Fenghua Technology Servo Precision Reducer Products

Planetary Gearbox

RV Reducer

90 Degree Right Angle Gearbox

Fenghua Transmission is committed to offering you quality products
Specializing in R & D and production of various precision planetary gear transmission products
Free service hotline: 400-8040-668
Click www.3fgearbox.com for CAD, 3D, 2D files of products

3F FAMED®

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3F FAMED®

Fenghua Transmission Technology (Shanghai) Co.,Ltd.

German Standard DIN
Japanese Standard JIS
Japanese Standard CP-JIS
Non-standard customized sizes

Fenghua Transmission Technology (Jiangsu) Co.,Ltd.

For servo motor / precision gearbox linear driving

Precision Rack . Pinion

Taiwan technology/precision transmission solutions expert

3F FAMED®

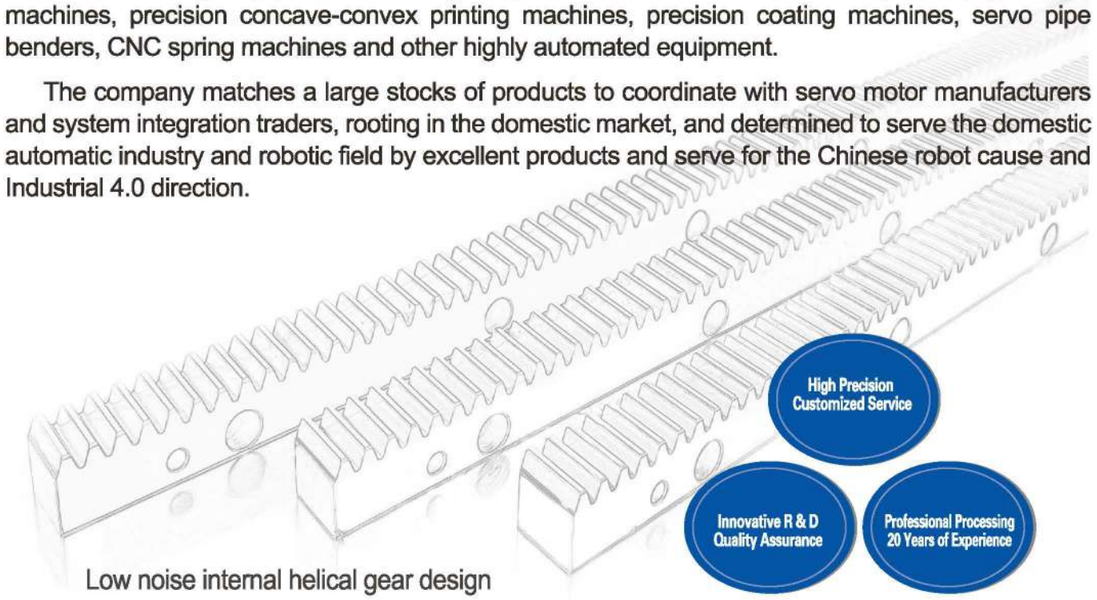
Fenghua Transmission Technology (Jiangsu) Co.,Ltd.

FAMED® Company Introduction

Fenghua Transmission Technology Co.,Ltd. is developed from a factory which professionally manufactures the gears. All staffs of factory and R & D team have more than 20 years' gear manufacturing and designing experience. The factory cooperated with Taiwan planetary gearbox technology team in the early period, and then established business department of the planetary gearbox , and developed the design and manufacturing process of product line of planetary gearbox series. The servo exclusive-used precision gearbox series the company produced are with three features of low backlash (5~8 arcmin), low noise (60dAB) and high efficiency (≧95%). Products can be compatible with servo motors and stepper motors produced by any servo factory. High precision planetary reducers features of reducing rotating speed, increasing torque greatly, increasing inertia of the motor rotor, improving rigidity, shortening the locating time of start and stop, miniaturizing the motor power and improving the stability of the inertia load and reducing the vibration at the same time.

In order to upgrade products, and adapt to the applicable range of high precision grade products, the factory launched the whole series of high precision helical planetary gearbox in late stage. With ultra-low backlash (1-3 arcmin) precision grade, the newly developed products can directly replace the sizes of the products produced by Germany and Japan. All product series are completed, and sizes and precision can perfectly match with that of Japanese and Germany. While upgrading planetary reducer products, the factory insists on the concept of R&D as the development direction of the company. Then the factory successively developed and launched 90 degree precision right angle gearboxes which are suitable for automation with different installation and output requirements , multi-joint robot industry reducers (RV high precision pin-wheel reducers), and harmonic reducers making use of the principle of the wave gear device invented by American genius inventor C. W. Musser, and precision gear & rack products. The factory can also customize the reducer. The products are widely used in tool machines (Planning Machine Tools), laser cutting machines, woodworking engraving machines, 3C automation, photovoltaic equipment, lithium battery and other fields of new energy equipment. And Fenghua gearboxes can also be found in fully servo paper towel machines, precision concave-convex printing machines, precision coating machines, servo pipe benders, CNC spring machines and other highly automated equipment.

The company matches a large stocks of products to coordinate with servo motor manufacturers and system integration traders, rooting in the domestic market, and determined to serve the domestic automatic industry and robotic field by excellent products and serve for the Chinese robot cause and Industrial 4.0 direction.



Low noise internal helical gear design

Production workshop

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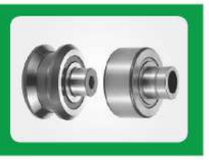

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Specificantion & Quality Grade

World Major Standard Specification of Racks and Pinions

Specification	Full Name
AGMA	American Gear Manufacturers Association
DIN	Deutsches Institut für Normung
ISO	International Organization for Standardization
JIS	Japanese Industrial Standards

Quality Grade Comparison Table

Standard	Quality Grade											
ISO	1	2	3	4	5	6	7	8	9	10	11	12
DIN		2	3	4	5	6	7	8	9	10	11	12
AGMA		15	14	13	12	11	10	9	8	7	6	5
JIS				0	1	2	3	4	5	6	7	8
JIS N				N4	N5	N6	N7	N8	N9	N10		

Compared with Pitch Error: Fp fp

Content of Racks

German Standard accuracy grade DIN

Code	DIN 3962	Material	Type	Teeth Treatment	Hardness	Mounted Holes	Module	Page
CHTGH	DIN 5	S45C	Helical Right Hand 19°31'42"	Teeth Ground	Hardened HRC 50°-55°	Holes	1.5, 2, 2.5, 3, 4, 5, 6, 8	P.3
CHTGH	DIN 6	S45C					1.5, 2, 2.5, 3, 4, 5, 6, 8, 10	P.4
MHTG	DIN 6	SCM440			*		1.5, 2, 2.5, 3, 4, 5, 6, 8	P.5
CHTM	DIN 8	S45C		Milled	*		1.5, 2, 3, 4, 5, 6, 8, 10	P.6
CHTMQ	DIN 8	S45C			HRC18°-22° Quenched & Tempered		1.5, 2, 3, 4, 5, 6, 8, 10	P.7
CHTMH	DIN 10	S45C			Hardened HRC 50°-55°		1.5, 2, 3, 4, 5, 6, 8, 10	P.8
CSTGH	DIN 5	S45C	Straight	Teeth Ground	Hardened HRC 50°-55		2, 3, 4, 5	P.9
CSTGH	DIN 6	S45C					1.5, 2, 2.5, 3, 4, 5, 6, 8	P.10
CSTM	DIN 8	S45C		Milled	*		1.5, 2, 3, 4, 5, 6, 8, 10	P.11
CSTMQ	DIN 8	S45C			Quenched&Tempered HRC 18°-20°		1.5, 2, 3, 4, 5, 6, 8, 10	P.12
CSTMH	DIN 10	S45C			Hardened HRC 50°-55°		1.5, 2, 3, 4, 5, 6, 8, 10	P.13

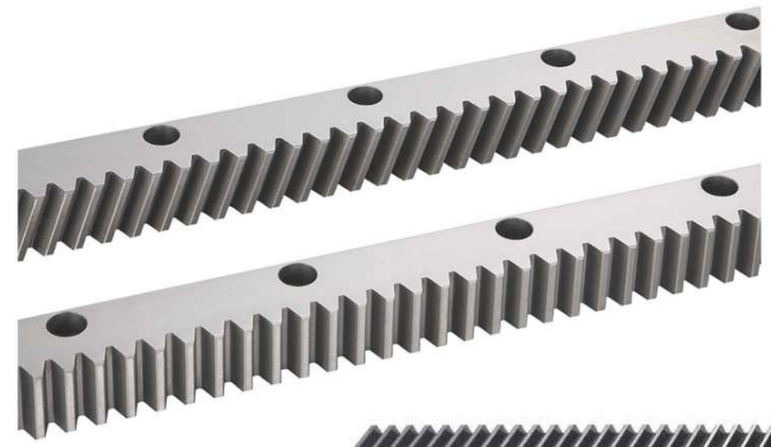
Japanese Standard accuracy grade JIS

Code	JIS	Material	Type	Teeth Treatment	Hardness	Mounted Holes	Module	Page
MHTGQ	JIS 1	SCM440	Helical20°30'	Teeth Ground	HRC18°-20° Quenched & Tempered	Holes	1, 1.5, 2, 2.5, 3	P.14
CHTM	JIS 4	S45C	Helical15°	Milled	*	with/out Holes	2, 3	P.15
CSTGH	JIS 2	S45C	Straight	Teeth Ground	Hardened HRC 50°-55°	with/out Holes	1, 1.5, 2, 2.5, 3, 4, 5, 6	P.16
MSTMQ	JIS 4	SCM440		Milled	HRC18°-22° Quenched & Tempered	with/out Holes	1.5, 2, 2.5, 3, 4, 5, 6	P.17
CSTM	JIS 4	S45C			*	with/out Holes	1, 1.5, 2, 2.5, 3, 4, 5, 6	P.18
CSTMH	JIS 5	S45C			Hardened HRC 50°-55°	with/out Holes	1.5, 2, 2.5, 3, 4, 5, 6	P.19

Japanese Standard accuracy grade CP–JIS

Code	JIS	Material	Type	Teeth Treatment	Hardness	Mounted Holes	CP	Page
MSTGQ-CP	JIS 1	SCM440	Straight	Teeth Ground	HRC18°-22° Quenched & Tempered	with/out Holes	5, 10	P.20
MSTGH-CP	JIS 1	SCM440			Hardened HRC 55°-58°	with/out Holes	5, 10	P.21
CSTM-CP	JIS 4	S45C		Milled	*	with/out Holes	5, 10, 15, 20	P.22

Rack Code Instruction



Helical Racks

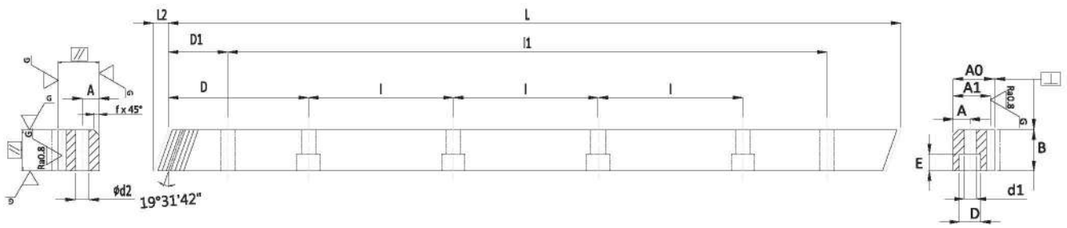
Straight Racks

1st	2nd	3th	4th	5th	6th	7th	8th
Material	Type	Shape	Teeth Treatment	Hardness	Module	Length	Grade
C	S	T	G	H	020	10	DIN JIS
C= Carbon Steel =S45C M=Alloy Steel =SCM440	S=Straight H=Helical	T=Tetragon	M=Milled G=Ground	H=Hardened Q=Quenched & Tempered	M1.5~M10	05=500mm 10=1000mm 15=1500mm 20=2000mm	DIN 5-10 JIS 1-5

Remarks: Lengths, holes,materials,surface treaments (sandblasted, phosphated,Black-coated, sides ground) and other requirements all could be customized.

CHTGH-DIN5 Series Helical Teeth Ground Racks

Tooth Surface Accuracy Grade DIN 5
Material S45C
Right Hand Angle 19°31'42"
Hardness HRC 50~55°
Ground on all sides after hardening.
Total Pitch Error: Fp /1000 ≦ 0.026 mm
Room Temperature is 25°C

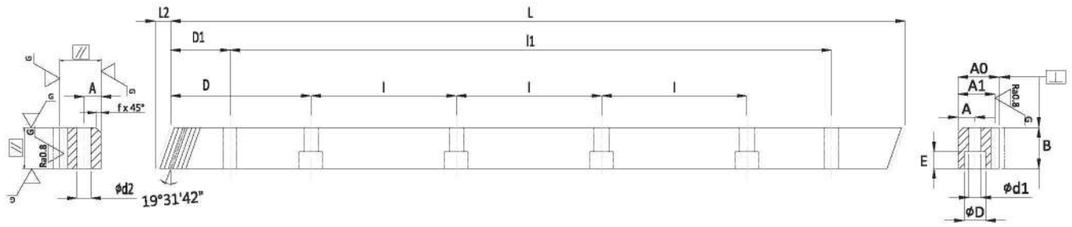


Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CHTGH01505-DIN5	1.5	500.00	6.70	100	19	19	17.5	62.5	125	4	8	7	11	7	31.7	436.60	5.7	1.5	6.87	1.3
CHTGH01510-DIN5	1.5	1000.00	6.70	200	19	19	17.5	62.5	125	8	8	7	11	7	31.7	936.60	5.7	1.5	6.97	2.6
CHTGH02005-DIN5	2	500.00	8.50	75	24	24	22.0	62.5	125	4	8	7	11	7	31.7	436.60	5.7	2	11.46	2.1
CHTGH02010-DIN5	2	1000.00	8.50	150	24	24	22.0	62.5	125	8	8	7	11	7	31.7	936.60	5.7	2	11.68	4.1
CHTGH02505-DIN5	2.5	500.00	8.50	60	24	24	21.5	62.5	125	4	9	7	11	7	31.7	436.60	5.7	2	14.20	2.1
CHTGH02510-DIN5	2.5	1000.00	8.50	120	24	24	21.5	62.5	125	8	9	7	11	7	31.7	936.60	5.7	2	14.52	4.1
CHTGH03005-DIN5	3	500.00	10.30	50	29	29	26.0	62.5	125	4	9	10	15	9	35	430.00	7.7	2	20.41	3.0
CHTGH03010-DIN5	3	1000.00	10.30	100	29	29	26.0	62.5	125	8	9	10	15	9	35	930.00	7.7	2	20.96	6.0
CHRGH04005-DIN5	4	506.67	13.80	38	39	39	35.0	62.5	125	4	12	10	15	9	33.3	433.00	7.7	2	36.11	5.5
CHTGH04010-DIN5	4	1000.00	13.80	75	39	39	35.0	62.5	125	8	12	10	15	9	33.3	933.40	7.7	2	37.24	10.8
CHTGH05005-DIN5	5	500.00	17.40	30	49	39	34.0	62.5	125	4	12	14	20	13	37.5	425.00	11.7	3	55.95	6.8
CHTGH05010-DIN5	5	1000.00	17.40	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.00	11.7	3	57.97	13.6
CHTGH06005-DIN5	6	500.00	20.90	25	59	49	43.0	62.5	125	4	16	18	26	17	37.5	425.00	15.7	3	79.91	10.3
CHTGH06010-DIN5	6	1000.00	20.90	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.00	15.7	3	83.07	20.5
CHTGH08005-DIN5	8	480.00	28.00	18	79	79	71.0	60.0	120	4	25	22	33	21	120	240.00	19.7	4	139.40	21.3
CHTGH08010-DIN5	8	960.00	28.00	36	79	79	71.0	60.0	120	8	25	22	33	21	120	720.00	19.7	4	145.83	42.6

CHTGH-DIN6 Series Helical Teeth Ground Racks

Tooth Surface Accuracy Grade DIN 6
Material S45C
Right Hand Angle 19°31'42"
Hardness HRC 50~55°
Ground on all sides after hardening.
Total Pitch Error: Fp /1000 ≦ 0.036 mm Fp /2000 ≦ 0.047 mm (≦ 0.024/1000 mm)

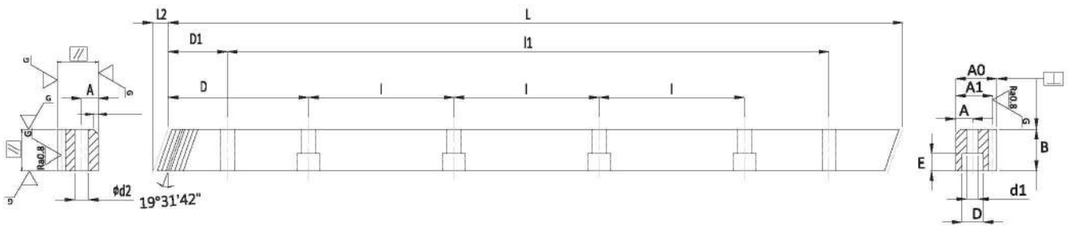


Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CHTGH01505-DIN6	1.5	500.00	6.70	100	19	19	17.5	62.5	125	4	8	7	11	7	31.7	436.60	5.7	1.5	6.87	1.3
CHTGH01510-DIN6	1.5	1000.00	6.70	200	19	19	17.5	62.5	125	8	8	7	11	7	31.7	936.60	5.7	1.5	6.97	2.6
CHTGH02005-DIN6	2	500.00	8.50	75	24	24	22.0	62.5	125	4	8	7	11	7	31.7	436.60	5.7	2	11.46	2.1
CHTGH02010-DIN6	2	1000.00	8.50	150	24	24	22.0	62.5	125	8	8	7	11	7	31.7	936.60	5.7	2	11.68	4.1
CHTGH02020-DIN6	2	2000.00	8.50	300	24	24	22.0	62.5	125	16	8	7	11	7	31.7	1936.60	5.7	2	11.80	8.2
CHTGH02505-DIN6	2.5	500.00	8.50	60	24	24	21.5	62.5	125	4	9	7	11	7	31.7	436.60	5.7	2	14.20	2.1
CHTGH02510-DIN6	2.5	1000.00	8.50	120	24	24	21.5	62.5	125	8	9	7	11	7	31.7	936.60	5.7	2	14.52	4.1
CHTGH02520-DIN6	2.5	2000.00	8.50	240	24	24	21.5	62.5	125	16	9	7	11	7	31.7	1936.60	5.7	2	14.71	8.2
CHTGH03005-DIN6	3	500.00	10.30	50	29	29	26.0	62.5	125	4	9	10	15	9	35.0	430.00	7.7	2	20.41	3.0
CHTGH03010-DIN6	3	1000.00	10.30	100	29	29	26.0	62.5	125	8	9	10	15	9	35.0	930.00	7.7	2	20.96	6.0
CHTGH03020-DIN6	3	2000.00	10.30	200	29	29	26.0	62.5	125	16	9	10	15	9	35.0	1930.00	7.7	2	21.28	12.0
CHTGH04005-DIN6	4	506.67	13.80	38	39	39	35.0	62.5	125	4	12	10	15	9	33.3	433.00	7.7	2	36.11	5.5
CHTGH04010-DIN6	4	1000.00	13.80	75	39	39	35.0	62.5	125	8	12	10	15	9	33.3	933.40	7.7	2	37.24	10.8
CHTGH04020-DIN6	4	2000.00	13.80	150	39	39	35.0	62.5	125	16	12	10	15	9	33.3	1933.40	7.7	2	37.95	21.6
CHTGH05005-DIN6	5	500.00	17.40	30	49	39	34.0	62.5	125	4	12	14	20	13	37.5	425.00	11.7	3	55.95	6.8
CHTGH05010-DIN6	5	1000.00	17.40	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.00	11.7	3	57.97	13.6
CHTGH05020-DIN6	5	2000.00	17.40	120	49	39	34.0	62.5	125	16	12	14	20	13	37.5	1925.00	11.7	3	59.30	27.2
CHTGH06005-DIN6	6	500.00	20.90	25	59	49	43.0	62.5	125	4	16	18	26	17	37.5	425.00	15.7	3	79.91	10.3
CHTGH06010-DIN6	6	1000.00	20.90	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.00	15.7	3	83.07	20.5
CHTGH06020-DIN6	6	2000.00	20.90	100	59	49	43.0	62.5	125	16	16	18	26	17	37.5	1925.00	15.7	3	85.29	41.1
CHTGH08005-DIN6	8	480.00	28.00	18	79	79	71.0	60.0	120	4	25	22	33	21	120.0	240.00	19.7	4	139.40	21.3
CHTGH08010-DIN6	8	960.00	28.00	36	79	79	71.0	60.0	120	8	25	22	33	21	120.0	720.00	19.7	4	145.83	42.6
CHTGH08020-DIN6	8	1920.00	28.00	72	79	79	71.0	60.0	120	16	25	22	33	21	120.0	1680.00	19.7	4	150.59	85.1
CHTGH10005-DIN6	10	500.00	35.11	15	99	99	89.0	62.5	125	4	32	33	48	32	125.0	250.00	19.7	5	215.33	34.8
CHTGH10010-DIN6	10	1000.00	35.11	30	99	99	89.0	62.5	125	8	32	33	48	32	125.0	750.00	19.7	5	226.09	69.6

MHTG-DIN6 Series Helical Teeth Ground Racks

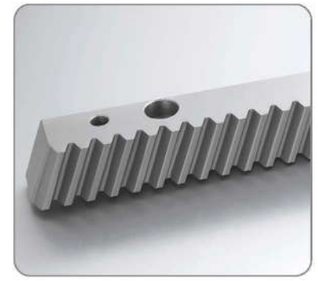
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Right Hand Angle 19°31'42"
Hardness HRC 10~12°
Ground on all sides.
Total Pitch Error: Fp /1000 ≦ 0.036 mm Fp /2000 ≦ 0.047 mm (≦ 0.024/1000 mm)



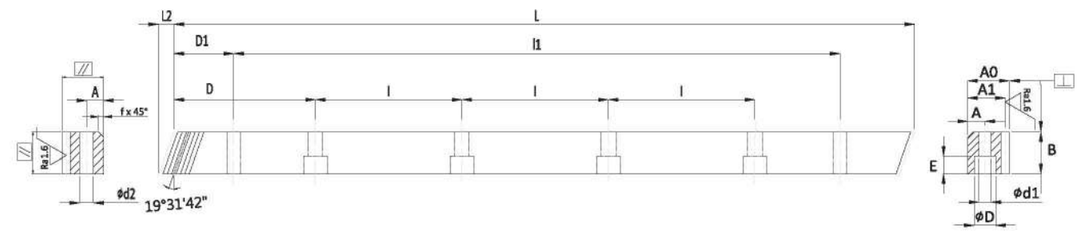
Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
MHTG01505-DIN6	1.5	500.00	6.70	100	19	19	17.5	62.5	125	4	8	7	11	7	31.7	436.60	5.7	1.5	9.48	1.3
MHTG01510-DIN6	1.5	1000.00	6.70	200	19	19	17.5	62.5	125	8	8	7	11	7	31.7	936.60	5.7	1.5	9.63	2.6
MHTG02005-DIN6	2	500.00	8.50	75	24	24	22.0	62.5	125	4	8	7	11	7	31.7	436.60	5.7	2	15.82	2.1
MHTG02010-DIN6	2	1000.00	8.50	150	24	24	22.0	62.5	125	8	8	7	11	7	31.7	936.60	5.7	2	16.13	4.1
MHTG02020-DIN6	2	2000.00	8.50	300	24	24	22.0	62.5	125	16	8	7	11	7	31.7	1936.60	5.7	2	16.31	8.2
MHTG02505-DIN6	2.5	500.00	8.50	60	24	24	21.5	62.5	125	4	9	7	11	7	31.7	436.60	5.7	2	19.61	2.1
MHTG02510-DIN6	2.5	1000.00	8.50	120	24	24	21.5	62.5	125	8	9	7	11	7	31.7	936.60	5.7	2	20.06	4.1
MHTG02520-DIN6	2.5	2000.00	8.50	240	24	24	21.5	62.5	125	16	9	7	11	7	31.7	1936.60	5.7	2	20.32	8.2
MHTG03005-DIN6	3	500.00	10.30	50	29	29	26.0	62.5	125	4	9	10	15	9	35.0	430.00	7.7	2	28.20	3.0
MHTG03010-DIN6	3	1000.00	10.30	100	29	29	26.0	62.5	125	8	9	10	15	9	35.0	930.00	7.7	2	28.95	6.0
MHTG03020-DIN6	3	2000.00	10.30	200	29	29	26.0	62.5	125	16	9	10	15	9	35.0	1930.00	7.7	2	29.39	12.0
MHTG04005-DIN6	4	506.67	13.80	38	39	39	35.0	62.5	125	4	12	10	15	9	33.3	433.00	7.7	2	49.87	5.5
MHTG04010-DIN6	4	1000.00	13.80	75	39	39	35.0	62.5	125	8	12	10	15	9	33.3	933.40	7.7	2	51.43	10.8
MHTG04020-DIN6	4	2000.00	13.80	150	39	39	35.0	62.5	125	16	12	10	15	9	33.3	1933.40	7.7	2	52.42	21.6
MHTG05005-DIN6	5	500.00	17.40	30	49	39	34.0	62.5	125	4	12	14	20	13	37.5	425.00	11.7	3	77.28	6.8
MHTG05010-DIN6	5	1000.00	17.40	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.00	11.7	3	80.06	13.6
MHTG05020-DIN6	5	2000.00	17.40	120	49	39	34.0	62.5	125	16	12	14	20	13	37.5	1925.00	11.7	3	81.90	27.2
MHTG06005-DIN6	6	500.00	20.90	25	59	49	43.0	62.5	125	4	16	18	26	17	37.5	425.00	15.7	3	110.37	10.3
MHTG06010-DIN6	6	1000.00	20.90	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.00	15.7	3	114.73	20.5
MHTG06020-DIN6	6	2000.00	20.90	100	59	49	43.0	62.5	125	16	16	18	26	17	37.5	1925.00	15.7	3	117.80	41.1
MHTG08005-DIN6	8	480.00	28.00	18	79	79	71.0	60.0	120	4	25	22	33	21	120.0	240.00	19.7	4	192.53	21.3
MHTG08010-DIN6	8	960.00	28.00	36	79	79	71.0	60.0	120	8	25	22	33	21	120.0	720.00	19.7	4	201.42	42.6
MHTG08020-DIN6	8	1920.00	28.00	72	79	79	71.0	60.0	120	16	25	22	33	21	120.0	1680.00	19.7	4	207.99	85.1

CHTM-DIN8 Series Helical Milled Racks



Tooth Surface Accuracy Grade DIN 8
Material S45C
Right Hand Angle 19°31'42"
Hardness: Soft HRC 10~12°
Total Pitch Error: Fp /1000 ≦ 0.060 mm
Fp /2000 ≦ 0.080 mm

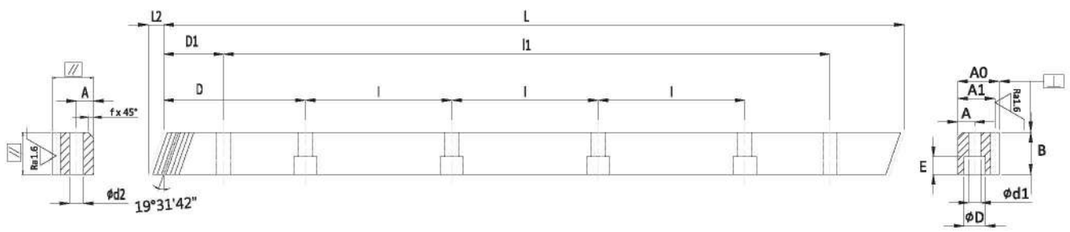


Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CHTM01510-DIN8	1.5	1000	6.00	200	17	17	15.5	62.5	125	8	7	6	9.5	6	31.7	936.6	5.70	1.5	4.35	2.1
CHTM02010-DIN8	2	1000	8.90	150	25	24	22	62.5	125	8	8	7	11	7	31.7	936.6	5.70	2	8.49	4.3
CHTM02020-DIN8	2	2000	8.90	300	25	24	22	62.5	125	16	8	7	11	7	31.7	1936.6	5.70	2	8.58	8.5
CHTM03010-DIN8	3	1000	10.60	100	30	29	26	62.5	125	8	9	10	15	9	35.0	930.0	7.70	2	15.13	6.2
CHTM03020-DIN8	3	2000	10.60	200	30	29	26	62.5	125	16	9	10	15	9	35.0	1930.0	7.70	2	15.36	12.4
CHTM04010-DIN8	4	1000	14.20	75	40	39	35	62.5	125	8	12	10	15	9	33.3	933.4	7.70	2	26.65	11.1
CHTM04020-DIN8	4	2000	14.20	150	40	39	35	62.5	125	16	12	10	15	9	33.3	1933.4	7.70	2	27.16	22.2
CHTM05010-DIN8	5	1000	17.40	60	49	39	34	62.5	125	8	12	14	20	13	37.5	925.0	11.70	3	40.44	13.6
CHTM05020-DIN8	5	2000	17.40	120	49	39	34	62.5	125	16	12	14	20	13	37.5	1925.0	11.70	3	41.37	27.2
CHTM06010-DIN8	6	1000	20.90	50	59	49	43	62.5	125	8	16	18	26	17	37.5	925.0	15.70	3	57.96	20.5
CHTM06020-DIN8	6	2000	20.90	100	59	49	43	62.5	125	16	16	18	26	17	37.5	1925.0	15.70	3	59.51	41.1
CHTM08010-DIN8	8	960	28.00	36	79	79	71	60	120	8	25	22	33	21	120.0	720.0	19.70	4	101.75	42.6
CHTM08020-DIN8	8	1920	28.00	72	79	79	71	60	120	16	25	22	33	21	120.0	1680.0	19.70	4	105.07	85.1
CHTM10010-DIN8	10	1000	35.11	30	99	99	89	62.5	125	8	32	33	48	32	125.0	750.0	19.70	5	157.75	69.6

CHTMQ-DIN8 Series Helical Milled Quenched & Tempered Racks

Tooth Surface Accuracy Grade DIN 8
Material S45C
Right Hand Angle 19°31'42"
Hardness: Soft HRC 18~20°
Total Pitch Error: Fp /1000 ≦ 0.060 mm
Fp /2000 ≦ 0.080 mm

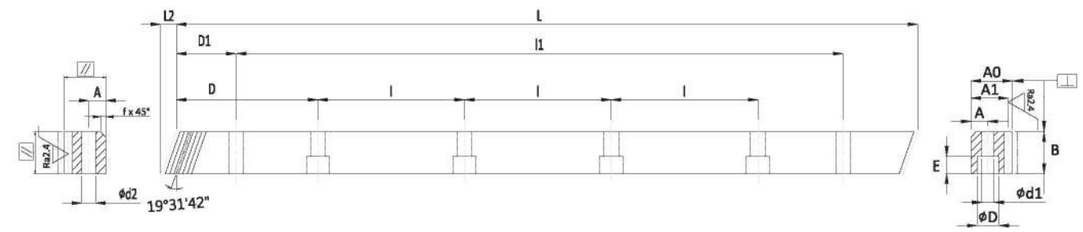


Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CHTMQ01510-DIN8	1.5	1000	6.00	200	17	17	15.5	62.5	125	8	7	6	9.5	7	31.7	936.6	5.7	1.5	5.28	2.1
CHTMQ02010-DIN8	2	1000	8.90	150	25	24	22	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	10.29	4.3
CHTMQ02020-DIN8	2	2000	8.90	300	25	24	22	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	2	10.41	8.5
CHTMQ03010-DIN8	3	1000	10.60	100	30	29	26	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	18.35	6.2
CHTMQ03020-DIN8	3	2000	10.60	200	30	29	26	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	2	18.62	12.4
CHTMQ04010-DIN8	4	1000	14.20	75	40	39	35	62.5	125	8	12	10	15	9	33.3	933.4	7.7	2	32.32	11.1
CHTMQ04020-DIN8	4	2000	14.20	150	40	39	35	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	2	32.94	22.2
CHTMQ05010-DIN8	5	1000	17.40	60	49	39	34	62.5	125	8	12	14	20	13	37.5	925.0	11.7	3	49.05	13.6
CHTMQ05020-DIN8	5	2000	17.40	120	49	39	34	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	3	50.18	27.2
CHTMQ06010-DIN8	6	1000	20.90	50	59	49	43	62.5	125	8	16	18	26	17	37.5	925.0	15.7	3	70.29	20.5
CHTMQ06020-DIN8	6	2000	20.90	100	59	49	43	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	3	72.17	41.1
CHTMQ08010-DIN8	8	960	28.00	36	79	79	71	60	120	8	25	22	33	21	120.0	720.0	19.7	4	123.40	42.6
CHTMQ08020-DIN8	8	1920	28.00	18	79	79	71	60	120	16	25	22	33	21	120.0	1680.0	19.7	4	117.95	85.1
CHTMQ10010-DIN8	10	1000	35.11	30	99	99	89	62.5	125	8	32	33	48	32	125.0	750.0	19.7	5	191.31	69.6

CHTMH-DIN10 Series Helical Hardened Racks

Tooth Surface Accuracy Grade DIN 10
Material S45C
Right Hand Angl e 19°31'42"
Hardness: Soft HRC 50~55°
Surfaces: Sand-blasted.
Total Pitch Error: Fp /1000 ≦ 0.15 mm

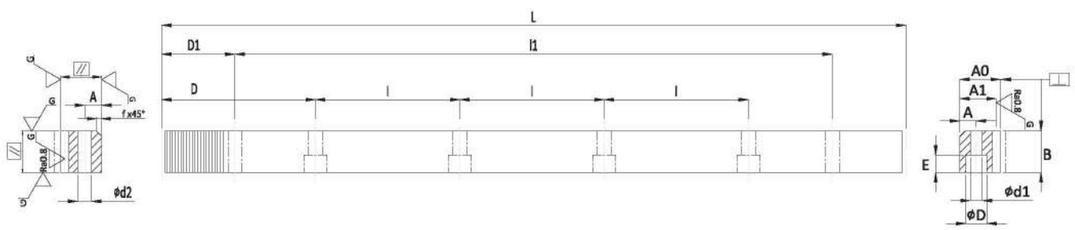


Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CHTMH01510-DIN10	1.5	1000	6.00	200	17	17	15.5	62.5	125	8	7	6	9.5	7	31.7	936.6	5.7	1.5	4.57	2.1
CHTMH02010-DIN10	2	1000	8.50	150	24	24	22	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	8.56	4.1
CHTMH02020-DIN10	2	2000	8.50	300	24	24	22	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	2	8.66	8.2
CHTMH03010-DIN10	3	1000	10.30	100	29	29	26	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	15.37	6.0
CHTMH03020-DIN10	3	2000	10.30	200	29	29	26	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	2	15.60	12.0
CHTMH04010-DIN10	4	1000	13.80	75	39	39	35	62.5	125	8	12	10	15	9	33.3	933.4	7.7	2	27.31	10.8
CHTMH04020-DIN10	4	2000	13.80	150	39	39	35	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	2	27.83	21.6
CHTMH05010-DIN10	5	1000	17.40	60	49	39	34	62.5	125	8	12	14	20	13	37.5	925.0	11.7	3	42.51	13.6
CHTMH05020-DIN10	5	2000	17.40	120	49	39	34	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	3	43.49	27.2
CHTMH06010-DIN10	6	1000	20.90	50	59	49	43	62.5	125	8	16	18	26	17	37.5	925.0	15.7	3	60.92	20.5
CHTMH06020-DIN10	6	2000	20.90	100	59	49	43	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	3	62.54	41.1
CHTMH08010-DIN10	8	960	28.00	36	79	79	71	60	120	8	25	22	33	21	120.0	720.0	19.7	4	106.94	42.6
CHTMH08020-DIN10	8	1920	28.00	72	79	79	71	60	120	16	25	22	33	21	120.0	1680.0	19.7	4	110.43	85.1
CHTMH10010-DIN10	10	1000	35.11	30	99	99	89	62.5	125	8	32	33	48	32	125.0	750.0	19.7	5	165.80	69.6

CSTGH-DIN5 Series Straight Teeth Ground Racks

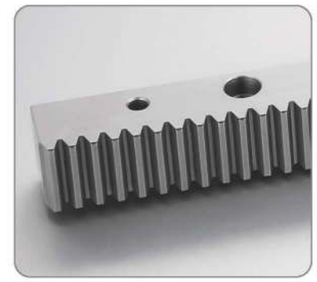
Tooth Surface Accuracy Grade DIN 5
Material S45C
Hardness: HRC 50~55°
Ground on all sides after hardening.
Total Pitch Error: Fp /1000 ≦ 0.026 mm
Room Temperature is 25°C



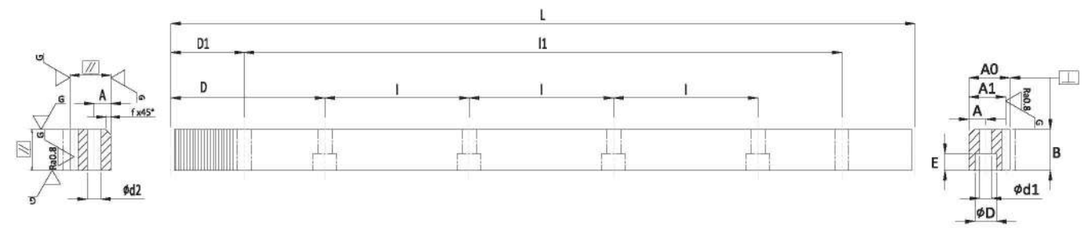
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CSTGH02010-DIN5	2	1005.31	160	24	24	22	62.83	125.66	8	8	7	11	7	31.3	942.70	5.7	2	9.73	4.1
CSTGH03010-DIN5	3	1017.88	108	29	29	26	63.61	127.23	8	9	10	11	9	34.4	949.10	7.7	2	17.48	6.1
CSTGH04010-DIN5	4	1005.31	80	39	39	35	62.83	125.66	8	12	10	15	9	37.5	930.30	7.7	2	31.04	10.9
CSTGH05010-DIN5	5	1005.31	64	49	39	34	62.83	125.66	8	12	14	17	13	37.5	945.00	11.7	3	48.37	17.2

CSTGH-DIN6 Series Straight Teeth Ground Racks



Tooth Surface Accuracy Grade DIN 6
Material S45C
Hardness: HRC 50~55°
Ground on all sides after hardening.
Total Pitch Error: Fp /1000 ≦ 0.036 mm
Fp /2000 ≦ 0.047 mm (≦ 0.024/1000 mm)

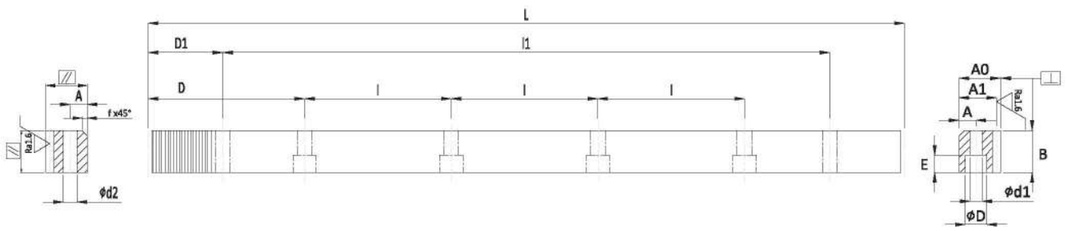


Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CSTGH01505-DIN6	1.5	499.51	106	19	19	17.5	62.44	124.88	4	8	6	9.5	7	29.0	441.50	5.7	1.5	5.72	1.3
CSTGH01510-DIN6	1.5	999.03	212	19	19	17.5	62.44	124.88	8	8	6	9.5	7	29.0	941.00	5.7	1.5	5.81	2.6
CSTGH02005-DIN6	2	502.65	80	24	24	22	62.83	125.66	4	8	7	11	7	31.3	440.10	5.7	2	9.55	2.1
CSTGH02010-DIN6	2	1005.31	160	24	24	22	62.83	125.66	8	8	7	11	7	31.3	942.70	5.7	2	9.73	4.1
CSTGH02020-DIN6	2	2010.62	320	24	24	22	62.83	125.66	16	8	7	11	7	31.3	1948.00	5.7	2	9.83	8.2
CSTGH02505-DIN6	2.5	502.65	64	24	24	21.5	62.83	125.66	4	9	7	11	7	31.3	440.10	5.7	2	11.85	2.1
CSTGH02510-DIN6	2.5	1005.31	128	24	24	21.5	62.83	125.66	8	9	7	11	7	31.3	942.70	5.7	2	12.10	4.1
CSTGH02520-DIN6	2.5	2010.62	256	24	24	21.5	62.83	125.66	16	9	7	11	7	31.3	1948.00	5.7	2	12.25	8.2
CSTGH03005-DIN6	3	508.94	54	29	29	26	63.62	127.23	4	9	10	15	9	34.4	440.10	7.7	2	17.05	3.0
CSTGH03010-DIN6	3	1017.88	108	29	29	26	63.62	127.23	8	9	10	15	9	34.4	949.10	7.7	2	17.48	6.1
CSTGH03020-DIN6	3	2035.75	216	29	29	26	63.62	127.23	16	9	10	15	9	34.4	1967.00	7.7	2	17.73	12.2
CSTGH04005-DIN6	4	502.65	40	39	39	35	62.83	125.66	4	12	10	15	9	37.5	427.70	7.7	2	30.13	5.4
CSTGH04010-DIN6	4	1005.31	80	39	39	35	62.83	125.66	8	12	10	15	9	37.5	930.30	7.7	2	31.04	10.9
CSTGH04020-DIN6	4	2010.62	160	39	39	35	62.83	125.66	16	12	10	15	9	37.5	1935.60	7.7	2	31.63	21.7
CSTGH05005-DIN6	5	502.65	32	49	39	34	62.83	125.66	4	12	14	20	13	30.1	442.30	11.7	3	46.73	6.8
CSTGH05010-DIN6	5	1005.31	64	49	39	34	62.83	125.66	8	12	14	20	13	30.1	945.00	11.7	3	48.37	13.7
CSTGH05020-DIN6	5	2010.62	128	49	39	34	62.83	125.66	16	12	14	20	13	30.1	1950.40	11.7	3	49.42	27.3
CSTGH06005-DIN6	6	508.94	27	59	49	43	63.62	127.23	4	16	18	26	17	31.4	446.10	15.7	3	66.82	10.5
CSTGH06010-DIN6	6	1017.88	54	59	49	43	63.62	127.23	8	16	18	26	17	31.4	955.00	15.7	3	69.37	20.9
CSTGH06020-DIN6	6	2035.75	108	59	49	43	63.62	127.23	16	16	18	26	17	31.4	1973.00	15.7	3	71.11	41.8
CSTGH08005-DIN8	8	502.65	20	79	79	71	62.83	125.66	4	25	22	33	21	26.6	449.45	19.7	4	116.91	22.3
CSTGH08005-DIN8	8	1005.31	40	79	79	71	62.83	125.66	8	25	22	33	21	26.6	952.00	19.7	4	122.06	44.6
CSTGH08020-DIN8	8	2010.61	80	79	79	71	62.83	125.66	16	25	22	33	21	26.6	1957.40	19.7	4	125.76	89.1

CSTM-DIN8 Series Straight Milled Racks

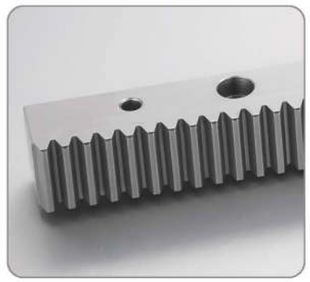
Tooth Surface Accuracy Grade DIN 8
Material S45C
Hardness: HRC 10~12°
Total Pitch Error: Fp /1000 ≦ 0.060 mm
Fp /2000 ≦ 0.080 mm



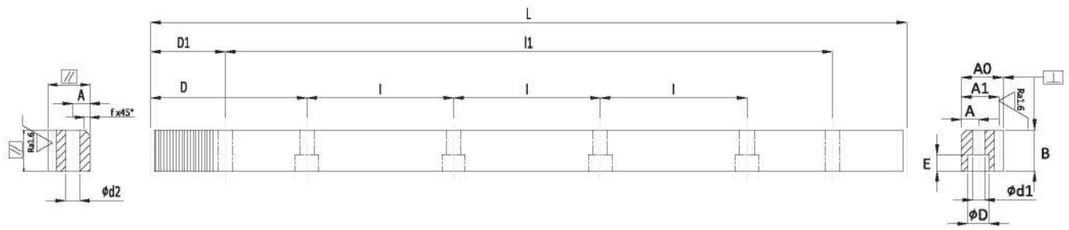
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CSTM01510-DIN8	1.5	999.03	212	17	17	15.5	62.44	124.88	8	7	6	9.5	7	29	941.00	5.7	1.5	3.62	1.9
CSTM02010-DIN8	2	1005.31	160	25	24	22	62.83	125.66	8	8	7	11	7	31.3	942.70	5.7	2	7.07	4.1
CSTM02020-DIN8	2	2010.62	320	25	24	22	62.83	125.66	16	8	7	11	7	31.3	1948.00	5.7	2	7.15	8.1
CSTM03010-DIN8	3	1017.88	108	30	29	26	63.62	127.23	8	9	10	15	9	34.4	949.10	7.7	2	12.61	5.9
CSTM03020-DIN8	3	2035.75	216	30	29	26	63.62	127.23	16	9	10	15	9	34.4	1967.00	7.7	2	12.80	11.9
CSTM04010-DIN8	4	1005.31	80	40	39	35	62.83	125.66	8	12	10	15	9	37.5	930.30	7.7	2	22.21	10.5
CSTM04020-DIN8	4	2010.62	160	40	39	35	62.83	125.66	16	12	10	15	9	37.5	1935.60	7.7	2	22.63	21.0
CSTM05010-DIN8	5	1005.31	64	49	39	34	62.83	125.66	8	12	14	20	13	30.1	945.00	11.7	3	33.75	12.9
CSTM05020-DIN8	5	2010.62	128	49	39	34	62.83	125.66	16	12	14	20	13	30.1	1950.40	11.7	3	34.48	25.8
CSTM06010-DIN8	6	1017.88	54	59	49	43	63.62	127.23	8	16	18	26	17	31.4	955.00	15.7	3	48.40	19.7
CSTM06020-DIN8	6	2035.75	108	59	49	43	63.62	127.23	16	16	18	26	17	31.4	1973.00	15.7	3	49.61	39.5
CSTM08010-DIN8	8	1005.31	40	79	79	71	62.83	125.66	8	25	22	33	21	26.6	952.00	19.7	4	85.17	42.1
CSTM08020-DIN8	8	2010.61	80	79	79	71	62.83	125.66	16	25	22	33	21	26.6	1957.40	19.7	4	87.75	84.2
CSTM10010-DIN8	10	1005.31	32	99	99	89	62.83	125.66	8	32	33	48	32	125.67	754.00	19.7	5	131.75	66.1

CSTMQ-DIN8 Series Straight Milled Quenched & Tempered Racks



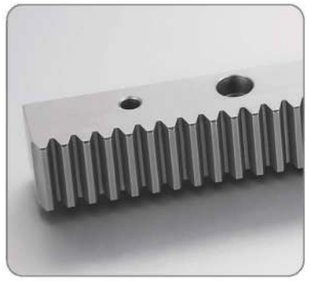
Tooth Surface Accuracy Grade DIN 8
Material S45C
Hardness: HRC 18~20°
Total Pitch Error: Fp /1000 ≦ 0.060 mm
Fp /2000 ≦ 0.080 mm



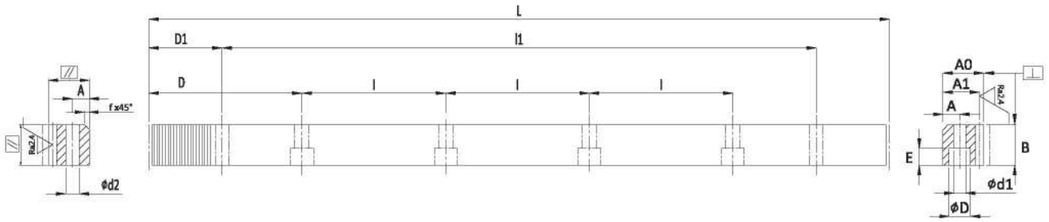
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CSTMQ01510-DIN8	1.5	999.03	212	17	17	15.5	62.44	124.88	8	7	6	9.5	7	29	941.00	5.7	1.5	4.40	1.9
CSTMQ02010-DIN8	2	1005.31	160	25	24	22	62.83	125.66	8	8	7	11	7	31.3	942.70	5.7	2	8.58	4.1
CSTMQ02020-DIN8	2	2010.62	320	25	24	22	62.83	125.66	16	8	7	11	7	31.3	1948.00	5.7	2	8.67	8.1
CSTMQ03010-DIN8	3	1017.88	108	30	29	26	63.62	127.23	8	9	10	15	9	34.4	949.10	7.7	2	15.30	5.9
CSTMQ03020-DIN8	3	2035.75	216	30	29	26	63.62	127.23	16	9	10	15	9	34.4	1967.00	7.7	2	15.52	11.9
CSTMQ04010-DIN8	4	1005.31	80	40	39	35	62.83	125.66	8	12	10	15	9	37.5	930.30	7.7	2	26.94	10.5
CSTMQ04020-DIN8	4	2010.62	160	40	39	35	62.83	125.66	16	12	10	15	9	37.5	1935.60	7.7	2	27.45	21.0
CSTMQ05010-DIN8	5	1005.31	64	49	39	34	62.83	125.66	8	12	14	20	13	30.1	945.00	11.7	3	40.93	12.9
CSTMQ05020-DIN8	5	2010.62	128	49	39	34	62.83	125.66	16	12	14	20	13	30.1	1950.40	11.7	3	41.82	25.8
CSTMQ06010-DIN8	6	1017.88	54	59	49	43	63.62	127.23	8	16	18	26	17	31.4	955.00	15.7	3	58.70	19.7
CSTMQ06020-DIN8	6	2035.75	108	59	49	43	63.62	127.23	16	16	18	26	17	31.4	1973.00	15.7	3	60.17	39.5
CSTMQ08010-DIN8	8	1005.31	40	79	79	71	62.83	125.66	8	25	22	33	21	26.6	952.00	19.7	4	103.28	42.1
CSTMQ08020-DIN8	8	2010.61	80	79	79	71	62.83	125.66	16	25	22	33	21	26.6	1957.30	19.7	4	106.42	84.2
CSTMQ10010-DIN8	10	1005.31	32	99	99	89	62.83	125.66	8	32	33	48	32	125.67	753.96	19.7	5	159.78	66.1

CSTMH-DIN10 Series Straight Hardened Rack



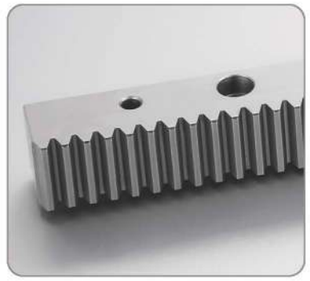
Tooth Surface Accuracy Grade DIN 10
Material S45C
Hardness: HRC 50~55°
Surfaces: Sand-blasted or phosphated.
Total Pitch Error: Fp /1000 ≦ 0.1 mm



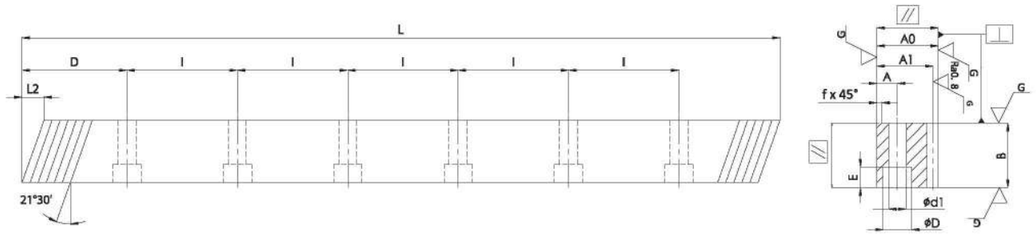
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	A	ød1	øD	E	D1	l1	ød2	f	F_{ta} kN	KG
CSTMH01510-DIN10	1.5	999.03	212	17	17	15.5	62.44	124.88	8	7	6	9.5	7	29	941.00	5.7	1.5	3.81	1.9
CSTMH02010-DIN10	2	1005.31	160	24	24	22	62.83	125.66	8	8	7	11	7	31.3	942.70	5.7	2	7.14	3.9
CSTMH02020-DIN10	2	2010.62	320	24	24	22	62.83	125.66	16	8	7	11	7	31.3	1948.00	5.7	2	7.21	7.8
CSTMH03010-DIN10	3	1017.88	108	29	29	26	63.62	127.23	8	9	10	15	9	34.4	949.10	7.7	2	12.82	5.8
CSTMH03020-DIN10	3	2035.75	216	29	29	26	63.62	127.23	16	9	10	15	9	34.4	1967.00	7.7	2	13.00	11.5
CSTMH04010-DIN10	4	1005.31	80	39	39	35	62.83	125.66	8	12	10	15	9	37.5	930.30	7.7	2	22.76	10.3
CSTMH04020-DIN10	4	2010.62	160	39	39	35	62.83	125.66	16	12	10	15	9	37.5	1935.60	7.7	2	23.20	20.5
CSTMH05010-DIN10	5	1005.31	64	49	39	34	62.83	125.66	8	12	14	20	13	30.1	945.00	11.7	3	35.47	12.9
CSTMH05020-DIN10	5	2010.62	128	49	39	34	62.83	125.66	16	12	14	20	13	30.1	1950.30	11.7	3	50.84	25.8
CSTMH06010-DIN10	6	1017.88	54	59	49	43	63.62	127.23	8	16	18	26	17	31.4	955.00	15.7	3	50.87	19.7
CSTMH06020-DIN10	6	2035.75	108	59	49	43	63.62	127.23	16	16	18	26	17	31.4	1973.00	15.7	3	52.15	39.5
CSTMH08010-DIN10	8	1005.31	40	79	79	71	62.83	125.66	8	25	22	33	21	26.6	952.00	19.7	4	89.51	42.1
CSTMH10010-DIN10	10	1005.31	32	99	99	89	62.83	125.66	8	32	33	48	32	125.7	753.96	19.7	4	138.47	66.1

MHTGQ-JIS1 Series Helical Quenched & Tempered Ground Racks



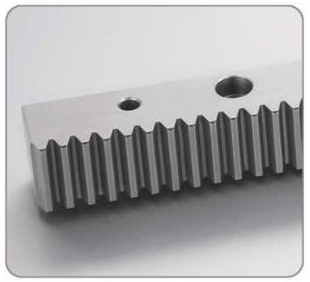
Tooth Surface Accuracy Grade JIS1
Material SCM440
Right Hand Angle 21°30'
Hardness: HRC 18~22°
Total Pitch Error: Fp/1000 ≦ 0.033mm
Ground on all sides after quenching.
No Mounted Holes , Code with-N



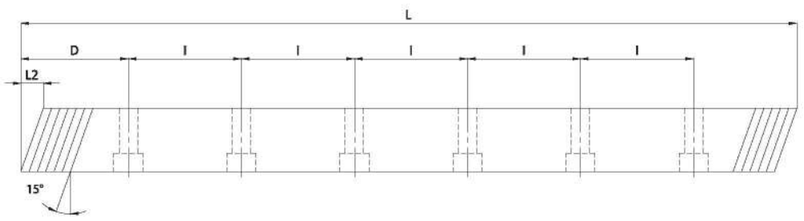
Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
MHTGQ01010-JIS1	1	1002.75	3.38	296	8	15	14	52.95	180	4	M4	6	4.5	8	4.4	1.5	2.63	0.4
MHTGQ01010-JIS1-N	1	1002.75	3.38	296	8	15	14	*	*	*	*	*	*	*	*	1.5	2.63	0.4
MHTGQ01510-JIS1	1.5	1002.53	5.07	197	12	20	18.5	53.63	180	4	M5	8	6	10	6.0	1.5	5.86	0.9
MHTGQ01510-JIS1-N	1.5	1002.53	5.07	197	12	20	18.5	*	*	*	*	*	*	*	*	1.5	5.86	0.9
MHTGQ02010-JIS1	2	1005.74	6.30	148	16	25	23	56.47	180	6	M6	10	7	11	7.0	2	10.53	2.9
MHTGQ02010-JIS1-N	2	1005.74	6.30	148	16	25	23	*	*	*	*	*	*	*	*	2	10.53	2.9
MHTGQ02510-JIS1	2.5	1013.92	7.88	118	20	30	27.5	56.46	180	6	M8	12	9	14	8.6	2	16.37	4.3
MHTGQ02510-JIS1-N	2.5	1013.92	7.88	118	20	30	27.5	*	*	*	*	*	*	*	*	2	16.37	4.3
MHTGQ03010-JIS1	3	1002.48	9.85	99	25	35	32	56.7	180	6	M10	14	11	18	10.8	2	24.44	6.2
MHTGQ03010-JIS1-N	3	1002.48	9.85	99	25	35	32	*	*	*	*	*	*	*	*	2	24.44	6.2

CHTM-JIS4 Series Helical Racks



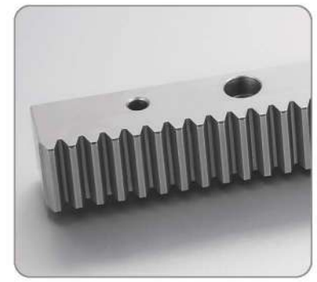
Tooth Surface Accuracy Grade JIS4
Material S45C
Right Hand Angle 15°
Hardness: HRC 10~12°
Surfaces: Black-coated
Total Pitch Error: Fp/1000 ≦ 0.075mm
No Mounted Holes , Code with-N



