

METAL MATERIALS

金属材料

Spring Wire



From everyday items to high-end products and applications are have springs inside. We offer various types and materials of spring wire such as stainless steel wire, piano wire, high carbon steel wire, oil-tempered wire, alloy steel wire, and shaped wire, to meet the demands of different industries.

- Stainless steel spring wire
- Piano Wire, SWC Wire
- Oil Tempered Wire for Valve
- Röslau GmbH Music Wire
- Copper Alloy Wire for Spring
- Dot Pin for Dot Matrix Printer Head
- Alloy Wire

Diameter: 0.03mm ~ 12mm
Material: 304, 301H/EH, 631J1, 316, SWP-B, SWC, 106N, 604PH, etc.
Surface: Ni-Co, Ni-Br, S-CO, BR, Cu-CO
Standard : JIS, GB, EN, DIN, ASTM, etc.
Application: precision spring, ball pen, battery spring, Piano, etc.

Precision Steel Strips



Stamping parts made from precision stainless steel strips are indispensable in multiple industries. Because the excellent corrosion resistance, high strength, and dimensional accuracy, they are used in the manufacturing of precision components, springs, connectors, and shields.

- ACCIFILO, our precision stainless steel strips, can provide corresponding products and services according to your specific requirements. We have strict requirements for thickness tolerance, tensile strength, flatness, and surface treatment for all our precision steel strips.

Thickness: 0.03mm ~ 1.5mm
Wide: 3mm ~ 500mm
Material: 304, 301, 316L, 631, 305, SPCC, SK4, SK5, SK7, etc
Hardness: Cold Rolled, 3/4H, H, EH, SEH
Surface: BA , 2B, 2D, SB, HL, TA, etc
Standard: JIS, ASTM, GB, DIN

Metal Materials for Medical Device



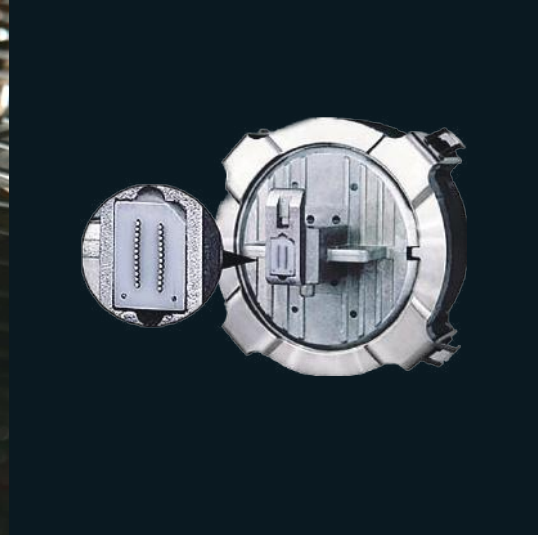
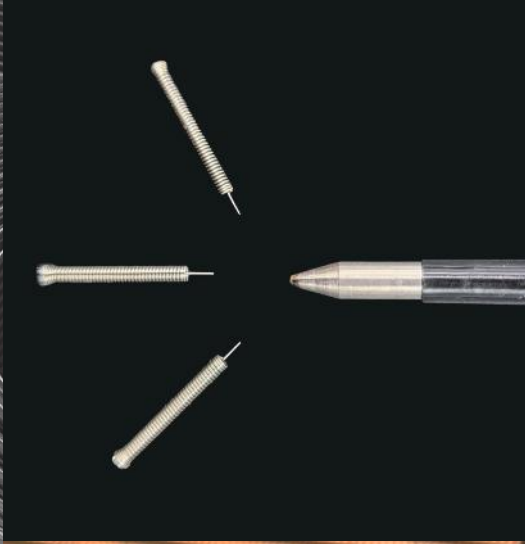
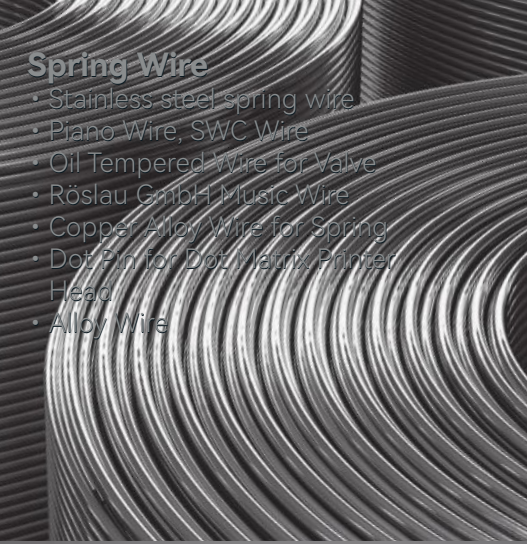
Medical-grade metallic materials are widely used in invasive/implantable applications, where long-term utility and safety are paramount. The most commonly used wire products in medical devices include:

