			35	16.81	1.71	14.0	17.5	
40			40	14.71	1.5	16.0	20.0	
45			45	13.08	1.33	18.0	22.5	
50			50	11.77	1.2	20.0	25.0	
55			55	10.7	1.09	22.0	27.5	
60			60	9.81	1	24.0	30.0	
65			65	9.05	0.92	26.0	32.5	
70			70	8.41	0.86	28.0	35.0	
75			75	7.85	0.8	30.0	37.5	
80			80	7.35	0.75	32.0	40.0	
90			90	6.54	0.67	36.0	45.0	
100			100	5.88	0.6	40.0	50.0	
110			110	5.35	0.55	44.0	55.0	
120			120	4.9	0.5	48.0	60.0	
125			125	4.71	0.48	50.0	62.5	
130			130	4.53	0.46	52.0	65.0	
140			140	4.2	0.43	56.0	70.0	
150			150	3.92	0.4	60.0	75.0	
175			175	3.36	0.34	70.0	87.5	
200			200	2.94	0.3	80.0	100.0	
DTR 26-25	26	16.5	25	31.38	3.2	10.0	12.5	392.3 {40.0}
30			30	26.15	2.67	12.0	15.0	
35			35	22.42	2.29	14.0	17.5	
40			40	19.61	2	16.0	20.0	
45			45	17.43	1.78	18.0	22.5	
50			50	15.69	1.6	20.0	25.0	
55			55	14.26	1.45	22.0	27.5	
60			60	13.08	1.33	24.0	30.0	
65			65	12.07	1.23	26.0	32.5	
70			70	11.21	1.14	28.0	35.0	
75			75	10.46	1.07	30.0	37.5	
80			80	9.81	1	32.0	40.0	
90			90	8.72	0.89	36.0	45.0	
100			100	7.85	0.8	40.0	50.0	
110			110	7.13	0.73	44.0	55.0	
120			120	6.54	0.67	48.0	60.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							**1.000.000 Cycles**	
DTR 26-125	26	16.5	125	6.28	0.64	50.0	62.5	392.3 {40.0}
130			130	6.03	0.62	52.0	65.0	
140			140	5.6	0.57	56.0	70.0	
150			150	5.23	0.53	60.0	75.0	
175			175	4.48	0.46	70.0	87.5	
200			200	3.92	0.4	80.0	100.0	
225			225	3.49	0.36	90.0	112.5	
250			250	3.14	0.32	100.0	125.0	
DTR 31-35	31	21	35	28.02	2.86	14.0	17.5	490.3 {50.0}
40			40	24.52	2.5	16.0	20.0	
45			45	21.79	2.22	18.0	22.5	
50			50	19.61	2	20.0	25.0	
55			55	17.83	1.82	22.0	27.5	
60			60	16.34	1.67	24.0	30.0	
65			65	15.09	1.54	26.0	32.5	
70			70	14.01	1.43	28.0	35.0	
75			75	13.08	1.33	30.0	37.5	
80			80	12.26	1.25	32.0	40.0	
90			90	10.9	1.11	36.0	45.0	
100			100	9.81	1	40.0	50.0	
110			110	8.92	0.91	44.0	55.0	
120			120	8.17	0.83	48.0	60.0	
125			125	7.85	0.8	50.0	62.5	
130			130	7.54	0.77	52.0	65.0	
140			140	7	0.71	56.0	70.0	
150			150	6.54	0.67	60.0	75.0	
160			160	6.13	0.63	67.0	80.0	
170			170	5.77	0.59	68.0	85.0	
175			175	5.6	0.57	70.0	87.5	
180			180	5.45	0.56	72.0	90.0	
190			190	5.16	0.53	76.0	95.0	
200			200	4.9	0.5	80.0	100.0	
250			250	3.92	0.4	100.0	125.0	
300			300	3.27	0.33	120.0	150.0	
DTR 37-35	37	26	35	33.62	3.43	14.0	17.5	588.4 {60.0}
40			40	29.42	3	16.0	20.0	
45			45	26.15	2.67	18.0	22.5	
50			50	23.54	2.4	20.0	25.0	
55			55	21.4	2.18	22.0	27.5	
60			60	19.61	2	24.0	30.0	
65			65	18.1	1.85	26.0	32.5	
70			70	16.81	1.71	28.0	35.0	
75			75	15.69	1.6	30.0	37.5	
80			80	14.71	1.5	32.0	40.0	
90			90	13.08	1.33	36.0	45.0	
100			100	11.77	1.2	40.0	50.0	
110			110	10.7	1.09	44.0	55.0	
120			120	9.81	1	48.0	60.0	
125			125	9.41	0.96	50.0	62.5	
130			130	9.05	0.92	52.0	65.0	
140			140	8.41	0.86	56.0	70.0	
150			150	7.85	0.8	60.0	75.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTR 37-160	37	26	160	7.35	0.75	64.0	80.0	588.4 {60.0}
170			170	6.92	0.71	68.0	85.0	
175			175	6.72	0.69	70.0	87.5	
180			180	6.54	0.67	72.0	90.0	
190			190	6.19	0.63	76.0	95.0	
200			200	5.88	0.6	80.0	100.0	
250			250	4.71	0.48	100.0	125.0	
300			300	3.92	0.4	120.0	150.0	
DTR 43-50	43	31	50	33.34	3.4	20.0	25.0	833.6 {85.0}
60			60	27.79	2.83	24.0	30.0	
70			70	23.82	2.43	28.0	35.0	
80			80	20.84	2.13	32.0	40.0	
90			90	18.52	1.89	36.0	45.0	
100			100	16.67	1.7	40.0	50.0	
110			110	15.16	1.55	44.0	55.0	
120			120	13.89	1.42	48.0	60.0	
130			130	12.82	1.31	52.0	65.0	
140			140	11.91	1.21	56.0	70.0	
150			150	11.11	1.13	60.0	75.0	
160			160	10.42	1.06	64.0	80.0	
170			170	9.81	1	68.0	85.0	
180			180	9.26	0.94	72.0	90.0	
190			190	8.77	0.89	76.0	95.0	
200			200	8.34	0.85	80.0	100.0	
225			225	7.41	0.76	90.0	112.5	
250			250	6.67	0.68	100.0	125.0	
275			275	6.06	0.62	110.0	137.5	
300			300	5.56	0.57	120.0	150.0	
DTR 46-50	46	33	50	43.15	4.4	20.0	25.0	1079 {110}
60			60	35.96	3.67	24.0	30.0	
70			70	30.82	3.14	28.0	35.0	
80			80	26.97	2.75	32.0	40.0	
90			90	23.97	2.44	36.0	45.0	
100			100	21.57	2.2	40.0	50.0	
110			110	19.61	2	44.0	55.0	
120			120	17.98	1.83	48.0	60.0	
125			125	17.26	1.76	50.0	62.5	
130			130	16.6	1.69	52.0	65.0	
140			140	15.41	1.57	56.0	70.0	
150			150	14.38	1.47	60.0	75.0	
175			175	12.33	1.26	70.0	87.5	
200			200	10.79	1.1	80.0	100.0	
225			225	9.59	0.98	90.0	112.5	
250			250	8.63	0.88	100.0	125.0	
275			275	7.85	0.8	110.0	137.5	
300			300	7.19	0.73	120.0	150.0	
DTR 50-50	50	36	50	52.96	5.4	20.0	25.0	1324 {135}
60			60	44.13	4.5	24.0	30.0	
70			70	37.83	3.86	28.0	35.0	
80			80	33.1	3.38	32.0	40.0	
90			90	29.42	3	36.0	45.0	
100			100	26.48	2.7	40.0	50.0	

DLR High Deflection Type

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							**1.000.000 Cycles**	
DTR 50-110	50	36	110	24.07	2.45	44.0	55.0	1324 {135}
120			120	22.06	2.25	48.0	60.0	
130			130	20.37	2.08	52.0	65.0	
140			140	18.91	1.93	56.0	70.0	
150			150	17.65	1.8	60.0	75.0	
175			175	15.13	1.54	70.0	87.5	
200			200	13.24	1.35	80.0	100.0	
225			225	11.77	1.2	90.0	112.5	
250			250	10.59	1.08	100.0	125.0	
275			275	9.63	0.98	110.0	137.5	
300			300	8.83	0.9	120.0	150.0	
350			350	7.57	0.77	140.0	175.0	
400			400	6.62	0.68	160.0	200.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTS 10.5-20	10.5	5.5	20	10.9	1.11	10.0	8.0	87.2 {8.9}
25			25	8.72	0.89	12.5	10.0	
30			30	7.27	0.74	15.0	12.0	
35			35	6.23	0.64	17.5	14.0	
40			40	5.45	0.56	20.0	16.0	
45			45	4.84	0.49	22.5	18.0	
50			50	4.36	0.44	25.0	20.0	
55			55	3.96	0.4	27.5	22.0	
60			60	3.63	0.37	30.0	24.0	
65			65	3.35	0.34	32.5	26.0	
70			70	3.11	0.32	35.0	28.0	
75			75	2.91	0.3	37.5	30.0	
80			80	2.73	0.28	40.0	32.0	
DTS 12.5-20	12.5	6.5	20	15.25	1.56	10.0	8.0	122.0 {12.4}
25			25	12.2	1.24	12.5	10.0	
30			30	10.17	1.04	15.0	12.0	
35			35	8.71	0.89	17.5	14.0	
40			40	7.63	0.78	20.0	16.0	
45			45	6.78	0.69	22.5	18.0	
50			50	6.1	0.62	25.0	20.0	
55			55	5.55	0.57	27.5	22.0	
60			60	5.08	0.52	30.0	24.0	
65			65	4.69	0.48	32.5	26.0	
70			70	4.36	0.44	35.0	28.0	
75			75	4.07	0.41	37.5	30.0	
80			80	3.81	0.39	40.0	32.0	
DTS 14.5-20	14.5	8.5	20	24.5	2.5	10.0	8.0	196.0 {20.0}
25			25	19.61	2	12.5	10.0	
30			30	16.33	1.67	15.0	12.0	
35			35	14	1.43	17.5	14.0	
40			40	12.25	1.25	20.0	16.0	
45			45	10.89	1.11	22.5	18.0	
50			50	9.8	1	25.0	20.0	
55			55	8.91	0.91	27.5	22.0	
60			60	8.17	0.83	30.0	24.0	
65			65	7.54	0.77	32.5	26.0	
70			70	7	0.71	35.0	28.0	
75			75	6.53	0.67	37.5	30.0	
80			80	6.13	0.62	40.0	32.0	
90			90	5.44	0.56	45.0	36.0	
100			100	4.9	0.5	50.0	40.0	
125			125	3.92	0.4	62.5	50.0	
150			150	3.27	0.33	75.0	60.0	
DTS 17-25	17	10.5	25	29.42	3	12.5	10.0	294.2 {30.0}
30			30	24.52	2.5	15.0	12.0	
35			35	21.01	2.14	17.5	14.0	
40			40	18.39	1.88	20.0	16.0	
45			45	16.34	1.67	22.5	18.0	
50			50	14.71	1.5	25.0	20.0	
55			55	13.37	1.36	27.5	22.0	
60			60	12.26	1.25	30.0	24.0	
65			65	11.32	1.15	32.5	26.0	
70			70	10.51	1.07	35.0	28.0	

DLS Medium Deflection Type

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTS 17-75	17	10.5	75	9.81	1	37.5	30.0	294.2 {30.0}
80			80	9.19	0.94	40.0	32.0	
90			90	8.17	0.83	45.0	36.0	
100			100	7.35	0.75	50.0	40.0	
125			125	5.88	0.6	62.5	50.0	
150			150	4.9	0.5	75.0	60.0	
DTS 21-30	21	13.5	30	35.17	3.59	15.0	12.0	422.0 {43.0}
35			35	30.14	3.07	17.5	14.0	
40			40	26.38	2.69	20.0	16.0	
45			45	23.44	2.39	22.5	18.0	
50			50	21.1	2.15	25.0	20.0	
55			55	19.18	1.96	27.5	22.0	
60			60	17.58	1.79	30.0	24.0	
65			65	16.23	1.66	32.5	26.0	
70			70	15.07	1.54	35.0	28.0	
75			75	14.07	1.43	37.5	30.0	
80			80	13.19	1.34	40.0	32.0	
90			90	11.72	1.2	45.0	36.0	
100			100	10.55	1.08	50.0	40.0	
110			110	9.59	0.98	55.0	44.0	
120			120	8.79	0.9	60.0	48.0	
125			125	8.44	0.86	62.5	50.0	
130			130	8.12	0.83	65.0	52.0	
140			140	7.54	0.77	70.0	56.0	
150			150	7.03	0.72	75.0	60.0	
175			175	6.03	0.61	87.5	70.0	
200			200	5.28	0.54	100.0	80.0	
DTS 26-30	26	16.5	30	47.42	4.84	15.0	12.0	569.0 {58.0}
35			35	40.64	4.14	17.5	14.0	
40			40	35.56	3.63	20.0	16.0	
45			45	31.61	3.22	22.5	18.0	
50			50	28.45	2.9	25.0	20.0	
55			55	25.86	2.64	27.5	22.0	
60			60	23.71	2.42	30.0	24.0	
65			65	21.88	2.23	32.5	26.0	
70			70	20.32	2.07	35.0	28.0	
75			75	18.97	1.93	37.5	30.0	
80			80	17.78	1.81	40.0	32.0	
90			90	15.81	1.61	45.0	36.0	
100			100	14.23	1.45	50.0	40.0	
110			110	12.93	1.32	55.0	44.0	
120			120	11.85	1.21	60.0	48.0	
125			125	11.38	1.16	62.5	50.0	
130			130	10.94	1.12	65.0	52.0	
140			140	10.16	1.04	70.0	56.0	
150			150	9.48	0.97	75.0	60.0	
175			175	8.13	0.83	87.5	70.0	
200			200	7.11	0.73	100.0	80.0	
225			225	6.32	0.64	112.5	90.0	
250			250	5.69	0.58	125.0	100.0	
DTS 31-40	31	21	40	49	5	20.0	16.0	784.0 {79.9}
45			45	43.56	4.44	22.5	18.0	
50			50	39.2	4	25.0	20.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTS 31-55	31	21	55	35.64	3.63	27.5	22.0	784.0 {79.9}
60			60	32.67	3.33	30.0	24.0	
65			65	30.15	3.07	32.5	26.0	
70			70	28	2.86	35.0	28.0	
75			75	26.13	2.66	37.5	30.0	
80			80	24.5	2.5	40.0	32.0	
90			90	21.78	2.22	45.0	36.0	
100			100	19.6	2	50.0	40.0	
110			110	17.82	1.82	55.0	44.0	
120			120	16.33	1.67	60.0	48.0	
125			125	15.68	1.6	62.5	50.0	
130			130	15.08	1.54	65.0	52.0	
140			140	14	1.43	70.0	56.0	
150			150	13.07	1.33	75.0	60.0	
160			160	12.25	1.25	80.0	64.0	
170			170	11.53	1.18	85.0	68.0	
175			175	11.2	1.14	87.5	70.0	
180			180	10.89	1.11	90.0	72.0	
190			190	10.32	1.05	95.0	76.0	
200			200	9.8	1	100.0	80.0	
250			250	7.84	0.8	125.0	100.0	
300			300	6.53	0.67	150.0	120.0	
DTS 37-40	37	26	40	52.13	5.32	20.0	16.0	834.0 {85.0}
45			45	46.33	4.72	22.5	18.0	
50			50	41.7	4.25	25.0	20.0	
55			55	37.91	3.87	27.5	22.0	
60			60	34.75	3.54	30.0	24.0	
65			65	32.08	3.27	32.5	26.0	
70			70	29.79	3.04	35.0	28.0	
75			75	27.8	2.83	37.5	30.0	
80			80	26.06	2.66	40.0	32.0	
90			90	23.17	2.36	45.0	36.0	
100			100	20.85	2.13	50.0	40.0	
110			110	18.95	1.93	55.0	44.0	
120			120	17.38	1.77	60.0	48.0	
125			125	16.68	1.7	62.5	50.0	
130			130	16.04	1.64	65.0	52.0	
140			140	14.89	1.52	70.0	56.0	
150			150	13.9	1.42	75.0	60.0	
160			160	13.03	1.33	80.0	64.0	
170			170	12.26	1.25	85.0	68.0	
175			175	11.91	1.21	87.5	70.0	
180			180	11.58	1.18	90.0	72.0	
190			190	10.97	1.12	95.0	76.0	
200			200	10.43	1.06	100.0	80.0	
250			250	8.34	0.85	125.0	100.0	
300			300	6.95	0.71	150.0	120.0	
DTS 44.5-50	44.5	31	50	50.15	5.11	25.0	20.0	1003 {102}
60			60	41.79	4.26	30.0	24.0	
70			70	35.82	3.65	35.0	28.0	
80			80	31.34	3.2	40.0	32.0	
90			90	27.86	2.84	45.0	36.0	
100			100	25.08	2.56	50.0	40.0	