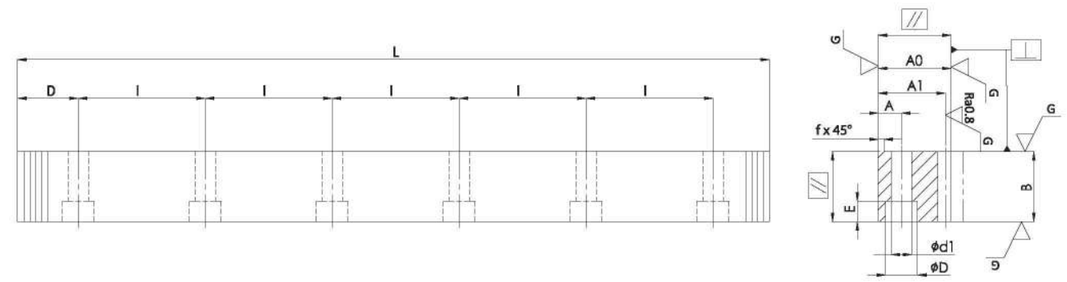
Dimension : mm

Code	Module	L	L2	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
CHTM02010-JIS4	2	1001.94	6.7	153	25	25	23	57	180	6	M6	10	7	11	7	2	8.86	4.5
CHTM02010-JIS4-N	2	1001.94	6.7	153	25	25	23	*	*	*	*	*	*	*	*	2	8.86	4.6
CHTM03010-JIS4	3	1004.62	9.38	102	35	35	32	57	180	6	M10	14	11	17.5	10.8	2	18.43	8.7
CHTM03010-JIS4-N	3	1004.62	9.38	102	35	35	32	*	*	*	*	*	*	*	*	2	18.43	8.8

CSTGH-JIS2 Series Straight Teeth Ground Racks



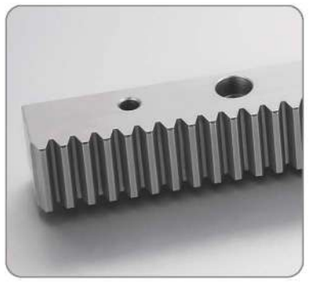
Tooth Surface Accuracy Grade JIS2
Material S45C
Hardness: HRC 50~55°
Surfaces: Black-coated (Exclude Teeth)
Ground on all sides after hardening.
Total Pitch Error: Fp/1000 ≦ 0.036 mm
No Mounted Holes , Code with-N



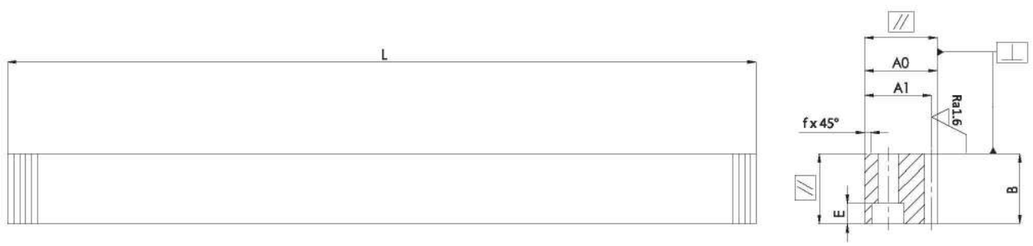
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
CSTGH01005-JIS2	1	499.51	159	10	12	11	24.76	150	4	M4	5	4.5	*	*	1.5	2.03	0.4
CSTGH01005-JIS2-N	1	499.51	159	10	12	11	*	*	*	*	*	*	*	*	1.5	2.03	0.4
CSTGH01505-JIS2	1.5	499.51	106	15	20	18.5	24.76	150	4	M5	8	6	10	6	1.5	4.52	1.1
CSTGH01505-JIS2-N	1.5	499.51	106	15	20	18.5	*	*	*	*	*	*	*	*	1.5	4.52	1.1
CSTGH01510-JIS2	1.5	999.03	212	15	20	18.5	49.51	180	6	M5	8	6	10	6	1.5	4.58	2.1
CSTGH01510-JIS2-N	1.5	999.03	212	15	20	18.5	*	*	*	*	*	*	*	*	1.5	4.58	2.1
CSTGH02005-JIS2	2	502.65	80	20	25	23	26.33	150	4	M6	10	7	11	7	2	7.96	1.8
CSTGH02005-JIS2-N	2	502.65	80	20	25	23	*	*	*	*	*	*	*	*	2	7.96	1.8
CSTGH02010-JIS2	2	1005.31	160	20	25	23	52.65	180	6	M6	10	7	11	7	2	8.11	3.6
CSTGH02010-JIS2-N	2	1005.31	160	20	25	23	*	*	*	*	*	*	*	*	2	8.11	3.6
CSTGH02505-JIS2	2.5	502.65	64	25	30	27.5	26.33	150	4	M8	12	9	14	8.6	2	12.34	2.7
CSTGH02505-JIS2-N	2.5	502.65	64	25	30	27.5	*	*	*	*	*	*	*	*	2	12.34	2.7
CSTGH02510-JIS2	2.5	1005.31	128	25	30	27.5	52.65	180	6	M8	12	9	14	8.6	2	12.61	5.4
CSTGH02510-JIS2-N	2.5	1005.31	128	25	30	27.5	*	*	*	*	*	*	*	*	2	12.61	5.4
CSTGH03005-JIS2	3	499.51	53	30	35	32	24.76	150	4	M10	14	11	17.5	10.8	2	17.63	3.7
CSTGH03005-JIS2-N	3	499.51	53	30	35	32	*	*	*	*	*	*	*	*	2	17.63	3.7
CSTGH03010-JIS2	3	999.03	106	30	35	32	49.51	180	6	M10	14	11	17.5	10.8	2	18.07	7.5
CSTGH03010-JIS2-N	3	999.03	106	30	35	32	*	*	*	*	*	*	*	*	2	18.07	7.5
CSTGH04005-JIS2	4	502.65	40	45	45	41	26.33	150	4	M12	18	14	20	13	2	34.76	6.4
CSTGH04005-JIS2-N	4	502.65	40	45	45	41	*	*	*	*	*	*	*	*	2	34.76	7.2
CSTGH04010-JIS2	4	1005.31	80	45	45	41	52.65	180	6	M12	18	14	20	13	2	35.82	12.9
CSTGH04010-JIS2-N	4	1005.31	80	45	45	41	*	*	*	*	*	*	*	*	2	35.82	14.5
CSTGH05005-JIS2	5	502.65	32	50	50	45	31.33	220	3	M14	20	16	23	15.2	3	47.68	8.9
CSTGH05005-JIS2-N	5	502.65	32	50	50	45	*	*	*	*	*	*	*	*	3	47.68	8.9
CSTGH05010-JIS2	5	1005.31	64	50	50	45	62.65	220	5	M14	20	16	23	15.2	3	49.36	17.9
CSTGH05010-JIS2-N	5	1005.31	64	50	50	45	*	*	*	*	*	*	*	*	3	49.36	17.9
CSTGH06005-JIS2	6	490.09	26	60	60	54	25.04	220	3	M16	23	18	26	17.5	3	67.80	12.5
CSTGH06005-JIS2-N	6	490.09	26	60	60	54	*	*	*	*	*	*	*	*	3	67.80	12.5
CSTGH06010-JIS2	6	999.03	53	60	60	54	59.51	220	5	M16	23	18	26	17.5	3	70.51	25.5
CSTGH06010-JIS2-N	6	999.03	53	60	60	54	*	*	*	*	*	*	*	*	3	70.51	25.5

MSTMQ-JIS4-N Series Straight Quenched & Tempered Racks



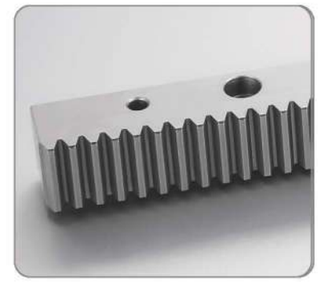
Tooth Surface Accuracy Grade JIS4-N
Material SCM440
Hardness: HRC 18~22°
Surfaces: Black-coated
Total Pitch Error: Fp/1000 ≦ 0.075mm
No Mounted Holes , Code with-N



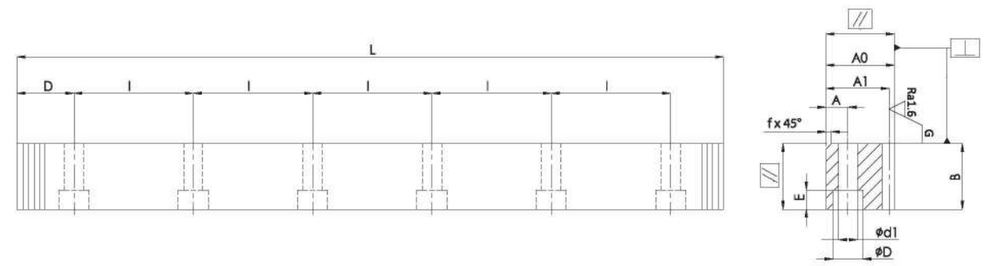
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	f	F_{ta} kN	KG
MSTMQ01510-JIS4-N	1.5	999.03	212	15	20	18.5	1.5	5.36	2.1
MSTMQ02010-JIS4-N	2	1005.31	160	20	25	23	2	9.48	3.6
MSTMQ02510-JIS4-N	2.5	1005.31	128	25	30	27.5	2	14.73	5.4
MSTMQ03010-JIS4-N	3	999.03	106	30	35	32	2	21.12	7.5
MSTMQ04010-JIS4-N	4	1005.31	80	45	45	41	2	41.86	14.5
MSTMQ05010-JIS4-N	5	1005.31	64	50	50	45	3	57.68	17.9
MSTMQ06010-JIS4-N	6	999.03	53	60	60	54	3	82.40	25.5

CSTM-JIS4 Series Straight Milled Racks



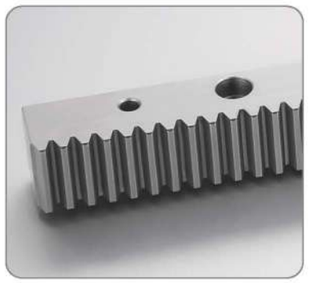
Tooth Surface Accuracy Grade JIS4
Material S45C
Hardness: Soft HRC 10~12°
Surfaces: Black-coated
Total Pitch Error: Fp/1000 ≦ 0.075mm
No Mounted Holes , Code with-N



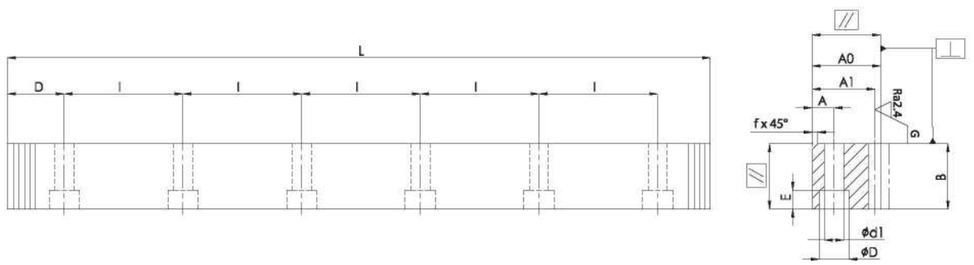
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
CSTM01510-JIS4	1.5	999.03	212	15	20	18.5	49.51	180	6	M5	8	6	10	6	1.5	3.20	2.1
CSTM01510-JIS4-N	1.5	999.03	212	15	20	18.5	*	*	*	*	*	*	*	*	1.5	3.20	2.1
CSTM01511-JIS4-N	1.5	999.03	212	15	15	13.5	*	*	*	*	*	*	*	*	1.5	3.20	1.6
CSTM01520-JIS4-N	1.5	2049.88	435	15	20	18.5	*	*	*	*	*	*	*	*	1.5	3.20	4.4
CSTM02010-JIS4	2	1005.31	160	20	25	23	52.65	180	6	M6	10	7	11	7	2	5.66	3.6
CSTM02010-JIS4-N	2	1005.31	160	20	25	23	*	*	*	*	*	*	*	*	2	5.66	3.6
CSTM02011-JIS4	2	1005.31	160	20	20	18	52.65	180	6	M6	7	7	11	7	2	5.66	2.9
CSTM02011-JIS4-N	2	1005.31	160	20	20	18	*	*	*	*	*	*	*	*	2	5.66	2.9
CSTM02020-JIS4	2	2048.31	326	20	25	23	34.15	180	12	M6	10	7	11	7	2	5.72	7.3
CSTM02020-JIS4-N	2	2048.31	326	20	25	23	*	*	*	*	*	*	*	*	2	5.72	7.3
CSTM02021-JIS4-N	2	2048.31	326	20	20	18	*	*	*	*	*	*	*	*	2	5.72	5.8
CSTM02510-JIS4	2.5	1005.31	128	25	30	27.5	52.65	180	6	M8	12	9	14	8.6	2	8.80	5.4
CSTM02510-JIS4-N	2.5	1005.31	128	25	30	27.5	*	*	*	*	*	*	*	*	2	8.80	5.4
CSTM02511-JIS4	2.5	1005.31	128	25	25	22.5	52.65	180	6	M8	9	9	14	8.6	2	8.80	4.5
CSTM02511-JIS4-N	2.5	1005.31	128	25	25	22.5	*	*	*	*	*	*	*	*	2	8.80	4.5
CSTM02520-JIS4	2.5	2049.88	261	25	30	27.5	34.94	180	12	M8	12	9	14	8.6	2	8.91	10.9
CSTM02520-JIS4-N	2.5	2049.88	261	25	30	27.5	*	*	*	*	*	*	*	*	2	8.91	10.9
CSTM02521-JIS4-N	2.5	2049.88	261	25	25	22.5	*	*	*	*	*	*	*	*	2	8.91	9.1
CSTM03010-JIS4	3	999.03	106	30	35	32	49.51	180	6	M10	14	11	17.5	10.8	2	12.61	7.5
CSTM03010-JIS4-N	3	999.03	106	30	35	32	*	*	*	*	*	*	*	*	2	12.61	7.5
CSTM03011-JIS4	3	999.03	106	30	30	27	49.51	180	6	M10	11	11	17.5	10.8	2	12.61	6.4
CSTM03011-JIS4-N	3	999.03	106	30	30	27	*	*	*	*	*	*	*	*	2	12.61	6.4
CSTM03020-JIS4	3	2045.17	217	30	35	32	32.58	180	12	M10	14	11	17.5	10.8	2	12.80	15.3
CSTM03020-JIS4-N	3	2045.17	217	30	35	32	*	*	*	*	*	*	*	*	2	12.80	15.3
CSTM03021-JIS4-N	3	2045.17	217	30	30	27	*	*	*	*	*	*	*	*	2	12.80	13.1
CSTM04010-JIS4	4	1005.31	80	40	45	41	52.65	180	6	M12	18	14	20	13	2	22.21	12.9
CSTM04010-JIS4-N	4	1005.31	80	40	45	41	*	*	*	*	*	*	*	*	2	22.21	12.9
CSTM04011-JIS4	4	1005.31	80	40	40	36	52.65	180	6	M12	15	14	20	13	2	22.21	11.4
CSTM04010-JIS4-N	4	1005.31	80	40	40	36	*	*	*	*	*	*	*	*	2	22.21	11.4
CSTM04020-JIS4	4	2048.31	163	40	45	41	34.15	180	12	M12	18	14	20	13	2	22.63	26.2
CSTM04020-JIS4-N	4	2048.31	163	40	45	41	*	*	*	*	*	*	*	*	2	22.63	26.2
CSTM05010-JIS4	5	1005.31	64	50	50	45	62.65	220	5	M14	20	16	23	15.2	3	34.44	17.9
CSTM05010-JIS4-N	5	1005.31	64	50	50	45	*	*	*	*	*	*	*	*	3	34.44	17.9
CSTM05020-JIS4	5	2042.04	130	50	50	45	31.02	220	10	M14	20	16	23	15.2	3	35.20	36.3
CSTM05020-JIS4-N	5	2042.04	130	50	50	45	*	*	*	*	*	*	*	*	3	35.20	36.3
CSTM06010-JIS4	6	999.03	53	60	60	54	59.51	220	5	M16	23	18	26	17.5	3	49.19	25.5
CSTM06010-JIS4-N	6	999.03	53	60	60	54	*	*	*	*	*	*	*	*	3	49.19	25.5
CSTM06020-JIS4	6	2035.75	108	60	60	54	27.88	220	10	M16	23	18	26	17.5	3	50.46	52.1
CSTM06020-JIS4-N	6	2035.75	108	60	60	54	*	*	*	*	*	*	*	*	3	50.46	52.1

CSTMH-JIS5 Series Straight Hardened Racks



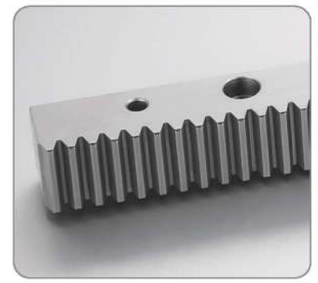
Tooth Surface Accuracy Grade JIS5
Material S45C
Hardness: HRC 50~55°
Surfaces: Black-coated
Total Pitch Error: Fp/1000 ≦ 0.15mm
No Mounted Holes , Code with-N



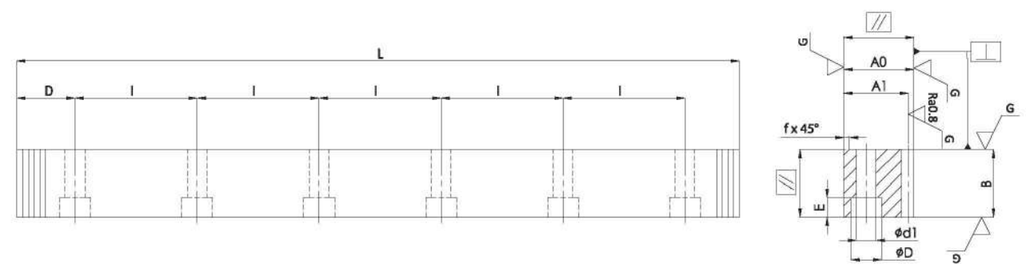
Dimension : mm

Code	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
CSTMH01510-JIS5	1.5	999.03	212	15	20	18.5	49.51	180	6	M5	8	6	10	6	1.5	3.60	2.1
CSTMH01510-JIS5-N	1.5	999.03	212	15	20	18.5	*	*	*	*	*	*	*	*	1.5	3.60	2.1
CSTMH01511-JIS5-N	1.5	999.03	212	15	15	13.5	*	*	*	*	*	*	*	*	1.5	3.60	1.6
CSTMH01520-JIS5-N	1.5	2049.88	435	15	20	18.5	*	*	*	*	*	*	*	*	1.5	3.63	4.4
CSTMH02010-JIS5	2	1005.31	160	20	25	23	52.65	180	6	M6	10	7	11	7	2	6.37	3.6
CSTMH02010-JIS5-N	2	1005.31	160	20	25	23	*	*	*	*	*	*	*	*	2	6.37	3.6
CSTMH02011-JIS5-N	2	1005.31	160	20	20	18	*	*	*	*	*	*	*	*	2	6.37	2.9
CSTMH02020-JIS5-N	2	2048.31	326	20	25	23	*	*	*	*	*	*	*	*	2	6.44	7.3
CSTMH02021-JIS5-N	2	2048.31	326	20	20	18	*	*	*	*	*	*	*	*	2	6.44	5.8
CSTMH02510-JIS5	2.5	1005.31	128	25	30	27.5	52.65	180	6	M8	12	9	14	8.6	2	9.91	5.4
CSTMH02510-JIS5-N	2.5	1005.31	128	25	30	27.5	*	*	*	*	*	*	*	*	2	9.91	5.4
CSTMH02511-JIS5-N	2.5	1005.31	128	25	25	22.5	*	*	*	*	*	*	*	*	2	9.91	4.5
CSTMH02520-JIS5-N	2.5	2049.88	261	25	30	27.5	*	*	*	*	*	*	*	*	2	10.30	10.9
CSTMH02521-JIS5-N	2.5	2049.88	261	25	25	22.5	*	*	*	*	*	*	*	*	2	10.30	9.1
CSTMH03010-JIS5	3	999.03	106	30	35	32	49.51	180	6	M10	14	11	17.5	10.8	2	14.20	7.5
CSTMH03010-JIS5-N	3	999.03	106	30	35	32	*	*	*	*	*	*	*	*	2	14.20	7.5
CSTMH03011-JIS5-N	3	999.03	106	30	30	27	*	*	*	*	*	*	*	*	2	14.20	6.4
CSTMH03020-JIS5-N	3	2045.17	217	30	35	32	*	*	*	*	*	*	*	*	2	14.41	15.3
CSTMH03021-JIS5-N	3	2045.17	217	30	30	27	*	*	*	*	*	*	*	*	2	14.41	13.1
CSTMH04010-JIS5	4	1005.31	80	40	45	41	52.65	180	6	M12	18	14	20	13	2	25.02	12.9
CSTMH04010-JIS5-N	4	1005.31	80	40	45	41	*	*	*	*	*	*	*	*	2	25.02	12.9
CSTMH04010-JIS5-N	4	1005.31	80	40	40	36	*	*	*	*	*	*	*	*	2	25.02	11.4
CSTMH04020-JIS5-N	4	2048.31	163	40	45	41	*	*	*	*	*	*	*	*	2	25.49	26.2
CSTMH05010-JIS5	5	1005.31	64	50	50	45	62.65	180	5	M14	20	16	23	15.2	3	38.78	17.9
CSTMH05010-JIS5-N	5	1005.31	64	50	50	45	*	*	*	*	*	*	*	*	3	38.78	17.9
CSTMH05020-JIS5-N	5	2042.04	130	50	50	45	*	*	*	*	*	*	*	*	3	39.64	36.3
CSTMH06010-JIS5	6	999.03	53	60	60	54	59.51	180	5	M16	23	18	26	17.5	3	55.40	25.5
CSTMH06010-JIS5-N	6	999.03	53	60	60	54	*	*	*	*	*	*	*	*	3	55.40	25.5
CSTMH06020-JIS5-N	6	2035.75	108	60	60	54	*	*	*	*	*	*	*	*	3	56.82	52.1

MSTGQ-CP-JIS1 Series Straight Quenched & Tempered Ground Racks



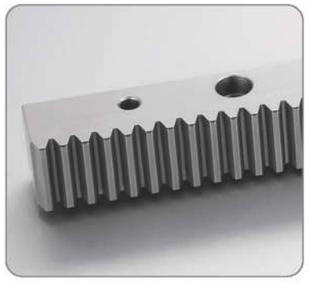
Tooth Surface Accuracy Grade JIS1
Material SCM440
Hardness: HRC 18~22°
Total Pitch Error: Fp/1000 ≦ 0.033mm
Ground on all sides after quenching.
No Mounted Holes , Code with-N
Room Temperature is 25°C



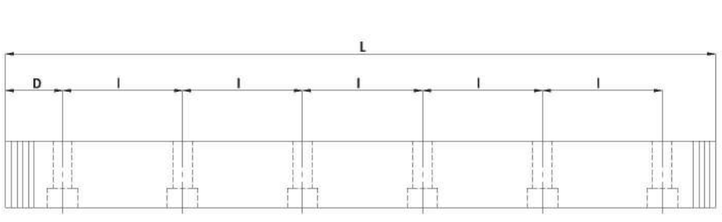
Dimension : mm

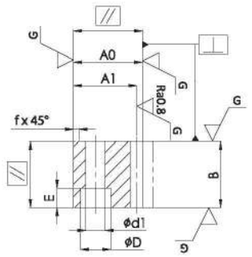
Code	CP	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
MSTGQ-CP-05005-JIS1	5	1.5915	500	100	15	20	18.41	40	140	4	M5	8	6	10	6	1.5	6.61	1.1
MSTGQ-CP-05005-JIS1-N	5	1.5915	500	100	15	20	18.41	*	*	*	*	*	*	*	*	1.5	6.61	1.1
MSTGQ-CP-05010-JIS1-N	5	1.5915	1000	200	15	20	18.41	*	*	*	*	*	*	*	*	1.5	6.71	2.1
MSTGQ-CP-10005-JIS1	10	3.1831	500	50	30	35	31.82	40	140	4	M10	14	11	17.5	10.8	1.5	25.76	3.7
MSTGQ-CP-10005-JIS1-N	10	3.1831	500	50	30	35	31.82	*	*	*	*	*	*	*	*	1.5	25.76	3.7
MSTGQ-CP-10010-JIS1-N	10	3.1831	1000	100	30	35	31.82	*	*	*	*	*	*	*	*	1.5	26.44	7.5

MSTGH-CP-JIS1 Series Straight Teeth Ground Racks



Tooth Surface Accuracy Grade CP-JIS 1
Material SCM440
Hardness: HRC 55~58°
Ground on all sides after hardening.
Total Pitch Error: Fp/1000 ≦ 0.033mm
No Mounted Holes , Code with-N
Room Temperature is 25°

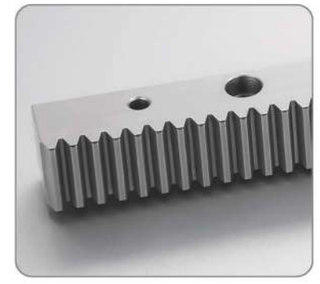




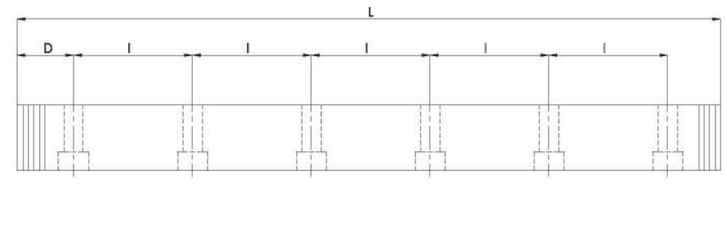
Dimension : mm

Code	CP	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
MSTGH-CP-05005-JIS1	5	1.5915	500	100	15	20	18.41	25	150	4	M5	8	6	10	6	1.5	6.61	1.1
MSTGH-CP-05005-JIS1-N	5	1.5915	500	100	15	20	18.41	*	*	*	*	*	*	*	*	1.5	6.61	1.1
MSTGH-CP-05010-JIS1	5	1.5915	1000	200	15	20	18.41	50	180	6	M5	8	6	10	6	1.5	6.71	2.1
MSTGH-CP-05010-JIS1-N	5	1.5915	1000	200	15	20	18.41	*	*	*	*	*	*	*	*	1.5	6.71	2.1
MSTGH-CP-10005-JIS1	10	3.1831	500	50	30	35	31.82	25	150	4	M10	14	11	17.5	10.8	1.5	25.76	3.7
MSTGH-CP-10005-JIS1-N	10	3.1831	500	50	30	35	31.82	*	*	*	*	*	*	*	*	1.5	25.76	3.7
MSTGH-CP-10010-JIS1	10	3.1831	1000	100	30	35	31.82	50	180	6	M10	14	11	17.5	10.8	1.5	26.44	7.5
MSTGH-CP-10010-JIS1-N	10	3.1831	1000	100	30	35	31.82	*	*	*	*	*	*	*	*	1.5	26.44	7.5

CSTM-CP-JIS4 Series Straight Milled Racks



Tooth Surface Accuracy Grade JIS 4
Material S45C
Hardness: Soft HRC 10~12°
Surfaces: Black-coated
Total Pitch Error: Fp /1000 ≦ 0.075mm
No Mounted Holes , Code with-N



Dimension : mm

Code	CP	Module	L	No. of Teeth	B	A0	A1	D	l	No of Holes	Screw	A	ød1	øD	E	f	F_{ta} kN	KG
CSTM-CP-05005-JIS4-N	5	1.5915	500	100	15	20	18.41	*	*	*	*	*	*	*	*	1	3.34	1.1
CSTM-CP-05010-JIS4	5	1.5915	1000	200	15	20	18.41	50	180	6	M5	18.41	6	10	6	1	3.39	2.0
CSTM-CP-05010-JIS4-N	5	1.5915	1000	200	15	20	18.41	*	*	*	*	*	*	*	*	1	3.39	2.1
CSTM-CP-05015-JIS4	5	1.5915	1500	300	15	20	18.41	30	180	9	M5	18.41	6	10	6	1	3.41	3.0
CSTM-CP-05015-JIS4-N	5	1.5915	1500	300	15	20	18.41	*	*	*	*	*	*	*	*	1	3.41	3.2
CSTM-CP-05020-JIS4	5	1.5915	2050	410	15	20	18.41	35	180	12	M5	18.41	6	10	6	1	3.42	4.1
CSTM-CP-05020-JIS4-N	5	1.5915	2050	410	15	20	18.41	*	*	*	*	*	*	*	*	1	3.42	4.4
CSTM-CP-10005-JIS4-N	10	3.1831	500	50	30	35	31.82	*	*	*	*	*	*	*	*	2	13.01	3.7
CSTM-CP-10010-JIS4	10	3.1831	1000	100	30	35	31.82	50	180	6	M10	31.82	11	17.5	10.8	2	13.36	7.1
CSTM-CP-10010-JIS4-N	10	3.1831	1000	100	30	35	31.82	*	*	*	*	*	*	*	*	2	13.36	7.5
CSTM-CP-10015-JIS4	10	3.1831	1500	150	30	35	31.82	30	180	9	M10	31.82	11	17.5	10.8	2	13.49	10.6
CSTM-CP-10015-JIS4-N	10	3.1831	1500	150	30	35	31.82	*	*	*	*	*	*	*	*	2	13.49	11.2
CSTM-CP-10020-JIS4	10	3.1831	2050	205	30	35	31.82	35	180	12	M10	31.82	11	17.5	10.8	2	13.56	14.4
CSTM-CP-10020-JIS4-N	10	3.1831	2050	205	30	35	31.82	*	*	*	*	*	*	*	*	2	13.56	15.3
CSTM-CP-15005-JIS4-N	15	4.7746	495	33	50	50	45.23	*	*	*	*	*	*	*	*	2	31.84	8.8
CSTM-CP-15010-JIS4	15	4.7746	1005	67	50	50	45.23	62.5	220	5	M14	45.23	16	23	15.2	2	32.94	16.9
CSTM-CP-15010-JIS4-N	15	4.7746	1005	67	50	50	45.23	*	*	*	*	*	*	*	*	2	32.94	17.9
CSTM-CP-15015-JIS4	15	4.7746	1500	100	50	50	45.23	90	220	7	M14	45.23	16	23	15.2	2	33.39	25.2
CSTM-CP-15015-JIS4-N	15	4.7746	1500	100	50	50	45.23	*	*	*	*	*	*	*	*	2	33.39	26.6
CSTM-CP-15020-JIS4	15	4.7746	2040	136	50	50	45.23	30	220	10	M14	45.23	16	23	15.2	2	33.65	34.2
CSTM-CP-15020-JIS4-N	15	4.7746	2040	136	50	50	45.23	*	*	*	*	*	*	*	*	2	33.65	36.2
CSTM-CP-20005-JIS4-N	20	6.3662	500	25	60	60	53.63	*	*	*	*	*	*	*	*	3	50.05	12.8
CSTM-CP-20010-JIS4	20	6.3662	1000	50	60	60	53.63	60	220	5	M16	53.63	18	26	17.5	3	52.06	24.2
CSTM-CP-20010-JIS4-N	20	6.3662	1000	50	60	60	53.63	*	*	*	*	*	*	*	*	3	52.06	25.6
CSTM-CP-20015-JIS4	20	6.3662	1500	75	60	60	53.63	90	220	7	M16	53.63	18	26	17.5	3	52.92	36.2
CSTM-CP-20015-JIS4-N	20	6.3662	1500	75	60	60	53.63	*	*	*	*	*	*	*	*	3	52.92	38.4
CSTM-CP-20020-JIS4	20	6.3662	2040	102	60	60	53.63	30	220	10	M16	53.63	18	26	17.5	3	53.45	49.3
CSTM-CP-20020-JIS4-N	20	6.3662	2040	102	60	60	53.63	*	*	*	*	*	*	*	*	3	53.45	52.2

Content of Pinions

German Standard accuracy grade DIN

Code	DIN 3962	Material	Type	Teeth Treatment	Hardness	Module	Page
MHGH	DIN 6	SCM415 SCM440	Helical Left Hand 19°31'42"	Teeth Ground	HRC 50~55°	1.5, 2, 3, 4, 5, 6, 8, 10	P.25
MHGH-L	DIN 6	SCM415 SCM440			HRC 50°~55°	1.5, 2.5, 3	P.29
MHSH	DIN 7	SCM415 SCM440		Skiving	HRC 50~55°	1.5, 2, 3, 4, 5, 6, 8, 10	P.30
CHM	DIN 8	S45C S50C		Milled	*	1.5, 2, 3, 4, 5, 6, 8, 10	P.33
MHMH	DIN 10	SCM415 SCM440			HRC 50~55°	1.5, 2, 3, 4, 5, 6, 8, 10	P.36
MSGH	DIN 6	SCM415 SCM440	Straight	Teeth Ground	HRC 50~55°	2, 3, 4, 5, 6, 8	P.39
MSSH	DIN 7	SCM415 SCM440		Skiving	HRC 50~55°	2, 3, 4, 5, 6, 8	P.44
CSM	DIN 8	S45C S50C		Milled	*	1, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10	P49
MSMH	DIN 10	SCM415 SCM440			HRC 50~55°	1, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10	P.58
MHFGH	DIN 6	SCM415 SCM440	Flange Helical	Teeth Ground	HRC 50~55°	2, 3, 4, 5	P.67

Japanese Standard accuracy grade JIS

Code	JIS	Material	Type	Teeth Treatment	Hardness	Module	Page
MHGH	JIS 2 (N6)	SCM415 SCM440	Helical Left Hand 21°30'	Teeth Ground	HRC50~55°	1, 1.5, 2, 2.5, 3	P.68
CHM	JIS 4 (N8)	S45C S50C	Helical Left Hand 15°	Milled	*	2, 3	P.73
MSGH	JIS 2 (N6)	SCM415 SCM440	Straight	Teeth Ground	HRC50~55°	1, 1.5, 2, 2.5, 3, 4	P.74
CSSH	JIS 3 (N7)	S45C S50C		Skiving	HRC50~55°	1, 1.5, 2, 2.5, 3, 4, 5, 6	P.80
CSM	JIS 4 (N8)	S45C S50C		Milled	*	1, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10	P.86

Japanese Standard accuracy grade CP–JIS

Code	JIS	Material	Type	Teeth Treatment	Hardness	CP	Page
MSGH-CP	DIN 6	SCM415 SCM440	Straight	Teeth Ground	HRC 50~55°	5, 7.5, 10, 15, 20	P.97
MSSH-CP	JIS 3 (N7)	SCM415 SCM440		Skiving	HRC 50~55°	5, 10, 15, 20	P.98
CSM-CP	JIS 4 (N8)	S45C S50C		Milled	*	5, 10, 15, 20	P.99

Pinion Code Instruction

1st	2nd	3th	4th	5th	6th	7th	8th	9th	10th
Material	Type	Series	Teeth Treatment	Hardness	Module Circular Pitch	No of Teeth	Series	Fig	Grade
C	S	(F)	G	H	020	030	1	1	DIN6
C= Carbon Steel =S45C =S50C M=Alloy Steel =SCM440 =SCM415	S=Straight H=Helical	F=Flange	G=Ground S=Skiving M=Milled	H=Hardened High Frequency Carburized.	M1.5~M10 CP5-CP20	12~120	1~11	1, 2	DIN 6-10 JIS 2-4

MHGH-DIN6 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Teeth Ground after Hardening

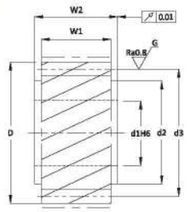


Fig . 1

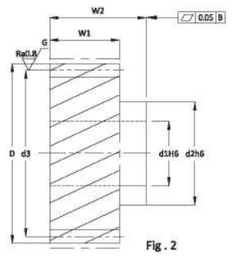
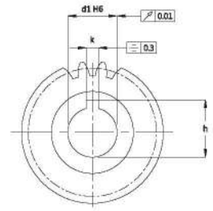


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5													
MHGH0150201	1	-DIN6	20	11	25	31.83	34.83	20	22	4	12.8	7.16	0.1
MHGH0150202	1	-DIN6	20	13	25	31.83	34.83	20	22	5	15.3	7.16	0.1
MHGH0150203	1	-DIN6	20	14	25	31.83	34.83	20	22	5	16.3	7.16	0.1
MHGH0150204	1	-DIN6	20	16	25	31.83	34.83	20	22	5	18.3	7.16	0.1
MHGH0150211	2	-DIN6	21	16	30	33.42	36.42	20	46	5	18.3	7.23	0.3

※ Weight only for reference. Actual scale should be Weighing.

MHGH-DIN6 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Teeth Ground after Hardening

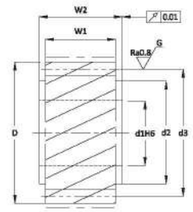


Fig . 1

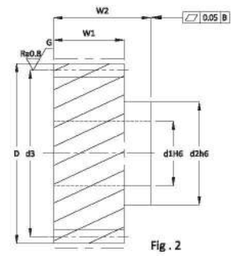
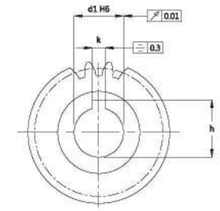


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
MHGH0200181	1	-DIN6	18	16	25	38.197	42.2	28	30	5	18.3	12.88	0.2
MHGH0200201	1	-DIN6	20	19	30	42.44	46.4	28	30	6	21.8	13.37	0.2
MHGH0200202	2	-DIN6	20	19	30	42.44	46.4	28	56	6	21.8	13.37	0.2
MHGH0200203	1	-DIN6	20	20	30	42.44	46.4	28	30	6	22.8	13.37	0.2
MHGH0200204	2	-DIN6	20	22	36	42.44	46.4	28	56	6	24.8	13.37	0.2
MHGH0200205	1	-DIN6	20	22	30	42.44	46.4	28	30	6	24.8	13.37	0.2
MHGH0200211	1	-DIN6	21	16	25	44.56	48.6	28	30	5	18.3	13.51	0.3
MHGH0200212	2	-DIN6	21	22	36	44.56	48.6	28	30	6	24.8	13.51	0.3
MHGH0200221	1	-DIN6	22	19	30	46.69	50.7	28	30	6	21.8	13.78	0.3
MHGH0200222	2	-DIN6	22	19	30	46.69	50.7	28	56	6	21.8	13.78	0.3
MHGH0200223	1	-DIN6	22	22	30	46.69	50.7	28	30	6	24.8	13.78	0.3
MHGH0200224	2	-DIN6	22	22	36	46.69	50.7	28	56	6	24.8	13.78	0.3
MHGH0200251	1	-DIN6	25	19	30	53.05	57.1	28	30	6	21.8	14.31	0.4
MHGH0200252	2	-DIN6	25	19	30	53.05	57.1	28	56	6	21.8	14.31	0.4
MHGH0200253	1	-DIN6	25	20	30	53.05	57.1	28	30	6	22.8	14.31	0.4
MHGH0200254	1	-DIN6	25	22	30	53.05	57.1	28	30	6	24.8	14.31	0.4
MHGH0200255	2	-DIN6	25	22	36	53.05	57.1	28	56	6	24.8	14.31	0.4
MHGH0200256	1	-DIN6	25	25	36	53.05	57.1	28	30	6	27.8	14.31	0.4
MHGH0200281	1	-DIN6	28	19	30	59.42	63.4	28	30	6	21.8	14.75	0.4
MHGH0200282	2	-DIN6	28	19	30	59.42	63.4	28	56	6	21.8	14.75	0.4
MHGH0200283	1	-DIN6	28	22	30	59.42	63.4	28	30	6	24.8	14.78	0.4
MHGH0200284	2	-DIN6	28	22	36	59.42	63.4	28	56	6	24.8	14.75	0.4
MHGH0200285	1	-DIN6	28	35	48	59.42	63.4	28	30	10	38.3	14.78	0.4
MHGH0200301	1	-DIN6	30	16	25	63.66	67.7	28	30	5	18.3	15.02	0.7
MHGH0200302	1	-DIN6	30	20	30	63.66	67.7	28	30	6	22.8	15.02	0.7
MHGH0200303	2	-DIN6	30	22	36	63.66	67.7	28	56	6	24.8	15.02	0.7
MHGH0200304	1	-DIN6	30	25	36	63.66	67.7	28	30	8	28.3	15.02	0.7
MHGH0200305	1	-DIN6	30	30	45	63.66	67.7	28	30	8	33.3	15.02	0.7
MHGH0200306	2	-DIN6	30	30	50	63.66	67.7	28	60	8	33.3	15.02	0.7
MHGH0200307	2	-DIN6	30	32	55	63.66	67.7	28	65	10	35.3	15.02	0.7
MHGH0200321	1	-DIN6	32	20	30	67.91	71.9	28	30	6	22.8	15.24	0.7
MHGH0200322	1	-DIN6	32	22	30	67.91	71.9	28	30	6	24.8	15.24	0.7
MHGH0200323	2	-DIN6	32	22	36	67.91	71.9	28	56	6	27.8	15.24	0.7
MHGH0200324	1	-DIN6	32	25	36	67.91	71.9	28	30	8	28.3	15.24	0.7
MHGH0200325	1	-DIN6	32	35	48	67.91	71.9	28	30	10	38.3	15.24	0.7
MHGH0200361	1	-DIN6	36	35	48	76.39	80.4	28	30	10	38.3	15.63	0.8
MHGH0200391	2	-DIN6	39	32	55	82.76	86.8	28	65	10	35.3	15.88	1.4
MHGH0200401	1	-DIN6	40	35	48	84.88	88.9	28	30	10	38.3	15.95	1.2

※ Weight only for reference. Actual scale should be Weighing.

MHGH-DIN6 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Teeth Ground after Hardening

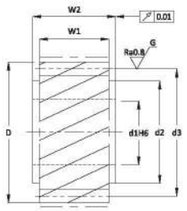


Fig . 1

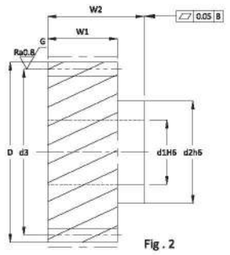
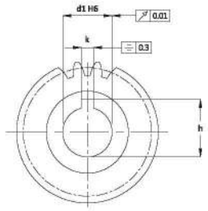


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MHGH0300181	1	-DIN6	18	25	36	54	60	28	30	8	28.3	15.21	0.4
MHGH0300201	1	-DIN6	20	25	36	60	66	28	30	8	28.3	20.05	0.5
MHGH0300202	2	-DIN6	20	25	44	63.66	69.7	28	60	8	28.3	20.05	1.1
MHGH0300203	1	-DIN6	20	30	45	63.66	69.7	28	30	8	33.3	20.05	0.5
MHGH0300204	2	-DIN6	20	30	50	63.66	69.7	28	60	8	33.3	20.05	1.1
MHGH0300205	2	-DIN6	20	32	55	63.66	69.7	28	65	10	35.3	20.05	1.2
MHGH0300206	1	-DIN6	20	35	48	63.66	69.7	28	30	10	38.3	20.05	0.5
MHGH0300221	1	-DIN6	22	25	36	70.03	76	28	30	8	28.3	20.67	0.6
MHGH0300222	1	-DIN6	22	30	45	70.03	76	28	30	8	33.3	20.67	0.6
MHGH0300223	2	-DIN6	22	32	55	70.03	76	28	65	10	35.3	20.67	1.4
MHGH0300224	1	-DIN6	22	35	48	70.03	76	28	30	10	38.3	20.67	0.6
MHGH0300225	2	-DIN6	22	40	62	70.03	76	28	65	12	43.3	20.67	1.4
MHGH0300251	2	-DIN6	25	22	36	79.58	85.6	28	56	6	24.8	21.47	1.5
MHGH0300252	1	-DIN6	25	25	36	79.58	85.6	28	30	8	28.3	21.47	0.8
MHGH0300253	2	-DIN6	25	25	44	79.58	85.6	28	60	8	28.3	21.47	1.6
MHGH0300254	1	-DIN6	25	30	45	79.58	85.6	28	30	8	33.3	21.47	0.8
MHGH0300255	2	-DIN6	25	30	50	79.58	85.6	28	60	8	33.3	21.47	1.6
MHGH0300256	2	-DIN6	25	32	55	79.58	85.6	28	65	10	35.3	21.47	1.8
MHGH0300257	1	-DIN6	25	35	48	79.58	85.6	28	30	10	38.3	21.47	0.8
MHGH0300258	2	-DIN6	25	35	55	79.58	85.6	28	65	10	38.3	21.47	1.8
MHGH0300259	1	-DIN6	25	40	70	79.58	85.6	28	50	12	43.3	21.47	1.4
MHGH03002510	2	-DIN6	25	40	62	79.58	85.6	28	65	12	43.3	21.47	1.8
MHGH0300281	2	-DIN6	28	32	55	89.13	95.1	28	65	10	35.3	22.13	2.2
MHGH0300282	2	-DIN6	28	40	62	89.13	95.1	28	65	12	43.3	22.13	2.2
MHGH0300321	2	-DIN6	32	32	55	101.86	107.85	28	65	10	35.3	22.86	2.8
MHGH0300322	2	-DIN6	32	40	62	101.86	107.85	28	65	12	43.3	22.86	2.8

※ Weight only for reference. Actual scale should be Weighing.

MHGH-DIN6 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Teeth Ground after Hardening

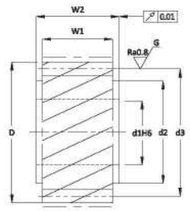


Fig . 1

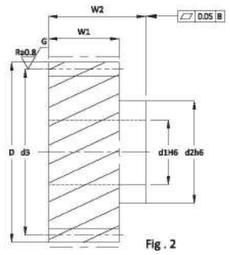
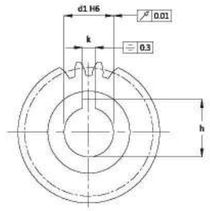


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
MHGH0400151	1	-DIN6	15	35	52	63.66	71.7	40	50	10	38.3	34.29	0.8
MHGH0400181	2	-DIN6	18	32	55	76.39	84.4	40	75	10	35.3	36.80	1.6
MHGH0400201	1	-DIN6	20	35	52	84.88	92.9	40	50	10	38.3	38.20	1.3
MHGH0400202	1	-DIN6	20	45	65	84.88	92.9	40	50	14	48.8	38.20	1.3
MHGH0400211	2	-DIN6	21	32	55	89.13	97.1	40	75	10	35.3	38.60	2.2
MHGH0400212	2	-DIN6	21	35	55	89.13	97.1	40	75	10	38.3	38.60	2.2
MHGH0400213	2	-DIN6	21	40	62	89.13	97.1	40	75	12	43.3	38.60	2.2
MHGH0400214	2	-DIN6	21	45	68	89.13	97.1	40	75	14	48.8	38.60	2.2
MHGH0400221	1	-DIN6	22	35	52	93.37	101.4	40	50	10	38.3	39.37	1.6
MHGH0400222	1	-DIN6	22	45	65	93.37	101.4	40	50	14	48.8	39.37	1.6
MHGH0400241	2	-DIN6	24	32	55	101.86	109.9	40	75	10	35.3	40.43	2.8
MHGH0400242	2	-DIN6	24	35	55	101.86	109.9	40	75	10	38.3	40.43	2.8
MHGH0400243	2	-DIN6	24	40	62	101.86	109.9	40	75	12	43.3	40.43	2.8
MHGH0400244	2	-DIN6	24	45	68	101.86	109.9	40	75	14	48.8	40.43	2.8
MHGH0400245	2	-DIN6	24	55	80	101.86	109.9	40	80	16	59.3	40.43	3.0
MHGH0400251	1	-DIN6	25	35	52	106.1	114.1	40	50	10	38.3	40.91	2.0
MHGH0400252	1	-DIN6	25	45	65	106.1	114.1	40	50	14	48.8	40.91	2.0
MHGH0400253	2	-DIN6	25	55	80	106.1	114.1	40	80	16	59.3	40.91	3.2
Module 5													
MHGH0500181	2	-DIN6	18	45	68	95.49	105.5	50	85	14	48.8	57.50	2.9
MHGH0500241	2	-DIN6	24	45	68	127.32	137.3	50	85	14	48.8	63.17	4.9
MHGH0500242	2	-DIN6	24	55	80	127.32	137.3	50	90	16	59.3	63.17	5.2
MHGH0500243	2	-DIN6	24	75	110	127.32	137.3	50	110	20	79.9	63.17	6.4
Module 6													
MHGH0600201	2	-DIN6	20	55	80	127.32	139.3	60	100	16	59.3	85.95	6.0
MHGH0600202	2	-DIN6	20	75	110	127.32	139.3	60	120	20	79.9	85.95	7.2
MHGH0600251	2	-DIN6	25	55	80	159.16	171.2	60	100	16	59.3	92.04	9.0
MHGH0600252	2	-DIN6	25	75	110	159.16	171.2	60	120	20	79.9	92.04	10.8
Module 8													
MHGH0800181	2	-DIN6	18	75	110	152.79	168.8	80	140	20	79.9	147.20	12.3
MHGH0800201	2	-DIN6	20	85	125	169.8	185.8	80	145	22	90.4	152.80	15.4
Module 10													
MHGH1000201	2	-DIN6	20	85	125	212.21	232.2	100	165	22	90.4	238.75	27.4

※ Weight only for reference. Actual scale should be Weighing.

MHGH-L-DIN6 Series Helical Teeth Ground Pinion Shaft

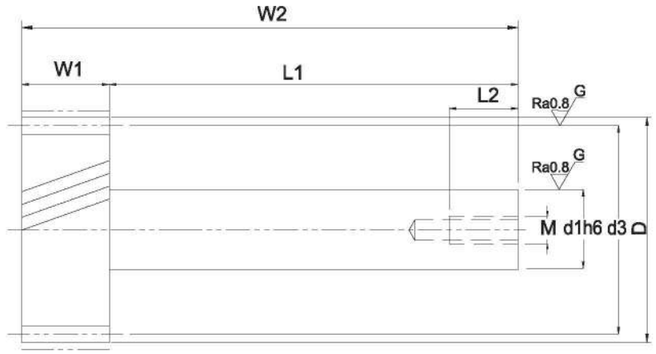
Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Teeth Ground after Hardening



Dimension : mm

Code	DIN	Module	No. of Teeth	d1	d3	D	W1	W2	L1	L2	Hole	F_{ta} kN	KG
Module 1.5													
MHGH-L-0150201	-DIN6	1.5	20	20h6	31.83	34.83	11.5	110	98.5	19	M8	4.11	0.5
MHGH-L-0150202	-DIN6	1.5	20	20h6	31.83	35.00	14.5	90	75.5	19	M8	5.19	0.6
Module 2.5													
MHGH-L-0250161	-DIN6	2.5	16	25h6	47.75	52.50	19.5	108	88.5	22	M10	10.72	0.6
Module 3													
MHGH-L-0300201	-DIN6	3	20	40h6	63.66	70	29.5	162	132.5	28	M12	21.13	1.9

※ Weight only for reference. Actual scale should be Weighing.

MHSH-DIN7 Series Helical Skiving Pinions

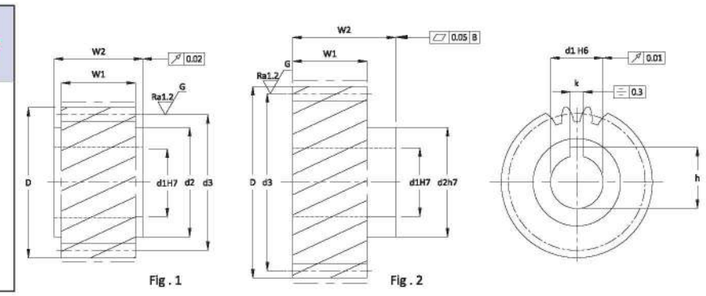
Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Skiving after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5													
MHSH0150201	1	-DIN7	20	11	25	31.83	34.83	20	22	4	12.8	6.56	0.1
MHSH0150202	1	-DIN7	20	13	25	31.83	34.83	20	22	5	15.3	6.56	0.1
MHSH0150203	1	-DIN7	20	14	25	31.83	34.83	20	22	5	16.3	6.56	0.1
MHSH0150204	1	-DIN7	20	16	25	31.83	34.83	20	22	5	18.3	6.56	0.1
MHSH0150211	2	-DIN7	21	16	30	33.42	36.42	20	46	5	18.3	6.63	0.3
Module 2													
MHSH0200181	1	-DIN7	18	16	25	38.197	42.2	28	30	5	18.3	11.80	0.2
MHSH0200201	1	-DIN7	20	19	30	42.44	46.4	28	30	6	21.8	12.25	0.3
MHSH0200202	2	-DIN7	20	19	30	42.44	46.4	28	56	6	21.8	12.25	0.6
MHSH0200203	1	-DIN7	20	20	30	42.44	46.4	28	30	6	22.8	12.25	0.3
MHSH0200204	2	-DIN7	20	22	36	42.44	46.4	28	56	6	24.8	12.25	0.6
MHSH0200205	1	-DIN7	20	22	30	42.44	46.4	28	30	6	24.8	12.25	0.3
MHSH0200211	1	-DIN7	21	16	25	44.56	48.6	28	30	5	18.3	12.38	0.3
MHSH0200212	2	-DIN7	21	22	36	44.56	48.6	28	30	6	24.8	12.38	0.3
MHSH0200221	1	-DIN7	22	19	30	46.69	50.7	28	30	6	21.8	12.63	0.4
MHSH0200222	2	-DIN7	22	19	30	46.69	50.7	28	56	6	21.8	12.63	0.7
MHSH0200223	1	-DIN7	22	22	30	46.69	50.7	28	30	6	24.8	12.63	0.4
MHSH0200224	2	-DIN7	22	22	36	46.69	50.7	28	56	6	24.8	12.63	0.7
MHSH0200251	1	-DIN7	25	19	30	53.05	57.1	28	30	6	21.8	13.12	0.5
MHSH0200252	2	-DIN7	25	19	30	53.05	57.1	28	56	6	21.8	13.12	0.8
MHSH0200253	1	-DIN7	25	20	30	53.05	57.1	28	30	6	22.8	13.12	0.5
MHSH0200254	1	-DIN7	25	22	30	53.05	57.1	28	30	6	24.8	13.12	0.5
MHSH0200255	2	-DIN7	25	22	36	53.05	57.1	28	56	6	24.8	13.12	0.8
MHSH0200256	1	-DIN7	25	25	36	53.05	57.1	28	30	6	24.8	13.12	0.5
MHSH0200281	1	-DIN7	28	19	30	59.42	63.4	28	30	6	21.8	13.52	0.6
MHSH0200282	2	-DIN7	28	19	30	59.42	63.4	28	56	6	21.8	13.52	1.0
MHSH0200283	1	-DIN7	28	22	30	59.42	63.4	28	30	6	24.8	13.52	0.6
MHSH0200284	2	-DIN7	28	22	36	59.42	63.4	28	56	6	24.8	13.52	1.0
MHSH0200285	1	-DIN7	28	35	48	59.42	63.4	28	30	10	38.3	13.52	0.6
MHSH0200301	1	-DIN7	30	16	25	63.66	67.7	28	30	5	18.3	13.77	0.6
MHSH0200302	1	-DIN7	30	20	30	63.66	67.7	28	30	6	22.8	13.77	0.6
MHSH0200303	2	-DIN7	30	22	36	63.66	67.7	28	56	6	24.8	13.77	1.2
MHSH0200304	1	-DIN7	30	25	36	63.66	67.7	28	30	8	28.3	13.77	0.6
MHSH0200305	1	-DIN7	30	30	45	63.66	67.7	28	30	8	33.3	13.77	0.6
MHSH0200306	2	-DIN7	30	30	50	63.66	67.7	28	60	8	33.3	13.77	1.3
MHSH0200307	2	-DIN7	30	32	55	63.66	67.7	28	65	10	35.3	13.77	1.4
MHSH0200321	1	-DIN7	32	20	30	67.91	71.9	28	30	6	22.8	13.97	0.7
MHSH0200322	1	-DIN7	32	22	30	67.91	71.9	28	30	6	24.8	13.97	0.7
MHSH0200323	2	-DIN7	32	22	36	67.91	71.9	28	56	6	27.8	13.97	1.3
MHSH0200324	1	-DIN7	32	25	36	67.91	71.9	28	30	8	28.3	13.97	0.7
MHSH0200325	1	-DIN7	32	35	48	67.91	71.9	28	30	10	38.3	13.97	0.7
MHSH0200361	1	-DIN7	36	35	48	76.39	80.4	28	30	10	38.3	14.32	0.9
MHSH0200391	2	-DIN7	39	32	55	82.76	86.8	28	65	10	35.3	14.56	2.3
MHSH0200401	1	-DIN7	40	35	48	84.88	88.9	28	30	10	38.3	14.62	1.1

※ Weight only for reference. Actual scale should be Weighing.

