齒條

齒輪

齒規

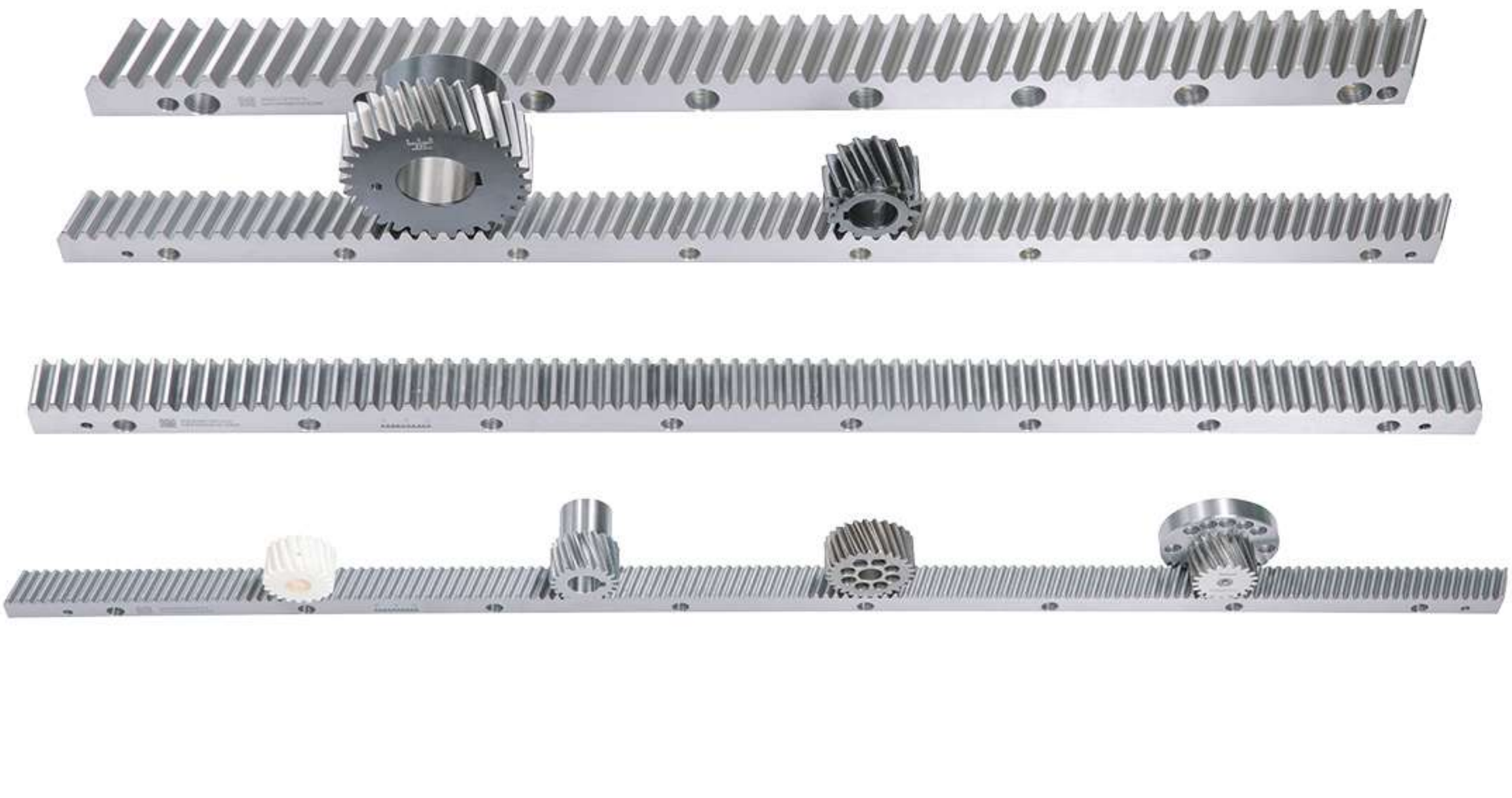
附錄

Rack

Pinion

Gauge

Appendix



齒條目錄

Contents of Racks

型號 Code	精度等級 Quality	材質 Material	右旋角 Right Hand Helix Angle	齒面處理 Teeth Treatment	齒厚公差 (μm) Tooth Thickness Tolerance (μm)	熱處理 Heat Treatment	鑽孔 Mounted Holes	模數 Module	頁碼 Page
CHTGH	DIN 5	S50C	19°31'42"	齒面研磨 Teeth Ground	-15	熱處理 HRC50-55 Hardened	Yes	M2-M3	3
CHTGH	DIN 6	S50C			-20			M1.5-M10	4
CHTGH	DIN 7	S50C / S45C			-36			M2-M6	5
CHTM	DIN 8	S50C		精銑 Milled	-87	--		M1.5-M10	6
CHTMH	DIN 10	S50C			-110	熱處理 HRC50-55 Hardened		M1.5-M10	7
MHTMQ	DIN 8	SCM440			-110	調質 HRC20-28 Quenched & Tempered		M1.5-M10	8
CSTGH	DIN 5	S50C	0°	齒面研磨 Teeth Ground	-15	熱處理 HRC50-55 Hardened		M2-M3	9
CSTGH	DIN 6	S50C			-20			M1.5-M10	10
CSTGH	DIN 7	S50C / S45C			-36			M2-M5	11
CSTM	DIN 8	S50C		精銑 Milled	-87	--		M1.5-M10	12
CSTMH	DIN 10	S50C			-110	熱處理 HRC50-55 Hardened		M1.5-M10	13
MSTMQ	DIN 8	SCM440			-110	調質 HRC20-28 Quenched & Tempered		M1.5-M10	14

齒條型號說明

Rack Code Instruction

齒條 Rack

CHTGH-020-10-DIN6

1 2 3 4 5 6 7 8

1. 材料
S50C 中碳鋼 /
SCM440 中碳鉻鉬合金鋼

1. Material
S50C Medium Carbon Steel /
SCM440 Medium-Carbon Chromium-Molybdenum Alloy Steel

2. 齒型
S= 直齒 / H= 斜齒

2. Type
S=Straight / H=Helical

3. 外型
T= 四角棒

3. Shape
Tetragon

4. 齒面處理
G= 齒研 / M= 精銑

4. Teeth Treatment
G=Ground / M=Milled

5. 熱處理
H= 高週波 / Q= 調質

5. Heat Treatment
H=Hardened / Q=Quenched & Tempered

6. 模數
M1.5-M10

6. Module
M1.5-M10

7. 長度
05=500mm / 10=1000mm
15=1500mm / 20=2000mm

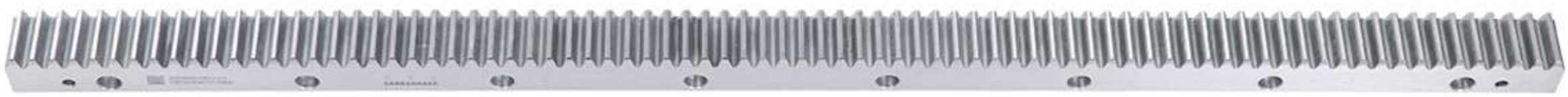
7. Length
05=500mm / 10=1000mm
15=1500mm / 20=2000mm

8. 精度
DIN 5-DIN 10

8. Quality
DIN 5-DIN 10

備註：長度、鑽孔、材質、表面處理 (噴砂、磷酸鹽、染黑、研磨) 等特殊需求，皆可客製。

Remark : Lengths, Holes, Materials, Surface Treatments(Sandblasted, Phosphated, Black oxidation, Sides ground)and other Customized Products available upon request.



斜齒齒研齒條

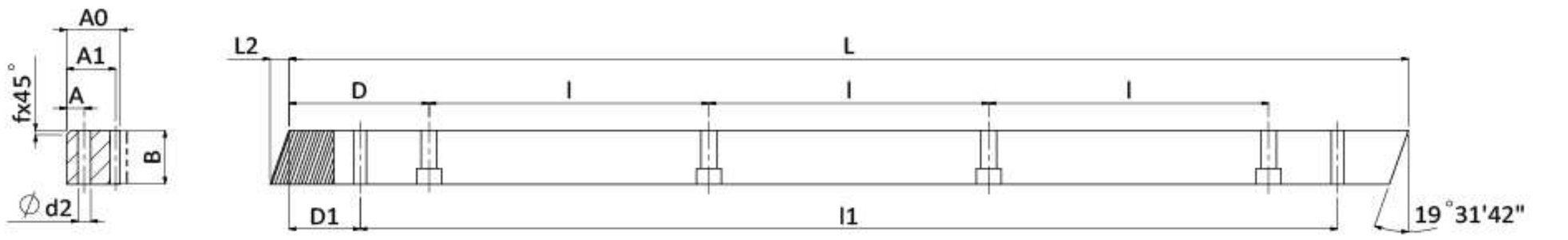
Helical Teeth, Hardened and Ground Racks

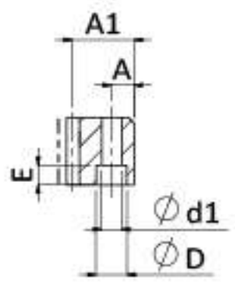
CHTGH-DIN5

材質 : S50C
右旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後四面研磨與齒面研磨

CHTGH-DIN5

Material : S50C
Right Hand Helix Angle : 19°31'42"
Hardened：Hardness HRC50-55
Teeth Hardened and Ground
Ground on all sides after Hardening





單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	D	I	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CHTGH02010-DIN5	2	1000.00	8.5	150	24	24	22.0	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	0.030	9.08	4.1
CHTGH03010-DIN5	3	1000.00	10.3	100	29	29	26.0	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	0.030	16.13	5.8

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

斜齒齒研齒條

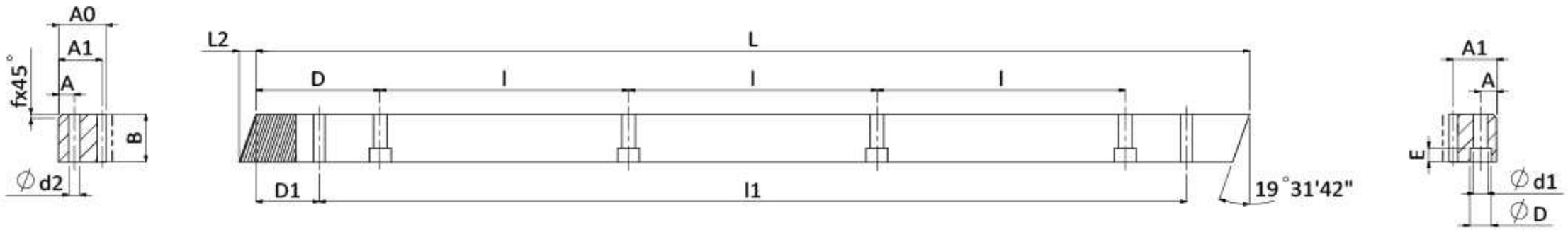
Helical Teeth, Hardened and Ground Racks

CHTGH-DIN6

材質 : S50C
右旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後四面研磨與齒面研磨

CHTGH-DIN6

Material : S50C
Right Hand Helix Angle : 19°31'42"
Hardened：Hardness HRC50-55
Teeth Hardened and Ground
Ground on all sides after Hardening



單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CHTGH01505-DIN6	1.5	500.00	6.7	100	19	19	17.5	62.5	125	4	8	7	11	7	31.7	436.6	5.7	2	0.028	5.14	1.3
CHTGH01510-DIN6	1.5	1000.00	6.7	200	19	19	17.5	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	0.034	5.14	2.6
CHTGH02005-DIN6	2	500.00	8.5	75	24	24	22.0	62.5	125	4	8	7	11	7	31.7	436.6	5.7	2	0.032	8.82	2.1
CHTGH02010-DIN6	2	1000.00	8.5	150	24	24	22.0	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	0.036	8.82	4.1
CHTGH02020-DIN6	2	2000.00	8.5	300	24	24	22.0	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	2	0.046	8.82	8.2
CHTGH02505-DIN6	2.5	500.00	8.5	60	24	24	21.5	62.5	125	4	9	7	11	7	31.7	436.6	5.7	2	0.032	10.94	2.0
CHTGH02510-DIN6	2.5	1000.00	8.5	120	24	24	21.5	62.5	125	8	9	7	11	7	31.7	936.6	5.7	2	0.036	10.94	4.0
CHTGH02520-DIN6	2.5	2000.00	8.5	240	24	24	21.5	62.5	125	16	9	7	11	7	31.7	1936.6	5.7	2	0.046	10.94	8.0
CHTGH03005-DIN6	3	500.00	10.3	50	29	29	26.0	62.5	125	4	9	10	15	9	35.0	430.0	7.7	2	0.032	15.66	2.9
CHTGH03010-DIN6	3	1000.00	10.3	100	29	29	26.0	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	0.036	15.66	5.8
CHTGH03020-DIN6	3	2000.00	10.3	200	29	29	26.0	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	2	0.046	15.66	11.6
CHTGH04005-DIN6	4	506.67	13.8	38	39	39	35.0	62.5	125	4	12	10	15	9	33.3	433.0	7.7	2	0.036	28.26	5.4
CHTGH04010-DIN6	4	1000.00	13.8	75	39	39	35.0	62.5	125	8	12	10	15	9	33.3	933.4	7.7	2	0.040	28.26	10.8
CHTGH04020-DIN6	4	2000.00	13.8	150	39	39	35.0	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	2	0.048	28.26	21.6
CHTGH05005-DIN6	5	500.00	17.4	30	49	39	34.0	62.5	125	4	12	14	20	13	37.5	425.0	11.7	3	0.036	45.27	6.5
CHTGH05010-DIN6	5	1000.00	17.4	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.0	11.7	3	0.040	45.27	13.1
CHTGH05020-DIN6	5	2000.00	17.4	120	49	39	34.0	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	3	0.048	45.27	26.0
CHTGH06005-DIN6	6	500.00	20.9	25	59	49	43.0	62.5	125	4	16	18	26	17	37.5	425.0	15.7	3	0.036	66.24	9.4
CHTGH06010-DIN6	6	1000.00	20.9	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.0	15.7	3	0.040	66.24	18.8
CHTGH06020-DIN6	6	2000.00	20.9	100	59	49	43.0	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	3	0.048	66.24	37.5
CHTGH08005-DIN6	8	480.00	28.0	18	79	79	71.0	60.0	120	4	25	22	33	21	120.0	240.0	19.7	4	0.036	117.68	20.5
CHTGH08010-DIN6	8	960.00	28.0	36	79	79	71.0	60.0	120	8	25	22	33	21	120.0	720.0	19.7	4	0.040	117.68	41.0
CHTGH08020-DIN6	8	1920.00	28.0	72	79	79	71.0	60.0	120	16	25	22	33	21	120.0	1680.0	19.7	4	0.048	117.68	82.0
CHTGH10005-DIN6	10	500.00	35.1	15	99	99	89.0	62.5	125	4	32	33	48	32	125.0	250.0	19.7	5	0.040	184.35	31.5
CHTGH10010-DIN6	10	1000.00	35.1	30	99	99	89.0	62.5	125	8	32	33	48	32	125.0	750.0	19.7	5	0.044	184.35	63.0

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

斜齒齒研齒條

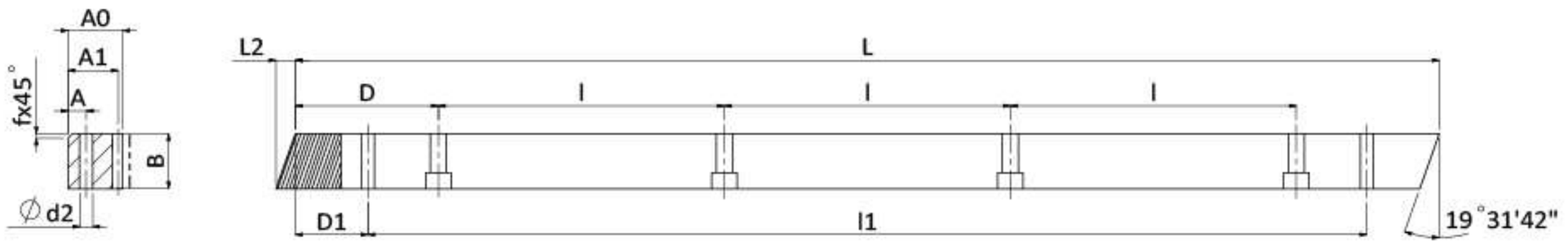
CHTGH-DIN7

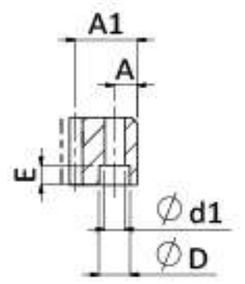
材質 : S50C / S45C
右旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後四面研磨與齒面研磨

Helical Teeth, Hardened and Ground Racks

CHTGH-DIN7

Material : S50C / S45C
Right Hand Helix Angle : 19°31'42"
Hardened：Hardness HRC50-55
Teeth Hardened and Ground
Ground on all sides after Hardening





單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	D	I	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CHTGH02010-DIN7	2	1000.00	8.5	150	24	24	22.0	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	0.052	8.11	4.1
CHTGH02020-DIN7	2	2000.00	8.5	300	24	24	22.0	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	2	0.068	8.11	8.2
CHTGH03010-DIN7	3	1000.00	10.3	100	29	29	26.0	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	0.052	14.38	5.8
CHTGH03020-DIN7	3	2000.00	10.3	200	29	29	26.0	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	2	0.068	14.38	11.6
CHTGH04010-DIN7	4	1000.00	13.8	75	39	39	35.0	62.5	125	8	12	10	15	9	33.3	933.4	7.7	2	0.052	25.79	10.8
CHTGH04020-DIN7	4	2000.00	13.8	150	39	39	35.0	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	2	0.068	25.79	21.6
CHTGH05010-DIN7	5	1000.00	17.4	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.0	11.7	3	0.052	41.37	13.1
CHTGH05020-DIN7	5	2000.00	17.4	120	49	39	34.0	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	3	0.068	41.37	26.0
CHTGH06010-DIN7	6	1000.00	20.9	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.0	15.7	3	0.052	60.42	18.8
CHTGH06020-DIN7	6	2000.00	20.9	100	59	49	43.0	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	3	0.068	60.42	37.5

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error /
kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

斜齒精銑齒條

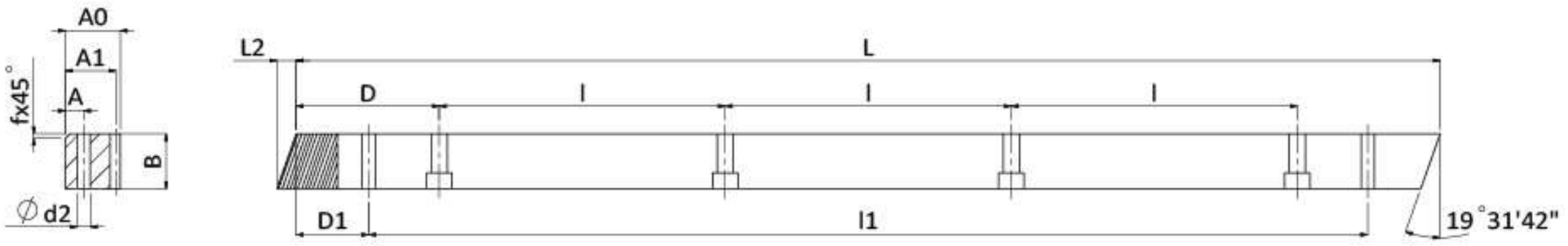
CHTM-DIN8

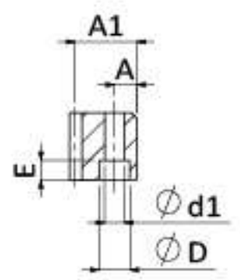
材質 : S50C
右旋角 : 19°31'42"
精銑

Helical Teeth, Milled Racks

CHTM-DIN8

Material : S50C
Right Hand Helix Angle : 19°31'42"
Milled





單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CHTM01510-DIN8	1.5	1000.00	6.0	200	17	17	15.5	62.5	125	8	7	6	9.5	7	31.7	936.6	5.7	1.5	0.060	0.76	2.6
CHTM02010-DIN8	2	1000.00	8.9	150	25	24	22.0	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	0.060	1.53	4.1
CHTM02020-DIN8	2	2000.00	8.9	300	25	24	22.0	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	2	0.078	1.53	8.2
CHTM03010-DIN8	3	1000.00	10.6	100	30	29	26.0	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	0.060	2.68	5.8
CHTM03020-DIN8	3	2000.00	10.6	200	30	29	26.0	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	2	0.078	2.68	11.6
CHTM04010-DIN8	4	1000.00	14.2	75	40	39	35.0	62.5	125	8	12	10	15	9	33.3	933.4	7.7	2	0.060	4.77	10.8
CHTM04020-DIN8	4	2000.00	14.2	150	40	39	35.0	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	2	0.078	4.77	21.6
CHTM05010-DIN8	5	1000.00	17.4	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.0	11.7	3	0.060	7.45	13.1
CHTM05020-DIN8	5	2000.00	17.4	120	49	39	34.0	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	3	0.078	7.45	26.0
CHTM06010-DIN8	6	1000.00	20.9	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.0	15.7	3	0.060	10.89	18.8
CHTM06020-DIN8	6	2000.00	20.9	100	59	49	43.0	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	3	0.078	10.89	37.5
CHTM08010-DIN8	8	960.00	28.0	36	79	79	71.0	60.0	120	8	25	22	33	21	120.0	720.0	19.7	4	0.060	19.45	41.0
CHTM08020-DIN8	8	1920.00	28.0	72	79	79	71.0	60.0	120	16	25	22	33	21	120.0	1680.0	19.7	4	0.078	19.45	82.0
CHTM10010-DIN8	10	1000.00	35.1	30	99	99	89.0	62.5	125	8	32	33	48	32	125.0	750.0	19.7	5	0.060	30.46	63.0

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

斜齒硬化齒條

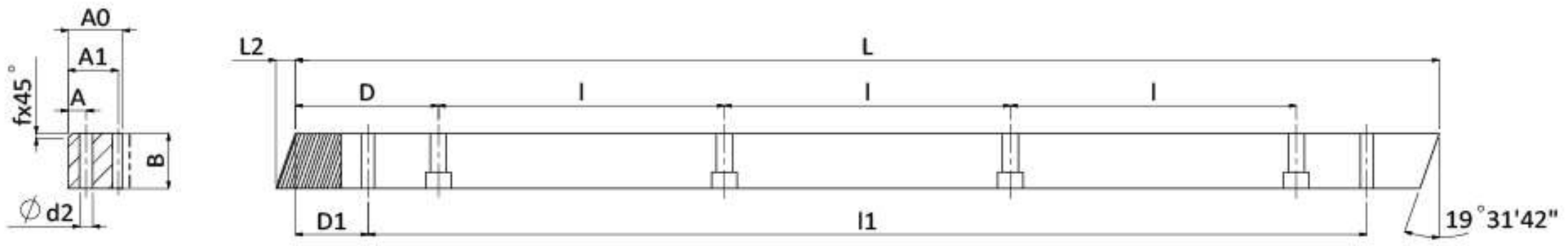
Helical Teeth, Milled and Hardened Racks

CHTMH-DIN10

材質 : S50C
右旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
精銑 , 表面噴砂

CHTMH-DIN10

Material : S50C
Right Hand Helix Angle : 19°31'42"
Hardened：Hardness HRC50-55
Milled, Teeth Hardened and Sandblasted



單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CHTMH01510-DIN10	1.5	1000.00	6.0	200	17	17	15.5	62.5	125	8	7	6	9.5	7	31.7	936.6	5.7	1.5	0.200	3.37	2.6
CHTMH02010-DIN10	2	1000.00	8.5	150	24	24	22.0	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	0.200	6.48	4.1
CHTMH02020-DIN10	2	2000.00	8.5	300	24	24	22.0	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	2	0.400	6.48	8.2
CHTMH03010-DIN10	3	1000.00	10.3	100	29	29	26.0	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	0.200	11.51	5.8
CHTMH03020-DIN10	3	2000.00	10.3	200	29	29	26.0	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	2	0.400	11.51	11.6
CHTMH04010-DIN10	4	1000.00	13.8	75	39	39	35.0	62.5	125	8	12	10	15	9	33.3	933.4	7.7	2	0.200	20.63	10.8
CHTMH04020-DIN10	4	2000.00	13.8	150	39	39	35.0	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	2	0.400	20.63	21.6
CHTMH05010-DIN10	5	1000.00	17.4	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.0	11.7	3	0.200	33.10	13.1
CHTMH05020-DIN10	5	2000.00	17.4	120	49	39	34.0	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	3	0.400	33.10	26.0
CHTMH06010-DIN10	6	1000.00	20.9	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.0	15.7	3	0.200	48.34	18.8
CHTMH06020-DIN10	6	2000.00	20.9	100	59	49	43.0	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	3	0.400	48.34	37.5
CHTMH08010-DIN10	8	960.00	28.0	36	79	79	71.0	60.0	120	8	25	22	33	21	120.0	720.0	19.7	4	0.200	86.30	41.0
CHTMH08020-DIN10	8	1920.00	28.0	72	79	79	71.0	60.0	120	16	25	22	33	21	120.0	1680.0	19.7	4	0.400	86.30	82.0
CHTMH10010-DIN10	10	1000.00	35.1	30	99	99	89.0	62.5	125	8	32	33	48	32	125.0	750.0	19.7	5	0.200	135.18	63.0

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

斜齒精銑調質齒條

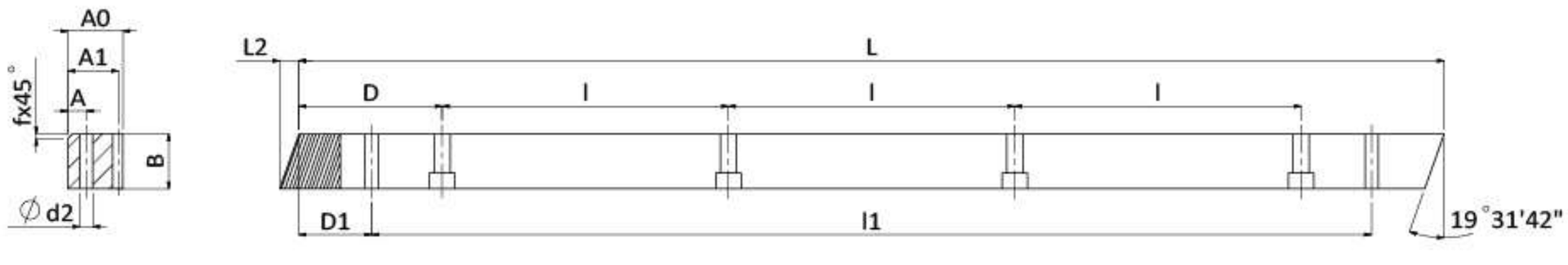
Helical Teeth, Quenched & Tempered Milled Racks

MHTMQ-DIN8

材質 : SCM440
右旋角 : 19°31'42"
調質 : 硬度 HRC20-28
精銑

MHTMQ-DIN8

Material : SCM440
Right Hand Helix Angle : 19°31'42"
Quenched & Tempered：Hardness HRC20-28
Milled



單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	D	I	N°	A	ød1	øD	E	D1	I1	ød2	f	Fp	kN	KG
MHTMQ01510-DIN8	1.5	1000.00	6.0	200	17	17	15.5	62.5	125	8	7	6	9.5	7	31.7	936.6	5.7	1.5	0.100	1.21	2.6
MHTMQ02010-DIN8	2	1000.00	8.9	150	25	24	22.0	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2	0.100	2.43	4.1
MHTMQ02020-DIN8	2	2000.00	8.9	300	25	24	22.0	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	2	0.200	2.43	8.2
MHTMQ03010-DIN8	3	1000.00	10.6	100	30	29	26.0	62.5	125	8	9	10	15	9	35.0	930.0	7.7	2	0.100	4.28	5.8
MHTMQ03020-DIN8	3	2000.00	10.6	200	30	29	26.0	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	2	0.200	4.28	11.6
MHTMQ04010-DIN8	4	1000.00	14.2	75	40	39	35.0	62.5	125	8	12	10	15	9	33.3	933.4	7.7	2	0.100	7.59	10.8
MHTMQ04020-DIN8	4	2000.00	14.2	150	40	39	35.0	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	2	0.200	7.59	21.6
MHTMQ05010-DIN8	5	1000.00	17.4	60	49	39	34.0	62.5	125	8	12	14	20	13	37.5	925.0	11.7	3	0.100	11.87	13.1
MHTMQ05020-DIN8	5	2000.00	17.4	120	49	39	34.0	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	3	0.200	11.87	26.0
MHTMQ06010-DIN8	6	1000.00	20.9	50	59	49	43.0	62.5	125	8	16	18	26	17	37.5	925.0	15.7	3	0.100	17.34	18.8
MHTMQ06020-DIN8	6	2000.00	20.9	100	59	49	43.0	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	3	0.200	17.34	37.5
MHTMQ08010-DIN8	8	960.00	28.0	36	79	79	71.0	60.0	120	8	25	22	33	21	120.0	720.0	19.7	4	0.100	30.95	41.0
MHTMQ08020-DIN8	8	1920.00	28.0	72	79	79	71.0	60.0	120	16	25	22	33	21	120.0	1680.0	19.7	4	0.200	30.95	82.0
MHTMQ10010-DIN8	10	1000.00	35.1	30	99	99	89.0	62.5	125	8	32	33	48	32	125.0	750.0	19.7	5	0.100	48.47	63.0

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

直齒齒研齒條

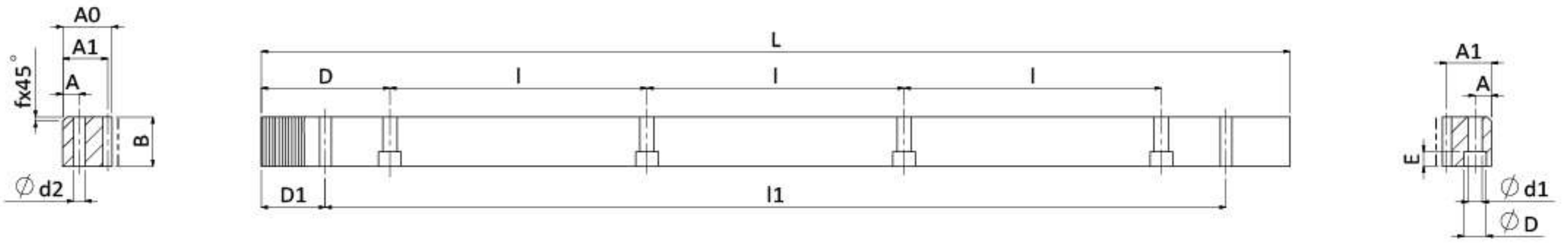
Straight Teeth, Hardened and Ground Racks

CSTGH-DIN5

材質 : S50C
高週波 : 硬度 HRC50-55
硬化處理後四面研磨與齒面研磨

CSTGH-DIN5

Material : S50C
Hardened：Hardness HRC50-55
Teeth Hardened and Ground
Ground on all sides after Hardening



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	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	0.030	7.09	4.2
CSTGH03010-DIN5	3	1017.88	108	29	29	26	63.62	127.23	8	9	10	15	9	34.4	949.10	7.7	2	0.030	12.59	6.2

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

直齒齒研齒條

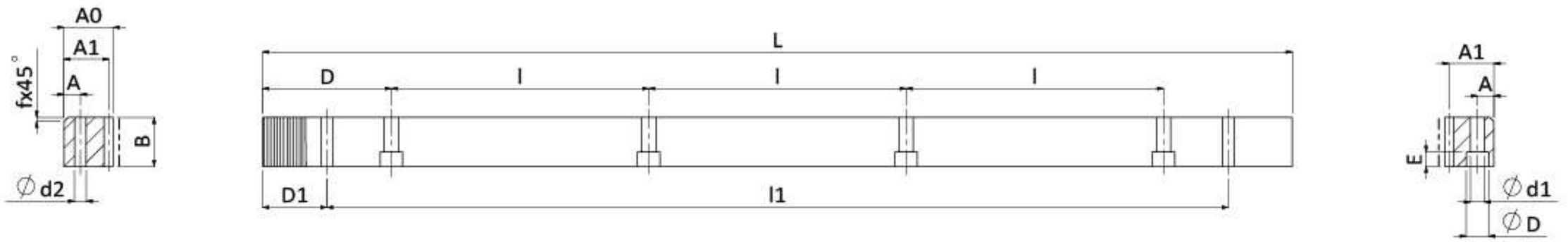
CSTGH-DIN6

材質 : S50C
高週波 : 硬度 HRC50-55
硬化處理後四面研磨與齒面研磨

Straight Teeth, Hardened and Ground Racks

CSTGH-DIN6

Material : S50C
Hardened：Hardness HRC50-55
Teeth Hardened and Ground
Ground on all sides after Hardening