DLS Medium Deflection Type

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%	
							Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}
Operating Cycles							1.000.000 Cycles	
DTS 44.5-110	44.5	31	110	22.8	2.32	55.0	44.0	1003 {102}
120			120	20.9	2.13	60.0	48.0	
130			130	19.29	1.97	65.0	52.0	
140			140	17.91	1.83	70.0	56.0	
150			150	16.72	1.7	75.0	60.0	
160			160	15.67	1.6	80.0	64.0	
170			170	14.75	1.5	85.0	68.0	
180			180	13.93	1.42	90.0	72.0	
190			190	13.2	1.35	95.0	76.0	
200			200	12.54	1.28	100.0	80.0	
225			225	11.14	1.14	112.5	90.0	
250			250	10.03	1.02	125.0	100.0	
275			275	9.12	0.93	137.5	110.0	
300			300	8.36	0.85	150.0	120.0	
DTS 46-50	46	33	50	63.74	6.5	25.0	20.0	1275 {130}
60			60	53.12	5.42	30.0	24.0	
70			70	45.53	4.64	35.0	28.0	
80			80	39.84	4.06	40.0	32.0	
90			90	35.41	3.61	45.0	36.0	
100			100	31.87	3.25	50.0	40.0	
110			110	28.97	2.95	55.0	44.0	
120			120	26.56	2.71	60.0	48.0	
125			125	25.5	2.6	62.5	50.0	
130			130	24.52	2.5	65.0	52.0	
140			140	22.77	2.32	70.0	56.0	
150			150	21.25	2.17	75.0	60.0	
175			175	18.21	1.86	87.5	70.0	
200			200	15.94	1.63	100.0	80.0	
225			225	14.17	1.44	112.5	90.0	
250			250	12.75	1.3	125.0	100.0	
275			275	11.59	1.18	137.5	110.0	
300			300	10.62	1.08	150.0	120.0	
DTS 52-60	52	37	60	65.42	6.67	30.0	24.0	1570 {160}
70			70	56.07	5.72	35.0	28.0	
80			80	49.06	5	40.0	32.0	
90			90	43.61	4.45	45.0	36.0	
100			100	39.25	4	50.0	40.0	
110			110	35.68	3.64	55.0	44.0	
120			120	32.71	3.34	60.0	48.0	
130			130	30.19	3.08	65.0	52.0	
140			140	28.04	2.86	70.0	56.0	
150			150	26.17	2.67	75.0	60.0	
175			175	22.43	2.29	87.5	70.0	
200			200	19.63	2	100.0	80.0	
225			225	17.44	1.78	112.5	90.0	
250			250	15.7	1.6	125.0	100.0	
275			275	14.27	1.46	137.5	110.0	
300			300	13.08	1.33	150.0	120.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%		F = L×55%		F = L×60%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTC 6-15	6	3	15	3.6	0.37	6.5	7.5	27 {2.8}	8.3	30 {3.0}	*Out of permissible range*	
20			20	2.7	0.28	8.0	10.0		11.0			
25			25	2.16	0.22	9.0	12.5		13.8		15.0	32 {3.3}
30			30	1.8	0.18	11.0	15.0		16.5		18.0	
35			35	1.54	0.16	13.0	17.5		19.3		21.0	
40			40	1.35	0.14	15.0	20.0		22.0		24.0	
DTC 8-15	8.0	4.6	15	3.81	0.39	5.0	7.5	29 {2.9}	8.3	31 {3.2}	*Out of permissible range*	
20			20	2.86	0.29	6.6	10.0		11.0		12.0	34 {3.5}
25			25	2.29	0.23	8.0	12.5		13.8		15.0	
30			30	1.91	0.19	9.3	15.0		16.5		18.0	
35			35	1.63	0.17	10.5	17.5		19.3		21.0	
40			40	1.43	0.15	11.8	20.0		22.0		24.0	
45			45	1.27	0.13	13.1	22.5		24.8		27.0	
50			50	1.14	0.12	14.4	25.0		27.5		30.0	
55			55	1.04	0.11	15.7	27.5		30.3		33.0	
60			60	0.95	0.1	16.7	30.0		33.0		36.0	
65			65	0.88	0.09	18.3	32.5		35.8		39.0	
70			70	0.82	0.08	19.5	35.0		38.5		42.0	
75			75	0.76	0.08	21.0	37.5		41.3		45.0	
80			80	0.72	0.07	22.2	40.0		44.0		48.0	
DTC 10-15	10	5.8	15	6.1	0.62	6.0	7.5	46 {4.7}	8.3	50 {5.1}	*Out of permissible range*	
20			20	4.58	0.47	7.5	10.0		11.0		12.0	55 {5.6}
25			25	3.66	0.37	9.0	12.5		13.8		15.0	
30			30	3.05	0.31	10.5	15.0		16.5		18.0	
35			35	2.62	0.27	12.0	17.5		19.3		21.0	
40			40	2.29	0.23	13.4	20.0		22.0		24.0	
45			45	2.03	0.21	14.8	22.5		24.8		27.0	
50			50	1.83	0.19	16.2	25.0		27.5		30.0	
55			55	1.66	0.17	17.7	27.5		30.3		33.0	
60			60	1.53	0.16	19.1	30.0		33.0		36.0	
65			65	1.41	0.14	20.6	32.5		35.8		39.0	
70			70	1.31	0.13	22.0	35.0		38.5		42.0	
75			75	1.22	0.12	23.4	37.5		41.3		45.0	
80			80	1.14	0.12	24.9	40.0		44.0		48.0	
90			90	1.02	0.1	27.8	45.0		49.5		54.0	
DTC 12-20	12	7.4	20	5.48	0.56	7.0	10.0	55 {5.6}	11.0	60 {6.1}	*Out of permissible range*	
25			25	4.38	0.45	8.0	12.5		13.8		15.0	66 {6.7}
30			30	3.65	0.37	10.0	15.0		16.5		18.0	
35			35	3.13	0.32	12.0	17.5		19.3		21.0	
40			40	2.74	0.28	14.0	20.0		22.0		24.0	
45			45	2.43	0.25	15.0	22.5		24.8		27.0	
50			50	2.19	0.22	16.0	25.0		27.5		30.0	
55			55	1.99	0.2	17.0	27.5		30.3		33.0	
60			60	1.83	0.19	18.0	30.0		33.0		36.0	
65			65	1.68	0.17	20.0	32.5		35.8		39.0	
70			70	1.56	0.16	21.0	35.0		38.5		42.0	
75			75	1.46	0.15	22.0	37.5		41.3		45.0	
80			80	1.37	0.14	24.0	40.0		44.0		48.0	
90			90	1.22	0.12	27.0	45.0		49.5		54.0	
DTC 14-25	14	8.5	25	8.17	0.83	10.5	12.5	102 {10.4}	13.8	112 {11.4}	*Out of permissible range*	
30			30	6.81	0.69	11.0	15.0		16.5		18.0	123 {12.5}
35			35	5.84	0.6	13.0	17.5		19.3		21.0	
40			40	5.11	0.52	15.0	20.0		22.0		24.0	
45			45	4.54	0.46	16.7	22.5		24.8		27.0	
50			50	4.09	0.42	18.0	25.0		27.5		30.0	
55			55	3.71	0.38	20.0	27.5		30.3		33.0	
60			60	3.41	0.35	21.5	30.0		33.0		36.0	
65			65	3.14	0.32	23.0	32.5		35.8		39.0	
70			70	2.92	0.3	24.6	35.0		38.5		42.0	
75			75	2.72	0.28	26.2	37.5		41.3		45.0	
80			80	2.55	0.26	28.0	40.0		44.0		48.0	
90			90	2.27	0.23	31.0	45.5		49.5		54.0	
100			100	2.04	0.21	34.0	50.0		55.0		60.0	
DTC 16-25	16	9.5	25	9.15	0.93	10.0	12.5	114 {11.7}	13.8	126 {12.8}	*Out of permissible range*	
30			30	7.63	0.78	11.0	15.0		16.5		18.0	137 {14.0}
35			35	6.54	0.67	12.5	17.5		19.3		21.0	
40			40	5.72	0.58	13.9	20.0		22.0		24.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%		F = L×55%		F = L×60%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTC 16-45	16	9.5	45	5.08	0.52	15.3	22.5	114 {11.7}	24.8	126 {12.8}	27.0	137 {14.0}
50			50	4.58	0.47	16.7	25.0		27.5		30.0	
55			55	4.16	0.42	18.0	27.5		30.3		33.0	
60			60	3.81	0.39	19.4	30.0		33.0		36.0	
65			65	3.52	0.36	20.8	32.5		35.8		39.0	
70			70	3.27	0.33	22.2	35.0		38.5		42.0	
75			75	3.05	0.31	23.6	37.5		41.3		45.0	
80			80	2.86	0.29	25.0	40.0		44.0		48.0	
90			90	2.54	0.26	27.8	45.0		49.5		54.0	
100			100	2.29	0.23	30.5	50.0		55.0		60.0	
125			125	1.83	0.19	37.5	62.5		68.8		75.0	
DTC 18-25	18	11	25	10.46	1.07	9.0	12.5	131 {13.3}	13.8	144 {14.7}	*Out of permissible range*	157 {16.0}
30			30	8.72	0.89	10.3	15.0		16.5		18.0	
35			35	7.47	0.76	11.5	17.5		19.3		21.0	
40			40	6.54	0.67	12.7	20.0		22.0		24.0	
45			45	5.81	0.59	14.0	22.5		24.8		27.0	
50			50	5.23	0.53	15.5	25.0		27.5		30.0	
55			55	4.75	0.48	16.5	27.5		30.3		33.0	
60			60	4.36	0.44	18.0	30.0		33.0		36.0	
65			65	4.02	0.41	19.0	32.5		35.8		39.0	
70			70	3.74	0.38	20.5	35.0		38.5		42.0	
75			75	3.49	0.36	22.0	37.5		41.3		45.0	
80			80	3.27	0.33	23.0	40.0		44.0		48.0	
90			90	2.91	0.3	25.5	45.0		49.5		54.0	
100			100	2.62	0.27	29.0	50.0		55.0		60.0	
125			125	2.09	0.21	35.0	62.5		68.8		75.0	
DTC 20-25	20	12.5	25	14.38	1.47	9.0	12.5	180 {18.3}	13.8	198 {20.2}	*Out of permissible range*	216 {22.0}
30			30	11.99	1.22	11.0	15.0		16.5		18.0	
35			35	10.27	1.05	12.5	17.5		19.3		21.0	
40			40	8.99	0.92	14.0	20.0		22.0		24.0	
45			45	7.99	0.81	15.0	22.5		24.8		27.0	
50			50	7.19	0.73	16.5	25.0		27.5		30.0	
55			55	6.54	0.67	18.0	27.5		30.3		33.0	
60			60	5.99	0.61	19.2	30.0		33.0		36.0	
65			65	5.53	0.56	20.5	32.5		35.8		39.0	
70			70	5.14	0.52	21.7	35.0		38.5		42.0	
75			75	4.79	0.49	23.0	37.5		41.3		45.0	
80			80	4.49	0.46	24.2	40.0		44.0		48.0	
90			90	4	0.41	27.0	45.5		49.5		54.0	
100			100	3.6	0.37	30.0	50.0		55.0		60.0	
125			125	2.88	0.29	37.0	62.5		68.8		75.0	
150			150	2.4	0.24	44.0	75.0		82.5		90.0	
DTC 22-25	22	13.5	25	19.61	2	10.0	12.5	245 {25.0}	13.8	270 {27.5}	*Out of permissible range*	294 {30.0}
30			30	16.34	1.67	11.0	15.0		16.5		18.0	
35			35	14.01	1.43	12.0	17.5		19.3		21.0	
40			40	12.26	1.25	14.0	20.0		22.0		24.0	
45			45	10.9	1.11	16.0	22.5		24.8		27.0	
50			50	9.81	1	18.0	25.0		27.5		30.0	
55			55	8.92	0.91	20.0	27.5		30.3		33.0	
60			60	8.17	0.83	22.0	30.0		33.0		36.0	
65			65	7.54	0.77	24.0	32.5		35.8		39.0	
70			70	7	0.71	26.0	35.0		38.5		42.0	
75			75	6.54	0.67	27.0	37.5		41.3		45.0	
80			80	6.13	0.63	29.0	40.0		44.0		48.0	
90			90	5.45	0.56	32.0	45.0		49.5		54.0	
100			100	4.9	0.5	35.0	50.0		55.0		60.0	
125			125	3.92	0.4	42.0	62.5		68.8		75.0	
150			150	3.27	0.33	50.0	75.0		82.5		90.0	
DTC 25-25	25	16	25	24.19	2.47	9.0	12.5	302 {30.8}	13.8	333 {33.9}	*Out of permissible range*	363 {37.0}
30			30	20.16	2.06	10.5	15.0		16.5		18.0	
35			35	17.28	1.76	12.7	17.5		19.3		21.0	
40			40	15.12	1.54	14.6	20.0		22.0		24.0	
45			45	13.44	1.37	16.6	22.5		24.8		27.0	
50			50	12.09	1.23	18.0	25.0		27.5		30.0	
55			55	11	1.12	20.0	27.5		30.3		33.0	
60			60	10.08	1.03	21.3	30.0		33.0		36.0	
65			65	9.3	0.95	22.5	32.5		35.8		39.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×50%		F = L×55%		F = L×60%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTC 25-70	25	16	70	8.64	0.88	24.0	35.0	302 {30.8}	38.5	333 {33.9}	42.0	363 {37.0}
75			75	8.06	0.82	25.3	37.5		41.3		45.0	
80			80	7.56	0.77	26.7	40.0		44.0		48.0	
90			90	6.72	0.69	29.5	45.0		49.5		54.0	
100			100	6.05	0.62	32.2	50.0		55.0		60.0	
125			125	4.84	0.49	39.0	62.5		68.8		75.0	
150			150	4.03	0.41	45.8	75.0		82.5		90.0	
175			175	3.46	0.35	52.6	87.5		96.3		105.0	
200			200	3.02	0.31	59.5	100.0		110.0		120.0	
DTC 27-25	27	17.5	25	28.11	2.87	9.0	12.5	351 {35.8}	13.8	387 {39.4}	*Out of permissible range*	
30			30	23.43	2.39	11.0	15.0		16.5		18.0	422 {43.0}
35			35	20.08	2.05	13.0	17.5		19.3		21.0	
40			40	17.57	1.79	14.5	20.0		22.0		24.0	
45			45	15.62	1.59	17.0	22.5		24.8		27.0	
50			50	14.06	1.43	18.5	25.0		27.5		30.0	
55			55	12.78	1.3	20.0	27.5		30.3		33.0	
60			60	11.71	1.19	22.0	30.0		33.0		36.0	
65			65	10.81	1.1	23.5	32.5		35.8		39.0	
70			70	10.04	1.02	25.0	35.0		38.5		42.0	
75			75	9.37	0.96	26.5	37.5		41.3		45.0	
80			80	8.79	0.9	28.0	40.0		44.0		48.0	
90			90	7.81	0.8	30.5	45.0		49.5		54.0	
100			100	7.03	0.72	33.5	50.0		55.0		60.0	
125			125	5.62	0.57	40.5	62.5		68.8		75.0	
150			150	4.69	0.48	48.0	75.0		82.5		90.0	
175			175	4.02	0.41	55.0	87.5		96.3		105.0	
200			200	3.51	0.36	62.0	100.0		110.0		120.0	
DTC 30-25	30	20	25	31.38	3.2	9.5	12.5	392 {40.0}	13.8	431 {44.0}	*Out of permissible range*	
30			30	26.15	2.67	11.0	15.0		16.5		18.0	471 {48.0}
35			35	22.42	2.29	13.0	17.5		19.3		21.0	
40			40	19.61	2	14.5	20.0		22.0		24.0	
45			45	17.43	1.78	16.5	22.5		24.8		27.0	
50			50	15.69	1.6	18.0	25.0		27.5		30.0	
55			55	14.26	1.45	19.5	27.5		30.3		33.0	
60			60	13.08	1.33	20.8	30.0		33.0		36.0	
65			65	12.07	1.23	22.0	32.5		35.8		39.0	
70			70	11.21	1.14	23.3	35.0		38.5		42.0	
75			75	10.46	1.07	24.5	37.5		41.3		45.0	
80			80	9.81	1	25.8	40.0		44.0		48.0	
90			90	8.72	0.89	28.3	45.0		49.5		54.0	
100			100	7.85	0.8	30.8	50.0		55.0		60.0	
125			125	6.28	0.64	37.0	62.5		68.8		75.0	
150			150	5.23	0.53	43.5	75.0		82.5		90.0	
175			175	4.48	0.46	50.0	87.5		96.3		105.0	
200			200	3.92	0.4	57.0	100.0		110.0		120.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		F = L×40%		F = L×45%		F = L×50%	
						Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles						1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTR 14.5×20	14.5	9.0	20	10.9	{1.11}	8.0	88.3 {9.0}	9.0	98.1 {10.0}	10.0	107.9 {11.0}
25			25	8.72	{0.89}	10.0		11.3		12.5	
30			30	7.27	{0.74}	12.0		13.5		15.0	
35			35	6.23	{0.64}	14.0		15.8		17.5	
40			40	5.45	{0.56}	16.0		18.0		20.0	
45			45	4.84	{0.49}	18.0		20.3		22.5	
50			50	4.36	{0.44}	20.0		22.5		25.0	
55			55	3.96	{0.4}	22.0		24.8		27.5	
60			60	3.63	{0.37}	24.0		27.0		30.0	
65			65	3.35	{0.34}	26.0		29.3		32.5	
70			70	3.11	{0.32}	28.0		31.5		35.0	
75			75	2.91	{0.3}	30.0		33.8		37.5	
80			80	2.73	{0.28}	32.0		36.0		40.0	
90			90	2.42	{0.25}	36.0		40.5		45.0	
100			100	2.18	{0.22}	40.0		45.0		50.0	
125			125	1.74	{0.18}	50.0		56.3		62.5	
DTR 17×25	17.0	11.0	25	14.82	{1.51}	10.0	147.1 {15.0}	11.3	166.7 {17.0}	12.5	186.3 {19.0}
30			30	12.35	{1.26}	12.0		13.5		15.0	
35			35	10.58	{1.08}	14.0		15.8		17.5	
40			40	9.26	{0.94}	16.0		18.0		20.0	
45			45	8.23	{0.84}	18.0		20.3		22.5	
50			50	7.41	{0.76}	20.0		22.5		25.0	
55			55	6.74	{0.69}	22.0		24.8		27.5	
60			60	6.17	{0.63}	24.0		27.0		30.0	
65			65	5.7	{0.58}	26.0		29.3		32.5	
70			70	5.29	{0.54}	28.0		31.5		35.0	
75			75	4.94	{0.5}	30.0		33.8		37.5	
80			80	4.63	{0.47}	32.0		36.0		40.0	
90			90	4.12	{0.42}	36.0		40.5		45.0	
100			100	3.7	{0.38}	40.0		45.0		50.0	
125			125	2.96	{0.3}	50.0		56.3		62.5	
150			150	2.47	{0.25}	60.0		67.5		75.0	
DTR 21×30	21.0	13.0	30	13.8	{1.41}	12.0	166.7 {17.0}	13.5	186.3 {19.0}	15.0	205.9 {21.0}
35			35	11.83	{1.21}	14.0		15.8		17.5	
40			40	10.35	{1.06}	16.0		18.0		20.0	
45			45	9.2	{0.94}	18.0		20.3		22.5	
50			50	8.28	{0.84}	20.0		22.5		25.0	
55			55	7.53	{0.77}	22.0		24.8		27.5	
60			60	6.9	{0.7}	24.0		27.0		30.0	
65			65	6.37	{0.65}	26.0		29.3		32.5	
70			70	5.91	{0.6}	28.0		31.5		35.0	
75			75	5.52	{0.56}	30.0		33.8		37.5	
80			80	5.18	{0.53}	32.0		36.0		40.0	
90			90	4.6	{0.47}	36.0		40.5		45.0	
100			100	4.14	{0.42}	40.0		45.0		50.0	
125			125	3.31	{0.34}	50.0		56.3		62.5	
150			150	2.76	{0.28}	60.0		67.5		75.0	
DTR 26×30	26.0	16.5	30	26.87	{2.74}	12.0	323.6 {33.0}	13.5	362.8 {37.0}	15.0	402.1 {41.0}
35			35	23.03	{2.35}	14.0		15.8		17.5	
40			40	20.16	{2.06}	16.0		18.0		20.0	
45			45	17.92	{1.83}	18.0		20.3		22.5	
50			50	16.12	{1.64}	20.0		22.5		25.0	
55			55	14.66	{1.5}	22.0		24.8		27.5	
60			60	13.44	{1.37}	24.0		27.0		30.0	
65			65	12.4	{1.27}	26.0		29.3		32.5	
70			70	11.52	{1.18}	28.0		31.5		35.0	
75			75	10.75	{1.1}	30.0		33.8		37.5	
80			80	10.08	{1.03}	32.0		36.0		40.0	
90			90	8.96	{0.91}	36.0		40.5		45.0	
100			100	8.06	{0.82}	40.0		45.0		50.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		F = L×40%		F = L×45%		F = L×50%	
						Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles						1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTR 26×110	26.0	16.5	110	7.33	{0.75}	44.0	323.6 {33.0}	49.5	362.8 {37.0}	55.0	402.1 {41.0}
125			125	6.45	{0.66}	50.0		56.3		62.5	
150			150	5.37	{0.55}	60.0		67.5		75.0	
175			175	4.61	{0.47}	70.0		78.8		87.5	
200			200	4.03	{0.41}	80.0		90.0		100.0	
DTR 32×40	32.0	21.0	40	25.06	{2.56}	16.0	402.1 {41.0}	18.0	451.1 {46.0}	20.0	500.1 {51.0}
45			45	22.28	{2.27}	18.0		20.3		22.5	
50			50	20.05	{2.05}	20.0		22.5		25.0	
60			60	16.71	{1.71}	24.0		27.0		30.0	
70			70	14.32	{1.46}	28.0		31.5		35.0	
80			80	12.53	{1.28}	32.0		36.0		40.0	
90			90	11.14	{1.14}	36.0		40.5		45.0	
100			100	10.02	{1.02}	40.0		45.0		50.0	
110			110	9.11	{0.93}	44.0		49.5		55.0	
125			125	8.02	{0.82}	50.0		56.3		62.5	
150			150	6.68	{0.68}	60.0		67.5		75.0	
175			175	5.73	{0.58}	70.0		78.8		87.5	
200			200	5.01	{0.51}	80.0		90.0		100.0	
250			250	4.01	{0.41}	100.0		112.5		125.0	
300			300	3.34	{0.34}	120.0		135.0		150.0	
DTR 39×40	39.0	26.0	40	27.24	{2.78}	16.0	431.5 {44.0}	18.0	490.3 {50.0}	20.0	539.4 {55.0}
45			45	24.21	{2.47}	18.0		20.3		22.5	
50			50	21.79	{2.22}	20.0		22.5		25.0	
60			60	18.16	{1.85}	24.0		27.0		30.0	
70			70	15.57	{1.59}	28.0		31.5		35.0	
80			80	13.62	{1.39}	32.0		36.0		40.0	
90			90	12.11	{1.24}	36.0		40.5		45.0	
100			100	10.9	{1.11}	40.0		45.0		50.0	
110			110	9.91	{1.01}	44.0		49.5		55.0	
125			125	8.72	{0.89}	50.0		56.3		62.5	
150			150	7.26	{0.74}	60.0		67.5		75.0	
175			175	6.23	{0.64}	70.0		78.8		87.5	
200			200	5.45	{0.56}	80.0		90.0		100.0	
250			250	4.36	{0.44}	100.0		112.5		125.0	
300			300	3.63	{0.37}	120.0		135.0		150.0	
DTR 46×50	46.0	32.0	50	24.41	{2.49}	20.0	490.3 {50.0}	22.5	549.2 {56.0}	25.0	608.0 {62.0}
60			60	20.34	{2.08}	24.0		27.0		30.0	
70			70	17.43	{1.78}	28.0		31.5		35.0	
80			80	15.26	{1.56}	32.0		36.0		40.0	
90			90	13.56	{1.38}	36.0		40.5		45.0	
100			100	12.2	{1.24}	40.0		45.0		50.0	
110			110	11.09	{1.13}	44.0		49.5		55.0	
125			125	9.76	{1}	50.0		56.3		62.5	
150			150	8.14	{0.83}	60.0		67.5		75.0	
175			175	6.97	{0.71}	70.0		78.8		87.5	
200			200	6.1	{0.62}	80.0		90.0		100.0	
250			250	4.88	{0.5}	100.0		112.5		125.0	
300			300	4.07	{0.42}	120.0		135.0		150.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		F = L×40%		F = L×45%		F = L×50%	
						Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles						1.000.000		500.000 Cycles		300.000 Cycles	
DTY 14.5×20	14.5	9.0	20	18.52	{1.89}	8.0	147.1 {15.0}	9.0	166.7 {17.0}	10.0	186.3 {19.0}
25			25	14.82	{1.51}	10.0		11.3		12.5	
30			30	12.35	{1.26}	12.0		13.5		15.0	
35			35	10.58	{1.08}	14.0		15.8		17.5	
40			40	9.26	{0.94}	16.0		18.0		20.0	
45			45	8.23	{0.84}	18.0		20.3		22.5	
50			50	7.41	{0.76}	20.0		22.5		25.0	
55			55	6.74	{0.69}	22.0		24.8		27.5	
60			60	6.17	{0.63}	24.0		27.0		30.0	
65			65	5.7	{0.58}	26.0		29.3		32.5	
70			70	5.29	{0.54}	28.0		31.5		35.0	
75			75	4.94	{0.5}	30.0		33.8		37.5	
80			80	4.63	{0.47}	32.0		36.0		40.0	
90			90	4.12	{0.42}	36.0		40.5		45.0	
100			100	3.7	{0.38}	40.0		45.0		50.0	
125			125	2.96	{0.3}	50.0		56.3		62.5	
DTY 17×25	17.0	11.0	25	21.8	{2.22}	10.0	215.7 {22.0}	11.3	245.2 {25.0}	12.5	274.6 {28.0}
30			30	18.16	{1.85}	12.0		13.5		15.0	
35			35	15.57	{1.59}	14.0		15.8		17.5	
40			40	13.62	{1.39}	16.0		18.0		20.0	
45			45	12.11	{1.24}	18.0		20.3		22.5	
50			50	10.9	{1.11}	20.0		22.5		25.0	
55			55	9.91	{1.01}	22.0		24.8		27.5	
60			60	9.08	{0.93}	24.0		27.0		30.0	
65			65	8.38	{0.86}	26.0		29.3		32.5	
70			70	7.78	{0.79}	28.0		31.5		35.0	
75			75	7.27	{0.74}	30.0		33.8		37.5	
80			80	6.81	{0.69}	32.0		36.0		40.0	
90			90	6.05	{0.62}	36.0		40.5		45.0	
100			100	5.45	{0.56}	40.0		45.0		50.0	
125			125	4.36	{0.44}	50.0		56.3		62.5	
150			150	3.63	{0.37}	60.0		67.5		75.0	
DTY 21×30	21.0	13.0	30	23.24	{2.37}	12.0	284.4 {29.0}	13.5	313.8 {32.0}	15.0	353.0 {36.0}
35			35	19.92	{2.03}	14.0		15.8		17.5	
40			40	17.43	{1.78}	16.0		18.0		20.0	
45			45	15.5	{1.58}	18.0		20.3		22.5	
50			50	13.95	{1.42}	20.0		22.5		25.0	
55			55	12.68	{1.29}	22.0		24.8		27.5	
60			60	11.62	{1.19}	24.0		27.0		30.0	
65			65	10.73	{1.09}	26.0		29.3		32.5	
70			70	9.96	{1.02}	28.0		31.5		35.0	
75			75	9.3	{0.95}	30.0		33.8		37.5	
80			80	8.72	{0.89}	32.0		36.0		40.0	
90			90	7.75	{0.79}	36.0		40.5		45.0	
100			100	6.97	{0.71}	40.0		45.0		50.0	
125			125	5.58	{0.57}	50.0		56.3		62.5	
150			150	4.65	{0.47}	60.0		67.5		75.0	
DTY 26×30	26.0	16.5	30	34.87	{3.56}	12.0	411.9 {42.0}	13.5	470.7 {48.0}	15.0	519.8 {53.0}
35			35	29.89	{3.05}	14.0		15.8		17.5	
40			40	26.15	{2.67}	16.0		18.0		20.0	
45			45	23.24	{2.37}	18.0		20.3		22.5	
50			50	20.92	{2.13}	20.0		22.5		25.0	
55			55	19.02	{1.94}	22.0		24.8		27.5	
60			60	17.43	{1.78}	24.0		27.0		30.0	
65			65	16.09	{1.64}	26.0		29.3		32.5	
70			70	14.94	{1.52}	28.0		31.5		35.0	
75			75	13.95	{1.42}	30.0		33.8		37.5	
80			80	13.08	{1.33}	32.0		36.0		40.0	
90			90	11.62	{1.19}	36.0		40.5		45.0	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		F = L×40%		F = L×45%		F = L×50%	
						Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles						1.000.000		500.000 Cycles		300.000 Cycles	
DTY 26×100	26.0	16.5	100	10.46	{1.07}	40.0	411.9 {42.0}	45.0	470.7 {48.0}	50.0	519.8 {53.0}
110			110	9.51	{0.97}	44.0		49.5		55.0	
125			125	8.37	{0.85}	50.0		56.3		62.5	
150			150	6.97	{0.71}	60.0		67.5		75.0	
175			175	5.98	{0.61}	70.0		78.8		87.5	
200			200	5.23	{0.53}	80.0		90.0		100.0	
DTY 32×40	32.0	21.0	40	34.87	{3.56}	16.0	559.0 {57.0}	18.0	627.6 {64.0}	20.0	696.3 {71.0}
45			45	30.99	{3.16}	18.0		20.3		22.5	
50			50	27.89	{2.85}	20.0		22.5		25.0	
60			60	23.24	{2.37}	24.0		27.0		30.0	
70			70	19.92	{2.03}	28.0		31.5		35.0	
80			80	17.43	{1.78}	32.0		36.0		40.0	
90			90	15.5	{1.58}	36.0		40.5		45.0	
100			100	13.95	{1.42}	40.0		45.0		50.0	
110			110	12.68	{1.29}	44.0		49.5		55.0	
125			125	11.16	{1.14}	50.0		56.3		62.5	
150			150	9.3	{0.95}	60.0		67.5		75.0	
175			175	7.97	{0.81}	70.0		78.8		87.5	
200			200	6.97	{0.71}	80.0		90.0		100.0	
250			250	5.58	{0.57}	100.0		112.5		125.0	
300			300	4.65	{0.47}	120.0		135.0		150.0	
DTY 39×40	39.0	26.0	40	45.77	{4.67}	16.0	725.7 {74.0}	18.0	823.8 {84.0}	20.0	912.0 {93.0}
45			45	40.68	{4.15}	18.0		20.3		22.5	
50			50	36.61	{3.74}	20.0		22.5		25.0	
60			60	30.51	{3.11}	24.0		27.0		30.0	
70			70	26.15	{2.67}	28.0		31.5		35.0	
80			80	22.88	{2.33}	32.0		36.0		40.0	
90			90	20.34	{2.08}	36.0		40.5		45.0	
100			100	18.31	{1.87}	40.0		45.0		50.0	
110			110	16.64	{1.7}	44.0		49.5		55.0	
125			125	14.65	{1.49}	50.0		56.3		62.5	
150			150	12.2	{1.24}	60.0		67.5		75.0	
175			175	10.46	{1.07}	70.0		78.8		87.5	
200			200	9.15	{0.93}	80.0		90.0		100.0	
250			250	7.32	{0.75}	100.0		112.5		125.0	
300			300	6.1	{0.62}	120.0		135.0		150.0	
DTY 46×50	46.0	32.0	50	48.81	{4.98}	20.0	970.9 {99.0}	22.5	1,098 {112.0}	25.0	1,216 {124.0}
60			60	40.68	{4.15}	24.0		27.0		30.0	
70			70	34.87	{3.56}	28.0		31.5		35.0	
80			80	30.51	{3.11}	32.0		36.0		40.0	
90			90	27.12	{2.77}	36.0		40.5		45.0	
100			100	24.41	{2.49}	40.0		45.0		50.0	
110			110	22.19	{2.26}	44.0		49.5		55.0	
125			125	19.53	{1.99}	50.0		56.3		62.5	
150			150	16.27	{1.66}	60.0		67.5		75.0	
175			175	13.95	{1.42}	70.0		78.8		87.5	
200			200	12.2	{1.24}	80.0		90.0		100.0	
250			250	9.76	{1}	100.0		112.5		125.0	
300			300	8.14	{0.83}	120.0		135.0		150.0	