MHSH-DIN7 Series Helical Skiving Pinions

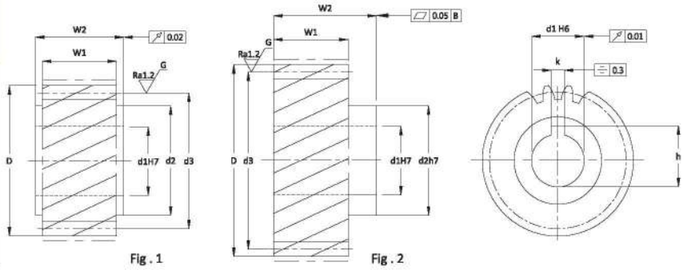
Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Skiving after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MHSH0300201	2	-DIN7	20	22	36	63.66	69.7	28	56	6	24.8	18.38	1.0
MHSH0300202	2	-DIN7	20	25	44	63.66	69.7	28	60	8	28.3	18.38	1.1
MHSH0300203	1	-DIN7	20	30	45	63.66	69.7	28	30	8	33.3	18.38	0.5
MHSH0300204	2	-DIN7	20	30	50	63.66	69.7	28	60	8	33.3	18.38	1.1
MHSH0300205	2	-DIN7	20	32	55	63.66	69.7	28	65	10	35.3	18.38	1.2
MHSH0300206	1	-DIN7	20	35	48	63.66	69.7	28	30	10	38.3	18.38	0.5
MHSH0300221	1	-DIN7	22	25	36	70.03	76	28	30	8	28.3	18.94	0.6
MHSH0300222	1	-DIN7	22	30	45	70.03	76	28	30	8	33.3	18.94	0.6
MHSH0300223	2	-DIN7	22	32	55	70.03	76	28	65	10	35.3	18.94	1.4
MHSH0300224	1	-DIN7	22	35	48	70.03	76	28	30	10	38.3	18.94	0.6
MHSH0300225	2	-DIN7	22	40	62	70.03	76	28	65	12	43.3	18.94	1.4
MHSH0300251	2	-DIN7	25	22	36	79.58	85.6	28	56	6	24.8	19.68	1.5
MHSH0300252	1	-DIN7	25	25	36	79.58	85.6	28	30	8	28.3	19.68	0.8
MHSH0300253	2	-DIN7	25	25	44	79.58	85.6	28	60	8	28.3	19.68	1.6
MHSH0300254	1	-DIN7	25	30	45	79.58	85.6	28	30	8	33.3	19.68	0.8
MHSH0300255	2	-DIN7	25	30	50	79.58	85.6	28	60	8	33.3	19.68	1.6
MHSH0300256	2	-DIN7	25	32	55	79.58	85.6	28	65	10	35.3	19.68	1.8
MHSH0300257	1	-DIN7	25	35	48	79.58	85.6	28	30	10	38.3	19.68	0.8
MHSH0300258	2	-DIN7	25	35	55	79.58	85.6	28	65	10	38.3	19.68	1.8
MHSH0300259	1	-DIN7	25	40	70	79.58	85.6	28	50	12	43.3	19.68	1.4
MHSH03002510	2	-DIN7	25	40	62	79.58	85.6	28	65	12	43.3	19.68	1.8
MHSH0300281	2	-DIN7	28	32	55	89.13	95.1	28	65	10	35.3	20.28	2.2
MHSH0300282	2	-DIN7	28	40	62	89.13	95.1	28	65	12	43.3	20.28	2.2
MHSH0300321	2	-DIN7	32	32	55	101.86	107.85	28	65	10	35.3	20.95	2.8
MHSH0300322	2	-DIN7	32	40	62	101.86	107.85	28	65	12	43.3	20.95	2.8

※ Weight only for reference. Actual scale should be Weighing.

MHSH-DIN7 Series Helical Skiving Pinions

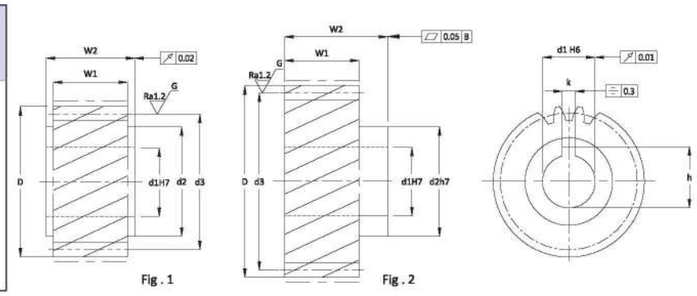
Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Skiving after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
MHSH0400151	1	-DIN7	15	35	52	63.66	71.7	40	50	10	38.3	31.44	0.8
MHSH0400181	2	-DIN7	18	32	55	76.39	84.4	40	75	10	35.3	33.73	1.6
MHSH0400201	1	-DIN7	20	35	52	84.88	92.9	40	50	10	38.3	35.01	1.3
MHSH0400202	1	-DIN7	20	45	65	84.88	92.9	40	50	14	48.8	35.01	1.3
MHSH0400211	2	-DIN7	21	32	55	89.13	97.1	40	75	10	35.3	35.39	2.2
MHSH0400212	2	-DIN7	21	35	55	89.13	97.1	40	75	10	38.3	35.39	2.2
MHSH0400213	2	-DIN7	21	40	62	89.13	97.1	40	75	12	43.3	35.39	2.2
MHSH0400214	2	-DIN7	21	45	68	89.13	97.1	40	75	14	48.8	35.39	2.2
MHSH0400221	1	-DIN7	22	35	52	93.37	101.4	40	50	10	38.3	36.09	1.6
MHSH0400222	1	-DIN7	22	45	65	93.37	101.4	40	50	14	48.8	36.09	1.6
MHSH0400241	2	-DIN7	24	32	55	101.86	109.9	40	75	10	35.3	37.06	2.8
MHSH0400242	2	-DIN7	24	35	55	101.86	109.9	40	75	10	38.3	37.06	2.8
MHSH0400243	2	-DIN7	24	40	62	101.86	109.9	40	75	12	43.3	37.06	2.8
MHSH0400244	2	-DIN7	24	45	68	101.86	109.9	40	75	14	48.8	37.06	2.8
MHSH0400245	2	-DIN7	24	55	80	101.86	109.9	40	80	16	59.3	37.06	3.0
MHSH0400251	1	-DIN7	25	35	52	106.1	114.1	40	50	10	38.3	37.50	2.0
MHSH0400252	1	-DIN7	25	45	65	106.1	114.1	40	50	14	48.8	37.50	2.0
MHSH0400253	2	-DIN7	25	55	80	106.1	114.1	40	80	16	59.3	37.50	3.2
Module 5													
MHSH0500181	2	-DIN7	18	45	68	95.49	105.5	50	85	14	48.8	52.71	2.9
MHSH0500241	2	-DIN7	24	45	68	127.32	137.3	50	85	14	48.8	57.90	4.9
MHSH0500242	2	-DIN7	24	55	80	127.32	137.3	50	90	16	59.3	57.90	5.2
MHSH0500243	2	-DIN7	24	75	110	127.32	137.3	50	110	20	79.9	57.90	6.4
Module 6													
MHSH0600201	2	-DIN7	20	55	80	127.32	139.3	60	100	16	59.3	78.79	6.0
MHSH0600202	2	-DIN7	20	75	110	127.32	139.3	60	120	20	79.9	78.79	7.2
MHSH0600251	2	-DIN7	25	55	80	159.16	171.2	60	100	16	59.3	84.37	9.0
MHSH0600252	2	-DIN7	25	75	110	159.16	171.2	60	120	20	79.9	84.37	10.8
Module 8													
MHSH0800181	2	-DIN7	18	75	110	152.79	168.8	80	140	20	79.9	134.94	12.3
MHSH0800202	2	-DIN7	20	85	125	169.8	185.8	80	145	22	90.4	140.07	15.4
Module 10													
MHSH1000201	2	-DIN7	20	85	125	212.21	232.2	100	165	22	90.4	218.86	27.4

※ Weight only for reference. Actual scale should be Weighing.

CHM-DIN8 Series Helical Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

Left Hand Angle 19°31'42"

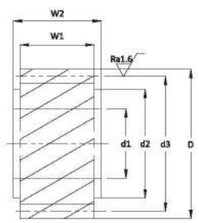


Fig . 1

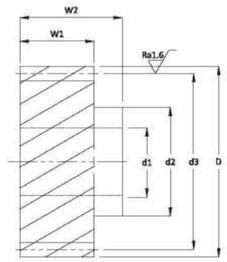
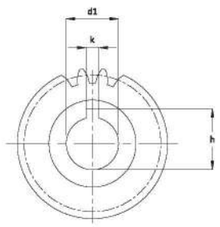


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5													
CHM0150201	1	-DIN8	20	11	25	31.83	34.83	20	22	4	12.8	3.61	0.1
CHM0150202	1	-DIN8	20	13	25	31.83	34.83	20	22	5	15.3	3.61	0.1
CHM0150203	1	-DIN8	20	14	25	31.83	34.83	20	22	5	16.3	3.61	0.1
CHM0150204	1	-DIN8	20	16	25	31.83	34.83	20	22	5	18.3	3.61	0.1
CHM0150211	2	-DIN8	21	16	30	33.42	36.42	20	46	5	18.3	3.65	0.3
Module 2													
CHM0200181	1	-DIN8	18	16	25	38.197	42.2	28	30	5	18.3	6.50	0.2
CHM0200201	1	-DIN8	20	19	30	42.44	46.4	28	30	6	21.8	6.75	0.3
CHM0200202	2	-DIN8	20	19	30	42.44	46.4	28	56	6	21.8	6.75	0.6
CHM0200203	1	-DIN8	20	20	30	42.44	46.4	28	30	6	22.8	6.75	0.3
CHM0200204	2	-DIN8	20	22	36	42.44	46.4	28	56	6	24.8	6.75	0.6
CHM0200205	1	-DIN8	20	22	30	42.44	46.4	28	30	6	24.8	6.75	0.3
CHM0200211	1	-DIN8	21	16	25	44.56	48.6	28	30	5	18.3	6.82	0.3
CHM0200212	2	-DIN8	21	22	36	44.56	48.6	28	30	6	24.8	6.82	0.3
CHM0200221	1	-DIN8	22	19	30	46.69	50.7	28	30	6	21.8	6.96	0.4
CHM0200222	2	-DIN8	22	19	30	46.69	50.7	28	56	6	21.8	6.96	0.7
CHM0200223	1	-DIN8	22	22	30	46.69	50.7	28	30	6	24.8	6.96	0.4
CHM0200224	2	-DIN8	22	22	36	46.69	50.7	28	56	6	24.8	6.96	0.7
CHM0200251	1	-DIN8	25	19	30	53.05	57.1	28	30	6	21.8	7.23	0.5
CHM0200252	2	-DIN8	25	19	30	53.05	57.1	28	56	6	21.8	7.23	0.8
CHM0200253	1	-DIN8	25	20	30	53.05	57.1	28	30	6	22.8	7.23	0.5
CHM0200254	1	-DIN8	25	22	30	53.05	57.1	28	30	6	24.8	7.23	0.5
CHM0200255	2	-DIN8	25	22	36	53.05	57.1	28	56	6	24.8	7.23	0.8
CHM0200256	1	-DIN8	25	25	36	53.05	57.1	28	30	6	27.8	7.23	0.5
CHM0200281	1	-DIN8	28	19	30	59.42	63.4	28	30	6	21.8	7.45	0.6
CHM0200282	2	-DIN8	28	19	30	59.42	63.4	28	56	6	21.8	7.45	1.0
CHM0200283	1	-DIN8	28	22	30	59.42	63.4	28	30	6	24.8	7.45	0.6
CHM0200284	2	-DIN8	28	22	36	59.42	63.4	28	56	6	24.8	7.45	1.0
CHM0200285	1	-DIN8	28	35	48	59.42	63.4	28	30	10	38.3	7.45	0.6
CHM0200301	1	-DIN8	30	16	25	63.66	67.7	28	30	5	18.3	7.58	0.6
CHM0200302	1	-DIN8	30	20	30	63.66	67.7	28	30	6	22.8	7.58	0.6
CHM0200303	2	-DIN8	30	22	36	63.66	67.7	28	56	6	24.8	7.58	1.2
CHM0200304	1	-DIN8	30	25	36	63.66	67.7	28	30	8	28.3	7.58	0.6
CHM0200305	1	-DIN8	30	30	45	63.66	67.7	28	30	8	33.3	7.58	0.6
CHM0200306	2	-DIN8	30	30	50	63.66	67.7	28	60	8	33.3	7.58	1.3
CHM0200307	2	-DIN8	30	32	55	63.66	67.7	28	65	10	35.3	7.58	1.4
CHM0200321	1	-DIN8	32	20	30	67.91	71.9	28	30	6	22.8	7.70	0.7
CHM0200322	1	-DIN8	32	22	30	67.91	71.9	28	30	6	24.8	7.70	0.7
CHM0200323	2	-DIN8	32	22	36	67.91	71.9	28	56	6	27.8	7.70	1.3
CHM0200324	1	-DIN8	32	25	36	67.91	71.9	28	30	8	28.3	7.70	0.7
CHM0200325	1	-DIN8	32	35	48	67.91	71.9	28	30	10	38.3	7.70	0.7
CHM0200361	1	-DIN8	36	35	48	76.39	80.4	28	30	10	38.3	7.89	0.9
CHM0200391	2	-DIN8	39	32	55	82.76	86.8	28	65	10	35.3	8.02	2.3
CHM0200401	1	-DIN8	40	35	48	84.88	88.9	28	30	10	38.3	8.06	1.1

※ Weight only for reference. Actual scale should be Weighing.

CHM-DIN8 Series Helical Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

Left Hand Angle 19°31'42"

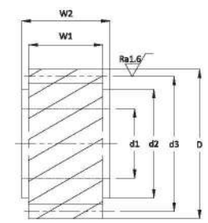


Fig . 1

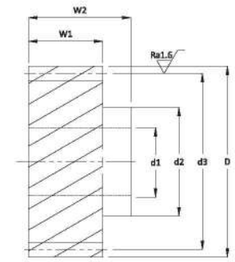
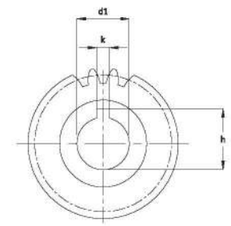


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
CHM0300201	2	-DIN8	20	22	36	63.66	69.7	28	56	6	24.8	10.13	1.0
CHM0300202	2	-DIN8	20	25	44	63.66	69.7	28	60	8	28.3	10.13	1.1
CHM0300203	1	-DIN8	20	30	45	63.66	69.7	28	30	8	33.3	10.13	0.5
CHM0300204	2	-DIN8	20	30	50	63.66	69.7	28	60	8	33.3	10.13	1.1
CHM0300205	2	-DIN8	20	32	55	63.66	69.7	28	65	10	35.3	10.13	1.2
CHM0300206	1	-DIN8	20	35	48	63.66	69.7	28	30	10	38.3	10.13	0.5
CHM0300221	1	-DIN8	22	25	36	70.03	76	28	30	8	28.3	10.44	0.6
CHM0300222	1	-DIN8	22	30	45	70.03	76	28	30	8	33.3	10.44	0.6
CHM0300223	2	-DIN8	22	32	55	70.03	76	28	65	10	35.3	10.44	1.4
CHM0300224	1	-DIN8	22	35	48	70.03	76	28	30	10	38.3	10.44	0.6
CHM0300225	2	-DIN8	22	40	62	70.03	76	28	65	12	43.3	10.44	1.4
CHM0300251	2	-DIN8	25	22	36	79.58	85.6	28	56	6	24.8	10.44	1.5
CHM0300252	1	-DIN8	25	25	36	79.58	85.6	28	30	8	28.3	10.85	0.8
CHM0300253	2	-DIN8	25	25	44	79.58	85.6	28	60	8	28.3	10.85	1.6
CHM0300254	1	-DIN8	25	30	45	79.58	85.6	28	30	8	33.3	10.85	0.8
CHM0300255	2	-DIN8	25	30	50	79.58	85.6	28	60	8	33.3	10.85	1.6
CHM0300256	2	-DIN8	25	32	55	79.58	85.6	28	65	10	35.3	10.85	1.8
CHM0300257	1	-DIN8	25	35	48	79.58	85.6	28	30	10	38.3	10.85	0.8
CHM0300258	2	-DIN8	25	35	55	79.58	85.6	28	65	10	38.3	10.85	1.8
CHM0300259	1	-DIN8	25	40	70	79.58	85.6	28	50	12	43.3	10.85	1.4
CHM03002510	2	-DIN8	25	40	62	79.58	85.6	28	65	12	43.3	10.85	1.8
CHM0300281	2	-DIN8	28	32	55	89.13	95.1	28	65	10	35.3	11.18	2.2
CHM0300282	2	-DIN8	28	40	62	89.13	95.1	28	65	12	43.3	11.18	2.2
CHM0300321	2	-DIN8	32	32	55	101.86	107.85	28	65	10	35.3	11.55	2.8
CHM0300322	2	-DIN8	32	40	62	101.86	107.85	28	65	12	43.3	11.55	2.8

※ Weight only for reference. Actual scale should be Weighing.

CHM-DIN8 Series Helical Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

Left Hand Angle 19°31'42"

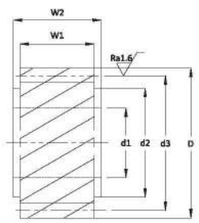


Fig . 1

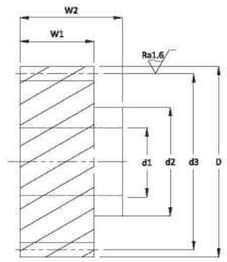
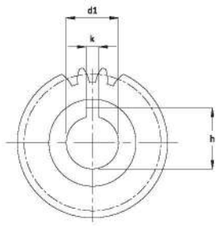


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
CHM0400151	1	-DIN8	15	35	52	63.66	71.7	40	50	10	38.3	17.32	0.8
CHM0400181	2	-DIN8	18	32	55	76.39	84.4	40	75	10	35.3	18.59	1.6
CHM0400201	1	-DIN8	20	35	52	84.88	92.9	40	50	10	38.3	19.29	1.3
CHM0400202	1	-DIN8	20	45	65	84.88	92.9	40	50	14	48.8	19.29	1.3
CHM0400211	2	-DIN8	21	32	55	89.13	97.1	40	75	10	35.3	19.50	2.2
CHM0400212	2	-DIN8	21	35	55	89.13	97.1	40	75	10	38.3	19.50	2.2
CHM0400213	2	-DIN8	21	40	62	89.13	97.1	40	75	12	43.3	19.50	2.2
CHM0400214	2	-DIN8	21	45	68	89.13	97.1	40	75	14	48.8	19.50	2.2
CHM0400221	1	-DIN8	22	35	52	93.37	101.4	40	50	10	38.3	19.88	1.6
CHM0400222	1	-DIN8	22	45	65	93.37	101.4	40	50	14	48.8	19.88	1.6
CHM0400241	2	-DIN8	24	32	55	101.86	109.9	40	75	10	35.3	20.42	2.8
CHM0400242	2	-DIN8	24	35	55	101.86	109.9	40	75	10	38.3	20.42	2.8
CHM0400243	2	-DIN8	24	40	62	101.86	109.9	40	75	12	43.3	20.42	2.8
CHM0400244	2	-DIN8	24	45	68	101.86	109.9	40	75	14	48.8	20.42	2.8
CHM0400245	2	-DIN8	24	55	80	101.86	109.9	40	80	16	59.3	20.42	3.0
CHM0400251	1	-DIN8	25	35	52	106.1	114.1	40	50	10	38.3	20.66	2.0
CHM0400252	1	-DIN8	25	45	65	106.1	114.1	40	50	14	48.8	20.66	2.0
CHM0400253	2	-DIN8	25	55	80	106.1	114.1	40	80	16	59.3	20.66	3.2
Module 5													
CHM0500181	2	-DIN8	18	45	68	95.49	105.5	50	85	14	48.8	29.04	2.9
CHM0500241	2	-DIN8	24	45	68	127.32	137.3	50	85	14	48.8	31.91	4.9
CHM0500242	2	-DIN8	24	55	80	127.32	137.3	50	90	16	59.3	31.91	5.2
CHM0500243	2	-DIN8	24	75	110	127.32	137.3	50	110	20	79.9	31.91	6.4
Module 6													
CHM0600201	2	-DIN8	20	55	80	127.32	139.3	60	100	16	59.3	43.42	6.0
CHM0600202	2	-DIN8	20	75	110	127.32	139.3	60	120	20	79.9	43.42	7.2
CHM0600251	2	-DIN8	25	55	80	159.16	171.2	60	100	16	59.3	46.49	9.0
CHM0600252	2	-DIN8	25	75	110	159.16	171.2	60	120	20	79.9	46.49	10.8
Module 8													
CHM0800181	2	-DIN8	18	75	110	152.79	168.8	80	140	20	79.9	74.36	12.3
CHM0800202	2	-DIN8	20	85	125	169.8	185.8	80	145	22	90.4	77.19	15.4
Module 10													
CHM1000201	2	-DIN8	20	85	125	212.21	232.2	100	165	22	90.4	155.06	27.4

※ Weight only for reference. Actual scale should be Weighing.

MHMH-DIN10 Series Helical Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Surfaces: Sand-blasted

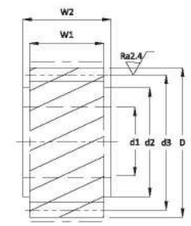


Fig . 1

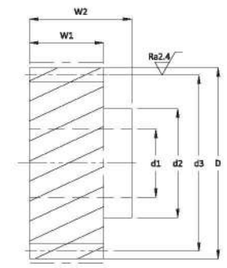
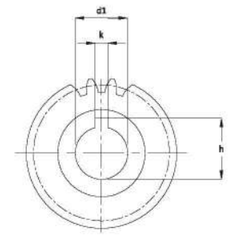


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5													
MHMH0150201	1	-DIN10	20	11	25	31.83	34.83	20	22	4	12.8	5.25	0.1
MHMH0150202	1	-DIN10	20	13	25	31.83	34.83	20	22	5	15.3	5.25	0.1
MHMH0150203	1	-DIN10	20	14	25	31.83	34.83	20	22	5	16.3	5.25	0.1
MHMH0150204	1	-DIN10	20	16	25	31.83	34.83	20	22	5	18.3	5.25	0.1
MHMH0150211	2	-DIN10	21	16	30	33.42	36.42	20	46	5	18.3	5.30	0.3
Module 2													
MHMH0200181	1	-DIN10	18	16	25	38.197	42.2	28	30	5	18.3	9.44	0.2
MHMH0200201	1	-DIN10	20	19	30	42.44	46.4	28	30	6	21.8	9.80	0.3
MHMH0200202	2	-DIN10	20	19	30	42.44	46.4	28	56	6	21.8	9.80	0.6
MHMH0200203	1	-DIN10	20	20	30	42.44	46.4	28	30	6	22.8	9.80	0.3
MHMH0200204	2	-DIN10	20	22	36	42.44	46.4	28	56	6	24.8	9.80	0.6
MHMH0200205	1	-DIN10	20	22	30	42.44	46.4	28	30	6	24.8	9.80	0.3
MHMH0200211	1	-DIN10	21	16	25	44.56	48.6	28	30	5	18.3	9.90	0.3
MHMH0200212	2	-DIN10	21	22	36	44.56	48.6	28	30	6	24.8	9.90	0.3
MHMH0200221	1	-DIN10	22	19	30	46.69	50.7	28	30	6	21.8	10.10	0.4
MHMH0200222	2	-DIN10	22	19	30	46.69	50.7	28	56	6	21.8	10.10	0.7
MHMH0200223	1	-DIN10	22	22	30	46.69	50.7	28	30	6	24.8	10.10	0.4
MHMH0200224	2	-DIN10	22	22	36	46.69	50.7	28	56	6	24.8	10.10	0.7
MHMH0200251	1	-DIN10	25	19	30	53.05	57.1	28	30	6	21.8	10.50	0.5
MHMH0200252	2	-DIN10	25	19	30	53.05	57.1	28	56	6	21.8	10.50	0.8
MHMH0200253	1	-DIN10	25	20	30	53.05	57.1	28	30	6	22.8	10.50	0.5
MHMH0200254	1	-DIN10	25	22	30	53.05	57.1	28	30	6	24.8	10.50	0.5
MHMH0200255	2	-DIN10	25	22	36	53.05	57.1	28	56	6	24.8	10.50	0.8
MHMH0200256	1	-DIN10	25	25	36	53.05	57.1	28	30	6	27.8	10.50	0.5
MHMH0200281	1	-DIN10	28	19	30	59.42	63.4	28	30	6	21.8	10.82	0.6
MHMH0200282	2	-DIN10	28	19	30	59.42	63.4	28	56	6	21.8	10.82	1.0
MHMH0200283	1	-DIN10	28	22	30	59.42	63.4	28	30	6	24.8	10.82	0.6
MHMH0200284	2	-DIN10	28	22	36	59.42	63.4	28	56	6	24.8	10.82	1.0
MHMH0200285	1	-DIN10	28	35	48	59.42	63.4	28	30	10	38.3	10.82	0.6
MHMH0200301	1	-DIN10	30	16	25	63.66	67.7	28	30	5	18.3	11.01	0.6
MHMH0200302	1	-DIN10	30	20	30	63.66	67.7	28	30	6	22.8	11.01	0.6
MHMH0200303	2	-DIN10	30	22	36	63.66	67.7	28	56	6	24.8	11.01	1.2
MHMH0200304	1	-DIN10	30	25	36	63.66	67.7	28	30	8	28.3	11.01	0.6
MHMH0200305	1	-DIN10	30	30	45	63.66	67.7	28	30	8	33.3	11.01	0.6
MHMH0200306	2	-DIN10	30	30	50	63.66	67.7	28	60	8	33.3	11.01	1.3
MHMH0200307	2	-DIN10	30	32	55	63.66	67.7	28	65	10	35.3	11.01	1.4
MHMH0200321	1	-DIN10	32	20	30	67.91	71.9	28	30	6	22.8	11.17	0.7
MHMH0200322	1	-DIN10	32	22	30	67.91	71.9	28	30	6	24.8	11.17	0.7
MHMH0200323	2	-DIN10	32	22	36	67.91	71.9	28	56	6	27.8	11.17	1.3
MHMH0200324	1	-DIN10	32	25	36	67.91	71.9	28	30	8	28.3	11.17	0.7
MHMH0200325	1	-DIN10	32	35	48	67.91	71.9	28	30	10	38.3	11.17	0.7
MHMH0200361	1	-DIN10	36	35	48	76.39	80.4	28	30	10	38.3	11.46	0.9
MHMH0200391	2	-DIN10	39	32	55	82.76	86.8	28	65	10	35.3	11.65	2.3
MHMH0200401	1	-DIN10	40	35	48	84.88	88.9	28	30	10	38.3	11.70	1.1

※ Weight only for reference. Actual scale should be Weighing.

MHMH-DIN10 Series Helical Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Surfaces: Sand-blasted

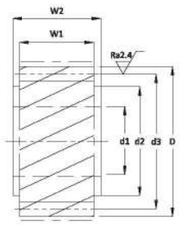


Fig . 1

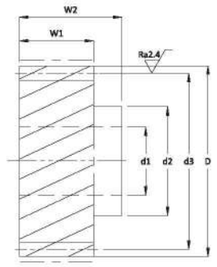
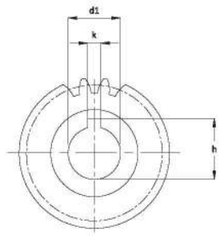


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MHMH0300201	2	-DIN10	20	22	36	63.66	69.7	28	56	6	24.8	14.70	1.0
MHMH0300202	2	-DIN10	20	25	44	63.66	69.7	28	60	8	28.3	14.70	1.1
MHMH0300203	1	-DIN10	20	30	45	63.66	69.7	28	30	8	33.3	14.70	0.5
MHMH0300204	2	-DIN10	20	30	50	63.66	69.7	28	60	8	33.3	14.70	1.1
MHMH0300205	2	-DIN10	20	32	55	63.66	69.7	28	65	10	35.3	14.70	1.2
MHMH0300206	1	-DIN10	20	35	48	63.66	69.7	28	30	10	38.3	14.70	0.5
MHMH0300221	1	-DIN10	22	25	36	70.03	76	28	30	8	28.3	15.15	0.6
MHMH0300222	1	-DIN10	22	30	45	70.03	76	28	30	8	33.3	15.15	0.6
MHMH0300223	2	-DIN10	22	32	55	70.03	76	28	65	10	35.3	15.15	1.4
MHMH0300224	1	-DIN10	22	35	48	70.03	76	28	30	10	38.3	15.15	0.6
MHMH0300225	2	-DIN10	22	40	62	70.03	76	28	65	12	43.3	15.15	1.4
MHMH0300251	2	-DIN10	25	22	36	79.58	85.6	28	56	6	24.8	15.75	1.5
MHMH0300252	1	-DIN10	25	25	36	79.58	85.6	28	30	8	28.3	15.75	0.8
MHMH0300253	2	-DIN10	25	25	44	79.58	85.6	28	60	8	28.3	15.75	1.6
MHMH0300254	1	-DIN10	25	30	45	79.58	85.6	28	30	8	33.3	15.75	0.8
MHMH0300255	2	-DIN10	25	30	50	79.58	85.6	28	60	8	33.3	15.75	1.6
MHMH0300256	2	-DIN10	25	32	55	79.58	85.6	28	65	10	35.3	15.75	1.8
MHMH0300257	1	-DIN10	25	35	48	79.58	85.6	28	30	10	38.3	15.75	0.8
MHMH0300258	2	-DIN10	25	35	55	79.58	85.6	28	65	10	38.3	15.75	1.8
MHMH0300259	1	-DIN10	25	40	70	79.58	85.6	28	50	12	43.3	15.75	1.4
MHMH03002510	2	-DIN10	25	40	62	79.58	85.6	28	65	12	43.3	15.75	1.8
MHMH0300281	2	-DIN10	28	32	55	89.13	95.1	28	65	10	35.3	16.23	2.2
MHMH0300282	2	-DIN10	28	40	62	89.13	95.1	28	65	12	43.3	16.23	2.2
MHMH0300321	2	-DIN10	32	32	55	101.86	107.85	28	65	10	35.3	16.76	2.8
MHMH0300322	2	-DIN10	32	40	62	101.86	107.85	28	65	12	43.3	16.76	2.8

※ Weight only for reference. Actual scale should be Weighing.

MHMH-DIN10 Series Helical Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Left Hand Angle 19°31'42"

Hardness: HRC 50~55°

Surfaces: Sand-blasted

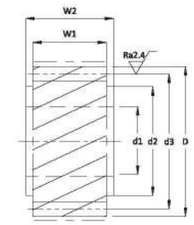


Fig . 1

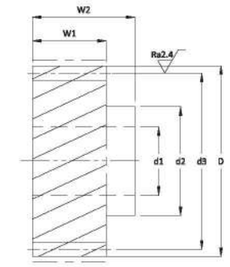
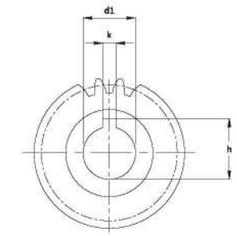


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
MHMH0400151	1	-DIN10	15	35	52	63.66	71.7	40	50	10	38.3	25.15	0.8
MHMH0400181	2	-DIN10	18	32	55	76.39	84.4	40	75	10	35.3	26.98	1.6
MHMH0400201	1	-DIN10	20	35	52	84.88	92.9	40	50	10	38.3	28.01	1.3
MHMH0400202	1	-DIN10	20	45	65	84.88	92.9	40	50	14	48.8	28.01	1.3
MHMH0400211	2	-DIN10	21	32	55	89.13	97.1	40	75	10	35.3	28.31	2.2
MHMH0400212	2	-DIN10	21	35	55	89.13	97.1	40	75	10	38.3	28.31	2.2
MHMH0400213	2	-DIN10	21	40	62	89.13	97.1	40	75	12	43.3	28.31	2.2
MHMH0400214	2	-DIN10	21	45	68	89.13	97.1	40	75	14	48.8	28.31	2.2
MHMH0400221	1	-DIN10	22	35	52	93.37	101.4	40	50	10	38.3	28.87	1.6
MHMH0400222	1	-DIN10	22	45	65	93.37	101.4	40	50	14	48.8	28.87	1.6
MHMH0400241	2	-DIN10	24	32	55	101.86	109.9	40	75	10	35.3	29.64	2.8
MHMH0400242	2	-DIN10	24	35	55	101.86	109.9	40	75	10	38.3	29.64	2.8
MHMH0400243	2	-DIN10	24	40	62	101.86	109.9	40	75	12	43.3	29.64	2.8
MHMH0400244	2	-DIN10	24	45	68	101.86	109.9	40	75	14	48.8	29.64	2.8
MHMH0400245	2	-DIN10	24	55	80	101.86	109.9	40	80	16	59.3	29.64	3.0
MHMH0400251	1	-DIN10	25	35	52	106.1	114.1	40	50	10	38.3	30.00	2.0
MHMH0400252	1	-DIN10	25	45	65	106.1	114.1	40	50	14	48.8	30.00	2.0
MHMH0400253	2	-DIN10	25	55	80	106.1	114.1	40	80	16	59.3	30.00	3.2
Module 5													
MHMH0500181	2	-DIN10	18	45	68	95.49	105.5	50	85	14	48.8	42.16	2.9
MHMH0500241	2	-DIN10	24	45	68	127.32	137.3	50	85	14	48.8	46.32	4.9
MHMH0500242	2	-DIN10	24	55	80	127.32	137.3	50	90	16	59.3	46.32	5.2
MHMH0500243	2	-DIN10	24	75	110	127.32	137.3	50	110	20	79.9	46.32	6.4
Module 6													
MHMH0600201	2	-DIN10	20	55	80	127.32	139.3	60	100	16	59.3	60.03	6.0
MHMH0600202	2	-DIN10	20	75	110	127.32	139.3	60	120	20	79.9	60.03	7.2
MHMH0600251	2	-DIN10	25	55	80	159.16	171.2	60	100	16	59.3	67.50	9.0
MHMH0600252	2	-DIN10	25	75	110	159.16	171.2	60	120	20	79.9	67.50	10.8
Module 8													
MHMH0800181	2	-DIN10	18	75	110	152.79	168.8	80	140	20	79.9	107.95	12.3
MHMH0800201	2	-DIN10	20	85	125	169.8	185.8	80	145	22	90.4	112.05	15.4
Module 10													
MHMH1000201	2	-DIN10	20	85	125	212.21	232.2	100	165	22	90.4	175.08	27.4

※ Weight only for reference. Actual scale should be Weighing.

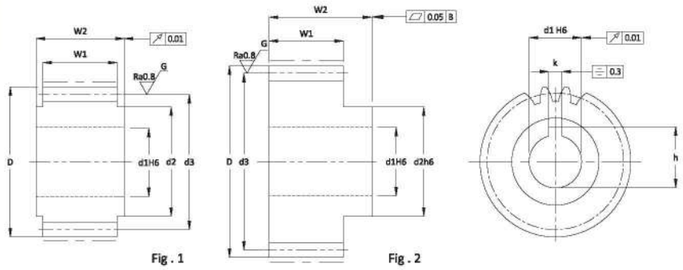
MSGH-DIN6 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Hardness: HRC 50~55°

Teeth Ground after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
MSGH0200161	1	-DIN6	16	15	25	32	36	28	30	5	17.3	12.74	0.2
MSGH0200181	1	-DIN6	18	15	30	36	40	28	30	5	17.3	10.14	0.2
MSGH0200182	1	-DIN6	18	20	25	36	40	28	30	6	22.8	10.14	0.2
MSGH0200201	1	-DIN6	20	15	25	40	44	28	30	6	17.8	10.57	0.3
MSGH0200202	1	-DIN6	20	19	30	40	44	28	30	6	21.8	10.57	0.3
MSGH0200203	2	-DIN6	20	19	30	40	44	28	56	6	21.8	10.57	0.5
MSGH0200204	1	-DIN6	20	20	30	40	44	28	30	6	22.8	10.57	0.3
MSGH0200205	1	-DIN6	20	22	30	40	44	28	30	6	24.8	10.57	0.3
MSGH0200206	2	-DIN6	20	22	36	40	44	28	56	6	24.8	10.57	0.5
MSGH0200221	1	-DIN6	22	15	25	44	48	28	30	5	17.3	10.95	0.3
MSGH0200222	1	-DIN6	22	19	30	44	48	28	30	6	21.8	10.95	0.3
MSGH0200223	2	-DIN6	22	19	30	44	48	28	56	6	21.8	10.95	0.6
MSGH0200224	1	-DIN6	22	20	30	44	48	28	30	6	22.8	10.95	0.3
MSGH0200225	2	-DIN6	22	22	36	44	48	28	56	6	24.8	10.95	0.6
MSGH0200226	1	-DIN6	22	22	30	44	48	28	30	6	24.8	10.95	0.3
MSGH0200227	1	-DIN6	22	25	36	44	48	28	30	8	28.3	10.95	0.3
MSGH0200251	2	-DIN6	25	16	30	50	54	28	54	5	18.3	11.36	0.7
MSGH0200252	1	-DIN6	25	19	30	50	54	28	30	6	21.8	11.36	0.4
MSGH0200253	2	-DIN6	25	19	30	50	54	28	56	6	21.8	11.36	0.8
MSGH0200254	1	-DIN6	25	20	30	50	54	28	30	6	22.8	11.36	0.4
MSGH0200255	1	-DIN6	25	22	30	50	54	28	30	6	24.8	11.36	0.4
MSGH0200256	2	-DIN6	25	22	36	50	54	28	56	6	24.8	11.36	0.8
MSGH0200257	1	-DIN6	25	25	36	50	54	28	30	8	28.3	11.36	0.4
MSGH0200258	1	-DIN6	25	30	45	50	54	28	30	8	33.3	11.36	0.4
MSGH0200281	1	-DIN6	28	19	30	56	60	28	30	6	21.8	11.82	0.5
MSGH0200282	2	-DIN6	28	19	30	56	60	28	56	6	21.8	11.82	0.9
MSGH0200283	1	-DIN6	28	20	30	56	60	28	30	6	22.8	11.82	0.5
MSGH0200284	1	-DIN6	28	22	30	56	60	28	30	6	24.8	11.82	0.5
MSGH0200285	2	-DIN6	28	22	36	56	60	28	56	6	24.8	11.82	0.9
MSGH0200286	1	-DIN6	28	25	36	56	60	28	30	8	28.3	11.82	0.5
MSGH0200287	1	-DIN6	28	30	45	56	60	28	30	8	33.3	11.82	0.5
MSGH0200288	2	-DIN6	28	30	50	56	60	28	60	8	33.3	11.82	1.0
MSGH0200289	1	-DIN6	28	35	48	56	60	28	30	10	38.3	11.82	0.5
MSGH0200321	2	-DIN6	32	16	30	64	68	28	54	5	18.3	12.26	1.2
MSGH0200322	1	-DIN6	32	20	30	64	68	28	30	6	22.8	12.26	0.6
MSGH0200323	1	-DIN6	32	22	30	64	68	28	30	6	24.8	12.26	0.6
MSGH0200324	2	-DIN6	32	22	36	64	68	28	56	6	24.8	12.26	1.2
MSGH0200325	1	-DIN6	32	25	36	64	68	28	30	8	28.3	12.26	0.6
MSGH0200326	1	-DIN6	32	30	45	64	68	28	30	8	33.3	12.26	0.6
MSGH0200327	2	-DIN6	32	30	50	64	68	28	60	8	33.3	12.26	1.3
MSGH0200328	2	-DIN6	32	32	55	64	68	28	65	10	35.3	12.26	1.4
MSGH0200329	1	-DIN6	32	35	48	64	68	28	30	10	38.3	12.26	0.6
MSGH0200361	1	-DIN6	36	20	30	72	76	28	30	6	22.8	12.64	0.8

※ Weight only for reference. Actual scale should be Weighing.

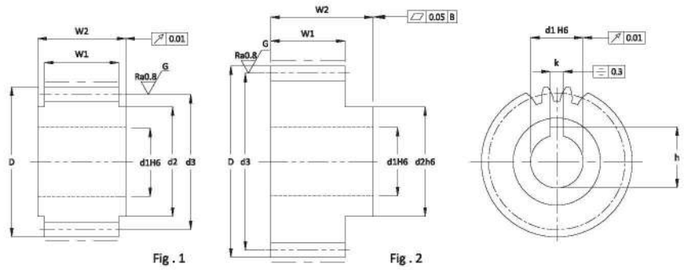
MSGH-DIN6 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Hardness: HRC 50~55°

Teeth Ground after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
MSGH0200362	1	-DIN6	36	25	36	72	76	28	30	8	28.3	12.64	0.8
MSGH0200363	1	-DIN6	36	30	45	72	76	28	30	8	33.3	12.64	0.8
MSGH0200364	1	-DIN6	36	35	48	72	76	28	30	10	38.3	12.64	0.8
MSGH0200365	2	-DIN6	36	40	62	72	76	28	65	12	43.3	12.64	1.7
MSGH0200366	1	-DIN6	36	45	58	72	76	28	30	14	48.8	12.64	0.8
MSGH0200401	1	-DIN6	40	15	36	80	84	28	30	5	17.3	12.94	1.0
MSGH0200402	1	-DIN6	40	20	30	80	84	28	30	6	22.8	12.94	1.0
MSGH0200403	1	-DIN6	40	25	36	80	84	28	30	8	28.3	12.94	1.0
MSGH0200404	1	-DIN6	40	30	45	80	84	28	30	8	33.3	12.94	1.0
MSGH0200405	2	-DIN6	40	32	55	80	84	28	65	10	35.3	12.94	2.1
MSGH0200406	1	-DIN6	40	35	48	80	84	28	30	10	38.3	12.94	1.0
MSGH0200407	2	-DIN6	40	40	62	80	84	28	65	12	43.3	12.94	2.1
MSGH0200408	1	-DIN6	40	45	58	80	84	28	30	14	48.8	12.94	1.0
MSGH0200409	2	-DIN6	40	45	68	80	84	28	65	14	48.8	12.94	2.1
MSGH0200451	1	-DIN6	45	20	30	90	94	28	30	6	22.8	13.25	1.2
MSGH0200452	1	-DIN6	45	25	36	90	94	28	30	8	28.3	13.25	1.2
MSGH0200453	1	-DIN6	45	35	48	90	94	28	30	10	38.3	13.25	1.2
MSGH0200454	1	-DIN6	45	45	58	90	94	28	30	14	48.8	13.25	1.2
MSGH0200501	1	-DIN6	50	20	30	100	104	28	30	6	22.8	13.51	1.5
MSGH0200502	1	-DIN6	50	25	36	100	104	28	30	8	28.3	13.51	1.5
MSGH0200503	1	-DIN6	50	35	48	100	104	28	30	10	38.3	13.51	1.5
MSGH0200504	1	-DIN6	50	45	58	100	104	28	30	14	48.8	13.51	1.5
MSGH0200505	2	-DIN6	50	45	68	100	104	28	65	14	48.8	13.51	3.3
MSGH0200561	1	-DIN6	56	25	36	112	116	28	30	8	28.3	13.74	1.9
MSGH0200562	1	-DIN6	56	35	48	112	116	28	30	10	38.3	13.74	1.9

※ Weight only for reference. Actual scale should be Weighing.

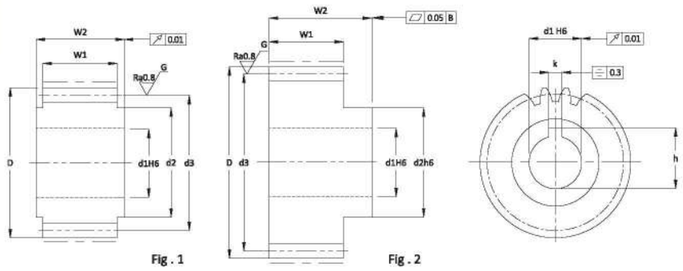
MSGH-DIN6 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Hardness: HRC 50~55°

Teeth Ground after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MSGH0300181	1	-DIN6	18	25	36	54	60	28	30	8	28.3	15.21	0.4
MSGH0300201	1	-DIN6	20	25	36	60	66	28	30	8	28.3	15.86	0.5
MSGH0300202	1	-DIN6	20	30	45	60	66	28	30	8	33.3	15.86	0.5
MSGH0300203	1	-DIN6	20	35	48	60	66	28	30	10	38.3	15.86	0.5
MSGH0300221	2	-DIN6	22	22	36	66	72	28	56	6	24.8	16.42	1.1
MSGH0300222	1	-DIN6	22	25	36	66	72	28	30	8	28.3	16.42	0.6
MSGH0300223	2	-DIN6	22	25	44	66	72	28	60	8	28.3	16.42	1.2
MSGH0300224	1	-DIN6	22	30	45	66	72	28	30	8	33.3	16.42	0.6
MSGH0300225	2	-DIN6	22	32	55	66	72	28	65	10	35.3	16.42	1.2
MSGH0300226	2	-DIN6	22	30	50	66	72	28	60	8	33.3	16.42	1.2
MSGH0300227	1	-DIN6	22	35	48	66	72	28	30	10	38.3	16.42	0.6
MSGH0300228	2	-DIN6	22	35	55	66	72	28	65	10	38.3	16.42	1.2
MSGH0300229	2	-DIN6	22	40	62	66	72	28	65	12	43.3	16.42	1.2
MSGH0300251	1	-DIN6	25	25	36	75	81	28	30	8	28.3	17.04	0.7
MSGH0300252	1	-DIN6	25	30	45	75	81	28	30	8	33.3	17.04	0.7
MSGH0300253	2	-DIN6	25	32	55	75	81	28	65	10	35.3	17.04	1.6
MSGH0300254	1	-DIN6	25	35	48	75	81	28	30	10	38.3	17.04	0.7
MSGH0300255	2	-DIN6	25	40	62	75	81	28	65	12	43.3	17.04	1.6
MSGH0300256	1	-DIN6	25	45	58	75	81	28	30	14	48.8	17.04	0.7
MSGH0300281	2	-DIN6	28	22	36	84	90	28	56	6	24.8	17.74	1.7
MSGH0300282	1	-DIN6	28	25	36	84	90	28	30	8	28.3	17.74	0.9
MSGH0300283	2	-DIN6	28	25	44	84	90	28	60	8	28.3	17.74	1.8
MSGH0300284	1	-DIN6	28	30	45	84	90	28	30	8	33.3	17.74	0.9
MSGH0300285	2	-DIN6	28	30	50	84	90	28	60	8	33.3	17.74	1.8
MSGH0300286	2	-DIN6	28	32	55	84	90	28	65	10	35.3	17.74	1.9
MSGH0300287	1	-DIN6	28	35	48	84	90	28	30	10	38.3	17.74	0.9
MSGH0300288	2	-DIN6	28	35	55	84	90	28	65	10	38.3	17.74	1.9
MSGH0300289	2	-DIN6	28	40	62	84	90	28	65	12	43.3	17.74	1.9
MSGH03002810	1	-DIN6	28	45	58	84	90	28	30	14	48.8	17.74	0.9
MSGH03002811	2	-DIN6	28	45	68	84	90	28	65	14	48.8	17.74	1.9
MSGH0300321	1	-DIN6	32	25	36	96	102	28	30	8	28.3	18.39	1.2
MSGH0300322	1	-DIN6	32	30	45	96	102	28	30	8	33.3	18.39	1.2
MSGH0300323	2	-DIN6	32	32	55	96	102	28	65	10	35.3	18.39	2.5
MSGH0300324	1	-DIN6	32	35	48	96	102	28	30	10	38.3	18.39	1.2
MSGH0300325	2	-DIN6	32	40	62	96	102	28	65	12	43.3	18.39	2.5
MSGH0300326	1	-DIN6	32	45	58	96	102	28	30	14	48.8	18.39	1.2
MSGH0300327	1	-DIN6	32	60	80	96	102	28	30	18	64.4	18.39	1.2
MSGH0300361	1	-DIN6	36	25	36	108	114	28	30	8	28.3	18.96	1.4
MSGH0300362	1	-DIN6	36	35	48	108	114	28	30	10	38.3	18.96	1.4
MSGH0300363	1	-DIN6	36	45	58	108	114	28	30	14	48.8	18.96	1.4
MSGH0300364	2	-DIN6	36	45	68	108	114	28	65	14	48.8	18.96	1.3
MSGH0300365	1	-DIN6	36	60	80	108	114	28	30	18	64.4	18.96	1.4
MSGH0300401	1	-DIN6	40	25	36	120	126	28	30	8	28.3	19.42	1.8

※ Weight only for reference. Actual scale should be Weighing.

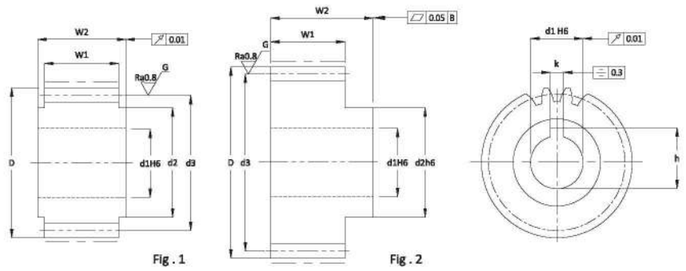
MSGH-DIN6 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Hardness: HRC 50~55°

Teeth Ground after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MSGH0300402	1	-DIN6	40	35	48	120	126	28	30	10	38.3	19.42	1.8
MSGH0300403	1	-DIN6	40	45	58	120	126	28	30	14	48.8	19.42	1.8
MSGH0300404	1	-DIN6	40	60	80	120	126	28	30	18	64.4	19.42	1.8
MSGH0300451	1	-DIN6	45	25	36	135	141	28	30	8	28.3	19.88	2.2
MSGH0300452	1	-DIN6	45	35	48	135	141	28	30	10	38.3	19.88	2.2
MSGH0300453	1	-DIN6	45	45	58	135	141	28	30	14	48.8	19.88	2.2
MSGH0300454	1	-DIN6	45	60	80	135	141	28	30	18	64.4	19.88	2.2
MSGH0300501	1	-DIN6	50	35	48	150	156	28	30	10	38.3	20.26	2.7
MSGH0300502	1	-DIN6	50	45	58	150	156	28	30	14	48.8	20.26	2.7
MSGH0300561	1	-DIN6	56	45	58	168	174	28	30	14	48.8	20.61	3.4
MSGH0300631	1	-DIN6	63	45	58	189	195	28	30	14	48.8	20.97	4.2
MSGH0300632	1	-DIN6	63	60	80	189	195	28	30	18	64.4	20.97	4.2

※ Weight only for reference. Actual scale should be Weighing.

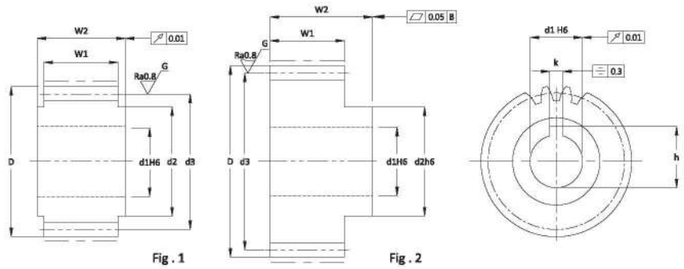
MSGH-DIN6 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/SCM440

Hardness: HRC 50~55°

Teeth Ground after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
MSGH0400201	2	-DIN6	20	32	55	80	88	40	75	10	35.3	30.21	1.8
MSGH0400202	1	-DIN6	20	35	52	80	88	40	50	10	38.3	30.21	1.2
MSGH0400203	2	-DIN6	20	35	55	80	88	40	75	10	38.3	30.21	1.8
MSGH0400204	1	-DIN6	20	45	65	80	88	40	50	14	48.8	30.21	1.2
MSGH0400205	2	-DIN6	20	40	62	80	88	40	75	12	43.3	30.21	1.8
MSGH0400221	1	-DIN6	22	35	52	88	96	40	50	10	38.3	31.29	1.4
MSGH0400222	1	-DIN6	22	45	65	88	96	40	50	14	48.8	31.29	1.4
MSGH0400223	2	-DIN6	22	45	68	88	96	40	75	14	48.8	31.29	2.1
MSGH0400251	2	-DIN6	25	32	55	100	108	40	75	10	35.3	32.46	2.7
MSGH0400252	1	-DIN6	25	35	52	100	108	40	50	10	38.3	32.46	1.8
MSGH0400253	2	-DIN6	25	35	55	100	108	40	75	10	38.3	32.46	2.7
MSGH0400254	2	-DIN6	25	40	62	100	108	40	75	12	43.3	32.46	2.7
MSGH0400255	1	-DIN6	25	45	65	100	108	40	50	14	48.8	32.46	1.8
MSGH0400256	2	-DIN6	25	55	80	100	108	40	80	16	59.3	32.46	2.9
MSGH0400281	1	-DIN6	28	35	52	112	120	40	50	10	38.3	33.79	2.2
MSGH0400282	1	-DIN6	28	45	65	112	120	40	50	14	48.8	33.79	2.2
MSGH0400283	2	-DIN6	28	45	68	112	120	40	75	14	48.8	33.79	3.3
MSGH0400321	1	-DIN6	32	35	52	128	136	40	50	10	38.3	35.03	2.9
MSGH0400322	1	-DIN6	32	45	65	128	136	40	50	14	48.8	35.03	2.9
MSGH0400323	2	-DIN6	32	55	80	128	136	40	80	16	59.3	35.03	4.6
MSGH0400324	2	-DIN6	32	75	110	128	136	40	100	20	79.9	35.03	5.7
MSGH0400401	1	-DIN6	40	45	65	160	168	40	50	14	48.8	36.99	4.4
MSGH0400402	1	-DIN6	40	60	80	160	168	40	50	18	64.4	36.99	4.4
MSGH0400403	2	-DIN6	40	75	110	160	168	40	100	20	79.9	36.99	8.7
Module 5													
MSGH0500211	2	-DIN6	21	45	68	105	115	50	85	14	48.8	48.05	3.5
MSGH0500212	2	-DIN6	21	55	80	105	115	50	90	16	59.3	48.05	3.7
MSGH0500251	2	-DIN6	25	45	68	125	135	50	85	14	48.8	50.72	4.8
MSGH0500252	2	-DIN6	25	55	80	125	135	50	90	16	59.3	50.72	5.1
MSGH0500253	2	-DIN6	25	75	110	125	135	50	110	20	79.9	50.72	6.2
Module 6													
MSGH0600211	2	-DIN6	21	55	80	126	138	60	100	16	59.3	69.19	5.9
MSGH0600212	2	-DIN6	21	75	110	126	138	60	120	20	79.9	69.19	7.0
MSGH0600251	2	-DIN6	25	55	80	150	162	60	100	16	59.3	73.03	8.1
MSGH0600252	2	-DIN6	25	75	110	150	162	60	120	20	79.9	73.03	9.7
Module 8													
MSGH0800201	2	-DIN6	20	75	110	160	176	80	140	20	79.9	120.85	13.4
MSGH0800202	2	-DIN6	20	85	125	160	176	80	145	22	90.4	120.85	13.8

※ Weight only for reference. Actual scale should be Weighing.

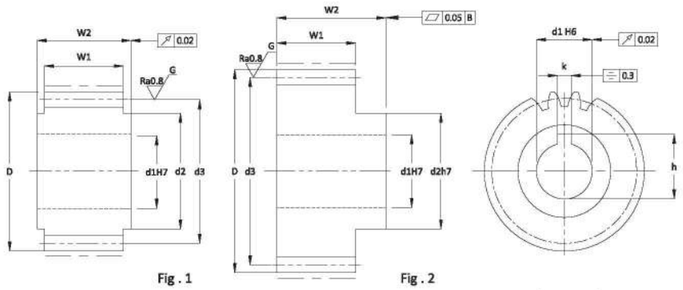
MSSH-DIN7 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Hardness: HRC 50~55°

Skiving after Hardening



Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
MSSH0200161	1	-DIN7	16	15	25	32	36	28	30	5	17.3	11.68	0.2
MSSH0200181	1	-DIN7	18	15	30	36	40	28	30	5	17.3	9.29	0.2
MSSH0200182	1	-DIN7	18	20	25	36	40	28	30	6	22.8	9.29	0.2
MSSH0200201	1	-DIN7	20	15	25	40	44	28	30	6	17.8	9.69	0.3
MSSH0200202	1	-DIN7	20	19	30	40	44	28	30	6	21.8	9.29	0.3
MSSH0200203	2	-DIN7	20	19	30	40	44	28	56	6	21.8	9.69	0.5
MSSH0200204	1	-DIN7	20	20	30	40	44	28	30	6	22.8	9.29	0.3
MSSH0200205	1	-DIN7	20	22	30	40	44	28	30	6	24.8	9.69	0.3
MSSH0200206	2	-DIN7	20	22	36	40	44	28	56	6	24.8	9.29	0.5
MSSH0200221	1	-DIN7	22	15	25	44	48	28	30	5	17.3	10.03	0.3
MSSH0200222	1	-DIN7	22	19	30	44	48	28	30	6	21.8	10.03	0.3
MSSH0200223	2	-DIN7	22	19	30	44	48	28	56	6	21.8	10.03	0.6
MSSH0200224	1	-DIN7	22	20	30	44	48	28	30	6	22.8	10.03	0.3
MSSH0200225	2	-DIN7	22	22	36	44	48	28	56	6	24.8	10.03	0.6
MSSH0200226	1	-DIN7	22	22	30	44	48	28	30	6	24.8	10.03	0.3
MSSH0200227	1	-DIN7	22	25	36	44	48	28	30	8	28.3	10.03	0.3
MSSH0200251	2	-DIN7	25	16	30	50	54	28	54	5	18.3	10.41	0.7
MSSH0200252	1	-DIN7	25	19	30	50	54	28	30	6	21.8	10.41	0.4
MSSH0200253	2	-DIN7	25	19	30	50	54	28	56	6	21.8	10.41	0.8
MSSH0200254	1	-DIN7	25	20	30	50	54	28	30	6	22.8	10.41	0.4
MSSH0200255	1	-DIN7	25	22	30	50	54	28	30	6	24.8	10.41	0.4
MSSH0200256	2	-DIN7	25	22	36	50	54	28	56	6	24.8	10.41	0.8
MSSH0200257	1	-DIN7	25	25	36	50	54	28	30	8	28.3	10.41	0.4
MSSH0200258	1	-DIN7	25	30	45	50	54	28	30	8	33.3	10.41	0.4
MSSH0200281	1	-DIN7	28	19	30	56	60	28	30	6	21.8	10.84	0.5
MSSH0200282	2	-DIN7	28	19	30	56	60	28	56	6	21.8	10.84	0.9
MSSH0200283	1	-DIN7	28	20	30	56	60	28	30	6	22.8	10.84	0.5
MSSH0200284	1	-DIN7	28	22	30	56	60	28	30	6	24.8	10.84	0.5
MSSH0200285	2	-DIN7	28	22	36	56	60	28	56	6	24.8	10.84	0.9
MSSH0200286	1	-DIN7	28	25	36	56	60	28	30	8	28.3	10.84	0.5
MSSH0200287	1	-DIN7	28	30	45	56	60	28	30	8	33.3	10.84	0.5
MSSH0200288	2	-DIN7	28	30	50	56	60	28	60	8	33.3	10.84	1.0
MSSH0200289	1	-DIN7	28	35	48	56	60	28	30	10	38.3	10.84	0.5
MSSH0200321	2	-DIN7	32	16	30	64	68	28	54	5	18.3	11.24	1.2
MSSH0200322	1	-DIN7	32	20	30	64	68	28	30	6	22.8	11.24	0.6
MSSH0200323	1	-DIN7	32	22	30	64	68	28	30	6	24.8	11.24	0.6
MSSH0200324	2	-DIN7	32	22	36	64	68	28	56	6	24.8	11.24	1.2
MSSH0200325	1	-DIN7	32	25	36	64	68	28	30	8	28.3	11.24	0.6
MSSH0200326	1	-DIN7	32	30	45	64	68	28	30	8	33.3	11.24	0.6
MSSH0200327	2	-DIN7	32	30	50	64	68	28	60	8	33.3	11.24	1.3
MSSH0200328	2	-DIN7	32	32	55	64	68	28	65	10	35.3	11.24	1.4
MSSH0200329	1	-DIN7	32	35	48	64	68	28	30	10	38.3	11.24	0.6
MSSH0200361	1	-DIN7	36	20	30	72	76	28	30	6	22.8	11.59	0.8

※ Weight only for reference. Actual scale should be Weighing.

