

The True Leader in Press Mold Die Spring SAMSOL





CERTIFICATE



This is to certify that

SAMSOL PRECISION CO., LTD.

776-73, Bonghwa-ro, Hwahyeon-myeon
Pocheon-si, Gyeonggi-do, 11124
Republic of Korea

has implemented and maintains a **Quality Management System**.

Scope:

Manufacturing of spring for industrial use and automobile suspensions.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2008

Certificate registration no.	292251 QM08
Valid from	2017-05-23
Valid until	2018-09-14
Date of certification	2017-05-23



DQS GmbH

Frank Graichen
Managing Director



Accredited Body: DQS GmbH, August-Schanz-Straße 21, 60433 Frankfurt am Main, Germany
Administrative Office: DQS Korea LLC, #302, ACE Techno Tower 10-cha,
196, Gasan digital 1-ro, Geumcheon-gu, Seoul, 08502, Republic of Korea

적용범위

삼솔의 금형스프링 규격은, 프레스 금형으로 설계·제작된 것으로서, 필요 특성을 본 카다로그에서 자유롭게 선택하여 사용하실 수 있습니다. 또한, 일반 모든 기계에 적용, 사용하여도 뛰어난 성능을 발휘할 수 있습니다.

특징

삼솔의 금형스프링은 독자적 특허방식인 와이어링 공정의 치밀한 조작으로 길이의 변형과 표면손상이 전혀 없으며, 모든 제품을 언제든지 고객에게 공급할 수 있습니다.

삼솔의 스프링은 세계에서 유일하게 제품옆면에 Lot No.를 사용하여 관리하고 있습니다.

종류

삼솔의 금형스프링은 輕少荷重, 輕荷重, 中荷重, 重荷重, 極重荷重, 極重荷重, 極超變形, 高變形, 中變形의 9종류로 구분되어 있고, 고객이 쉽게 판별하여 사용하실 수 있도록, 각각의 색으로 구분하였습니다.

종 류	기 호	색
輕少荷重	SF	노랑색
輕荷重	SL	파랑색
中荷重	SM	빨강색
重荷重	SH	녹색
極重荷重	SB	갈색
超重荷重	SG	검정색
極超變形	SU	하늘색
高變形	SR	흰색
中變形	SY	보라색

재료

삼솔금형스프링은 POSCO의 SAE 9254소재를 사용하여 高應力, 高速振幅, 耐熱性에 견딜 수 있도록 특수하게 설계되었습니다.

제조

삼솔의 금형스프링은 모든공정을 엄정한 품질기준을 통하여 생산공급하고 있습니다. 또한, 사용자의 입장에 서서 피로및 스트레스에 극히 우수하여 안심하고 사용하셔도 좋습니다.

Lot 번호의 의미

- ① SAMSOL 로고
- ② 외경·자유장
- ③ 변형량 (30만회 기준)
- ④ 제조일자

 SAMSOL	60-125	 40.0	E25SH
①	②	③	④

Samsol Metal Mold Spring

Application

The Samsol Metal Mold spring has been designed and manufactured in accordance with the specifications of the Press Metal Molding. Therefore, you can easily choose the correct one from our catalog according to the specified characteristics required. These springs are compatible with any general machines and also have excellent application capabilities.

Features

The Samsol Metal Mold Spring has an elaborate material by a wiring process of an independent patent, therefore there is no deformation of length and damage of surface at all. Samsol can supply the full range of products whenever the customer requires.

Samsol Spring is the only company in the world using a lot number on the side of the product.

Products

The Samsol Metal Mold Spring is classified in 9 types : Lightest Load, Light Load, Medium Load, Heavy Load, Ultra Heavy Load, Hyper Heavy Load, Super High Deflection, High Deflection, Middle Deflection.

These are indicated by different colors in order that customers can easily recognize and select the required item,

Description	Model	Color
Lightest Load	S F	Yellow
Light Load	S L	Blue
Medium Load	S M	Red
Heavy Load	S H	Green
Extra Heavy Load	S B	Brown
Hyper Heavy Load	S G	Black
Super High Deflection	S U	Sky
High Deflection	S R	White
Middle Deflection	S Y	Purple

Material

The Samsol Metal Mold spring uses a material, SAE9254 of POSCO and it is specially designed to achieve high stress resistance, high speed amplitude, and be heat resistance.

Manufacturing

We produce all the products through strict quality standard therefore they are superior to extreme fatigue and stressful conditions.

The meaning of Lot No.

- ① SAMSOL logo
- ② Out Dia. -Free Length
- ③ Deflection(the basis 0.3 million times)
- ④ The date of manufacture

 SAMSOL	60-125	 40.0	E25SH
①	②	③	④

SAMSOL 金型スプリング

適用範囲

SAMSOLの金型スプリングは プレス金型とし 設計・製作され、必要特性をカタログにて自由に選べられます。

特徴

SAMSOLの金型スプリングは独自のワイヤリング工程で長さの変形と表面の損傷がないし、すべての製品をいつでも顧客に供給できます。

また、SAMSOLのスプリングは 世界唯一に製品の横にLot No.を使用し管理しております。

種類

SAMSOLの金型スプリングは軽小荷重、軽荷重、中荷重、重荷重、極重荷重等9種類に分けておりまして、顧客が分かりやすく各々の色に区分しております。

種 類	記 号	色
Lightest Load	S F	Yellow
Light Load	S L	Blue
Medium Load	S M	Red
Heavy Load	S H	Green
Extra Heavy Load	S B	Brown
Hyper Heavy Load	S G	Black
Super High Deflection	S U	Sky
High Deflection	S R	White
Middle Deflection	S Y	Purple

材料

SAMSOLの金型スプリングは POSCOの SAE 9254 素材を使用し、高応力、高速振幅、耐熱性に耐えられる設計されております。

製造

SAMSOLの金型スプリングは全ての工程を厳しい品質基準にて生産供給しております。また、ユーザの立場から疲労及びストレスに強いから安心して使えます。

Lot No.の意味

- ① SAMSOLのロゴ
- ② 外径=自由長
- ③ 変形量(30万回基準)
- ④ 製造日付

 SAMSOL	60-125	 40.0	E25SH
①	②	③	④

SAMSOL金型弹簧

适用范围

SAMSOL的金型弹簧规格是以压制金模子设计制作的产品，顾客所需要的特性可以在本手册内选使用，另外，本产品适用于一般所有的机械中，使用后会发挥卓越的性能。

特征

SAMSOL的金型弹簧是以独有的专利方式—配线工程的精细组织，长度绝对没有变形和表面损伤，任何时候都可以供应给顾客所有的产品。
三率的弹簧是世界上唯一的在产品侧面使用 Lot No.而管理的。

种类

SAMSOL的金型弹簧分为轻少荷重、轻荷重、中荷重、重荷重、极重荷重9种类型，为了使顾客可以、很容易的判别、使用而分别以不同的颜色区别开来。

种类	型号	颜色
轻少荷重	SF	黄色
轻荷重	SL	蓝色
中荷重	SM	红色
重荷重	SH	绿色
极重荷重	SB	褐色
超重荷重	SG	黑色
极超变形	SU	空色
高变形	SR	白色
中变形	SY	苾色

材料

SAMSOL金型弹簧使用 POSCO 和 SAE 9254 原材料，为使产品具有高应力、高速振幅、耐热性而进行了特殊的设计。

制造

SAMSOL金型弹簧的所有工程都经过严格规定的品质标准而进行生产。另外，从用户的立场着想，解除疲劳和压力效果非常优秀，您可以尽管放心的使用。

Lot 符号的意义

- ① SAMSOL 的标志
- ② 外径-自由长
- ③ 变形量(以30万次为标准)
- ④ 制造日期













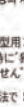





 SAMSOL	60-125	 40.0	E25SH
①	②	③	④

Square-angled coils for molds

Patented : No. 10-1000515



Specifications

	Type	Type	Color	Outer diameter		Free length		Available Max.Bend	Load N (kgf)	
				min.	max.	min.	max.		min.	max.
coil spring	 SF	 SL	SF Yellow	φ 6 (φ 3)	φ 70	10	500	40% (1)	58.8 (6)	2255.5 (230)
								50% (0.3)	78.5 (8)	2824.3 (288)
	 SM	 SH	SL Blue	φ 6 (φ 3)	φ 70	10	500	32% (1)	78.5 (8)	3814.4 (389)
								40% (0.3)	98.1 (10)	4766.0 (486)
	 SM	 SH	SM Red	φ 6 (φ 3)	φ 70	10	350	25.6% (1)	107.9 (11)	5638.8 (525)
								32% (0.3)	137.3 (14)	7060.8 (720)
	 SB	 SG	SH Green	φ 6 (φ 3)	φ 70	10	350	19.2% (1)	166.7 (17)	8472.9 (864)
								24% (0.3)	205.9 (21)	10591.2 (1080)
	 SB	 SG	SB Brown	φ 6 (φ 3)	φ 70	10	350	16% (1)	255.0 (26)	11297.3 (152)
								20% (0.3)	323.6 (33)	14121.6 (1440)
	 SU	 SR	SG Black	φ 10 (φ 5)	φ 50	15	300	16% (1)	392.3 (40)	10101.2 (1030)
								20% (0.3)	490.4 (50)	12626.5 (1288)
	 SU	 SR	SU Sky	φ 10.5	φ 43	15	300	50% (1)	56.84 (5.8)	490 (50)
								60% (0.3)	68.4 (7)	588 (60)
	 SY	 SR	SR White	φ 10.5	φ 46	15	300	50% (1)	127.5 (13)	3579.4 (110)
								55% (0.3)	140.2 (14.3)	1078.7 (120.5)
	 SY	 SR	SY Purple	φ 10.5	φ 46	15	300	50% (1)	78.4 (8)	1068.2 (109)
								60% (0.3)	98 (10)	1332.8 (136)

한 국내최대SAMSOL사의 고품질 각 코일 스프링은 명망한 품질 기준으로 생산 공급하고 있습니다.
특히 독자적 특허 방식인 와이어링 공정의 차질한 조치으로 강하의 변형과 표면 손상없이 오래 사용 할 수 있습니다.

S 사이즈 : mm 사이즈로 SF, SL, SM, SH, SB, SG, SU, SR, SY 9종의 표준 규격

■ 주문사항 : 주문 사양의 재질도 환영합니다.

SAMSOL社の金型用コイルスプリングはすべての工程を厳正な品質基準を守ってあります。特に「独自の特許方式であるワイヤリング工程で最も変形と表面損傷がありません」

S シリーズ : mm 寸法で SF, SL, SM, SH, SB, SG, SU, SR, SY タイプがあります

■ オーダーベース 製作可能

We SAMSOL guarantee quality standard in accordance with our specification listed in the related patent such as the strict tolerance internationally required in the actual use, especially, we put the strong point on diminishing its fatigue and stress in use through stringent quality control on every process in the manufacturing of the spring.

We also accept any order by customer's specification

韓 국내최대SAMSOL사의 고품질 각 코일 스프링은 명망한 품질 기준으로 생산 공급하고 있습니다.
특히 독자적 특허 방식인 와이어링 공정의 차질한 조치으로 강하의 변형과 표면 손상없이 오래 사용 할 수 있습니다.

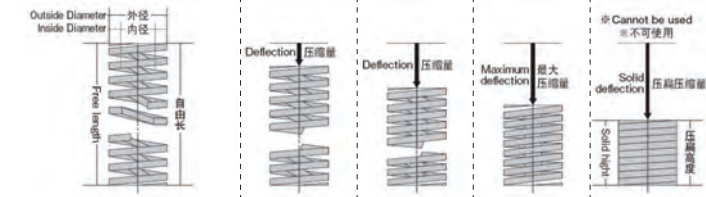
S 시리즈 : mm 寸法로 SF, SL, SM, SH, SB, SG, SU, SR, SY 9종 표준 규격

■ 订货选择 : 也欢迎客户制定产品样式。

■금형스프링 사용횟수와 압축비 관계 (Relationship between working times of spring and description rate)

사용횟수 Working Times		100만회(자유장) 1 million (% of free length)	50만회(자유장) 0.5 million (% of free length)	30만회(자유장) 0.3 million (% of free length)	최대변형률(자유장) Max Description (% of free length)
종류 Deflection	색별 Color				
輕少荷重 Lightest Load	황색 (Yellow)	40.0%	45.0%	50.0%	Approx. 53.0%
輕荷重 Light Load	청색 (Blue)	32.0%	36.0%	40.0%	Approx. 43.0%
中荷重 Medium Load	적색 (Red)	25.6%	28.8%	32.0%	Approx. 35.0%
重荷重 Heavy Load	녹색 (Green)	19.2%	21.6%	24.0%	Approx. 26.0%
極重荷重 Extra Heavy Load	갈색(Brown)	16.0%	18.0%	20.0%	Approx. 22.0%
超重荷重 Hyper Heavy Load	검정(Black)	16.0%	18.0%	20.0%	Approx. 22.0%
極超變形 Super High Deflection	하늘색(Sky)	50%	55%	60%	Approx. 70%
高變形 High Deflection	흰색(White)	40%	45%	50%	Approx. 60%
中變形 Middle Deflection	보라색(Purple)	40%	45%	50%	Approx. 60%

※ 최대 변형률은 참고하십시오.

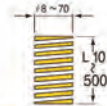
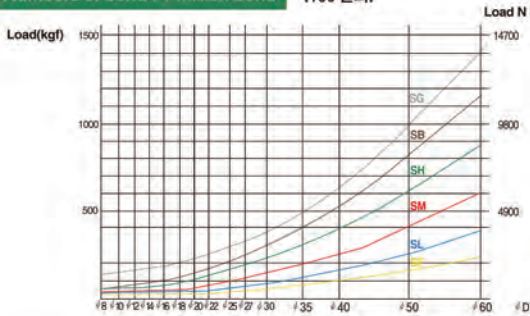


■금형스프링 허용공차 (Tolerance of Metal Mold Spring)

구분 (외경기준)	외경 외경 Outer Dia.	내경 내경 Inner Dia.	自由長 자유장 Free Length		荷重 하중 Load kgf	권방향 Coil Direction.
			50mm 이하	55mm 이상		
φ60 이하 (below φ60)	+0.0 / -0.7mm	+0.7 / +0.1mm	±0.5mm	±1%	±10%	오른쪽 (right)
φ70 이상 (over φ70)	+0.0 / -1.0mm	+1.0 / +0.1mm				



Numbers of bend : 1 million bend (100 만회)

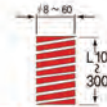
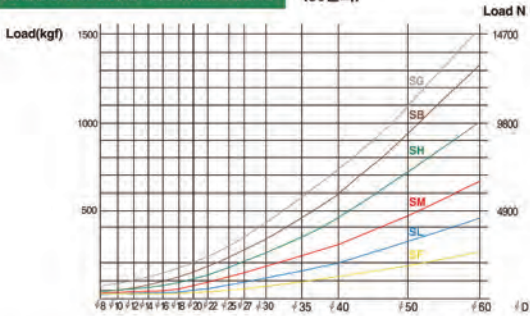


10 thousand bend	100	50	30
(100만회)	(50만회)	(30만회)	
40%	45%	50%	

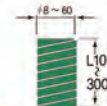


10 thousand bend	100	50	30
(100만회)	(50만회)	(30만회)	
32%	36%	40%	

Numbers of bend : 0.5 million bend (50 만회)

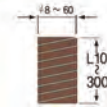
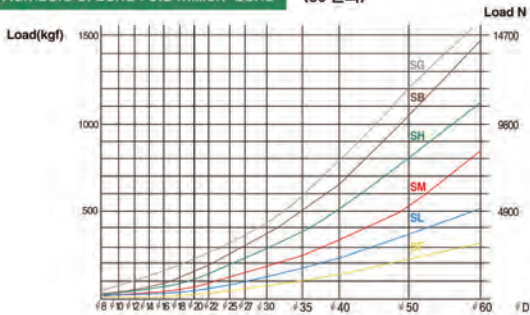


10 thousand bend	100	50	30
(100만회)	(50만회)	(30만회)	
25%	28.8%	32%	

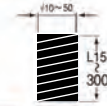


10 thousand bend	100	50	30
(100만회)	(50만회)	(30만회)	
19.2%	21.6%	24%	

Numbers of bend : 0.3 million bend (30 만회)



10 thousand bend	100	50	30
(100만회)	(50만회)	(30만회)	
16%	18%	20%	



10 thousand bend	100	50	30
(100만회)	(50만회)	(30만회)	
16%	18%	20%	

스프링하중성능표

30만회		荷重ランク (Load Rank)					
		SF ($\delta=H \times 0.5$)	SL ($\delta=H \times 0.4$)	SM ($\delta=H \times 0.32$)	SH ($\delta=H \times 0.24$)	SB ($\delta=H \times 0.2$)	SG ($\delta=H \times 0.2$)
外 径 (mm)	8	8	10	14	21	34	—
	10	10	14	20	30	45	50
	12	14	21	29	43	58	75
	14	18	28	39	59	75	97
	16	21	35	51	77	100	129
	18	26	43	65	97	125	161
	20	32	54	80	120	160	206
	22	40	67	97	145	195	251
	25	50	84	125	187	245	315
	27	60	100	146	219	290	373
	30	72	121	180	270	360	454
	35	98	165	245	367	490	631
	40	128	216	320	480	640	824
	50	200	338	500	750	1000	1288
	60	288	486	720	1080	1440	—
	70	400	610	850	1280	1740	—

50만회		하중 랭크 (Load Rank)					
		SF ($\delta=H \times 0.45$)	SL ($\delta=H \times 0.36$)	SM ($\delta=H \times 0.288$)	SH ($\delta=H \times 0.216$)	SB ($\delta=H \times 0.18$)	SG ($\delta=H \times 0.15$)
외 徑 (mm)	8	7	9	13	19	30	—
	10	9	13	18	27	41	45
	12	13	19	26	38	52	67
	14	16	25	35	53	68	87
	16	19	32	46	69	90	116
	18	23	39	58	87	113	145
	20	29	49	72	108	144	185
	22	36	60	87	130	175	226
	25	45	76	112	169	221	284
	27	54	90	131	197	261	336
	30	65	109	161	243	324	417
	35	88	149	220	330	441	568
	40	115	194	288	432	578	742
	50	180	304	450	675	900	1159
	60	259	437	647	973	1296	—
	70	360	549	764	1152	1567	—

100만회		荷重ランク (Load Rank)					
		SF ($\delta=H \times 0.4$)	SL ($\delta=H \times 0.32$)	SM ($\delta=H \times 0.256$)	SH ($\delta=H \times 0.192$)	SB ($\delta=H \times 0.16$)	SG ($\delta=H \times 0.16$)
外 径 (mm)	8	6	8	11	17	27	—
	10	8	12	16	24	36	40
	12	11	17	23	34	46	60
	14	14	22	31	47	60	77
	16	17	28	41	62	80	103
	18	21	34	52	78	100	129
	20	26	43	64	96	128	165
	22	32	54	78	116	158	201
	25	40	67	100	150	196	252
	27	48	80	117	175	232	299
	30	58	97	144	216	288	371
	35	78	132	195	293	392	505
	40	102	173	256	384	512	659
	50	160	270	400	600	800	1030
	60	230	388	575	864	1152	—
	70	320	488	680	1024	1392	—

주 δ =변형률 H=자유장

1kgf \approx 9.807N (單位kgf)



스프링을 효과적으로 사용하는 방법

삼솔의 스프링은 최적의 단면형상으로 설계되어 있으며, 내구성이 뛰어납니다. 나이가 저희 제품을 안전하고 효과적으로 사용하는 방법을 소개합니다.

1. 스프링 가이드 없이 사용할 경우

스프링을 가이드 없이 사용하면 스프링이 구부러지거나 휘는 현상이 발생합니다. 이렇게 되면 구부러진 안쪽에 부분적으로 심한 응력이 가해져 파손될 수 있습니다. 따라서 반드시 사프트나 외경 가이드 등의 스프링 가이드를 사용하시기 바랍니다. 스프링은 내경 측 가이드에서 사프트 윗면과 아랫면으로 관통시켜 사용하는 것이 이상적입니다.

2. 스프링의 내경과 사프트

사프트와의 사이에 간격이 적으면 사프트에 의해 스프링 내경이 마모하여 마모부를 기점으로 파손될 수 있습니다. 사프트와의 간격이 너무 크면 스프링이 구부러질 수 있습니다. 사프트 직경은 내경 -1.0mm 정도로 설정하는 것이 좋습니다. 또한 길이가 긴 스프링(자유장/외경=4이상인 스프링)은 <그림 1>과 같이 사프트에 단차를 주어 스프링이 구부러질 때 내경에 닿지 않도록 해 주십시오.

3. 스프링의 외경과 카운터 보어 홀

카운터 보어 홀과의 간격이 너무 작으면 스프링이 휠 때 외경쪽으로 부풀기 때문에 외경에 닿아 응력이 집중되므로 스프링이 파손될 수 있습니다. 카운터 보어 홀 직경을 외경보다 +1.5mm 정도로 설정하시는 것이 좋습니다. 자유 길이가 긴 스프링은 <그림 1>과 같은 카운터 보어 홀 형상이 이상적입니다.

4. 사프트 길이, 카운터 보어 홀 길이가 짧을 때

가이드 길이가 짧으면 스프링이 구부러졌을 때 가이드 끝 부분에 닿게 됩니다. 이렇게 마찰이 계속되면 결국은 파손됩니다. 가이드 길이를 초기 설정 높이 1/2이상으로 하는 것이 좋습니다. 또한 C3 정도의 면치를 해 주십시오.