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CSTGH01505-DIN6	1.5	499.51	106	19	19	17.5	62.44	124.88	4	8	7	11	7	29.0	441.50	5.7	2	0.028	4.00	1.3
CSTGH01510-DIN6	1.5	999.03	212	19	19	17.5	62.44	124.88	8	8	7	11	7	29.0	941.00	5.7	2	0.034	4.00	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	0.032	6.88	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	0.036	6.88	4.2
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	0.046	6.88	8.4
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	0.032	8.52	2.0
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	0.036	8.52	4.0
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	0.046	8.52	8.0
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	0.032	12.22	3.1
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	0.036	12.22	6.2
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	0.046	12.22	12.4
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	0.036	21.92	5.3
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	0.040	21.92	10.6
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	0.048	21.92	21.2
CSTGH05005-DIN6	5	502.65	32	49	39	34	62.83	125.66	4	12	14	20	13	30.1	442.40	11.7	3	0.036	35.15	6.3
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	0.040	35.15	12.6
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	0.048	35.15	25.2
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	0.036	51.35	9.8
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	0.040	51.35	19.6
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	0.048	51.35	39.2
CSTGH08005-DIN6	8	502.65	20	79	79	71	62.83	125.66	4	25	22	33	21	26.6	449.45	19.7	4	0.036	91.66	21.0
CSTGH08010-DIN6	8	1005.31	40	79	79	71	62.83	125.66	8	25	22	33	21	26.6	952.00	19.7	4	0.040	91.66	42.0
CSTGH08020-DIN6	8	2010.61	80	79	79	71	62.83	125.66	16	25	22	33	21	26.6	1957.40	19.7	4	0.048	91.66	84.0
CSTGH10010-DIN6	10	1005.31	32	99	99	89	62.83	125.66	8	32	33	48	32	125.66	754.00	19.7	5	0.044	143.59	66.1

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

直齒齒研齒條

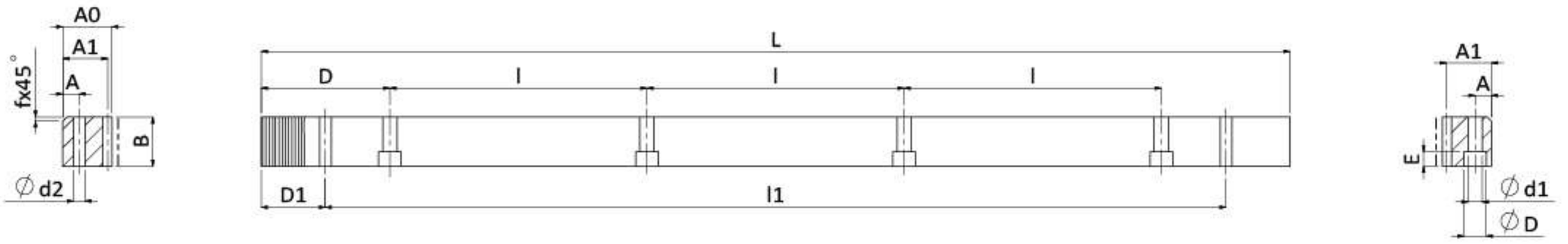
Straight Teeth, Hardened and Ground Racks

CSTGH-DIN7

材質 : S50C / S45C
高週波 : 硬度 HRC50-55
硬化處理後四面研磨與齒面研磨

CSTGH-DIN7

Material : S50C / S45C
Hardened：Hardness HRC50-55
Teeth Hardened and Ground
Ground on all sides after Hardening



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CSTGH02010-DIN7	2	1005.31	160	24	24	22	62.83	125.66	8	8	7	11	7	31.3	942.70	5.7	2	0.052	5.65	4.2
CSTGH02020-DIN7	2	2010.62	320	24	24	22	62.83	125.66	16	8	7	11	7	31.3	1948.00	5.7	2	0.068	5.65	8.4
CSTGH03010-DIN7	3	1017.88	108	29	29	26	63.62	127.23	8	9	10	15	9	34.4	949.10	7.7	2	0.052	10.01	6.2
CSTGH03020-DIN7	3	2035.75	216	29	29	26	63.62	127.23	16	9	10	15	9	34.4	1967.00	7.7	2	0.068	10.01	12.4
CSTGH04010-DIN7	4	1005.31	80	39	39	35	62.83	125.66	8	12	10	15	9	37.5	930.30	7.7	2	0.052	17.95	10.6
CSTGH04020-DIN7	4	2010.62	160	39	39	35	62.83	125.66	16	12	10	15	9	37.5	1935.60	7.7	2	0.068	17.95	21.2
CSTGH05010-DIN7	5	1005.31	64	49	39	34	62.83	125.66	8	12	14	20	13	30.1	945.00	11.7	3	0.052	28.78	12.6
CSTGH05020-DIN7	5	2010.62	128	49	39	34	62.83	125.66	16	12	14	20	13	30.1	1950.40	11.7	3	0.068	28.78	25.2

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

直齒精銑齒條

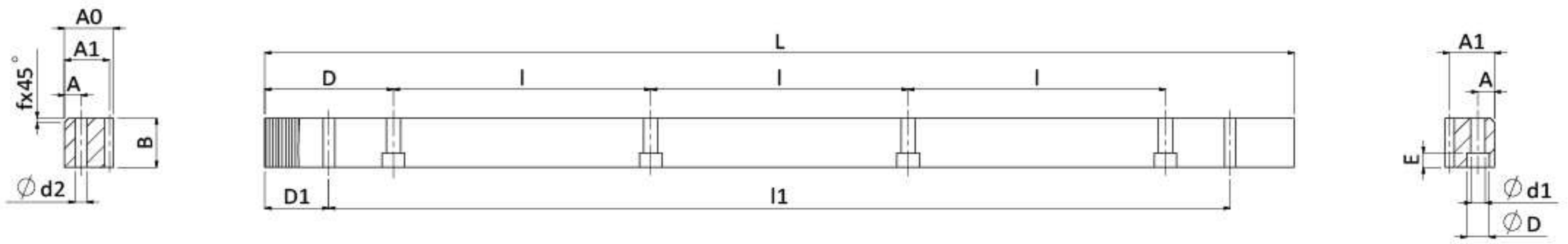
Straight Teeth, Milled Racks

CSTM-DIN8

材質 : S50C
精銑

CSTM-DIN8

Material : S50C
Milled



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CSTM01510-DIN8	1.5	999.03	212	17	17	15.5	62.44	124.88	8	7	6	9.5	7	29.0	941.00	5.7	1.5	0.060	0.41	2.6
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	0.060	0.83	4.2
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	0.078	0.83	8.4
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	0.060	1.45	6.2
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	0.078	1.45	12.4
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	0.060	2.58	10.6
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	0.078	2.58	21.2
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	0.060	4.03	12.6
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	0.078	4.03	25.2
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	0.060	5.89	19.6
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	0.078	5.89	39.2
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	0.060	10.52	42.0
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	0.078	10.52	84.0
CSTM10010-DIN8	10	1005.31	32	99	99	89	62.83	125.66	8	32	33	48	32	125.66	754.00	19.7	5	0.060	16.48	42.0

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

直齒硬化齒條

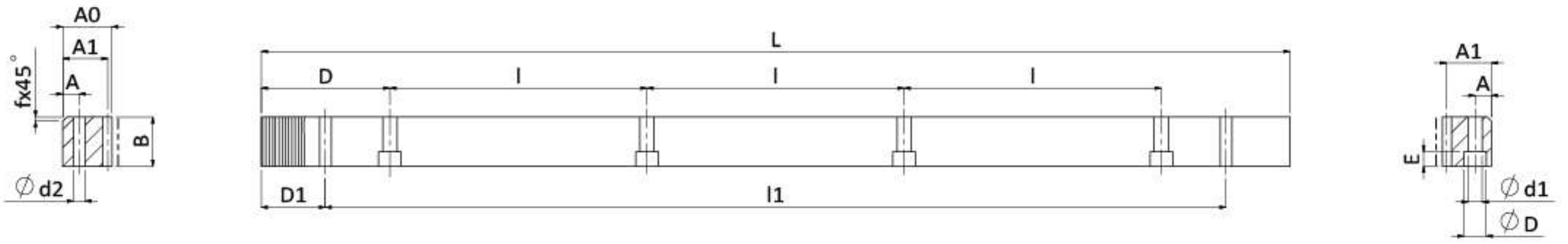
Straight Teeth, Milled and Hardened Racks

CSTMH-DIN10

材質 : S50C
高週波 : 硬度 HRC50-55
精銑 , 表面噴砂

CSTMH-DIN10

Material : S50C
Hardened：Hardness HRC50-55
Milled, Teeth Hardened and Sandblasted



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	D	l	N°	A	ød1	øD	E	D1	l1	ød2	f	Fp	kN	KG
CSTMH01510-DIN10	1.5	999.03	212	17	17	15.5	62.44	124.88	8	7	6	9.5	7	29.0	941.00	5.7	1.5	0.200	2.35	2.6
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	0.200	4.52	4.2
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	0.400	4.52	8.4
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	0.200	8.01	6.2
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	0.400	8.01	12.4
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	0.200	14.36	10.6
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	0.400	14.36	21.2
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	0.200	23.03	12.6
CSTMH05020-DIN10	5	2010.62	128	49	39	34	62.83	125.66	16	12	14	20	13	30.1	1950.40	11.7	3	0.400	23.03	25.2
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	0.200	33.64	19.6
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	0.400	33.64	39.2
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	0.200	60.05	42.0
CSTMH10010-DIN10	10	1005.31	32	99	99	89	62.83	125.66	8	32	33	48	32	125.66	754.00	19.7	5	0.200	94.07	66.1

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

直齒精銑調質齒條

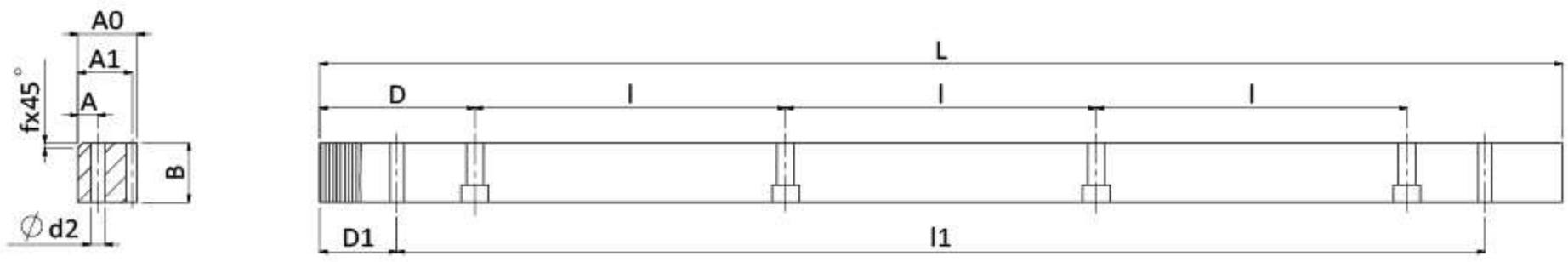
Straight Teeth, Quenched & Tempered Milled Racks

MSTMQ-DIN8

材質 : SCM440
調質 : 硬度 HRC20-28
精銑

MSTMQ-DIN8

Material : SCM440
Quenched & Tempered：Hardness HRC20-28
Milled



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	D	I	N°	A	ød1	øD	E	D1	I1	ød2	f	Fp	kN	KG
MSTMQ01510-DIN8	1.5	999.03	212	17	17	15.5	62.44	124.88	8	7	6	9.5	7	29.0	941.00	5.7	1.5	0.100	0.66	2.6
MSTMQ02010-DIN8	2	1005.31	160	25	24	22	62.83	125.66	8	8	7	11	7	31.3	942.70	5.7	2	0.100	1.31	4.2
MSTMQ02020-DIN8	2	2010.62	320	25	24	22	62.83	125.66	16	8	7	11	7	31.3	1948.00	5.7	2	0.200	1.31	8.4
MSTMQ03010-DIN8	3	1017.88	108	30	29	26	63.62	127.23	8	9	10	15	9	34.4	949.10	7.7	2	0.100	2.31	6.2
MSTMQ03020-DIN8	3	2035.75	216	30	29	26	63.62	127.23	16	9	10	15	9	34.4	1967.00	7.7	2	0.200	2.31	12.4
MSTMQ04010-DIN8	4	1005.31	80	40	39	35	62.83	125.66	8	12	10	15	9	37.5	930.30	7.7	2	0.100	4.11	10.6
MSTMQ04020-DIN8	4	2010.62	160	40	39	35	62.83	125.66	16	12	10	15	9	37.5	1935.60	7.7	2	0.200	4.11	21.2
MSTMQ05010-DIN8	5	1005.31	64	49	39	34	62.83	125.66	8	12	14	20	13	30.1	945.00	11.7	3	0.100	6.42	12.6
MSTMQ05020-DIN8	5	2010.62	128	49	39	34	62.83	125.66	16	12	14	20	13	30.1	1950.40	11.7	3	0.200	6.42	25.2
MSTMQ06010-DIN8	6	1017.88	54	59	49	43	63.62	127.23	8	16	18	26	17	31.4	955.00	15.7	3	0.100	9.37	19.6
MSTMQ06020-DIN8	6	2035.75	108	59	49	43	63.62	127.23	16	16	18	26	17	31.4	1973.00	15.7	3	0.200	9.37	39.2
MSTMQ08010-DIN8	8	1005.31	40	79	79	71	62.83	125.66	8	25	22	33	21	26.6	952.00	19.7	4	0.100	16.73	42.0
MSTMQ08020-DIN8	8	2010.61	80	79	79	71	62.83	125.66	16	25	22	33	21	26.6	1957.40	19.7	4	0.200	16.73	84.0
MSTMQ10010-DIN8	10	1005.31	32	99	99	89	62.83	125.66	8	32	33	48	32	125.66	754.00	19.7	5	0.100	26.22	66.1

M : 模數 / Z : 齒數 / N : 孔數 / Fp : 總節距誤差 / kN : 最大進給力

M : Module / Z : No. of Teeth / N : No. of Holes / Fp : Total Pitch Error / kN : Max Feed Force

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

齒輪目錄與型號說明

品名 Product	型號 Code	1. 精度 Quality	2. 螺旋角 Helix Angle	3. 材質 Material	4. 齒型 Type	5. 系列 Series	6. 齒面處理 Teeth Treatment
齒輪	MHGH	DIN6	左旋角 Left Hand Helix Angle 19°31'42"	M= 合金鋼 SCM440、SCM415 M=Alloy Steel SCM440、SCM415	H= 斜齒 S= 直齒 H=Helical S=Straight	--	G= 齒研 M= 精銑 G=Ground M=Milled
齒輪	MSGH		0°				
法蘭齒輪	MHFGH		左旋角 Left Hand Helix Angle 19°31'42"			F= 法蘭式 F=Flange	
齒輪焊接法蘭	MHGC-FW						
花鍵齒輪	MHSGC-N					S= 花鍵 S=Splined	
毛氈齒輪	FHM	--	左旋角 / 右旋角 Left Hand Helix Angle Right Hand Helix Angle 19°31'42"	F= 毛氈 F=Felt		--	
毛氈齒輪	FSM		0°				

齒輪 Pinion

MHGH-020-030-1-1-DIN6

3 4 6 7 8 9 10 11 1

法蘭齒輪 Flange Pinion

MHFGH-020-026-1-4-DIN6

3 4 5 6 7 8 9 10 11 1

齒輪焊接法蘭 Pinion with Flange Welded

MHGC-020-023-1-DIN6-FW063-3

3 4 6 7 8 9 10 1 5 12 11

7. 熱處理 Heat Treatment	8. 模數 Module	9. 齒數 No. of. Teeth	10. 編號 Number	11. 圖號 Fig	12. 備註 Remark	頁碼 Page	品名 Product
H= 高週波 C= 滲碳淬火 H=Induction Hardened C=Case Hardened	M1.5-M10	15-40	1、2、3...	圖號 Fig 1、2	--	17-23	Pinion
	M2-M8	16-63				24-30	
	M2-M5	21-40		圖號 Fig 1、2、3		31	Flange Pinion
	M2-M6	12-32			W= 焊接 080= 鑽孔位置 W=Welded 080=Hole Position	32	Pinion with Flange Welded
	M1.5-M4	15-38		--	N= 花鍵直徑 N=Spline Diameter	33	Splined Pinion
--	M2-M8	17-18	--		L= 左旋角 R= 右旋角 L=Left Hand Helix Angle R=Right Hand Helix Angle	34	Felt Pinion
		18-19			--	34	

花鍵齒輪 Splined Pinion

MHSGC-020-020-1-N22-DIN6

3 4 5 6 7 8 9 10 12 1

毛氈齒輪 Felt Pinion

FHM-020-018-L

3 4 6 8 9 12

斜齒齒研齒輪

MHGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

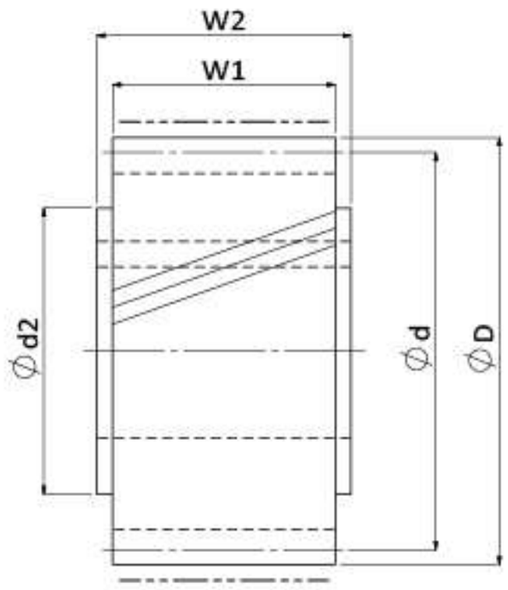
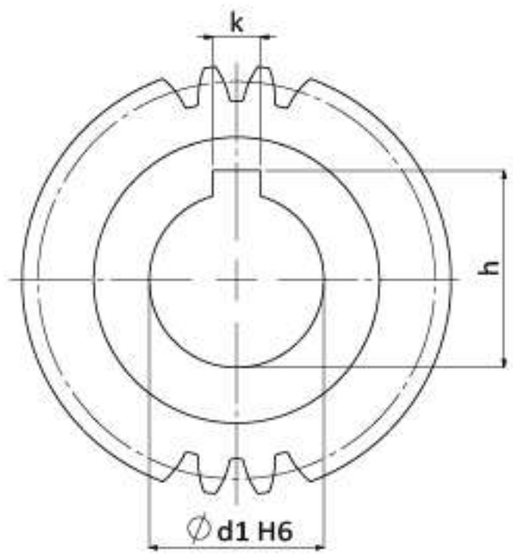


圖.1/Fig.1



Helical Teeth, Hardened and Ground Pinions

MHGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

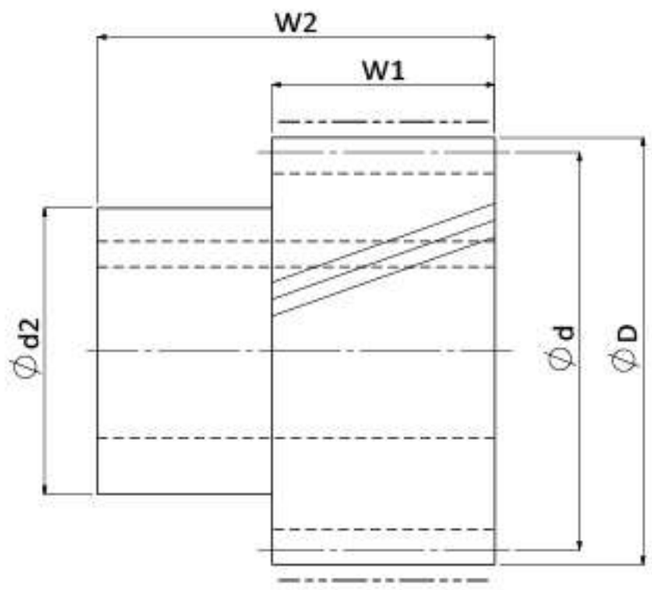


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MHGH0150201	1	-DIN6	1.5	20	34.83	31.831	11	25	20	22	4	12.8	4.71	0.10
MHGH0150202	1	-DIN6	1.5	20	34.83	31.831	13	25	20	22	5	15.3	4.71	0.10
MHGH0150203	1	-DIN6	1.5	20	34.83	31.831	14	25	20	22	5	16.3	4.71	0.10
MHGH0150204	1	-DIN6	1.5	20	34.83	31.831	16	25	20	22	5	18.3	4.71	0.10
MHGH0150205	2	-DIN6	1.5	20	34.83	31.831	16	25	20	30	5	18.3	4.71	0.11
MHGH0150206	2	-DIN6	1.5	20	34.83	31.831	16	24	20	50	--	--	4.71	0.15
MHGH0150211	2	-DIN6	1.5	21	36.42	33.423	16	30	20	46	5	18.3	5.57	0.30
MHGH0150221	2	-DIN6	1.5	22	38.01	35.014	16	25	20	30	5	18.3	5.85	0.14
MHGH0150222	2	-DIN6	1.5	22	38.01	35.014	16	24	20	50	--	--	5.85	0.18
MHGH0150251	2	-DIN6	1.5	25	42.79	39.789	16	30	20	46	5	18.3	6.72	0.18
MHGH0150252	2	-DIN6	1.5	25	42.79	39.789	16	25	20	30	5	18.3	6.72	0.18
MHGH0150253	2	-DIN6	1.5	25	42.79	39.789	16	24	20	50	--	--	6.72	0.22
MHGH0150301	2	-DIN6	1.5	30	50.75	47.747	16	25	20	30	5	18.3	7.50	0.27
MHGH0150302	2	-DIN6	1.5	30	50.75	47.747	16	24	20	50	--	--	7.50	0.31

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒齒研齒輪

MHGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Helical Teeth, Hardened and Ground Pinions

MHGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

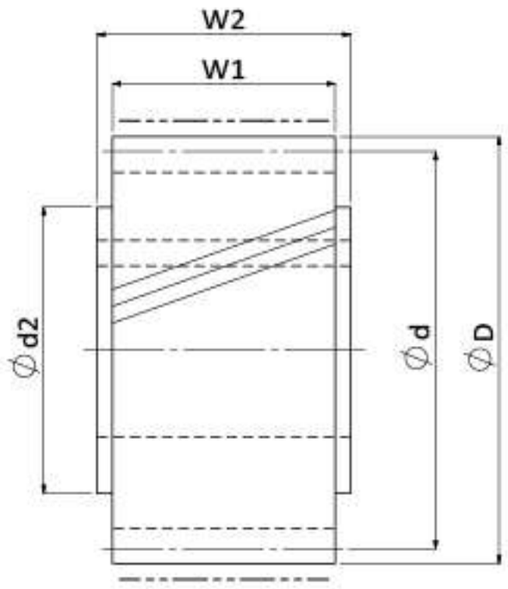
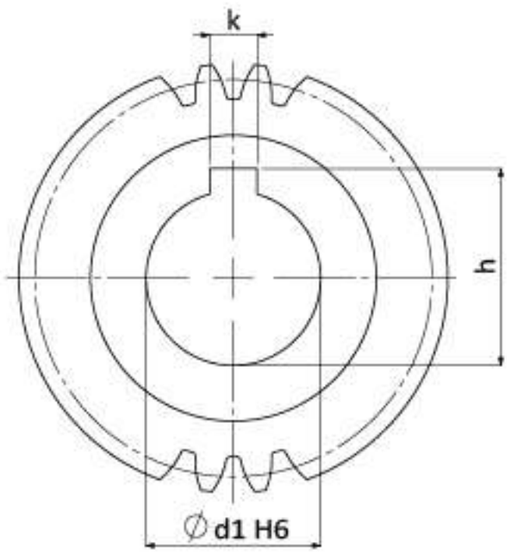


圖.1/Fig.1



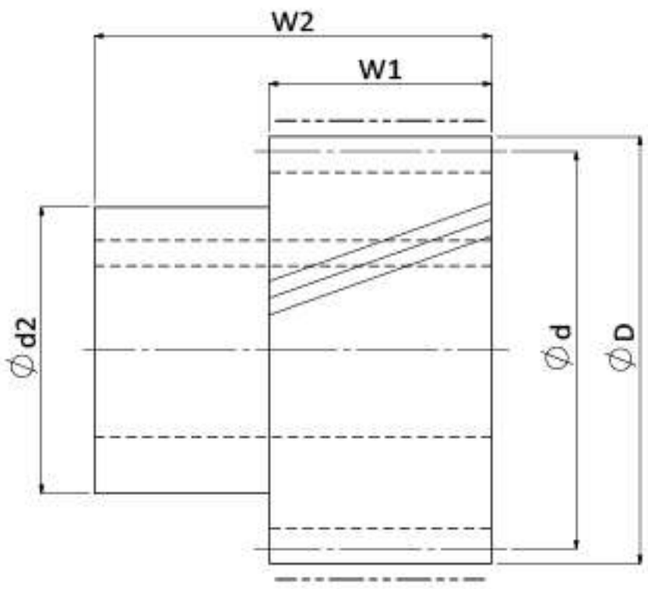


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MHGH0200181	1	-DIN6	2	18	42.20	38.197	16	25	28	30	5	18.3	8.03	0.20
MHGH0200201	1	-DIN6	2	20	46.44	42.441	19	30	28	30	6	21.8	8.99	0.20
MHGH0200202	2	-DIN6	2	20	46.44	42.441	19	30	28	56	6	21.8	8.99	0.20
MHGH0200203	1	-DIN6	2	20	46.44	42.441	20	30	28	30	6	22.8	8.99	0.20
MHGH0200204	2	-DIN6	2	20	46.44	42.441	22	36	28	56	6	24.8	8.99	0.20
MHGH0200205	1	-DIN6	2	20	46.44	42.441	22	30	28	30	6	24.8	8.99	0.20
MHGH0200206	2	-DIN6	2	20	46.44	42.441	22	36	28	36	6	24.8	8.99	0.20
MHGH0200207	2	-DIN6	2	20	46.44	42.441	22	35	25	40	6	24.8	8.03	0.26
MHGH0200208	2	-DIN6	2	20	46.44	42.441	22	30	25	60	--	--	8.03	0.29
MHGH0200211	1	-DIN6	2	21	48.56	44.563	16	25	28	30	5	18.3	9.47	0.30
MHGH0200212	2	-DIN6	2	21	48.56	44.563	22	36	28	30	6	24.8	9.47	0.30
MHGH0200221	1	-DIN6	2	22	50.69	46.686	19	30	28	30	6	21.8	11.16	0.30
MHGH0200222	2	-DIN6	2	22	50.69	46.686	19	30	28	56	6	21.8	11.16	0.30
MHGH0200223	1	-DIN6	2	22	50.69	46.686	22	30	28	30	6	24.8	11.16	0.30
MHGH0200224	2	-DIN6	2	22	50.69	46.686	22	36	28	56	6	24.8	11.16	0.30
MHGH0200225	2	-DIN6	2	22	50.69	46.686	22	35	25	40	6	24.8	9.97	0.32
MHGH0200226	2	-DIN6	2	22	50.69	46.686	22	35	25	60	--	--	9.97	0.35
MHGH0200251	1	-DIN6	2	25	57.05	53.052	19	30	28	30	6	21.8	12.80	0.40
MHGH0200252	2	-DIN6	2	25	57.05	53.052	19	30	28	56	6	21.8	12.80	0.40
MHGH0200253	1	-DIN6	2	25	57.05	53.052	20	30	28	30	6	22.8	12.80	0.40
MHGH0200254	1	-DIN6	2	25	57.05	53.052	22	30	28	30	6	24.8	12.80	0.40
MHGH0200255	2	-DIN6	2	25	57.05	53.052	22	36	28	56	6	24.8	12.80	0.40
MHGH0200256	1	-DIN6	2	25	57.05	53.052	25	36	28	30	6	27.8	12.80	0.40
MHGH0200257	2	-DIN6	2	25	57.05	53.052	22	35	25	40	6	24.8	11.42	0.42
MHGH0200258	2	-DIN6	2	25	57.05	53.052	22	30	25	60	--	--	11.42	0.45

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter /
kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒齒研齒輪

MHGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

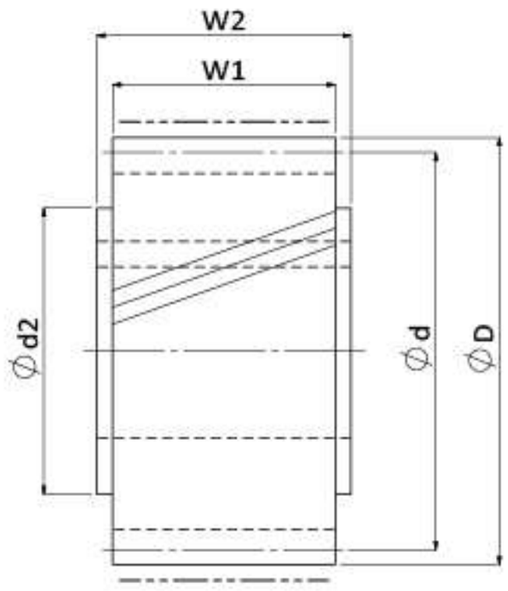
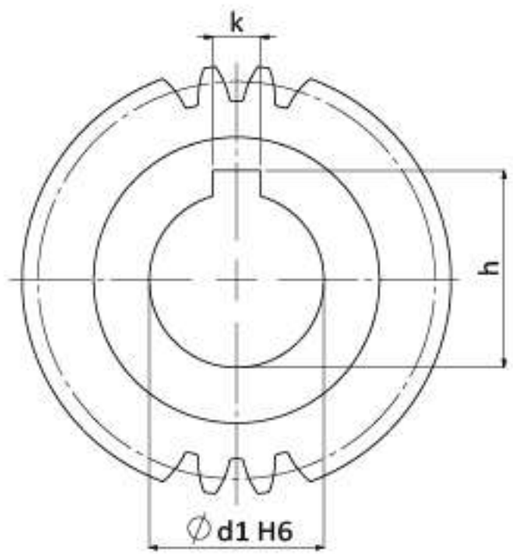


圖.1/Fig.1



Helical Teeth, Hardened and Ground Pinions

MHGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

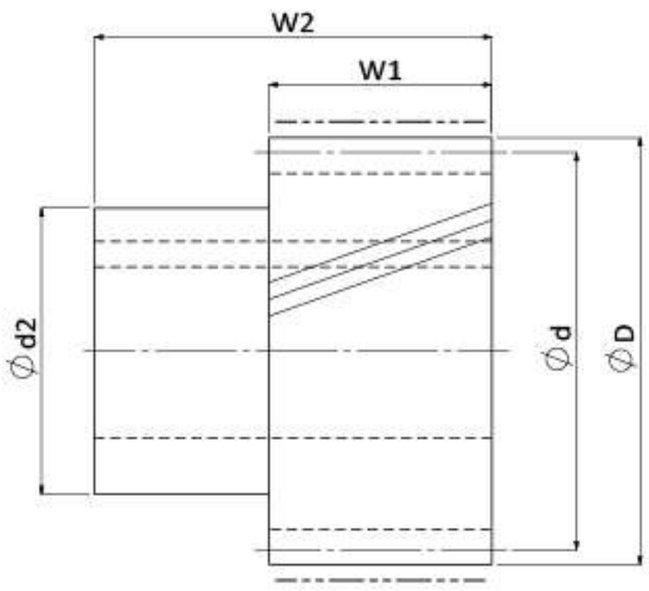


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MHGH0200281	1	-DIN6	2	28	63.42	59.418	19	30	28	30	6	21.8	14.05	0.40
MHGH0200282	2	-DIN6	2	28	63.42	59.418	19	30	28	56	6	21.8	14.05	0.40
MHGH0200283	1	-DIN6	2	28	63.42	59.418	22	30	28	30	6	24.8	14.05	0.40
MHGH0200284	2	-DIN6	2	28	63.42	59.418	22	36	28	56	6	24.8	14.05	0.40
MHGH0200285	1	-DIN6	2	28	63.42	59.418	35	48	28	30	10	38.3	14.05	0.40
MHGH0200301	1	-DIN6	2	30	67.66	63.662	16	25	28	30	5	18.3	14.30	0.70
MHGH0200302	1	-DIN6	2	30	67.66	63.662	20	30	28	30	6	22.8	14.30	0.70
MHGH0200303	2	-DIN6	2	30	67.66	63.662	22	36	28	56	6	24.8	14.30	0.70
MHGH0200304	1	-DIN6	2	30	67.66	63.662	25	36	28	30	8	28.3	14.30	0.70
MHGH0200305	1	-DIN6	2	30	67.66	63.662	30	45	28	30	8	33.3	14.30	0.70
MHGH0200306	2	-DIN6	2	30	67.66	63.662	30	50	28	60	8	33.3	14.30	0.70
MHGH0200307	2	-DIN6	2	30	67.66	63.662	32	55	28	65	10	35.3	14.30	0.70
MHGH0200308	2	-DIN6	2	30	67.66	63.662	22	35	25	40	6	24.8	12.77	0.61
MHGH0200309	2	-DIN6	2	30	67.66	63.662	22	30	25	60	--	--	12.77	0.64
MHGH0200321	1	-DIN6	2	32	71.91	67.906	20	30	28	30	6	22.8	14.51	0.70
MHGH0200322	1	-DIN6	2	32	71.91	67.906	22	30	28	30	6	24.8	14.51	0.70
MHGH0200323	2	-DIN6	2	32	71.91	67.906	22	36	28	56	6	24.8	14.51	0.70
MHGH0200324	1	-DIN6	2	32	71.91	67.906	25	36	28	30	8	28.3	14.51	0.70
MHGH0200325	1	-DIN6	2	32	71.91	67.906	35	48	28	30	10	38.3	14.51	0.70
MHGH0200361	1	-DIN6	2	36	80.39	76.394	35	48	28	30	10	38.3	14.88	0.80
MHGH0200391	2	-DIN6	2	39	86.76	82.761	32	55	28	65	10	35.3	15.12	1.40
MHGH0200401	1	-DIN6	2	40	88.88	84.883	35	48	28	30	10	38.3	15.19	1.20

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒齒研齒輪

MHGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Helical Teeth, Hardened and Ground Pinions

MHGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

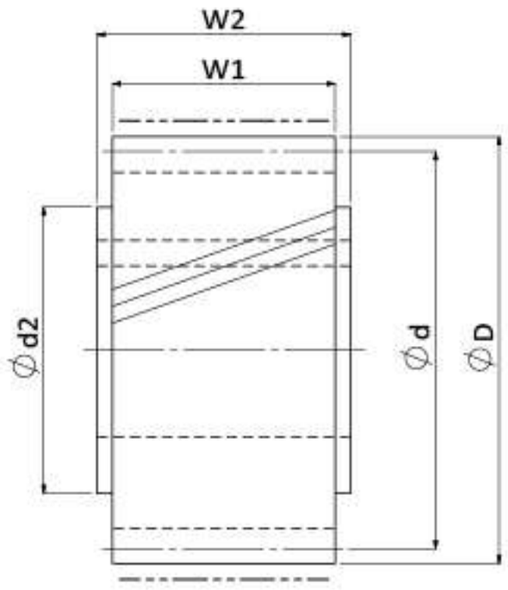
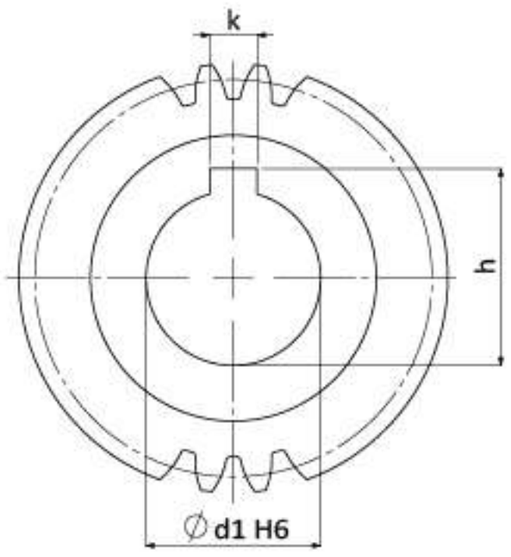


圖.1/Fig.1



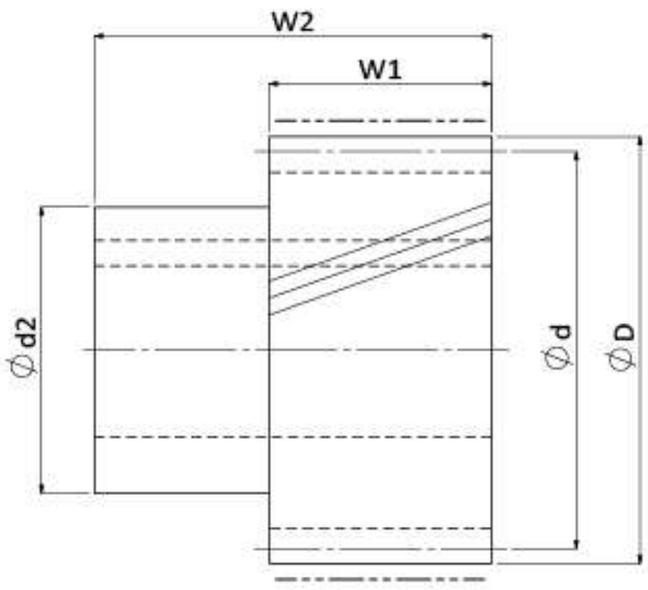


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MHGH0300181	1	-DIN6	3	18	63.30	57.296	25	36	28	30	8	28.3	13.17	0.40
MHGH0300201	1	-DIN6	3	20	69.66	63.662	25	36	28	30	8	28.3	14.74	0.50
MHGH0300202	2	-DIN6	3	20	69.66	63.662	25	44	28	60	8	28.3	14.74	1.10
MHGH0300203	1	-DIN6	3	20	69.66	63.662	30	45	28	30	8	33.3	14.74	0.50
MHGH0300204	2	-DIN6	3	20	69.66	63.662	30	50	28	60	8	33.3	14.74	1.10
MHGH0300205	2	-DIN6	3	20	69.66	63.662	32	55	28	65	10	35.3	14.74	1.20
MHGH0300206	1	-DIN6	3	20	69.66	63.662	35	48	28	30	10	38.3	14.74	0.50
MHGH0300207	2	-DIN6	3	20	69.66	63.662	22	35	30	40	6	24.8	15.86	0.69
MHGH0300208	2	-DIN6	3	20	69.66	63.662	22	30	30	65	--	--	15.86	0.74
MHGH0300209	2	-DIN6	3	20	69.66	63.662	32	50	30	60	10	35.3	15.86	0.81
MHGH03002010	2	-DIN6	3	20	69.66	63.662	32	44	30	70	--	--	15.86	0.78
MHGH0300221	1	-DIN6	3	22	76.03	70.028	25	36	28	30	8	28.3	18.57	0.60
MHGH0300222	1	-DIN6	3	22	76.03	70.028	30	45	28	30	8	33.3	18.57	0.60
MHGH0300223	2	-DIN6	3	22	76.03	70.028	32	55	28	65	10	35.3	18.57	1.40
MHGH0300224	1	-DIN6	3	22	76.03	70.028	35	48	28	30	10	38.3	18.57	0.60
MHGH0300225	2	-DIN6	3	22	76.03	70.028	40	62	28	65	12	43.3	18.57	1.40
MHGH0300226	2	-DIN6	3	22	76.03	70.028	22	35	30	40	6	24.8	19.58	0.85
MHGH0300227	2	-DIN6	3	22	76.03	70.028	22	30	30	65	--	--	19.58	0.90
MHGH0300228	2	-DIN6	3	22	76.03	70.028	32	50	30	60	10	35.3	19.58	0.96
MHGH0300229	2	-DIN6	3	22	76.03	70.028	32	44	30	70	--	--	19.58	0.93

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒齒研齒輪

MHGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

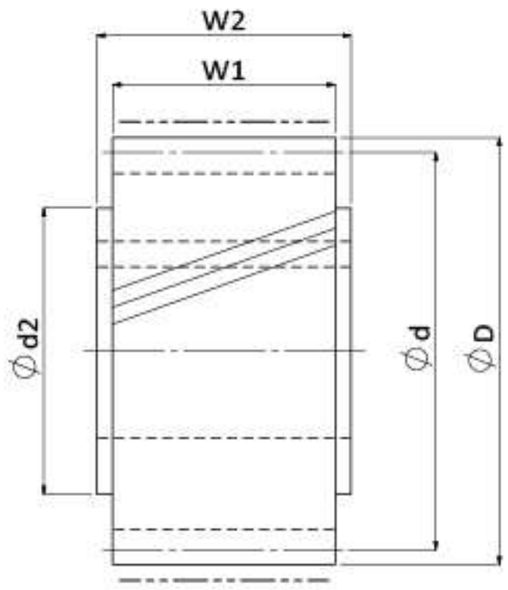
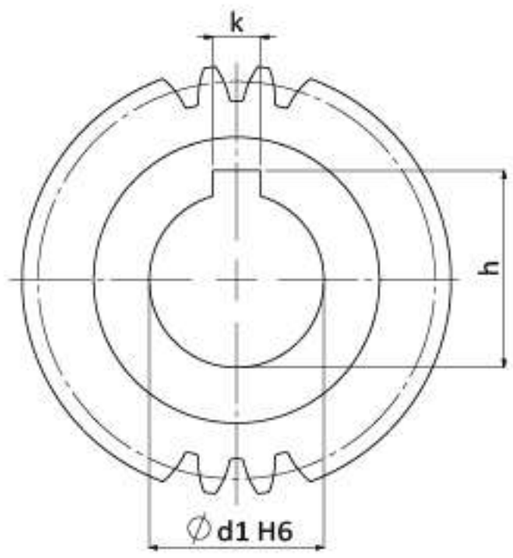


圖.1/Fig.1



Helical Teeth, Hardened and Ground Pinions

MHGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

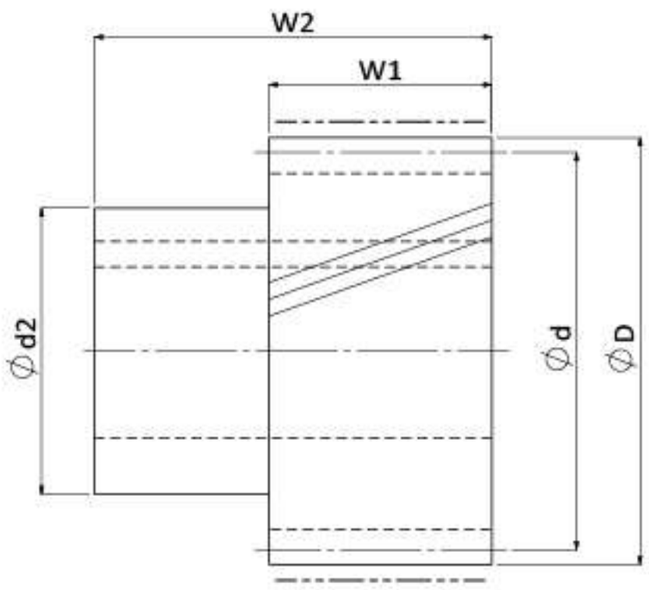


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MHGH0300251	2	-DIN6	3	25	85.58	79.578	22	36	28	56	6	24.8	20.01	1.50
MHGH0300252	1	-DIN6	3	25	85.58	79.578	25	36	28	30	8	28.3	20.01	0.80
MHGH0300253	2	-DIN6	3	25	85.58	79.578	25	44	28	60	8	28.3	20.01	1.60
MHGH0300254	1	-DIN6	3	25	85.58	79.578	30	45	28	30	8	33.3	20.01	0.80
MHGH0300255	2	-DIN6	3	25	85.58	79.578	30	50	28	60	8	33.3	20.01	1.60
MHGH0300256	2	-DIN6	3	25	85.58	79.578	32	55	28	65	10	35.3	20.01	1.80
MHGH0300257	1	-DIN6	3	25	85.58	79.578	35	48	28	30	10	38.3	20.01	0.80
MHGH0300258	2	-DIN6	3	25	85.58	79.578	35	55	28	65	10	38.3	20.01	1.80
MHGH0300259	1	-DIN6	3	25	85.58	79.578	40	70	28	50	12	43.3	20.01	1.40
MHGH03002510	2	-DIN6	3	25	85.58	79.578	40	62	28	65	12	43.3	20.01	1.80
MHGH03002511	2	-DIN6	3	25	85.58	79.578	22	35	30	40	6	24.8	21.44	1.11
MHGH03002512	2	-DIN6	3	25	85.58	79.578	22	30	30	65	--	--	21.44	1.17
MHGH03002513	2	-DIN6	3	25	85.58	79.578	32	50	30	60	10	35.3	21.44	1.23
MHGH03002514	2	-DIN6	3	25	85.58	79.578	32	44	30	70	--	--	21.44	1.20
MHGH0300281	2	-DIN6	3	28	95.13	89.127	32	55	28	65	10	35.3	20.63	2.20
MHGH0300282	2	-DIN6	3	28	95.13	89.127	40	62	28	65	12	43.3	20.63	2.20
MHGH0300301	2	-DIN6	3	30	101.49	95.493	22	35	30	40	6	24.8	22.50	1.62
MHGH0300302	2	-DIN6	3	30	101.49	95.493	22	30	30	65	--	--	22.50	1.67
MHGH0300303	2	-DIN6	3	30	101.49	95.493	32	50	30	60	10	35.3	22.50	1.74
MHGH0300304	2	-DIN6	3	30	101.49	95.493	32	44	30	70	--	--	22.50	1.71
MHGH0300321	2	-DIN6	3	32	107.86	101.859	32	55	28	65	10	35.3	21.31	2.80
MHGH0300322	2	-DIN6	3	32	107.86	101.859	40	62	28	65	12	43.3	21.31	2.00

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒齒研齒輪

MHGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Helical Teeth, Hardened and Ground Pinions

MHGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

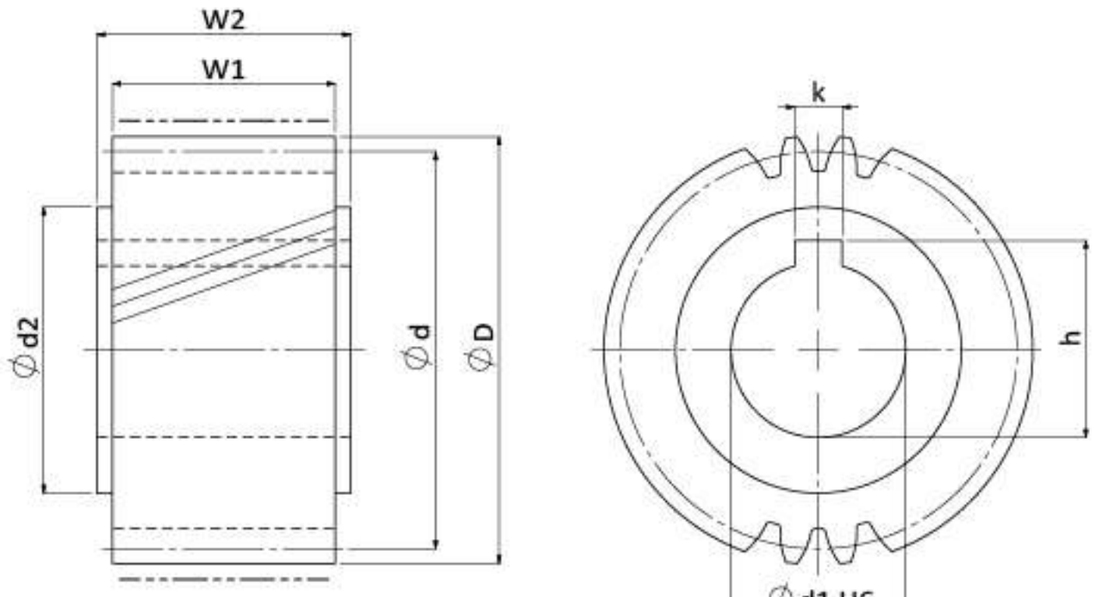


圖.1/Fig.1

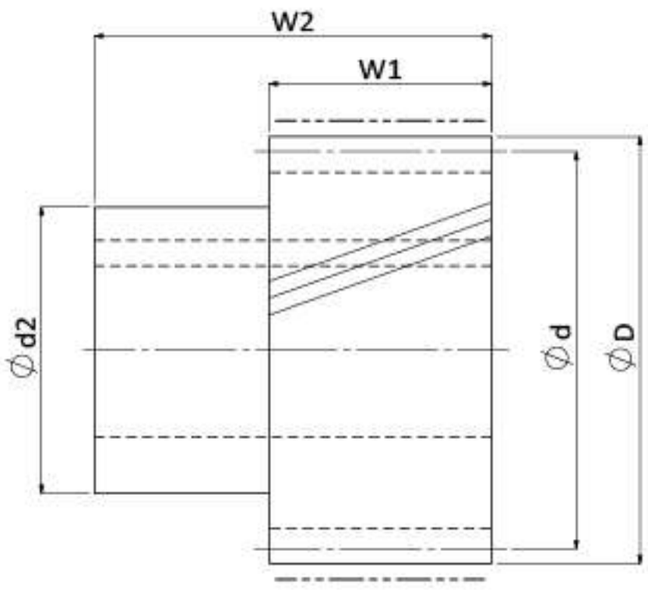


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MHGH0400151	1	-DIN6	4	15	71.66	63.662	35	52	40	50	10	38.3	18.45	0.80
MHGH0400181	2	-DIN6	4	18	84.39	76.394	32	55	40	75	10	35.3	25.18	1.60
MHGH0400201	1	-DIN6	4	20	92.88	84.883	35	52	40	50	10	38.3	28.19	1.30
MHGH0400202	1	-DIN6	4	20	92.88	84.883	45	65	40	50	14	48.8	28.19	1.30
MHGH0400203	2	-DIN6	4	20	92.88	84.883	32	50	40	60	10	35.3	28.19	1.67
MHGH0400204	2	-DIN6	4	20	92.88	84.883	32	44	40	80	--	--	28.19	1.73
MHGH0400205	2	-DIN6	4	20	92.88	84.883	40	60	40	85	12	43.3	28.19	1.89
MHGH0400206	2	-DIN6	4	20	92.88	84.883	40	50	40	85	--	--	28.19	1.58
MHGH0400211	2	-DIN6	4	21	97.13	89.127	32	55	40	75	10	35.3	29.71	2.20
MHGH0400212	2	-DIN6	4	21	97.13	89.127	35	55	40	75	10	38.3	29.71	2.20
MHGH0400213	2	-DIN6	4	21	97.13	89.127	40	62	40	75	12	43.3	29.71	2.20
MHGH0400214	2	-DIN6	4	21	97.13	89.127	45	68	40	75	14	48.8	29.71	2.20
MHGH0400221	1	-DIN6	4	22	101.37	93.371	35	52	40	50	10	38.3	31.22	1.60
MHGH0400222	1	-DIN6	4	22	101.37	93.371	45	65	40	50	14	48.8	31.22	1.60
MHGH0400223	2	-DIN6	4	22	101.37	93.371	32	50	40	60	10	35.3	31.22	2.04
MHGH0400224	2	-DIN6	4	22	101.37	93.371	32	44	40	80	--	--	31.22	2.10
MHGH0400225	2	-DIN6	4	22	101.37	93.371	40	60	40	85	12	43.3	31.22	2.26
MHGH0400226	2	-DIN6	4	22	101.37	93.371	40	50	40	85	--	--	31.22	1.95
MHGH0400241	2	-DIN6	4	24	109.86	101.859	32	55	40	75	10	35.3	37.68	2.80
MHGH0400242	2	-DIN6	4	24	109.86	101.859	35	55	40	75	10	38.3	37.68	2.80
MHGH0400243	2	-DIN6	4	24	109.86	101.859	40	62	40	75	12	43.3	37.68	2.80
MHGH0400244	2	-DIN6	4	24	109.86	101.859	45	68	40	75	14	48.8	37.68	2.80
MHGH0400245	2	-DIN6	4	24	109.86	101.859	55	80	40	80	16	59.3	37.68	3.00
MHGH0400251	1	-DIN6	4	25	114.10	106.103	35	52	40	50	10	38.3	38.12	2.00
MHGH0400252	1	-DIN6	4	25	114.10	106.103	45	65	40	50	14	48.8	38.12	2.00
MHGH0400253	2	-DIN6	4	25	114.10	106.103	55	80	40	80	16	59.3	38.12	3.20
MHGH0400254	2	-DIN6	4	25	114.10	106.103	32	50	40	60	10	35.3	38.12	2.66
MHGH0400255	2	-DIN6	4	25	114.10	106.103	32	44	40	80	--	--	38.12	2.72
MHGH0400256	2	-DIN6	4	25	114.10	106.103	40	60	40	85	12	43.3	38.12	2.88
MHGH0400257	2	-DIN6	4	25	114.10	106.103	40	50	40	85	--	--	38.12	2.58
MHGH0400301	2	-DIN6	4	30	135.32	127.324	32	50	40	60	10	35.3	40.00	3.88
MHGH0400302	2	-DIN6	4	30	135.32	127.324	32	44	40	80	--	--	40.00	3.94
MHGH0400303	2	-DIN6	4	30	135.32	127.324	40	60	40	85	12	43.3	40.00	4.10
MHGH0400304	2	-DIN6	4	30	135.32	127.324	40	50	40	85	--	--	40.00	3.80

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒齒研齒輪

MHGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

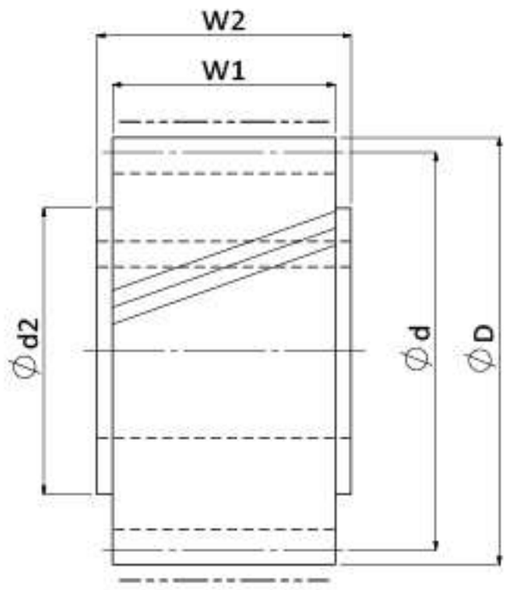
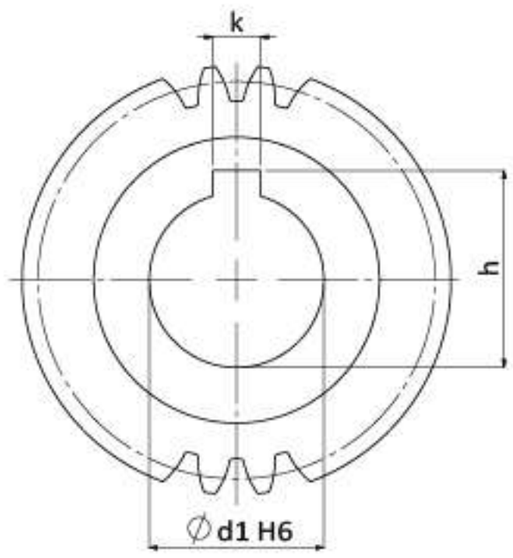


圖.1/Fig.1



Helical Teeth, Hardened and Ground Pinions

MHGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

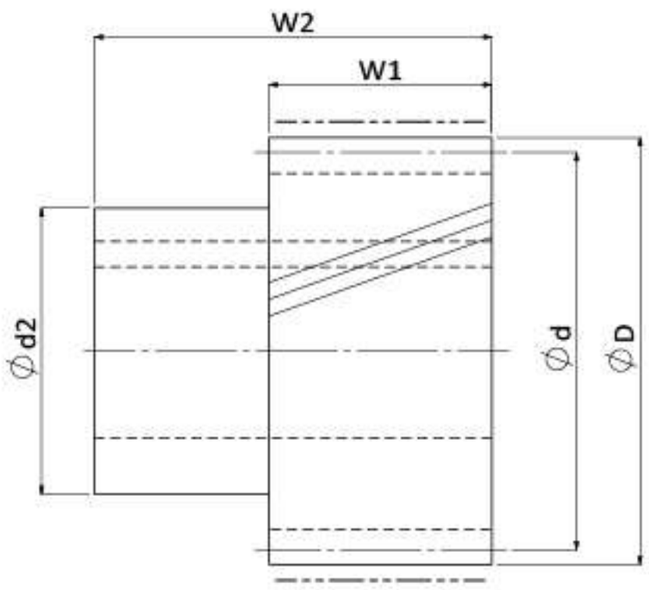


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MHGH0500181	2	-DIN6	5	18	105.49	95.493	45	68	50	85	14	48.8	40.19	2.90
MHGH0500201	2	-DIN6	5	20	116.10	106.103	40	60	50	85	12	43.3	44.99	3.34
MHGH0500202	2	-DIN6	5	20	116.10	106.103	40	50	50	90	--	--	44.99	3.16
MHGH0500221	2	-DIN6	5	22	126.71	116.714	40	60	50	85	12	43.3	49.83	4.06
MHGH0500222	2	-DIN6	5	22	126.71	116.714	40	50	50	90	--	--	49.83	3.88
MHGH0500241	2	-DIN6	5	24	137.32	127.324	45	68	50	85	14	48.8	60.14	4.90
MHGH0500242	2	-DIN6	5	24	137.32	127.324	55	80	50	90	16	59.3	60.14	5.20
MHGH0500243	2	-DIN6	5	24	137.32	127.324	75	110	50	110	20	79.9	60.14	6.40
MHGH0500251	2	-DIN6	5	25	142.63	132.629	40	60	50	85	12	43.3	60.85	5.28
MHGH0500252	2	-DIN6	5	25	142.63	132.629	40	50	50	90	--	--	60.85	5.10
MHGH0500301	2	-DIN6	5	30	169.16	159.155	40	60	50	85	12	43.3	63.84	7.66
MHGH0500302	2	-DIN6	5	30	169.16	159.155	40	50	50	90	--	--	63.84	7.48
MHGH0600201	2	-DIN6	6	20	139.32	127.324	55	80	60	100	16	59.3	65.50	6.00
MHGH0600202	2	-DIN6	6	20	139.32	127.324	75	110	60	120	20	79.9	65.50	7.20
MHGH0600203	2	-DIN6	6	20	139.32	127.324	55	80	60	85	16	59.3	65.50	5.28
MHGH0600204	2	-DIN6	6	20	139.32	127.324	55	68	60	105	--	--	65.50	5.25
MHGH0600221	2	-DIN6	6	22	152.06	140.057	40	60	60	85	12	43.3	72.54	4.06
MHGH0600222	2	-DIN6	6	22	152.06	140.057	40	50	60	90	--	--	72.54	3.88
MHGH0600251	2	-DIN6	6	25	171.16	159.155	55	80	60	100	16	59.3	88.57	9.00
MHGH0600252	2	-DIN6	6	25	171.16	159.155	75	110	60	120	20	79.9	88.57	10.80
MHGH0600253	2	-DIN6	6	25	171.16	159.155	55	80	60	85	16	59.3	88.57	8.64
MHGH0600254	2	-DIN6	6	25	171.16	159.155	55	68	60	105	--	--	88.57	8.61
MHGH0600301	2	-DIN6	6	30	202.99	190.986	55	80	60	85	16	59.3	92.93	12.74
MHGH0600302	2	-DIN6	6	30	202.99	190.986	55	68	60	105	--	--	92.93	12.71
MHGH0800181	2	-DIN6	8	18	168.79	152.789	75	110	80	140	20	79.9	104.00	11.00
MHGH0800201	2	-DIN6	8	20	185.77	169.766	85	125	80	145	22	90.4	116.44	14.00
MHGH1000201	2	-DIN6	10	20	232.21	212.207	85	125	100	165	22	90.4	181.93	26.00

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

直齒齒研齒輪

MSGH-DIN6

材質 : SCM440
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Straight Teeth, Hardened and Ground Pinions

MSGH-DIN6

Material : SCM440
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

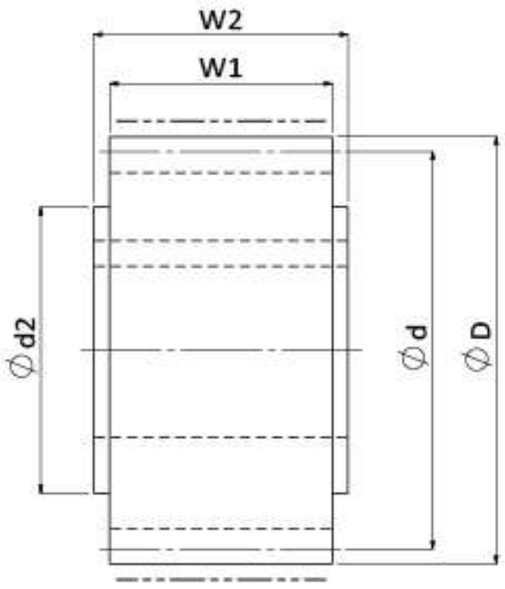
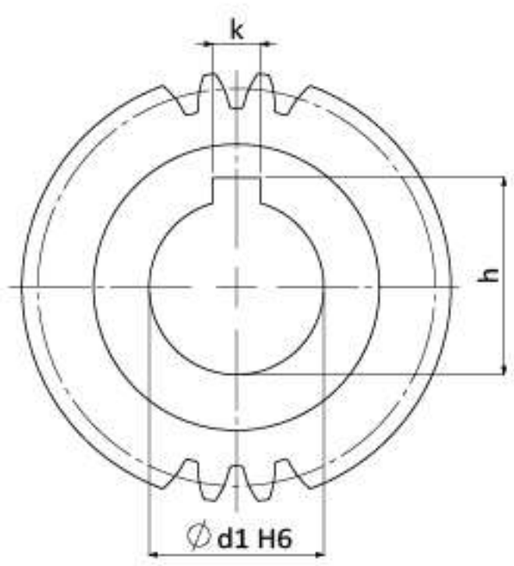


圖.1/Fig.1



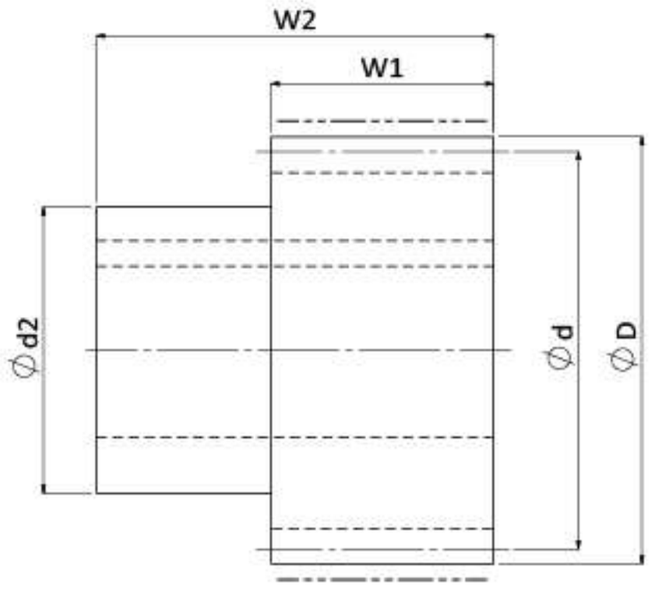


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MSGH0200161	1	-DIN6	2	16	36	32	15	25	28	30	5	17.3	3.57	0.2
MSGH0200181	1	-DIN6	2	18	40	36	15	30	28	30	5	17.3	4.34	0.2
MSGH0200182	1	-DIN6	2	18	40	36	20	28	28	30	6	22.8	4.34	0.2
MSGH0200201	1	-DIN6	2	20	44	40	15	25	28	30	6	17.8	4.83	0.3
MSGH0200202	1	-DIN6	2	20	44	40	19	30	28	30	6	21.8	4.83	0.3
MSGH0200203	2	-DIN6	2	20	44	40	19	30	28	56	6	21.8	4.83	0.5
MSGH0200204	1	-DIN6	2	20	44	40	20	30	28	30	6	22.8	4.83	0.3
MSGH0200205	1	-DIN6	2	20	44	40	22	30	28	30	6	24.8	4.83	0.3
MSGH0200206	2	-DIN6	2	20	44	40	22	30	28	56	6	24.8	4.83	0.5
MSGH0200221	1	-DIN6	2	22	48	44	15	25	28	30	5	17.3	5.31	0.3
MSGH0200222	1	-DIN6	2	22	48	44	19	30	28	30	6	21.8	5.31	0.3
MSGH0200223	2	-DIN6	2	22	48	44	19	30	28	56	6	21.8	5.31	0.6
MSGH0200224	1	-DIN6	2	22	48	44	20	30	28	30	6	22.8	5.31	0.3
MSGH0200225	2	-DIN6	2	22	48	44	22	36	28	56	6	24.8	5.31	0.6
MSGH0200226	1	-DIN6	2	22	48	44	22	30	28	30	6	24.8	5.31	0.3
MSGH0200227	1	-DIN6	2	22	48	44	25	36	28	30	8	28.3	5.31	0.3
MSGH0200251	2	-DIN6	2	25	54	50	16	30	28	54	5	18.3	6.76	0.7
MSGH0200252	1	-DIN6	2	25	54	50	19	30	28	30	6	21.8	6.76	0.4
MSGH0200253	2	-DIN6	2	25	54	50	19	30	28	56	6	21.8	6.76	0.8
MSGH0200254	1	-DIN6	2	25	54	50	20	30	28	30	6	22.8	6.76	0.4
MSGH0200255	1	-DIN6	2	25	54	50	22	30	28	30	6	24.8	6.76	0.4
MSGH0200256	2	-DIN6	2	25	54	50	22	36	28	56	6	24.8	6.76	0.8
MSGH0200257	1	-DIN6	2	25	54	50	25	36	28	30	8	28.3	6.76	0.4
MSGH0200258	1	-DIN6	2	25	54	50	30	45	28	30	8	33.3	6.76	0.4

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter /
kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

直齒齒研齒輪

MSGH-DIN6

材質 : SCM440
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Straight Teeth, Hardened and Ground Pinions

MSGH-DIN6

Material : SCM440
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

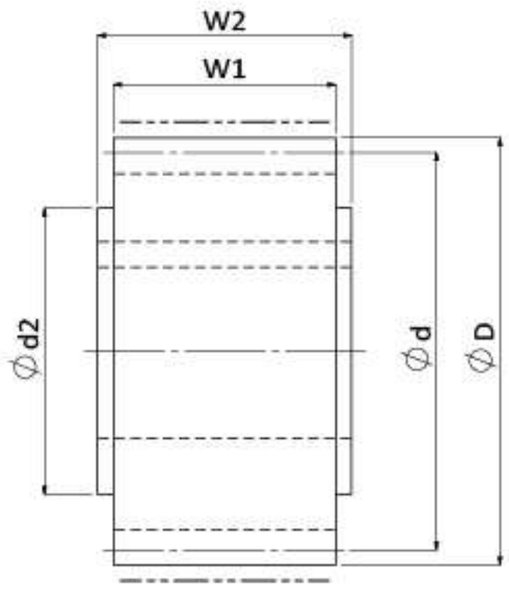
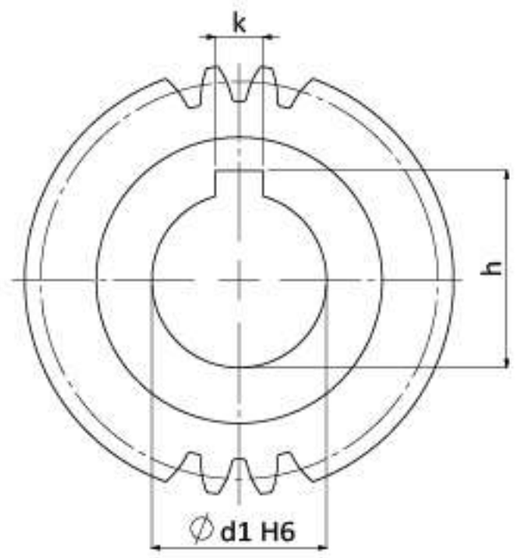