DTF Extra Light Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%		F = L×45%		F = L×50%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTF 6-15	6	3	15	7.8	0.8	7.1	6	47 {4.8}	6.8	53 {5.4}	7.5	59 {6.0}
20			20	5.9	0.6	9.5	8		9		10	
25			25	4.7	0.48	11.9	10		11.3		12.5	
30			30	3.9	0.4	14.2	12		13.5		15	
35			35	3.4	0.34	16.6	14		15.8		17.5	
40			40	2.9	0.3	19	16		18		20	
DTF 8-10	8	4	10	15.7	1.6	4.5	4	63 {6.4}	4.5	71 {7.2}	5	79 {8.0}
15			15	10.5	1.07	6.8	6		6.8		7.5	
20			20	7.8	0.8	9	8		9		10	
25			25	6.3	0.64	11.3	10		11.2		12.5	
30			30	5.2	0.53	13.5	12		13.5		15	
35			35	4.5	0.46	15.8	14		15.7		17.5	
40			40	3.9	0.4	18	16		18		20	
45			45	3.5	0.36	20.3	18		20.2		22.5	
50			50	3.1	0.32	22.5	20		22.5		25	
55			55	2.9	0.29	24.8	22		24.7		27.5	
60			60	2.6	0.27	27	24		27		30	
65			65	2.4	0.25	30.8	26		29.3		32.5	
70			70	2.2	0.23	33.2	28		31.5		35	
75			75	2.1	0.21	35.6	30		33.8		37.5	
80			80	2	0.2	37.9	32		36		40	
DTF 10-10	10	5	10	19.6	2	4.5	4	78 {8.0}	4.5	88 {9.0}	5	98 {10}
15			15	13.1	1.33	6.8	6		6.8		7.5	
20			20	9.8	1	9	8		9		10	
25			25	7.8	0.8	11.3	10		11.2		12.5	
30			30	6.5	0.67	13.5	12		13.5		15	
35			35	5.9	0.57	15.8	14		15.7		17.5	
40			40	4.9	0.5	18	16		18		20	
45			45	4.4	0.44	20.3	18		20.2		22.5	
50			50	3.9	0.4	22.5	20		22.5		25	
55			55	3.6	0.36	24.8	22		24.7		27.5	
60			60	3.3	0.33	27	24		27		30	
65			65	3	0.31	29.3	26		29.2		32.5	
70			70	2.8	0.29	31.5	28		31.5		35	
75			75	2.6	0.27	33.8	30		33.7		37.5	
80			80	2.5	0.25	36	32		36		40	
90			90	2.2	0.22	40.5	36		40.5		45	
DTF 12-15	12	6	15	18.3	1.87	6.8	6	110 {11}	6.8	124 {13}	7.5	137 {14}
20			20	13.7	1.4	9	8		9		10	
25			25	11	1.12	11.3	10		11.2		12.5	
30			30	9.2	0.93	13.5	12		13.5		15	
35			35	7.8	0.8	15.8	14		15.7		17.5	
40			40	6.9	0.7	18	16		18		20	
45			45	6.1	0.62	20.3	18		20.2		22.5	
50			50	5.5	0.56	22.5	20		22.5		25	
55			55	5	0.51	24.8	22		24.7		27.5	
60			60	4.6	0.47	27	24		27		30	
65			65	4.2	0.43	29.3	26		29.2		32.5	
70			70	3.9	0.4	31.5	28		31.5		35	
75			75	3.7	0.37	33.8	30		33.7		37.5	
80			80	3.4	0.35	36	32		36		40	
90			90	3.1	0.31	40.5	36		40.5		45	
DTF 14-20	14	7	20	17.7	1.8	9	8	141 {14}	9	159 {16}	10	177 {18}
25			25	14.1	1.44	11.3	10		11.2		12.5	
30			30	11.8	1.2	13.5	12		13.5		15	
35			35	10.1	1.03	15.8	14		15.7		17.5	
40			40	8.8	0.9	18	16		18		20	
45			45	7.8	0.8	20.3	18		20.2		22.5	
50			50	7.1	0.72	22.5	20		22.5		25	
55			55	6.4	0.65	24.8	22		24.7		27.5	
60			60	5.9	0.6	27	24		27		30	
65			65	5.4	0.55	29.3	26		29.2		32.5	
70			70	5	0.51	31.5	28		31.5		35	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%		F = L×45%		F = L×50%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTF 14-75	14	7	75	4.7	0.48	33.8	30	141 {14}	33.7	159 {16}	37.5	177 {18}
80			80	4.4	0.45	36	32		36		40	
90			90	3.9	0.4	40.5	36		40.5		45	
100			100	3.5	0.36	45	40		45		50	
DTF 16-20	16	8	20	20.6	2.1	9	8	165 {17}	9	185 {19}	10	206 {21}
25			25	16.5	1.68	11.3	10		11.2		12.5	
30			30	13.7	1.4	13.5	12		13.5		15	
35			35	11.8	1.2	15.8	14		15.7		17.5	
40			40	10.3	1.05	18	16		18		20	
45			45	9.2	0.93	20.3	18		20.2		22.5	
50			50	8.2	0.84	22.5	20		22.5		25	
55			55	7.5	0.76	24.8	22		24.7		27.5	
60			60	6.9	0.7	27	24		27		30	
65			65	6.3	0.65	29.3	26		29.2		32.5	
70			70	5.9	0.6	31.5	28		31.5		35	
75			75	5.5	0.56	33.8	30		33.7		37.5	
80			80	5.1	0.53	36	32		36		40	
90			90	4.6	0.47	40.5	36		40.5		45	
100			100	4.1	0.42	45	40		45		50	
125			125	3.3	0.34	56.3	50		56.3		62.5	
DTF 18-20	18	9	20	25.5	2.6	9	8	204 {21}	9	229 {23}	10	255 {26}
25			25	20.4	2.08	11.3	10		11.2		12.5	
30			30	17	1.73	13.5	12		13.5		15	
35			35	14.6	1.49	15.8	14		15.7		17.5	
40			40	12.7	1.3	18	16		18		20	
45			45	11.3	1.16	20.3	18		20.2		22.5	
50			50	10.2	1.04	22.5	20		22.5		25	
55			55	9.3	0.95	24.8	22		24.7		27.5	
60			60	8.5	0.87	27	24		27		30	
65			65	7.8	0.8	29.3	26		29.2		32.5	
70			70	7.3	0.74	31.5	28		31.5		35	
75			75	6.8	0.69	33.8	30		33.7		37.5	
80			80	6.4	0.65	36	32		36		40	
90			90	5.7	0.58	40.5	36		40.5		45	
100			100	5.1	0.52	45	40		45		50	
125			125	4.1	0.42	56.3	50		56.3		62.5	
DTF 20-20	20	11	20	31.4	3.2	9	8	251 {26}	9	282 {29}	10	314 {32}
25			25	25.1	2.56	11.3	10		11.2		12.5	
30			30	20.9	2.13	13.5	12		13.5		15	
35			35	17.9	1.83	15.8	14		15.7		17.5	
40			40	15.7	1.6	18	16		18		20	
45			45	13.9	1.42	20.3	18		20.2		22.5	
50			50	12.6	1.28	22.5	20		22.5		25	
55			55	11.4	1.16	24.8	22		24.7		27.5	
60			60	10.5	1.07	27	24		27		30	
65			65	9.7	0.98	29.3	26		29.2		32.5	
70			70	9	0.91	31.5	28		31.5		35	
75			75	8.4	0.85	33.8	30		33.7		37.5	
80			80	7.8	0.8	36	32		36		40	
90			90	7	0.71	40.5	36		40.5		45	
100			100	6.3	0.64	45	40		45		50	
125			125	5	0.51	56.3	50		56.2		62.5	
150			150	4.2	0.43	67.5	60		67.5		75	
DTF 22-25	22	11	25	31.4	3.2	11.3	10	314 {32}	11.2	353 {36}	12.5	392 {40}
30			30	26.2	2.67	13.5	12		13.5		15	
35			35	22.4	2.29	15.8	14		15.7		17.5	
40			40	19.6	2	18	16		18		20	
45			45	17.4	1.78	20.3	18		20.2		22.5	
50			50	15.7	1.6	22.5	20		22.5		25	
55			55	14.3	1.45	24.8	22		24.7		27.5	
60			60	13.1	1.33	27	24		27		30	
65			65	12.1	1.23	29.3	26		29.2		32.5	
70			70	11.2	1.14	31.5	28		31.5		35	

DTF Extra Light Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%		F = L×45%		F = L×50%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTF 22-75	22	11	75	10.5	1.07	33.8	30	314 {32}	33.7	353 {36}	37.5	392 {40}
80			80	9.8	1	36	32		36		40	
90			90	8.7	0.89	40.5	36		40.5		45	
100			100	7.8	0.8	45	40		45		50	
125			125	6.3	0.64	56.3	50		56.2		62.5	
150			150	5.2	0.53	67.5	60		67.5		75	
DTF 25-25	25	13.5	25	39.2	4	11.3	10	392 {40}	11.2	441 {45}	12.5	490 {50}
30			30	32.7	3.33	13.5	12		13.5		15	
35			35	28	2.86	15.8	14		15.7		17.5	
40			40	24.5	2.5	18	16		18		20	
45			45	21.8	2.22	20.3	18		20.2		22.5	
50			50	19.6	2	22.5	20		22.5		25	
55			55	17.8	1.82	24.8	22		24.7		27.5	
60			60	16.3	1.67	27	24		27		30	
65			65	15.1	1.54	29.3	26		29.2		32.5	
70			70	14	1.43	31.5	28		31.5		35	
75			75	13.1	1.33	33.8	30		33.7		37.5	
80			80	12.3	1.25	36	32		36		40	
90			90	10.9	1.11	40.5	36		40.5		45	
100			100	9.8	1	45	40		45		50	
125			125	7.8	0.8	56.3	50		56.2		62.5	
150			150	6.5	0.67	67.5	60		67.5		75	
175			175	5.6	0.57	78.8	70		78.7		87.5	
200			200	4.9	0.5	90	80		90		100	
DTF 27-25	27	13.5	25	47.1	4.8	11.3	10	471 {48}	11.2	530 {54}	12.5	588 {60}
30			30	39.2	4	13.5	12		13.5		15	
35			35	33.6	3.43	15.8	14		15.7		17.5	
40			40	29.4	3	18	16		18		20	
45			45	26.2	2.67	20.3	18		20.2		22.5	
50			50	23.5	2.4	22.5	20		22.5		25	
55			55	21.4	2.18	24.8	22		24.7		27.5	
60			60	19.6	2	27	24		27		30	
65			65	18.1	1.85	29.3	26		29.2		32.5	
70			70	16.8	1.71	31.5	28		31.5		35	
75			75	15.7	1.6	33.8	30		33.7		37.5	
80			80	14.7	1.5	36	32		36		40	
90			90	13.1	1.33	40.5	36		40.5		45	
100			100	11.8	1.2	45	40		45		50	
125			125	9.4	0.96	56.3	50		56.2		62.5	
150			150	7.8	0.8	67.5	60		67.5		75	
175			175	6.7	0.69	78.8	70		78.7		87.5	
200			200	5.9	0.6	90	80		90		100	
DTF 30-25	30	16	25	56.5	5.76	11.3	10	565 {58}	11.2	635 {65}	12.5	706 {72}
30			30	47.1	4.8	13.5	12		13.5		15	
35			35	40.3	4.11	15.8	14		15.7		17.5	
40			40	35.3	3.6	18	16		18		20	
45			45	31.4	3.2	20.3	18		20.2		22.5	
50			50	28.2	2.88	22.5	20		22.5		25	
55			55	25.7	2.62	24.8	22		24.7		27.5	
60			60	23.5	2.4	27	24		27		30	
65			65	21.7	2.22	29.3	26		29.2		32.5	
70			70	20.2	2.06	31.5	28		31.5		35	
75			75	18.8	1.92	33.8	30		33.7		37.5	
80			80	17.7	1.8	36	32		36		40	
90			90	15.7	1.6	40.5	36		40.5		45	
100			100	14.1	1.44	45	40		45		50	
125			125	11.3	1.15	56.3	50		56.2		62.5	
150			150	9.4	0.96	67.5	60		67.5		75	
175			175	8.1	0.82	78.8	70		78.7		87.5	
200			200	7.1	0.72	90	80		90		100	
DTF 35-40	35	19	40	48	4.89	18	16	768 {78}	18	864 {88}	20	960 {98}
45			45	42.7	4.35	20.3	18		20.2		22.5	
50			50	38.4	3.92	22.5	20		22.5		25	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%		F = L×45%		F = L×50%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTF 35-55	35	19	55	34.9	3.56	24.8	22	768 {78}	24.7	864 {88}	27.5	960 {98}
60			60	32	3.26	27	24		27		30	
65			65	29.5	3.01	29.3	26		29.2		32.5	
70			70	27.4	2.8	31.5	28		31.5		35	
75			75	25.6	2.61	33.8	30		33.7		37.5	
80			80	24	2.45	36	32		36		40	
90			90	21.3	2.18	40.5	36		40.5		45	
100			100	19.2	1.96	45	40		45		50	
125			125	15.4	1.57	56.3	50		56.2		62.5	
150			150	12.8	1.31	67.5	60		67.5		75	
175			175	11	1.12	78.8	70		78.7		87.5	
200			200	9.6	0.98	90	80		90		100	
DTF 40-40	40	22	40	62.7	6.39	18	16	1003 {102}	18	1129 {115}	20	1254 {128}
45			45	55.7	5.68	21.3	18		20.3		22.5	
50			50	50.2	5.11	22.5	20		22.5		25	
55			55	45.6	4.65	26.1	22		24.8		27.5	
60			60	41.8	4.26	27	24		27		30	
65			65	38.6	3.93	30.8	26		29.3		32.5	
70			70	35.8	3.65	31.5	28		31.5		35	
75			75	33.4	3.41	35.6	30		33.8		37.5	
80			80	31.4	3.2	36	32		36		40	
90			90	27.9	2.84	40.5	36		40.5		45	
100			100	25.1	2.56	45	40		45		50	
125			125	20.1	2.05	56.3	50		56.2		62.5	
150			150	16.7	1.7	67.5	60		67.5		75	
175			175	14.3	1.46	78.8	70		78.7		87.5	
200			200	12.5	1.28	90	80		90		100	
225			225	11.1	1.14	101	90		101.3		112.5	
250			250	10	1.02	112.5	100		112.5		125	
275			275	9.1	0.93	124	110		123.8		137.5	
300			300	8.4	0.85	142.2	120		135		150	
DTF 50-50	50	27.5	50	78.4	7.99	22.5	20	1568 {160}	22.5	1764 {180}	25	1960 {200}
55			55	71.3	7.27	24.8	22		24.8		27.5	
60			60	65.3	6.66	27	24		27		30	
65			65	60.3	6.15	29.3	26		29.3		32.5	
70			70	56	5.71	31.5	28		31.5		35	
75			75	52.3	5.33	33.8	30		33.8		37.5	
80			80	49	5	36	32		36		40	
90			90	43.6	4.44	40.5	36		40.5		45	
100			100	39.2	4	45	40		45		50	
125			125	31.4	3.2	56.3	50		56.2		62.5	
150			150	26.1	2.66	67.5	60		67.5		75	
175			175	22.4	2.28	78.8	70		78.7		87.5	
200			200	19.6	2	90	80		90		100	
225			225	17.4	1.78	101	90		101.3		112.5	
250			250	15.7	1.6	112.5	100		112.5		125	
275			275	14.3	1.45	124	110		123.8		137.5	
300			300	13.1	1.33	135	120		135		150	
350			350	11.2	1.14	165.9	140		157.5		175	
400			400	9.8	1	189.6	160		180		200	
450			450	8.7	0.89	213.3	180		202.5		225	
500			500	7.8	0.8	237	200		225		250	
DTF 60-60	60	33	60	94	9.59	27	24	2256 {230}	27	2538 {259}	30	2820 {288}
70			70	80.6	8.22	31.5	28		31.5		35	
80			80	70.5	7.19	36	32		36		40	
90			90	62.7	6.39	40.5	36		40		45	
100			100	56.4	5.75	45	40		45		50	
125			125	45.1	4.6	56.3	50		56.2		62.5	
150			150	37.6	3.83	67.5	60		67.5		75	
175			175	32.2	3.29	78.8	70		78.7		87.5	
200			200	28.2	2.88	90	80		90		100	
225			225	25.1	2.56	101.3	90		101.3		112.5	
250			250	22.6	2.3	112.5	100		112.5		125	

DTF Extra Light Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×40%		F = L×45%		F = L×50%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTF 60-275	60	33	275	20.5	2.09	123.8	110	2256 {230}	123.8	2538 {259}	137.5	2820 {288}
300			300	18.8	1.92	135	120		135		150	
350			350	16.1	1.64	165.9	140		157.5		175	
400			400	14.1	1.44	189.6	160		180		200	
450			450	12.5	1.28	213.3	180		202.5		225	
500			500	11.3	1.15	237	200		225		250	
DTF 70-70	70	38.5	70	112	11.4	33.2	28	3136 {320}	31.5	3528 {360}	35	3920 {400}
80			80	98	9.99	37.9	32		36		40	
90			90	87.1	8.88	42.7	36		40.5		45	
100			100	78.4	7.99	47.4	40		45		50	
125			125	62.7	6.4	59.3	50		56.3		62.5	
150			150	52.3	5.33	71.1	60		67.5		75	
175			175	44.8	4.57	83	70		78.8		87.5	
200			200	39.2	4	94.8	80		90		100	
250			250	31.4	3.2	118.5	100		112.5		125	
300			300	26.1	2.66	142.2	120		135		150	
350			350	22.4	2.28	165.9	140		157.5		175	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×32%		F = L×36%		F = L×40%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTL 6-15	6	3	15	13.1	1.33	8.6	4.8	63 {6.4}	5.4	71 {7.2}	6	78 {8.0}
20			20	9.8	1	11.5	6.4		7.2		8	
25			25	7.8	0.8	14.4	8		9		10	
30			30	6.5	0.67	17.2	9.6		10.8		12	
35			35	5.6	0.57	20.1	11.2		12.6		14	
40			40	4.9	0.5	23	12.8		14.4		16	
DTL 8-15	8	4	10	24.5	2.5	5.4	3.2	78 {8.0}	3.6	88 {9.0}	4	98 {10}
15			15	16.3	1.67	8.1	4.8		5.4		6	
20			20	12.3	1.25	10.8	6.4		7.2		8	
25			25	9.8	1	13.5	8		9		10	
30			30	8.2	0.83	16.2	9.6		10.8		12	
35			35	7	0.71	18.9	11.2		12.6		14	
40			40	6.1	0.63	21.6	12.8		14.4		16	
45			45	5.4	0.56	24.3	14.4		16.2		18	
50			50	4.9	0.5	27	16		18		20	
55			55	4.5	0.45	29.7	17.6		19.8		22	
60			60	4.1	0.42	32.4	19.2		21.6		24	
65			65	3.8	0.38	37.3	20.8		23.4		26	
70			70	3.5	0.36	40.2	22.4		25.2		28	
75			75	3.3	0.33	43.1	24		27		30	
80			80	3.1	0.31	45.9	25.6		28.8		32	
DTL 10-15	10	5	10	34.3	3.5	5.4	3.2	110 {11}	3.6	124 {13}	4	137 {14}
15			15	22.9	2.33	8.1	4.8		5.4		6	
20			20	17.2	1.75	10.8	6.4		7.2		8	
25			25	13.7	1.4	13.5	8		9		10	
30			30	11.4	1.17	16.2	9.6		10.8		12	
35			35	9.8	1	18.9	11.2		12.6		14	
40			40	8.6	0.88	21.6	12.8		14.4		16	
45			45	7.6	0.78	24.3	14.4		16.2		18	
50			50	6.9	0.7	27	16		18		20	
55			55	6.2	0.64	29.7	17.6		19.8		22	
60			60	5.7	0.58	32.4	19.2		21.6		24	
65			65	5.3	0.54	35.1	20.8		23.4		26	
70			70	4.9	0.5	37.8	22.4		25.2		28	
75			75	4.6	0.47	40.5	24		27		30	
80			80	4.3	0.44	43.2	25.6		28.8		32	
90			90	3.8	0.39	48.6	28.8		32.4		36	
DTL 12-15	12	6	15	34.3	3.5	8.1	4.8	165 {17}	5.4	185 {19}	6	206 {21}
20			20	25.7	2.63	10.8	6.4		7.2		8	
25			25	20.6	2.1	13.5	8		9		10	
30			30	17.2	1.75	16.2	9.6		10.8		12	
35			35	14.7	1.5	18.9	11.2		12.6		14	
40			40	12.9	1.31	21.6	12.8		14.4		16	
45			45	11.4	1.17	24.3	14.4		16.2		18	
50			50	10.3	1.05	27	16		18		20	
55			55	9.4	0.95	29.7	17.6		19.8		22	
60			60	8.6	0.88	32.4	19.2		21.6		24	
65			65	7.9	0.81	35.1	20.8		23.4		26	
70			70	7.4	0.75	37.8	22.4		25.2		28	
75			75	6.9	0.7	40.5	24		27		30	
80			80	6.4	0.66	43.2	25.6		28.8		32	
90			90	5.7	0.58	48.6	28.8		32.4		36	
DTL 14-20	14	7	20	34.3	3.5	10.8	6.4	220 {22}	7.2	247 {25}	8	275 {28}
25			25	27.5	2.8	13.5	8		9		10	
30			30	22.9	2.33	16.2	9.6		10.8		12	
35			35	19.6	2	18.9	11.2		12.6		14	
40			40	17.2	1.75	21.6	12.8		14.4		16	
45			45	15.3	1.56	24.3	14.4		16.2		18	
50			50	13.7	1.4	27	16		18		20	
55			55	12.5	1.27	29.7	17.6		19.8		22	
60			60	11.4	1.17	32.4	19.2		21.6		24	
65			65	10.6	1.08	35.1	20.8		23.4		26	
70			70	9.8	1	37.8	22.4		25.2		28	
75			75	9.2	0.93	40.5	24		27		30	
80			80	8.6	0.88	43.2	25.6		28.8		32	
90			90	7.6	0.78	48.6	28.8		32.4		36	
100			100	6.9	0.7	54	32		36		40	
DTL 16-20	16	8	20	42.9	4.38	10.8	6.4	275 {28}	7.2	309 {32}	8	343 {35}