5. 30만회 조건에서 최대 변형량을 초과하여 사용하는 경우

30만회 조건을 초과하여 사용하는 경우 단면에 계상값 이상의 높은 응력이 가해지게 되어 스프링이 부러지게 됩니다. 또한 밀착 길이 부근에서는 유요 감금 부분이 서서히 밀착되면서 스프링 정수가 높아집니다. 따라서 <그림 2>와 같이 하중선 그래프가 상승하므로 고응력이 발생하여 스프링이 끊어지거나 변형됩니다. 30만회 조건을 초과하여 사용하지 않도록 해 주십시오.

6. 초기 변형량 없이 사용하는 경우

틀이 있으면 스프링이 상하로 움직이면서 충격이 가해져, 휘거나 구부러지는 현상이 발생합니다. 초기 변형량을 제거하면 스프링의 상하면이 안정됩니다.

7. 스크래치나 이물질이 긴 상태에서 사용하는 경우

이물질이 끼어 있으면 그 부분은 유요 감금으로 볼 수 없게 되어 <그림 3>과 같이 이 외의 부분이 변형되거나 유요 감금 회수가 줄어드는 것과 같은 결과가 됩니다.

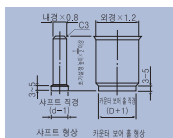
8. 장착면의 평행도가 좋지 않는 장소에서 사용할 때

장착면의 평행도가 나쁘면 스프링이 구부러지면서 안쪽 부분에 국부적으로 높은 응력이 발생하여 파손됩니다. 또한 <그림 4>와 같이 금형의 평행도가 나쁜 경우도 스프링이 휘게 되며, 30만회 조건을 넘지 않도록 하고 스프링 장착면의 평행도를 개선해 주십시오.

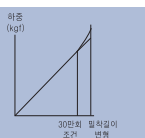
9. 스프링을 눌러서 사용하는 경우

스프링을 눌러서 사용하는 경우, 사프트에 의해 스프링의 내경이 마모되어 그 마모부를 기점으로 스프링이 파손됩니다.

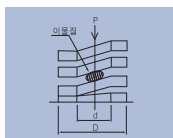
<그림-1>



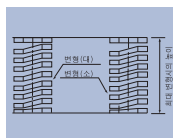
<그림-2>



<그림-3>



<그림-4>



Samsol Metal Mold Spring

How to use the spring effectively

Samsol spring has been designed with the optimal single surface shape, so it has outstanding endurance. Furthermore we would like to introduce how to use our products safely and effectively.

1. In case it is used without a guide

If a spring is used without a guide, it causes the spring to be bent or curved.

Consequently it can be broken as a result of adding a high stress partly to the curved inside. Therefore a spring guide definitely should be used like a shaft or a internal dia. guide. It is most desirable to use a spring with a guide being fully inserted through the internal diameter of the spring.

2. The diameter of a spring and shaft

If the distance between a spring and a shaft is too short, the internal diameter can be worn out by the shaft. It can start to be broken from that part of abrasion. On the contrary, if it's too long a spring can be bent. Accordingly, It's good to set the shaft thickness about 1,0mm less than the internal diameter of the spring. In case of a long spring (longer than free length/external dia=4), add a stepped pulley to a shaft as a figure. 1 not to touch a internal diameter when a spring bends.

3. The external diameter of a spring and a counter bore hole.

If the distance between two is too short, the spring easily gets to expand toward to the external diameter. The high stress on it might break the spring. Therefore it's desirable to set the diameter of counter bore hole so that it may be 0.15mm greater than the external diameter of the spring. For free length springs, the counter bore hole as figure 1 is desirable.

4. In case the shaft length and the depth of the counter bore hole are short.

If the guide length is short, it touches the end of a guide when a spring bends.

In this way, the continual abrasion finally causes a guide to be broken. It's desirable to set the guide height over than 1/2 of the initial setting height and trim it at C3 or so.

5. In case it is used more than utmost strain amount in the condition of 300,000 times.

If it is used more than 300,000 times the higher stress than the measured value is added on the surface. It causes a spring to be broken. Besides, if the effective coiling part gradually adheres to close adhesion length, the spring constant increases. Accordingly the load resistance curve is going high as figure.2 so that a high stress causes a spring to be cut or varied.

Be sure not to use more than 300,000 times.

6. In case it is used without the initial variation

If there is a gap, the spring moves up and down with a shock and it causes the spring to be bent or curved. If the initial variation is reduced, the upper lower plate of spring gets stable.

7. In case it is used with scrap or the different thing.

If there is a different thing, that part can't be regarded as an effective coiling that is counted as an unexpected variation or reduction of effective coiling times.

8. In case it is used in the place with the bad parallelism

If the parallelism of the plate is bad, a high stress takes place to cause the spring to be bent or extinct. It's the same as the case of bad parallelism of the mold and exceeding use of 300,000 times. Be sure to check the parallelism of the spring plate and not to use more than 300,000.

9. In case the spring is used in the position of lying

In this case, the internal diameter of the spring is worn out by the shaft and it may start to be broken from the part of abrasion.

<figure-1>

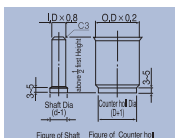
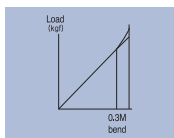
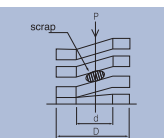


Figure of Shaft Figure of Counter hole

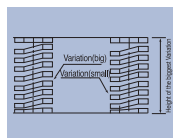
<figure-2>



<figure-3>



<figure-4>



SAMSOL의 金型スプリング

スプリングの使用方法和注意点

SAMSOLのスプリングは 最適の 断面形状に設計され、耐久性に優秀な製品ですので安全で効果的に使用する方法をご紹介します。

1. スプリングガイドなしで使う場合

スプリングをガイドなしで使用すると、スプリングに座屈、胴曲がり等が発生し、曲がりの内側が局部的に高応力となり折損に至ります。必ずシャフト、外径ガイド等のスプリングガイドを使用してください。

2. スプリングの 内径とシャフトについて

シャフトとのクリアランスが小さいと、シャフトによりスプリングの内径が磨耗し、磨耗部を起点とし折損に至ります。また、シャフトとのクリアランスが大きいと座屈等の原因となります。シャフト径を内径より-1.0mm程度に設定する事をお勧めします。

3. スプリングの外径と座グリ穴について

座グリ穴とのクリアランスが小さいと、スプリングがたわむと外径側に膨らむため外径が拘束され、応力集中により折損に至ります。座グリ穴径を外径より+1.5mm程度に設定することをお勧めします。自由長の長いスプリングは④1)のような座グリ穴形状が理想的です。

4. シャフト長さ、座グリ穴深さが短い場合

シャフト長さが短いと、スプリングが座屈したときにガイド先端部が接触し、摩擦により折損に至ります。シャフト長さを初期設定高さの1/2以上にすることをお勧めします。

5. 30万回条件で最大変形量を超えて使用する場合

30万回条件を超えて使用する場合には断面に計算値以上の応力が発生し折損に至ります。また、密着長付近では有効巻数が徐々に密着して、スプリング定数が高くなるため④2)のように荷重線図が立ち上がるので高応力が発生して折損に至ります。

6. 初期変形量なしでの使用

隔間があるとスプリングが上下に動き衝撃力が加わり胴曲がりや座屈が発生します。初期変形量をとるとスプリングの上下面が安定します。

7. スクラップや異物が入った場合

異物が挟まるその部分は有効巻数として作用しなくなり④3)のようにそれ以外の部分がたわみ、実質的に有効巻数が減少したのと同じようになります。

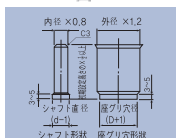
8. 取付面の平行度が悪いとき

取付面の平行度が悪いとスプリングに胴曲がりが発生し、曲がりの内側が局部的に高応力となり折損に至ります。また、④4)のように金型の平行度が悪い場合も、スプリングの曲がり、30万回条件を越える等により折損に至ります。

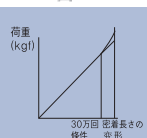
9. スプリングを横にしての使用

スプリングを横にして使用した場合、シャフトによりスプリングの内径が磨耗し、磨耗部を起点とし折損に至ります。

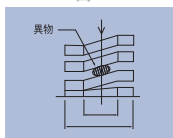
④1-



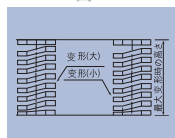
④2-



④3-



④4-





有效的使用弹簧的方法

SAMSOL的弹簧以最佳的单面形象设计而成，耐久性非常卓越。另外，我们向各位顾客介绍一下安全、有效的使用产品的方法。

1. 在没有弹簧指南装置而使用的情况下

如果没有弹簧指南装置使用弹簧的话，弹簧会产生弯曲或压弯的现象。这样的话，会给部分弯曲的内侧以强大的应力，导致破损。因此，轴或者外径指南装置等的使用一定要有弹簧指南装置使用。将弹簧的内径轴从指南装置上，与轴的上面和下面贯通后使用是比较理想的。

2. 弹簧的内径和轴

如果没有弹簧指南装置使用弹簧的话，弹簧会产生弯曲或压弯的现象。这样的话，会给部分弯曲的内侧以强大的应力，导致破损。因此，轴或者外径指南装置等的使用一定要有弹簧指南装置使用。将弹簧的内径轴从指南装置上，与轴的上面和下面贯通后使用是比较理想的。

3. 弹簧的外径和埋头孔

如果外径与埋头孔的间隔太小的话，弹簧压弯的时候会向外径侧突起，因此，向外径延伸的应力会集中，导致弹簧破损。将埋头孔的直径设定为比外径 +1.5mm 程度比较好。自由长比较长的弹簧，如 <图片1>所示的埋头孔形状是最理想的了。

4. 轴长及埋头孔的长度比较短的情况下

指南装置的长度如果较短的话，在弹簧弯曲的时候会伸到指南装置的末端部位。如果这样继续不断的摩擦结果就会导致弹簧的破损。将指南装置的长度初期设定为高为1/2以上比较好。另外，要做C3程度的面取处理。

5. 在30万次的条件下超过最大变形量使用的情况下

如果超过30万次的条件下使用时，会给单面超过计算值以上的高应力，导致弹簧断裂。另外，随着在贴紧面附近的有效缠绕部分逐渐的贴紧，使弹簧定数增高，因此，如<图片2>所示，荷重曲线的上升，会产生高应力，导致弹簧断裂或变形。因此，请不要超过30万次的条件使用。

6. 没有初期变形量而使用的情况下

如果没有缝隙，随着弹簧上下的运动会增加冲击力，从而产生压弯或弯曲的现象。如果除掉变形量，弹簧的上下面会很安全。

7. 在附着碎屑或异物质的状态下使用时

如果附着异物，这个部分可以视为无效缠绕，如<图片3>所示，此外的部分会导致变形或减少有效缠绕次数等结果。

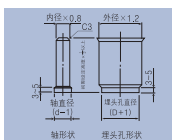
8. 在安装面的平行度不太好的场所使用时

如果安装面的平行度不好，随着弹簧的弯曲会给内侧部分的高应力，从而导致弹簧破损。另外，如<图片4>所示，如果金模子的平行度不好的情况下，弹簧会压弯，超过30万次条件的情况下，弹簧也会破损。为了不超过30万次的条件，请改善弹簧安装面的平行度。

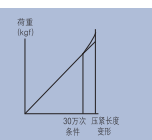
9. 将弹簧弯曲使用的情况下

如果弯曲使用弹簧的情况下，因为轴的原因会使弹簧内径磨损，并以磨损部位为基点导致弹簧的破损。

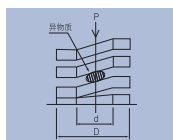
<图片-1>



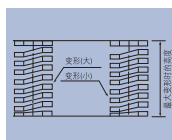
<图片-2>



<图片-3>



<图片-4>



삼솔스프링 규격사이즈(외경/자유장) (Standardized products)

		외경(外徑O.D)mm																	
		6	8	10	12	14	16	18	20	22	25	27	30	35	40	50	60	70	
자유장 (自由長) mm	10		●	●															
	15	●	●	●															
	20	●	●	●	●														
	25	●	●	●	●	●	●	●	●	●	●	●	●						
	30	●	●	●	●	●	●	●	●	●	●	●	●						
	35	●	●	●	●	●	●	●	●	●	●	●	●	●					
	40	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
	45	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	55	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	60	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	65	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	75		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	80		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	90		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	100			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	125					●	●	●	●	●	●	●	●	●	●	●	●	●	
	150								●	●	●	●	●	●	●	●	●	●	
	175								●	●	●	●	●	●	●	●	●	●	
200										●	●	●	●	●	●	●	●		
225												●	●		●	●	●		
250															●	●	●		
275															●	●	●		
300															●	●	●		
350																●	●		
400																●	●		
450																●	●		
500																●	●		

輕少荷重
경소하중
LIGHTEST LOAD

SF

하중 荷重 ±10%
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 ±0.5m/m
55m/m 以上 ± 1%

呼稱 호칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SF 6×15	6	3	15	0.80	7.5	6	6.8	5.4	6.0	4.8
20			20	0.60	10.0		9.0		8.0	
25			25	0.48	12.5		11.3		10.0	
30			30	0.40	15.0		13.5		12.0	
35			35	0.34	17.5		15.8		14.0	
40			40	0.30	20.0		18.0		16.0	
45			45	0.27	22.5		20.3		18.0	
50			50	0.24	25.0		22.5		20.0	
55			55	0.22	27.5		24.8		22.0	
60			60	0.20	30.0		27.0		24.0	
65			65	0.18	32.5		29.3		26.0	
70			70	0.17	35.0		31.5		28.0	
SF 8×10	8	4	10	1.56	5.0	8	4.5	7	4.0	6
15			15	1.04	7.5		6.8		6.0	
20			20	0.78	10.0		9.0		8.0	
25			25	0.62	12.5		11.2		10.0	
30			30	0.52	15.0		13.5		12.0	
35			35	0.44	17.5		15.7		14.0	
40			40	0.39	20.0		18.0		16.0	
45			45	0.35	22.5		20.2		18.0	
50			50	0.31	25.0		22.5		20.0	
55			55	0.28	27.5		24.7		22.0	
60			60	0.26	30.0		27.0		24.0	
65			65	0.24	32.5		29.2		26.0	
70			70	0.22	35.0		31.5		28.0	
75			75	0.21	37.5		33.7		30.0	
80			80	0.20	40.0		36.0		32.0	
90			90	0.17	45.0		40.5		36.0	
SF10×10	10	5	10	2.00	5.0	10	4.5	9	4.0	8
15			15	1.32	7.5		6.8		6.0	
20			20	1.00	10.0		9.0		8.0	
25			25	0.80	12.5		11.2		10.0	
30			30	0.67	15.0		13.5		12.0	
35			35	0.57	17.5		15.7		14.0	
40			40	0.50	20.0		18.0		16.0	
45			45	0.44	22.5		20.2		18.0	
50			50	0.40	25.0		22.5		20.0	
55			55	0.36	27.5		24.7		22.0	
60			60	0.33	30.0		27.0		24.0	
65			65	0.31	32.5		29.2		26.0	
70			70	0.29	35.0		31.5		28.0	
75			75	0.27	37.5		33.7		30.0	
80			80	0.25	40.0		36.0		32.0	
90			90	0.22	45.0		40.5		36.0	
100			100	0.20	50.0		45.0		40.0	

輕少荷重
경소하중
LIGHTEST LOAD

SF

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5m/m$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SF 12×20			20	1.40	10.0		9.0		8.0	
25			25	1.12	12.5		11.2		10.0	
30			30	0.93	15.0		13.5		12.0	
35			35	0.80	17.5		15.7		14.0	
40			40	0.70	20.0		18.0		16.0	
45			45	0.62	22.5		20.2		18.0	
50			50	0.56	25.0		22.5		20.0	
55	12	6	55	0.51	27.5	14	24.7	12.5	22.0	11
60			60	0.47	30.0		27.0		24.0	
65			65	0.43	32.5		29.2		26.0	
70			70	0.40	35.0		31.5		28.0	
75			75	0.37	37.5		33.7		30.0	
80			80	0.35	40.0		36.0		32.0	
90			90	0.31	45.0		40.5		36.0	
100			100	0.28	50.0		45.0		40.0	
SF 14×20			20	1.78	10.0		9.0		8.0	
25			25	1.44	12.5		11.2		10.0	
30			30	1.20	15.0		13.5		12.0	
35			35	1.03	17.5		15.7		14.0	
40			40	0.90	20.0		18.0		16.0	
45			45	0.80	22.5		20.2		18.0	
50			50	0.72	25.0		22.5		20.0	
55			55	0.65	27.5		24.7		22.0	
60	14	7	60	0.60	30.0	18	27.0	16	24.0	14.5
65			65	0.55	32.5		29.2		26.0	
70			70	0.51	35.0		31.5		28.0	
75			75	0.48	37.5		33.7		30.0	
80			80	0.45	40.0		36.0		32.0	
90			90	0.40	45.0		40.5		36.0	
100			100	0.36	50.0		45.0		40.0	
125			125	0.29	62.5		56.2		50.0	
SF 16×20			20	2.11	10.0		9.0		8.0	
25			25	1.68	12.5		11.2		10.0	
30			30	1.40	15.0		13.5		12.0	
35			35	1.20	17.5		15.7		14.0	
40			40	1.05	20.0		18.0		16.0	
45			45	0.94	22.5		20.2		18.0	
50			50	0.84	25.0		22.5		20.0	
55			55	0.77	27.5		24.7		22.0	
60	16	8	60	0.70	30.0	21	27.0	19	24.0	17
65			65	0.65	32.5		29.2		26.0	
70			70	0.60	35.0		31.5		28.0	
75			75	0.56	37.5		33.7		30.0	
80			80	0.53	40.0		36.0		32.0	
90			90	0.47	45.0		40.5		36.0	
100			100	0.42	50.0		45.0		40.0	
125			125	0.34	62.5		56.2		50.0	

輕少荷重
경소하중
LIGHTEST LOAD

SF

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外徑(mm) Outer Dia.	內徑(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SF 18×20	18	9	20	2.56	10.0	26	9.0	23	8.0	21
25			25	2.08	12.5		11.2		10.0	
30			30	1.74	15.0		13.5		12.0	
35			35	1.49	17.5		15.7		14.0	
40			40	1.30	20.0		18.0		16.0	
45			45	1.16	22.5		20.2		18.0	
50			50	1.04	25.0		22.5		20.0	
55			55	0.95	27.5		24.7		22.0	
60			60	0.87	30.0		27.0		24.0	
65			65	0.80	32.5		29.2		26.0	
70			70	0.74	35.0		31.5		28.0	
75			75	0.70	37.5		33.7		30.0	
80			80	0.65	40.0		36.0		32.0	
90			90	0.58	45.0		40.5		36.0	
100			100	0.52	50.0		45.0		40.0	
125			125	0.42	62.5		56.2		50.0	
SF 20×20	20	11	20	3.22	10.0	32	9.0	29	8.0	26
25			25	2.56	12.5		11.2		10.0	
30			30	2.13	15.0		13.5		12.0	
35			35	1.83	17.5		15.7		14.0	
40			40	1.60	20.0		18.0		16.0	
45			45	1.42	22.5		20.2		18.0	
50			50	1.28	25.0		22.5		20.0	
55			55	1.16	27.5		24.7		22.0	
60			60	1.07	30.0		27.0		24.0	
65			65	0.98	32.5		29.2		26.0	
70			70	0.91	35.0		31.5		28.0	
75			75	0.85	37.5		33.7		30.0	
80			80	0.80	40.0		36.0		32.0	
90			90	0.71	45.0		40.5		36.0	
100			100	0.64	50.0		45.0		40.0	
125			125	0.51	62.5		56.2		50.0	
150			150	0.43	75.0		67.5		60.0	
175			175	0.37	87.5		78.7		70.0	
SF 22×25	22	11	25	3.20	12.5	40	11.2	36	10.0	32
30			30	2.67	15.0		13.5		12.0	
35			35	2.29	17.5		15.7		14.0	
40			40	2.00	20.0		18.0		16.0	
45			45	1.78	22.5		20.2		18.0	
50			50	1.60	25.0		22.5		20.0	
55			55	1.46	27.5		24.7		22.0	
60			60	1.33	30.0		27.0		24.0	
65			65	1.23	32.5		29.2		26.0	
70			70	1.14	35.0		31.5		28.0	
75			75	1.07	37.5		33.7		30.0	
80			80	1.00	40.0		36.0		32.0	
90			90	0.89	45.0		40.5		36.0	
100			100	0.80	50.0		45.0		40.0	
125			125	0.64	62.5		56.2		50.0	
150			150	0.53	75.0		67.5		60.0	
175			175	0.46	87.5		78.7		70.0	