圖.1/Fig.1



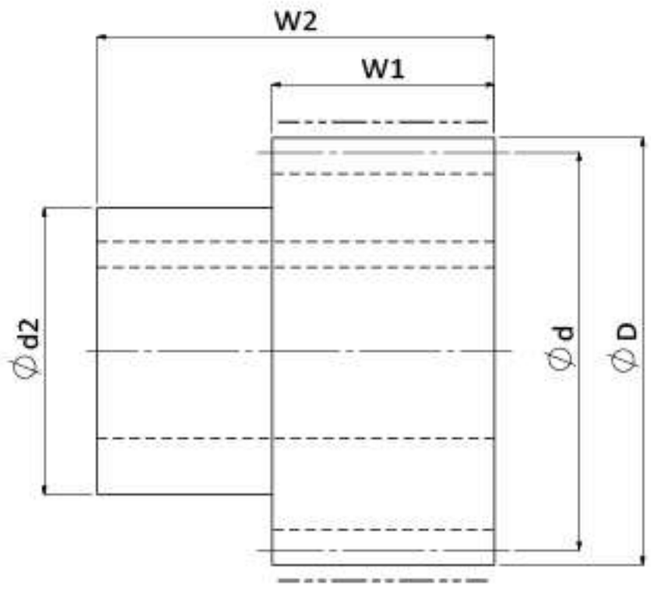


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MSGH0200281	1	-DIN6	2	28	60	56	19	30	28	30	6	21.8	7.58	0.5
MSGH0200282	2	-DIN6	2	28	60	56	19	30	28	56	6	21.8	7.58	0.9
MSGH0200283	1	-DIN6	2	28	60	56	20	30	28	30	6	22.8	7.58	0.5
MSGH0200284	1	-DIN6	2	28	60	56	22	30	28	30	6	24.8	7.58	0.5
MSGH0200285	2	-DIN6	2	28	60	56	22	36	28	56	6	24.8	7.58	0.9
MSGH0200286	1	-DIN6	2	28	60	56	25	36	28	30	8	28.3	7.58	0.5
MSGH0200287	1	-DIN6	2	28	60	56	30	45	28	30	8	33.3	7.58	0.5
MSGH0200288	2	-DIN6	2	28	60	56	30	50	28	60	8	33.3	7.58	1.0
MSGH0200289	1	-DIN6	2	28	60	56	35	48	28	30	10	38.3	7.58	0.5
MSGH0200321	2	-DIN6	2	32	68	64	16	30	28	54	5	18.3	8.66	1.2
MSGH0200322	1	-DIN6	2	32	68	64	20	30	28	30	6	22.8	8.66	0.6
MSGH0200323	1	-DIN6	2	32	68	64	22	30	28	30	6	24.8	8.66	0.6
MSGH0200324	2	-DIN6	2	32	68	64	22	36	28	56	6	24.8	8.66	1.2
MSGH0200325	1	-DIN6	2	32	68	64	25	36	28	30	8	28.3	8.66	0.6
MSGH0200326	1	-DIN6	2	32	68	64	30	45	28	30	8	33.3	8.66	0.6
MSGH0200327	2	-DIN6	2	32	68	64	30	50	28	60	8	33.3	8.66	1.3
MSGH0200328	2	-DIN6	2	32	68	64	32	55	28	65	10	35.3	8.66	1.4
MSGH0200329	1	-DIN6	2	32	68	64	35	48	28	30	10	38.3	8.66	0.6
MSGH0200361	1	-DIN6	2	36	76	72	20	30	28	30	6	22.8	11.08	0.8
MSGH0200362	1	-DIN6	2	36	76	72	25	36	28	30	8	28.3	11.08	0.8
MSGH0200363	1	-DIN6	2	36	76	72	30	45	28	30	8	33.3	11.08	0.8
MSGH0200364	1	-DIN6	2	36	76	72	35	48	28	30	10	38.3	11.08	0.8
MSGH0200365	2	-DIN6	2	36	76	72	40	62	28	65	12	43.3	11.08	1.7
MSGH0200366	1	-DIN6	2	36	76	72	45	58	28	30	14	48.8	11.08	0.8

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter /
kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

直齒齒研齒輪

Straight Teeth, Hardened and Ground Pinions

MSGH-DIN6

材質 : SCM440
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

MSGH-DIN6

Material : SCM440
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

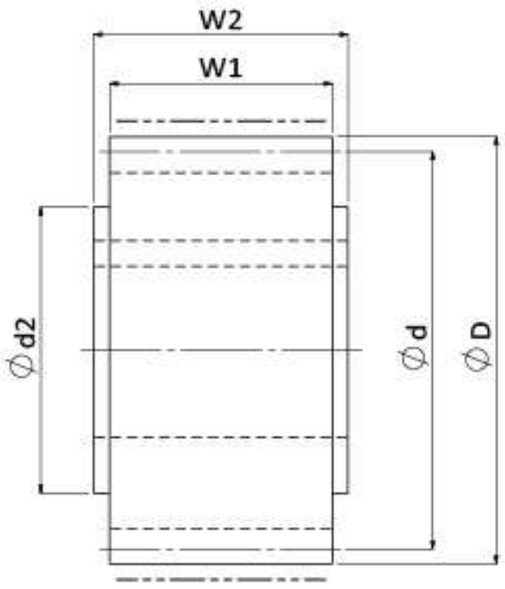
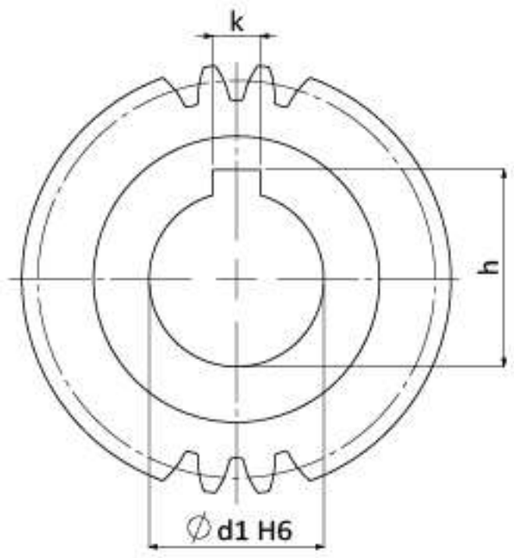


圖.1/Fig.1



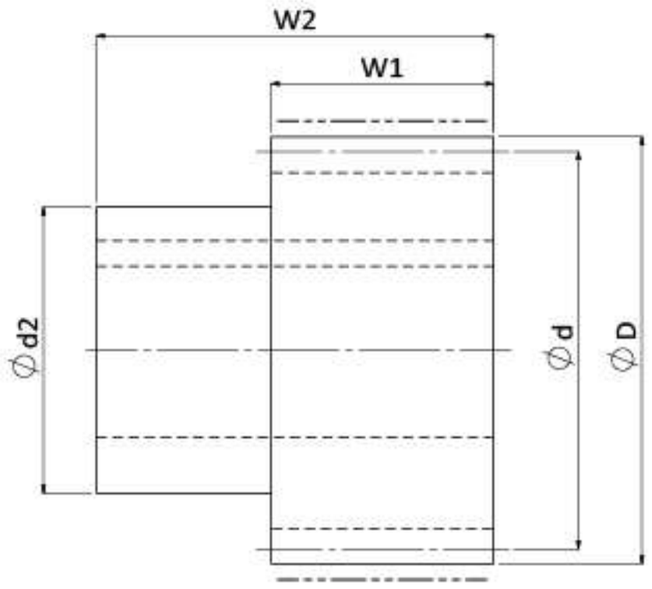


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MSGH0200401	1	-DIN6	2	40	84	80	15	36	28	30	5	17.3	12.31	1.0
MSGH0200402	1	-DIN6	2	40	84	80	20	30	28	30	6	22.8	12.31	1.0
MSGH0200403	1	-DIN6	2	40	84	80	25	36	28	30	8	28.3	12.31	1.0
MSGH0200404	1	-DIN6	2	40	84	80	30	45	28	30	8	33.3	12.31	1.0
MSGH0200405	2	-DIN6	2	40	84	80	32	55	28	65	10	35.3	12.31	2.1
MSGH0200406	1	-DIN6	2	40	84	80	35	48	28	30	10	38.3	12.31	1.0
MSGH0200407	2	-DIN6	2	40	84	80	40	62	28	65	12	43.3	12.31	2.1
MSGH0200408	1	-DIN6	2	40	84	80	45	58	28	30	14	48.8	12.31	1.0
MSGH0200409	2	-DIN6	2	40	84	80	45	68	28	65	14	48.8	12.31	2.1
MSGH0200451	1	-DIN6	2	45	94	90	20	30	28	30	6	22.8	12.62	1.2
MSGH0200452	1	-DIN6	2	45	94	90	25	36	28	30	8	28.3	12.62	1.2
MSGH0200453	1	-DIN6	2	45	94	90	35	48	28	30	10	38.3	12.62	1.2
MSGH0200454	1	-DIN6	2	45	94	90	45	58	28	30	14	48.8	12.62	1.2
MSGH0200501	1	-DIN6	2	50	104	100	20	30	28	30	6	22.8	12.86	1.5
MSGH0200502	1	-DIN6	2	50	104	100	25	36	28	30	8	28.3	12.86	1.5
MSGH0200503	1	-DIN6	2	50	104	100	35	48	28	30	10	38.3	12.86	1.5
MSGH0200504	1	-DIN6	2	50	104	100	45	58	28	30	14	48.8	12.86	1.5
MSGH0200505	2	-DIN6	2	50	104	100	45	68	28	65	14	48.8	12.86	3.3
MSGH0200561	1	-DIN6	2	56	116	112	25	36	28	30	8	28.3	13.08	1.9
MSGH0200562	1	-DIN6	2	56	116	112	35	48	28	30	10	38.3	13.08	1.9

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

直齒齒研齒輪

MSGH-DIN6

材質 : SCM440
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Straight Teeth, Hardened and Ground Pinions

MSGH-DIN6

Material : SCM440
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

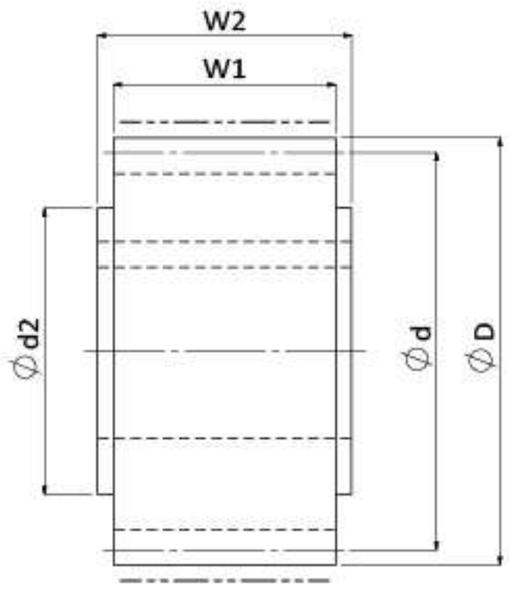
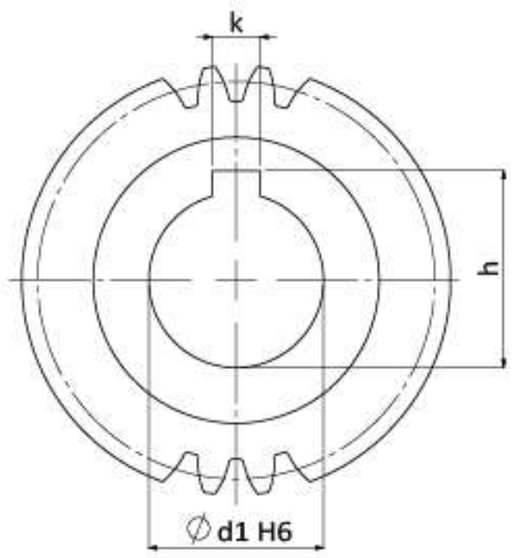


圖.1/Fig.1



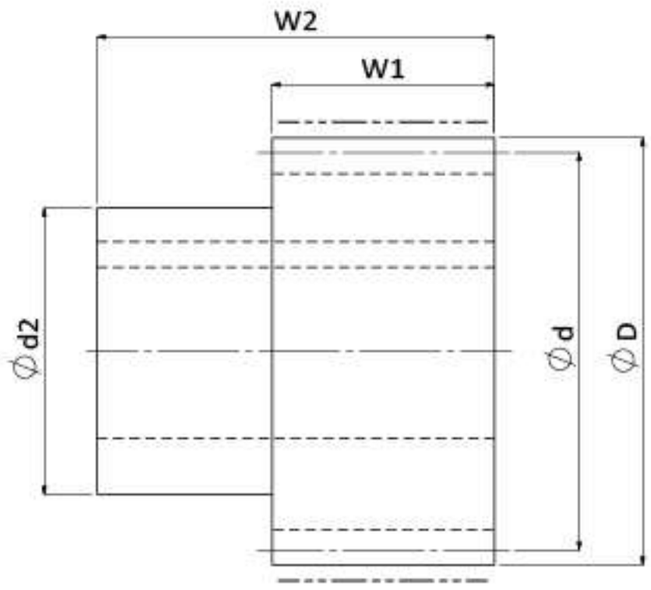


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MSGH0300181	1	-DIN6	3	18	60	54	25	36	28	30	8	28.3	7.15	0.4
MSGH0300201	1	-DIN6	3	20	66	60	25	36	28	30	8	28.3	7.95	0.5
MSGH0300202	1	-DIN6	3	20	66	60	30	45	28	30	8	33.3	7.95	0.5
MSGH0300203	1	-DIN6	3	20	66	60	35	48	28	30	10	38.3	7.95	0.5
MSGH0300221	2	-DIN6	3	22	72	66	22	36	28	56	6	24.8	8.74	1.1
MSGH0300222	1	-DIN6	3	22	72	66	25	36	28	30	8	28.3	8.74	0.6
MSGH0300223	2	-DIN6	3	22	72	66	25	44	28	60	8	28.3	8.74	1.2
MSGH0300224	1	-DIN6	3	22	72	66	30	45	28	30	8	33.3	8.74	0.6
MSGH0300225	2	-DIN6	3	22	72	66	32	55	28	65	10	35.3	8.74	1.2
MSGH0300226	2	-DIN6	3	22	72	66	30	50	28	60	8	33.3	8.74	1.2
MSGH0300227	1	-DIN6	3	22	72	66	35	48	28	30	10	38.3	8.74	0.6
MSGH0300228	2	-DIN6	3	22	72	66	35	55	28	65	10	38.3	8.74	1.2
MSGH0300229	2	-DIN6	3	22	72	66	40	62	28	65	12	43.3	8.74	1.2
MSGH0300251	1	-DIN6	3	25	81	75	25	36	28	30	8	28.3	11.30	0.7
MSGH0300252	1	-DIN6	3	25	81	75	30	45	28	30	8	33.3	11.30	0.7
MSGH0300253	2	-DIN6	3	25	81	75	32	55	28	65	10	35.3	11.30	1.6
MSGH0300254	1	-DIN6	3	25	81	75	35	48	28	30	10	38.3	11.30	0.7
MSGH0300255	2	-DIN6	3	25	81	75	40	62	28	65	12	43.3	11.30	1.6
MSGH0300256	1	-DIN6	3	25	81	75	45	58	28	30	14	48.8	11.30	0.7
MSGH0300281	2	-DIN6	3	28	90	84	22	36	28	56	6	24.8	12.66	1.7
MSGH0300282	1	-DIN6	3	28	90	84	25	36	28	30	8	28.3	12.66	0.9
MSGH0300283	2	-DIN6	3	28	90	84	25	44	28	60	8	28.3	12.66	1.8
MSGH0300284	1	-DIN6	3	28	90	84	30	45	28	30	8	33.3	12.66	0.9
MSGH0300285	2	-DIN6	3	28	90	84	30	50	28	60	8	33.3	12.66	1.8
MSGH0300286	2	-DIN6	3	28	90	84	32	55	28	65	10	35.3	12.66	1.9
MSGH0300287	1	-DIN6	3	28	90	84	35	48	28	30	10	38.3	12.66	0.9
MSGH0300288	2	-DIN6	3	28	90	84	35	55	28	65	10	38.3	12.66	1.9
MSGH0300289	2	-DIN6	3	28	90	84	40	62	28	65	12	43.3	12.66	1.9
MSGH03002810	1	-DIN6	3	28	90	84	45	58	28	30	14	48.8	12.66	0.9
MSGH03002811	2	-DIN6	3	28	90	84	45	68	28	65	14	48.8	12.66	1.9

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

直齒齒研齒輪

MSGH-DIN6

材質 : SCM440
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Straight Teeth, Hardened and Ground Pinions

MSGH-DIN6

Material : SCM440
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

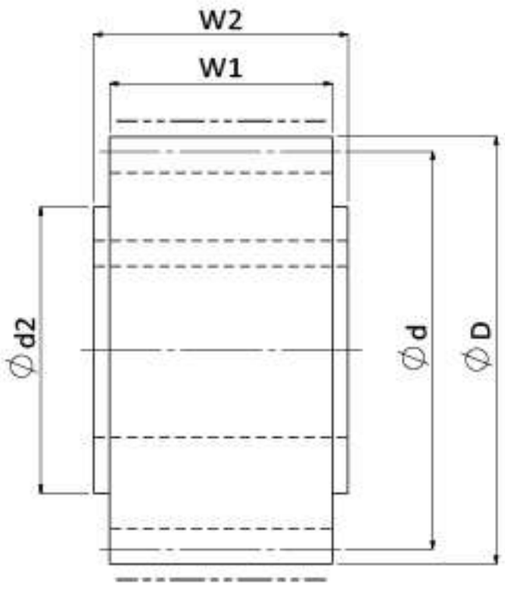
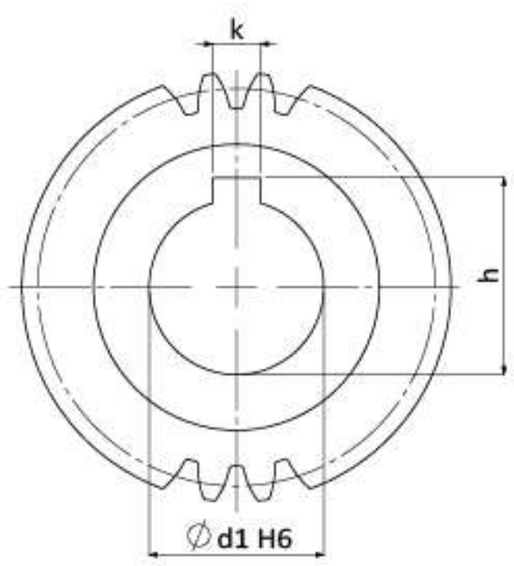


圖.1/Fig.1



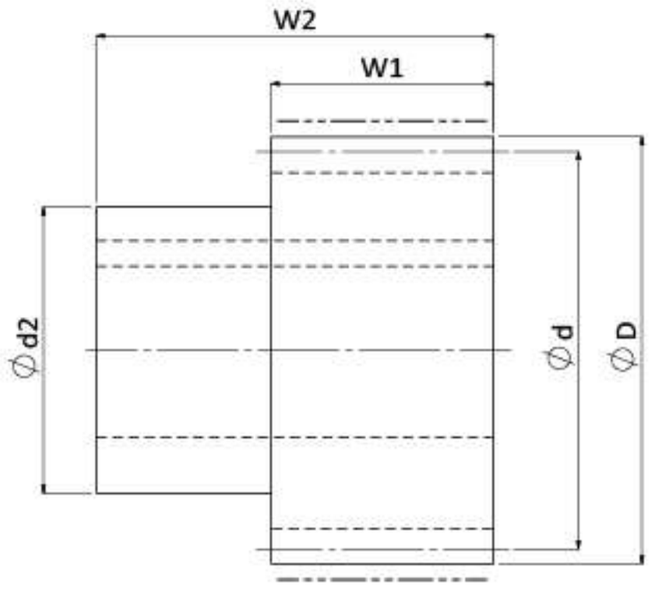


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MSGH0300321	1	-DIN6	3	32	102	96	25	36	28	30	8	28.3	14.47	1.2
MSGH0300322	1	-DIN6	3	32	102	96	30	45	28	30	8	33.3	14.47	1.2
MSGH0300323	2	-DIN6	3	32	102	96	32	55	28	65	10	35.3	14.47	2.5
MSGH0300324	1	-DIN6	3	32	102	96	35	48	28	30	10	38.3	14.47	1.2
MSGH0300325	2	-DIN6	3	32	102	96	40	62	28	65	12	43.3	14.47	2.5
MSGH0300326	1	-DIN6	3	32	102	96	45	58	28	30	14	48.8	14.47	1.2
MSGH0300327	1	-DIN6	3	32	102	96	60	80	28	30	18	64.4	14.47	1.2
MSGH0300361	1	-DIN6	3	36	114	108	25	36	28	30	8	28.3	16.27	1.4
MSGH0300362	1	-DIN6	3	36	114	108	35	48	28	30	10	38.3	16.27	1.4
MSGH0300363	1	-DIN6	3	36	114	108	45	58	28	30	14	48.8	16.27	1.4
MSGH0300364	2	-DIN6	3	36	114	108	45	68	28	65	14	48.8	16.27	1.3
MSGH0300365	1	-DIN6	3	36	114	108	60	80	28	30	18	64.4	16.27	1.4
MSGH0300401	1	-DIN6	3	40	126	120	25	36	28	30	8	28.3	18.08	1.8
MSGH0300402	1	-DIN6	3	40	126	120	35	48	28	30	10	38.3	18.08	1.8
MSGH0300403	1	-DIN6	3	40	126	120	45	58	28	30	14	48.8	18.08	1.8
MSGH0300404	1	-DIN6	3	40	126	120	60	80	28	30	18	64.4	18.08	1.8
MSGH0300451	1	-DIN6	3	45	141	135	25	36	28	30	8	28.3	18.53	2.2
MSGH0300452	1	-DIN6	3	45	141	135	35	48	28	30	10	38.3	18.53	2.2
MSGH0300453	1	-DIN6	3	45	141	135	45	58	28	30	14	48.8	18.53	2.2
MSGH0300454	1	-DIN6	3	45	141	135	60	80	28	30	18	64.4	18.53	2.2
MSGH0300501	1	-DIN6	3	50	156	150	35	48	28	30	10	38.3	18.88	2.7
MSGH0300502	1	-DIN6	3	50	156	150	45	58	28	30	14	48.8	18.88	2.7
MSGH0300561	1	-DIN6	3	56	174	168	45	58	28	30	14	48.8	19.21	3.4
MSGH0300631	1	-DIN6	3	63	195	189	45	58	28	30	14	48.8	19.54	4.2
MSGH0300632	1	-DIN6	3	63	195	189	60	80	28	30	18	64.4	19.54	4.2

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter /
kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

直齒齒研齒輪

MSGH-DIN6

材質 : SCM440
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Straight Teeth, Hardened and Ground Pinions

MSGH-DIN6

Material : SCM440
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

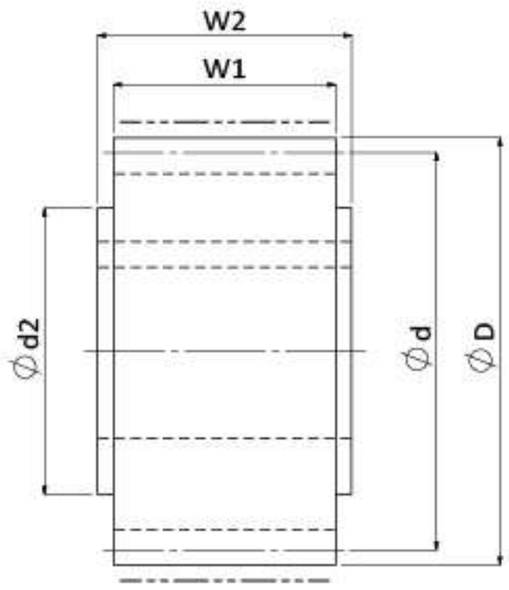
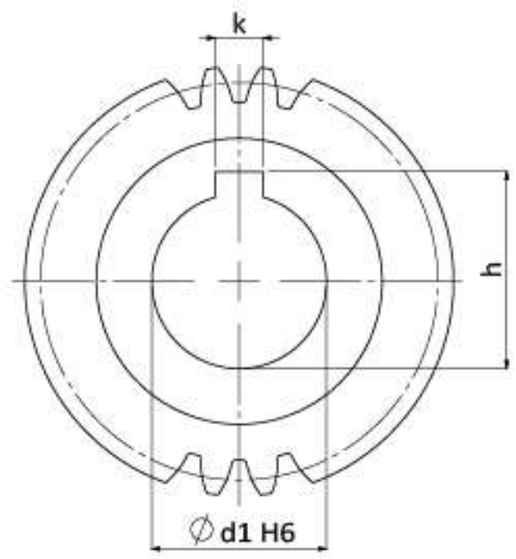


圖.1/Fig.1



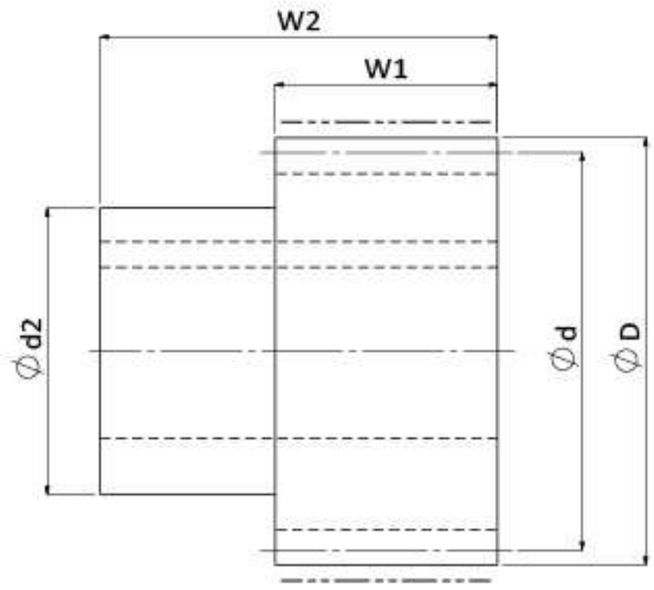


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MSGH0400181	1	-DIN6	4	18	80	72	32	55	40	75	10	35.3	13.62	1.2
MSGH0400201	2	-DIN6	4	20	88	80	32	55	40	75	10	35.3	15.13	1.8
MSGH0400202	1	-DIN6	4	20	88	80	35	52	40	50	10	38.3	15.13	1.2
MSGH0400203	2	-DIN6	4	20	88	80	35	55	40	75	10	38.3	15.13	1.8
MSGH0400204	1	-DIN6	4	20	88	80	45	65	40	50	14	48.8	15.13	1.2
MSGH0400205	2	-DIN6	4	20	88	80	40	62	40	75	12	43.3	15.13	1.8
MSGH0400221	1	-DIN6	4	22	96	88	35	52	40	50	10	38.3	16.65	1.4
MSGH0400222	1	-DIN6	4	22	96	88	45	65	40	50	14	48.8	16.65	1.4
MSGH0400223	2	-DIN6	4	22	96	88	45	68	40	75	14	48.8	16.65	2.1
MSGH0400251	2	-DIN6	4	25	108	100	32	55	40	75	10	35.3	21.53	2.7
MSGH0400252	1	-DIN6	4	25	108	100	35	52	40	50	10	38.3	21.53	1.8
MSGH0400253	2	-DIN6	4	25	108	100	35	55	40	75	10	38.3	21.53	2.7
MSGH0400254	2	-DIN6	4	25	108	100	40	62	40	75	12	43.3	21.53	2.7
MSGH0400255	1	-DIN6	4	25	108	100	45	65	40	50	14	48.8	21.53	1.8
MSGH0400256	2	-DIN6	4	25	108	100	55	80	40	80	16	59.3	21.53	2.9
MSGH0400281	1	-DIN6	4	28	120	112	35	52	40	50	10	38.3	24.11	2.2
MSGH0400282	1	-DIN6	4	28	120	112	45	65	40	50	14	48.8	24.11	2.2
MSGH0400283	2	-DIN6	4	28	120	112	45	68	40	75	14	48.8	24.11	3.3
MSGH0400321	1	-DIN6	4	32	136	128	35	52	40	50	10	38.3	27.55	2.9
MSGH0400322	1	-DIN6	4	32	136	128	45	65	40	50	14	48.8	27.55	2.9
MSGH0400323	2	-DIN6	4	32	136	128	55	80	40	80	16	59.3	27.55	4.6
MSGH0400324	2	-DIN6	4	32	136	128	75	110	40	100	20	79.9	27.55	5.7
MSGH0400401	1	-DIN6	4	40	168	160	45	65	40	50	14	48.8	34.44	4.4
MSGH0400402	1	-DIN6	4	40	168	160	60	80	40	50	18	64.4	34.44	4.4
MSGH0400403	2	-DIN6	4	40	168	160	75	110	40	100	20	79.9	34.44	8.7

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter /
kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

直齒齒研齒輪

MSGH-DIN6

材質 : SCM440
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Straight Teeth, Hardened and Ground Pinions

MSGH-DIN6

Material : SCM440
Induction Hardened: Hardness HRC50-55
Teeth Induction-Hardened and Ground

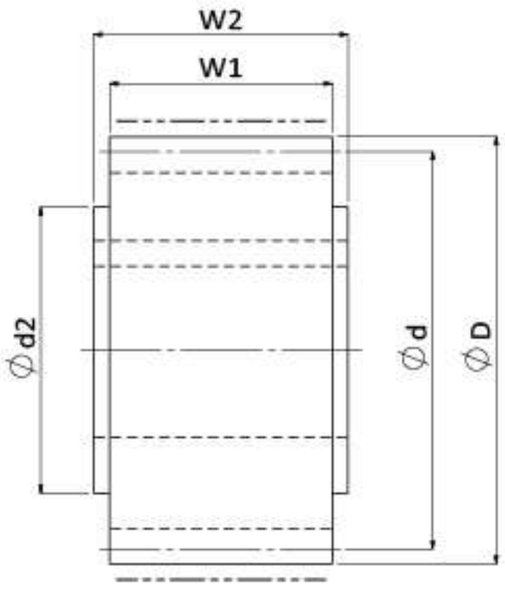
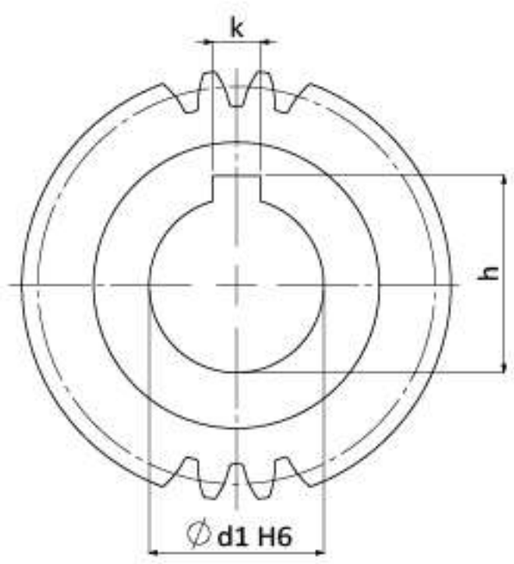


圖.1/Fig.1



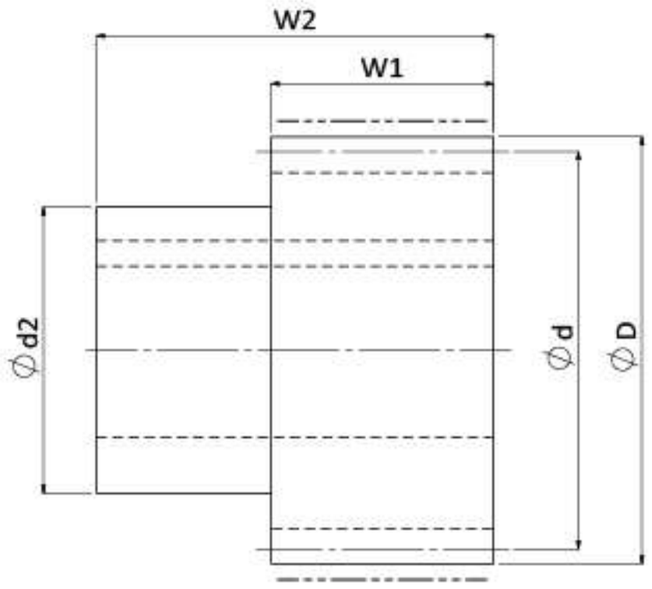


圖.2/Fig.2

單位 / Unit : mm

Code	Fig.	Q	M	Z	ØD	Ød	Ød1H6	Ød2	W1	W2	k	h	kN	KG
MSGH0500211	2	-DIN6	5	21	115	105	45	68	50	85	14	48.8	25.36	3.5
MSGH0500212	2	-DIN6	5	21	115	105	55	80	50	90	16	59.3	25.36	3.7
MSGH0500251	2	-DIN6	5	25	135	125	45	68	50	85	14	48.8	34.36	4.8
MSGH0500252	2	-DIN6	5	25	135	125	55	80	50	90	16	59.3	34.36	5.1
MSGH0500253	2	-DIN6	5	25	135	125	75	110	50	110	20	79.9	34.36	6.2
MSGH0600211	2	-DIN6	6	21	138	126	55	80	60	100	16	59.3	36.92	5.9
MSGH0600212	2	-DIN6	6	21	138	126	75	110	60	120	20	79.9	36.92	7.0
MSGH0600251	2	-DIN6	6	25	162	150	55	80	60	100	16	59.3	50.01	8.1
MSGH0600252	2	-DIN6	6	25	162	150	75	110	60	120	20	79.9	50.01	9.7
MSGH0800201	2	-DIN6	8	20	176	160	75	110	80	140	20	79.9	62.51	13.4
MSGH0800202	2	-DIN6	8	20	176	160	85	125	80	145	22	90.4	62.51	13.8