- Medical-grade SUS wire
- Cobalt-based alloy for medical
- Stainless steel flat wire
- Stainless Steel Straighten wire
- Precious metal wire
- Torsion wire rope

Diameter: 0.03mm ~ 1.0mm
Material: 304V, 304, 316LVM, 605PH(F90) MP35N, L605, Ti-6Al-4V ELI, Pure Ti
Standard: JIS, ASTM A313, etc
Spec.: full hard/soft wire, corresponding to requirements, Small MOQ support
Application: special-shaped wires for endoscopes, Mesh for catheters, etc.

Spring Wire

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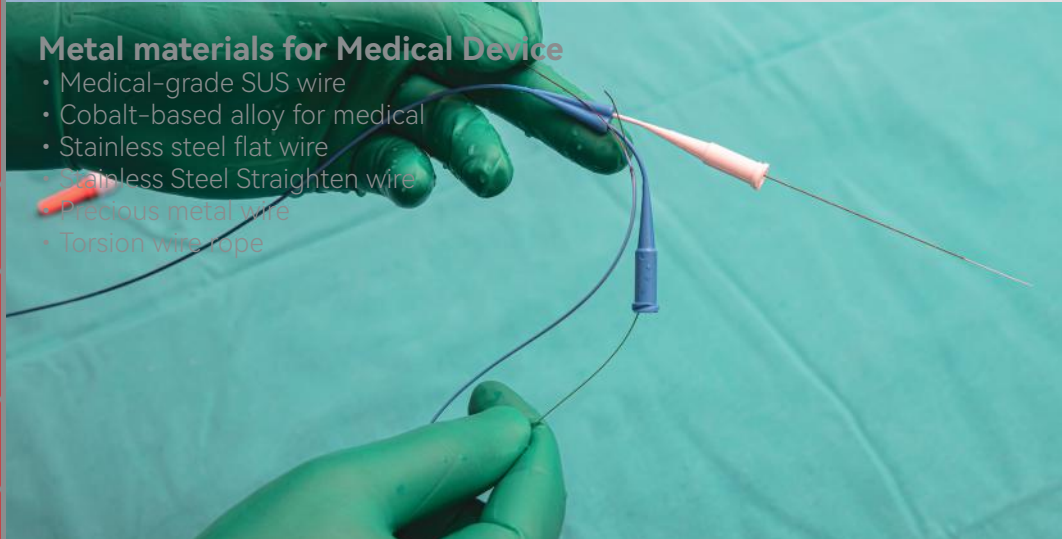


Precision Steel Strips
• ACCIFIL® stainless steel strips for precision use



Metal materials for Medical Device

- Medical-grade SUS wire
- Cobalt-based alloy for medical
- Stainless steel flat wire
- Stainless Steel Straighten wire
- Precious metal wire
- Torsion wire rope



INDUSTRIAL AUTOMATION 工业自动化

High-efficiency cooling fan



SANYO DENKI CO., LTD.

- Reliable quality and durable
- Low Noise, Compared to our current model, noise level has been reduced by 3 dB(A)
- High Cooling Performance, the maximum airflow and maximum static pressure have increased by 33% and 70%, respectively, compared to the current model
- Energy Saving, Power consumption has been reduced by 35% compared to the current model
- Rich Lineup, The lineup offers four different rotational speeds for each of 12/24 V rated voltage

Application

- Cooling commercial air conditioners
- Medical equipment
- Cooling servers, communication equipment and telecom power supplies
- Automotive manufacturing
- Laser CNC machine
- Die bonder
- Wire bonder

High-efficiency stepping and servo motors



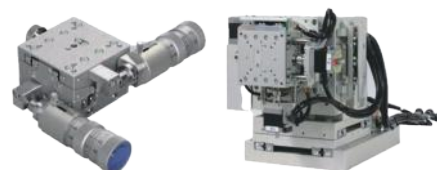
SANYO DENKI CO., LTD.