MSSH-DIN7 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Hardness: HRC 50~55°

Skiving after Hardening

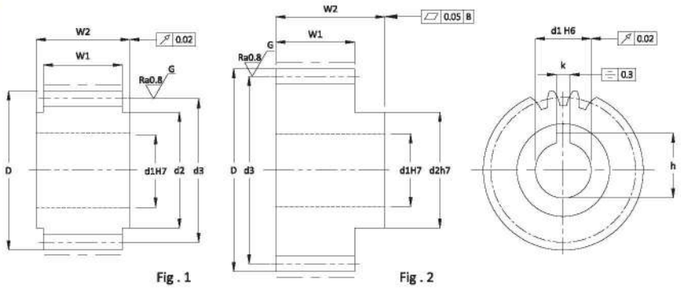


Fig . 1 Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
MSSH0200362	1	-DIN7	36	25	36	72	76	28	30	8	28.3	11.59	0.8
MSSH0200363	1	-DIN7	36	30	45	72	76	28	30	8	33.3	11.59	0.8
MSSH0200364	1	-DIN7	36	35	48	72	76	28	30	10	38.3	11.59	0.8
MSSH0200365	2	-DIN7	36	40	62	72	76	28	65	12	43.3	11.59	1.7
MSSH0200366	1	-DIN7	36	45	58	72	76	28	30	14	48.8	11.59	0.8
MSSH0200401	1	-DIN7	40	15	36	80	84	28	30	5	17.3	11.87	1.0
MSSH0200402	1	-DIN7	40	20	30	80	84	28	30	6	22.8	11.87	1.0
MSSH0200403	1	-DIN7	40	25	36	80	84	28	30	8	28.3	11.87	1.0
MSSH0200404	1	-DIN7	40	30	45	80	84	28	30	8	33.3	11.87	1.0
MSSH0200405	2	-DIN7	40	32	55	80	84	28	65	10	35.3	11.87	2.1
MSSH0200406	1	-DIN7	40	35	48	80	84	28	30	10	38.3	11.87	1.0
MSSH0200407	2	-DIN7	40	40	62	80	84	28	65	12	43.3	11.87	2.1
MSSH0200408	1	-DIN7	40	45	58	80	84	28	30	14	48.8	11.87	1.0
MSSH0200409	2	-DIN7	40	45	68	80	84	28	65	14	48.8	11.87	2.1
MSSH0200451	1	-DIN7	45	20	30	90	94	28	30	6	22.8	12.14	1.2
MSSH0200452	1	-DIN7	45	25	36	90	94	28	30	8	28.3	12.14	1.2
MSSH0200453	1	-DIN7	45	35	48	90	94	28	30	10	38.3	12.14	1.2
MSSH0200454	1	-DIN7	45	45	58	90	94	28	30	14	48.8	12.14	1.2
MSSH0200501	1	-DIN7	50	20	30	100	104	28	30	6	22.8	12.38	1.5
MSSH0200502	1	-DIN7	50	25	36	100	104	28	30	8	28.3	12.38	1.5
MSSH0200503	1	-DIN7	50	35	48	100	104	28	30	10	38.3	12.38	1.5
MSSH0200504	1	-DIN7	50	45	58	100	104	28	30	14	48.8	12.38	1.5
MSSH0200505	2	-DIN7	50	45	68	100	104	28	65	14	48.8	12.38	3.3
MSSH0200561	1	-DIN7	56	25	36	112	116	28	30	8	28.3	12.59	1.9
MSSH0200562	1	-DIN7	56	35	48	112	116	28	30	10	38.3	12.59	1.9

※ Weight only for reference. Actual scale should be Weighing.

MSSH-DIN7 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Hardness: HRC 50~55°

Skiving after Hardening

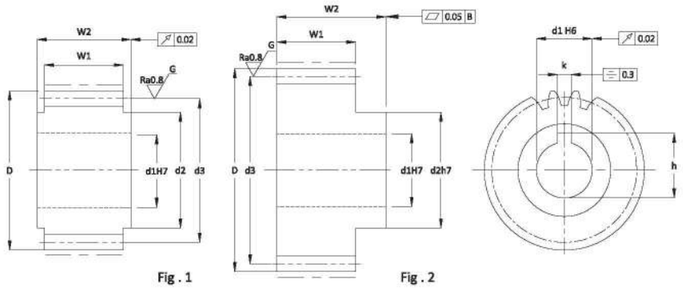


Fig . 1 Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MSSH0300181	1	-DIN7	18	25	36	54	60	28	30	8	28.3	13.94	0.4
MSSH0300201	1	-DIN7	20	25	36	60	66	28	30	8	28.3	14.54	0.5
MSSH0300202	1	-DIN7	20	30	45	60	66	28	30	8	33.3	14.54	0.5
MSSH0300203	1	-DIN7	20	35	48	60	66	28	30	10	38.3	14.54	0.5
MSSH0300221	2	-DIN7	22	22	36	66	72	28	56	6	24.8	15.05	1.1
MSSH0300222	1	-DIN7	22	25	36	66	72	28	30	8	28.3	15.05	0.6
MSSH0300223	2	-DIN7	22	25	44	66	72	28	60	8	28.3	15.05	1.2
MSSH0300224	1	-DIN7	22	30	45	66	72	28	30	8	33.3	15.05	0.6
MSSH0300225	2	-DIN7	22	32	55	66	72	28	65	10	35.3	15.05	1.2
MSSH0300226	2	-DIN7	22	30	50	66	72	28	60	8	33.3	15.05	1.2
MSSH0300227	1	-DIN7	22	35	48	66	72	28	30	10	38.3	15.05	0.6
MSSH0300228	2	-DIN7	22	35	55	66	72	28	65	10	38.3	15.05	1.2
MSSH0300229	2	-DIN7	22	40	62	66	72	28	65	12	43.3	15.05	1.2
MSSH0300251	1	-DIN7	25	25	36	75	81	28	30	8	28.3	15.62	0.7
MSSH0300252	1	-DIN7	25	30	45	75	81	28	30	8	33.3	15.62	0.7
MSSH0300253	2	-DIN7	25	32	55	75	81	28	65	10	35.3	15.62	1.6
MSSH0300254	1	-DIN7	25	35	48	75	81	28	30	10	38.3	15.62	0.7
MSSH0300255	2	-DIN7	25	40	62	75	81	28	65	12	43.3	15.62	1.6
MSSH0300256	1	-DIN7	25	45	58	75	81	28	30	14	48.8	15.62	0.7
MSSH0300281	2	-DIN7	28	22	36	84	90	28	56	6	24.8	16.26	1.7
MSSH0300282	1	-DIN7	28	25	36	84	90	28	30	8	28.3	16.26	0.9
MSSH0300283	2	-DIN7	28	25	44	84	90	28	60	8	28.3	16.26	1.8
MSSH0300284	1	-DIN7	28	30	45	84	90	28	30	8	33.3	16.26	0.9
MSSH0300285	2	-DIN7	28	30	50	84	90	28	60	8	33.3	16.26	1.8
MSSH0300286	2	-DIN7	28	32	55	84	90	28	65	10	35.3	16.26	1.9
MSSH0300287	1	-DIN7	28	35	48	84	90	28	30	10	38.3	16.26	0.9
MSSH0300288	2	-DIN7	28	35	55	84	90	28	65	10	38.3	16.26	1.9
MSSH0300289	2	-DIN7	28	40	62	84	90	28	65	12	43.3	16.26	1.9
MSSH03002810	1	-DIN7	28	45	58	84	90	28	30	14	48.8	16.26	0.9
MSSH03002811	2	-DIN7	28	45	68	84	90	28	65	14	48.8	16.26	1.9
MSSH0300321	1	-DIN7	32	25	36	96	102	28	30	8	28.3	16.86	1.2
MSSH0300323	1	-DIN7	32	30	45	96	102	28	30	8	33.3	16.86	1.2
MSSH0300323	2	-DIN7	32	32	55	96	102	28	65	10	35.3	16.86	2.5
MSSH0300324	1	-DIN7	32	35	48	96	102	28	30	10	38.3	16.86	1.2
MSSH0300325	2	-DIN7	32	40	62	96	102	28	65	12	43.3	16.86	2.5
MSSH0300326	1	-DIN7	32	45	58	96	102	28	30	14	48.8	16.86	1.2
MSSH0300327	1	-DIN7	32	60	80	96	102	28	30	18	64.4	16.86	1.2
MSSH0300361	1	-DIN7	36	25	36	108	114	28	30	8	28.3	17.38	1.4
MSSH0300362	1	-DIN7	36	35	48	108	114	28	30	10	38.3	17.38	1.4
MSSH0300363	1	-DIN7	36	45	58	108	114	28	30	14	48.8	17.38	1.4
MSSH0300364	2	-DIN7	36	45	68	108	114	28	65	14	48.8	17.38	3.1
MSSH0300365	1	-DIN7	36	60	80	108	114	28	30	18	64.4	17.38	1.4
MSSH0300401	1	-DIN7	40	25	36	120	126	28	30	8	28.3	17.80	1.8

※ Weight only for reference. Actual scale should be Weighing.

MSSH-DIN7 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Hardness: HRC 50~55°

Skiving after Hardening

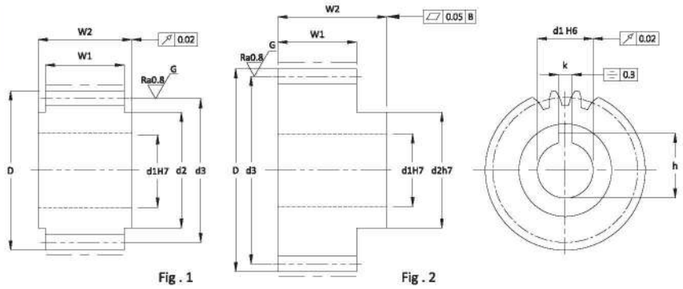


Fig . 1 Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MSSH0300402	1	-DIN7	40	35	48	120	126	28	30	10	38.3	17.80	1.8
MSSH0300403	1	-DIN7	40	45	58	120	126	28	30	14	48.8	17.80	1.8
MSSH0300404	1	-DIN7	40	60	80	120	126	28	30	18	64.4	17.80	1.8
MSSH0300451	1	-DIN7	45	25	36	135	141	28	30	8	28.3	18.22	2.2
MSSH0300452	1	-DIN7	45	35	48	135	141	28	30	10	38.3	18.22	2.2
MSSH0300453	1	-DIN7	45	45	58	135	141	28	30	14	48.8	18.22	2.2
MSSH0300454	1	-DIN7	45	60	80	135	141	28	30	18	64.4	18.22	2.2
MSSH0300501	1	-DIN7	50	35	48	150	156	28	30	10	38.3	18.57	2.7
MSSH0300502	1	-DIN7	50	45	58	150	156	28	30	14	48.8	18.57	2.7
MSSH0300561	1	-DIN7	56	45	58	168	174	28	30	14	48.8	18.89	3.4
MSSH0300631	1	-DIN7	63	45	58	189	195	28	30	14	48.8	19.22	4.2
MSSH0300632	1	-DIN7	63	60	80	189	195	28	30	18	64.4	19.22	4.2

※ Weight only for reference. Actual scale should be Weighing.

MSSH-DIN7 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade DIN 7

Material SCM415/SCM440

Hardness: HRC 50~55°

Skiving after Hardening

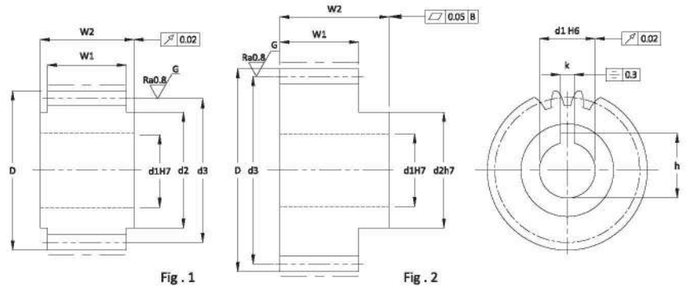


Fig . 1 Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
MSSH0400201	2	-DIN7	20	32	55	80	88	40	75	10	35.3	27.69	1.8
MSSH0400202	1	-DIN7	20	35	52	80	88	40	50	10	38.3	27.69	1.2
MSSH0400203	2	-DIN7	20	35	55	80	88	40	75	10	38.3	27.69	1.8
MSSH0400204	1	-DIN7	20	45	65	80	88	40	50	14	48.8	27.69	1.2
MSSH0400205	2	-DIN7	20	40	62	80	88	40	75	12	43.3	27.69	1.8
MSSH0400221	1	-DIN7	22	35	52	88	96	40	50	10	38.3	28.68	1.4
MSSH0400222	1	-DIN7	22	45	65	88	96	40	50	14	48.8	28.68	1.4
MSSH0400223	2	-DIN7	22	45	68	88	96	40	75	14	48.8	28.68	2.1
MSSH0400251	2	-DIN7	25	32	55	100	108	40	75	10	35.3	29.75	2.7
MSSH0400252	1	-DIN7	25	35	52	100	108	40	50	10	38.3	29.75	1.8
MSSH0400253	2	-DIN7	25	35	55	100	108	40	75	10	38.3	29.75	2.7
MSSH0400254	2	-DIN7	25	40	62	100	108	40	75	12	43.3	29.75	2.7
MSSH0400255	1	-DIN7	25	45	65	100	108	40	50	14	48.8	29.75	1.8
MSSH0400256	2	-DIN7	25	55	80	100	108	40	80	16	59.3	29.75	2.9
MSSH0400281	1	-DIN7	28	35	52	112	120	40	50	10	38.3	30.98	2.2
MSSH0400282	1	-DIN7	28	45	65	112	120	40	50	14	48.8	30.98	2.2
MSSH0400283	2	-DIN7	28	45	68	112	120	40	75	14	48.8	30.98	3.3
MSSH0400321	1	-DIN7	32	35	52	128	136	40	50	10	38.3	32.11	2.9
MSSH0400322	1	-DIN7	32	45	65	128	136	40	50	14	48.8	32.11	2.9
MSSH0400323	2	-DIN7	32	55	80	128	136	40	80	16	59.3	32.11	4.6
MSSH0400324	2	-DIN7	32	75	110	128	136	40	100	20	79.9	32.11	5.7
MSSH0400401	1	-DIN7	40	45	65	160	168	40	50	14	48.8	33.91	4.4
MSSH0400402	1	-DIN7	40	60	80	160	168	40	50	18	64.4	33.91	4.4
MSSH0400403	2	-DIN7	40	75	110	160	168	40	100	20	79.9	33.91	8.7
Module 5													
MSSH0500211	2	-DIN7	21	45	68	105	115	50	85	14	48.8	44.05	3.5
MSSH0500212	2	-DIN7	21	55	80	105	115	50	90	16	59.3	44.05	3.7
MSSH0500251	2	-DIN7	25	45	68	125	135	50	85	14	48.8	46.49	4.8
MSSH0500252	2	-DIN7	25	55	80	125	135	50	90	16	59.3	46.49	5.1
MSSH0500253	2	-DIN7	25	75	110	125	135	50	110	20	79.9	46.49	6.2
Module 6													
MSSH0600211	2	-DIN7	21	55	80	126	138	60	100	16	59.3	63.43	5.9
MSSH0600212	2	-DIN7	21	75	110	126	138	60	120	20	79.9	63.43	7.0
MSSH0600251	2	-DIN7	25	55	80	150	162	60	100	16	59.3	66.95	8.1
MSSH0600252	2	-DIN7	25	75	110	150	162	60	120	20	79.9	66.95	9.7
Module 8													
MSSH0800201	2	-DIN7	20	75	110	160	176	80	140	20	79.9	110.78	13.4
MSSH0800202	2	-DIN7	20	85	125	160	176	80	145	22	90.4	110.78	13.8

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

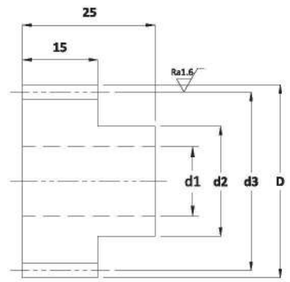


圖1 /Fig . 1

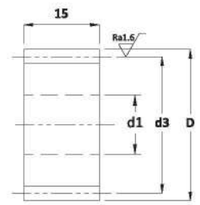


圖2 /Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1													
CSM0100121	1	-DIN8	12	6	9	12.0	14.0	*	*	*	*	*	0.1
CSM0100131	1	-DIN8	13	6	9	13.0	15.0	*	*	*	*	*	0.1
CSM0100141	1	-DIN8	14	6	11	14.0	16.0	*	*	*	*	*	0.1
CSM0100151	1	-DIN8	15	6	12	15.0	17.0	*	*	*	*	*	0.1
CSM0100161	1	-DIN8	16	6	12	16.0	18.0	*	*	*	*	*	0.1
CSM0100171	1	-DIN8	17	6	14	17.0	19.0	*	*	*	*	*	0.1
CSM0100181	1	-DIN8	18	6	15	18.0	20.0	*	*	*	*	*	0.1
CSM0100191	1	-DIN8	19	6	15	19.0	21.0	*	*	*	*	*	0.1
CSM0100201	1	-DIN8	20	6	16	20.0	22.0	*	*	*	*	*	0.1
CSM0100211	1	-DIN8	21	6	16	21.0	23.0	*	*	*	*	1.45	0.1
CSM0100221	1	-DIN8	22	6	18	22.0	24.0	*	*	*	*	1.48	0.1
CSM0100231	1	-DIN8	23	6	18	23.0	25.0	*	*	*	*	1.50	0.1
CSM0100241	1	-DIN8	24	9	20	24.0	26.0	*	*	*	*	1.52	0.1
CSM0100251	1	-DIN8	25	9	20	25.0	27.0	*	*	*	*	1.53	0.1
CSM0100301	1	-DIN8	30	9	20	30.0	32.0	*	*	*	*	1.63	0.1
CSM0100351	1	-DIN8	35	9	25	35.0	37.0	*	*	*	*	1.70	0.2
CSM0100381	1	-DIN8	38	9	25	38.0	40.0	*	*	*	*	1.73	0.2
CSM0100401	1	-DIN8	40	9	25	40.0	42.0	*	*	*	*	1.75	0.2
CSM0100451	1	-DIN8	45	9	30	45.0	47.0	*	*	*	*	1.79	0.3
CSM0100481	1	-DIN8	48	9	30	48.0	50.0	*	*	*	*	1.81	0.3
CSM0100501	1	-DIN8	50	9	30	50.0	52.0	*	*	*	*	1.82	0.3
CSM0100571	1	-DIN8	57	9	40	57.0	59.0	*	*	*	*	1.86	0.4
CSM0100601	1	-DIN8	60	9	40	60.0	62.0	*	*	*	*	1.88	0.4
CSM0100761	2	-DIN8	76	10	*	76.0	78.0	*	*	*	*	1.93	0.7
CSM0100801	2	-DIN8	80	10	*	80.0	82.0	*	*	*	*	1.94	0.8
CSM0100951	2	-DIN8	95	10	*	95.0	97.0	*	*	*	*	1.98	1.1
CSM0101001	2	-DIN8	100	10	*	100.0	102.0	*	*	*	*	1.99	1.2
CSM0101141	2	-DIN8	114	10	*	114.0	116.0	*	*	*	*	2.01	1.6

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

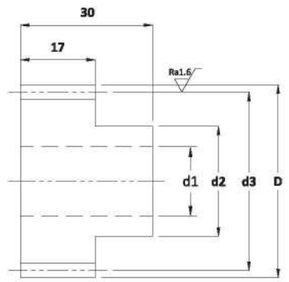


Fig . 1

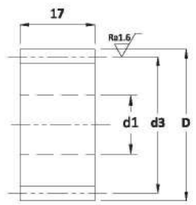


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5													
CSM0150121	1	-DIN8	12	6	14	18.0	21.0	*	*	*	*	*	0.1
CSM0150131	1	-DIN8	13	6	14	19.5	22.5	*	*	*	*	*	0.1
CSM0150141	1	-DIN8	14	6	16	21.0	24.0	*	*	*	*	*	0.1
CSM0150151	1	-DIN8	15	6	18	22.5	25.5	*	*	*	*	*	0.1
CSM0150161	1	-DIN8	16	6	18	24.0	27.0	*	*	*	*	*	0.1
CSM0150171	1	-DIN8	17	9	20	25.5	28.5	*	*	*	*	2.28	0.1
CSM0150181	1	-DIN8	18	9	20	27.0	30.0	*	*	*	*	2.33	0.1
CSM0150191	1	-DIN8	19	9	20	28.5	31.5	*	*	*	*	2.38	0.1
CSM0150201	1	-DIN8	20	9	25	30.0	33.0	*	*	*	*	2.43	0.2
CSM0150211	1	-DIN8	21	9	25	31.5	34.5	*	*	*	*	2.47	0.2
CSM0150221	1	-DIN8	22	9	25	33.0	36.0	*	*	*	*	2.51	0.2
CSM0150231	1	-DIN8	23	9	25	34.5	37.5	*	*	*	*	2.55	0.2
CSM0150241	1	-DIN8	24	9	25	36.0	39.0	*	*	*	*	2.59	0.2
CSM0150251	1	-DIN8	25	9	25	37.5	40.5	*	*	*	*	2.61	0.2
CSM0150301	1	-DIN8	30	9	25	45.0	48.0	*	*	*	*	2.77	0.3
CSM0150351	1	-DIN8	35	9	40	52.5	55.5	*	*	*	*	2.89	0.4
CSM0150381	1	-DIN8	38	9	40	57.0	60.0	*	*	*	*	2.94	0.5
CSM0150401	1	-DIN8	40	9	40	60.0	63.0	*	*	*	*	2.97	0.6
CSM0150451	1	-DIN8	45	12	50	67.5	70.5	*	*	*	*	3.04	0.7
CSM0150481	1	-DIN8	48	12	50	72.0	75.0	*	*	*	*	3.08	0.8
CSM0150501	1	-DIN8	50	12	50	75.0	78.0	*	*	*	*	3.10	0.8
CSM0150571	1	-DIN8	57	12	60	85.5	88.5	*	*	*	*	3.17	1.1
CSM0150601	1	-DIN8	60	12	60	90.0	93.0	*	*	*	*	3.19	1.2
CSM0150761	2	-DIN8	76	16	*	114.0	117.0	*	*	*	*	3.29	1.9
CSM0150801	2	-DIN8	80	16	*	120.0	123.0	*	*	*	*	3.31	2.1
CSM0150951	2	-DIN8	95	20	*	142.5	145.5	*	*	*	*	3.37	2.9

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

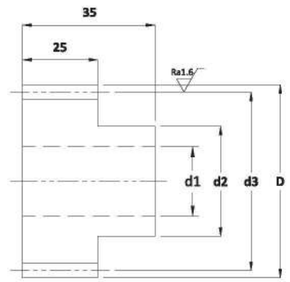


Fig . 1

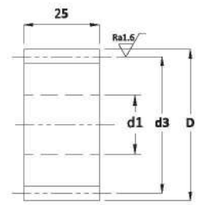


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
CSM0200121	1	-DIN8	12	9	18	24.0	28.0	*	*	*	*	*	0.1
CSM0200131	1	-DIN8	13	9	19	26.0	30.0	*	*	*	*	*	0.1
CSM0200141	1	-DIN8	14	9	19	28.0	32.0	*	*	*	*	*	0.2
CSM0200151	1	-DIN8	15	9	24.5	30.0	34.0	*	*	*	*	*	0.2
CSM0200161	1	-DIN8	16	9	25	32.0	36.0	*	*	*	*	*	0.2
CSM0200171	1	-DIN8	17	9	25	34.0	38.0	*	*	*	*	4.00	0.2
CSM0200181	1	-DIN8	18	9	25	36.0	40.0	*	*	*	*	4.57	0.3
CSM0200191	1	-DIN8	19	9	25	38.0	42.0	*	*	*	*	4.67	0.3
CSM0200201	1	-DIN8	20	9	30	40.0	44.0	*	*	*	*	4.77	0.3
CSM0200211	1	-DIN8	21	9	30	42.0	46.0	*	*	*	*	4.85	0.3
CSM0200221	1	-DIN8	22	9	30	44.0	48.0	*	*	*	*	4.94	0.4
CSM0200231	1	-DIN8	23	9	30	46.0	50.0	*	*	*	*	5.01	0.4
CSM0200241	1	-DIN8	24	12	35	48.0	52.0	*	*	*	*	5.08	0.4
CSM0200251	1	-DIN8	25	12	35	50.0	54.0	*	*	*	*	5.12	0.5
CSM0200281	1	-DIN8	28	12	40	56.0	60.0	*	*	*	*	5.33	0.6
CSM0200301	1	-DIN8	30	12	40	60.0	64.0	*	*	*	*	5.44	0.7
CSM0200321	1	-DIN8	32	12	40	64.0	68.0	*	*	*	*	5.31	0.7
CSM0200351	1	-DIN8	35	12	50	70.0	74.0	*	*	*	*	5.66	0.9
CSM0200361	1	-DIN8	36	12	50	72.0	76.0	*	*	*	*	5.70	0.9
CSM0200381	1	-DIN8	38	12	50	76.0	80.0	*	*	*	*	5.77	1.0
CSM0200401	1	-DIN8	40	12	50	80.0	84.0	*	*	*	*	5.84	1.1
CSM0200451	1	-DIN8	45	12	60	90.0	94.0	*	*	*	*	5.97	1.4
CSM0200481	1	-DIN8	48	15	70	96.0	100.0	*	*	*	*	6.04	1.6
CSM0200501	1	-DIN8	50	15	70	100.0	104.0	*	*	*	*	6.09	1.8
CSM0200561	1	-DIN8	56	15	70	112.0	116.0	*	*	*	*	6.19	2.2
CSM0200571	1	-DIN8	57	15	70	114.0	118.0	*	*	*	*	6.21	2.3
CSM0200601	1	-DIN8	60	15	70	120.0	124.0	*	*	*	*	6.27	2.5
CSM0200761	2	-DIN8	76	20	*	152.0	156.0	*	*	*	*	6.45	3.9
CSM0200801	2	-DIN8	80	20	*	160.0	164.0	*	*	*	*	6.49	4.4
CSM0200951	2	-DIN8	95	20	*	190.0	194.0	*	*	*	*	6.61	6.1

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

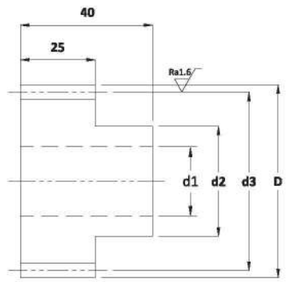


Fig . 1

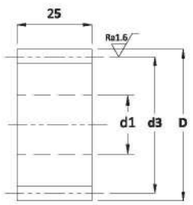


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2.5													
CSM0250121	1	-DIN8	12	9	20	30.0	35.0	*	*	*	*	*	0.2
CSM0250131	1	-DIN8	13	9	20	32.5	37.5	*	*	*	*	*	0.3
CSM0250141	1	-DIN8	14	9	25	35.0	40.0	*	*	*	*	*	0.3
CSM0250151	1	-DIN8	15	9	25	37.5	42.5	*	*	*	*	*	0.3
CSM0250161	1	-DIN8	16	9	30	40.0	45.0	*	*	*	*	*	0.4
CSM0250171	1	-DIN8	17	9	30	42.5	47.5	*	*	*	*	5.60	0.4
CSM0250181	1	-DIN8	18	9	35	45.0	50.0	*	*	*	*	5.71	0.5
CSM0250191	1	-DIN8	19	12	35	47.5	52.5	*	*	*	*	5.84	0.5
CSM0250201	1	-DIN8	20	12	35	50.0	55.0	*	*	*	*	5.96	0.6
CSM0250211	1	-DIN8	21	12	35	52.5	57.5	*	*	*	*	6.06	0.6
CSM0250221	1	-DIN8	22	12	40	55.0	60.0	*	*	*	*	6.17	0.7
CSM0250231	1	-DIN8	23	12	40	57.5	62.5	*	*	*	*	6.26	0.7
CSM0250241	1	-DIN8	24	12	40	60.0	65.0	*	*	*	*	6.36	0.8
CSM0250251	1	-DIN8	25	12	45	62.5	67.5	*	*	*	*	6.40	0.8
CSM0250301	1	-DIN8	30	12	50	75.0	80.0	*	*	*	*	6.80	1.2
CSM0250351	1	-DIN8	35	12	60	87.5	92.5	*	*	*	*	7.08	1.6
CSM0250381	1	-DIN8	38	12	60	95.0	100.0	*	*	*	*	7.21	1.8
CSM0250401	1	-DIN8	40	12	70	100.0	105.0	*	*	*	*	7.30	2.0
CSM0250451	1	-DIN8	45	15	70	112.5	117.5	*	*	*	*	7.47	2.6
CSM0250481	1	-DIN8	48	15	80	120.0	125.0	*	*	*	*	7.55	2.9
CSM0250501	1	-DIN8	50	15	80	125.0	130.0	*	*	*	*	7.61	3.1
CSM0250571	1	-DIN8	57	15	90	142.5	147.5	*	*	*	*	7.77	4.0
CSM0250601	1	-DIN8	60	15	90	150.0	155.0	*	*	*	*	7.83	4.4
CSM0250761	1	-DIN8	76	20	*	190.0	195.0	*	*	*	*	7.07	7.0
CSM0250801	1	-DIN8	80	25	*	200.0	205.0	*	*	*	*	8.11	7.8
CSM0250951	1	-DIN8	95	25	*	237.5	242.5	*	*	*	*	8.26	10.9

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

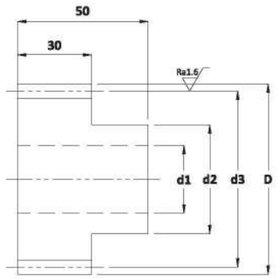


Fig . 1

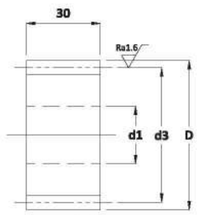


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
CSM0300121	1	-DIN8	12	14	25	36	42	*	*	*	*	*	0.3
CSM0300131	1	-DIN8	13	14	25	39	45	*	*	*	*	*	0.4
CSM0300141	1	-DIN8	14	14	25	42	48	*	*	*	*	*	0.4
CSM0300151	1	-DIN8	15	14	35	45	51	*	*	*	*	*	0.5
CSM0300161	1	-DIN8	16	14	35	48	54	*	*	*	*	*	0.5
CSM0300171	1	-DIN8	17	14	42	51	57	*	*	*	*	8.06	0.6
CSM0300181	1	-DIN8	18	14	45	54	60	*	*	*	*	8.23	0.7
CSM0300191	1	-DIN8	19	14	45	57	63	*	*	*	*	8.41	0.7
CSM0300201	1	-DIN8	20	14	45	60	66	*	*	*	*	8.58	0.8
CSM0300211	1	-DIN8	21	14	45	63	69	*	*	*	*	8.73	0.9
CSM0300221	1	-DIN8	22	14	50	66	72	*	*	*	*	8.89	1.0
CSM0300231	1	-DIN8	23	14	50	69	75	*	*	*	*	9.01	1.0
CSM0300241	1	-DIN8	24	14	50	72	78	*	*	*	*	9.16	1.1
CSM0300251	1	-DIN8	25	14	60	75	81	*	*	*	*	9.22	1.2
CSM0300271	1	-DIN8	27	14	60	81	87	*	*	*	*	9.49	1.4
CSM0300281	1	-DIN8	28	14	60	84	90	*	*	*	*	9.60	1.5
CSM0300301	1	-DIN8	30	14	60	90	96	*	*	*	*	9.79	1.7
CSM0300321	1	-DIN8	32	14	60	96	102	*	*	*	*	9.95	1.9
CSM0300351	1	-DIN8	35	14	80	105	111	*	*	*	*	10.20	2.3
CSM0300361	1	-DIN8	36	14	80	108	114	*	*	*	*	10.26	2.4
CSM0300381	1	-DIN8	38	14	80	114	120	*	*	*	*	10.38	2.7
CSM0300401	1	-DIN8	40	14	80	120	126	*	*	*	*	10.51	2.9
CSM0300451	2	-DIN8	45	20	*	135	141	*	*	*	*	10.76	3.7
CSM0300481	2	-DIN8	48	20	*	144	150	*	*	*	*	10.88	4.2
CSM0300501	2	-DIN8	50	25	*	150	156	*	*	*	*	10.96	4.5
CSM0300521	2	-DIN8	52	25	*	156	162	*	*	*	*	11.03	5.0
CSM0300561	2	-DIN8	56	25	*	168	174	*	*	*	*	11.15	5.6
CSM0300601	2	-DIN8	60	25	*	180	186	*	*	*	*	11.28	6.4
CSM0300761	2	-DIN8	76	25	*	228	234	*	*	*	*	11.62	10.1
CSM0300801	2	-DIN8	80	25	*	240	246	*	*	*	*	11.69	11.2
CSM0300951	2	-DIN8	95	25	*	285	291	*	*	*	*	11.90	15.7

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

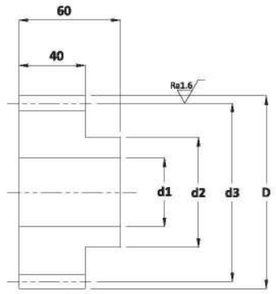


Fig . 1

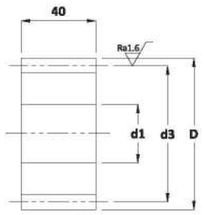


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
CSM0400121	1	-DIN8	12	16	35	48	56	*	*	*	*	*	0.6
CSM0400131	1	-DIN8	13	16	35	52	60	*	*	*	*	*	0.7
CSM0400141	1	-DIN8	14	16	45	56	64	*	*	*	*	*	0.8
CSM0400151	1	-DIN8	15	16	45	60	68	*	*	*	*	*	0.9
CSM0400161	1	-DIN8	16	16	45	64	72	*	*	*	*	*	1.0
CSM0400171	1	-DIN8	17	16	50	68	76	*	*	*	*	14.34	1.1
CSM0400181	1	-DIN8	18	16	50	72	80	*	*	*	*	14.63	1.2
CSM0400191	1	-DIN8	19	16	60	76	84	*	*	*	*	14.96	1.3
CSM0400201	1	-DIN8	20	16	60	80	88	*	*	*	*	15.26	1.4
CSM0400211	1	-DIN8	21	16	70	84	92	*	*	*	*	15.53	1.6
CSM0400221	1	-DIN8	22	16	70	88	96	*	*	*	*	15.80	1.7
CSM0400231	1	-DIN8	23	16	75	92	100	*	*	*	*	16.03	1.8
CSM0400241	1	-DIN8	24	16	75	96	104	*	*	*	*	16.28	2.0
CSM0400251	1	-DIN8	25	16	75	100	108	*	*	*	*	16.39	2.2
CSM0400301	1	-DIN8	30	16	75	120	128	*	*	*	*	17.41	3.0
CSM0400381	2	-DIN8	38	25	*	152	160	*	*	*	*	18.46	4.7
CSM0400401	2	-DIN8	40	25	*	160	168	*	*	*	*	18.68	5.2
CSM0400451	2	-DIN8	45	25	*	180	188	*	*	*	*	19.13	6.5
CSM0400481	2	-DIN8	48	25	*	192	200	*	*	*	*	19.35	7.4
CSM0400501	2	-DIN8	50	25	*	200	208	*	*	*	*	19.49	8.0
CSM0400521	2	-DIN8	52	25		208	216	*	*	*	*	19.61	8.6
CSM0400561	2	-DIN8	56	25	*	224	232	*	*	*	*	19.83	10.0
CSM0400601	2	-DIN8	60	25	*	240	248	*	*	*	*	20.06	11.4
CSM0400761	2	-DIN8	76	25		304	312	*	*	*	*	20.65	18.0
CSM0400801	2	-DIN8	80	25	*	320	328	*	*	*	*	20.78	19.9
CSM0400951	2	-DIN8	95	25	*	380	388	*	*	*	*	21.16	27.8

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

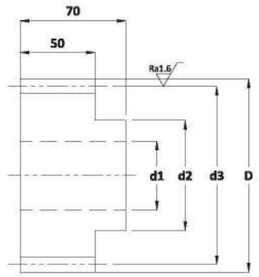


Fig . 1

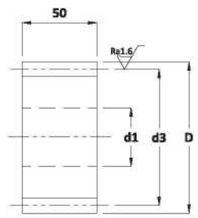


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 5													
CSM0500121	1	-DIN8	12	20	45	60	70	*	*	*	*	*	1.1
CSM0500131	1	-DIN8	13	20	45	65	75	*	*	*	*	*	1.2
CSM0500141	1	-DIN8	14	20	55	70	80	*	*	*	*	*	1.4
CSM0500151	1	-DIN8	15	20	60	75	85	*	*	*	*	*	1.6
CSM0500161	1	-DIN8	16	20	60	80	90	*	*	*	*	*	1.7
CSM0500171	1	-DIN8	17	20	70	85	95	*	*	*	*	22.41	1.9
CSM0500181	1	-DIN8	18	20	70	90	100	*	*	*	*	22.87	2.2
CSM0500191	1	-DIN8	19	20	70	95	105	*	*	*	*	23.37	2.4
CSM0500201	1	-DIN8	20	20	70	100	110	*	*	*	*	23.84	2.6
CSM0500211	1	-DIN8	21	20	70	105	115	*	*	*	*	24.27	2.9
CSM0500221	1	-DIN8	22	20	80	110	120	*	*	*	*	24.69	3.1
CSM0500231	1	-DIN8	23	20	80	115	125	*	*	*	*	25.05	3.4
CSM0500241	1	-DIN8	24	20	80	120	130	*	*	*	*	25.44	3.6
CSM0500251	1	-DIN8	25	20	80	125	135	*	*	*	*	25.62	3.9
CSM0500301	1	-DIN8	30	20	90	150	160	*	*	*	*	27.21	5.5
CSM0500361	2	-DIN8	36	30	*	180	190	*	*	*	*	28.51	7.8
CSM0500381	2	-DIN8	38	30	*	190	200	*	*	*	*	28.85	8.6
CSM0500401	2	-DIN8	40	30	*	200	210	*	*	*	*	29.20	9.5
CSM0500451	2	-DIN8	45	30	*	225	235	*	*	*	*	29.89	11.9
CSM0500481	2	-DIN8	48	30	*	240	250	*	*	*	*	30.23	13.5
CSM0500501	2	-DIN8	50	30	*	250	260	*	*	*	*	30.46	14.6
CSM0500521	2	-DIN8	52	30	*	260	270	*	*	*	*	30.64	15.7
CSM0500561	2	-DIN8	56	30	*	280	290	*	*	*	*	30.99	18.1
CSM0500601	2	-DIN8	60	30	*	300	310	*	*	*	*	31.34	20.7
CSM0500761	2	-DIN8	76	30	*	380	390	*	*	*	*	32.28	32.8
CSM0500801	2	-DIN8	80	30	*	400	410	*	*	*	*	32.47	36.3
CSM0500951	2	-DIN8	95	30	*	475	485	*	*	*	*	33.07	50.8

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

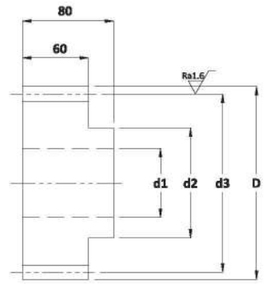


Fig . 1

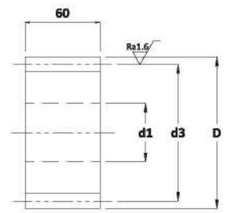


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 6													
CSM0600151	1	-DIN8	15	20	60	90	102	*	*	*	*	*	2.6
CSM0600191	1	-DIN8	19	20	80	114	126	*	*	*	*	33.66	3.9
CSM0600201	1	-DIN8	20	20	90	120	132	*	*	*	*	34.34	4.3
CSM0600211	1	-DIN8	21	20	90	126	138	*	*	*	*	34.95	4.7
CSM0600221	1	-DIN8	22	20	100	132	144	*	*	*	*	35.56	5.1
CSM0600251	1	-DIN8	25	20	110	150	162	*	*	*	*	36.89	6.5
CSM0600301	2	-DIN8	30	30	*	180	192	*	*	*	*	39.18	9.1
CSM0600361	2	-DIN8	36	30	*	216	228	*	*	*	*	41.06	12.8

※ Weight only for reference. Actual scale should be Weighing.

CSM-DIN8 Series Straight Soft Pinions

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

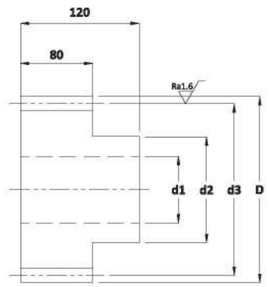


Fig . 1

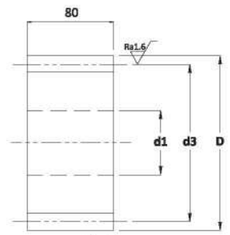


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 8													
CSM0800151	1	-DIN8	15	40	90	120	136	*	*	*	*	*	6.8
CSM0800181	1	-DIN8	18	40	100	144	160	*	*	*	*	58.55	9.5
CSM0800201	1	-DIN8	20	40	120	160	176	*	*	*	*	61.05	11.5
CSM0800241	1	-DIN8	24	40	150	192	208	*	*	*	*	65.14	16.0
CSM0800251	1	-DIN8	25	40	150	200	216	*	*	*	*	65.59	17.3
CSM0800301	1	-DIN8	30	40	190	240	256	*	*	*	*	69.65	24.2

Tooth Surface Accuracy Grade DIN 8

Material S45C / S50C

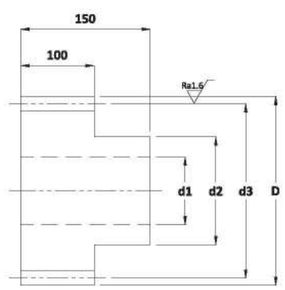


Fig . 1

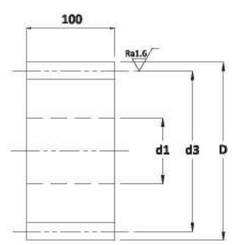


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 10													
CSM1000201	2	-DIN8	20	40	150	200	220	*	*	*	*	95.39	22.4

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

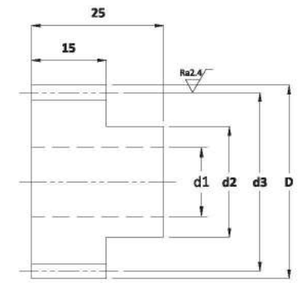


Fig . 1

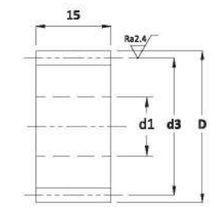


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1													
MSMH0100121	1	-DIN10	12	6	9	12.0	14.0	*	*	*	*	*	0.1
MSMH0100131	1	-DIN10	13	6	9	13.0	15.0	*	*	*	*	*	0.1
MSMH0100141	1	-DIN10	14	6	11	14.0	16.0	*	*	*	*	*	0.1
MSMH0100151	1	-DIN10	15	6	12	15.0	17.0	*	*	*	*	*	0.1
MSMH0100161	1	-DIN10	16	6	12	16.0	18.0	*	*	*	*	*	0.1
MSMH0100171	1	-DIN10	17	6	14	17.0	19.0	*	*	*	*	1.95	0.1
MSMH0100181	1	-DIN10	18	6	15	18.0	20.0	*	*	*	*	1.99	0.1
MSMH0100191	1	-DIN10	19	6	15	19.0	21.0	*	*	*	*	2.03	0.1
MSMH0100201	1	-DIN10	20	6	16	20.0	22.0	*	*	*	*	2.07	0.1
MSMH0100211	1	-DIN10	21	6	16	21.0	23.0	*	*	*	*	2.11	0.1
MSMH0100221	1	-DIN10	22	6	18	22.0	24.0	*	*	*	*	2.15	0.1
MSMH0100231	1	-DIN10	23	6	18	23.0	25.0	*	*	*	*	2.18	0.1
MSMH0100241	1	-DIN10	24	9	20	24.0	26.0	*	*	*	*	2.21	0.1
MSMH0100251	1	-DIN10	25	9	20	25.0	27.0	*	*	*	*	2.23	0.1
MSMH0100301	1	-DIN10	30	9	20	30.0	32.0	*	*	*	*	2.37	0.1
MSMH0100351	1	-DIN10	35	9	25	35.0	37.0	*	*	*	*	2.46	0.2
MSMH0100381	1	-DIN10	38	9	25	38.0	40.0	*	*	*	*	2.51	0.2
MSMH0100401	1	-DIN10	40	9	25	40.0	42.0	*	*	*	*	2.54	0.2
MSMH0100451	1	-DIN10	45	9	30	45.0	47.0	*	*	*	*	2.60	0.3
MSMH0100481	1	-DIN10	48	9	30	48.0	50.0	*	*	*	*	2.63	0.3
MSMH0100501	1	-DIN10	50	9	30	50.0	52.0	*	*	*	*	2.65	0.3
MSMH0100571	1	-DIN10	57	9	40	57.0	59.0	*	*	*	*	2.70	0.4
MSMH0100601	1	-DIN10	60	9	40	60.0	62.0	*	*	*	*	2.73	0.4
MSMH0100761	2	-DIN10	76	10	*	76.0	78.0	*	*	*	*	2.81	0.7
MSMH0100801	2	-DIN10	80	10	*	80.0	82.0	*	*	*	*	2.82	0.8
MSMH0100951	2	-DIN10	95	10	*	95.0	97.0	*	*	*	*	2.88	1.1
MSMH0101001	2	-DIN10	100	10	*	100.0	102.0	*	*	*	*	2.89	1.2
MSMH0101141	2	-DIN10	114	10	*	114.0	116.0	*	*	*	*	3.06	1.6

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

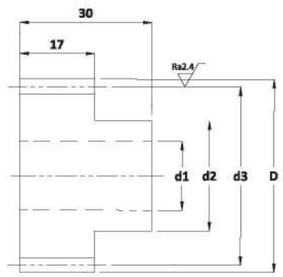


Fig . 1

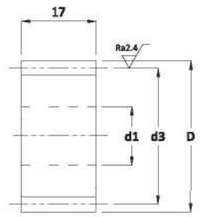


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5													
MSMH0150121	1	-DIN10	12	6	14	18.0	21.0	*	*	*	*	*	0.1
MSMH0150131	1	-DIN10	13	6	14	19.5	22.5	*	*	*	*	*	0.1
MSMH0150141	1	-DIN10	14	6	16	21.0	24.0	*	*	*	*	*	0.1
MSMH0150151	1	-DIN10	15	6	18	22.5	25.5	*	*	*	*	*	0.1
MSMH0150161	1	-DIN10	16	6	18	24.0	27.0	*	*	*	*	*	0.1
MSMH0150171	1	-DIN10	17	9	20	25.5	28.5	*	*	*	*	3.31	0.1
MSMH0150181	1	-DIN10	18	9	20	27.0	30.0	*	*	*	*	3.38	0.1
MSMH0150191	1	-DIN10	19	9	20	28.5	31.5	*	*	*	*	3.46	0.1
MSMH0150201	1	-DIN10	20	9	25	30.0	33.0	*	*	*	*	3.53	0.2
MSMH0150211	1	-DIN10	21	9	25	31.5	34.5	*	*	*	*	3.59	0.2
MSMH0150221	1	-DIN10	22	9	25	33.0	36.0	*	*	*	*	3.65	0.2
MSMH0150231	1	-DIN10	23	9	25	34.5	37.5	*	*	*	*	3.71	0.2
MSMH0150241	1	-DIN10	24	9	25	36.0	39.0	*	*	*	*	3.76	0.2
MSMH0150251	1	-DIN10	25	9	25	37.5	40.5	*	*	*	*	3.79	0.2
MSMH0150301	1	-DIN10	30	9	30	45.0	48.0	*	*	*	*	4.02	0.3
MSMH0150351	1	-DIN10	35	9	30	52.5	55.5	*	*	*	*	4.19	0.4
MSMH0150381	1	-DIN10	38	9	40	57.0	60.0	*	*	*	*	4.27	0.5
MSMH0150401	1	-DIN10	40	9	40	60.0	63.0	*	*	*	*	4.32	0.6
MSMH0150451	1	-DIN10	45	12	50	67.5	70.5	*	*	*	*	4.42	0.7
MSMH0150481	1	-DIN10	48	12	50	72.0	75.0	*	*	*	*	4.47	0.8
MSMH0150501	1	-DIN10	50	12	50	75.0	78.0	*	*	*	*	4.51	0.8
MSMH0150571	1	-DIN10	57	12	60	85.5	88.5	*	*	*	*	4.60	1.1
MSMH0150601	1	-DIN10	60	12	60	90.0	93.0	*	*	*	*	4.64	1.2
MSMH0150761	2	-DIN10	76	16	*	114.0	117.0	*	*	*	*	4.78	1.9
MSMH0150801	2	-DIN10	80	16	*	120.0	123.0	*	*	*	*	4.80	2.1
MSMH0150951	2	-DIN10	95	20	*	142.5	145.5	*	*	*	*	4.89	2.9

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

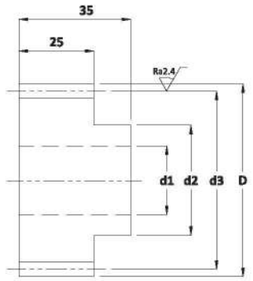


Fig . 1

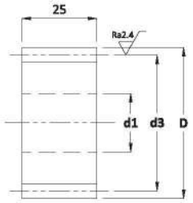


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
MSMH0200121	1	-DIN10	12	9	18	24.0	28.0	*	*	*	*	*	0.1
MSMH0200131	1	-DIN10	13	9	19	26.0	30.0	*	*	*	*	*	0.1
MSMH0200141	1	-DIN10	14	9	19	28.0	32.0	*	*	*	*	*	0.2
MSMH0200151	1	-DIN10	15	9	24.5	30.0	34.0	*	*	*	*	*	0.2
MSMH0200161	1	-DIN10	16	9	25	32.0	36.0	*	*	*	*	*	0.2
MSMH0200171	1	-DIN10	17	9	25	34.0	38.0	*	*	*	*	6.50	0.2
MSMH0200181	1	-DIN10	18	9	25	36.0	40.0	*	*	*	*	6.64	0.3
MSMH0200191	1	-DIN10	19	9	25	38.0	42.0	*	*	*	*	6.78	0.3
MSMH0200201	1	-DIN10	20	9	30	40.0	44.0	*	*	*	*	6.92	0.3
MSMH0200211	1	-DIN10	21	9	30	42.0	46.0	*	*	*	*	7.04	0.3
MSMH0200221	1	-DIN10	22	9	30	44.0	48.0	*	*	*	*	7.17	0.4
MSMH0200231	1	-DIN10	23	9	30	46.0	50.0	*	*	*	*	7.27	0.4
MSMH0200241	1	-DIN10	24	12	35	48.0	52.0	*	*	*	*	7.38	0.4
MSMH0200251	1	-DIN10	25	12	35	50.0	54.0	*	*	*	*	7.43	0.5
MSMH0200281	1	-DIN10	28	12	40	56.0	60.0	*	*	*	*	7.74	0.6
MSMH0200301	1	-DIN10	30	12	40	60.0	64.0	*	*	*	*	7.90	0.7
MSMH0200321	1	-DIN10	32	12	40	64.0	68.0	*	*	*	*	8.03	0.7
MSMH0200351	1	-DIN10	35	12	50	70.0	74.0	*	*	*	*	8.22	0.9
MSMH0200361	1	-DIN10	36	12	50	72.0	76.0	*	*	*	*	8.28	0.9
MSMH0200381	1	-DIN10	38	12	50	76.0	80.0	*	*	*	*	8.37	1.0
MSMH0200401	1	-DIN10	40	12	50	80.0	84.0	*	*	*	*	8.47	1.1
MSMH0200451	1	-DIN10	45	12	60	90.0	94.0	*	*	*	*	8.67	1.4
MSMH0200481	1	-DIN10	48	15	70	96.0	100.0	*	*	*	*	8.77	1.6
MSMH0200501	1	-DIN10	50	15	70	100.0	104.0	*	*	*	*	8.84	1.8
MSMH0200561	1	-DIN10	56	15	70	112.0	116.0	*	*	*	*	8.99	2.2
MSMH0200571	1	-DIN10	57	15	70	114.0	118.0	*	*	*	*	9.02	2.3
MSMH0200601	1	-DIN10	60	15	70	120.0	124.0	*	*	*	*	9.10	2.5
MSMH0200761	2	-DIN10	76	20	*	152.0	156.0	*	*	*	*	9.37	3.9
MSMH0200801	2	-DIN10	80	20	*	160.0	164.0	*	*	*	*	9.42	4.4
MSMH0200951	2	-DIN10	95	20	*	190.0	194.0	*	*	*	*	9.60	6.1

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

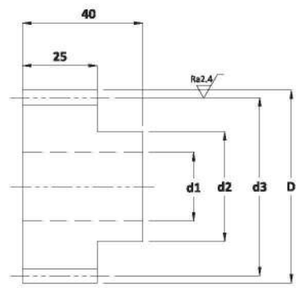


Fig . 1

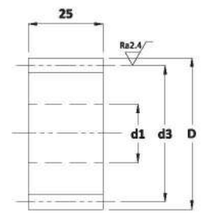


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2.5													
MSMH0250121	1	-DIN10	12	9	20	30.0	35.0	*	*	*	*	*	0.3
MSMH0250131	1	-DIN10	13	9	20	32.5	37.5	*	*	*	*	*	0.3
MSMH0250141	1	-DIN10	14	9	25	35.0	40.0	*	*	*	*	*	0.3
MSMH0250151	1	-DIN10	15	9	25	37.5	42.5	*	*	*	*	*	0.4
MSMH0250161	1	-DIN10	16	9	30	40.0	45.0	*	*	*	*	*	0.4
MSMH0250171	1	-DIN10	17	9	30	42.5	47.5	*	*	*	*	8.13	0.5
MSMH0250181	1	-DIN10	18	9	35	45.0	50.0	*	*	*	*	8.30	0.5
MSMH0250191	1	-DIN10	19	12	35	47.5	52.5	*	*	*	*	8.48	0.6
MSMH0250201	1	-DIN10	20	12	35	50.0	55.0	*	*	*	*	8.65	0.6
MSMH0250211	1	-DIN10	21	12	35	52.5	57.5	*	*	*	*	8.81	0.7
MSMH0250221	1	-DIN10	22	12	40	55.0	60.0	*	*	*	*	8.96	0.7
MSMH0250231	1	-DIN10	23	12	40	57.5	62.5	*	*	*	*	9.09	0.8
MSMH0250241	1	-DIN10	24	12	40	60.0	65.0	*	*	*	*	9.23	0.9
MSMH0250251	1	-DIN10	25	12	45	62.5	67.5	*	*	*	*	9.29	0.9
MSMH0250301	1	-DIN10	30	12	50	75.0	80.0	*	*	*	*	9.87	1.3
MSMH0250351	1	-DIN10	35	12	60	87.5	92.5	*	*	*	*	10.28	1.8
MSMH0250381	1	-DIN10	38	12	60	95.0	100.0	*	*	*	*	10.47	2.1
MSMH0250401	1	-DIN10	40	12	70	100.0	105.0	*	*	*	*	10.59	2.3
MSMH0250451	1	-DIN10	45	15	70	112.5	117.5	*	*	*	*	10.84	2.9
MSMH0250481	1	-DIN10	48	15	80	120.0	125.0	*	*	*	*	10.97	3.3
MSMH0250501	1	-DIN10	50	15	80	125.0	130.0	*	*	*	*	11.05	3.5
MSMH0250571	1	-DIN10	57	15	90	142.5	147.5	*	*	*	*	11.28	4.5
MSMH0250601	1	-DIN10	60	15	90	150.0	155.0	*	*	*	*	11.37	5.0
MSMH0250761	1	-DIN10	76	20	*	190.0	195.0	*	*	*	*	11.71	7.9
MSMH0250801	1	-DIN10	80	25	*	200.0	205.0	*	*	*	*	11.78	8.7
MSMH0250951	1	-DIN10	95	25	*	237.5	242.5	*	*	*	*	12.00	12.2

