

PRECISE GEAR RACK

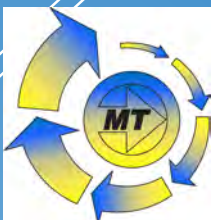
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Material S45C Spur Rack

- 11** SSF Series Precise Cutting Tooth
- 12** SSFH Series Precise Cutting Tooth, Hardening
- 13** SSFH-G Series Precise Cutting Tooth, Hardening, Surface Grinding
- 14** SSFQ Series Precise Cutting Tooth, Quenching
- 15** SSFQ-G Series Precise Cutting Tooth, Quenching, Surface Grinding
- 16** SSGH Series Grinding Tooth, Hardening, Surface Grinding



Material SCM440 Spur Rack

- 17** RSFH Series Precise Cutting Tooth, Hardening
- 18** RSFH-G Series Precise Cutting Tooth, Hardening, Surface Grinding
- 19** RSFQ Series Precise Cutting Tooth, Quenching
- 20** RSFQ-G Series Precise Cutting Tooth, Quenching, Surface Grinding
- 21** RSGH Series Grinding Tooth, Hardening, Surface Grinding



Material S45C Helical Rack

- 22** SHF Precise Cutting Tooth
- 23** SHFH Precise Cutting Tooth, Hardening
- 24** SHFH-G Precise Cutting Tooth, Hardening, Surface Grinding
- 25** SHFQ Precise Cutting Tooth, Quenching
- 26** SHFQ-G Precise Cutting Tooth, Quenching, Surface Grinding
- 27** SHGH Grinding Tooth, Hardening, Surface Grinding



Material SCM440 Helical Rack

- 28** RHFH Precise Cutting Tooth, Hardening
- 29** RHFH-G Precise Cutting Tooth, Hardening, Surface Grinding
- 30** RHFQ Precise Cutting Tooth, Quenching
- 31** RHFQ-G Precise Cutting Tooth, Quenching, Surface Grinding
- 32** RHGH Grinding Tooth, Hardening, Surface Grinding



► What is Rack and Pinion?

A rack and pinion (wheel gear) is a type of linear actuator that comprises a pair of gears which convert rotational motion into linear motion (reciprocating motion).

A circular gear called “Pinion”, and the engaged teeth on a linear gear bar called “Rack”. Rotational motion applied to the pinion causes the rack to move, thereby, translating the rotational motion of the pinion into the linear motion of the rack.

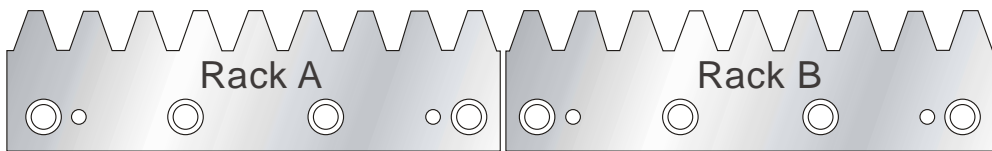
► Advantage of Rack and Pinion

- > High Dynamic Performance
- > High Stabilization
- > Low Mass Moment of Inertia
- > Low Cumulative Error
- > Unlimited Travel Distance
- > Higher Load Capability
- > Flexible for Custom-Made Request
- > More Compact, but less Complex
- > Machine Design
- > Maintenance Free but only requires few drops of light oil
- > Constant Stiffness over the Complete Travel Length plus Good System Performance
- > Matching or Exceeding the Performance and Accuracy of other electric and mechanical motion system, and are More Efficient.

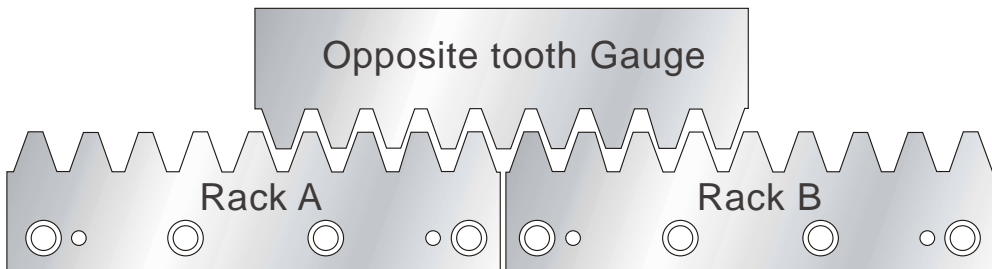
► Application of Rack and Pinion

- > Woodworking Machine
- > High-Speed Metal Cutting Machine
- > Assembly Machine
- > Packaging Machine
- > Gantry
- > Lift Mechanisms
- > X-Y Axis Table
- > Guide Mechanism
- > CNC Router
- > Pick and Place Robot
- > Material Handling Machine
- > Automation
- > Machine Tool
- > Stir Friction Welding Machine
- > Carbon Fiber Placement Machine
- > Seventh-Axis Robotic Slide

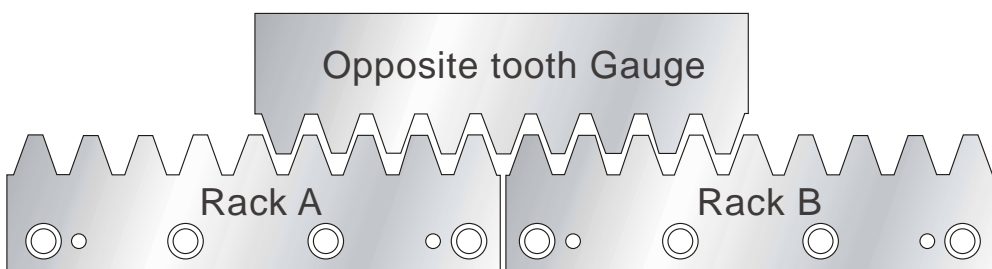
01 Put racks on base (end to end) without screw on;



02 Put opposite tooth gauge on both ends of jointed racks. For keeping smooth and precise motion, Tooth on both ends of jointed racks will be made by half for combining a complete tooth. The opposite tooth gauge is used for adjusting the pitch position.

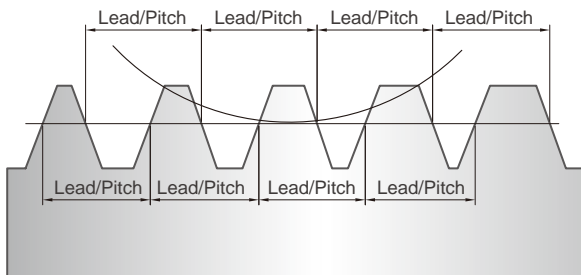
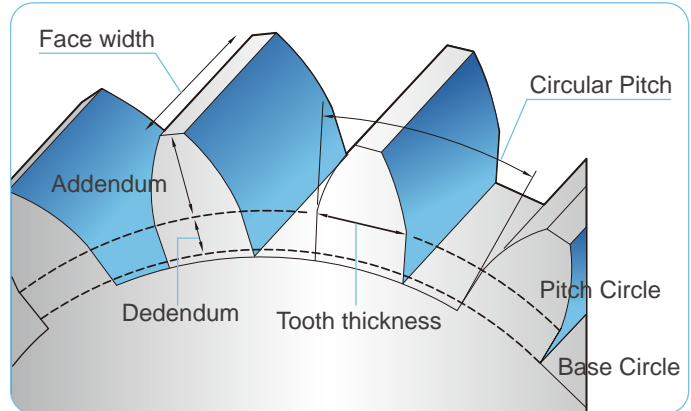


03 Screw on both racks on base in sequence, and then pin the bore hole in the final.

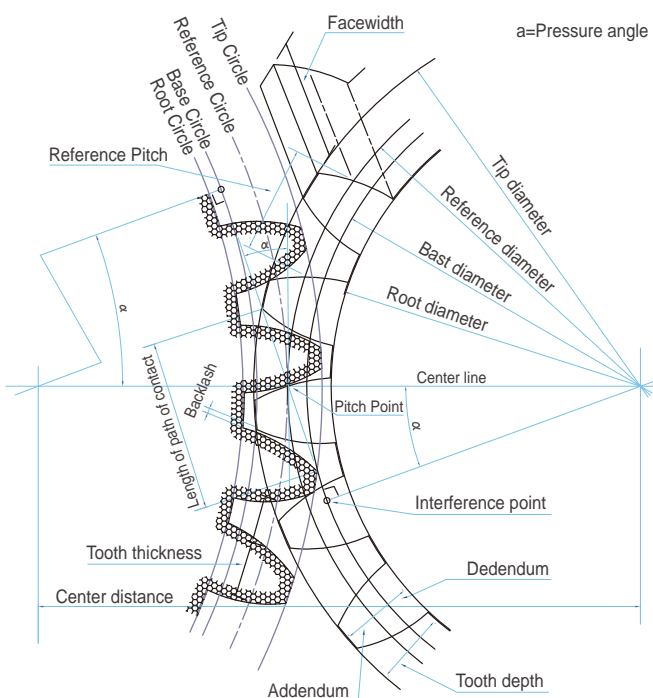


Terminology

- **Addendum:** The distance between the top land of the gear tooth and the pitch circle.
- **Addendum Circle:** An imaginary circle that passes through the addendums of the gear teeth.
- **Dedendum:** The distance between the bottom land of the gear tooth and the pitch circle.
- **Dedendum Circle:** An imaginary circle that passes through the dedendums of the gear teeth.
- **Base Circle:** In an involute curve, the circle from which the curve is unwound in a spiral shape.
- **Circular Pitch:** The distance from a point on one gear tooth to the corresponding point on the next gear tooth, measured along the pitch circle.



- **Circular Thickness:** The thickness of a gear tooth, measured on the pitch circle.
- **Pitch Circle:** An imaginary circle on a gear that divides the gear teeth into top lands and bottom lands, and into addendums and dedendums. The pitch circles of two gears in correct mesh contact each other at the pitch point.
- **Pitch Diameter:** The diameter of a gear's pitch circle. A gear's pitch diameter can be determined by measuring from the top of one gear tooth to the bottom of the opposite gear tooth.
- **Pitch Point:** The point at which the pitch circles of two gears are in contact with each other at a single point.
- **Pitch:** A property used to classify gears. Gears can be classified by circular pitch or diametric pitch, but the diametric pitch method is the most common.
- **Backlash:** The distance by which the tooth thickness of one gear exceeds the tooth space of the mating gear.
- **Clearance:** The distance between the top land of a gear tooth and the bottom land of the tooth it meshes with on the mating gear.
- **Diametric Pitch:** The number of teeth given per inch of a gear's pitch diameter. Diametric pitch is the most common method of classifying gears.
- **Pressure Angle:** The angle made by the sides of a gear tooth as they incline toward the top of the gear.
- **Reference Pitch:** It is equal to the circumference divided by the number of teeth.



