



精密研磨齿条

精密研磨 CP 齿条

精密研磨 CP 小齿轮

Ground Racks, Circular Pitch Ground Racks and Pinion Gears.

产品型号的解读方法

Reference of Catalogue Number

RKG RKGP 2 1 S 3 - 10 15 RKGP 2 S 2 - 08 12						
齿轮的种类 Kind of Gear	齿轮的周节距 Circular Pitch	模数 Module	材料 Material	全长 Overall Length	齿宽 Face Width	全齿高 Overall Thickness
RKG : 精密研磨齿条 (Ground Rack) RKGP : 精密研磨CP齿条 (周节变位齿条) (Ground Circular Rack)	2 : CP2 5 : CP5 2 : 2 mm 5 : 5 mm 2 : 2 Millimeter 5 : 5 Millimeter	表示模数大小。模数1以下 时所标数据是实际模数乘于 100。 例：模数0.5时所标数据是50。 模数0.8时所标数据是80。 Expressed the unit of module's size. Module 0.5 and 0.8 as multiple of 100. 例 Example m0.5 → 50 m0.8 → 80	S45C (ISO C45) 碳钢 SCM435齿部高频淬火HRC49 ~ 55 Material : Carbon Steel Applied thermal refining of HS40~45 to the raw material. Chromium Molybdenum Steel, complete with high frequency Induction Hardening. (HRC49 to 55)	表示长度。在所标数据上乘于100 为实际长度。单位为mm。例： 所标数据2时，乘于100而得出 200。单位为mm。所以实际长度 为200mm。 例 2 → 200 mm 3 → 300 mm Increase hundred times from these numbers. Example 2 → 200 millimeter 3 → 300 millimeter	单位：mm Dimension : millimeter	单位：mm Dimension : millimeter

SGP 2 S - 20				
齿轮的种类 Kind of Gear	节距 Circular Pitch	材料 Material	齿孔加工 Bore Processed	齿数 Number of Teeth
SGP : 精密研磨CP小齿轮 (周节变位齿轮) (Circular Pitch Ground Spur Gear) Circular pitch pinions	2 : CP2 Pitch : 2mm (0.636 module) 5 : CP5 Pitch : 5mm (1.591 module)	SCM435, 440齿部高频淬火 HRC49 ~ 55 Material : Chromium Molybdenum Steel, complete with high frequency Induction Hardening. (HRC 49 to 55).	[-] : 磨削加工 Ground bore. without threaded hole/ without Set Screw. [*] : 磨削加工, 有两处系 紧螺丝。 with two threaded holes/ without Set Screw.	Z : 20、25、30

KG 研磨齿条齿轮是对机电一体化，机床机械和半导体制造，精密工业用机械，测定仪器等广大领域的机械产品非常适合十分匹配的齿轮。

The precision gears are applied and demanded in the Mechatronics, Machine Tools, and Measured Instruments.

研磨齿条

GROUND RACKS

模数
MODULE

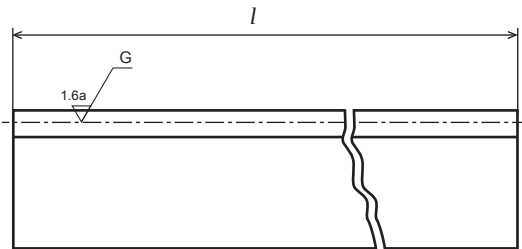
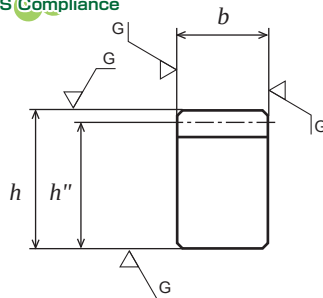
0.5/0.8/1/1.5

压力角 20° (普通齿)

20° PRESSURE ANGLE FULL DEPTH TOOTH

材料调质 HS 40 - 45

Applied thermal refining with hardness of HS 40 ~ 45 to the raw material.



材料 : 碳钢 (ISO C45)

Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

模数 Module m	产品型号 Catalogue Number	全长 Overall Length l	两端面加工 Both Ends Processed p	有效齿数 Effective Number of Teeth z	啮合高度 Datum Line h''	齿宽 Face Width $b(h\delta)$	齿高 Overall Thickness $h(h\delta)$	重量 Weight $W(kg)$
0.5	RKG50S 2 - 0812	201.06	0.02 ~ 0.08	128	11.5	8	12	0.14
0.8	RKG80S 2 - 0812	201.06	0.03 ~ 0.12	80	11.2	8	12	0.14
1.0	RKG1S 3 - 1015	301.59	0.03 ~ 0.12	96	14.0	10	15	0.32
1.5	RKG1.5S 3 - 1520	301.59	0.06 ~ 0.18	64	18.5	15	20	0.64

ISO C45精密研磨齿条的主要特征

- 精度
 - 直线度 : 进行研磨加工后精度为0.04mm。
 - 平行度 : 四面研磨加工后精度为0.01mm。
 - 齿距累积误差 : 研磨加工后为0.025mm。(长度200mm)
- 作为消除侧隙齿轮来使用

近年, 无侧隙机械装置的需求正在增加。如果使用研磨齿条和研磨直齿轮, 啮合可以接近[0]侧隙。注意 : 但是装配一定要非常精确。
- 材料的老化

研磨齿条的材质都经过热处理调制。但是因为存在内应力, 材料仍会发生老化。

KG齿面研磨控制侧隙齿轮可与其他齿轮制造商的齿轮相配对。但是为了得到最佳的效果, 建议相配对齿轮也使用KG研磨齿轮系列。

KG-Ground Rack is able to match with other gear makers however it is advisable to use KG-Ground Spur gear series for best result.

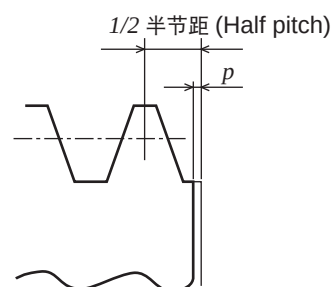
Feature of ISO C45 Ground Racks

- Precision
 - Straightness: 0.04mm and below after processed.
 - Parallelism: 0.01mm and below after grinding process on all four faces.
 - Total cumulative pitch deviation: 0.025mm (for 200 length) and below after processed.
- To use with Anti Backlash gear.

Due to the recent increase demand of anti backlash mechanism, zero backlash can be obtained by matching the Ground Spur Gear with Anti Backlash gear. However using this method will require the assembler to be very precise with this assembly.
- The secular change of the material.

Ground Rack's material has been thermal refined but secular change may occur due to the inner stress and characteristic.

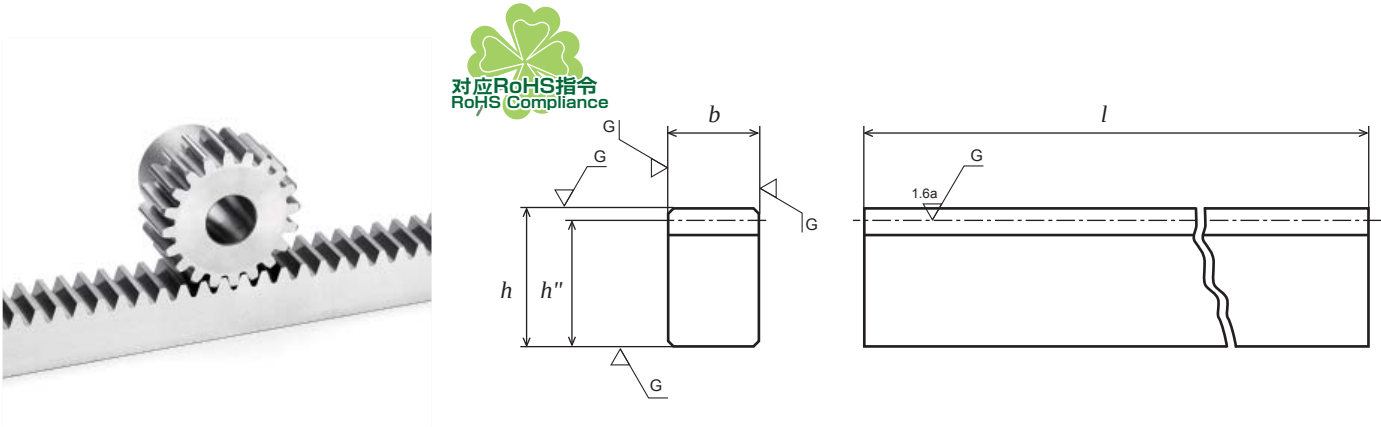
两端面的加工详细 (节距调整) Detail of both ends processed



研磨齿条
GROUND RACKS

模数
MODULE 1/1.5/2/2.5/3 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH

齿面高频淬火 HRC 49 - 55
Gear tooth surface completed with induction hardening, Hardness HRC49 to 55.



铬钼合金钢 (SCM435 或 ISO34CrMo4)
Material : Chromium Molybdenum Steel (ISO 34CrMo4)
单位 : mm
Dimensions : mm

模数 Module <i>m</i>	产品型号 Catalogue Number	全长 Overall Length <i>l</i>	两端面加工 Both Ends Processed <i>p</i>	有效齿数 Effective Number of Teeth <i>z</i>	啮合高度 Datum Line <i>h''</i>	齿宽 Face Width <i>b(hδ)</i>	高度 Overall Thickness <i>h(hδ)</i>	重量 Weight <i>W(kg)</i>
1	RKG1S 5 – 1015H	505.80	0.03 ~ 0.12	161	14	10	15	0.55
1	RKG1S 10 – 1015H	1021.02	0.03 ~ 0.12	325	14	10	15	1.12
1.5	RKG1.5S 5 – 1515H	504.23	0.06 ~ 0.18	107	13.5	15	15	0.80
1.5	RKG1.5S 10 – 1515H	1008.45	0.06 ~ 0.18	214	13.5	15	15	1.59
2	RKG2S 5 – 2020H	502.66	0.06 ~ 0.18	80	18	20	20	1.41
2	RKG2S 10 – 2020H	1005.31	0.06 ~ 0.18	160	18	20	20	2.82
2.5	RKG2.5S 5 – 2525H	502.66	0.06 ~ 0.18	64	22.5	25	25	2.21
2.5	RKG2.5S 10 – 2525H	1005.31	0.06 ~ 0.18	128	22.5	25	25	4.41
3	RKG3S 5 – 3030H	499.51	0.10 ~ 0.25	53	27	30	30	3.16
3	RKG3S 10 – 3030H	1008.45	0.10 ~ 0.25	107	27	30	30	6.37

标有●的产品为新产品
Products with ● marks are new item.

由于淬火的影响齿部以外的部分也可能硬化了。
所以要对齿根以下2 ~ 3mm处进行追加工时，要充分注意。
Take note that areas of the gear teeth and near gear teeth may occur the condition of low machinability by the influence of induction hardening processed.

KG齿面研磨控制侧隙齿轮可与其他齿轮制造商的齿轮相配对。但是为了得到最佳的效果，建议相配对齿轮也使用KG研磨齿轮系列。
KG-Ground Rack is able to match with other gear makers however it is advisable to use KG-Ground Spur gear series for best result.

目次表 CONTENTS	齿条信息 INFORMATION	齿条箱 GEAR BOXES	无侧隙齿条 ANTI BACKLASH SPUR GEARS	研磨直齿条 GROUND SPUR GEARS	直齿条 SPUR GEARS	内齿条 INTERNAL GEARS	研磨齿条 GROUND RACKS	齿条 RACKS	斜齿条・螺旋齿条 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿条 BEVEL GEARS	技术资料 REFERENCE DATA
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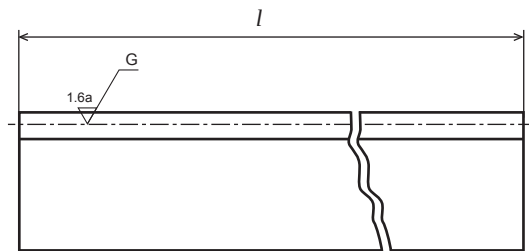
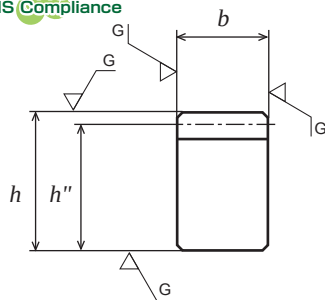
研磨 CP 齿条 (周节变位)

GROUND CP RACK

节距 PITCH **2/5** 压力角 20° (普通齿) 20° PRESSURE ANGLE FULL DEPTH TOOTH

材料经过热处理调质, 硬度 HS 40 - 45
Applied thermal refining with hardness of HS 40 ~ 45 to the raw material.

订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材料 : 碳钢 (ISO C45)

因为周节是正数, 所以无论选择几个周节, 其长度合计也会变为正数。

Material : Carbon Steel (ISO C45) Able to obtain integer number of length, if selected from any number of teeth due to integer pitch.

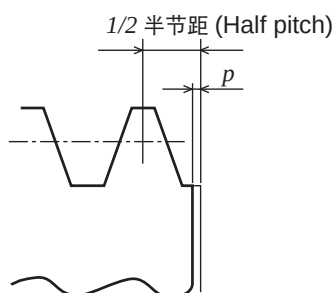
单位 : mm
Dimensions : mm

节距 Circular Pitch	产品型号 Catalogue Number	全长 Overall Length l	两端面加工 Both Ends Processed p	有效齿数 Effective Number of Teeth z	啮合高度 Datum Line h''	齿宽 Face Width $b(h\delta)$	高度 Overall Thickness $h(h\delta)$	重量 Weight $W(kg)$
cp								
2	RKGP2S 2 — 0812	200	0.02 ~ 0.08	100	11.364	8	12	0.14
5	RKGP5S 3 — 1520	300	0.04 ~ 0.16	60	18.409	15	20	0.65

材料经过热处理调质, 硬度 HS 40 - 45
Applied thermal refining with hardness of HS 40 ~ 45 to the material.

两端面的加工详细 (节距调整)

Details of both ends processed



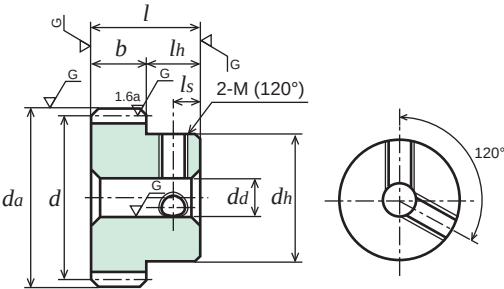
研磨CP小齿轮(周节变位)
GROUND CP RACK PINION

节距 PITCH 2/5 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH

齿部高频淬火 硬度 HRC 49 - 55.
JIS B 1702-1(ISO) 5 级
System of accuracy: JIS B 1702-1(ISO) class 5



New 新产品带有两个螺纹孔 (120°)
New item with two thread holes (120°)



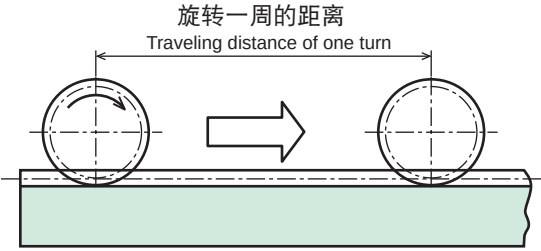
B1 形状
TYPE B1

材料: 铬钼合金钢(SCM435, 440 或 ISO34CrMo4, 42CrMo4)
Material: Chromium Molybdenum Steel (ISO 34CrMo4, 42CrMo4)
单位: mm
Dimensions: mm

节距 Circular Pitch <i>cp</i>	产品型号 Catalogue Number	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>dd</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	螺纹孔 Set Screw		旋转一周的距离 Distance of one turn (注)	重量 Weight <i>W</i> (g)
											2-M	<i>ls</i>		
2	SGP2S - 20	20	φ12.73	φ14.01	B1	8	φ 5	φ10	7	15	-	-	40	10.0
2	SGP2S * 20	20	φ12.73	φ14.01	B1	8	φ 5	φ10	7	15	2-M3	3.5	40	9.6
2	SGP2S - 25	25	φ15.92	φ17.19	B1	8	φ 6	φ12	7	15	-	-	50	15.4
2	SGP2S * 25	25	φ15.92	φ17.19	B1	8	φ 6	φ12	7	15	2-M3	3.5	50	14.9
2	SGP2S - 30	30	φ19.10	φ20.37	B1	8	φ 6	φ15	7	15	-	-	60	24.4
2	SGP2S * 30	30	φ19.10	φ20.37	B1	8	φ 6	φ15	7	15	2-M4	3.5	60	23.7
5	SGP5S - 20	20	φ31.83	φ35.01	B1	15	φ10	φ25	10	25	-	-	100	117.1
5	SGP5S - 25	25	φ39.79	φ42.97	B1	15	φ10	φ30	10	25	-	-	125	187.0
5	SGP5S - 30	30	φ47.75	φ50.93	B1	15	φ10	φ40	10	25	-	-	150	294.8

注: 所谓旋转一周的距离: 小齿轮在齿条上旋转一周时所移动的距离。
Traveling distance of one turn.
Obtain traveling amount of integer number, revolved one turn of the CP Pinion on the CP Rack.

齿部高频淬火 硬度 HRC 49 - 55.
Gear tooth surface completed with induction hardening, Hardness HRC49 to 55.



容许传达动力表 弯曲强度(kW)
Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	转速/min revolution/min						
	100	250	500	800	1,000	1,500	2,000
SGP2S - 20	0.038	0.096	0.191	0.306	0.383	0.574	0.765
SGP2S - 25	0.053	0.132	0.263	0.421	0.526	0.790	1.053
SGP2S - 30	0.068	0.169	0.338	0.540	0.675	1.013	1.350
SGP5S - 20	0.448	1.121	2.242	3.587	4.483	6.725	8.892
SGP5S - 25	0.617	1.542	3.084	4.935	6.169	9.225	11.99
SGP5S - 30	0.791	1.978	3.955	6.328	7.910	11.65	15.07

上述数值相当于JIGMA公式, 仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认册的KG综合产品目录的P26页。Please refer to the conversion formulas of power on page26 in KG CATALOGUE.

容许传达动力表 齿面强度(kW)
Allowable transfer capability table (kW) Surface Durability

转速 /min ⁻¹ revolution/min						
100	250	500	800	1,000	1,500	2,000
0.007	0.019	0.038	0.063	0.079	0.121	0.163
0.011	0.030	0.061	0.100	0.126	0.193	0.260
0.017	0.043	0.090	0.146	0.185	0.282	0.381
0.091	0.238	0.490	0.800	1.010	1.542	2.066
0.146	0.379	0.782	1.277	1.612	2.454	3.230
0.214	0.556	1.146	1.871	2.362	3.541	4.638

目次表 CONTENTS	齿轮信息 GEAR INFORMATION	齿轮箱 GEAR BOXES	无背隙齿轮 ANTI BACKLASH SPUR GEARS	研磨直齿轮 GROUND SPUR GEARS	直齿轮 SPUR GEARS	内齿轮 INTERNAL GEARS	研磨锥齿轮 GROUND RACKS	齿条 RACKS	斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿轮 BEVEL GEARS	技术资料 REFERENCE DATA
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齿条连接规

GAUGE RACKS

模数
MODULE

0.5/0.8/1/1.5

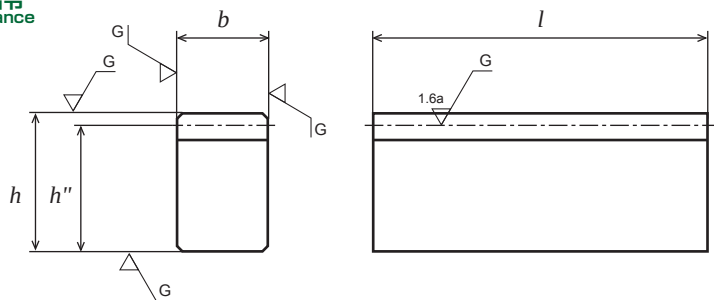
节距
PITCH

2/5^{CP}

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH

材料 : ISO 45C Material : ISO 45C
材料调质 HS40 ~ 45
Applied thermal refining with hardness of HS
40 ~ 45 to the raw material.

材料 : ISO 34CrMo45 Material : ISO 34CrMo45
齿部高频淬火 HRC49 ~ 55
Gear tooth surface completed with induction
hardening.
Hardness HRC 49 to 55.



齿条连接规 (齿面研磨品用)

Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

模数 Module <i>m</i>	产品型号 Catalogue Number	材料 Material <i>M</i>	全长 Overall Length <i>l</i>	齿数 Number of Teeth <i>z</i>	啮合高度 Datum Line <i>h''</i>	齿宽 Face Width <i>b(h8)</i>	齿高 Overall Thickness <i>h(h8)</i>	重量 Weight <i>W(g)</i>
0.5	RKG50S — G	S45C	45.3	29	11.5	8	12	32.7
0.8	RKG80S — G	S45C	44.9	18	11.2	8	12	31.5
1.0	RKG1S — G	S45C	43.6	14	14.0	10	15	47.9
1.5	RKG1.5S — G	S45C	41.9	9	18.5	15	20	91.2
2.0	RKG2S — GH	SCM435	94	15	18	20	20	264.6
2.5	RKG2.5S — GH	SCM435	94	12	22.5	25	25	413.4
3.0	RKG3S — GH	SCM435	94	9	27	30	30	595.3

标有 ● 的产品为新产品
Products with ● marks are new item.

CP齿条连接规 (齿面研磨品用)

Material : Carbon Steel (ISO C45)

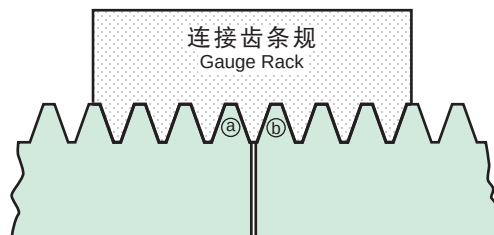
单位 : mm
Dimensions : mm

节距 Circular Pitch <i>cp</i>	产品型号 Catalogue Number	材料 Material <i>M</i>	全长 Overall Length <i>l</i>	齿数 Number of Teeth <i>z</i>	啮合高度 Datum Line <i>h''</i>	齿宽 Face Width <i>b(h8)</i>	齿高 Overall Thickness <i>h(h8)</i>	重量 Weight <i>W(g)</i>
2	RKGP2S — G	S45C	45.7	23	11.364	8	12	32.6
5	RKGP5S — G	S45C	39.4	8	18.409	15	20	85.4

齿条连接规的使用方法

当要对多个齿条进行连接(如图连接齿条a和b), 并打算设定最适合的节距时
请使用齿条连接规。其具体使用方法如右图, 通过用连接齿条规与齿条a, b
的连接部相互啮合来调整连接部分的节距。

Numerous Rack Gears between ① and ② to be joint, please apply the
Gauge Rack for the best fit of the pitch.
Refer to the picture on the right.





模数单位 齿条

CP齿条 (周节变位齿条)

CP小齿轮 (周节变位齿轮)

Racks (Metric and Circular Pitch) and Circular Pitch Pinion.

产品型号的解读方法

Reference of Catalogue Number

ORK 50 SU 2 - 08 15

RK 75 SU 2 - 08 08
RK 1.5 SD 10 - 16 16 M
RK 2 SD 16 - 20 25
RKP 5 SD 5 - 16 16

轴直径 Shaft Diameter	有效啮合长度 Effective length of Action
单位 : mm Dimension : millimeter	单位 : mm Dimension : millimeter

齿轮的种类 Kind of Gear	周节距 Circular Pitch	模数 Module	材料 Material	全长 Overall Length	齿宽 Face Width	全齿高 Overall Thickness	安装孔 Fixed holes
RK : 齿条 Module pitch Racks ORK : 圆齿条 Round Racks RKP : 周节变位齿条 Circular Pitch Racks	2表示齿距2mm Pitch : 2 millimeter 5表示齿距5mm Pitch : 5 millimeter 10表示齿距10mm Pitch : 10 millimeter	当模数1以下时所标的数据是实际模数乘以100。 例 : 模数0.5时的所标数据是50。 模数0.75时的所标数据为80。 Expressed the unit of module's size. Module 0.3, 0.5, 0.75 and 0.8 as multiple of 100. Example m0.5 → 50	B : 黄铜 Brass SU : 不锈钢 Stainless Steel SD : 碳素钢 Carbon Steel	表示长度。在所标数据上乘以100为实际长度。单位为mm。 例 : 所标数据2时, 乘以100而得出200。 单位为mm。 所以实际长度为200mm。 Expressed overall length : Multiplication of 100 from the numbers : For Example : 2 as 200millimeter	单位 : mm Dimension : millimeter	单位 : mm Dimension : millimeter	带有装配孔 With fixed holes

SP 2 S - 20

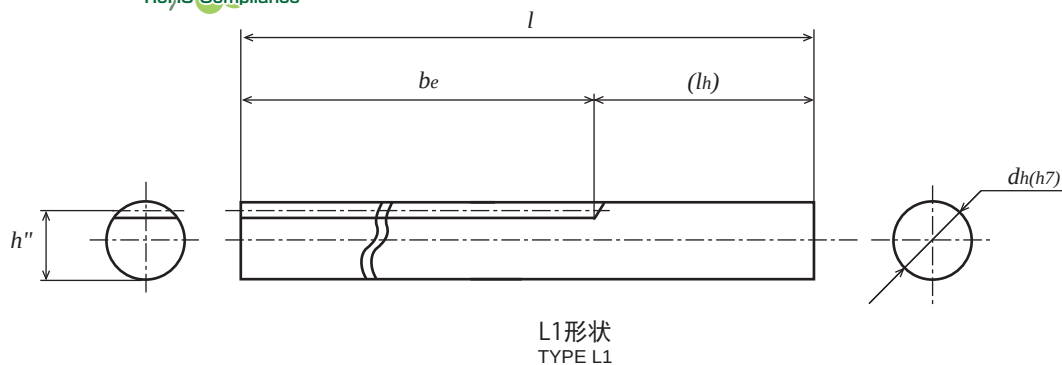
齿轮的种类 Kind of Gear	周节距 Circular Pitch	材料 Material	内径处理 Bore Processed	齿数 Number of Teeth
SP : 周节变位直齿轮 Circular pitch pinions	2表示齿距2mm Pitch : 2mm (0.636module) 5表示齿距5mm Pitch : 5mm (1.591module) 10表示齿距10mm Pitch : 10mm (3.183module)	C45 碳钢 Carbon Steel	标号[-]表示齿轮无键槽/无螺纹孔, 车削加工。 Gear without key way / without threaded hole. 标号[*]表示齿轮带有两个螺纹孔/两个固定螺钉, 车削加工。 Gear with two threaded holes / with two set screws.	P2 : 15,20,25,30 P5 : 15,16,20,24,25,30 P10 : 20,25,30

圆齿条 ROUND RACKS

模数
MODULE

0.5/0.75/0.8/1

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : 不锈钢 SUS304 (JIS G 4303)
Material : Stainless Steel SUS304 (JIS G 4303)

单位 : mm
Dimensions : mm

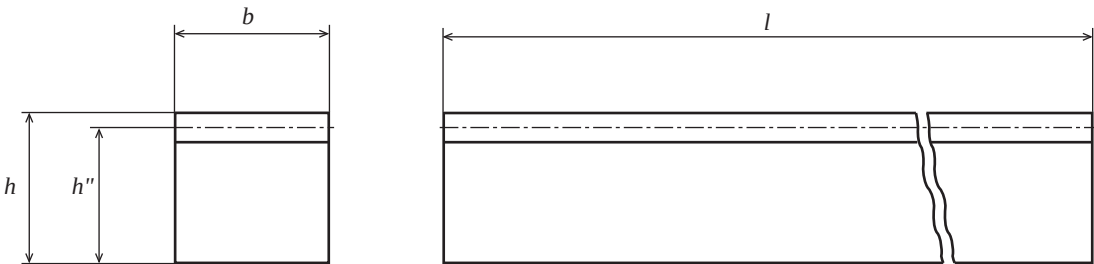
模数 Module m	产品型号 Catalogue Number	全长 Overall Length l	有效齿数 Effective Number of Teeth z	有效啮合长度 Effective Datum Length b_e	啮合高度 Datum Line h''	轴直径 Shaft Diameter $dh(h7)$	柄长度 Length of Stem l_h	重量 Weight $W(g)$
0.5	ORK50SU 2 — 0815	200	95	149	7.5	$\phi 8$	50	78
0.75	ORK75SU 2 — 0815	200	63	148	7.25	$\phi 8$	50	76
0.8	ORK80SU 2 — 0815	200	59	148	7.2	$\phi 8$	50	76
1	ORK1SU 3 — 1024	300	76	238	9	$\phi 10$	60	177

全长标称为200mm时，实际长度为202mm $\pm$ 1mm。
全长标称为300mm时，实际长度为305mm $\pm$ 1mm。

Actual tolerances and length for 200.0 mm: 202.0 mm $\pm$ 1.0 mm
Actual tolerances and length for 300.0 mm: 305.0 mm $\pm$ 1.0 mm



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



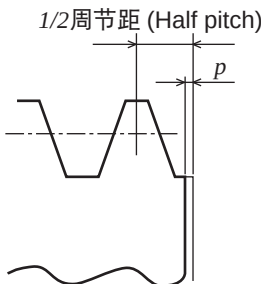
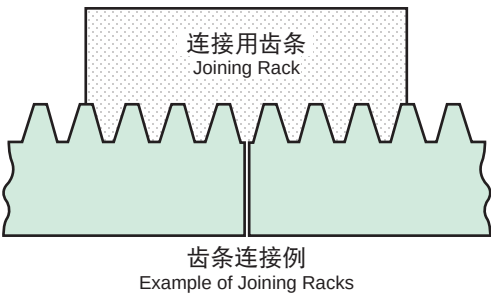
材料 : 黄铜 (ISO CuZn39Pb3)
Material : Brass (ISO CuZn39Pb3)

单位 : mm
Dimensions : mm

模数 Module <i>m</i>	产 品 型 号 Catalogue Number	全 长 Overall Length <i>l</i>	两端面 加 工 Both Ends Processed <i>p</i>	有效齿数 Effective Number of Teeth <i>z</i>	啮合高度 Datum Line <i>h''</i>	齿 宽 Face Width <i>b(h1l)</i>	全齿高 Overall Thickness <i>h(h1l)</i>	重 量 Weight <i>W(g)</i>
0.3	RK30B 2 — 0308	200	-	210	7.7	3	8	38
0.5	RK50B 2 — 0308	200	-	125	7.5	3	8	37
0.5	RK50B 2 — 0808	200	-	125	7.5	8	8	98
0.5	RK50B 5 — 0810	505	-	319	9.5	8	10	313
0.75	RK75B 2 — 0308	200	-	82	7.25	3	8	35
0.75	RK75B 2 — 0808	200	-	82	7.25	8	8	95
0.75	RK75B 5 — 0310	505	-	212	9.25	3	10	115
0.75	RK75B 5 — 0810	505	-	212	9.25	8	10	307
0.8	RK80B 2 — 0707	200	-	77	6.2	7	7	70
0.8	RK80B 5 — 0510	505	-	198	9.2	5	10	191
0.8	RK80B 5 — 0710	505	-	198	9.2	7	10	268

对应 RoHS 指令

从2006年11月份开始生产提供，对应欧洲RoHS指令的产品。
We supplied the KG-products with RoHS compliance of EU to all our valued customers since November 2006



对齿条的两端面进行加工处理的侧面图。(节距微调)
Detail of both ends processed Racks (Pitch adjustment)

目 录 表 CONTENTS	齿 轮 信 息 GEAR INFORMATION	齿 轮 箱 GEAR BOXES	无 背 隙 齿 轮 ANTI BACKLASH SPUR GEARS	研 磨 直 齿 轮 GROUND SPUR GEARS	直 齿 轮 SPUR GEARS	内 齿 轮 INTERNAL GEARS	研 磨 齿 条 GROUND RACKS	齿 条 RACKS	斜 齿 轮 · 螺 旋 齿 轮 HELICAL GEARS AND SCREW GEARS	蜗 轮 · 蜗 杆 WORMS AND WORM WHEELS	锥 齿 轮 BEVEL GEARS	技 术 资 料 REFERENCE DATA
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材料：不锈钢 SUS304 (JIS G 4303)
Material : Stainless Steel SUS304 (JIS G 4318)

单位：mm
Dimensions : mm

模数 Module <i>m</i>	产品型号 Catalogue Number	全长 Overall Length <i>l</i>	两端面加工 Both Ends Processed <i>p</i>	有效齿数 Effective Number of Teeth <i>z</i>	啮合高度 Datum Line <i>h''</i>	齿宽 Face Width <i>b(h12)</i>	全齿高 Overall Thickness <i>h(h12)</i>	重量 Weight <i>W(g)</i>
0.5	RK50SU 2 — 0310	202 ~ 205	-	126	9.5	3	10	45
0.5	RK50SU 2 — 0808	202 ~ 205	-	126	7.5	8	8	95
0.5	RK50SU 5 — 0810	505 ~ 508	-	319	9.5	8	10	300
0.75	RK75SU 2 — 0310	202 ~ 205	-	83	9.25	3	10	44
0.75	RK75SU 2 — 0808	202 ~ 205	-	83	7.25	8	8	91
0.75	RK75SU 5 — 0810	505 ~ 508	-	212	9.25	8	10	295
0.8	RK80SU 2 — 0707	202 ~ 205	-	78	6.2	7	7	70
0.8	RK80SU 5 — 0510	505 ~ 508	-	198	9.2	5	10	183
0.8	RK80SU 5 — 0710	505 ~ 508	-	198	9.2	7	10	256
1	RK1SU 3 — 1010	303 ~ 306	-	94	9	10	10	210
1	RK1SU 5 — 0810	505 ~ 508	-	158	9	8	10	280
1	RK1SU 5 — 1010	505 ~ 508	-	158	9	10	10	360
1.5	RK1.5SU 3 — 1616	303 ~ 306	-	62	14.5	16	16	0.55(kg)
1.5	RK1.5SU 5 — 1616	503 ~ 506	-	105	14.5	16	16	0.92(kg)
1.5	RK1.5SU 10 — 1219	1008.5	0.06 ~ 0.18	214	17.5	12	19	1.67(kg)
1.5	RK1.5SU 10 — 1616	1008.5	0.06 ~ 0.18	214	14.5	16	16	1.83(kg)
2	RK2SU 10 — 1420	1005.3	0.06 ~ 0.18	160	18	14	20	1.99(kg)

齿宽，齿条高度的加工尺寸。

由于是拉拔材料所以齿宽齿高公差都在h11 ~ 12左右。

关于齿条的长度

两端进行过端面加工的齿条，其长度比理论值短0.06mm到0.5mm。

两端面加工(齿条节距接合用加工)。

当把齿条接合使用时，用上图P项的尺寸对齿条的两端面进行了加工。

关于老化

齿条加工后进行过矫正。但是由于材料特性和内部抵抗力还是有可能出现由于老化的弯曲。

Surface condition and Tolerances of Face Width and Overall thickness.