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

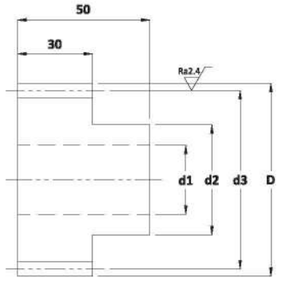


Fig . 1

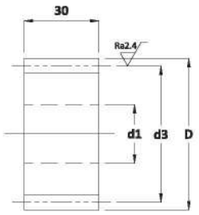


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MSMH0300121	1	-DIN10	12	14	25	36	42	*	*	*	*	*	0.4
MSMH0300131	1	-DIN10	13	14	25	39	45	*	*	*	*	*	0.5
MSMH0300141	1	-DIN10	14	14	25	42	48	*	*	*	*	*	0.5
MSMH0300151	1	-DIN10	15	14	35	45	51	*	*	*	*	*	0.6
MSMH0300161	1	-DIN10	16	14	35	48	54	*	*	*	*	*	0.7
MSMH0300171	1	-DIN10	17	14	42	51	57	*	*	*	*	11.71	0.8
MSMH0300181	1	-DIN10	18	14	45	54	60	*	*	*	*	11.95	0.8
MSMH0300191	1	-DIN10	19	14	45	57	63	*	*	*	*	12.21	0.9
MSMH0300201	1	-DIN10	20	14	45	60	66	*	*	*	*	12.46	1.0
MSMH0300211	1	-DIN10	21	14	45	63	69	*	*	*	*	12.68	1.1
MSMH0300221	1	-DIN10	22	14	50	66	72	*	*	*	*	12.90	1.2
MSMH0300231	1	-DIN10	23	14	50	69	75	*	*	*	*	13.09	1.3
MSMH0300241	1	-DIN10	24	14	50	72	78	*	*	*	*	13.29	1.4
MSMH0300251	1	-DIN10	25	14	60	75	81	*	*	*	*	13.39	1.5
MSMH0300271	1	-DIN10	27	14	60	81	87	*	*	*	*	13.78	1.7
MSMH0300281	1	-DIN10	28	14	60	84	90	*	*	*	*	13.94	1.9
MSMH0300301	1	-DIN10	30	14	60	90	96	*	*	*	*	14.22	2.1
MSMH0300321	1	-DIN10	32	14	60	96	102	*	*	*	*	14.45	2.4
MSMH0300351	1	-DIN10	35	14	80	105	111	*	*	*	*	14.81	2.8
MSMH0300361	1	-DIN10	36	14	80	108	114	*	*	*	*	14.90	3.0
MSMH0300381	1	-DIN10	38	14	80	114	120	*	*	*	*	15.08	3.3
MSMH0300401	1	-DIN10	40	14	80	120	126	*	*	*	*	15.26	3.7
MSMH0300451	2	-DIN10	45	20	*	135	141	*	*	*	*	15.62	4.6
MSMH0300481	2	-DIN10	48	20	*	144	150	*	*	*	*	15.80	5.2
MSMH0300501	2	-DIN10	50	25	*	150	156	*	*	*	*	15.92	5.6
MSMH0300521	2	-DIN10	52	25	*	156	165	*	*	*	*	16.01	6.3
MSMH0300561	2	-DIN10	56	25	*	168	174	*	*	*	*	16.19	7.0
MSMH0300601	2	-DIN10	60	25	*	180	186	*	*	*	*	16.38	8.0
MSMH0300761	2	-DIN10	76	25	*	228	234	*	*	*	*	16.86	12.7
MSMH0300801	2	-DIN10	80	25	*	240	246	*	*	*	*	16.96	14.0
MSMH0300951	2	-DIN10	95	25	*	285	291	*	*	*	*	17.28	19.6

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

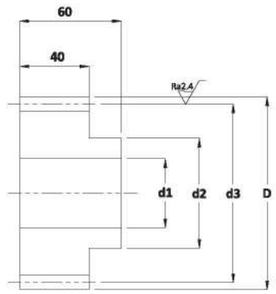


Fig . 1

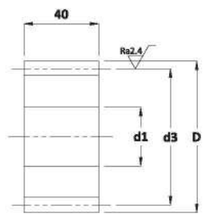


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
MSMH0400121	1	-DIN10	12	16	35	48	56	*	*	*	*	*	0.9
MSMH0400131	1	-DIN10	13	16	35	52	60	*	*	*	*	*	1.0
MSMH0400141	1	-DIN10	14	16	45	56	64	*	*	*	*	*	1.1
MSMH0400151	1	-DIN10	15	16	45	60	68	*	*	*	*	*	1.3
MSMH0400161	1	-DIN10	16	16	45	64	72	*	*	*	*	*	1.4
MSMH0400171	1	-DIN10	17	16	50	68	76	*	*	*	*	20.82	1.6
MSMH0400181	1	-DIN10	18	16	50	72	80	*	*	*	*	21.25	1.8
MSMH0400191	1	-DIN10	19	16	60	76	84	*	*	*	*	21.71	2.0
MSMH0400201	1	-DIN10	20	16	60	80	88	*	*	*	*	22.15	2.1
MSMH0400211	1	-DIN10	21	16	70	84	92	*	*	*	*	22.55	2.3
MSMH0400221	1	-DIN10	22	16	70	88	96	*	*	*	*	22.94	2.6
MSMH0400231	1	-DIN10	23	16	75	92	100	*	*	*	*	23.27	2.8
MSMH0400241	1	-DIN10	24	16	75	96	104	*	*	*	*	23.64	3.0
MSMH0400251	1	-DIN10	25	16	75	100	108	*	*	*	*	23.80	3.2
MSMH0400301	1	-DIN10	30	16	*	120	128	*	*	*	*	25.28	4.5
MSMH0400381	2	-DIN10	38	25	*	152	160	*	*	*	*	26.81	7.1
MSMH0400401	2	-DIN10	40	25	*	160	168	*	*	*	*	27.13	7.8
MSMH0400451	2	-DIN10	45	25	*	180	188	*	*	*	*	27.77	9.8
MSMH0400481	2	-DIN10	48	25	*	192	200	*	*	*	*	28.09	11.1
MSMH0400501	2	-DIN10	50	25	*	200	208	*	*	*	*	28.30	12.0
MSMH0400521	2	-DIN10	52	25		208	216	*	*	*	*	28.46	12.9
MSMH0400561	2	-DIN10	56	25	*	224	232	*	*	*	*	28.79	14.9
MSMH0400601	2	-DIN10	60	25	*	240	248	*	*	*	*	29.12	17.1
MSMH0400761	2	-DIN10	76	25		304	312	*	*	*	*	29.99	27.0
MSMH0400801	2	-DIN10	80	25	*	320	328	*	*	*	*	30.16	29.8
MSMH0400951	2	-DIN10	95	25	*	380	388	*	*	*	*	30.72	41.8

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MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

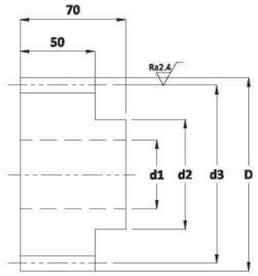


Fig . 1

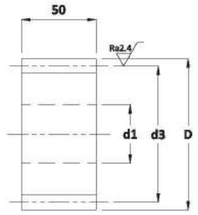


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 5													
MSMH0500121	1	-DIN10	12	20	45	60	70	*	*	*	*	*	1.6
MSMH0500131	1	-DIN10	13	20	45	65	75	*	*	*	*	*	1.8
MSMH0500141	1	-DIN10	14	20	55	70	80	*	*	*	*	*	2.1
MSMH0500151	1	-DIN10	15	20	60	75	85	*	*	*	*	*	2.3
MSMH0500161	1	-DIN10	16	20	60	80	90	*	*	*	*	*	2.6
MSMH0500171	1	-DIN10	17	20	70	85	95	*	*	*	*	32.53	2.9
MSMH0500181	1	-DIN10	18	20	70	90	100	*	*	*	*	33.20	3.2
MSMH0500191	1	-DIN10	19	20	70	95	105	*	*	*	*	33.96	3.6
MSMH0500201	1	-DIN10	20	20	70	100	110	*	*	*	*	34.61	3.9
MSMH0500211	1	-DIN10	21	20	70	105	115	*	*	*	*	35.24	4.3
MSMH0500221	1	-DIN10	22	20	80	110	120	*	*	*	*	35.85	4.7
MSMH0500231	1	-DIN10	23	20	80	115	125	*	*	*	*	36.36	5.1
MSMH0500241	1	-DIN10	24	20	80	120	130	*	*	*	*	36.93	5.5
MSMH0500251	1	-DIN10	25	20	80	125	135	*	*	*	*	37.19	5.9
MSMH0500301	1	-DIN10	30	20	90	150	160	*	*	*	*	39.49	8.3
MSMH0500361	2	-DIN10	36	30	*	180	190	*	*	*	*	41.39	11.7
MSMH0500381	2	-DIN10	38	30	*	190	200	*	*	*	*	41.89	12.9
MSMH0500401	2	-DIN10	40	30	*	200	210	*	*	*	*	42.39	14.3
MSMH0500451	2	-DIN10	45	30	*	225	235	*	*	*	*	43.39	17.9
MSMH0500481	2	-DIN10	48	30	*	240	250	*	*	*	*	43.89	20.2
MSMH0500501	2	-DIN10	50	30	*	250	260	*	*	*	*	44.22	21.9
MSMH0500521	2	-DIN10	52	30	*	260	270	*	*	*	*	44.48	23.6
MSMH0500561	2	-DIN10	56	30	*	280	290	*	*	*	*	44.99	27.2
MSMH0500601	2	-DIN10	60	30	*	300	310	*	*	*	*	45.50	31.1
MSMH0500761	2	-DIN10	76	30	*	380	390	*	*	*	*	46.85	49.2
MSMH0500801	2	-DIN10	80	30	*	400	410	*	*	*	*	47.13	54.4
MSMH0500951	2	-DIN10	95	30	*	475	485	*	*	*	*	48.00	76.1

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

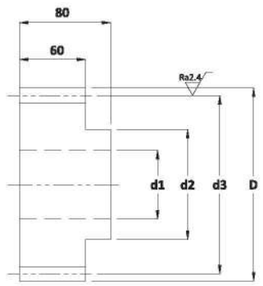


Fig . 1

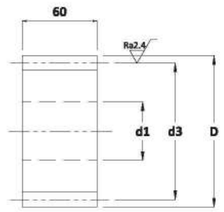


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 6													
MSMH0600151	1	-DIN10	15	20	60	90	102	*	*	*	*	*	3.8
MSMH0600191	1	-DIN10	19	20	80	114	126	*	*	*	*	48.86	5.9
MSMH0600201	1	-DIN10	20	20	90	120	132	*	*	*	*	49.85	6.4
MSMH0600211	1	-DIN10	21	20	90	126	138	*	*	*	*	50.74	7.0
MSMH0600221	1	-DIN10	22	20	100	132	144	*	*	*	*	51.62	7.7
MSMH0600251	1	-DIN10	25	20	110	150	162	*	*	*	*	53.56	9.7
MSMH0600301	2	-DIN10	30	30	*	180	192	*	*	*	*	56.87	13.6
MSMH0600361	2	-DIN10	36	30	*	216	228	*	*	*	*	59.61	19.2

※ Weight only for reference. Actual scale should be Weighing.

MSMH-DIN10 Series Straight Hardened Pinions

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

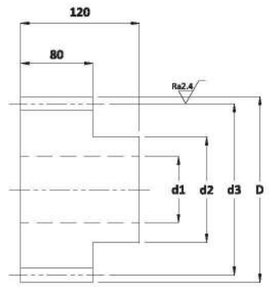


Fig . 1

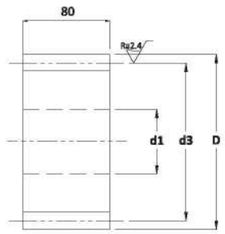


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 8													
MSMH0800151	1	-DIN10	15	40	90	120	136	*	*	*	*	*	10.3
MSMH0800181	1	-DIN10	18	40	100	144	160	*	*	*	*	85.00	14.2
MSMH0800201	1	-DIN10	20	40	120	160	176	*	*	*	*	88.62	17.2
MSMH0800241	1	-DIN10	24	40	150	192	208	*	*	*	*	94.56	24.0
MSMH0800251	1	-DIN10	25	40	150	200	216	*	*	*	*	95.22	25.9
MSMH0800301	1	-DIN10	30	40	190	240	256	*	*	*	*	101.11	36.4

Tooth Surface Accuracy Grade DIN 10

Material SCM415/SCM440

Hardness: HRC 50~55°

Surfaces: Sand-blasted

Other surface treatments are available upon request.

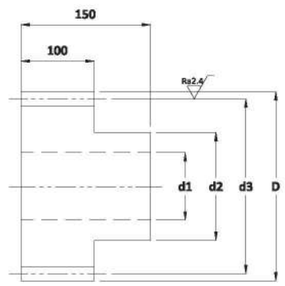


Fig . 1

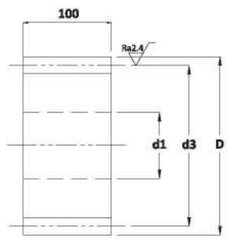


Fig . 2

Dimension : mm

Code	Fig.	DIN	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 10													
MSMH1000201	2	-DIN10	20	40	150	200	220	*	*	*	*	138.47	33.6

※ Weight only for reference. Actual scale should be Weighing.

MHFGH-DIN6 Series Helical Flange Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN 6

Material SCM415/ SCM440

Hardness: HRC 50~55°

Teeth Gound after Hardening

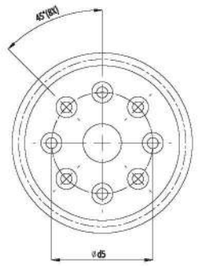


Fig . 1

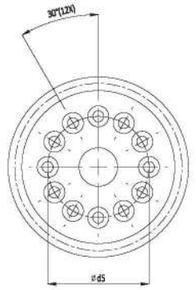
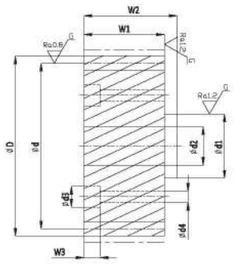


Fig . 2



Dimension : mm

Code	Fig.	DIN	No. of Teeth	Shift Coefficient	D	Pitch Dia.	Working Pitch Dia.	d1	d5	W1	W2	d4	d3	W3	d2
Module 2															
MHFGH0200261	1	-DIN6	26	0.407	60.800	55.174	56.800	20.0	31.5	26	29	5.5	9.5	12.0	16.2
MHFGH0200271	1	-DIN6	27	0.000	61.296	57.296	57.296	20.0	31.5	30	33	5.5	9.5	11.0	16.2
MHFGH0200291	1	-DIN6	29	0.415	67.200	61.540	63.200	20.0	31.5	26	29	5.5	9.5	12.0	16.2
MHFGH0200351	1	-DIN6	35	0.382	79.800	74.272	75.800	20.0	31.5	26	29	5.5	9.5	12.0	16.2
MHFGH0200291	1	-DIN6	29	0.415	67.200	61.540	63.200	25.0	40	26	29	6.6	11.0	10.5	20.3
MHFGH0200331	1	-DIN6	33	0.393	75.599	70.028	71.599	31.5	50	26	29	6.6	11.0	14.0	23.7
MHFGH0200361	1	-DIN6	36	0.000	80.394	76.394	76.394	31.5	50	30	33	6.6	11.0	8.0	23.7
MHFGH0200371	1	-DIN6	37	0.421	84.200	78.517	80.200	31.5	50	26	29	6.6	11.0	14.0	23.7
MHFGH0200372	2	-DIN6	37	0.421	84.200	78.517	80.200	31.5	50	26	29	6.6	11.0	14.0	23.7
Module 3															
MHFGH0300311	2	-DIN6	31	0.354	106.800	98.676	100.800	31.5	50	31	35	6.6	11.0	14.0	23.7
MHFGH0300351	2	-DIN6	35	0.365	119.600	111.409	113.600	50.0	80	31	35	9.0	14.0	10.5	32.2
MHFGH0300401	2	-DIN6	40	0.379	135.599	127.324	129.599	50.0	80	31	35	9.0	14.0	10.5	32.2
Module 4															
MHFGH0400301	2	-DIN6	30	0.000	135.324	127.324	127.324	50.0	80	45	49	9.0	14.0	9.5	32.2
MHFGH0400381	2	-DIN6	38	0.240	171.200	161.277	163.200	80.0	125	41	45	11.0	17.5	10.5	56.1
Module 5															
MHFGH0500211	2	-DIN6	21	0.000	121.109	111.409	111.409	50.0	80	59	64	9.0	14.0	11.5	32.2
MHFGH0500361	2	-DIN6	36	0.000	200.986	190.986	190.986	80.0	125	55	60	11.0	17.5	12.5	56.1

※ Weight only for reference. Actual scale should be Weighing.

MHGH-JIS2 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS 2

Material SCM415 / SCM440

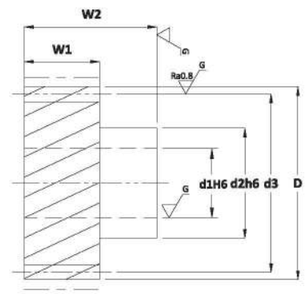
Left Hand Angle 21°30'

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Teeth Ground after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

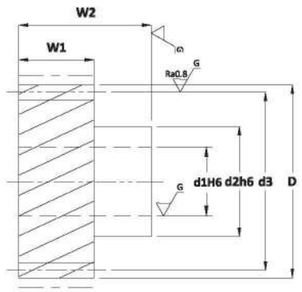
Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1												
MHGH010020	-JIS2	20	6	17	20	22	8	18	*	*	1.88	0.1
MHGH010022	-JIS2	22	8	18	22	24	8	18	*	*	1.94	0.1
MHGH010024	-JIS2	24	8	20	24	26	8	18	*	*	1.99	0.1
MHGH010025	-JIS2	25	8	20	25	27	8	18	*	*	2.01	0.1
MHGH010028	-JIS2	28	8	20	28	30	8	18	*	*	2.08	0.1
MHGH010030	-JIS2	30	10	25	30	32	8	18	*	*	2.11	0.1
MHGH010032	-JIS2	32	10	25	32	34	8	18	*	*	2.14	0.1
MHGH010035	-JIS2	35	10	25	35	37	8	18	*	*	2.18	0.1
MHGH010036	-JIS2	36	10	25	36	38	8	18	*	*	2.20	0.1
MHGH010040	-JIS2	40	10	30	40	42	8	18	*	*	2.24	0.1
MHGH010044	-JIS2	44	10	30	44	46	8	18	*	*	2.28	0.2
MHGH010045	-JIS2	45	10	30	45	47	8	18	*	*	2.28	0.2
MHGH010048	-JIS2	48	10	30	48	50	8	18	*	*	2.31	0.2
MHGH010050	-JIS2	50	12	35	50	52	8	18	*	*	2.32	0.2
MHGH010060	-JIS2	60	12	40	60	62	8	18	*	*	2.38	0.3
MHGH010070	-JIS2	70	12	40	70	72	8	18	*	*	2.42	0.4
MHGH010080	-JIS2	80	15	50	80	82	8	18	*	*	2.46	0.6
MHGH010090	-JIS2	90	15	50	90	92	8	18	*	*	2.48	0.7
MHGH010100	-JIS2	100	15	50	100	102	8	18	*	*	2.51	0.9

※ Weight only for reference. Actual scale should be Weighing.

MHGH-JIS2 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS 2

Material SCM415 / SCM440
Left Hand Angle 21°30'
Hardness: HRC 50~55°
Surfaces: Black-coated (Exclude Teeth)
Teeth Ground after Hardening
Keyway and screw holes are available upon request.



Dimension : mm

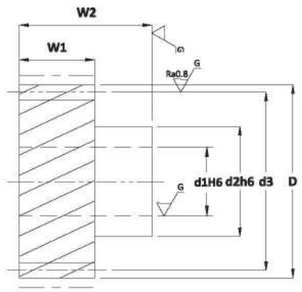
Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5												
MHGH015020	-JIS2	20	12	24	30	33	12	24	*	*	4.23	0.1
MHGH015022	-JIS2	22	12	26	33	36	12	24	*	*	4.37	0.1
MHGH015024	-JIS2	24	12	28	36	39	12	24	*	*	4.49	0.2
MHGH015025	-JIS2	25	12	30	37.5	40.5	12	24	*	*	4.54	0.2
MHGH015026	-JIS2	26	12	32	39	42	12	24	*	*	4.58	0.2
MHGH015028	-JIS2	28	15	36	42	45	12	24	*	*	4.68	0.2
MHGH015030	-JIS2	30	15	38	45	48	12	24	*	*	4.75	0.3
MHGH015032	-JIS2	32	15	40	48	51	12	24	*	*	4.83	0.3
MHGH015035	-JIS2	35	15	42	52.5	55.5	12	24	*	*	4.92	0.3
MHGH015036	-JIS2	36	15	45	54	57	12	24	*	*	4.95	0.4
MHGH015040	-JIS2	40	15	50	60	63	12	24	*	*	5.05	0.4
MHGH015044	-JIS2	44	15	50	66	69	12	24	*	*	5.12	0.5
MHGH015045	-JIS2	45	18	50	67.5	70.5	12	24	*	*	5.14	0.6
MHGH015048	-JIS2	48	18	50	72	75	12	24	*	*	5.20	0.6
MHGH015050	-JIS2	50	18	60	75	78	12	24	*	*	5.23	0.7
MHGH015052	-JIS2	52	18	60	78	81	12	24	*	*	5.26	0.7
MHGH015060	-JIS2	60	20	60	90	93	12	24	*	*	5.35	1.0
MHGH015070	-JIS2	70	20	60	105	108	12	24	*	*	5.45	1.3
MHGH015080	-JIS2	80	20	70	120	123	12	24	*	*	5.54	1.7
MHGH015090	-JIS2	90	20	70	135	138	12	24	*	*	5.59	2.1
MHGH015100	-JIS2	100	20	70	150	153	12	24	*	*	5.65	2.6

※ Weight only for reference. Actual scale should be Weighing.

MHGH-JIS2 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS 2

Material SCM415 / SCM440
Left Hand Angle 21°30'
Hardness: HRC 50~55°
Surfaces: Black-coated (Exclude Teeth)
Teeth Ground after Hardening
Keyway and screw holes are available upon request.



Dimension : mm

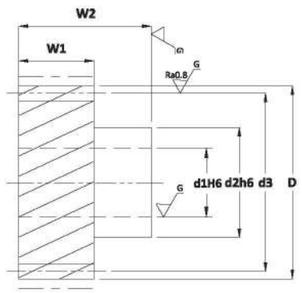
Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2												
MHGH020015	-JIS2	15	12	24	30	34	16	29	*	*	6.79	0.2
MHGH020016	-JIS2	16	12	26	32	36	16	29	*	*	6.97	0.2
MHGH020018	-JIS2	18	12	30	36	40	16	29	*	*	7.28	0.2
MHGH020020	-JIS2	20	15	32	40	44	16	29	*	*	7.52	0.3
MHGH020022	-JIS2	22	15	36	44	48	16	29	*	*	7.78	0.3
MHGH020024	-JIS2	24	15	38	48	52	16	29	*	*	7.98	0.4
MHGH020025	-JIS2	25	15	40	50	54	16	29	*	*	8.07	0.4
MHGH020026	-JIS2	26	15	42	52	56	16	29	*	*	8.15	0.4
MHGH020028	-JIS2	28	15	45	56	60	16	29	*	*	8.32	0.5
MHGH020030	-JIS2	30	18	50	60	64	16	29	*	*	8.46	0.5
MHGH020032	-JIS2	32	18	50	64	68	16	29	*	*	8.59	0.6
MHGH020035	-JIS2	35	18	50	70	74	16	29	*	*	8.75	0.7
MHGH020036	-JIS2	36	18	50	72	76	16	29	*	*	8.80	0.8
MHGH020040	-JIS2	40	20	60	80	84	16	29	*	*	8.97	0.9
MHGH020044	-JIS2	44	20	60	88	92	16	29	*	*	9.11	1.1
MHGH020045	-JIS2	45	20	60	90	94	16	29	*	*	9.15	1.2
MHGH020048	-JIS2	48	20	60	96	100	16	29	*	*	9.25	1.3
MHGH020050	-JIS2	50	25	60	100	104	16	29	*	*	9.30	1.5
MHGH020052	-JIS2	52	25	65	104	108	16	29	*	*	9.35	1.6
MHGH020060	-JIS2	60	25	65	120	124	16	29	*	*	9.52	2.1
MHGH020070	-JIS2	70	25	70	140	144	16	29	*	*	9.70	2.8
MHGH020080	-JIS2	80	25	80	160	164	16	29	*	*	9.84	3.6
MHGH020090	-JIS2	90	25	90	180	184	16	29	*	*	9.95	4.5
MHGH020100	-JIS2	100	25	100	200	204	16	29	*	*	10.43	5.6

※ Weight only for reference. Actual scale should be Weighing.

MHGH-JIS2 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS 2

Material SCM415 / SCM440
Left Hand Angle 21°30'
Hardness: HRC 50~55°
Surfaces: Black-coated (Exclude Teeth)
Teeth Ground after Hardening
Keyway and screw holes are available upon request.



Dimension : mm

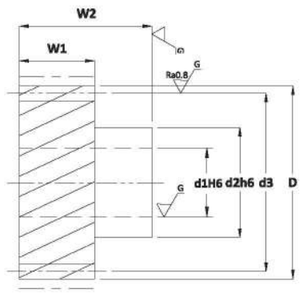
Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2.5												
MHGH025015	-JIS2	15	15	30	37.5	42.5	20	34	*	*	10.62	0.3
MHGH025016	-JIS2	16	15	32	40	45	20	34	*	*	10.90	0.3
MHGH025018	-JIS2	18	15	38	45	50	20	34	*	*	11.38	0.4
MHGH025020	-JIS2	20	18	40	50	55	20	34	*	*	11.75	0.5
MHGH025022	-JIS2	22	18	44	55	60	20	34	*	*	12.15	0.6
MHGH025024	-JIS2	24	18	48	60	65	20	34	*	*	12.48	0.7
MHGH025025	-JIS2	25	20	50	62.5	67.5	20	34	*	*	12.61	0.7
MHGH025026	-JIS2	26	20	50	65	70	20	34	*	*	12.74	0.8
MHGH025028	-JIS2	28	20	60	70	75	20	34	*	*	13.01	0.9
MHGH025030	-JIS2	30	20	65	75	80	20	34	*	*	13.21	1.0
MHGH025032	-JIS2	32	20	70	80	85	20	34	*	*	13.42	1.1
MHGH025035	-JIS2	35	20	70	87.5	92.5	20	34	*	*	13.67	1.3
MHGH025036	-JIS2	36	20	70	90	95	20	34	*	*	13.75	1.4
MHGH025040	-JIS2	40	25	70	100	105	20	34	*	*	14.03	1.7
MHGH025044	-JIS2	44	25	75	110	115	20	34	*	*	14.24	2.1
MHGH025045	-JIS2	45	25	75	112.5	117.5	20	34	*	*	14.30	2.2
MHGH025048	-JIS2	48	25	75	120	125	20	34	*	*	14.45	2.5
MHGH025050	-JIS2	50	25	80	125	130	20	34	*	*	14.53	2.7
MHGH025052	-JIS2	52	25	80	130	135	20	34	*	*	14.61	2.9
MHGH025060	-JIS2	60	25	80	150	155	20	34	*	*	14.88	3.8

※ Weight only for reference. Actual scale should be Weighing.

MHGH-JIS2 Series Helical Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS 2

Material SCM415 / SCM440
Left Hand Angle 21°30'
Hardness: HRC 50~55°
Surfaces: Black-coated (Exclude Teeth)
Teeth Ground after Hardening
Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3												
MHGH030015	-JIS2	15	18	36	45	51	25	41	*	*	15.93	0.4
MHGH030016	-JIS2	16	18	38	48	54	25	41	*	*	16.35	0.4
MHGH030018	-JIS2	18	18	40	54	60	25	41	*	*	17.08	0.5
MHGH030020	-JIS2	20	20	50	60	66	25	41	*	*	17.63	0.7
MHGH030022	-JIS2	22	20	54	66	72	25	41	*	*	18.23	0.8
MHGH030024	-JIS2	24	20	58	72	78	25	41	*	*	18.72	0.9
MHGH030025	-JIS2	25	20	60	75	81	25	41	*	*	18.92	1.0
MHGH030026	-JIS2	26	20	60	78	84	25	41	*	*	19.12	1.1
MHGH030028	-JIS2	28	20	70	84	90	25	41	*	*	19.51	1.2
MHGH030030	-JIS2	30	25	75	90	96	25	41	*	*	19.82	1.4
MHGH030032	-JIS2	32	25	75	96	102	25	41	*	*	20.14	1.6
MHGH030035	-JIS2	35	25	80	105	111	25	41	*	*	20.51	1.9
MHGH030036	-JIS2	36	25	80	108	114	25	41	*	*	20.63	2.0
MHGH030040	-JIS2	40	25	80	120	126	25	41	*	*	21.04	2.4
MHGH030044	-JIS2	44	25	80	132	138	25	41	*	*	21.37	2.9
MHGH030045	-JIS2	45	25	80	135	141	25	41	*	*	21.45	3.0
MHGH030048	-JIS2	48	25	85	144	150	25	41	*	*	21.68	3.4
MHGH030050	-JIS2	50	30	85	150	156	25	41	*	*	21.80	3.7
MHGH030052	-JIS2	52	30	85	156	162	25	41	*	*	21.92	4.0
MHGH030060	-JIS2	60	30	90	180	186	25	41	*	*	22.32	5.2

※ Weight only for reference. Actual scale should be Weighing.

CHM-JIS4 Series Helical Soft Pinions

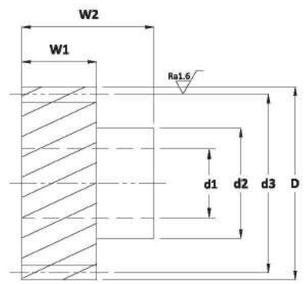
Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Left Hand Angle 15°

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2												
CHM020015	-JIS4	15	12	24	31.05	35.06	25	35	*	*	6.05	0.2
CHM020020	-JIS4	20	12	32	41.41	45.41	25	35	*	*	6.16	0.3
CHM020030	-JIS4	30	12	50	62.11	66.12	25	35	*	*	6.97	0.7
CHM020040	-JIS4	40	18	60	82.82	86.82	25	35	*	*	7.44	1.2
CHM020060	-JIS4	60	18	70	124.23	128.23	25	35	*	*	7.93	2.7
CHM020090	-JIS4	90	18	120	186.35	190.35	25	35	*	*	8.31	5.9
Module 3												
CHM030015	-JIS4	15	15	36	46.58	52.59	35	50	*	*	12.70	0.5
CHM030020	-JIS4	20	15	50	62.11	68.12	35	50	*	*	12.95	0.9
CHM030030	-JIS4	30	20	70	93.17	99.17	35	50	*	*	14.63	1.8
CHM030040	-JIS4	40	20	80	124.23	130.23	35	50	*	*	15.62	3.1
CHM030060	-JIS4	60	20	140	186.35	192.35	35	50	*	*	16.66	6.8

※ Weight only for reference. Actual scale should be Weighing.

MSGH-JIS2 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS2

Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Teeth Ground after Hardening

Keyway and screw holes are available upon request.

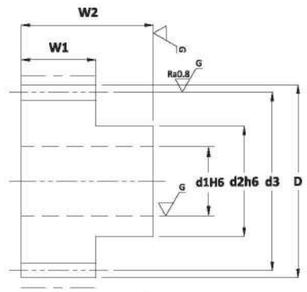


圖1 /Fig . 1

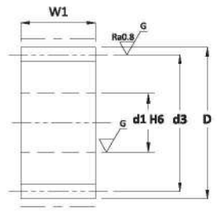


圖2 /Fig . 2

Dimension : mm

Code	Fig.	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1													
MSGH010018	1	-JIS2	18	8	15	18	20	10	15	3	1.4	1.81	0.1
MSGH010020	1	-JIS2	20	8	17	20	22	10	15	3	1.4	1.88	0.1
MSGH010020	2	-JIS2	20	10	17	20	22	10	15	4	1.8	1.88	0.1
MSGH010024	1	-JIS2	24	10	20	24	26	10	15	4	1.8	2.01	0.1
MSGH010024	2	-JIS2	24	12	20	24	26	10	15	4	1.8	2.01	0.1
MSGH010025	1	-JIS2	25	10	20	25	27	10	15	4	1.8	2.02	0.1
MSGH010025	2	-JIS2	25	12	20	25	27	10	15	4	1.8	2.02	0.1
MSGH010030	1	-JIS2	30	10	25	30	32	10	15	4	1.8	2.15	0.1
MSGH010030	2	-JIS2	30	12	25	30	32	10	15	4	1.8	2.15	0.1
MSGH010035	1	-JIS2	35	10	25	35	37	10	15	4	1.8	2.24	0.1
MSGH010035	2	-JIS2	35	15	25	35	37	10	15	5	2.3	2.24	0.1
MSGH010036	1	-JIS2	36	12	25	36	38	10	15	4	1.8	2.58	0.1
MSGH010036	2	-JIS2	36	15	25	36	38	10	15	5	2.3	2.58	0.1
MSGH010040	1	-JIS2	40	12	30	40	42	10	15	4	1.8	2.31	0.1
MSGH010040	2	-JIS2	40	15	30	40	42	10	15	5	2.3	2.31	0.1
MSGH010045	1	-JIS2	45	12	30	45	47	10	15	4	1.8	2.36	0.2
MSGH010045	2	-JIS2	45	15	30	45	47	10	15	5	2.3	2.36	0.2
MSGH010048	1	-JIS2	48	12	30	48	50	10	15	4	1.8	2.39	0.2
MSGH010048	2	-JIS2	48	15	30	48	50	10	15	5	2.3	2.39	0.2
MSGH010050	1	-JIS2	50	12	35	50	52	10	15	4	1.8	2.41	0.2
MSGH010050	2	-JIS2	50	15	35	50	52	10	15	5	2.3	2.41	0.2

※ Weight only for reference. Actual scale should be Weighing.

MSGH-JIS2 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS2

Material SCM415 / SCM440
Hardness: HRC 50~55°
Surfaces: Black-coated (Exclude Teeth)
Teeth Ground after Hardening
Keyway and screw holes are available upon request.

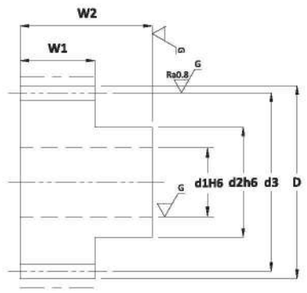


Fig . 1

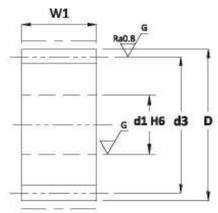


Fig . 2

Dimension : mm

Code	Fig.	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5													
MSGH015015	1	-JIS2	15	10	18	22.5	22.5	15	25	4	1.8	*	0.1
MSGH015018	1	-JIS2	18	10	22	27	30	15	25	4	1.8	4.07	0.1
MSGH015018	2	-JIS2	18	12	22	27	30	15	25	4	1.8	4.07	0.1
MSGH015020	1	-JIS2	20	12	25	30	33	15	25	4	1.8	4.24	0.1
MSGH015020	2	-JIS2	20	15	25	30	33	15	25	5	2.3	4.24	0.1
MSGH015024	1	-JIS2	24	12	28	36	39	15	25	4	1.8	4.53	0.2
MSGH015024	2	-JIS2	24	15	28	36	39	15	25	5	2.3	4.53	0.2
MSGH015025	1	-JIS2	25	14	30	37.5	40.5	15	25	5	2.3	4.56	0.2
MSGH015025	2	-JIS2	25	16	30	37.5	40.5	15	25	5	2.3	4.56	0.2
MSGH015030	1	-JIS2	30	15	30	45	48	15	25	5	2.3	4.84	0.3
MSGH015030	2	-JIS2	30	18	30	45	48	15	25	6	2.8	4.84	0.3
MSGH015035	1	-JIS2	35	15	32	52.5	55.5	15	25	5	2.3	5.04	0.4
MSGH015035	2	-JIS2	35	18	32	52.5	55.5	15	25	6	2.8	5.04	0.4
MSGH015036	1	-JIS2	36	15	32	54	57	15	25	5	2.3	5.08	0.4
MSGH015036	2	-JIS2	36	18	32	54	57	15	25	6	2.8	5.08	0.4
MSGH015040	1	-JIS2	40	16	35	60	63	15	25	5	2.3	5.20	0.5
MSGH015040	2	-JIS2	40	20	35	60	63	15	25	6	2.8	5.20	0.5
MSGH015045	1	-JIS2	45	16	40	67.5	70.5	15	25	5	2.3	5.32	0.6
MSGH015045	2	-JIS2	45	20	40	67.5	70.5	15	25	6	2.8	5.32	0.6
MSGH015048	1	-JIS2	48	16	40	72	75	15	25	5	2.3	5.38	0.7
MSGH015048	2	-JIS2	48	20	40	72	75	15	25	6	2.8	5.38	0.7
MSGH015050	1	-JIS2	50	18	40	75	78	15	25	6	2.8	5.42	0.7
MSGH015050	2	-JIS2	50	22	40	75	78	15	25	6	2.8	5.42	0.7
MSGH015055	1	-JIS2	55	20	45	82.5	85.5	15	25	6	2.8	5.50	0.8
MSGH015055	2	-JIS2	55	25	45	82.5	85.5	15	25	8	3.3	5.50	0.8
MSGH015060	1	-JIS2	60	20	45	90	93	15	25	6	2.8	5.58	1.0
MSGH015060	2	-JIS2	60	25	45	90	93	15	25	8	3.3	5.58	1.0
MSGH015070	1	-JIS2	70	20	45	105	108	15	25	6	2.8	5.69	1.3
MSGH015070	2	-JIS2	70	25	45	105	108	15	25	8	3.3	5.69	1.3
MSGH015080	1	-JIS2	80	20	45	120	123	15	25	6	2.8	5.78	1.7
MSGH015080	2	-JIS2	80	25	45	120	123	15	25	8	3.3	5.78	1.7

※ Weight only for reference. Actual scale should be Weighing.

MSGH-JIS2 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS2

Material SCM415 / SCM440
Hardness: HRC 50~55°
Surfaces: Black-coated (Exclude Teeth)
Teeth Ground after Hardening
Keyway and screw holes are available upon request.

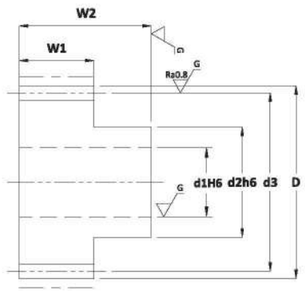


Fig . 1

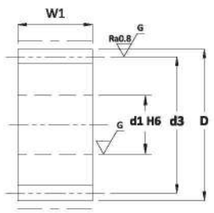


Fig . 2

Dimension : mm

Code	Fig.	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2													
MSGH020015	1	-JIS2	15	12	24	30	34	20	30	4	1.8	*	0.2
MSGH020015	2	-JIS2	15	15	24	30	34	20	30	5	2.3	*	0.2
MSGH020018	1	-JIS2	18	12	30	36	40	20	30	4	1.8	7.24	0.2
MSGH020018	2	-JIS2	18	15	30	36	40	20	30	5	2.3	7.24	0.2
MSGH020020	1	-JIS2	20	15	32	40	44	20	30	5	2.3	7.55	0.3
MSGH020020	2	-JIS2	20	18	32	40	44	20	30	6	2.8	7.55	0.3
MSGH020024	1	-JIS2	24	15	35	48	52	20	30	5	2.3	8.05	0.4
MSGH020024	2	-JIS2	24	18	35	48	52	20	30	6	2.8	8.05	0.4
MSGH020025	1	-JIS2	25	16	35	50	54	20	30	5	2.3	8.11	0.4
MSGH020025	2	-JIS2	25	20	35	50	54	20	30	6	2.8	8.11	0.4
MSGH020030	1	-JIS2	30	18	40	60	64	20	30	6	2.8	8.61	0.6
MSGH020030	2	-JIS2	30	22	40	60	64	20	30	6	2.8	8.61	0.6
MSGH020035	1	-JIS2	35	18	40	70	74	20	30	6	2.8	8.97	0.8
MSGH020035	2	-JIS2	35	22	40	70	74	20	30	6	2.8	8.97	0.8
MSGH020036	1	-JIS2	36	18	40	72	76	20	30	6	2.8	9.03	0.8
MSGH020036	2	-JIS2	36	22	40	72	76	20	30	6	2.8	9.03	0.8
MSGH020040	1	-JIS2	40	20	45	80	84	20	30	6	2.8	9.24	1.0
MSGH020040	2	-JIS2	40	25	45	80	84	20	30	8	3.3	9.24	1.0
MSGH020045	1	-JIS2	45	20	45	90	94	20	30	6	2.8	9.46	1.2
MSGH020045	2	-JIS2	45	25	45	90	94	20	30	8	3.3	9.46	1.2
MSGH020048	1	-JIS2	48	22	50	96	100	20	30	6	2.8	9.57	1.4
MSGH020048	2	-JIS2	48	28	50	96	100	20	30	8	3.3	9.57	1.4
MSGH020050	1	-JIS2	50	22	50	100	104	20	30	6	2.8	9.65	1.5
MSGH020050	2	-JIS2	50	28	50	100	104	20	30	8	3.3	9.65	1.5
MSGH020055	1	-JIS2	55	25	55	110	114	20	30	8	3.3	9.79	1.8
MSGH020055	2	-JIS2	55	30	55	110	114	20	30	8	3.3	9.79	1.8
MSGH020060	1	-JIS2	60	25	55	120	124	20	30	8	3.3	9.92	2.1
MSGH020060	2	-JIS2	60	30	55	120	124	20	30	8	3.3	9.92	2.1
MSGH020070	1	-JIS2	70	25	55	140	144	20	30	8	3.3	10.12	2.9
MSGH020070	2	-JIS2	70	30	55	140	144	20	30	8	3.3	10.12	2.9
MSGH020080	1	-JIS2	80	30	60	160	164	20	30	8	3.3	10.28	3.7
MSGH020080	2	-JIS2	80	35	60	160	164	20	30	10	3.3	10.28	3.7

※ Weight only for reference. Actual scale should be Weighing.

MSGH-JIS2 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS2

Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Teeth Ground after Hardening

Keyway and screw holes are available upon request.

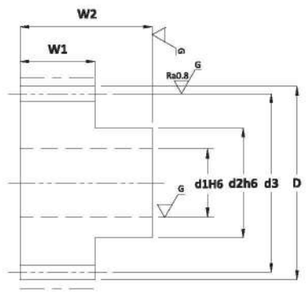


Fig . 1

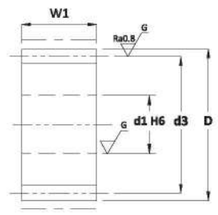


Fig . 2

Dimension : mm

Code	Fig.	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2.5													
MSGH025015	1	-JIS2	15	15	30	37.5	42.5	25	37	5	2.3	*	0.3
MSGH025015	2	-JIS2	15	18	30	37.5	42.5	25	37	6	2.8	*	0.3
MSGH025018	1	-JIS2	18	18	38	45	50	25	37	6	2.8	11.32	0.4
MSGH025018	2	-JIS2	18	20	38	45	50	25	37	6	2.8	11.32	0.4
MSGH025020	1	-JIS2	20	18	40	50	55	25	37	6	2.8	11.8	0.5
MSGH025020	2	-JIS2	20	22	40	50	55	25	37	6	2.8	11.8	0.5
MSGH025024	1	-JIS2	24	18	40	60	65	25	37	6	2.8	12.59	0.7
MSGH025024	2	-JIS2	24	22	40	60	65	25	37	6	2.8	12.59	0.7
MSGH025025	1	-JIS2	25	20	45	62.5	67.5	25	37	6	2.8	12.68	0.8
MSGH025025	2	-JIS2	25	25	45	62.5	67.5	25	37	8	3.3	12.68	0.8
MSGH025030	1	-JIS2	30	22	50	75	80	25	37	6	2.8	13.46	1.1
MSGH025030	2	-JIS2	30	28	50	75	80	25	37	8	3.3	13.46	1.1
MSGH025035	1	-JIS2	35	25	55	87.5	92.5	25	37	8	3.3	14.02	1.5
MSGH025035	2	-JIS2	35	30	55	87.5	92.5	25	37	8	3.3	14.02	1.5
MSGH025036	1	-JIS2	36	25	55	90	95	25	37	8	3.3	14.11	1.5
MSGH025036	2	-JIS2	36	30	55	90	95	25	37	8	3.3	1411	1.5
MSGH025040	1	-JIS2	40	25	55	100	105	25	37	8	3.3	14.45	1.9
MSGH025040	2	-JIS2	40	32	55	100	105	25	37	10	3.3	14.45	1.9
MSGH025045	1	-JIS2	45	30	60	112.5	117.5	25	37	8	3.3	14.79	2.4
MSGH025045	2	-JIS2	45	35	60	112.5	117.5	25	37	10	3.3	14.79	2.4
MSGH025048	1	-JIS2	48	30	60	120	125	25	37	8	3.3	14.96	2.7
MSGH025048	2	-JIS2	48	35	60	120	125	25	37	10	3.3	14.96	2.7
MSGH025050	1	-JIS2	50	30	60	125	130	25	37	8	3.3	15.07	2.9
MSGH025050	2	-JIS2	50	35	60	125	130	25	37	10	3.3	15.07	2.9
MSGH025055	1	-JIS2	55	30	70	137.5	142.5	25	37	8	3.3	15.29	3.5
MSGH025055	2	-JIS2	55	40	70	137.5	142.5	25	37	12	3.3	15.29	3.5
MSGH025060	1	-JIS2	60	30	70	150	155	25	37	8	3.3	15.51	4.1
MSGH025060	2	-JIS2	60	40	70	150	155	25	37	12	3.3	15.51	4.1
MSGH025070	1	-JIS2	70	40	85	175	180	25	37	12	3.3	15.82	5.5
MSGH025070	2	-JIS2	70	50	85	175	180	25	37	14	3.8	15.82	5.5

※ Weight only for reference. Actual scale should be Weighing.

MSGH-JIS2 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS2

Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Teeth Ground after Hardening

Keyway and screw holes are available upon request.

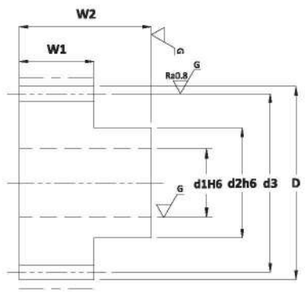


Fig . 1

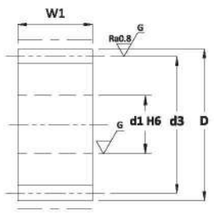


Fig . 2

Dimension : mm

Code	Fig.	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3													
MSGH030015	1	-JIS2	15	18	36	45	51	30	45	6	2.8	*	0.4
MSGH030015	2	-JIS2	15	22	36	45	51	30	45	6	2.8	*	0.4
MSGH030018	1	-JIS2	18	20	45	54	60	30	45	6	2.8	16.30	0.6
MSGH030018	2	-JIS2	18	25	45	54	60	30	45	8	3.3	16.30	0.6
MSGH030020	1	-JIS2	20	20	45	60	66	30	45	6	2.8	16.99	0.7
MSGH030020	2	-JIS2	20	25	45	60	66	30	45	8	3.3	16.99	0.7
MSGH030024	1	-JIS2	24	20	45	72	78	30	45	6	3.3	18.13	1.0
MSGH030024	2	-JIS2	24	25	45	72	78	30	45	8	3.3	18.13	1.0
MSGH030025	1	-JIS2	25	25	55	75	81	30	45	8	3.3	18.26	1.1
MSGH030025	2	-JIS2	25	30	55	75	81	30	45	10	3.3	18.26	1.1
MSGH030030	1	-JIS2	30	28	60	90	96	30	45	8	3.3	19.39	1.5
MSGH030030	2	-JIS2	30	35	60	90	96	30	45	10	3.3	19.39	1.5
MSGH030035	1	-JIS2	35	30	60	105	111	30	45	8	3.3	20.19	2.1
MSGH030035	2	-JIS2	35	35	60	105	111	30	45	10	3.3	20.19	2.1
MSGH030036	1	-JIS2	36	30	60	108	114	30	45	8	3.3	20.32	2.2
MSGH030036	2	-JIS2	36	35	60	108	114	30	45	10	3.3	20.32	2.2
MSGH030040	1	-JIS2	40	30	70	120	126	30	45	8	3.3	20.81	2.6
MSGH030040	2	-JIS2	40	40	70	120	126	30	45	12	3.3	20.81	2.6
MSGH030045	1	-JIS2	45	30	70	135	141	30	45	8	3.3	21.30	3.3
MSGH030045	2	-JIS2	45	40	70	135	141	30	45	12	3.3	21.30	3.3
MSGH030048	1	-JIS2	48	35	70	144	150	30	45	10	3.3	21.54	3.7
MSGH030048	2	-JIS2	48	40	70	144	150	30	45	12	3.3	21.54	3.7
MSGH030050	1	-JIS2	50	32	70	150	156	30	45	10	3.3	21.71	4.1
MSGH030050	2	-JIS2	50	40	70	150	156	30	45	12	3.3	21.71	4.1
MSGH030055	1	-JIS2	55	35	70	165	171	30	45	10	3.3	22.02	4.9
MSGH030055	2	-JIS2	55	40	70	165	171	30	45	12	3.3	22.02	4.9
MSGH030060	1	-JIS2	60	35	80	180	186	30	45	10	3.3	22.34	5.8
MSGH030060	2	-JIS2	60	45	80	180	186	30	45	14	3.8	22.34	5.8

※ Weight only for reference. Actual scale should be Weighing.

MSGH-JIS2 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade JIS2

Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Teeth Ground after Hardening

Keyway and screw holes are available upon request.

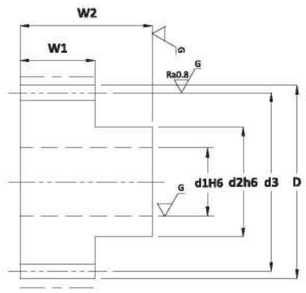


Fig . 1

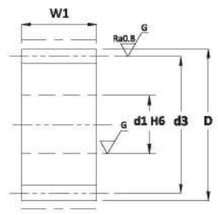


Fig . 2

Dimension : mm

Code	Fig.	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4													
MSGH040015	1	-JIS2	15	25	48	60	68	40	60	8	3.3	*	0.9
MSGH040015	2	-JIS2	15	30	48	60	68	40	60	8	3.3	*	0.9
MSGH040018	1	-JIS2	18	25	50	72	80	40	60	8	3.3	28.97	1.2
MSGH040018	2	-JIS2	18	30	50	72	80	40	60	8	3.3	28.97	1.2
MSGH040020	1	-JIS2	20	28	60	80	88	40	60	8	3.3	30.21	1.4
MSGH040020	2	-JIS2	20	32	60	80	88	40	60	10	3.3	30.21	1.4
MSGH040024	1	-JIS2	24	28	60	96	104	40	60	8	3.3	32.23	2.0
MSGH040024	2	-JIS2	24	32	60	96	104	40	60	10	3.3	32.23	2.0
MSGH040025	1	-JIS2	25	30	60	100	108	40	60	8	3.3	32.46	2.2
MSGH040025	2	-JIS2	25	35	60	100	108	40	60	10	3.3	32.46	2.2
MSGH040030	1	-JIS2	30	35	70	120	128	40	60	10	3.3	34.47	3.0
MSGH040030	2	-JIS2	30	40	70	120	128	40	60	12	3.3	34.47	3.0
MSGH040035	1	-JIS2	35	35	70	140	148	40	60	10	3.3	35.90	4.1
MSGH040035	2	-JIS2	35	40	70	140	148	40	60	12	3.3	35.90	4.1
MSGH040036	1	-JIS2	36	35	70	144	152	40	60	10	3.3	36.12	4.3
MSGH040036	2	-JIS2	36	40	70	144	152	40	60	12	3.3	36.12	4.3
MSGH040040	1	-JIS2	40	40	80	160	168	40	60	12	3.3	36.99	5.2
MSGH040040	2	-JIS2	40	45	80	160	168	40	60	14	3.8	36.99	5.2
MSGH040045	1	-JIS2	45	40	80	180	188	40	60	12	3.3	37.86	6.5
MSGH040045	2	-JIS2	45	45	80	180	188	40	60	14	3.8	37.86	6.5
MSGH040048	1	-JIS2	48	40	80	192	200	40	60	12	3.3	38.30	7.4
MSGH040048	2	-JIS2	48	45	80	192	200	40	60	14	3.8	38.30	7.4
MSGH040050	1	-JIS2	50	40	85	200	208	40	60	12	3.3	38.59	8.0
MSGH040050	2	-JIS2	50	45	85	200	208	40	60	14	3.8	38.59	8.0

※ Weight only for reference. Actual scale should be Weighing.

CSSH-JIS3 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade JIS3

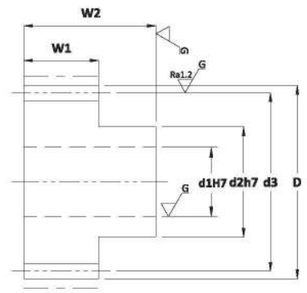
Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Skiving after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1												
CSSH010015	-JIS3	15	6	12	15	17	8	18	*	*	*	0.0
CSSH010016	-JIS3	16	6	13	16	18	8	18	*	*	*	0.0
CSSH010017	-JIS3	17	6	14	17	19	8	18	*	*	1.30	0.0
CSSH010018	-JIS3	18	6	15	18	20	8	18	*	*	1.32	0.0
CSSH010019	-JIS3	19	6	16	19	21	8	18	*	*	1.35	0.0
CSSH010020	-JIS3	20	6	17	20	22	8	18	*	*	1.38	0.0
CSSH010021	-JIS3	21	8	18	21	23	8	18	*	*	1.41	0.0
CSSH010022	-JIS3	22	8	18	22	24	8	18	*	*	1.43	0.0
CSSH010023	-JIS3	23	8	20	23	25	8	18	*	*	1.45	0.1
CSSH010024	-JIS3	24	8	20	24	26	8	18	*	*	1.47	0.1
CSSH010025	-JIS3	25	8	20	25	27	8	18	*	*	1.48	0.1
CSSH010026	-JIS3	26	8	20	26	28	8	18	*	*	1.51	0.1
CSSH010027	-JIS3	27	8	20	27	29	8	18	*	*	1.53	0.1
CSSH010028	-JIS3	28	8	20	28	30	8	18	*	*	1.54	0.1
CSSH010029	-JIS3	29	8	25	29	31	8	18	*	*	1.56	0.1
CSSH010030	-JIS3	30	10	25	30	32	8	18	*	*	1.58	0.1
CSSH010032	-JIS3	32	10	25	32	34	8	18	*	*	1.60	0.1
CSSH010034	-JIS3	34	10	25	34	36	8	18	*	*	1.63	0.1
CSSH010035	-JIS3	35	10	25	35	37	8	18	*	*	1.64	0.1
CSSH010036	-JIS3	36	10	25	36	38	8	18	*	*	1.65	0.1
CSSH010038	-JIS3	38	10	30	38	40	8	18	*	*	1.67	0.1
CSSH010040	-JIS3	40	10	30	40	42	8	18	*	*	1.69	0.1
CSSH010042	-JIS3	42	10	30	42	44	8	18	*	*	1.71	0.2
CSSH010044	-JIS3	44	10	30	44	46	8	18	*	*	1.72	0.2
CSSH010045	-JIS3	45	10	30	45	47	8	18	*	*	1.73	0.2
CSSH010048	-JIS3	48	10	30	48	50	8	18	*	*	1.75	0.2
CSSH010050	-JIS3	50	12	35	50	52	8	18	*	*	1.76	0.2
CSSH010055	-JIS3	55	12	35	55	57	8	18	*	*	1.79	0.3
CSSH010056	-JIS3	56	12	35	56	58	8	18	*	*	1.80	0.3
CSSH010060	-JIS3	60	12	40	60	62	8	18	*	*	1.82	0.3
CSSH010064	-JIS3	64	12	40	64	66	8	18	*	*	1.83	0.4
CSSH010070	-JIS3	70	12	40	70	72	8	18	*	*	1.85	0.4
CSSH010075	-JIS3	75	12	40	75	77	8	18	*	*	1.87	0.5
CSSH010080	-JIS3	80	15	50	80	82	8	18	*	*	1.88	0.6
CSSH010090	-JIS3	90	15	50	90	92	8	18	*	*	1.91	0.7
CSSH010100	-JIS3	100	15	50	100	102	8	18	*	*	1.93	0.9
CSSH010120	-JIS3	120	15	50	120	122	8	18	*	*	1.96	1.2

※ Weight only for reference. Actual scale should be Weighing.