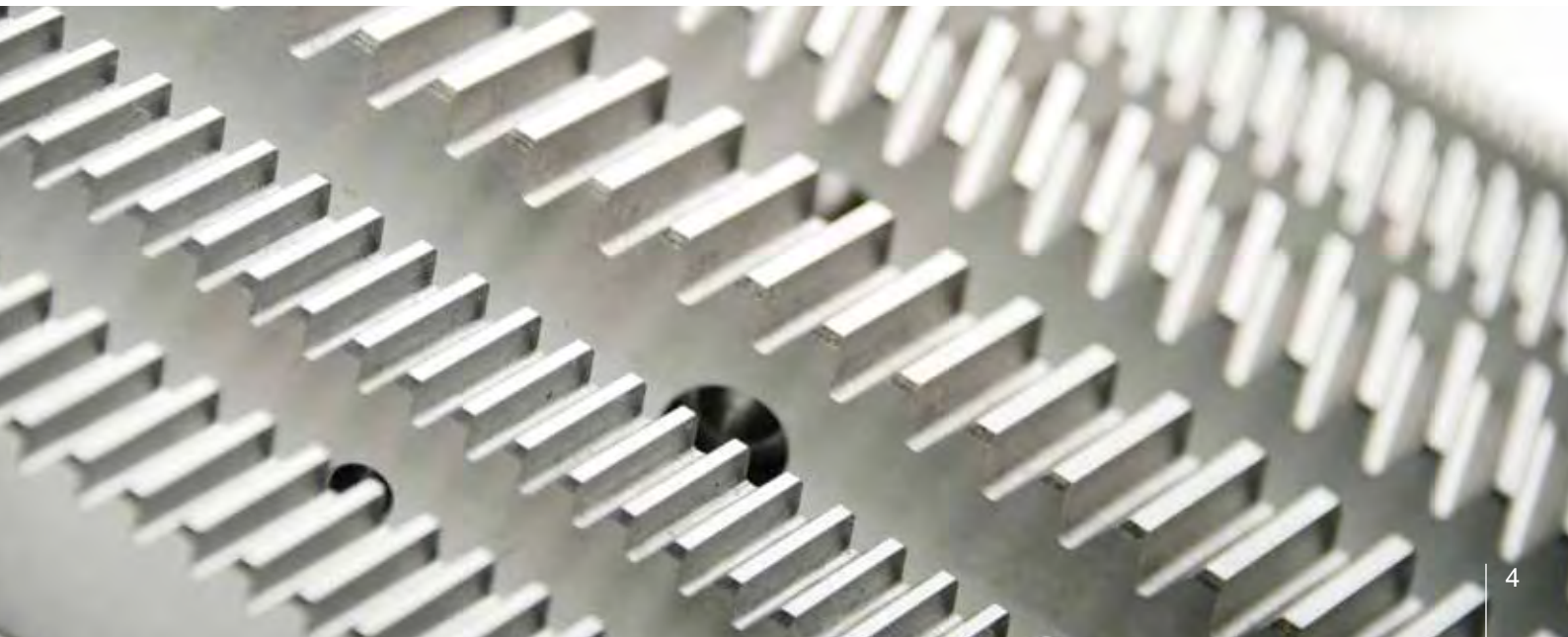
Material Reference

- ISO : International Organization for Standardization
- AISI : American Iron and Steel Institute
- SAE : Society of Automotive Engineers
- BS : British Standards
- DIN : Deutsches Institut für Normung
- EN : European Standards
- NF : Norme Francaise
- ГОСТ : Russia



STEEL and THE STANDARD							
ISO	AISI	SAE	BS	DIN	NF	ГОСТ	JIS
C45	1045	1045	C45	C45	C45	45Г	S45C
C45E4	1046	1046	C45E	C45E	C45E		
C45M2			C45R	C45R	C45R		
42CrMo4	4140H	4140H	42CrMo4	42CrMo4	42CrMo4	-	SCM440H
42CrMoS4	4142H	4142H	42CrMoS4	42CrMoS4	42CrMoS4		

STAINLESS STEEL and THE STANDARD								
ISO	UNS	AISI	BS	DIN	NF	ГОСТ	EN	JIS
13	S30300	303	303S21	X10CrNiS18 9	Z8CNF18-09	-	X8CrNiS18-9	SUS303
6	S30400	304	304S31	X5CrNi18 10	27CN18-09	08X18H10	X4CrNi18-10	SUS304



Module Calculation

Module is the unit of size to indicate how big or small a gear pinion is. It is the ratio of the reference diameter of the gear pinion divided by the number of teeth. Thus the formula of module calculation of gear pinion is:

$$> \text{Module (M)} = \frac{\text{Reference Diameter}}{\text{Number of Tooth}}$$

The relation between the module and the reference diameter is as following:

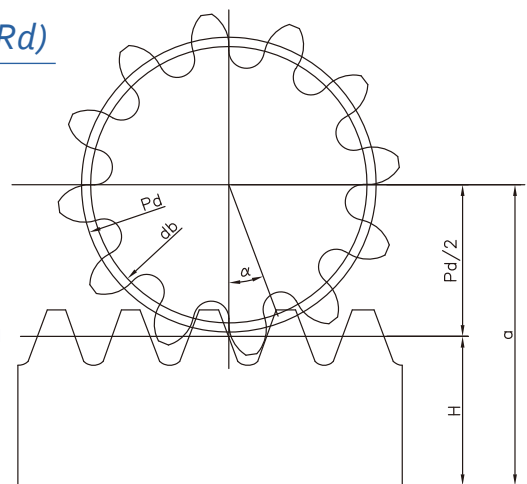
$$> \text{Reference Diameter (Rd)} = \text{Module (M)} \times \text{Number of Teeth (Nt)}$$

$$> \text{Number of Teeth (Nt)} = \frac{\text{Reference Diameter (Rd)}}{\text{Module (M)}}$$


$$> \text{Reference Pitch (Rp)} = \pi \times \text{Module (M)}$$

For example

$$> \text{Reference Pitch (Rp)} = 3.14159265 \times 1.5 = 4.7124 \text{ mm}$$



The table presents the method for calculating the mesh of a rack with pinion :

Item	Description	Symbol	Formula	Example		
				Spur Gear	Spur Rack	
1	Module	m		3		
2	Pressure Angle	α		20°		
3	Number of Teeth	z		12	N / A	
4	Coefficient of Profile Shift	x		0.6		
5	Height of Pitch Line	H		N / A	32.00	
6	Working Pressure Angle	α_w		$\alpha = 20^\circ, z = 12, x = 0$	20°	
7	Center Distance	a_x		$(zm / 2) + H + xm$	51.80	
8	Pitch Diameter	Pd		zm	36.00	N / A
9	Base Diameter	d_b		$d \cos \alpha$	33.829	
10	Working Pitch Diameter	d_w		$d_b / \cos \alpha_w$	36.00	
11	Addendum	h_a		$m (1 + x)$	4.80	3.00
12	Whole Depth	h		2.25m	6.75	
13	Outside Diameter	d_a		$Pd + 2h_a$	45.60	N / A
14	Root Diameter	d_f		$D_a - 2h$	32.10	

Calculation of Mechanical Transmitting

Usually we're used to describe the power of the electronic device with a load capacity possessed; but for servo motor system, the main part is the output torque which could guide the relative concepts. From the notion of the motor driving circuit design, the power is focused especially. For the purpose we must clarify the relationship among the power, the torque, and the speed:

> Power (P_w) = Force (F) x Linear Velocity (V)

> Force (F) = $\frac{\text{Torque } (T_{Nm})}{\text{Radius } (r)}$

Through above formulas we can get $F = \text{Torque } (T_{Nm}) / \text{Radius } (r)$

> Linear Velocity (V) = $2\pi r \times \text{Angular Velocity } (n_{RPS}) = \frac{2\pi r \times n_{RPM}}{60} = \frac{\pi r \times n_{RPM}}{30}$

Guide formula 2 and 3 into formula 1, and then we can get:

> Power (P_w) = $\frac{T_{Nm}}{r} \times \frac{\pi r \times n_{RPM}}{30} = \frac{\pi}{30} \times T_{Nm} \times n_{RPM}$

Now we transfer the unit of Power (P_w) to P_{kw} , and then we can get:

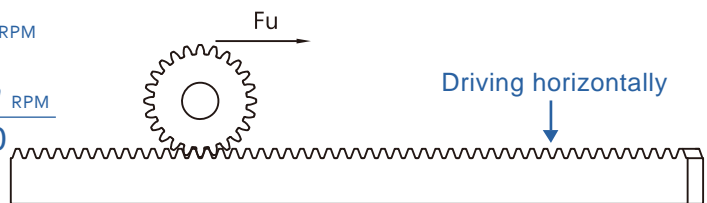
> Power (P_{kw}) = $\frac{\pi}{30} \times T_{Nm} \times n_{RPM} / 1000$

And then, the result we can get:

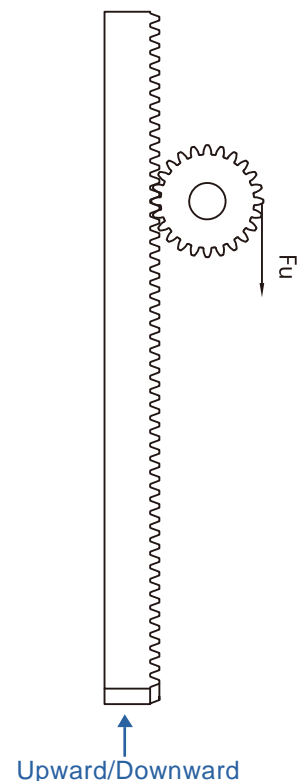
> Power (P_{kw}) = $\frac{3.1415926}{30000} \times T_{Nm} \times n_{RPM}$

> Power (P_{kw}) = $\frac{T_{Nm} \times n_{RPM}}{9549.297} \div \frac{T_{Nm} \times n_{RPM}}{9550}$

Following Table shows the notion applied into the actual environment



Parameter Reference		
Safe Coefficient	Application	1.0
	Teeth Connection	1.0
	Prevention of Teeth Cracking	1.4
Life Time		20,000 hrs
Vertical Driving		Horizontal Driving
$F_U = m \times g + m \times a$		$F_U = m \times g \times \mu + m \times a$
Acceleration (a)	m / s^2	$a = \frac{v}{t} = \frac{2 \times s}{t^2}$
Speed (v)	m / s	$a = \frac{s}{t} = \sqrt{2 \times s \times a}$
Distance (s)	m	N / A
Time (t)	s	
Revolution per Minute (n)	RPM	$n = \frac{v \times 60}{\pi \times d_0}$
Pitch Diameter (d_0)	mm	N / A
Torque (T)	Nm	$T = \frac{F_U \times d_0}{2,000}$
Power (P)	kw	$P = \frac{T \times n}{9550} = \frac{F_U \times n \times d_0}{19100}$



Grade Contrast

AGMA	–	16	15	14	13	12	11	10	9	8	7	6
JIS	–	–	–	0	1	2	3	4	5	6	7	8
ISO	1	2	3	4	5	6	7	8	9	10	11	12
DIN	1	2	3	4	5	6	7	8	9	10	11	12