Tolerances of Racks have been about h11 to h12 for Face width, Overall thickness are processed by cold drawn material.

Regarding to Overall Length of Racks.

Both ends processed of Racks had an overall length of theory tolerance that range from minus 0.06 to 0.5 mm.

Both ends processed Racks (Counterpart process for the joining.)

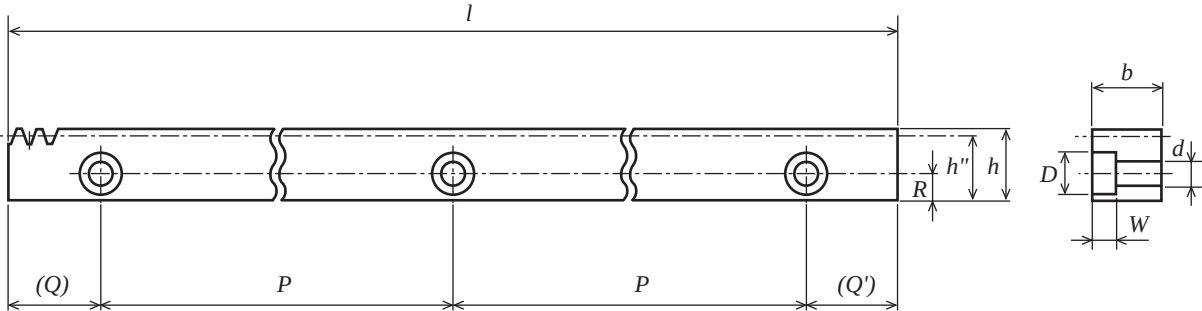
Please refer to dimension of P for the rack joining.

Regarding to the Secular change.

Due to the characteristic of materials, secular change or cause of inter-stress may result in the possibility that the straightness of dimension may change after the adjustment of the racks.



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



带有安装孔的KG齿条
KG-Rack with fixed holes

材料：不锈钢 SUS304 (JIS G 4303)
Material : Stainless Steel SUS304 (JIS G 4318)

单位：mm
Dimensions : mm

模数 Module <i>m</i>	产 品 型 号 Catalogue Number	全 长 Overall Length <i>l</i>	啮 合 高 度 Datum Line <i>h</i> ''	齿 宽 Face Width <i>b(h12)</i>	全齿高 Overall Thickness <i>h(h12)</i>	安 装 孔								重 量 Weight <i>W(kg)</i>
						孔的数目	钻孔径 Drill Hole Diameter <i>d</i>	沉孔径 Counter Sink Diameter <i>D</i>	沉孔深度 Counter Sink Depth <i>W</i>	从底面的 距 离 <i>R</i>	从端面的距离		周节距 <i>P</i>	
1.5	RK1.5SU 3 — 1219M	301.59	17.5	12	19	3	5.5	9.5	5.4	7	20.8	20.8	130	0.48
1.5	RK1.5SU 5 — 1219M	499.51	17.5	12	19	4	5.5	9.5	5.4	7	24.7	24.7	150	0.80
1.5	RK1.5SU 10 — 1219M	1008.45	17.5	12	19	6	5.5	9.5	5.4	7	49.5	58.9	180	1.63
1.5	RK1.5SU 3 — 1616M	301.59	14.5	16	16	3	5.5	9.5	5.4	6	20.8	20.8	130	0.53
1.5	RK1.5SU 5 — 1616M	499.51	14.5	16	16	4	5.5	9.5	5.4	6	24.7	24.7	150	0.88
1.5	RK1.5SU 10 — 1616M	1008.45	14.5	16	16	6	5.5	9.5	5.4	6	49.5	58.9	180	1.79
2	RK2SU 3 — 1420M	301.59	18	14	20	3	6.6	11	6.5	7	20.8	20.8	130	0.57
2	RK2SU 5 — 1420M	496.37	18	14	20	4	6.6	11	6.5	7	23.1	23.1	150	0.95
2	RK2SU 10 — 1420M	1005.31	18	14	20	6	6.6	11	6.5	7	52.6	52.6	180	1.94

关于齿条的长度

进行过两端的端面加工的齿条，其长度比理论值短0.06mm到0.5mm。

两端面加工(齿条节距接合用加工)。

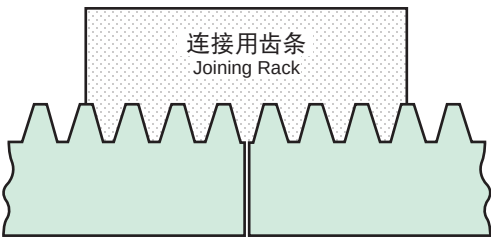
当把齿条接合使用时，用上图P项的尺寸对齿条的两端面进行了加工。

Regarding to Overall Length of Racks.

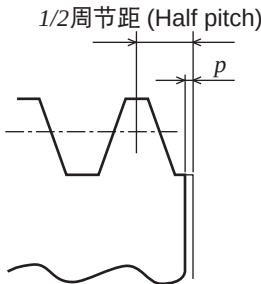
Both ends processed of Racks had an overall length of theory tolerance that range from minus 0.06 to 0.5 mm.

Both ends processed Racks (Counterpart process for the joining.)

Please refer to dimension of P for the rack joining.



齿条连接例
Example of Joining Racks



对齿条的两端面进行加工处理的侧面图。(节距微调)
Detail of both ends processed Racks

C45 齿条

RACKS

模数
MODULE1/1.25/1.5/2 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH

材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel

单位 : mm
Dimensions : mm

模数 Module <i>m</i>	产品型号 Catalogue Number	全长 Overall Length <i>l</i>	两端面加工 Both Ends Processed <i>p</i>	有效齿数 Effective Number of Teeth <i>z</i>	啮合高度 Datum Line <i>h''</i>	齿宽 Face Width <i>b(h12)</i>	全齿高 Overall Thickness <i>h(h12)</i>	重量 Weight <i>W(kg)</i>
1	RK1SD 3 — 1010	303 ~ 306	-	94	9	10	10	0.20
1	RK1SD 5 — 1010	505 ~ 508	-	158	9	10	10	0.34
1	RK1SD 10 — 1015	1021.0	0.03 ~ 0.12	325	14	10	15	1.12
1.25	RK1.25SD 5 — 1010	505 ~ 508	-	126	8.75	10	10	0.34
1.25	RK1.25SD 5 — 1313	505 ~ 508	-	126	11.75	13	13	0.60
1.5	RK1.5SD 3 — 1616	303 ~ 306	-	62	14.5	16	16	0.53
1.5	RK1.5SD 5 — 1216	505 ~ 508	-	105	14.5	12	16	0.66
1.5	RK1.5SD 5 — 1616	503 ~ 506	-	105	14.5	16	16	0.90
1.5	RK1.5SD 10 — 1616	1008.5	0.06 ~ 0.18	214	14.5	16	16	1.84
1.5	RK1.5SD 5 — 1620	503 ~ 506	-	105	18.5	16	20	1.16
1.5	RK1.5SD 10 — 1620	1008.5	0.06 ~ 0.18	214	18.5	16	20	2.34
1.5	RK1.5SD 16 — 1620	1602.2	0.06 ~ 0.18	340	18.5	16	20	3.72
2	RK2SD 3 — 2020	303 ~ 306	-	46	18	20	20	0.90
2	RK2SD 5 — 2020	503 ~ 506	-	78	18	20	20	1.40
2	RK2SD 10 — 1420	1005.3	0.06 ~ 0.18	160	18	14	20	1.95
2	RK2SD 10 — 2020	1005.3	0.06 ~ 0.18	160	18	20	20	2.80
2	RK2SD 5 — 2025	501 ~ 506	-	78	23	20	25	1.80
2	RK2SD 10 — 2025	1005.3	0.06 ~ 0.18	160	23	20	25	3.63
2	RK2SD 16 — 2025	1602.2	0.06 ~ 0.18	255	23	20	25	5.80

齿宽，齿条高度的加工尺寸。

由于是拉拔材料所以齿宽齿高公差都在h11 ~ 12左右。

关于老化

齿条加工后进行过矫正。但是由于材料特性和内部抵抗力还是有可能出现由于老化的弯曲。

高频淬火

因为是用C45拉拔材料做成，所以齿条表面会有脱碳层，因此进行齿部高频淬火时有可能出现表面硬度上不去的现象。而且因为热处理会出现歪，弯曲等现象，这些会成为节距发生变化的原因。请注意。

Surface condition and Tolerance of Face Width and Overall thickness.

Tolerances of Racks have been about h11 to h12 for Face width, Overall Thickness are processed by cold drawn material.

Regarding to the Secular change.

Due to the characteristic of materials, secular change or cause of inter-stress may result in the possibility that the straightness of dimension may change after the adjustment of the racks.

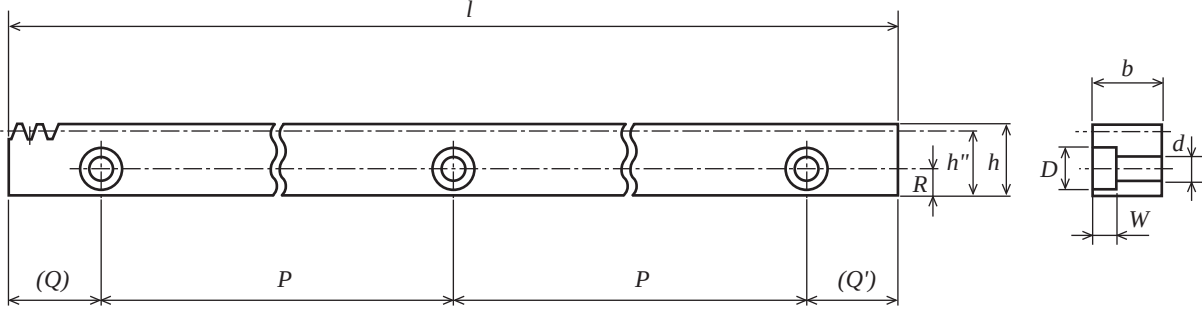
The Quenching.

Due to cold drawn of S45C material's Rack, it has a layer of decarburization. Additional heat treatment on the teeth of cold drawn Racks are not recommended due to possibility to obtain quenching cracks and unfulfilled quenching temperature.

It will also affect the pitch of the Rack and straightness due to the cause of strain and bending



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



带有安装孔的KG齿条
KG-Rack with fixed holes

材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel

单位 : mm
Dimensions : mm

模数 Module <i>m</i>	产 品 型 号 Catalogue Number	全 长 Overall Length <i>l</i>	啮 合 度 Datum Line <i>h''</i>	齿 宽 Face Width <i>b(h12)</i>	全齿高 Overall Thickness <i>h(h12)</i>	安 装 孔								重 量 Weight <i>W(kg)</i>
						孔的数目	钻孔径 Drill Hole Diameter <i>d</i>	沉孔径 Counter Sink Diameter <i>D</i>	沉孔深度 Counter Sink Depth <i>W</i>	从底面的 距 离 <i>R</i>	从端面的距离		周节距 <i>P</i>	
											<i>(Q)</i>	<i>(Q')</i>		
1	RK1SD 3 — 1015M	298.45	14	10	15	3	4.5	—	—	6	19.2	19.2	130	0.32
1	RK1SD 5 — 1015M	505.79	14	10	15	4	4.5	—	—	6	27.9	27.9	150	0.55
1	RK1SD 10 — 1015M	1021.01	14	10	15	6	4.5	—	—	6	60.5	60.5	180	1.11
1.5	RK1.5SD 3 — 1616M	301.59	14.5	16	16	3	5.5	9.5	5.4	6	20.8	20.8	130	0.53
1.5	RK1.5SD 5 — 1616M	499.51	14.5	16	16	4	5.5	9.5	5.4	6	24.7	24.7	150	0.88
1.5	RK1.5SD 10 — 1616M	1008.45	14.5	16	16	6	5.5	9.5	5.4	6	49.5	58.9	180	1.80
1.5	RK1.5SD 3 — 1620M	301.59	18.5	16	20	3	5.5	9.5	5.4	8	20.8	20.8	130	0.68
1.5	RK1.5SD 5 — 1620M	499.51	18.5	16	20	4	5.5	9.5	5.4	8	24.7	24.7	150	1.13
1.5	RK1.5SD 10 — 1620M	1008.45	18.5	16	20	6	5.5	9.5	5.4	8	49.5	58.9	180	2.30
2	RK2SD 3 — 1420M	301.59	18	14	20	3	6.6	11	6.5	7	20.8	20.8	130	0.57
2	RK2SD 5 — 1420M	496.37	18	14	20	4	6.6	11	6.5	7	23.1	23.1	150	0.95
2	RK2SD 10 — 1420M	1005.31	18	14	20	6	6.6	11	6.5	7	52.6	52.6	180	1.94
2	RK2SD 3 — 2020M	301.59	18	20	20	3	6.6	11	6.5	7	20.8	20.8	130	0.82
2	RK2SD 5 — 2020M	496.37	18	20	20	4	6.6	11	6.5	7	23.1	23.1	150	1.36
2	RK2SD 10 — 2020M	1005.31	18	20	20	6	6.6	11	6.5	7	52.6	52.6	180	2.77
2	RK2SD 3 — 2025M	301.59	23	20	25	3	6.6	11	6.5	10	20.8	20.8	130	1.05
2	RK2SD 5 — 2025M	496.37	23	20	25	4	6.6	11	6.5	10	23.1	23.1	150	1.75
2	RK2SD 10 — 2025M	1005.31	23	20	25	6	6.6	11	6.5	10	52.6	52.6	180	3.56

C45齿条

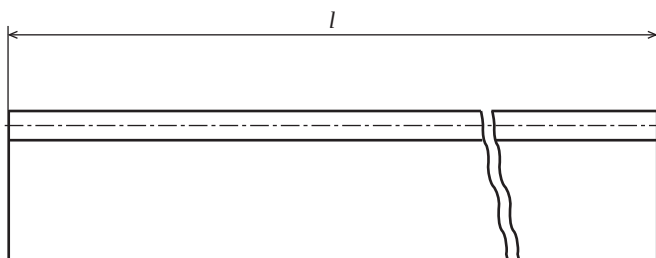
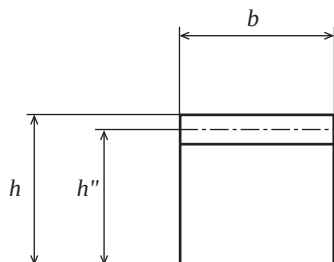
RACKS

模数
MODULE

2.5/3/4/5

压力角 20° (普通齿)

20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel

单位 : mm
Dimensions : mm

模数 Module <i>m</i>	产品型号 Catalogue Number	全长 Overall Length <i>l</i>	两端面加工 Both Ends Processed <i>p</i>	有效齿数 Effective Number of Teeth <i>z</i>	啮合高度 Datum Line <i>h''</i>	齿宽 Face Width <i>b(h/2)</i>	全齿高 Overall Thickness <i>h(h/2)</i>	重量 Weight <i>W(kg)</i>
2.5	RK2.5SD 3 — 2525	303 ~ 306	-	36	22.5	25	25	1.32
2.5	RK2.5SD 5 — 2525	503 ~ 506	-	62	22.5	25	25	2.20
2.5	RK2.5SD 10 — 1825	1005.3	0.06 ~ 0.18	128	22.5	18	25	3.13
2.5	RK2.5SD 10 — 2525	1005.3	0.06 ~ 0.18	128	22.5	25	25	4.40
2.5	RK2.5SD 5 — 2530	501 ~ 506	-	62	27.5	25	30	2.69
2.5	RK2.5SD 10 — 2530	1005.3	0.06 ~ 0.18	128	27.5	25	30	5.42
2.5	RK2.5SD 16 — 2530	1602.2	0.06 ~ 0.18	204	27.5	25	30	8.60
3	RK3SD 3 — 3030	300 ~ 306	-	30	27	30	30	1.90
3	RK3SD 5 — 3030	503 ~ 506	-	52	27	30	30	3.20
3	RK3SD 10 — 2230	1008.5	0.10 ~ 0.25	107	27	22	30	4.80
3	RK3SD 10 — 3030	1008.5	0.10 ~ 0.25	107	27	30	30	6.40
3	RK3SD 5 — 3035	501 ~ 506	-	52	32	30	35	3.76
3	RK3SD 10 — 3035	1008.5	0.10 ~ 0.25	107	32	30	35	7.60
3	RK3SD 16 — 3035	1602.2	0.10 ~ 0.25	170	32	30	35	12.10
4	RK4SD 10 — 4040	1005.3	0.10 ~ 0.25	80	36	40	40	12.00
5	RK5SD 10 — 5050	1005.3	0.10 ~ 0.25	64	45	50	50	18.50

关于齿条的长度

进行过两端的端面加工的齿条，其长度比理论值短0.06mm到0.5mm。

两端面加工(齿条节距接合用加工)。

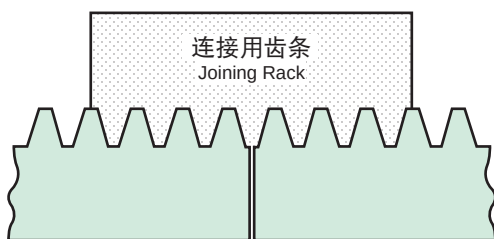
当把齿条接合使用时，用上图P项的尺寸对齿条的两端面进行了加工。

Regarding to Overall Length of Racks.

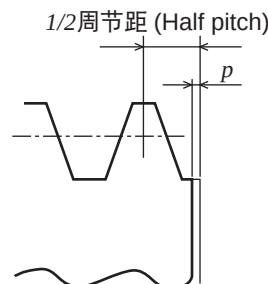
Both ends processed of Racks had an overall length of theory tolerance that range from minus 0.06 to 0.5 mm.

Both ends processed Racks (Counterpart process for the joining.)

Please refer to dimension of P for the rack joining.



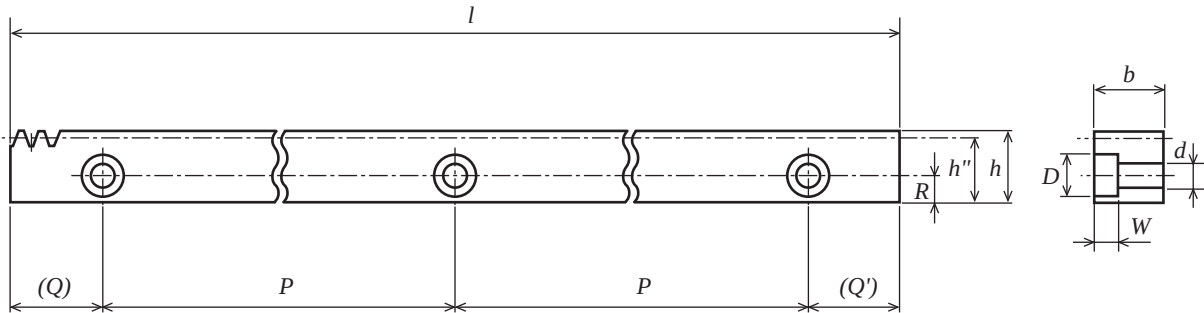
齿条连接例
Example of Joining Racks



对齿条的两端面进行加工处理的侧面图。(节距微调)
Detail of both ends processed Racks



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



带有安装孔的KG齿条
KG-Rack with fixed holes

材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel

单位 : mm
Dimensions : mm

模数 Module <i>m</i>	产 品 型 号 Catalogue Number	全 长 Overall Length <i>l</i>	啮 合 度 Datum Line <i>h</i> ''	齿 宽 Face Width <i>b(h12)</i>	全齿高 Overall Thickness <i>h(h12)</i>	安 装 孔								重 量 Weight <i>W(kg)</i>
						孔的数目	钻孔径 Drill Hole Diameter <i>d</i>	沉孔径 Counter Sink Diameter <i>D</i>	沉孔深度 Counter Sink Depth <i>W</i>	从底面的距 离 <i>R</i>	从端面的距离		周节距 <i>P</i>	
											<i>(Q)</i>	<i>(Q')</i>		
2.5	RK2.5SD 3 — 1825M	298.45	22.5	18	25	3	9	14	8.6	9	19.2	19.2	130	0.90
2.5	RK2.5SD 5 — 1825M	494.80	22.5	18	25	4	9	14	8.6	9	22.4	22.4	150	1.51
2.5	RK2.5SD 10 — 1825M	1005.31	22.5	18	25	6	9	14	8.6	9	52.6	52.6	180	3.10
2.5	RK2.5SD 3 — 2525M	298.45	22.5	25	25	3	9	14	8.6	9	19.2	19.2	130	1.24
2.5	RK2.5SD 5 — 2525M	494.80	22.5	25	25	4	9	14	8.6	9	22.4	22.4	150	2.09
2.5	RK2.5SD 10 — 2525M	1005.31	22.5	25	25	6	9	14	8.6	9	52.6	52.6	180	4.29
2.5	RK2.5SD 3 — 2530M	298.45	27.5	25	30	3	9	14	8.6	12	19.2	19.2	130	1.54
2.5	RK2.5SD 5 — 2530M	494.80	27.5	25	30	4	9	14	8.6	12	22.4	22.4	150	2.57
2.5	RK2.5SD 10 — 2530M	1005.31	27.5	25	30	6	9	14	8.6	12	52.6	52.6	180	5.28
3	RK3SD 3 — 2230M	301.59	27	22	30	3	11	17.5	10.8	11	20.8	20.8	130	1.32
3	RK3SD 5 — 2230M	499.51	27	22	30	4	11	17.5	10.8	11	24.7	24.7	150	2.21
3	RK3SD 10 — 2230M	1008.45	27	22	30	6	11	17.5	10.8	11	49.5	58.9	180	4.53
3	RK3SD 3 — 3030M	301.59	27	30	30	3	11	17.5	10.8	11	20.8	20.8	130	1.78
3	RK3SD 5 — 3030M	499.51	27	30	30	4	11	17.5	10.8	11	24.7	24.7	150	3.00
3	RK3SD 10 — 3030M	1008.45	27	30	30	6	11	17.5	10.8	11	49.5	58.9	180	6.15
3	RK3SD 3 — 3035M	301.59	32	30	35	3	11	17.5	10.8	14	20.8	20.8	130	2.14
3	RK3SD 5 — 3035M	499.51	32	30	35	4	11	17.5	10.8	14	24.7	24.7	150	3.59
3	RK3SD 10 — 3035M	1008.45	32	30	35	6	11	17.5	10.8	14	49.5	58.9	180	7.33

CP齿条(周节变位齿条)

CIRCULAR PITCH RACKS

节距
PITCH

2/5/10

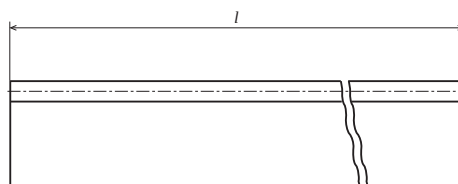
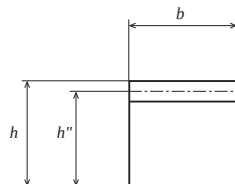
压力角 20° (普通齿)

20° PRESSURE ANGLE FULL DEPTH TOOTH



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



材料: 黄铜, 碳钢

Material: Brass, Carbon Steel

单位: mm
Dimensions: mm

周节距 Circular Pitch	产品型号 Catalogue Number	材质 Material	全长 Overall Length	两端面加工 Both Ends Processed	有效齿数 Effective Number of Teeth	啮合高度 Datum Line	齿宽 Face Width	全齿高 Overall Thickness	重量 Weight
cp		M	l	p	z	h''	$b(h/1)$	$h(h/1)$	$W(g)$
2	RKP2B 2 — 0308	C3604B	200	-	98	7.36	3	8	35.8
2	RKP2B 5 — 0310	C3604B	500	-	248	9.36	3	10	113.7
5	RKP5SD 5 — 1616	S45C	503 ~ 506	-	98	14.41	16	16	0.92(kg)
5	RKP5SD 10 — 1616	S45C	1,000	0.06 ~ 0.18	200	14.41	16	16	1.80(kg)
10	RKP10SD 5 — 3030	S45C	503 ~ 506	-	48	26.82	30	30	3.16(kg)
10	RKP10SD 10 — 3030	S45C	1,000	0.10 ~ 0.25	100	26.82	30	30	6.32(kg)

注) 所谓研磨周节变位齿条(CP齿条): 通常模数齿条的一个齿的节距是 $\pi \times m$ (模数), 不是整数。CP齿条改进了其啮合设计, 使小齿轮在CP齿条上旋转一整周, 可使齿条的移动CP量(周节:Circular pitch)定为固定的整数数值(比如100, 150, 200等), 然后反过来设计了对应的模数。因此使用步进马达, 伺服马达进行组设计时会更加方便。在使用滚珠螺杆等高昂的零件之前, 请考虑和设计使用CP齿条和小齿轮的组合。

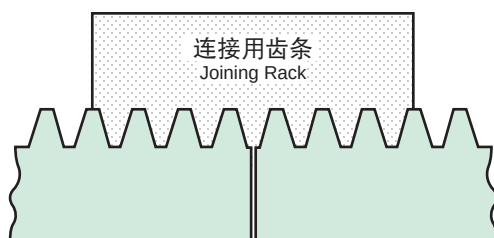
注) CP设计的齿条只能和CP设计的小齿轮能啮合。请使用同一个CP值的齿条和小齿轮。请不要与以模数为准设计的小齿轮相互混合使用。两者不相啮合。

Note that engagement of CP-Racks and Pinions has been design to obtain a traveling distance of one full turn of a pinion on the CP Racks at an integer figure (e.g. 100, 150 or 200...), but instead the Module Rack has been design at one pitch with $\pi \cdot m$ (about 3.14159 mm x Module). Therefore it is easier to design CP Rack & Pinion with Servo and Stepping motors. Please consider designing the CP-Racks and Pinions before using a costly of ball screw.

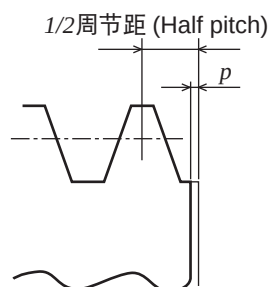
Note that engagement of the same pitches of CP-Rack and Pinions are indispensable. CP-Rack and Module pinion are impossible.

对应 RoHS 指令

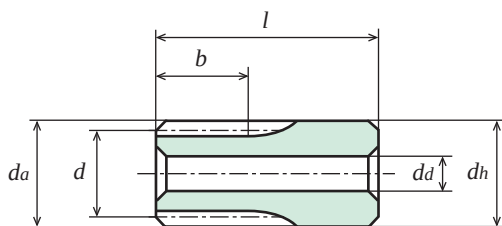
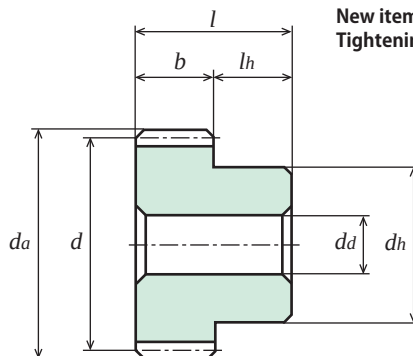
从2006年11月份开始生产提供, 对应欧洲RoHS指令的产品。
We supplied the KG-products with RoHS compliance of EU to all our valued customers since November 2006



齿条连接例
Example of Joining Racks



对齿条的两端面进行加工处理的侧面图。(节距微调)
Detail of both ends processed Racks

新产品带有两个螺纹孔 (120°)
紧固力增加 1.6 倍New item with two threaded holes (120°)
Tightening power increased by 1.6 times.K2形状
TYPE K2B1形状
TYPE B1材料: C45 碳钢 (JIS G 4051)
Material: Brass Carbon Steel单位: mm
Dimensions: mm

周节距 Circular Pitch cp	产品型号 Catalogue Number	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter da	形状 Type	齿宽 Face Width b	孔径 Bore Diameter da(H7)	轮毂外径 Hub Diameter dh	轮毂长度 Hub Projection lh	全长 Overall Length l	螺纹孔 Set Screw		旋转一周的长度 Distance of one turn 注)	重量 Weight W(g)
											2-M(120°)	ls		
2	SP2S - 15	15	φ 9.55	φ 10.82	K2	5	φ4(H8)	φ10.82	10	15	-	-	30	8.54
2	SP2S * 15	15	φ 9.55	φ 10.82	K2	5	φ4(H8)	φ10.82	10	15	2-M3	3	30	8.25
2	SP2S - 20	20	φ12.73	φ 14.01	B1	3	φ 5	φ10	7	10	-	-	40	5.78
2	SP2S * 20	20	φ12.73	φ 14.01	B1	3	φ 5	φ10	7	10	2-M3	3.5	40	5.55
2	SP2S - 25	25	φ15.92	φ 17.19	B1	3	φ 6	φ12	7	10	-	-	50	8.67
2	SP2S * 25	25	φ15.92	φ 17.19	B1	3	φ 6	φ12	7	10	2-M3	3.5	50	8.42
2	SP2S - 30	30	φ19.10	φ 20.37	B1	3	φ 6	φ15	7	10	-	-	60	14.2
2	SP2S * 30	30	φ19.10	φ 20.37	B1	3	φ 6	φ15	7	10	2-M4	3.5	60	13.5

注) 旋转一整的长度为, 小齿轮在齿条上旋转一整周时移动的距离。

Travelling distance of one turn.

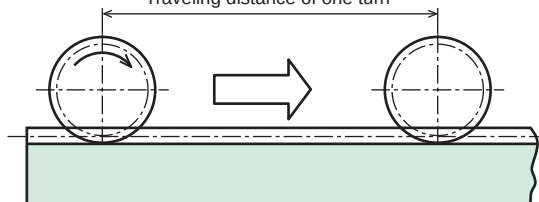
Obtain travelling amount of integral number, revolved one turn of the CP Pinion on the CP Rack.

标号[*]表示齿轮带有两个螺纹孔/带有两个固定螺钉。

[*]: Gear with two threaded holes / with two set screws.

旋转一周的长度

Traveling distance of one turn



容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	800	1,200	1,500
SP2S - 15	0.88	8.78	17.55	35.10	70.21	105.31	131.64
SP2S - 20	0.83	8.25	16.50	33.00	66.01	99.01	117.89
SP2S - 25	1.14	11.36	22.71	45.43	90.86	131.38	154.87
SP2S - 30	1.46	14.56	29.12	58.25	116.49	162.56	189.99

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	800	1,200	1,500
0.03	0.29	0.59	1.21	2.42	3.63	4.54
0.03	0.33	0.66	1.32	2.63	3.95	4.81
0.05	0.53	1.05	2.10	4.27	6.19	7.34
0.08	0.77	1.55	3.10	6.27	8.76	10.41

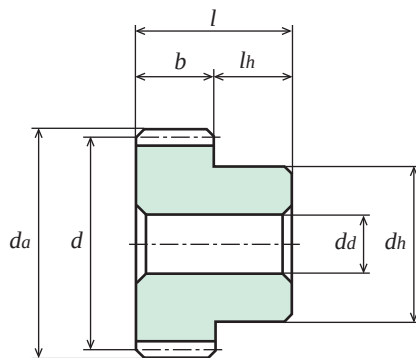
CP小齿轮 (周节变位小齿轮) CIRCULAR PITCH PINIONS

节距
PITCH

5/10

压力角 20° (普通齿)

20° PRESSURE ANGLE FULL DEPTH TOOTH



B1形状
TYPE B1

材料 : C45 碳钢 (JIS G 4051)
Material : Brass Carbon Steel

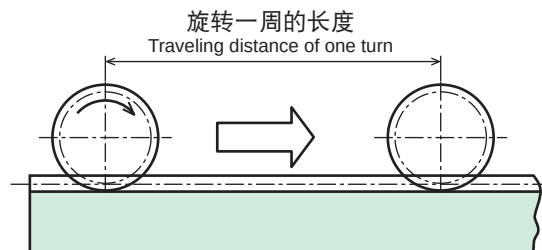
单位 : mm
Dimensions : mm

周节距 Circular Pitch	产品型号 Catalogue Number	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	螺纹孔 Set Screw		旋转一周的长度 Distance of one turn 注)	重量 Weight <i>W</i> (g)
											2-M(120°)	<i>ls</i>		
5	SP5S - 15	15	φ23.87	φ27.06	B1	16	φ8	φ18	10	26	-	-	75	65.9
5	SP5S - 16	16	φ25.46	φ28.65	B1	16	φ8	φ20	10	26	-	-	80	78.3
5	SP5S - 20	20	φ31.83	φ35.01	B1	16	φ10	φ25	10	26	-	-	100	122.4
5	SP5S - 24	24	φ38.20	φ41.38	B1	16	φ10	φ25	10	26	-	-	120	166.3
5	SP5S - 25	25	φ39.79	φ42.97	B1	16	φ10	φ25	10	26	-	-	125	178.6
5	SP5S - 30	30	φ47.75	φ50.93	B1	16	φ10	φ40	10	26	-	-	150	307.4
10	SP10S - 20	20	φ63.66	φ70.03	B1	30	φ18	φ50	15	45	-	-	200	0.89(kg)
10	SP10S - 25	25	φ79.58	φ85.94	B1	30	φ18	φ50	15	45	-	-	250	1.31(kg)
10	SP10S - 30	30	φ95.49	φ101.86	B1	30	φ18	φ60	15	45	-	-	300	1.93(kg)

注) 旋转一周的长度为, 小齿轮在齿条上旋转一周时移动的距离。

Travelling distance of one turn.