CSSH-JIS3 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade JIS3

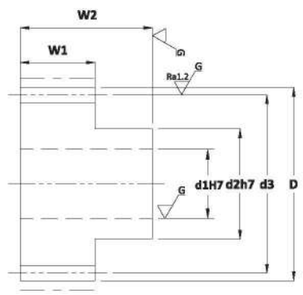
Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Skiving after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5												
CSSH015014	-JIS3	14	10	17	21	24	15	29	*	*	*	0.1
CSSH015015	-JIS3	15	10	18	22.5	25.5	15	29	*	*	*	0.1
CSSH015016	-JIS3	16	10	20	24	27	15	29	*	*	*	0.1
CSSH015017	-JIS3	17	10	21	25.5	28.5	15	29	*	*	3.66	0.1
CSSH015018	-JIS3	18	10	225	27	30	15	29	*	*	3.73	0.1
CSSH015019	-JIS3	19	10	23	28.5	31.5	15	29	*	*	3.81	0.1
CSSH015020	-JIS3	20	10	24	30	33	15	29	*	*	3.89	0.1
CSSH015021	-JIS3	21	10	25	31.5	34.5	15	29	*	*	3.96	0.2
CSSH015022	-JIS3	22	12	26	33	36	15	29	*	*	4.03	0.2
CSSH015023	-JIS3	23	12	27	34.5	37.5	15	29	*	*	4.09	0.2
CSSH015024	-JIS3	24	12	28	36	39	15	29	*	*	4.15	0.2
CSSH015025	-JIS3	25	12	30	37.5	40.5	15	29	*	*	4.18	0.2
CSSH015026	-JIS3	26	12	32	39	42	15	29	*	*	4.26	0.2
CSSH015027	-JIS3	27	15	34	40.5	43.5	15	29	*	*	4.30	0.3
CSSH015028	-JIS3	28	15	36	42	45	15	29	*	*	4.35	0.3
CSSH015029	-JIS3	29	15	37	43.5	46.5	15	29	*	*	4.39	0.3
CSSH015030	-JIS3	30	15	38	45	48	15	29	*	*	4.44	0.3
CSSH015032	-JIS3	32	15	40	48	51	15	29	*	*	4.51	0.3
CSSH015034	-JIS3	34	15	42	51	54	15	29	*	*	4.59	0.4
CSSH015035	-JIS3	35	15	42	52.5	55.5	15	29	*	*	4.62	0.4
CSSH015036	-JIS3	36	15	45	54	57	15	29	*	*	4.65	0.4
CSSH015038	-JIS3	38	15	45	57	60	15	29	*	*	4.71	0.5
CSSH015040	-JIS3	40	15	50	60	63	15	29	*	*	4.76	0.5
CSSH015042	-JIS3	42	15	50	63	66	15	29	*	*	4.82	0.6
CSSH015044	-JIS3	44	15	50	66	69	15	29	*	*	4.85	0.6
CSSH015045	-JIS3	45	18	50	67.5	70.5	15	29	*	*	4.88	0.7
CSSH015048	-JIS3	48	18	50	72	75	15	29	*	*	4.93	0.8
CSSH015050	-JIS3	50	18	60	75	78	15	29	*	*	4.97	0.8
CSSH015055	-JIS3	55	18	60	82.5	85.5	15	29	*	*	5.04	1.0
CSSH015056	-JIS3	56	18	60	84	87	15	29	*	*	5.06	1.0
CSSH015060	-JIS3	60	20	60	90	93	15	29	*	*	5.12	1.2
CSSH015064	-JIS3	64	20	60	96	99	15	29	*	*	5.16	1.3
CSSH015070	-JIS3	70	20	60	105	108	15	29	*	*	5.22	1.6
CSSH015075	-JIS3	75	20	60	112.5	115.5	15	29	*	*	5.26	1.8
CSSH015080	-JIS3	80	20	70	120	123	15	29	*	*	5.30	2.0
CSSH015090	-JIS3	90	20	70	135	138	15	29	*	*	5.37	2.6
CSSH015100	-JIS3	100	20	70	150	153	15	29	*	*	5.43	3.1

※ Weight only for reference. Actual scale should be Weighing.

CSSH-JIS3 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade JIS3

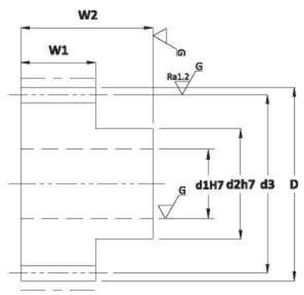
Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Skiving after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2												
CSSH020014	-JIS3	14	12	22	28	32	20	36	*	*	*	0.2
CSSH020015	-JIS3	15	12	24	30	34	20	36	*	*	*	0.2
CSSH020016	-JIS3	16	12	26	32	36	20	36	*	*	*	0.2
CSSH020017	-JIS3	17	12	28	34	38	20	36	*	*	6.50	0.2
CSSH020018	-JIS3	18	12	30	36	40	20	36	*	*	6.64	0.3
CSSH020019	-JIS3	19	12	31	38	42	20	36	*	*	6.78	0.3
CSSH020020	-JIS3	20	15	32	40	44	20	36	*	*	6.92	0.3
CSSH020021	-JIS3	21	15	34	42	46	20	36	*	*	7.04	0.4
CSSH020022	-JIS3	22	15	36	44	48	20	36	*	*	7.17	0.4
CSSH020023	-JIS3	23	15	37	46	50	20	36	*	*	7.27	0.4
CSSH020024	-JIS3	24	15	38	48	52	20	36	*	*	7.38	0.5
CSSH020025	-JIS3	25	15	40	50	54	20	36	*	*	7.43	0.5
CSSH020026	-JIS3	26	15	42	52	56	20	36	*	*	7.57	0.5
CSSH020027	-JIS3	27	15	44	54	58	20	36	*	*	7.65	0.6
CSSH020028	-JIS3	28	15	45	56	60	20	36	*	*	7.74	0.6
CSSH020029	-JIS3	29	15	48	58	62	20	36	*	*	7.82	0.6
CSSH020030	-JIS3	30	18	50	60	64	20	36	*	*	7.90	0.7
CSSH020032	-JIS3	32	18	50	64	68	20	36	*	*	8.03	0.8
CSSH020034	-JIS3	34	18	50	68	72	20	36	*	*	8.16	0.9
CSSH020035	-JIS3	35	18	50	70	74	20	36	*	*	8.22	0.9
CSSH020036	-JIS3	36	18	50	72	76	20	36	*	*	8.28	1.0
CSSH020038	-JIS3	38	18	50	76	80	20	36	*	*	8.37	1.1
CSSH020040	-JIS3	40	20	60	80	84	20	36	*	*	8.47	1.2
CSSH020042	-JIS3	42	20	60	84	88	20	36	*	*	8.56	1.3
CSSH020044	-JIS3	44	20	60	88	92	20	36	*	*	8.63	1.4
CSSH020045	-JIS3	45	20	60	90	94	20	36	*	*	8.67	1.5
CSSH020048	-JIS3	48	20	60	96	100	20	36	*	*	8.77	1.7
CSSH020050	-JIS3	50	25	60	100	104	20	36	*	*	8.84	1.8
CSSH020055	-JIS3	55	25	60	110	114	20	36	*	*	8.97	2.2
CSSH020056	-JIS3	56	25	60	112	116	20	36	*	*	8.99	2.2
CSSH020060	-JIS3	60	25	65	120	124	20	36	*	*	9.10	2.6
CSSH020064	-JIS3	64	25	65	128	132	20	36	*	*	9.17	2.9
CSSH020070	-JIS3	70	25	70	140	144	20	36	*	*	9.28	3.5
CSSH020075	-JIS3	75	25	70	150	154	20	36	*	*	9.35	3.9
CSSH020080	-JIS3	80	25	80	160	164	20	36	*	*	9.42	4.5
CSSH020090	-JIS3	90	25	80	180	184	20	36	*	*	9.54	5.6
CSSH020100	-JIS3	100	25	80	200	204	20	36	*	*	9.65	6.9

※ Weight only for reference. Actual scale should be Weighing.

CSSH-JIS3 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade JIS3

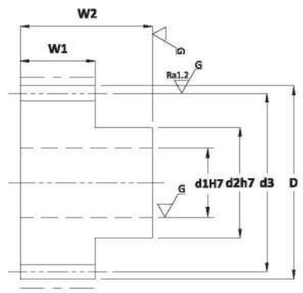
Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Skiving after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2.5												
CSSH025014	-JIS3	14	15	28	35	40	25	43	*	*	*	0.3
CSSH025015	-JIS3	15	15	30	37.5	42.5	25	43	*	*	*	0.4
CSSH025016	-JIS3	16	15	32	40	45	25	43	*	*	*	0.4
CSSH025017	-JIS3	17	15	35	42.5	47.5	25	43	*	*	10.16	0.4
CSSH025018	-JIS3	18	15	38	45	50	25	43	*	*	10.37	0.5
CSSH025019	-JIS3	19	15	39	47.5	52.5	25	43	*	*	10.60	0.5
CSSH025020	-JIS3	20	18	40	50	55	25	43	*	*	10.81	0.6
CSSH025021	-JIS3	21	18	42	52.5	57.5	25	43	*	*	11.01	0.7
CSSH025022	-JIS3	22	18	44	55	60	25	43	*	*	11.20	0.7
CSSH025023	-JIS3	23	18	46	57.5	62.5	25	43	*	*	11.36	0.8
CSSH025024	-JIS3	24	18	48	60	65	25	43	*	*	11.54	0.8
CSSH025025	-JIS3	25	20	50	62.5	67.5	25	43	*	*	11.62	0.9
CSSH025026	-JIS3	26	20	54	65	70	25	43	*	*	11.83	1.0
CSSH025027	-JIS3	27	20	56	67.5	72.5	25	43	*	*	11.96	1.0
CSSH025028	-JIS3	28	20	60	70	75	25	43	*	*	12.10	1.1
CSSH025029	-JIS3	29	20	60	72.5	77.5	25	43	*	*	12.21	1.2
CSSH025030	-JIS3	30	20	65	75	80	25	43	*	*	12.34	1.3
CSSH025032	-JIS3	32	20	70	80	85	25	43	*	*	12.54	1.4
CSSH025034	-JIS3	34	20	70	85	90	25	43	*	*	12.75	1.6
CSSH025035	-JIS3	35	20	70	87.5	92.5	25	43	*	*	12.85	1.7
CSSH025036	-JIS3	36	20	70	90	95	25	43	*	*	12.93	1.8
CSSH025038	-JIS3	38	20	70	95	100	25	43	*	*	13.09	2.0
CSSH025040	-JIS3	40	25	70	100	105	25	43	*	*	13.24	2.2
CSSH025042	-JIS3	42	25	75	105	110	25	43	*	*	13.37	2.4
CSSH025044	-JIS3	44	25	75	110	115	25	43	*	*	13.49	2.6
CSSH025045	-JIS3	45	25	75	112.5	117.5	25	43	*	*	13.55	2.7
CSSH025048	-JIS3	48	25	75	120	125	25	43	*	*	13.71	3.1
CSSH025050	-JIS3	50	25	80	125	130	25	43	*	*	13.82	3.4
CSSH025055	-JIS3	55	25	80	137.5	142.5	25	43	*	*	14.02	4.0
CSSH025056	-JIS3	56	25	80	140	145	25	43	*	*	14.05	4.2
CSSH025060	-JIS3	60	25	80	150	155	25	43	*	*	14.22	4.8
CSSH025070	-JIS3	70	25	80	170	180	25	43	*	*	14.50	6.4
CSSH025075	-JIS3	75	25	90	187.5	192.5	25	43	*	*	14.62	7.4
CSSH025080	-JIS3	80	25	90	200	205	25	43	*	*	14.73	8.4

※ Weight only for reference. Actual scale should be Weighing.

CSSH-JIS3 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade JIS3

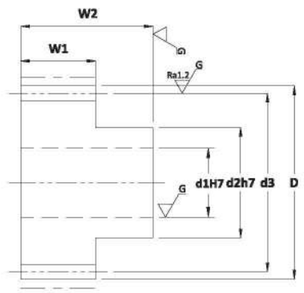
Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Skiving after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3												
CSSH030014	-JIS3	14	16	34	42	48	30	50	*	*	*	0.4
CSSH030015	-JIS3	15	16	36	45	51	30	50	*	*	*	0.5
CSSH030016	-JIS3	16	16	38	48	54	30	50	*	*	*	0.5
CSSH030017	-JIS3	17	16	37	51	57	30	50	*	*	14.63	0.6
CSSH030018	-JIS3	18	16	40	54	60	30	50	*	*	14.94	0.7
CSSH030019	-JIS3	19	16	45	57	63	30	50	*	*	15.27	0.7
CSSH030020	-JIS3	20	20	50	60	66	30	50	*	*	15.57	0.8
CSSH030021	-JIS3	21	20	52	63	69	30	50	*	*	15.85	0.9
CSSH030022	-JIS3	22	20	54	66	72	30	50	*	*	16.13	1.0
CSSH030023	-JIS3	23	20	56	69	75	30	50	*	*	16.36	1.0
CSSH030024	-JIS3	24	20	58	72	78	30	50	*	*	16.62	1.1
CSSH030025	-JIS3	25	20	60	75	81	30	50	*	*	16.73	1.2
CSSH030026	-JIS3	26	20	62	78	84	30	50	*	*	17.04	1.3
CSSH030027	-JIS3	27	20	65	81	87	30	50	*	*	17.23	1.4
CSSH030028	-JIS3	28	20	70	84	90	30	50	*	*	17.42	1.5
CSSH030029	-JIS3	29	20	70	87	93	30	50	*	*	17.59	1.6
CSSH030030	-JIS3	30	25	75	90	96	30	50	*	*	17.77	1.7
CSSH030032	-JIS3	32	25	75	96	102	30	50	*	*	18.06	1.9
CSSH030034	-JIS3	34	25	75	102	108	30	50	*	*	18.36	2.2
CSSH030035	-JIS3	35	25	80	105	111	30	50	*	*	18.51	2.3
CSSH030036	-JIS3	36	25	80	108	114	30	50	*	*	18.62	2.4
CSSH030038	-JIS3	38	25	80	114	120	30	50	*	*	18.85	2.7
CSSH030040	-JIS3	40	25	80	120	126	30	50	*	*	19.07	2.9
CSSH030042	-JIS3	42	25	80	126	132	30	50	*	*	19.26	3.2
CSSH030044	-JIS3	44	25	80	132	138	30	50	*	*	19.43	3.5
CSSH030045	-JIS3	45	25	80	135	141	30	50	*	*	19.52	3.7
CSSH030048	-JIS3	48	25	80	144	150	30	50	*	*	19.75	4.2
CSSH030050	-JIS3	50	30	85	150	156	30	50	*	*	19.90	4.5
CSSH030055	-JIS3	55	30	90	165	171	30	50	*	*	20.19	5.4
CSSH030056	-JIS3	56	30	90	168	174	30	50	*	*	20.24	5.6
CSSH030060	-JIS3	60	30	100	180	186	30	50	*	*	20.47	6.4
CSSH030070	-JIS3	70	30	100	210	216	30	50	*	*	20.88	8.6
CSSH030075	-JIS3	75	30	100	225	231	30	50	*	*	21.05	9.9
CSSH030080	-JIS3	80	30	100	240	246	30	50	*	*	21.21	11.2

※ Weight only for reference. Actual scale should be Weighing.

CSSH-JIS3 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade JIS3

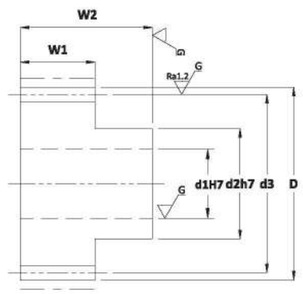
Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Skiving after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4												
CSSH040014	-JIS3	14	20	40	56	64	40	65	*	*	*	0.8
CSSH040015	-JIS3	15	20	45	60	68	40	65	*	*	*	0.9
CSSH040016	-JIS3	16	20	50	64	72	40	65	*	*	*	1.0
CSSH040018	-JIS3	18	20	60	72	80	40	65	*	*	26.56	1.3
CSSH040020	-JIS3	20	20	65	80	88	40	65	*	*	27.69	1.6
CSSH040022	-JIS3	22	20	70	88	96	40	65	*	*	28.68	1.8
CSSH040024	-JIS3	24	20	75	96	104	40	65	*	*	29.55	2.2
CSSH040025	-JIS3	25	20	80	100	108	40	65	*	*	29.75	2.3
CSSH040028	-JIS3	28	20	85	112	120	40	65	*	*	30.98	2.9
CSSH040030	-JIS3	30	20	90	120	128	40	65	*	*	31.60	3.3
CSSH040032	-JIS3	32	25	90	128	136	40	65	*	*	32.11	3.7
CSSH040035	-JIS3	35	25	90	140	148	40	65	*	*	32.91	4.4
CSSH040036	-JIS3	36	25	90	144	152	40	65	*	*	33.11	4.6
CSSH040040	-JIS3	40	25	90	160	168	40	65	*	*	33.91	5.7
CSSH040042	-JIS3	42	25	90	168	176	40	65	*	*	34.24	6.2
CSSH040044	-JIS3	44	30	90	176	184	40	65	*	*	34.55	6.8
CSSH040045	-JIS3	45	30	90	180	188	40	65	*	*	34.71	7.1
CSSH040048	-JIS3	48	30	100	192	200	40	65	*	*	35.11	8.0
CSSH040050	-JIS3	50	30	100	200	108	40	65	*	*	35.38	2.3
CSSH040055	-JIS3	55	30	100	220	228	40	65	*	*	35.89	10.4
CSSH040056	-JIS3	56	30	110	224	232	40	65	*	*	35.99	10.8
CSSH040060	-JIS3	60	30	110	240	248	40	65	*	*	36.40	12.3
Module 5												
CSSH050020	-JIS3	20	25	82	100	110	50	75	*	*	43.27	3.3
CSSH050025	-JIS3	25	25	105	125	135	50	75	*	*	46.49	4.9
CSSH050030	-JIS3	30	25	120	150	160	50	75	*	*	49.37	6.9
Module 6												
CSSH060020	-JIS3	20	25	100	120	132	60	88	*	*	62.31	4.7
CSSH060025	-JIS3	25	30	125	150	162	60	88	*	*	66.95	7.1
CSSH060030	-JIS3	30	30	150	180	192	60	88	*	*	71.09	10.0

※ Weight only for reference. Actual scale should be Weighing.

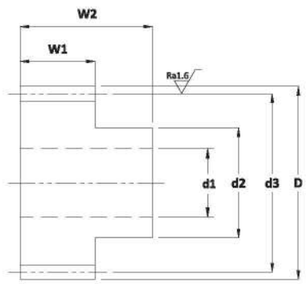
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1												
CSM010015	-JIS4	15	8	17	15	17	10	20	*	*	*	0.1
CSM010016	-JIS4	16	8	18	16	18	10	20	*	*	*	0.1
CSM010017	-JIS4	17	8	19	17	19	10	20	*	*	0.89	0.1
CSM010018	-JIS4	18	8	20	18	20	10	20	*	*	0.91	0.1
CSM010019	-JIS4	19	8	21	19	21	10	20	*	*	0.93	0.1
CSM010020	-JIS4	20	8	16	20	22	10	20	*	*	0.95	0.1
CSM010021	-JIS4	21	8	17	21	23	10	20	*	*	0.97	0.1
CSM010022	-JIS4	22	8	18	22	24	10	20	*	*	0.98	0.1
CSM010023	-JIS4	23	8	18	23	25	10	20	*	*	1.00	0.1
CSM010024	-JIS4	24	8	20	24	26	10	20	*	*	1.01	0.1
CSM010025	-JIS4	25	8	20	25	27	10	20	*	*	1.02	0.1
CSM010026	-JIS4	26	8	22	26	28	10	20	*	*	1.04	0.1
CSM010027	-JIS4	27	8	22	27	29	10	20	*	*	1.05	4.8
CSM010028	-JIS4	28	8	22	28	30	10	20	*	*	1.06	0.1
CSM010029	-JIS4	29	8	24	29	31	10	20	*	*	1.07	0.1
CSM010030	-JIS4	30	10	25	30	32	10	20	*	*	1.08	0.1
CSM010032	-JIS4	32	10	26	32	34	10	20	*	*	1.10	0.1
CSM010034	-JIS4	34	10	26	34	36	10	20	*	*	1.12	0.1
CSM010035	-JIS4	35	10	26	35	37	10	20	*	*	1.13	0.1
CSM010036	-JIS4	36	10	28	36	38	10	20	*	*	1.14	0.1
CSM010038	-JIS4	38	10	32	38	40	10	20	*	*	1.15	0.1
CSM010040	-JIS4	40	10	35	40	42	10	20	*	*	1.16	0.2
CSM010042	-JIS4	42	10	35	42	44	10	20	*	*	1.17	0.2
CSM010044	-JIS4	44	10	35	44	46	10	20	*	*	1.19	0.2
CSM010045	-JIS4	45	10	35	45	47	10	20	*	*	1.19	0.2
CSM010046	-JIS4	46	10	35	46	48	10	20	*	*	1.20	0.2
CSM010048	-JIS4	48	10	35	48	50	10	20	*	*	1.20	0.2
CSM010050	-JIS4	50	10	35	50	52	10	20	*	*	1.21	0.3
CSM010052	-JIS4	52	10	35	52	54	10	20	*	*	1.22	0.3
CSM010054	-JIS4	54	10	35	54	56	10	20	*	*	1.23	0.3
CSM010055	-JIS4	55	10	35	55	57	10	20	*	*	1.23	0.3
CSM010056	-JIS4	56	10	35	56	58	10	20	*	*	1.24	0.3
CSM010058	-JIS4	58	10	35	58	60	10	20	*	*	1.24	0.3
CSM010060	-JIS4	60	10	35	60	62	10	20	*	*	1.25	0.4
CSM010062	-JIS4	62	10	40	62	64	10	20	*	*	1.25	0.4
CSM010064	-JIS4	64	10	40	64	66	10	20	*	*	1.26	0.4
CSM010065	-JIS4	65	10	40	65	67	10	20	*	*	1.26	0.4
CSM010066	-JIS4	66	10	40	66	68	10	20	*	*	1.26	0.4
CSM010068	-JIS4	68	10	40	68	70	10	20	*	*	1.27	0.5
CSM010070	-JIS4	70	10	40	70	72	10	20	*	*	1.27	0.5
CSM010072	-JIS4	72	10	40	72	74	10	20	*	*	1.28	0.5
CSM010075	-JIS4	75	10	40	75	77	10	20	*	*	1.28	0.5
CSM010076	-JIS4	76	10	40	76	78	10	20	*	*	1.29	0.6
CSM010080	-JIS4	80	10	40	80	82	10	20	*	*	1.29	0.6

※ Weight only for reference. Actual scale should be Weighing.

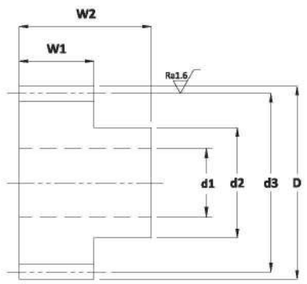
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1												
CSM010084	-JIS4	84	10	40	84	86	10	20	*	*	1.30	0.7
CSM010085	-JIS4	85	10	40	85	87	10	20	*	*	1.30	0.7
CSM010088	-JIS4	88	10	40	88	90	10	20	*	*	1.31	0.7
CSM010090	-JIS4	90	10	40	90	92	10	20	*	*	1.31	0.8
CSM010100	-JIS4	100	10	40	100	102	10	20	*	*	1.33	1.0
CSM010120	-JIS4	120	15	50	120	122	10	20	*	*	1.35	1.4
Module 1.5												
CSM015012	-JIS4	12	8	21	18	21	15	30	*	*	*	0.1
CSM015013	-JIS4	13	8	22.5	19.5	22.5	15	30	*	*	*	0.1
CSM015014	-JIS4	14	8	16	21	24	15	25	*	*	*	0.1
CSM015015	-JIS4	15	8	18	22.5	25.5	15	25	*	*	*	0.1
CSM015016	-JIS4	16	8	20	24	27	15	25	*	*	*	0.1
CSM015017	-JIS4	17	8	21	25.5	28.5	15	25	*	*	2.01	0.1
CSM015018	-JIS4	18	8	22	27	30	15	25	*	*	2.05	0.1
CSM015019	-JIS4	19	8	23	28.5	31.5	15	25	*	*	2.10	0.1
CSM015020	-JIS4	20	8	24	30	33	15	25	*	*	2.14	0.1
CSM015021	-JIS4	21	8	25	31.5	34.5	15	25	*	*	2.18	0.1
CSM015022	-JIS4	22	8	26	33	36	15	25	*	*	2.22	0.1
CSM015023	-JIS4	23	8	27	34.5	37.5	15	25	*	*	2.25	0.2
CSM015024	-JIS4	24	8	28	36	39	15	25	*	*	2.29	0.2
CSM015025	-JIS4	25	8	30	37.5	40.5	15	25	*	*	2.30	0.2
CSM015026	-JIS4	26	10	32	39	42	15	25	*	*	2.34	0.2
CSM015027	-JIS4	27	10	34	40.5	43.5	15	25	*	*	2.37	0.2
CSM015028	-JIS4	28	10	36	42	45	15	25	*	*	2.40	0.2
CSM015029	-JIS4	29	10	37	43.5	46.5	15	25	*	*	2.42	0.2
CSM015030	-JIS4	30	10	38	45	48	15	25	*	*	2.44	0.3
CSM015032	-JIS4	32	10	40	48	51	15	25	*	*	2.48	0.3
CSM015034	-JIS4	34	10	40	51	54	15	25	*	*	2.53	0.3
CSM015035	-JIS4	35	10	42	52.5	55.5	15	25	*	*	2.55	0.4
CSM015036	-JIS4	36	10	45	54	57	15	25	*	*	2.56	0.4
CSM015038	-JIS4	38	12	45	57	60	15	25	*	*	2.59	0.4
CSM015040	-JIS4	40	12	45	60	63	15	25	*	*	2.65	0.5
CSM015042	-JIS4	42	12	45	63	66	15	25	*	*	2.65	0.5
CSM015044	-JIS4	44	12	45	66	69	15	25	*	*	2.67	0.6
CSM015045	-JIS4	45	12	45	67.5	70.5	15	25	*	*	2.69	0.6
CSM015046	-JIS4	46	12	45	69	72	15	25	*	*	2.70	0.6
CSM015048	-JIS4	48	12	45	72	75	15	25	*	*	2.72	0.7
CSM015050	-JIS4	50	12	45	75	78	15	25	*	*	2.74	0.7
CSM015052	-JIS4	52	15	50	78	81	15	25	*	*	2.75	0.8
CSM015054	-JIS4	54	15	50	81	84	15	25	*	*	2.77	0.8
CSM015055	-JIS4	55	15	50	82.5	85.5	15	25	*	*	2.78	0.8
CSM015056	-JIS4	56	15	50	84	87	15	25	*	*	2.78	0.9
CSM015058	-JIS4	58	15	50	87	90	15	25	*	*	2.80	0.9

※ Weight only for reference. Actual scale should be Weighing.

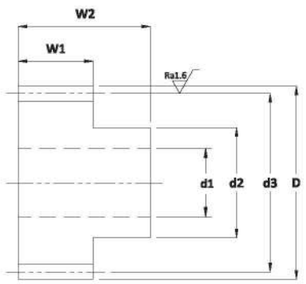
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 1.5												
CSM015060	-JIS4	60	15	50	90	93	15	25	*	*	2.82	1.0
CSM015062	-JIS4	62	15	55	93	96	15	25	*	*	2.83	1.1
CSM015064	-JIS4	64	15	55	96	99	15	25	*	*	2.84	1.1
CSM015065	-JIS4	65	15	55	97.5	100.5	15	25	*	*	2.85	1.2
CSM015066	-JIS4	66	15	55	99	102	15	25	*	*	2.85	1.2
CSM015068	-JIS4	68	15	55	102	105	15	25	*	*	2.86	1.3
CSM015070	-JIS4	70	15	55	105	108	15	25	*	*	2.87	1.3
CSM015072	-JIS4	72	15	55	108	111	15	25	*	*	2.88	1.4
CSM015075	-JIS4	75	15	60	112.5	115.5	15	25	*	*	2.90	1.5
CSM015076	-JIS4	76	15	60	114	117	15	25	*	*	2.90	1.6
CSM015080	-JIS4	80	15	60	120	123	15	25	*	*	2.92	1.7
CSM015090	-JIS4	90	15	60	135	138	15	25	*	*	2.96	2.2
CSM015100	-JIS4	100	15	60	150	153	15	25	*	*	2.99	2.7
Module 2												
CSM020012	-JIS4	12	10	18	24	28	20	30	*	*	*	0.1
CSM020013	-JIS4	13	10	20	26	30	20	30	*	*	*	0.1
CSM020014	-JIS4	14	10	20	28	32	20	30	*	*	*	0.1
CSM020020	-JIS4	15	12	24	30	34	20	30	*	*	*	0.2
CSM020016	-JIS4	16	12	26	32	36	20	30	*	*	*	0.2
CSM020017	-JIS4	17	12	28	34	38	20	30	*	*	3.58	0.2
CSM020018	-JIS4	18	12	30	36	40	20	30	*	*	3.66	0.2
CSM020019	-JIS4	19	12	31	38	42	20	30	*	*	3.74	0.2
CSM020020	-JIS4	20	12	32	40	44	20	30	*	*	3.81	0.3
CSM020021	-JIS4	21	12	34	42	46	20	30	*	*	3.88	0.3
CSM020022	-JIS4	22	12	36	44	48	20	30	*	*	3.95	0.3
CSM020023	-JIS4	23	12	37	46	50	20	30	*	*	4.00	0.3
CSM020024	-JIS4	24	12	38	48	52	20	30	*	*	4.07	0.4
CSM020025	-JIS4	25	12	40	50	54	20	30	*	*	4.10	0.4
CSM020026	-JIS4	26	12	42	52	56	20	30	*	*	4.17	0.4
CSM020027	-JIS4	27	12	45	54	58	20	30	*	*	4.22	0.5
CSM020028	-JIS4	28	12	45	56	60	20	30	*	*	4.26	0.5
CSM020029	-JIS4	29	12	47	58	62	20	30	*	*	4.31	0.5
CSM020030	-JIS4	30	12	50	60	64	20	30	*	*	4.35	0.6
CSM020032	-JIS4	32	12	50	64	68	20	30	*	*	4.42	0.6
CSM020034	-JIS4	34	12	50	68	72	20	30	*	*	4.49	0.7
CSM020035	-JIS4	35	12	52	70	74	20	30	*	*	4.53	0.8
CSM020036	-JIS4	36	12	55	72	76	20	30	*	*	4.56	0.8
CSM020038	-JIS4	38	12	55	76	80	20	30	*	*	4.61	0.9
CSM020040	-JIS4	40	15	55	80	84	20	30	*	*	4.67	1.0
CSM020042	-JIS4	42	15	55	84	88	20	30	*	*	4.71	1.1
CSM020044	-JIS4	44	15	55	88	92	20	30	*	*	4.76	1.2
CSM020045	-JIS4	45	15	55	90	94	20	30	*	*	4.78	1.2

※ Weight only for reference. Actual scale should be Weighing.

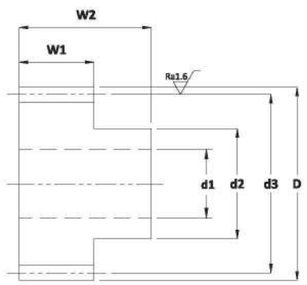
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2												
CSM020046	-JIS4	46	15	55	92	96	20	30	*	*	4.80	1.3
CSM020048	-JIS4	48	15	55	96	100	20	30	*	*	4.83	1.4
CSM020050	-JIS4	50	15	55	100	104	20	30	*	*	4.87	1.5
CSM020052	-JIS4	52	15	55	104	108	20	30	*	*	4.90	1.6
CSM020054	-JIS4	54	15	55	108	112	20	30	*	*	4.93	1.7
CSM020055	-JIS4	55	15	55	110	114	20	30	*	*	4.94	1.8
CSM020056	-JIS4	56	15	55	112	116	20	30	*	*	4.95	1.9
CSM020058	-JIS4	58	15	60	116	120	20	30	*	*	4.98	2.0
CSM020060	-JIS4	60	15	60	120	124	20	30	*	*	5.01	2.1
CSM020062	-JIS4	62	15	60	124	128	20	30	*	*	5.03	2.3
CSM020064	-JIS4	64	15	60	128	132	20	30	*	*	5.05	2.4
CSM020065	-JIS4	65	15	60	130	134	20	30	*	*	5.06	2.5
CSM020066	-JIS4	66	15	60	132	136	20	30	*	*	5.07	2.6
CSM020068	-JIS4	68	15	60	136	140	20	30	*	*	5.09	2.7
CSM020070	-JIS4	70	15	60	140	144	20	30	*	*	5.11	2.9
CSM020072	-JIS4	72	15	60	144	148	20	30	*	*	5.13	3.0
CSM020075	-JIS4	75	20	60	150	154	20	30	*	*	5.15	3.3
CSM020076	-JIS4	76	20	60	152	156	20	30	*	*	5.16	3.4
CSM020080	-JIS4	80	20	60	160	164	20	30	*	*	5.19	3.7
CSM020090	-JIS4	90	20	70	180	184	20	30	*	*	5.26	4.7
CSM020100	-JIS4	100	20	70	200	204	20	30	*	*	5.32	5.8

※ Weight only for reference. Actual scale should be Weighing.

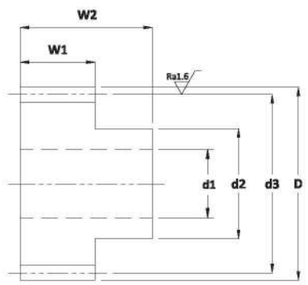
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2.5												
CSM025012	-JIS4	12	12	23	30	35	25	37	*	*	*	0.2
CSM025013	-JIS4	13	12	25	32.5	37.5	25	37	*	*	*	0.2
CSM025014	-JIS4	14	12	25	35	40	25	37	*	*	*	0.3
CSM025015	-JIS4	15	15	30	37.5	42.5	25	37	*	*	*	0.3
CSM025016	-JIS4	16	15	32	40	45	25	37	*	*	*	0.3
CSM025017	-JIS4	17	15	35	42.5	47.5	25	37	*	*	5.60	0.4
CSM025018	-JIS4	18	15	38	45	50	25	37	*	*	5.71	0.4
CSM025019	-JIS4	19	15	39	47.5	52.5	25	37	*	*	5.84	0.5
CSM025020	-JIS4	20	15	40	50	55	25	37	*	*	5.96	0.5
CSM025021	-JIS4	21	15	42	52.5	57.5	25	37	*	*	6.06	0.6
CSM025022	-JIS4	22	15	44	55	60	25	37	*	*	6.17	0.6
CSM025023	-JIS4	23	15	46	57.5	62.5	25	37	*	*	6.26	0.7
CSM025024	-JIS4	24	15	48	60	65	25	37	*	*	6.36	0.7
CSM025025	-JIS4	25	15	50	62.5	67.5	25	37	*	*	6.40	0.8
CSM025026	-JIS4	26	15	55	65	70	25	37	*	*	6.52	0.8
CSM025027	-JIS4	27	15	60	67.5	72.5	25	37	*	*	6.59	0.9
CSM025028	-JIS4	28	15	60	70	75	25	37	*	*	6.66	1.0
CSM025029	-JIS4	29	15	62	72.5	77.5	25	37	*	*	6.73	1.0
CSM025030	-JIS4	30	15	65	75	80	25	37	*	*	6.80	1.1
CSM025032	-JIS4	32	15	70	80	85	25	37	*	*	6.91	1.2
CSM025034	-JIS4	34	15	70	85	90	25	37	*	*	7.02	1.4
CSM025035	-JIS4	35	15	70	87.5	92.5	25	37	*	*	7.08	1.5
CSM025036	-JIS4	36	15	70	90	95	25	37	*	*	7.12	1.5
CSM025038	-JIS4	38	20	70	95	100	25	37	*	*	7.21	1.7
CSM025040	-JIS4	40	20	70	100	105	25	37	*	*	7.30	1.9
CSM025042	-JIS4	42	20	70	105	110	25	37	*	*	7.37	2.1
CSM025044	-JIS4	44	20	70	110	115	25	37	*	*	7.43	2.3
CSM025045	-JIS4	45	20	70	112.5	117.5	25	37	*	*	7.47	2.4
CSM025046	-JIS4	46	20	70	115	120	25	37	*	*	7.50	2.5
CSM025048	-JIS4	48	20	70	120	125	25	37	*	*	7.55	2.7
CSM025050	-JIS4	50	20	70	125	130	25	37	*	*	7.61	2.9
CSM025052	-JIS4	52	20	70	130	135	25	37	*	*	7.66	3.1
CSM025054	-JIS4	54	20	70	135	140	25	37	*	*	7.70	3.4
CSM025055	-JIS4	55	20	70	137.5	142.5	25	37	*	*	7.72	3.5
CSM025056	-JIS4	56	20	70	140	145	25	37	*	*	7.74	3.6
CSM025058	-JIS4	58	20	70	145	150	25	37	*	*	7.79	3.8
CSM025060	-JIS4	60	25	70	150	155	25	37	*	*	7.83	4.1
CSM025062	-JIS4	62	25	80	155	160	25	37	*	*	7.86	4.4
CSM025064	-JIS4	64	25	80	160	165	25	37	*	*	7.90	4.7
CSM025065	-JIS4	65	25	80	162.5	167.5	25	37	*	*	7.91	4.8
CSM025066	-JIS4	66	25	80	165	170	25	37	*	*	7.93	4.9
CSM025068	-JIS4	68	25	80	170	175	25	37	*	*	7.96	5.2
CSM025070	-JIS4	70	25	80	175	180	25	37	*	*	7.99	5.5
CSM025072	-JIS4	72	25	80	180	185	25	37	*	*	8.01	5.9

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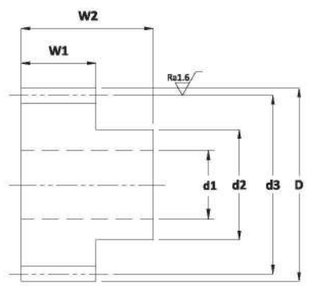
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 2.5												
CSM025075	-JIS4	75	25	80	187.5	192.5	25	37	*	*	8.05	6.3
CSM025076	-JIS4	76	25	80	190	195	25	37	*	*	8.07	6.5
CSM025080	-JIS4	80	25	80	200	205	25	37	*	*	8.11	7.2
CSM025090	-JIS4	90	30	90	225	230	25	37	*	*	8.22	9.1
CSM025100	-JIS4	100	30	90	250	255	25	37	*	*	8.31	11.1
Module 3												
CSM030012	-JIS4	12	15	28	36	42	30	45	*	*	*	0.3
CSM030013	-JIS4	13	15	30	39	45	30	45	*	*	*	0.3
CSM030014	-JIS4	14	15	32	42	48	30	45	*	*	*	0.4
CSM030015	-JIS4	15	15	36	45	51	30	45	*	*	*	0.4
CSM030016	-JIS4	16	15	38	48	54	30	45	*	*	*	0.5
CSM030017	-JIS4	17	15	39	51	57	30	45	*	*	8.06	0.5
CSM030018	-JIS4	18	15	40	54	60	30	45	*	*	8.23	0.6
CSM030019	-JIS4	19	15	45	57	63	30	45	*	*	8.41	0.7
CSM030020	-JIS4	20	15	50	60	66	30	45	*	*	8.58	0.7
CSM030021	-JIS4	21	15	52	63	69	30	45	*	*	8.73	0.8
CSM030022	-JIS4	22	15	54	66	72	30	45	*	*	8.89	0.9
CSM030023	-JIS4	23	15	56	69	75	30	45	*	*	9.01	0.9
CSM030024	-JIS4	24	15	58	72	78	30	45	*	*	9.16	1.0
CSM030025	-JIS4	25	20	60	75	81	30	45	*	*	9.22	1.1
CSM030026	-JIS4	26	20	65	78	84	30	45	*	*	9.39	1.2
CSM030027	-JIS4	27	20	65	81	87	30	45	*	*	9.49	1.3
CSM030028	-JIS4	28	20	70	84	90	30	45	*	*	9.60	1.3
CSM030029	-JIS4	29	20	70	87	93	30	45	*	*	9.69	1.4
CSM030030	-JIS4	30	20	75	90	96	30	45	*	*	9.79	1.5
CSM030032	-JIS4	32	20	75	96	102	30	45	*	*	9.95	1.7
CSM030034	-JIS4	34	20	80	102	108	30	45	*	*	10.12	1.9
CSM030035	-JIS4	35	20	80	105	111	30	45	*	*	10.20	2.1
CSM030036	-JIS4	36	20	80	108	114	30	45	*	*	10.26	2.2
CSM030038	-JIS4	38	25	80	114	120	30	45	*	*	10.38	2.4
CSM030040	-JIS4	40	25	80	120	126	30	45	*	*	10.51	2.6
CSM030042	-JIS4	42	25	80	126	132	30	45	*	*	10.61	2.9
CSM030044	-JIS4	44	25	80	132	138	30	45	*	*	10.71	3.2
CSM030045	-JIS4	45	25	80	135	141	30	45	*	*	10.76	3.3
CSM030046	-JIS4	46	25	80	138	144	30	45	*	*	10.80	3.5
CSM030048	-JIS4	48	25	80	144	150	30	45	*	*	10.88	3.7
CSM030050	-JIS4	50	25	80	150	156	30	45	*	*	10.96	4.1
CSM030052	-JIS4	52	25	80	156	162	30	45	*	*	11.03	4.4
CSM030054	-JIS4	54	25	80	162	168	30	45	*	*	11.09	4.7
CSM030055	-JIS4	55	25	80	165	171	30	45	*	*	11.12	4.9
CSM030056	-JIS4	56	25	80	168	174	30	45	*	*	11.15	5.0
CSM030058	-JIS4	58	25	80	174	180	30	45	*	*	11.22	5.4

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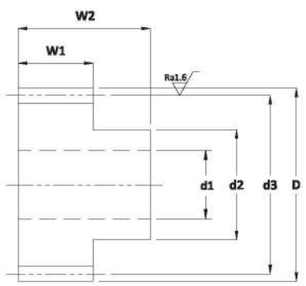
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 3												
CSM030060	-JIS4	60	25	80	180	186	30	45	*	*	11.28	5.8
CSM030062	-JIS4	62	25	80	186	192	30	45	*	*	11.32	6.1
CSM030064	-JIS4	64	25	80	192	198	30	45	*	*	11.37	6.5
CSM030065	-JIS4	65	25	80	195	201	30	45	*	*	11.40	6.7
CSM030066	-JIS4	66	25	90	198	204	30	45	*	*	11.42	6.9
CSM030068	-JIS4	68	25	90	204	210	30	45	*	*	11.46	7.3
CSM030070	-JIS4	70	25	90	210	216	30	45	*	*	11.50	7.8
CSM030072	-JIS4	72	25	90	216	222	30	45	*	*	11.54	8.2
CSM030075	-JIS4	75	25	90	225	231	30	45	*	*	11.60	8.9
CSM030076	-JIS4	76	25	90	228	234	30	45	*	*	11.62	9.1
CSM030080	-JIS4	80	30	90	240	246	30	45	*	*	11.69	10.1
CSM030090	-JIS4	90	30	100	270	276	30	45	*	*	11.84	12.7
CSM030100	-JIS4	100	30	100	300	306	30	45	*	*	11.97	15.6

※ Weight only for reference. Actual scale should be Weighing.

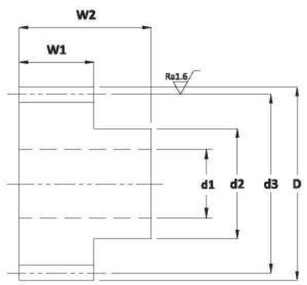
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 4												
CSM040012	-JIS4	12	20	35	48	56	40	60	*	*	*	0.6
CSM040013	-JIS4	13	20	38	52	60	40	60	*	*	*	0.7
CSM040014	-JIS4	14	20	40	56	64	40	60	*	*	*	0.8
CSM040015	-JIS4	15	20	45	60	68	40	60	*	*	*	0.9
CSM040016	-JIS4	16	20	50	64	72	40	60	*	*	*	1.0
CSM040017	-JIS4	17	20	53	68	76	40	60	*	*	14.34	1.1
CSM040018	-JIS4	18	20	55	72	80	40	60	*	*	14.63	1.2
CSM040019	-JIS4	19	20	60	76	84	40	60	*	*	14.96	1.3
CSM040020	-JIS4	20	20	65	80	88	40	60	*	*	15.26	1.4
CSM040021	-JIS4	21	20	69	84	92	40	60	*	*	15.53	1.6
CSM040022	-JIS4	22	20	73	88	96	40	60	*	*	15.80	1.7
CSM040023	-JIS4	23	20	77	92	100	40	60	*	*	16.03	1.8
CSM040024	-JIS4	24	20	80	96	104	40	60	*	*	16.28	2.0
CSM040025	-JIS4	25	20	84	100	108	40	60	*	*	16.39	2.2
CSM040026	-JIS4	26	20	87	104	112	40	60	*	*	16.69	2.3
CSM040027	-JIS4	27	20	90	108	116	40	60	*	*	16.88	2.5
CSM040028	-JIS4	28	20	95	112	120	40	60	*	*	17.07	2.7
CSM040029	-JIS4	29	20	95	116	124	40	60	*	*	17.23	2.8
CSM040030	-JIS4	30	20	100	120	128	40	60	*	*	17.41	3.0
CSM040032	-JIS4	32	22	100	128	136	40	56	*	*	17.70	3.4
CSM040034	-JIS4	34	22	100	136	144	40	56	*	*	17.99	3.8
CSM040035	-JIS4	35	22	100	140	148	40	56	*	*	18.13	4.1
CSM040036	-JIS4	36	22	100	144	152	40	56	*	*	18.25	4.3
CSM040038	-JIS4	38	22	100	152	160	40	56	*	*	18.46	4.7
CSM040040	-JIS4	40	25	100	160	168	40	56	*	*	18.68	5.2
CSM040042	-JIS4	42	25	100	168	176	40	56	*	*	18.87	5.7
CSM040044	-JIS4	44	25	100	176	184	40	56	*	*	19.04	6.3
CSM040045	-JIS4	45	25	100	180	188	40	56	*	*	19.13	6.5
CSM040046	-JIS4	46	25	100	184	192	40	56	*	*	19.20	6.8
CSM040048	-JIS4	48	25	100	192	200	40	56	*	*	19.35	7.4
CSM040050	-JIS4	50	30	100	200	208	40	56	*	*	19.49	8.0
CSM040052	-JIS4	52	30	100	208	216	40	56	*	*	19.61	8.6
CSM040054	-JIS4	54	30	100	216	224	40	56	*	*	19.72	9.3
CSM040055	-JIS4	55	30	100	220	228	40	56	*	*	19.78	9.6
CSM040056	-JIS4	56	30	100	224	232	40	56	*	*	19.83	10.0
CSM040058	-JIS4	58	30	110	232	240	40	56	*	*	19.94	10.7
CSM040060	-JIS4	60	30	110	240	248	40	56	*	*	20.06	11.4
CSM040062	-JIS4	62	30	110	248	256	40	56	*	*	20.14	12.1
CSM040064	-JIS4	64	30	110	256	264	40	56	*	*	20.22	12.9
CSM040065	-JIS4	65	30	110	260	268	40	56	*	*	22.26	13.3
CSM040066	-JIS4	66	30	120	264	272	40	56	*	*	20.30	13.7
CSM040068	-JIS4	68	30	120	272	280	40	56	*	*	20.38	14.5
CSM040070	-JIS4	70	30	120	280	288	40	56	*	*	20.46	15.3
CSM040080	-JIS4	80	30	120	320	328	40	56	*	*	20.78	19.9

※ Weight only for reference. Actual scale should be Weighing.

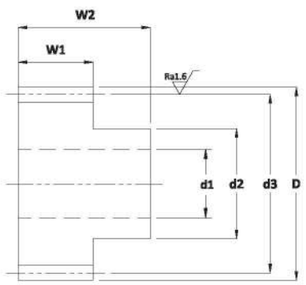
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 5												
CSM050012	-JIS4	12	22	46	60	70	50	75	*	*	*	1.1
CSM050013	-JIS4	13	22	50	65	75	50	75	*	*	*	1.3
CSM050014	-JIS4	14	22	52	70	80	50	75	*	*	*	1.5
CSM050015	-JIS4	15	22	60	75	85	50	75	*	*	*	1.7
CSM050016	-JIS4	16	22	65	80	90	50	75	*	*	*	1.9
CSM050017	-JIS4	17	22	68	85	95	50	75	*	*	22.41	2.1
CSM050018	-JIS4	18	22	70	90	100	50	75	*	*	22.87	2.3
CSM050019	-JIS4	19	22	76	95	105	50	75	*	*	23.37	2.5
CSM050020	-JIS4	20	22	82	100	110	50	75	*	*	23.84	2.8
CSM050021	-JIS4	21	25	90	105	115	50	75	*	*	24.27	3.1
CSM050022	-JIS4	22	25	95	110	120	50	75	*	*	24.69	3.3
CSM050023	-JIS4	23	25	100	115	125	50	75	*	*	25.05	3.6
CSM050024	-JIS4	24	25	100	120	130	50	75	*	*	25.44	3.9
CSM050025	-JIS4	25	25	105	125	135	50	75	*	*	25.62	4.2
CSM050026	-JIS4	26	25	110	130	140	50	75	*	*	26.08	4.5
CSM050027	-JIS4	27	25	110	135	145	50	75	*	*	26.38	4.9
CSM050028	-JIS4	28	25	110	140	150	50	75	*	*	26.67	5.2
CSM050029	-JIS4	29	25	115	145	155	50	75	*	*	26.93	5.6
CSM050030	-JIS4	30	25	120	150	160	50	75	*	*	27.21	5.9
CSM050032	-JIS4	32	30	120	160	170	50	71	*	*	27.65	6.7
CSM050034	-JIS4	34	30	120	170	180	50	71	*	*	28.11	7.5
CSM050035	-JIS4	35	30	120	175	185	50	71	*	*	28.34	7.9
CSM050036	-JIS4	36	30	120	180	190	50	71	*	*	28.51	8.3
CSM050038	-JIS4	38	30	120	190	200	50	71	*	*	28.85	9.2
CSM050040	-JIS4	40	30	120	200	210	50	71	*	*	29.20	10.2
CSM050042	-JIS4	42	30	120	210	220	50	71	*	*	29.48	11.2
CSM050044	-JIS4	44	30	120	220	230	50	71	*	*	29.75	12.2
CSM050045	-JIS4	45	30	120	225	235	50	71	*	*	29.89	12.8
CSM050046	-JIS4	46	30	120	230	240	50	71	*	*	30.00	13.3
CSM050048	-JIS4	48	30	120	240	250	50	71	*	*	30.23	14.5
CSM050050	-JIS4	50	30	120	250	260	50	71	*	*	30.46	15.6
CSM050052	-JIS4	52	30	130	260	270	50	71	*	*	30.64	16.9
CSM050054	-JIS4	54	30	130	270	280	50	71	*	*	30.81	18.1
CSM050055	-JIS4	55	30	130	275	285	50	71	*	*	30.91	18.8
CSM050056	-JIS4	56	30	130	280	290	50	71	*	*	30.99	19.4
CSM050058	-JIS4	58	30	130	290	300	50	71	*	*	31.17	20.8
CSM050060	-JIS4	60	30	130	300	310	50	71	*	*	31.34	22.2

※ Weight only for reference. Actual scale should be Weighing.

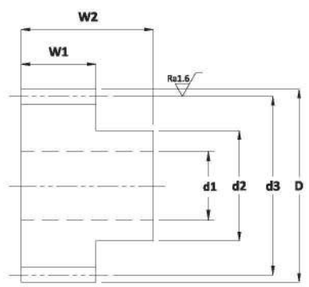
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 6												
CSM060012	-JIS4	12	25	55	72	84	60	88	*	*	*	1.9
CSM060013	-JIS4	13	25	58	78	90	60	88	*	*	*	2.2
CSM060014	-JIS4	14	25	60	84	96	60	88	*	*	*	2.5
CSM060015	-JIS4	15	25	70	90	102	60	88	*	*	*	2.8
CSM060016	-JIS4	16	25	75	96	108	60	88	*	*	*	3.2
CSM060017	-JIS4	17	25	78	102	114	60	88	*	*	32.27	3.5
CSM060018	-JIS4	18	25	80	108	120	60	88	*	*	32.93	3.9
CSM060019	-JIS4	19	25	90	114	126	60	88	*	*	33.66	4.3
CSM060020	-JIS4	20	25	100	120	132	60	88	*	*	34.34	4.7
CSM060021	-JIS4	21	28	105	126	138	60	88	*	*	34.95	5.2
CSM060022	-JIS4	22	28	110	132	144	60	88	*	*	35.56	5.6
CSM060023	-JIS4	23	28	115	138	150	60	88	*	*	36.07	6.1
CSM060024	-JIS4	24	28	120	144	156	60	88	*	*	36.64	6.6
CSM060025	-JIS4	25	28	125	150	162	60	88	*	*	36.89	7.1
CSM060026	-JIS4	26	28	130	156	168	60	88	*	*	37.56	7.7
CSM060027	-JIS4	27	28	135	162	174	60	88	*	*	37.98	8.2
CSM060028	-JIS4	28	28	140	168	180	60	88	*	*	38.41	8.8
CSM060030	-JIS4	30	30	150	180	192	60	88	*	*	39.18	10.0
CSM060032	-JIS4	32	30	150	192	204	60	83	*	*	39.82	11.3
CSM060034	-JIS4	34	30	150	204	216	60	83	*	*	40.48	12.7
CSM060035	-JIS4	35	30	150	210	222	60	83	*	*	40.81	13.4
CSM060036	-JIS4	36	30	150	216	228	60	83	*	*	41.06	14.1
CSM060038	-JIS4	38	30	150	228	240	60	83	*	*	41.55	15.6
CSM060040	-JIS4	40	30	150	240	252	60	83	*	*	42.05	17.2
CSM060042	-JIS4	42	40	150	252	264	60	83	*	*	42.45	18.9
CSM060044	-JIS4	44	40	150	264	276	60	83	*	*	42.84	20.7
CSM060045	-JIS4	45	40	180	270	282	60	83	*	*	43.04	21.6
CSM060046	-JIS4	46	40	180	276	288	60	83	*	*	43.20	22.5
CSM060048	-JIS4	48	40	180	288	300	60	83	*	*	43.53	24.4
CSM060050	-JIS4	50	40	180	300	312	60	83	*	*	43.87	26.4

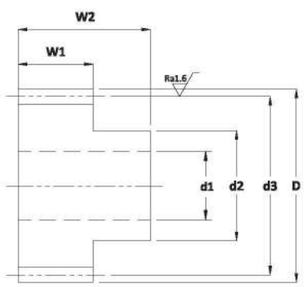
CSM-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
Module 8												
CSM080012	-JIS4	12	28	75	96	112	75	110	*	*	*	4.3
CSM080013	-JIS4	13	28	80	104	120	75	110	*	*	*	4.9
CSM080014	-JIS4	14	28	85	112	128	75	110	*	*	*	5.6
CSM080015	-JIS4	15	28	90	120	136	75	110	*	*	*	6.3
CSM080016	-JIS4	16	28	100	128	144	75	110	*	*	*	7.0
CSM080017	-JIS4	17	28	105	136	152	75	110	*	*	53.78	7.8
CSM080018	-JIS4	18	28	110	144	160	75	110	*	*	54.89	8.7
CSM080019	-JIS4	19	28	120	152	168	75	110	*	*	56.01	9.6
CSM080020	-JIS4	20	28	130	160	176	75	110	*	*	57.23	10.5
CSM080021	-JIS4	21	30	140	168	184	75	110	*	*	58.26	11.5
CSM080022	-JIS4	22	30	150	176	192	75	110	*	*	59.27	12.5
CSM080023	-JIS4	23	30	155	184	200	75	110	*	*	60.12	13.6
CSM080024	-JIS4	24	30	160	192	208	75	110	*	*	61.06	14.7
CSM080025	-JIS4	25	30	170	200	216	75	110	*	*	61.49	15.8
CSM080026	-JIS4	26	30	170	208	224	75	110	*	*	62.61	17.0
CSM080027	-JIS4	27	30	170	216	232	75	110	*	*	63.31	18.3
CSM080028	-JIS4	28	30	180	224	240	75	110	*	*	64.02	19.5
CSM080030	-JIS4	30	30	180	240	256	75	110	*	*	65.30	22.2
Module 10												
CSM100015	-JIS4	15	30	115	150	170	90	130	*	*	*	11.6
CSM100020	-JIS4	20	30	165	200	220	90	130	*	*	85.85	19.4
CSM100025	-JIS4	25	40	200	250	270	90	130	*	*	92.24	29.2

※ Weight only for reference. Actual scale should be Weighing.

MSGH-CP-DIN6 Series Straight Teeth Ground Pinions

Tooth Surface Accuracy Grade DIN6

Material SCM415 / SCM440

Hardness: HRC 50~55°

Teeth Gound after Hardening

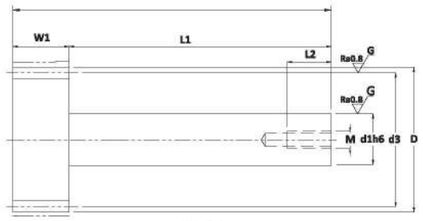


圖1 /Fig . 1

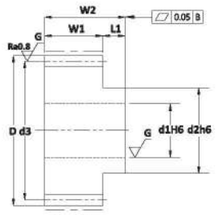


圖2 /Fig . 2

Dimension : mm

Code	Fig.	DIN	Module	No. of Teeth	d1	d2	d3	D	W1	W2	L1	L2	Hole	F_{ta} kN	kg
CP 5															
MSGH-CP0500201	1	-DIN6	1.5915	20	20h6	*	31.831	35	11.5	90	78.5	19	M8	3.45	1.4
MSGH-CP0500202	1	-DIN6	1.5915	20	20h6	*	31.831	35	14.5	90	75.5	19	M8	3.45	1.4
MSGH-CP0500203	2	-DIN6	1.5915	20	10h6	25	31.831	35	14.5	23	8.5	*	*	4.35	0.5
CP 7.5															
MSGH-CP0750201	1	-DIN6	2.3873	20	25h6	*	47.746	52.5	19.5	108	88.5	22	M10	8.79	3.7
MSGH-CP0750202	2	-DIN6	2.3873	20	15h7	40	47.746	52.5	19.5	30	10.5	*	*	8.79	1.4
CP 10															
MSGH-CP1000201	1	-DIN6	3.1831	20	40h6	*	63.662	70	29.5	162	132.5	28	M12	17.73	9.8
MSGH-CP1000202	2	-DIN6	3.1831	20	15h7	50	63.662	70	29.5	43	13.5	*	*	17.73	3.7

※ Weight only for reference. Actual scale should be Weighing.