DTL Light Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×32%		F = L×36%		F = L×40%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTL 16-25	16	8	25	34.3	3.5	13.5	8	275 {28}	9	309 {32}	10	343 {35}
30			30	28.6	2.92	16.2	9.6		10.8		12	
35			35	24.5	2.5	18.9	11.2		12.6		14	
40			40	21.5	2.19	21.6	12.8		14.4		16	
45			45	19.1	1.94	24.3	14.4		16.2		18	
50			50	17.2	1.75	27	16		18		20	
55			55	15.6	1.59	29.7	17.6		19.8		22	
60			60	14.3	1.46	32.4	19.2		21.6		24	
65			65	13.2	1.35	35.1	20.8		23.4		26	
70			70	12.3	1.25	37.8	22.4		25.2		28	
75			75	11.4	1.17	40.5	24		27		30	
80			80	10.7	1.09	43.2	25.6		28.8		32	
90			90	9.5	0.97	48.6	28.8		32.4		36	
100			100	8.6	0.88	54	32		36		40	
125			125	6.9	0.7	67.5	40		45		50	
DTL 18-20	18	9	20	52.7	5.38	10.8	6.4	337 {34}	7.2	380 {39}	8	422 {43}
25			25	42.2	4.3	13.5	8		9		10	
30			30	35.1	3.58	16.2	9.6		10.8		12	
35			35	30.1	3.07	18.9	11.2		12.6		14	
40			40	26.4	2.69	21.6	12.8		14.4		16	
45			45	23.4	2.39	24.3	14.4		16.2		18	
50			50	21.1	2.15	27	16		18		20	
55			55	19.2	1.95	29.7	17.6		19.8		22	
60			60	17.6	1.79	32.4	19.2		21.6		24	
65			65	16.2	1.65	35.1	20.8		23.4		26	
70			70	15.1	1.54	37.8	22.4		25.2		28	
75			75	14.1	1.43	40.5	24		27		30	
80			80	13.2	1.34	43.2	25.6		28.8		32	
90			90	11.7	1.19	48.6	28.8		32.4		36	
100			100	10.5	1.08	54	32		36		40	
125			125	8.4	0.86	67.5	40		45		50	
DTL 20-20	20	10	20	66.2	6.75	10.8	6.4	424 {43}	7.2	477 {48}	8	530 {54}
25			25	53	5.4	13.5	8		9		10	
30			30	44.1	4.5	16.2	9.6		10.8		12	
35			35	37.8	3.86	18.9	11.2		12.6		14	
40			40	33.1	3.38	21.6	12.8		14.4		16	
45			45	29.4	3	24.3	14.4		16.2		18	
50			50	26.5	2.7	27	16		18		20	
55			55	24.1	2.45	29.7	17.6		19.8		22	
60			60	22.1	2.25	32.4	19.2		21.6		24	
65			65	20.4	2.08	35.1	20.8		23.4		26	
70			70	18.9	1.93	37.8	22.4		25.2		28	
75			75	17.7	1.8	40.5	24		27		30	
80			80	16.5	1.69	43.2	25.6		28.8		32	
90			90	14.7	1.5	48.6	28.8		32.4		36	
100			100	13.2	1.35	54	32		36		40	
125			125	10.6	1.08	67.5	40		45		50	
150			150	8.8	0.9	81	48		54		60	
DTL 22-25	22	11	25	65.7	6.7	13.5	8	526 {54}	9	591 {60}	10	657 {67}
30			30	54.8	5.58	16.2	9.6		10.8		12	
35			35	46.9	4.79	18.9	11.2		12.6		14	
40			40	41.1	4.19	21.6	12.8		14.4		16	
45			45	36.5	3.72	24.3	14.4		16.2		18	
50			50	32.9	3.35	27	16		18		20	
55			55	29.9	3.05	29.7	17.6		19.8		22	
60			60	27.4	2.79	32.4	19.2		21.6		24	
65			65	25.3	2.58	35.1	20.8		23.4		26	
70			70	23.5	2.39	37.8	22.4		25.2		28	
75			75	21.9	2.23	40.5	24		27		30	
80			80	20.5	2.09	43.2	25.6		28.8		32	
90			90	18.3	1.86	48.6	28.8		32.4		36	
100			100	16.4	1.68	54	32		36		40	
125			125	13.1	1.34	67.5	40		45		50	
150			150	11	1.12	81	48		54		60	
DTL 25-25	25	12.5	25	82.4	8.4	13.5	8	659 {67}	9	741 {76}	10	824 {84}
30			30	68.6	7	16.2	9.6		10.8		12	
35			35	58.8	6	18.9	11.2		12.6		14	
40			40	51.5	5.25	21.6	12.8		14.4		16	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×32%		F = L×36%		F = L×40%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTL 25-45	25	12.5	45	45.8	4.67	24.3	14.4	659 {67}	16.2	741 {76}	18	824 {84}
50			50	41.2	4.2	27	16		18		20	
55			55	37.4	3.82	29.7	17.6		19.8		22	
60			60	34.3	3.5	32.4	19.2		21.6		24	
65			65	31.7	3.23	35.1	20.8		23.4		26	
70			70	29.4	3	37.8	22.4		25.2		28	
75			75	27.5	2.8	40.5	24		27		30	
80			80	25.7	2.63	43.2	25.6		28.8		32	
90			90	22.9	2.33	48.6	28.8		32.4		36	
100			100	20.6	2.1	54	32		36		40	
125			125	16.5	1.68	67.5	40		45		50	
150			150	13.7	1.4	81	48		54		60	
175			175	11.8	1.2	94.5	56		63		70	
200			200	10.3	1.05	108	64		72		80	
DTL 27-25	27	13.5	25	98.1	10	13.5	8	785 {80}	9	883 {90}	10	981 {100}
30			30	81.7	8.33	16.2	9.6		10.8		12	
35			35	70	7.14	18.9	11.2		12.6		14	
40			40	61.3	6.25	21.6	12.8		14.4		16	
45			45	54.5	5.56	24.3	14.4		16.2		18	
50			50	49	5	27	16		18		20	
55			55	44.6	4.55	29.7	17.6		19.8		22	
60			60	40.9	4.17	32.4	19.2		21.6		24	
65			65	37.7	3.85	35.1	20.8		23.4		26	
70			70	35	3.57	37.8	22.4		25.2		28	
75			75	32.7	3.33	40.5	24		27		30	
80			80	30.6	3.13	43.2	25.6		28.8		32	
90			90	27.2	2.78	48.6	28.8		32.4		36	
100			100	24.5	2.5	54	32		36		40	
125			125	19.6	2	67.5	40		45		50	
150			150	16.3	1.67	81	48		54		60	
175			175	14	1.43	94.5	56		63		70	
200			200	12.3	1.25	108	64		72		80	
DTL 30-25	30	15	25	119	12.1	13.5	8	949 {97}	9	1067 {109}	10	1186 {121}
30			30	98.8	10.1	16.2	9.6		10.8		12	
35			35	84.7	8.64	18.9	11.2		12.6		14	
40			40	74.1	7.56	21.6	12.8		14.4		16	
45			45	65.9	6.72	24.3	14.4		16.2		18	
50			50	59.3	6.05	27	16		18		20	
55			55	53.9	5.5	29.7	17.6		19.8		22	
60			60	49.4	5.04	32.4	19.2		21.6		24	
65			65	45.6	4.65	35.1	20.8		23.4		26	
70			70	42.4	4.32	37.8	22.4		25.2		28	
75			75	39.5	4.03	40.5	24		27		30	
80			80	37.1	3.78	43.2	25.6		28.8		32	
90			90	32.9	3.36	48.6	28.8		32.4		36	
100			100	29.7	3.02	54	32		36		40	
125			125	23.7	2.42	67.5	40		45		50	
150			150	19.8	2.02	81	48		54		60	
175			175	16.9	1.73	94.5	56		63		70	
200			200	14.8	1.51	108	64		72		80	
DTL 35-40	35	17.5	40	101	10.3	21.6	12.8	1294 {132}	14.4	1455 {148}	16	1617 {165}
45			45	89.8	9.16	24.3	14.4		16.2		18	
50			50	80.9	8.24	27	16		18		20	
55			55	73.5	7.49	29.7	17.6		19.8		22	
60			60	67.4	6.87	32.4	19.2		21.6		24	
65			65	62.2	6.34	35.1	20.8		23.4		26	
70			70	57.8	5.89	37.8	22.4		25.2		28	
75			75	53.9	5.5	40.5	24		27		30	
80			80	50.5	5.15	43.2	25.6		28.8		32	
90			90	44.9	4.58	48.6	28.8		32.4		36	
100			100	40.4	4.12	54	32		36		40	
125			125	32.3	3.3	67.5	40		45		50	
150			150	27	2.75	81	48		54		60	
175			175	23.1	2.36	94.5	56		63		70	
200			200	20.2	2.06	108	64		72		80	
DTL 40-40	40	20	40	132	13.5	21.6	12.8	1694 {173}	14.4	1905 {194}	16	2117 {216}
45			45	118	12	25.8	14.4		16.2		18	
50			50	106	10.8	27	16		18		20	

DTL Light Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×32%		F = L×36%		F = L×40%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTL 40-55	40	20	55	96.2	9.81	31.6	17.6	1694 {173}	19.8	1905 {194}	22	2117 {216}
60			60	88.2	8.99	32.4	19.2		21.6		24	
65			65	81.4	8.3	37.3	20.8		23.4		26	
70			70	75.6	7.71	37.8	22.4		25.2		28	
75			75	70.6	7.2	43.1	24		27		30	
80			80	66.2	6.75	45.9	25.6		28.8		32	
90			90	58.8	6	48.6	28.8		32.4		36	
100			100	52.9	5.4	54	32		36		40	
125			125	42.3	4.32	67.5	40		45		50	
150			150	35.3	3.6	81	48		54		60	
175			175	30.2	3.08	94.5	56		63		70	
200			200	26.5	2.7	108	64		72		80	
225			225	23.5	2.4	122	72		81		90	
250			250	21.2	2.16	135	80		90		100	
275			275	19.2	1.96	149	88		99		110	
300			300	17.6	1.8	172.2	96		108		120	
DTL 50-50	50	25	50	166	16.9	27	16	2650 {270}	18	2981 {304}	20	3312 {338}
55			55	151	15.4	29.7	17.6		19.8		22	
60			60	138	14.1	32.4	19.2		21.6		24	
65			65	127	13	35.1	20.8		23.4		26	
70			70	118	12.1	37.8	22.4		25.2		28	
75			75	110	11.3	40.5	24		27		30	
80			80	104	10.6	43.2	25.6		28.8		32	
90			90	92	9.38	48.6	28.8		32.4		36	
100			100	82.8	8.44	54	32		36		40	
125			125	66.2	6.75	67.5	40		45		50	
150			150	55.2	5.63	81	48		54		60	
175			175	47.3	4.82	94.5	56		63		70	
200			200	41.4	4.22	108	64		72		80	
225			225	36.8	3.75	122	72		81		90	
250			250	33.1	3.38	135	80		90		100	
275			275	30.1	3.07	149	88		99		110	
300			300	27.6	2.81	172.2	96		108		120	
350			350	23.7	2.41	200.9	112		126		140	
400			400	20.7	2.11	216	128		144		160	
450			450	18.4	1.88	243	144		162		180	
500			500	16.6	1.69	270	160		180		200	
DTL 60-60	60	30	60	199	20.3	32.4	19.2	3816 {389}	21.6	4293 {438}	24	4770 {486}
70			70	170	17.4	37.8	22.4		25.2		28	
80			80	149	15.2	43.2	25.6		28.8		32	
90			90	133	13.5	48.6	28.8		32.4		36	
100			100	119	12.2	54	32		36		40	
125			125	95.4	9.73	67.5	40		45		50	
150			150	79.5	8.11	81	48		54		60	
175			175	68.1	6.95	94.5	56		63		70	
200			200	59.6	6.08	108	64		72		80	
225			225	53	5.4	122	72		81		90	
250			250	47.7	4.86	135	80		90		100	
275			275	43.4	4.42	149	88		99		110	
300			300	39.8	4.05	172.2	96		108		120	
350			350	34.1	3.47	200.9	112		126		140	
400			400	29.8	3.04	216	128		144		160	
450			450	26.5	2.7	243	144		162		180	
500			500	23.9	2.43	270	160		180		200	
DTL 70-70	70	38.5	70	214	21.8	40.2	22.4	4782 {488}	25.2	5380 {549}	28	5978 {610}
80			80	187	19	45.9	25.6		28.8		32	
90			90	166	16.9	51.7	28.8		32.4		36	
100			100	149	15.2	57.4	32		36		40	
125			125	120	12.2	71.8	40		45		50	
150			150	99.6	10.2	86.1	48		54		60	
175			175	85.4	8.71	100.5	56		63		70	
200			200	74.7	7.62	114.8	64		72		80	
250			250	59.8	6.1	143.5	80		90		100	
300			300	49.8	5.08	172.2	96		108		120	
350			350	42.7	4.35	200.9	112		126		140	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×25.6%		F = L×28.8%		F = L×32%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTM 6-15	6	3	15	20.4	2.08	9.8	3.8	79 {8.0}	4.3	88 {9.0}	4.8	98 {10}
20			20	15.3	1.56	13.1	5.1		5.8		6.4	
25			25	12.3	1.25	16.4	6.4		7.2		8	
30			30	10.2	1.04	19.6	7.7		8.6		9.6	
35			35	8.8	0.89	22.9	9		10.1		11.2	
40			40	7.7	0.78	26.2	10.2		11.5		12.8	
45			45	6.8	0.69	29.4	11.5		13		14.4	
50			50	6.1	0.63	32.7	12.8		14.4		16	
55			55	5.6	0.57	36	14.1		15.8		17.6	
60			60	5.1	0.52	39.2	15.4		17.3		19.2	
DTM 8-10	8	4	10	42.9	4.37	6.6	2.6	110 {11}	2.9	123 {13}	3.2	137 {14}
15			15	28.6	2.91	9.4	3.8		4.3		4.8	
20			20	21.5	2.18	12.5	5.1		5.8		6.4	
25			25	17.2	1.75	15.7	6.4		7.2		8	
30			30	14.3	1.46	18.8	7.7		8.6		9.6	
35			35	12.2	1.25	21.9	9		10.1		11.2	
40			40	10.7	1.09	25	10.2		11.5		12.8	
45			45	9.5	0.97	28.2	11.5		13		14.4	
50			50	8.6	0.87	31.3	12.8		14.4		16	
55			55	7.8	0.79	34.4	14.1		15.8		17.6	
60			60	7.1	0.73	37.6	15.4		17.3		19.2	
65			65	6.6	0.67	42.5	16.6		18.7		20.8	
70			70	6.1	0.62	45.8	17.9		20.2		22.4	
75			75	5.7	0.58	49.1	19.2		21.6		24	
80			80	5.4	0.55	52.3	20.5		23		25.6	
DTM 10-10	10	5	10	61.3	6.25	6.6	2.6	157 {16}	2.9	176 {18}	3.2	196 {20}
15			15	40.9	4.17	9.8	3.8		4.3		4.8	
20			20	30.6	3.13	12.5	5.1		5.8		6.4	
25			25	24.5	2.50	15.7	6.4		7.2		8	
30			30	20.4	2.08	18.8	7.7		8.6		9.6	
35			35	17.5	1.79	21.9	9		10.1		11.2	
40			40	15.3	1.56	25	10.2		11.5		12.8	
45			45	13.6	1.39	28.2	11.5		13		14.4	
50			50	12.3	1.25	31.3	12.8		14.4		16	
55			55	11.1	1.14	34.4	14.1		15.8		17.6	
60			60	10.2	1.04	37.6	15.4		17.3		19.2	
65			65	9.4	0.96	40.7	16.6		18.7		20.8	
70			70	8.8	0.89	43.8	17.9		20.2		22.4	
75			75	8.2	0.83	47	19.2		21.6		24	
80			80	7.7	0.78	50.1	20.5		23		25.6	
90			90	6.8	0.69	56.3	23		25.9		28.8	
DTM 12-15	12	6	15	59.2	6.04	9.8	3.8	227 {23}	4.3	256 {26}	4.8	284 {29}
20			20	44.4	4.53	12.5	5.1		5.8		6.4	
25			25	35.5	3.63	15.7	6.4		7.2		8	
30			30	29.6	3.02	18.8	7.7		8.6		9.6	
35			35	25.4	2.59	21.9	9		10.1		11.2	
40			40	22.2	2.27	25	10.2		11.5		12.8	
45			45	19.7	2.01	28.2	11.5		13		14.4	
50			50	17.8	1.81	31.3	12.8		14.4		16	
55			55	16.2	1.65	34.4	14.1		15.8		17.6	
60			60	14.8	1.51	37.6	15.4		17.3		19.2	
65			65	13.7	1.39	40.7	16.6		18.7		20.8	
70			70	12.7	1.29	43.8	17.9		20.2		22.4	
75			75	11.8	1.21	47	19.2		21.6		24	
80			80	11.1	1.13	50.1	20.5		23		25.6	
90			90	9.9	1.01	56.3	23		25.9		28.8	
DTM 14-20	14	7	20	59.8	6.09	13.1	5.1	306 {31}	5.8	345 {35}	6.4	383 {39}
25			25	47.9	4.88	15.7	6.4		7.2		8	
30			30	39.9	4.08	18.8	7.7		8.6		9.6	
35			35	34.2	3.48	21.9	9		10.1		11.2	
40			40	29.9	3.05	25	10.2		11.5		12.8	
45			45	26.6	2.71	28.2	11.5		13		14.4	
50			50	23.9	2.44	31.3	12.8		14.4		16	
55			55	21.8	2.22	34.4	14.1		15.8		17.6	
60			60	19.9	2.03	37.6	15.4		17.3		19.2	
65			65	18.4	1.88	40.7	16.6		18.7		20.8	
70			70	17.1	1.74	43.8	17.9		20.2		22.4	
75			75	16	1.63	47	19.2		21.6		24	
80			80	15	1.52	50.1	20.5		23		25.6	
90			90	13.3	1.35	56.3	23		25.9		28.8	
100			100	12	1.22	62.6	25.6		28.8		32	
DTM 16-20	16	8	20	78.1	7.97	13.1	5.1	400 {41}	5.8	450 {46}	6.4	500 {51}
25			25	62.5	6.38	15.7	6.4		7.2		8	
30			30	52.1	5.31	18.8	7.7		8.6		9.6	
35			35	44.7	4.55	21.9	9		10.1		11.2	

DTM Medium Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×25.6%		F = L×28.8%		F = L×32%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTM 16-40	16	8	40	39.1	3.98	25	10.2	400 {41}	11.5	450 {46}	12.8	500 {51}
45			45	34.7	3.54	28.2	11.5		13		14.4	
50			50	31.3	3.19	31.3	12.8		14.4		16	
55			55	28.4	2.9	34.4	14.1		15.8		17.6	
60			60	26.0	2.66	37.6	15.4		17.3		19.2	
65			65	24.0	2.45	40.7	16.6		18.7		20.8	
70			70	22.3	2.28	43.8	17.9		20.2		22.4	
75			75	20.8	2.13	47	19.2		21.6		24	
80			80	19.5	1.99	50.1	20.5		23		25.6	
90			90	17.4	1.77	56.3	23		25.9		28.8	
100			100	15.6	1.59	62.6	25.6		28.8		32	
DTM 18-20	18	9	20	99.6	10.2	13.1	5.1	510 {52}	5.8	574 {59}	6.4	637 {65}
25			25	79.7	8.13	15.7	6.4		7.2		8	
30			30	66.4	6.77	18.8	7.7		8.6		9.6	
35			35	56.9	5.8	21.9	9		10.1		11.2	
40			40	49.8	5.08	25	10.2		11.5		12.8	
45			45	44.3	4.51	28.2	11.5		13		14.4	
50			50	39.8	4.06	31.3	12.8		14.4		16	
55			55	36.2	3.69	34.4	14.1		15.8		17.6	
60			60	33.2	3.39	37.6	15.4		17.3		19.2	
65			65	30.6	3.13	40.7	16.6		18.7		20.8	
70			70	28.5	2.9	43.8	17.9		20.2		22.4	
75			75	26.6	2.71	47	19.2		21.6		24	
80			80	24.9	2.54	50.1	20.5		23		25.6	
90			90	22.1	2.26	56.3	23		25.9		28.8	
100			100	19.9	2.03	62.6	25.6		28.8		32	
DTM 20-20	20	10	20	123	12.5	13.1	5.1	628 {64}	5.8	706 {72}	6.4	784 {80}
25			25	98.0	10	15.7	6.4		7.2		8	
30			30	81.7	8.33	18.8	7.7		8.6		9.6	
35			35	70.0	7.14	21.9	9		10.1		11.2	
40			40	61.3	6.25	25	10.2		11.5		12.8	
45			45	54.4	5.55	28.2	11.5		13		14.4	
50			50	49.0	5	31.3	12.8		14.4		16	
55			55	44.5	4.55	34.4	14.1		15.8		17.6	
60			60	40.8	4.17	37.6	15.4		17.3		19.2	
65			65	37.7	3.85	40.7	16.6		18.7		20.8	
70			70	35.0	3.57	43.8	17.9		20.2		22.4	
75			75	32.7	3.33	47	19.2		21.6		24	
80			80	30.6	3.13	50.1	20.5		23		25.6	
90			90	27.2	2.78	56.3	23		25.9		28.8	
100			100	24.5	2.5	62.6	25.6		28.8		32	
125			125	19.6	2	78.3	32		36		40	
150			150	16.3	1.67	93.9	38.4		43.2		48	
DTM 22-25	22	11	25	119	12.1	15.7	6.4	761 {78}	7.2	856 {87}	8	951 {97}
30			30	99.1	10.1	18.8	7.7		8.6		9.6	
35			35	84.9	8.66	21.9	9		10.1		11.2	
40			40	74.3	7.58	25	10.2		11.5		12.8	
45			45	66.1	6.74	28.2	11.5		13		14.4	
50			50	59.5	6.06	31.3	12.8		14.4		16	
55			55	54.0	5.51	34.4	14.1		15.8		17.6	
60			60	49.5	5.05	37.6	15.4		17.3		19.2	
65			65	45.7	4.66	40.7	16.6		18.7		20.8	
70			70	42.5	4.33	43.8	17.9		20.2		22.4	
75			75	39.6	4.04	47	19.2		21.6		24	
80			80	37.2	3.79	50.1	20.5		23		25.6	
90			90	33.0	3.37	56.3	23		25.9		28.8	
100			100	29.7	3.03	62.6	25.6		28.8		32	
125			125	23.8	2.43	78.3	32		36		40	
150			150	19.8	2.02	93.9	38.4		43.2		48	
DTM 25-25	25	12.5	25	153	15.6	15.7	6.4	981 {100}	7.2	1103 {113}	8	1225 {125}
30			30	128	13	18.8	7.7		8.6		9.6	
35			35	109	11.2	21.9	9		10.1		11.2	
40			40	95.7	9.77	25	10.2		11.5		12.8	
45			45	85.1	8.68	28.2	11.5		13		14.4	
50			50	76.6	7.81	31.3	12.8		14.4		16	
55			55	69.6	7.1	34.4	14.1		15.8		17.6	
60			60	63.8	6.51	37.6	15.4		17.3		19.2	
65			65	58.9	6.01	40.7	16.6		18.7		20.8	
70			70	54.7	5.58	43.8	17.9		20.2		22.4	
75			75	51.0	5.21	47	19.2		21.6		24	
80			80	47.9	4.88	50.1	20.5		23		25.6	
90			90	42.5	4.34	56.3	23		25.9		28.8	
100			100	38.3	3.91	62.6	25.6		28.8		32	
125			125	30.6	3.13	78.3	32		36		40	
150			150	25.5	2.6	93.9	38.4		43.2		48	

DTM Medium Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×25.6%		F = L×28.8%		F = L×32%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTM 25-175	25	12.5	175	21.9	2.23	109.6	44.8	981 {100}	50.4	1103 {113}	56	1225 {125}
DTM 27-25	27	13.5	25	179	18.3	15.7	6.4	1145 {117}	7.2	1288 {131}	8	1431 {146}
30			30	149	15.2	18.8	7.7		8.6		9.6	
35			35	128	13	21.9	9		10.1		11.2	
40			40	112	11.4	25	10.2		11.5		12.8	
45			45	99.4	10.1	28.2	11.5		13		14.4	
50			50	89.4	9.13	31.3	12.8		14.4		16	
55			55	81.3	8.3	34.4	14.1		15.8		17.6	
60			60	74.5	7.6	37.6	15.4		17.3		19.2	
65			65	68.8	7.02	40.7	16.6		18.7		20.8	
70			70	63.9	6.52	43.8	17.9		20.2		22.4	
75			75	59.6	6.08	47	19.2		21.6		24	
80			80	55.9	5.7	50.1	20.5		23		25.6	
90			90	49.7	5.07	56.3	23		25.9		28.8	
100			100	44.7	4.56	62.6	25.6		28.8		32	
125			125	35.8	3.65	78.3	32		36		40	
150			150	29.8	3.04	93.9	38.4		43.2		48	
175			175	25.6	2.61	109.6	44.8		50.4		56	
DTM 30-25	30	15	25	221	22.5	15.7	6.4	1412 {144}	7.2	1589 {162}	8	1765 {180}
30			30	184	18.8	18.8	7.7		8.6		9.6	
35			35	158	16.1	21.9	9		10.1		11.2	
40			40	138	14.1	25	10.2		11.5		12.8	
45			45	123	12.5	28.2	11.5		13		14.4	
50			50	110	11.3	31.3	12.8		14.4		16	
55			55	100	10.2	34.4	14.1		15.8		17.6	
60			60	91.9	9.38	37.6	15.4		17.3		19.2	
65			65	84.9	8.65	40.7	16.6		18.7		20.8	
70			70	78.8	8.04	43.8	17.9		20.2		22.4	
75			75	73.5	7.5	47	19.2		21.6		24	
80			80	69.0	7.03	50.1	20.5		23		25.6	
90			90	61.3	6.25	56.3	23		25.9		28.8	
100			100	55.2	5.63	62.6	25.6		28.8		32	
125			125	44.1	4.5	78.3	32		36		40	
150			150	36.8	3.75	93.9	38.4		43.2		48	
175			175	31.5	3.21	109.6	44.8		50.4		56	
200			200	27.6	2.81	125.2	51.2		57.6		64	
DTM 35-40	35	17.5	40	188	19.1	25	10.2	1921 {196}	11.5	2161 {220}	12.8	2401 {245}
45			45	167	17	28.2	11.5		12.9		14.4	
50			50	150	15.3	31.3	12.8		14.4		16	
55			55	136	13.9	34.4	14.1		15.8		17.6	
60			60	125	12.8	37.6	15.4		17.3		19.2	
65			65	115	11.8	40.7	16.6		18.7		20.8	
70			70	107	10.9	43.8	17.9		20.2		22.4	
75			75	100	10.2	47	19.2		21.6		24	
80			80	93.8	9.57	50.1	20.5		23		25.6	
90			90	83.4	8.51	56.3	23		25.9		28.8	
100			100	75.0	7.66	62.6	25.6		28.8		32	
125			125	60.0	6.13	78.3	32		36		40	
150			150	50.0	5.1	93.9	38.4		43.2		48	
175			175	42.9	4.38	109.6	44.8		50.4		56	
200			200	37.5	3.83	125.5	51.2		57.6		64	
DTM 40-40	40	20	40	245	25	25	10.2	2510 {256}	11.5	2824 {288}	12.8	3138 {320}
45			45	218	22.2	29.4	11.5		13		14.4	
50			50	196	20	31.3	12.8		14.4		16	
55			55	178	18.2	36	14.1		15.8		17.6	
60			60	163	16.7	37.6	15.4		17.3		19.2	
65			65	151	15.4	42.5	16.6		18.7		20.8	
70			70	140	14.3	43.8	17.9		20.2		22.4	
75			75	131	13.3	49.1	19.2		21.6		24	
80			80	123	12.5	50.1	20.5		23		25.6	
90			90	109	11.1	56.3	23		25.9		28.8	
100			100	98.1	10	62.6	25.6		28.8		32	
125			125	78.5	8	78.3	32		36		40	
150			150	65.4	6.67	93.9	38.4		43.2		48	
175			175	56.0	5.71	109.6	44.8		50.4		56	
200			200	49.0	5	125.5	51.2		57.6		64	
225			225	43.6	4.44	141	57.6		64.8		72	
250			250	39.2	4	156.5	64		72		80	
275			275	35.7	3.64	172	70.4		79.2		88	
300			300	32.7	3.33	196.2	76.8		86.4		96	
DTM 50-50	50	25	50	306	31.2	31.3	12.8	3920 {400}	14.4	4410 {450}	16	4900 {500}
55			55	278	28.4	34.4	14.1		15.8		17.6	
60			60	255	26	37.6	15.4		17.3		19.2	
65			65	236	24	40.7	16.6		18.7		20.8	
70			70	219	22.3	43.8	17.9		20.2		22.4	