Obtain travelling amount of integral number, revolved one turn of the CP Pinion on the CP Rack.



容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	800	1,500
SP5S - 15	17.55	175.51	351.03	702.06	1353.35	1861.80
SP5S - 16	19.58	195.83	391.65	775.54	1491.99	2043.38
SP5S - 20	27.51	275.13	550.27	1048.12	2000.97	2695.23
SP5S - 24	35.75	357.55	715.09	1312.09	2487.24	3300.42
SP5S - 25	37.86	378.59	752.47	1376.67	2605.30	3477.94
SP5S - 30	48.54	485.44	935.79	1688.48	3170.25	4355.38
SP10S - 20	206.4	2063.5	3751.8	6603.2	12537.7	17687.1
SP10S - 25	283.9	2821.8	4885.0	8626.0	16722.8	23634.2
SP10S - 30	364.1	3509.2	5944.2	10787.6	20804.7	29453.5

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	800	1,200	1,500
0.65	6.55	13.21	26.63	51.62	71.99	84.51
0.75	7.51	15.13	30.23	58.53	81.28	95.19
1.20	12.03	24.28	46.78	89.93	123.79	147.26
1.76	17.69	35.76	66.51	127.17	173.46	213.09
1.91	19.28	38.77	71.92	137.43	188.73	232.18
2.81	28.36	55.43	101.68	193.54	275.03	339.52
9.67	97.83	181.2	327.2	632.5	932.7	1169.8
15.5	156.2	276.8	505.6	997.5	1496.5	1875.6
22.78	223.3	389.8	732.0	1458.7	2192.2	2850.5

Memo

目录 CONTENTS
齿信 INFORMATION
齿轮 GEAR BOXES
齿 ANTI BACKLASH SPUR GEARS
齿 GROUND SPUR GEARS
直齿 SPUR GEARS
内齿 INTERNAL GEARS
齿 GROUND RACKS
齿 RACKS
齿 HELIC GEAR AND SCREW GEARS
齿 WORMS AND WORM WHEELS
齿 BEVEL GEARS
技术 REFERENCE DATA



斜齿轮

Helical Gears and Screw Gears

产品型号的解读方法 Reference of Catalogue Number

斜齿轮

H 1 S 13 R - B
H 1 SU 13 R - B
H 1 D 13 L * B

齿轮的种类 Kind of Gear	模数 Module	材料 Material	齿数 Number of Teeth	螺旋方向 Direction of Helix	内径处里 Bores Processed	形状 Type
斜齿轮 Helical gears and Screw gears	m : 1.0 1.5 2.0 2.5 3.0	S : 碳素钢 Carbon Steel SU: 不锈钢 Stainless Steel D: 聚缩醛树脂 (机械加工) Poly Acetal (Machined)	z : 13 26	R : 右螺旋齿 Right Hand L : 左螺旋齿 Left Hand	[-]: 齿轮无键槽/无 螺纹孔 Gear without Key Way / without Thread hole. [*]: 齿轮带有两个螺 丝孔/带有两个固 定螺钉 Gear with two threaded holes / with two set screws.	B : 带有单侧轮毂 with Hub on one side.

目录 CONTENTS
齿信 INFORMATION
齿轮 GEAR BOXES
行星轮 ANTI BACKLASH SPUR GEARS
行星直齿 GROUND SPUR GEARS
直齿 SPUR GEARS
内齿 INTERNAL GEARS
研磨齿 GROUND RACKS
齿 RACKS
螺旋齿 HELICAL GEARS AND SCREW GEARS
蜗轮蜗杆 WORMS AND WORM WHEELS
锥齿 BEVEL GEARS
技术数据 REFERENCE DATA

Memo

斜齿轮使用中的注意事项

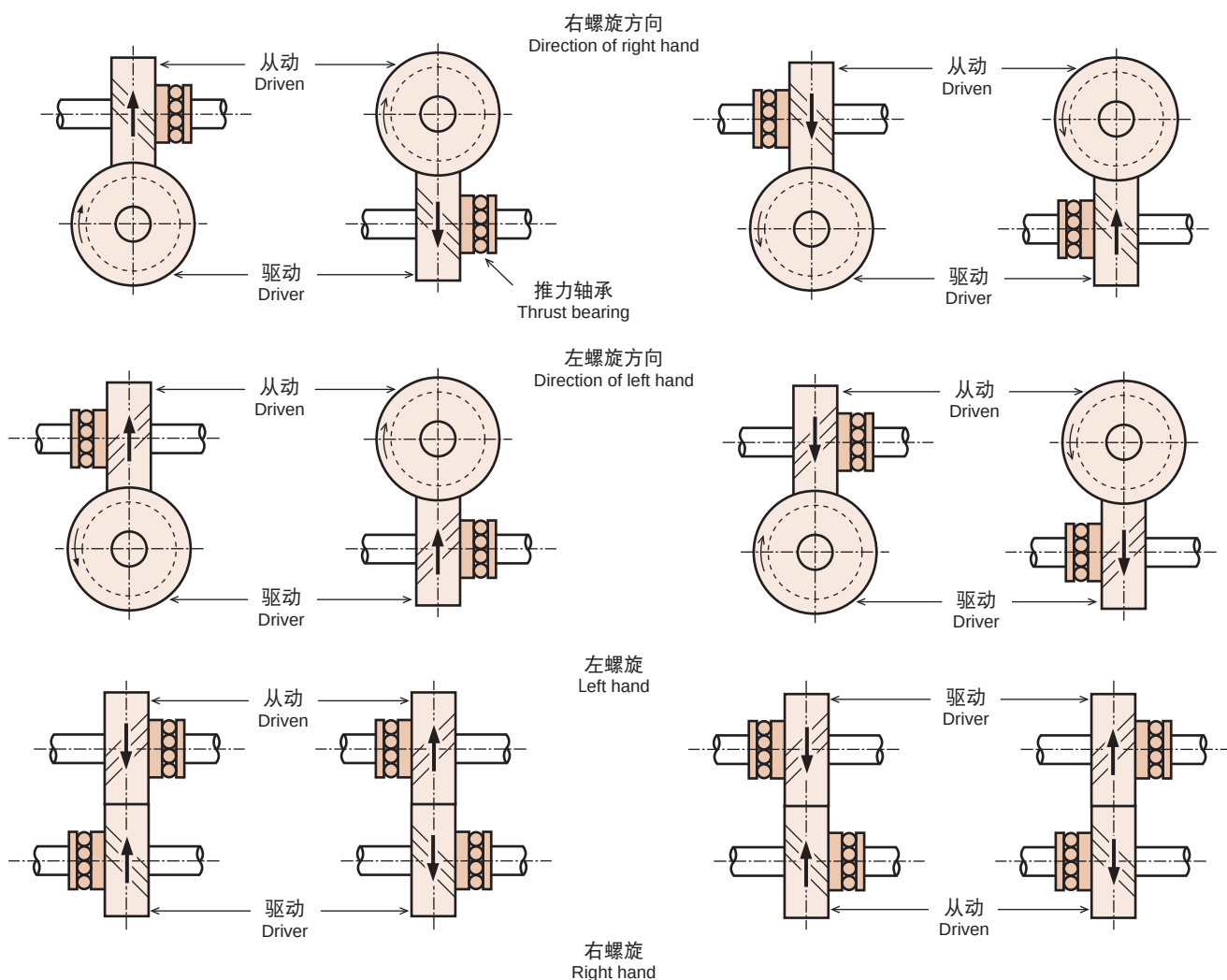
Usage precaution of Helical Gear

- 1) 为了实现理想的啮合，每个斜齿轮的90度的轴角要尽量准确安装。
- 2) 在使用时会出现对轴方向的轴向力，所以设计时一定要充分考虑并装配可承受轴向力的轴承。
- 3) 关于斜齿轮的轴向力：
斜齿轮有比直齿轮啮合更流畅的特点。但是因为齿是斜着的，所以有着产生轴方向的轴向力的缺点。因此，要设计安装能够充分承受轴向力的轴承。

- 1) To obtain ideal engagement of the shafts of Helical gears, provide right angle (90°) correctly.
- 2) Provide the bearing that will completely support the thrust load when Helical gear is operated as the axial thrust direction.
- 3) As for the thrust load of Helical gear.
Helical gear is able to obtain a smooth engagement compare to Spur gear, However Helical gear produces thrust load by helix angle on the tooth trace. Therefore the design of the shafts between drive gear (Pinion) and driven gear (Gear) should be in firm condition, and provide bearing that completely support pinion and gear against the axial thrust load.

斜齿轮轴向力的方向

Axial thrust load of helical gear and location of bearing



使用时，如果把其他厂家生产的产品和本公司产品一起混合使用，会容易产生问题。如果以KG常规规格以外的规格设计齿轮时，欢迎与本公司洽谈。

KG-Helical gear is able to match with other gear makers however it is advisable to use KG-Gear for best result. We are able to fabricate made to order according to your specifications. Please do not hesitate to contact us.

斜齿轮 HELICAL GEARS

模数
MODULE

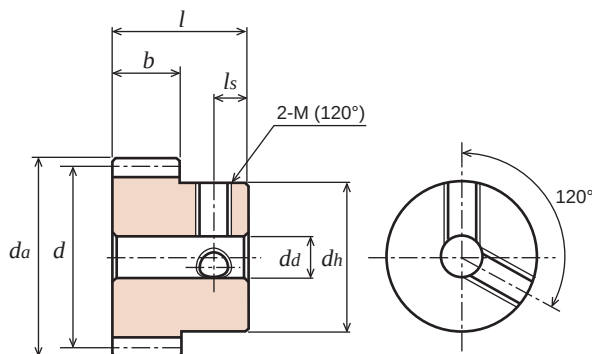
1/1.5

压力角 20° (普通齿) 螺旋角 45°
20° PRESSURE ANGLE FULL DEPTH TOOTH 45° Helix Angle

JIS B 1702-1(ISO) 9-10级
System of accuracy : JIS B 1702-1(ISO) class 9-10



新产品带有两个螺纹孔 (120°)
New item with two threaded holes (120°)



B1形状
TYPE B1

聚缩醛树脂 (白色)
Material : Poly Acetal (White)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Helix	模数 Module <i>m</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>dd</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	螺纹孔 Set Screw		重量 Weight <i>W(g)</i>
											2-M(120°)	<i>ls</i>	
H1D 13R — B	R	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	-	-	5.4
H1D 13L — B	L	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	-	-	5.4
H1D 26R — B	R	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	-	-	26.9
H1D 26L — B	L	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	-	-	26.9
H1D 13R * B	R	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	2-M3	5	5.3
H1D 13L * B	L	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	2-M3	5	5.3
H1D 26R * B	R	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	2-M4	5	26.6
H1D 26L * B	L	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	2-M4	5	26.6
H1.5D 13R — B	R	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	-	-	15.7
H1.5D 13L — B	L	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	-	-	15.7
H1.5D 26R — B	R	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	-	-	64.2
H1.5D 26L — B	L	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	-	-	64.2
H1.5D 13R * B	R	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	2-M4	5	15.5
H1.5D 13L * B	L	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	2-M4	5	15.5
H1.5D 26R * B	R	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	2-M5	5	63.6
H1.5D 26L * B	L	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	2-M5	5	63.6

标号[*]表示齿轮带有两个螺纹孔/带有两个固定螺钉。[*]: Gear with two threaded holes / with two set screws.

平衡轴斜齿轮的容许传达能力表 弯曲强度 (单位W)

Allowable transfer capability table

The table below shows the Bending strength applicable for parallel axis only.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	800	1,200	1,500
H1D 13R	2.98	29.75	59.46	118.79	237.06	354.80	442.76
H1D 26R	5.95	59.46	118.79	237.06	472.02	704.88	875.19
H1.5D 13R	4.71	47.10	94.12	187.93	374.61	560.04	698.30
H1.5D 26R	9.43	94.12	187.93	374.61	744.23	1,099.52	1,356.90

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

斜齿轮 HELICAL GEARS

模数
MODULE

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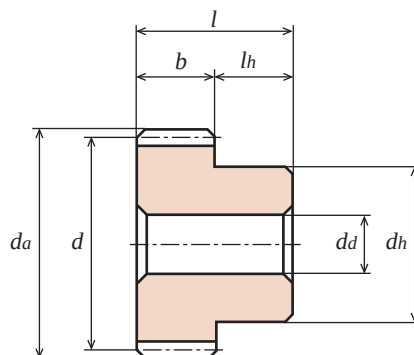
压力角 20° (普通齿) 螺旋角 45°
20° PRESSURE ANGLE FULL DEPTH TOOTH 45° Helix Angle

JIS B 1702-1(ISO) 9级
System of accuracy : JIS B 1702-1(ISO) class 9



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



B1形状
TYPE B1

材料：不锈钢 SUS304 (JIS G 4303)
Material : Stainless SUS304 (JIS G 4303)

单位：mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Helix	模数 Module <i>m</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	螺纹孔 Set Screw		重量 Weight <i>W(g)</i>
											2-M(120°)	ls	
H1SU 13R — B	R	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	-	-	30.5
H1SU 13L — B	L	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	-	-	30.5
H1SU 26R — B	R	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	-	-	151.1
H1SU 26L — B	L	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	-	-	151.1
H1SU 13R * B	R	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	2-M3	5	30.2
H1SU 13L * B	L	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	2-M3	5	30.2
H1SU 26R * B	R	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	2-M4	5	149.3
H1SU 26L * B	L	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	2-M4	5	149.3
H1.5SU 13R — B	R	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	-	-	88.4
H1.5SU 13L — B	L	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	-	-	88.4
H1.5SU 26R — B	R	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	-	-	361.4
H1.5SU 26L — B	L	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	-	-	361.4
H1.5SU 13R * B	R	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	2-M4	5	87.4
H1.5SU 13L * B	L	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	2-M4	5	87.4
H1.5SU 26R * B	R	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	2-M5	5	357.9
H1.5SU 26L * B	L	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	2-M5	5	357.9

SUS304的产品没有螺纹孔。

标号[*]表示齿轮带有两个螺纹孔/无固定螺钉。

[*] : Gear with two threaded holes / without set screw.

平衡轴斜齿轮的容许传达能力表 弯曲强度 (单位W)

Allowable transfer capability table

The table below shows the Bending strength applicable for parallel axis only.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	800	1,200	1,500
H1SU 13R	4.07	40.68	81.36	162.73	325.46	477.08	572.13
H1SU 26R	9.50	95.02	190.03	380.06	703.15	952.90	1,110.70
H1.5SU 13R	11.44	114.42	228.83	457.67	894.52	1,237.04	1,460.79
H1.5SU 26R	26.72	267.23	534.46	1,044.61	1,786.69	2,423.37	2,933.19

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

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模数
MODULE

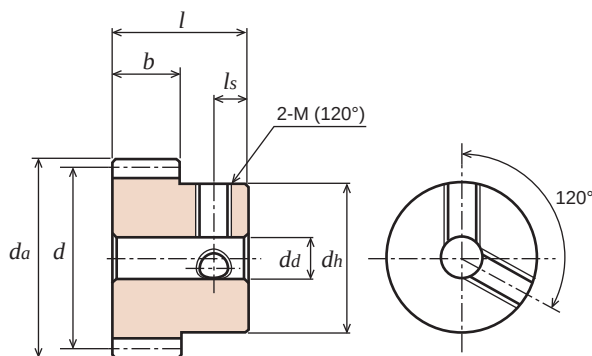
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压力角 20° (普通齿) 螺旋角 45°
20° PRESSURE ANGLE FULL DEPTH TOOTH 45° Helix Angle

JIS B 1702-1(ISO) 9级
System of accuracy : JIS B 1702-1(ISO) class 9



New 新产品带有两个螺纹孔 (120°)
New item with two threaded holes (120°)



B1形状
TYPE B1

材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Helix	模数 Module <i>m</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	螺纹孔 Set Screw		重量 Weight <i>W(kg)</i>
											2-M(120°)	<i>ls</i>	
H1S 13R — B	R	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	-	-	0.03
H1S 13L — B	L	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	-	-	0.03
H1S 26R — B	R	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	-	-	0.15
H1S 26L — B	L	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	-	-	0.15
H1S 13R * B	R	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	2-M3	5	0.03
H1S 13L * B	L	1	13	φ18.38	φ20.4	12	φ 8	φ15	10	22	2-M3	5	0.03
H1S 26R * B	R	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	2-M4	5	0.15
H1S 26L * B	L	1	26	φ36.77	φ38.8	12	φ10	φ32	10	22	2-M4	5	0.15
H1.5S 13R — B	R	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	-	-	0.09
H1.5S 13L — B	L	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	-	-	0.09
H1.5S 26R — B	R	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	-	-	0.36
H1.5S 26L — B	L	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	-	-	0.36
H1.5S 13R * B	R	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	2-M4	5	0.09
H1.5S 13L * B	L	1.5	13	φ27.58	φ30.6	15	φ10	φ23	10	25	2-M4	5	0.09
H1.5S 26R * B	R	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	2-M5	5	0.36
H1.5S 26L * B	L	1.5	26	φ55.15	φ58.2	15	φ12	φ40	10	25	2-M5	5	0.36

齿面高频淬火 HRC47 ~ 53。

Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.

标号 [*] 表示齿轮带有两个螺纹孔/带有两个固定螺钉。 [*] : Gear with two threaded holes / with two set screws.

平衡轴斜齿轮的容许传达能力表 弯曲强度 (单位kW)

Allowable transfer capability table

The table below shows the Bending strength applicable for parallel axis only.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	800	1,200	1,500
H1S 13R	0.009	0.09	0.19	0.38	0.77	1.13	1.36
H1S 26R	0.022	0.22	0.45	0.90	1.67	2.26	2.64
H1.5S 13R	0.027	0.27	0.54	1.08	2.12	2.94	3.47
H1.5S 26R	0.063	0.63	1.27	2.48	4.25	5.76	6.98

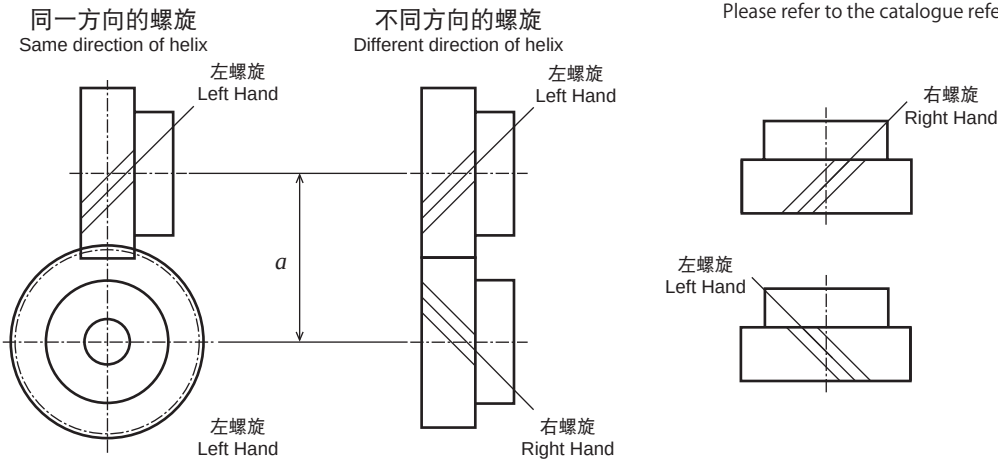
上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	800	1,200	1,500
0.003	0.03	0.07	0.14	0.28	0.42	0.51
0.015	0.15	0.31	0.64	1.20	1.65	1.95
0.010	0.10	0.20	0.41	0.81	1.14	1.36
0.045	0.45	0.91	1.81	3.16	4.37	5.35



材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Helix	模数 Module <i>m</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	重量 Weight <i>W(kg)</i>
H2S 13R — B	R	2	13	φ 36.77	φ 40.8	20	φ12	φ30	13	33	0.21
H2S 13L — B	L	2	13	φ 36.77	φ 40.8	20	φ12	φ30	13	33	0.21
H2S 26R — B	R	2	26	φ 73.54	φ 77.5	20	φ16	φ55	13	33	0.86
H2S 26L — B	L	2	26	φ 73.54	φ 77.5	20	φ16	φ55	13	33	0.86
H2.5S 13R — B	R	2.5	13	φ 45.96	φ 50.9	22	φ14	φ38	14	36	0.37
H2.5S 13L — B	L	2.5	13	φ 45.96	φ 50.9	22	φ14	φ38	14	36	0.37
H2.5S 26R — B	R	2.5	26	φ 91.92	φ 96.9	22	φ18	φ63	14	36	1.41
H2.5S 26L — B	L	2.5	26	φ 91.92	φ 96.9	22	φ18	φ63	14	36	1.41
H3S 13R — B	R	3	13	φ 55.15	φ 61.2	25	φ16	φ44	15	40	0.58
H3S 13L — B	L	3	13	φ 55.15	φ 61.2	25	φ16	φ44	15	40	0.58
H3S 26R — B	R	3	26	φ110.31	φ116.3	25	φ22	φ70	15	40	2.21
H3S 26L — B	L	3	26	φ110.31	φ116.3	25	φ22	φ70	15	40	2.21

齿面高频淬火 HRC47 ~ 53。
Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.

平衡轴斜齿轮的容许传达能力表 弯曲强度 (单位kW)

Allowable transfer capability table
The table below shows the Bending strength applicable for parallel axis only.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	800	1,200	1,500
H2S 13R — B	0.06	0.64	1.29	2.58	4.77	6.47	7.54
H2S 26R — B	0.15	1.50	2.99	5.53	9.17	12.99	15.73
H2.5S 13R — B	0.11	1.10	2.21	4.41	7.75	10.31	12.43
H2.5S 26R — B	0.26	2.57	5.15	9.04	15.34	21.67	26.20
H3S 13R — B	0.18	1.82	3.63	7.10	12.14	16.47	19.93
H3S 26R — B	0.42	4.22	8.24	14.10	24.43	34.56	42.17
H4S 13R — B	0.38	3.78	7.56	13.99	23.20	32.86	39.78

上述数字相当于JGMA公式，仅供参考。The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	800	1,200	1,500
0.02	0.24	0.49	0.99	1.87	2.57	3.03
0.11	1.07	2.16	4.06	6.91	9.98	12.23
0.04	0.52	0.85	1.71	3.06	4.14	5.04
0.19	1.87	3.79	6.78	11.83	17.08	20.92
0.07	0.71	1.42	2.82	4.92	6.79	8.31
0.31	3.11	6.15	10.75	19.22	27.82	34.40
0.15	1.52	3.06	5.75	9.77	14.12	17.31

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Memo



蜗杆和蜗轮

Worms and Worm Wheels

产品型号的解读方法 Reference of Catalogue Number

蜗杆 Worm

W 1 S R 1 = A
W 1 S L 1 - L
W 1 SU R 1 + B

齿轮的种类 Kind of Gear	模数 Module	材料 Material	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread	内径处里 Bores Processed	形状 Type
蜗杆 (Worm)	表示模数大小。当模数1以下时， 所标数据是实际模数乘于100。 例：模数0.5时为50。 模数0.8时为80。 Expressed the unit of module's size. Module 0.5 and 0.8 as multiple of 100. Example m0.5 → 50 m0.8 → 80	S : 碳素钢S45C (ISO C45) Carbon Steel SU : 不锈钢 SUS304 Stainless Steel	R : 右蜗杆 Right Hand L : 左蜗杆 Left Hand	1 : 1头螺纹 Single thread 2 : 2头螺纹 Double thread	标号[-]表示齿轮无 键槽/无螺纹孔。 Gear without key way / without threaded hole. 标号[+]表示齿轮带 有螺纹孔/有固定螺钉 或无固定螺钉。 Gear with threaded hole / with set screw without set screw (Please refer the detail) 标号[=]表示齿轮带 有键槽/带有键。 Gear with key way / with key.	A : 无轮毂 Hubless B : 带有单侧轮毂 with hub on one side. C : 带有双侧轮毂 With hub on both sides. L : 带有两侧实心轴 With Solid shaft on both sides

蜗轮 Worm Wheel

G 1 A 20 R 2 + 6
G 1 A 30 R 1 = 10
G 2 A 25 L 1 - 12

齿轮的种类 Kind of Gear	模数 Module	材料 Material	齿数 Number of teeth	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread	内径处里 Bores Processed	孔径 Bore
蜗轮 (Worm Wheel)	m : 0.5 0.8 1.0 1.25 1.5 2.0 2.5 3.0 4.0 5.0	B : 黄铜 Brass D : 聚缩醛树脂 Poly Acetal C : 铸铁 Cast iron A : 铝青铜 Aluminium Bronze DB : 聚缩醛树脂与黄铜衬套 Poly Acetal with brass bush	z : 20 25 30 40 50 60 80 100	R : 右蜗杆 Right Hand L : 左蜗杆 Left Hand	1 : 1头螺纹 Single thread 2 : 2头螺纹 Double thread	标号[-]表示齿轮无 键槽/无螺纹孔 Gear without key way / without threaded hole. 标号[+]表示齿轮带 有螺纹孔/有固定螺 钉或无固定螺钉 Gear with threaded hole / with set screw without set screw (Please refer the detail) 标号[=]表示齿轮带 有键槽/带有键 Gear with key way / with key.	单位: mm Dimension : Millimeter

CAC702铝青铜蜗轮，其齿部材料和轮毂材料会有所不同。
For CAC702 worm wheel, the material and hub may vary.
Please refer to catalogue information.

KG 齿轮 - 信息

KG Gear - Information

Worm gear

关于本公司用冷滚轧法制作的蜗杆

Regarding rolling worm of KG

本公司的模数 0.5 ~ 2.0 的蜗杆是用冷滚轧法制作的

冷滚轧精密蜗杆的特点

Feature of Cold Rolled precision Worm.

- 1) 因为是冷滚轧法工艺加工而成，所以螺丝表面因为加工硬化效应而出现硬度上升的现象，因为金属的纤维组织没有被切断，所以相对于机械切削的蜗杆有更好的力学性能。
- 2) 轧制后的表面硬度为原材料硬度的1.2倍或1.3倍。[螺纹面的硬度为HB240-260]。
- 3) 轧制蜗杆，由于螺纹面的表面精度为镜面，所以当与蜗轮啮合使用时，蜗轮的寿命会相对与切削工艺加工而成的蜗杆啮合使用时更长。
- 4) 当把用聚缩醛树脂等软材料制作的蜗轮与蜗杆结合使用时，如果蜗杆是切削加工生产的蜗杆，那么有可能出现蜗杆的齿顶刮掉蜗轮齿的情况。
因为冷滚轧法蜗杆螺纹面的表面粗糙度为镜面，并且表面硬度也被加强，特别是螺纹牙型是在轧制中隆起出来的，所以成为完整的曲面，不会出现上述的刮掉蜗轮齿的现象。所以耐久性也极为优秀。
- 5) 轧制蜗杆的原料因为在冷滚轧法工艺中无法进行均匀的塑性变形，所以会出现冷滚轧法特有的螺纹导程周期误差(Drunkenness)。当制蜗杆进行一个完整的旋转(1个主动旋转)的时候会在特定的位置出现前进迟缓，这个现象叫螺纹导程周期误差。
- 6) 单一齿距误差和压力角误差是由冷滚轧时使用的螺纹辊的精度所左右。冷滚轧法加工后的蜗杆的单一齿距误差最大为 $18\mu\text{m}$ 。压力角误差为， $\pm 20'$ 。

The Module 0.5 to 2.0 of KG-Worms are manufactured by using the cold rolled forming method.

- 1) The hardness of the helicoid surface has been increased by work hardening because cold rolling was performed, and the worms has more excellent mechanical properties than machined worms because the metallic fibrous structure has not been cut.
- 2) The surface hardness after cold rolling process was increased by 1.2 to 1.3 times compare with the hardness of original material, and the hardness of the helicoid surface was increased to HB240 to 260.
- 3) Cold rolling worm is suitable for the miniature module, and can be rotated smoothly without damaging the worm wheel of the Acetal or other soft materials.
- 4) Due to this cold rolling method, the helicoid surface of KG-Worm (M0.5 to 2.0) has a mirror finishing that looks like a mirror. The KG-Precision Cold Rolling Worm is able to provide a smooth engagement and high durability.

冷轧蜗杆的齿部高频淬火，有可能引起烧裂。所以本公司并不推崇对冷轧蜗杆进行高频淬火。

It is not advisable to apply heat treatments to KG-Cold Rolling Worm that may cause the possibility of 'quenching crack'.

本产品除常规产品外，也接受其他规格的订制生产。

If you have any enquiry for Customize make Worm and Worm Wheels, please do not hesitate to contact us.

本公司也接受研磨切削蜗杆的订单。

本公司将对其另行报价，为了进行准确的报价，烦请送给我们图纸。

We are able to manufacture the Customize make Ground Worm according to your specifications. Please provide your drawings to us and all will be make to order.

如果和其他工厂生产的齿轮和本公司的齿轮混合使用，容易出现问題。

所以如果以KG STOCK GEARS以外的规格进行设计时，请与本公司联系。

Due to the different manufacturing process of the normal module Worm and Worm Wheels in the industries, it is not advisable to match KG Worm or Worm Wheels with other gear manufacturers.

We are able to fabricate made to order specifications, please do not hesitate to contact us.

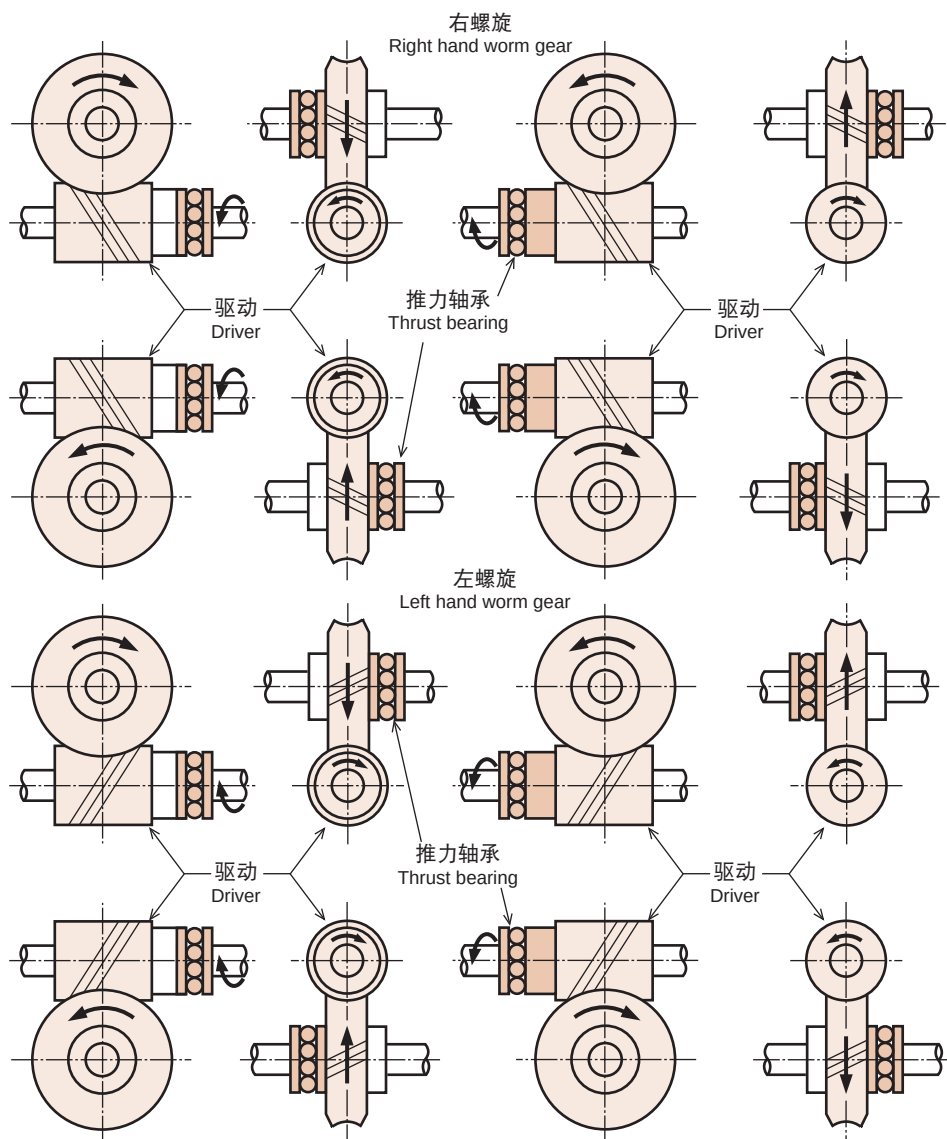
蜗杆齿轮使用时的注意事项

Usage precaution

- 1) 为了实现理想的啮合，组装蜗杆和蜗轮的时候请安装出准确的直角。
 - 2) 蜗杆和蜗轮进行啮合时齿面的摩擦比较大，所以请尽可能在有润滑油的环境中进行运转使用。
 - 3) 请使用同一个螺旋方向的蜗杆和蜗轮，并用同等的头数进行组合使用。(1头的蜗杆，要和对应1头蜗轮的蜗轮相配对)
 - 4) 为了不让蜗杆轴和蜗轮轴发生变位等变化。请在尽可能离齿轮近的地方设计结实的轴承。
 - 5) 向蜗杆产生的轴向力非常大。所以要注意。轴向力的方向请确认以下图。
- 1) To obtain ideal engagement of Worm and Worm Wheel's shafts, provide right angle (90°) correctly.
 - 2) Lubrication oil is indispensable to Worm and Worm Wheel during operation due to high rate of friction between tooth surface of Worm and Worm Wheel.
 - 3) Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.
 - 4) The design of the shafts between Worm and Worm Wheel should be in firm condition, and provide bearing which completely support Worm and Worm Wheel as close as possible.
 - 5) Provide the bearing that will completely support the Worm gear from the axial thrust when in operation. Refer to Figure below for its axial thrust directions.