MSSH-CP-JIS3 Series Straight Skiving Pinions

Tooth Surface Accuracy Grade JIS3

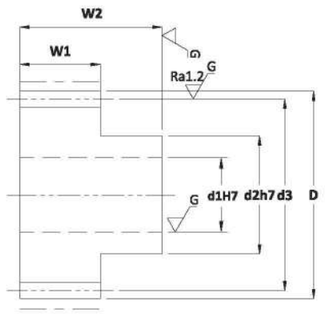
Material SCM415 / SCM440

Hardness: HRC 50~55°

Surfaces: Black-coated (Exclude Teeth)

Skiving after Hardening

Keyway and screw holes are available upon request.



Dimension : mm

Code	JIS	Module	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
CP 5													
MSSH-CP050020	-JIS3	1.5915	20	8	25	31.83	35.01	15	30	*	*	5.22	0.2
MSSH-CP050025	-JIS3	1.5915	25	10	32	39.79	42.97	15	30	*	*	5.59	0.3
MSSH-CP050030	-JIS3	1.5915	30	10	38	47.74	50.93	15	30	*	*	5.87	0.4
MSSH-CP050040	-JIS3	1.5915	40	12	50	63.66	66.84	15	30	*	*	6.23	0.6
CP 10													
MSSH-CP100020	-JIS3	3.1831	20	15	50	63.66	70.03	30	50	*	*	20.90	0.9
MSSH-CP100025	-JIS3	3.1831	25	20	60	79.57	85.94	30	50	*	*	22.38	1.4
MSSH-CP100030	-JIS3	3.1831	30	20	75	95.49	101.86	30	50	*	*	23.48	1.9
MSSH-CP100040	-JIS3	3.1831	40	25	80	127.32	133.69	30	50	*	*	24.94	3.3
CP 15													
MSSH-CP150020	-JIS3	4.7746	20	25	75	95.49	105.04	50	77	*	*	52.24	2.6
MSSH-CP150025	-JIS3	4.7746	25	25	100	119.37	128.92	50	77	*	*	55.95	3.9
MSSH-CP150030	-JIS3	4.7746	30	25	110	143.24	152.79	50	77	*	*	58.70	5.5
CP 20													
MSSH-CP200020	-JIS3	6.3662	20	25	100	127.32	140.06	60	90	*	*	83.59	5.4
MSSH-CP200025	-JIS3	6.3662	25	30	130	159.16	171.89	60	90	*	*	89.52	8.2
MSSH-CP200030	-JIS3	6.3662	30	30	150	190.99	203.72	60	90	*	*	93.92	11.5

※ Weight only for reference. Actual scale should be Weighing.

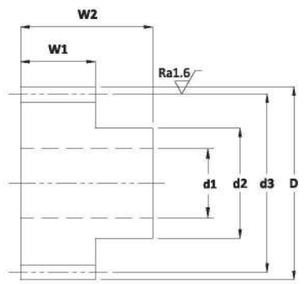
CSM-CP-JIS4 Series Straight Soft Pinions

Tooth Surface Accuracy Grade JIS4

Material S45C / S50C

Surfaces: Black-coated

Keyway and screw holes are available upon request.

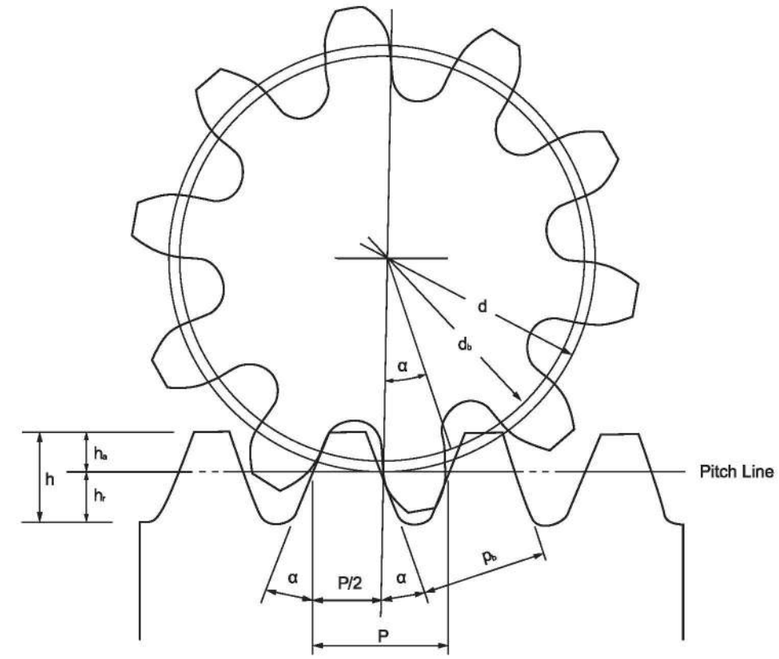


Dimension : mm

Code	JIS	Module	No. of Teeth	d1	d2	d3	D	W1	W2	k	h	F_{ta} kN	KG
CP 5													
CSM-CP050020	-JIS4	1.5915	20	8	25	31.83	35.01	15	30	*	*	2.27	0.2
CSM-CP050025	-JIS4	1.5915	25	10	32	39.79	42.97	15	30	*	*	2.44	0.3
CSM-CP050030	-JIS4	1.5915	30	10	38	47.74	50.93	15	30	*	*	2.59	0.4
CSM-CP050040	-JIS4	1.5915	40	12	45	63.66	66.84	15	30	*	*	2.78	0.6
CP 10													
CSM-CP100020	-JIS4	3.1831	20	15	50	63.66	70.03	30	50	*	*	9.10	0.9
CSM-CP100025	-JIS4	3.1831	25	20	60	79.57	85.94	30	50	*	*	9.78	1.4
CSM-CP100030	-JIS4	3.1831	30	20	75	95.49	101.86	30	50	*	*	10.39	1.9
CSM-CP100040	-JIS4	3.1831	40	20	80	127.32	133.69	30	50	*	*	11.15	3.3
CP 15													
CSM-CP150020	-JIS4	4.7746	20	22	75	95.49	105.04	50	77	*	*	22.77	2.6
CSM-CP150025	-JIS4	4.7746	25	25	100	119.36	128.92	50	77	*	*	24.46	3.9
CSM-CP150030	-JIS4	4.7746	30	25	110	143.24	152.79	50	77	*	*	25.98	5.5
CP 20													
CSM-CP200020	-JIS4	6.3662	20	25	100	127.32	140.06	60	90	*	*	36.43	5.4
CSM-CP200025	-JIS4	6.3662	25	30	130	159.15	171.89	60	90	*	*	39.14	8.2
CSM-CP200030	-JIS4	6.3662	30	30	150	190.98	203.72	60	90	*	*	41.57	11.5

※ Weight only for reference. Actual scale should be Weighing.

Definition of Standard Straight Gear



Standard spur gear

Module	m
Pressure Angle	α = 20°
Addendum	h_a = m
Dedendum	$h_f \geq$ 1.25m
Whole Depth	h $\geq$ 2.25m
Working Tooth Depth	h_w = 2.00m
Clearance	c = 0.25m
Circular Pitch	p = πm
Base Circle Pitch	p_b = p cos α
Standard Circle Dia	d = mz
Base Circle Diameter	d_b = d cos α

r_f = Root Radius

S= Circular Tooth Thickness

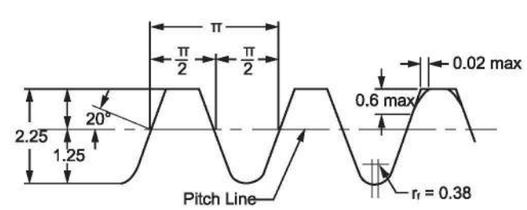


Fig. 1-1 The Basic Metric Rack From ISO 53 Normalized for Module 1

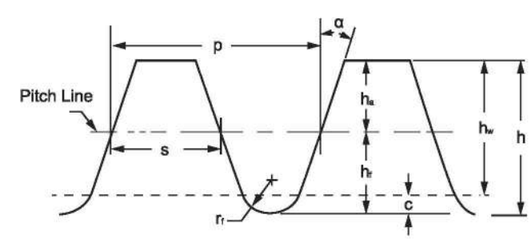
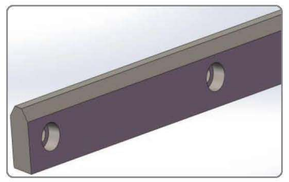


Fig. 1-2 The Basic Inch Diametral Pitch Rack Normalized for 1 Diametral Pitch

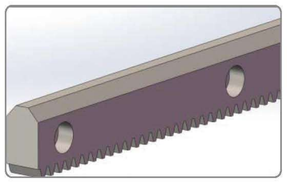
Content of Guideway Racks

Code	Material	Type	Type	Shape	Teeth Treatment	Hardness	CP / Module	Grade DIN	Page
MSVGH-CP	SCM440	Straight	V Type Guideway Rack	Hexgan	Teeth Ground	Hardened HRC 53°-58°	CP / 5, 7.5, 10	DIN 6	P103
MSVGH-CP-L	SCM440	Straight	V Type Guideway Rack	Hexgan	Teeth Ground	Hardened HRC 53°-58°	CP / 5, 7.5, 10	DIN 6	P.104
CSVM-CP-L	S45C	Straight	V Type Guideway Rack	Hexgan	Milled	HRC 10~12°	CP / 5, 7.5, 10	DIN 8	P105
MNVGH-00	SCM440	N/A	V Type Guideway	Hexgan	Ground	Hardened HRC 53°-58°	N/A	DIN 6	P.106
MNVGH-L	SCM440	N/A	V Type Guideway	Hexgan	Ground	Hardened HRC 53°-58°	N/A	DIN 6	P.107
CNVM-L	S45C	N/A	V Type Guideway	Hexgan	Milled	HRC 10~12°	N/A	DIN 8	P.108
MSTGH-CP	SCM440	Straight	Guideway Rack	Tetragon	Teeth Ground	Hardened HRC 53°-58°	CP / 5, 7.5, 10	DIN 6	P.109
MSTGH-CP-L	SCM440	Straight	Guideway Rack	Tetragon	Teeth Ground	Hardened HRC 53°-58°	CP / 5, 7.5, 10	DIN 6	P.110
CSTM-CP-L	S45C	Straight	Guideway Rack	Tetragon	Milled	HRC 10~12°	CP / 5, 7.5, 10	DIN 8	P.111
MNTGH-00	SCM440	N/A	Guideway	Tetragon	Ground	Hardened HRC 53°-58°	N/A	DIN 6	P.112
MNTGH-L	SCM440	N/A	Guideway	Tetragon	Ground	Hardened HRC 53°-58°	N/A	DIN 6	P.113
CNTM-L	S45C	N/A	Guideway	Tetragon	Milled	HRC 10~12°	N/A	DIN 8	P.114
MHVGH-L	SCM440	Helical	V Type Guideway Rack	Hexgan	Teeth Ground	Hardened HRC 53°-58°	M1.5, 2.5, 3	DIN 6	P.115
CHVM-L	S45C	Helical	V Type Guideway Rack	Hexgan	Milled	HRC 10~12°	M1.5, 2.5, 3	DIN 8	P.116

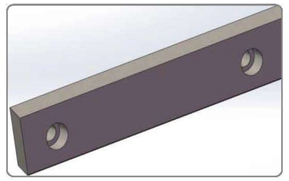
Guideway Rack Code Instruction



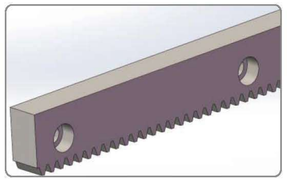
Guideway V bar



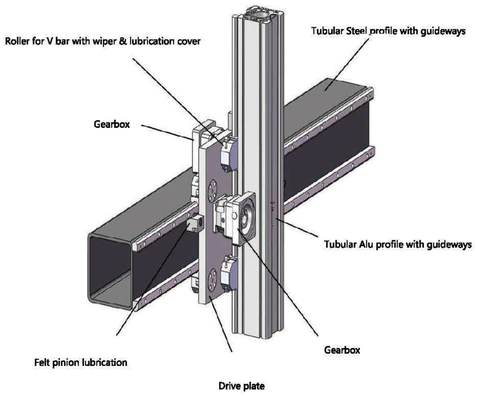
Guideway V bar rack



Guideway flat rail



Guideway flat rail rack

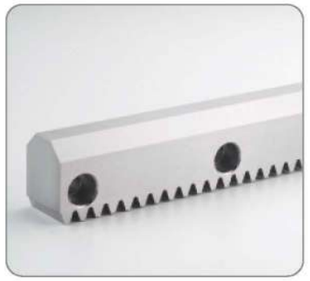


The guideway V bar rack drive system includes modular components like guideway V bar, guideway V bar rack, roller, drive plate, aluminum profile, steel profile, etc. Such system is suitable for medium duty application. The contact between the roller and the guideway is linear, ensuring high speed, low noise and precise positioning.

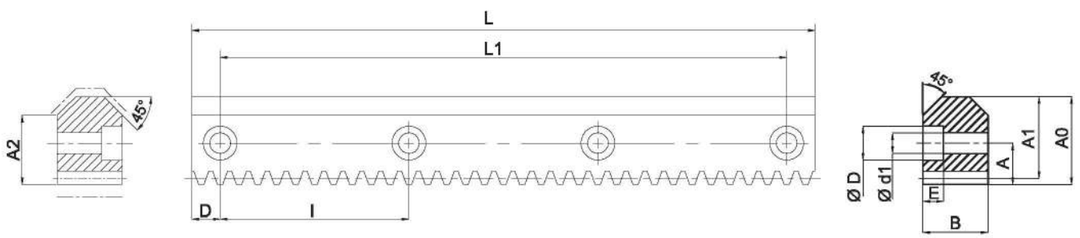
We can also make non standard models according to customer's requirement. To avoid cumulative pitch tolerance due to pi, we use CP racks. We have milled racks to DIN8e27 and ground racks to DIN6h25 with tooth hardened to HRC55-60. The guideways are induction hardened to HRC55-60.

1st	2nd	3th	4th	5th	6th	7th	8th
Material	Type	Shape	Teeth Treatment	Hardness	Circular Pitch	Length	Grade
M	S/H	V/T	G	H	CP	L	DIN
C=S45C M=SCM0440	S=Straight N=None	V=V Type Bar T=Tetragon Bar	G=Teeth Ground /Ground	H=Hardened	CP=Circular Pitch CP=No Teeth	10=1030 12=1230 or 1200	DIN 6 DIN 8

MSVGH-CP-DIN6 Series Straight V Type Ground Guideway Racks



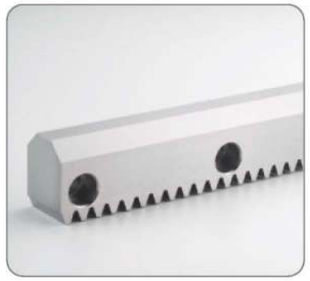
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
6 Sides Ground and Teeth Ground after hardening.
Total Pitch Error: Fp /1000 ≦ 0.036 mm



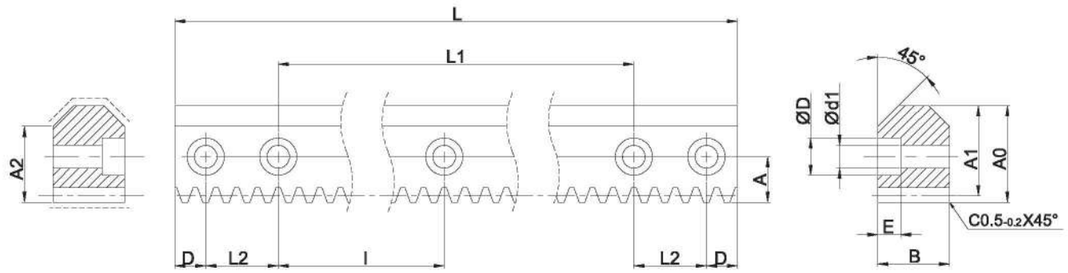
Dimension : mm

Code	CP	L	L1	Module	B	A0	A1	D	I	A	øD	ød1	E	A2	KG
MSVGH-CP05010-1-DIN6	5	1030	1000	1.5915	14.5	24.5	22.91	15	100	11.5	11	7	7	20.0	2.2
MSVGH-CP05010-2-DIN6	5	1030	1000	1.5915	19.5	29.5	27.91	15	100	14.0	15	9	9	23.5	3.5
MSVGH-CP07512-1-DIN6	7.5	1230	1200	2.3873	24.7	33.0	30.61	15	100	14.5	15	9	9	25.2	5.8
MSVGH-CP10012-1-DIN6	10	1230	1200	3.1831	34.6	46.6	43.42	15	100	18	18	11	11	36.7	11.7

MSVGH-CP-L-DIN6 Series Straight V Type Ground Guideway Racks



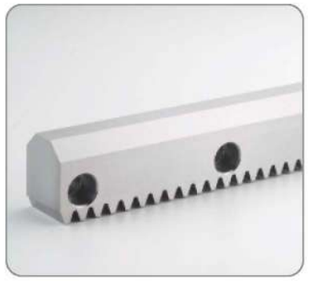
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
6 Sides Ground and Teeth Ground after hardening.
Total Pitch Error: Fp /1000 ≦ 0.036 mm



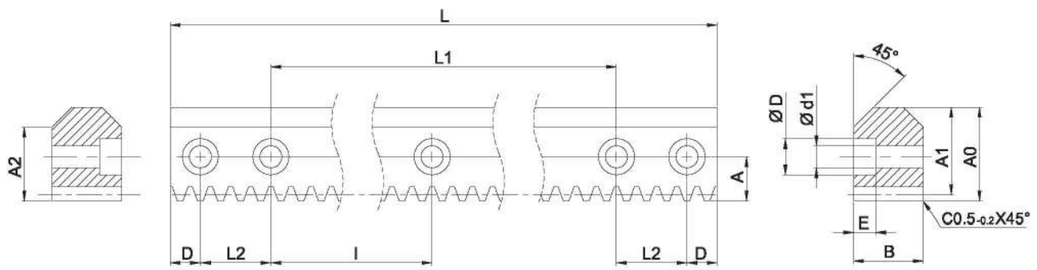
Dimension : mm

Code	CP	L	L1	L2	Module	B	A0	A1	D	I	A	øD	ød1	E	A2	KG
MSVGH-CP050-1200-1-DIN6	5	1200	1100	35	1.5915	14.5	24.5	22.91	15	100	11.5	11	7	7	20.00	2.5
MSVGH-CP050-1200-2-DIN6	5	1200	1100	35	1.5915	19.5	29.5	27.91	15	100	14	15	9	9	23.50	4.0
MSVGH-CP075-1200-1-DIN6	7.5	1200	1100	35	2.3873	24.7	33.0	30.61	15	100	14.5	15	9	9	25.20	5.5
MSVGH-CP100-1200-1-DIN6	10	1200	1100	35	3.1831	34.6	46.6	43.42	15	100	18	18	11	11	36.70	11.4

CSVM-CP-L-DIN8 Series Straight V Type Milled Guideway Racks



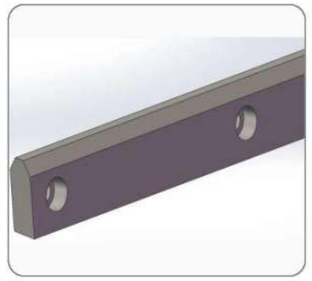
Tooth Surface Accuracy Grade DIN 8
Material S45C
Hardness: HRC 10~12°
Total Pitch Error: Fp /1000 ≦ 0.060 mm



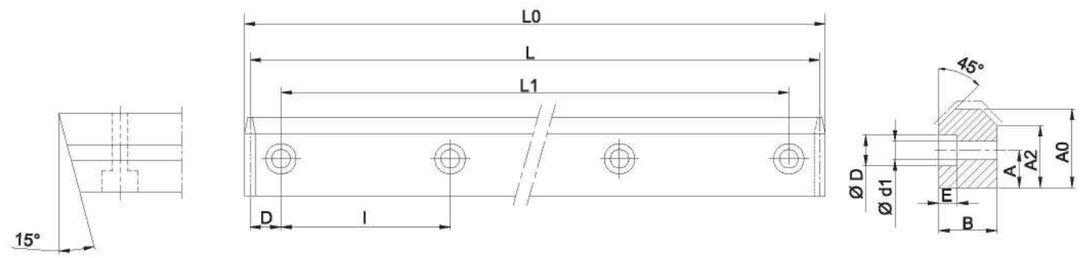
Dimension : mm

Code	CP	L	L1	L2	Module	B	A0	A1	D	I	A	øD	ød1	E	A2	KG
CSVM-CP050-1200-1-DIN8	5	1200	1100	35	1.5915	14.5	24.5	22.91	15	100	11.5	11	7	7	20.00	2.5
CSVM-CP050-1200-2-DIN8	5	1200	1100	35	1.5915	19.5	29.5	27.91	15	100	14	15	9	9	23.50	4.0
CSVM-CP075-1200-1-DIN8	7.5	1200	1100	35	2.3873	24.7	33.0	30.61	15	100	14.5	15	9	9	25.20	5.5
CSVM-CP100-1200-1-DIN8	10	1200	1100	35	3.1831	34.6	46.6	43.42	15	100	18	18	11	11	36.70	11.4

MNVGH-00-DIN6 Series V Type Ground Guideway



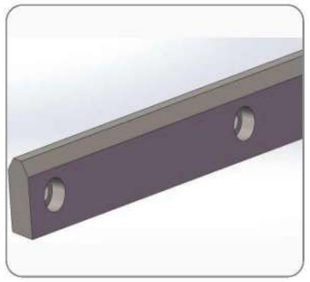
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
6 Sides Ground after hardening.



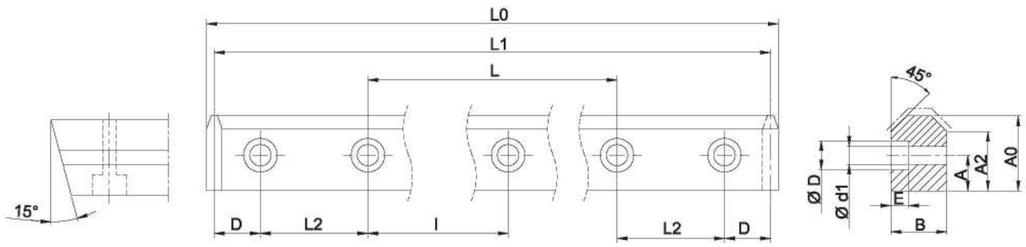
Dimension : mm

Code	L0	L	L1	B	A0	D	I	A	øD	ød1	E	A2	KG
MNVGH-001-DIN6	1033.89	1030	1000	14.5	24.5	15	100	11.5	11	7	7	20.0	2.3
MNVGH-002-DIN6	1035.23	1030	1000	19.5	29.5	15	100	14.0	15	9	9	23.5	3.6
MNVGH-003-DIN6	1236.62	1230	1200	24.7	33.0	15	100	14.5	15	9	9	25.2	6.3
MNVGH-004-DIN6	1239.27	1230	1200	34.6	46.6	15	100	18	18	11	11	36.7	12.5

MNVGH-L-DIN6 Series V Type Ground Guideway



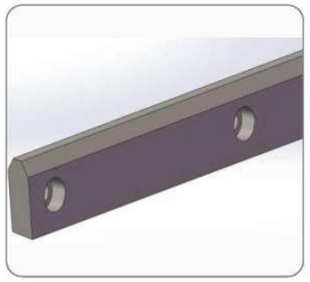
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
6 Sides Ground after hardening.



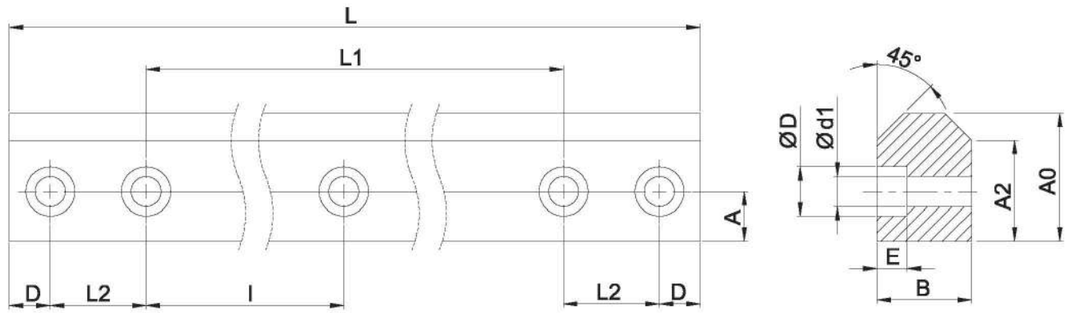
Dimension : mm

Code	L0	L	L1	L2	B	A0	D	I	A	øD	ød1	E	A2	KG
MNVGH-1200-1-DIN6	1203.89	1200	1100	35	14.5	24.5	15	100	11.5	11	7	7	20.0	2.8
MNVGH-1200-2-DIN6	1205.23	1200	1100	35	19.5	29.5	15	100	14.0	15	9	9	23.5	4.3
MNVGH-1200-3-DIN6	1206.62	1200	1100	35	24.7	33.0	15	100	14.5	15	9	9	25.2	7.6
MNVGH-1200-4-DIN6	1209.27	1200	1100	35	34.6	46.6	15	100	18	18	11	11	36.7	15.0

CNVM-L-DIN8 Series V Type Ground Guideway



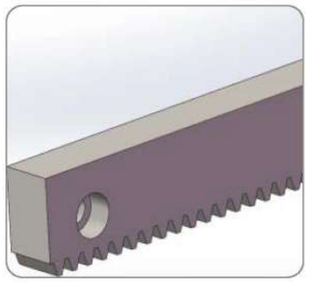
Tooth Surface Accuracy Grade DIN 8
Material S45C
Hardness: HRC 10~12°



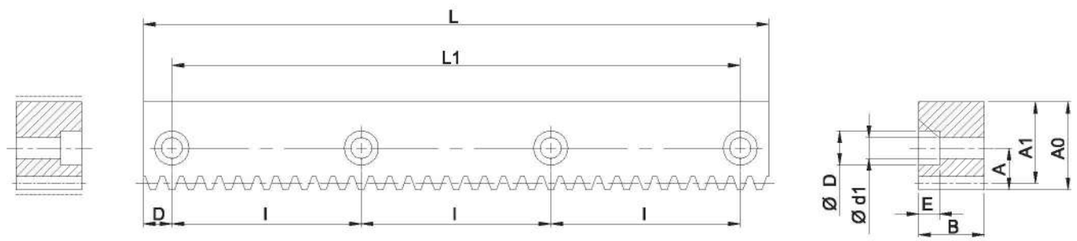
Dimension : mm

Code	L	L1	L2	B	A0	D	I	A	øD	ød1	E	A2	KG
CNVM-1200-1-DIN8	1200	1100	35	14.5	24.5	15	100	11.5	11	7	7	20.0	2.8
CNVM-1200-2-DIN8	1200	1100	35	19.5	29.5	15	100	14.0	15	9	9	23.5	4.3
CNVM-1200-3-DIN8	1200	1100	35	24.7	33.0	15	100	14.5	15	9	9	25.2	7.6
CNVM-1200-4-DIN8	1200	1100	35	34.6	46.6	15	100	18	18	11	11	36.7	15.0

MSTGH-CP-DIN6 Series Ground Guideway Racks



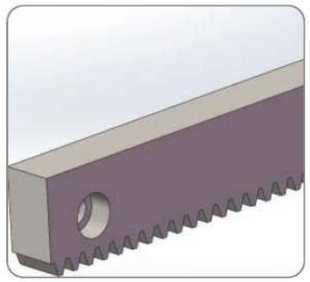
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
4 Sides Ground and Teeth Ground after hardening.
Total Pitch Error: Fp /1000 ≦ 0.036 mm



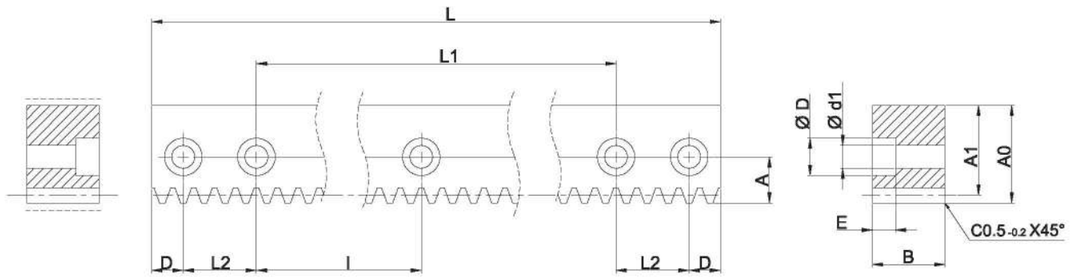
Dimension : mm

Code	CP	L	L1	Module	B	A0	A1	D	I	A	øD	ød1	E	KG
MSTGH-CP05010-1-DIN6	5	1030	1000	1.5915	14.5	24.5	22.91	15	100	11.5	11	7	7	2.2
MSTGH-CP05010-2-DIN6	5	1030	1000	1.5915	19.5	29.5	27.91	15	100	14.0	15	9	9	3.8
MSTGH-CP07512-1-DIN6	7.5	1230	1200	2.3873	24.7	33.0	30.61	15	100	14.5	15	9	9	6.3
MSTGH-CP10012-1-DIN6	10	1230	1200	3.1831	34.6	46.6	43.42	15	100	18	18	11	11	12.5

MSTGH-CP-L-DIN6 Series Ground Guideway Racks



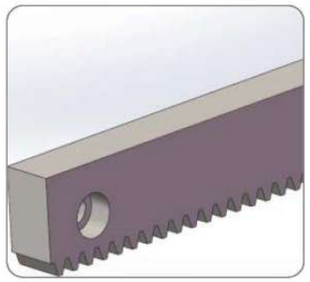
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
4 Sides Ground and Teeth Ground after hardening.
Total Pitch Error: Fp /1000 ≦ 0.036 mm



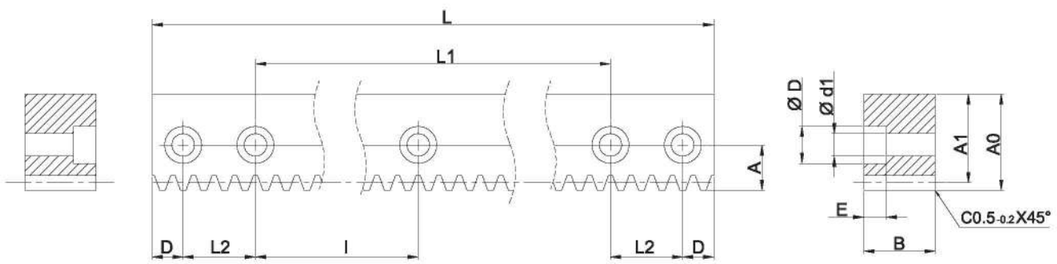
Dimension : mm

Code	CP	L	L1	L2	Module	B	A0	A1	D	I	A	øD	ød1	E	KG
MSTGH-CP050-1200-1-DIN6	5	1200	1100	35	1.5915	14.5	24.5	22.91	15	100	11.5	11	7	7	2.6
MSTGH-CP050-1200-2-DIN6	5	1200	1100	35	1.5915	19.5	29.5	27.91	15	100	14.0	15	9	9	4.6
MSTGH-CP075-1200-1-DIN6	7.5	1200	1100	35	2.3873	24.7	33.0	30.61	15	100	14.5	15	9	9	7.6
MSTGH-CP100-1200-1-DIN6	10	1200	1100	35	3.1831	34.6	46.6	43.42	15	100	18	18	11	11	15.0

CSTM-CP-L-DIN8 Series Milled Guideway Racks



Tooth Surface Accuracy Grade DIN 8
Material S45C
Hardness: HRC 10~12°
Total Pitch Error: Fp /1000 ≦ 0.060 mm

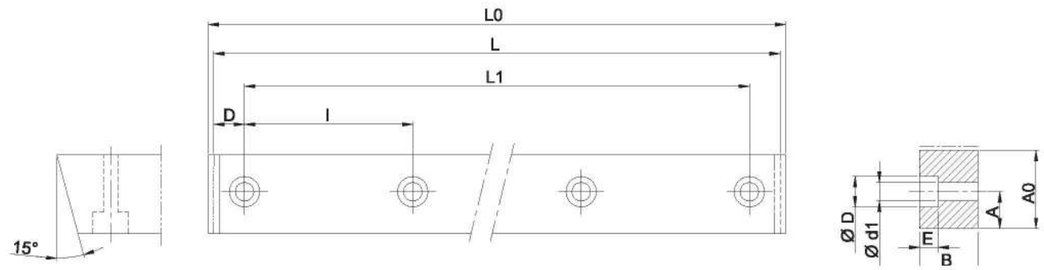


Dimension : mm

Code	CP	L	L1	L2	Module	B	A0	A1	D	I	A	øD	ød1	E	KG
CSTM-CP050-1200-1-DIN8	5	1200	1100	35	1.5915	14.5	24.5	22.91	15	100	11.5	11	7	7	2.6
CSTM-CP050-1200-2-DIN8	5	1200	1100	35	1.5915	19.5	29.5	27.91	15	100	14.0	15	9	9	4.6
CSTM-CP075-1200-1-DIN8	7.5	1200	1100	35	2.3873	24.7	33.0	30.61	15	100	14.5	15	9	9	7.6
CSTM-CP100-1200-1-DIN8	10	1200	1100	35	3.1831	34.6	46.6	43.42	15	100	18	18	11	11	15.0

MNTGH-00-DIN6 Series Ground Guideway

Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
4 Sides Ground after hardening.

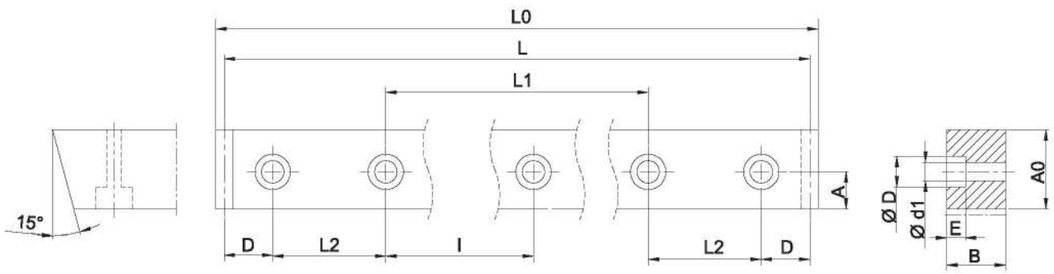


Dimension : mm

Code	L0	L	L1	B	A0	D	I	A	øD	ød1	E	KG
MNTGH-001-DIN6	1033.89	1030	1000	14.5	24.5	15	100	11.5	11	7	7	2.5
MNTGH-002-DIN6	1035.23	1030	1000	19.5	29.5	15	100	14.0	15	9	9	4.0
MNTGH-003-DIN6	1236.62	1230	1200	24.7	33.0	15	100	14.5	15	9	9	6.8
MNTGH-004-DIN6	1239.27	1230	1200	34.6	46.6	15	100	18	18	11	11	13.4

MNTGH-L-DIN6 Series Ground Guideway

Tooth Surface Accuracy Grade DIN 6
Material SCM440
Hardness: HRC 53~58°
4 Sides Ground after hardening.

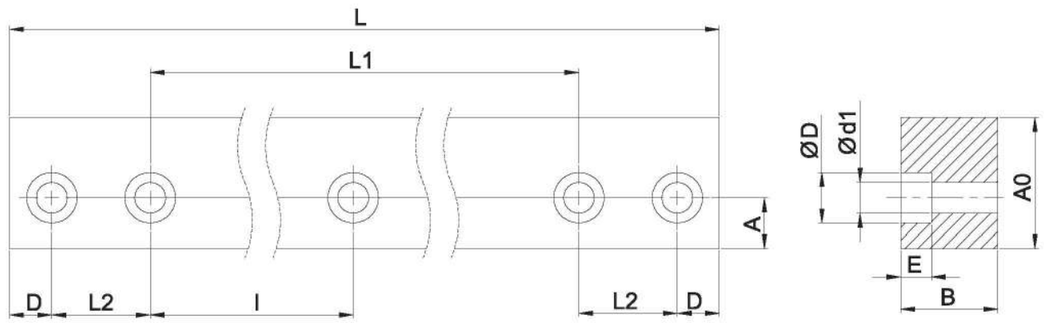


Dimension : mm

Code	L0	L	L1	L2	B	A0	D	I	A	øD	ød1	E	KG
MNTGH-1200-1-DIN6	1203.89	1200	1100	35	14.5	24.5	15	100	11.5	11	7	7	3.0
MNTGH-1200-2-DIN6	1205.23	1200	1100	35	19.5	29.5	15	100	14.0	15	9	9	4.8
MNTGH-1200-3-DIN6	1206.62	1200	1100	35	24.7	33.0	15	100	14.5	15	9	9	8.2
MNTGH-1200-4-DIN6	1209.27	1200	1100	35	34.6	46.6	15	100	18	18	11	11	16.1

CNTM-L-DIN8 Series Milled Guideway

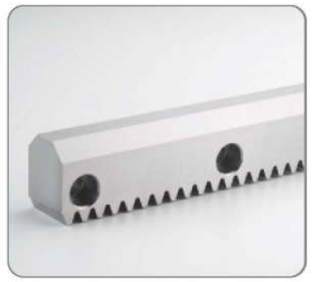
Tooth Surface Accuracy Grade DIN 8
Material S45C
Hardness: HRC 10~12°



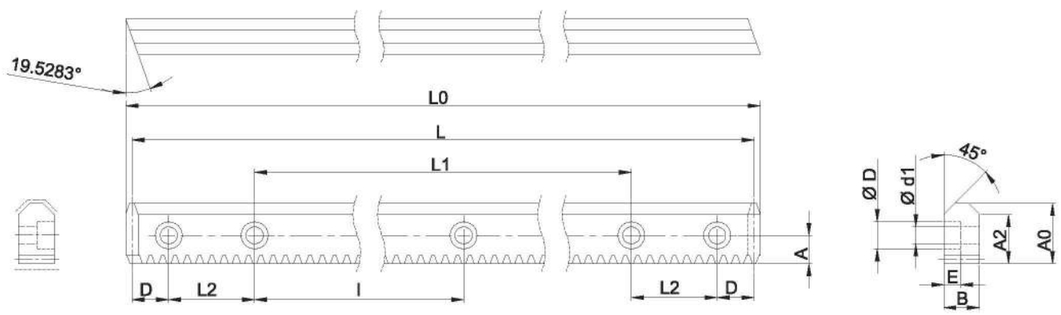
Dimension : mm

Code	L	L1	L2	B	A0	D	I	A	øD	ød1	E	KG
CNTM-1200-1-DIN8	1200	1100	35	14.5	24.5	15	100	11.5	11	7	7	3.0
CNTM-1200-2-DIN8	1200	1100	35	19.5	29.5	15	100	14.0	15	9	9	4.8
CNTM-1200-3-DIN8	1200	1100	35	24.7	33.0	15	100	14.5	15	9	9	8.2
CNTM-1200-4-DIN8	1200	1100	35	34.6	46.6	15	100	18	18	11	11	16.1

MHVGH-L-DIN6 Series Helical V Type Ground Guideway Racks



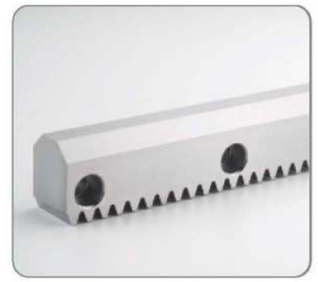
Tooth Surface Accuracy Grade DIN 6
Material SCM440
Right Hand Angle 19°31'42"
Hardness: HRC 53~58°
6 Sides Ground and Teeth Ground after hardening.
Total Pitch Error: Fp /1000 ≦ 0.036 mm



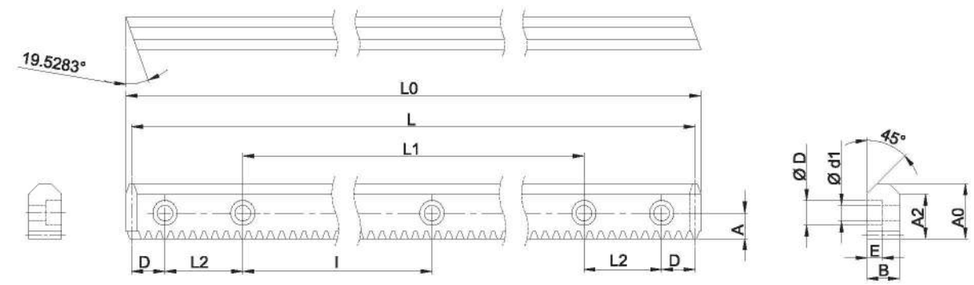
Dimension : mm

Code	Module	L0	L	L1	L2	B	A0	A1	D	I	A	øD	ød1	E	A2	KG
MHVGH-015-1200-1-DIN6	1.5	1205.14	1200	1100	35	14.5	24.5	23	15	100	11.5	11	7	7	20.0	2.6
MHVGH-015-1200-2-DIN6	1.5	1206.92	1200	1100	35	19.5	29.5	28	15	100	14.0	15	9	9	23.5	3.2
MHVGH-025-1200-1-DIN6	2.5	1208.76	1200	1100	35	24.7	33.0	30.50	15	100	14.5	15	9	9	25.2	5.8
MHVGH-030-1200-1-DIN6	3	1212.27	1200	1100	35	34.6	46.6	43.6	15	100	18	18	11	11	36.7	11.4

CHVM-L-DIN8 Series Helical V Type Milled Guideway Racks



Tooth Surface Accuracy Grade DIN 8
Material S45C
Right Hand Angle 19°31'42"
Hardness HRC: 10~12°
Total Pitch Error: Fp /1000 ≦ 0.060 mm



Dimension : mm

Code	Module	L0	L	L1	L2	B	A0	A1	D	I	A	øD	ød1	E	A2	KG
CHVM-015-1200-1-DIN8	1.5	1205.14	1200	1100	35	14.5	24.5	23	15	100	11.5	11	7	7	20.0	2.6
CHVM-015-1200-2-DIN8	1.5	1206.92	1200	1100	35	19.5	29.5	28	15	100	14.0	15	9	9	23.5	3.2
CHVM-025-1200-1-DIN8	2.5	1208.76	1200	1100	35	24.7	33.0	30.50	15	100	14.5	15	9	9	25.2	5.8
CHVM-030-1200-1-DIN8	3	1212.27	1200	1100	35	34.6	46.6	43.6	15	100	18	18	11	11	36.7	11.4

Content of Rollers

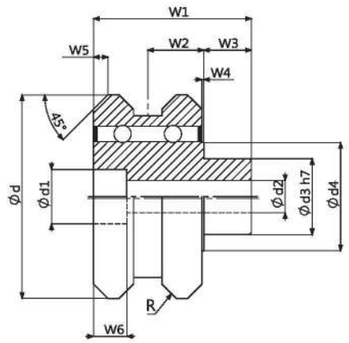
Code	Material	Type	Shaft Dia.	Page
UV	SUJ2 (100Cr6)	V Type Roller	15 20 25 35	P.118
UR	SUJ2 (100Cr6)	Round Rolle	15 20 25 35	P.118

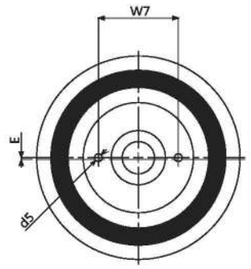
Roller Code Instruction

1st	2nd	3th	4th
Material	Type	Shaft Dia.	Excenter
U=SUJ2 (100Cr6)	V= V Type R=Round	15 20 25 35	Y=1mm N=0mm
			Y=1mm N=0mm

V Type Roller / Round Roller

UV Type Roller

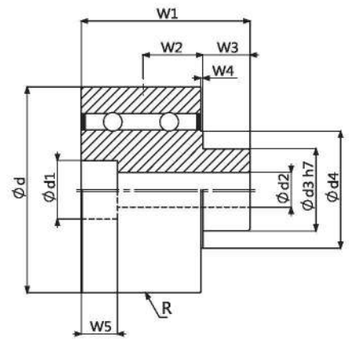


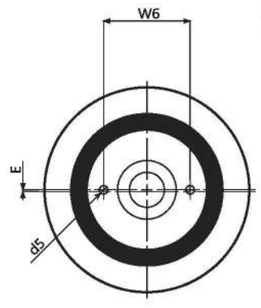


Code	Shaft Dia.	Excenter	ød	ød1	W1	W5	W2	W3	W4	W6	R	ød2	ød3	ød4	W7	d5	Ca(μm)	KG
UV15Y	15	1 mm	53	13.5	35	2	12	12	1	9	R250	8.4	15h7	23.8	18.5	2.6x3	-3/+5	0.23
UV15N	15	0 mm	53	13.5	35	2	12	12	1	9	R250	8.4	15h7	23.8	18.5	2.6x3	-3/+5	0.23
UV20Y	20	1 mm	63	16.5	46	3	16	15	1	11	R300	10.5	20h7	27.7	22.5	2.6x3	-3/+5	0.45
UV20N	20	0 mm	63	16.5	46	3	16	15	1	11	R300	10.5	20h7	27.7	22.5	2.6x3	-3/+5	0.45
UV25Y	25	1 mm	77	20.5	60	3.5	20.5	20	1	13	R360	13	25h7	35.6	27.5	4.1x4.5	-3/+5	1.00
UV25N	25	0 mm	77	20.5	60	3.5	20.5	20	1	13	R360	13	25h7	35.6	27.5	4.1x4.5	-3/+5	1.00
UV35Y	35	1 mm	107	28.5	84	7.5	30	25	1	17.5	R500	17	40h7	56.9	42	4.1x4.5	-3/+5	2.50
UV35N	35	0 mm	107	28.5	84	7.5	30	25	1	17.5	R500	17	40h7	56.9	42	4.1x4.5	-3/+5	2.50

Ga (μm) / Internal Axial Tolerance

UR Round Roller





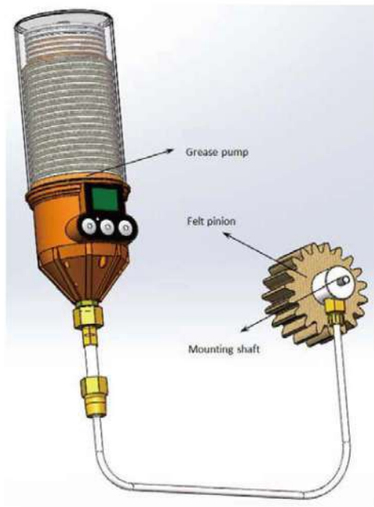
Code	Shaft Dia.	Excenter	ød	ød1	W1	W2	W3	W4	W5	R	ød2	ød3	ød4	W6	d5	Ca(μm)	KG
UR15Y	15	1 mm	47	13.5	35	12	12	1	9	R500	8.4	15h7	23.8	18.5	2.6x3	-3/+5	0.16
UR20Y	20	1 mm	72	16.5	46	16	15	1	11	R500	10.5	20h7	27.7	22.5	2.6x3	-3/+5	0.63
UR25Y	25	1 mm	85	20.5	60	20.5	20	1	13	R500	13	25h7	35.6	27.5	4.1x4.5	-3/+5	1.00
UR35Y	35	1 mm	100	28.5	84	30	25	1	17.5	R500	17	40h7	56.9	42	4.1x4.5	-3/+5	2.70

Oil pot

It is suggested that at the same time when the gear transmission is used Use the correct lubricating parts

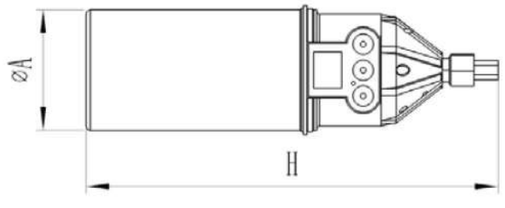
Lubricator

We can provide the following two types of oil injectors that are not reusable. The product use cycle is usually 12 (1, 3, 6) months. The product has the periodic setting of the product. The cycle can be set according to the specific application. After the end of a cycle, the user needs to repurchase the same specifications of the product. . A repeatable oil injector, the product use cycle is usually 12 (1, 3, 6) months. The product has the appropriate cycle setting. It can set the cycle according to the specific application. After the end of the one month period, the user needs to inject a proper amount of lubrication (oil product specification and purchase time) into the product according to the operation description. The same product is injected into the product, so we can continue to use the product.



Grease pump

Code	A	H
RH250	86	233
RH500	86	291



Install

The lubricating oil / grease is supplied by the center hole of the installation shaft. The center hole is connected to the injector through the catheter. The oil is exported from the oil cup to the felt gear and flows to the lubricating point. The grease lubricants the outer diameter of the pipeline is 8mm, and the proposed length is not more than 1m.

Felt gear

Felt gear is suitable for rack or other tooth type transmission, effective contact lubrication of transmission parts, installation position is not limited. Attention should be paid to the matching of engagement angles when helical teeth are lubricated.

Felt pinion, straight-tooth

Code	Fig.	Module	Z	d	d_K	d_1	b_1	m (g)
MZ1526S	1	1.5	26	39.0	42	12	15	7.2
MZ2019S	1	2	19	38.0	42	12	25	11
MZ2522S	1	2.5	22	55.0	60	12	25	25
MZ3019S	1	3	19	57.0	63	12	30	37
MZ4019S	1	4	19	76.0	84	12	40	98
MZ5018S	1	5	18	90.0	100	20	50	133
MZ6018S	1	6	18	108.0	120	20	60	234

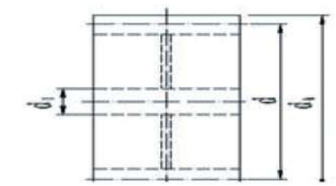


Fig. 1

Felt pinion, helical-tooth, RH

Code	Fig.	Module	Z	d	d_K	d_1	b_1	m (g)
MZ1524RH	2	1.5	24	38.2	42	12	25	7.0
MZ2018RH	2	2	18	38.2	42	12	25	11
MZ3018RH	2	3	18	57.3	63	12	30	36
MZ4018RH	2	4	18	76.5	84	12	40	97
MZ5017RH	2	5	17	90.2	100	20	50	133
MZ6017RH	2	6	17	108.2	120	20	60	234

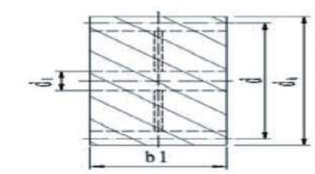
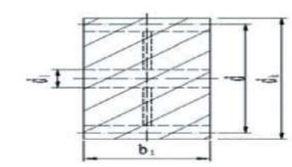


Fig.2

Felt pinion, helical-tooth, LH

Code	Fig.	Module	Z	d	d_K	d_1	b_1	m (g)
MZ1524LH	3	1.5	24	38.2	42	12	25	7.0
MZ2018LH	3	2	18	38.2	42	12	25	11
MZ3018LH	3	3	18	57.3	63	12	30	36
MZ4018LH	3	4	18	76.5	84	12	40	97
MZ5017LH	3	5	17	90.2	100	20	50	133
MZ6017LH	3	6	17	108.2	120	20	60	234



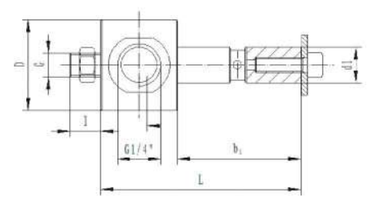


Fig.4

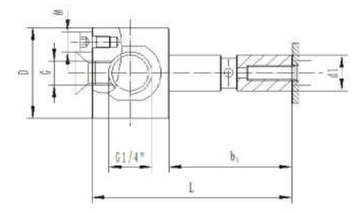


Fig.5

Mounting shaft

Code	Fig.	Module	d_1	D	b_1	L	l	G	m (g)
MS15440	4	1.5	12	30	15	40	10	M8	135
MS20450	4	2	12	30	25	50	10	M8	143
MS20550	5	2	12	30	25	50	-	M8	140
MS20562	5	2	12	30	25	62	-	M8	150
MS30455	4	3	12	30	30	55	10	M8	147
MS30555	5	3	12	30	30	55	-	M8	145
MS30566	5	3	12	30	30	66	-	M8	155
MS40465	4	4	12	30	40	65	10	M8	154
MS40565	5	4	12	30	40	65	-	M8	150
MS40572	5	4	12	30	40	72	-	M8	160
MS50475	4	5	20	50	50	75	15	M12	520
MS50575	5	5	20	40	50	75	-	M8	510
MS50585	5	5	20	40	50	85	-	M8	520
MS60485	4	6	20	50	60	85	15	M12	545
MS60585	5	6	20	40	60	85	-	M8	535
MS60597	5	6	20	40	60	97	-	M8	550

Rack and Gear Definition

Straight Gear Calculation

No.	Description	Symbol	Formula	Example	
				Small	Big
1	Module	m		2.25	
2	Pressure Angle	α		20	
3	No of Teeth	z		16	20
4	Center Distance	α	$\frac{(Z_1+Z_2)m}{2}$	40.5	
5	Standard Circle Diameter	d	zm	36	45
6	Base Circle Diameter	d_b	d cos α	33.8289	42.2862
7	Addendum	h_a	1.00m	2.25	2.25
8	Whole Depth	h	2.55m	5.0625	5.0625
9	Addendum Circle Diameter	d_a	d-2.5m	40.5	49.5
10	Diameterof RootCircle	d_f	d - 2.5m	30.375	39.375

No.	Description	Symbol	Formula	Example	
1	Module	m		2.25	
2	Center Distance	a		45	
3	Speed Ratio	i		1.5	
4	Sum of Teeth No.	Z_1+Z_2	$\frac{2\alpha}{m}$	40	
5	Teeth No.	Z	$\frac{Z_1+Z_2}{i+1}$ $\frac{i(Z_1+Z_2)}{i+1}$	16	24

Helical Gear Calculation

No.	Description	Symbol	Formula	Example	
				Small	Big
1	Module	m_n		2.5	
2	Pressure Angle	a_n		20°	
3	Standard Cylinder Helical Angle	β		15°	
4	No of Teeth (Direction)	Z		15 (L)	24 (R)
5	Axis Right Angle Pressure Angle	α_t	$\tan^{-1}\left(\frac{\tan\alpha_n}{\cos\beta}\right)$	20.6469°	
6	Teeth Right Angle Profile Shift Factor	X_n		0.12012	0
7	Involute Function of a' Angle	inv a'_t	$2\tan\alpha_n\left(\frac{X_{n1}+X_{n2}}{Z_1+Z_2}\right)$ + inv α_t	0.018695	
8	Axis Right Angle Contact of Pressure Angle	α'_t	Involute Function Chart	21.511	
9	Center Distance Correction Factor	y	$\frac{Z_1+Z_2}{2\cos\beta}\left(\frac{\cos\alpha_t}{\cos\alpha'_t}-1\right)$	0.084598	
10	Center Distance	α	$\left(\frac{Z_1+Z_2}{2\cos\beta}+y\right)m_n$	50.764	
11	Standard Circle Diameter	d	$\frac{Zm_n}{\cos\beta}$	38.822	62.117
12	Base Circle Diameter	d_b	d $\cos_t\alpha$	36.329	58.127
13	Contact Standard Circle Diameter	d'	$\frac{d_b}{\cos\alpha'_t}$	39.049	62.478
14	Addendum	h_{a1} h_{a1}	$(1+X_1)m_n$ $(1+X_2)m_n$	5.895	5.625
15	Whole Depth	h	$2.25m_n$	6.748	
16	Addendum Circle Diameter	d_a	$d+2h_a$	44.423	67.116
17	Diameteof RooCircle	d_f	d_a-2h	33.173	55.867

No.	Description	Symbol	Formula	Example	
1	Center Distance	α		125	
2	Center Distance Correction Factor	y	$\frac{a}{m_n}-\frac{Z_1+Z_2}{2\cos\beta}$	0.0.97447	
3	Axis Right Angle Contact of Pressure Angle	α'_t	$\cos^{-1}\left(\frac{2\cos a}{2y\cos\beta}+1\right)$	23.1126°	
4	Sum of Profile Shift Factor	$X_{n1}+X_{n2}$	$\frac{(Z_1+Z_2)(\text{inv}\,\alpha'_t-\text{inv}\,\alpha_t)}{2\tan\alpha_n}$	0.09809	
5	Teeth Right Angle Profile Shift Factor	X_n		0.09809	0

Overload Factor Ka

Impact from Prime Mover	Impact From Load Side Machine		
	Uniform Load	Mediem Impac t Load	Heavy Impact Load
Uniform Load (Motor, Turbine, hydraulic Motor)	1	1.25	1.75
Light Impact Load (Multicylinder Engine)	1.25	1.5	2
Medium Impact Load (Single Cyliner Engine)	1.5	1.75	2.25

The overload factor is used to correct the impact caused by the mechanical power output and the reference value for the influence of the tooth stress.