► Grade Contrast of Spur Rack

Type	Shape	Grade	Tooth Process	Hardening	Surface Treatment	Pressure Angle	Tooth Hardness	Material
SSF	Spur	AGMA 9	Finish Cutting	N / A	Finish Cutting	20°	Less than 15HRC	S45C
		JIS 5						
		ISO 9						
		DIN 9						
SSFH RSFH	Spur	AGMA 8	Finish Cutting	High Frequency Induction	Finish Cutting	20°	50 – 55HRC	S45C SCM440
		JIS 6						
		ISO 10						
		DIN 10						
SSFH-G RSFH-G	Spur	AGMA 9	Finish Cutting	High Frequency Induction	Grinding	20°	50 – 55HRC	S45C SCM440
		JIS 5						
		ISO 9						
		DIN 9						
SSFQ RSFQ	Spur	AGMA 10	Finish Cutting	Quenched	Finish Cutting	20°	15 – 20HRC	S45C SCM440
		JIS 4						
		ISO 8						
		DIN 8						
SSFQ-G RSFQ-G	Spur	AGMA 11	Finish Cutting	Quenched	Grinding	20°	15 – 20HRC	S45C SCM440
		JIS 3						
		ISO 7						
		DIN 7						
SSGH RSGH	Spur	AGMA 12	Grinding	High Frequency Induction	Grinding	20°	50 – 55HRC	S45C SCM440
		JIS 2						
		ISO 6						
		DIN 6						

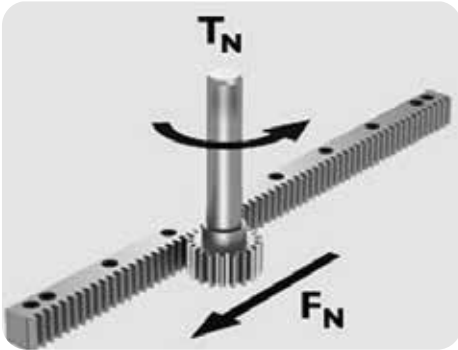


► Grade Contrast of Helical Rack

Type	Shape	Grade	Tooth Process	Hardening	Surface Treatment	Pressure Angle Right Hand Angle	Tooth Hardness	Material
SHF	Helical	AGMA 9	Finish Cutting	N / A	Finish Cutting	20° 19° 31' 42"	Less than 15HRC	S45C
		JIS 5						
		ISO 9						
		DIN 9						
SHFH RHFH	Helical	AGMA 8	Finish Cutting	High Frequency Induction	Finish Cutting	20° 19° 31' 42"	50 – 55HRC	S45C SCM440
		JIS 6						
		ISO 10						
		DIN 10						
SHFH-G RHFH-G	Helical	AGMA 9	Finish Cutting	High Frequency Induction	Grinding	20° 19° 31' 42"	50 – 55HRC	S45C SCM440
		JIS 5						
		ISO 9						
		DIN 9						
SHFQ RHFQ	Helical	AGMA 10	Finish Cutting	Quenched	Finish Cutting	20° 19° 31' 42"	15 – 20HRC	S45C SCM440
		JIS 4						
		ISO 8						
		DIN 8						
SHFQ-G RHFQ-G	Helical	AGMA 11	Finish Cutting	Quenched	Grinding	20° 19° 31' 42"	15 – 20HRC	S45C SCM440
		JIS 3						
		ISO 7						
		DIN 7						
SHGH RHGH	Helical	AGMA 12	Grinding	High Frequency Induction	Grinding	20° 19° 31' 42"	50 – 55HRC	S45C SCM440
		JIS 2						
		ISO 6						
		DIN 6						

Load Capacity

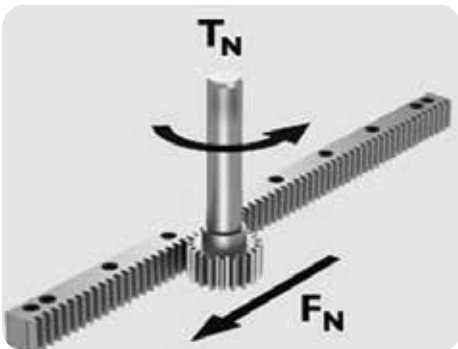
▶ Spur and Helical Tooth by Precision Cutting



- L_2 : facewidth
- p (mm): pitch
- z : Number of teeth

P	Module	z	L_2	F_N (N)	T_N (Nm)
3.142	1.0	20	15	386	3.9
4.712	1.5	16	20	532	6.4
4.712	1.5	20	20	668	10
6.283	2.0	16	20	845	14
6.283	2.0	20	20	1063	21
7.854	2.5	20	25	1601	40
9.425	3.0	16	30	1846	44
9.425	3.0	20	30	2326	70
12.566	4.0	20	40	4519	181
15.708	5.0	20	50	7606	380
18.850	6.0	20	60	11854	711
25.133	8.0	20	80	23103	1848

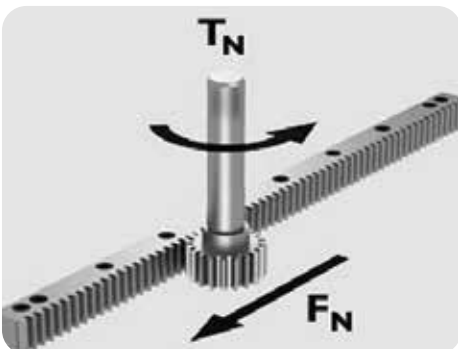
▶ Spur Tooth by Grinding



- L_2 : facewidth
- p (mm): pitch
- z : Number of teeth

P	Module	z	L_2	F_N (N)	T_N (Nm)
3.142	1.0	25	9.5	970	12
4.712	1.5	16	20	2888	35
4.712	1.5	20	20	3638	55
6.283	2.0	16	20	4810	77
6.283	2.0	20	20	5958	119
7.854	2.5	20	25	9004	225
9.425	3.0	16	30	12597	302
9.425	3.0	20	30	13697	411
12.566	4.0	20	40	24068	963
15.708	5.0	20	50	37317	1866
18.850	6.0	20	60	52880	3173
25.133	8.0	20	80	91220	7298
31.416	10.0	16	100	137151	10972
31.416	10.0	20	100	138643	13864

▶ Helical Tooth by Grinding



- L_2 : facewidth
- p (mm): pitch
- z : Number of teeth

P	Module	z	L_2	F_N (N)	T_N (Nm)
5.00	1.5	16	20.0	3178	41
5.00	1.5	20	20.0	4237	67
6.66	2.0	16	20.0	5417	92
6.66	2.0	20	20.0	6528	139
8.33	2.5	20	25.0	10363	275
10.00	3.0	16	30.0	13589	346
10.00	3.0	20	30.0	15180	483
13.33	4.0	20	40.0	28394	1205
16.66	5.0	20	50.0	44963	2385
20.00	6.0	20	60.0	64990	4137
26.66	8.0	20	80.0	114380	9709
33.33	10.0	20	100.0	175005	18569
33.33	10.0	15	100.0	160516	12773

Rack and Pinion Application Form

Company: _____

Website: _____

Address: _____

Contact: _____

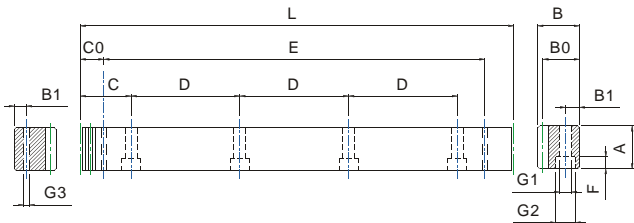
Nation: _____

E-mail: _____

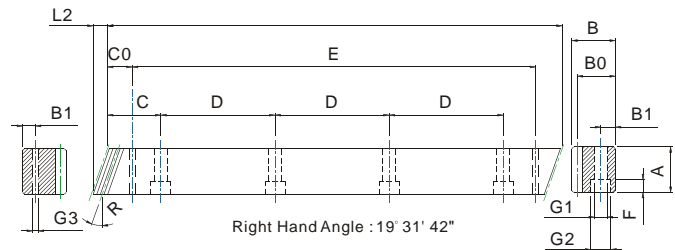
Phone: _____

Fax: _____

Spur Rack



Helical Rack



► Specificaiton of Gear Rack

- | | | |
|--------------------|---|--|
| Tooth Type: | <input type="checkbox"/> Spur Rack | <input type="checkbox"/> Helical Rack (19° 31'42") |
| Material: | <input type="checkbox"/> S45C | <input type="checkbox"/> SCM440 |
| Hardening: | <input type="checkbox"/> With Hardening | <input type="checkbox"/> Without Hardening |
| Tooth Process: | <input type="checkbox"/> Grinding | <input type="checkbox"/> Precise Finished Cutting |
| Surface Treatment: | <input type="checkbox"/> Grinding | <input type="checkbox"/> Precise Finished Cutting |
| Bottom Jointed: | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Applying Method: | <input type="checkbox"/> Parallel Usage | <input type="checkbox"/> Vertical Usage |
| End Machining | <input type="checkbox"/> Yes (by drawing) | <input type="checkbox"/> No (by catalog) |

Remark:

► Dimension of Gear Rack

Modulus: _____

Width (B): _____

Bolt Hole Distance (D): _____

Rack Length (L): _____

Height (A): _____

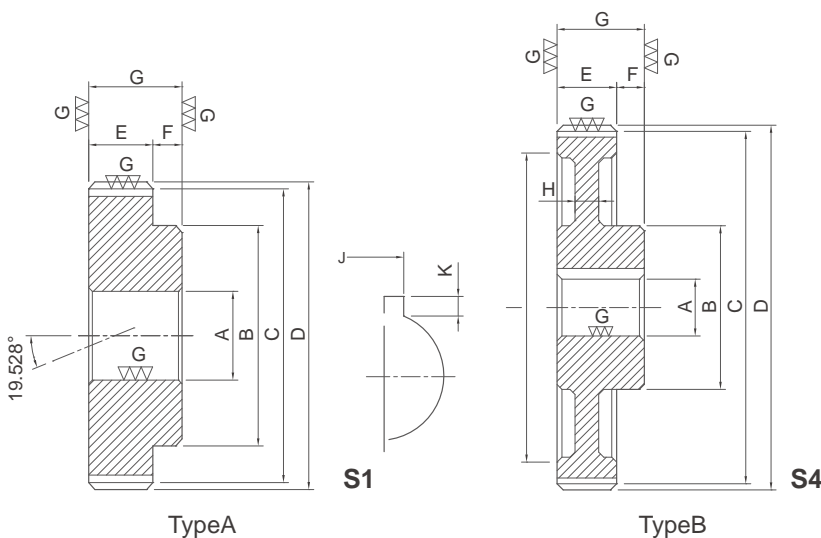
Bolt Hole Quantity: _____

Distance between end cut to the bolt hole (C): _____

Quantity: _____

Bolt Hole Dim. (G1 / G2): _____

► Dimension of Gear Pinion



Modulus: _____

by Pitch: _____

Pinion Type: TypeA: TypeB:

Material: S45C
 SCM440
 Others

Tooth Type: Spur
 Helical (19° 31'42")
 Helical Angle (customized)

Other Angle: _____

Helix Direction: Right Left

Hardening: With Without

Tooth Process: Precise Finished Cutting
 Grinding

Dimension: Standard (by catalog)

Quantity: _____



Material S45C
Spur Rack

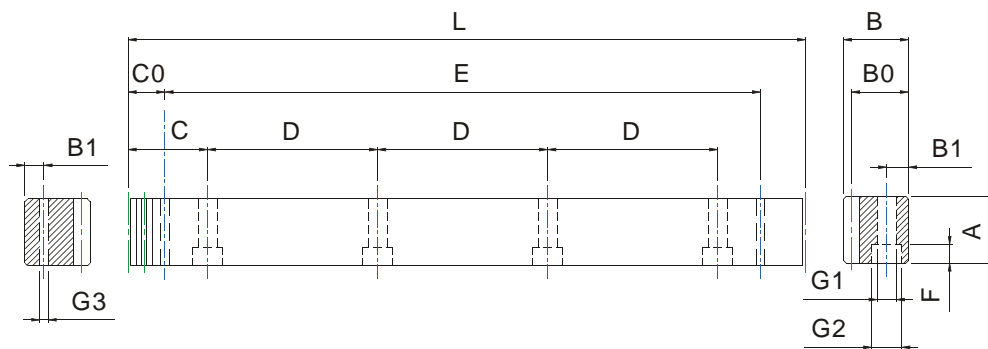
SSF series

Material	Tooth Shape	Tooth Process	Heat Treatment
S	S	F	N/A
S45C	Spur	Finish Cutting	Non

Module	Length	Surface Treatment
M1.5	L05	F
Module 1.5	L05=500 mm L10=1000 mm	Finish cutting

Specifications

Precision Grade	JIS 5 DIN 9 e 27	Tooth Hardness	Less than 15HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Finish cutting	Material	S45C	Heat Treatment	N/A



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SSF 1.5~05	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.042
SSF 1.5~10	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.042
SSF 2~05	502.64	80	24	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.044
SSF 2~10	1005.28	160	24	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.044
SSF 3~05	508.95	54	29	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.046
SSF 3~10	1017.90	108	29	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.046
SSF 4~05	502.64	40	39	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.048
SSF 4~10	1005.28	80	39	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.048
SSF 5~05	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.050
SSF 5~10	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.050
SSF 6~05	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.055
SSF 6~10	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.055
SSF 8~05	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.060
SSF 8~10	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



Material S45C
Spur Rack

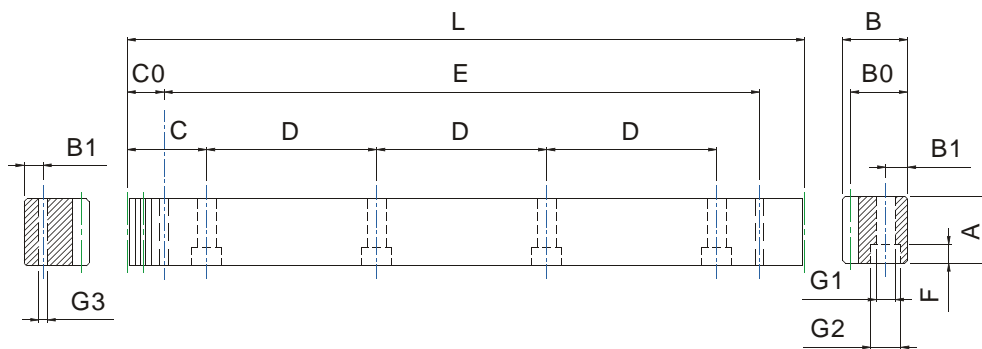
SSFH series

Material	Tooth Shape	Tooth Process	Heat Treatment
S	S	F	H
S45C	Spur	Finish Cutting	High Frequency Induction

Module	Length	Surface Treatment
M1.5	L05	F
Module 1.5	L05=500 mm L10=1000 mm	Finish cutting

Specifications

Precision Grade	JIS 6 DIN 10 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Finish cutting	Material	S45C	Heat Treatment	Tooth surface induction hardened



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SSFH 1.5~05	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.085
SSFH 1.5~10	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.085
SSFH 2~05	502.64	80	24	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.086
SSFH 2~10	1005.28	160	24	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.086
SSFH 3~05	508.95	54	29	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.091
SSFH 3~10	1017.90	108	29	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.091
SSFH 4~05	502.64	40	39	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.095
SSFH 4~10	1005.28	80	39	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.095
SSFH 5~05	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.098
SSFH 5~10	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.098
SSFH 6~05	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.100
SSFH 6~10	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.100
SSFH 8~05	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.105
SSFH 8~10	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.105

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



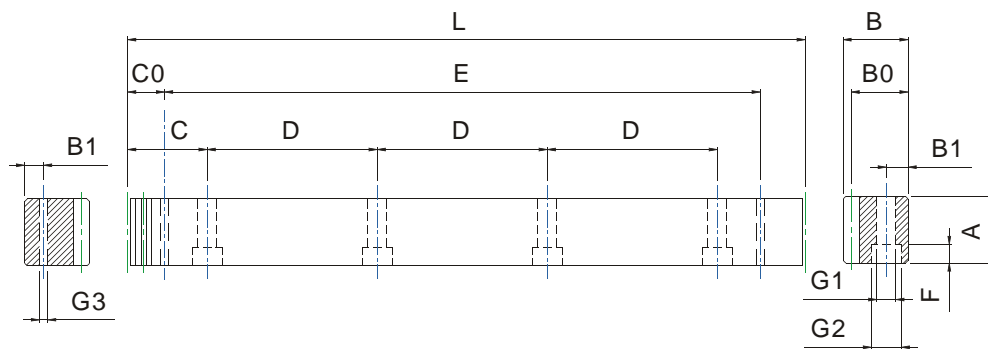
Material S45C
Spur Rack

SSFH-G series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
S	S	F	H	M1.5	L05	G
S45C	Spur	Finish Cutting	High Frequency Induction	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 5 DIN 9 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Grinding	Material	S45C	Heat Treatment	Tooth surface induction hardened



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SSFH 1.5-05G	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.058
SSFH 1.5-10G	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.058
SSFH 2-05G	502.64	80	24	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.059
SSFH 2-10G	1005.28	160	24	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.061
SSFH 3-05G	508.95	54	29	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.065
SSFH 3-10G	1017.90	108	29	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.065
SSFH 4-05G	502.64	40	39	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.068
SSFH 4-10G	1005.28	80	39	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.068
SSFH 5-05G	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.070
SSFH 5-10G	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.070
SSFH 6-05G	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.072
SSFH 6-10G	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.072
SSFH 8-05G	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.075
SSFH 8-10G	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.075

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



Material S45C
Spur Rack

SSFQ series

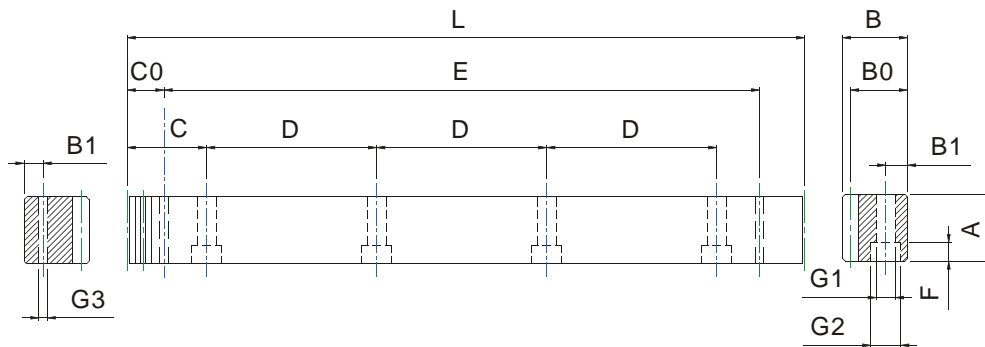
Material	Tooth Shape	Tooth Process	Heat Treatment
S	S	F	Q
S45C	Spur	Finish Cutting	Quenched

Module	Length	Surface Treatment
M1.5	L05	F
Module 1.5	L05=500 mm L10=1000 mm	Finish Cutting

Specifications

Precision Grade	JIS 4 DIN 8 e 27	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
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Gear Teeth	Straight	Surface Treatment	Finish cutting	Material	S45C	Heat Treatment	Quenched
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Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SSFQ 1.5~05	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.042
SSFQ 1.5~10	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.042
SSFQ 2~05	502.64	80	25	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.044
SSFQ 2~10	1005.28	160	25	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.044
SSFQ 3~05	508.95	54	30	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.046
SSFQ 3~10	1017.90	108	30	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.046
SSFQ 4~05	502.64	40	40	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.048
SSFQ 4~10	1005.28	80	40	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.048
SSFQ 5~05	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.050
SSFQ 5~10	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.050
SSFQ 6~05	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.055
SSFQ 6~10	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.055
SSFQ 8~05	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.060
SSFQ 8~10	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



Material S45C
Spur Rack

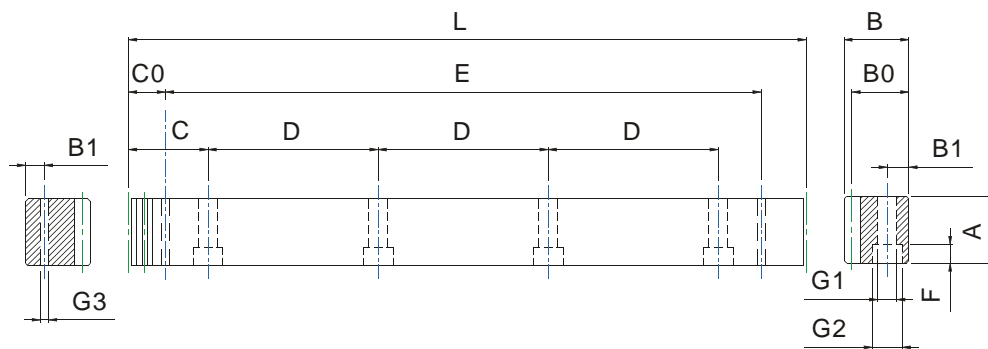
SSFQ-G series

Material	Tooth Shape	Tooth Process	Heat Treatment
S	S	F	Q
S45C	Spur	Finish Cutting	Quenched

Module	Length	Surface Treatment
M1.5	Lo5	G
Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 3 DIN 7 e 25	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Grinding	Material	S45C	Heat Treatment	Quenched