輕少荷重
경소하중
LIGHTEST LOAD

SF

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SF 25×25	25	13.5	25	4.00	12.5	50	11.2	45	10.0	40
30			30	3.33	15.0		13.5		12.0	
35			35	2.85	17.5		15.7		14.0	
40			40	2.50	20.0		18.0		16.0	
45			45	2.22	22.5		20.2		18.0	
50			50	2.00	25.0		22.5		20.0	
55			55	1.82	27.5		24.7		22.0	
60			60	1.67	30.0		27.0		24.0	
65			65	1.54	32.5		29.2		26.0	
70			70	1.43	35.0		31.5		28.0	
75			75	1.33	37.5		33.7		30.0	
80			80	1.25	40.0		36.0		32.0	
90			90	1.11	45.0		40.5		36.0	
100			100	1.00	50.0		45.0		40.0	
125			125	0.80	62.5		56.2		50.0	
150			150	0.67	75.0		67.5		60.0	
175			175	0.57	87.5		78.7		70.0	
200			200	0.50	100.0		90.0		80.0	
SF 27×25	27	13.5	25	4.80	12.5	60	11.2	54	10.0	48
30			30	4.00	15.0		13.5		12.0	
35			35	3.43	17.5		15.7		14.0	
40			40	3.00	20.0		18.0		16.0	
45			45	2.67	22.5		20.2		18.0	
50			50	2.40	25.0		22.5		20.0	
55			55	2.18	27.5		24.7		22.0	
60			60	2.00	30.0		27.0		24.0	
65			65	1.85	32.5		29.2		26.0	
70			70	1.71	35.0		31.5		28.0	
75			75	1.60	37.5		33.7		30.0	
80			80	1.50	40.0		36.0		32.0	
90			90	1.33	45.0		40.5		36.0	
100			100	1.20	50.0		45.0		40.0	
125			125	0.96	62.5		56.2		50.0	
150			150	0.80	75.0		67.5		60.0	
175			175	0.69	87.5		78.7		70.0	
200			200	0.60	100.0		90.0		80.0	
SF 30×25	30	16	25	5.80	12.5	72	11.2	65	10.0	58
30			30	4.83	15.0		13.5		12.0	
35			35	4.13	17.5		15.7		14.0	
40			40	3.60	20.0		18.0		16.0	
45			45	3.21	22.5		20.2		18.0	
50			50	2.88	25.0		22.5		20.0	
55			55	2.63	27.5		24.7		22.0	
60			60	2.40	30.0		27.0		24.0	
65			65	2.22	32.5		29.2		26.0	
70			70	2.05	35.0		31.5		28.0	
75			75	1.93	37.5		33.7		30.0	
80			80	1.80	40.0		36.0		32.0	
90			90	1.60	45.0		40.5		36.0	
100			100	1.44	50.0		45.0		40.0	
125			125	1.15	62.5		56.2		50.0	
150			150	0.96	75.0		67.5		60.0	
175			175	0.82	87.5		78.7		70.0	
200			200	0.72	100.0		90.0		80.0	

輕少荷重
경소하중
LIGHTEST LOAD

SF

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SF 35 × 35	35	19	35	5.60	17.5	98	15.7	88	14.0	78
40			40	4.90	20.0		18.0		16.0	
45			45	4.36	22.5		20.2		18.0	
50			50	3.92	25.0		22.5		20.0	
55			55	3.56	27.5		24.7		22.0	
60			60	3.26	30.0		27.0		24.0	
65			65	3.02	32.5		29.2		26.0	
70			70	2.80	35.0		31.5		28.0	
75			75	2.61	37.5		33.7		30.0	
80			80	2.45	40.0		36.0		32.0	
90			90	2.17	45.0		40.5		36.0	
100			100	1.96	50.0		45.0		40.0	
125			125	1.57	62.5		56.2		50.0	
150			150	1.30	75.0		67.5		60.0	
175			175	1.12	87.5		78.7		70.0	
200			200	0.98	100.0		90.0		80.0	
SF 40 × 40	40	22	40	6.38	20.0	128	18.0	115	16.0	102
45			45	5.67	22.5		20.2		18.0	
50			50	5.12	25.0		22.5		20.0	
55			55	4.64	27.5		24.7		22.0	
60			60	4.26	30.0		27.0		24.0	
65			65	3.93	32.5		29.2		26.0	
70			70	3.65	35.0		31.5		28.0	
75			75	3.40	37.5		33.7		30.0	
80			80	3.20	40.0		36.0		32.0	
90			90	2.84	45.0		40.5		36.0	
100			100	2.56	50.0		45.0		40.0	
125			125	2.04	62.5		56.2		50.0	
150			150	1.70	75.0		67.5		60.0	
175			175	1.46	87.5		78.7		70.0	
200			200	1.28	100.0		90.0		80.0	
SF 50 × 50	50	27.5	50	8.00	25.0	200	22.5	180	20.0	160
55			55	7.27	27.5		24.7		22.0	
60			60	6.66	30.0		27.0		24.0	
65			65	6.15	32.5		29.2		26.0	
70			70	5.71	35.0		31.5		28.0	
75			75	5.33	37.5		33.7		30.0	
80			80	5.00	40.0		36.0		32.0	
90			90	4.44	45.0		40.5		36.0	
100			100	4.00	50.0		45.0		40.0	
125			125	3.20	62.5		56.2		50.0	
150			150	2.66	75.0		67.5		60.0	
175			175	2.28	87.5		78.7		70.0	
200			200	2.00	100.0		90.0		80.0	
225			225	1.78	112.5		101.2		90.0	
250			250	1.60	125.0		112.5		100.0	
SF 50 × 50	50	27.5	275	1.45	137.5		123.7		110.0	
300			300	1.33	150.0		135.0		120.0	
350			350	1.14	175.0		157.5		140.0	
400			400	1.00	200.0		180.0		160.0	
450			450	0.89	225.0		202.5		180.0	
500			500	0.80	250.0		225.0		200.0	

輕少荷重
경소하중
LIGHTEST LOAD

SF

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SF 60×60	60	33	60	9.59	30.0	288	27.0	259	24.0	230
70			70	8.22	35.0		31.5		28.0	
80			80	7.19	40.0		36.0		32.0	
90			90	6.40	45.0		40.5		36.0	
100			100	5.76	50.0		45.0		40.0	
125			125	4.60	62.5		56.2		50.0	
150			150	3.84	75.0		67.5		60.0	
175			175	3.29	87.5		78.7		70.0	
200			200	2.88	100.0		90.0		80.0	
225			225	2.56	112.5		101.3		90.0	
250			250	2.30	125.0		112.5		100.0	
275			275	2.09	137.5		123.8		110.0	
300			300	1.92	150.0		135.0		120.0	
350			350	1.65	175.0		157.5		140.0	
400			400	1.44	200.0		180.0		160.0	
450			450	1.28	225.0		202.5		180.0	
500			500	1.15	250.0		225.0		200.0	
SF 70×70	70	38.5	70	11.43	35.0	400	31.5	360	28.0	320
80			80	10.00	40.0		36.0		32.0	
90			90	8.89	45.0		40.5		36.0	
100			100	8.00	50.0		45.0		40.0	
125			125	6.40	62.5		56.2		50.0	
150			150	5.33	75.0		67.5		60.0	
175			175	4.57	87.5		78.7		70.0	
200			200	4.00	100.0		90.0		80.0	
225			225	3.56	112.5		101.3		90.0	
250			250	3.20	125.0		112.5		100.0	
275			275	2.91	137.5		123.8		110.0	
300			300	2.67	150.0		135.0		120.0	
350			350	2.29	175.0		157.5		140.0	

Special 輕少荷重
Special 경소하중
Special LIGHTEST LOAD

SSF

하중 荷重 $\pm 10\%$
적각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3 million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SSF 35 X 40	35	21	40	4.15	20.0	83	18.0	75	16.0	66
45			45	3.69	22.5		20.2		18.0	
50			50	3.32	25.0		22.5		20.0	
55			55	3.02	27.5		24.8		22.0	
60			60	2.77	30.0		27.0		24.0	
65			65	2.55	32.5		29.3		26.0	
70			70	2.37	35.0		31.5		28.0	
75			75	2.21	37.5		33.8		30.0	
80			80	2.08	40.0		36.0		32.0	
90			90	1.84	45.0		40.5		36.0	
100			100	1.66	50.0		45.0		40.0	
120			120	1.33	62.5		56.2		50.0	
150			150	1.11	75.0		67.5		60.0	
175			175	0.95	87.5		78.8		70.0	
200			200	0.83	100.0		90.0		80.0	
SSF 40 X 40	40	26	40	5.50	20.0	110	18.0	99	16.0	88
50			50	4.40	25.0		22.5		20.0	
60			60	3.67	30.0		27.0		24.0	
70			70	3.14	35.0		31.5		28.0	
80			80	2.75	40.0		36.0		32.0	
90			90	2.44	45.0		40.5		36.0	
100			100	2.20	50.0		45.0		40.0	
125			125	1.76	62.5		56.2		50.0	
150			150	1.47	75.0		67.5		60.0	
175			175	1.26	87.5		78.8		70.0	
200			200	1.10	100.0		90.0		80.0	
250			250	0.88	125.0		112.5		100.0	
SSF 50 X 50	50	31	50	5.76	25.0	144	22.5	130	20.0	115
60			60	4.80	30.0		27.0		24.0	
70			70	4.11	35.0		31.5		28.0	
80			80	3.60	40.0		36.0		32.0	
90			90	3.20	45.0		40.5		36.0	
100			100	2.88	50.0		45.0		40.0	
125			125	2.30	62.5		56.2		50.0	
150			150	1.92	75.0		67.5		60.0	
175			175	1.65	87.5		78.8		70.0	
200			200	1.44	100.0		90.0		80.0	
250			250	1.15	125.0		112.5		100.0	
300			300	0.96	150.0		135.0		120.0	
SSF 60 X 60	60	37	60	6.27	30.0	188	27.0	170	24.0	150
70			70	5.37	35.0		31.5		28.0	
80			80	4.70	40.0		36.0		32.0	
90			90	4.18	45.0		40.5		36.0	
100			100	3.76	50.0		45.0		40.0	
125			125	3.01	62.5		56.3		50.0	
150			150	2.51	75.0		67.5		60.0	
175			175	2.15	87.5		78.8		70.0	
200			200	1.88	100.0		90.0		80.0	
250			250	1.50	125.0		112.5		100.0	
300			300	1.25	150.0		135.0		120.0	

輕荷重
경하중
LIGHT LOAD

SL

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5m/m$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外徑(mm) Outer Dia.	內徑(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SL 6 × 15	6	3	15	1.33	6.0	8	5.4	7.2	4.8	6.4
20			20	1.00	8.0		7.2		6.4	
25			25	0.80	10.0		9.0		8.0	
30			30	0.67	12.0		10.8		9.6	
35			35	0.57	14.0		12.6		11.2	
40			40	0.50	16.0		14.4		12.8	
45			45	0.44	18.0		16.2		14.4	
50			50	0.40	20.0		18.0		16.0	
55			55	0.36	22.0		19.8		17.6	
60			60	0.33	24.0		21.6		19.2	
65			65	0.31	26.0		23.4		20.8	
70			70	0.29	28.0		25.2		22.4	
SL 8 × 10	8	4	10	2.50	4.0	10	3.6	9	3.2	8
15			15	1.67	6.0		5.4		4.8	
20			20	1.25	8.0		7.2		6.4	
25			25	1.00	10.0		9.0		8.0	
30			30	0.83	12.0		10.8		9.6	
35			35	0.71	14.0		12.6		11.2	
40			40	0.63	16.0		14.4		12.8	
45			45	0.56	18.0		16.2		14.4	
50			50	0.50	20.0		18.0		16.0	
55			55	0.46	22.0		19.8		17.6	
60			60	0.42	24.0		21.6		19.2	
65			65	0.38	26.0		23.4		20.8	
70			70	0.36	28.0		25.2		22.4	
75			75	0.33	30.0		27.0		24.0	
80			80	0.31	32.0		28.8		25.6	
90			90	0.28	36.0		32.4		28.8	
SL 10 × 10	10	5	10	3.61	4.0	14.5	3.6	13	3.2	11.5
15			15	2.41	6.0		5.4		4.8	
20			20	1.81	8.0		7.2		6.4	
25			25	1.45	10.0		9.0		8.0	
30			30	1.21	12.0		10.8		9.6	
35			35	1.03	14.0		12.6		11.2	
40			40	0.90	16.0		14.4		12.8	
45			45	0.80	18.0		16.2		14.4	
50			50	0.73	20.0		18.0		16.0	
55			55	0.66	22.0		19.8		17.6	
60			60	0.60	24.0		21.6		19.2	
65			65	0.55	26.0		23.4		20.8	
70			70	0.51	28.0		25.2		22.4	
75			75	0.48	30.0		27.0		24.0	
80			80	0.45	32.0		28.8		25.6	
90			90	0.40	36.0		32.4		28.8	
100			100	0.36	40.0		36.0		32.0	

輕荷重
경하중
LIGHT LOAD

SL

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SL 12×20	12	6	20	2.63	8.0	21	7.2	19	6.4	17
25			25	2.10	10.0		9.0		8.0	
30			30	1.75	12.0		10.8		9.6	
35			35	1.50	14.0		12.6		11.2	
40			40	1.32	16.0		14.4		12.8	
45			45	1.17	18.0		16.2		14.4	
50			50	1.05	20.0		18.0		16.0	
55			55	0.96	22.0		19.8		17.6	
60			60	0.88	24.0		21.6		19.2	
65			65	0.81	26.0		23.4		20.8	
70			70	0.75	28.0		25.2		22.4	
75			75	0.70	30.0		27.0		24.0	
80			80	0.66	32.0		28.8		25.6	
90			90	0.58	36.0		32.4		28.8	
100			100	0.53	40.0		36.0		32.0	
SL 14×20	14	7	20	3.47	8.0	28	7.2	25	6.4	22
25			25	2.80	10.0		9.0		8.0	
30			30	2.34	12.0		10.8		9.6	
35			35	2.00	14.0		12.6		11.2	
40			40	1.75	16.0		14.4		12.8	
45			45	1.56	18.0		16.2		14.4	
50			50	1.40	20.0		18.0		16.0	
55			55	1.27	22.0		19.8		17.6	
60			60	1.17	24.0		21.6		19.2	
65			65	1.08	26.0		23.4		20.8	
70			70	1.00	28.0		25.2		22.4	
75			75	0.93	30.0		27.0		24.0	
80			80	0.87	32.0		28.8		25.6	
90			90	0.77	36.0		32.4		28.8	
100			100	0.70	40.0		36.0		32.0	
SL 16×20	16	8	20	4.44	8.0	35	7.2	32	6.4	28
25			25	3.50	10.0		9.0		8.0	
30			30	2.92	12.0		10.8		9.6	
35			35	2.50	14.0		12.6		11.2	
40			40	2.19	16.0		14.4		12.8	
45			45	1.95	18.0		16.2		14.4	
50			50	1.75	20.0		18.0		16.0	
55			55	1.60	22.0		19.8		17.6	
60			60	1.46	24.0		21.6		19.2	
65			65	1.35	26.0		23.4		20.8	
70			70	1.25	28.0		25.2		22.4	
75			75	1.17	30.0		27.0		24.0	
80			80	1.10	32.0		28.8		25.6	
90			90	0.98	36.0		32.4		28.8	
100			100	0.88	40.0		36.0		32.0	
125			125	0.70	50.0		45.0		40.0	

輕荷重
경하중
LIGHT LOAD

SL

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5m/m$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30萬 (0.3million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	50萬 (0.5 million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	100萬 (1 million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SL 18×20	18	9	20	5.42	8.0	43	7.2	39	6.4	34
25			25	4.30	10.0		9.0		8.0	
30			30	3.58	12.0		10.8		9.6	
35			35	3.07	14.0		12.6		11.2	
40			40	2.69	16.0		14.4		12.8	
45			45	2.39	18.0		16.2		14.4	
50			50	2.15	20.0		18.0		16.0	
55			55	1.96	22.0		19.8		17.6	
60			60	1.79	24.0		21.6		19.2	
65			65	1.66	26.0		23.4		20.8	
70			70	1.54	28.0		25.2		22.4	
75			75	1.44	30.0		27.0		24.0	
80			80	1.35	32.0		28.8		25.6	
90			90	1.20	36.0		32.4		28.8	
100			100	1.07	40.0		36.0		32.0	
125			125	0.86	50.0		45.0		40.0	
SL 20×20	20	10	20	6.81	8.0	54	7.2	49	6.4	43
25			25	5.40	10.0		9.0		8.0	
30			30	4.50	12.0		10.8		9.6	
35			35	3.86	14.0		12.6		11.2	
40			40	3.38	16.0		14.4		12.8	
45			45	3.00	18.0		16.2		14.4	
50			50	2.70	20.0		18.0		16.0	
55			55	2.45	22.0		19.8		17.6	
60			60	2.25	24.0		21.6		19.2	
65			65	2.08	26.0		23.4		20.8	
70			70	1.93	28.0		25.2		22.4	
75			75	1.80	30.0		27.0		24.0	
80			80	1.69	32.0		28.8		25.6	
90			90	1.50	36.0		32.4		28.8	
100			100	1.35	40.0		36.0		32.0	
125			125	1.08	50.0		45.0		40.0	
150			150	0.90	60.0		54.0		48.0	
175			175	0.77	70.0		63.0		56.0	
SL 22×25	22	11	25	6.70	10.0	67	9.0	60	8.0	54
30			30	5.60	12.0		10.8		9.6	
35			35	4.80	14.0		12.6		11.2	
40			40	4.20	16.0		14.4		12.8	
45			45	3.72	18.0		16.2		14.4	
50			50	3.35	20.0		18.0		16.0	
55			55	3.05	22.0		19.8		17.6	
60			60	2.80	24.0		21.6		19.2	
65			65	2.58	26.0		23.4		20.8	
70			70	2.40	28.0		25.2		22.4	
75			75	2.23	30.0		27.0		24.0	
80			80	2.10	32.0		28.8		25.6	
90			90	1.86	36.0		32.4		28.8	
100			100	1.68	40.0		36.0		32.0	
125			125	1.34	50.0		45.0		40.0	
150			150	1.12	60.0		54.0		48.0	
175			175	0.96	70.0		63.0		56.0	

輕荷重
경하중
LIGHT LOAD

SL

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SL 25×25	25	12.5	25	8.40	10.0	84	9.0	76	8.0	67
30			30	7.00	12.0		10.8		9.6	
35			35	6.00	14.0		12.6		11.2	
40			40	5.25	16.0		14.4		12.8	
45			45	4.67	18.0		16.2		14.4	
50			50	4.20	20.0		18.0		16.0	
55			55	3.82	22.0		19.8		17.6	
60			60	3.50	24.0		21.6		19.2	
65			65	3.23	26.0		23.4		20.8	
70			70	3.00	28.0		25.2		22.4	
75			75	2.80	30.0		27.0		24.0	
80			80	2.63	32.0		28.8		25.6	
90			90	2.33	36.0		32.4		28.8	
100			100	2.10	40.0		36.0		32.0	
125			125	1.68	50.0		45.0		40.0	
150			150	1.40	60.0		54.0		48.0	
175			175	1.20	70.0		63.0		56.0	
200			200	1.05	80.0		72.0		64.0	
SL 27×25	27	13.5	25	10.00	10.0	100	9.0	90	8.0	80
30			30	8.33	12.0		10.8		9.6	
35			35	7.14	14.0		12.6		11.2	
40			40	6.25	16.0		14.4		12.8	
45			45	5.56	18.0		16.2		14.4	
50			50	5.00	20.0		18.0		16.0	
55			55	4.55	22.0		19.8		17.6	
60			60	4.17	24.0		21.6		19.2	
65			65	3.85	26.0		23.4		20.8	
70			70	3.57	28.0		25.2		22.4	
75			75	3.33	30.0		27.0		24.0	
80			80	3.13	32.0		28.8		25.6	
90			90	2.78	36.0		32.4		28.8	
100			100	2.50	40.0		36.0		32.0	
125			125	2.00	50.0		45.0		40.0	
150			150	1.67	60.0		54.0		48.0	
175			175	1.43	70.0		63.0		56.0	
200			200	1.25	80.0		72.0		64.0	
SL 30×25	30	15	25	12.11	10.0	121	9.0	109	8.0	97
30			30	10.08	12.0		10.8		9.6	
35			35	8.65	14.0		12.6		11.2	
40			40	7.56	16.0		14.4		12.8	
45			45	6.73	18.0		16.2		14.4	
50			50	6.05	20.0		18.0		16.0	
55			55	5.50	22.0		19.8		17.6	
60			60	5.04	24.0		21.6		19.2	
65			65	4.65	26.0		23.4		20.8	
70			70	4.32	28.0		25.2		22.4	
75			75	4.03	30.0		27.0		24.0	
80			80	3.78	32.0		28.8		25.6	
90			90	3.36	36.0		32.4		28.8	
100			100	3.02	40.0		36.0		32.0	
125			125	2.42	50.0		45.0		40.0	
150			150	2.01	60.0		54.0		48.0	
175			175	1.72	70.0		63.0		56.0	
200			200	1.51	80.0		72.0		64.0	