对蜗轮起作用的轴向力

Axial thrust load to Worm gear and location of bearings

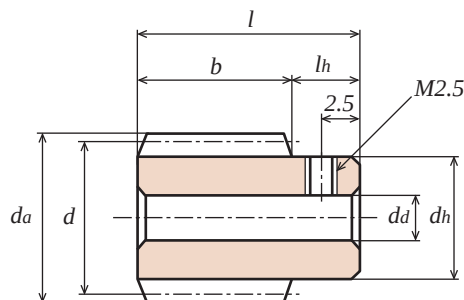


蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

0.5 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



B形状
TYPE B

材料：不锈钢 SUS304 (JIS G 4303) 精密轧制蜗杆

Material : Stainless Steel SUS304 (JIS G 4303) Precision Cold Rolled processed Worm

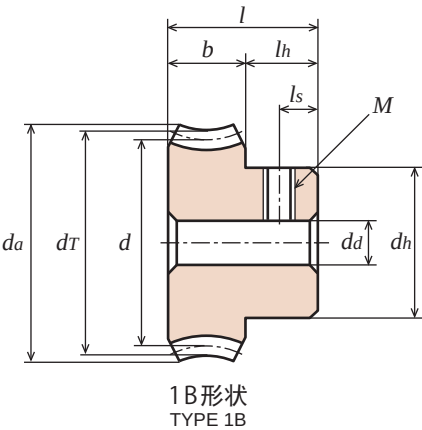
单位：mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_d(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection l_h	全长 Overall Length l	导程角 Lead Angle γ	重量 Weight $W(g)$
W50SU R1 + B	R	1	$\phi 9$	$\phi 10$	B	13	$\phi 3$	$\phi 7.6$	5	18	3°11'	7.3

标号[+]表示齿轮带有螺纹孔/有固定螺钉。螺钉材质不是不锈钢。[+] : Gear with threaded hole / with set screw. (not SUS)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：黄铜 (ISO CuZn39Pb3) 下表中的 X 栏尺寸表示径向变位系数
Material : Brass (ISO CuZn39Pb3) Dimension X: Coefficient of Rack shift. 单位：mm
Dimensions : mm

Table with 17 columns: Product Number, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Set Screw (M, ls), Center Distance, Hand and Thread for Worm, Weight. Rows include G50B 20 + R1, G50B 30 + R1, G50B 40 + R1, G50B 50 + R1.

齿顶圆直径da不是理论值。Dimension da does not follow the theory value.
标号[+]表示齿轮带有螺纹孔/有固定螺钉。[+] : Gear with threaded hole / with set screw.

对应 RoHS 指令
从2006年11月份开始生产提供，对应欧洲RoHS指令的产品。
We supplied the KG-products with RoHS compliance of EU to all our valued customers since November 2006

蜗杆的容许扭矩传达能力和齿面强度表
下图表示的齿面强度数据仅限于平行轴
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·cm) as surface durability.

Table with 2 rows of headers and 8 data rows. Headers: Product Number, Rotating speed (min⁻¹) with sub-header 'revolution/min (Rotating speed of worm)'. Data rows for G50B 20 + R1, G50B 30 + R1, G50B 40 + R1, G50B 50 + R1 at speeds 100, 250, 500, 1,000, 1,200, 1,500, 1,800.

对蜗杆旋转速度的蜗轮的容许扭矩。

上述数值相当于JGMA公式。仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.

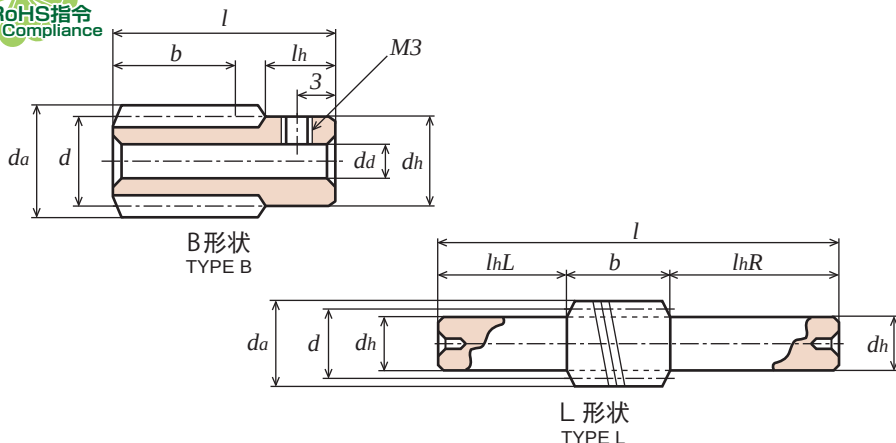
目录表 CONTENTS
齿轮信息 INFORMATION
齿轮箱 GEAR BOXES
无侧隙齿轮 ANTI BACKLASH SPUR GEARS
研磨直齿轮 GROUND SPUR GEARS
直齿轮 SPUR GEARS
内齿轮 INTERNAL GEARS
研磨齿条 GROUND RACKS
齿条 RACKS
斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS
蜗杆・蜗轮 WORMS AND WORM WHEELS
锥齿轮 BEVEL GEARS
技术资料 REFERENCE DATA

蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

0.8 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : 不锈钢 SUS304 (JIS G 4303) 精密轧制蜗杆

Material : Stainless Steel SUS304 (JIS G 4303) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_d(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	导程角 Lead Angle γ	重量 Weight $W(g)$
									l_{hL}	l_{hR}			
W80SU R1 + B	R	1	$\phi 10.4$	$\phi 12$	B	14	$\phi 5$	$\phi 10.3$	-	6	26	4°24'	18.0
W80SU R1 - L	R	1	$\phi 10.4$	$\phi 12$	L	20	-	$\phi 8 (h9)$	20	40	80	4°24'	40.0

不锈钢产品有螺纹孔，但是没有固定螺钉。Gear with threaded hole / without set screw.

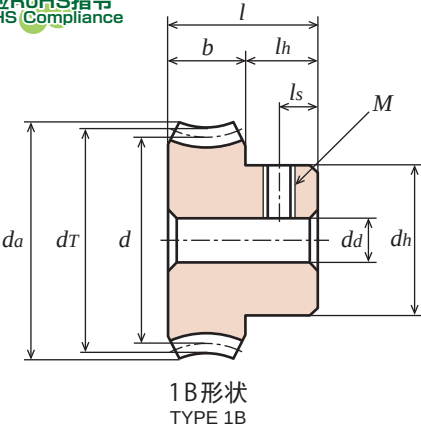
材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆

Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

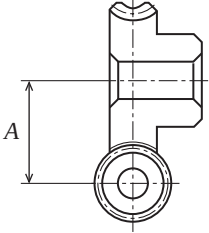
单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_d(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	导程角 Lead Angle γ	重量 Weight $W(g)$
									l_{hL}	l_{hR}			
W80S R1 + B	R	1	$\phi 10.4$	$\phi 12$	B	14	$\phi 5$	$\phi 10.3$	-	6	26	4°24'	18.0
W80S R1 - L	R	1	$\phi 10.4$	$\phi 12$	L	20	-	$\phi 8 (h9)$	20	40	80	4°24'	40.0

标号[+]表示齿轮带有螺纹孔/有固定螺钉。[+] : Gear with threaded hole / with set screw.



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：聚缩醛（白色）树脂 下表中的 X 栏尺寸表示径向变位系数
Material: Poly Acetal (White) Dimension X: Coefficient of Rack shift. 单位：mm
Dimensions: mm

Table with 17 columns: Product Number, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Set Screw, Center Distance, Hand and Thread for Worm, Weight. Rows include G80D 20 + R1, G80D 30 + R1, G80D 40 + R1, G80D 50 + R1.

齿顶圆直径da不是理论值。Dimension da does not follow the theory value.
标号[+]表示齿轮带有螺纹孔/有固定螺钉。[+] : Gear with threaded hole / with set screw.

材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数
Material: Aluminum Bronze casting (JIS CAC702) Dimension X: Coefficient of Rack shift. 单位：mm
Dimensions: mm

Table with 17 columns: Product Number, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Set Screw, Center Distance, Hand and Thread for Worm, Weight. Rows include G80A 20 + R1, G80A 30 + R1, G80A 40 + R1, G80A 50 + R1.

齿顶圆直径da不是理论值。Dimension da does not follow the theory value.
标号[+]表示齿轮带有螺纹孔/有固定螺钉。[+] : Gear with threaded hole / with set screw.

蜗杆的容许转矩能力和齿面强度表
下图表示的齿面强度仅限于平行轴的时候
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Numbers, Rotating speed (min⁻¹) with sub-columns for 100, 250, 500, 1,000, 1,200, 1,500, 1,800. Rows include G80A 20 + R1, G80A 30 + R1, G80A 40 + R1, G80A 50 + R1.

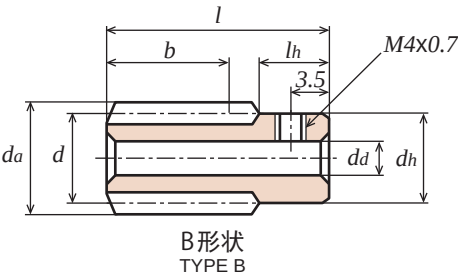
对蜗杆旋转速度的蜗轮的容许扭矩。

上述数值相当于JGMA公式。仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.

蜗杆和蜗轮

WORMS AND WORM WHEELS

模数 MODULE 1 压力角 20° (普通齿) 20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : 不锈钢 SUS304 (JIS G 4303) 精密轧制蜗杆
Material : Stainless Steel SUS304 (JIS G 4303) Precision Cold Rolled processed Worm
单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter da	形状 Type	齿宽 Face Width b	孔径 Bore Diameter dd(H8)	轮毂外径 Hub Diameter dh	轮毂长度 Hub Projection lh	全长 Overall Length l	导程角 Lead Angle γ	重量 Weight W(g)
W1SU R1 + B	R	1	φ16	φ18	B	15.5	φ6	φ15.85	7	32	3°35'	42.0
W1SU R2 + B	R	2	φ16	φ18	B	15	φ6	φ15.85	7	32	7°11'	42.0

不锈钢产品有螺纹孔，但是没有固定螺钉。Gear with threaded hole / without set screw.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如蜗杆为右旋头数为1条。那么蜗轮也要挑选右旋，对应头数为1条的产品。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

关于冷滚轧法加工

- 1) 利用材料的塑性变形原理，把材料放入一对轧制用的螺纹辊之间。并在两边用强大的油压施压，并同时旋转。
- 2) 只要硬度为HB220以下，任何材料都可。但是不能加工非金属。S45以下，S20C程度刚好。
- 3) 螺距为0.8mm-8mm。
- 4) 可制作的单一蜗杆的大小限度为外径100mm，长度150mm。
- 5) 螺纹牙型可以自行设定，如螺丝，蜗杆，锯齿型等。

Regarding the Precision Cold Rolling processed.

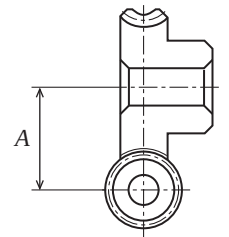
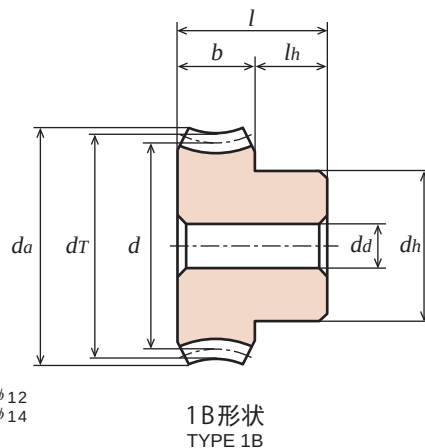
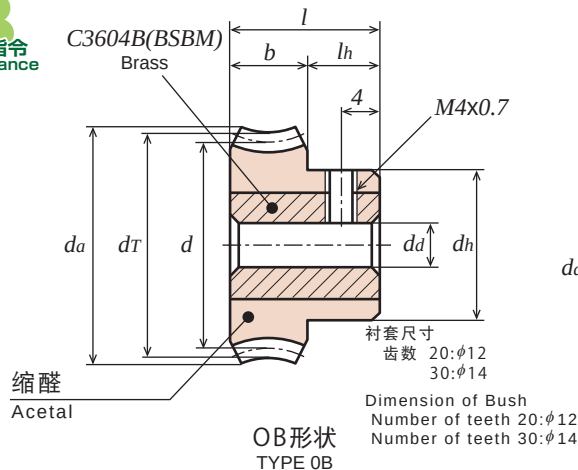
With regard to the precision Cold Rolling process of the worm, in respect of theory of plasticity material, the fabrication of the material of Cold Rolled-worm is produced by rotating with hydraulic pressing between both sides of the rolling tooth machine.

For the material of worm without nonferrous metal that can use HB220 or below, S20C to S45C are the most suitable process of the Cold Rolling.

Thread pitch 0.8 to 8.0mm

Our capacity of maximum dimension and length: φ100 × 150 mm

It may be possible that this process can make to design of the screw, worm and serration to the free type of thread



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.

材质：聚缩醛（白色）树脂（有黄铜衬套） 表中的 X 栏尺寸表示径向变位系数
Material: Poly Acetal (with Brass Bushing) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	节圆直径 Pitch Diameter <i>d</i>	变位系数 Coefficient of Rack shift <i>x</i>	蜗轮喉圆直径 Throat Diameter <i>dr</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	中心距 Center Distance <i>A</i>	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight <i>W(g)</i>
G1DB 20 + R2	10	20	φ20	-0.079	φ22	φ23	0B	8	φ6	φ16	9	17	18	R2	15.0
G1DB 20 + R1	20	20	φ20	-0.019	φ22	φ23	0B	8	φ6	φ16	9	17	18	R1	15.0
G1DB 30 + R1	30	30	φ30	-0.029	φ32	φ33	0B	8	φ6	φ20	9	17	23	R1	25.7

标号[+]表示齿轮带有螺纹孔/有固定螺钉。[+]: Gear with threaded hole / with set screw.

对应 RoHS 指令

从2006年11月份开始生产提供，对应欧洲RoHS指令的产品。
We supplied the KG-products with RoHS compliance of EU to all our valued customers since November 2006

材质：聚缩醛（白色）树脂（无黄铜衬套） 表中的 X 栏尺寸表示径向变位系数
Material: Poly Acetal (White) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	节圆直径 Pitch Diameter <i>d</i>	变位系数 Coefficient of Rack shift <i>x</i>	蜗轮喉圆直径 Throat Diameter <i>dr</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	中心距 Center Distance <i>A</i>	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight <i>W(g)</i>
G1D 20 - R2	10	20	φ 20	-0.079	φ 22	φ 23.5	1B	10	φ 6	φ17	8	18	18	R2	6.0
G1D 20 - R1	20	20	φ 20	-0.019	φ 22	φ 23.5	1B	10	φ 6	φ17	8	18	18	R1	6.0
G1D 30 - R2	15	30	φ 30	-0.118	φ 32	φ 33.5	1B	10	φ 6	φ22	8	18	23	R2	14.0
G1D 30 - R1	30	30	φ 30	-0.029	φ 32	φ 33.5	1B	10	φ 6	φ22	8	18	23	R1	14.0
G1D 40 - R1	40	40	φ 40	-0.039	φ 42	φ 43.5	1B	10	φ 8	φ25	8	18	28	R1	22.2
G1D 50 - R1	50	50	φ 50	-0.048	φ 52	φ 53.5	1B	10	φ 8	φ30	8	18	33	R1	34.7
G1D 60 - R1	60	60	φ 60	-0.058	φ 62	φ 63.5	1B	10	φ10	φ30	8	18	38	R1	46.0
G1D 80 - R1	80	80	φ 80	-0.078	φ 82	φ 83.5	1B	10	φ10	φ40	8	18	48	R1	84.0
G1D 100 - R1	100	100	φ100	-0.098	φ102	φ103.5	1B	10	φ10	φ40	8	18	58	R1	125.0

蜗杆和蜗轮

WORMS AND WORM WHEELS

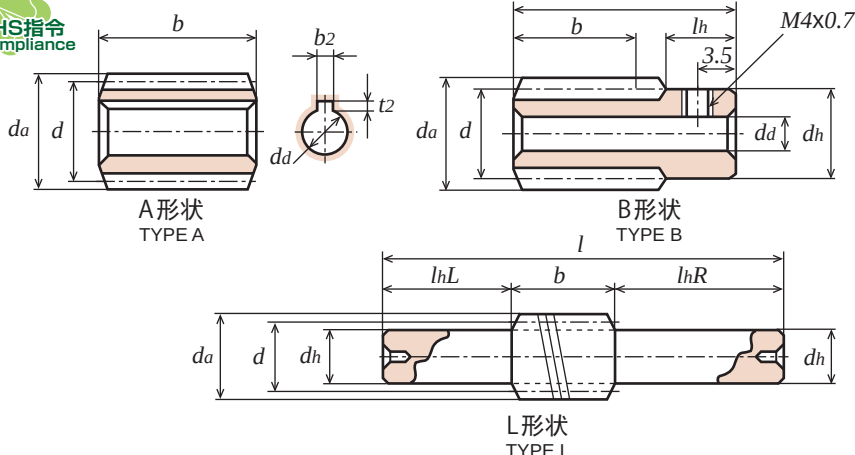
模数
MODULE

1

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



对应RoHS指令
RoHS Compliance



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮轂外径 Hub Diameter d_h	轮轂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(g)$
									l_{hL}	l_{hR}				
W1S R1 = A	R	1	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	3°35'	28.0
W1S R1 + B	R	1	$\phi 16$	$\phi 18$	B	17	$\phi 6$	$\phi 15.85$	-	7	32	-	3°35'	42.0
W1S R1 + B - 8	R	1	$\phi 16$	$\phi 18$	B	17	$\phi 8$	$\phi 15.85$	-	7	32	-	3°35'	42.0
W1S R1 - L	R	1	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	3°35'	120.0
W1S R2 = A	R	2	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	7°11'	28.0
W1S R2 + B	R	2	$\phi 16$	$\phi 18$	B	16.5	$\phi 6$	$\phi 15.85$	-	7	32	-	7°11'	42.0
W1S R2 + B - 8	R	2	$\phi 16$	$\phi 18$	B	16.5	$\phi 8$	$\phi 15.85$	-	7	32	-	7°11'	42.0
W1S R2 - L	R	2	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	7°11'	120.0
W1S L1 = A	L	1	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	3°35'	28.0
W1S L1 + B	L	1	$\phi 16$	$\phi 18$	B	17	$\phi 6$	$\phi 15.85$	-	7	32	-	3°35'	42.0
W1S L1 - L	L	1	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	3°35'	120.0
W1S L2 = A	L	2	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	7°11'	28.0
W1S L2 + B	L	2	$\phi 16$	$\phi 18$	B	16.5	$\phi 6$	$\phi 15.85$	-	7	32	-	7°11'	42.0
W1S L2 - L	L	2	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	7°11'	120.0

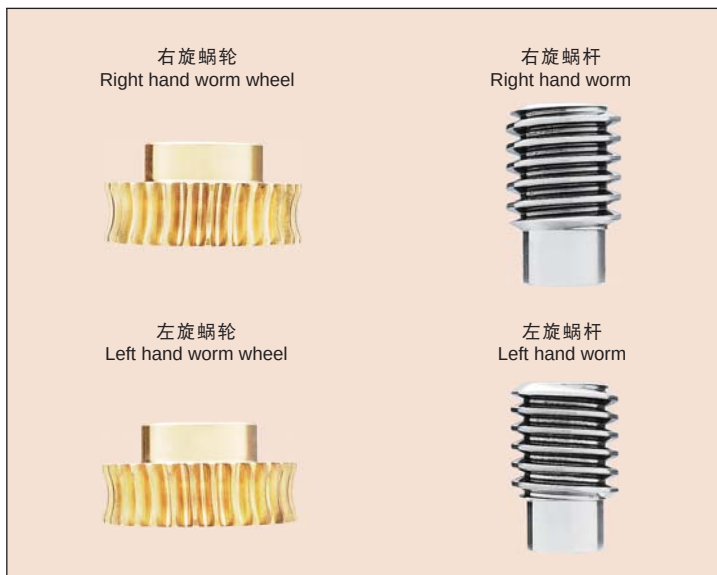
标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

标号 [+] 表示齿轮带有螺纹孔/有固定螺钉。

[+] : Gear with threaded hole / with set screw.

如何辨认蜗轮和蜗杆的 (左, 右) 旋转方向

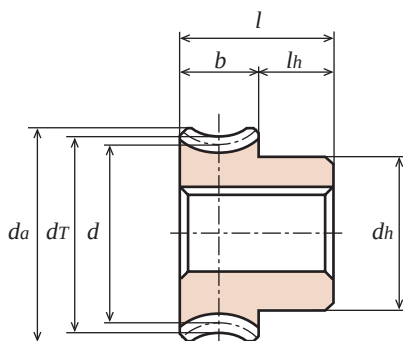
How to identify the left and right hand threads for worm and worm wheel.



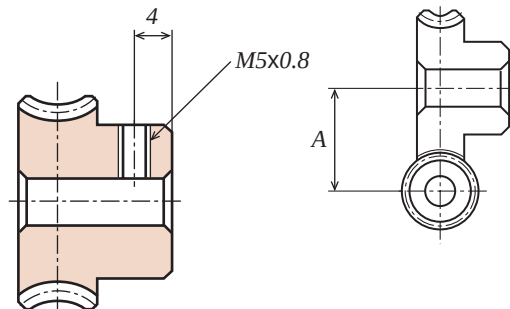
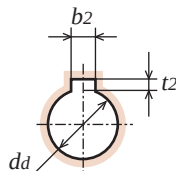


订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



1B形状
TYPE 1B



1B形状
TYPE 1B

材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数

Material: Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	节圆直径 Pitch Diameter <i>d</i>	变位系数 X	蜗轮喉圆直径 Throat Diameter <i>dT</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮轂外径 Hub Diameter <i>dh</i>	轮轂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	键槽 Key Way <i>b2 × t2</i>	中心距 Center Distance <i>A</i>	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight <i>W(g)</i>
G1A 20R2 + 6	10	20	φ20	-0.079	φ22	φ23.5	1B	10	φ6	φ17	8	18	-	18	R2	35.0
G1A 20R2 + 8	10	20	φ20	-0.079	φ22	φ23.5	1B	10	φ8	φ17	8	18	-	18	R2	32.0
G1A 20R2 = 8	10	20	φ20	-0.079	φ22	φ23.5	1B	10	φ8	φ17	8	18	3 × 1.4	18	R2	31.7
G1A 20R1 + 6	20	20	φ20	-0.019	φ22	φ23.5	1B	10	φ6	φ17	8	18	-	18	R1	35.0
G1A 20R1 + 8	20	20	φ20	-0.019	φ22	φ23.5	1B	10	φ8	φ17	8	18	-	18	R1	32.0
G1A 20R1 = 8	20	20	φ20	-0.019	φ22	φ23.5	1B	10	φ8	φ17	8	18	3 × 1.4	18	R1	31.7
G1A 20L2 + 6	10	20	φ20	-0.079	φ22	φ23.5	1B	10	φ6	φ17	8	18	-	18	L2	35.0
G1A 20L1 + 6	20	20	φ20	-0.019	φ22	φ23.5	1B	10	φ6	φ17	8	18	-	18	L1	35.0
G1A 30R2 + 6	15	30	φ30	-0.118	φ32	φ33.5	1B	10	φ6	φ22	8	18	-	23	R2	73.0
G1A 30R2 + 8	15	30	φ30	-0.118	φ32	φ33.5	1B	10	φ8	φ22	8	18	-	23	R2	69.5
G1A 30R2 = 10	15	30	φ30	-0.118	φ32	φ33.5	1B	10	φ10	φ22	8	18	3 × 1.4	23	R2	66.0
G1A 30R1 + 6	30	30	φ30	-0.029	φ32	φ33.5	1B	10	φ6	φ22	8	18	-	23	R1	73.0
G1A 30R1 + 8	30	30	φ30	-0.029	φ32	φ33.5	1B	10	φ8	φ22	8	18	-	23	R1	69.5
G1A 30R1 = 10	30	30	φ30	-0.029	φ32	φ33.5	1B	10	φ10	φ22	8	18	3 × 1.4	23	R1	66.0
G1A 30L2 + 6	15	30	φ30	-0.118	φ32	φ33.5	1B	10	φ6	φ22	8	18	-	23	L2	73.0
G1A 30L1 + 6	30	30	φ30	-0.029	φ32	φ33.5	1B	10	φ6	φ22	8	18	-	23	L1	73.0

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

标号 [+] 表示齿轮带有螺纹孔/有固定螺钉。 [+] : Gear with threaded hole / with set screw.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread

Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	100	250	500	1,000	1,200	1,500	1,800
G1A 20R2 + 6	2.185	1.793	1.479	1.185	1.107	1.009	0.980
G1A 20R1 + 6	2.322	1.930	1.597	1.303	1.225	1.146	1.078
G1A 20L2 + 6	2.185	1.793	1.479	1.185	1.107	1.009	0.980
G1A 20L1 + 6	2.322	1.930	1.597	1.303	1.225	1.146	1.078
G1A 30R2 + 6	4.488	3.547	2.900	2.312	2.175	1.989	1.852
G1A 30R1 + 6	4.978	4.184	3.528	2.891	2.724	2.548	2.401
G1A 30L2 + 6	4.488	3.547	2.900	2.312	2.175	1.989	1.852
G1A 30L1 + 6	4.978	4.184	3.528	2.891	2.724	2.548	2.401

对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.

蜗杆和蜗轮 WORMS AND WORM WHEELS

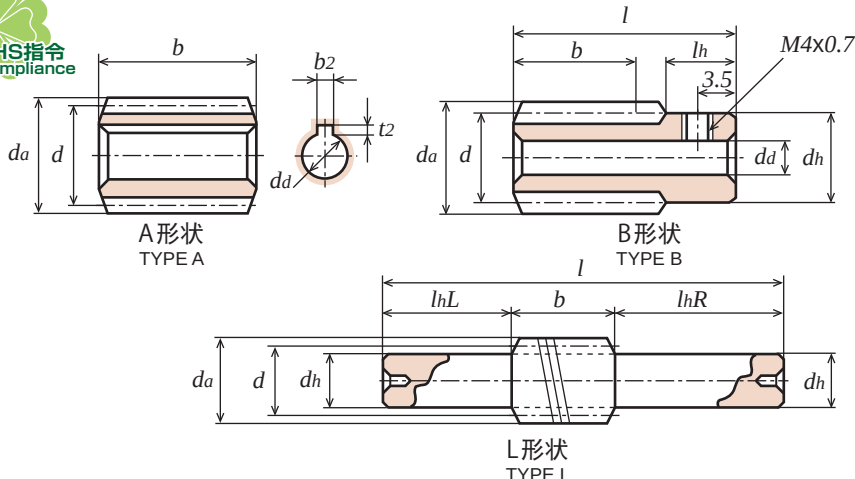
模数
MODULE

1

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



对应RoHS指令
RoHS Compliance



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b \times t_2$	导程角 Lead Angle γ	重量 Weight $W(g)$
									l_{hL}	l_{hR}				
W1S R1 = A	R	1	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	$3^\circ 35'$	28.0
W1S R1 + B	R	1	$\phi 16$	$\phi 18$	B	17	$\phi 6$	$\phi 15.85$	-	7	32	-	$3^\circ 35'$	42.0
W1S R1 + B - 8	R	1	$\phi 16$	$\phi 18$	B	17	$\phi 8$	$\phi 15.85$	-	7	32	-	$3^\circ 35'$	42.0
W1S R1 - L	R	1	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	$3^\circ 35'$	120.0
W1S R2 = A	R	2	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	$7^\circ 11'$	28.0
W1S R2 + B	R	2	$\phi 16$	$\phi 18$	B	16.5	$\phi 6$	$\phi 15.85$	-	7	32	-	$7^\circ 11'$	42.0
W1S R2 + B - 8	R	2	$\phi 16$	$\phi 18$	B	16.5	$\phi 8$	$\phi 15.85$	-	7	32	-	$7^\circ 11'$	42.0
W1S R2 - L	R	2	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	$7^\circ 11'$	120.0
W1S L1 = A	L	1	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	$3^\circ 35'$	28.0
W1S L1 + B	L	1	$\phi 16$	$\phi 18$	B	17	$\phi 6$	$\phi 15.85$	-	7	32	-	$3^\circ 35'$	42.0
W1S L1 - L	L	1	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	$3^\circ 35'$	120.0
W1S L2 = A	L	2	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	$7^\circ 11'$	28.0
W1S L2 + B	L	2	$\phi 16$	$\phi 18$	B	16.5	$\phi 6$	$\phi 15.85$	-	7	32	-	$7^\circ 11'$	42.0
W1S L2 - L	L	2	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	$7^\circ 11'$	120.0

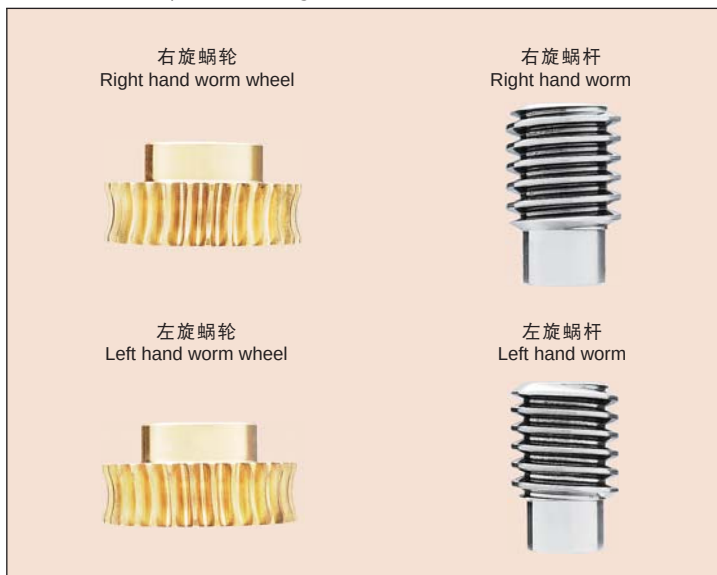
标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

标号 [+] 表示齿轮带有螺纹孔/有固定螺钉。

[+] : Gear with threaded hole / with set screw.

如何辨认蜗轮和蜗杆的 (左, 右) 旋转方向

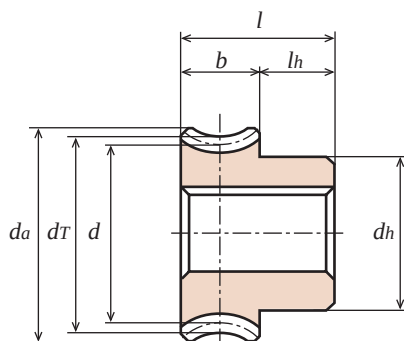
How to identify the left and right hand threads for worm and worm wheel.



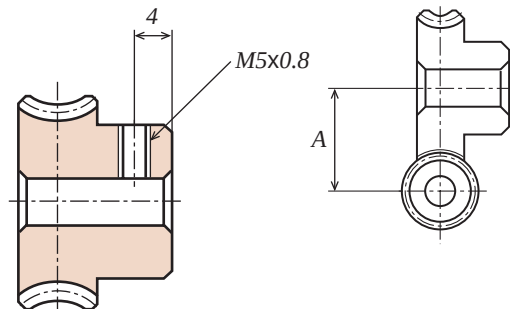
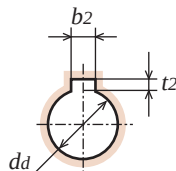


订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



1B形状
TYPE 1B



1B形状
TYPE 1B

材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数

Material: Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	节圆直径 Pitch Diameter <i>d</i>	变位系数 X	蜗轮喉圆直径 Throat Diameter <i>dT</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮轂外径 Hub Diameter <i>dh</i>	轮轂长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	键槽 Key Way <i>b2 × t2</i>	中心距 Center Distance <i>A</i>	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight <i>W(g)</i>
G1A 40R2 + 8	20	40	φ40	-0.158	φ42	φ43.5	1B	10	φ 8	φ25	8	18	-	28	R2	121.0
G1A 40R1 + 8	40	40	φ40	-0.039	φ42	φ43.5	1B	10	φ 8	φ25	8	18	-	28	R1	121.0
G1A 40R1 + 10	40	40	φ40	-0.039	φ42	φ43.5	1B	10	φ10	φ25	8	18	-	28	R1	119.5
G1A 40R1 = 10	40	40	φ40	-0.039	φ42	φ43.5	1B	10	φ10	φ25	8	18	3 × 1.4	28	R1	118.0
G1A 40L2 + 8	20	40	φ40	-0.158	φ42	φ43.5	1B	10	φ 8	φ25	8	18	-	28	L2	121.0
G1A 40L1 + 8	40	40	φ40	-0.039	φ42	φ43.5	1B	10	φ 8	φ25	8	18	-	28	L1	120.0
G1A 50R2 + 8	25	50	φ50	-0.197	φ52	φ53.5	1B	10	φ 8	φ30	8	18	-	33	R2	190.0
G1A 50R1 + 8	50	50	φ50	-0.048	φ52	φ53.5	1B	10	φ 8	φ30	8	18	-	33	R1	190.0
G1A 50R1 + 10	50	50	φ50	-0.048	φ52	φ53.5	1B	10	φ10	φ30	8	18	-	33	R1	187.5
G1A 50R1 = 12	50	50	φ50	-0.048	φ52	φ53.5	1B	10	φ12	φ30	8	18	4 × 1.8	33	R1	185.0
G1A 50L2 + 8	25	50	φ50	-0.197	φ52	φ53.5	1B	10	φ 8	φ30	8	18	-	33	L2	190.0
G1A 50L1 + 8	50	50	φ50	-0.048	φ52	φ53.5	1B	10	φ 8	φ30	8	18	-	33	L1	190.0

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

标号 [+] 表示齿轮带有螺纹孔/有固定螺钉。 [+] : Gear with threaded hole / with set screw.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread

Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	100	250	500	1,000	1,200	1,500	1,800
G1A 40R2 + 8	8.339	6.918	5.742	4.684	4.390	4.096	3.861
G1A 40R1 + 8	8.496	7.212	6.164	5.086	4.792	4.488	4.243
G1A 40L2 + 8	8.339	6.918	5.742	4.684	4.390	4.096	3.861
G1A 40L1 + 8	8.496	7.212	6.164	5.086	4.792	4.488	4.243
G1A 50R2 + 8	12.965	10.838	8.878	7.271	6.830	6.379	6.017
G1A 50R1 + 8	12.926	11.054	9.476	7.859	7.408	6.948	6.585
G1A 50L2 + 8	12.965	10.838	8.878	7.271	6.830	6.379	6.017
G1A 50L1 + 8	12.926	11.054	9.476	7.859	7.408	6.948	6.585

对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.