Life Factor KL

Number of Cyclic Repetitions	Hardness HRC		
	≦ 20°	≧ 20°	≧ 45°
Under 10,000	1.4	1.5	1.5
Approx. 10^5	1.2	1.4	1.5
Approx. 10^6	1.1	1.1	1.1
Approx. 10^7	1.0	1.0	1.0

Radial Contact Ratio of Standard Spur Gear

	12	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	110	120
12	1.420																				
15	1.451	1.481																			
20	1.489	1.519	1.557																		
25	1.516	1.547	1.584	1.612																	
30	1.537	1.567	1.605	1.633	1.654																
35	1.553	1.584	1.622	1.649	1.670	1.687															
40	1.567	1.597	1.635	1.663	1.684	1.700	1.714														
45	1.578	1.609	1.646	1.674	1.695	1.711	1.725	1.736													
50	1.588	1.618	1.656	1.683	1.704	1.721	1.734	1.745	1.755												
55	1.596	1.626	1.664	1.691	1.712	1.729	1.742	1.753	1.763	1.771											
60	1.603	1.633	1.671	1.698	1.719	1.736	1.749	1.760	1.770	1.778	1.785										
65	1.609	1.639	1.677	1.704	1.725	1.742	1.755	1.766	1.776	1.784	1.791	1.797									
70	1.614	1.645	1.682	1.710	1.731	1.747	1.761	1.772	1.781	1.789	1.796	1.802	1.808								
75	1.619	1.649	1.687	1.714	1.735	1.752	1.765	1.777	1.786	1.794	1.801	1.807	1.812	1.817							
80	1.623	1.654	1.691	1.719	1.740	1.756	1.770	1.781	1.790	1.798	1.805	1.811	1.817	1.821	1.826						
85	1.627	1.657	1.695	1.723	1.743	1.760	1.773	1.785	1.794	1.802	1.809	1.815	1.821	1.825	1.830	1.833					
90	1.630	1.661	1.699	1.726	1.747	1.764	1.777	1.788	1.798	1.806	1.813	1.819	1.824	1.829	1.833	1.837	1.840				
95	1.634	1.664	1.702	1.729	1.750	1.767	1.780	1.791	1.801	1.809	1.816	1.822	1.827	1.832	1.836	1.840	1.844	1.847			
100	1.636	1.667	1.705	1.732	1.753	1.770	1.783	1.794	1.804	1.812	1.819	1.825	1.830	1.835	1.839	1.843	1.846	1.850	1.853		
110	1.642	1.672	1.710	1.737	1.758	1.775	1.788	1.799	1.809	1.817	1.824	1.830	1.835	1.840	1.844	1.848	1.852	1.855	1.858	1.863	
120	1.646	1.676	1.714	1.742	1.762	1.779	1.792	1.804	1.813	1.821	1.828	1.834	1.840	1.844	1.849	1.852	1.856	1.859	1.862	1.867	1.871
RACK	1.701	1.731	1.769	1.797	1.817	1.834	1.847	1.859	1.868	1.876	1.883	1.889	1.894	1.899	1.903	1.907	1.911	1.914	1.917	1.992	1.926

ISO Table 17-1 (α = 20°)

Strength and Durability of Gears

Strength and Durability of Gears

The strength of gears is commonly illustrated with bending strength and surface durability. Both are important on application. In particularly, when applications are severe, each parameter requires further discussion.

The following formulas are based on standards of JGMA (Japanese Gear Manufacturer Association). The specifications below are for reference only.

JGMA 401-01 Bending Strength Formula of Spur Gears and Helical Gears

JGMA 402-01 Surface Durability Formula of Spur Gears and Helical Gears

Bending strength and durability specifications are usually used with straight and helical gears (including racks and pinions) in manufacturing industry within the ranges below:

Module: m 1.5 to 25 mm
Pitch Diameter: d 25 to 3200 mm
Tangential Speed: v ≦ 25 m/sec
Rotating Speed: n ≦ 3600 rpm

Conversion Formulas: Power, Torque and Force
Gear strength and durability relate to the power and forces to be transmitted. The calculation of tangential force are based on pitch circle, F_t(kgf), power, P(kw), and torque, T(kgf•m).

Formula Below:

$$F_t = \frac{102P}{V} = \frac{19.5 \times 10^6 P}{d_w n} = \frac{2000T}{d_w}$$

$$P = \frac{F_t}{102} = \frac{10^{-6}}{1.95} F_t d_w n$$

$$T = \frac{F_t d_w}{2000} = \frac{947P}{n}$$

Where v: Tangential Speed of Working Pitch Circle

$$V = \frac{d_w n}{19100} \text{ (m/sec)}$$

dw: Working Pitch Diameter (mm)
n: Rotating Speed (rpm)

Product Selection Calculation:
1. The calculation method of the above tangential force F_t can be calculated according to different input conditions;

2. Each item in the catalogue provides the maximum allowable tangential force F_{ta} for the design comparison for users;

3. When using F_{ta}, depending on the conditions of use, it is necessary to correct the load factor K_a and the life factor K_L provided in the catalog;

$$F'_{ta} = \frac{F_{ta}}{K_a \times K_L}$$

4.F_t value must be less than F'_{ta}

5.Note that the F_{ta} unit on the product catalog is kN, and the tangential force F_t is calculated in kgf, and the unit conversion is required when comparing.

Remark:

1kgf= 9.807 N= 0.0098 kN

1kN= 101.972 kgf

Steel Hardness Conversion Chart

Brinell HB	Rockwell HRC	Rockwell HRB	Vickers HV
760	70		
752	69		
745	68		
746	67		
735	66		
711	65		
695	64		
681	63		
658	62		
642	61		
627	60		
613	59		
601	58	746	
592	57	727	
572	56	694	
552	55	649	
534	54	120	589
513	53	119	567
504	52	118	549
486	51	118	531
469	50	117	505
468	49	117	497
456	48	116	490
445	47	115	474
430	46	115	458
419	45	114	448
415	44	114	438
402	43	114	424
388	42	113	406
375	41	112	393
373	40	111	388
360	39	111	376
348	38	110	361
341	37	109	351
331	36	109	342
322	35	108	332
314	34	108	320
308	33	107	311
300	32	107	303
290	31	106	292
277	30	105	285
271	29	104	277
264	28	103	271
262	27	103	262
255	26	102	258
250	25	101	255
245	24	100	252
240	23	100	247
233	22	99	241
229	21	98	235
223	20	97	227
216	19	96	222
212	18	95	218
208	17	95	210

Brinell HB	Rockwell HRC	Rockwell HRB	Vickers HV
199	15	93	199
191	14	92	197
190	13	92	186
186	12	91	184
183	11	90	183
180	10	89	180
175	9	88	178
170	7	87	175
167	6	86	172
166	5	86	168
163	4	85	162
160	3	84	160
156	2	83	158
154	1	82	152

Since all materials and testing instruments are different, all values are for reference only.

Conversion Table for Gear Pitch and Module

Diametral Pitch	Circular Pitch (CP)		Module
DP	in	mm	M
1	3.1416	79.796	25.4000
1.0053	3.1250	79.375	25.2658
1.0160	3.0921	78.540	25
1.0472	3.0000	76.200	24.2552
1.0583	2.9684	75.398	24.0000
1.0640	2.9528	75.000	23.8732
1.0927	2.8750	73.025	23.2446
1.1399	2.7559	70.000	22.2817
1.1424	2.7500	69.850	22.2339
1.1545	2.7211	69.115	22.0000
1.1968	2.6250	66.675	21.2233
1.2276	2.5591	65.000	20.6901
1.2500	2.5133	63.837	20.3200
1.2566	2.5000	63.500	20.2127
1.2700	2.4737	62.832	20
1.3228	2.3750	60.325	19.2020
1.3299	2.3622	60.000	19.0986
1.3963	2.2500	57.150	18.1914
1.4111	2.2263	56.549	18.0000
1.4508	2.1654	55.000	17.5070
1.4784	2.1250	53.975	17.1808
1.5	2.0944	53.198	16.9333
1.5708	2.0000	50.800	16.1701
1.5875	1.9790	50.265	16
1.5959	1.9685	50.000	15.9155
1.6755	1.8750	47.625	15.1595
1.6933	1.8553	47.124	15.0000
1.7500	1.7952	45.598	14.5143
1.7733	1.7717	45.000	14.3239
1.7952	1.7500	44.450	14.1489
1.8143	1.7316	43.982	14.0000
1.9333	1.6250	41.275	13.1382
1.9538	1.6079	40.841	13.0000
1.9949	1.5748	40.000	12.7324
2	1.5708	39.898	12.7000
2.0944	1.5000	38.100	12.1276
2.0999	1.4961	38.000	12.0958
2.1167	1.4842	37.699	12
2.1855	1.4375	36.513	11.6223
2.2166	1.4173	36.000	11.4592
2.2500	1.3963	35.465	11.2889
2.2848	1.3750	34.925	11.1170
2.3091	1.3605	34.558	11.0000
2.3470	1.3386	34.000	10.8225
2.3936	1.3125	33.338	10.6117
2.4936	1.2598	32.000	10.1859
2.5	1.2566	31.919	10.1600
2.5133	1.2500	31.750	10.1063
2.5400	1.2368	31.416	10
2.6456	1.1875	30.163	9.6010
2.6599	1.1811	30.000	9.5493
2.7500	1.1424	29.017	9.2364
2.7925	1.1250	28.575	9.0957
2.8222	1.1132	28.274	9.0000
2.8499	1.1024	28.000	8.9127
2.9568	1.0625	26.988	8.5904

Diametral Pitch	Circular Pitch (CP)		Module
DP	in	mm	M
3	1.0472	26.599	8.4667
3.0691	1.0236	26.000	8.2761
3.1416	1.0000	25.400	8.0851
3.1750	0.9895	25.133	8
3.1919	0.9843	25.000	7.9577
3.2500	0.9666	24.553	7.8154
3.3249	0.9449	24.000	7.6394
3.3510	0.9375	23.813	7.5798
3.5000	0.8976	22.799	7.2571
3.5904	0.8750	22.225	7.0744
3.6271	0.8661	22.000	7.0028
3.6286	0.8658	21.991	7.0000
3.7500	0.8378	21.279	6.7733
3.8666	0.8125	20.638	6.5691
3.9898	0.7874	20.000	6.3662
4	0.7854	19.949	6.3500
4.1888	0.7500	19.050	6.0638
4.1998	0.7480	19.000	6.0479
4.2333	0.7421	18.850	6
4.4331	0.7087	18.000	5.7296
4.5000	0.6981	17.733	5.6444
4.5696	0.6875	17.463	5.5585
4.6182	0.6803	17.279	5.5000
4.6939	0.6693	17.000	5.4113
4.9873	0.6299	16.000	5.0930
5	0.6283	15.959	5.0800
5.0265	0.6250	15.875	5.0532
5.0800	0.6184	15.708	5
5.3198	0.5906	15.000	4.7746
5.5000	0.5712	14.508	4.6182
5.5851	0.5625	14.288	4.5479
5.6444	0.5566	14.137	4.5000
5.6997	0.5512	14.000	4.4563
6	0.5236	13.299	4.2333
6.1382	0.5118	13.000	4.1380
6.2832	0.5000	12.700	4.0425
6.3500	0.4947	12.566	4
6.5000	0.4833	12.276	3.9077
6.6497	0.4724	12.000	3.8197
7.0000	0.4488	11.399	3.6286
7.1808	0.4375	11.113	3.5372
7.2542	0.4331	11.000	3.5014
7.2571	0.4329	10.996	3.5000
7.9796	0.3937	10.000	3.1831
8	0.3927	9.975	3.1750
8.3776	0.3750	9.525	3.0319
8.3996	0.3740	9.500	3.0239
8.4667	0.3711	9.425	3
8.8663	0.3543	9.000	2.8648
9.0000	0.3491	8.866	2.8222
9.2364	0.3401	8.639	2.7500
9.3878	0.3346	8.500	2.7056
9.9746	0.3150	8.000	2.5465
10	0.3142	7.980	2.5400
10.0531	0.3125	7.938	2.5266
10.1600	0.3092	7.854	2.5

Diametral Pitch	Circular Pitch (CP)		Module
DP	in	mm	M
10.6395	0.2953	7.5000	2.3873
11.0000	0.2856	7.2540	2.3091
11.2889	0.2783	7.0690	2.2500
11.3995	0.2756	7.0000	2.2282
12	0.2618	6.6500	2.1167
12.2764	0.2559	6.5000	2.0690
12.5664	0.2500	6.3500	2.0213
12.7000	0.2474	6.2830	2
13.0000	0.2417	6.1380	1.9538
13.2994	0.2362	6.0000	1.9099
14.0000	0.2244	5.7000	1.8143
14.5084	0.2165	5.5000	1.7507
14.5143	0.2164	5.4980	1.7500
15.0000	0.2094	5.3200	1.6933
15.9593	0.1969	5.0000	1.5915
16	0.1963	4.9870	1.5875
16.7552	0.1875	4.7630	1.5160
16.9333	0.1855	4.7120	1.5
17.7325	0.1772	4.5000	1.4324
18.0000	0.1745	4.4330	1.4111
19.9491	0.1575	4.0000	1.2732
20	0.1571	3.9900	1.2700
20.3200	0.1546	3.9270	1.25
22.7990	0.1378	3.5000	1.1141
24	0.1309	3.3250	1.0583
25.0000	0.1257	3.1920	1.0160
25.1327	0.1250	3.1750	1.0106
25.4000	0.1237	3.1420	1
26.5988	0.1181	3.0000	0.9549
28.0000	0.1122	2.8500	0.9071
30.0000	0.1047	2.6600	0.8467
31.4159	0.1000	2.5400	0.8085
31.7500	0.0989	2.5130	0.8
31.9186	0.0984	2.5000	0.7958
32	0.0982	2.4940	0.7938
33.8667	0.0928	2.3560	0.7500
36.0000	0.0873	2.2170	0.7056
36.2857	0.0866	2.1990	0.7
38.0000	0.0827	2.1000	0.6684
39.8982	0.0787	2.0000	0.6366
40.0000	0.0785	1.9950	0.6350
42.3333	0.0742	1.8850	0.6
48	0.0654	1.6620	0.5292
50.0000	0.0628	1.5960	0.5080
50.2655	0.0625	1.5880	0.5053
50.8000	0.0618	1.5710	0.5
53.1976	0.0591	1.5000	0.4775
63.5000	0.0495	1.2570	0.4
64	0.0491	1.2470	0.3969
72	0.0436	1.1080	0.3528
79.7965	0.0394	1.0000	0.3183
80	0.0393	0.9970	0.3175
84.6667	0.0371	0.9420	0.3
96	0.0327	0.8310	0.2646
120	0.0262	0.6650	0.2117
127.0000	0.0247	0.6280	0.2

Helical Rack Gauge for Assembling

Module	Code	Dimension	Angle	Rack Code Matched
	Helical Gauge Left Hand			
M1	MHTGQ010-JIS-Gauge	8*A15*199.42L*M1	21°30'	MHTGQ010-JIS1
M1.5	CHTGH015-Gauge	17*17*200L*M1.5	19°31'42"	CHTGH015-DIN5 CHTGH015-DIN6 MHTG015-DIN6
	MHTGQ015-JIS-Gauge	12*A20*197.34L*M1.5	21°30'	MHTGQ015-JIS1
	CHTM015-Gauge	17*17*200L*M1.5	19°31'42"	CHTM015-DIN8 CHTMQ015-DIN8 CHTMH015-DIN10
M2	CHTGH020-Gauge	24*24*200L*M2	19°31'42"	CHTGH020-DIN5 CHTGH020-DIN6 MHTG020-DIN6
	MHTGQ020-JIS-Gauge	16*A25*195.75L*M2	21°30'	MHTGQ02010-JIS1
	CHTM020-Gauge	24*24*200L*M2	19°31'42"	CHTM020-DIN8 CHTMQ020-DIN8 CHTMH020-DIN10
	CHTM020-JIS-Gauge	25*25*195L*M2	15°	CHTM020-JIS4
M2.5	CHTGH025-Gauge	24*24*200L*M2	19°31'42"	CHTGH025-DIN5 CHTGH025-DIN6 MHTG025-DIN6
	MHTGQ025-JIS-Gauge	20*A30*194.12L*M2.5	21°30'	MHTGQ025-JIS1
M3	CHTGH030-Gauge	29*29*200L*M3	19°31'42"	CHTGH030-DIN5 CHTGH030-DIN6 MHTG030-DIN6
	MHTGQ030-JIS-Gauge	25*A35*192.47L*M3	21°30'	MHTGQ030-JIS1
	CHTM030-Gauge	30*A29*200L*M3	19°31'42"	CHTM030-DIN8 CHTMQ030-DIN8 CHTMH030-DIN10
	CHTM030-JIS-Gauge	35*35*195.2L*M3	15°	CHTM030-JIS4
M4	CHTGH040-Gauge	39*39*200L*M4	19°31'42"	CHTGH040-DIN5 CHTGH040-DIN6 MHTG040-DIN6
	CHTM040-Gauge	40*A39*200L*M4	19°31'42"	CHTM040-DIN8 CHTMQ040-DIN8 CHTMH040-DIN10
M5	CHTGH050-Gauge	49*A39*200L*M5	19°31'42"	CHTGH050-DIN5 CHTGH050-DIN6 MHTG050-DIN6
	CHTM050-Gauge	49*A39*200L*M5	19°31'42"	CHTM050-DIN8 CHTMQ050-DIN8 CHTMH050-DIN10
M6	CHTGH060-Gauge	59*A49*200L*M6	19°31'42"	CHTGH060-DIN5 CHTGH060-DIN6 MHTG060-DIN6
	CHTM060-Gauge	59*A49*200L*M6	19°31'42"	CHTM060-DIN8 CHTMQ060-DIN8 CHTMH060-DIN10
M8	CHTGH080-Gauge	79*79*186.66L*M8	19°31'42"	CHTGH080-DIN5 CHTGH080-DIN6 MHTG080-DIN6
	CHTM080-Gauge	79*79*186.66L*M8	19°31'42"	CHTM080-DIN8 CHTMQ080-DIN8 CHTMH080-DIN10
M10	CHTGH100-Gauge	99*99*200L*M10	19°31'42"	CHTGH100-DIN6
	CHTM100-Gauge	99*99*200L*M10	19°31'42"	CHTM100-DIN8 CHTMQ100-DIN8 CHTMH100-DIN10

JIS Series noted in gray for easy identification.

Straight Rack Gauge for Assembling

Module	Code	Dimension	Rack Code Matched
	Straight Gauge		
M1	CSTGH010-JIS2-Gauge	10*A12*197.92L*M1	CSTGH010-JIS2
M1.5	CSTGH015-Gauge	17*17*197.92L*M1.5	CSTGH015-DIN 6
	CSTGH015-JIS2-Gauge	15*A20*197.92L*M1.5	CSTGH015-JIS2
	CSTM015-Gauge	17*17*197.92L*M1.5	CSTM015-DIN8 CSTMQ015-DIN8 CSTMH015-DIN10
	CSTM015-JIS4-Gauge	15*A20*197.92L*M1.5	CSTM015-JIS4 CSTMH015-JIS5
M2	CSTGH020-Gauge	24*24*194.78L*M2	CSTGH020-DIN5 CSTGH020-DIN6
	CSTGH020-JIS2-Gauge	20*A25*194.78L*M2	CSTGH020-JIS2
	CSTM020-Gauge	25*A24*194.78L*M2	CSTM020-DIN8 CSTMQ020-DIN8 CSTMH020-DIN10
	CSTM020-JIS4-Gauge	20*A25*194.78L*M2	CSTM020-JIS4 CSTMH020-JIS5
M2.5	CSTGH025-Gauge	25*24*196.35L*M2.5	CSTGH025-DIN6
	CSTGH025-JIS2-Gauge	25*A30*196.35L*M2.5	CSTGH025-JIS2
	CSTM025-JIS4-Gauge	25*A30*196.35L*M2.5	CSTM025-JIS4 CSTMH025-JIS5
M3	CSTGH030-Gauge	29*29*197.92L*M3	CSTGH030-DIN5 CSTGH-030-DIN6
	CSTGH030-JIS3-Gauge	30*A35*197.92L*M3	CSTGH030-JIS2
	CSTM030-JIS4-Gauge	30*A35*197.92L*M3	CSTM030-JIS4 CSTMH030-JIS5
M4	CSTGH040-Gauge	39*39*188.49L*M4	CSTGH040-DIN5 CSTGH040-DIN6
	CSTGH040-JIS2-Gauge	40*A45*188.49L*M4	CSTGH040-JIS2
	CSTM040-Gauge	40*A39*188.49L*M4	CSTM040-DIN8 CSTMQ040-DIN8 CSTMH040-DIN10
	CSTM040-JIS4-Gauge	40*A45*188.49L*M4	CSTM040-JIS4 CSTMH040-JIS5
M5	CSTGH050-Gauge	49*A39*188.49L*M5	CSTGH050-DIN5 CSTGH060-DIN6
	CSTGH050-JIS2-Gauge	50*A50*188.49L*M4	CSTGH050-JIS2
	CSTM050-Gauge	49*A39*188.49L*M5	CSTM050-DIN8 CSTMQ050-DIN8 CSTMH050-DIN10
	CSTM050-JIS4-Gauge	50*A50*188.49L*M4	CSTM050-JIS4 CSTMH040-JIS5
M6	CSTGH060-Gauge	59*A49*188.49L*M6	CSTGH060-DIN6
	CSTGH060-JIS-Gauge	60*A60*188.49L*M4	CSTGH060-JIS2
	CSTM060-Gauge	59*A49*188.49L*M6	CSTM060-DIN8 CSTMQ060-DIN8 CSTMH060-DIN10
	CSTM060-JIS4-Gauge	60*A60*188.49L*M4	CSTM060-JIS4 CSTMH060-JIS5

Straight Rack Gauge for Assembling

Module	Code	Dimension	Rack Code Matched
	Straight Gauge		
M8	CSTGH080-Gauge	79*79*175.92L*M8	CSTGH080-DIN6
	CSTM080-Gauge	79*79*175.92L*M8	CSTM080-DIN8 CSTMQ080-DIN8 CSTMH080-DIN10
M10	CSTM100-Gauge	99*99*188.496L*M10	CSTM100-DIN8 CSTMQ100-DIN8 CSTMH100-DIN10

CP	Code	Dimension	Rack Code Matched
	Straight Gauge		
CP 5	MSTGQ-CP050-GAUGE	15*20*200L*CP5	MSTGQ-CP050-JIS1 MSTGH-CP050-JIS1
	CSTM-CP050-GAUGE	15*20*200L*CP5	CSTM-CP050-JIS4
CP 10	MSTGQ-CP100-GAUGE	30*35*200L*CP10	MSTGQ-CP100-JIS1 MSTGH-CP100-JIS1
	CSTM-CP100-GAUGE	30*35*200L*CP10	CSTM-CO100-JIS4
CP 15	CSTM-CP150-GAUGE	50*50*195L*CP15	CSTM-CP150-JIS4
CP 20	CSTM-CP200-GAUGE	60*60*200L*CP20	CSTM-CP200-JIS4

JIS Series noted in gray for easy identification.

Instruction of Rack Assembly Steps

The instruction of installation is adapted for transportation, storage,assembly and maintenance of racks. All the relevant professionals should study carefully the content of the instruction before doing the actions as above. If any professionals don't study thoroughly nor follow up the regulations to do the actions of transportation, storage, assembly and maintenance of racks, any property damage or personal injury, we are irresponsible for any compensations.

OUTLINE OF RACK INSTALLATION INSTRUCTIONS

1. TRANSPORTATION

During transportation process, please do not stack incorrectly, vigorously put or hang racks to make it twisted or damaged.

2. STORAGE

Racks should be stored in dry environment with temperature 25 ℃ , and relative humidity should be 60% which is the best. To check the rack package should be completed and stored horizontally to avoid being sloping, leaning on one side or upright side.

3. ASSEMBLY

Rack assembly should be operated by well-trained and qualified professionals. Meanwhile, please prepare all the relevant tools accurately while assembling.

4. MAINTENANCES

Please set up maintenance plans based on the running methods of rack and pinions.

*If there are any questions, please kindly contact us.

RACK INSTALLATION INSTRUCTIONS

1. TRANSPORTATION

All racks are straightened before delivering, and packed by thermal shrinkage film to isolate the air and to protect racks from collision.

If the rack length is over 1,000mm (100cm) or 10 kgs, is should be carried by 2 or more people to avoid collision or dropping.

If carrying plenty of racks, it should be hanged on a pallet to avoid racks dropping. During hanging, please pay attention to the surroundings to avoid dropping or colliding with somethings to injure people.

2. STORAGE

Racks should be stored in a suitable temperate and dry environment. The room temperature should be 25°C, and relative humidity should be 60% which is the best.

Before storage, the rack outside package should be inspected if completed.

Before delivering, all the racks are smeared anti-rust lubricant and packed by thermal shrinkage film to isolate air and prevent from collision.

During the rack storage process, it should not be sloping, leaning on one side or upright side.

The rack storage place should be maintained in a suitable and stable temperature and humidity. Meanwhile, the place should be stable to avoid vibration.

Racks should be put on horizontally; prevent from any abnormally stacking, or oppress on the top of racks. So, the racks will not be twisted due to outside oppression.

To check the rack package should be completed and stored horizontally to avoid being sloping, leaning on one side or upright side.

3. ASSEMBLY

3.1 Before assembly, check and prepare.

3.1.1 Before assembling racks, please do check the rack outside package and open the cartons carefully in case racks are damaged accidently.

3.1.2. Before assembling racks, please check racks'specifications and all the necessary assembly tools carefully.

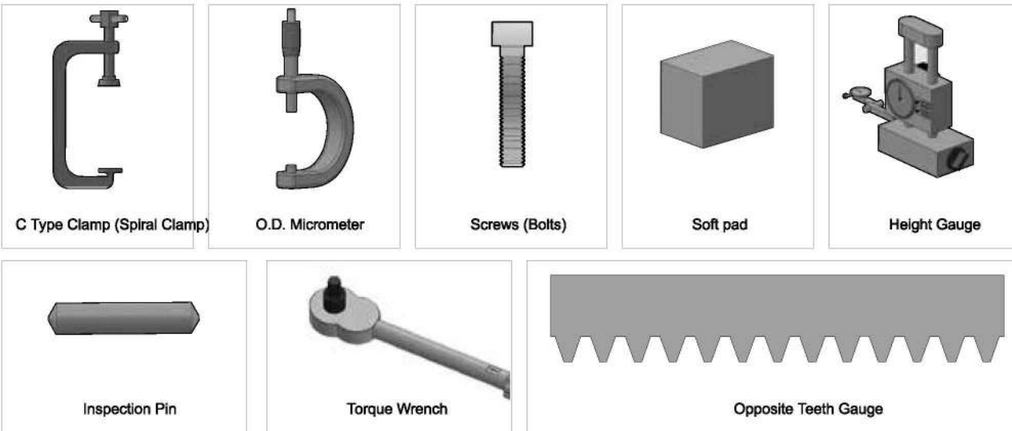
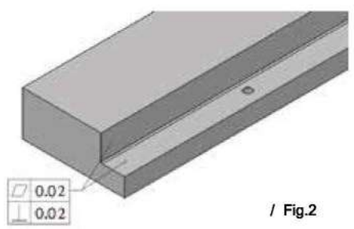


Fig.1

3.1.3 Before assembling, please assure the verticality and parallel of bearing surface of installation basement should be within the tolerance.
The verticality is ≦ 0.02mm and parallel is ≦ 0.02mm as the Fig. 2 below.



/ Fig.2

3.1.4 Please do check the bearing surface of rack and installation base clean and complete to avoid any damage or chippings.

3.1.5 The chamfering surface of installation bearing surface bottom have to be aware of the question as Fig 3 noted.

Attention

The rack chamfer angle shouldbe apply with our standards (as chart 1).
The recommended chamfer value of bearing surface of installation base should not exceed 0.3 mm at maximum.

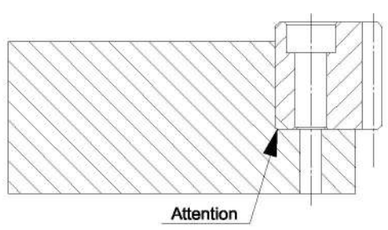
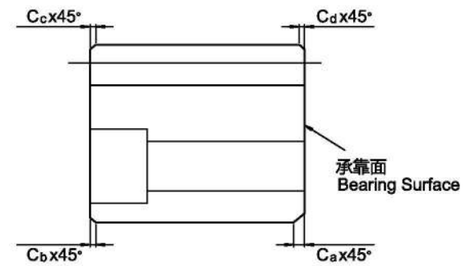


Fig.3



Unit : mm

Rack	Ca	Cb	Cc	Cd
M1	1.5mm	0.5mm	0.5mm	0.5mm
M1.5	1.5mm	0.5mm	0.5mm	0.5mm
M2	2.0mm	1.0mm	1.0mm	1.0mm
M3	2.0mm	1.0mm	1.0mm	1.0mm
M4	2.0mm	1.5mm	1.5mm	1.5mm
M5	3.0mm	1.5mm	1.5mm	1.5mm
M6	3.0mm	2.0mm	2.0mm	2.0mm
M8	4.0mm	2.0mm	2.0mm	2.0mm
M10	5.0mm	3.0mm	3.0mm	3.0mm
M12	5.0mm	3.0mm	3.0mm	3.0mm

Table 1

3.1. 6 Rack positioning pin hole is specially for quick positioning purpose when racks are assembled repeatedly. If no repeated demands, it is not necessary to assemble positioning pin hole.

3.2. Assembly Process A- Single Rack Assembly

3.2.1 Put the rack on the blocks; put the inspection pin in the rack valley of the teeth and use O.D. micrometer to check the over pin value as Fig 4.

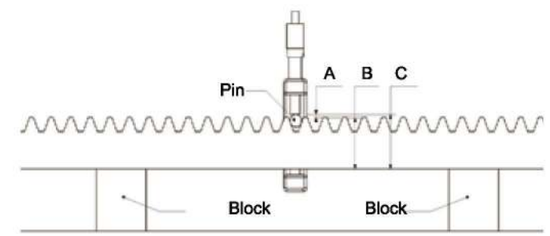


Fig.4

★Before assembling racks, please refer to the inspection method on Fig. 4 and assure the over-pin values of rack are within the quality grade tolerance.

Over-Pin Value Formula:

Over-Pin Value C= Value A + Total Rack Height B

※ Please refer to Chart 2 for inspection over-pin value.

Attention

The best tolerance of inspection pin diameter is ≧-0.001mm.

Unit : mm

模數 Module	數值 Value	檢測銷棒 Inspection Pin	齒距 Pitch	
			斜齒 Helical (19°31'42")	直齒 Straight
M1.0	0.766	ψ2	3.333	3.142
M1.5	1.149	ψ3	5.000	4.712
M2.0	1.532	ψ4	6.667	6.283
M3.0	2.298	ψ6	10.000	9.425
M4.0	3.064	ψ8	13.333	12.566
M5.0	3.830	ψ10	16.667	15.708
M6.0	4.596	ψ12	20.000	18.850
M8.0	6.128	ψ16	26.667	25.133
M10.0	7.659	ψ20	33.333	31.416

表 2 / Table 2

3.22 The rack is put on the top of the base of the bearing surface. Align the screw holes pitches. Slightly tighten the screws to the contact surface of countersunk head screw hole as the Fig. 5 as below.

Fig.5

3.23 Place the C-type clamp on the soft pad, then fix the two ends of the racks by the C-type clamp. Fix the middle of the rack averagely on the base to assure the whole rack is attached to the bearing surface of the base completed as Fig. 6 below.

Fig.6

3.24 Place inspection pins averagely on the 5 inspection points of the rack. Use height gauge to measure the highest point of the inspection pins. The inspected values should be the same as step 3.2.1. If the values are different, please tighten the C-type clamp and fix the values to the same as step 3.2.1. as Fig. 7 below.

Fig.7

3.2.5 Fix the screws (bolts) from the middle; then onward to the two ends of the racks.

3.2.6 Remove the C-type clamp and soft pads.

3.3. Assembly Process B- Multiple Racks Assembly

3.3.1 Two or more racks assembly, please follow up the assembly process A-single rack assembly. Between racks joint point, it's necessary to increase an assistive device, opposite teeth gauge as the standard of joining racks up, to avoid pitch error too large. (Fig. 8)

Slightly tighten screws and remove opposite teeth gauge as Fig 9, and place the inspection pin on the teeth valley of the joint point (Fig.10). Slightly adjust the jointing two racks and use height gauge to measure the highest point values of the inspection pin(Fig 10/A,B,C points). The values of the three points should be the same as step 3.2.1, using O.D. micrometer to measure. (Fig. 12)

Use C-type clamp and place the soft pads on the rack base. Then, use torque wrench in sequence to fix and tighten screws(bolts). The screw torque values could be referred to Table 3. (Fig. 13) After tightening, remove the inspection pins, C-type clamp and soft pads. The assembly step is completed. (Fig. 14)

Attention Three racks above assembly, it starts from the middle base, and onwards to the ends.

3.3.1 Measure the highest point of the inspection pin by height gauge. The measured values should be the same as the values by OD micrometer as step3.2.1.

3.3.2 The two joint sides should be placed on the assistive device, opposite teeth gauge as the standard of joining racks up. to avoid pitch error too large. (Fig. 8)

Fig.8

3.3.3 Slightly loose screws and remove the opposite teeth gauge. Fig 9.

Fig.9

3.3.4 Place the inspection pins on A, B, C three points. As Fig 10.

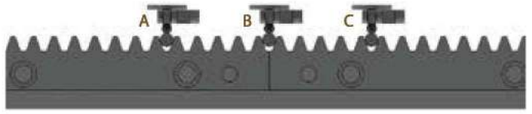


Fig.10

3.3.5 Measure the values of the 3 highest points of the inspection pins by height gauge to assure the 3 values are the same as on Step 1. If values are different, slightlyadjust the two jointed racks, to make the value of the highest point of inspection pin is the same as step 1. Fig11.

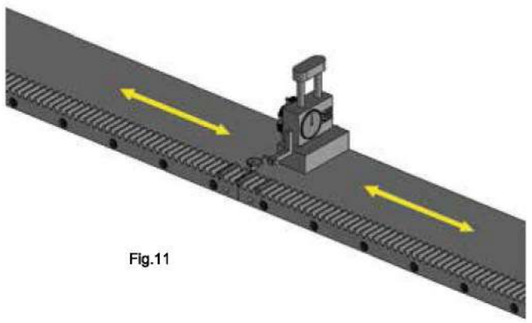


Fig.11

3.3.6 Measure the correct value of the highest inspection pin; use C-type clamp and place soft pads to fix the rack on the base. Then, use torque wrench in sequence to fix and tighten screws as Fig. 12.

Fig.12

3.3.7 Tighten screws and remove C-type clamp, soft pads. The assembly is completed. As Fig 13.

Fig.13

Screw Spec.	Hex Wrench (mm)	12.9 Torque Value (N.m)
M4*0.7P	3	4.3
M5*0.8P	4	7.5
M6*1.0P	5	13.4
M8*1.25P	6	30.5
M10*1.5P	8	61
M12*1.75P	10	102
M14*2.0P	12	162
M16*2.0P	14	249
M20*2.5P	17	481
M24*3.0P	19	836
M30*3.5P	22	1670

Table 3. Screw Torque

3.4. Inspection After Assembly.

3.4.1 Clean the lubricant oil on the racks.

3.4.2 Smear colored paint on racks such as lead oxide ellow powder, red powder and blue powder. (Please use clearable paints).

3.4.3 Inside the rack movement, the pinion runs back and forth to clench.

3.4.4 Observe the peeling situation on the painted teeth of the racks as Fig.14.

3.4.5 If teeth clenches correctly, please clean the colored paint on the racks. Bare parts should be smeared anti-rust lubricant. If not correctly, please adjust it to correct.

3.5. Attentions by Operation

3.5.1 Racks Assembly correct. Teeth clench correct.

3.5.2 The clenching surface of rack and pinion needslubricant oil.

3.5.3 Assure no people inside the operation area to avoid any injure.

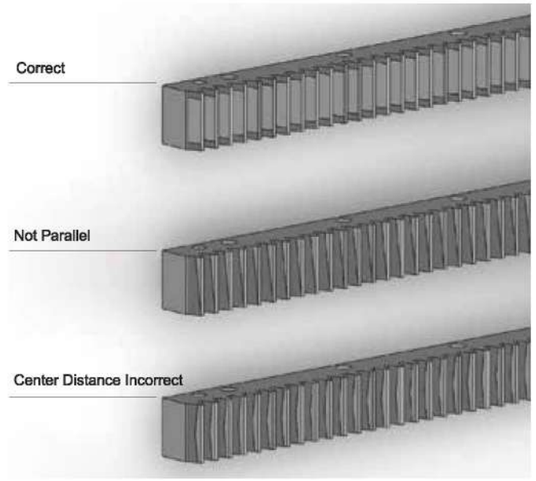


Fig.14

4. Maintenances

4.1 Formulate a maintenance schedule according to theequipment operation situation.

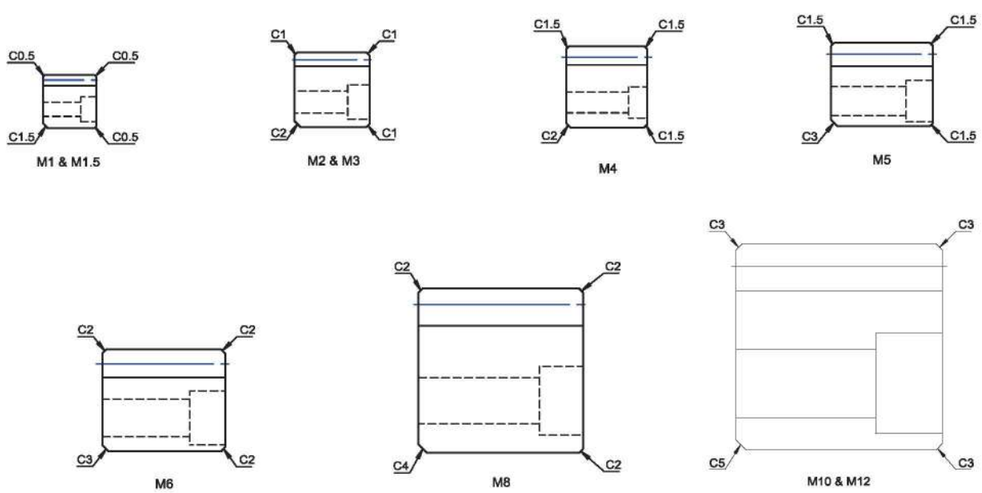
4.2 Please select suitable lubricant oil and decide lubricant system according to the lubricant oil.

4.3 Maintenance cycle should be increased or decreased, based on operation worn situation.

4.4 If racks are worn or damaged seriously, please replace new racks to avoid any impact on operation accuracy and efficiency.

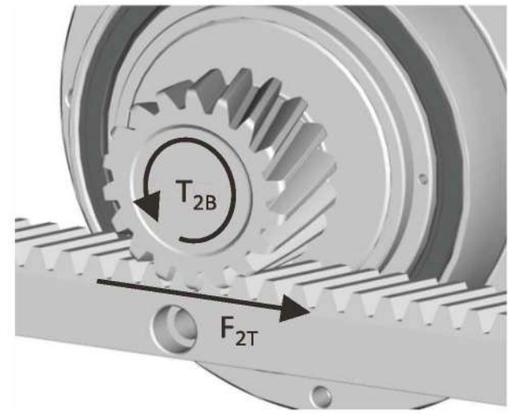
※ Rack replacement and maintenance should be operated by trained and qualified professionals.

Rack Standard Chamfer



Unit: mm

Rack calculation and selection



$F_{2T} = 2 \times T_{2B} / d$

d : Pitch diameter

Application		Horizontal shift	Vertical lift
Unit		Application parameters	
Total weight of load	M	Kg	Kg
Speed	V	m/s	m/s
Acceleration time	ta	s	s
Acceleration of gravity	g	9.8 m/s²	9.8 m/s²
Friction coefficient	μ	-	-
Pitch diameter of gear	d	mm	mm
Other extra forces	F	N	N
Safety factor	S_B(1)	-	-
		α = V / tα (m/s²)	α = V / tα (m/s²)
Tangential force of rack	F_N	$F_N = M \times g \times \mu + M \times a + F$ (N)	$F_N = M \times g + M \times a + F$ (N)
Gear moment	T_N	$T_N = (F_N \times d) / 2000$ (Nm)	$T_N = (F_N \times d) / 2000$ (Nm)
Design demand moment	T_{NV}	$T_{NV} = T_N \times S_B$ (Nm)	$T_{NV} = T_N \times S_B$ (Nm)
Maximum gear speed	N_V	$N_V = (V \times 19100) / d$ (rpm)	$N_V = (V \times 19100) / d$ (rpm)

(1) Please consider the safety factor according to your experience and application mode. Generally, the recommended range is between 1 and 4 (S_B ≒1 to 4) .

Please select the suitable gear first

Calculate the design demand torque (Tnv) according to the order in the table above

According to the table of [allowable driving force of rack], [T2B > Tnv] shall be met

Select the appropriate reducer and speed ratio according to [selection of reducer]

Stepper/servo motor driving (for robot industry)

Harmonic Reducer

High cost-effective/perfectly match and replace the sizes of Japanes harmonic reducers

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Low noise internal helical gear design

High Precision Customized Service

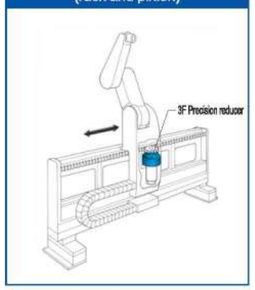
Innovative R & D Quality Assurance

Professional Processing 20 Years of Experience

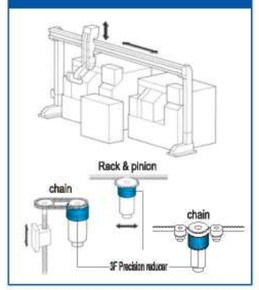
Product Application Industry

Semiconductor liquid crystal manufacturing equipment, robots, machine tools, and other frontier areas requiring precision motion control are widely used.

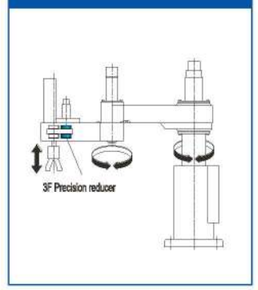
The walking shaft of a robot (rack and pinion)



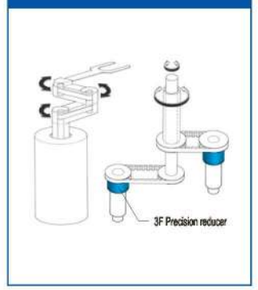
Gantry robot of machine tool



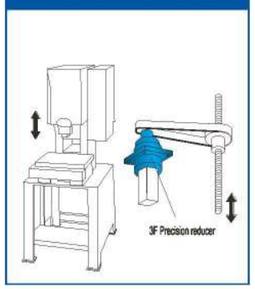
Horizontal multi-joint robot



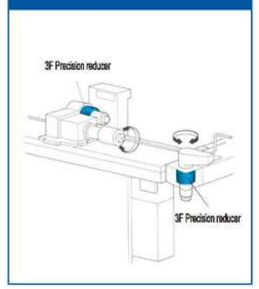
Wafer handling robot



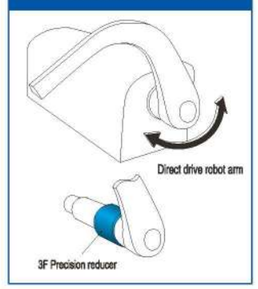
Stamping equipment (riveting)



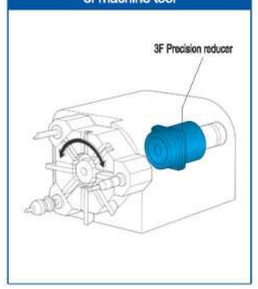
Pipe bending machine



Injection mold taken–out robot

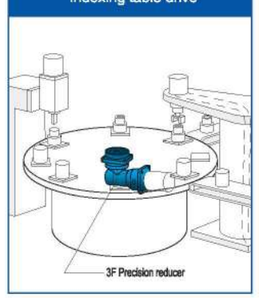


Rotary tower knife frame rotation of machine tool

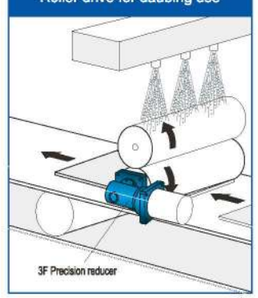


The XY axis of machine tool

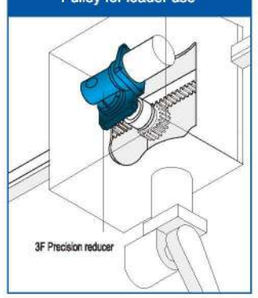
Indexing table drive



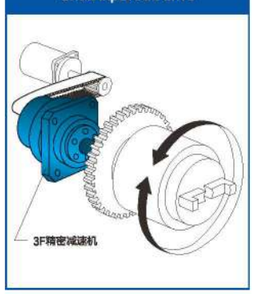
Roller drive for daubing use



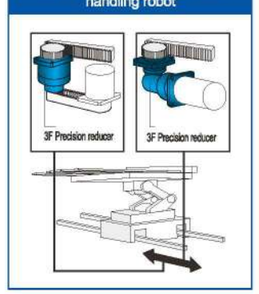
Pulley for loader use



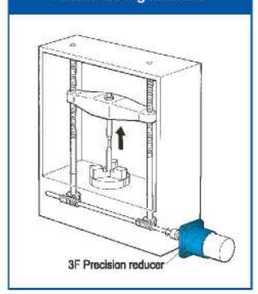
Shaft input belt drive



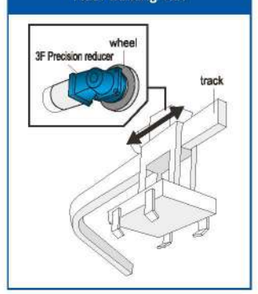
Liquid crystal glass substrate handling robot



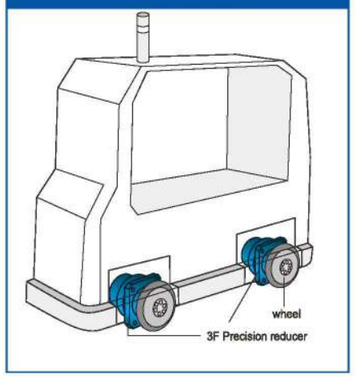
Tensile testing machine



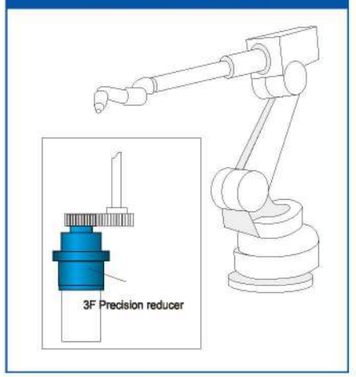
Roof walking van



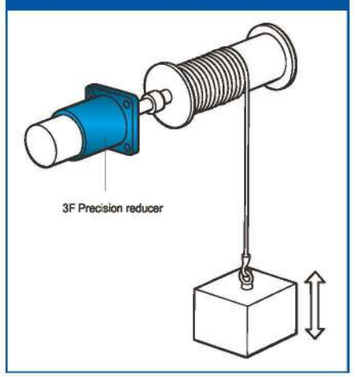
Unmanned vehicle



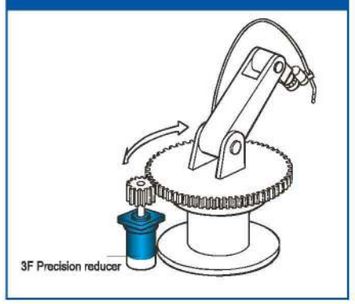
Robot for working in height



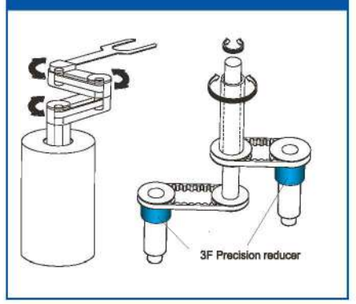
Roll up



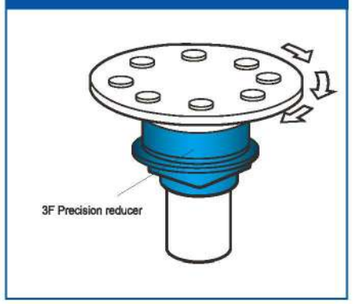
Rotate



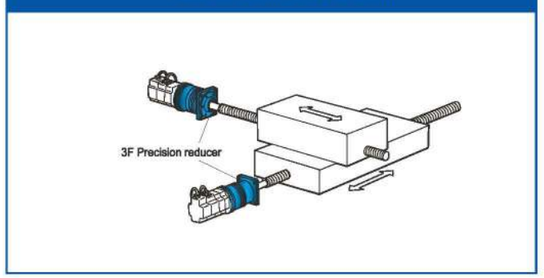
Transport



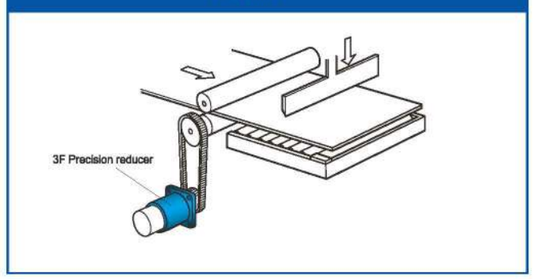
Angle (positioning) control



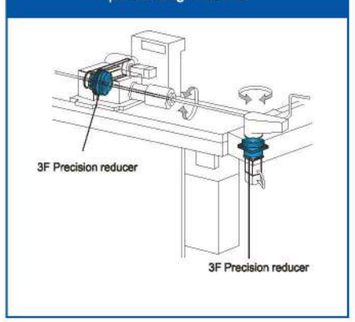
Two axis control (XY workbench)



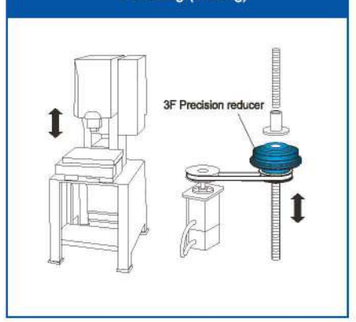
Roller drive



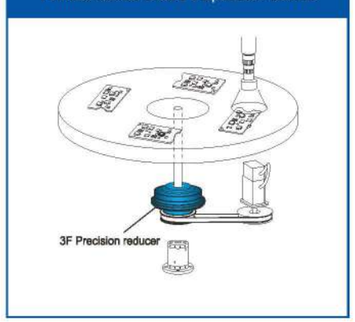
Pipe bending machine



Punching (riveting)



Printed circuit board inspection device



Structure of harmonic reducer

Wave Generator Flex Spline Circular Spline

Wave Generator

A ball bearing with thin-walled construction is fitted onto the outer circumference of an oval cam. The entire structure is oval. The inner ring of the bearing is fixed onto the oval cam and the outer ring elastically deforms through a ball. The wave generator can be mounted on a motor shaft.

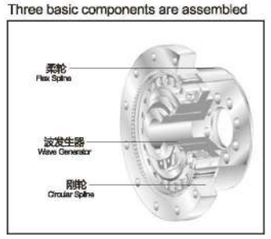
Flex Spline

The inner gear of the rigid body, with teeth of equivalent size to those on the flex spline cut into the inner circumference. The circular spline has two more teeth than the flex spline and is normally fixed onto the gear casing.

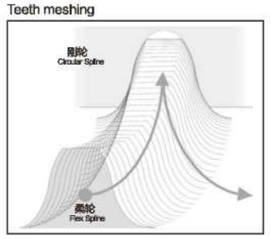
Flex Spline

A cup-like elastic metal part with thin wall thickness. Teeth are cut into the outer circumference of the opening of the cup, from where the output is usually extracted.

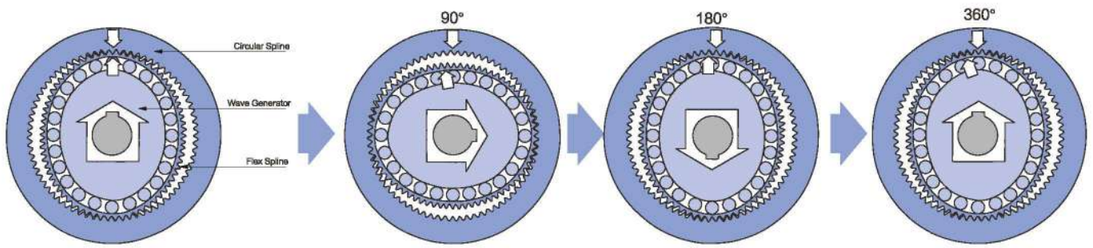
Three basic components are assembled



Teeth meshing



Working principle of harmonic reducer



The flex spline is bent into an oval shape by the wave generator. Teeth on the long axis of the oval therefore mesh with the circular spline, while the teeth on the short axis of the oval perfectly detach from the circular spline.

Fixing the circular spline and rotating the wave generator clockwise will elastically deform the flex spline, sequentially moving the tooth meshing positions with the circular spline.

Rotating the wave generator through 180° in a clockwise direction will move the flex spline counterclockwise by one tooth as a difference in the number of teeth.

When the wave generator rotates through one turn (360°), the flex spline movescounterclockwise by two teeth based on the difference in the number of teeth because the flex spline has two teeth fewer than the

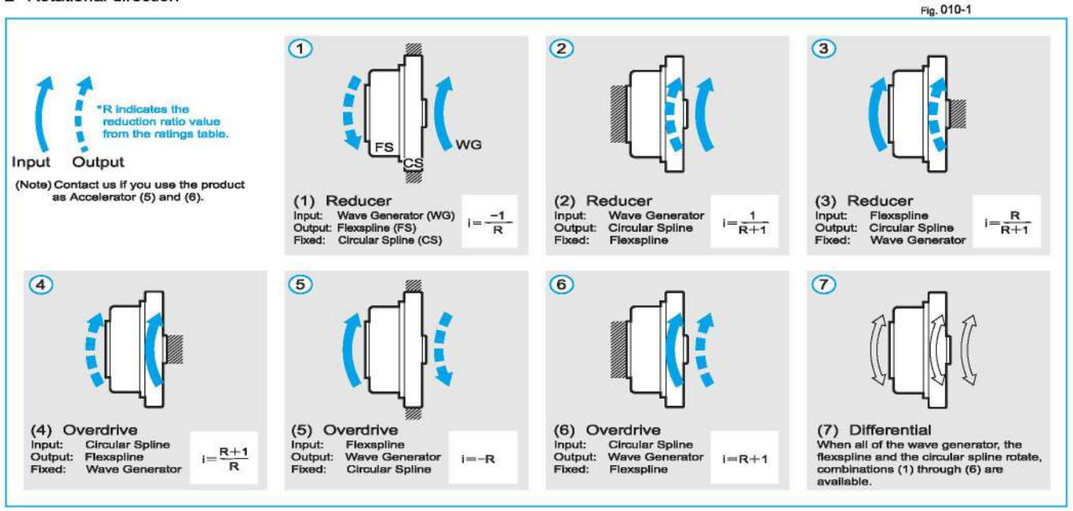
Rotational direction and reduction ratio

Cup Style

Series: CSG, CSF, CSD, CSF-mini

■ Rotational direction

Fig. 010-1

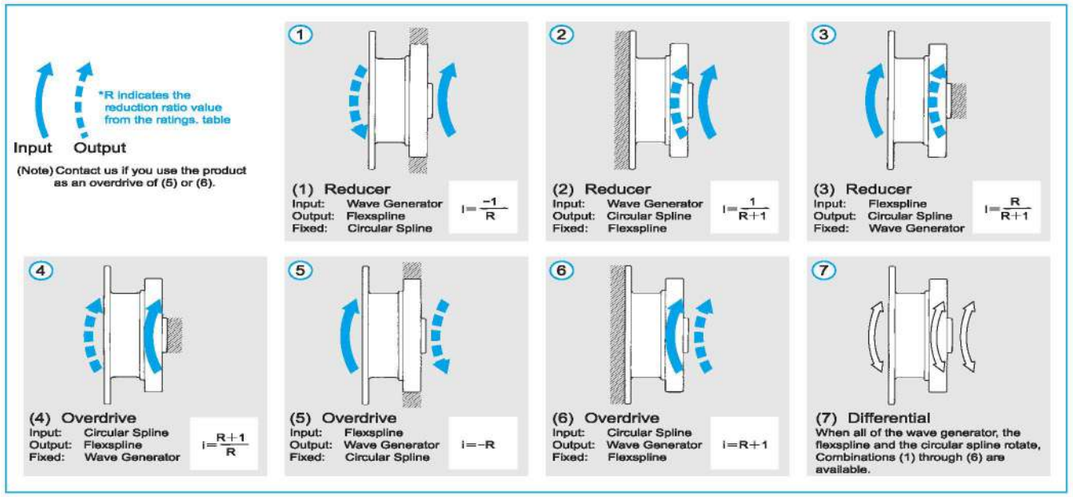


Silk hat

Series: SHG, SHF, SHD

■ Rotational direction

Fig. 010-2



■ Reduction ratio

The reduction ratio is determined by the number of teeth of the Flexspline and the Circular Spline

Number of teeth of the Flexspline: Zf
Number of teeth of the Circular Spline: Zc

▶ Input: Wave Generator, Output: Flexspline, Fixed: Circular Spline — Reduction ratio $i_1 = \frac{1}{R_1} = \frac{Zf-Zc}{Zf}$

▶ Input: Wave Generator, Output: Circular Spline, Fixed: Flexspline — Reduction ratio $i_2 = \frac{1}{R_2} = \frac{Zc-Zf}{Zc}$

Example

Number of teeth of the Flexspline: 200
Number of teeth of the Circular Spline: 202

▶ Input: Wave Generator, Output: Flexspline, Fixed: Circular Spline — Reduction ratio $i_1 = \frac{1}{R_1} = \frac{200-202}{200} = \frac{-1}{100}$

▶ Input: Wave Generator, Output: Circular Spline, Fixed: Flexspline — Reduction ratio $i_2 = \frac{1}{R_2} = \frac{202-200}{202} = \frac{1}{101}$

■ R_1 indicates the reduction ratio value from the ratings table.