Q : 精度 / M : 模數 / Z : 齒數 / Ød : 節圓直徑 / kN : 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / kN : Max Feed Force

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒法蘭齒研齒輪

MHFGH-DIN6

材質 : SCM440
左旋角 : 19°31'42"
高週波 : 硬度 HRC50-55
硬化處理後齒面研磨

Helical Teeth, Flange Connection, Hardened and Ground Pinions

MHFGH-DIN6

Material : SCM440
Left Hand Helix Angle : 19°31'42"
Induction Hardened : Hardness HRC50-55
Teeth Induction-Hardened and Ground

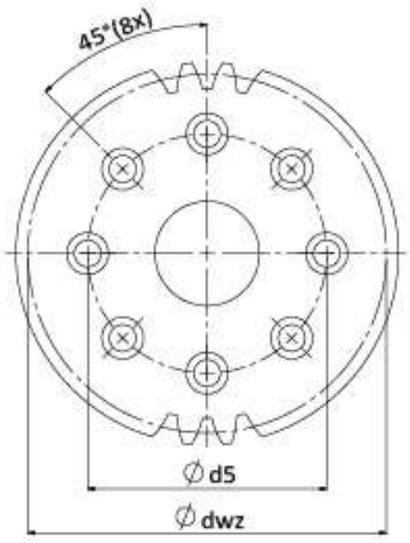


圖.1/Fig.1

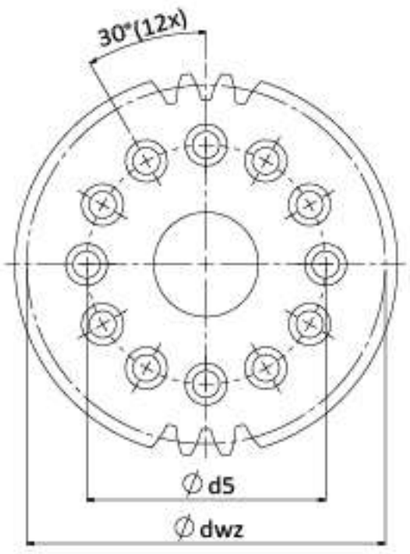


圖.2/Fig.2

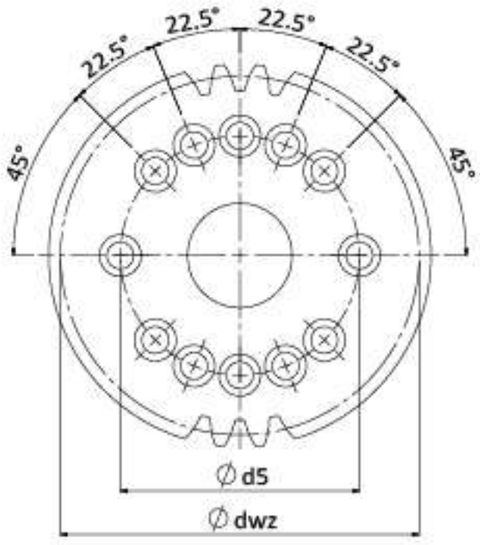
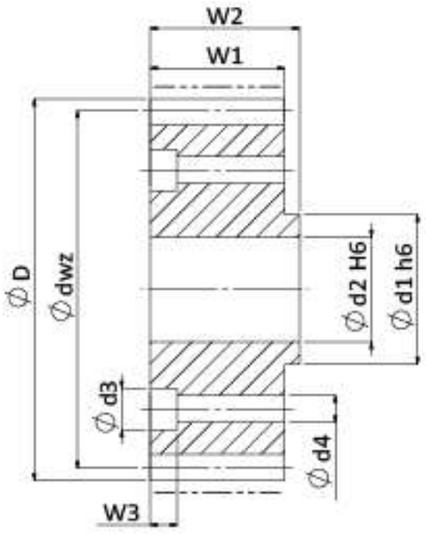


圖.3/Fig.3

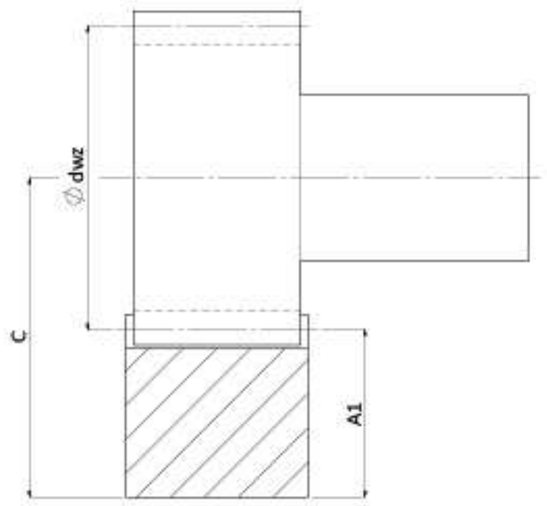


單位 / Unit : mm

Code	Fig.	Q	M	Z	X	ØD	Ød	Ødwz	Ød1h6	Ød2H6	Ød3	Ød4	Ød5	W1	W2	W3	kN	KG
MHFGH0200261	1	-DIN6	2	26	0.407	60.80	55.174	56.802	20.0	16.2	9.5	5.5	31.5	26	29	12.0	12.39	0.40
MHFGH0200262	1	-DIN6	2	26	0.407	60.80	55.174	56.802	20.0	16.0	9.5	5.5	31.5	26	31	11.0	12.39	0.40
MHFGH0200271	1	-DIN6	2	27	0.000	61.30	57.296	57.296	20.0	16.2	9.5	5.5	31.5	30	33	11.0	14.88	0.50
MHFGH0200272	1	-DIN6	2	27	0.000	61.30	57.296	57.296	20.0	16.0	9.5	5.5	31.5	26	31	11.0	12.90	0.45
MHFGH0200291	1	-DIN6	2	29	0.415	67.20	61.540	63.200	20.0	16.2	9.5	5.5	31.5	26	29	12.0	13.17	0.50
MHFGH0200292	1	-DIN6	2	29	0.415	67.20	61.540	63.200	25.0	20.3	11.0	6.6	40.0	26	29	10.5	13.17	0.50
MHFGH0200293	1	-DIN6	2	29	0.415	67.20	61.540	63.200	20.0	16.0	9.5	5.5	31.5	26	31	11.0	13.17	0.50
MHFGH0200331	1	-DIN6	2	33	0.393	75.60	70.028	71.600	31.5	23.7	11.0	6.6	50.0	26	29	14.0	13.57	0.65
MHFGH0200332	1	-DIN6	2	33	0.393	75.60	70.028	71.600	31.5	20.0	11.0	6.6	50.0	26	31	11.0	13.57	0.65
MHFGH0200351	1	-DIN6	2	35	0.382	79.80	74.272	75.800	20.0	16.2	9.5	5.5	31.5	26	29	12.0	13.74	0.75
MHFGH0200352	1	-DIN6	2	35	0.382	79.80	74.272	75.800	20.0	16.0	9.5	5.5	31.5	26	31	11.0	13.74	0.75
MHFGH0200361	1	-DIN6	2	36	0.000	80.39	76.394	76.394	31.5	23.7	11.0	6.6	50.0	30	33	8.0	15.94	0.90
MHFGH0200362	1	-DIN6	2	36	0.000	80.39	76.394	76.394	31.5	20.0	11.0	6.6	50.0	26	31	11.0	13.82	0.80
MHFGH0200371	1	-DIN6	2	37	0.421	84.20	78.517	80.201	31.5	23.7	11.0	6.6	50.0	26	29	14.0	13.90	0.85
MHFGH0200372	2	-DIN6	2	37	0.421	84.20	78.517	80.201	31.5	23.7	11.0	6.6	50.0	26	29	14.0	13.90	0.85
MHFGH0200373	1	-DIN6	2	37	0.421	84.20	78.517	80.201	31.5	20.0	11.0	6.6	50.0	26	31	11.0	13.90	0.85
MHFGH0300311	1	-DIN6	3	31	0.354	106.80	98.676	100.800	31.5	23.7	11.0	6.6	50.0	31	35	14.0	23.42	1.80
MHFGH0300312	1	-DIN6	3	31	0.354	106.80	98.676	100.800	31.5	23.7	11.0	6.6	50.0	31	35	14.0	23.42	1.80
MHFGH0300313	1	-DIN6	3	31	0.354	106.80	98.676	100.800	31.5	20.0	11.0	6.6	50.0	31	36	11.0	23.42	1.80
MHFGH0300314	3	-DIN6	3	31	0.354	106.80	98.676	100.800	40.0	31.5	11.0	6.6	63.0	31	36	11.0	23.42	1.80
MHFGH0300351	2	-DIN6	3	35	0.365	119.60	111.409	113.599	50.0	32.2	14.0	9.0	80.0	31	35	10.5	24.06	2.50
MHFGH0300352	3	-DIN6	3	35	0.365	119.60	111.409	113.599	40.0	31.5	11.0	6.6	63.0	31	36	11.0	24.06	2.50
MHFGH0300401	2	-DIN6	3	40	0.379	135.60	127.324	129.598	50.0	32.2	14.0	9.0	80.0	31	35	10.5	24.69	3.50
MHFGH0300402	3	-DIN6	3	40	0.379	135.60	127.324	129.598	40.0	31.5	11.0	6.6	63.0	31	36	11.0	24.69	3.50
MHFGH0300403	2	-DIN6	3	40	0.379	135.60	127.324	129.598	50.0	40.0	14.0	9.0	80.0	31	36	11.0	24.69	3.50
MHFGH0400301	2	-DIN6	4	30	0.000	135.32	127.324	127.324	50.0	32.2	14.0	9.0	80.0	45	49	9.5	45.00	5.00
MHFGH0400302	3	-DIN6	4	30	0.000	135.32	127.324	127.324	40.0	32.2	14.0	9.0	80.0	45	49	9.5	45.00	5.00
MHFGH0400303	2	-DIN6	4	30	0.000	135.32	127.324	127.324	50.0	40.0	14.0	9.0	80.0	41	46	16.0	41.00	5.00
MHFGH0400381	2	-DIN6	4	38	0.240	171.20	161.277	163.197	80.0	56.1	17.5	11.0	125.0	41	45	10.5	43.13	7.00
MHFGH0400382	2	-DIN6	4	38	0.240	171.20	161.277	163.197	80.0	60.0	17.5	11.0	125.0	41	46	16.0	43.13	7.00
MHFGH0500211	2	-DIN6	5	21	0.000	121.41	111.409	111.409	50.0	32.2	14.0	9.0	80.0	59	64	11.5	55.96	10.00
MHFGH0500212	2	-DIN6	5	21	0.000	121.41	111.409	111.409	50.0	40.0	14.0	9.0	80.0	51	56	16.0	48.37	7.00
MHFGH0500361	2	-DIN6	5	36	0.000	200.99	190.986	190.986	80.0	56.1	17.5	11.0	125.0	55	60	12.5	73.07	12.50
MHFGH0500362	2	-DIN6	5	36	0.000	200.99	190.986	190.986	80.0	60.0	17.5	11.0	125.0	51	56	16.0	67.76	11.00

Q : 精度 / M : 模數 / Z : 齒數 / X : 轉位係數 / Ød : 節圓直徑 /
Ødwz : 嚙合節圓直徑 / kN: 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / X : Profile Modification Factor /
Ød : Pitch Circle Diameter / Ødwz : Working Pitch Diameter / kN : Max Feed Force



齒輪和齒條裝配中心距的計算 :
Calculation of center distance C between pinion and rack : $C = \frac{Ødwz}{2} + A1$

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒齒研齒輪含焊接法蘭

MHGC-DIN6-FW

齒輪
材質 : SCM415
左旋角 : 19°31'42"
滲碳淬火 : 硬度 HRC60±2
硬化處理後齒面研磨

法蘭
材質 : 軟材 S45C

Helical Teeth, Hardened and Ground Pinions with Flange Welded Connection

MHGC-DIN6-FW

Pinion
Material : SCM415
Left Hand Helix Angle : 19°31'42"
Case Hardened : Hardness HRC60±2
Teeth Case-Hardened and Ground

Flange
Material : Soft S45C

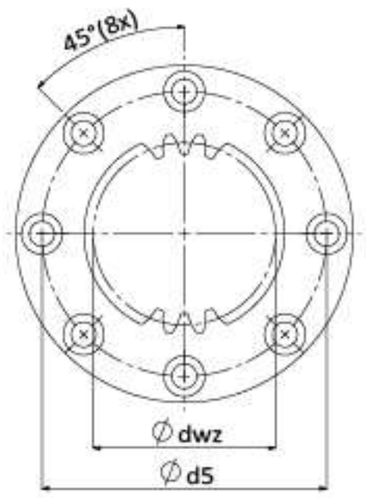


圖.1/Fig.1

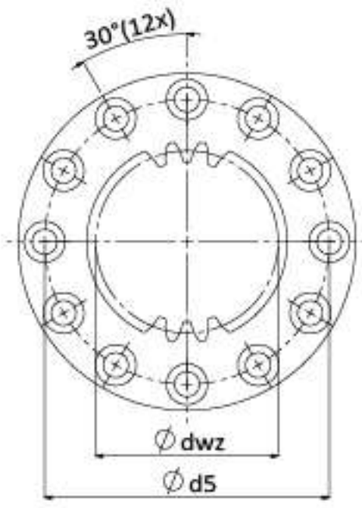


圖.2/Fig.2

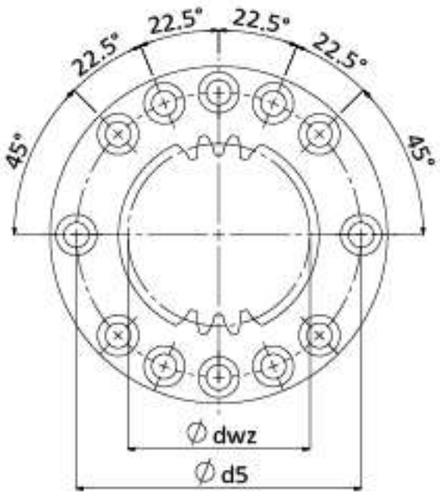
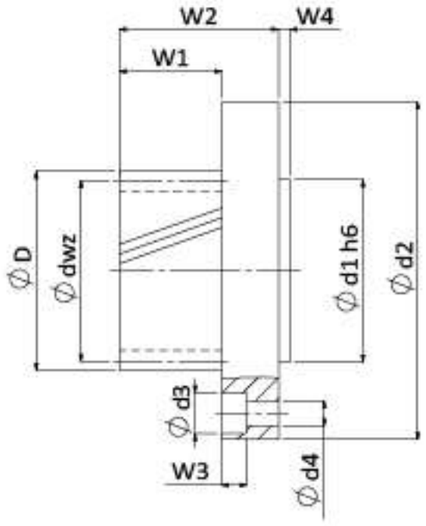


圖.3/Fig.3

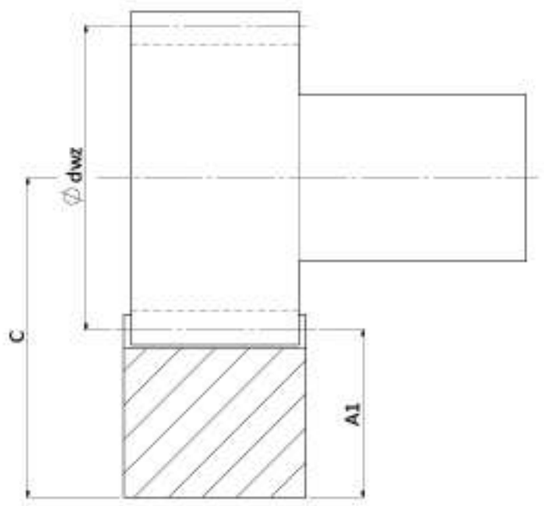


單位 / Unit : mm

Code	Fig.	M	Z	X	ØD	Ød	Ødwz	Ød1h6	Ød2	Ød3	Ød4	Ød5	W1	W2	W3	W4	kN	KG
MHGC0200121-DIN6-FW050	-1	2	12	0.50	31.46	25.465	27.465	31.5	63	11	7.0	50	26	41	7.0	3.0	6.91	0.10
MHGC0200122-DIN6-FW063	-3	2	12	0.50	31.46	25.465	27.465	40.0	80	11	7.0	63	26	41	7.0	4.0	6.91	0.10
MHGC0200123-DIN6-FW080	-2	2	12	0.50	31.46	25.465	27.465	50.0	100	15	9.0	80	26	46	9.0	4.0	6.91	0.10
MHGC0200161-DIN6-FW050	-1	2	16	0.00	37.95	33.953	33.953	31.5	63	11	7.0	50	26	41	7.0	3.0	8.94	0.20
MHGC0200191-DIN6-FW063	-3	2	19	0.00	44.32	40.319	40.319	40.0	80	11	7.0	63	26	41	7.0	4.0	10.75	0.30
MHGC0200231-DIN6-FW063	-3	2	23	0.00	52.81	48.808	48.808	40.0	80	11	7.0	63	26	41	7.0	4.0	12.35	0.30
MHGC0200232-DIN6-FW080	-2	2	23	0.00	52.81	48.808	48.808	50.0	100	15	9.0	80	26	46	9.0	4.0	12.35	0.30
MHGC0300121-DIN6-FW063	-3	3	12	0.50	47.20	38.197	41.197	40.0	80	11	7.0	63	32.5	47.5	7.0	4.0	12.25	0.30
MHGC0300141-DIN6-FW063	-3	3	14	0.30	52.36	44.563	46.363	40.0	80	11	7.0	63	32.5	47.5	7.0	4.0	14.21	0.30
MHGC0300161-DIN6-FW080	-2	3	16	0.00	56.93	50.930	50.930	50.0	100	15	9.0	80	32.5	52.5	9.0	4.0	16.41	0.40
MHGC0300171-DIN6-FW080	-2	3	17	0.00	60.11	54.113	54.113	50.0	100	15	9.0	80	32.5	52.5	9.0	4.0	17.51	0.40
MHGC0300191-DIN6-FW080	-2	3	19	0.00	66.48	60.479	60.479	50.0	100	15	9.0	80	32.5	52.5	9.0	4.0	21.30	0.50
MHGC0300192-DIN6-FW125	-2	3	19	0.00	66.48	60.479	60.479	80.0	148	18	11.0	125	32.5	57.5	11.0	5.0	21.30	0.50
MHGC0300261-DIN6-FW125	-2	3	26	0.00	88.76	82.761	82.761	80.0	148	18	11.0	125	32.5	57.5	11.0	5.0	23.47	1.60
MHGC0300321-DIN6-FW125	-2	3	32	0.00	107.86	101.859	101.859	80.0	148	18	11.0	125	32.5	57.5	11.0	5.0	24.73	2.80
MHGC0400121-DIN6-FW080	-2	4	12	0.50	62.93	50.930	54.930	50.0	100	15	9.0	80	45	65	9.0	4.0	22.62	0.70
MHGC0400122-DIN6-FW125	-2	4	12	0.50	62.93	50.930	54.930	80.0	148	18	11.0	125	45	70	11.0	5.0	22.62	0.70
MHGC0400171-DIN6-FW125	-2	4	17	0.00	80.15	72.150	72.150	80.0	148	18	11.0	125	45	70	11.0	5.0	32.33	0.80
MHGC0400191-DIN6-FW125	-2	4	19	0.11	89.52	80.639	81.519	80.0	148	18	11.0	125	45	70	11.0	5.0	39.31	1.30
MHGC0400201-DIN6-FW125	-2	4	20	0.00	92.88	84.883	84.883	80.0	148	18	11.0	125	45	70	11.0	5.0	40.05	1.50
MHGC0500121-DIN6-FW125	-2	5	12	0.50	78.66	63.662	68.662	80.0	148	18	11.0	125	55	80	11.0	5.0	35.31	2.50
MHGC0500161-DIN6-FW125	-2	5	16	0.00	94.88	84.883	84.883	80.0	148	18	11.0	125	55	80	11.0	5.0	47.28	2.80
MHGC0500181-DIN6-FW125	-2	5	18	0.00	105.49	95.493	95.493	80.0	148	18	11.0	125	55	80	11.0	5.0	60.17	2.90
MHGC0600151-DIN6-FW125	-2	6	15	0.00	107.49	95.493	95.493	80.0	148	18	11.0	125	65	90	11.0	5.0	63.22	5.00

Q : 精度 / M : 模數 / Z : 齒數 / X : 轉位係數 / Ød : 節圓直徑 /
Ødwz : 嚙合節圓直徑 / kN: 最大進給力

Q : Quality / M : Module / Z : No. of Teeth / X : Profile Modification Factor /
Ød : Pitch Circle Diameter / Ødwz : Working Pitch Diameter / kN : Max Feed Force



齒輪和齒條裝配中心距的計算 :
Calculation of center distance C between pinion and rack : $C = \frac{Ødwz}{2} + A1$

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。
- 不含德國市場。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.
- German market excluded.

DIN 5480 花鍵斜齒齒研齒輪

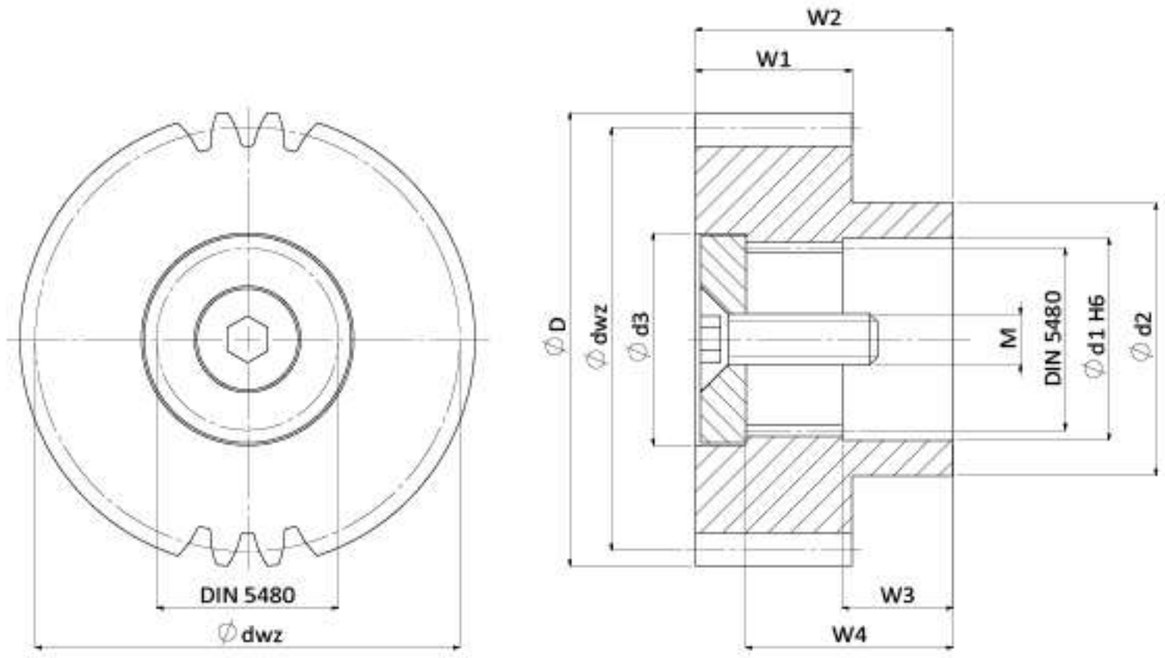
Helical Teeth, Hardened and Ground Pinions with DIN 5480 Spline Connection

MHSGC-N-DIN6

材質 : SCM415
左旋角 : 19°31'42"
滲碳淬火 : 硬度 HRC60±2
硬化處理後齒面研磨

MHSGC-N-DIN6

Material : SCM415
Left Hand Helix Angle : 19°31'42"
Case Hardened : Hardness HRC60±2
Teeth Case-Hardened and Ground

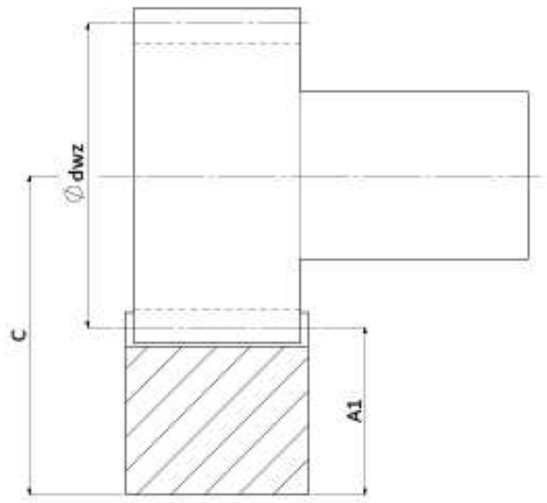


單位 / Unit : mm

Code	Q	Mn	Z	X	ØD	Ød	Ødwz	Ød1 H6	Ød2	Ød3	W1	W2	W3	W4	M	DIN 5480	kN	KG
MHSGC0150381-N22	-DIN6	1.5	38	0.000	63.48	60.479	60.479	22	32	24	20	33	12	27.5	M8x25L	N22x1.25x30x16x7H	7.89	0.12
MHSGC0200151-N16	-DIN6	2	15	0.592	38.20	31.831	34.199	16	26	18	26	32	11	26.5	M5x16L	N16x0.8x30x18x7H	7.71	0.21
MHSGC0200161-N16	-DIN6	2	16	0.612	40.40	33.953	36.401	16	26	18	26	32	11	26.5	M5x16L	N16x0.8x30x18x7H	8.94	0.21
MHSGC0200181-N16	-DIN6	2	18	0.500	44.20	38.197	40.197	16	26	18	26	32	11	26.5	M5x16L	N16x0.8x30x18x7H	10.15	0.31
MHSGC0200182-N22	-DIN6	2	18	0.500	44.20	38.197	40.197	22	32	24	26	33	12	27.5	M8x25L	N22x1.25x30x16x7H	10.15	0.32
MHSGC0200201-N22	-DIN6	2	20	0.490	48.40	42.441	44.401	22	32	24	26	33	12	27.5	M8x25L	N22x1.25x30x16x7H	11.36	0.32
MHSGC0200221-N22	-DIN6	2	22	0.479	52.60	46.686	48.602	22	32	24	26	33	12	27.5	M8x25L	N22x1.25x30x16x7H	12.18	0.42
MHSGC0200231-N32	-DIN6	2	23	0.498	54.80	48.808	50.800	32	42	34	26	34	13	27.0	M12x30L	N32x1.25x30x24x7H	12.35	0.44
MHSGC0200251-N22	-DIN6	2	25	0.479	58.97	53.052	54.968	22	32	24	26	33	12	27.5	M8x25L	N22x1.25x30x16x7H	12.66	0.42
MHSGC0200252-N32	-DIN6	2	25	0.487	59.00	53.052	55.000	32	42	34	26	34	13	27.0	M12x30L	N32x1.25x30x24x7H	12.66	0.44
MHSGC0200271-N32	-DIN6	2	27	0.376	62.80	57.296	58.800	32	42	34	26	34	13	27.0	M12x30L	N32x1.25x30x24x7H	12.91	0.54
MHSGC0300201-N40	-DIN6	3	20	0.456	72.40	63.662	66.398	40	54	42	31	51	20	41.0	M16x40L	N40x2x30x18x7H	20.69	0.77
MHSGC0300221-N40	-DIN6	3	22	0.462	78.80	70.028	72.800	40	54	42	31	51	20	41.0	M16x40L	N40x2x30x18x7H	21.33	0.87
MHSGC0300241-N40	-DIN6	3	24	0.468	85.20	76.394	79.202	40	54	42	31	51	20	41.0	M16x40L	N40x2x30x18x7H	21.90	1.07
MHSGC0400201-N55	-DIN6	4	20	0.400	96.08	84.883	88.083	55	75	57	41	54	20	44.0	M20x50L	N55x2x30x26x7H	36.49	1.70
MHSGC0400251-N70	-DIN6	4	25	0.340	116.82	106.103	108.823	70	92	72	41	65	24	55.0	M20x50L	N70x2x30x34x7H	39.08	3.40

Q : 精度 / Mn : 模數 / Z : 齒數 / X : 轉位係數 / Ød : 節圓直徑 /
Ødwz : 嚙合節圓直徑 / M: 螺栓規格 / DIN 5480: 花鍵規格 /
kN: 最大進給力 /

Q : Quality / Mn : Module / Z : No. of Teeth / X : Profile Modification Factor /
Ød : Pitch Circle Diameter / Ødwz : Working Pitch Diameter / M : Bolt Specification /
DIN 5480 : Spline Specification / kN : Max Feed Force



齒輪和齒條裝配中心距的計算：
Calculation of center distance C between pinion and rack : $C = \frac{Ødwz}{2} + A1$

備註：
- 齒輪可客製不同材質、尺寸、熱處理等。
- 重量僅供參考。

Remark：
- Pinion with different material, dimension, heat treatment are all available upon request.
- Weight for reference only.