DTM Medium Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×25.6%		F = L×28.8%		F = L×32%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTM 50-75	50	25	75	204	20.8	47	19.2	3920 {400}	21.6	4410 {450}	24	4900 {500}
80			80	191	19.5	50.1	20.5		23		25.6	
90			90	170	17.3	56.3	23		25.9		28.8	
100			100	153	15.6	62.6	25.6		28.8		32	
125			125	123	12.5	78.3	32		36		40	
150			150	102	10.4	93.9	38.4		43.2		48	
175			175	87.5	8.92	109.6	44.8		50.4		56	
200			200	76.6	7.81	125.2	51.2		57.6		64	
225			225	68.1	6.94	141	57.6		64.8		72	
250			250	61.3	6.25	156.5	64		72		80	
275			275	55.7	5.68	172	70.4		79.2		88	
300			300	51.0	5.2	187.8	76.8		86.4		96	
350			350	43.8	4.46	228.9	89.6		100.8		112	
DTM 60-60	60	30	60	368	37.5	37.6	15.4	5645 {576}	17.3	6350 {648}	19.2	7056 {720}
70			70	315	32.1	43.8	17.9		20.2		22.4	
80			80	276	28.1	50.1	20.5		23		25.6	
90			90	245	25	56.3	23		25.9		28.8	
100			100	221	22.5	62.6	25.6		28.8		32	
125			125	176	18	78.3	32		36		40	
150			150	147	15	93.9	38.4		43.2		48	
175			175	126	12.8	109.6	44.8		50.4		56	
200			200	110	11.2	125.2	51.2		57.6		64	
225			225	98.0	10	141	57.6		64.8		72	
250			250	88.2	8.99	156.5	64		72		80	
275			275	80.2	8.18	172	70.4		79.2		88	
300			300	73.5	7.49	187.8	76.8		86.4		96	
350			350	63.0	6.42	228.9	89.6		100.8		112	
DTM 70-70	70	38.5	70	372	37.9	45.8	17.9	6664 {680}	20.2	7497 {764}	22.4	8330 {850}
80			80	325	33.2	52.3	20.5		23		25.6	
90			90	289	29.5	58.9	23		25.9		28.8	
100			100	260	26.5	65.4	25.6		28.8		32	
125			125	208	21.2	81.8	32		36		40	
150			150	174	17.7	98.1	38.4		43.2		48	
175			175	149	15.2	114.5	44.8		50.4		56	
200			200	130	13.3	130.8	51.2		57.6		64	
250			250	104	10.6	163.5	64		72		80	
300			300	86.8	8.85	196.2	76.8		86.4		96	
350			350	74.4	7.58	228.9	89.6		100.8		112	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×19.2%		F = L×21.6%		F = L×24%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTH 6-15	6	3	15	38.1	3.9	11	2.9	110 {11}	3.2	123 {13}	3.6	137 {14}
20			20	28.5	2.9	14.7	3.8		4.3		4.8	
25			25	22.8	2.3	18.4	4.8		5.4		6	
30			30	19	1.9	22	5.8		6.5		7.2	
35			35	16.3	1.7	25.7	6.7		7.6		8.4	
40			40	14.3	1.5	29.4	7.7		8.6		9.6	
45			45	12.7	1.3	33	8.6		9.7		10.8	
50			50	11.4	1.2	36.7	9.6		10.8		12	
55			55	10.4	1.1	40.4	10.6		11.9		13.2	
60			60	9.5	1	44	11.5		13		14.4	
DTH 8-10	8	4	10	85.8	8.8	7.4	1.9	165 {17}	2.2	185 {19}	2.4	206 {21}
15			15	57.2	5.8	10.8	2.9		3.2		3.6	
20			20	42.9	4.4	14.4	3.8		4.3		4.8	
25			25	34.3	3.5	18	4.8		5.4		6	
30			30	28.6	2.9	21.6	5.8		6.5		7.2	
35			35	24.5	2.5	25.2	6.7		7.5		8.4	
40			40	21.5	2.2	28.8	7.7		8.6		9.6	
45			45	19.1	1.9	32.4	8.6		9.7		10.8	
50			50	17.2	1.8	36	9.6		10.8		12	
55			55	15.6	1.6	39.6	10.6		11.8		13.2	
60			60	14.3	1.5	43.2	11.5		13		14.4	
65			65	13.2	1.3	47.7	12.5		14		15.6	
70			70	12.3	1.3	51.4	13.4		15.1		16.8	
75			75	11.4	1.2	55.1	14.4		16.2		18	
80			80	10.7	1.1	58.7	15.4		17.3		19.2	
DTH 10-10	10	5	10	123	12.5	7.4	1.9	235 {24}	2.2	265 {27}	2.4	294 {30}
15			15	81.7	8.3	11	2.9		3.2		3.6	
20			20	61.3	6.3	14.4	3.8		4.3		4.8	
25			25	49	5	18	4.8		5.4		6	
30			30	40.8	4.2	21.6	5.8		6.5		7.2	
35			35	35	3.6	25.2	6.7		7.5		8.4	
40			40	30.6	3.1	28.8	7.7		8.6		9.6	
45			45	27.2	2.8	32.4	8.6		9.7		10.8	
50			50	24.5	2.5	36	9.6		10.8		12	
55			55	22.3	2.3	39.6	10.6		11.8		13.2	
60			60	20.4	2.1	43.2	11.5		13		14.4	
65			65	18.8	1.9	46.8	12.5		14		15.6	
70			70	17.5	1.8	50.4	13.4		15.1		16.8	
75			75	16.3	1.7	54	14.4		16.2		18	
80			80	15.3	1.6	57.6	15.4		17.3		19.2	
90			90	13.6	1.4	64.8	17.3		19.4		21.6	
DTH 12-15	12	6	15	117	11.9	11	2.9	337 {34}	3.2	379 {38}	3.6	421 {43}
20			20	87.7	8.9	14.4	3.8		4.3		4.8	
25			25	70.2	7.2	18	4.8		5.4		6	
30			30	58.5	6	21.6	5.8		6.5		7.2	
35			35	50.1	5.1	25.2	6.7		7.5		8.4	
40			40	43.9	4.5	28.8	7.7		8.6		9.6	
45			45	39	4	32.4	8.6		9.7		10.8	
50			50	35.1	3.6	36	9.6		10.8		12	
55			55	31.9	3.3	39.6	10.6		11.8		13.2	
60			60	29.2	3	43.2	11.5		13		14.4	
65			65	27	2.8	46.8	12.5		14		15.6	
70			70	25.1	2.6	50.4	13.4		15.1		16.8	
75			75	23.4	2.4	54	14.4		16.2		18	
80			80	21.9	2.2	57.6	15.4		17.3		19.2	
90			90	19.5	2	64.8	17.3		19.4		21.6	
DTH 14-20	14	7	20	120	12.3	14.7	3.8	462 {47}	4.3	520 {53}	4.8	578 {59}
25			25	96.3	9.8	18	4.8		5.4		6	
30			30	80.3	8.2	21.6	5.8		6.5		7.2	
35			35	68.8	7	25.2	6.7		7.5		8.4	
40			40	60.2	6.1	28.8	7.7		8.6		9.6	
45			45	53.5	5.5	32.4	8.6		9.7		10.8	
50			50	48.2	4.9	36	9.6		10.8		12	
55			55	43.8	4.5	39.6	10.6		11.8		13.2	
60			60	40.1	4.1	43.2	11.5		13		14.4	
65			65	37.1	3.8	46.8	12.5		14		15.6	
70			70	34.4	3.5	50.4	13.4		15.1		16.8	
75			75	32.1	3.3	54	14.4		16.2		18	
80			80	30.1	3.1	57.6	15.4		17.3		19.2	
90			90	26.8	2.7	64.8	17.3		19.4		21.6	
100			100	24.1	2.5	72	19.2		21.6		24	
DTH 16-20	16	8	20	157	16	14.7	3.8	604 {62}	4.3	680 {69}	4.8	755 {77}
25			25	126	12.8	18	4.8		5.4		6	
30			30	105	10.7	21.6	5.8		6.5		7.2	
35			35	89.9	9.2	25.2	6.7		7.5		8.4	
40			40	78.6	8	28.8	7.7		8.6		9.6	
45			45	69.9	7.1	32.4	8.6		9.7		10.8	
50			50	62.9	6.4	36	9.6		10.8		12	
55			55	57.2	5.8	39.6	10.6		11.8		13.2	
60			60	52.4	5.3	43.2	11.5		13		14.4	
65			65	48.4	4.9	46.8	12.5		14		15.6	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×19.2%		F = L×21.6%		F = L×24%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTH 16-70	16	8	70	44.9	4.6	50.4	13.4	604 {62}	15.1	680 {69}	16.8	755 {77}
75			75	41.9	4.3	54	14.4		16.2		18	
80			80	39.3	4	57.6	15.4		17.3		19.2	
90			90	35	3.6	64.8	17.3		19.4		21.6	
100			100	31.5	3.2	72	19.2		21.6		24	
DTH 18-20	18	9	20	198	20.2	14.7	3.8	761 {78}	4.3	856 {87}	4.8	951 {97}
25			25	159	16.2	18	4.8		5.4		6	
30			30	132	13.5	21.6	5.8		6.5		7.2	
35			35	113	11.5	25.2	6.7		7.5		8.4	
40			40	99.1	10.1	28.8	7.7		8.6		9.6	
45			45	88.1	9	32.4	8.6		9.7		10.8	
50			50	79.3	8.1	36	9.6		10.8		12	
55			55	72	7.3	39.6	10.6		11.8		13.2	
60			60	66	6.7	43.2	11.5		13		14.4	
65			65	61	6.2	46.8	12.5		14		15.6	
70			70	56.6	5.8	50.4	13.4		15.1		16.8	
75			75	52.8	5.4	54	14.4		16.2		18	
80			80	49.5	5.1	57.6	15.4		17.3		19.2	
90			90	44	4.5	64.8	17.3		19.4		21.6	
100			100	39.6	4	72	19.2		21.6		24	
DTH 20-20	20	10	20	245	25	14.7	3.8	941 {96}	4.3	1058 {108}	4.8	1176 {120}
25			25	196	20	18	4.8		5.4		6	
30			30	163	16.7	21.6	5.8		6.5		7.2	
35			35	140	14.3	25.2	6.7		7.5		8.4	
40			40	123	12.5	28.8	7.7		8.6		9.6	
45			45	109	11.1	32.4	8.6		9.7		10.8	
50			50	98	10	36	9.6		10.8		12	
55			55	89.1	9.1	39.6	10.6		11.8		13.2	
60			60	81.7	8.3	43.2	11.5		13		14.4	
65			65	75.4	7.7	46.8	12.5		14		15.6	
70			70	70	7.1	50.4	13.4		15.1		16.8	
75			75	65.3	6.7	54	14.4		16.2		18	
80			80	61.3	6.2	57.6	15.4		17.3		19.2	
90			90	54.4	5.6	64.8	17.3		19.4		21.6	
100			100	49	5	72	19.2		21.6		24	
125			125	39.2	4	90	24		27		30	
150			150	32.7	3.3	108	28.8		32.4		36	
DTH 22-25	22	11	25	237	24.2	18	4.8	1137 {116}	5.4	1279 {130}	6	1421 {145}
30			30	197	20.1	21.6	5.8		6.5		7.2	
35			35	169	17.3	25.2	6.7		7.6		8.4	
40			40	148	15.1	28.8	7.7		8.6		9.6	
45			45	132	13.4	32.4	8.6		9.7		10.8	
50			50	118	12.1	36	9.6		10.8		12	
55			55	108	11	39.6	10.6		11.9		13.2	
60			60	98.7	10.1	43.2	11.5		13		14.4	
65			65	91.1	9.3	46.8	12.5		14		15.6	
70			70	84.6	8.6	50.4	13.4		15.1		16.8	
75			75	78.9	8.1	54	14.4		16.2		18	
80			80	74	7.5	57.6	15.4		17.3		19.2	
90			90	65.8	6.7	64.8	17.3		19.4		21.6	
100			100	59.2	6	72	19.2		21.6		24	
125			125	47.4	4.8	90	24		27		30	
150			150	39.5	4	108	28.8		32.4		36	
DTH 25-25	25	12.5	25	306	31.2	18	4.8	1466 {150}	5.4	1650 {168}	6	1833 {187}
30			30	255	26	21.6	5.8		6.5		7.2	
35			35	218	22.3	25.2	6.7		7.6		8.4	
40			40	191	19.5	28.8	7.7		8.6		9.6	
45			45	170	17.3	32.4	8.6		9.7		10.8	
50			50	153	15.6	36	9.6		10.8		12	
55			55	139	14.2	39.6	10.6		11.9		13.2	
60			60	127	13	43.2	11.5		13		14.4	
65			65	118	12	46.8	12.5		14		15.6	
70			70	109	11.1	50.4	13.4		15.1		16.8	
75			75	102	10.4	54	14.4		16.2		18	
80			80	95.5	9.7	57.6	15.4		17.3		19.2	
90			90	84.9	8.7	64.8	17.3		19.4		21.6	
100			100	76.4	7.8	72	19.2		21.6		24	
125			125	61.1	6.2	90	24		27		30	
150			150	50.9	5.2	108	28.8		32.4		36	
175			175	43.6	4.5	126	33.6		37.8		42	
DTH 27-25	27	13.5	25	358	36.5	18	4.8	1717 {175}	5.4	1931 {197}	6	2146 {219}
30			30	298	30.4	21.6	5.8		6.5		7.2	
35			35	255	26.1	25.2	6.7		7.6		8.4	
40			40	224	22.8	28.8	7.7		8.6		9.6	
45			45	199	20.3	32.4	8.6		9.7		10.8	
50			50	179	18.2	36	9.6		10.8		12	
55			55	163	16.6	39.6	10.6		11.9		13.2	
60			60	149	15.2	43.2	11.5		13		14.4	
65			65	138	14	46.8	12.5		14		15.6	
70			70	128	13	50.4	13.4		15.1		16.8	
75			75	119	12.2	54	14.4		16.2		18	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×19.2%		F = L×21.6%		F = L×24%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTH 27-80	27	13.5	80	112	11.4	57.6	15.4	1717 {175}	17.3	1931 {197}	19.2	2146 {219}
90			90	99.4	10.1	64.8	17.3		19.4		21.6	
100			100	89.4	9.1	72	19.2		21.6		24	
125			125	71.5	7.3	90	24		27		30	
150			150	59.6	6.1	108	28.8		32.4		36	
175			175	51.1	5.2	126	33.6		37.8		42	
DTH 30-25	30	15	25	441	45	18	4.8	2117 {216}	5.4	2381 {243}	6	2646 {270}
30			30	368	37.5	21.6	5.8		6.5		7.2	
35			35	315	32.1	25.2	6.7		7.6		8.4	
40			40	276	28.1	28.8	7.7		8.6		9.6	
45			45	245	25	32.4	8.6		9.7		10.8	
50			50	221	22.5	36	9.6		10.8		12	
55			55	200	20.4	39.6	10.6		11.9		13.2	
60			60	184	18.7	43.2	11.5		13		14.4	
65			65	170	17.3	46.8	12.5		14		15.6	
70			70	158	16.1	50.4	13.4		15.1		16.8	
75			75	147	15	54	14.4		16.2		18	
80			80	138	14.1	57.6	15.4		17.3		19.2	
DTH 30-90			90	123	12.5	64.8	17.3		19.4		21.6	
100			100	110	11.2	72	19.2		21.6		24	
125			125	88.2	9	90	24		27		30	
150			150	73.5	7.5	108	28.8		32.4		36	
175			175	63	6.4	126	33.6		37.8		42	
200			200	55.1	5.6	144	38.4		43.2		48	
DTH 35-40	35	17.5	40	375	38.2	28.8	7.7	2878 {293}	8.6	3237 {330}	9.6	3597 {367}
45			45	333	34	32.4	8.6		9.7		10.8	
50			50	300	30.6	36	9.6		10.8		12	
55			55	273	27.8	39.6	10.6		11.9		13.2	
60			60	250	25.5	43.2	11.5		13		14.4	
65			65	231	23.5	46.8	12.5		14		15.6	
70			70	214	21.8	50.4	13.4		15.1		16.8	
75			75	200	20.4	54	14.4		16.2		18	
80			80	187	19.1	57.6	15.4		17.3		19.2	
90			90	167	17	64.8	17.3		19.4		21.6	
100			100	150	15.3	72	19.2		21.6		24	
125			125	120	12.2	90	24		27		30	
150			150	99.9	10.2	108	28.8		32.4		36	
175			175	85.6	8.7	126	33.6		37.8		42	
200			200	74.9	7.6	144	38.4		43.2		48	
DTH 40-40	40	20	40	490	50	28.8	7.7	3763 {384}	8.6	4234 {432}	9.6	4704 {480}
45			45	436	44.4	33	8.6		9.7		10.8	
50			50	392	40	36	9.6		10.8		12	
55			55	356	36.3	40.4	10.6		11.9		13.2	
60			60	327	33.3	43.2	11.5		13		14.4	
65			65	302	30.7	47.7	12.5		14		15.6	
70			70	280	28.6	50.4	13.4		15.1		16.8	
75			75	261	26.6	55.1	14.4		16.2		18	
80			80	245	25	57.6	15.4		17.3		19.2	
90			90	218	22.2	64.8	17.3		19.4		21.6	
100			100	196	20	72	19.2		21.6		24	
125			125	157	16	90	24		27		30	
150			150	131	13.3	108	28.8		32.4		36	
175			175	112	11.4	126	33.6		37.8		42	
200			200	98	10	144	38.4		43.2		48	
225			225	87.1	8.9	162	43.2		48.6		54	
250			250	78.4	8	180	48		54		60	
275			275	71.3	7.3	198	52.8		59.4		66	
300			300	65.3	6.7	220.2	57.6		64.8		72	
DTH 50-50	50	25	50	613	62.5	36	9.6	5880 {600}	10.8	6615 {675}	12	7350 {750}
55			55	557	56.8	39.6	10.6		11.9		13.2	
60			60	510	52	43.2	11.5		13		14.4	
65			65	471	48	46.8	12.5		14		15.6	
70			70	438	44.6	50.4	13.4		15.1		16.8	
75			75	408	41.6	54	14.4		16.2		18	
80			80	383	39	57.6	15.4		17.3		19.2	
90			90	340	34.7	64.8	17.3		19.4		21.6	
100			100	306	31.2	72	19.2		21.6		24	
125			125	245	25	90	24		27		30	
150			150	204	20.8	108	28.8		32.4		36	
175			175	175	17.8	126	33.6		37.8		42	
200			200	153	15.6	144	38.4		43.2		48	
225			225	136	13.9	162	43.2		48.6		54	
250			250	123	12.5	180	48		54		60	
275			275	111	11.4	198	52.8		59.4		66	
300			300	102	10.4	216	57.6		64.8		72	
350			350	87.5	8.9	256.9	67.2		75.6		84	
DTH 60-60	60	30	60	735	74.9	43.2	11.5	8467 {863}	13	9526 {971}	14.4	10584 {1079}
70			70	630	64.2	50.4	13.4		15.1		16.8	
80			80	551	56.2	57.6	15.4		17.3		19.2	
90			90	490	50	64.8	17.3		19.4		21.6	
100			100	441	45	72	19.2		21.6		24	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×19.2%		F = L×21.6%		F = L×24%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTH 60-125	60	30	125	353	36	90	24	8467 {863}	27	9526 {971}	30	10584 {1079}
150			150	294	30	108	28.8		32.4		36	
175			175	252	25.7	126	33.6		37.8		42	
200			200	221	22.5	144	38.4		43.2		48	
225			225	196	20	162	43.2		48.6		54	
250			250	176	18	180	48		54		60	
275			275	160	16.4	198	52.8		59.4		66	
300			300	147	15	216	57.6		64.8		72	
350			350	126	12.8	256.9	67.2		75.6		84	
DTH 70-70	70	38.5	70	747	76.2	51.4	13.4	10046 {1024}	15.1	11301 {1152}	16.8	12557 {1280}
80			80	654	66.7	58.7	15.4		17.3		19.2	
90			90	581	59.3	66.1	17.3		19.4		21.6	
100			100	523	53.4	72	19.2		21.6		24	
125			125	419	42.7	90	24		27		30	
150			150	349	35.6	108	28.8		32.4		36	
175			175	299	30.5	126	33.6		37.8		42	
200			200	262	26.7	144	38.4		43.2		48	
250			250	209	21.3	180	48		54		60	
300			300	174	17.8	216	57.6		64.8		72	
350			350	149	15.2	252	67.2		75.6		84	

DTB Extra Heavy Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTB 6-15	6	3	15	59	6	11.6	2.4	142 {14}	2.7	159 {16}	3	177 {18}
20			20	44.3	4.5	15.5	3.2		3.6		4	
25			25	35.4	3.6	19.4	4		4.5		5	
30			30	29.5	3	23.2	4.8		5.4		6	
35			35	25.3	2.6	27.1	5.6		6.3		7	
40			40	22.1	2.3	31	6.4		7.2		8	
45			45	19.7	2	34.8	7.2		8.1		9	
50			50	17.7	1.8	38.7	8		9		10	
55			55	16.1	1.6	42.6	8.8		9.9		11	
60			60	14.8	1.5	46.4	9.6		10.8		12	
DTB 8-10	8	4	10	162	16.5	7.7	1.6	258 {26}	1.8	291 {30}	2	323 {33}
15			15	108	11	11.6	2.4		2.7		3	
20			20	80.8	8.2	15.9	3.2		3.6		4	
25			25	64.6	6.6	19.4	4		4.5		5	
30			30	53.8	5.5	23.2	4.8		5.4		6	
35			35	46.1	4.7	27.1	5.6		6.3		7	
40			40	40.4	4.1	31	6.4		7.2		8	
45			45	35.9	3.7	34.8	7.2		8.1		9	
50			50	32.3	3.3	38.7	8		9		10	
55			55	29.4	3	42.6	8.8		9.9		11	
60			60	26.9	2.7	46.4	9.6		10.8		12	
65			65	24.8	2.5	50.3	10.4		11.7		13	
70			70	23.1	2.4	54.2	11.2		12.6		14	
75			75	21.5	2.2	58.1	12		13.5		15	
80			80	20.2	2.1	61.9	12.8		14.4		16	
DTB 10-10	10	5	10	221	22.5	7.7	1.6	353 {36}	1.8	397 {41}	2	441 {45}
15			15	147	15	11.6	2.4		2.7		3	
20			20	110	11.2	15.5	3.2		3.6		4	
25			25	88.2	9	19.4	4		4.5		5	
30			30	73.5	7.5	23.2	4.8		5.4		6	
35			35	63	6.4	27.1	5.6		6.3		7	
40			40	55.1	5.6	31	6.4		7.2		8	
45			45	49	5	34.8	7.2		8.1		9	
50			50	44.1	4.5	38.7	8		9		10	
55			55	40.1	4.1	42.6	8.8		9.9		11	
60			60	36.8	3.7	46.4	9.6		10.8		12	
65			65	33.9	3.5	50.3	10.4		11.7		13	
70			70	31.5	3.2	54.2	11.2		12.6		14	
75			75	29.4	3	58.1	12		13.5		15	
80			80	27.6	2.8	61.9	12.8		14.4		16	
90			90	24.5	2.5	69.7	14.4		16.2		18	
DTB 12-15	12	6	15	190	19.3	11.6	2.4	455 {46}	2.7	512 {52}	3	569 {58}
20			20	142	14.5	15.5	3.2		3.6		4	
25			25	114	11.6	19.4	4		4.5		5	
30			30	94.8	9.7	23.2	4.8		5.4		6	
35			35	81.3	8.3	27.1	5.6		6.3		7	
40			40	71.1	7.3	31	6.4		7.2		8	
45			45	63.2	6.4	34.8	7.2		8.1		9	
50			50	56.9	5.8	38.7	8		9		10	
55			55	51.7	5.3	42.6	8.8		9.9		11	
60			60	47.4	4.8	46.4	9.6		10.8		12	
65			65	43.8	4.5	50.3	10.4		11.7		13	
70			70	40.6	4.1	54.2	11.2		12.6		14	
75			75	37.9	3.9	58.1	12		13.5		15	
80			80	35.6	3.6	61.9	12.8		14.4		16	
90			90	31.6	3.2	69.7	14.4		16.2		18	
DTB 14-20	14	7	20	184	18.8	15.5	3.2	589 {60}	3.6	662 {68}	4	736 {75}
25			25	147	15	19.4	4		4.5		5	
30			30	123	12.5	23.2	4.8		5.4		6	
35			35	105	10.7	27.1	5.6		6.3		7	
40			40	92	9.4	31	6.4		7.2		8	
45			45	81.8	8.3	34.8	7.2		8.1		9	
50			50	73.6	7.5	38.7	8		9		10	
55			55	66.9	6.8	42.6	8.8		9.9		11	
60			60	61.3	6.3	46.4	9.6		10.8		12	
65			65	56.6	5.8	50.3	10.4		11.7		13	
70			70	52.6	5.4	54.2	11.2		12.6		14	