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SSFQ 1.5~05G	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.042
SSFQ 1.5~10G	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.042
SSFQ 2~05G	502.64	80	25	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.044
SSFQ 2~10G	1005.28	160	25	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.044
SSFQ 3~05G	508.95	54	30	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.046
SSFQ 3~10G	1017.90	108	30	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.046
SSFQ 4~05G	502.64	40	40	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.048
SSFQ 4~10G	1005.28	80	40	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.048
SSFQ 5~05G	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.050
SSFQ 5~10G	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.050
SSFQ 6~05G	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.055
SSFQ 6~10G	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.055
SSFQ 8~05G	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.060
SSFQ 8~10G	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



Material S45C
Spur Rack

SSGH series

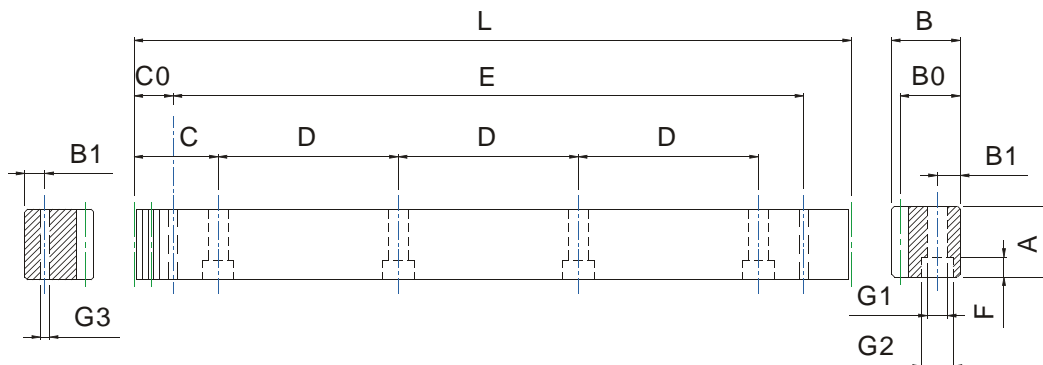
Material	Tooth Shape	Tooth Process	Heat Treatment
S	S	G	H
S45C	Teeth	Grinding	High Frequency Induction

Module	Length	Surface Treatment
M1.5	L05	G
Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 2 DIN 6 h 25	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Grinding
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Gear Teeth	Straight	Surface Treatment	Grinding	Material	S45C	Heat Treatment	Tooth surface induction hardened
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Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SSGH 1.5~05	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.021
SSGH 1.5~10	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.021
SSGH 2~05	502.64	80	24	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.022
SSGH 2~10	1005.28	160	24	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.022
SSGH 3~05	508.95	54	29	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.024
SSGH 3~10	1017.90	108	29	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.024
SSGH 4~05	502.64	40	39	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.025
SSGH 4~10	1005.28	80	39	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.025
SSGH 5~05	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.025
SSGH 5~10	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.025
SSGH 6~05	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.026
SSGH 6~10	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.026
SSGH 8~05	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.027
SSGH 8~10	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.027

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



Material SCM440
Spur Rack

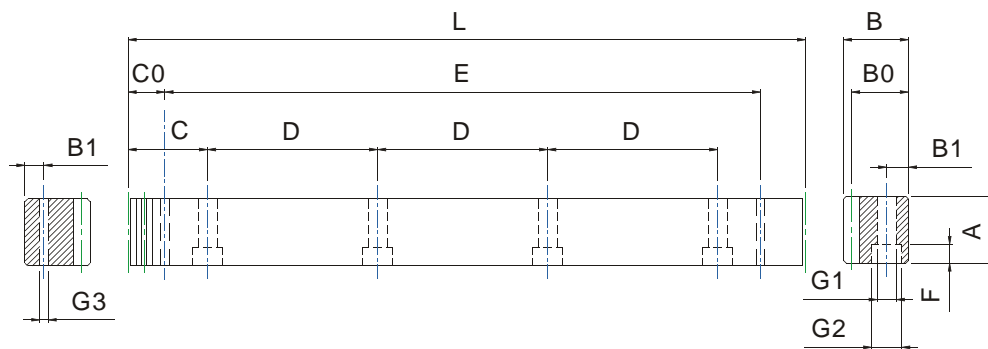
RSFH series

Material	Tooth Shape	Tooth Process	Heat Treatment
R	S	F	H
SCM440	Spur	Finish Cutting	High Frequency Induction

Module	Length	Surface Treatment
M1.5	L05	F
Module 1.5	L05=500 mm L10=1000 mm	Finish Cutting

Specifications

Precision Grade	JIS 6 DIN 10 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Finish cutting	Material	SCM440	Heat Treatment	Tooth surface induction hardened



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RSFH 1.5~05	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.082
RSFH 1.5~10	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.082
RSFH 2~05	502.64	80	25	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.086
RSFH 2~10	1005.28	160	25	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.086
RSFH 3~05	508.95	54	30	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.091
RSFH 3~10	1017.90	108	30	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.091
RSFH 4~05	502.64	40	40	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.095
RSFH 4~10	1005.28	80	40	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.095
RSFH 5~05	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.098
RSFH 5~10	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.098
RSFH 6~05	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.100
RSFH 6~10	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.100
RSFH 8~05	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.105
RSFH 8~10	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.105

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



Material SCM440
Spur Rack

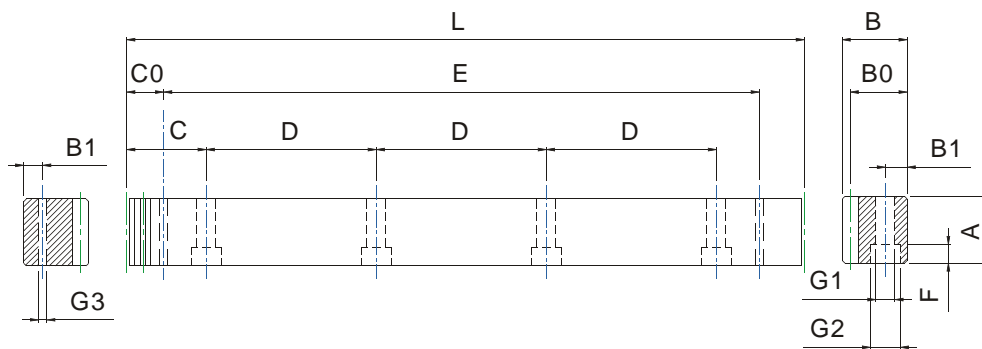
RSFH-G series

Material	Tooth Shape	Tooth Process	Heat Treatment
R	S	F	H
SCM440	Spur Teeth	Finish Cutting	High Frequency Induction

Module	Length	Surface Treatment
M1.5	L05	G
Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 5 DIN 9 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Grinding	Material	SCM440	Heat Treatment	Tooth surface induction hardened



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RSFH 1.5~05G	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.058
RSFH 1.5~10G	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.058
RSFH 2~05G	502.64	80	24	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.059
RSFH 2~10G	1005.28	160	24	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.061
RSFH 3~05G	508.95	54	29	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.065
RSFH 3~10G	1017.90	108	29	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.065
RSFH 4~05G	502.64	40	39	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.068
RSFH 4~10G	1005.28	80	39	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.068
RSFH 5~05G	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.070
RSFH 5~10G	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.070
RSFH 6~05G	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.072
RSFH 6~10G	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.072
RSFH 8~05G	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.075
RSFH 8~10G	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.075

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



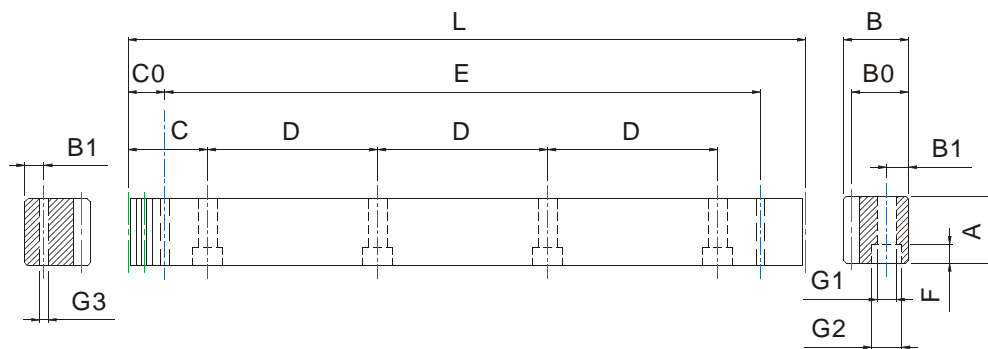
Material SCM440
Spur Rack

RSFQ series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
R	S	F	Q	M1.5	L05	F
SCM440	Spur	Finish Cutting	Quenched	Module 1.5	L05=500 mm L10=1000 mm	Finish Cutting

Specifications

Precision Grade	JIS 4 DIN 8 e 27	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Finish cutting	Material	SCM440	Heat Treatment	Quenched



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RSFQ 1.5-05	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.042
RSFQ 1.5-10	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.042
RSFQ 2-05	502.64	80	25	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.044
RSFQ 2-10	1005.28	160	25	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.044
RSFQ 3-05	508.95	54	30	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.046
RSFQ 3-10	1017.90	108	30	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.046
RSFQ 4-05	502.64	40	40	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.048
RSFQ 4-10	1005.28	80	40	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.048
RSFQ 5-05	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.050
RSFQ 5-10	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.050
RSFQ 6-05	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.055
RSFQ 6-10	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.055
RSFQ 8-05	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.060
RSFQ 8-10	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



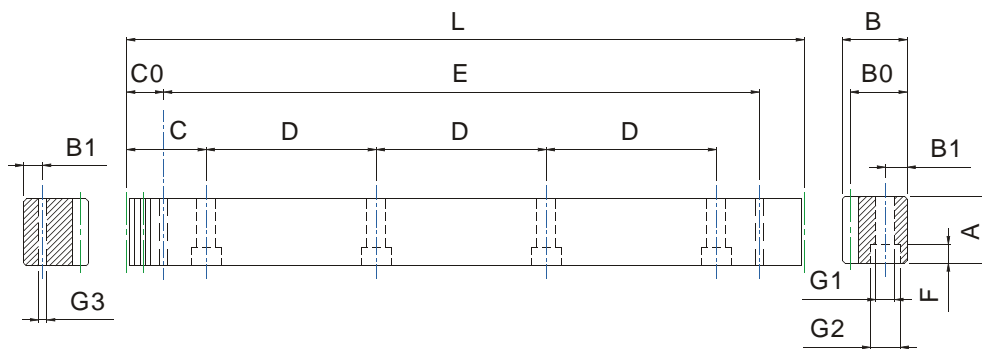
Material SCM440
Spur Rack

RSFQ-G series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
R	S	F	Q	M1.5	L05	G
SCM440	Spur	Finish Cutting	Quenched	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 3 DIN 7 e 25	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Straight	Surface Treatment	Finish cutting	Material	SCM440	Heat Treatment	Quenched