斜齒毛氈齒輪

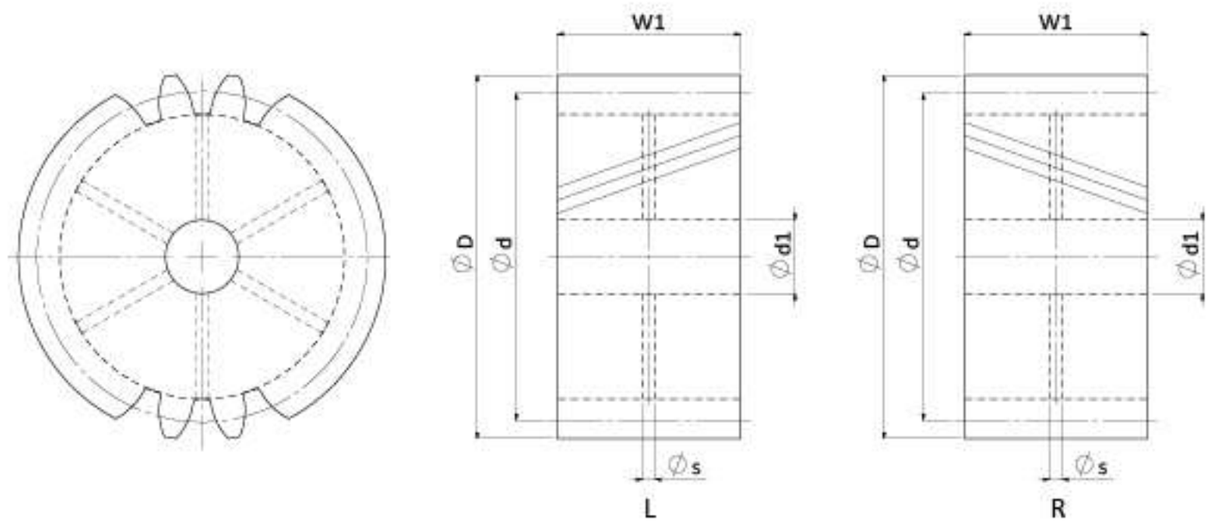
FHM

材質 : 毛氈
螺旋角 : 19°31'42"

Helical Felt Pinions

FHM

Material : Felt
Helix Angle : 19°31'42"



單位 / Unit : mm

Code	M	Z	ØD	Ød	Ød1	W1	Øs	KG	L/R
FHM020018-L	2	18	42.2	38.2	12	25	2	0.016	Left
FHM020018-R	2	18	42.2	38.2	12	25	2	0.016	Right
FHM030018-L	3	18	63.3	57.3	12	30	3	0.044	Left
FHM030018-R	3	18	63.3	57.3	12	30	3	0.044	Right
FHM040018-L	4	18	84.4	76.4	12	40	3	0.105	Left
FHM040018-R	4	18	84.4	76.4	12	40	3	0.105	Right
FHM050017-L	5	17	100.2	90.2	20	50	4	0.182	Left
FHM050017-R	5	17	100.2	90.2	20	50	4	0.182	Right
FHM060017-L	6	17	120.2	108.2	20	60	4	0.318	Left
FHM060017-R	6	17	120.2	108.2	20	60	4	0.318	Right
FHM080017-L	8	17	160.3	144.3	20	80	5	0.763	Left
FHM080017-R	8	17	160.3	144.3	20	80	5	0.763	Right

M : 模數 / Z : 齒數 / Ød : 節圓直徑 / Øs : 注油孔 /
L/R : 螺旋方向

M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / Øs : Oil Filler /
L/R : Helix Direction

直齒毛氈齒輪

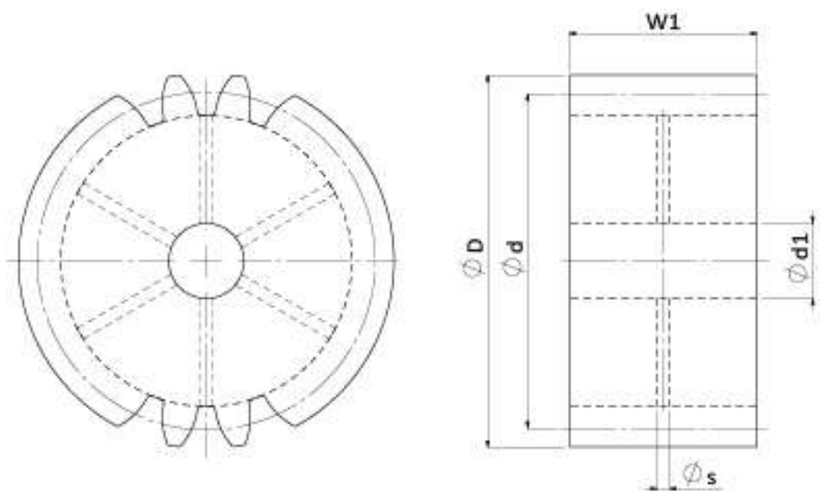
FSM

材質 : 毛氈

Straight Felt Pinions

FSM

Material : Felt



單位 / Unit : mm

Code	M	Z	ØD	Ød	Ød1	W1	Øs	KG	L/R
FSM020019	2	19	42	38	12	25	2	0.016	--
FSM030019	3	19	63	57	12	30	3	0.044	--
FSM040019	4	19	84	76	12	40	3	0.105	--
FSM050018	5	18	100	90	20	50	4	0.182	--
FSM060018	6	18	120	108	20	60	4	0.318	--
FSM080018	8	18	160	144	20	80	5	0.763	--

M : 模數 / Z : 齒數 / Ød : 節圓直徑 / Øs : 注油孔 /
L/R : 螺旋方向

M : Module / Z : No. of Teeth / Ød : Pitch Circle Diameter / Øs : Oil Filler /
L/R : Helix Direction

齒規目錄

Contents of Gauge

型號 Code	精度等級 Quality	材質 Material	左旋角 Left Hand Helix Angle	齒面處理 Teeth Treatment	齒厚公差 (μm) Tooth Thickness Tolerance (μm)	熱處理 Heat Treatment	鑽孔 Mounted Holes	模數 Module	頁碼 Page
CHTG-G	DIN 6	S50C	19°31'42"	齒面研磨 Teeth Ground	-20	--	--	M1.5-M10	37
CHTM-G	DIN 8			精銑 Milled	-58	--	--	M1.5-M10	
CSTG-G	DIN 6		0°	齒面研磨 Teeth Ground	-20	--	--	M1.5-M10	38
CSTM-G	DIN 8			精銑 Milled	-58	--	--	M1.5-M10	

齒規型號說明

Gauge Code Instruction

齒規 Gauge

CHTG-020-Gauge-DIN6

1 2 3 4 5 6 7

1. 材料
S50C 中碳鋼

1. Material
S50C Medium Carbon Steel

2. 齒型
S= 直齒 / H= 斜齒

2. Type
S=Straight / H=Helical

3. 外型
T= 四角棒

3. Shape
Tetragon

4. 齒面處理
G= 齒研 / M= 精銑

4. Teeth Treatment
G=Ground / M=Milled

5. 模數
M1.5-M10

5. Module
M1.5-M10

6. 齒規

6. Gauge

7. 精度
DIN 6、DIN 8

7. Quality
DIN 6、DIN 8

斜齒齒研齒規

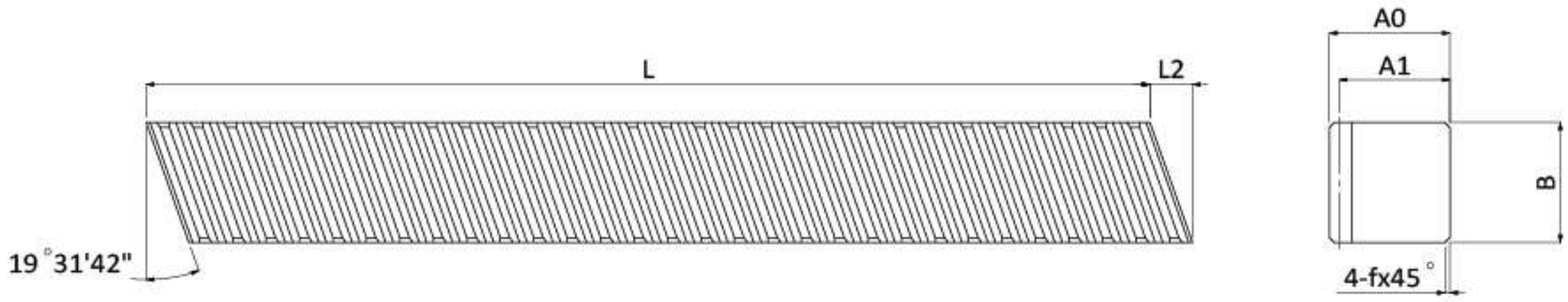
CHTG-G-DIN6

材質 : S50C
左旋角 : 19°31'42"
四面研磨與齒面研磨

Helical Teeth, Ground Gauge

CHTG-G-DIN6

Material : S50C
Left Hand Helix Angle : 19°31'42"
Teeth and all sides Ground



單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	f	Fp	KG
CHTG015-Gauge-DIN6	1.5	150.00	6.7	30	19	19	17.5	0.5	0.025	0.5
CHTG020-Gauge-DIN6	2	200.00	8.5	30	24	24	22.0	1.0	0.025	0.8
CHTG025-Gauge-DIN6	2.5	200.00	8.5	24	24	24	21.5	1.0	0.025	0.8
CHTG030-Gauge-DIN6	3	200.00	10.3	20	29	29	26.0	1.0	0.025	1.2
CHTG040-Gauge-DIN6	4	200.00	13.8	15	39	39	35.0	1.5	0.025	2.0
CHTG050-Gauge-DIN6	5	200.00	17.4	12	49	39	34.0	1.5	0.025	2.7
CHTG060-Gauge-DIN6	6	200.00	20.9	10	59	49	43.0	2.0	0.025	4.0
CHTG080-Gauge-DIN6	8	213.33	28.0	8	79	79	71.0	2.0	0.025	8.5
CHTG100-Gauge-DIN6	10	233.33	35.1	7	99	99	89.0	3.0	0.025	14.0

M : 模數 / Z : 齒數 / Fp : 總節距誤差

M : Module / Z : No. of Teeth / Fp : Total Pitch Error

斜齒精銑齒規

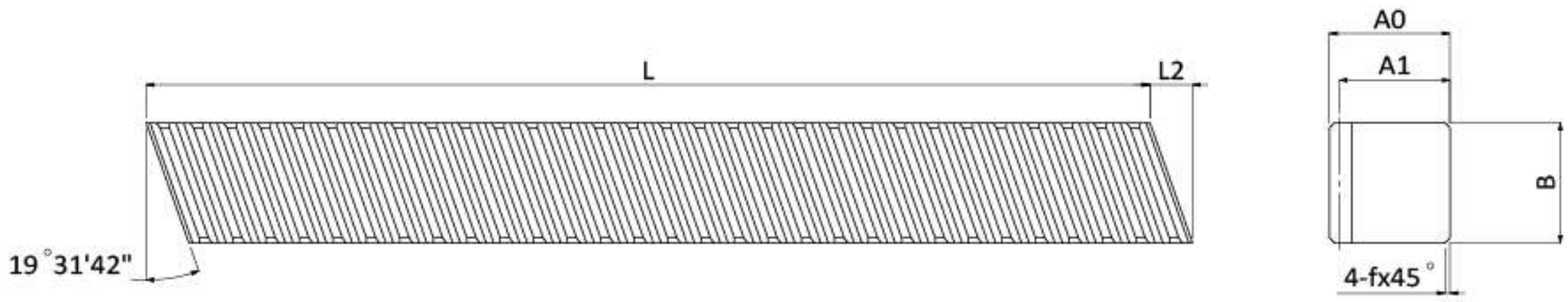
CHTM-G-DIN8

材質 : S50C
左旋角 : 19°31'42"
精銑

Helical Teeth, Milled Gauge

CHTM-G-DIN8

Material : S50C
Left Hand Helix Angle : 19°31'42"
Milled



單位 / Unit : mm

Code	M	L	L2	Z	B	A0	A1	f	Fp	KG
CHTM015-Gauge-DIN8	1.5	150.00	6.0	30	17	17	15.5	0.5	0.045	0.5
CHTM020-Gauge-DIN8	2	200.00	8.9	30	25	24	22.0	1	0.045	0.8
CHTM030-Gauge-DIN8	3	200.00	10.6	20	30	29	26.0	1	0.045	1.2
CHTM040-Gauge-DIN8	4	200.00	14.2	15	40	39	35.0	1.5	0.045	2.0
CHTM050-Gauge-DIN8	5	200.00	17.4	12	49	39	34.0	1.5	0.045	2.7
CHTM060-Gauge-DIN8	6	200.00	20.9	10	59	49	43.0	2	0.045	4.0
CHTM080-Gauge-DIN8	8	213.33	28.0	8	79	79	71.0	2	0.045	8.5
CHTM100-Gauge-DIN8	10	233.33	35.1	7	99	99	89.0	3	0.045	14.0

M : 模數 / Z : 齒數 / Fp : 總節距誤差

M : Module / Z : No. of Teeth / Fp : Total Pitch Error

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

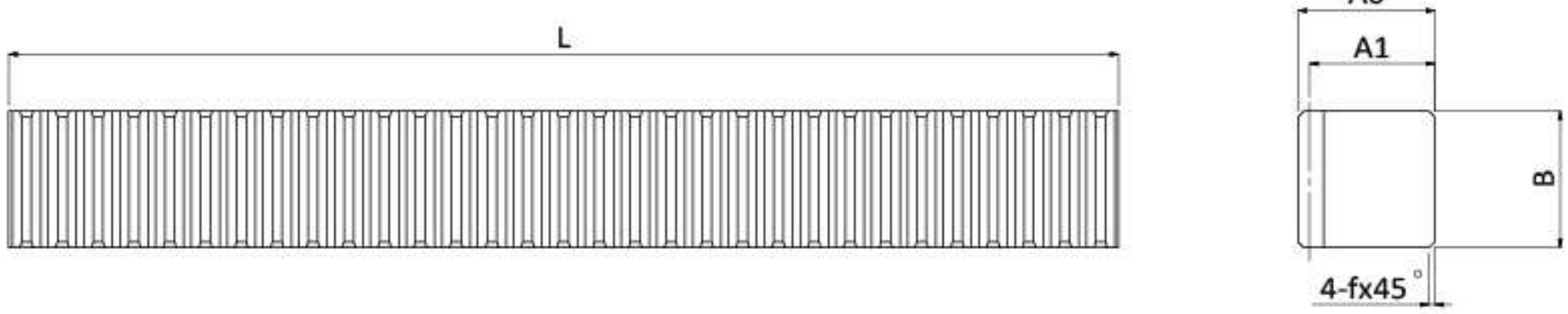
直齒齒研齒規

Straight Teeth, Ground Gauge

CSTG-G-DIN6

材質 : S50C
四面研磨與齒面研磨

Material : S50C
Teeth and all sides Ground



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	f	Fp	KG
CSTG015-Gauge-DIN6	1.5	141.37	30	19	19	17.5	0.5	0.025	0.5
CSTG020-Gauge-DIN6	2	188.49	30	24	24	22	1	0.025	0.8
CSTG025-Gauge-DIN6	2.5	188.49	24	24	24	21.5	1	0.025	0.8
CSTG030-Gauge-DIN6	3	188.49	20	29	29	26	1	0.025	1.2
CSTG040-Gauge-DIN6	4	188.49	15	39	39	35	1.5	0.025	2.0
CSTG050-Gauge-DIN6	5	188.49	12	49	39	34	1.5	0.025	2.7
CSTG060-Gauge-DIN6	6	188.49	10	59	49	43	2	0.025	4.0
CSTG080-Gauge-DIN6	8	201.06	8	79	79	71	2	0.025	9.0
CSTG100-Gauge-DIN6	10	219.91	7	99	99	89	3	0.025	13.0

M : 模數 / Z : 齒數 / Fp : 總節距誤差

M : Module / Z : No. of Teeth / Fp : Total Pitch Error

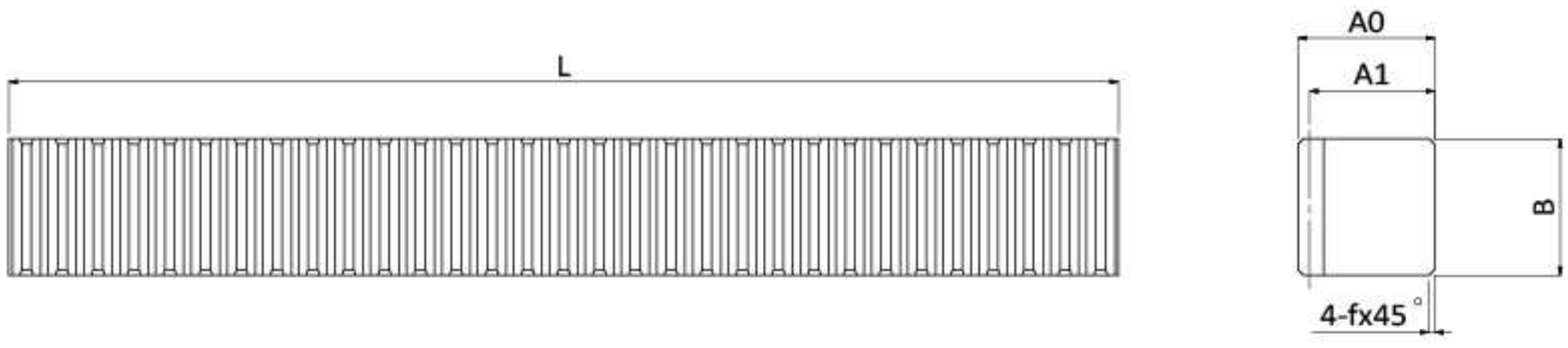
直齒精銑齒規

Straight Teeth, Milled Gauge

CSTM-G-DIN8

材質 : S50C
精銑

Material : S50C
Milled



單位 / Unit : mm

Code	M	L	Z	B	A0	A1	f	Fp	KG
CSTM015-Gauge-DIN8	1.5	141.37	30	17	17	15.5	0.5	0.045	0.5
CSTM020-Gauge-DIN8	2	188.49	30	25	24	22	1	0.045	0.8
CSTM030-Gauge-DIN8	3	188.49	20	30	29	26	1	0.045	1.2
CSTM040-Gauge-DIN8	4	188.49	15	40	39	35	1.5	0.045	2.0
CSTM050-Gauge-DIN8	5	188.49	12	49	39	34	1.5	0.045	2.7
CSTM060-Gauge-DIN8	6	188.49	10	59	49	43	2	0.045	4.0
CSTM080-Gauge-DIN8	8	201.06	8	79	79	71	2	0.045	9.0
CSTM100-Gauge-DIN8	10	219.91	7	99	99	89	3	0.045	13.0

M : 模數 / Z : 齒數 / Fp : 總節距誤差

M : Module / Z : No. of Teeth / Fp : Total Pitch Error

備註：
- 重量僅供參考。

Remark：
- Weight for reference only.

相接齒條誤差說明

相接齒條誤差公式

$\alpha \cdot F_P + b \cdot F_{PG}$

α	齒條數量	b	間隙數量 = 齒條數量 -1
F_P	總齒距誤差	F_{PG}	齒規總齒距誤差

舉例：若須相接 4 支模數 2，長度 2000，精度爲 DIN6 的齒條，根據 YYC 齒條目錄，

F_P 爲 0.046mm，

F_{PG} 爲 0.025mm，

相接誤差 = 4 x 0.046 + 3 x 0.025 = 0.259mm

若換爲相接 8 支模數 2，長度 1000，精度爲 DIN6 的齒條，

F_P 爲 0.036mm，

F_{PG} 爲 0.025mm，

相接誤差 = 8 x 0.036 + 7 x 0.025 = 0.463mm

若換爲相接 16 支模數 2，長度 500，精度爲 DIN6 的齒條，

F_P 爲 0.032mm，

F_{PG} 爲 0.025mm，

相接誤差 = 16 x 0.032 + 15 x 0.025 = 0.887mm

在設計上，若需有效減少相接誤差，則盡可能減少齒條相接的數量，便可減少誤差。

Connectable rack error calculation formula.

$\alpha \cdot F_P + b \cdot F_{PG}$

α	Number of racks	b	Number of gaps = Number of racks minus one
F_P	Total pitch error	F_{PG}	Gauge total pitch error

For assembling four Mod 2 racks with a length of 2000mm and quality grade DIN 6, the specifications from YYC catalogue indicate :
Total pitch error (F_P) = 0.046mm
Cumulative pitch deviation (F_{PG}) = 0.025mm
The total cumulative pitch error across the assembly is calculated as : 4 x 0.046mm + 3 x 0.025mm = 0.259mm

For assembling eight Mod 2 racks with a length of 1000mm and quality grade DIN 6 :
Total pitch error (F_P) = 0.036mm
Cumulative pitch deviation (F_{PG}) = 0.025mm
The total cumulative pitch error is : 8 x 0.036mm + 7 x 0.025mm = 0.463mm

For assembling sixteen Mod 2 racks with a length of 500mm and quality grade DIN 6 :
Total pitch error (F_P) = 0.032mm
Cumulative pitch deviation (F_{PG}) = 0.025mm
The total cumulative pitch error is : 16 x 0.032mm + 15 x 0.025mm = 0.887mm

To optimize precision in application, minimizing the number of rack joints is effective in reducing potential alignment errors.

齒條齒輪傳動負載表

Rack and Pinion Drive-Selection and Load Tables

此表格中的數值需考量以下說明配合使用

1. 速度 v = 1.5m/s
2. 系統具備良好的潤滑
3. 安全係數 S_B = 1.0-4.0
4. 線性負載分布係數 $L_{K\beta}$ = 1.0
5. 齒根強度係數 S_F = 1.0

在此情形下可達到理想的最大進給力，若需要不同項目的配對計算，請參考目錄頁面。

The values given in the table are based upon following conditions

1. Speed (v) = 1.5 m/s
2. Reliable grease lubrication in the application
3. Safety coefficient (S_B) = 1.0 ~ 4.0
4. Linear load distrubution factor ($L_{K\beta}$) = 1.0
5. Tooth root strength factor (S_F) = 1.0

In this case, the optimal maximum feed force can be achieved.
For different pairing calculations, please refer to the catalogue.

扭矩 T： $T = \frac{F \times D}{2000}$

Torque (T) : $T = \frac{F \times D}{2000}$

設計扭矩 T_B： $T_B = T \times S_B$

Designed Torque (T_B) : $T_B = T \times S_B$

緊急停止所需的扭矩： $T_{stop} = 2 \times T_B$

Torque required for emergency stop : $T_{stop} = 2 \times T_B$

斜齒 Helical Teeth

模數 Module	1.5	螺旋角 Helix Angle 19°31'42"			
齒輪 Pinion	型號 Code	MHGH-DIN6			
	材質 Material	SCM440			
	熱處理 Heat Treatment	高週波 Induction Hardened			
齒條 Rack	型號 Code	CHTGH-DIN6	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)			
18	28.648	4.21	0.76	3.37	1.21
19	30.239	4.46	0.80	3.39	1.29
20	31.831	4.71	0.85	3.40	1.36
21	33.423	5.20	0.89	3.41	1.43
22	35.014	5.21	0.94	3.42	1.51
23	36.606	5.23	0.99	3.43	1.58
24	38.197	5.24	1.03	3.44	1.64
25	39.789	5.26	1.08	3.45	1.71
26	41.380	5.27	1.13	3.46	1.79
27	42.972	5.28	1.17	3.46	1.86
28	44.563	5.29	1.22	3.47	1.93
29	46.155	5.31	1.26	3.48	2.01
30	47.747	5.33	1.32	3.49	2.08

模數 Module	2	螺旋角 Helix Angle 19°31'42"					
齒輪 Pinion	型號 Code	MHGH-DIN6					
	材質 Material	SCM440					
	熱處理 Heat Treatment	高週波 Induction Hardened					
齒條 Rack	型號 Code	CHTGH-DIN5	CHTGH-DIN6	CHTGH-DIN7	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)					
18	38.197	8.03	8.03	8.03	1.53	6.48	2.43
19	40.319	8.51	8.51	8.14	1.61	6.51	2.58
20	42.441	8.99	8.99	8.16	1.70	6.54	2.70
21	44.563	9.47	9.47	8.19	1.80	6.56	2.85
22	46.686	11.16	10.98	8.23	1.88	6.58	3.00
23	48.808	11.40	11.07	8.25	1.98	6.60	3.15
24	50.930	11.49	11.16	8.27	2.08	6.62	3.30
25	53.052	11.49	11.16	8.29	2.16	6.63	3.44
26	55.174	11.49	11.16	8.31	2.26	6.66	3.59
27	57.296	11.49	11.16	8.33	2.34	6.67	3.74
28	59.418	11.59	11.25	8.35	2.44	6.69	3.89
29	61.540	11.59	11.25	8.38	2.53	6.70	4.04
30	63.662	11.59	11.25	8.39	2.62	6.71	4.17

模數 Module	3	螺旋角 Helix Angle 19°31'42"					
齒輪 Pinion	型號 Code	MHGH-DIN6					
	材質 Material	SCM440					
	熱處理 Heat Treatment	高週波 Induction Hardened					
齒條 Rack	型號 Code	CHTGH-DIN5	CHTGH-DIN6	CHTGH-DIN7	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)					
18	57.296	13.17	13.17	13.17	2.68	11.51	4.28
19	60.479	13.95	13.95	13.95	2.84	11.55	4.53
20	63.662	14.74	14.74	14.49	3.00	11.59	4.78
21	66.845	15.53	15.53	14.55	3.17	11.63	5.04
22	70.028	18.57	18.57	14.59	3.33	11.67	5.29
23	73.211	19.48	19.44	14.63	3.48	11.71	5.54
24	76.394	19.78	19.71	14.68	3.65	11.75	5.81
25	79.578	20.01	19.71	14.72	3.81	11.78	6.06
26	82.761	20.22	19.71	14.76	3.97	11.80	6.31
27	85.944	20.30	19.71	14.79	4.14	11.83	6.59
28	89.127	20.39	19.80	14.83	4.31	11.86	6.84
29	92.310	20.39	19.80	14.85	4.46	11.88	7.11
30	95.493	20.49	19.89	14.89	4.63	11.92	7.36

模數 Module	4	螺旋角 Helix Angle 19°31'42"				
齒輪 Pinion	型號 Code	MHGH-DIN6				
	材質 Material	SCM440				
	熱處理 Heat Treatment	高週波 Induction Hardened				
齒條 Rack	型號 Code	CHTGH-DIN6	CHTGH-DIN7	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)				
18	76.394	25.18	25.18	4.77	20.63	7.59
19	80.639	26.68	25.88	5.05	20.71	8.04
20	84.883	28.19	25.98	5.34	20.79	8.50
21	89.127	29.71	26.08	5.62	20.86	8.96
22	93.371	31.22	26.16	5.92	20.93	9.41
23	97.615	32.74	26.24	6.20	20.99	9.87
24	101.859	33.66	26.33	6.48	21.06	10.33
25	106.103	33.84	26.39	6.78	21.12	10.79
26	110.348	33.93	26.45	7.06	21.17	11.25
27	114.592	34.02	26.52	7.36	21.22	11.71
28	118.836	34.20	26.59	7.64	21.27	12.17
29	123.080	34.29	26.63	7.94	21.31	12.63
30	127.324	34.38	26.69	8.22	21.36	13.10

模數 Module	5	螺旋角 Helix Angle 19°31'42"				
齒輪 Pinion	型號 Code	MHGH-DIN6				
	材質 Material	SCM440				
	熱處理 Heat Treatment	高週波 Induction Hardened				
齒條 Rack	型號 Code	CHTGH-DIN6	CHTGH-DIN7	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)				
18	95.493	40.19	40.19	7.45	33.10	10.32
19	100.798	42.58	41.53	7.90	33.23	10.94
20	106.103	44.99	41.69	8.34	33.34	11.55
21	111.409	47.42	41.84	8.80	33.47	12.17
22	116.714	49.83	41.97	9.25	33.58	12.80
23	122.019	52.11	42.10	9.70	33.68	13.42
24	127.324	52.20	42.24	10.15	33.78	14.04
25	132.629	52.47	42.33	10.60	33.87	14.67
26	137.934	52.74	42.44	11.05	33.96	15.29
27	143.240	52.74	42.55	11.51	34.03	15.92
28	148.545	52.74	42.66	11.96	34.12	16.55
29	153.850	52.83	42.73	12.41	34.18	17.17
30	159.155	53.01	42.84	12.87	34.27	17.81

模數 Module	6	螺旋角 Helix Angle 19°31'42"				
齒輪 Pinion	型號 Code	MHGH-DIN6				
	材質 Material	SCM440				
	熱處理 Heat Treatment	高週波 Induction Hardened				
齒條 Rack	型號 Code	CHTGH-DIN6	CHTGH-DIN7	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)				
18	114.592	58.50	58.50	10.89	48.34	17.34
19	120.958	61.99	60.65	11.54	48.52	18.37
20	127.324	65.50	60.88	12.20	48.71	19.40
21	133.690	69.03	61.11	12.85	48.89	20.45
22	140.057	72.27	61.30	13.50	49.04	21.51
23	146.423	72.27	61.49	14.16	49.20	22.54
24	152.789	72.45	61.68	14.83	49.35	23.60
25	159.155	72.90	61.84	15.48	49.47	24.63
26	165.521	72.90	61.99	16.14	49.60	25.69
27	171.888	72.99	62.14	16.80	49.72	26.74
28	178.254	73.35	62.29	17.47	49.84	27.80
29	184.620	73.35	62.41	18.12	49.92	28.85
30	190.986	73.44	62.57	18.79	50.05	29.91

模數 Module	8	螺旋角 Helix Angle 19°31'42"			
齒輪 Pinion	型號 Code	MHGH-DIN6			
	材質 Material	SCM440			
	熱處理 Heat Treatment	高週波 Induction Hardened			
齒條 Rack	型號 Code	CHTGH-DIN6	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)			
18	152.789	104.00	19.45	86.30	30.95
19	161.277	110.20	20.60	86.63	32.79
20	169.766	116.44	21.77	86.96	34.65
21	178.254	119.02	22.95	87.28	36.51
22	186.742	119.39	24.11	87.55	38.38
23	195.230	119.77	25.28	87.83	40.24
24	203.719	120.14	26.47	88.10	42.12
25	212.207	120.43	27.63	88.32	43.99
26	220.695	120.73	28.82	88.53	45.86
27	229.183	121.03	29.99	88.76	47.74
28	237.672	121.33	31.18	88.98	49.62
29	246.160	121.55	32.36	89.14	51.50
30	254.648	121.85	33.55	89.36	53.39

模數 Module	10	螺旋角 Helix Angle 19°31'42"			
齒輪 Pinion	型號 Code	MHGH-DIN6			
	材質 Material	SCM440			
	熱處理 Heat Treatment	高週波 Induction Hardened			
齒條 Rack	型號 Code	CHTGH-DIN6	CHTM-DIN8	CHTMH-DIN10	MHTMQ-DIN8
	材質 Material	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)			
18	190.986	162.51	30.46	135.18	48.47
19	201.597	172.18	32.27	135.70	51.36
20	212.207	181.93	34.10	136.22	54.28
21	222.817	186.45	35.93	136.73	57.20
22	233.428	187.02	37.76	137.15	60.11
23	244.038	187.61	39.61	137.58	63.04
24	254.648	188.20	41.46	138.01	65.99
25	265.259	188.65	43.29	138.35	68.90

直齒 Straight Teeth

模數 Module	2	螺旋角 Helix Angle 0°					
齒輪 Pinion	型號 Code	MSGH-DIN6					
	材質 Material	SCM440					
	熱處理 Heat Treatment	高週波 Induction Hardened					
齒條 Rack	型號 Code	CSTGH-DIN5	CSTGH-DIN6	CSTGH-DIN7	CSTM-DIN8	CSTMH-DIN10	MSTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)					
18	36.0	4.34	4.34	4.34	0.83	4.34	1.31
19	38.0	4.58	4.58	4.58	0.87	4.58	1.38
20	40.0	4.83	4.83	4.83	0.91	4.83	1.46
21	42.0	5.07	5.07	5.07	0.96	5.07	1.53
22	44.0	5.31	5.31	5.31	1.01	5.31	1.60
23	46.0	5.55	5.55	5.55	1.05	5.49	1.67
24	48.0	6.49	6.49	6.49	1.10	5.51	1.75
25	50.0	6.76	6.76	6.76	1.14	5.52	1.82
26	52.0	7.03	7.03	6.92	1.19	5.54	1.90
27	54.0	7.30	7.30	6.94	1.24	5.55	1.97
28	56.0	7.58	7.58	6.95	1.28	5.56	2.04
29	58.0	7.83	7.60	6.97	1.32	5.57	2.12
30	60.0	7.84	7.61	6.98	1.38	5.58	2.19

模數 Module	3	螺旋角 Helix Angle 0°					
齒輪 Pinion	型號 Code	MSGH-DIN6					
	材質 Material	SCM440					
	熱處理 Heat Treatment	高週波 Induction Hardened					
齒條 Rack	型號 Code	CSTGH-DIN5	CSTGH-DIN6	CSTGH-DIN7	CSTM-DIN8	CSTMH-DIN10	MSTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)					
18	54.0	7.15	7.15	7.15	1.45	7.15	2.31
19	57.0	7.55	7.55	7.55	1.53	7.55	2.44
20	60.0	7.95	7.95	7.95	1.61	7.95	2.56
21	63.0	8.34	8.34	8.34	1.69	8.34	2.69
22	66.0	8.74	8.74	8.74	1.77	8.74	2.82
23	69.0	9.14	9.14	9.14	1.85	9.14	2.96
24	72.0	10.85	10.85	10.85	1.94	9.77	3.07
25	75.0	11.30	11.30	11.30	2.01	9.80	3.21
26	78.0	11.75	11.75	11.75	2.09	9.82	3.32
27	81.0	12.21	12.21	12.21	2.18	9.84	3.46
28	84.0	12.66	12.66	12.34	2.25	9.86	3.60
29	87.0	13.11	13.11	12.36	2.34	9.88	3.71
30	90.0	13.56	13.52	12.39	2.42	9.91	3.85

模數 Module	4	螺旋角 Helix Angle 0°				
齒輪 Pinion	型號 Code	MSGH-DIN6				
	材質 Material	SCM440				
	熱處理 Heat Treatment	高週波 Induction Hardened				
齒條 Rack	型號 Code	CSTGH-DIN6	CSTGH-DIN7	CSTM-DIN8	CSTMH-DIN10	MSTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)				
18	72.0	13.62	13.62	2.58	13.62	4.11
19	76.0	14.38	14.38	2.73	14.38	4.34
20	80.0	15.13	15.13	2.86	15.13	4.57
21	84.0	15.89	15.89	3.01	15.89	4.80
22	88.0	16.65	16.65	3.15	16.65	5.01
23	92.0	17.40	17.40	3.29	17.40	5.24
24	96.0	18.16	18.16	3.44	17.52	5.47
25	100.0	21.53	21.53	3.58	17.57	5.70
26	104.0	22.39	22.02	3.73	17.61	5.93
27	108.0	23.25	22.06	3.86	17.65	6.16
28	112.0	24.11	22.12	4.01	17.69	6.38
29	116.0	24.18	22.17	4.16	17.73	6.61
30	120.0	24.23	22.21	4.29	17.77	6.84

模數 Module	5	螺旋角 Helix Angle 0°				
齒輪 Pinion	型號 Code	MSGH-DIN6				
	材質 Material	SCM440				
	熱處理 Heat Treatment	高週波 Induction Hardened				
齒條 Rack	型號 Code	CSTGH-DIN6	CSTGH-DIN7	CSTM-DIN8	CSTMH-DIN10	MSTMQ-DIN8
	材質 Material	S50C	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)				
18	90.0	21.74	21.74	4.03	21.74	6.42
19	95.0	22.95	22.95	4.26	22.95	6.77
20	100.0	24.15	24.15	4.48	24.15	7.13
21	105.0	25.36	25.36	4.71	25.36	7.50
22	110.0	26.57	26.57	4.92	26.57	7.84
23	115.0	27.78	27.78	5.15	27.78	8.20
24	120.0	28.98	28.98	5.38	28.10	8.56
25	125.0	34.36	34.36	5.60	28.18	8.91
26	130.0	35.73	35.32	5.83	28.26	9.27
27	135.0	37.11	35.40	6.05	28.32	9.64
28	140.0	38.48	35.48	6.27	28.39	9.99
29	145.0	38.78	35.56	6.49	28.44	10.34
30	150.0	38.87	35.63	6.72	28.51	10.70

模數 Module	6	螺旋角 Helix Angle 0°			
齒輪 Pinion	型號 Code	MSGH-DIN6			
	材質 Material	SCM440			
	熱處理 Heat Treatment	高週波 Induction Hardened			
齒條 Rack	型號 Code	CSTGH-DIN6	CSTM-DIN8	CSTMH-DIN10	MSTMQ-DIN8
	材質 Material	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)			
18	108.0	31.64	5.89	31.64	9.37
19	114.0	33.40	6.22	33.40	9.90
20	120.0	35.16	6.54	35.16	10.41
21	126.0	36.92	6.87	36.92	10.94
22	132.0	38.68	7.20	38.68	11.47
23	138.0	40.43	7.52	40.43	11.97
24	144.0	42.19	7.86	41.04	12.50
25	150.0	50.01	8.18	41.16	13.03
26	156.0	52.01	8.51	41.27	13.54
27	162.0	54.01	8.84	41.37	14.06
28	168.0	56.01	9.16	41.46	14.58
29	174.0	56.65	9.49	41.54	15.10
30	180.0	56.78	9.82	41.64	15.63