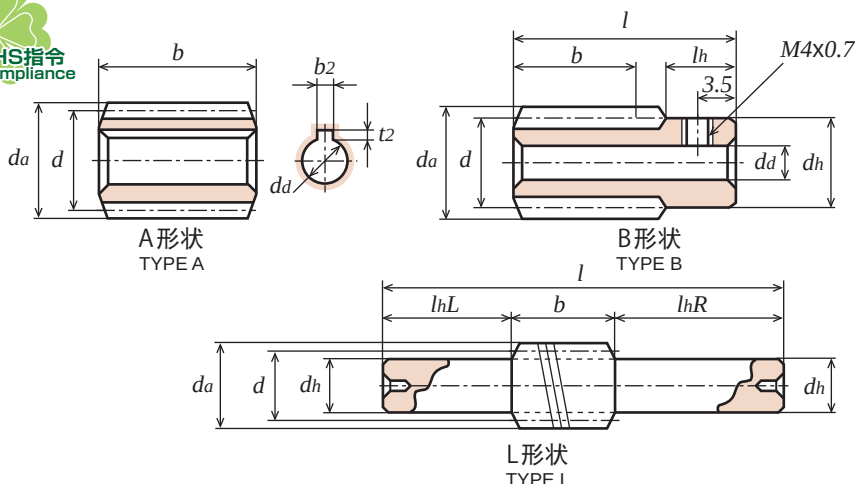
蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

1

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(g)$
									l_{hL}	l_{hR}				
W1S R1 = A	R	1	$\phi 16$	$\phi 18$	A	25	$\phi 8$	-	-	-	25	3×1.4	$3^\circ 35'$	28.0
W1S R1 + B	R	1	$\phi 16$	$\phi 18$	B	17	$\phi 6$	$\phi 15.85$	-	7	32	-	$3^\circ 35'$	42.0
W1S R1 + B - 8	R	1	$\phi 16$	$\phi 18$	B	17	$\phi 8$	$\phi 15.85$	-	7	32	-	$3^\circ 35'$	42.0
W1S R1 - L	R	1	$\phi 16$	$\phi 18$	L	25	-	$\phi 13(h8)$	25	50	100	-	$3^\circ 35'$	120.0

标号[-]表示齿轮带有键槽/带有键。[-] : Gear with key way / with key.

标号[+]表示齿轮带有螺孔/有固定螺钉。[+] : Gear with threaded hole / with set screw.

关于冷滚轧法加工

- 1) 利用材料的塑性变形原理，把材料放入一对轧制用的螺纹辊之间。并在两边用强大的油压施压，并同时旋转。
- 2) 只要硬度为HB220以下，任何材料都可。但是不能加工非金属。S45以下，S20C程度刚好。
- 3) 螺距为0.8mm-8mm。
- 4) 可制作的单一蜗杆的大小限度为外径100mm，长度150mm。
- 5) 螺纹牙型可以自行设定，如螺丝，蜗杆，锯齿型等。

Regarding the Precision Cold Rolling processed.

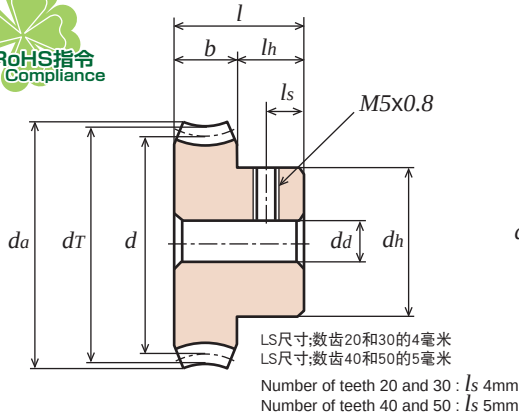
With regard to the precision Cold Rolling process of the worm, in respect of theory of plasticity material, the fabrication of the material of Cold Rolled-worm is produced by rotating with hydraulic pressing between both sides of the rolling tooth machine.

For the material of worm without nonferrous metal that can use HB220 or below, S20C to S45C are the most suitable process of the Cold Rolling.

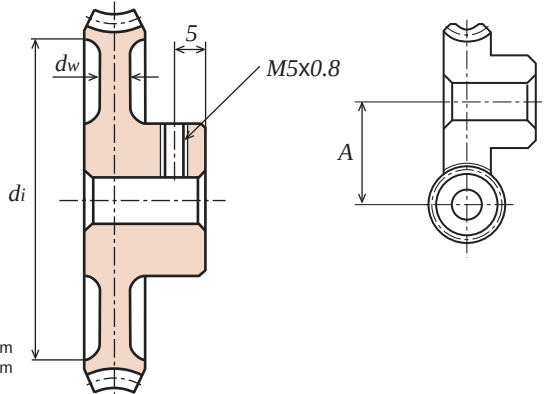
Thread pitch 0.8 to 8.0mm

Our capacity of maximum dimension and length: $\phi 100 \times 150$ mm

It may be possible that this process can make to design of the screw, worm and serration to the free type of thread



1B形状
TYPE 1B



2B形状
TYPE 2B

材质：灰铸铁 (JIS G 5501) 表中的 X 栏尺寸表示径向变位系数
Material : Grey Iron casting (JIS FC200) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Gear Ratio u	齿数 Number of Teeth z	节圆直径 Pitch Diameter d	变位系数 x	蜗轮喉圆直径 Throat Diameter dT	齿顶圆直径 Tip Diameter da	形状 Type	齿宽 Face Width b	孔径 Bore Diameter da(H8)	轮毂外径 Hub Diameter dh	轮毂长度 Hub Projection lh	全长 Overall Length l	轮毂内径 Dimension of Rim di	腹板厚度 Thickness of Web dw	中心距 Center Distance A	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight W(g)
G1C 30 + R1	30	30	φ 30	-0.029	φ 32	φ 33	1B	8	φ 6	φ20	9	17	-	-	23	R1	57.0
G1C 40 + R1	40	40	φ 40	-0.039	φ 42	φ 43	1B	8	φ 8	φ25	10	18	-	-	28	R1	100.0
G1C 50 + R1	50	50	φ 50	-0.048	φ 52	φ 53	1B	8	φ 8	φ30	10	18	-	-	33	R1	155.0
G1C 60 + R1	60	60	φ 60	-0.058	φ 62	φ 63	2B	8	φ10	φ30	10	18	φ54	4	38	R1	160.0
G1C 80 + R1	80	80	φ 80	-0.078	φ 82	φ 83	2B	8	φ10	φ30	10	18	φ74	4	48	R1	235.0
G1C 100+ R1	100	100	φ100	-0.098	φ102	φ103	2B	8	φ10	φ35	10	18	φ94	4	58	R1	340.0

标号[+]表示齿轮带有螺纹孔/有固定螺钉。[+] : Gear with threaded hole / with set screw.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	10	20	50	100	150	200	300
G1C 30 + R1	4.909	4.606	4.125	3.773	3.528	3.332	3.057
G1C 40 + R1	8.232	7.859	7.036	6.448	6.076	5.733	5.272
G1C 50 + R1	12.348	11.858	10.682	9.770	9.202	8.761	8.045
G1C 60 + R1	17.052	16.464	14.994	13.720	12.936	12.250	11.368
G1C 80 + R1	28.714	27.636	25.480	23.422	22.050	20.972	19.502
G1C 100 + R1	42.826	41.258	38.612	35.378	33.418	31.850	29.596

The above references are JGMA standard.

对蜗杆旋转速度的蜗轮的容许扭矩。

单位 : mm
Dimensions : mm

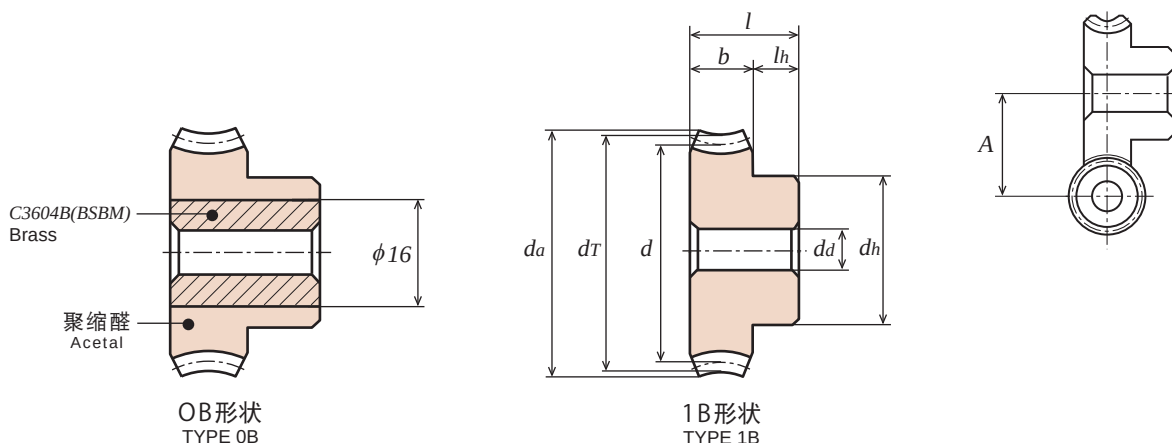
单位 : mm
Dimensions : mm

Worm: Right hand with single thread.
Worm Wheel: Right hand with single thread.



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



材料：不锈钢 SUS304 (JIS G 4303) 精密轧制蜗杆

Material: Stainless Steel SUS304 (JIS G 4303) Precision Cold Rolled processed Worm

单位：mm
Dimensions: mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread	分度圆直径 Reference Diameter	齿顶圆直径 Tip Diameter	形状 Type	齿宽 Face Width	孔径 Bore Diameter	轮轂外径 Hub Diameter	轮轂长度 Hub Projection	全长 Overall Length	导程角 Lead Angle	重量 Weight
W1.5SU R1 - B	R	1	φ25	φ28	B	30	φ10	φ20	13	43	3°26'	120.0
W1.5SU R2 - B	R	2	φ25	φ28	B	30	φ10	φ20	13	43	6°54'	120.0

聚缩醛树脂 (白色) 树脂 (镶有黄铜衬套) (3604B), 表中的 X 栏尺寸表示径向变位

Material: Poly Acetal (with Brass Bushing) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio	齿数 Number of Teeth	节圆直径 Pitch Diameter	变位系数 x	蜗轮喉圆直径 Throat Diameter	齿顶圆直径 Tip Diameter	形状 Type	齿宽 Face Width	孔径 Bore Diameter	轮轂外径 Hub Diameter	轮轂长度 Hub Projection	全长 Overall Length	中心距 Center Distance	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight
G1.5DB 20 - R2	10	20	φ30	-0.072	φ33	φ34.3	0B	10	φ8	φ22	10	20	27.5	R2	35.0
G1.5DB 20 - R1	20	20	φ30	-0.018	φ33	φ34.3	0B	10	φ8	φ22	10	20	27.5	R1	35.0

聚缩醛树脂 (白色) 树脂 (无黄铜衬套), 表中的 X 栏尺寸表示径向变位系数

Material: Poly Acetal (White) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio	齿数 Number of Teeth	节圆直径 Pitch Diameter	变位系数 x	蜗轮喉圆直径 Throat Diameter	齿顶圆直径 Tip Diameter	形状 Type	齿宽 Face Width	孔径 Bore Diameter	轮轂外径 Hub Diameter	轮轂长度 Hub Projection	全长 Overall Length	中心距 Center Distance	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight
G1.5D 20 - R2	10	20	φ30	-0.072	φ33	φ35.3	1B	15	φ8	φ25	10	25	27.5	R2	21.0
G1.5D 20 - R1	20	20	φ30	-0.018	φ33	φ35.3	1B	15	φ8	φ25	10	25	27.5	R1	21.0
G1.5D 30 - R2	15	30	φ45	-0.109	φ48	φ50.3	1B	15	φ10	φ30	10	25	35	R2	42.0
G1.5D 30 - R1	30	30	φ45	-0.027	φ48	φ50.3	1B	15	φ10	φ30	10	25	35	R1	42.0
G1.5D 40 - R1	40	40	φ60	-0.036	φ63	φ65.3	1B	15	φ12	φ36	13	28	42.5	R1	75.0
G1.5D 50 - R1	50	50	φ75	-0.045	φ78	φ80.3	1B	15	φ12	φ40	13	28	50	R1	114.0

对应 RoHS 指令

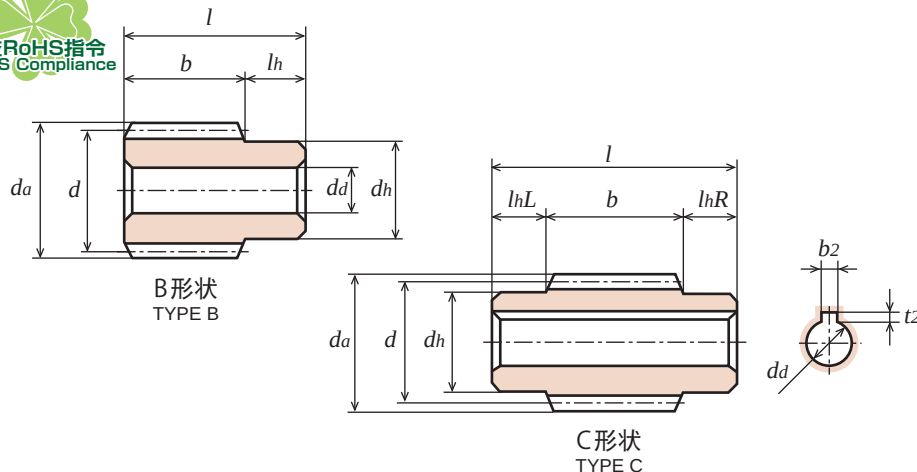
从2006年11月份开始生产提供, 对应欧洲RoHS指令的产品。
We supplied the KG-products with RoHS compliance of EU to all our valued customers since November 2006

蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

1.5 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									l_{hL}	l_{hR}				
W1.5S R1 - B	R	1	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	3°26'	0.12
W1.5S R1 - CF	R	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	-	3°26'	0.14
W1.5S R1 = C	R	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	3°26'	0.13
W1.5S R2 - B	R	2	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	6°54'	0.12
W1.5S R2 - CF	R	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	-	6°54'	0.14
W1.5S R2 = C	R	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	6°54'	0.13
W1.5S L1 - B	L	1	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	3°26'	0.12
W1.5S L1 = C	L	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	3°26'	0.13
W1.5S L2 - B	L	2	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	6°54'	0.12
W1.5S L2 = C	L	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	6°54'	0.13

标号[=]表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

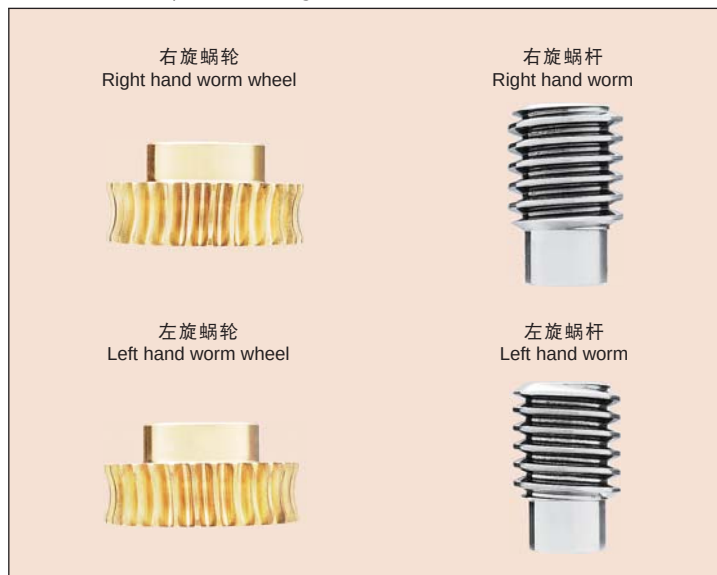
使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

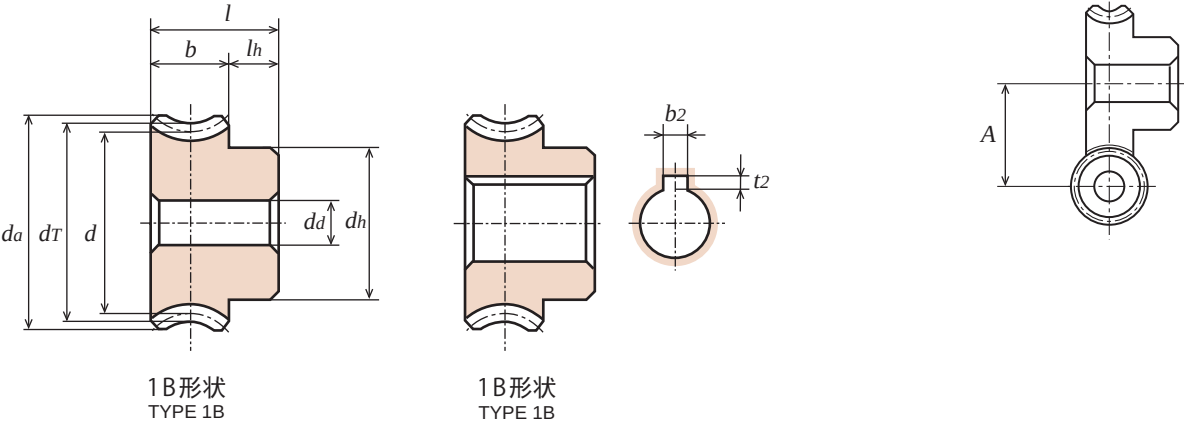
Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

如何辨认蜗轮和蜗杆的 (左, 右) 旋转方向
How to identify the left and right hand threads for worm and worm wheel.





订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数
Material : Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.
单位：mm
Dimensions : mm

Table with 16 columns: Product Model, Gear Ratio, Number of Teeth, Pitch Diameter, Coefficient of Rack Shift, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Key Way, Center Distance, Hand and Thread for Worm, Weight. Rows include models like G1.5A 20R2-8, G1.5A 30R2-10, etc.

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

蜗杆的容许转矩能力和齿面强度表
下图表示的齿面强度仅限于平行轴的时候
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Model, and 7 columns for rotational speed (100, 250, 500, 1,000, 1,200, 1,500, 1,800 rpm). Rows include models like G1.5A 20R2-8, G1.5A 30L2-10, etc.

对蜗杆旋转速度的蜗轮的容许扭矩。

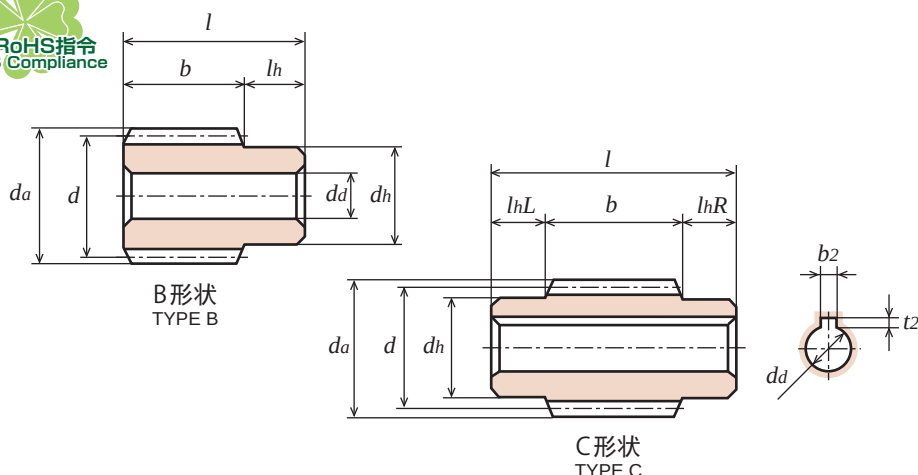
The above references are JGMA standard.

蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

1.5 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

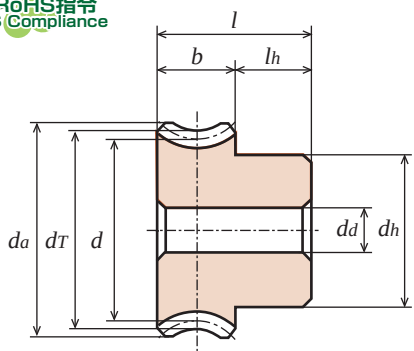
产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									l_{hL}	l_{hR}				
W1.5S R1 - B	R	1	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	3°26'	0.12
W1.5S R1 - CF	R	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	-	3°26'	0.14
W1.5S R1 = C	R	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	3°26'	0.13
W1.5S R2 - B	R	2	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	6°54'	0.12
W1.5S R2 - CF	R	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	-	6°54'	0.14
W1.5S R2 = C	R	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	6°54'	0.13
W1.5S L1 - B	L	1	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	3°26'	0.12
W1.5S L1 = C	L	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	3°26'	0.13
W1.5S L2 - B	L	2	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	6°54'	0.12
W1.5S L2 = C	L	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	6°54'	0.13

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

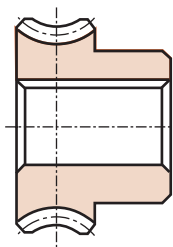


订购时请写入明确完整的产品型号。

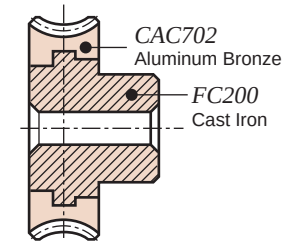
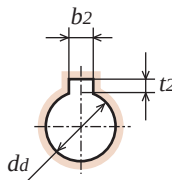
Please refer to the catalogue reference while ordering.



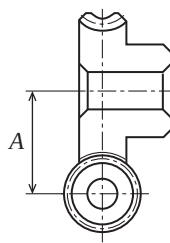
1B形状
TYPE 1B



1B形状
TYPE 1B



1BT形状
TYPE 1BT



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数

Material: Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio u	齿数 Number of Teeth z	节圆直径 Pitch Diameter d	变位系数 x	蜗轮喉圆直径 Throat Diameter dT	齿顶圆直径 Tip Diameter da	形状 Type	齿宽 Face Width b	孔径 Bore Diameter dd	轮轂外径 Hub Diameter dh	轮轂长度 Hub Projection lh	全长 Overall Length l	键槽 Key Way b2 × t2	中心距 Center Distance A	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight W(kg)
G1.5A 40R2 - 12	20	40	φ60	-0.145	φ63	φ65.3	1BT	15	φ12	φ36	13	28	-	42.5	R2	0.36
G1.5A 40R1 - 12	40	40	φ60	-0.036	φ63	φ65.3	1BT	15	φ12	φ36	13	28	-	42.5	R1	0.36
G1.5A 40R1 = 16	40	40	φ60	-0.036	φ63	φ65.3	1BT	15	φ16	φ36	13	28	5 × 2.3	42.5	R1	0.33
G1.5A 40L2 - 12	20	40	φ60	-0.145	φ63	φ65.3	1BT	15	φ12	φ36	13	28	-	42.5	L2	0.36
G1.5A 40L1 - 12	40	40	φ60	-0.036	φ63	φ65.3	1BT	15	φ12	φ36	13	28	-	42.5	L1	0.36
G1.5A 50R2 - 12	25	50	φ75	-0.181	φ78	φ80.3	1BT	15	φ12	φ40	13	28	-	50	R2	0.53
G1.5A 50R1 - 12	50	50	φ75	-0.045	φ78	φ80.3	1BT	15	φ12	φ40	13	28	-	50	R1	0.53
G1.5A 50R1 = 20	50	50	φ75	-0.045	φ78	φ80.3	1BT	15	φ20	φ40	13	28	6 × 2.8	50	R1	0.48
G1.5A 50L2 - 12	25	50	φ75	-0.181	φ78	φ80.3	1BT	15	φ12	φ40	13	28	-	50	L2	0.53
G1.5A 50L1 - 12	50	50	φ75	-0.045	φ78	φ80.3	1BT	15	φ12	φ40	13	28	-	50	L1	0.53

标号[=]表示齿轮带有键槽/带有键。 [=]: Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread

Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

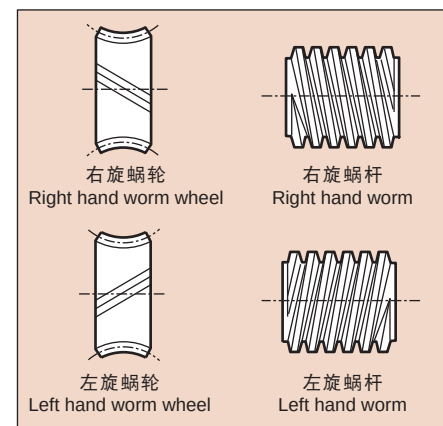
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	100	250	500	1,000	1,200	1,500	1,800
G1.5A 40R2 - 12	25.284	20.678	17.150	13.818	13.034	12.152	11.466
G1.5A 40R1 - 12	25.774	21.560	18.326	14.994	14.210	13.328	12.544
G1.5A 40L2 - 12	25.284	20.678	17.150	13.818	13.034	12.152	11.466
G1.5A 40L1 - 12	25.774	21.560	18.326	14.994	14.210	13.328	12.544
G1.5A 50R2 - 12	38.612	31.752	26.460	21.462	20.286	18.914	17.836
G1.5A 50R1 - 12	39.004	32.928	28.224	23.226	22.050	20.580	19.502
G1.5A 50L2 - 12	38.612	31.752	26.460	21.462	20.286	18.914	17.836
G1.5A 50L1 - 12	39.004	32.928	28.224	23.226	22.050	20.580	19.502

The above references are JGMA standard.

对蜗杆旋转速度的蜗轮的容许扭矩。

如何辨认蜗轮和蜗杆的(左,右)旋转方向
How to identify the left and right hand threads for worm and worm wheel.

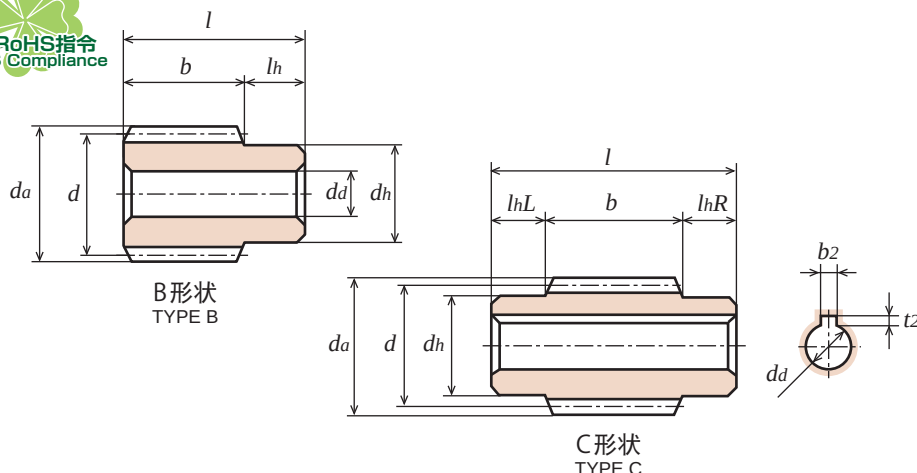


蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

1.5 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									l_{hL}	l_{hR}				
W1.5S R1 - B	R	1	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	3°26'	0.12
W1.5S R1 - CF	R	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	-	3°26'	0.14
W1.5S R1 = C	R	1	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	3°26'	0.13
W1.5S R2 - B	R	2	$\phi 25$	$\phi 28$	B	30	$\phi 10$	$\phi 20$	-	13	43	-	6°54'	0.12
W1.5S R2 - CF	R	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	-	6°54'	0.14
W1.5S R2 = C	R	2	$\phi 25$	$\phi 28$	C	35	$\phi 12$	$\phi 20$	10	10	55	4 × 1.8	6°54'	0.13

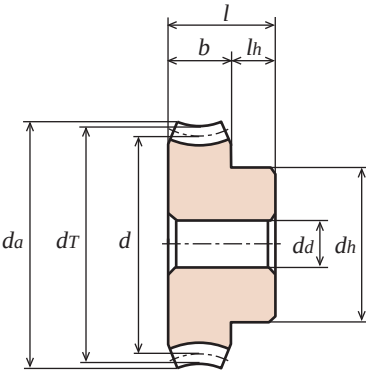
标号[=]表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

关于冷滚轧法加工

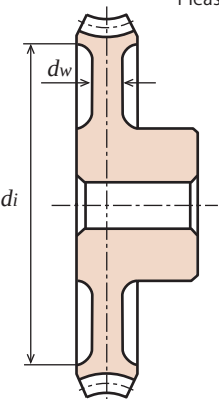
- 1)利用材料的塑性变形原理，把材料放入一对轧制用的螺纹辊之间。并在两边用强大的油压施压，并同时旋转。
- 2)只要硬度为HB220以下，任何材料都可。但是不能加工非金属。S45以下，S20C程度刚好。
- 3)螺距为0.8mm-8mm。
- 4)可制作的单一蜗杆的大小限度为外径100mm，长度150mm。
- 5)螺纹牙型可以自行设定，如螺丝，蜗杆，锯齿型等。

Regarding the Precision Cold Rolling processed.

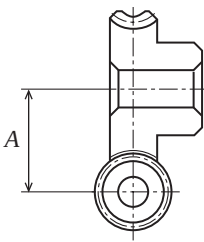
With regard to the precision Cold Rolling process of the worm, in respect of theory of plasticity material, the fabrication of the material of Cold Rolled-worm is produced by rotating with hydraulic pressing between both sides of the rolling tooth machine.
For the material of worm without nonferrous metal that can use HB220 or below, S20C to S45C are the most suitable process of the Cold Rolling.
Thread pitch 0.8 to 8.0mm
Our capacity of maximum dimension and length: $\phi 100 \times 150$ mm
It may be possible that this process can make to design of the screw, worm and serration to the free type of thread



1B形状
TYPE 1B



2B形状 (3B形状带有冲孔)
TYPE 2B (Type 3B with Piercing hole)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.

材质：灰铸铁 (JIS G 5501) 表中的 X 栏尺寸表示径向变位系数
Material : Grey Iron casting (JIS FC200) Dimension X: Coefficient of Rack shift.
单位：mm
Dimensions : mm

Table with 17 columns: Product Model, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Dimension of Rim, Thickness of Web, Center Distance, Hand and Thread for Worm, Weight. Rows include models G1.5C 20-R2, G1.5C 20-R1, G1.5C 30-R2, G1.5C 30-R1, G1.5C 40-R1, G1.5C 50-R1, G1.5C 60-R1, G1.5C 80-R1, G1.5C 100-R1.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

- Worm: Right hand with single thread
- Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Model, and 7 columns for rotational speeds (10, 20, 50, 100, 150, 200, 300 rev/min). Rows include models G1.5C 20-R2, G1.5C 20-R1, G1.5C 30-R2, G1.5C 30-R1, G1.5C 40-R1, G1.5C 50-R1, G1.5C 60-R1, G1.5C 80-R1, G1.5C 100-R1.

对蜗杆旋转速度的蜗轮的容许扭矩。

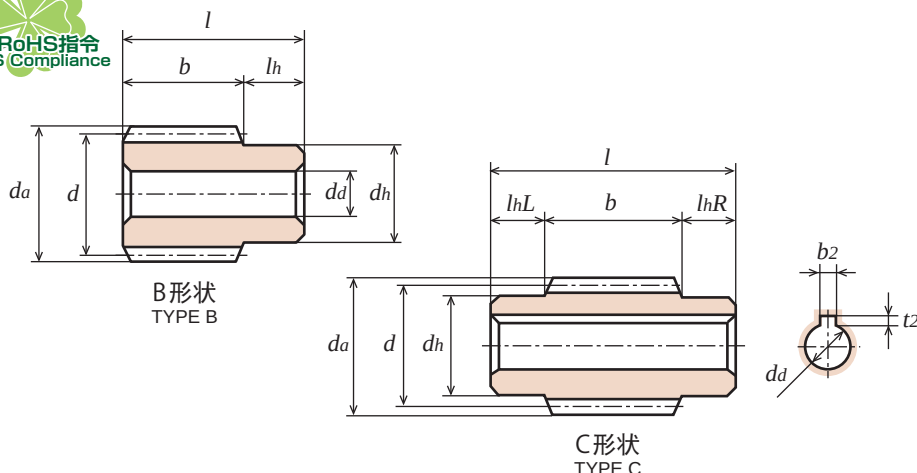
The above references are JGMA standard.