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RSFQ 1.5~05G	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.042
RSFQ 1.5~10G	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.042
RSFQ 2~05G	502.64	80	25	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.044
RSFQ 2~10G	1005.28	160	25	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.044
RSFQ 3~05G	508.95	54	30	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.046
RSFQ 3~10G	1017.90	108	30	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.046
RSFQ 4~05G	502.64	40	40	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.048
RSFQ 4~10G	1005.28	80	40	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.048
RSFQ 5~05G	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.050
RSFQ 5~10G	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.050
RSFQ 6~05G	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.055
RSFQ 6~10G	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.055
RSFQ 8~05G	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.060
RSFQ 8~10G	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



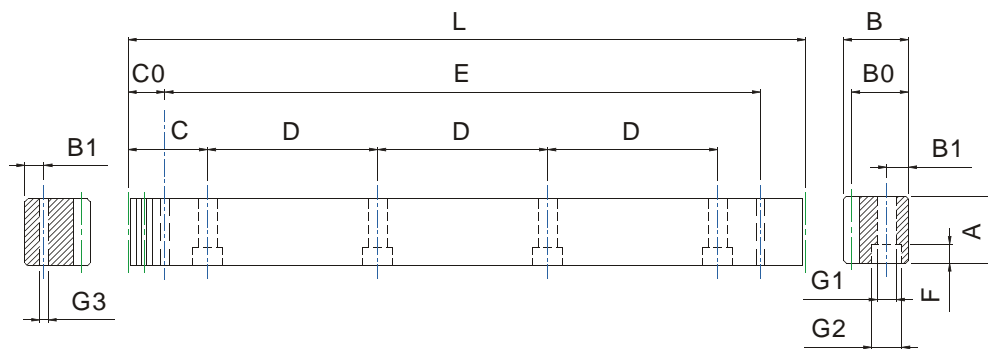
Material SCM440
Spur Rack

RSGH series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
R	S	G	H	M1.5	L05	G
SCM440	Spur	Grinding	High Frequency Induction	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 2 DIN 6 e 25	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Grinding
Gear Teeth	Straight	Surface Treatment	Grinding	Material	SCM440	Heat Treatment	Tooth surface induction hardened



Unit: mm

Module	Length	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RSGH 1.5-05	499.51	106	17	17	15.5	62.44	124.88	4	8	6	9.5	7	29.0	441.5	5.7	0.021
RSGH 1.5-10	999.03	212	17	17	15.5	62.44	124.88	8	8	6	9.5	7	29.0	941.0	5.7	0.021
RSGH 2-05	502.64	80	24	24	22.0	62.83	125.66	4	8	7	11.0	7	31.3	440.1	5.7	0.022
RSGH 2-10	1005.28	160	24	24	22.0	62.83	125.66	8	8	7	11.0	7	31.3	942.7	5.7	0.022
RSGH 3-05	508.95	54	29	29	26.0	63.62	127.23	4	9	10	15.0	9	34.4	440.1	7.7	0.024
RSGH 3-10	1017.9	108	29	29	26.0	63.62	127.23	8	9	10	15.0	9	34.4	949.1	7.7	0.024
RSGH 4-05	502.64	40	39	39	35.0	62.83	125.66	4	12	10	15.0	9	37.5	427.7	7.7	0.025
RSGH 4-10	1005.28	80	39	39	35.0	62.83	125.66	8	12	10	15.0	9	37.5	930.3	7.7	0.025
RSGH 5-05	502.65	32	49	39	34.0	62.83	125.66	4	12	14	20.0	13	30.1	442.4	11.7	0.025
RSGH 5-10	1005.31	64	49	39	34.0	62.83	125.66	8	12	14	20.0	13	30.1	945.0	11.7	0.025
RSGH 6-05	508.95	27	59	49	43.0	63.62	127.23	4	16	18	26.0	17	31.4	446.1	15.7	0.026
RSGH 6-10	1017.90	54	59	49	43.0	63.62	127.23	8	16	18	26.0	17	31.4	955.0	15.7	0.026
RSGH 8-05	502.64	20	79	79	71.0	62.83	125.66	4	25	22	33.0	21	26.6	449.5	19.7	0.027
RSGH 8-10	1005.28	40	79	79	71.0	62.83	125.66	8	25	22	33.0	21	26.6	952.0	19.7	0.027

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



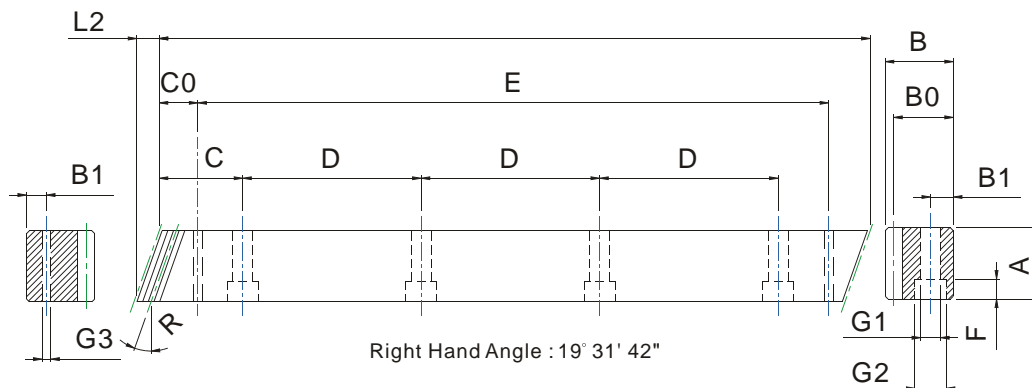
Material S45C
Helical Rack

SHF series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
S	H	F	N/A	M1.5	L05	F
S45C	Helical	Finish Cutting	Non	Module 1.5	L05=500 mm L10=1000 mm	Finish cutting

Specifications

Precision Grade	JIS 5 DIN 9 e 27	Tooth Hardness	Less than 15HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Finish cutting	Material	S45C	Heat Treatment	N/A
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SHF 1.5~05	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.042
SHF 1.5~10	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.042
SHF 2~05	500.00	8.5	75	24	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.044
SHF 2~10	1000.00	8.5	150	24	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.044
SHF 3~05	500.00	10.3	50	29	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.046
SHF 3~10	1000.00	10.3	100	29	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.046
SHF 4~05	506.67	13.8	38	39	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.048
SHF 4~10	1000.00	13.8	75	39	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.048
SHF 5~05	500.00	17.4	30	49	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.050
SHF 5~10	1000.00	17.4	60	49	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.050
SHF 6~05	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.055
SHF 6~10	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.055
SHF 8~05	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.060
SHF 8~10	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



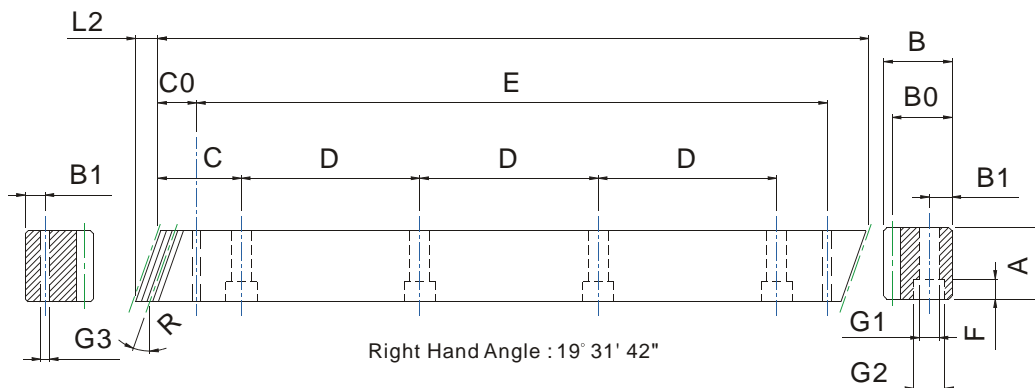
Material S45C
Helical Rack

SHFH series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
S	H	F	H	M1.5	L05	F
S45C	Helical	Finish Cutting	High Frequency Induction	Module 1.5	L05=500 mm L10=1000 mm	Finish cutting

Specifications

Precision Grade	JIS 6 DIN 10 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Finish cutting	Material	S45C	Heat Treatment	Tooth surface induction hardened
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SHFH 1.5~05	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.083
SHFH 1.5~10	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.083
SHFH 2~05	500.00	8.5	75	24	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.086
SHFH 2~10	1000.00	8.5	150	24	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.086
SHFH 3~05	500.00	10.3	50	29	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.091
SHFH 3~10	1000.00	10.3	100	29	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.091
SHFH 4~05	506.67	13.8	38	39	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.095
SHFH 4~10	1000.00	13.8	75	39	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.095
SHFH 5~05	500.00	17.4	30	49	49	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.098
SHFH 5~10	1000.00	17.4	60	49	49	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.098
SHFH 6~05	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.100
SHFH 6~10	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.100
SHFH 8~05	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.105
SHFH 8~10	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.105

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



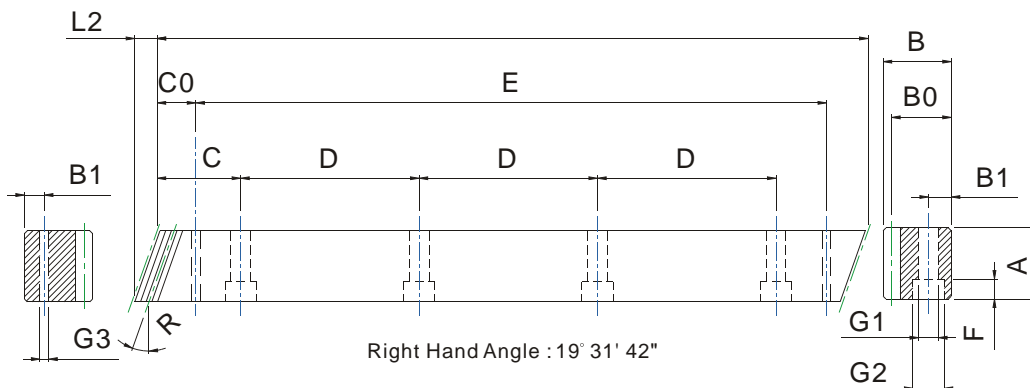
Material S45C
Helical Rack

SHFH-G series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
S	H	F	H	M1.5	L05	G
S45C	Helical	Finish Cutting	High Frequency Induction	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 5 DIN 9 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Grinding	Material	S45C	Heat Treatment	Tooth surface induction hardened
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SHFH 1.5~05G	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.059
SHFH 1.5~10G	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.059
SHFH 2~05G	500.00	9.2	75	24	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.061
SHFH 2~10G	1000.00	9.2	150	24	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.061
SHFH 3~05G	500.00	11.0	50	29	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.065
SHFH 3~10G	1000.00	11.0	100	29	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.065
SHFH 4~05G	506.67	14.5	38	39	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.068
SHFH 4~10G	1000.00	14.5	75	39	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.068
SHFH 5~05G	500.00	17.7	30	39	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.070
SHFH 5~10G	1000.00	17.7	60	39	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.070
SHFH 6~05G	500.00	21.3	25	49	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.072
SHFH 6~10G	1000.00	21.3	50	49	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.072
SHFH 8~05G	480.00	28.7	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.075
SHFH 8~10G	960.00	28.7	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.075