模數 Module	8	螺旋角 Helix Angle 0°			
齒輪 Pinion	型號 Code	MSGH-DIN6			
	材質 Material	SCM440			
	熱處理 Heat Treatment	高週波 Induction Hardened			
齒條 Rack	型號 Code	CSTGH-DIN6	CSTM-DIN8	CSTMH-DIN10	MSTMQ-DIN8
	材質 Material	S50C	S50C	S50C	SCM440
	熱處理 Heat Treatment	高週波 Hardened	--	高週波 Hardened	調質 Quenched & Tempered
齒輪齒數 No. of Teeth	齒輪節圓直徑 P C D	最大進給力 Max Feed Force (kN)			
18	144.0	56.26	10.52	56.26	16.73
19	152.0	59.38	11.10	59.38	17.68
20	160.0	62.51	11.68	62.51	18.60
21	168.0	65.63	12.27	65.63	19.53
22	176.0	68.76	12.86	68.76	20.46
23	184.0	71.88	13.43	71.88	21.39
24	192.0	75.01	14.02	75.01	22.32
25	200.0	88.91	14.61	73.48	23.25
26	208.0	92.47	15.20	73.68	24.17
27	216.0	96.02	15.77	73.85	25.12
28	224.0	99.58	16.36	74.01	26.04
29	232.0	101.15	16.95	74.17	26.97
30	240.0	101.37	17.53	74.34	27.90

齒型說明

在齒條齒輪安裝過程中，除了需確認安裝位置的中心距離外，還應充分了解齒條的相關技術參數，方能確保設計出符合需求的齒條應用方案。以下爲 YYC 齒條設計過程中常需考量的關鍵技術說明：

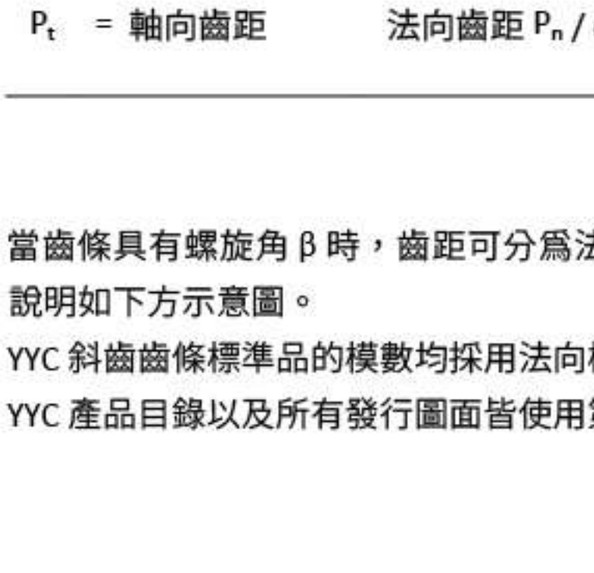
符號	說明
Mn = 法向模數	齒條的全齒深爲 2.25 倍法向模數 (Mn)。
A_1 = 齒條節線高度	齒條節線高度爲齒條高度減去一倍法向模數 Mn 的距離所計算得出的理論線。
ød = 齒輪節圓直徑	當齒輪存在轉位係數時，應使用嚙合節圓直徑 ødwz 代替。
C = 裝配中心距	齒條齒輪組裝時的裝配距離，A_1+ ød/2。
α_n = 法向壓力角	YYC 標準品採用的壓力角均爲 20°。
P_n = 法向齒距	法向模數 Mn · π 的距離
P_t = 軸向齒距	法向齒距 P_n / cosβ 的距離

當齒條具有螺旋角 β 時，齒距可分爲法向齒距 P_n 與軸向齒距 P_t，詳細說明如下方示意圖。

YYC 斜齒齒條標準品的模數均採用法向模數 Mn。

YYC 產品目錄以及所有發行圖面皆使用第三角法繪製。

剖面視圖 B-B / Sectional View B-B



剖面視圖 A-A / Sectional View A-A

Tooth Profile

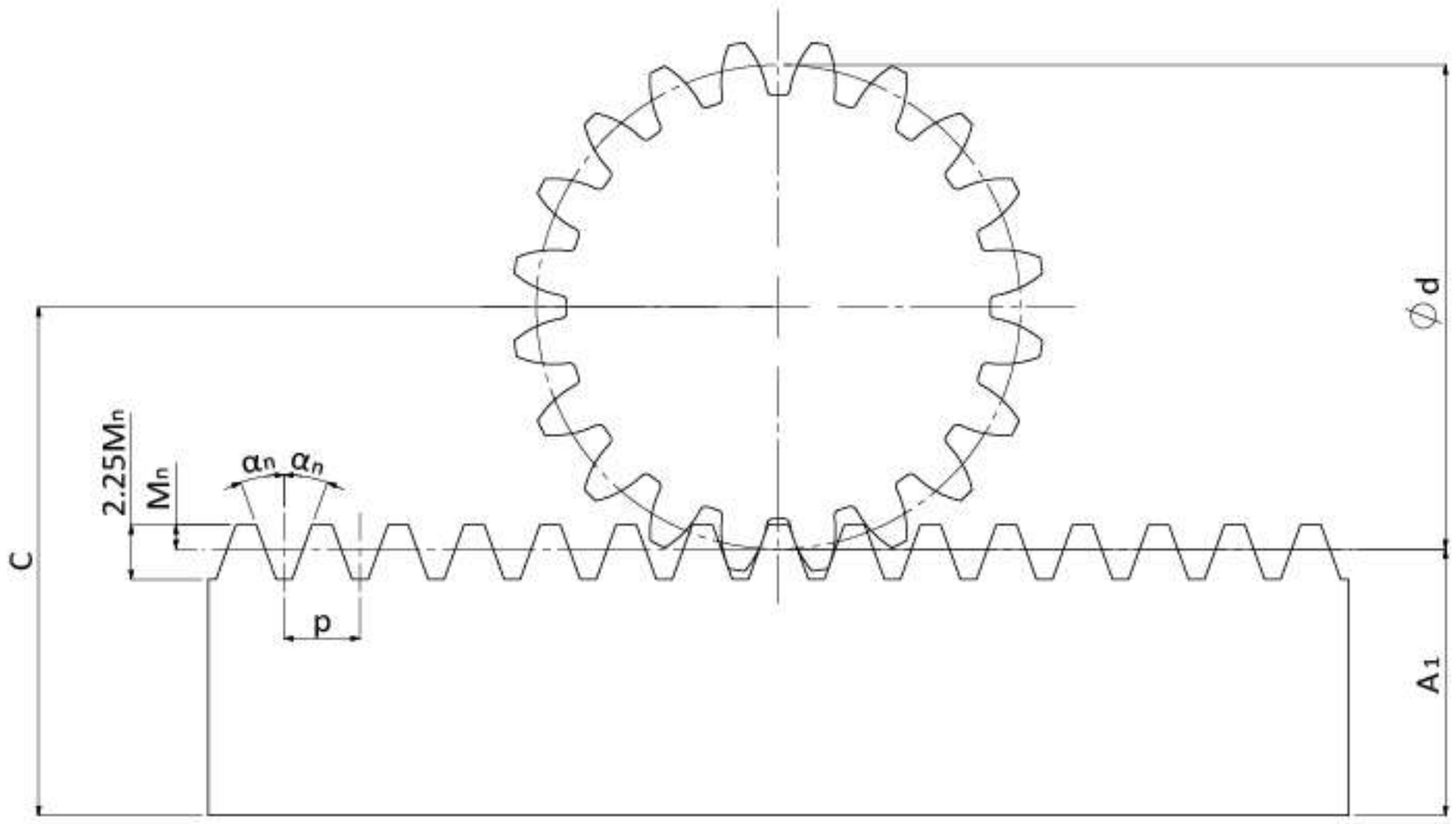
During the mounting process of racks and pinions, it is essential not only to confirm the center distance of the mounting position but also to fully understand the relevant technical parameters of the rack. This ensures the design of a rack application solution that meets required specifications. The following are the key technical considerations commonly addressed in the design process of YYC racks:

Symbol	Description
Mn = Normal Module	The full tooth depth of the rack is 2.25 times the normal module (Mn).
A_1 = Rack Pitch Line Height	The rack pitch line height is a theoretical line calculated by subtracting one normal module (Mn) from the total height of the rack.
ød = Pinion Pitch Circle Diameter	When the pinion has a shift coefficient, the meshing pitch circle diameter, ødwz, should be used instead.
C = Assembly Center Distance	When mounting rack and pinion, the mounting distance is A_1 + ød/2.
α_n = Normal Pressure Angle	The pressure angle used in YYC standard racks is 20°.
P_n = Normal Pitch	The distance of the normal module is normal module multiplied by π.
P_t = Axial Pitch	The distance of axial pitch is normal pitch divided by cos β.

When the rack has a helix angle β, the pitch can be divided into normal pitch (P_n) and axial pitch (P_t). A detailed explanation is provided in the illustration below.

The module of YYC's standard helical racks is based on the normal module (Mn).

The YYC catalog and all issued drawings are developed using the third-angle projection method.



齒條跨銷與背隙簡易說明

爲了檢測齒條的齒厚公差，透過將銷棒置入齒型之間，量測銷棒至齒條底部的最大距離 M，如圖 1。

$$M = A_1 + \frac{D_M}{2}\left(\frac{1}{\sin \alpha_n} + 1\right) - \frac{m_n \cdot \pi}{4\tan \alpha_n}$$

法向齒距 $P_n = m_n \cdot \pi$

齒條齒厚與齒輪背隙公差的變化

齒條與齒輪嚙合時的理論線稱爲節線，此線爲虛擬的假想線。當節線爲理想值時，齒厚會等於 $P_n/2$，如圖 2。爲了確保齒條與齒輪運動時能夠穩定嚙合，齒厚必須介於一定範圍值之間，稱爲齒厚公差。

根據理論推算，齒厚 $P_n/2$ 每減少 c 的距離，銷棒的高度也會隨著下降 d，如圖 3。

$$d = \frac{c}{2} \div \tan \alpha_n$$

c	d	
0.01	0.0137	mm
0.02	0.0275	mm

也可用此方式去推算齒輪背隙的變化量。

YYC 齒條跨銷棒量測說明

YYC 測量齒條跨銷值使用的銷棒如下表：

模數	ϕD_M	M	A_0
1.5	ø3	18.149	17
1.5	ø3	20.149	19
2	ø4	25.532	24
2.5	ø5	25.915	24
3	ø6	31.298	29
4	ø8	42.064	39
5	ø10	42.830	39
6	ø12	53.596	49
8	ø16	85.128	79
10	ø20	106.659	99

A Brief Description of Rack Over-Pin Dimension and Backlash

To measure the tooth thickness tolerance of the rack, a pin is inserted between the teeth flanks, and the maximum distance M from the top of the pin to the bottom of the rack, as illustrated in the figure 1.

$$M = A_1 + \frac{D_M}{2}\left(\frac{1}{\sin \alpha_n} + 1\right) - \frac{m_n \cdot \pi}{4\tan \alpha_n}$$

Normal Pitch $P_n = m_n \cdot \pi$

Relation in between Tooth Thickness Tolerance of Rack and Rack-Pinion Backlash

When the rack and pinion mesh, the theoretical line of contact is referred to as the pitch line, which is an imaginary conceptual line. When the pitch line is at its ideal value, the tooth thickness equals $P_n/2$, as shown in Figure 2. To ensure stable meshing between the rack and pinion during transmission, the tooth thickness must remain within a specific range, which is defined as the tooth thickness tolerance.

According to theoretical calculations, for every reduction in the tooth thickness by a distance of c from $P_n/2$, the height of the pin also decreases correspondingly by d, as illustrated in Figure 3.

$$d = \frac{c}{2} \div \tan \alpha_n$$

c	d	
0.01	0.0137	mm
0.02	0.0275	mm

This method can also be applied to calculate the variation in gear backlash.

Over-pin Measurement Instructions for YYC Racks

Over-pin used to measure over-pin dimension of YYC Racks:

Module	ϕD_M	M	A_0
1.5	ø3	18.149	17
1.5	ø3	20.149	19
2	ø4	25.532	24
2.5	ø5	25.915	24
3	ø6	31.298	29
4	ø8	42.064	39
5	ø10	42.830	39
6	ø12	53.596	49
8	ø16	85.128	79
10	ø20	106.659	99

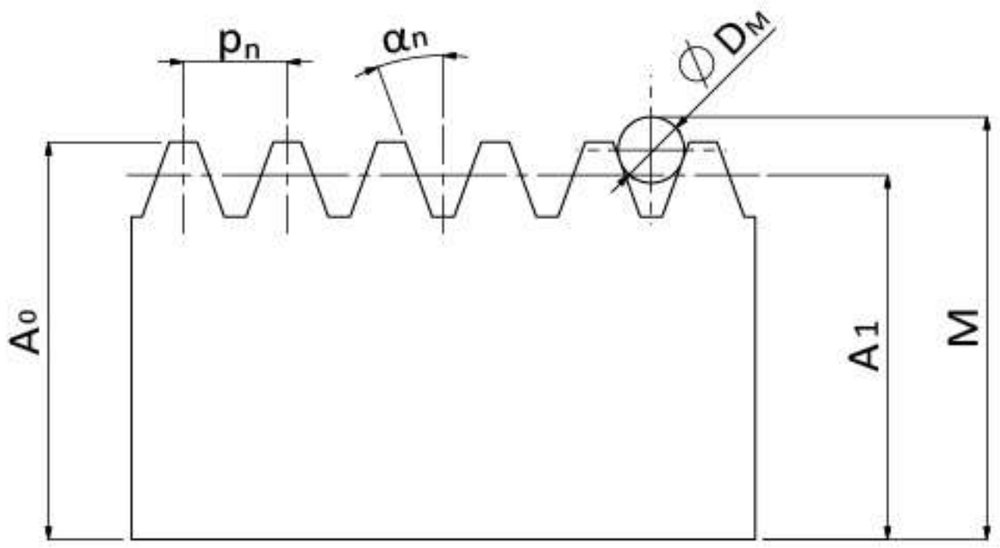


圖 1 / Figure 1

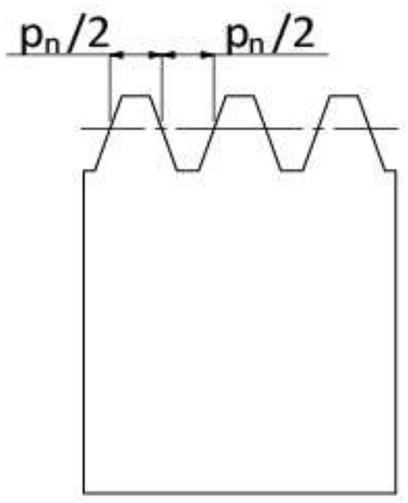


圖 2 / Figure 2

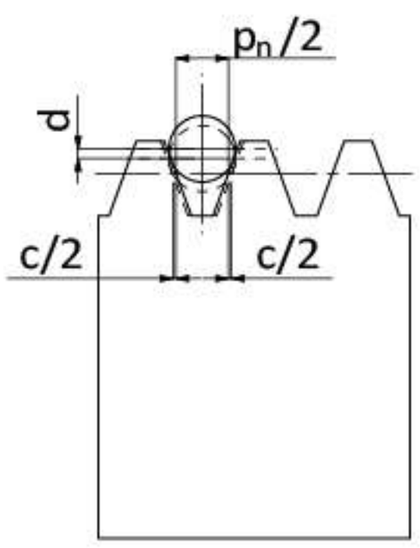


圖 3 / Figure 3

選型說明與計算

齒條齒輪運動時如有搭配減速機以及馬達，爲確保運作狀態是安全並達到合適的參數需求，選擇相匹配的齒條與齒輪很重要。在選型之前需先評估目前的需要來做計算，儘可能準備完整數據以利後續計算順利。一個完整的選型最終產出的報告需有以下數據：

代號		說明	單位 / 備註	範例
		應用機構	類型	工具機移動
		負載移動方向	水平 / 垂直	水平
m	=	最大載荷重量	kg	2500
μ	=	摩擦係數		0.01
v	=	最大線速度	m/min	60
N_G	=	減速機額定轉速	rpm	3000
T_G	=	減速機額定扭矩	Nm	180
i	=	減速比		10
N_M	=	馬達額定轉速	rpm	3000
T_M	=	馬達額定扭矩	Nm	20
K_A	=	運行負載係數	均勻 / 中度 / 劇烈	1
S_B	=	安全係數	根據需求介於 1-4 之間	1
α_1	=	加速度	m/s^2	--
t_1	=	加速時間	s	0.5
α_2	=	減速度	m/s^2	--
t_2	=	減速時間	s	0.5

Selection and Calculation

To ensure safe movement and meet required parameters, selecting a compatible rack and pinion is essential when paired with a gearbox and motor. Evaluate current requirements and prepare complete data to ensure accurate calculations. A complete selection report must include the following data :

Symbol		Descriptions	Unit / Remark	Example
		Application	Type	Machine Tool Movement
		Movement	Horizontal / Vertical	Horizontal
m	=	Maximum Load Weight	kg	2500
μ	=	Coefficient of Friction		0.01
v	=	Maximum Linear Speed	m/min	60
N_G	=	Gearbox Nominal Speed	rpm	3000
T_G	=	Gearbox Nominal Torque	Nm	180
i	=	Ratio		10
N_M	=	Rated Rotation Speed (RPM)	rpm	3000
T_M	=	Rated Torque	Nm	20
K_A	=	Movement Service Factor	Uniform / Medium / Heavy	1
S_B	=	Safety Coefficient	between 1 - 4	1
α_1	=	Acceleration	m/s^2	--
t_1	=	Accelerating Time	s	0.5
α_2	=	Deceleration	m/s^2	--
t_2	=	Deceleration Time	s	0.5

計算說明 (依據列表中的單位)	
$\frac{v}{60} = \alpha_1 \cdot t$	用於界定速度 v、加速度 α、加速時間 t 的計算公式。
$F_1 = m \cdot g \cdot \mu + m \cdot \alpha$	計算系統所需進給力 F_1，單位爲牛頓 N，g 爲重力加速度 $9.81m/s^2$。 若爲垂直應用，將摩擦係數 μ 設爲 1 再計算。
$F_S = \frac{F_1}{K_A \cdot S_B}$	設計使用上會考慮安全與負載做出可承受範圍的調整。將系統需求進給力 F_1 除以安全係數 S_B 與負載係數 K_A 得出的結果爲設計所需進給力 F_S。
$T_1 = \frac{F_1 \cdot d}{2000}$	減速機輸出需求扭矩 T_1 計算公式，其中 d 爲齒輪節圓直徑，單位爲 mm。
$T_S = \frac{T_1}{K_A \cdot S_B}$	設計使用上會考慮安全與負載做出可承受範圍的調整。將減速機輸出需求扭矩 T_1 除以安全係數 S_B 與負載係數 K_A 得出的扭矩爲設計所需扭矩 T_S。
$N_1 = \frac{v}{\pi \cdot d} \cdot 1000$	減速機輸出需求轉速 N_1 計算公式，單位爲 rpm。
$N_2 = N_1 \cdot i$	減速機輸入轉速 N_2 計算公式。
$T_2 = \frac{T_S}{i}$	減速機輸入扭矩 T_2 計算公式。

Calculation Process	
$\frac{v}{60} = \alpha_1 \cdot t$	The formula used to define speed (v), acceleration (α), and acceleration time (t).
$F_1 = m \cdot g \cdot \mu + m \cdot \alpha$	Calculate the required feed force F_1 in system, the unit is Newton N, g is the gravitational acceleration $9.81m/s^2$. If it is a vertical application, set the coefficient of friction μ to 1 and then calculate.
$F_S = \frac{F_1}{K_A \cdot S_B}$	During design and use, safety and load will be taken into consideration to make adjustments to the tolerable range. Divide the system required feed force F_1 by the safety factor S_B and load factor K_A. The result is the design required feed force F_S.
$T_1 = \frac{F_1 \cdot d}{2000}$	Calculation formula of reducer output demand torque T_1, where d is the gear pitch circle diameter in mm.
$T_S = \frac{T_1}{K_A \cdot S_B}$	During design and use, safety and load will be taken into consideration to make adjustments to the tolerable range. Divide the reducer output required torque T_1 by the safety factor S_B and load factor K_A. The torque obtained is the design required torque T_S.
$N_1 = \frac{v}{\pi \cdot d} \cdot 1000$	The formula to calculate required speed (N_1) of reducer output, the unit is rpm.
$N_2 = N_1 \cdot i$	The formula to calculate output speed (N_2) of reducer.
$T_2 = \frac{T_S}{i}$	The formula to calculate output torque (T_2) of reducer.

可參考下表設定運行負載係數 K_A

	均勻	中度	劇烈
K_A	1	1.25	1.75

Refer to the table below for the settings of the operational load factor K_A.

	Uniform	Medium	Heavy
K_A	1	1.25	1.75

當得出以上數據後，請判斷以下情況來決定此數據是否符合使用需求：

F_{MAX}	≧ F_S	請根據所選擇的齒條齒輪，參考〈齒條齒輪傳動負載表〉找到相應的最大進給力 F_{MAX}，並與設計所需進給力 F_S 比對。
T_G	≧ T_S	減速機額定扭矩 T_G 需大於設計所需扭矩 T_S。
T_M	≧ T_2	馬達額定扭矩 T_M 需大於減速機輸入扭矩 T_2。
N_G	≧ N_2	減速機額定轉速 N_G 需大於減速機輸入轉速 N_2。
N_M	≧ N_2	馬達額定轉速 N_M 需大於減速機輸入轉速 N_2。

After obtaining the above data, evaluate the following conditions to determine if it meets the usage requirements.

F_{MAX}	≧ F_S	Please refer to the "Rack and Pinion Drive-Selection and Load Tables" to find the corresponding maximum feed force F_{MAX} according to the selected rack and gear, and compare it with the designed maximum feed force F_S.
T_G	≧ T_S	The rated torque T_G of the reducer must be greater than the design required torque T_S.
T_M	≧ T_2	The rated torque T_M of the motor must be greater than the input torque T_2 of the reducer.
N_G	≧ N_2	The rated speed N_G of the reducer must be greater than the input speed N_2 of the reducer.
N_M	≧ N_2	The motor rated speed N_M must be greater than the reducer input speed N_2.

計算流程

$\frac{v}{60} = \alpha_1 \cdot t$	$\frac{60}{60} = \alpha_1 \cdot 0.5$	$\alpha_1 = 2$	m/s^2
		$\alpha_1 = \alpha_2 = 2$	m/s^2
$F_1 = m \cdot g \cdot \mu + m \cdot \alpha$	$F_1 = 2500x9.81x0.01+2500x2$	$F_1 = 5245.25$	N
$F_S = \frac{F_1}{K_A \cdot S_B}$	$F_S = \frac{5245.25}{1x1}$	$F_S = 5245.25$	N
$T_1 = \frac{F_1 \cdot d}{2000}$	$T_1 = \frac{5245.25 \cdot 63.662}{2000}$	$T_1 = 166.96$	Nm
$T_S = \frac{T_1}{K_A \cdot S_B}$	$T_S = \frac{166.96}{1x1}$	$T_S = 166.96$	Nm
$N_1 = \frac{v}{\pi \cdot d} \cdot 1000$	$N_1 = \frac{60}{\pi \cdot 63.662} \cdot 1000$	$N_1 = 300$	rpm
$N_2 = N_1 \cdot i$	$N_2 = 300x10$	$N_2 = 3000$	rpm
$T_2 = \frac{T_S}{i}$	$T_2 = \frac{166.96}{10}$	$T_2 = 16.7$	Nm

Calculation Process

$\frac{v}{60} = \alpha_1 \cdot t$	$\frac{60}{60} = \alpha_1 \cdot 0.5$	$\alpha_1 = 2$	m/s^2
		$\alpha_1 = \alpha_2 = 2$	m/s^2
$F_1 = m \cdot g \cdot \mu + m \cdot \alpha$	$F_1 = 2500x9.81x0.01+2500x2$	$F_1 = 5245.25$	N
$F_S = \frac{F_1}{K_A \cdot S_B}$	$F_S = \frac{5245.25}{1x1}$	$F_S = 5245.25$	N
$T_1 = \frac{F_1 \cdot d}{2000}$	$T_1 = \frac{5245.25 \cdot 63.662}{2000}$	$T_1 = 166.96$	Nm
$T_S = \frac{T_1}{K_A \cdot S_B}$	$T_S = \frac{166.96}{1x1}$	$T_S = 166.96$	Nm
$N_1 = \frac{v}{\pi \cdot d} \cdot 1000$	$N_1 = \frac{60}{\pi \cdot 63.662} \cdot 1000$	$N_1 = 300$	rpm
$N_2 = N_1 \cdot i$	$N_2 = 300x10$	$N_2 = 3000$	rpm
$T_2 = \frac{T_S}{i}$	$T_2 = \frac{166.96}{10}$	$T_2 = 16.7$	Nm

計算結果

F_{MAX}	≧ F_S	14740	≧	5245.25
T_G	≧ T_S	180	≧	166.96
T_M	≧ T_2	20	≧	16.7
N_G	≧ N_2	3000	≧	166.96
N_M	≧ N_2	3000	≧	3000

此應用符合使用需求。

Calculation Result

F_{MAX}	≧ F_S	14740	≧	5245.25
T_G	≧ T_S	180	≧	166.96
T_M	≧ T_2	20	≧	16.7
N_G	≧ N_2	3000	≧	166.96
N_M	≧ N_2	3000	≧	3000

This application meets the needs.

選型說明與計算

符號	說明	單位 / 備註	數據
	應用機構	類型	_____
	負載移動方向	水平 / 垂直	_____
m	最大載荷重量	kg	_____
μ	摩擦係數		_____
v	最大線速度	m/min	_____
	減速機型號	需求型號	_____
N_G	減速機額定轉速	rpm	_____
T_G	減速機額定扭矩	Nm	_____
i	減速比		_____
	馬達規格型號	需求型號	_____
N_M	馬達額定轉速	rpm	_____
T_M	馬達額定扭矩	Nm	_____
K_A	運行負載係數	均勻 / 中度 / 劇烈	_____
S_B	安全係數	根據需求介於 1-4 之間	_____
α1	加速度	m/s^2	_____
t1	加速時間	s	_____
α2	減速度	m/s^2	_____
t2	減速時間	s	_____

Selection and Calculation

Symbols	Description	Unit / Remark	Data
	Application Mechanism	Type	_____
	Load Movement Direction	Horizontal / Vertical	_____
m	Maximum Load Capacity	kg	_____
μ	Coefficient of Friction		_____
v	Maximum Linear Velocity	m/min	_____
	Gearbox Model Number	Required Model	_____
N_G	Gearbox Nominal Speed	rpm	_____
T_G	Gearbox Nominal Torque	Nm	_____
i	Ratio		_____
	Motor Model	Required Model	_____
N_M	Motor Nominal Rotation Speed	rpm	_____
T_M	Motor Nominal Torque	Nm	_____
K_A	Operationg Load Factor	Uniform / Medium / Heavy	_____
S_B	Safety Coefficient	Ranges from 1-4	_____
α1	Acceleration	m/s^2	_____
t1	Accelerating Time	s	_____
α2	Deceleration	m/s^2	_____
t2	Deceleration Time	s	_____

計算流程	結果	你的計算
$\frac{v}{60} = \alpha_1 \cdot t$	v = _____ m/min α = _____ m/s^2 t = _____ s	
$F_1 = m \cdot g \cdot \mu + m \cdot \alpha$	F_1 = _____ N (垂直應用摩擦係數設爲 1)	
$F_S = \frac{F_1}{K_A \cdot S_B}$	F_S = _____ N	
$T_1 = \frac{F_1 \cdot d}{2000}$	T_1 = _____ Nm d = _____ mm	
$T_S = \frac{T_1}{K_A \cdot S_B}$	T_S = _____ Nm	
$N_1 = \frac{v}{\pi \cdot d} \cdot 1000$	N_1 = _____ rpm	
$N_2 = N_1 \cdot i$	N_2 = _____ rpm	
$T_2 = \frac{T_S}{i}$	T_2 = _____ Nm	
$F_{MAX} \geqq F_S$	F_{MAX} = _____ N ≧ F_S = _____ N (F_{MAX} : 參考〈齒條齒輪傳動附載表〉)	
$T_G \geqq T_S$	T_G = _____ N_m ≧ T_S = _____ N_m	
$T_M \geqq T_2$	T_M = _____ N_m ≧ T_2 = _____ N_m	
$N_G \geqq N_2$	N_G = _____ rpm ≧ N_2= _____ rpm	
$N_M \geqq N_2$	N_M = _____ rpm ≧ N_2= _____ rpm	

Calculation Process	Results	Your Calculation
$\frac{v}{60} = \alpha_1 \cdot t$	v = _____ m/min α = _____ m/s^2 t = _____ s	
$F_1 = m \cdot g \cdot \mu + m \cdot \alpha$	F_1 = _____ N (Friction Coefficient for Vertical Application = 1)	
$F_S = \frac{F_1}{K_A \cdot S_B}$	F_S = _____ N	
$T_1 = \frac{F_1 \cdot d}{2000}$	T_1 = _____ Nm d = _____ mm	
$T_S = \frac{T_1}{K_A \cdot S_B}$	T_S = _____ Nm	
$N_1 = \frac{v}{\pi \cdot d} \cdot 1000$	N_1 = _____ rpm	
$N_2 = N_1 \cdot i$	N_2 = _____ rpm	
$T_2 = \frac{T_S}{i}$	T_2 = _____ Nm	
$F_{MAX} \geqq F_S$	F_{MAX} = _____ N ≧ F_S = _____ N (F_{MAX} : Refer to "Rack and Pinion Drive-Selection and Load Tables" .)	
$T_G \geqq T_S$	T_G = _____ N_m ≧ T_S = _____ N_m	
$T_M \geqq T_2$	T_M = _____ N_m ≧ T_2 = _____ N_m	
$N_G \geqq N_2$	N_G = _____ rpm ≧ N_2= _____ rpm	
$N_M \geqq N_2$	N_M = _____ rpm ≧ N_2= _____ rpm	

齒條齒輪安裝說明手冊

Operating Manual for Rack and Pinion Drives

一、關於

本說明書用於齒條齒輪安裝使用說明，請依照下方說明進行操作，如有不當使用造成人員受傷或產品損壞，本公司不負相關賠償責任。

I. About this Manual

This instruction is adapted for assembly of racks and pinions. Please follow the instructions below. If there is any improper use to cause personnel injuries or product damages, we are irresponsible for any compensations.

二、注意事項

1. 需在安全環境下進行操作，例如移動中的設備停止運轉或保持安全距離，周圍不會有未固定容易掉落的物件。
2. 清潔相關設備，避免髒汙、液體影響安裝精確性。
3. 操作人員需詳細閱讀說明手冊，並熟悉各項操作工具的使用，並有相關技術經驗以便發現問題與避免危險情況。
4. 請確認安裝的相關設備、零件都在合格的情況下安裝，避免使用異常與損壞。
5. 再次確認齒條的齒距誤差時，會因環境溫度有所影響，YYC 標準的總齒距誤差 F_P 需在攝氏溫度 20° C 進行量測。

II. General Safety Instructions

1. Operations must be carried out in a safe environment. For example, stop the equipment when it moves or to keep a safe distance. Make sure there are no unsecured and easily drop items around.
2. Clean related equipment to prevent dirt and liquid from affecting assembly accuracy.
3. Operators must read the instruction manual in detail, be familiar with the use of various operating tools, and have relevant technical experience in order to detect problems and avoid dangerous situations.
4. Please confirm that the relevant equipment and parts installed are installed under qualified conditions to avoid abnormal use and damage.
5. When reconfirming the pitch error of the rack, it will be affected by the environment temperature. The YYC standard total pitch error F_P must be measured at 20° C.

三、齒條倒角說明

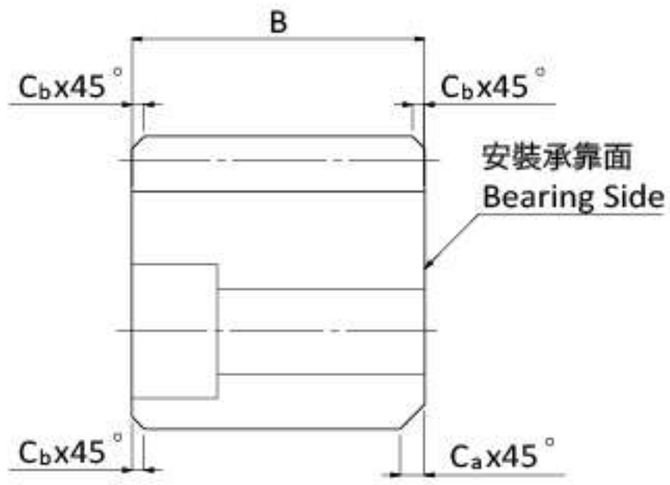
齒條安裝時，爲避免四角與接觸面發生干涉，YYC 將根據齒條的模數進行倒角處理。

III. Rack Chamfering Instruction

To avoid interference between the four corners of the rack and the bearing side during mounting, YYC performs chamfering based on the module of the rack.