輕荷重
경하중
LIGHT LOAD

SL

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5m/m$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SL 35×35	35	17.5	35	11.78	14.0	165	12.6	149	11.2	132
40			40	10.31	16.0		14.4		12.8	
45			45	9.17	18.0		16.2		14.4	
50			50	8.25	20.0		18.0		16.0	
55			55	7.50	22.0		19.8		17.6	
60			60	6.87	24.0		21.6		19.2	
65			65	6.35	26.0		23.4		20.8	
70			70	5.89	28.01		25.2		22.4	
75			75	5.50	30.0		27.0		24.0	
80			80	5.15	32.0		28.8		25.6	
90			90	4.58	36.0		32.4		28.8	
100			100	4.12	40.0		36.0		32.0	
125			125	3.30	50.0		45.0		40.0	
150			150	2.75	60.0		54.0		48.0	
175			175	2.35	70.0		63.0		56.0	
200			200	2.06	80.0		72.0		64.0	
SL 40×40	40	20	40	13.50	16.0	216	14.4	194	12.8	173
45			45	12.00	18.0		16.2		14.4	
50			50	10.80	20.0		18.0		16.0	
55			55	9.82	22.0		19.8		17.6	
60			60	9.00	24.0		21.6		19.2	
65			65	8.31	26.0		23.4		20.8	
70			70	7.71	28.0		25.2		22.4	
75			75	7.20	30.0		27.0		24.0	
80			80	6.75	32.0		28.8		25.6	
90			90	6.00	36.0		32.4		28.8	
100			100	5.40	40.0		36.0		32.0	
125			125	4.32	50.0		45.0		40.0	
150			150	3.60	60.0		54.0		48.0	
175			175	3.08	70.0		63.0		56.0	
200			200	2.70	80.0		72.0		64.0	
225			225	2.40	90.0		81.0		72.0	
250			250	2.16	100.0		90.0		80.0	
275			275	1.96	110.0		99.0		88.0	
300			300	1.80	120.0		108.0		96.0	
SL 50×50	50	25	50	16.89	20.0	338	18.0	304	16.0	270
55			55	15.35	22.0		19.8		17.6	
60			60	14.08	24.0		21.6		19.2	
65			65	12.99	26.0		23.4		20.8	
70			70	12.07	28.0		25.2		22.4	
75			75	11.26	30.0		27.0		24.0	
80			80	10.56	32.0		28.8		25.6	
90			90	9.38	36.0		32.4		28.8	
100			100	8.45	40.0		36.0		32.0	
125			125	6.76	50.0		45.0		40.0	
150			150	5.63	60.0		54.0		48.0	
175			175	4.82	70.0		63.0		56.0	
200			200	4.22	80.0		72.0		64.0	
225			225	3.75	90.0		81.0		72.0	
250			250	3.38	100.0		90.0		80.0	
275			275	3.07	110.0		99.0		88.0	
300			300	2.81	120.0		108.0		96.0	
350			350	2.41	140.0		126.0		112.0	
400			400	2.11	160.0		144.0		128.0	
450			450	1.88	180.0		162.0		144.0	
500			500	1.69	200.0		180.0		160.0	

輕荷重
경하중
LIGHT LOAD

SL

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SL 60×60	60	30	60	20.25	24.0	486	21.6	437	19.2	389
70			70	17.35	28.0		25.2		22.4	
80			80	15.18	32.0		28.8		25.6	
90			90	13.50	36.0		32.4		28.8	
100			100	12.15	40.0		36.0		32.0	
125			125	9.72	50.0		45.0		40.0	
150			150	8.10	60.0		54.0		48.0	
175			175	6.94	70.0		63.0		56.0	
200			200	6.07	80.0		72.0		64.0	
225			225	5.40	90.0		81.0		72.0	
250			250	4.86	100.0		90.0		80.0	
275			275	4.42	110.0		99.0		88.0	
300			300	4.05	120.0		108.0		96.0	
350			350	3.47	140.0		126.0		112.0	
400			400	3.04	160.0		144.0		128.0	
450			450	2.70	180.0		162.0		144.0	
500			500	2.43	200.0		180.0		160.0	
SL 70×70	70	38.5	70	21.79	28.0	610	25.2	549	22.4	488
80			80	19.06	32.0		28.8		25.6	
90			90	16.94	36.0		32.4		28.8	
100			100	15.25	40.0		36.0		32.0	
125			125	12.20	50.0		45.0		40.0	
150			150	10.17	60.0		54.0		48.0	
175			175	8.71	70.0		63.0		56.0	
200			200	7.62	80.0		72.0		64.0	
225			225	6.78	90.0		81.0		72.0	
250			250	6.10	100.0		90.0		80.0	
275			275	5.55	110.0		99.0		88.0	
300			300	5.08	120.0		108.0		96.0	
350			350	4.36	140.0		126.0		112.0	

Special 輕荷重
Special 경하중
Special LIGHT LOAD

SSL

하중 荷重 $\pm 10\%$
작각도 曲角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

• SSL 타입 금형스프링 사용횟수와 압축비 관계

(Relationship between working times of spring and description rate)

사용횟수 Working Times 종류 (Deflection)	100만 (자유장 %)	50만 (자유장 %)	30만 (자유장 %)
	1 million (% of free length)	0.5 million (% of free length)	0.3 million (% of free length)
SSL 20	32.0%	36.0%	40.0%
SSL 30	36.0%	40.0%	45.0%
SSL 35	40.0%	45.0%	50.0%
SSL 40, 50, 60	32.0%	36.0%	40.0%

呼稱 호 칭 Model	外形 외경(mm) Outer Dia.	내徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30만 (0.3 million)		50만 (0.5 million)		100만 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SSL 20 X 25	20	12	25	3.20	10.0	32	9.0	29	8.0	26
30			30	2.67	12.0		10.8		9.6	
35			35	2.29	14.0		12.6		11.2	
40			40	2.00	16.0		14.4		12.8	
45			45	1.78	18.0		16.2		14.4	
50			50	1.60	20.0		18.0		16.0	
55			55	1.45	22.0		19.8		17.6	
60			60	1.33	24.0		21.6		19.2	
65			65	1.23	26.0		23.4		20.8	
70			70	1.14	28.0		25.2		22.4	
75			75	1.07	30.0		27.0		24.0	
80			80	1.00	32.0		28.8		25.6	
90			90	0.89	36.0		32.4		28.8	
100			100	0.80	40.0		36.0		32.0	
125			125	0.64	50.0		45.0		40.0	
SSL 30 X 25	30	16	25	8.00	11.3	90	10.0	80	9.0	72
30			30	6.67	13.5		12.0		10.8	
35			35	5.72	15.8		14.0		12.6	
40			40	5.00	18.0		16.0		14.4	
45			45	4.45	20.3		18.0		16.2	
50			50	4.00	22.5		20.0		18.0	
55			55	3.64	24.8		22.0		19.8	
60			60	3.33	27.0		24.0		21.6	
65			65	3.08	29.3		26.0		23.4	
70			70	2.86	31.5		28.0		25.2	
75			75	2.67	33.8		30.0		27.0	
80			80	2.50	36.0		32.0		28.8	
90			90	2.22	40.5		36.0		32.4	
100			100	2.00	45.0		40.0		36.0	
125			125	1.60	56.3		50.0		45.0	
150			150	1.33	67.5		60.0		54.0	
175			175	1.14	78.8		70.0		63.0	

Special 輕荷重
Special 경하중
Special LIGHT LOAD

SSL

하중 荷重 $\pm 10\%$
작각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5m/m$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外径 외경(mm) Outer Dia.	内径 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3 million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SSL 35 X 40	35	21	40	5.40	20.0	108	18.0	97	16.0	86
45			45	4.80	22.5		20.3		18.0	
50			50	4.32	25.0		22.5		20.0	
55			55	3.93	27.5		24.8		22.0	
60			60	3.60	30.0		27.0		24.0	
65			65	3.32	32.5		29.3		26.0	
70			70	3.09	35.0		31.5		28.0	
75			75	2.88	37.5		33.8		30.0	
80			80	2.70	40.0		36.0		32.0	
90			90	2.40	45.0		40.5		36.0	
100			100	2.16	50.0		45.0		40.0	
125			125	1.73	62.5		56.3		50.0	
150			150	1.44	75.0		67.5		60.0	
170			170	1.23	87.5		78.8		70.0	
200			200	1.08	100.0		90.0		80.0	
SSL 40 X 40	40	26	40	10.81	16.0	173	14.4	156	12.8	138
50			50	8.65	20.0		18.0		16.0	
60			60	7.21	24.0		21.6		19.2	
70			70	6.18	28.0		25.2		22.4	
80			80	5.41	32.0		28.8		25.6	
90			90	4.81	36.0		32.4		28.8	
100			100	4.33	40.0		36.0		32.0	
125			125	3.46	50.0		45.0		40.0	
150			150	2.88	60.0		54.0		48.0	
175			175	2.47	70.0		63.0		56.0	
200			200	2.16	80.0		72.0		64.0	
250			250	1.73	100.0		90.0		80.0	
300			300	1.44	120.0		108.0		96.0	
SSL 50 X 50	50	30	50	13.00	20.0	260	18.0	234	16.0	208
60			60	10.83	24.0		21.6		19.2	
70			70	9.29	28.0		25.2		22.4	
80			80	8.13	32.0		28.8		25.6	
90			90	7.22	36.0		32.4		28.8	
100			100	6.50	40.0		36.0		32.0	
125			125	5.20	50.0		45.0		40.0	
150			150	4.33	60.0		54.0		48.0	
175			175	3.71	70.0		63.0		56.0	
200			200	3.25	80.0		72.0		64.0	
250			250	2.60	100.0		90.0		80.0	
300			300	2.17	120.0		108.0		96.0	
SSL 60 X 60	60	35	60	15.33	24.0	368	21.6	331	19.2	294
70			70	13.14	28.0		25.2		22.4	
80			80	11.50	32.0		28.8		25.6	
90			90	10.22	36.0		32.4		28.8	
100			100	9.20	40.0		36.0		32.0	
125			125	7.36	50.0		45.0		40.0	
150			150	6.13	60.0		54.0		48.0	
175			175	5.26	70.0		63.0		56.0	
200			200	4.60	80.0		72.0		64.0	
250			250	3.68	100.0		90.0		80.0	
300			300	3.07	120.0		108.0		96.0	

中荷重
중하중
MEDIUM LOAD

SM

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 ± 0.5 m/m
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SM 6×15	6	3	15	2.08	4.8	10	4.3	9	3.8	8
20			20	1.56	6.4		5.8		5.1	
25			25	1.25	8.0		7.2		6.4	
30			30	1.04	9.6		8.6		7.7	
35			35	0.89	11.2		10.1		9.0	
40			40	0.78	12.8		11.5		10.2	
45			45	0.69	14.4		13.0		11.5	
50			50	0.63	16.0		14.4		12.8	
55			55	0.57	17.6		15.8		14.1	
60			60	0.52	19.2		17.3		15.4	
65			65	0.48	20.8		18.72		16.64	
70			70	0.45	22.4		20.16		17.92	
SM 8×10	8	4	10	4.34	3.2	14	2.9	12.5	2.6	11
15			15	2.89	4.8		4.3		3.8	
20			20	2.17	6.4		5.8		5.1	
25			25	1.74	8.0		7.2		6.4	
30			30	1.45	9.6		8.6		7.7	
35			35	1.24	11.2		10.1		9.0	
40			40	1.09	12.8		11.5		10.2	
45			45	0.97	14.4		13.0		11.5	
50			50	0.87	16.0		14.4		12.8	
55			55	0.79	17.6		15.8		14.1	
60			60	0.72	19.2		17.3		15.4	
65			65	0.67	20.8		18.7		16.6	
70			70	0.62	22.4		20.2		17.9	
75			75	0.58	24.0		21.6		19.2	
80			80	0.54	25.6		23.0		20.5	
90			90	0.48	28.8		25.9		23.0	
SM10×10	10	5	10	6.21	3.2	20	2.9	18	2.6	16
15			15	4.09	4.8		4.4		3.8	
20			20	3.13	6.4		5.8		5.1	
25			25	2.50	8.0		7.2		6.4	
30			30	2.08	9.6		8.6		7.7	
35			35	1.78	11.2		10.1		9.0	
40			40	1.56	12.8		11.5		10.2	
45			45	1.38	14.4		13.0		11.5	
50			50	1.25	16.0		14.4		12.8	
55			55	1.13	17.6		15.8		14.1	
60			60	1.04	19.2		17.3		15.4	
65			65	0.96	20.8		18.7		16.6	
70			70	0.89	22.4		20.2		17.9	
75			75	0.83	24.0		21.6		19.2	
80			80	0.78	25.6		23.0		20.5	
90			90	0.70	28.8		25.9		23.0	
100			100	0.63	32.0		28.8		25.6	

中荷重
중하중
MEDIUM LOAD

SM

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5m/m$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SM 12×20	12	6	20	4.53	6.4	29	5.8	26	5.1	23
25			25	3.62	8.0		7.2		6.4	
30			30	3.02	9.6		8.6		7.7	
35			35	2.58	11.2		10.1		9.0	
40			40	2.27	12.8		11.5		10.2	
45			45	2.01	14.4		13.0		11.5	
50			50	1.81	16.0		14.4		12.8	
55			55	1.64	17.6		15.8		14.1	
60			60	1.51	19.2		17.3		15.4	
65			65	1.39	20.8		18.7		16.6	
70			70	1.29	22.4		20.2		17.9	
75			75	1.20	24.0		21.6		19.2	
80			80	1.13	25.6		23.0		20.5	
90			90	1.01	28.8		25.9		23.0	
100			100	0.91	32.0		28.8		25.6	
SM 14×20	14	7	20	6.03	6.4	39	5.8	35	5.1	31
25			25	4.87	8.0		7.2		6.4	
30			30	4.06	9.6		8.6		7.7	
35			35	3.48	11.2		10.1		9.0	
40			40	3.04	12.8		11.5		10.2	
45			45	2.70	14.4		13.0		11.5	
50			50	2.43	16.0		14.4		12.8	
55			55	2.21	17.6		15.8		14.1	
60			60	2.03	19.2		17.3		15.4	
65			65	1.87	20.8		18.7		16.6	
70			70	1.74	22.4		20.2		17.9	
75			75	1.62	24.0		21.6		19.2	
80			80	1.52	25.6		23.0		20.5	
90			90	1.35	28.8		25.9		23.0	
100			100	1.22	32.0		28.8		25.6	
125			125	0.97	40.0		36.0		32.0	
SM 16×20	16	8	20	7.93	6.4	51	5.8	46	5.1	41
25			25	6.39	8.0		7.2		6.4	
30			30	5.32	9.6		8.6		7.7	
35			35	4.55	11.2		10.1		9.0	
40			40	3.98	12.8		11.5		10.2	
45			45	3.54	14.4		13.0		11.5	
50			50	3.18	16.0		14.4		12.8	
55			55	2.89	17.6		15.8		14.1	
60			60	2.65	19.2		17.3		15.4	
65			65	2.45	20.8		18.7		16.6	
70			70	2.27	22.4		20.2		17.9	
75			75	2.11	24.0		21.6		19.2	
80			80	1.99	25.6		23.0		20.5	
90			90	1.77	28.8		25.9		23.0	
100			100	1.59	32.0		28.8		25.6	
125			125	1.28	40.0		36.0		32.0\	

中荷重
중하중
MEDIUM LOAD

SM

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 Outer Dia.	內徑 Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SM 18×20	18	9	20	10.00	6.4	65	5.8	58	5.1	52
25			25	8.12	8.0		7.2		6.4	
30			30	6.77	9.6		8.6		7.7	
35			35	5.80	11.2		10.1		9.0	
40			40	5.07	12.8		11.5		10.2	
45			45	4.51	14.4		13.0		11.5	
50			50	4.06	16.0		14.4		12.8	
55			55	3.69	17.6		15.8		14.1	
60			60	3.38	19.2		17.3		15.4	
65			65	3.12	20.8		18.7		16.6	
70			70	2.90	22.4		20.2		17.9	
75			75	2.70	24.0		21.6		19.2	
80			80	2.53	25.6		23.0		20.5	
90			90	2.25	28.8		25.9		23.0	
100			100	2.02	32.0		28.8		25.6	
125			125	1.62	40.0		36.0		32.0	
SM 20×20	20	10	20	12.41	6.4	80	5.8	72	5.1	64
25			25	10.00	8.0		7.2		6.4	
30			30	8.33	9.6		8.6		7.7	
35			35	7.14	11.2		10.1		9.0	
40			40	6.25	12.8		11.5		10.2	
45			45	5.55	14.4		13.0		11.5	
50			50	5.00	16.0		14.4		12.8	
55			55	4.54	17.6		15.8		14.1	
60			60	4.16	19.2		17.3		15.4	
65			65	3.84	20.8		18.7		16.6	
70			70	3.57	22.4		20.2		17.9	
75			75	3.33	24.0		21.6		19.2	
80			80	3.12	25.6		23.0		20.5	
90			90	2.77	28.8		25.9		23.0	
100			100	2.50	32.0		28.8		25.6	
125			125	2.00	40.0		36.0		32.0	
150			150	1.67	48.0		43.2		38.4	
175			175	1.43	56.0		50.4		44.8	
SM 22×25	22	11	25	12.13	8.0	97	7.2	87	6.4	78
30			30	10.10	9.6		8.6		7.7	
35			35	8.65	11.2		10.1		9.0	
40			40	7.57	12.8		11.5		10.2	
45			45	6.74	14.4		13.0		11.5	
50			50	6.06	16.0		14.4		12.8	
55			55	5.50	17.6		15.8		14.1	
60			60	5.05	19.2		17.3		15.4	
65			65	4.66	20.8		18.7		16.6	
70			70	4.33	22.4		20.2		17.9	
75			75	4.04	24.0		21.6		19.2	
80			80	3.78	25.6		23.0		20.5	
90			90	3.36	28.8		25.9		23.0	
100			100	3.03	32.0		28.8		25.6	
125			125	2.42	40.0		36.0		32.0	
150			150	2.01	48.0		43.2		38.4	
175			175	1.73	56.0		50.4		44.8	

中荷重
중하중
MEDIUM LOAD

SM

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	내徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	50万 (0.5 million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	100万 (1 million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SM 25×25			25	15.63	8.0		7.2		6.4	
30			30	13.02	9.6		8.6		7.7	
35			35	11.20	11.2		10.1		9.0	
40			40	9.76	12.8		11.5		10.2	
45			45	8.68	14.4		13.0		11.5	
50			50	7.81	16.0		14.4		12.8	
55			55	7.10	17.6		15.8		14.1	
60			60	6.51	19.2		17.3		15.4	
65			65	6.00	20.8		18.7		16.6	
70	25	12.5	70	5.58	22.4	125	20.2	112	17.9	100
75			75	5.21	24.0		21.6		19.2	
80			80	4.88	25.6		23.0		20.5	
90			90	4.34	28.8		25.9		23.0	
100			100	3.90	32.0		28.8		25.6	
125			125	3.12	40.0		36.0		32.0	
150			150	2.60	48.0		43.2		38.4	
175			175	2.23	56.0		50.4		44.8	
200			200	1.95	64.0		57.6		51.2	
SM 27×25			25	18.25	8.0		7.2		6.4	
30			30	15.20	9.6		8.6		7.7	
35			35	13.04	11.2		10.1		9.0	
40			40	11.40	12.8		11.5		10.2	
45			45	10.14	14.4		13.0		11.5	
50			50	9.12	16.0		14.4		12.8	
55			55	8.30	17.6		15.8		14.1	
60			60	7.60	19.2		17.3		15.4	
65	27	13.5	65	7.00	20.8	146	18.7	131	16.6	117
70			70	6.51	22.4		20.2		17.9	
75			75	6.08	24.0		21.6		19.2	
80			80	5.70	25.6		23.0		20.5	
90			90	5.06	28.8		25.9		23.0	
100			100	4.56	32.0		28.8		25.6	
125			125	3.65	40.0		36.0		32.0	
150			150	3.04	48.0		43.2		38.4	
175			175	2.61	56.0		50.4		44.8	
200			200	2.28	64.0		57.6		51.2	
SM 30×25			25	22.50	8.0		7.2		6.4	
30			30	18.75	9.6		8.6		7.7	
35			35	16.10	11.2		10.1		9.0	
40			40	14.06	12.8		11.5		10.2	
45			45	12.50	14.4		13.0		11.5	
50			50	11.25	16.0		14.4		12.8	
55			55	10.23	17.6		15.8		14.1	
60			60	9.37	19.2		17.3		15.4	
65			65	8.65	20.8		18.7		16.6	
70	30	15	70	8.03	22.4	180	20.2	161	17.9	144
75			75	7.50	24.0		21.6		19.2	
80			80	7.03	25.6		23.0		20.5	
90			90	6.25	28.8		25.9		23.0	
100			100	5.62	32.0		28.8		25.6	
125			125	4.50	40.0		36.0		32.0	
150			150	3.75	48.0		43.2		38.4	
175			175	3.21	56.0		50.4		44.8	
200			200	2.81	64.0		57.6		51.2	

中荷重
중하중
MEDIUM LOAD

SM

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg/l) Load	變形量 변형량(mm) Deflection	荷重 하중(kg/l) Load	變形量 변형량(mm) Deflection	荷重 하중(kg/l) Load
SM 35×35	35	17.5	35	21.87	11.2	245	10.1	220	9.0	195
40			40	19.14	12.8		11.5		10.2	
45			45	17.01	14.4		13.0		11.5	
50			50	15.31	16.0		14.4		12.8	
55			55	13.92	17.6		15.8		14.1	
60			60	12.76	19.2		17.3		15.4	
65			65	11.77	20.8		18.7		16.6	
70			70	10.93	22.4		20.2		17.9	
75			75	10.20	24.0		21.6		19.2	
80			80	9.57	25.6		23.0		20.5	
90			90	8.50	28.8		25.9		23.0	
100			100	7.65	32.0		28.8		25.6	
125			125	6.12	40.0		36.0		32.0	
150			150	5.10	48.0		43.2		38.4	
175			175	4.37	56.0		50.4		44.8	
200			200	3.82	64.0		57.6		51.2	
SM 40×40	40	20	40	25.02	12.8	320	11.5	288	10.2	256
45			45	22.26	14.4		13.0		11.5	
50			50	20.00	16.0		14.4		12.8	
55			55	18.15	17.6		15.8		14.1	
60			60	16.60	19.2		17.3		15.4	
65			65	15.40	20.8		18.7		16.6	
70			70	14.28	22.4		20.2		17.9	
75			75	13.34	24.0		21.6		19.2	
80			80	12.50	25.6		23.0		20.5	
90			90	11.11	28.8		25.9		23.0	
100			100	10.00	32.0		28.8		25.6	
125			125	8.00	40.0		36.0		32.0	
150			150	6.66	48.0		43.2		38.4	
175			175	5.71	56.0		50.4		44.8	
200			200	5.00	64.0		57.6		51.2	
225			225	4.44	72.0		64.8		57.6	
250			250	4.00	80.0		72.0		64.0	
275			275	3.64	88.0		79.2		70.4	
300			300	3.33	96.0		86.4		76.8	
SM 50×50	50	25	50	31.25	16.0	500	14.4	450	12.8	400
55			55	28.41	17.6		15.8		14.1	
60			60	26.04	19.2		17.3		15.4	
65			65	24.04	20.8		18.7		16.6	
70			70	22.32	22.4		20.2		17.9	
75			75	20.83	24.0		21.6		19.2	
80			80	19.53	25.6		23.0		20.5	
90			90	17.36	28.8		25.9		23.0	
100			100	15.62	32.0		28.8		25.6	
125			125	12.50	40.0		36.0		32.0	
150			150	10.41	48.0		43.2		38.4	
175			175	8.92	56.0		50.4		44.8	
200			200	7.81	64.0		57.6		51.2	
225			225	6.94	72.0		64.8		57.6	
250			250	6.25	80.0		72.0		64.0	
275			275	5.68	88.0		79.2		70.4	
300			300	5.20	96.0		86.4		76.8	
350			350	4.46	112.0		100.8		89.6	