- Made in Japan, quality assurance
- Evolved Servo and stepping motor performance, higher reliability and maintainability, greatly enhance productivity and quality
- Compared with conventional products, the vibration resistance of servo motors and amplifiers has been improved by two times and 20%, respectively
- Simple and user-friendly, one cable can connect motor power and brake connection, and the connector direction can be changed for easy wiring
- Improve the accuracy of the frequency characteristics of the measurement equipment, and automatically optimize the servo parameters, easy to start

Application

- Medical equipment
- Industrial robotics
- Semiconductor manufacturer device
- Machine tools
- Food Manufacturing equipment

High-quality precision positioning platform

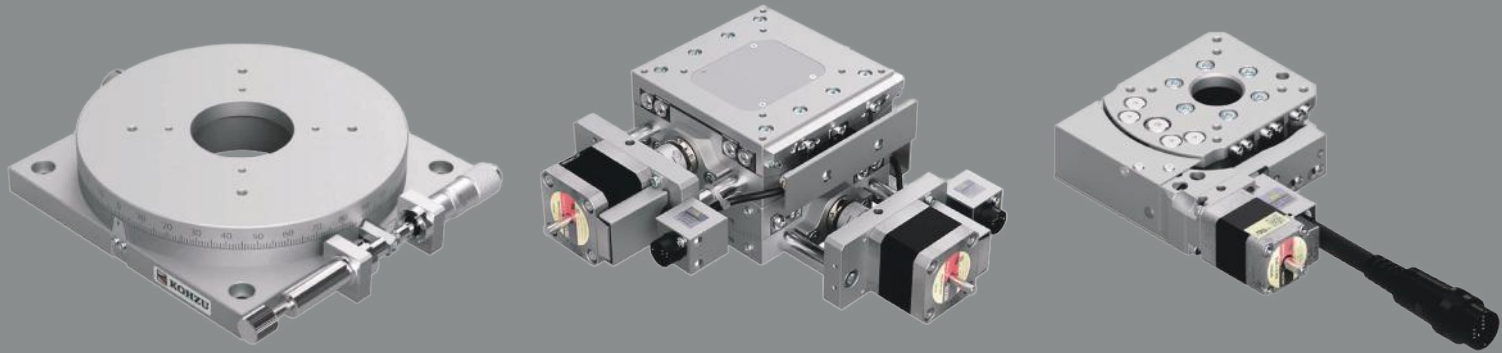


KOHZU

- Mainly manufacturing and design: Precision positioning Device / Optical measuring Device / Precision Device parts / Inspection Device /
- Made in Japan, quality assurance
- Excellent durability using high precision ball screw
- Composed of precision in-line parts, greatly improves the resolution of the platform module

Application

- Fiber optic alignment
- Motion mechanism for vacuum stage inspection
- Microscope observation and measurement
- Electronic wafer inspection
- Assembly and alignment of camera lens parts for cellular phone
- Probe tester inspection
- Optical axis alignment for laser interferometer
- Lamp measurement



SANYO DENKI



Cooling Fans unit

Sanyo cooling fan units are mostly used in data center server cabinets
 · Safe and reliable · Low power consumption and energy saving · High efficiency cooling

SANYO DENKI

Assembly and alignment of camera lens parts for cellular phone

KOHZU high-precision platform is often used in the production of mobile phone lens
 · High precision · High durability · Made in Japan, quality assurance

KOHZU

Semiconductor manufacturer device

Sanyo stepping / servo motors are mostly used in semiconductor manufacturing environment
 · High precision control · High speed response · Stable operation

SANYO DENKI

FASTENERS

緊固件

General and High Strength Nut



Nut are used with machine threaded fasteners in through-hole applications. General hex type and prevailing torque type are chosen depending on the application required. Metallica and non-metallic insert nuts provide greater resistance to vibrations and torque is required.

- Available in grade 2, 5 and 8
- Over 1,000 standard size
- Stock available in GB, JIS, DIN, ANSI standard
- according drawing available

Type: General and Prevailing Torque

Style: Dome, Cap, Flange, Keps, Pipe etc.

Size: M1.6 - M 24

Threads: Metric & Imperial (inch)

Material: Alloy Steel, Stainless Steel, Brass

Finishing: Zinc, Black Oxide, Dacromat

Application: Retail, Heavy & Automotive

High Strength Bolts



Melco high strength bolts can be applied in numerous applications, from automotive to construction and industrial equipment.