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTB 14-75	14	7	75	49.1	5	58.1	12	589 {60}	13.5	662 {68}	15	736 {75}
80			80	46	4.7	61.9	12.8		14.4		16	
90			90	40.9	4.2	69.7	14.4		16.2		18	
100			100	36.8	3.8	77.4	16		18		20	
DTB 16-20	16	8	20	245	25	15.5	3.2	784 {80}	3.6	882 {90}	4	980 {100}
25			25	196	20	19.4	4		4.5		5	
30			30	163	16.7	23.2	4.8		5.4		6	
35			35	140	14.3	27.1	5.6		6.3		7	
40			40	123	12.5	31	6.4		7.2		8	
45			45	109	11.1	34.8	7.2		8.1		9	
50			50	98	10	38.7	8		9		10	
55			55	89.1	9.1	42.6	8.8		9.9		11	
60			60	81.7	8.3	46.4	9.6		10.8		12	
65			65	75.4	7.7	50.3	10.4		11.7		13	
70			70	70	7.1	54.2	11.2		12.6		14	
75			75	65.3	6.7	58.1	12		13.5		15	
80			80	61.3	6.3	61.9	12.8		14.4		16	
90			90	54.4	5.6	69.7	14.4		16.2		18	
100			100	49	5	77.4	16		18		20	
DTB 18-20	18	9	20	306	31.2	15.5	3.2	980 {100}	3.6	1103 {113}	4	1225 {125}
25			25	245	25	19.4	4		4.5		5	
30			30	204	20.8	23.2	4.8		5.4		6	
35			35	175	17.8	27.1	5.6		6.3		7	
40			40	153	15.6	31	6.4		7.2		8	
45			45	136	13.9	34.8	7.2		8.1		9	
50			50	123	12.5	38.7	8		9		10	
55			55	111	11.4	42.6	8.8		9.9		11	
60			60	102	10.4	46.4	9.6		10.8		12	
65			65	94.2	9.6	50.3	10.4		11.7		13	
70			70	87.5	8.9	54.2	11.2		12.6		14	
75			75	81.7	8.3	58.1	12		13.5		15	
80			80	76.6	7.8	61.9	12.8		14.4		16	
90			90	68.1	6.9	69.7	14.4		16.2		18	
100			100	61.3	6.2	77.4	16		18		20	
DTB 20-20	20	10	20	392	40	15.5	3.2	1254 {128}	3.6	1411 {144}	4	1568 {160}
25			25	314	32	19.4	4		4.5		5	
30			30	261	26.6	23.2	4.8		5.4		6	
35			35	224	22.8	27.1	5.6		6.3		7	
40			40	196	20	31	6.4		7.2		8	
45			45	174	17.8	34.8	7.2		8.1		9	
50			50	157	16	38.7	8		9		10	
55			55	143	14.5	42.6	8.8		9.9		11	
60			60	131	13.3	46.4	9.6		10.8		12	
65			65	121	12.3	50.3	10.4		11.7		13	
70			70	112	11.4	54.2	11.2		12.6		14	
75			75	105	10.7	58.1	12		13.5		15	
80			80	98	10	61.9	12.8		14.4		16	
90			90	87.1	8.9	69.7	14.4		16.2		18	
100			100	78.4	8	77.4	16		18		20	
125			125	62.7	6.4	96.8	20		22.5		25	
150			150	52.3	5.3	116.1	24		27		30	
DTB 22-25	22	11	25	382	39	19.4	4	1530 {156}	4.5	1721 {175}	5	1912 {195}
30			30	319	32.5	23.2	4.8		5.4		6	
35			35	273	27.9	27.1	5.6		6.3		7	
40			40	239	24.4	31	6.4		7.2		8	
45			45	212	21.7	34.8	7.2		8.1		9	
50			50	191	19.5	38.7	8		9		10	
55			55	174	17.7	42.6	8.8		9.9		11	
60			60	159	16.2	46.4	9.6		10.8		12	
65			65	147	15	50.3	10.4		11.7		13	
70			70	137	13.9	54.2	11.2		12.6		14	
75			75	127	13	58.1	12		13.5		15	
80			80	120	12.2	61.9	12.8		14.4		16	
90			90	106	10.8	69.7	14.4		16.2		18	
100			100	95.6	9.8	77.4	16		18		20	
125			125	76.5	7.8	96.8	20		22.5		25	
150			150	63.7	6.5	116.1	24		27		30	

DTB Extra Heavy Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTB 25-25	25	12.5	25	481	49	19	4	1922 {196}	4.5	2162 {220}	5	2403 {245}
30			30	400	40.8	22.8	4.8		5.4		6	
35			35	343	35	26.6	5.6		6.3		7	
40			40	300	30.6	30.4	6.4		7.2		8	
45			45	267	27.2	34.2	7.2		8.1		9	
50			50	240	24.5	38	8		9		10	
55			55	218	22.3	41.8	8.8		9.9		11	
60			60	200	20.4	45.6	9.6		10.8		12	
65			65	185	18.8	49.4	10.4		11.7		13	
70			70	172	17.5	53.2	11.2		12.6		14	
75			75	160	16.3	57	12		13.5		15	
80			80	150	15.3	60.8	12.8		14.4		16	
90			90	133	13.6	68.4	14.4		16.2		18	
100			100	120	12.2	76	16		18		20	
125			125	96.1	9.8	95	20		22.5		25	
150			150	80.1	8.2	114	24		27		30	
175			175	68.6	7	133	28		31.5		35	
DTB 27-25	27	13.5	25	569	58	19	4	2275 {232}	4.5	2560 {261}	5	2844 {290}
30			30	474	48.3	22.8	4.8		5.4		6	
35			35	406	41.4	26.6	5.6		6.3		7	
40			40	355	36.2	30.4	6.4		7.2		8	
45			45	316	32.2	34.2	7.2		8.1		9	
50			50	284	29	38	8		9		10	
55			55	259	26.4	41.8	8.8		9.9		11	
60			60	237	24.2	45.6	9.6		10.8		12	
65			65	219	22.3	49.4	10.4		11.7		13	
70			70	203	20.7	53.2	11.2		12.6		14	
75			75	190	19.3	57	12		13.5		15	
80			80	178	18.1	60.8	12.8		14.4		16	
90			90	158	16.1	68.4	14.4		16.2		18	
100			100	142	14.5	76	16		18		20	
125			125	114	11.6	95	20		22.5		25	
150			150	94.8	9.7	114	24		27		30	
175			175	81.3	8.3	133	28		31.5		35	
DTB 30-25	30	15	25	706	72	19	4	2824 {288}	4.5	3177 {324}	5	3530 {360}
30			30	588	60	22.8	4.8		5.4		6	
35			35	504	51.4	26.6	5.6		6.3		7	
40			40	441	45	30.4	6.4		7.2		8	
45			45	392	40	34.2	7.2		8.1		9	
50			50	353	36	38	8		9		10	
55			55	321	32.7	41.8	8.8		9.9		11	
60			60	294	30	45.6	9.6		10.8		12	
65			65	272	27.7	49.4	10.4		11.7		13	
70			70	252	25.7	53.2	11.2		12.6		14	
75			75	235	24	57	12		13.5		15	
80			80	221	22.5	60.8	12.8		14.4		16	
90			90	196	20	68.4	14.4		16.2		18	
100			100	177	18	76	16		18		20	
125			125	141	14.4	95	20		22.5		25	
150			150	118	12	114	24		27		30	
175			175	101	10.3	133	28		31.5		35	
200			200	88.3	9	152	32		36		40	
DTB 35-40	35	17.5	40	600	61.2	31	6.4	3842 {392}	7.2	4322 {441}	8	4802 {490}
45			45	534	54.4	34.8	7.2		8.1		9	
50			50	480	49	38.7	8		9		10	
55			55	437	44.5	42.6	8.8		9.9		11	
60			60	400	40.8	46.4	9.6		10.8		12	
65			65	369	37.7	50.3	10.4		11.7		13	
70			70	343	35	54.2	11.2		12.6		14	
75			75	320	32.6	58.1	12		13.5		15	
80			80	300	30.6	61.9	12.8		14.4		16	
90			90	267	27.2	69.7	14.4		16.2		18	
100			100	240	24.5	77.4	16		18		20	
125			125	192	19.6	96.8	20		22.5		25	
150			150	160	16.3	116.1	24		27		30	
175			175	137	14	135.5	28		31.5		35	
200			200	120	12.2	154.8	32		36		40	

DTB Extra Heavy Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTB 40-40	40	20	40	784	79.9	31	6.4	5018 {512}	7.2	5645 {576}	8	6272 {640}
45			45	697	71.1	34.8	7.2		8.1		9	
50			50	627	64	38.7	8		9		10	
55			55	570	58.1	42.6	8.8		9.9		11	
60			60	523	53.3	46.4	9.6		10.8		12	
65			65	482	49.2	50.3	10.4		11.7		13	
70			70	448	45.7	54.2	11.2		12.6		14	
75			75	418	42.6	58.1	12		13.5		15	
80			80	392	40	61.9	12.8		14.4		16	
90			90	348	35.5	69.7	14.4		16.2		18	
100			100	314	32	77.4	16		18		20	
125			125	251	25.6	96.8	20		22.5		25	
150			150	209	21.3	116.1	24		27		30	
175			175	179	18.3	135.5	28		31.5		35	
200			200	157	16	154.8	32		36		40	
225			225	139	14.2	174.2	36		40.5		45	
250			250	125	12.8	193.5	40		45		50	
275			275	114	11.6	212.9	44		49.5		55	
300			300	105	10.7	232.2	48		54		60	
DTB 50-50	50	25	50	980	100	38.7	8	7840 {800}	9	8820 {900}	10	9800 {1000}
55			55	891	90.9	42.6	8.8		9.9		11	
60			60	817	83.3	46.4	9.6		10.8		12	
65			65	754	76.9	50.3	10.4		11.7		13	
70			70	700	71.4	54.2	11.2		12.6		14	
75			75	653	66.7	58.1	12		13.5		15	
80			80	613	62.5	61.9	12.8		14.4		16	
90			90	544	55.6	69.7	14.4		16.2		18	
100			100	490	50	77.4	16		18		20	
125			125	392	40	96.8	20		22.5		25	
150			150	327	33.3	116.1	24		27		30	
175			175	280	28.6	135.5	28		31.5		35	
200			200	245	25	154.8	32		36		40	
225			225	218	22.2	174.2	36		40.5		45	
250			250	196	20	193.5	40		45		50	
275			275	178	18.2	212.9	44		49.5		55	
300			300	163	16.7	232.2	48		54		60	
350			350	140	14.3	270.9	56		63		70	
DTB 60-60	60	30	60	1176	120	46.4	9.6	1129 {1152}	10.8	12701 {1296}	12	14112 {1440}
70			70	1008	102.9	53.2	11.2		12.6		14	
80			80	882	90	61.9	12.8		14.4		16	
90			90	784	80	69.7	14.4		16.2		18	
100			100	706	72	77.4	16		18		20	
125			125	564	57.6	96.8	20		22.5		25	
150			150	470	48	116.1	24		27		30	
175			175	403	41.1	135.5	28		31.5		35	
200			200	353	36	154.8	32		36		40	
225			225	314	32	174.2	36		40.5		45	
250			250	282	28.8	193.5	40		45		50	
275			275	257	26.2	212.9	44		49.5		55	
300			300	235	24	232.2	48		54		60	
350			350	202	20.6	270.9	56		63		70	
DTB 70-70	70	38.5	70	1219	124.3	54.2	11.2	13655 {1392}	12.6	15362 {1567}	14	17069 {1740}
80			80	1067	108.8	61.9	12.8		14.4		16	
90			90	948	96.7	69.7	14.4		16.2		18	
100			100	853	87	77.4	16		18		20	
125			125	683	69.6	96.8	20		22.5		25	
150			150	569	58	116.1	24		27		30	
175			175	488	49.7	135.5	28		31.5		35	
200			200	427	43.5	154.8	32		36		40	
250			250	341	34.8	193.5	40		45		50	
300			300	284	29	232.2	48		54		60	
350			350	244	24.9	270.9	56		63		70	

DTG Super Heavy Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTG 10-15	10	5	15	163	16.7	11.4	2.4	392 {40}	2.7	441 {45}	*Out of permissible range*	490 {50}
20			20	123	12.5	15.0	3.2		3.6		4.0	
25			25	98.1	10.0	19.0	4.0		4.5		5.0	
30			30	81.7	8.3	22.8	4.8		5.4		6.0	
35			35	70	7.1	26.6	5.6		6.3		7.0	
40			40	61.3	6.3	30.4	6.4		7.2		8.0	
45			45	54.5	5.6	34.2	7.2		8.1		9.0	
50			50	49	5.0	38.0	8.0		9.0		10.0	
55			55	44.6	4.5	41.8	8.8		9.9		11.0	
60			60	40.9	4.2	45.6	9.6		10.8		12.0	
65			65	37.7	3.8	49.4	10.4		11.7		13.0	
70			70	35	3.6	53.2	11.2		12.6		14.0	
75			75	32.7	3.3	57.0	12.0		13.5		15.0	
80			80	30.6	3.1	60.8	12.8		14.4		16.0	
90			90	27.2	2.8	68.4	14.4		16.2		18.0	
100			100	24.5	2.5	76.0	16.0		18.0		20.0	
DTG 12-15	12	6	15	245	25.0	11.4	2.4	588 {60}	2.7	662 {68}	*Out of permissible range*	735 {75}
20			20	184	18.8	15.0	3.2		3.6		4.0	
25			25	147	15.0	19.0	4.0		4.5		5.0	
30			30	123	12.5	22.8	4.8		5.4		6.0	
35			35	105	10.7	26.6	5.6		6.3		7.0	
40			40	91.9	9.4	30.4	6.4		7.2		8.0	
45			45	81.7	8.3	34.2	7.2		8.1		9.0	
50			50	73.5	7.5	38.0	8.0		9.0		10.0	
55			55	66.9	6.8	41.8	8.8		9.9		11.0	
60			60	61.3	6.3	45.6	9.6		10.8		12.0	
65			65	56.6	5.8	49.4	10.4		11.7		13.0	
70			70	52.5	5.4	53.2	11.2		12.6		14.0	
75			75	49	5.0	57.0	12.0		13.5		15.0	
80			80	46	4.7	60.8	12.8		14.4		16.0	
90			90	40.9	4.2	68.4	14.4		16.2		18.0	
100			100	36.8	3.8	76.0	16.0		18.0		20.0	
DTG 14-20	14	7	20	238	24.3	15.2	3.2	761 {78}	3.6	856 {87}	*Out of permissible range*	951 {97}
25			25	190	19.4	19.0	4.0		4.5		5.0	
30			30	159	16.2	22.8	4.8		5.4		6.0	
35			35	136	13.9	26.6	5.6		6.3		7.0	
40			40	119	12.1	30.4	6.4		7.2		8.0	
45			45	106	10.8	34.2	7.2		8.1		9.0	
50			50	95.1	9.7	38.0	8.0		9.0		10.0	
55			55	86.5	8.8	41.8	8.8		9.9		11.0	
60			60	79.3	8.1	45.6	9.6		10.8		12.0	
65			65	73.2	7.5	49.4	10.4		11.7		13.0	
70			70	67.9	6.9	53.2	112		12.6		14.0	
75			75	63.4	6.5	57.0	12.0		13.5		15.0	
80			80	59.5	6.1	60.8	12.8		14.4		16.0	
90			90	52.8	5.4	68.4	14.4		16.2		18.0	
100			100	47.6	4.9	76.0	16.0		18.0		20.0	
DTG 16-20	16	8	20	319	32.5	15.2	3.2	1020 {104}	3.6	1147 {117}	*Out of permissible range*	1275 {130}
25			25	255	26.0	19.0	4.0		4.5		5.0	
30			30	212	21.7	22.8	4.8		5.4		6.0	
35			35	182	18.6	26.6	5.6		6.3		7.0	
40			40	159	16.3	30.4	6.4		7.2		8.0	
45			45	142	14.4	34.2	7.2		8.1		9.0	
50			50	127	13.0	38.0	8.0		9.0		10.0	
55			55	116	11.8	41.8	8.8		9.9		11.0	
60			60	106	10.8	45.6	9.6		10.8		12.0	
65			65	98.1	10.0	49.4	10.4		11.7		13.0	
70			70	91.1	9.3	53.2	11.2		12.6		14.0	
75			75	85	8.7	57.0	12.0		13.5		15.0	
80			80	79.7	8.1	60.8	12.8		14.4		16.0	
90			90	70.8	7.2	68.4	14.4		16.2		18.0	
100			100	63.7	6.5	76.0	16.0		18.0		20.0	
DTG 18-20	18	9	20	392	40.0	15.2	3.2	1255 {128}	3.6	1412 {144}	*Out of permissible range*	

DTG Super Heavy Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTG 18-25	18	9	25	314	32.0	19.0	4.0	1255 {128}	4.5	1412 {144}	5.0	1569 {160}
30			30	262	26.7	22.8	4.8		5.4		6.0	
35			35	224	22.9	26.6	5.6		6.3		7.0	
40			40	196	20.0	30.4	6.4		7.2		8.0	
45			45	174	17.8	34.2	7.2		8.1		9.0	
50			50	157	16.0	38.0	8.0		9.0		10.0	
55			55	143	14.5	41.8	8.8		9.9		11.0	
60			60	131	13.3	45.6	9.6		10.8		12.0	
65			65	121	12.3	49.4	10.4		11.7		13.0	
70			70	112	11.4	53.2	11.2		12.6		14.0	
75			75	105	10.7	57.0	12.0		13.5		15.0	
80			80	98.1	10.0	60.8	12.8		14.4		16.0	
90			90	87.2	8.9	68.4	14.4		16.2		18.0	
100			100	78.5	8.0	76.0	16.0		18.0		20.0	
DTG 20-20	20	10	20	515	52.5	15.2	3.2	1648 {168}	3.6	1853 {189}	*Out of permissible range*	
25			25	412	42.0	19.0	4.0		4.5		5.0	2059 {210}
30			30	343	35.0	22.8	4.8		5.4		6.0	
35			35	294	30.0	26.6	5.6		6.3		7.0	
40			40	257	26.3	30.4	6.4		7.2		8.0	
45			45	229	23.3	34.2	7.2		8.1		9.0	
50			50	206	21.0	38.0	8.0		9.0		10.0	
55			55	187	19.1	41.8	8.8		9.9		11.0	
60			60	172	17.5	45.6	9.6		10.8		12.0	
65			65	158	16.2	49.4	10.4		11.7		13.0	
70			70	147	15.0	53.2	11.2		12.6		14.0	
75			75	137	14.0	57.0	12.0		13.5		15.0	
80			80	129	13.1	60.8	12.8		14.4		16.0	
90			90	114	11.7	68.4	14.4		16.2		18.0	
100			100	103	10.5	76.0	16.0		18.0		20.0	
125			125	82.4	8.4	95.0	20.0		22.5		25.0	
DTG 22-20	22	11	20	588	60.0	15.2	3.2	1883 {192}	3.6	2118 {216}	*Out of permissible range*	
25			25	471	48.0	19.0	4.0		4.5		5.0	2354 {240}
30			30	392	40.0	22.8	4.8		5.4		6.0	
35			35	336	34.3	26.6	5.6		6.3		7.0	
40			40	294	30.0	30.4	6.4		7.2		8.0	
45			45	262	26.7	34.2	7.2		8.1		9.0	
50			50	235	24.0	38.0	8.0		9.0		10.0	
55			55	214	21.8	41.8	8.8		9.9		11.0	
60			60	196	20.0	45.6	9.6		10.8		12.0	
65			65	181	18.5	49.4	10.4		11.7		13.0	
70			70	168	17.1	53.2	11.2		12.6		14.0	
75			75	157	16.0	57.0	12.0		13.5		15.0	
80			80	147	15.0	60.8	12.8		14.4		16.0	
90			90	131	13.3	68.4	14.4		16.2		18.0	
100			100	118	12.0	76.0	16.0		18.0		20.0	
125			125	94.1	9.6	95.0	20.0		22.5		25.0	
DTG 25-20	25	12.5	20	760	77.5	15.2	3.2	2432 {248}	3.6	2736 {279}	*Out of permissible range*	
25			25	608	62.0	19.0	4.0		4.5		5.0	3040 {310}
30			30	507	51.7	22.8	4.8		5.4		6.0	
35			35	434	44.3	26.6	5.6		6.3		7.0	
40			40	380	38.8	30.4	6.4		7.2		8.0	
45			45	338	34.4	34.2	7.2		8.1		9.0	
50			50	304	31.0	38.0	8.0		9.0		10.0	
55			55	276	28.2	41.8	8.8		9.9		11.0	
60			60	253	25.8	45.6	9.6		10.8		12.0	
65			65	234	23.8	49.4	10.4		11.7		13.0	
70			70	217	22.1	53.2	11.2		12.6		14.0	
75			75	203	20.7	57.0	12.0		13.5		15.0	
80			80	190	19.4	60.8	12.8		14.4		16.0	
90			90	169	17.2	68.4	14.4		16.2		18.0	
100			100	152	15.5	76.0	16.0		18.0		20.0	
125			125	121.6	12.4	95.0	20.0		22.5		25.0	
DTG 27-20	27	13.5	20	907	92.5	15.2	3.2	2903 {296}	3.6	3266 {333}	*Out of permissible range*	

DTG Super Heavy Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTG 27-25	27	13.5	25	726	74.0	19.0	4.0	2903 {296}	4.5	3266 {333}	5.0	3628 {370}
30			30	605	61.7	22.8	4.8		5.4		6.0	
35			35	518	52.9	26.6	5.6		6.3		7.0	
40			40	454	46.3	30.4	6.4		7.2		8.0	
45			45	403	41.1	34.2	7.2		8.1		9.0	
50			50	363	37.0	38.0	8.0		9.0		10.0	
55			55	330	33.6	41.8	8.8		9.9		11.0	
60			60	302	30.8	45.6	9.6		10.8		12.0	
65			65	279	28.5	49.4	10.4		11.7		13.0	
70			70	259	26.4	53.2	11.2		12.6		14.0	
75			75	242	24.7	57.0	12.0		13.5		15.0	
80			80	227	23.1	60.8	12.8		14.4		16.0	
90			90	202	20.6	68.4	14.4		16.2		18.0	
100			100	181	18.5	76.0	16.0		18.0		20.0	
125			125	145	14.8	95.0	20.0		22.5		25.0	
150			150	121	12.3	114.0	24.0		27.0		30.0	
DTG 30-20	30	15	20	1177	120.0	15.2	3.2	3766 {384}	3.6	4236 {432}	*Out of permissible range*	4707 {480}
25			25	941	96.0	19.0	4.0		4.5		5.0	
30			30	785	80.0	22.8	4.8		5.4		6.0	
35			35	672	68.6	26.6	5.6		6.3		7.0	
40			40	588	60.0	30.4	6.4		7.2		8.0	
45			45	523	53.3	34.2	7.2		8.1		9.0	
50			50	471	48.0	38.0	8.0		9.0		10.0	
55			55	428	43.6	41.8	8.8		9.9		11.0	
60			60	392	40.0	45.6	9.6		10.8		12.0	
65			65	362	36.9	49.4	10.4		11.7		13.0	
70			70	336	34.3	53.2	11.2		12.6		14.0	
75			75	314	32.0	57.0	12.0		13.5		15.0	
80			80	294	30.0	60.8	12.8		14.4		16.0	
90			90	262	26.7	68.4	14.4		16.2		18.0	
100			100	235	24.0	76.0	16.0		18.0		20.0	
125			125	188	19.2	95.0	20.0		22.5		25.0	
150			150	157	16.0	114.0	24.0		27.0		30.0	
175			175	134	13.7	133.0	28.0		31.5		35.0	
200			200	118	12.0	152.0	32.0		36.0		40.0	
DTG 35-30	35	17.5	30	1030	105.0	22.8	4.8	4943 {504}	5.4	5560 {567}	6.0	6178 {630}
35			35	883	90.0	26.6	5.6		6.3		7.0	
40			40	772	78.8	30.4	6.4		7.2		8.0	
45			45	686	70.0	34.2	7.2		8.1		9.0	
50			50	618	63.0	38.0	8.0		9.0		10.0	
55			55	562	57.3	41.8	8.8		9.9		11.0	
60			60	515	52.5	45.6	9.6		10.8		12.0	
65			65	475	48.5	49.4	10.4		11.7		13.0	
70			70	441	45.0	53.2	11.2		12.6		14.0	
75			75	412	42.0	57.0	12.0		13.5		15.0	
80			80	386	39.4	60.8	12.8		14.4		16.0	
90			90	343	35.0	68.4	14.4		16.2		18.0	
100			100	309	31.5	76.0	16.0		18.0		20.0	
125			125	247	25.2	95.0	20.0		22.5		25.0	
150			150	206	21.0	114.0	24.0		27.0		30.0	
175			175	177	18.0	133.0	28.0		31.5		35.0	
200			200	154	15.8	152.0	32.0		36.0		40.0	
DTG 40-35	40	20	35	1149	117.1	26.6	5.6	6433 {656}	6.3	7237 {738}	7.0	8041 {820}
40			40	1005	102.5	30.4	6.4		7.2		8.0	
45			45	893	91.1	34.2	7.2		8.1		9.0	
50			50	804	82.0	38.0	8.0		9.0		10.0	
55			55	731	74.5	41.8	8.8		9.9		11.0	
60			60	670	68.3	45.6	9.6		10.8		12.0	
65			65	619	63.1	49.4	10.4		11.7		13.0	
70			70	574	58.6	53.2	11.2		12.6		14.0	
75			75	536	54.7	57.0	12.0		13.5		15.0	
80			80	503	51.3	60.8	12.8		14.4		16.0	
90			90	447	45.6	68.4	14.4		16.2		18.0	

DTG Super Heavy Load

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Solid Height	F = L×16%		F = L×18%		F = L×20%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N{kgf}	mm	N{kgf}	mm	N{kgf}
Operating Cycles							1.000.000 Cycles		500.000 Cycles		300.000 Cycles	
DTG 40-100	40	20	100	402	41.0	76.0	16.0	6433 {656}	18.0	7237 {738}	20.0	8041 {820}
125			125	322	32.8	95.0	20.0		22.5		25.0	
150			150	268	27.3	114.0	24.0		27.0		30.0	
175			175	230	23.4	133.0	28.0		31.5		35.0	
200			200	201	20.5	152.0	32.0		36.0		40.0	
DTG 50-50	50	25	50	1226	125.0	39.0	8.0	9807 {1000}	9.0	11032 {1125}	10.0	12258 {1250}
55			55	1114	113.6	43.0	8.8		9.9		11.0	
60			60	1022	104.2	47.0	9.6		10.8		12.0	
65			65	943	96.2	51.0	10.4		11.7		13.0	
70			70	876	89.3	54.0	11.2		12.6		14.0	
75			75	817	83.3	58.0	12.0		13.5		15.0	
80			80	766	78.1	61.0	12.8		14.4		16.0	
90			90	681	69.4	66.0	14.4		16.2		18.0	
100			100	613	62.5	74.0	16.0		18.0		20.0	
125			125	490	50.0	89.0	20.0		22.5		25.0	
150			150	409	41.7	105.0	24.0		27.0		30.0	
175			175	350	35.7	133.0	28.0		31.5		35.0	
200			200	306	31.3	152.0	32.0		36.0		40.0	

ISO 10243 STANDARD DIE SPRINGS

The Complete Series

WHY CHOOSE DLS?