中荷重
중하중
MEDIUM LOAD

SM

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SM 60×60	60	30	60	37.40	19.2	17.3	17.3	648	15.4	575
70			70	32.10	22.4	20.2	20.2	648	17.9	575
80			80	28.12	25.6	23.0	23.0	648	20.5	575
90			90	25.00	28.8	25.9	25.9	648	23.0	575
100			100	22.50	32.0	28.8	28.8	648	25.6	575
125			125	18.00	40.0	36.0	36.0	648	32.0	575
150			150	15.00	48.0	43.2	43.2	648	38.4	575
175			175	12.85	56.0	50.4	50.4	648	44.8	575
200			200	11.25	64.0	57.6	57.6	648	51.2	575
225			225	10.00	72.0	64.8	64.8	648	57.6	575
250			250	9.00	80.0	72.0	72.0	648	64.0	575
275			275	8.18	88.0	79.2	79.2	648	70.4	575
300			300	7.50	96.0	86.4	86.4	648	76.8	575
350			350	6.43	112.0	100.8	100.8	648	89.6	575
SM 70×70	70	38.5	70	37.9	22.4	20.2	20.2	764	17.9	680
80			80	33.2	25.6	23.0	23.0	764	20.5	680
90			90	29.5	28.8	25.9	25.9	764	23.0	680
100			100	26.6	32.0	28.8	28.8	764	25.6	680
125			125	21.3	40.0	36.0	36.0	764	32.0	680
150			150	17.7	48.0	43.2	43.2	764	38.4	680
175			175	15.2	56.0	50.4	50.4	764	44.8	680
200			200	13.3	64.0	57.6	57.6	764	51.2	680
225			225	11.8	72.0	64.8	64.8	764	57.6	680
250			250	10.6	80.0	72.0	72.0	764	64.0	680
275			275	9.7	88.0	79.2	79.2	764	70.4	680
300			300	8.9	96.0	86.4	86.4	764	76.8	680
350			350	7.6	112.0	100.8	100.8	764	89.6	680

重荷重
중하중
HEAVY LOAD

SH

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million) 變形量 변형량(mm) Deflection	50万 (0.5 million) 荷重 하중(kgf) Load	100万 (1 million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SH 6×15			15	3.90	3.6		3.2	2.9
20			20	2.90	4.8		4.3	3.8
25			25	2.30	6.0		5.4	4.8
30			30	1.90	7.2		6.5	5.8
35			35	1.70	8.4		7.6	6.7
40			40	1.50	9.6		8.6	7.7
45			45	1.30	10.8		9.7	8.6
50			50	1.20	12.0		10.8	9.6
55			55	1.10	13.2		11.9	10.6
60			60	1.00	14.4		13.0	11.5
65			65	0.90	15.6		13.8	12.48
70			70	0.83	16.8		14.9	13.44
SH 8×10			10	8.80	2.4		2.2	1.9
15			15	5.86	3.6		3.2	2.9
20			20	4.40	4.8		4.3	3.8
25			25	3.52	6.0		5.4	4.8
30			30	2.93	7.2		6.5	5.8
35			35	2.51	8.4		7.6	6.7
40			40	2.20	9.6		8.6	7.7
45			45	1.95	10.8		9.7	8.6
50			50	1.76	12.0		10.8	9.6
55			55	1.60	13.2		11.9	10.6
60			60	1.47	14.4		13.0	11.5
65			65	1.35	15.6		14.0	12.5
70			70	1.26	16.8		15.1	13.4
75			75	1.17	18.0		16.2	14.4
80			80	1.10	19.2		17.3	15.4
90			90	0.98	21.6		19.4	17.3
SH 10×10			10	12.27	2.4		2.2	1.9
15			15	8.18	3.6		3.3	2.9
20			20	6.25	4.8		4.3	3.8
25			25	5.00	6.0		5.4	4.8
30			30	4.16	7.2		6.5	5.8
35			35	3.57	8.4		7.6	6.7
40			40	3.15	9.6		8.6	7.7
45			45	2.77	10.8		9.7	8.6
50			50	2.50	12.0		10.8	9.6
55			55	2.27	13.2		11.9	10.6
60			60	2.08	14.4		13.0	11.5
65			65	1.92	15.6		14.0	12.5
70			70	1.79	16.8		15.1	13.4
75			75	1.67	18.0		16.2	14.4
80			80	1.56	19.2		17.3	15.4
90			90	1.39	21.6		19.4	17.3
100			100	1.25	24.0		21.6	19.2

重荷重
중하중
HEAVY LOAD

SH

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 장수(kg/mm) spring constant	30万 (0.3million) 變形量 변형량(mm) Deflection	50万 (0.5 million) 變形量 변형량(mm) Deflection	100万 (1 million) 變形量 변형량(mm) Deflection
					荷重 하중(kg/l) Load	荷重 하중(kg/l) Load	荷重 하중(kg/l) Load
SH 12×20			20	8.90	4.8	4.3	3.8
25			25	7.10	6.0	5.4	4.8
30			30	5.97	7.2	6.5	5.8
35			35	5.11	8.4	7.6	6.7
40			40	4.47	9.6	8.6	7.7
45			45	3.98	10.8	9.7	8.6
50			50	3.58	12.0	10.8	9.6
55	12	6	55	3.25	13.2	11.9	10.6
60			60	2.98	14.4	13.0	11.5
65			65	2.74	15.6	14.0	12.5
70			70	2.54	16.8	15.1	13.4
75			75	2.37	18.0	16.2	14.4
80			80	2.21	19.2	17.3	15.4
90			90	1.98	21.6	19.4	17.3
100			100	1.78	24.0	21.6	19.2
SH 14×20			20	12.05	4.8	4.4	3.8
25			25	9.83	6.0	5.4	4.8
30			30	8.19	7.2	6.5	5.8
35			35	7.02	8.4	7.6	6.7
40			40	6.14	9.6	8.6	7.7
45			45	5.46	10.8	9.7	8.6
50			50	4.91	12.0	10.8	9.6
55			55	4.46	13.2	11.9	10.6
60	14	7	60	4.09	14.4	13.0	11.5
65			65	3.78	15.6	14.0	12.5
70			70	3.51	16.8	15.1	13.4
75			75	3.27	18.0	16.2	14.4
80			80	3.07	19.2	17.3	15.4
90			90	2.72	21.6	19.4	17.3
100			100	2.46	24.0	21.6	19.2
125			125	1.97	30.0	27.0	24.0
SH 16×20			20	15.68	4.8	4.4	3.8
25			25	12.83	6.0	5.4	4.8
30			30	10.69	7.2	6.5	5.8
35			35	9.16	8.4	7.6	6.7
40			40	8.02	9.6	8.6	7.7
45			45	7.12	10.8	9.7	8.6
50			50	6.41	12.0	10.8	9.6
55			55	5.83	13.2	11.9	10.6
60	16	8	60	5.34	14.4	13.0	11.5
65			65	4.93	15.6	14.0	12.5
70			70	4.58	16.8	15.1	13.4
75			75	4.28	18.0	16.2	14.4
80			80	4.01	19.2	17.3	15.4
90			90	3.57	21.6	19.4	17.3
100			100	3.21	24.0	21.6	19.2
125			125	2.57	30.0	27.0	24.0

重荷重
중하중
HEAVY LOAD

SH

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	내徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million) 변형량(mm) Deflection	荷重 하중(kg/l) Load	50万 (0.5 million) 변형량(mm) Deflection	荷重 하중(kg/l) Load	100万 (1 million) 변형량(mm) Deflection	荷重 하중(kg/l) Load
SH 18×20	18	9	20	19.77	4.8	97	4.4	87	3.8	78
25			25	16.16	6.0		5.4		4.8	
30			30	13.47	7.2		6.5		5.8	
35			35	11.54	8.4		7.6		6.7	
40			40	10.10	9.6		8.6		7.7	
45			45	8.98	10.8		9.7		8.6	
50			50	8.08	12.0		10.8		9.6	
55			55	7.34	13.2		11.9		10.6	
60			60	6.73	14.4		13.0		11.5	
65			65	6.21	15.6		14.0		12.5	
70			70	5.77	16.8		15.1		13.4	
75			75	5.39	18.0		16.2		14.4	
80			80	5.05	19.2		17.3		15.4	
90			90	4.50	21.6		19.4		17.3	
100			100	4.04	24.0		21.6		19.2	
125			125	3.23	30.0		27.0		24.0	
SH 20×20	20	10	20	24.55	4.8	120	4.4	108	3.7	96
25			25	20.00	6.0		5.4		4.8	
30			30	16.66	7.2		6.5		5.8	
35			35	14.28	8.4		7.6		6.7	
40			40	12.50	9.6		8.6		7.7	
45			45	11.11	10.8		9.7		8.6	
50			50	10.00	12.0		10.8		9.6	
55			55	9.09	13.2		11.9		10.6	
60			60	8.33	14.4		13.0		11.5	
65			65	7.69	15.6		14.0		12.5	
70			70	7.14	16.8		15.1		13.4	
75			75	6.67	18.0		16.2		14.4	
80			80	6.25	19.2		17.3		15.4	
90			90	5.55	21.6		19.4		17.3	
100			100	5.00	24.0		21.6		19.2	
125			125	4.00	30.0		27.0		24.0	
150			150	3.33	36.0		32.4		28.8	
175			175	2.86	42.0		37.8		33.6	
SH 22×25	22	11	25	24.16	6.0	145	5.4	130	4.8	116
30			30	20.13	7.2		6.5		5.8	
35			35	17.30	8.4		7.6		6.7	
40			40	15.10	9.6		8.6		7.7	
45			45	13.40	10.8		9.7		8.6	
50			50	12.08	12.0		10.8		9.6	
55			55	10.94	13.2		11.9		10.6	
60			60	10.06	14.4		13.0		11.5	
65			65	9.28	15.6		14.0		12.5	
70			70	8.63	16.8		15.1		13.4	
75			75	8.04	18.0		16.2		14.4	
80			80	7.55	19.2		17.3		15.4	
90			90	6.71	21.6		19.4		17.3	
100			100	6.04	24.0		21.6		19.2	
125			125	4.83	30.0		27.0		24.0	
150			150	4.02	36.0		32.4		28.8	
175			175	3.45	42.0		37.8		33.6	

重荷重
중하중
HEAVY LOAD

SH

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑(mm) Outer Dia.	內徑(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 장수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SH 25×25	25	12.5	25	31.20	6.0	187	5.4	169	4.8	150
30			30	25.97	7.2		6.5		5.8	
35			35	22.38	8.4		7.6		6.7	
40			40	19.47	9.6		8.6		7.7	
45			45	17.40	10.8		9.7		8.6	
50			50	15.58	12.0		10.8		9.6	
55			55	14.20	13.2		11.9		10.6	
60			60	12.98	14.4		13.0		11.5	
65			65	12.00	15.6		14.0		12.5	
70			70	11.13	16.8		15.1		13.4	
75			75	10.40	18.0		16.2		14.4	
80			80	9.73	19.2		17.3		15.4	
90			90	8.65	21.6		19.4		17.3	
100			100	7.79	24.0		21.6		19.2	
125			125	6.23	30.0		27.0		24.0	
150			150	5.20	36.0		32.4		28.8	
175			175	4.46	42.0		37.8		33.6	
200			200	3.90	48.0		43.2		38.4	
SH 27×25	27	13.5	25	36.40	6.0	219	5.4	197	4.8	175
30			30	30.41	7.2		6.5		5.8	
35			35	26.20	8.4		7.6		6.7	
40			40	22.81	9.6		8.6		7.7	
45			45	20.30	10.8		9.7		8.6	
50			50	18.25	12.0		10.8		9.6	
55			55	16.50	13.2		11.9		10.6	
60			60	15.20	14.4		13.0		11.5	
65			65	14.00	15.6		14.0		12.5	
70			70	13.03	16.8		15.1		13.4	
75			75	12.10	18.0		16.2		14.4	
80			80	11.40	19.2		17.3		15.4	
90			90	10.13	21.6		19.4		17.3	
100			100	9.12	24.0		21.6		19.2	
125			125	7.30	30.0		27.0		24.0	
150			150	6.08	36.0		32.4		28.8	
175			175	5.21	42.0		37.8		33.6	
200			200	4.56	48.0		43.2		38.4	
SH 30×25	30	15	25	45.00	6.0	270	5.4	243	4.8	216
30			30	37.50	7.2		6.5		5.8	
35			35	32.26	8.4		7.6		6.7	
40			40	28.12	9.6		8.6		7.7	
45			45	25.00	10.8		9.7		8.6	
50			50	22.50	12.0		10.8		9.6	
55			55	20.40	13.2		11.9		10.6	
60			60	18.75	14.4		13.0		11.5	
65			65	17.30	15.6		14.0		12.5	
70			70	16.07	16.8		15.1		13.4	
75			75	15.00	18.0		16.2		14.4	
80			80	14.06	19.2		17.3		15.4	
90			90	12.50	21.6		19.4		17.3	
100			100	11.25	24.0		21.6		19.2	
125			125	9.00	30.0		27.0		24.0	
150			150	7.50	36.0		32.4		28.8	
175			175	6.42	42.0		37.8		33.6	
200			200	5.62	48.0		43.2		38.4	

重荷重
중하중
HEAVY LOAD

SH

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5m/m$
 55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million) 변형량(mm) Deflection	荷重 하중(kgf) Load	50万 (0.5 million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	100万 (1 million) 變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SH 35×35	35	17.5	35	43.68	8.4	367	7.6	330	6.7	293
40			40	38.22	9.6		8.6		7.7	
45			45	33.98	10.8		9.7		8.6	
50			50	30.58	12.0		10.8		9.6	
55			55	27.80	13.2		11.9		10.6	
60			60	25.48	14.4		13.0		11.5	
65			65	23.53	15.6		14.0		12.5	
70			70	21.84	16.8		15.1		13.4	
75			75	20.39	18.0		16.2		14.4	
80			80	19.11	19.2		17.3		15.4	
90			90	16.99	21.6		19.4		17.3	
100			100	15.29	24.0		21.6		19.2	
125	40	20	125	12.23	30.0	480	27.0	432	24.0	384
150			150	10.19	36.0		32.4		28.8	
175			175	8.73	42.0		37.8		33.6	
200			200	7.64	48.0		43.2		38.4	
SH 40×40			40	50.00	9.6		8.6		7.7	
45			45	44.44	10.8		9.7		8.6	
50			50	40.00	12.0		10.8		9.6	
55			55	36.36	13.2		11.9		10.6	
60			60	33.33	14.4		13.0		11.5	
65			65	30.77	15.6		14.0		12.5	
70			70	28.57	16.8		15.1		13.4	
75			75	26.67	18.0		16.2		14.4	
80			80	25.00	19.2		17.3		15.4	
90			90	22.22	21.6		19.4		17.3	
100			100	20.00	24.0		21.6		19.2	
125	50	25	125	16.00	30.0	750	27.0	675	24.0	600
150			150	13.33	36.0		32.4		28.8	
175			175	11.42	42.0		37.8		33.6	
200			200	10.00	48.0		43.2		38.4	
225			225	8.89	54.0		48.6		43.2	
250			250	8.00	60.0		54.0		48.0	
275			275	7.27	66.0		59.4		52.8	
300			300	6.67	72.0		64.8		57.6	
SH 50×50			50	62.50	12.0		10.8		9.6	
55			55	56.82	13.2		11.9		10.6	
60			60	52.08	14.4		13.0		11.5	
65			65	48.08	15.6		14.0		12.5	
70	50	25	70	44.64	16.8	750	15.1	675	13.4	600
75			75	41.67	18.0		16.2		14.4	
80			80	39.06	19.2		17.3		15.4	
90			90	34.72	21.6		19.4		17.3	
100			100	31.25	24.0		21.6		19.2	
125			125	25.00	30.0		27.0		24.0	
150			150	20.83	36.0		32.4		28.8	
175			175	17.85	42.0		37.8		33.6	
200			200	15.62	48.0		43.2		38.4	
225			225	13.89	54.0		48.6		43.2	
250			250	12.50	60.0		54.0		48.0	
275			275	11.36	66.0		59.4		52.8	
300	50	25	300	10.41	72.0		64.8		57.6	
350			350	8.93	84.0		75.6		67.2	

重荷重
중하중
HEAVY LOAD

SH

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 장수(kg/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SH 60×60	60	30	60	75.00	14.4	1080	13.0	973	11.5	864
70			70	64.28	16.8		15.1		13.4	
80			80	56.25	19.2		17.3		15.4	
90			90	50.00	21.6		19.4		17.3	
100			100	45.00	24.0		21.6		19.2	
125			125	36.00	30.0		27.0		24.0	
150			150	30.00	36.0		32.4		28.8	
175			175	25.71	42.0		37.8		33.6	
200			200	22.50	48.0		43.2		38.4	
225			225	20.00	54.0		48.6		43.2	
250			250	18.00	60.0		54.0		48.0	
275			275	16.36	66.0		59.4		52.8	
300			300	15.00	72.0		64.8		57.6	
350			350	12.86	84.0		75.6		67.2	
SH 70×70	70	38.5	70	76.2	16.8	1280	15.1	1152	13.4	1024
80			80	66.7	19.2		17.3		15.4	
90			90	59.3	21.6		19.4		17.3	
100			100	53.3	24.0		21.6		19.2	
125			125	42.7	30.0		27.0		24.0	
150			150	35.6	36.0		32.4		28.8	
175			175	30.5	42.0		37.8		33.6	
200			200	26.7	48.0		43.2		38.4	
225			225	23.7	54.0		48.6		43.2	
250			250	21.3	60.0		54.0		48.0	
275			275	19.4	66.0		59.4		52.8	
300			300	17.8	72.0		64.8		57.6	
350			350	15.2	84.0		75.6		67.2	

極重荷重
극중하중
EXTRA HEAVY LOAD

SB

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外径 외경(mm) Outer Dia.	内径 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定数 정수(kg/mm) spring constant	30万 (0.3million) 変形量 변형량(mm) Deflection	荷重 하중(kg) Load	50万 (0.5 million) 変形量 변형량(mm) Deflection	荷重 하중(kg) Load	100万 (1 million) 変形量 변형량(mm) Deflection	荷重 하중(kg) Load
SB 6×15			15	6.00	3.0		2.7		2.4	
20			20	4.50	4.0		3.6		3.2	
25			25	3.60	5.0		4.5		4.0	
30			30	3.00	6.0		5.4		4.8	
35			35	2.60	7.0		6.3		5.6	
40			40	2.30	8.0		7.2		6.4	
45	6	3	45	2.00	9.0	18	8.1	16	7.2	14
50			50	1.80	10.0		9.0		8.0	
55			55	1.60	11.0		9.9		8.8	
60			60	1.50	12.0		10.8		9.6	
65			65	1.38	13.0		11.7		10.4	
70			70	1.29	14.0		12.6		11.2	
SB 8×10			10	16.94	2.0		1.8		1.6	
15			15	11.30	3.0		2.7		2.4	
20			20	8.47	4.0		3.6		3.2	
25			25	6.78	5.0		4.5		4.0	
30			30	5.65	6.0		5.4		4.8	
35			35	4.84	7.0		6.3		5.6	
40			40	4.24	8.0		7.2		6.4	
45			45	3.77	9.0		8.1		7.2	
50	8	4	50	3.39	10.0	35	9.0	31	8.0	26
55			55	3.08	11.0		9.9		8.8	
60			60	2.82	12.0		10.8		9.6	
65			65	2.61	13.0		11.7		10.4	
70			70	2.42	14.0		12.6		11.2	
75			75	2.26	15.0		13.5		12.0	
80			80	2.12	16.0		14.4		12.8	
90			90	1.88	18.0		16.2		14.4	
SB 10×10			10	22.78	2.0		1.8		1.6	
15			15	15.19	3.0		2.7		2.4	
20			20	11.25	4.0		3.6		3.2	
25			25	9.00	5.0		4.5		4.0	
30			30	7.50	6.0		5.4		4.8	
35			35	6.43	7.0		6.3		5.6	
40			40	5.63	8.0		7.2		6.4	
45			45	5.00	9.0		8.1		7.2	
50			50	4.50	10.0		9.0		8.0	
55	10	5	55	4.09	11.0	45	9.9	41	8.8	36
60			60	3.75	12.0		10.8		9.6	
65			65	3.47	13.0		11.7		10.4	
70			70	3.21	14.0		12.6		11.2	
75			75	3.00	15.0		13.5		12.0	
80			80	2.82	16.0		14.4		12.8	
90			90	2.50	18.0		16.2		14.4	
100			100	2.25	20.0		18.0		16.0	