Our high strength bolts are made of high-strength steel and require a large pretension. High performance and reliability due to its superior tensile strength compared to regular steel bolts.

- Available in grade 8.8, 10.9 & 12.9
- Stock available in GB, JIS, DIN, ANSI standard
- Massive existing tooling to meet various customizing production needs

Head Type: Hex, Flange, Hex socket & set

Recess: Slotted, Philips, Hex, Torx

Size: M 2 - M 24

Threads: Metric & Imperial (inch)

Material: SCM 435, 40Cr, 35K

Finishing: Zinc, Black Oxide, Dacromat

Application: Construction & Automotive

Retaining Ring and Circlips



A retaining ring is a fastener that holds components or assemblies onto a shaft or in housing/bore when installed in a groove. Once installed, the exposed portion acts as a shoulder which retains the specific component or assembly.

- Over 20 series, JIS, DIN, GB standard available
- Less shaft or housing preparation
- Reduced weight and size of finished design
- Cost saving of raw material and labour
- Customize design available

Type: External & internal

Style: E-clip, C-clip, Disc, Circular

Size: 0.6 - 200mm

Threads: Metric & Imperial (inch)

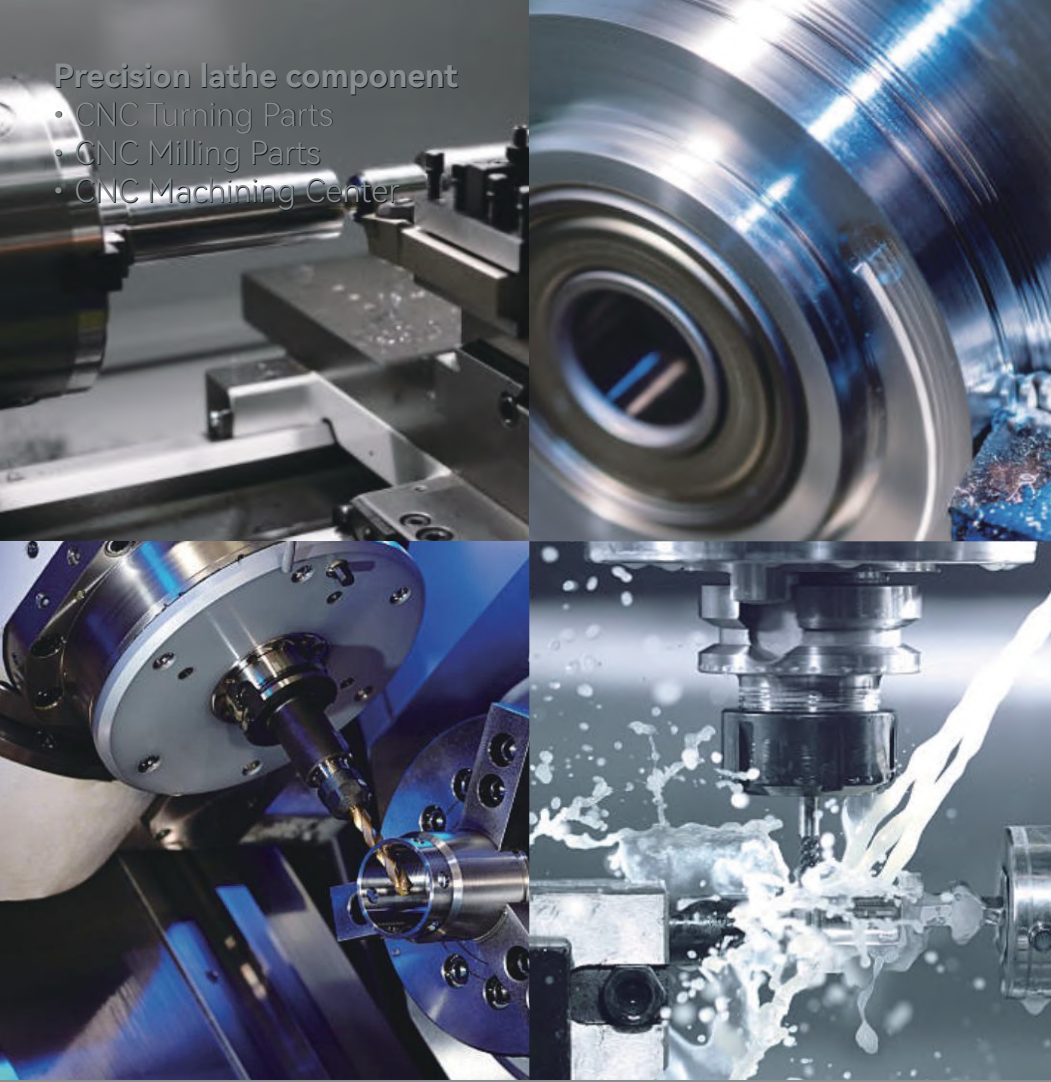
Material: SAE 1065, S50Cr, 65Mn, SUS304

Finishing: Zinc, Black Oxide, Phosphating

Application: Machinery & Automotive

Precision lathe component

- CNC Turning Parts
- CNC Milling Parts
- CNC Machining Center



Round & Hex Standoff

- Material: Aluminum, Stainless Steel, Brass and more
- Finishing: Anodizing, Plating & Polishing etc.



Customizing Part

- Application in Machinery, Electrical, Medical industry
- Tolerance: 0.005mm
- RoHS & Reach Compliant



ACCIFILO Precision Strips



The design of stainless steel strip is playing an increasingly important role. ACCIFILO is addressing this trend and, in collaboration with its customers, is developing a wide range of very varied designs, suitable both for decorative and functional applications.

ACCIFILO STRIP

Material	Finish	Hardness	Processing Capabilities	
SUS 304			Range	: 0.03mm - 1.50mm
SUS 301	BA		Thickness	: 0.03mm - 0.20mm ± 5%
SUS 316L	2B	ANN		0.20mm - 1.20mm ± 3%
SUS 305	2D	1/2H	HV	: ± 15
SUS 631	No.3	3/4H	Width	: 3.0mm - 250mm ± 0.05mm
SUS 430	No.4	H		over 250mm ± 0.1mm
SUS 430	N0.5	EH		
SPCC	SB	SHE	Straightness	: 1-2IU
SK4/SK5	HL		Slit Burr	: 0.04 - 0.30mm <10%
SK7			Edge Quality	: 0.30 - 1.20mm < 0.04mm