MATERIAL	Made of high-quality 55CrSi / SWOSC-V alloy steel, combined with a unique vacuum heat treatment process.
DESIGN	Rectangular wire design maximizes die space utilization and provides superior resistance against overload failure.
TOLERANCE	Strictly manufactured according to ISO 10243 standards. Equipped with fully automatic spring load testing equipment to ensure accurate and consistent load performance for every spring.

1,000,000+
CYCLE LIFE

100%
INSPECTION

24h
SHIPMENT

DLF For Extra Light Load— DLF ISO10243

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×30%		F = L×40%		F = L×50%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		20.000 Cycles	
DLF 20-32	20	10	32	22.6	2.3	18.2	9.6	217	12.8	289	16	362
38			38	18.6	1.9	22	11.4	212	15.2	283	19	353
44			44	15.7	1.6	25.8	13.2	207	17.6	276	22	345
51			51	13.7	1.4	30.3	15.3	210	20.4	279	25.5	349
64			64	11.3	1.2	38.9	19.2	217	25.6	289	32	362
76			76	9.8	1.0	47	22.8	223	30.4	298	38	372
89			89	8.3	0.8	55.7	26.7	222	35.6	295	44.5	369
102			102	7.4	0.8	64.2	30.6	226	40.8	302	51	377
115			115	6.4	0.7	72.9	34.5	221	46	294	57.5	368
127			127	5.9	0.6	80.7	38.1	225	50.8	300	63.5	375
139			139	5.4	0.6	88.4	41.7	225	55.6	300	69.5	375
152			152	4.9	0.5	96.7	45.6	223	60.8	298	76	372
305			305	2.5	0.3	196.3	91.5	229	122	305	152.5	381
DLF 25-25	25	12.5	25	53.9	5.5	12.9	7.5	404	10	539	12.5	674
32			32	42.2	4.3	17.2	9.6	405	12.8	540	16	675
38			38	35.8	3.7	20.7	11.4	408	15.2	544	19	680
44			44	31.4	3.2	24.4	13.2	414	17.6	553	22	691
51			51	27	2.8	28.5	15.3	413	20.4	551	25.5	689
64			64	21.6	2.2	36.5	19.2	415	25.6	553	32	691
76			76	18.1	1.8	43.9	22.8	413	30.4	550	38	688
89			89	15.2	1.6	51.4	26.7	406	35.6	541	44.5	691
102			102	13.2	1.3	59.3	30.6	404	40.8	539	51	688
115			115	11.8	1.2	67.2	34.5	407	46	543	57.5	676
127			127	10.6	1.1	74.4	38.1	404	50.8	538	63.5	673
139			139	9.6	1.0	81.6	41.7	400	55.6	534	69.5	667
152			152	8.8	0.9	89.5	45.6	401	60.8	535	76	669
178			178	7.6	0.8	105.4	53.4	406	71.2	541	89	676
203			203	6.7	0.7	120.7	60.9	408	81.2	544	101.5	680
305			305	4.4	0.4	182.4	91.5	403	122	537	152.5	671
DLF 32-38	32	16	38	43.1	4.4	19.9	11.4	491	15.2	655	19	819
44			44	37.3	3.8	23.5	13.2	492	17.6	656	22	821
51			51	32.4	3.3	27.6	15.3	496	20.4	661	25.5	826
64			64	25.5	2.6	35.2	19.2	490	25.6	653	32	816
76			76	21.6	2.2	42.4	22.8	492	30.4	657	38	821
89			89	18.1	1.8	50	26.7	483	35.6	644	44.5	805
102			102	15.7	1.6	57.6	30.6	480	40.8	641	51	801
115			115	14.2	1.4	65.5	34.5	490	46	653	57.5	817
127			127	12.7	1.3	72.5	38.1	484	50.8	645	63.5	806
139			139	11.6	1.2	79.4	41.7	484	55.6	645	69.5	806
152			152	10.6	1.1	87.3	45.6	483	60.8	644	76	806
178			178	9	0.9	102.9	53.4	481	71.2	641	89	801
203			203	7.8	0.8	117.7	60.9	475	81.2	633	101.5	792
254			254	6.4	0.7	148.1	76.2	488	101.6	650	127	813
305			305	5.3	0.5	178.3	91.5	485	122	647	152.5	808
DLF 40-51	40	20	51	48.1	4.9	28	15.3	736	20.4	981	25.5	1227
64			64	39.2	4.0	36.2	19.2	753	25.6	1004	32	1254
76			76	33.3	3.4	43.7	22.8	759	30.4	1012	38	1265
89			89	28.4	2.9	51.7	26.7	758	35.6	1011	44.5	1264
102			102	24.5	2.5	59.8	30.6	750	40.8	1000	51	1250
115			115	22.1	2.3	67.9	34.5	762	46	1017	57.5	1271
127			127	19.6	2.0	75.2	38.1	747	50.8	996	63.5	1245
139			139	17.7	1.8	82.4	41.7	738	55.6	984	69.5	1230
152			152	16.2	1.7	90.6	45.6	739	60.8	985	76	1231
178			178	13.7	1.4	106.5	53.4	732	71.2	975	89	1219
203			203	12.3	1.3	122.2	60.9	749	81.2	999	101.5	1248
254			254	9.8	1.0	153.6	76.2	747	101.6	996	127	1245
305			305	8.3	0.8	185.4	91.5	759	122	1013	152.5	1266
DLF 50-64	50	25	64	86.3	8.8	35.1	19.2	1657	25.6	2209	32	2762
76			76	70.6	7.2	42.2	22.8	1610	30.4	2146	38	2683

DLF For Extra Light Load— DLF ISO10243

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×30%		F = L×40%		F = L×50%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		20.000 Cycles	
DLF 50-89	50	25	89	59.8	6.1	50.3	26.7	1597	35.6	2129	44.5	2661
102			102	52	5.3	58.4	30.6	1591	40.8	2122	51	2652
115			115	46.1	4.7	66.1	34.5	1590	46	2121	57.5	2651
127			127	42.2	4.3	73.8	38.1	1608	50.8	2144	63.5	2680
139			139	38.2	3.9	80.9	41.7	1593	55.6	2124	69.5	2655
152			152	34.3	3.5	89	45.6	1564	60.8	2085	76	2607
178			178	29.4	3.0	105.3	53.4	1570	71.2	2093	89	2617
203			203	25.5	2.6	120.6	60.9	1553	81.2	2071	101.5	2588
254			254	20.6	2.1	152.2	76.2	1570	101.6	2093	127	2616
305			305	17.2	1.8	183.7	91.5	1574	122	2098	152.5	2623

DLL For Light Load— DLL ISO10243

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×25%		F = L×30%		F = L×40%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		20.000 Cycles	
DLL 10-25	10	5	25	10	1.0	13.5	6.3	63	7.5	75	10	100
32			32	8.5	0.9	17.5	8	68	9.6	82	12.8	109
38			38	6.8	0.7	20.8	9.5	65	11.4	78	15.2	103
44			44	6	0.6	23.9	11	66	13.2	79	17.6	106
51			51	5	0.5	28.9	12.8	64	15.3	77	20.4	102
64			64	4.3	0.4	36.1	16	69	19.2	83	25.6	110
76			76	3.2	0.3	43.2	19	61	22.8	73	30.4	97
305			305	1.1	0.1	178.7	76.3	84	91.5	101	122	134
DLL 12.5-25	12.5	6.3	25	17.9	1.8	13.2	6.3	113	7.5	134	10	179
32			32	16.4	1.7	18	8	131	9.6	157	12.8	210
38			38	13.6	1.4	21	9.5	129	11.4	155	15.2	207
44			44	12.1	1.2	24	11	133	13.2	160	17.6	213
51			51	11.4	1.2	28.7	12.8	146	15.3	174	20.4	233
64			64	9.3	0.9	35.8	16	149	19.2	179	25.6	238
76			76	7.1	0.7	42.7	19	135	22.8	162	30.4	216
89			89	5.4	0.6	50.4	22.3	120	26.7	144	35.6	192
305			305	1.4	0.1	172	76.3	107	91.5	128	122	171
DLL 16-25	16	8	25	23.4	2.4	12.6	6.3	147	7.5	176	10	234
32			32	22.9	2.3	16.4	8	183	9.6	220	12.8	293
38			38	19.3	2.0	19.7	9.5	183	11.4	220	15.2	293
44			44	17.1	1.7	22.5	11	188	13.2	226	17.6	301
51			51	15.7	1.6	26.3	12.8	201	15.3	240	20.4	320
64			64	10.7	1.1	33.3	16	171	19.2	205	25.6	274
76			76	10	1.0	40.2	19	190	22.8	228	30.4	304
89			89	8.6	0.9	47.6	22.3	192	26.7	230	35.6	306
102			102	7.8	0.8	55.4	25.5	199	30.6	239	40.8	318
305			305	2.5	0.3	165.3	76.3	191	91.5	229	122	305
DLL 20-25	20	10	25	55.8	5.7	12.1	6.3	352	7.5	419	10	558
32			32	45	4.6	15.3	8	360	9.6	432	12.8	576
38			38	33.3	3.4	18.9	9.5	316	11.4	380	15.2	506
44			44	30	3.1	21.5	11	330	13.2	396	17.6	528
51			51	24.5	2.5	25	12.8	314	15.3	375	20.4	500
64			64	20	2.0	31.1	16	320	19.2	384	25.6	512
76			76	16	1.6	37.3	19	304	22.8	365	30.4	486
89			89	14	1.4	44.5	22.3	312	26.7	374	35.6	498
102			102	12	1.2	51.1	25.5	306	30.6	367	40.8	490
115			115	10.9	1.1	58.2	28.8	314	34.5	376	46	501
127			127	9.5	1.0	64.9	31.8	302	38.1	362	50.8	483
139			139	8.4	0.9	71.5	35	294	42	353	56	470
152			152	7.5	0.8	78.8	38	285	45.6	342	60.8	456
305			305	4	0.4	157.4	76.3	305	91.5	366	122	488
DLL 25-25	25	12.5	25	100	10.2	12.1	6.3	630	7.5	750	10	1000
32			32	80.3	8.2	15.2	8	642	9.6	771	12.8	1028
38			38	62	6.3	18.3	9.5	589	11.4	707	15.2	942
44			44	52.9	5.4	21.4	11	582	13.2	698	17.6	931
51			51	44	4.5	24.9	12.8	563	15.3	673	20.4	898
64			64	35.2	3.6	31.4	16	563	19.2	676	25.6	901
76			76	28	2.9	37.5	19	532	22.8	638	30.4	851
89			89	24	2.4	43.5	22.3	535	26.7	641	35.6	854
102			102	21.1	2.2	51.1	25.5	538	30.6	646	40.8	861
115			115	18.7	1.9	58.1	28.8	539	34.5	645	46	860
127			127	16.7	1.7	64.1	31.8	531	38.1	636	50.8	848
139			139	15.3	1.6	70.4	35	536	42	643	56	857
152			152	14	1.4	77.1	38	532	45.6	638	60.8	851
178			178	12.5	1.3	93.1	44.5	556	53.4	668	71.2	890
203			203	10.4	1.1	102.7	50.8	528	60.9	633	81.2	844
305			305	7	0.7	155.9	76.3	534	91.5	641	122	854
DLL 32-38	32	16	38	94	9.6	18.3	9.5	893	11.4	1072	15.2	1429
44			44	79.5	8.1	21.5	11	875	13.2	1049	17.6	1399
51			51	67	6.8	25.5	12.8	858	15.3	1025	20.4	1367
64			64	53	5.4	31.9	16	848	19.2	1018	25.6	1357
76			76	44	4.5	38.6	19	836	22.8	1003	30.4	1338
89			89	37.2	3.8	46.5	22.3	830	26.7	993	35.6	1324
102			102	32	3.3	53.2	25.5	816	30.6	979	40.8	1306
115			115	29	3.0	60	28.8	835	34.5	1001	46	1334
127			127	25	2.6	66.7	31.8	795	38.1	953	50.8	1270
139			139	23	2.3	71.8	35	805	42	966	56	1288
152			152	21.5	2.2	78.5	38	817	45.6	980	60.8	1307

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×25%		F = L×30%		F = L×40%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		20.000 Cycles	
DLL 32-178	32	16	178	18.2	1.9	94.4	44.5	810	53.4	972	71.2	1296
203			203	15.8	1.6	107.1	50.8	803	60.9	962	81.2	1283
254			254	12.5	1.3	136.5	63.5	794	76.2	953	101.6	1270
305			305	10.3	1.1	162.7	76.3	786	91.5	942	122	1257
DLL 40-51	40	20	51	92	9.4	25.5	12.8	1178	15.3	1408	20.4	1877
64			64	73	7.4	31.4	16	1168	19.2	1402	25.6	1869
76			76	63	6.4	37.8	19	1197	22.8	1436	30.4	1915
89			89	51	5.2	44.3	22.3	1137	26.7	1362	35.6	1816
102			102	43	4.4	50.7	25.5	1097	30.6	1316	40.8	1754
115			115	39.6	4.0	58.1	28.8	1140	34.5	1366	46	1822
127			127	37	3.8	64.6	31.8	1177	38.1	1410	50.8	1880
139			139	32	3.3	70.1	35	1120	42	1344	56	1792
152			152	28	2.9	76.6	38	1064	45.6	1277	60.8	1702
178			178	25.2	2.6	90.4	44.5	1121	53.4	1346	71.2	1794
203			203	22.7	2.3	102.4	50.8	1153	60.9	1382	81.2	1843
254			254	17	1.7	128.8	63.5	1080	76.2	1295	101.6	1727
305			305	14.8	1.5	156.1	76.3	1129	91.5	1354	122	1806
DLL 50-64	50	25	64	156	15.9	31	16	2496	19.2	2995	25.6	3994
76			76	125	12.8	37.2	19	2375	22.8	2850	30.4	3800
89			89	109	11.1	43.6	22.3	2431	26.7	2910	35.6	3880
102			102	94	9.6	50.3	25.5	2397	30.6	2876	40.8	3835
115			115	81	8.3	58.1	28.8	2333	34.5	2795	46	3726
127			127	71	7.2	63.7	31.8	2258	38.1	2705	50.8	3607
139			139	66.5	6.8	69.5	35	2328	42	2793	56	3724
152			152	60	6.1	76.5	38	2280	45.6	2736	60.8	3648
178			178	52	5.3	91.9	44.5	2314	53.4	2777	71.2	3702
203			203	44	4.5	104.7	50.8	2235	60.9	2680	81.2	3573
254			254	35	3.6	130.6	63.5	2223	76.2	2667	101.6	3556
305			305	28.5	2.9	154.9	76.3	2175	91.5	2608	122	3477
DLL 63-76	63	38	76	189	19.3	36.5	19	3591	22.8	4309	30.4	5746
89			89	158	16.1	43.4	22.3	3523	26.7	4219	35.6	5625
102			102	131	13.4	49.7	25.5	3341	30.6	4009	40.8	5345
115			115	116	11.8	55.6	28.8	3341	34.5	4002	46	5336
127			127	103	10.5	62.7	31.8	3275	38.1	3924	50.8	5232
152			152	84.3	8.6	77.1	38	3203	45.6	3844	60.8	5125
178			178	71.5	7.3	92.2	44.5	3182	53.4	3818	71.2	5091
203			203	61.7	6.3	103.5	50.8	3134	60.9	3725	81.2	5010
254			254	47	4.8	130.4	63.5	2985	76.2	3581	101.6	4775
305			305	38.2	3.9	157.4	76.3	2915	91.5	3495	122	4660

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×25%		F = L×30%		F = L×37.5%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		10.000 Cycles	
DLM 10-25	10	5	25	16	1.6	10.2	6.3	101	7.5	120	9.4	150
32			32	13	1.3	14.2	8	104	9.6	125	12	156
38			38	11.9	1.2	16.8	9.5	113	11.4	136	14.3	170
44			44	10.3	1.1	19.4	11	113	13.2	136	16.5	170
51			51	8.9	0.9	23.4	12.8	114	15.3	136	19.1	170
64			64	7.5	0.8	28.2	16	120	19.2	144	24	180
76			76	5.3	0.5	34.2	19	101	22.8	121	28.5	151
305			305	1.6	0.2	133.8	76.3	122	91.5	146	114.4	183
DLM 12.5-25	12.5	6.3	25	30	3.1	11.9	6.3	189	7.5	225	9.4	282
32			32	24.8	2.5	16.2	8	198	9.6	238	12	298
38			38	21.4	2.2	18.7	9.5	203	11.4	244	14.3	306
44			44	18.5	1.9	21.3	11	204	13.2	244	16.5	305
51			51	15.5	1.6	25.6	12.8	198	15.3	237	19.1	296
64			64	12.1	1.2	32.4	16	194	19.2	232	24	290
76			76	10.2	1.0	39	19	194	22.8	233	28.5	291
89			89	8.4	0.9	45.9	22.3	187	26.7	224	33.4	281
305			305	2.1	0.2	152.5	76.3	160	91.5	192	114.4	240
DLM 16-25	16	8	25	49.4	5.0	10.5	6.3	311	7.5	371	9.4	464
32			32	37.1	3.8	13.2	8	297	9.6	356	12	445
38			38	33.9	3.5	17.2	9.5	322	11.4	386	14.3	485
44			44	30	3.1	19.4	11	330	13.2	396	16.5	495
51			51	26.4	2.7	24.2	12.8	338	15.3	404	19.1	504
64			64	20.5	2.1	29.2	16	328	19.2	394	24	492
76			76	17.8	1.8	36.3	19	338	22.8	406	28.5	507
89			89	15.2	1.6	41.7	22.3	339	26.7	406	33.4	508
102			102	13.5	1.4	48.9	25.5	344	30.6	413	38.3	517
305			305	4.8	0.5	141.6	76.3	366	91.5	439	114.4	549
DLM 20-25	20	10	25	98	10.0	10.5	6.3	617	7.5	735	9.4	921
32			32	72.6	7.4	13.9	8	581	9.6	697	12	871
38			38	56	5.7	16.6	9.5	532	11.4	638	14.3	801
44			44	47.5	4.8	18.8	11	523	13.2	627	16.5	784
51			51	41.7	4.3	23.1	12.8	534	15.3	638	19.1	796
64			64	32.3	3.3	27.5	16	517	19.2	620	24	775
76			76	25.1	2.6	33.8	19	477	22.8	572	28.5	715
89			89	22	2.2	39.7	22.3	491	26.7	587	33.4	735
102			102	19.8	2.0	47.3	25.5	505	30.6	606	38.3	758
115			115	18.1	1.8	52.5	28.8	521	34.5	624	43.1	780
127			127	16.6	1.7	56.9	31.8	528	38.1	632	47.6	790
139			139	15.1	1.5	62.1	35	529	42	634	52.5	793
152			152	13.2	1.3	67.6	38	500	45.6	600	57	750
305			305	6.1	0.6	143.4	76.3	465	91.5	558	114.4	698
DLM 25-25	25	12.5	25	147	15.0	10.2	6.3	926	7.5	1103	9.4	1382
32			32	118	12.0	13.7	8	944	9.6	1133	12	1416
38			38	93	9.5	15.7	9.5	884	11.4	1060	14.3	1330
44			44	80.8	8.2	18.2	11	889	13.2	1067	16.5	1333
51			51	68.6	7.0	21.7	12.8	878	15.3	1050	19.1	1310
64			64	53	5.4	26	16	848	19.2	1018	24	1272
76			76	43.2	4.4	32.3	19	821	22.8	985	28.5	1231
89			89	38.2	3.9	38	22.3	852	26.7	1020	33.4	1276
102			102	33	3.4	43	25.5	842	30.6	1010	38.3	1264
115			115	28	2.9	48.6	28.8	806	34.5	966	43.1	1207
127			127	25.9	2.6	53.7	31.8	824	38.1	987	47.6	1233
139			139	23.2	2.4	59.4	35	812	42	974	52.5	1218
152			152	20.8	2.1	63.8	38	790	45.6	948	57	1186
178			178	17.8	1.8	76.6	44.5	792	53.4	951	66.8	1189
203			203	15.8	1.6	88.4	50.8	803	60.9	962	76.1	1202
305			305	10.2	1.0	135.1	76.3	778	91.5	933	114.4	1167
DLM 32-38	32	16	38	185	18.9	16.3	9.5	1758	11.4	2109	14.3	2646
44			44	158	16.1	18.9	11	1738	13.2	2086	16.5	2607
51			51	134	13.7	23.1	12.8	1715	15.3	2050	19.1	2559
64			64	99	10.1	28.5	16	1584	19.2	1901	24	2376
76			76	80.5	8.2	34.2	19	1530	22.8	1835	28.5	2294
89			89	69.1	7.1	40.4	22.3	1541	26.7	1845	33.4	2308
102			102	58.8	6.0	48	25.5	1499	30.6	1799	38.3	2252
115			115	51.5	5.3	54.3	28.8	1483	34.5	1777	43.1	2220
127			127	44.8	4.6	59.2	31.8	1425	38.1	1707	47.6	2132
139			139	42.3	4.3	65.3	35	1481	42	1777	52.5	2221
152			152	37.8	3.9	73	38	1436	45.6	1724	57	2155