極重荷重
극중하중
EXTRA HEAVY LOAD

SB

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外径 외경(mm) Outer Dia.	内径 내경(mm) inner Dia.	自由長 자유장(mm) Free length	定数 정수(kgf/mm) spring constant	30万 (0.3million) 変形量 변형량(mm) Deflection	50万 (0.5 million) 変形量 변형량(mm) Deflection	100万 (1 million) 変形量 변형량(mm) Deflection
SB 12×20			20	14.50	4.0	3.6	3.2
25			25	11.60	5.0	4.5	4.0
30			30	9.67	6.0	5.4	4.8
35			35	8.29	7.0	6.3	5.6
40			40	7.25	8.0	7.2	6.4
45			45	6.44	9.0	8.1	7.2
50			50	5.80	10.0	9.0	8.0
55	12	6	55	5.27	11.0	9.9	8.8
60			60	4.83	12.0	10.8	9.6
65			65	4.44	13.0	11.7	10.4
70			70	4.13	14.0	12.6	11.2
75			75	3.85	15.0	13.5	12.0
80			80	3.61	16.0	14.4	12.8
90			90	3.22	18.0	16.2	14.4
100			100	2.90	20.0	18.0	16.0
SB 14×20			20	18.89	4.0	3.6	3.2
25			25	15.00	5.0	4.5	4.0
30			30	12.50	6.0	5.4	4.8
35			35	10.72	7.0	6.3	5.6
40			40	9.38	8.0	7.2	6.4
45			45	8.34	9.0	8.1	7.2
50			50	7.50	10.0	9.0	8.0
55			55	6.82	11.0	9.9	8.8
60	14	7	60	6.25	12.0	10.8	9.6
65			65	5.77	13.0	11.7	10.4
70			70	5.36	14.0	12.6	11.2
75			75	5.00	15.0	13.5	12.0
80			80	4.69	16.0	14.4	12.8
90			90	4.17	18.0	16.2	14.4
100			100	3.75	20.0	18.0	16.0
125			125	3.00	25.0	22.5	20.0
SB 16×20			20	25.00	4.0	3.6	3.2
25			25	20.00	5.0	4.5	4.0
30			30	16.67	6.0	5.4	4.8
35			35	14.29	7.0	6.3	5.6
40			40	12.50	8.0	7.2	6.4
45			45	11.11	9.0	8.1	7.2
50			50	10.00	10.0	9.0	8.0
55			55	9.09	11.0	9.9	8.8
60	16	8	60	8.34	12.0	10.8	9.6
65			65	7.69	13.0	11.7	10.4
70			70	7.14	14.0	12.6	11.2
75			75	6.67	15.0	13.5	12.0
80			80	6.25	16.0	14.4	12.8
90			90	5.56	18.0	16.2	14.4
100			100	5.00	20.0	18.0	16.0
125			125	4.00	25.0	22.5	20.0

極重荷重
극중하중
EXTRA HEAVY LOAD

SB

하중 荷重 ±10%
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 ±0.5m/m
55m/m 以上 ±1%

呼稱 호칭 Model	外径 외경(mm) Outer Dia.	内径 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kgf/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SB 18×20	18	9	20	31.39	4.0	125	3.6	113	3.2	100
25			25	25.00	5.0		4.5		4.0	
30			30	20.84	6.0		5.4		4.8	
35			35	17.86	7.0		6.3		5.6	
40			40	15.63	8.0		7.2		6.4	
45			45	13.89	9.0		8.1		7.2	
50			50	12.50	10.0		9.0		8.0	
55			55	11.37	11.0		9.9		8.8	
60			60	10.42	12.0		10.8		9.6	
65			65	9.62	13.0		11.7		10.4	
70			70	8.93	14.0		12.6		11.2	
75			75	8.34	15.0		13.5		12.0	
80			80	7.82	16.0		14.4		12.8	
90			90	6.95	18.0		16.2		14.4	
100			100	6.26	20.0		18.0		16.0	
125			125	5.00	25.0		22.5		20.0	
SB 20×20	20	10	20	40.00	4.0	160	3.6	144	3.2	128
25			25	32.00	5.0		4.5		4.0	
30			30	26.67	6.0		5.4		4.8	
35			35	22.86	7.0		6.3		5.6	
40			40	20.00	8.0		7.2		6.4	
45			45	17.78	9.0		8.1		7.2	
50			50	16.00	10.0		9.0		8.0	
55			55	14.55	11.0		9.9		8.8	
60			60	13.33	12.0		10.8		9.6	
65			65	12.31	13.0		11.7		10.4	
70			70	11.43	14.0		12.6		11.2	
75			75	10.67	15.0		13.5		12.0	
80			80	10.00	16.0		14.4		12.8	
90			90	8.89	18.0		16.2		14.4	
100			100	8.00	20.0		18.0		16.0	
125			125	6.40	25.0		22.5		20.0	
150	150	5.33	30.0	27.0	24.0					
175	175	4.57	35.0	31.5	28.0					
SB 22×25	22	11	25	39.00	5.0	195	4.5	176	4.0	156
30			30	32.50	6.0		5.4		4.8	
35			35	27.86	7.0		6.3		5.6	
40			40	24.38	8.0		7.2		6.4	
45			45	21.67	9.0		8.1		7.2	
50			50	19.50	10.0		9.0		8.0	
55			55	17.73	11.0		9.9		8.8	
60			60	16.25	12.0		10.8		9.6	
65			65	15.00	13.0		11.7		10.4	
70			70	13.93	14.0		12.6		11.2	
75			75	13.00	15.0		13.5		12.0	
80			80	12.19	16.0		14.4		12.8	
90			90	10.83	18.0		16.2		14.4	
100			100	9.75	20.0		18.0		16.0	
125			125	7.80	25.0		22.5		20.0	
150			150	6.50	30.0		27.0		24.0	
175			175	5.57	35.0		31.5		28.0	

極重荷重
극중하중
EXTRA HEAVY LOAD

SB

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	외경 외경(mm) Outer Dia.	내경 내경(mm) Inner Dia.	자유장 자유장(mm) Free length	정수 정수(kgf/mm) spring constant	30만 (0.3million) 변형량 변형량(mm) Deflection	하중 하중(kgf) Load	50만 (0.5 million) 변형량 변형량(mm) Deflection	하중 하중(kgf) Load	100만 (1 million) 변형량 변형량(mm) Deflection	하중 하중(kgf) Load
SB 25×25			25	49.00	5.0		4.5		4.0	
30			30	40.80	6.0		5.4		4.8	
35			35	35.00	7.0		6.3		5.6	
40			40	30.60	8.0		7.2		6.4	
45			45	27.20	9.0		8.1		7.2	
50			50	24.50	10.0		9.0		8.0	
55			55	22.30	11.0		9.9		8.8	
60			60	20.40	12.0		10.8		9.6	
65	25	12.5	65	18.80	13.0	245	11.7	221	10.4	196
70			70	17.50	14.0		12.6		11.2	
75			75	16.30	15.0		13.5		12.0	
80			80	15.30	16.0		14.4		12.8	
90			90	13.60	18.0		16.2		14.4	
100			100	12.30	20.0		18.0		16.0	
125			125	9.80	25.0		22.5		20.0	
150			150	8.17	30.0		27.0		24.0	
175			175	7.00	35.0		31.5		28.0	
200			200	6.13	40.0		36.0		32.0	
SB 27×25			25	58.00	5.0		4.5		4.0	
30			30	48.33	6.0		5.4		4.8	
35			35	41.43	7.0		6.3		5.6	
40			40	36.25	8.0		7.2		6.4	
45			45	32.22	9.0		8.1		7.2	
50			50	29.00	10.0		9.0		8.0	
55			55	26.36	11.0		9.9		8.8	
60			60	24.17	12.0		10.8		9.6	
65	27	13.5	65	22.31	13.0	290	11.7	261	10.4	232
70			70	20.71	14.0		12.6		11.2	
75			75	19.33	15.0		13.5		12.0	
80			80	18.13	16.0		14.4		12.8	
90			90	16.11	18.0		16.2		14.4	
100			100	14.50	20.0		18.0		16.0	
125			125	11.60	25.0		22.5		20.0	
150			150	9.67	30.0		27.0		24.0	
175			175	8.28	35.0		31.5		28.0	
200			200	7.25	40.0		36.0		32.0	
SB 30×25			25	72.00	5.0		4.5		4.0	
30			30	60.00	6.0		5.4		4.8	
35			35	51.43	7.0		6.3		5.6	
40			40	45.00	8.0		7.2		6.4	
45			45	40.00	9.0		8.1		7.2	
50			50	36.00	10.0		9.0		8.0	
55			55	32.72	11.0		9.9		8.8	
60			60	30.00	12.0		10.8		9.6	
65	30	15	65	27.69	13.0	360	11.7	324	10.4	288
70			70	25.71	14.0		12.6		11.2	
75			75	24.00	15.0		13.5		12.0	
80			80	22.50	16.0		14.4		12.8	
90			90	20.00	18.0		16.2		14.4	
100			100	18.00	20.0		18.0		16.0	
125			125	14.40	25.0		22.5		20.0	
150			150	12.00	30.0		27.0		24.0	
175			175	10.28	35.0		31.5		28.0	
200			200	9.00	40.0		36.0		32.0	

極重荷重
극중하중
EXTRA HEAVY LOAD

SB

하중 荷重 ±10%
직각도 直角度 2° 以下
자유장 自由長 50mm 以下 ±0.5mm
55mm 以上 ±1%

呼稱 호칭 Model	외경 외경(mm) Outer Dia.	내경 내경(mm) Inner Dia.	자유장 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load	50万 (0.5 million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load	100万 (1 million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SB 35×35			35	69.94	7.0		6.3		5.6	
40			40	61.25	8.0		7.2		6.4	
45			45	54.44	9.0		8.1		7.2	
50			50	49.00	10.0		9.0		8.0	
55			55	44.54	11.0		9.9		8.8	
60			60	40.83	12.0		10.8		9.6	
65			65	37.69	13.0		11.7		10.4	
70	35	17.5	70	35.00	14.0	490	12.6	441	11.2	392
75			75	32.67	15.0		13.5		12.0	
80			80	30.62	16.0		14.4		12.8	
90			90	27.22	18.0		16.2		14.4	
100			100	24.50	20.0		18.0		16.0	
125			125	19.60	25.0		22.5		20.0	
150			150	16.33	30.0		27.0		24.0	
175			175	14.00	35.0		31.5		28.0	
200			200	12.25	40.0		36.0		32.0	
SB 40×40			40	80.00	8.0		7.2		6.4	
45			45	71.11	9.0		8.1		7.2	
50			50	64.00	10.0		9.0		8.0	
55			55	58.18	11.0		9.9		8.8	
60			60	53.33	12.0		10.8		9.6	
65			65	49.23	13.0		11.7		10.4	
70			70	45.71	14.0		12.6		11.2	
75			75	42.67	15.0		13.5		12.0	
80	40	20	80	40.00	16.0	640	14.4	576	12.8	512
90			90	35.55	18.0		16.2		14.4	
100			100	32.00	20.0		18.0		16.0	
125			125	25.60	25.0		22.5		20.0	
150			150	21.33	30.0		27.0		24.0	
175			175	18.28	35.0		31.5		28.0	
200			200	16.00	40.0		36.0		32.0	
225			225	14.22	45.0		40.5		36.0	
250			250	12.80	50.0		45.0		40.0	
275			275	11.64	55.0		49.5		44.0	
300			300	10.67	60.0		54.0		48.0	
SB 50×50			50	100.00	10.0		9.0		8.0	
55			55	90.91	11.0		9.9		8.8	
60			60	83.33	12.0		10.8		9.6	
65			65	76.92	13.0		11.7		10.4	
70			70	71.42	14.0		12.6		11.2	
75			75	66.67	15.0		13.5		12.0	
80			80	62.50	16.0		14.4		12.8	
90			90	55.55	18.0		16.2		14.4	
100	50	25	100	50.00	20.0	1000	18.0	900	16.0	800
125			125	40.00	25.0		22.5		20.0	
150			150	33.33	30.0		27.0		24.0	
175			175	28.57	35.0		31.5		28.0	
200			200	25.00	40.0		36.0		32.0	
225			225	22.22	45.0		40.5		36.0	
250			250	20.00	50.0		45.0		40.0	
275			275	18.18	55.0		49.5		44.0	
300			300	16.66	60.0		54.0		48.0	
350			350	14.29	70.0		63.0		56.0	

極重荷重
극중하중
EXTRA HEAVY LOAD

SB

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

呼稱 호칭 Model	外径 외경(mm) Outer Dia.	内径 내경(mm) inner Dia.	自由長 자유장(mm) Free length	定数 정수(kg/mm) spring constant	30万 (0.3million) 변형량 변형량(mm) Deflection	50万 (0.5 million) 하중 하중(kg) Load	100万 (1 million) 변형량 변형량(mm) Deflection	하중 하중(kg) Load
SB 60×60			60	120.00	12.0		10.8	9.6
70			70	102.86	14.0		12.6	11.2
80			80	90.00	16.0		14.4	12.8
90			90	80.00	18.0		16.2	14.4
100			100	72.00	20.0		18.0	16.0
125			125	57.60	25.0		22.5	20.0
150			150	48.00	30.0		27.0	24.0
175			175	41.14	35.0		31.5	28.0
200			200	36.00	40.0		36.0	32.0
225			225	32.00	45.0		40.5	36.0
250			250	28.80	50.0		45.0	40.0
275			275	26.18	55.0		49.5	44.0
300			300	24.00	60.0		54.0	48.0
350			350	20.57	70.0		63.0	56.0
SB 70×70			70	124.3	14.0		12.6	11.2
80			80	108.8	16.0		14.4	12.8
90			90	96.7	18.0		16.2	14.4
100			100	87.0	20.0		18.0	16.0
125			125	69.6	25.0		22.5	20.0
150			150	58.0	30.0		27.0	24.0
175			175	49.7	35.0		31.5	28.0
200			200	43.5	40.0		36.0	32.0
225			225	38.7	45.0		40.5	36.0
250			250	34.8	50.0		45.0	40.0
275			275	31.6	55.0		49.5	44.0
300			300	29.0	60.0		54.0	48.0
350			350	24.9	70.0		63.0	56.0

超重荷重
초중하중
HYPER HEAVY LOAD

SG

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5 million)		100万 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SG 10×15	10	5	15	16.67	3.0	50	2.7	45	2.4	40
20			20	12.50	4.0		3.6		3.2	
25			25	10.00	5.0		4.5		4.0	
30			30	8.33	6.0		5.4		4.8	
35			35	7.14	7.0		6.3		5.6	
40			40	6.25	8.0		7.2		6.4	
45			45	5.56	9.0		8.1		7.2	
50			50	5.00	10.0		9.0		8.0	
55			55	4.55	11.0		9.9		8.8	
60			60	4.17	12.0		10.8		9.6	
65			65	3.85	13.0		11.7		10.4	
70			70	3.57	14.0		12.6		11.2	
75			75	3.33	15.0		13.5		12.0	
80			80	3.13	16.0		14.4		12.8	
90			90	2.78	18.0		16.2		14.4	
100			100	2.50	20.0		18.0		16.0	
SG 12×15	12	6	15	25.00	3.0	75	2.7	67	2.4	60
20			20	18.75	4.0		3.6		3.2	
25			25	15.00	5.0		4.5		4.0	
30			30	12.50	6.0		5.4		4.8	
35			35	10.71	7.0		6.3		5.6	
40			40	9.38	8.0		7.2		6.4	
45			45	8.33	9.0		8.1		7.2	
50			50	7.50	10.0		9.0		8.0	
55			55	6.82	11.0		9.9		8.8	
60			60	6.25	12.0		10.8		9.6	
65			65	5.77	13.0		11.7		10.4	
70			70	5.36	14.0		12.6		11.2	
75			75	5.00	15.0		13.5		12.0	
80			80	4.69	16.0		14.4		12.8	
90			90	4.17	18.0		16.2		14.4	
100			100	3.75	20.0		18.0		16.0	
SG 14×20	14	7	20	24.25	4.0	97	3.6	97	3.2	77
25			25	19.40	5.0		4.5		4.0	
30			30	16.17	6.0		5.4		4.8	
35			35	13.86	7.0		6.3		5.6	
40			40	12.13	8.0		7.2		6.4	
45			45	10.78	9.0		8.1		7.2	
50			50	9.70	10.0		9.0		8.0	
55			55	8.82	11.0		9.9		8.8	
60			60	8.08	12.0		10.8		9.6	
65			65	7.46	13.0		11.7		10.4	
70			70	6.93	14.0		12.6		11.2	
75			75	6.47	15.0		13.5		12.0	
80			80	6.06	16.0		14.4		12.8	
90			90	5.39	18.0		16.2		14.4	
100			100	4.85	20.0		18.0		16.0	

超重荷重
초중하중
HYPER HEAVY LOAD

SG

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 장수(kg/mm) spring constant	30萬 (0.3million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load	50萬 (0.5 million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load	100萬 (1 million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SG 16×20			20	32.25	4.0		3.6		3.2	
25			25	25.80	5.0		4.5		4.0	
30			30	21.50	6.0		5.4		4.8	
35			35	18.43	7.0		6.3		5.6	
40			40	16.13	8.0		7.2		6.4	
45			45	14.33	9.0		8.1		7.2	
50			50	12.90	10.0		9.0		8.0	
55	16	8	55	11.73	11.0	129	9.9	116	8.8	103
60			60	10.75	12.0		10.8		9.6	
65			65	9.92	13.0		11.7		10.4	
70			70	9.21	14.0		12.6		11.2	
75			75	8.60	15.0		13.5		12.0	
80			80	8.06	16.0		14.4		12.8	
90			90	7.17	18.0		16.2		14.4	
100			100	6.45	20.0		18.0		16.0	
SG 18×20			20	40.25	4.0		3.6		3.2	
25			25	32.20	5.0		4.5		4.0	
30			30	26.83	6.0		5.4		4.8	
35			35	23.00	7.0		6.3		5.6	
40			40	20.13	8.0		7.2		6.4	
45			45	17.89	9.0		8.1		7.2	
50			50	16.10	10.0		9.0		8.0	
55	18	9	55	14.64	11.0	161	9.9	145	8.8	129
60			60	13.42	12.0		10.8		9.6	
65			65	12.38	13.0		11.7		10.4	
70			70	11.50	14.0		12.6		11.2	
75			75	10.73	15.0		13.5		12.0	
80			80	10.06	16.0		14.4		12.8	
90			90	8.94	18.0		16.2		14.4	
100			100	8.05	20.0		18.0		16.0	
125			125	6.44	25.0		22.5		20.0	
SG 20×20			20	51.50	4.0		3.6		3.2	
25			25	41.20	5.0		4.5		4.0	
30			30	34.33	6.0		5.4		4.8	
35			35	29.43	7.0		6.3		5.6	
40			40	25.75	8.0		7.2		6.4	
45			45	22.89	9.0		8.1		7.2	
50			50	20.60	10.0		9.0		8.0	
55	20	10	55	18.73	11.0	206	9.9	185	8.8	165
60			60	17.17	12.0		10.8		9.6	
65			65	15.85	13.0		11.7		10.4	
70			70	14.71	14.0		12.6		11.2	
75			75	13.73	15.0		13.5		12.0	
80			80	12.88	16.0		14.4		12.8	
90			90	11.44	18.0		16.2		14.4	
100			100	10.30	20.0		18.0		16.0	
125			125	8.24	25.0		22.5		20.0	

超重荷重
초중하중
HYPER HEAVY LOAD

SG

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	내徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million) 변형량 변형량(mm) Deflection	荷重 하중(kg) Load	50万 (0.5 million) 변형량 변형량(mm) Deflection	荷重 하중(kg) Load	100万 (1 million) 변형량 변형량(mm) Deflection	荷重 하중(kg) Load
SG 22×20	22	11	20	62.75	4.0	251	3.6	226	3.2	201
25			25	50.20	5.0		4.5		4.0	
30			30	41.83	6.0		5.4		4.8	
35			35	35.86	7.0		6.3		5.6	
40			40	31.38	8.0		7.2		6.4	
45			45	27.89	9.0		8.1		7.2	
50			50	25.10	10.0		9.0		8.0	
55			55	22.82	11.0		9.9		8.8	
60			60	20.92	12.0		10.8		9.6	
65			65	19.31	13.0		11.7		10.4	
70			70	17.93	14.0		12.6		11.2	
75			75	16.73	15.0		13.5		12.0	
80			80	15.69	16.0		14.4		12.8	
90			90	13.94	18.0		16.2		14.4	
100			100	12.55	20.0		18.0		16.0	
125			125	10.04	25.0		22.5		20.0	
SG 25×20	25	12.5	20	78.75	4.0	315	3.6	284	3.2	252
25			25	63.00	5.0		4.5		4.0	
30			30	52.50	6.0		5.4		4.8	
35			35	45.00	7.0		6.3		5.6	
40			40	39.38	8.0		7.2		6.4	
45			45	35.00	9.0		8.1		7.2	
50			50	31.50	10.0		9.0		8.0	
55			55	28.64	11.0		9.9		8.8	
60			60	26.25	12.0		10.8		9.6	
65			65	24.23	13.0		11.7		10.4	
70			70	22.50	14.0		12.6		11.2	
75			75	21.00	15.0		13.5		12.0	
80			80	19.69	16.0		14.4		12.8	
90			90	17.50	18.0		16.2		14.4	
100			100	15.75	20.0		18.0		16.0	
125			125	12.60	25.0		22.5		20.0	
150			150	10.50	30.0		27.0		24.0	
SG 27×20	27	13.5	20	93.25	4.0	373	3.6	336	3.2	299
25			25	74.60	5.0		4.5		4.0	
30			30	62.17	6.0		5.4		4.8	
35			35	53.29	7.0		6.3		5.6	
40			40	46.63	8.0		7.2		6.4	
45			45	41.44	9.0		8.1		7.2	
50			50	37.30	10.0		9.0		8.0	
55			55	33.91	11.0		9.9		8.8	
60			60	31.08	12.0		10.8		9.6	
65			65	28.69	13.0		11.7		10.4	
70			70	26.64	14.0		12.6		11.2	
75			75	24.87	15.0		13.5		12.0	
80			80	23.31	16.0		14.4		12.8	
90			90	20.72	18.0		16.2		14.4	
100			100	18.65	20.0		18.0		16.0	
125			125	14.92	25.0		22.5		20.0	
150			150	12.43	30.0		27.0		24.0	