蜗杆和蜗轮 WORMS AND WORM WHEELS

模数
MODULE

2

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									lhL	lhR				
W2S R1 - B	R	1	$\phi 31$	$\phi 35$	B	35	$\phi 12$	$\phi 25$	-	15	50	-	3°42'	0.22
W2S R1 - CF	R	1	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	-	3°42'	0.25
W2S R1 = C	R	1	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	5 × 2.3	3°42'	0.24
W2S R2 - B	R	2	$\phi 31$	$\phi 35$	B	35	$\phi 12$	$\phi 25$	-	15	50	-	7°25'	0.22
W2S R2 - CF	R	2	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	-	7°25'	0.25
W2S R2 = C	R	2	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	5 × 2.3	7°25'	0.24
W2S L1 - B	L	1	$\phi 31$	$\phi 35$	B	35	$\phi 12$	$\phi 25$	-	15	50	-	3°42'	0.22
W2S L1 = C	L	1	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	5 × 2.3	3°42'	0.24
W2S L2 - B	L	2	$\phi 31$	$\phi 35$	B	35	$\phi 12$	$\phi 25$	-	15	50	-	7°25'	0.22
W2S L2 = C	L	2	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	5 × 2.3	7°25'	0.24

标号[=]表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

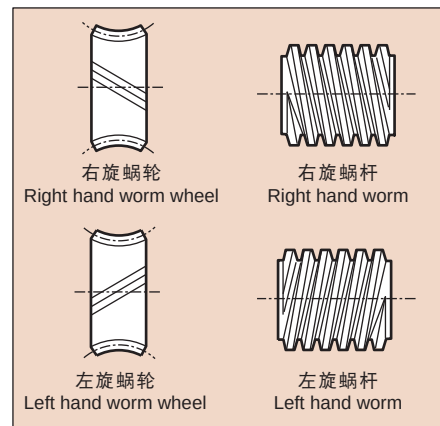
使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

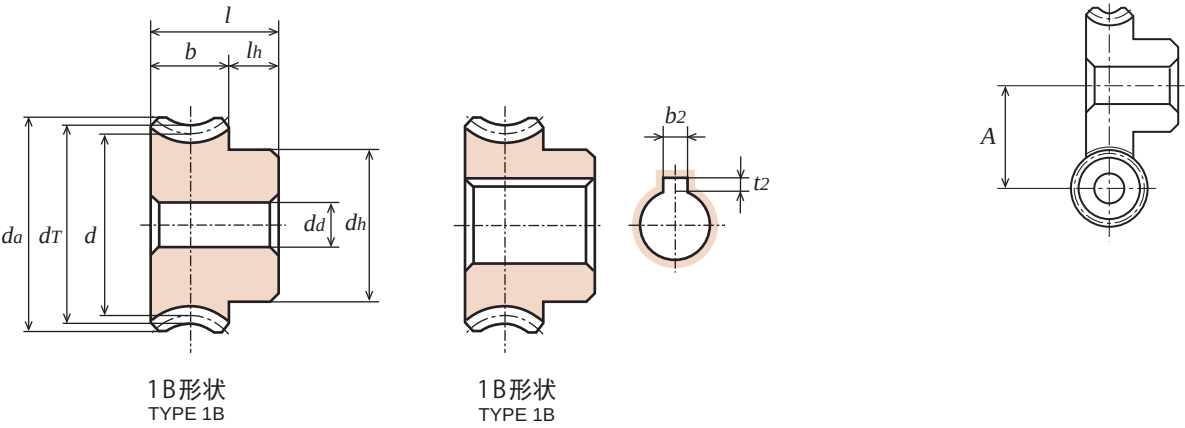
Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

如何辨认蜗轮和蜗杆的(左,右)旋转方向
How to identify the left and right hand threads for worm and worm wheel.





订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数
Material : Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.
单位：mm
Dimensions : mm

Table with 18 columns: Product Number, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Key Way, Center Distance, Worm Hand and Thread, Weight. Rows include various gear models like G2A 20R2-10, G2A 20R2=15, etc.

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

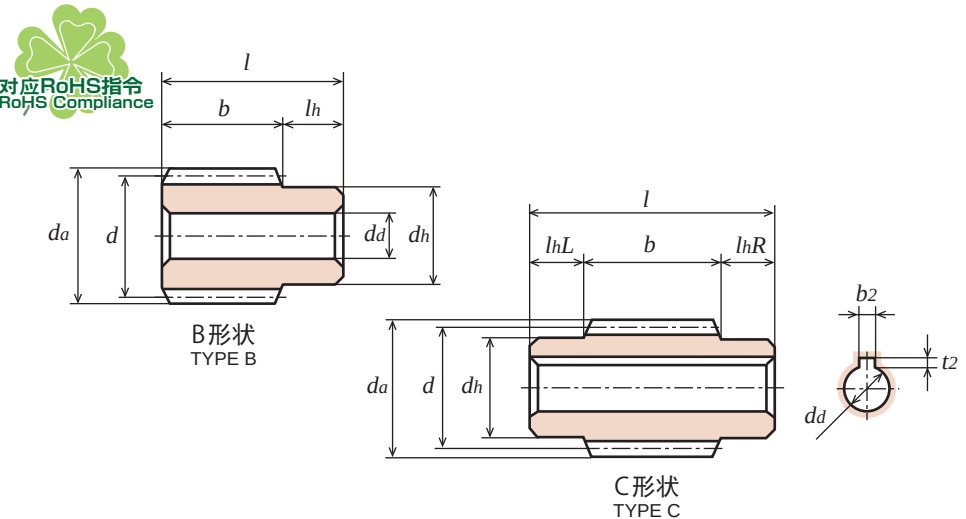
Table with 8 columns: Product Number, and 7 columns for rotational speed (100, 250, 500, 1,000, 1,200, 1,500, 1,800 rpm). Rows list various gear models and their corresponding torque values.

The above references are JGMA standard.

对蜗杆旋转速度的蜗轮的容许扭矩。

蜗杆和蜗轮
WORMS AND WORM WHEELS

模数 MODULE 2 压力角 20° (普通齿) 20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm
单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter da	形状 Type	齿宽 Face Width b	孔径 Bore Diameter da(H8)	轮毂外径 Hub Diameter dh	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way b2 × t2	导程角 Lead Angle γ	重量 Weight W(kg)
									lhL	lhR				
W2S R1 — B	R	1	φ31	φ35	B	35	φ12	φ25	-	15	50	-	3°42'	0.22
W2S R1 — CF	R	1	φ31	φ35	C	41	φ14	φ25	12	12	65	-	3°42'	0.25
W2S R1 = C	R	1	φ31	φ35	C	41	φ14	φ25	12	12	65	5 × 2.3	3°42'	0.24
W2S R2 — B	R	2	φ31	φ35	B	35	φ12	φ25	-	15	50	-	7°25'	0.22
W2S R2 — CF	R	2	φ31	φ35	C	41	φ14	φ25	12	12	65	-	7°25'	0.25
W2S R2 = C	R	2	φ31	φ35	C	41	φ14	φ25	12	12	65	5 × 2.3	7°25'	0.24
W2S L1 — B	L	1	φ31	φ35	B	35	φ12	φ25	-	15	50	-	3°42'	0.22
W2S L1 = C	L	1	φ31	φ35	C	41	φ14	φ25	12	12	65	5 × 2.3	3°42'	0.24
W2S L2 — B	L	2	φ31	φ35	B	35	φ12	φ25	-	15	50	-	7°25'	0.22
W2S L2 = C	L	2	φ31	φ35	C	41	φ14	φ25	12	12	65	5 × 2.3	7°25'	0.24

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

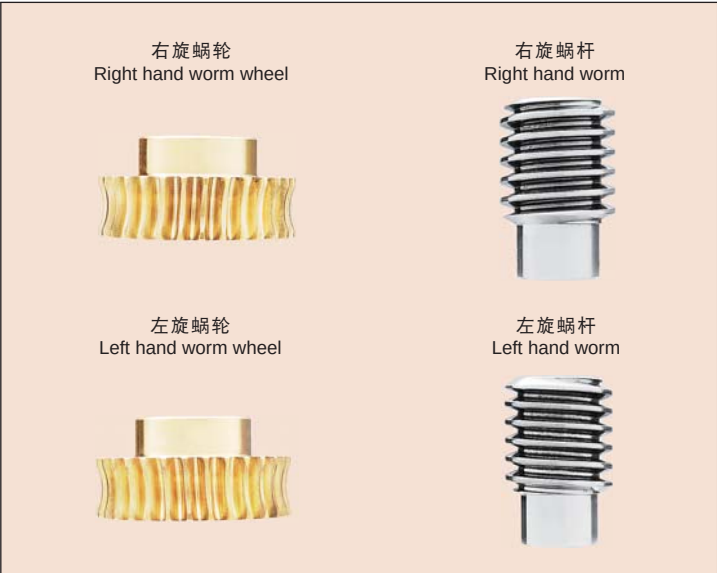
使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

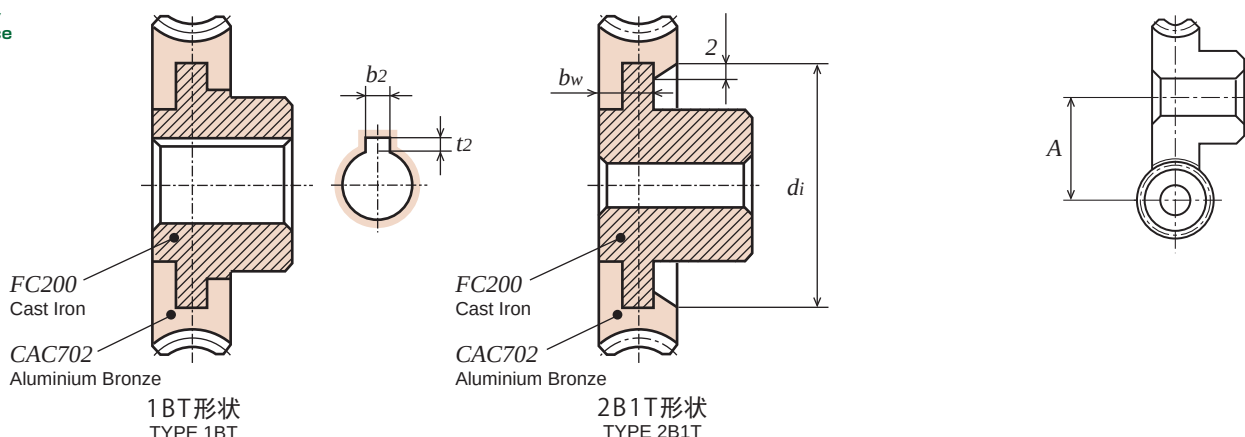
如何辨认蜗轮和蜗杆的 (左, 右) 旋转方向
How to identify the left and right hand threads for worm and worm wheel.





订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数

Material: Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio u	齿数 Number of Teeth z	节圆直径 Pitch Diameter d	变位系数 X	蜗轮喉圆直径 Throat Diameter d_T	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毅外径 Hub Diameter d_h	轮毅长度 Hub Projection l_h	全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	轮毅内径 Dimension of Rim d_i	腹厚度 Thickness of Web d_w	中心距 Center Distance A	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight $W(kg)$
G2A 40R2 - 14	20	40	$\phi 80$	-0.168	$\phi 84$	$\phi 87$	1BT	20	$\phi 14$	$\phi 45$	18	38	-	-	-	55.5	R2	0.92
G2A 40R1 - 14	40	40	$\phi 80$	-0.041	$\phi 84$	$\phi 87$	1BT	20	$\phi 14$	$\phi 45$	18	38	-	-	-	55.5	R1	0.92
G2A 40R1 = 20	40	40	$\phi 80$	-0.041	$\phi 84$	$\phi 87$	1BT	20	$\phi 20$	$\phi 45$	18	38	6 × 2.8	-	-	55.5	R1	0.88
G2A 40L2 - 14	20	40	$\phi 80$	-0.168	$\phi 84$	$\phi 87$	1BT	20	$\phi 14$	$\phi 45$	18	38	-	-	-	55.5	L2	0.92
G2A 40L1 - 14	40	40	$\phi 80$	-0.041	$\phi 84$	$\phi 87$	1BT	20	$\phi 14$	$\phi 45$	18	38	-	-	-	55.5	L1	0.92
G2A 50R2 - 14	25	50	$\phi 100$	-0.210	$\phi 104$	$\phi 107$	2BT1T	20	$\phi 14$	$\phi 50$	18	38	-	$\phi 70$	15	65.5	R2	1.32
G2A 50R1 - 14	50	50	$\phi 100$	-0.052	$\phi 104$	$\phi 107$	2BT1T	20	$\phi 14$	$\phi 50$	18	38	-	$\phi 70$	15	65.5	R1	1.32
G2A 50R1 = 25	50	50	$\phi 100$	-0.052	$\phi 104$	$\phi 107$	2BT1T	20	$\phi 25$	$\phi 50$	18	38	8 × 3.3	$\phi 70$	15	65.5	R1	1.23
G2A 50L2 - 14	25	50	$\phi 100$	-0.210	$\phi 104$	$\phi 107$	2BT1T	20	$\phi 14$	$\phi 50$	18	38	-	$\phi 70$	15	65.5	L2	1.32
G2A 50L1 - 14	50	50	$\phi 100$	-0.052	$\phi 104$	$\phi 107$	2BT1T	20	$\phi 14$	$\phi 50$	18	38	-	$\phi 70$	15	65.5	L1	1.32

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread

Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	100	250	500	1,000	1,200	1,500	1,800
G2A 40R2 - 14	53.900	44.002	36.260	29.302	27.636	25.676	24.108
G2A 40R1 - 14	54.978	45.864	38.906	31.850	30.184	28.126	26.558
G2A 40L2 - 14	53.900	44.002	36.260	29.302	27.636	25.676	24.108
G2A 40L1 - 14	54.978	45.864	38.906	31.850	30.184	28.126	26.558
G2A 50R2 - 14	82.222	67.620	56.056	45.472	43.022	39.984	37.632
G2A 50R1 - 14	83.202	69.972	59.780	49.196	46.648	43.610	41.160
G2A 50L2 - 14	82.222	67.620	56.056	45.472	43.022	39.984	37.632
G2A 50L1 - 14	83.202	69.972	59.780	49.196	46.648	43.610	41.160

对蜗杆旋转速度的蜗轮的容许扭矩。

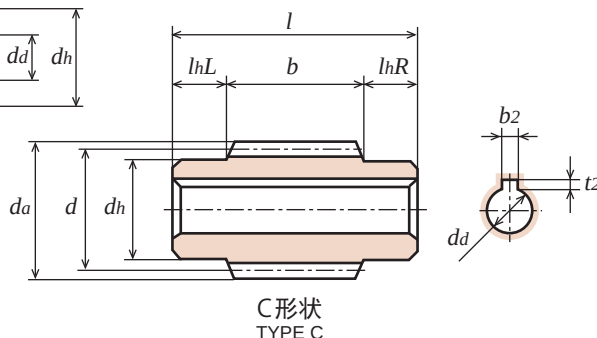
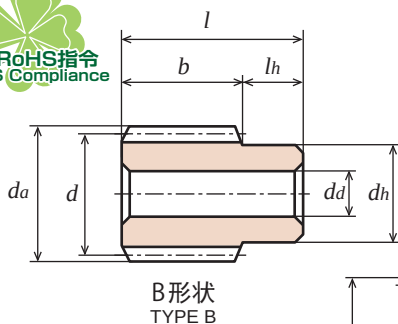
The above references are JGMA standard.

蜗杆和蜗轮 WORMS AND WORM WHEELS

模数
MODULE

2

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) 精密轧制蜗杆
Material : Carbon Steel (ISO C45) Precision Cold Rolled processed Worm

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									lhL	lhR				
W2S R1 — B	R	1	$\phi 31$	$\phi 35$	B	35	$\phi 12$	$\phi 25$	-	15	50	-	3°42'	0.22
W2S R1 — CF	R	1	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	-	3°42'	0.25
W2S R1 = C	R	1	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	5 × 2.3	3°42'	0.24
W2S R2 — B	R	2	$\phi 31$	$\phi 35$	B	35	$\phi 12$	$\phi 25$	-	15	50	-	7°25'	0.22
W2S R2 — CF	R	2	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	-	7°25'	0.25
W2S R2 = C	R	2	$\phi 31$	$\phi 35$	C	41	$\phi 14$	$\phi 25$	12	12	65	5 × 2.3	7°25'	0.24

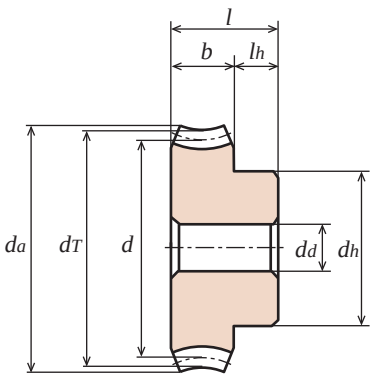
标号[=]表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

关于冷滚轧法加工

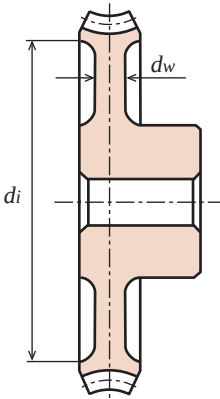
- 1) 利用材料的塑性变形原理，把材料放入一对轧制用的螺纹辊之间。并在两边用强大的油压施压，并同时旋转。
- 2) 只要硬度为HB220以下，任何材料都可。但是不能加工非金属。S45以下，S20C程度刚好。
- 3) 螺距为0.8mm-8mm。
- 4) 可制作的单一蜗杆的大小限度为外径100mm，长度150mm。
- 5) 螺纹牙型可以自行设定，如螺丝，蜗杆，锯齿型等。

Regarding the Precision Cold Rolling processed.

With regard to the precision Cold Rolling process of the worm, in respect of theory of plasticity material, the fabrication of the material of Cold Rolled-worm is produced by rotating with hydraulic pressing between both sides of the rolling tooth machine.
For the material of worm without nonferrous metal that can use HB220 or below, S20C to S45C are the most suitable process of the Cold Rolling.
Thread pitch 0.8 to 8.0mm
Our capacity of maximum dimension and length: $\phi 100 \times 150$ mm
It may be possible that this process can make to design of the screw, worm and serration to the free type of thread

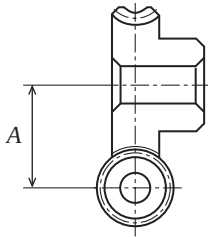


1B形状
TYPE 1B



2B形状 (3B形状带有冲孔)
TYPE 2B (Type 3B with Piercing hole)

订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：灰铸铁 (JIS G 5501) 表中的 X 栏尺寸表示径向变位系数
Material : Grey Iron casting (JIS FC200) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions : mm

Table with 17 columns: Product Model, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Dimension of Rim, Thickness of Web, Center Distance, Hand and Thread for Worm, Weight. Rows include models G2C 20-R2, G2C 20-R1, G2C 25-R1, G2C 30-R2, G2C 30-R1, G2C 40-R1, G2C 50-R1, G2C 60-R1, G2C 80-R1, G2C 100-R1.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

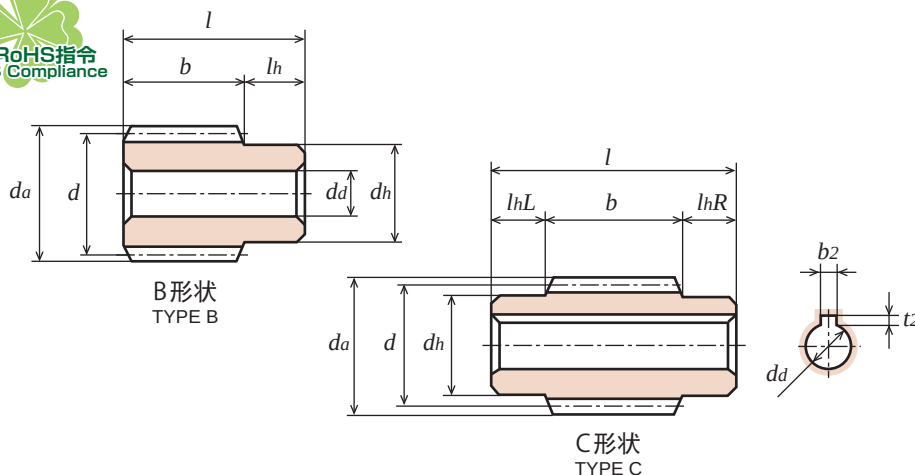
蜗杆的容许转矩能力和齿面强度表
下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Model, and 7 columns for rotational speeds (10, 20, 50, 100, 150, 200, 300 min⁻¹). Rows include models G2C 20-R2, G2C 20-R1, G2C 25-R1, G2C 30-R2, G2C 30-R1, G2C 40-R1, G2C 50-R1, G2C 60-R1, G2C 80-R1, G2C 100-R1.

对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.



材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

単位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	螺 旋 方 向 Direction of Thread	蜗 杆 头 数 Number of Thread	分度圆直 径 Reference Diameter	齿顶圆直 径 Tip Diameter	形 状 Type	齿 宽 Face Width	孔 径 Bore Diameter	轮 毂 外 径 Hub Diameter	轮 毂 长 度 Hub Projection		全 长 Overall Length	键 槽 Key Way	导程角 Lead Angle	重 量 Weight
									l_L	l_R				
W2.5S R1 — B	R	1	$\phi 37$	$\phi 42$	B	42	$\phi 14$	$\phi 30$	-	18	60	-	3°52'	0.37
W2.5S R1 — CF	R	1	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	-	3°52'	0.42
W2.5S R1 = C	R	1	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	5 × 2.3	3°52'	0.41
W2.5S R2 — B	R	2	$\phi 37$	$\phi 42$	B	42	$\phi 14$	$\phi 30$	-	18	60	-	7°46'	0.37
W2.5S R2 — CF	R	2	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	-	7°46'	0.42
W2.5S R2 = C	R	2	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	5 × 2.3	7°46'	0.41
W2.5S L1 — B	L	1	$\phi 37$	$\phi 42$	B	42	$\phi 14$	$\phi 30$	-	18	60	-	3°52'	0.37
W2.5S L1 = C	L	1	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	5 × 2.3	3°52'	0.41

标号[=]表示齿轮带有键槽/带有键。 [=]: Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

如何辨认蜗轮和蜗杆的(左,右)旋转方向

How to identify the left and right hand threads for worm and worm wheel.

右旋蜗轮
Right hand worm wheel



左旋蜗轮
Left hand worm wheel



右旋蜗杆
Right hand worm



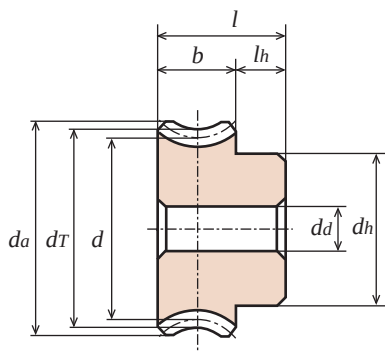
左旋蜗杆
Left hand worm



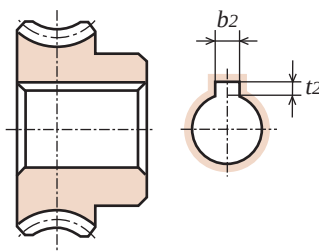


订购时请写入明确完整的产品型号。

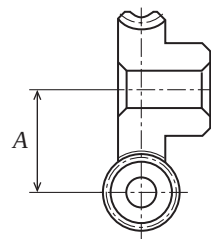
Please refer to the catalogue reference while ordering.



1B形状
TYPE 1B



1B形状
TYPE 1B



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数

Material: Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio u	齿数 Number of Teeth z	节圆直径 Pitch Diameter d	变位系数 x	蜗轮喉圆直径 Throat Diameter dT	齿顶圆直径 Tip Diameter da	形状 Type	齿宽 Face Width b	孔径 Bore Diameter da(H8)	轮毅外径 Hub Diameter dh	轮毅长度 Hub Projection lh	全长 Overall Length l	键槽 Key Way b2 × t2	中心距 Center Distance A	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight W(kg)
G2.5A 20R2 - 12	10	20	φ50	-0.092	φ55	φ58.8	1B	24	φ12	φ40	16	40	-	43.5	R2	0.50
G2.5A 20R2 = 18	10	20	φ50	-0.092	φ55	φ58.8	1B	24	φ18	φ40	16	40	6 × 2.8	43.5	R2	0.46
G2.5A 20R1 - 12	20	20	φ50	-0.022	φ55	φ58.8	1B	24	φ12	φ40	16	40	-	43.5	R1	0.50
G2.5A 20R1 = 18	20	20	φ50	-0.022	φ55	φ58.8	1B	24	φ18	φ40	16	40	6 × 2.8	43.5	R1	0.46
G2.5A 20L1 - 12	20	20	φ50	-0.022	φ55	φ58.8	1B	24	φ12	φ40	16	40	-	43.5	L1	0.50
G2.5A 30R2 - 14	15	30	φ75	-0.138	φ80	φ83.8	1B	24	φ14	φ50	16	40	-	56	R2	1.02
G2.5A 30R2 = 20	15	30	φ75	-0.138	φ80	φ83.8	1B	24	φ20	φ50	16	40	6 × 2.8	56	R2	0.98
G2.5A 30R1 - 14	30	30	φ75	-0.034	φ80	φ83.8	1B	24	φ14	φ50	16	40	-	56	R1	1.02
G2.5A 30R1 = 20	30	30	φ75	-0.034	φ80	φ83.8	1B	24	φ20	φ50	16	40	6 × 2.8	56	R1	0.98
G2.5A 30L1 - 14	30	30	φ75	-0.034	φ80	φ83.8	1B	24	φ14	φ50	16	40	-	56	L1	1.02

标号[=]表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread

Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	100	250	500	1,000	1,200	1,500	1,800
G2.5A 20R2 - 12	26.166	20.580	16.758	13.328	12.446	11.368	10.486
G2.5A 20R1 - 12	27.048	22.050	18.130	14.700	13.818	12.838	11.956
G2.5A 20L1 - 12	27.048	22.050	18.130	14.700	13.818	12.838	11.956
G2.5A 30R2 - 14	56.448	45.276	37.142	29.792	28.028	25.970	24.010
G2.5A 30R1 - 14	58.016	47.922	39.984	32.536	30.772	28.616	26.656
G2.5A 30L1 - 14	58.016	47.922	39.984	32.536	30.772	28.616	26.656

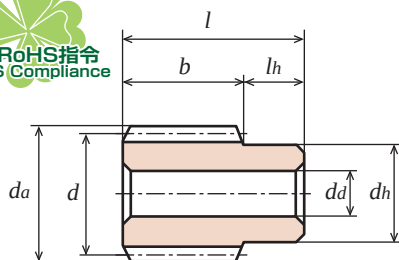
对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.

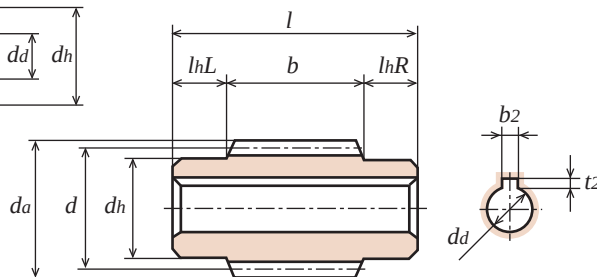
蜗杆和蜗轮 WORMS AND WORM WHEELS

模数
MODULE

2.5 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



B形状
TYPE B



C形状
TYPE C

材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									lhL	lhR				
W2.5S R1 - B	R	1	$\phi 37$	$\phi 42$	B	42	$\phi 14$	$\phi 30$	-	18	60	-	3°52'	0.37
W2.5S R1 - CF	R	1	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	-	3°52'	0.42
W2.5S R1 = C	R	1	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	5 × 2.3	3°52'	0.41
W2.5S R2 - B	R	2	$\phi 37$	$\phi 42$	B	42	$\phi 14$	$\phi 30$	-	18	60	-	7°46'	0.37
W2.5S R2 - CF	R	2	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	-	7°46'	0.42
W2.5S R2 = C	R	2	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	5 × 2.3	7°46'	0.41
W2.5S L1 - B	L	1	$\phi 37$	$\phi 42$	B	42	$\phi 14$	$\phi 30$	-	18	60	-	3°52'	0.37
W2.5S L1 = C	L	1	$\phi 37$	$\phi 42$	C	47	$\phi 16$	$\phi 30$	14	14	75	5 × 2.3	3°52'	0.41

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

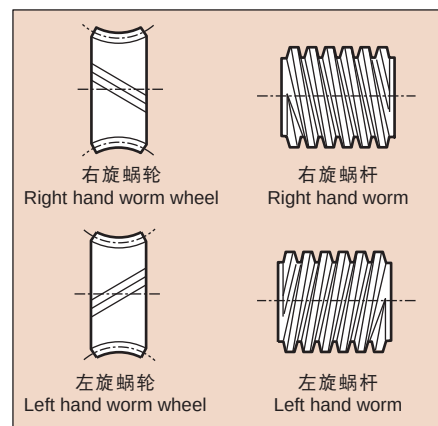
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread

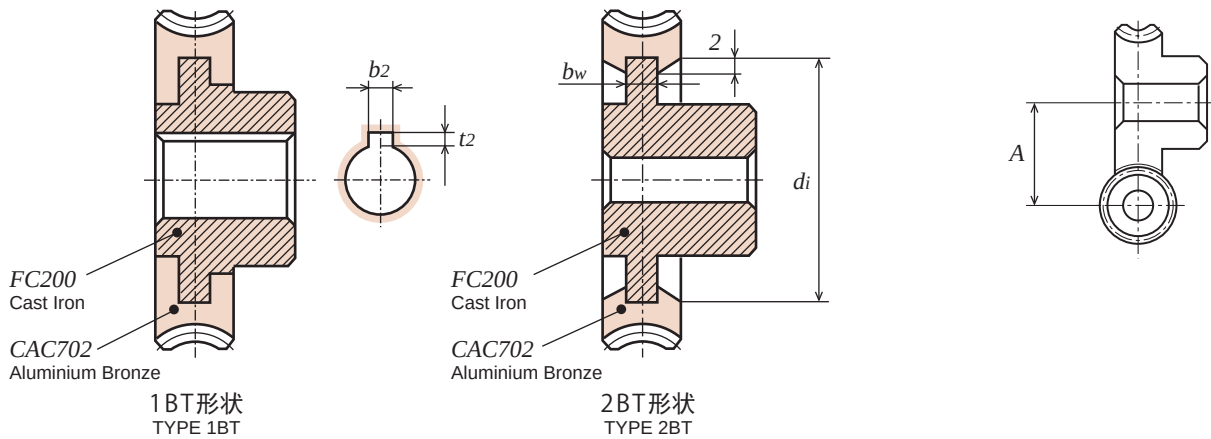
Worm Wheel: Right hand with single thread.

如何辨认蜗轮和蜗杆的 (左, 右) 旋转方向
How to identify the left and right hand threads for worm and worm wheel.





订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数
Material : Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.
单位：mm
Dimensions : mm

Table with 19 columns: Product Model, Gear Ratio, Number of Teeth, Pitch Diameter, X, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Key Way, Dimension of Rim, Thickness of Web, Center Distance, Hand and Thread for Worm, Weight. Rows include models like G2.5A 40R2-15, G2.5A 40R1-15, etc.

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

蜗杆的容许转矩能力和齿面强度表
下图表示的齿面强度仅限于平行轴的时候
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Model, and 7 columns for rotational speed (100, 250, 500, 1,000, 1,200, 1,500, 1,800 rpm). Rows include models like G2.5A 40R2-15, G2.5A 40R1-15, etc.

The above references are JGMA standard.

对蜗杆旋转速度的蜗轮的容许扭矩。

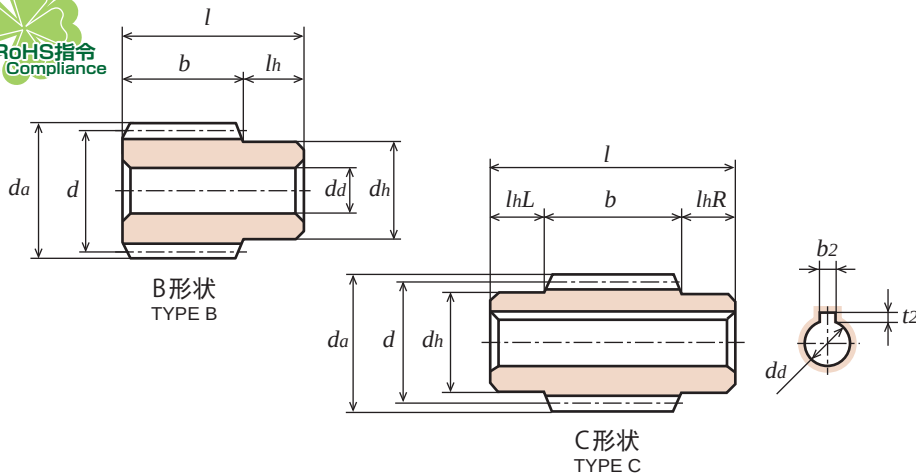
蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

3

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									lhL	lhR				
W3S R1 — B	R	1	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	3°55'	0.62
W3S R1 — CF	R	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	-	3°55'	0.67
W3S R1 = C	R	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	3°55'	0.66
W3S R2 — B	R	2	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	7°50'	0.62
W3S R2 — CF	R	2	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	-	7°50'	0.67
W3S R2 = C	R	2	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	7°50'	0.66
W3S L1 — B	L	1	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	3°55'	0.62
W3S L1 = C	L	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	3°55'	0.66

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

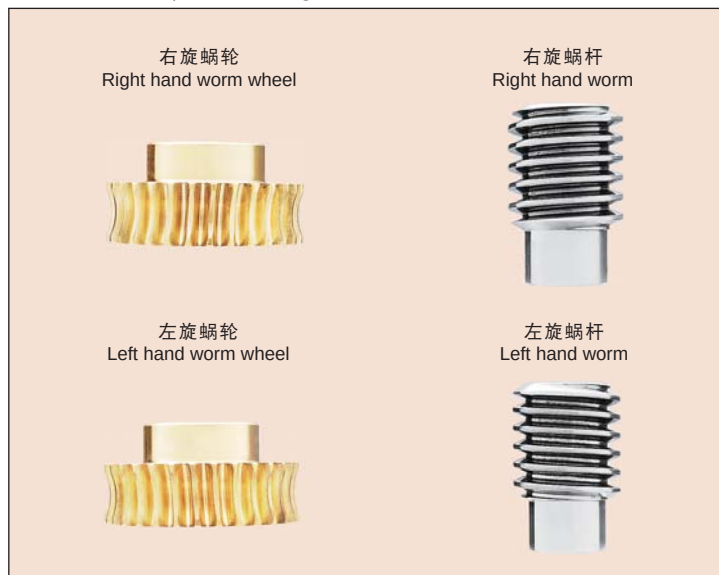
使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。

(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

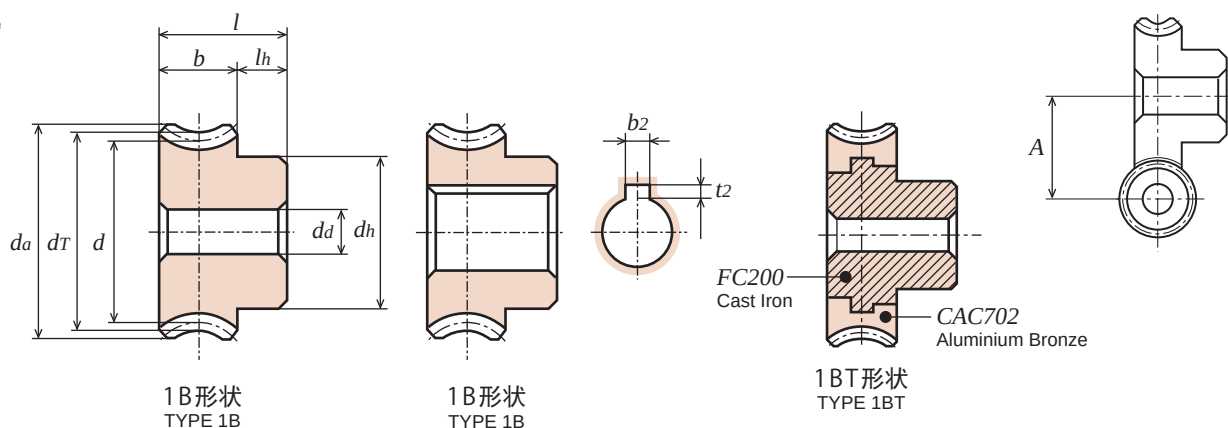
如何辨认蜗轮和蜗杆的 (左, 右) 旋转方向
How to identify the left and right hand threads for worm and worm wheel.