*Correspond to JIS, ASTM, GB, DIN standard

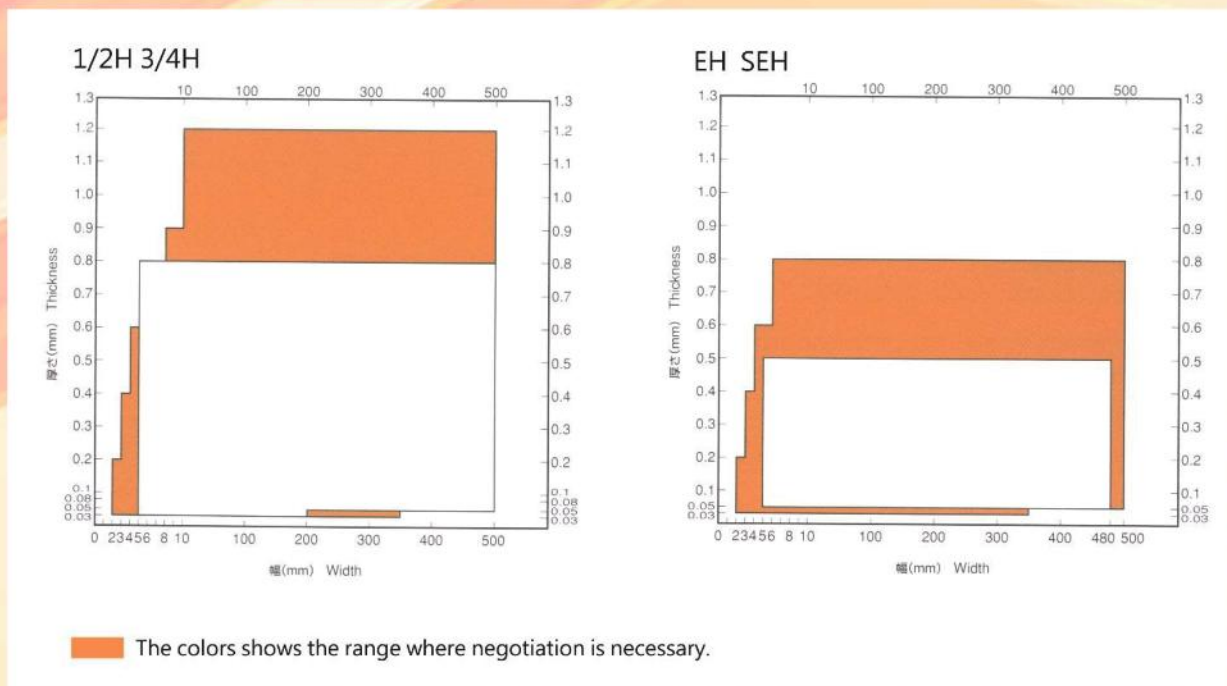
Mechanical Properties

Steel Grade	Statement	Hardness HV	Tensile Strength N/mm ²	Elongation %	Yield Intensity Mpa
SUS301	1/2H	≥310	≥930	≥10	≥510
	3/4H	≥370	≥1130	≥5	≥745
	H	≥430	≥1320	-	≥1030
	EH	≥490	≥1570	-	≥1275
	SEH	≥530	≥1740	-	≥1450
SUS304	1/2H	≥250	≥780	≥6	≥470
	3/4H	≥310	≥930	≥3	≥665
	H	≥370	≥1130	-	≥880
SUS420J2	0	≤210	-	≥18	≤225
SUS631 (17-7PH)	1/2H	≥350	≥1080	≥5	-
	3/4H	≥400	≥1180	-	-
	H	≥450	≥1420	-	-
SPCC	SPCC-S	≤115	≥270	≥28	-
SK4	BA	160 ~ 200	490 ~ 645	24 ~ 35	-
SK5	BA	150 ~ 190	460 ~ 625	26 ~ 37	-
SK7	BA	140 ~ 180	410 ~ 610	28 ~ 39	-

STAINLESS STEEL STRIPS

Grade	Characteristics
301	<p>It is a modification of Type 304 in which the chromium and nickel contents are lowered to increase the cold work-hardening range. this permits higher tensile strengths to be achieved by rolling with a lower loss of ductility than with Type 304.</p> <p>The grade is essentially non-magnetic when annealed. However, when the grade is cold worked, it becomes more magnetic than other standard austenitic stainless steels.</p>
304	<p>It is the most typical in 18-8 stainless steel strips. Also, it is the most popular in Austenite series.</p>
304L	<p>The Carbon content is lower than in SUS304, and it has anticorrosion because of the Chromium content. It excels at resistance to grain boundary corrosion.</p> <p>Under annealing conditions, its hardness is very low and work hardening is very small ,so it is suitable for deep drawing products.</p>
305	<p>Under solution treatment conditions, the Austenite Series is not magnetic.</p> <p>Throughout the cold rolling process it becomes magnetic.</p>