超重荷重
초중하중
HYPER HEAVY LOAD

SG

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50mm/m 以下 $\pm 0.5\text{mm/m}$
55mm/m 以上 $\pm 1\%$

呼稱 호 칭 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 장수(kg/mm) spring constant	30萬 (0.3million)		50萬 (0.5 million)		100萬 (1 million)	
					變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SG 30×20	30	15	20	116.00	4.0		3.6		3.2	
25			25	92.80	5.0		4.5		4.0	
30			30	77.33	6.0		5.4		4.8	
35			35	66.29	7.0		6.3		5.6	
40			40	58.00	8.0		7.2		6.4	
45			45	51.56	9.0		8.1		7.2	
50			50	46.40	10.0		9.0		8.0	
55			55	42.18	11.0		9.9		8.8	
60			60	38.67	12.0		10.8		9.6	
65			65	35.69	13.0		11.7		10.4	
70			70	33.14	14.0		12.6		11.2	
75			75	30.93	15.0		13.5		12.0	
80			80	29.00	16.0		14.4		12.8	
90			90	25.78	18.0		16.2		14.4	
100			100	23.20	20.0		18.0		16.0	
125			125	18.56	25.0		22.5		20.0	
150			150	15.47	30.0		27.0		24.0	
175			175	13.26	35.0		31.5		28.0	
200			200	11.60	40.0		36.0		32.0	
SG 35×30	35	17.5	30	105.17	6.0		5.4		4.8	
35			35	90.14	7.0		6.3		5.6	
40			40	78.88	8.0		7.2		6.4	
45			45	70.11	9.0		8.1		7.2	
50			50	63.10	10.0		9.0		8.0	
55			55	57.36	11.0		9.9		8.8	
60			60	52.58	12.0		10.8		9.6	
65			65	48.54	13.0		11.7		10.4	
70			70	45.07	14.0		12.6		11.2	
75			75	42.07	15.0		13.5		12.0	
80			80	39.44	16.0		14.4		12.8	
90			90	35.06	18.0		16.2		14.4	
100			100	31.55	20.0		18.0		16.0	
125			125	25.24	25.0		22.5		20.0	
150			150	21.03	30.0		27.0		24.0	
175			175	18.03	35.0		31.5		28.0	
200			200	15.78	40.0		36.0		32.0	
SG 40×35	40	20	35	117.71	7.0		6.3		5.6	
40			40	103.00	8.0		7.2		6.4	
45			45	91.56	9.0		8.1		7.2	
50			50	82.40	10.0		9.0		8.0	
55			55	74.91	11.0		9.9		8.8	
60			60	68.67	12.0		10.8		9.6	
65			65	63.38	13.0		11.7		10.4	
70			70	58.86	14.0		12.6		11.2	
75			75	54.93	15.0		13.5		12.0	
80			80	51.50	16.0		14.4		12.8	
90			90	45.78	18.0		16.2		14.4	
100			100	41.20	20.0		18.0		16.0	
125			125	32.96	25.0		22.5		20.0	
150			150	27.47	30.0		27.0		24.0	
175			175	23.54	35.0		31.5		28.0	
200			200	20.60	40.0		36.0		32.0	
225			225	18.31	45.0		40.5		36.0	
250			250	16.48	50.0		45.0		40.0	

超重荷重
초중하중
HYPER HEAVY LOAD

SG

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

規格 호 칭 Model	外径 외경(mm) Outer Dia.	内径 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	定數 정수(kg/mm) spring constant	30万 (0.3million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load	50万 (0.5 million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load	100万 (1. million) 變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SG 50×50	50	25	50	128.80	10.0	1288	9.0	1159	8.0	1030
55			55	117.09	11.0		9.9		8.8	
60			60	107.33	12.0		10.8		9.6	
65			65	99.08	13.0		11.7		10.4	
70			70	92.00	14.0		12.6		11.2	
75			75	85.87	15.0		13.5		12.0	
80			80	80.50	16.0		14.4		12.8	
90			90	71.56	18.0		16.2		14.4	
100			100	64.40	20.0		18.0		16.0	
125			125	51.52	25.0		22.5		20.0	
150			150	42.93	30.0		27.0		24.0	
175			175	36.80	35.0		31.5		28.0	
200			200	32.20	40.0		36.0		32.0	
225			225	28.62	45.0		40.5		36.0	
250			250	25.76	50.0		45.0		40.0	
275			275	23.42	55.0		49.5		44.0	
300			300	21.47	60.0		54.0		48.0	

■특징

- 최대 자유장의 60%사용 범위가 얻을 수 있는 압축 내구성능은 300,000회입니다.
- 초압을 자유장의 5%이상, 사용변형량을 자유장의 50% 사용범위에서 압축 내구성능은 100만회입니다.
- 사용온도 200℃에서 자유장의 감소율은 2%임(50%사용시)

■Characteristics

- The Maximum Free Length 60% range can get 300,000 times of Description Durability.
- Free Length 50% range can get 1 million times of Description Durability.
- 2% reduce rate of Free Length at the temperature of 200℃(50% range)

■特徴

- 最大自由長の60%まで使える圧縮耐久性能は30万回です。
- 初期圧を自由長の50%以上、使用変形量を自由長の使用範囲にての圧縮耐久性は100万回です。
- 使用温度200℃で自由長の減少率は2%です。

■特徴

- 最大自由長の60%使用范围所获得的压缩耐久性能为300,000次。
- 初压在自由长的5%以上、使用变形量在自由长的50%使用范围内，压缩耐久性能为100万次。
- 使用温度在 200℃范围内自由长的减少率为 2%(使用50%时)

■허용차 (Difference Allowance)

구분 (외경기준)	외경 Outer Dia.	내경 Inner Dia.	자유장 Free Length		하중 Load kgf	관방향 Coil Direction.	직각도 Squareness	밀착장 Solid length
			50mm 이하	55mm 이상				
Ø60 이하 (below Ø60)	+0.0 / -0.7mm	+0.7 / +0.1mm	±0.5mm	±1%	±10%	오른쪽 (right)	2°이하	자유장 40%
Ø70 이상 (over Ø70)	+0.0 / -1.0mm	+1.0 / +0.1mm						

■밀착시의 외경팽창 (Outer Diameter Expansion Contact)

SR 14.5	SR 17	SR 21	SR 26	SR 32	SR 39	SR 46
+ 0.15	+ 0.1	+ 0.1	+ 0.15	+ 0.2	+ 0.26	+ 0.4

極超變形
극초변형
Super High Deflection

SU

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

品名 품명 Model	外径 외경(mm) Outer Dia.	内径 내경(mm) Inner Dia.	자유장 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SU 10.5×15	10.5	6	15	4.5	0.78	9	7	8.3	6.4	7.5	5.8
20			20	6.0	0.58	12		11.0		10.0	
25			25	7.5	0.47	15		13.8		12.5	
30			30	9.0	0.39	18		16.5		15.0	
35			35	10.5	0.33	21		19.3		17.5	
40			40	12.0	0.29	24		22.0		20.0	
45			45	13.5	0.26	27		24.8		22.5	
50			50	15.0	0.23	30		27.5		25.0	
55			55	16.5	0.21	33		30.3		27.5	
60			60	18.0	0.19	36		33.0		30.0	
65			65	19.5	0.18	39		35.8		32.5	
70			70	21.0	0.17	42		38.5		35.0	
75			75	22.5	0.16	45		41.3		37.5	
80			80	24.0	0.15	48		44.0		40.0	
SU 12.5×15	12.5	7	15	4.5	0.89	9	8	8.3	7.4	7.5	6.7
20			20	6.0	0.67	12		11.0		10.0	
25			25	7.5	0.53	15		13.8		12.5	
30			30	9.0	0.44	18		16.5		15.0	
35			35	10.5	0.38	21		19.3		17.5	
40			40	12.0	0.33	24		22.0		20.0	
45			45	13.5	0.30	27		24.8		22.5	
50			50	15.0	0.27	30		27.5		25.0	
55			55	16.5	0.24	33		30.3		27.5	
60			60	18.0	0.22	36		33.0		30.0	
65			65	19.5	0.20	39		35.8		32.5	
70			70	21.0	0.19	42		38.5		35.0	
75			75	22.5	0.18	45		41.3		37.5	
80			80	24.0	0.17	48		44.0		40.0	
90			90	27.0	0.15	54		49.5		45.0	
100			100	30.0	0.13	60		55.0		50.0	
SU 14.5×15	14.5	8.5	15	4.5	1.11	9	10	8.3	9.2	7.5	8.3
20			20	6.0	0.83	12		11.0		10.0	
25			25	7.5	0.67	15		13.8		12.5	
30			30	9.0	0.56	18		16.5		15.0	
35			35	10.5	0.48	21		19.3		17.5	
40			40	12.0	0.42	24		22.0		20.0	
45			45	13.5	0.37	27		24.8		22.5	
50			50	15.0	0.33	30		27.5		25.0	
55			55	16.5	0.30	33		30.3		27.5	
60			60	18.0	0.28	36		33.0		30.0	
65			65	19.5	0.26	39		35.8		32.5	
70			70	21.0	0.24	42		38.5		35.0	
75			75	22.5	0.22	45		41.3		37.5	
80			80	24.0	0.21	48		44.0		40.0	
90			90	27.0	0.19	54		49.5		45.0	
100			100	30.0	0.17	60		55.0		50.0	
110			110	33.0	0.15	66		60.5		55.0	
120			120	36.0	0.14	72		66.0		60.0	
125			125	37.5	0.13	75		68.8		62.5	
150			150	45.0	0.11	90		82.5		75.0	

極超變形
극초변형

Super High Deflection

SU

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以上 $\pm 1\%$

品名 Model	外徑 Outer Dia.	內徑 Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SU 17×20	17	10.5	20	6.0	1.25	12	15	11.0	13.7	10.0	12.5
25			25	7.5	1.00	15		13.8		12.5	
30			30	9.0	0.83	18		16.5		15.0	
35			35	10.5	0.71	21		19.3		17.5	
40			40	12.0	0.63	24		22.0		20.0	
45			45	13.5	0.56	27		24.8		22.5	
50			50	15.0	0.50	30		27.5		25.0	
55			55	16.5	0.45	33		30.3		27.5	
60			60	18.0	0.42	36		33.0		30.0	
65			65	19.5	0.38	39		35.8		32.5	
70			70	21.0	0.36	42		38.5		35.0	
75			75	22.5	0.33	45		41.3		37.5	
80			80	24.0	0.31	48		44.0		40.0	
90			90	27.0	0.28	54		49.5		45.0	
100			100	30.0	0.25	60		55.0		50.0	
110			110	33.0	0.23	66		60.5		55.0	
120			120	36.0	0.21	72		66.0		60.0	
125			125	37.5	0.20	75		68.8		62.5	
150			150	45.0	0.17	90		82.5		75.0	
175			175	52.5	0.14	105		96.3		87.5	
SU 21×25	21	13.5	25	7.5	1.53	15	23	13.8	21.0	12.5	19.0
30			30	9.0	1.28	18		16.5		15.0	
35			35	10.5	1.10	21		19.3		17.5	
40			40	12.0	0.96	24		22.0		20.0	
45			45	13.5	0.85	27		24.8		22.5	
50			50	15.0	0.78	30		27.5		25.0	
55			55	16.5	0.70	33		30.3		27.5	
60			60	18.0	0.64	36		33.0		30.0	
65			65	19.5	0.59	39		35.8		32.5	
70			70	21.0	0.55	42		38.5		35.0	
75			75	22.5	0.51	45		41.3		37.5	
80			80	24.0	0.48	48		44.0		40.0	
90			90	27.0	0.43	54		49.5		45.0	
100			100	30.0	0.38	60		55.0		50.0	
110			110	33.0	0.34	66		60.5		55.0	
120			120	36.0	0.32	72		66.0		60.0	
125			125	37.5	0.31	75		68.8		62.5	
130			130	39.0	0.29	78		71.5		65.0	
140			140	42.0	0.27	84		77.0		70.0	
150			150	45.0	0.26	90		82.5		75.0	
175			175	52.5	0.22	105		96.3		87.5	
200			200	60.0	0.19	120		110.0		100.0	

極超變形
극초변형
Super High Deflection

SU

하중 荷重 $\pm 10\%$
 직각도 直角度 2° 以下
 자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
 55m/m 以上 $\pm 1\%$

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SU 26×30	26	16.5	30	9.0	1.67	18	30	16.5	27.5	15.0	25.0
35			35	10.5	1.43	21		19.3		17.5	
40			40	12.0	1.25	24		22.0		20.0	
45			45	13.5	1.11	27		24.8		22.5	
50			50	15.0	1.00	30		27.5		25.0	
55			55	16.5	0.91	33		30.3		27.5	
60			60	18.0	0.83	36		33.0		30.0	
65			65	19.5	0.77	39		35.8		32.5	
70			70	21.0	0.71	42		38.5		35.0	
75			75	22.5	0.67	45		41.3		37.5	
80			80	24.0	0.63	48		44.0		40.0	
90			90	27.0	0.56	54		49.5		45.0	
100			100	30.0	0.50	60		55.0		50.0	
110			110	33.0	0.45	66		60.5		55.0	
120			120	36.0	0.42	72		66.0		60.0	
125			125	37.5	0.40	75		68.8		62.5	
130			130	39.0	0.38	78		71.5		65.0	
140			140	42.0	0.36	84		77.0		70.0	
150			150	45.0	0.33	90		82.5		75.0	
175			175	52.5	0.29	105		96.3		87.5	
200			200	60.0	0.25	120		110.0		100.0	
225			225	67.5	0.22	135		123.8		112.5	
250			250	75.0	0.20	150		137.5		125.0	
SU 31×35	31	21	35	10.5	1.81	21	38	19.3	35.0	17.5	32.0
40			40	12.0	1.58	24		22.0		20.0	
45			45	13.5	1.41	27		24.8		22.5	
50			50	15.0	1.27	30		27.5		25.0	
55			55	16.5	1.15	33		30.3		27.5	
60			60	18.0	1.06	36		33.0		30.0	
65			65	19.5	0.97	39		35.8		32.5	
70			70	21.0	0.90	42		38.5		35.0	
75			75	22.5	0.84	45		41.3		37.5	
80			80	24.0	0.79	48		44.0		40.0	
90			90	27.0	0.70	54		49.5		45.0	
100			100	30.0	0.63	60		55.0		50.0	
110			110	33.0	0.58	66		60.5		55.0	
120			120	36.0	0.53	72		66.0		60.0	
125			125	37.5	0.51	75		68.8		62.5	
130			130	39.0	0.49	78		71.5		65.0	
140			140	42.0	0.45	84		77.0		70.0	
150			150	45.0	0.42	90		82.5		75.0	
160			160	48.0	0.40	96		88.0		80.0	
170			170	51.0	0.37	102		93.5		85.0	
175			175	52.5	0.36	105		96.3		87.5	
180			180	54.0	0.35	108		99.0		90.0	
190			190	57.0	0.33	114		104.5		95.0	
200			200	60.0	0.32	120		110.0		100.0	
250			250	75.0	0.25	150		137.5		125.0	
300			300	90.0	0.21	180		165.0		150.0	

極超變形
극초변형

Super High Deflection

SU

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 ± 0.5 m/m
55m/m 以上 $\pm 1\%$

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SU 37×40	37	26	40	12.0	1.96	24	47	22.0	43.1	20.0	39.2
45			45	13.5	1.74	27		24.8		22.5	
50			50	15.0	1.57	30		27.5		25.0	
55			55	16.5	1.42	33		30.3		27.5	
60			60	18.0	1.31	36		33.0		30.0	
65			65	19.5	1.21	39		35.8		32.5	
70			70	21.0	1.12	42		38.5		35.0	
75			75	22.5	1.04	45		41.3		37.5	
80			80	24.0	0.98	48		44.0		40.0	
90			90	27.0	0.87	54		49.5		45.0	
100			100	30.0	0.78	60		55.0		50.0	
110			110	33.0	0.71	66		60.5		55.0	
120			120	36.0	0.65	72		66.0		60.0	
130			130	39.0	0.60	78		71.5		65.0	
140			140	42.0	0.56	84		77.0		70.0	
150			150	45.0	0.52	90		82.5		75.0	
160			160	48.0	0.49	96		88.0		80.0	
170			170	51.0	0.46	102		93.5		85.0	
180			180	54.0	0.44	108		99.0		90.0	
190			190	57.0	0.41	114		104.5		95.0	
200			200	60.0	0.39	120		110.0		100.0	
225	43	31	225	67.5	0.35	135	60	123.8	55.0	112.5	50.0
250			250	75.0	0.31	150		137.5		125.0	
275			275	82.5	0.28	165		151.3		137.5	
300			300	90.0	0.26	180		165.0		150.0	
SU 43×50			50	15.0	2.00	30		27.5		25.0	
60			60	18.0	1.67	36		33.0		30.0	
70			70	21.0	1.43	42		38.5		35.0	
80			80	24.0	1.25	48		44.0		40.0	
90			90	27.0	1.11	54		49.5		45.0	
100			100	30.0	1.00	60		55.0		50.0	
110			110	33.0	0.91	66		60.5		55.0	
120			120	36.0	0.83	72		66.0		60.0	
130			130	39.0	0.77	78		71.5		65.0	
140			140	42.0	0.71	84		77.0		70.0	
150			150	45.0	0.67	90		82.5		75.0	
160			160	48.0	0.63	96		88.0		80.0	
170			170	51.0	0.59	102		93.5		85.0	
180			180	54.0	0.56	108		99.0		90.0	
190			190	57.0	0.53	114		104.5		95.0	
200			200	60.0	0.50	120		110.0		100.0	
225			225	67.5	0.44	135		123.8		112.5	
250			250	75.0	0.40	150		137.5		125.0	
275			275	82.5	0.36	165		151.3		137.5	
300			300	90.0	0.33	180		165.0		150.0	

高變形
고변형
High Deflection

SR

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以下 $\pm 1\%$

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kg/l) Load	變形量 변형량(mm) Deflection	荷重 하중(kg/l) Load	變形量 변형량(mm) Deflection	荷重 하중(kg/l) Load
SR 10.5×15	10.5	6	15	6	1.07	7.5	8	6.75	7.2	6	6.4
20			20	8	0.80	10		9		8	
25			25	10	0.64	12.5		11.25		10	
30			30	12	0.53	15		13.5		12	
35			35	14	0.46	17.5		15.75		14	
40			40	16	0.40	20		18		16	
45			45	18	0.36	22.5		20.25		18	
50			50	20	0.32	25		22.5		20	
55			55	22	0.29	27.5		24.75		22	
60			60	24	0.27	30		27		24	
65			65	26	0.25	32.5		29.25		26	
70			70	28	0.23	35		31.5		28	
75			75	30	0.21	37.5		33.75		30	
80			80	32	0.20	40		36		32	
SR 12.5×15	12.5	7	15	6	1.20	7.5	9	6.75	8.1	6	7.2
20			20	8	0.90	10		9		8	
25			25	10	0.72	12.5		11.25		10	
30			30	12	0.60	15		13.5		12	
35			35	14	0.51	17.5		15.75		14	
40			40	16	0.45	20		18		16	
45			45	18	0.40	22.5		20.25		18	
50			50	20	0.36	25		22.5		20	
55			55	22	0.33	27.5		24.75		22	
60			60	24	0.30	30		27		24	
65			65	26	0.28	32.5		29.25		26	
70			70	28	0.26	35		31.5		28	
75			75	30	0.24	37.5		33.75		30	
80			80	32	0.23	40		36		32	
90			90	36	0.20	45		40.5		36	
100			100	40	0.18	50		45		40	
SR 14.5×20	14.5	9	20	8	1.11	10	11	9	10	8	9
25			25	10	0.89	12.5		11.3		10	
30			30	12	0.74	15		13.5		12	
35			35	14	0.64	17.5		15.8		14	
40			40	16	0.56	20		18		16	
45			45	18	0.49	22.5		20.3		18	
50			50	20	0.44	25		22.5		20	
55			55	22	0.40	27.5		24.8		22	
60			60	24	0.37	30		27		24	
65			65	26	0.34	32.5		29.3		26	
70			70	28	0.32	35		31.5		28	
75			75	30	0.30	37.5		33.8		30	
80			80	32	0.28	40		36		32	
90			90	36	0.25	45		40.5		36	
100			100	40	0.22	50		45		40	
125			125	50	0.18	62.5		56.3		50	