订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数

Material: Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Gear Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	节圆直径 Pitch Diameter <i>d</i>	变位系数 X	蜗轮喉圆直径 Throat Diameter <i>dT</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮毅外径 Hub Diameter <i>dh</i>	轮毅长度 Hub Projection <i>lh</i>	全长 Overall Length <i>l</i>	键槽 Key Way <i>b2 × t2</i>	中心距 Center Distance <i>A</i>	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight <i>W(kg)</i>
G3A 20R2 — 16	10	20	φ60	-0.094	φ66	φ 70.5	1B	28	φ16	φ48	17	45	-	52	R2	0.80
G3A 20R2 = 20	10	20	φ60	-0.094	φ66	φ 70.5	1B	28	φ20	φ48	17	45	6 × 2.8	52	R2	0.77
G3A 20R1 — 16	20	20	φ60	-0.023	φ66	φ 70.5	1B	28	φ16	φ48	17	45	-	52	R1	0.80
G3A 20R1 = 20	20	20	φ60	-0.023	φ66	φ 70.5	1B	28	φ20	φ48	17	45	6 × 2.8	52	R1	0.77
G3A 20L1 — 16	20	20	φ60	-0.023	φ66	φ 70.5	1B	28	φ16	φ48	17	45	-	52	L1	0.80
G3A 25R2 — 16	12.5	25	φ75	-0.117	φ81	φ 85.5	1B	28	φ16	φ55	17	45	-	59.5	R2	1.22
G3A 25R1 — 16	25	25	φ75	-0.029	φ81	φ 85.5	1B	28	φ16	φ55	17	45	-	59.5	R1	1.22
G3A 25L1 — 16	25	25	φ75	-0.029	φ81	φ 85.5	1B	28	φ16	φ55	17	45	-	59.5	L1	1.22
G3A 30R2 — 16	15	30	φ90	-0.141	φ96	φ 100.5	1BT	28	φ16	φ55	17	45	-	67	R2	1.59
G3A 30R2 = 25	15	30	φ90	-0.141	φ96	φ 100.5	1BT	28	φ25	φ55	17	45	8 × 3.3	67	R2	1.51
G3A 30R1 — 16	30	30	φ90	-0.034	φ96	φ 100.5	1BT	28	φ16	φ55	17	45	-	67	R1	1.59
G3A 30R1 = 25	30	30	φ90	-0.034	φ96	φ 100.5	1BT	28	φ25	φ55	17	45	8 × 3.3	67	R1	1.51
G3A 30L1 — 16	30	30	φ90	-0.034	φ96	φ 100.5	1BT	28	φ16	φ55	17	45	-	67	L1	1.59

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	100	250	500	1,000	1,200	1,500	1,800
G3A 20R2 — 16	42.532	33.418	26.950	21.560	20.188	18.228	16.758
G3A 20R1 — 16	44.100	35.868	29.302	23.716	22.344	20.580	19.012
G3A 20L1 — 16	44.100	35.868	29.302	23.716	22.344	20.580	19.012
G3A 25R2 — 16	64.974	51.548	41.846	33.614	31.556	28.714	26.460
G3A 25R1 — 16	67.326	55.076	45.276	36.848	34.790	31.948	29.694
G3A 25L1 — 16	67.326	55.076	45.276	36.848	34.790	31.948	29.694
G3A 30R2 — 16	91.826	73.598	59.878	48.314	45.374	41.552	38.318
G3A 30R1 — 16	94.472	77.812	64.582	52.724	49.784	45.766	42.532
G3A 30L1 — 16	94.472	77.812	64.582	52.724	49.784	45.766	42.532

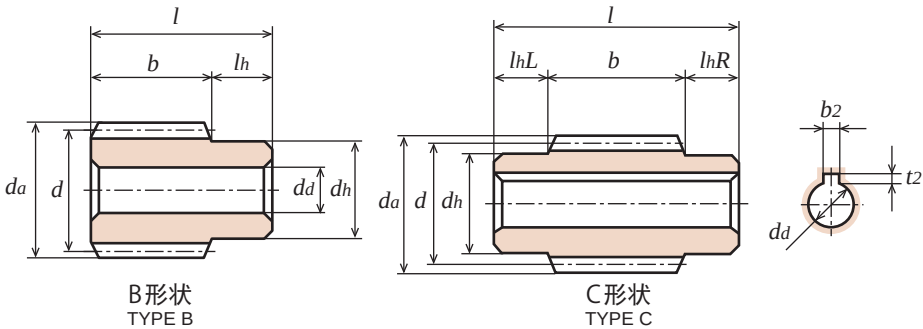
对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.

蜗杆和蜗轮

WORMS AND WORM WHEELS

模数 MODULE 3 压力角 20° (普通齿) 20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051) Material : Carbon Steel (ISO C45) 单位 : mm Dimensions : mm

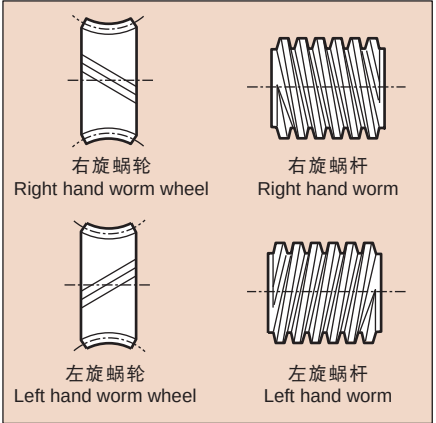
产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									l_{hL}	l_{hR}				
W3S R1 — B	R	1	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	3°55'	0.62
W3S R1 — CF	R	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	-	3°55'	0.67
W3S R1 = C	R	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	3°55'	0.66
W3S R2 — B	R	2	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	7°50'	0.62
W3S R2 — CF	R	2	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	-	7°50'	0.67
W3S R2 = C	R	2	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	7°50'	0.66
W3S L1 — B	L	1	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	3°55'	0.62
W3S L1 = C	L	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	3°55'	0.66

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)
Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

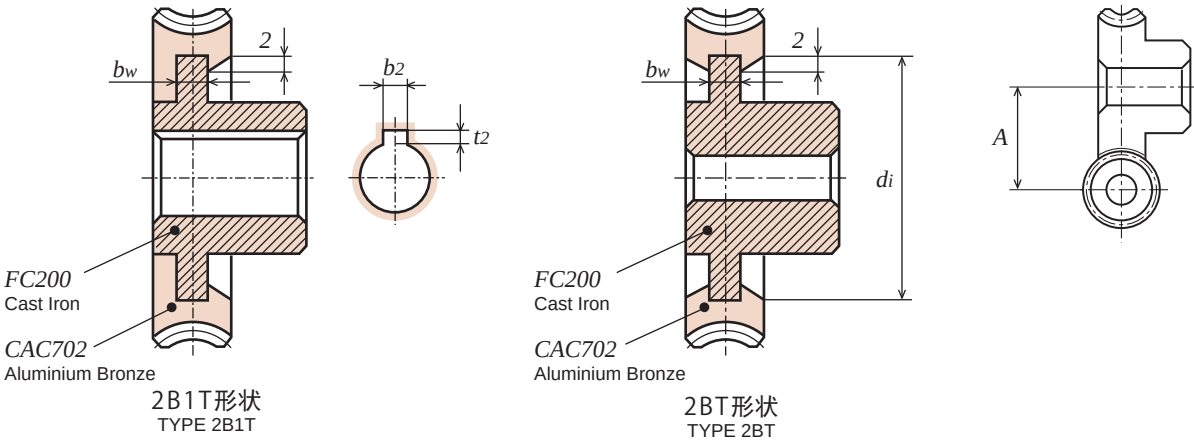
Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

如何辨认蜗轮和蜗杆的(左,右)旋转方向
How to identify the left and right hand threads for worm and worm wheel.





订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数
Material : Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.
单位：mm
Dimensions : mm

Table with 19 columns: Product Model, Gear Ratio, Number of Teeth, Pitch Diameter, Coefficient of Rack Shift, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Key Way, Dimension of Rim, Thickness of Web, Center Distance, Hand and Thread for Worm, Weight.

标号 [=] 表示齿轮带有键槽/带有键。 [=] : Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表
下图表示的齿面强度仅限于平行轴的时候
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Model, and 7 columns for allowable torque at different speeds (100, 250, 500, 1,000, 1,200, 1,500, 1,800 rpm).

对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.

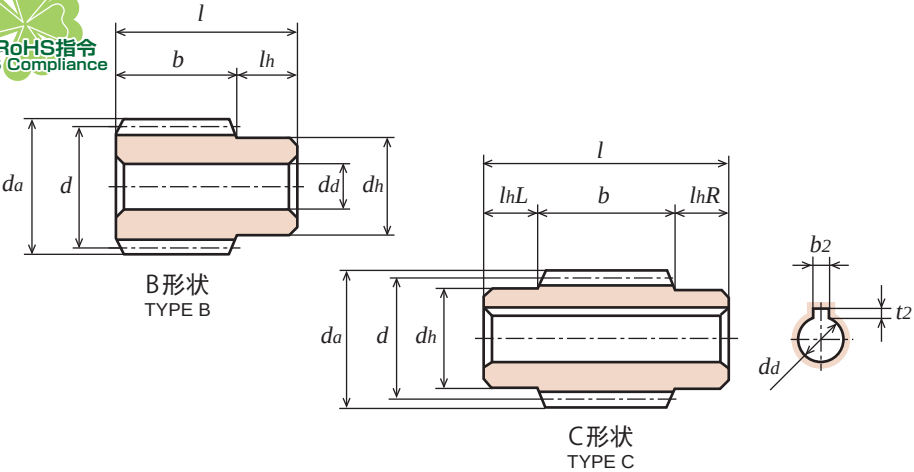
蜗杆和蜗轮

WORMS AND WORM WHEELS

模数
MODULE

3

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

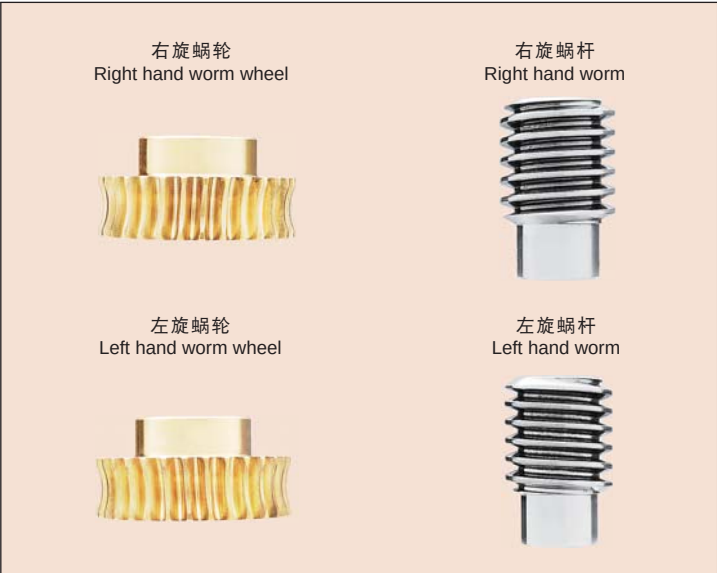
产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection		全长 Overall Length l	键槽 Key Way $b_2 \times t_2$	导程角 Lead Angle γ	重量 Weight $W(kg)$
									l_{hL}	l_{hR}				
W3S R1 — B	R	1	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	3°55'	0.62
W3S R1 — CF	R	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	-	3°55'	0.67
W3S R1 = C	R	1	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	3°55'	0.66
W3S R2 — B	R	2	$\phi 44$	$\phi 50$	B	50	$\phi 16$	$\phi 36$	-	20	70	-	7°50'	0.62
W3S R2 — CF	R	2	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	-	7°50'	0.67
W3S R2 = C	R	2	$\phi 44$	$\phi 50$	C	55	$\phi 20$	$\phi 36$	15	15	85	6 × 2.8	7°50'	0.66

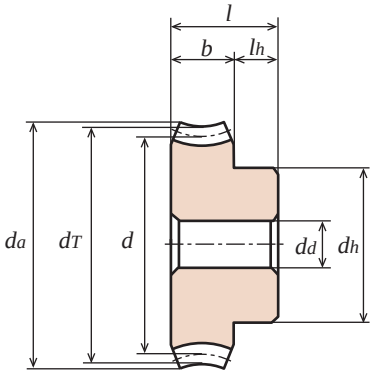
标号[=]表示齿轮带有键槽/带有键。
[=] : Gear with key way / with key.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)
Engagement of the same number of thread (starts) and hand of thread are important to Worm and Worm Wheel.

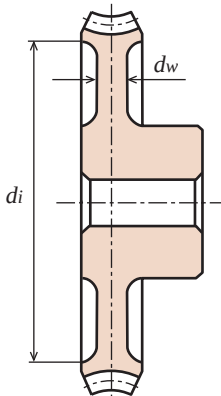
Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

如何辨认蜗轮和蜗杆的 (左, 右) 旋转方向
How to identify the left and right hand threads for worm and worm wheel.



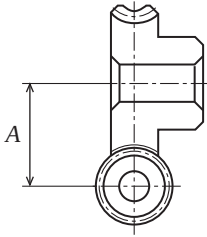


1B形状
TYPE 1B



2B形状
TYPE 2B

订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.



材质：灰铸铁 (JIS G 5501) 表中的 X 栏尺寸表示径向变位系数
Material: Grey Iron casting (JIS FC200) Dimension X: Coefficient of Rack shift.

单位：mm
Dimensions: mm

Table with 17 columns: Product Model, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Dimension of Rim, Thickness of Web, Center Distance, Hand and Thread for Worm, Weight.

使用蜗杆和蜗轮时，一定要将旋转方向和头数相同的蜗杆和蜗轮进行组合来使用。
(例：如果蜗杆是右旋1头。那么要给它装配右旋，对应1头蜗杆的蜗轮。)

Worm: Right hand with single thread
Worm Wheel: Right hand with single thread.

蜗杆的容许转矩能力和齿面强度表
下图表示的齿面强度仅限于平行轴的时候
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Model, and 7 columns for rotational speeds (10, 20, 50, 100, 150, 200, 300 rpm).

对蜗杆旋转速度的蜗轮的容许扭矩。

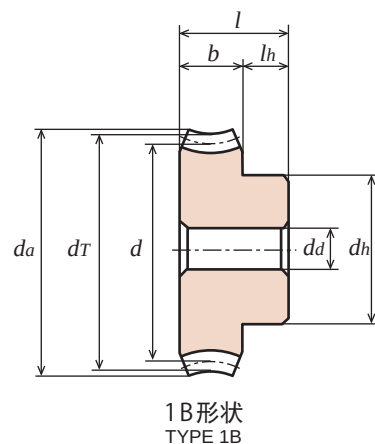
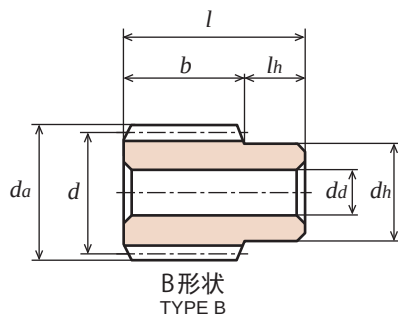
The above references are JGMA standard.

蜗杆和蜗轮 WORMS AND WORM WHEELS

模数
MODULE

4

压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮轂外径 Hub Diameter d_h	轮轂长度 Hub Projection l_h	全长 Overall Length l	导程角 Lead Angle γ	重量 Weight $W(kg)$
W4S R1 — B	R	1	$\phi 62$	$\phi 70$	B	70	$\phi 22$	$\phi 50$	25	95	3°42'	1.69
W4S R2 — B	R	2	$\phi 62$	$\phi 70$	B	70	$\phi 22$	$\phi 50$	25	95	7°25'	1.69

材质 : 铝青铜铸件 下表中的 X 栏尺寸表示径向变位系数

Material : Aluminum Bronze Casting (JIS CAC702) Dimension X: Coefficient of Rack shift.

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Gear Ratio u	齿数 Number of Teeth z	节圆直径 Pitch Diameter d	变位系数 x	蜗轮喉圆直径 Throat Diameter d_T	齿顶圆直径 Tip Diameter d_a	形状 Type	齿宽 Face Width b	孔径 Bore Diameter $d_a(H8)$	轮轂外径 Hub Diameter d_h	轮轂长度 Hub Projection l_h	全长 Overall Length l	中心距 Center Distance A	蜗杆的螺旋方向和蜗杆头数 Hand and Thread for Worm	重量 Weight $W(kg)$
G4A 20 — R2	10	20	$\phi 80$	-0.084	$\phi 88$	$\phi 93$	1B	36	$\phi 22$	$\phi 64$	25	61	71	R2	1.81
G4A 20 — R1	20	20	$\phi 80$	-0.020	$\phi 88$	$\phi 93$	1B	36	$\phi 22$	$\phi 64$	25	61	71	R1	1.81

蜗杆的容许转矩能力和齿面强度表

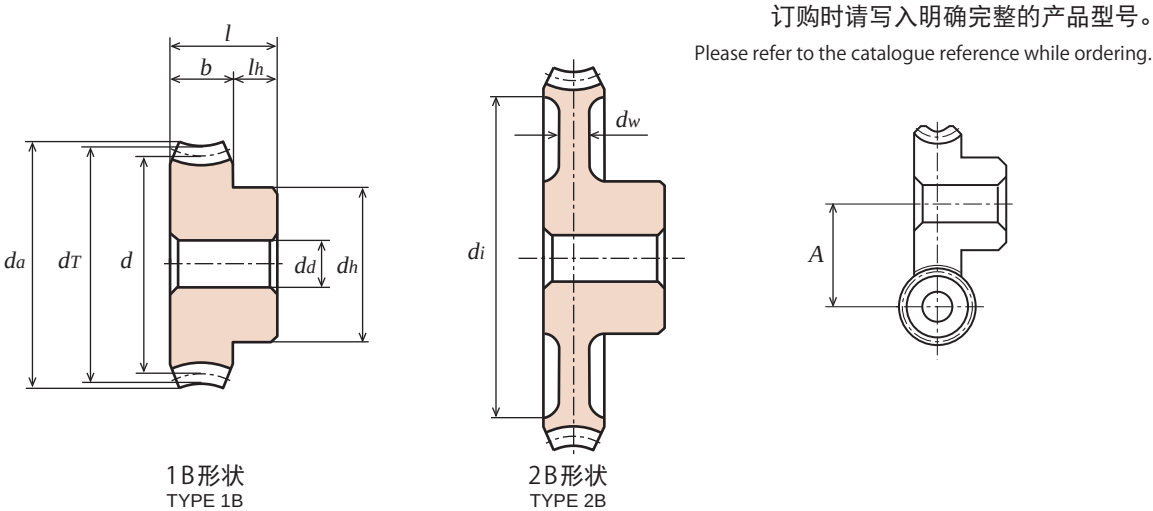
下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)						
	100	250	500	1,000	1,200	1,500	1,800
G4A 20 — R2	72.226	56.350	45.472	35.966	33.124	29.988	27.244
G4A 20 — R1	74.774	60.466	49.392	39.592	36.750	33.712	31.066

对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.



材质：灰铸铁 (JIS G 5501) 表中的 X 栏尺寸表示径向变位系数
Material : Grey Iron casting (JIS FC200) Dimension X: Coefficient of Rack shift. 单位：mm
Dimensions : mm

Table with 18 columns: Product Number, Gear Ratio, Number of Teeth, Pitch Diameter, Addendum Coefficient, Throat Diameter, Tip Diameter, Type, Face Width, Bore Diameter, Hub Diameter, Hub Projection, Overall Length, Dimension of Rim, Thickness of Web, Center Distance, Hand and Thread for Worm, Weight.

蜗杆的容许转矩能力和齿面强度表
下图表示的齿面强度仅限于平行轴的时候
Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

Table with 8 columns: Product Number, and 7 columns for Rotating speed of worm (10, 20, 50, 100, 150, 200, 300 rpm).

对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.

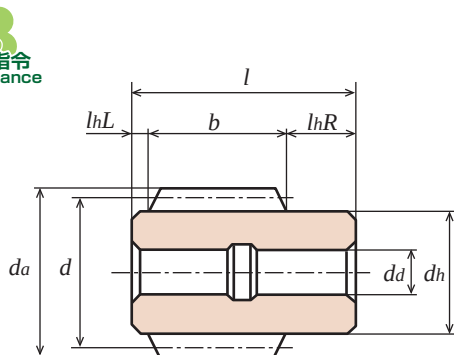
目录表
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GEAR BOXES
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研磨直齿轮
GROUND SPUR GEARS
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SPUR GEARS
内齿轮
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WORMS AND WORM WHEELS
锥齿条
BEVEL GEARS
技术资料
REFERENCE DATA

蜗杆和蜗轮

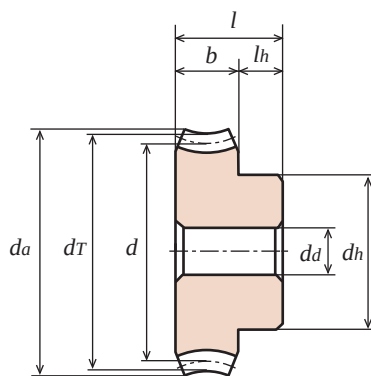
WORMS AND WORM WHEELS

模数
MODULE

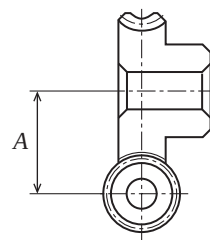
5 压力角 20° (普通齿)
20° PRESSURE ANGLE FULL DEPTH TOOTH



B 形状
TYPE B



1B 形状
TYPE 1B



材料 : C45 碳钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	螺旋方向 Direction of Thread	蜗杆头数 Number of Thread <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	形状 Type	齿宽 Face Width <i>b</i>	孔径 Bore Diameter <i>da(H8)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection		全长 Overall Length <i>l</i>	导程角 Lead Angle <i>γ</i>	重量 Weight <i>W(kg)</i>
									<i>lhL</i>	<i>lhR</i>			
W5S R1 — B	R	1	φ72	φ82	B	90	φ25	φ58	5	30	125	3°58'	3.00
W5S R2 — B	R	2	φ72	φ82	B	90	φ25	φ58	5	30	125	7°59'	3.00

材质 : 灰铸铁 (JIS G 5501) 表中的 X 栏尺寸表示径向变位系数
Material : Grey Iron casting (JIS FC200) Dimension X: Coefficient of Rack shift.

单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	齿数比	齿 数	节 圆 直 径	变 系 数	蜗轮喉 圆直径	齿顶圆 直 径	形 状	齿 宽	孔 径	轮 毂 外 径	轮 毂 长 度	全 长	轮 毂 内 经	腹 板 厚 度	中心距	蜗杆的螺旋方向 和蜗杆头数	重 量
	Gear Ratio	Number of Teeth	Pitch Diameter		Throat Diameter	Tip Diameter	Type	Face Width	Bore Diameter	Hub Diameter	Hub Projection	Overall Length	Dimension of Rim	Thickness of Web	Center Distance	Hand and Thread for Worm	Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>x</i>	<i>d</i> T	<i>d</i> _a		<i>b</i>	<i>d</i> a(H8)	<i>d</i> _h	<i>l</i> _h	<i>l</i>	<i>d</i> _i	<i>d</i> _w	<i>A</i>		<i>W</i> (kg)
G5C 20 — R2	10	20	φ100	-0.097	φ110	φ118	1B	46	φ25	φ80	26	72	-	-	86	R2	3.20
G5C 20 — R1	20	20	φ100	-0.024	φ110	φ118	1B	46	φ25	φ80	26	72	-	-	86	R1	3.20

蜗杆的容许转矩能力和齿面强度表

下图表示的齿面强度仅限于平行轴的时候

Allowable Transfer Capability Torque of Worm Wheel apply to the rotating speed of Worm only (N·m) as surface durability.

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (Rotating speed of worm)					
	10	20	50	100	150	200
G5C 20 — R2	247.84	227.26	195.31	168.26	151.41	139.74
G5C 20 — R1	249.90	229.51	199.13	174.24	159.25	149.05

对蜗杆旋转速度的蜗轮的容许扭矩。

The above references are JGMA standard.



等径锥齿轮 / 锥齿轮

Miter Gears and Bevel Gears

产品型号的解读方法 Reference of Catalogue Number

等径锥齿轮 / 锥齿轮

M 1 D 25 * 23 06
 M 1 S 20 = 14 08
 M 1.5 S 20 # 28 10 H
 M 1 S 20 R + 21 08
 B 2 S 18 L - 10

齿轮的种类 Kind of Gear	模数 Module	材料 Materials	齿数 Number of Teeth	齿向形状 Shape of Teeth	内径处理 Bores Processed	中心距 Locating Distance	孔径 Bore Diameter	齿部热处理 Heat Treatment
等径锥齿轮 (Miter Gear) 锥齿轮 (Bevel Gear)	m : 0.5 0.8 1.0 1.25 1.5 2.0 2.5 3.0 4.0 5.0 2.25 2.75 3.5 3.75 4.5 6.0 7.0 表示模数大小。当 模数1以下时，所标 数据是实际模数乘 于100。 例：模数0.5时为50。 模数0.8时为80。 Expressed the unit of module's size. Module 0.5 and 0.8 as multiple of 100. Example. module 0.5 → 50 module 0.8 → 80	DM : 聚缩醛树脂 (注射模塑成形产品) Injection molded gear with Poly Acetal D : 聚缩醛树脂 (加工成形产品) Machined gear with Poly Acetal SU : 不锈钢 Stainless Steel B : 黄铜 Brass S : 碳素钢 Carbon Steel DB : 聚缩醛树脂 (镶有黄铜衬套) Poly Acetal with Brass Bush	z : 19 20 23 25 30 u Ratio 2 (z : 20 40) (z : 18 36) u Ratio 3 (z : 15 45)	无 : 直齿 Blank : Straight. R : 右螺旋齿 Right hand spiral. L : 左螺旋齿 Left hand spiral.	标号[-]表示齿轮 无螺纹孔/无固定螺 钉 Gear without key way / without threaded hole. 标号[+]表示齿轮 带有螺纹孔/带有固 定螺钉/无固定螺钉 Gear with threaded hole / with set screw. with out set screw. (Please refer the detail) 标号[*]表示齿轮 带有两个螺纹孔/带 有固定螺钉 Gear with two threaded holes / with two set screws. 标号[=]表示齿轮 带有键槽/带有键 Gear with key way / with key. 标号[#]表示齿轮 带有键槽/带有键， 带有螺纹孔/带有固 定螺钉 Gear with key way and threaded hole / with key and screw.	单位 : mm Dimensions : Millimeter	单位 : mm Dimensions : Millimeter	齿部高频淬火 Gear tooth surface completed with induction harden

锥齿轮的使用上的注意事项

Usage precaution of bevel Gears.

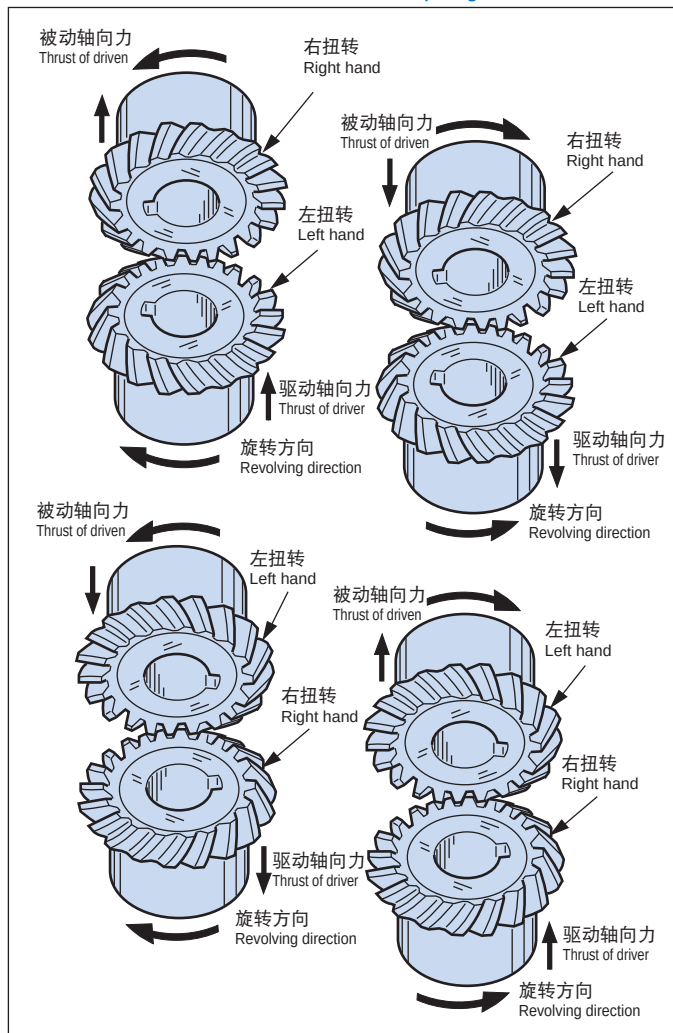
- 1) 为了得到理想的啮合，组装锥齿轮时，齿轮轴的装配角度要准确，齿隙也必须恰当。
- 2) 锥齿轮要特别注意其装配方法。通常，锥齿轮的轴承是悬臂式布置。轴受到负荷后容易出现挠曲的现象。所以齿面接触会出现一端接触的不良反应。
所以齿轮轴和轴承要做的足够坚固，并尽量接近齿轮。组装的时候要使锥齿轮可进行轴向调整，然后在齿轮的轮毂端面放入齿轮垫片，这样就可以比较容易的调整轮齿接触。
- 3) 用机器切割的普通直齿锥齿轮的分度圆的旋转速度是328m/分钟的程度以内。如果超过这个旋转速度时，推崇使用螺旋锥齿轮。格里森 (Gleason) 公司推崇的是，分度圆旋转速度在5.5m/秒以上或旋转数为1000回/分的时候用螺旋锥齿轮，旋转速度在40m/秒以上的时候使用齿面研磨的螺旋锥齿轮。
- 4) 螺旋锥齿轮相比普通的直齿锥齿轮在啮合时同时啮合的齿数较多。并始终有复数个齿在分度线上接触。所以旋转的传达会比较流畅。
另外，齿和齿的啮合线，相对于节锥母线有较多的齿数在啮合，所以负荷不会在一个齿上集中，非常的结实，所以可以设计的更小，并有可用于高速旋转的优点。
作为缺点，因为齿线弯曲，所以容易发生轴向力。所以要设计足够能够承担轴向力的轴承。

- 1) To obtain ideal engagement of the bevel gears, the correct shaft angle and proper backlash should be obtained to assemble in an assembly.
- 2) Important note that when designing of Bevel Gears, the gear shaft and gearbox must be strong enough to support the Bevel Gear in order to prevent any deflection. Bearing should be

designed as close as possible to the Bevel Gear in order to prevent the overhang load.

- 3) We recommend that Straight Bevel Gears are suitable for peripheral (pitch circle) of velocities less than 328m/min and Spiral Bevel Gears are suitable for peripheral (pitch circle) of velocities more than 328m/min. The above mention statement does not apply to Injection Molded type of Bevel Gears.
Gleason Company in USA recommend that Machined Spiral Bevel Gears are suitable for peripheral (pitch circle) of velocities more than 5.5m/s or above 1,000 revolution per minute, and Ground Spiral Bevel Gears are suitable for peripheral (pitch circle) of velocities more than 40m/s.
- 4) Spiral Bevel Gears are able to run smoothly in high speed environment and providing a quiet operation, due to fewer number of teeth contacting the matched gear and wide working number of teeth on the pitch cone comparing to Straight Bevel Gear.
Spiral Bevel Gear has overlapping engagement in pitch cone generatrix and the load does not concentrate on one (1) tooth.
The only disadvantage of a Spiral Bevel Gear is the axial thrust load that was generated due to the Helix design of the teeth trace. Therefore proper design of the bearing location and firm support are needed to be as close to the Spiral Bevel Gear as possible in order to minimize this axial thrust load.