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



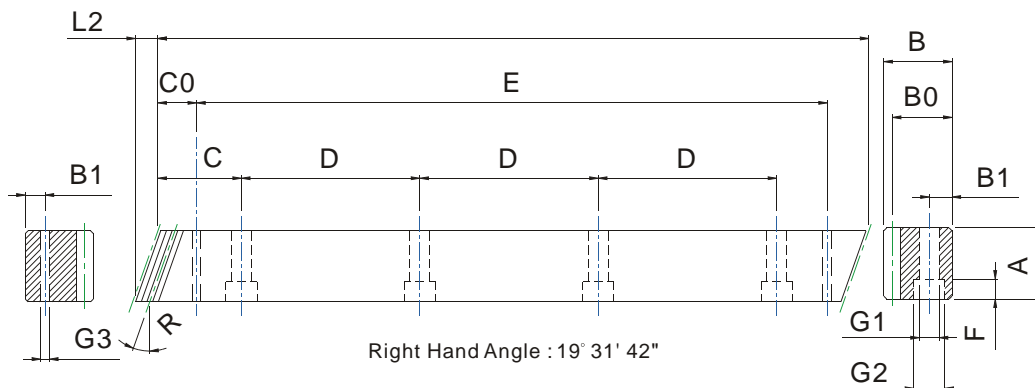
Material S45C
Helical Rack

SHFQ series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
S	H	F	Q	M1.5	L05	F
S45C	Helical	Finish Cutting	Quenched	Module 1.5	L05=500 mm L10=1000 mm	Finish cutting

Specifications

Precision Grade	JIS 4 DIN 8 e 27	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Finish cutting	Material	S45C	Heat Treatment	Quenched
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SHFQ 1.5~05	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.042
SHFQ 1.5~10	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.042
SHFQ 2~05	500.00	8.9	75	25	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.044
SHFQ 2~10	1000.00	8.9	150	25	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.044
SHFQ 3~05	500.00	10.6	50	30	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.046
SHHQ 3~10	1000.00	10.6	100	30	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.046
SHFQ 4~05	506.67	14.2	38	40	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.048
SHFQ 4~10	1000.00	14.2	75	40	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.048
SHFQ 5~05	500.00	17.4	30	50	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.050
SHFQ 5~10	1000.00	17.4	60	50	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.050
SHFQ 6~05	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.055
SHFQ 6~10	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.055
SHFQ 8~05	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.060
SHFQ 8~10	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



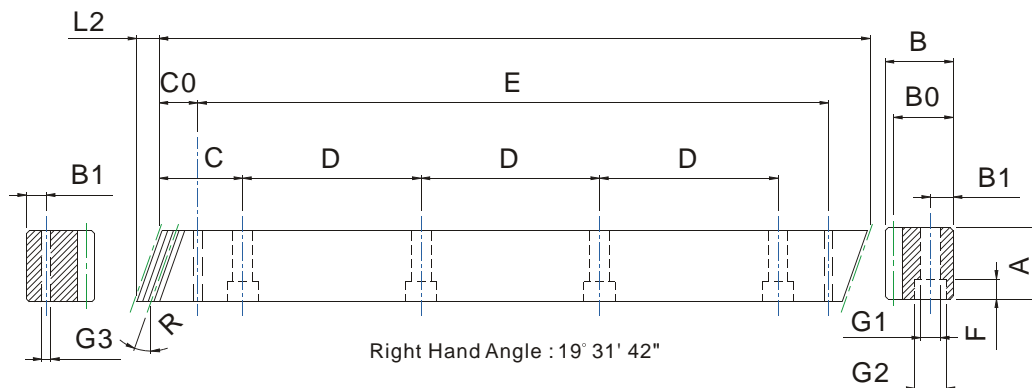
Material S45C
Helical Rack

SHFQ-G series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
S	H	F	Q	M1.5	L05	G
S45C	Helical	Finish Cutting	Quenched	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 3 DIN 7 e 25	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Grinding	Material	S45C	Heat Treatment	Quenched
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SHFQ 1.5~05G	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.042
SHFQ 1.5~10G	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.042
SHFQ 2~05G	500.00	8.9	75	25	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.044
SHFQ 2~10G	1000.00	8.9	150	25	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.044
SHFQ 3~05G	500.00	10.6	50	30	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.046
SHHQ 3~10G	1000.00	10.6	100	30	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.046
SHFQ 4~05G	506.67	14.2	38	40	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.048
SHFQ 4~10G	1000.00	14.2	75	40	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.048
SHFQ 5~05G	500.00	17.7	30	50	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.050
SHFQ 5~10G	1000.00	17.7	60	50	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.050
SHFQ 6~05G	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.055
SHFQ 6~10G	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.055
SHFQ 8~05G	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.060
SHFQ 8~10G	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



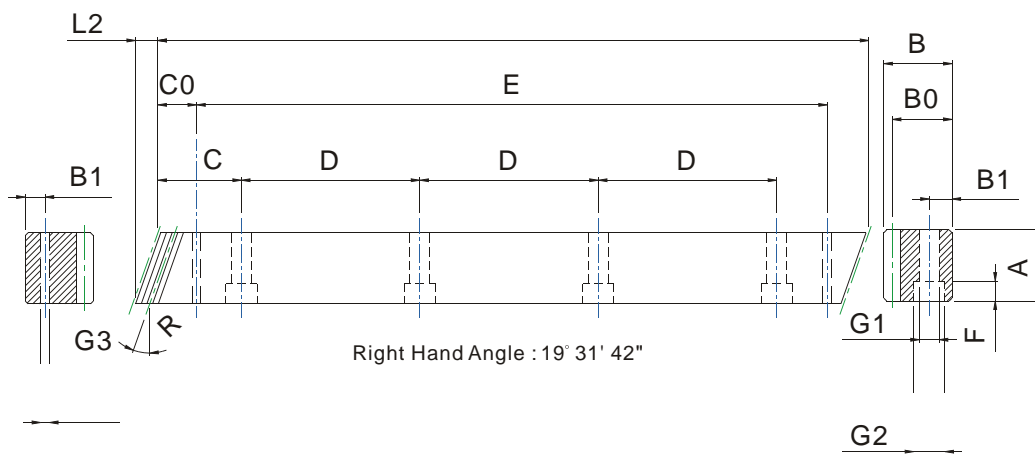
Material S45C
Helical Rack

SHGH series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
S	H	G	H	M1.5	L05	G
S45C	Helical	Grinding	High Frequency Induction	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 2 DIN 6 e 25	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Grinding
Gear Teeth	Helical	Surface Treatment	Grinding	Material	S45C	Heat Treatment	Tooth surface induction hardened
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
SHGH 1.5~05	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.021
SHGH 1.5~10	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.021
SHGH 2~05	500.00	8.5	75	24	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.022
SHGH 2~10	1000.00	8.5	150	24	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.022
SHGH 3~05	500.00	10.3	50	29	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.024
SHGH 3~10	1000.00	10.3	100	29	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.024
SHGH 4~05	506.67	13.8	38	39	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.024
SHGH 4~10	1000.00	13.8	75	39	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.024
SHGH 5~05	500.00	17.4	30	49	49	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.025
SHGH 5~10	1000.00	17.4	60	49	49	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.025
SHGH 6~05	500.00	20.9	25	59	59	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.026
SHGH 6~10	1000.00	20.9	50	59	59	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.026
SHGH 8~05	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.027
SHGH 8~10	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.027

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



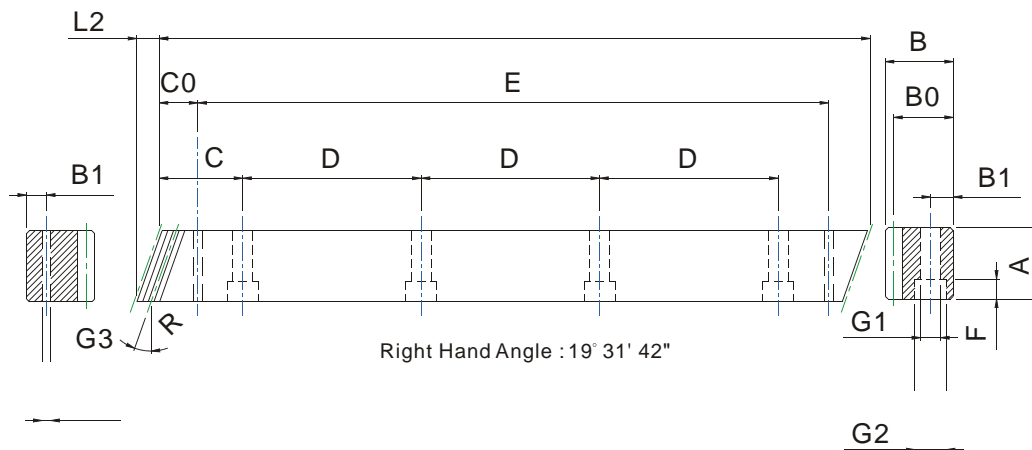
Material SCM440
Helical Rack

RHFH series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
R	H	F	H	M1.5	L05	F
SCM440	Helical	Finish Cutting	High Frequency Induction	Module 1.5	L05=500 mm L10=1000 mm	Finish cutting

Specifications

Precision Grade	JIS 6 DIN 10 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Finish cutting	Material	SCM440	Heat Treatment	Tooth surface induction hardened
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RHFH 1.5~05	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.083
RHFH 1.5~10	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.083
RHFH 2~05	500.00	8.5	75	24	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.086
RHFH 2~10	1000.00	8.5	150	24	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.086
RHFH 3~05	500.00	10.3	50	29	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.091
RHFH 3~10	1000.00	10.3	100	29	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.091
RHFH 4~05	506.67	13.8	38	39	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.095
RHFH 4~10	1000.00	13.8	75	39	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.095
RHFH 5~05	500.00	17.4	30	49	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.098
RHFH 5~10	1000.00	17.4	60	49	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.098
RHFH 6~05	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.100
RHFH 6~10	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.100
RHFH 8~05	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.105
RHFH 8~10	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.105