高變形
고변형
High Deflection

SR

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以下 $\pm 1\%$

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SR 17×25	17	11	25	10	1.51	12.5	19	11.3	17	10	15
30			30	12	1.26	15		13.5		12	
35			35	14	1.08	17.5		15.8		14	
40			40	16	0.94	20		18		16	
45			45	18	0.84	22.5		20.3		18	
50			50	20	0.76	25		22.5		20	
55			55	22	0.69	27.5		24.8		22	
60			60	24	0.63	30		27		24	
65			65	26	0.58	32.5		29.3		26	
70			70	28	0.54	35		31.5		28	
75			75	30	0.50	37.5		33.8		30	
80			80	32	0.47	40		36		32	
90			90	36	0.42	45		40.5		36	
100			100	40	0.38	50		45		40	
125			125	50	0.30	62.5		56.3		50	
150			150	60	0.25	75		67.5		60	
SR 21×30	21	13	30	12	2.00	15.0	30	13.5	27	12.0	24
35			35	14	1.71	17.5		15.8		14.0	
40			40	16	1.50	20.0		18.0		16.0	
45			45	18	1.33	22.5		20.3		18.0	
50			50	20	1.20	25.0		22.5		20.0	
55			55	22	1.09	27.5		24.8		22.0	
60			60	24	1.00	30.0		27.0		24.0	
65			65	26	0.92	32.5		29.3		26.0	
70			70	28	0.86	35.0		31.5		28.0	
75			75	30	0.80	37.5		33.8		30.0	
80			80	32	0.75	40.0		36.0		32.0	
90			90	36	0.67	45.0		40.5		36.0	
100			100	40	0.60	50.0		45.0		40.0	
125			125	50	0.48	62.5		56.3		50.0	
150			150	60	0.40	75.0		67.5		60.0	
175			175	70	0.34	87.5		78.8		70	
200			200	80	0.30	100.0		90		80	
SR 26×30	26	16.5	30	12	2.74	15	41	13.5	37	12	33
35			35	14	2.35	17.5		15.8		14	
40			40	16	2.06	20		18		16	
45			45	18	1.83	22.5		20.3		18	
50			50	20	1.64	25		22.5		20	
55			55	22	1.49	27.5		24.8		22	
60			60	24	1.37	30		27		24	
65			65	26	1.26	32.5		29.3		26	
70			70	28	1.17	35		31.5		28	
75			75	30	1.10	37.5		33.8		30	
80			80	32	1.03	40		36		32	
90			90	36	0.91	45		40.5		36	
100			100	40	0.82	50		45		40	
110			110	44	0.75	55		49.5		44	
125			125	50	0.66	62.5		56.3		50	
150			150	60	0.55	75		67.5		60	
175			175	70	0.47	87.5		78.8		70	
200			200	80	0.41	100		90		80	

高變形
고변형
High Deflection

SR

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50mm 以下 $\pm 0.5\text{mm/m}$
55mm 以下 $\pm 1\%$

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SR 31×40	31	21	40	16	2.56	20	51	18	46	16	41
45			45	18	2.27	22.5		20.3		18	
50			50	20	2.04	25		22.5		20	
55			55	22	1.85	27.5		24.8		22	
60			60	24	1.70	30		27		24	
65			65	26	1.57	32.5		29.3		30	
70			70	28	1.46	35		31.5		28	
75			75	30	1.36	37.5		33.8		30	
80			80	32	1.28	40		36		32	
90			90	36	1.14	45		40.5		36	
100			100	40	1.02	50		45		40	
110			110	44	0.93	55		49.5		44	
125			125	50	0.82	62.5		56.3		50	
150			150	60	0.68	75		67.5		60	
175			175	70	0.58	87.5		78.8		70	
200			200	80	0.51	100		90		80	
250			250	100	0.41	125		112.5		100	
300			300	120	0.34	150		135		120	
SR 39×40	39	26	40	16	2.78	20	56	18	50	16	44
45			45	18	2.47	22.5		20.3		18	
50			50	20	2.22	25		22.5		20	
55			55	22	2.02	27.5		24.8		22	
60			60	24	1.85	30		27		24	
65			65	26	1.71	32.5		29.3		26	
70			70	28	1.59	35		31.5		28	
75			75	30	1.48	37.5		33.8		30	
80			80	32	1.39	40		36		32	
90			90	36	1.23	45		40.5		36	
100			100	40	1.11	50		45		40	
110			110	44	1.01	55		49.5		44	
125			125	50	0.89	62.5		56.3		50	
150			150	60	0.74	75		67.5		60	
175			175	70	0.63	87.5		78.8		70	
200			200	80	0.56	100		90		80	
250			250	100	0.44	125		112.5		100	
300			300	120	0.37	150		135		120	
SR 46×50	46	32	50	20	2.49	25	62	22.5	56	20	50
55			55	22	2.26	27.5		24.8		22	
60			60	24	2.07	30		27		24	
65			65	26	1.92	32.5		29.3		26	
70			70	28	1.78	35		31.5		28	
75			75	30	1.66	37.5		33.8		30	
80			80	32	1.56	40		36		32	
90			90	36	1.38	45		40.5		36	
100			100	40	1.24	50		45		40	
110			110	44	1.13	55		49.5		44	
125			125	50	1.00	62.5		56.3		50	
150			150	60	0.83	75		67.5		60	
175			175	70	0.71	87.5		78.8		70	
200			200	80	0.62	100		90		80	
250			250	100	0.50	125		112.5		100	
300			300	120	0.41	150		135		120	

中變形
중변형

Middle Deflection

SY

하중 荷重 ±10%

직각도 直角度 2°以下

자유장 自由長 50m/m 以下 ±0.5m/m

55m/m 以下 ± 1%

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SY 10.5×15	10.5	6	15	6	1.33	7.5	10	6.8	9	6.0	8
20			20	8	1.00	10.0		9.0		8.0	
25			25	10	0.80	12.5		11.3		10.0	
30			30	12	0.67	15.0		13.5		12.0	
35			35	14	0.57	17.5		15.8		14.0	
40			40	16	0.50	20.0		18.0		16.0	
45			45	18	0.44	22.5		20.3		18.0	
50			50	20	0.40	25.0		22.5		20.0	
55			55	22	0.36	27.5		24.8		22.0	
60			60	24	0.33	30.0		27.0		24.0	
65			65	26	0.31	32.5		29.3		26.0	
70			70	28	0.29	35.0		31.5		28.0	
75			75	30	0.27	37.5		33.8		30.0	
80			80	32	0.25	40.0		36.0		32.0	
SY 12.5×15	12.5	7	15	6	2.00	7.5	15	6.8	13.5	6.0	12.0
20			20	8	1.50	10.0		9.0		8.0	
25			25	10	1.20	12.5		11.3		10.0	
30			30	12	1.00	15.0		13.5		12.0	
35			35	14	0.86	17.5		15.8		14.0	
40			40	16	0.75	20.0		18.0		16.0	
45			45	18	0.67	22.5		20.3		18.0	
50			50	20	0.60	25.0		22.5		20.0	
55			55	22	0.55	27.5		24.8		22.0	
60			60	24	0.50	30.0		27.0		24.0	
65			65	26	0.46	32.5		29.3		26.0	
70			70	28	0.43	35.0		31.5		28.0	
75			75	30	0.40	37.5		33.8		30.0	
80			80	32	0.38	40.0		36.0		32.0	
90			90	36	0.33	45.0		40.5		36.0	
100			100	40	0.30	50.0		45.0		40.0	
SY 14.5×20	14.5	9	20	8	2.10	10.0	21	9.0	19	8.0	17
25			25	10	1.68	12.5		11.3		10.0	
30			30	12	1.40	15.0		13.5		12.0	
35			35	14	1.20	17.5		15.8		14.0	
40			40	16	1.05	20.0		18.0		16.0	
45			45	18	0.93	22.5		20.3		18.0	
50			50	20	0.84	25.0		22.5		20.0	
55			55	22	0.76	27.5		24.8		22.0	
60			60	24	0.70	30.0		27.0		24.0	
65			65	26	0.65	32.5		29.3		26.0	
70			70	28	0.60	35.0		31.5		28.0	
75			75	30	0.56	37.5		33.8		30.0	
80			80	32	0.53	40.0		36.0		32.0	
90			90	36	0.47	45.0		40.5		36.0	
100			100	40	0.42	50.0		45.0		40.0	
125			125	50	0.34	62.5		56.3		50.0	

中變形
중변형
Middle Deflection

SY

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以下 $\pm 1\%$

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SY 17×25	17	11	25	10	2.46	12.5	31	11.3	28	10.0	25
30			30	12	2.05	15.0		13.5		12.0	
35			35	14	1.76	17.5		15.8		14.0	
40			40	16	1.54	20.0		18.0		16.0	
45			45	18	1.37	22.5		20.3		18.0	
50			50	20	1.23	25.0		22.5		20.0	
55			55	22	1.12	27.5		24.8		22.0	
60			60	24	1.03	30.0		27.0		24.0	
65			65	26	0.95	32.5		29.3		26.0	
70			70	28	0.88	35.0		31.5		28.0	
75			75	30	0.82	37.5		33.8		30.0	
80			80	32	0.77	40.0		36.0		32.0	
90			90	36	0.68	45.0		40.5		36.0	
100			100	40	0.62	50.0		45.0		40.0	
125			125	50	0.49	62.5		56.3		50.0	
150			150	60	0.41	75.0		67.5		60.0	
SY 21×25	21	13	25	10	3.19	12.5	40	11.3	36	10.0	32
30			30	12	2.67	15.0		13.5		12.0	
35			35	14	2.29	17.5		15.8		14.0	
40			40	16	2.00	20.0		18.0		16.0	
45			45	18	1.78	22.5		20.3		18.0	
50			50	20	1.60	25.0		22.5		20.0	
55			55	22	1.45	27.5		24.8		22.0	
60			60	24	1.33	30.0		27.0		24.0	
65			65	26	1.23	32.5		29.3		26.0	
70			70	28	1.14	35.0		31.5		28.0	
75			75	30	1.07	37.5		33.8		30.0	
80			80	32	1.00	40.0		36.0		32.0	
90			90	36	0.89	45.0		40.5		36.0	
100			100	40	0.80	50.0		45.0		40.0	
125			125	50	0.64	62.5		56.3		50.0	
150			150	60	0.53	75.0		67.5		60.0	
175			175	70	0.46	87.5		78.8		70.0	
SY 26×30	26	16.5	30	12	3.87	15.0	58.0	13.5	52	12.0	46
35			35	14	3.31	17.5		15.8		14.0	
40			40	16	2.90	20.0		18.0		16.0	
45			45	18	2.58	22.5		20.3		18.0	
50			50	20	2.32	25.0		22.5		20.0	
55			55	22	2.11	27.5		24.8		22.0	
60			60	24	1.93	30.0		27.0		24.0	
65			65	26	1.78	32.5		29.3		26.0	
70			70	28	1.66	35.0		31.5		28.0	
75			75	30	1.55	37.5		33.8		30.0	
80			80	32	1.45	40.0		36.0		32.0	
90			90	36	1.29	45.0		40.5		36.0	
100			100	40	1.16	50.0		45.0		40.0	
110			110	44	1.05	55.0		49.5		44.0	
125			125	50	0.93	62.5		56.3		50.0	
150			150	60	0.77	75.0		67.5		60.0	
175			175	70	0.66	87.5		78.8		70.0	
200			200	80	0.58	100.0		90.0		80.0	

中變形
중변형

Middle Deflection

SY

하중 荷重 ±10%

직각도 直角度 2°以下

자유장 自由長 50m/m 以下 ±0.5m/m

55m/m 以下 ± 1%

品名 품명 Model	外形 외경(mm) Outer Dia.	내徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load	變形量 변형량(mm) Deflection	荷重 하중(kg) Load
SY 32×40	32	21	40	16	3.90	20.0	78	18.0	70	16.0	62
45			45	18	3.47	22.5		20.3		18.0	
50			50	20	3.12	25.0		22.5		20.0	
55			55	22	2.84	27.5		24.8		22.0	
60			60	24	2.60	30.0		27.0		24.0	
65			65	26	2.40	32.5		29.3		26.0	
70			70	28	2.23	35.0		31.5		28.0	
75			75	30	2.08	37.5		33.8		30.0	
80			80	32	1.95	40.0		36.0		32.0	
90			90	36	1.73	45.0		40.5		36.0	
100			100	40	1.56	50.0		45.0		40.0	
110			110	44	1.42	55.0		49.5		44.0	
125			125	50	1.25	62.5		56.3		50.0	
150			150	60	1.04	75.0		67.5		60.0	
175			175	70	0.89	87.5		78.8		70.0	
200			200	80	0.78	100.0		90.0		80.0	
250			250	100	0.62	125.0		112.5		100.0	
300			300	120	0.52	150.0		135.0		120.0	
SY 39×40	39	26	40	16	5.10	20.0	102	18.0	92	16.0	82
45			45	18	4.53	22.5		20.3		18.0	
50			50	20	4.08	25.0		22.5		20.0	
55			55	22	3.71	27.5		24.8		22.0	
60			60	24	3.40	30.0		27.0		24.0	
65			65	26	3.14	32.5		29.3		26.0	
70			70	28	2.91	35.0		31.5		28.0	
75			75	30	2.72	37.5		33.8		30.0	
80			80	32	2.55	40.0		36.0		32.0	
90			90	36	2.27	45.0		40.5		36.0	
100			100	40	2.04	50.0		45.0		40.0	
110			110	44	1.85	55.0		49.5		44.0	
125			125	50	1.63	62.5		56.3		50.0	
150			150	60	1.36	75.0		67.5		60.0	
175			175	70	1.17	87.5		78.8		70.0	
200			200	80	1.02	100.0		90.0		80.0	
250			250	100	0.82	125.0		112.5		100.0	
300			300	120	0.68	150.0		135.0		120.0	
SY 46×50	46	32	50	20	5.44	25.0	136	22.5	122	20.0	109
55			55	22	4.95	27.5		24.8		22.0	
60			60	24	4.53	30.0		27.0		24.0	
65			65	26	4.18	32.5		29.3		26.0	
70			70	28	3.89	35.0		31.5		28.0	
75			75	30	3.63	37.5		33.8		30.0	
80			80	32	3.40	40.0		36.0		32.0	
90			90	36	3.02	45.0		40.5		36.0	
100			100	40	2.72	50.0		45.0		40.0	
110			110	44	2.47	55.0		49.5		44.0	
125			125	50	2.18	62.5		56.3		50.0	
150			150	60	1.81	75.0		67.5		60.0	
175			175	70	1.55	87.5		78.8		70.0	
200			200	80	1.36	100.0		90.0		80.0	
250			250	100	1.09	125.0		112.5		100.0	
300			300	120	0.91	150.0		135.0		120.0	

中變形
중변형
Middle Deflection

SY

하중 荷重 $\pm 10\%$
직각도 直角度 2° 以下
자유장 自由長 50m/m 以下 $\pm 0.5\text{m/m}$
55m/m 以下 $\pm 1\%$

品名 품명 Model	外徑 외경(mm) Outer Dia.	內徑 내경(mm) Inner Dia.	自由長 자유장(mm) Free length	密着長 밀착장(mm) Solid Length	定數 정수(kg/mm) spring constant	30万 (0.3million)		50万 (0.5million)		100万 (1million)	
						變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load	變形量 변형량(mm) Deflection	荷重 하중(kgf) Load
SY 52×60	52	37	60	24.0	5.33	30.0	160	27.0	144	24.0	128
70			70	28.0	4.57	35.0		31.5		28.0	
80			80	32.0	4.00	40.0		36.0		32.0	
90			90	36.0	3.56	45.0		40.5		36.0	
100			100	40.0	3.20	50.0		45.0		40.0	
110			110	44.0	2.91	55.0		49.5		44.0	
125			125	50.0	2.56	62.5		56.3		50.0	
150			150	60.0	2.13	75.0		67.5		60.0	
175			175	70.0	1.83	87.5		78.8		70.0	
200			200	80.0	1.60	100.0		90.0		80.0	
225			225	90.0	1.42	112.5		101.3		90.0	
250			250	100.0	1.28	125.0		112.5		100.0	
275			275	110.0	1.16	137.5		123.8		110.0	
300			300	120.0	1.07	150.0		135.0		120.0	
350			350	140.0	0.91	175.0		157.5		140.0	





We appreciate your continuing support and we promise that we will provide you with better products and services while meeting the needs of internationalization.

The Samsol Company has been in the metal molds and automobile machinery fields since 1986. We have a mass production system and continue to develop our own technology in manufacturing springs, thus resulting in an invention patent (No. 1085435) through our continuous development.

Services while meeting the needs of internationalization

QUOTATION



HISTORY

- 03. 1986 SAMIK SPRING was founded.
We produced Coil springs and started the development of metal molds.
- 03. 1997 Changed the company name to SAMSOL PRECISION CO., LTD.
Die & Mold springs are produced by this company.
- 06. 1998 Started supplying to the domestic conglomerates, Currently, supplying Daewoo Electronics, LG Electronics, Hyundai Electronics, and Samsung Electronics.
Started exporting Taiwan, Singapore, Hongkong, Malaysia
- 07. 2002 ISO 9001 acquired immunity Production after-sales service of springs for industrial use and automobile suspensions.
- 12. 2004 Founded sole agent of Thailand
- 08. 2005 Founded SAMSOL JAPAN
- 07. 2006 The introduction of spring endurance tests
- 12. The introduction of large heating furnace
- 06. 2007 The introduction of coiling machine CSC5200
The introduction of coiling machine CSC5120
- 02. 2008 The introduction of grinding machine SEG 915-2S
The introduction of cnc machine SPT-V1000i
- 10. 2010 Company Former
- 12. 2012 Shipment Partner Korea Air

FIN PLATE DIE & PARTS

MOTOR CORE DIE & PARTS

CONNECTOR DIE & PARTS

LEAD FRAME DIE & PARTS



SAMSOL DIE SPRINGS

PRODUCTION PLANT



CNC-50



CNC-80



CNC-120



CNC-160



CNC-210



CNC-325



CNC-620



CNC-650

Inspection is also measurement Equipped

NO	Equipped	Process	Quantity
1	Projector	test	1
2	Load Tester	test	2
3	Endurance tester	test	1
4	Metallurgical microscope	test	1

Coil spring of method

NO	Equipped	Process	Quantity
1	Small roller	rolling	1
2	Middle roller	rolling	2
3	Large roller	rolling	1
4	CNC-50	forming	2
5	CNC-80	forming	1
6	CNC-120	forming	2
7	CNC-160	forming	1
8	CNC-210	forming	1
9	CNC-620	forming	1
10	CNC-650	forming	1
11	Small circuit	Shot peening	2
12	Middle circuit	Shot peening	1
13	Large circuit	Shot peening	1
14	Heating furnace	Heating furnace	4
15	Large size-mill	grinding	3
16	Middle size-mill	grinding	2
17	Small size-mill	grinding	3
18	Coating machine	coating	1
19	Auto drying system	coating	1
20	Static electricity	coating	1



MANUFACTURER SAMSOL PRECISION CO., LTD.

#776-73 Bonghwa-ro, Hwahyeon-Myeon, Pocheon-si, Gyeonggi-do, Korea
Tel : (82-31)572-0314 Fax : (82-31)572-6554

TEST EQUIPAGE



Endurance tester



Metallurgical microscope



Load Tester



Projector

MAIN PRODUCTS



4



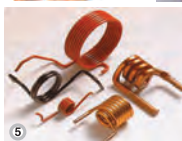
1



2



3



5



6

1. METAL MOLD SPRINGS
2. COMPRESSION COIL SPRINGS
3. EXTENSION COILING SPRINGS
4. BOARD CLIP SPRINGS
5. TORSION SPRINGS
6. AUTOMOBILE SUSPENSIONS

우레탄 프렌저

ウレタンプランジャ

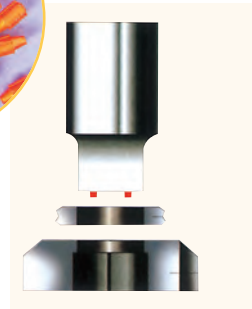
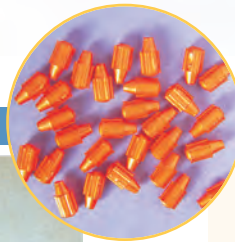
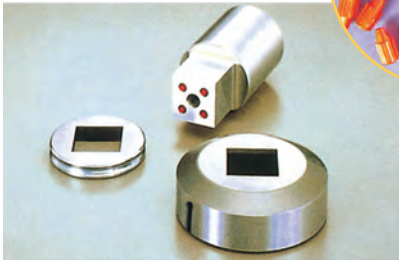
Urethan Plungers

3ø, 5ø, 8ø, 10ø 생산

스크랩이 기름 및 진공으로 펀치에 밀착하여
다이위로 상승하는 것을 방지

油や真空によりパンチに密着し、
スクラップがダイの上にかかるのを防止

Shape

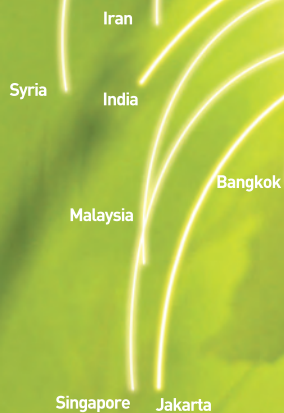


***Excellent spring
Press mold die spring***



삼솔 수출현황

Oversea's distributor of SAMSOL



Iran
Syria
India
Bangkok
Malaysia
Singapore
Jakarta

MAIN PRODUCTS



METAL MOLD SPRINGS



COMPRESSION COIL SPRINGS



EXTENSION COILING SPRINGS



BOARD CLIP SPRINGS



AUTOMOBILE SUSPENSIONS



TORSION SPRINGS


 Samsol Spring

Shanghai

Hogkong

Taiwan

Samsol Japan

A blurred background image of a person wearing a dark suit and a light blue shirt, looking slightly to the side. The image is dark and out of focus, serving as a backdrop for the text.

press mold die spring

DIN EN ISO 9001:2008