316L	<p>It is extreme-low Carbon steel of SUS316. Resistance to grain boundary corrosion is present in SUS 316, the same as in SUS304L.</p>
631	<p>This is a typical type of precipitation hardened steel. Hardness can be gained by heat-treatment, maintaining the excellent performance of stainless steel.</p> <p>From the softest to the hardest, suitable heat-treatment enables it to gain strength similar to that of hardened high-Carbon Martensitic steels.</p> <p>Its magnetism is weak after solution treatment, but it is strongly magnetized by precipitation hardening treatment.</p>

Possible range to produce



ACCIFILO Spring Wire



ACCIFILO Spring Wire which can be fabricated as compression spring, tension spring, torsion spring and other special springs. For corrosive working environments, Nickel-coated stainless steel spring wire, Nickel-coated High Carbon Steel wire are available. Also, we can custom make as to your special requirements.

Hard drawn steel wire, Piano spring wire & Ni-co SWC

Type	Standard	Surface Coating	Feature
SWC	JIS G3521	Non-Coating (Bright)	Hard drawn steel wire is made by the special heat treatment and cold drawing process by using high quality high carbon steel wire rods. The usage of the hard drawn steel wire is mainly for the spring of wide general purpose.
SWP-A/B	JIS G3522	Non-Coating (Bright)	Piano spring wire using special high quality high carbon steel wire rods and higher strength than hard drawn steel wire. The manufacture is more politely, and under severer quality control.
Ni-CO SWC	-	Ni-Coating (NI-CO)	Nickel-coating high carbon steel wire is specially treated and suitable for various types of battery springs. Excellent characteristics suitable for replacing stainless steel materials.