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×25%		F = L×30%		F = L×37.5%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		10.000 Cycles	
DLM 32-178	32	16	178	32.5	3.3	84.5	44.5	1446	53.4	1736	66.8	2171
203			203	28.9	2.9	96.9	50.8	1468	60.9	1760	76.1	2199
254			254	21.4	2.2	120.9	63.5	1359	76.2	1631	95.3	2039
305			305	18.3	1.9	146.9	76.3	1396	91.5	1674	114.4	2094
DLM 40-51	40	20	51	181.6	18.5	21.4	12.8	2324	15.3	2778	19.1	3469
64			64	140	14.3	26.8	16	2240	19.2	2688	24	3360
76			76	108	11.0	32.7	19	2052	22.8	2462	28.5	3078
89			89	90.7	9.3	39	22.3	2023	26.7	2422	33.4	3029
102			102	81	8.3	44.1	25.5	2066	30.6	2479	38.3	3102
115			115	71.8	7.3	50.6	28.8	2068	34.5	2477	43.1	3095
127			127	62.7	6.4	55.9	31.8	1994	38.1	2389	47.6	2985
139			139	57.5	5.9	61.8	35	2013	42	2415	52.5	3019
152			152	51.6	5.3	67.5	38	1961	45.6	2353	57	2941
178			178	44.1	4.5	77.2	44.5	1962	53.4	2355	66.8	2946
203			203	36.7	3.7	91.8	50.8	1864	60.9	2235	76.1	2793
254			254	30.1	3.1	112.7	63.5	1911	76.2	2294	95.3	2869
305			305	24.6	2.5	138.1	76.3	1877	91.5	2251	114.4	2814
DLM 50-64	50	25	64	209	21.3	28.2	16	3344	19.2	4013	24	5016
76			76	168	17.1	34.9	19	3192	22.8	3830	28.5	4788
89			89	140	14.3	39.2	22.3	3122	26.7	3738	33.4	4676
102			102	119	12.1	47.3	25.5	3035	30.6	3641	38.3	4558
115			115	106	10.8	52.6	28.8	3053	34.5	3657	43.1	4569
127			127	97	9.9	59.8	31.8	3085	38.1	3696	47.6	4617
139			139	87	8.9	65.1	35	3045	42	3654	52.5	4568
152			152	80	8.2	70.8	38	3040	45.6	3648	57	4560
178			178	69.5	7.1	84.2	44.5	3093	53.4	3711	66.8	4643
203			203	59.8	6.1	96.6	50.8	3038	60.9	3642	76.1	4551
229			229	50.9	5.2	108.5	57.3	2917	68.7	3497	85.9	4372
254			254	43.9	4.5	121.8	63.5	2788	76.2	3345	95.3	4184
305			305	38.6	3.9	146.8	76.3	2945	91.5	3532	114.4	4416
DLM 63-76	63	38	76	312	31.8	30.7	19	5928	22.8	7114	28.5	8892
89			89	260	26.5	36.5	22.3	5798	26.7	6942	33.4	8684
102			102	221	22.6	43.6	25.5	5636	30.6	6763	38.3	8464
115			115	187	19.1	48.9	28.8	5386	34.5	6452	43.1	8060
127			127	168	17.1	54.2	31.8	5342	38.1	6401	47.6	7997
152			152	136	13.9	65.7	38	5168	45.6	6202	57	7752
178			178	114	11.6	76.5	44.5	5073	53.4	6088	66.8	7615
203			203	100	10.2	88	50.8	5080	60.9	6090	76.1	7610
229			229	89.2	9.1	103.9	57.3	5111	68.7	6128	85.9	7662
254			254	78.4	8.0	112.4	63.5	4978	76.2	5974	95.3	7472
305			305	64.7	6.6	133.8	76.3	4937	91.5	5920	114.4	7402

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×20%		F = L×25%		F = L×30%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000	Cycles	1.500.000	Cycles	10.000	Cycles
DLH 10-25	10	5	25	22.1	2.3	9.2	5	111	6.3	139	7.5	166
32			32	17.5	1.8	12.1	6.4	112	8	140	9.6	168
38			38	17.1	1.7	13.2	7.6	130	9.5	162	11.4	195
44			44	15	1.5	15.1	8.8	132	11	165	13.2	198
51			51	12.8	1.3	19.5	10.2	131	12.8	164	15.3	196
64			64	10.7	1.1	21.8	12.8	137	16	171	19.2	205
76			76	7.5	0.8	27.9	15.2	114	19	143	22.8	171
305			305	2.1	0.2	127.2	61	128	76.3	160	91.5	192
DLH 12.5-25	12.5	6.3	25	42.1	4.3	9.8	5	211	6.3	265	7.5	316
32			32	33.2	3.4	13.6	6.4	212	8	266	9.6	319
38			38	29.3	3.0	14.6	7.6	223	9.5	278	11.4	334
44			44	24.6	2.5	18.1	8.8	216	11	271	13.2	325
51			51	19.6	2.0	22.3	10.2	200	12.8	251	15.3	300
64			64	15	1.5	27.3	12.8	192	16	240	19.2	288
76			76	13.2	1.3	33.1	15.2	201	19	251	22.8	301
89			89	11.4	1.2	38.9	17.8	203	22.3	254	26.7	304
305			305	2.8	0.3	139.7	61	171	76.3	214	91.5	256
DLH 16-25	16	8	25	75.7	7.7	8.4	5	379	6.3	477	7.5	568
32			32	52.8	5.4	10.5	6.4	338	8	422	9.6	507
38			38	48.5	4.9	13.6	7.6	369	9.5	461	11.4	553
44			44	42.8	4.4	15.9	8.8	377	11	471	13.2	565
51			51	37.1	3.8	18.9	10.2	378	12.8	475	15.3	568
64			64	30.3	3.1	24.9	12.8	388	16	485	19.2	582
76			76	25.7	2.6	29.2	15.2	391	19	488	22.8	586
89			89	21.7	2.2	34.5	17.8	386	22.3	484	26.7	579
102			102	19.3	2.0	39.1	20.4	394	25.5	492	30.6	591
305			305	7.1	0.7	103.6	61	433	76.3	542	91.5	650
DLH 20-25	20	10	25	216	22.0	8.3	5	1080	6.3	1361	7.5	1620
32			32	168	17.1	10.9	6.4	1075	8	1344	9.6	1613
38			38	129	13.2	12.5	7.6	980	9.5	1226	11.4	1471
44			44	112	11.4	15	8.8	986	11	1232	13.2	1478
51			51	94	9.6	17.6	10.2	959	12.8	1203	15.3	1438
64			64	72.1	7.4	22.6	12.8	923	16	1154	19.2	1384
76			76	59.7	6.1	27.5	15.2	907	19	1134	22.8	1361
89			89	50.5	5.2	31.7	17.8	899	22.3	1126	26.7	1348
102			102	44.2	4.5	37.5	20.4	902	25.5	1127	30.6	1353
115			115	38.4	3.9	42.6	23	883	28.8	1106	34.5	1325
127			127	34.1	3.5	45.5	25.4	866	31.8	1084	38.1	1299
139			139	31	3.2	50.1	28	868	35	1085	42	1302
152			152	28.2	2.9	55.8	30.4	857	38	1072	45.6	1286
305			305	15	1.5	114.1	61	915	76.3	1145	91.5	1373
DLH 25-25	25	12.5	25	375	38.3	8.5	5	1875	6.3	2363	7.5	2813
32			32	297	30.3	11	6.4	1901	8	2376	9.6	2851
38			38	219	22.3	12.6	7.6	1664	9.5	2081	11.4	2497
44			44	187	19.1	14.8	8.8	1646	11	2057	13.2	2468
51			51	156	15.9	17.9	10.2	1591	12.8	1997	15.3	2387
64			64	123	12.6	23.1	12.8	1574	16	1968	19.2	2362
76			76	99	10.1	26.3	15.2	1505	19	1881	22.8	2257
89			89	84	8.6	30.5	17.8	1495	22.3	1873	26.7	2243
102			102	73	7.4	37.3	20.4	1489	25.5	1862	30.6	2234
115			115	65	6.6	41.9	23	1495	28.8	1872	34.5	2243
127			127	57.7	5.9	46.2	25.4	1466	31.8	1835	38.1	2198
139			139	52.7	5.4	49.3	28	1476	35	1845	42	2213
152			152	47.8	4.9	55.7	30.4	1453	38	1816	45.6	2180
178			178	41	4.2	65.1	35.6	1460	44.5	1825	53.4	2189
203			203	35.8	3.7	74.5	40.6	1453	50.8	1819	60.9	2180
305			305	22.9	2.3	110.2	61	1397	76.3	1747	91.5	2095
DLH 32-38	32	16	38	388	39.6	12.5	7.6	2949	9.5	3686	11.4	4423
44			44	324	33.1	14.9	8.8	2851	11	3564	13.2	4277
51			51	272	27.8	17.8	10.2	2774	12.8	3482	15.3	4162
64			64	212	21.6	22.4	12.8	2714	16	3392	19.2	4070
76			76	172	17.6	26.1	15.2	2614	19	3268	22.8	3922
89			89	141	14.4	30.8	17.8	2510	22.3	3144	26.7	3765
102			102	122	12.4	36.8	20.4	2489	25.5	3111	30.6	3733
115			115	107	10.9	41.4	23	2461	28.8	3082	34.5	3692
127			127	93	9.5	44.4	25.4	2362	31.8	2957	38.1	3543
139			139	86	8.8	48.5	28	2408	35	3010	42	3612
152			152	78	8.0	54.8	30.4	2371	38	2964	45.6	3557

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×20%		F = L×25%		F = L×30%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		10.000 Cycles	
DLH 32-178	32	16	178	67.2	6.9	63.6	35.6	2392	44.5	2990	53.4	3588
203			203	59.1	6.0	72.5	40.6	2399	50.8	3002	60.9	3599
254			254	46.4	4.7	92.8	50.8	2357	63.5	2946	76.2	3536
305			305	38	3.9	111.8	61	2318	76.3	2899	91.5	3477
DLH 40-51	40	20	51	350	35.7	17	10.2	3570	12.8	4480	15.3	5355
64			64	269	27.4	21.9	12.8	3443	16	4304	19.2	5165
76			76	219	22.3	26.7	15.2	3329	19	4161	22.8	4993
89			89	190	19.4	31.3	17.8	3382	22.3	4237	26.7	5073
102			102	163	16.6	37.1	20.4	3325	25.5	4157	30.6	4988
115			115	142	14.5	41	23	3266	28.8	4090	34.5	4899
127			127	128	13.1	46.5	25.4	3251	31.8	4070	38.1	4877
139			139	115	11.7	53.1	28	3220	35	4025	42	4830
152			152	105	10.7	56.1	30.4	3192	38	3990	45.6	4788
178			178	89	9.1	67.4	35.6	3168	44.5	3961	53.4	4753
203			203	77	7.9	76.2	40.6	3126	50.8	3912	60.9	4689
254			254	61	6.2	96.2	50.8	3099	63.5	3874	76.2	4648
305			305	51	5.2	114.8	61	3111	76.3	3891	91.5	4667
DLH 50-64	50	25	64	413	42.1	22.4	12.8	5286	16	6608	19.2	7930
76			76	339	34.6	26.5	15.2	5153	19	6441	22.8	7729
89			89	288	29.4	31.5	17.8	5126	22.3	6422	26.7	7690
102			102	245	25.0	37.6	20.4	4998	25.5	6248	30.6	7497
115			115	215	21.9	42.7	23	4945	28.8	6192	34.5	7418
127			127	192	19.6	47.5	25.4	4877	31.8	6106	38.1	7315
139			139	168	17.1	51.8	28	4704	35	5880	42	7056
152			152	154	15.7	57.8	30.4	4682	38	5852	45.6	7022
178			178	134	13.7	68.5	35.6	4770	44.5	5963	53.4	7156
203			203	117	11.9	77.6	40.6	4750	50.8	5944	60.9	7125
254			254	89	9.1	97.9	50.8	4521	63.5	5652	76.2	6782
305			305	73	7.4	120.7	61	4453	76.3	5570	91.5	6680
DLH 63-76	63	38	76	618	63.1	24.7	15.2	9394	19	11742	22.8	14090
89			89	515	52.6	30	17.8	9167	22.3	11485	26.7	13751
102			102	438	44.7	35.1	20.4	8935	25.5	11169	30.6	13403
115			115	370	37.8	37.5	23	8510	28.8	10656	34.5	12765
127			127	333	34.0	45.9	25.4	8458	31.8	10589	38.1	12687
152			152	269	27.4	56.5	30.4	8178	38	10222	45.6	12266
178			178	226	23.1	66.8	35.6	8046	44.5	10057	53.4	12068
203			203	198	20.2	78.8	40.6	8039	50.8	10058	60.9	12058
254			254	155	15.8	101.7	50.8	7874	63.5	9843	76.2	11811
305			305	128	13.1	122.4	61	7808	76.3	9766	91.5	11712

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×17%		F = L×20%		F = L×25%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		10.000 Cycles	
DLB 10-25	10	5	25	36.8	3.8	7.7	4.3	158	5	184	6.3	232
32			32	27.9	2.8	10.6	5.4	151	6.4	179	8	223
38			38	23.7	2.4	12.6	6.5	154	7.6	180	9.5	225
44			44	19.2	2.0	13.8	7.5	144	8.8	169	11	211
51			51	16.5	1.7	16.2	8.7	144	10.2	168	12.8	211
64			64	13.2	1.3	20.4	10.9	144	12.8	169	16	211
76			76	10.9	1.1	25.2	12.9	141	15.2	166	19	207
305			305	2.6	0.3	110.8	51.9	135	61	159	76.3	198
DLB 12.5-25	12.5	6.3	25	58.5	6.0	8.1	4.3	252	5	293	6.3	369
32			32	43.9	4.5	9.9	5.4	237	6.4	281	8	351
38			38	36	3.7	12.9	6.5	234	7.6	274	9.5	342
44			44	30.3	3.1	14.1	7.5	227	8.8	267	11	333
51			51	26.2	2.7	17.4	8.7	228	10.2	267	12.8	335
64			64	21.2	2.2	21	10.9	231	12.8	271	16	339
76			76	17.1	1.7	26.4	12.9	221	15.2	260	19	325
89			89	14.5	1.5	31.5	15.1	219	17.8	258	22.3	323
305			305	4.3	0.4	111.3	51.9	223	61	262	76.3	328
DLB 16-25	16	8	25	118	12.0	8.5	4.3	507	5	590	6.3	743
32			32	89	9.1	11	5.4	481	6.4	570	8	712
38			38	72.1	7.4	13.2	6.5	469	7.6	548	9.5	685
44			44	60.9	6.2	14.7	7.5	457	8.8	536	11	670
51			51	52.3	5.3	17.7	8.7	455	10.2	533	12.8	669
64			64	41.2	4.2	21.9	10.9	449	12.8	527	16	659
76			76	34.1	3.5	27.8	12.9	440	15.2	518	19	648
89			89	29.5	3.0	31.2	15.1	445	17.8	525	22.3	658
102			102	25.6	2.6	37.9	17.3	443	20.4	522	25.5	653
305			305	8.4	0.9	113.5	51.9	436	61	512	76.3	641
DLB 20-25	20	10	25	293	29.9	6.9	4.3	1260	5	1465	6.3	1846
32			32	224	22.9	9.4	5.4	1210	6.4	1434	8	1792
38			38	177	18.1	12	6.5	1151	7.6	1345	9.5	1682
44			44	149	15.2	13.5	7.5	1118	8.8	1311	11	1639
51			51	128	13.1	16.2	8.7	1114	10.2	1306	12.8	1638
64			64	99	10.1	21.2	10.9	1079	12.8	1267	16	1584
76			76	81.7	8.3	24.7	12.9	1054	15.2	1242	19	1552
89			89	69.5	7.1	28.8	15.1	1049	17.8	1237	22.3	1550
102			102	60.6	6.2	34.8	17.3	1048	20.4	1236	25.5	1545
115			115	53	5.4	39	19.6	1039	23	1219	28.8	1526
127			127	47.5	4.8	43	21.6	1026	25.4	1207	31.8	1511
139			139	43	4.4	45.3	23.8	1023	28	1204	35	1505
152			152	39	4.0	50.4	25.8	1006	30.4	1186	38	1482
305			305	21.2	2.2	103.5	51.9	1100	61	1293	76.3	1618
DLB 25-25	25	12.5	25	459	46.8	7.3	4.3	1974	5	2295	6.3	2892
32			32	374.4	38.2	10.7	5.4	2022	6.4	2396	8	2995
38			38	346	35.3	12	6.5	2249	7.6	2630	9.5	3287
44			44	244	24.9	14.4	7.5	1830	8.8	2147	11	2684
51			51	207.5	21.2	17.4	8.7	1805	10.2	2117	12.8	2656
64			64	161	16.4	21.4	10.9	1755	12.8	2061	16	2576
76			76	130.8	13.3	26.9	12.9	1687	15.2	1988	19	2485
89			89	110.5	11.3	30.9	15.1	1669	17.8	1967	22.3	2464
102			102	96.3	9.8	36.7	17.3	1666	20.4	1965	25.5	2456
115			115	85.7	8.7	40.3	19.6	1680	23	1971	28.8	2468
127			127	76.3	7.8	45.1	21.6	1648	25.4	1938	31.8	2426
139			139	68.9	7.0	47.6	23.8	1640	28	1929	35	2412
152			152	63.5	6.5	53.5	25.8	1638	30.4	1930	38	2413
178			178	53.9	5.5	63.9	30.3	1633	35.6	1919	44.5	2399
203			203	47	4.8	70.2	34.5	1622	40.6	1908	50.8	2388
305			305	30.9	3.2	110.1	51.9	1604	61	1885	76.3	2358
DLB 32-38	32	16	38	528.2	53.9	11.4	6.5	3433	7.6	4014	9.5	5018
44			44	424.4	43.3	13.7	7.5	3183	8.8	3735	11	4668
51			51	353	36.0	15.6	8.7	3071	10.2	3601	12.8	4518
64			64	269.2	27.5	20	10.9	2934	12.8	3446	16	4307
76			76	218.5	22.3	24.4	12.9	2819	15.2	3321	19	4152
89			89	180.3	18.4	29.7	15.1	2723	17.8	3209	22.3	4021
102			102	155	15.8	35.1	17.3	2682	20.4	3162	25.5	3953
115			115	140	14.3	39	19.6	2744	23	3220	28.8	4032
127			127	124	12.7	42.8	21.6	2678	25.4	3150	31.8	3943
139			139	112.3	11.5	48.6	23.8	2673	28	3144	35	3931
152			152	102	10.4	52.4	25.8	2632	30.4	3101	38	3876

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×17%		F = L×20%		F = L×25%	
							Defl.	Load	Defl.	Load	Defl.	Load
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	mm	N	mm	N	mm	N
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		10.000 Cycles	
DLB 32-178	32	16	178	88.2	9.0	60.9	30.3	2672	35.6	3140	44.5	3925
203			203	76	7.8	69.2	34.5	2622	40.6	3086	50.8	3861
254			254	60.8	6.2	88.1	43.2	2627	50.8	3089	63.5	3861
305			305	49	5.0	104.2	51.9	2543	61	2989	76.3	3739
DLB 40-51	40	20	51	628	64.1	15	8.7	5464	10.2	6406	12.8	8038
64			64	487	49.7	19.5	10.9	5308	12.8	6234	16	7792
76			76	379	38.7	23.3	12.9	4889	15.2	5761	19	7201
89			89	321	32.8	26.7	15.1	4847	17.8	5714	22.3	7158
102			102	281	28.7	33.8	17.3	4861	20.4	5732	25.5	7166
115			115	245	25.0	36.2	19.6	4802	23	5635	28.8	7056
127			127	221	22.6	40.7	21.6	4774	25.4	5613	31.8	7028
139			139	190	19.4	44.5	23.8	4522	28	5320	35	6650
152			152	168	17.1	49.6	25.8	4334	30.4	5107	38	6384
178			178	146	14.9	59.9	30.3	4424	35.6	5198	44.5	6497
203			203	132	13.5	67.1	34.5	4554	40.6	5359	50.8	6706
254			254	107	10.9	86.3	43.2	4622	50.8	5436	63.5	6795
305			305	87.8	9.0	103.6	51.9	4557	61	5356	76.3	6699
DLB 50-64	50	25	64	709	72.3	19.3	10.9	7728	12.8	9075	16	11344
76			76	572	58.4	24.2	12.9	7379	15.2	8694	19	10868
89			89	475	48.5	28	15.1	7173	17.8	8455	22.3	10593
102			102	405	41.3	33.5	17.3	7007	20.4	8262	25.5	10328
115			115	352	35.9	38.6	19.6	6899	23	8096	28.8	10138
127			127	316	32.2	41.4	21.6	6826	25.4	8026	31.8	10049
139			139	274	28.0	47.3	23.8	6521	28	7672	35	9590
152			152	239	24.4	50.2	25.8	6166	30.4	7266	38	9082
178			178	215	21.9	61.1	30.3	6515	35.6	7654	44.5	9568
203			203	187	19.1	67.7	34.5	6452	40.6	7592	50.8	9500
254			254	153	15.6	87	43.2	6610	50.8	7772	63.5	9716
305			305	127	13.0	103.4	51.9	6591	61	7747	76.3	9690
DLB 63-76	63	38	76	952	97.1	15.5	12.9	12280	15.2	14470	-	-
89			89	819	83.6	20	15.1	12360	17.8	14580	-	-
102			102	700	71.4	30.7	17.3	12110	20.4	14280	25.5	17850
115			115	620	63.3	34.9	19.6	12152	23	14260	28.8	17860
127			127	565	57.7	38	21.6	12204	25.4	14351	31.8	17967
152			152	458	46.7	47.2	25.8	11816	30.4	13923	38	17404
178			178	384	39.2	55.8	30.3	11635	35.6	13670	44.5	17088
203			203	337	34.4	64.8	34.5	11627	40.6	13682	50.8	17120
254			254	263	26.8	86.7	43.2	11362	50.8	13360	63.5	16701
305			305	218	22.2	105.7	51.9	11314	61	13298	76.3	16633

Material Property: Equivalent to SWOSC-V

Model	OD	ID	Free Length	Spring Rate		Max. Deflection	F = L×10%		F = L×13.5%		F = L×15%	
							Load	Defl.	Load	Defl.	Load	Defl.
	mm	mm	mm	N/mm	kgf/mm	mm (approx.)	N	mm	N	mm	N	mm
Operating Cycles							3.000.000 Cycles		1.500.000 Cycles		10.000 Cycles	
DLG 25-64	25	12.5	64	644	65.7	13	4122	6.4	5564	8.64	6182	9.6
76			76	556	56.7	16	4226	7.6	5705	10.26	6338	11.4
89			89	462	47.1	20	4112	8.9	5551	12.015	6168	13.35
102			102	390	39.8	23	3978	10.2	5370	13.77	5967	15.3
115			115	360	36.7	26	4140	11.5	5589	15.525	6210	17.25
127			127	326	33.3	28	4140	12.7	5589	17.145	6210	19.05
152			152	255	26.0	34	3876	15.2	5233	20.52	5814	22.8
178			178	230	23.5	39	4094	17.8	5527	24.03	6141	26.7
203			203	202	20.6	45	4101	20.3	5536	27.405	6151	30.45
305			305	136	13.9	63	4148	30.5	5600	41.175	6222	45.75
DLG 32-64	32	16	64	1077	109.9	13	6893	6.4	9305	8.64	10339	9.6
76			76	874	89.2	16	6642	7.6	8967	10.26	9964	11.4
89			89	721	73.6	20	6417	8.9	8663	12.015	9625	13.35
102			102	620	63.3	23	6324	10.2	8537	13.77	9486	15.3
115			115	560	57.1	26	6440	11.5	8694	15.525	9660	17.25
127			127	496	50.6	28	6299	12.7	8504	17.145	9449	19.05
152			152	408	41.6	34	6202	15.2	8372	20.52	9302	22.8
178			178	353	36.0	39	6283	17.8	8483	24.03	9425	26.7
203			203	304	31.0	45	6171	20.3	8331	27.405	9257	30.45
254			254	243	24.8	62	6172	25.4	8332	34.29	9258	38.1
305			305	196	20.0	75	5978	30.5	8070	41.175	8967	45.75
DLG 40-89	40	20	89	880	89.8	20	7832	8.9	10573	12.015	11748	13.35
102			102	762	77.8	23	7772	10.2	10493	13.77	11659	15.3
115			115	679	69.3	26	7809	11.5	10541	15.525	11713	17.25
127			127	622	63.5	28	7899	12.7	10664	17.145	11849	19.05
152			152	509	51.9	36	7737	15.2	10445	20.52	11605	22.8
178			178	429	43.8	43	7636	17.8	10309	24.03	11454	26.7
203			203	374	38.2	49	7592	20.3	10249	27.405	11388	30.45
254			254	296	30.2	62	7518	25.4	10150	34.29	11278	38.1
305			305	246	25.1	75	7503	30.5	10129	41.175	11255	45.75
DLG 50-89	50	25	89	1410	143.9	19	12549	8.9	16941	12.015	18824	13.35
102			102	1215	124.0	22	12393	10.2	16731	13.77	18590	15.3
115			115	1076	109.8	25	12374	11.5	16705	15.525	18561	17.25
127			127	968	98.8	28	12294	12.7	16596	17.145	18440	19.05
152			152	806	82.2	34	12251	15.2	16539	20.52	18377	22.8
178			178	698	71.2	40	12424	17.8	16773	24.03	18637	26.7
203			203	612	62.4	45	12424	20.3	16772	27.405	18635	30.45
254			254	472	48.2	58	11989	25.4	16185	34.29	17983	38.1
305			305	388	39.6	70	11834	30.5	15976	41.175	17751	45.75

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