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



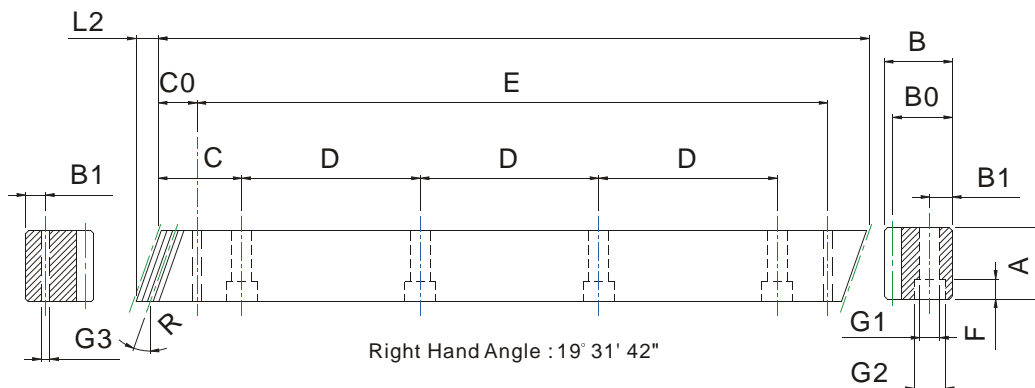
Material SCM440
Helical Rack

RHFH-G series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
R	H	F	H	M1.5	L05	G
SCM440	Helical	Finish Cutting	High Frequency Induction	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 5 DIN 9 e 27	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Grinding	Material	SCM440	Heat Treatment	Tooth surface induction hardened
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RHFH 1.5~05G	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.059
RHFH 1.5~10G	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.059
RHFH 2~05G	500.00	9.2	75	24	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.061
RHFH 2~10G	1000.00	9.2	150	24	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.061
RHFH 3~05G	500.00	11.0	50	29	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.065
RHFH 3~10G	1000.00	11.0	100	29	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.065
RHFH 4~05G	506.67	14.5	38	39	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.068
RHFH 4~10G	1000.00	14.5	75	39	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.068
RHFH 5~05G	500.00	17.7	30	49	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.070
RHFH 5~10G	1000.00	17.7	60	49	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.070
RHFH 6~05G	500.00	21.3	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.072
RHFH 6~10G	1000.00	21.3	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.072
RHFH 8~05G	480.00	28.7	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.075
RHFH 8~10G	960.00	28.7	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.075

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



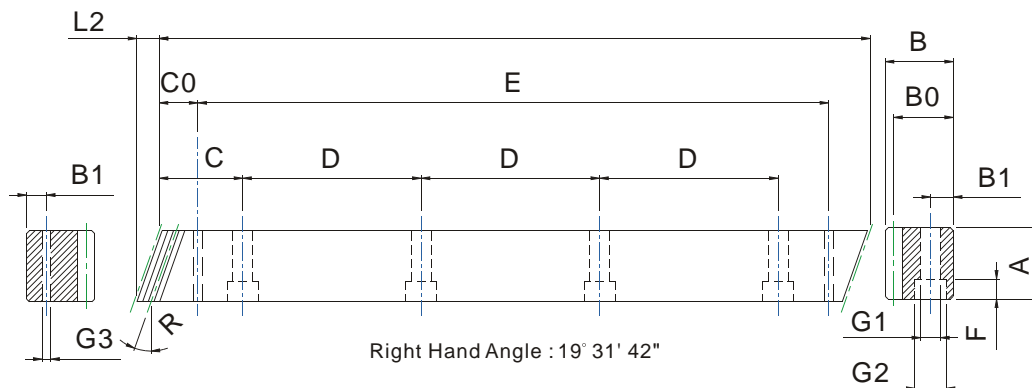
Material SCM440
Helical Rack

RHFQ series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
R	H	F	Q	M1.5	L05	F
SCM440	Helical	Finish Cutting	Quenched	Module 1.5	L05=500 mm L10=1000 mm	Finish cutting

Specifications

Precision Grade	JIS 4 DIN 8 e 27	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Finish cutting	Material	SCM440	Heat Treatment	Quenched
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RHFQ 1.5~05	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.042
RHFQ 1.5~10	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.042
RHFQ 2~05	500.00	8.9	75	25	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.044
RHFQ 2~10	1000.00	8.9	150	25	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.044
RHFQ 3~05	500.00	10.6	50	30	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.046
RHFQ 3~10	1000.00	10.6	100	30	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.046
RHFQ 4~05	506.67	14.2	38	40	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.048
RHFQ 4~10	1000.00	14.2	75	40	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.048
RHFQ 5~05	500.00	17.4	30	50	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.050
RHFQ 5~10	1000.00	17.4	60	50	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.050
RHFQ 6~05	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.055
RHFQ 6~10	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.055
RHFQ 8~05	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.060
RHFQ 8~10	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



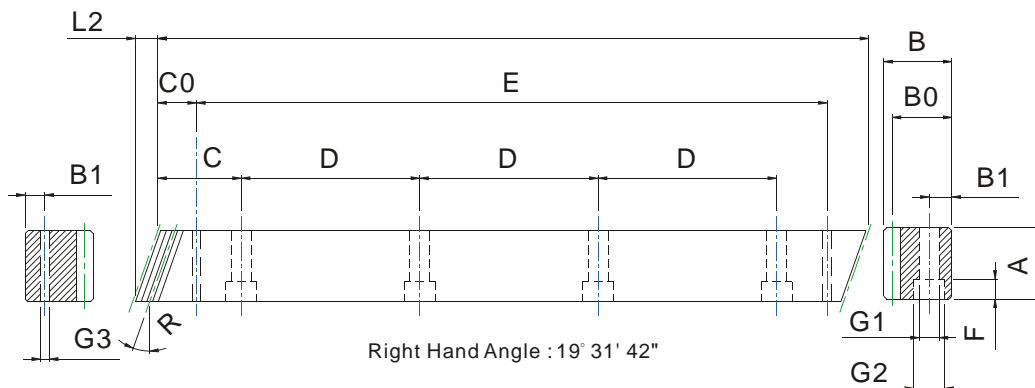
Material SCM440
Helical Rack

RHFQ-G series

Material	Tooth Shape	Tooth Process	Heat Treatment	Module	Length	Surface Treatment
R	H	F	Q	M1.5	L05	G
SCM440	Helical	Finish Cutting	Quenched	Module 1.5	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 3 DIN 7 e 25	Tooth Hardness	15~20HRC	Pressure Angle	20°	Tooth Process	Finish cutting
Gear Teeth	Helical	Surface Treatment	Grinding	Material	SCM440	Heat Treatment	Quenched
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RHFQ 1.5~05G	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.042
RHFQ 1.5~10G	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.042
RHFQ 2~05G	500.00	8.9	75	25	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.044
RHFQ 2~10G	1000.00	8.9	150	25	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.044
RHFQ 3~05G	500.00	10.6	50	30	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.046
RHFQ 3~10G	1000.00	10.6	100	30	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.046
RHFQ 4~05G	506.67	14.2	38	40	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.048
RHFQ 4~10G	1000.00	14.2	75	40	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.048
RHFQ 5~05G	500.00	17.7	30	50	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.050
RHFQ 5~10G	1000.00	17.7	60	50	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.050
RHFQ 6~05G	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.055
RHFQ 6~10G	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.055
RHFQ 8~05G	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.060
RHFQ 8~10G	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.060

Material S45C
Spur Rack

Material SCM440
Spur Rack

Material S45C
Helical Rack

Material SCM440
Helical Rack



Material SCM440
Helical Rack

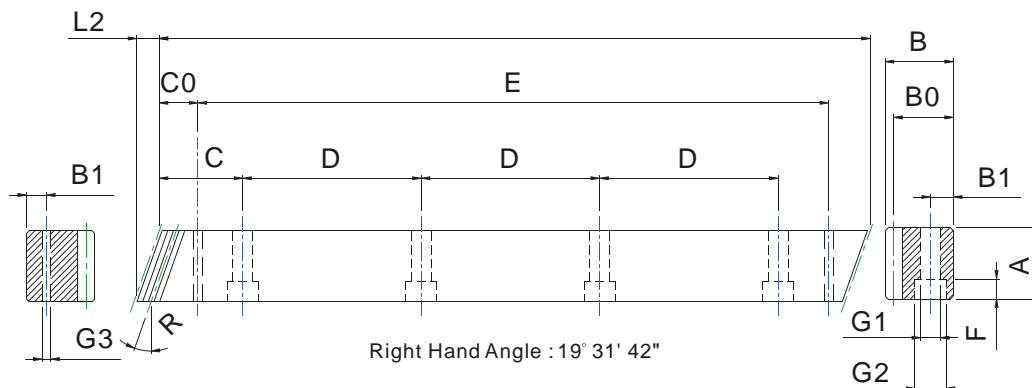
RHGH series

Material	Tooth Shape	Tooth Process	Heat Treatment
R	H	G	H
SCM440	Helical	Grinding	High Frequency Induction

Module	Length	Surface Treatment
M1.5	L05	G
M1.5=1.5 M=2.0.....	L05=500 mm L10=1000 mm	Grinding

Specifications

Precision Grade	JIS 2 DIN 6 e 25	Tooth Hardness	50~55HRC	Pressure Angle	20°	Tooth Process	Grinding
Gear Teeth	Helical	Surface Treatment	Grinding	Material	SCM440	Heat Treatment	Tooth surface induction hardened
Right Hand Angle	19° 31' 42"						



Unit: mm

Module	Length	L2	Tooth No.	A	B	B0	C	D	Hole No.	B1	G1	G2	F	C0	E	G3	Pitch Error /300mm
RHGH 1.5~05	500.00	6.0	100	17	17	15.5	62.50	125	4	8	6	9.5	7	31.7	436.6	5.7	0.021
RHGH 1.5~10	1000.00	6.0	200	17	17	15.5	62.50	125	8	8	6	9.5	7	31.7	936.6	5.7	0.021
RHGH 2~05	500.00	8.5	75	24	24	22.0	62.50	125	4	8	7	11.0	7	31.7	436.6	5.7	0.022
RHGH 2~10	1000.00	8.5	150	24	24	22.0	62.50	125	8	8	7	11.0	7	31.7	936.6	5.7	0.022
RHGH 3~05	500.00	10.3	50	29	29	26.0	62.50	125	4	9	10	15.0	9	35.0	430.0	7.7	0.024
RHGH 3~10	1000.00	10.3	100	29	29	26.0	62.50	125	8	9	10	15.0	9	35.0	930.0	7.7	0.024
RHGH 4~05	506.67	13.8	38	39	39	35.0	62.50	125	4	12	10	15.0	9	33.3	433.0	7.7	0.024
RHGH 4~10	1000.00	13.8	75	39	39	35.0	62.50	125	8	12	10	15.0	9	33.3	933.4	7.7	0.024
RHGH 5~05	500.00	17.4	30	49	39	34.0	62.50	125	4	12	14	20.0	13	37.5	425.0	11.7	0.025
RHGH 5~10	1000.00	17.4	60	49	39	34.0	62.50	125	8	12	14	20.0	13	37.5	925.0	11.7	0.025
RHGH 6~05	500.00	20.9	25	59	49	43.0	62.50	125	4	16	18	26.0	17	37.5	425.0	15.7	0.026
RHGH 6~10	1000.00	20.9	50	59	49	43.0	62.50	125	8	16	18	26.0	17	37.5	925.0	15.7	0.026
RHGH 8~05	480.00	28.0	18	79	79	71.0	60.00	120	4	25	22	33.0	21	120.0	240.0	17.7	0.027
RHGH 8~10	960.00	28.0	36	79	79	71.0	60.00	120	8	25	22	33.0	21	120.0	720.0	17.7	0.027

Material S45C
Spur Rack

Material SCM440
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