模數	Ca	Cb	B
1.5	1.5	0.5	17
1.5	2	0.5	19
2	2	1	24
2.5	2	1	24
3	2	1	29
4	2	1.5	39
5	3	1.5	49
6	3	2	59
8	4	2	79
10	5	3	99

Module	Ca	Cb	B
1.5	1.5	0.5	17
1.5	2	0.5	19
2	2	1	24
2.5	2	1	24
3	2	1	29
4	2	1.5	39
5	3	1.5	49
6	3	2	59
8	4	2	79
10	5	3	99



四、準備工具與說明

1. 安裝齒條的承靠基準面需在平面度與垂直度 0.05mm 以內，如圖 4-1。
2. 根據圖 4-2 準備下列工具，並詳閱表 4-1 中的工具使用說明。
3. 在確保沒有捲入危險的情況下配戴防護手套且穿上工作鞋。
4. 使用不會造成配件生鏽與腐蝕的清潔劑清潔安裝表面，如圖 4-3。
5. 使用油石和不殘留毛屑的布料清潔表面，如圖 4-3。
6. 使用千分錶檢測鎖固面與承靠面以及線軌之間的平行度，如圖 4-4。
7. 將齒條提前置於安裝位置附近用於適應環境溫度。

備註：千分錶使用時，請將其支架固定於滑塊上再進行檢測。

IV. Installation Preparation

1. The flatness and squareness of the contact and supporting surfaces for assembling racks should be ≤ 0.05mm as the Fig. 2 below.
2. Prepare the following tools according to Figure 4-2, and carefully read the tool usage instructions in Table 4-1.
3. Wear protective gloves and work shoes only under the circumstance that there is no risk of entrapment.
4. Use a cleaning agent that will not cause rust or corrosion to accessories to clean the installation surface, as shown in Figure 4-3.
5. Clean the contact and supporting surfaces with a sharpening stone and a clean rag, as shown in Figure 4-3.
6. Use a dial gauge to check the parallelism between the contact and supporting surfaces and the linear guideway, as shown in Figure 4-4.
7. Place the rack nearby in advance to adapt to the surrounding temperature.

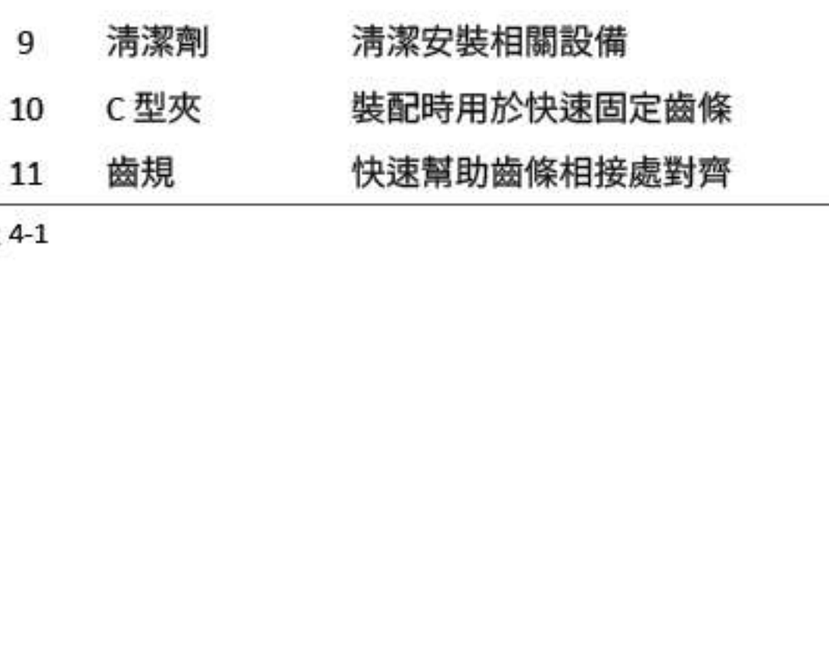
Note: When using the dial indicator, please fix its bracket on the slider before testing.

代碼	工具	用途
1	內六角螺栓	將齒條固定於機架上
2	定位銷	將齒條固定於機架上
3	跨銷棒	方便檢查齒條相接精確度的零件
4	千分錶	檢查齒條相接的精確度
5	油石	清潔安裝相關設備
6	磁鐵	給跨銷棒加磁性
7	扭力板手	鎖緊螺栓
8	橡膠錘	微調齒條安裝位置
9	清潔劑	清潔安裝相關設備
10	C 型夾	裝配時用於快速固定齒條
11	齒規	快速幫助齒條相接處對齊

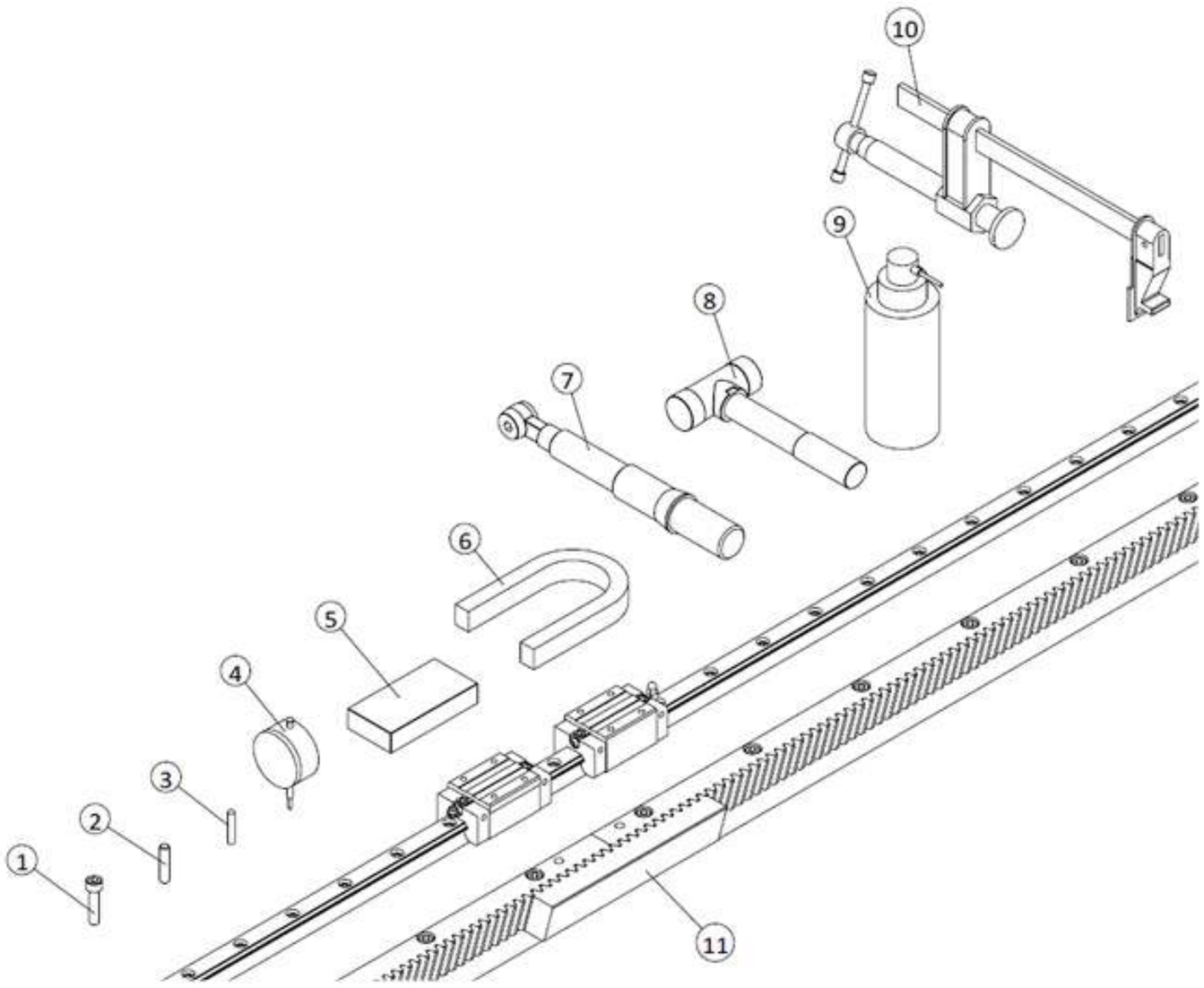
表 4-1

No.	Tool	Purpose
1	Hex-socket bolt	To tighten the rack to the frame.
2	Positioning pin	To fasten the rack to the frame.
3	Over pin	A part used to conveniently check the accuracy of rack connection.
4	Dial gauge	To inspect the accuracy of rack connection
5	Sharpening stone	To clean related installation equipment.
6	Magnet	To induce magnetic properties in over-pin.
7	Torque wrench	To tighten bolts.
8	Rubber hammer	To slightly adjust the installation position of rack.
9	Cleaning agent	To clean related installation equipment.
10	C clamp	Used to quickly fasten he rack when assembling.
11	Gauge	To fast align the connecting positon between two racks.

Table 4-1



4-1 / Fig. 4-1



4-2 / Fig. 4-2

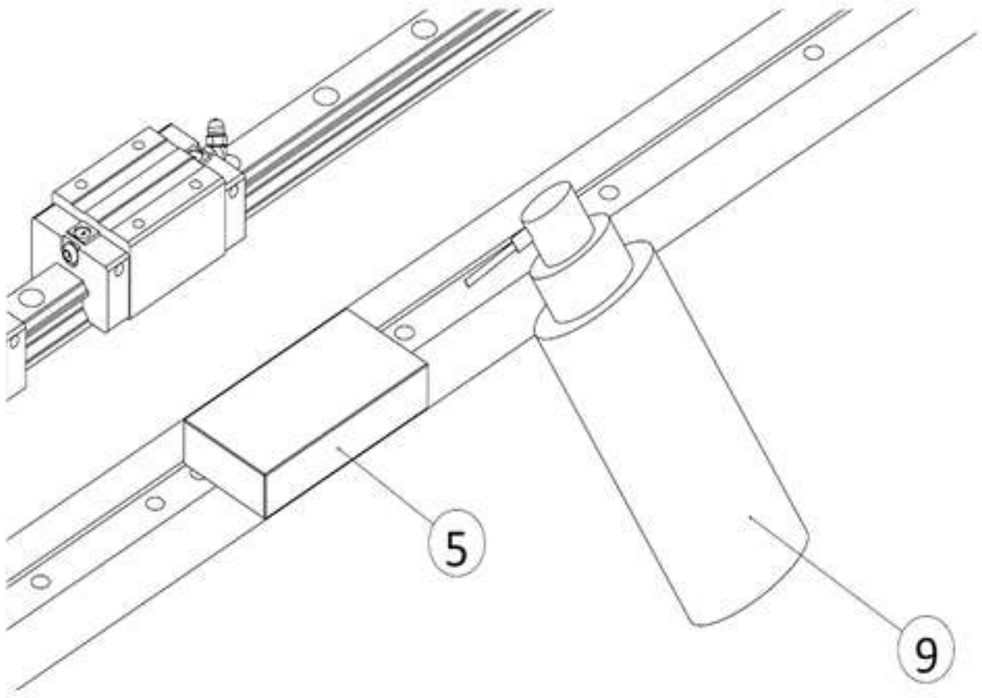


圖 4-3 / Fig. 4-3

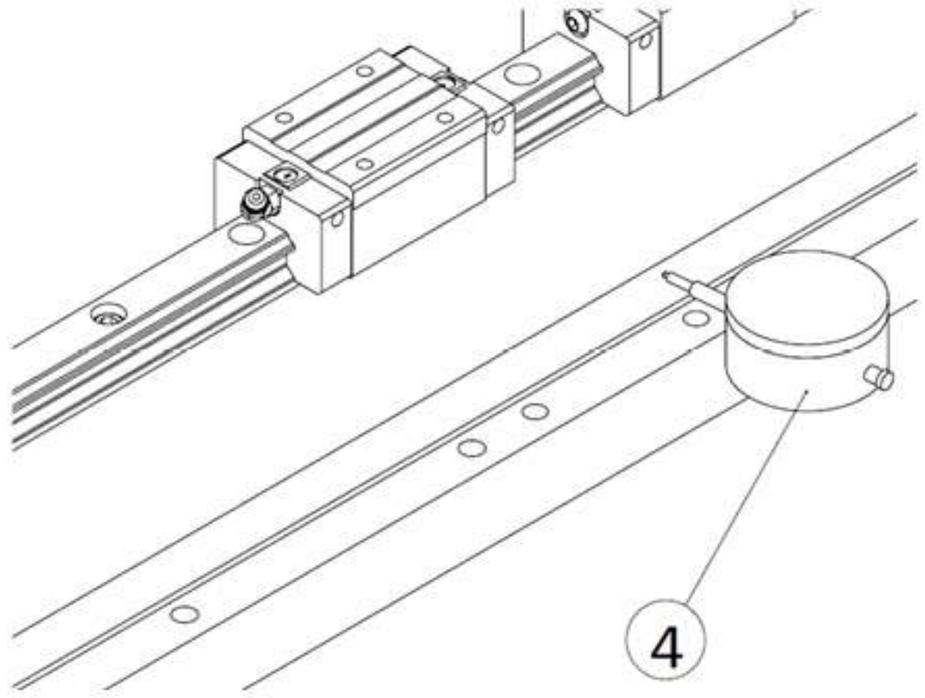


圖 4-4 / Fig. 4-4

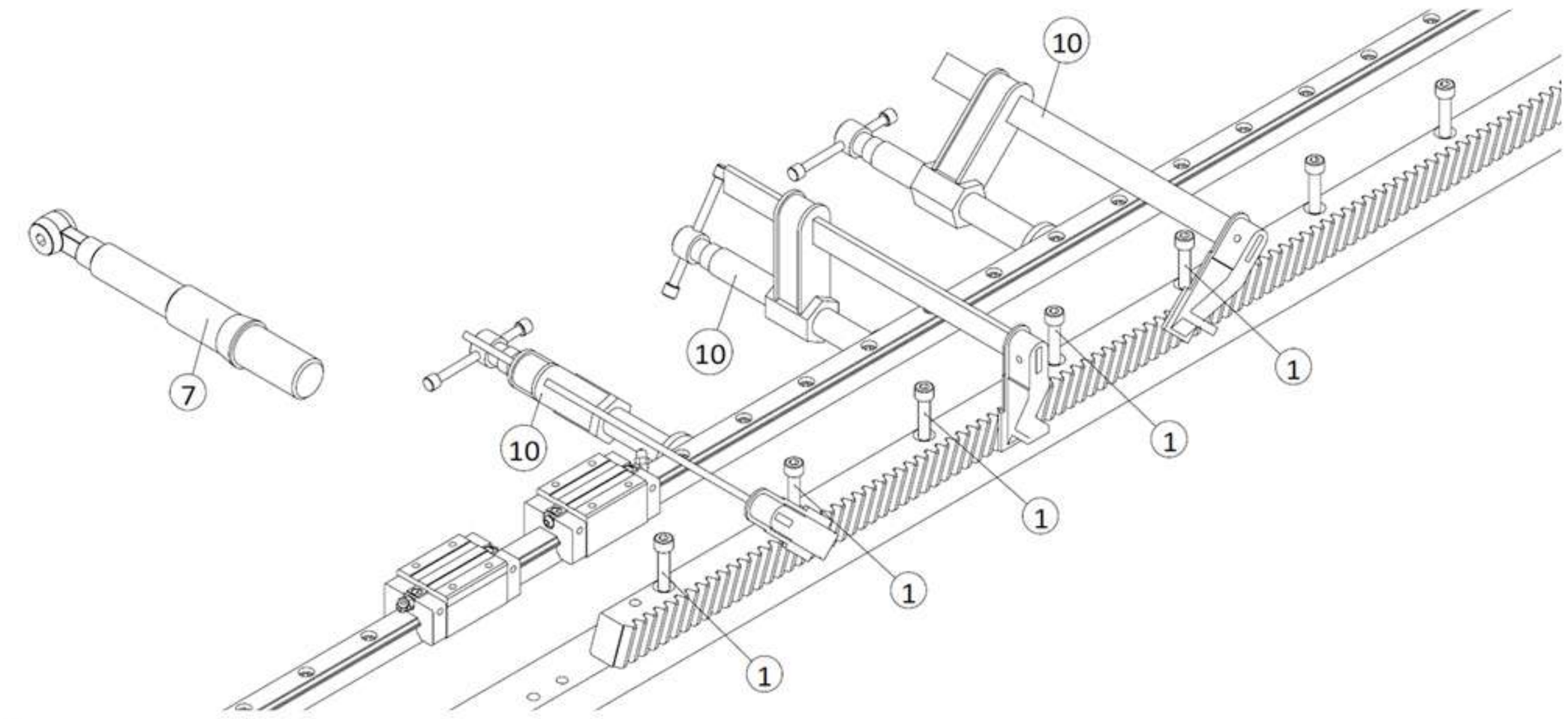


圖 4-5 / Fig. 4-5

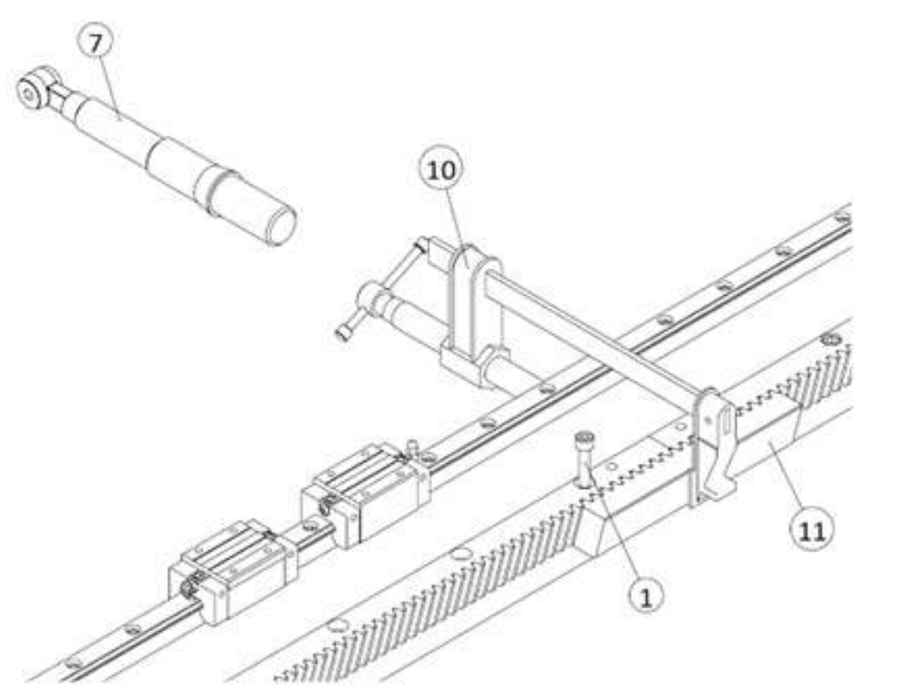


圖 4-6 / Fig. 4-6

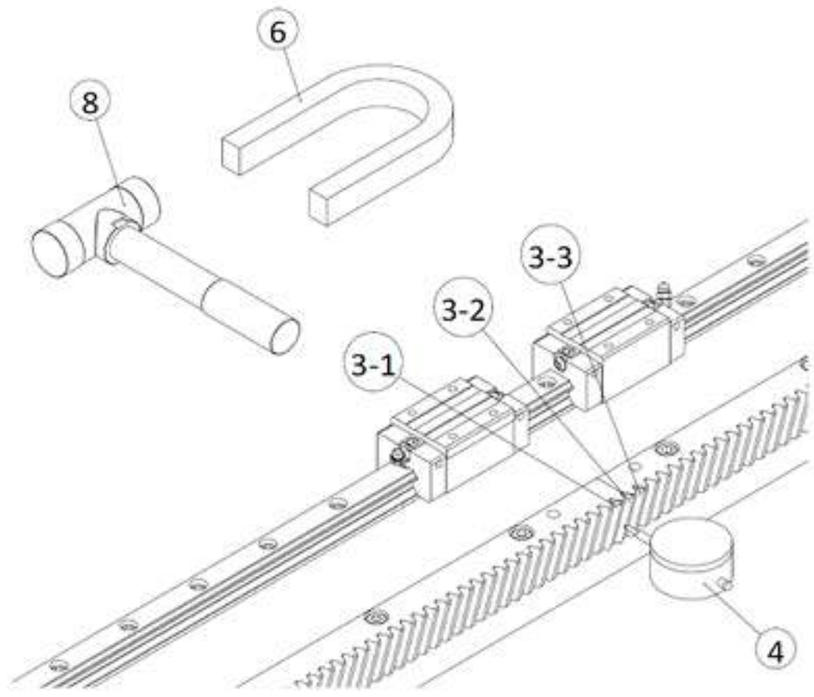


圖 4-7 / Fig. 4-7

五、安裝步驟說明

1. 將一支齒條置於機架的中央位置，爲避免齒條在安裝時會持續累計齒距誤差與孔偏差，因此以中間位置爲基準開始安裝使誤差盡量減少。
2. 使用 C 型夾將齒條固定到螺栓鎖固位置上，如圖 4-5，爲確保齒面不會因爲夾持損壞，可墊軟質材料或確保夾頭材質不會損壞齒面。
3. 放入內六角螺栓並略爲鎖緊，盡量從齒條中心的孔開始鎖緊，螺栓使用的鎖緊扭矩參考表 5-1。
4. 鎖緊每個螺栓以後取下 C 型夾。
5. 將要相接的齒條放置到相鄰位置，並將齒規置於相接位置之間，用於初步定位，如圖 4-6。
6. 使用 C 型夾將搭配安裝的齒規固定於機架上。
7. 將最接近相接位置的孔放入螺栓，使用接近最大鎖緊扭矩一半的力鎖緊螺栓。
8. 將所有螺栓依照上述方法鎖緊於齒條與機架上。
9. 鬆開 C 型夾及移開齒規。
10. 用磁鐵將跨銷棒附加磁力。
11. 將 3 支跨銷棒置於相接縫以及兩旁的齒空隙中，如圖 4-7。
12. 使用千分錶測量第一支與第三支跨銷棒的高度落差值。
13. 判斷第一支與第三支跨銷棒的高度落差是否在公差範圍內。該項公差根據需求界定在 10um-30um 之間，根據齒條模數與平穩需求會有所改變。
14. 量測第二支跨銷棒的高度落差，若在公差範圍內，重複步驟 2-4 完成安裝。
15. 如果跨銷棒量測高度落差不符合公差要求，使用橡膠錘朝齒條兩端輕輕敲擊，或使用可微調的裝置進行調整。
16. 根據相接齒條的數量，重複步驟 5-15 即可完成安裝。

備註：若需將齒條完全定位，詳見章節六〈檢查與定位〉。

內六角螺栓 (強度等級 12.9)	
規格	鎖緊扭矩 Nm
M5	8.0
M6	13.5
M8	32.7
M12	113.7
M16	281.3
M20	548.8
M30	2300.0

表 5-1

V. Mounting Instructions

1. Place a rack in the center of the frame. In order to prevent the rack from continuously accumulating pitch errors and hole deviations during installation, it is recommended that the user commence installation with middle position as the basis to minimize the error.
2. Use a C clamp to fix the rack to the bolt screw-on position, as shown in Figure 4-5. To ensure that the teeth will not be damaged due to clamping, it is recommended that the user pad it with soft material, or to ensure that the chuck material will not damage the teeth.
3. Insert the hex-socket bolt and tighten it slightly. Commence tightening from the center hole of the rack. For the tightening torque of the bolts, refer to Table 5-1.
4. Tighten each bolt and remove the C clamp.
5. Place the racks to be connected to adjacent positions, and place the gauge between the connecting positions for preliminary positioning, as shown in Figure 4-6.
6. Use a C clamp to fasten the gauge on the frame.
7. Insert the bolt into the hole closest to the connecting position and tighten the bolt with a force close to half of the maximum tightening torque.
8. Tighten all bolts to the rack and frame according to the above method.
9. Release the C clamp and remove the gauge.
10. Use a magnet to induce magnetic properties in the over-pin.
11. Place three over-pins in the joints and the tooth gaps on both sides, as shown in Figure 4-7.
12. Use a dial indicator to measure the height difference between the first and third over-pin.
13. Determine whether the height difference between the first and third over-pins is within the tolerance range. This tolerance is defined within 10um-30um according to requirements, and will change depending on the rack module and stability requirements.
14. Measure the height difference of the second over-pin. If it is within the tolerance range, repeat steps 2-4 to complete the assembly.
15. If the height difference across the over-pin does not meet the tolerance requirements, use a rubber hammer to tap lightly on both ends of the rack, or to use a fine-adjustable device to adjust.
16. Depending on the number of connecting racks, repeat steps 5-15 to accomplish the assembly.

Note: If the rack must be fully positioned, please see Section 6 “Final Inspection”.

Hex-socket bolt (strength class 12.9)	
Spec.	Tightening torque (Nm)
M5	8.0
M6	13.5
M8	32.7
M12	113.7
M16	281.3
M20	548.8
M30	2300.0

Table 5-1

六、檢查與定位

1. 爲確保整體移動行程的平行度，分別將跨銷棒置於齒間隙當中，建議每隔 200mm 放置一支跨銷棒，如圖 6-1。
2. 使用千分錶測量每個跨銷棒的高度落差，並做紀錄。
3. 判斷最大高度落差是否在公差範圍內。該項公差根據需求界定在 30um-100um 之間，根據齒條模數與平穩需求會有所改變。
4. 用 C 型夾在定位孔處與機架固定，如圖 6-2。
5. 將齒條定位孔與機架的定位孔使用螺絲攻進行攻牙到適合定位銷的尺寸。
6. 將鐵屑清除乾淨，避免影響裝配。
7. 將定位銷安裝即可完成定位。

VI. Final Inspection

1. In order to ensure the parallelism of the overall movement stroke, place the over-pin rods in the tooth gaps. It is recommended to place an over-pin every 200mm, as shown in Figure 6-1.
2. Use a dial indicator to measure the height difference of each over-pin and record it.
3. Determine whether the maximum height difference is within the tolerance range. This tolerance is defined within 10um-30um according to requirements, and it will change depending on the rack module and stability requirements.
4. Use a C clamp to fix it to the frame at the positioning hole, as shown in Figure 6-2.
5. Use a screw tap to tap the positioning holes of the rack and frame to a size suitable for the positioning pins.
6. Clean the iron filings to avoid affecting the assembly.
7. Install the positioning pin to accomplish the positioning.

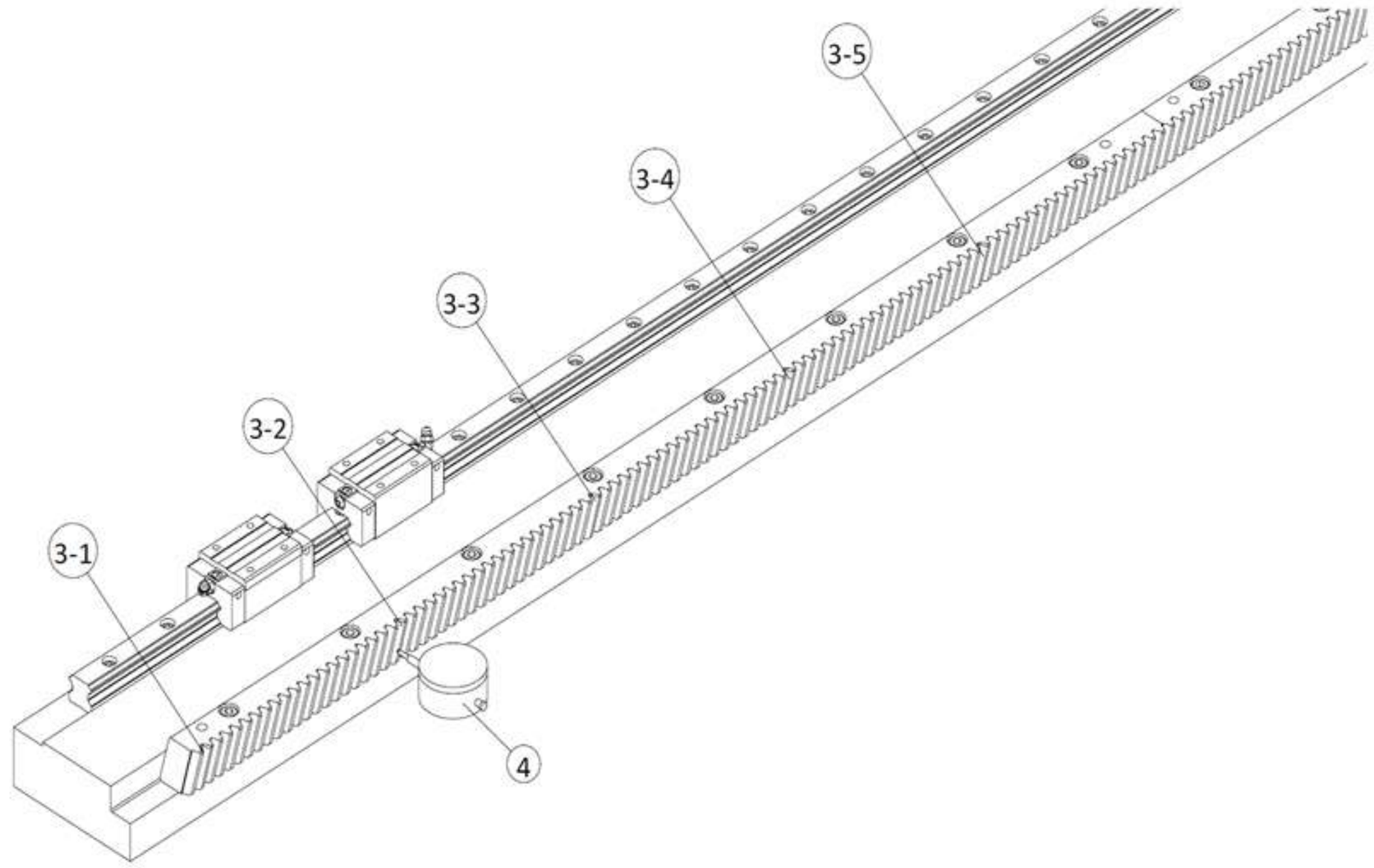


圖 6-1 / Fig. 6-1

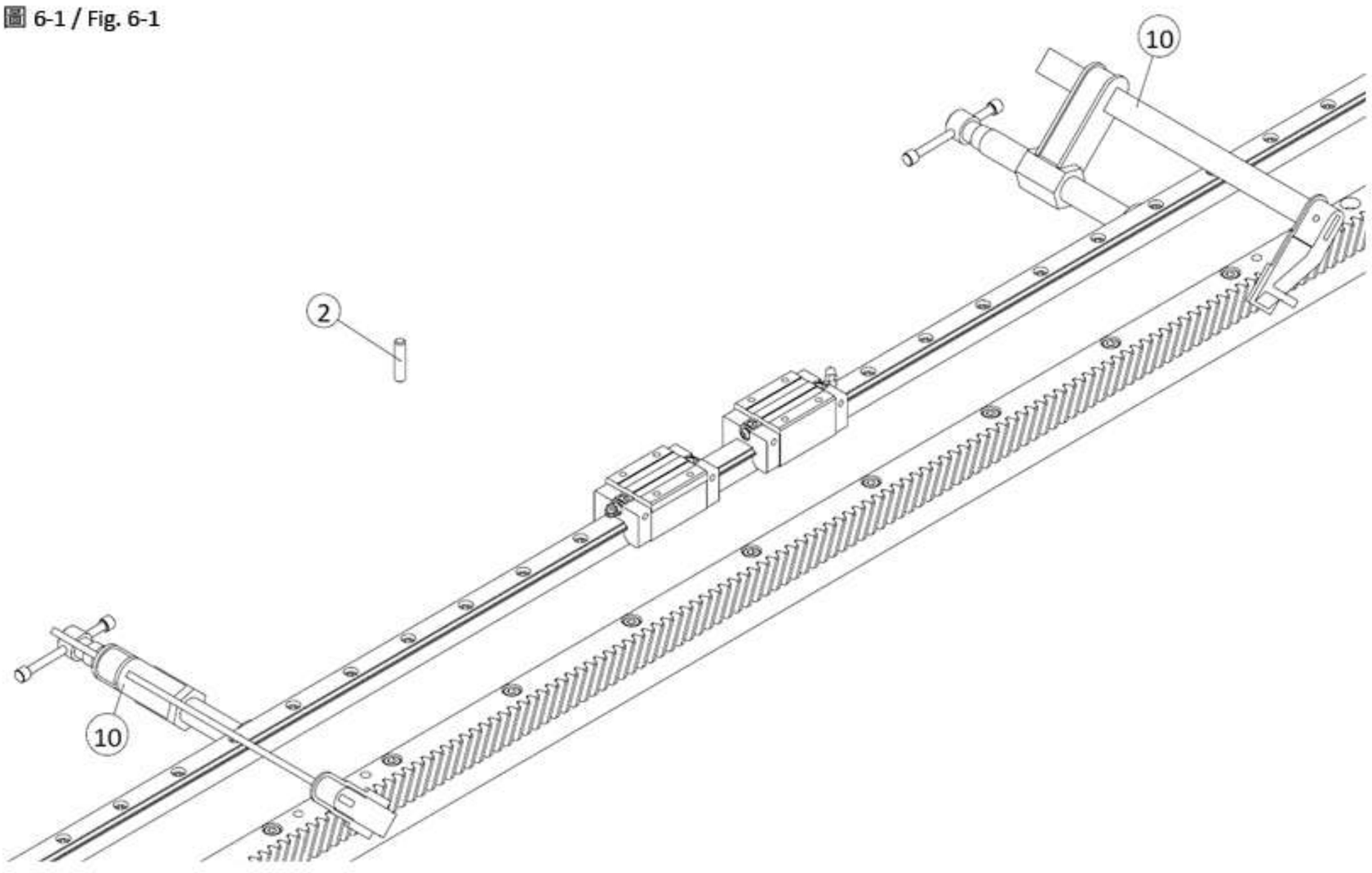


圖 6-2 / Fig. 6-2