Tensile Strength of Piano spring wire and High Carbon Steel wire

Wire Diameter (mm)	Piano Spring Wire			High Carbon Steel wire				
	Tolerance (mm)	Tensile Strength N/mm ²		Tolerance (mm)	Tensile Strength N/mm ²			
		SWP-A	SWP-B		SW-B	SW-C		
0.20	±0.008	2600-2840	2840-3090	±0.015	2210-2500	2500-2790		
0.23		2550-2790	2790-3040		2160-2450	2450-2750		
0.26		2500-2750	2750-2990		2110-2400	2400-2700		
0.29		2450-2700	2700-2940		2060-2350	2350-2650		
0.32		2400-2650	2650-2890		2010-2300	2300-2600		
0.35		2400-2650	2650-2890		2010-2300	2300-2600		
0.40		2350-2600	2600-2840		1960-2260	2260-2550		
0.45		2300-2550	2550-2790		1910-2210	2210-2500		
0.50		2300-2550	2550-2790		1910-2210	2210-2500		
0.55		2260-2500	2500-2750		1860-2160	2160-2450		
0.60	±0.010	2210-2450	2450-2700	±0.020	1810-2110	2110-2400		
0.65		2210-2450	2450-2700		1810-2110	2110-2400		
0.70		2160-2400	2400-2650		1770-2060	2060-2350		
0.80		2110-2350	2350-2600		1770-2010	2010-2300		
0.90		2110-2300	2300-2500		1770-2010	2010-2260		
1.00		2060-2260	2260-2450		1720-1960	1960-2210		
1.20		2010-2210	2210-2400		1670-1910	1910-2160		
1.40		±0.015	1960-2160		2160-2350	±0.030	1620-1860	1860-2110
1.60			1910-2110		2110-2300		1570-1810	1810-2060

STAINLESS STEEL SPRING WIRE

Stainless Steel Spring Wire

Type	Standard	Surface Coating	Feature
SUS 304	JIS G4314	Soap Coating (S-CO)	The most common stainless steel grade. Strength can be increased by processing and it can be used for various applications.
SUS 302		Non-Coating (Bright)	As same as 304 can be used for springs, needles ,etc..
SUS 316		Ni-Coating (NI-CO)	Corrosion resistance is greatly improved by adding Mo to 304. Lower strength than 304 and almost nonmagnetic.
AISI 302	ASTM A313	Ni-Bright (NI-BR)	AISI 302 is just the ASTM International name for 302 grade stainless steel.
1.4310	EN 10270-3		EN standard specification for stainless steel spring wire.
SUS 631J1	JIS G4314		Strength is substantially increased by heat treatment after cold working. For heat-resistant springs.
201	GB/T 20878		Ni saving steel grade. Can be magnetized by cold working.
130	-	Soap Coating (S-CO)	130 is a nonmagnetic stainless steel wire with magnetic permeability
430F	1Cr17	Non-Coating (Bright)	Machinability is obtained by increasing S in 430. For shafts and cut bolts.
SUPER DOLCE	-		This is a high strength stainless steel wire with tensile strength and high temperature applicability equivalent to SUS631WPC through tempering at 500°C for 20 minutes. It also delivers corrosion resistance equal to or higher than SUS316 standards.

Tensile Strength of spring stainless steel wire

Surface	Wire Diameter (mm)	Tolerance (mm)	SUS 304/302-WPA	SUS 304/302-WPB	SUS 631J1
			Tensile Strength N/mm ²	Tensile Strength N/mm ²	Tensile Strength N/mm ²
BRIGHT NI-CO S-CO	0.18	±0.005	1650~1900	2150~2400	1950~2200
	0.20				
	0.23				
	0.25	±0.008	1600~1850	2050~2300	1930~2180
	0.26				
	0.29				
	0.32				
	0.35				
	0.40	±0.010	1530~1780	1850~2100	1850~2100
	0.45				
	0.50				
	0.55				
	0.60				
	0.65	±0.015	1450~1700	1750~2000	1700~1950
	0.70				
	0.80				
	0.90				
	1.00				
	1.20	±0.020	1400~1650	1650~1900	1600~1850
	1.40				
1.60					
1.80					
2.00					
2.30	±0.020	1320~1570	1550~1800	1500~1750	
2.60					
2.90					
3.00			1230~1480	1450~1700	1400~1650

* For an intermediate diameter, the T/S value specified for the next larger diameter shall be applied.