作用于螺旋锥齿轮的轴向力
Generate a thrust load on Spiral gear.



如果所使用的相配套齿轮非我司生产产品时，容易成为发生故障的原因。

如果把配套齿轮设计成为KG公司的齿轮以外的规格时，请与我司联系洽谈。

To prevent the trouble of gear's engagement, please do not match the gears with other gear makers. Purchase of KG-STOCK GEARS in a set will result in better and smoother engagement.

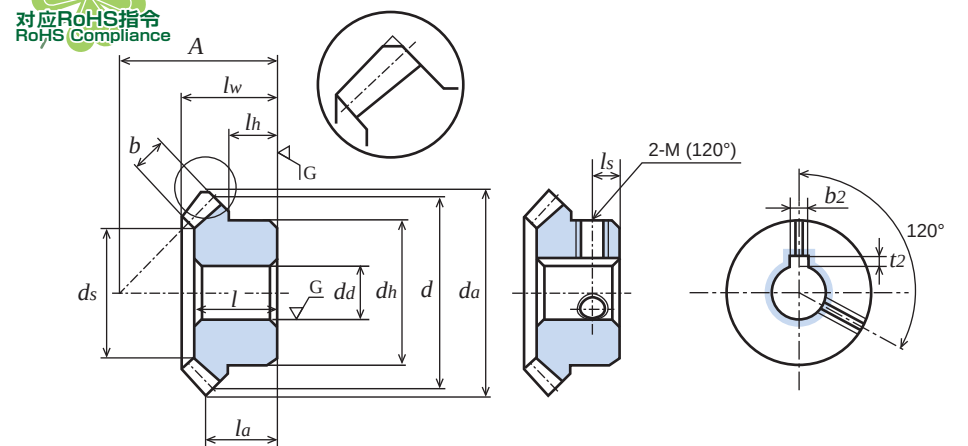
Please do not hesitate to contact us for advice even though if your design and dimensions does not belong to KG-STOCK GEARS.

精密切割螺旋等径锥齿轮
FINE CUT SPIRAL MITER GEARS

模数 MODULE 1.5 压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

齿部高频淬火 HRC47 ~ 51
JIS B 1704 2级
System of accuracy : JIS B1704 Class 2

对应RoHS指令
RoHS Compliance
New 已进行规格改进，无需进行紧固加工。
Additional machining on tightening is not necessary.



材料：铬钼钢 (ISO 34CrMo4, 42CrMo4)
Material : Chromium Molybdenum Steel (ISO 34CrMo4, 42CrMo4)
单位：mm
Dimensions : mm

产品型号 Catalogue Number	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter da	装配距离 Locating Distance A	孔径 Bore Diameter da(H7)	轮毂外径 Hub Diameter dh	轮毂长度 Hub Projection lh	穴长度 Bore Length l	全长 Overall Length lw	Tip Distance la	齿宽 Face Width b	键槽 Key Way b2 × t2	螺纹孔 Set Screw		顶锥角 Face Angle δa	重量 Weight W(g)
													M	ls		
MF1.5S 19R - 2810H	19	φ28.5	(φ30.34) φ28.5	28	φ10	φ25	12	16	18.19	14.67	5.5	-	-	-	50°23'	φ17.4 54.7
MF1.5S 19L - 2810H	19	φ28.5	(φ30.34) φ28.5	28	φ10	φ25	12	16	18.19	14.67	5.5	-	-	-	50°23'	φ17.4 54.7
MF1.5S 19R # 2812H	19	φ28.5	(φ30.34) φ28.5	28	φ12	φ25	12	16	18.19	14.67	5.5	4 × 1.8	2-M4	6	50°23'	φ17.4 49.1
MF1.5S 19L # 2812H	19	φ28.5	(φ30.34) φ28.5	28	φ12	φ25	12	16	18.19	14.67	5.5	4 × 1.8	2-M4	6	50°23'	φ17.4 49.1
MF1.5S 23R - 3212H	23	φ34.5	(φ36.33) φ34.5	32	φ12	φ30	12.5	18	19.91	15.67	6.5	-	-	-	49°22'	φ22.6 88.1
MF1.5S 23L - 3212H	23	φ34.5	(φ36.33) φ34.5	32	φ12	φ30	12.5	18	19.91	15.67	6.5	-	-	-	49°22'	φ22.6 88.1
MF1.5S 23R # 3215H	23	φ34.5	(φ36.33) φ34.5	32	φ15	φ30	12.5	18	19.91	15.67	6.5	5 × 2.3	2-M5	8	49°22'	φ22.6 77.1
MF1.5S 23L # 3215H	23	φ34.5	(φ36.33) φ34.5	32	φ15	φ30	12.5	18	19.91	15.67	6.5	5 × 2.3	2-M5	8	49°22'	φ22.6 77.1

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 51。[H] : Gear tooth surface completed with induction hardening, Hardness HRC 47 to 51.
标号[=]表示齿槽带有键槽/带有键。[=] : Gear with key way / with key.
标号[#]表示齿槽带有键槽/带有键，带有螺纹孔/带有固定螺钉。[#] : Gear with key way and threaded hole / with key and screw.

齿顶圆直径da的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面，所以实际齿顶圆直径要比理论值小。
The numeric indicated in the bracket () under the column. Outside diameter da has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	100	250	500	800	1,000	1,500	2,000
MF1.5S 19R	0.054	0.137	0.274	0.432	0.525	0.736	0.922
MF1.5S 23R	0.084	0.212	0.424	0.652	0.789	1.094	1.385

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
100	250	500	800	1,000	1,500	2,000
0.025	0.067	0.138	0.223	0.273	0.391	0.495
0.047	0.123	0.255	0.401	0.489	0.691	0.886

精密切割螺旋等径锥齿轮
FINE CUT SPIRAL MITER GEARS

模数
MODULE

2

压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

齿部高频淬火 HRC47 ~ 51
JIS B 1704 2级
System of accuracy : JIS B1704 Class 2

对应RoHS指令
RoHS Compliance

订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.

材料 : 铬钼钢 (ISO 34CrMo4, 42CrMo4)
Material : Chromium Molybdenum Steel (ISO 34CrMo4, 42CrMo4)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter da	装配距离 Locating Distance A	孔径 Bore Diameter da(H7)	轮毂外径 Hub Diameter dh	轮毂长度 Hub Projection lh	穴长度 Bore Length l	全长 Overall Length lw	Tip Distance la	齿宽 Face Width b	键槽 Key Way b2 x t2	螺纹孔 Set Screw		顶锥角 Face Angle da	ds	重量 Weight W(g)
													M	ls			
MF2S 19R - 3512H	19	φ38	(φ40.43) φ38.0	35	φ12	φ32	13	19	22.09	17.21	7.5	-	-	-	49°39'	φ22.8	113.4
MF2S 19L - 3512H	19	φ38	(φ40.43) φ38.0	35	φ12	φ32	13	19	22.09	17.21	7.5	-	-	-	49°39'	φ22.8	113.4
MF2S 19R # 3515H	19	φ38	(φ40.43) φ38.0	35	φ15	φ32	13	19	22.09	17.21	7.5	5 x 2.3	2-M5	8	49°39'	φ22.8	101.9
MF2S 19L # 3515H	19	φ38	(φ40.43) φ38.0	35	φ15	φ32	13	19	22.09	17.21	7.5	5 x 2.3	2-M5	8	49°39'	φ22.8	101.9
MF2S 23R - 4015H	23	φ46	(φ48.52) φ46.0	40	φ15	φ40	14	21	24.43	18.26	9.5	-	-	-	49°39'	φ27.1	191.9
MF2S 23L - 4015H	23	φ46	(φ48.52) φ46.0	40	φ15	φ40	14	21	24.43	18.26	9.5	-	-	-	49°39'	φ27.1	191.9
MF2S 23R # 4020H	23	φ46	(φ48.52) φ46.0	40	φ20	φ40	14	21	24.43	18.26	9.5	6 x 2.8	2-M5	9	49°39'	φ27.1	166.5
MF2S 23L # 4020H	23	φ46	(φ48.52) φ46.0	40	φ20	φ40	14	21	24.43	18.26	9.5	6 x 2.8	2-M5	9	49°39'	φ27.1	166.5

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 51。[H] : Gear tooth surface completed with induction hardening, Hardness HRC 47 to 51。
标号[=]表示齿轮带有键槽/带有键。[=] : Gear with key way / with key。
标号[#]表示齿轮带有键槽/带有键，带有螺纹孔/带有固定螺钉。[#] : Gear with key way and threaded hole / with key and screw.

齿顶圆直径da的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面，所以实际齿顶圆直径要比理论值小。
The numeric indicated in the bracket () under the column. Outside diameter da has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	100	250	500	800	1,000	1,500	2,000
MF2S 19R	0.133	0.334	0.668	1.014	1.223	1.685	2.150
MF2S 23R	0.215	0.539	1.060	1.587	1.901	2.640	3.359

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
100	250	500	800	1,000	1,500	2,000
0.064	0.167	0.344	0.533	0.649	0.911	1.178
0.123	0.320	0.648	0.991	1.199	1.694	2.183

目次表 CONTENTS	齿形信息 GEAR INFORMATION	齿形箱 GEAR BOXES	无隙隙齿 ANTI BACKLASH SPUR GEARS	研磨直齿 GROUND SPUR GEARS	直齿 SPUR GEARS	内齿 INTERNAL GEARS	研磨齿 GROUND RACKS	齿 RACKS	斜齿・螺旋齿 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿 BEVEL GEARS	技术资料 REFERENCE DATA
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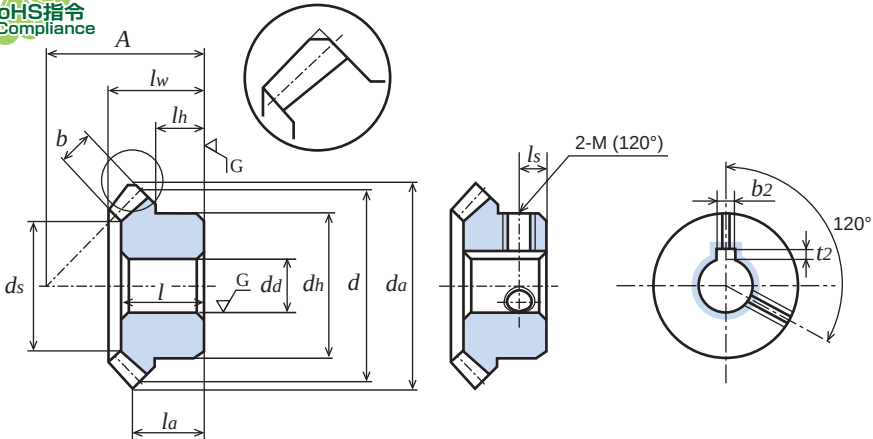
精密切割螺旋等径锥齿轮
FINE CUT SPIRAL MITER GEARS

模数 MODULE 2.5 压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

齿部高频淬火 HRC47 ~ 51
JIS B 1704 2级
System of accuracy : JIS B1704 Class 2



New 已进行规格改进，无需进行紧固加工。
Additional machining on tightening is not necessary.



材料 : 铬钼钢 (ISO 34CrMo4, 42CrMo4)
Material : Chromium Molybdenum Steel (ISO 34CrMo4, 42CrMo4)
单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量	
	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length		Tip Distance	Face Width	Key Way	Set Screw			Face Angle	Weight
														M	ls			
	<i>z</i>	<i>d</i>	<i>d</i> _a	<i>A</i>	<i>d</i> a(H7)	<i>d</i> _h	<i>l</i> _h	<i>l</i>	<i>l</i> _w	<i>l</i> _a	<i>b</i>	<i>b</i> ₂ × <i>t</i> ₂			<i>δ</i> _a	<i>d</i> _s	<i>W</i> (g)	
MF2.5S 19R — 4215H	19	φ47.5	(φ50.55) φ47.5	42	φ15	φ40	14.5	23	25.93	19.78	9.5	-	-	-	49°48'	φ30.1	210.8	
MF2.5S 19L — 4215H	19	φ47.5	(φ50.55) φ47.5	42	φ15	φ40	14.5	23	25.93	19.78	9.5	-	-	-	49°48'	φ30.1	210.8	
MF2.5S 19R # 4220H	19	φ47.5	(φ50.55) φ47.5	42	φ20	φ40	14.5	23	25.93	19.78	9.5	6 × 2.8	2-M6	10	49°48'	φ30.1	182.5	
MF2.5S 19L # 4220H	19	φ47.5	(φ50.55) φ47.5	42	φ20	φ40	14.5	23	25.93	19.78	9.5	6 × 2.8	2-M6	10	49°48'	φ30.1	182.5	
MF2.5S 23R — 4815H	23	φ57.5	(φ60.63) φ57.5	48	φ15	φ50	15.5	24	28.30	20.81	11.5	-	-	-	49°30'	φ34.5	363.9	
MF2.5S 23L — 4815H	23	φ57.5	(φ60.63) φ57.5	48	φ15	φ50	15.5	24	28.30	20.81	11.5	-	-	-	49°30'	φ34.5	363.9	
MF2.5S 23R # 4825H	23	φ57.5	(φ60.63) φ57.5	48	φ25	φ50	15.5	24	28.30	20.81	11.5	8 × 3.3	2-M6	10	49°30'	φ34.5	300.5	
MF2.5S 23L # 4825H	23	φ57.5	(φ60.63) φ57.5	48	φ25	φ50	15.5	24	28.30	20.81	11.5	8 × 3.3	2-M6	10	49°30'	φ34.5	300.5	

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 51。[H] : Gear tooth surface completed with induction hardening, Hardness HRC 47 to 51.
标号[#]表示齿轮带有键槽/带有键，带有螺纹孔/带有固定螺钉。[#] : Gear with key way and threaded hole / with key and screw.

齿顶圆直径da的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面，所以实际齿顶圆直径要比理论值小。
The numeric indicated in the bracket () under the column. Outside diameter da has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	100	250	500	800	1,000	1,500	2,000
MF2.5S 19R	0.264	0.662	1.298	1.939	2.321	3.228	4.103
MF2.5S 23R	0.414	1.036	1.980	2.923	3.474	4.897	6.240

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
100	250	500	800	1,000	1,500	2,000
0.128	0.335	0.678	1.034	1.250	1.769	2.278
0.240	0.624	1.230	1.853	2.224	3.192	4.119

精密切割螺旋等径锥齿轮
FINE CUT SPIRAL MITER GEARS

模数
MODULE

3

压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

齿部高频淬火 HRC47 ~ 51
JIS B 1704 2级
System of accuracy : JIS B1704 Class 2

对应RoHS指令
RoHS Compliance

订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.

材料 : 铬钼钢 (ISO 34CrMo4, 42CrMo4)
Material : Chromium Molybdenum Steel (ISO 34CrMo4, 42CrMo4)

单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
													M	ls			
	<i>z</i>	<i>d</i>	<i>d</i> _a	<i>A</i>	<i>d</i> <i>a</i> (H7)	<i>d</i> <i>h</i>	<i>l</i> <i>h</i>	<i>l</i>	<i>l</i> <i>w</i>	<i>l</i> <i>a</i>	<i>b</i>	<i>b</i> ₂ × <i>t</i> ₂	<i>M</i>	<i>l</i> <i>s</i>	<i>δ</i> <i>a</i>	<i>d</i> <i>s</i>	<i>W</i> (g)
MF3S 19R — 5020H	19	φ57	(φ60.68) φ57.0	50	φ20	φ48	17	27	31.09	23.34	12.0	-	-	-	49°56′	φ34.1	347.8
MF3S 19L — 5020H	19	φ57	(φ60.68) φ57.0	50	φ20	φ48	17	27	31.09	23.34	12.0	-	-	-	49°56′	φ34.1	347.8
MF3S 19R # 5025H	19	φ57	(φ60.68) φ57.0	50	φ25	φ48	17	27	31.09	23.34	12.0	8 × 3.3	2-M6	10	49°56′	φ34.1	306.4
MF3S 19L # 5025H	19	φ57	(φ60.68) φ57.0	50	φ25	φ48	17	27	31.09	23.34	12.0	8 × 3.3	2-M6	10	49°56′	φ34.1	306.4
MF3S 23R — 5520H	23	φ69	(φ72.73) φ69.0	55	φ20	φ60	16	27	31.51	22.36	14.0	-	-	-	49°22′	φ42.4	571.3
MF3S 23L — 5520H	23	φ69	(φ72.73) φ69.0	55	φ20	φ60	16	27	31.51	22.36	14.0	-	-	-	49°22′	φ42.4	571.3
MF3S 23R # 5530H	23	φ69	(φ72.73) φ69.0	55	φ30	φ60	16	27	31.51	22.36	14.0	8 × 3.3	2-M8	9	49°22′	φ42.4	478.7
MF3S 23L # 5530H	23	φ69	(φ72.73) φ69.0	55	φ30	φ60	16	27	31.51	22.36	14.0	8 × 3.3	2-M8	9	49°22′	φ42.4	478.7

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 51。[H] : Gear tooth surface completed with induction hardening, Hardness HRC 47 to 51.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#] : Gear with key way and threaded hole / with key and screw.

齿顶圆直径da的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。
The numeric indicated in the bracket () under the column. Outside diameter da has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	100	250	500	800	1,000	1,500	2,000
MF3S 19R	0.472	1.188	2.274	3.360	3.995	5.626	7.166
MF3S 23R	0.726	1.815	3.374	4.916	5.923	8.319	10.061

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
100	250	500	800	1,000	1,500	2,000
0.233	0.608	1.201	1.812	2.176	3.119	4.023
0.425	1.108	2.123	3.157	3.841	5.493	7.098

目次表 CONTENTS	齿形信息 GEAR INFORMATION	齿形箱 GEAR BOXES	无隙隙齿 ANTI BACKLASH SPUR GEARS	研磨直齿 GROUND SPUR GEARS	直齿 SPUR GEARS	内齿 INTERNAL GEARS	研磨齿 GROUND RACKS	齿 RACKS	斜齿・螺旋齿 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿 BEVEL GEARS	技术资料 REFERENCE DATA
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KG 齿轮 - 信息

KG Gear's Information

B-lock

特征

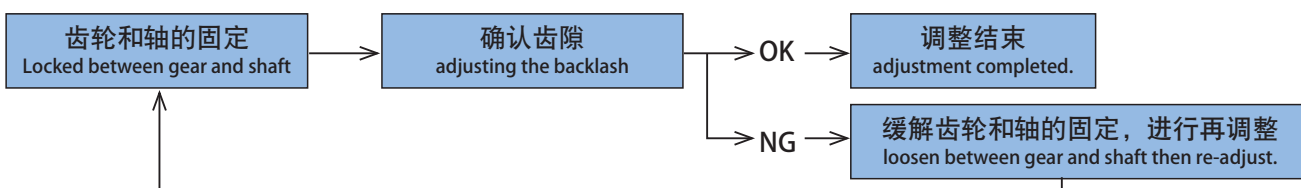
Feature of B-LOCKS.

1) B-LOCK(简易锁锥齿轮)的优秀特点。

- (1) B-LOCK (简易锁锥齿轮) 是用齿轮轮毂部的连结机构使齿轮固定于轴。所以很少产生用螺丝固定时的对轴的划痕凹痕。
- (2) B-LOCK (简易锁锥齿轮) 适合于有必要对齿轮啮合进行调整的场合。
- (3) 不需要为了使齿轮固定于轴，对轴进行键槽加工和半圆切割加工。
- (4) 如果使用B-LOCK (简易锁锥齿轮) 直齿锥齿轮，在对机械进行维护时比较容易对侧隙进行调整，因此维护更加方便。
- (5) 可以将其他直齿锥齿轮作为配对齿轮来使用。因为B-LOCK (简易锁锥齿轮) 与其它直齿锥齿轮有互换性。

为了调整锥齿轮的齿隙一般用以下工艺。

Generally, the process of adjustment for gear backlash is as follows:-



- 1) B-LOCK is a straight miter gear design with a locking mechanism that enable the gear and gear shaft to be tightened. The locking mechanism of B-LOCK tightens the gear shaft from the hub thus causing lesser damage to the gear shaft surface.
- 2) B-LOCK of Straight Miter gear has suitable mechanism for adjustment of the gear engagement.
- 3) Key way and D-cut are not necessary for tightening of the gear to the shaft.
- 4) B-LOCK of Straight Miter gear is easy for maintenance and adjustment.
- 5) KG-Straight Miter gears can match with KG- B-LOCKS because of the gear's tooth specification.

使用上的注意点

Usage of precaution.

- 1) 选择商品时，要使实际最大扭矩小于容许传达能力扭矩表的扭矩。还要考虑马达的启动扭矩。以防止出现由于马达的启动扭矩而发生事故。
- 2) 组装后，不要立即用实际负荷运行。请先在轻负荷下进行试运转并确认情况后，再进行实际负荷的运行。
- 3) 在进行轻负荷下的试运转后，请把紧固螺丝再度用扭力扳手重新拧紧到所指定的扭矩值。并进行确认。
- 4) 请在对其紧固能力不发生影响的前提下进行追加工。特别是对内径的长度(深度)，内径直径，轮毂径等不要进行追加工和热处理。
- 5) 如果在启动次数较多的情况下使用，推荐使用本系列之外有键槽的产品。

- 1) For best selection, do not exceed the number (W) indicated in the Allowable Transfer Capability Table for the maximum torque of usage. Starting torque is an important factor to consider for prevention of any accident.
- 2) After assembly, warm up and test run with light load is highly recommended. Please do not apply actual load to the B-LOCK before warm up test run.
- 3) Re-Locking after the warm up test run is necessarily important by using a torque wrench to tighten at the recommended torque.
- 4) Additional machining to the B-LOCK and heat treatment are not allowed.
- 5) If the usage of frequently revolution, gear with keyway is recommended.

安装用轴的精度

Precision of the gear shaft.

- 1) 请使用直径公差精度高于h7的轴。
 - 2) 请使用轴面表面粗糙度精度高于16a (6.3S) 的轴
- 1) Recommended tolerance of shaft is h7 or above.
 - 2) Recommended surface roughness of shaft is 1.6a (6.3s) or above.

齿轮的安装

Installation of KG B-LOCK.

- 1) 请用扭力扳手拧紧螺钉。并使用所指定的拧紧扭矩进行2,3次左右的再拧紧。(为了对拧紧扭矩进行确认,并防止螺钉的松懈。)
 - 2) 为了防止螺钉的松懈, 推荐在螺丝部分使用防松弛剂。
 - 3) 在拧紧时使用的螺钉, 请使用JIS的强度区中10.9级以上的螺钉。
- 1) In order to confirm the locked torque and prevent lose nut condition, torque wrench is recommended to tighten the screw few times for re-adjustment.
 - 2) Anti-looseness products are recommended to apply.
 - 3) Recommended screw for the tightening is JIS classification of strength class 10.9 or above.

万一发生齿轮空转的现象时, 有可能在两个齿轮的啮合脱离时断裂出齿的断片

Other

这些断片会对机器的其他零部件产生影响。所以如果出现以上情况, 请务必对于机器的其他零部件也进行检查和清扫。
本产品会在不预告的情况下, 在功能上不发生障碍的范围内对其尺寸进行变更。敬请谅解。

Under unforeseen circumstances, when mis-engagement between two gears happened, this causes the B-LOCK to slip during operation. This fault needs to be rectified immediately and all foreign objects (e.g. chips or burrs) are to be removed or cleaned before installation again.

All dimensions and descriptions are subject to changes without prior notice.

简易锁锥齿轮 B-LOCK SERIES

模数
MODULE

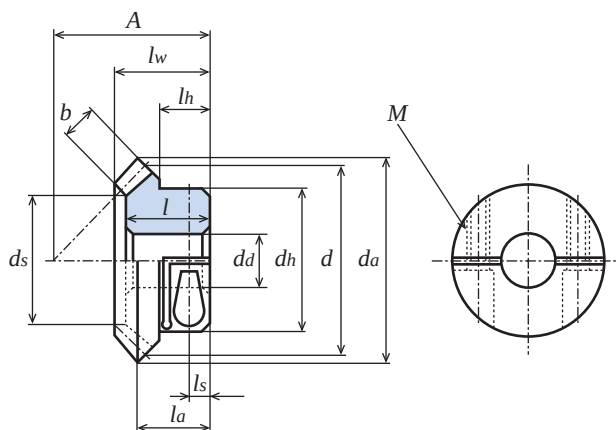
0.8/1/1.5/2

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B 1704 4级
System of accuracy : JIS B1704 Class 4



d_s 的尺寸仅供参考。
Dimension of d_s is for reference only.



材料 : 不锈钢 SUS304 (JIS G 4303)
Material : Stainless Steel SUS304 (JIS G 4303)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Gear Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	装配距离 Locating Distance A	孔径 Bore Diameter $d_a(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection l_h	穴长度 Bore Length l	全长 Overall Length l_w	齿宽 Face Width b	螺纹孔 Set Screw		顶锥角 Face Angle δ_a	d_s	重量 Weight $W(g)$
												M	l_s			
ML80SU 20 — 1605	1	20	$\phi 16$	$\phi 17.13$	16	$\phi 5$	$\phi 14.5$	7.25	10	10.95	8.57	M2.5	3	49° 3'	$\phi 9.5$	10.2
ML1SU 20 — 2106	1	20	$\phi 20$	$\phi 21.41$	21	$\phi 6$	$\phi 16$	9	13	14.48	11.71	M3	4	49° 3'	$\phi 11.8$	18.6
ML1SU 30 — 2808	1	30	$\phi 30$	$\phi 31.41$	28	$\phi 8$	$\phi 24$	11	16.5	17.84	13.71	M4	5	47° 42'	$\phi 19.4$	54.3
ML1.5SU 20 — 3010	1	20	$\phi 30$	$\phi 32.12$	30	$\phi 10$	$\phi 24$	12	18.5	20.38	16.06	M4	5	49° 3'	$\phi 17.7$	57.3
ML1.5SU 25 — 3412	1	25	$\phi 37.5$	$\phi 39.62$	34	$\phi 12$	$\phi 30$	12.5	19	21.11	16.31	M5	5.5	48° 51'	$\phi 23.8$	94.0
ML2SU 20 — 3715	1	20	$\phi 40$	$\phi 41.32$	37	$\phi 15$	$\phi 34$	14	21	23.85	19.07	M5	6	49° 3'	$\phi 23.9$	121.5

简易锁锥齿轮带有螺纹孔，带有固定螺钉。

模数，装配距离，齿宽等相对应的齿轮才可互相啮合。

B-LOCK Miter gear with clamp screw.

Mating miter gears should be the same as module size, number of teeth and face width.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	50	100	250	500	800	1,000
ML80SU 20 — 1605	0.2	1.3	2.6	6.5	13.1	20.9	26.2
ML1SU 20 — 2106	0.4	2.4	4.8	12.1	24.4	39.1	48.5
ML1SU 30 — 2808	1.2	6.1	12.2	30.5	61.1	94.5	113.5
ML1.5SU 20 — 3010	1.6	8.5	17.0	42.7	85.4	132.0	158.4
ML1.5SU 25 — 3412	2.6	13.2	26.5	66.4	132.9	197.3	234.9
ML2SU 20 — 3715	3.8	19.4	38.8	97.1	193.0	284.7	338.1

上述数值为参考值。The above numerical value are reference value.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

所推荐的拧紧螺钉用扭矩 Recommendable power of screw tightening Torque (N·m)
0.68
0.98
2.45
2.45
3.92
3.92

配对齿轮 (KG产品) Example of some matching KG Miter gears.
ML80SU 20 + 1605
ML1SU 20 + 2106
ML1SU 30 + 2608
ML1.5SU 20 — 2810
ML1.5SU 25 — 3410
ML2SU 20 — 3712

简易锁锥齿轮
 B-LOCK SERIES

模数
 MODULE

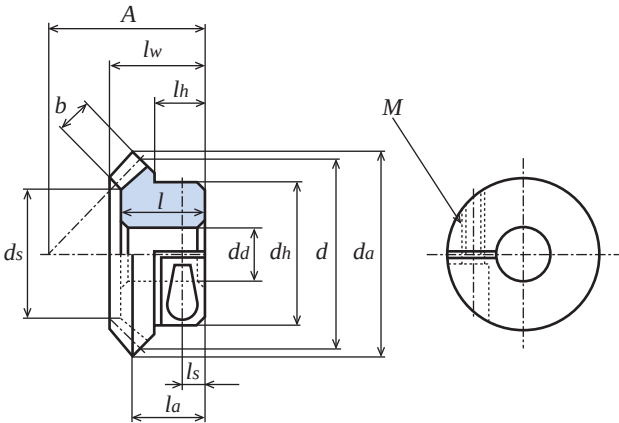
1/1.5/2/2.5

压力角20° 齿数比1:1
 1:1 Ratio 20° PRESSURE ANGLE

JIS B 1704 3级
 System of accuracy : JIS B1704 Class 3



订购时请写入明确完整的产品型号。
 Please refer to the catalogue reference while ordering.



ISO C45 机械构造用碳素钢 (JIS G 4051)
 Material : Carbon Steel (ISO C45)

单位 : mm
 Dimensions : mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	螺纹孔		顶锥角		重 量
	Gear Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_a(H7)</i>	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>M</i>	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W(g)</i>
ML1S 20 — 2108	1	20	φ20	φ21.41	21	φ 8	φ18	10	13	14.48	11.71	4.3	M3	4	49° 3′	φ11.8	19.5
ML1.5S 20 — 3010	1	20	φ30	φ32.12	30	φ10	φ24	12	18.5	20.38	16.06	6.8	M4	5	49° 3′	φ17.7	54.6
ML1.5S 25 — 3412	1	25	φ37.5	φ39.62	34	φ12	φ30	12.5	19	21.11	16.31	7.5	M5	5.5	48°51′	φ23.8	93.4
ML2S 20 — 3715	1	20	φ40	φ41.32	37	φ15	φ34	14	21	23.85	18.41	8.5	M5	5.5	49° 3′	φ23.9	119.2
ML2.5S 20 — 4820	1	20	φ50	φ51.66	48	φ20	φ42	19	28	31.86	24.77	11.1	M6	7.5	49° 3′	φ28.5	236.6

简易锁锥齿轮带有螺纹孔，带有固定螺钉。
 模数，装配距离，齿宽等相对应的齿轮才可互相啮合。
 B-LOCK Miter gear with clamp screw.
 Mating miter gears should be the same as module size, number of teeth and face width.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	50	100	250	500	800	1,000
ML1S 20 – 2108	1.0	5.1	10.2	25.6	51.3	82.2	102.0
ML1.5S 20 – 3010	3.5	17.9	35.8	89.7	179.4	277.3	332.8
ML1.5S 25 – 3412	5.5	27.9	55.8	139.5	279.1	414.4	493.4
ML2S 20 – 3715	8.1	40.8	81.6	204.0	405.4	597.9	710.2
ML2.5S 20 – 4820	16.3	81.9	163.9	409.8	786.6	1141.2	1343.2

上述数值为参考值。The above numerical value are reference value.
 动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

所推荐的拧紧螺钉用扭矩 Rcommendable power of screw tightening Torque (N·m)
1.17
2.54
5.09
5.09
7.84

配对齿轮 (KG 产品) Example of some matching KG Miter gears.
M1S 20 – 2106
M1.5S 20 – 2810
M1.5S 25 – 3410
M2S 20 – 3712
M2.5S 20 – 4814

目次表	CONTENTS
齿轮信息	INFORMATION
齿轮箱	GEAR BOXES
无隙隙齿轮	ANTI BACKLASH SPUR GEARS
研磨直齿轮	GROUND SPUR GEARS
直齿轮	SPUR GEARS
内齿轮	INTERNAL GEARS
研磨齿条	GROUND RACKS
齿条	RACKS
斜齿轮・螺旋齿轮	HELICAL GEARS AND SCREW GEARS
蜗轮・蜗杆	WORMS AND WORM WHEELS
锥齿轮	BEVEL GEARS
技术资料	REFERENCE DATA

MGH螺旋等径锥齿轮

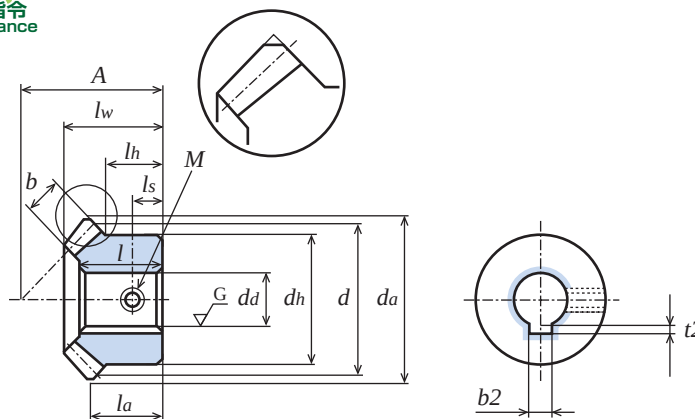
SPIRAL MITER GEARS

压力角20° 齿数20 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B 1704 4级
System of accuracy: JIS B1704 Class 4



d_s 的尺寸仅供参考。
Dimension of d_s is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)

Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	孔 径 Bore Diameter $d_a(H7)$	模 数 Module m	分度圆 直 径 Reference Diameter d	齿顶圆 直 径 Tip Diameter d_a	装 配 距 离 Locating Distance A	轮 毂 外 径 Hub Diameter d_h	轮 毂 长 度 Hub Projection l_h	穴长度 Bore Length l	全 长 Overall Length l_w	Tip Distance l_a	齿 宽 Face Width b	键 槽 Key Way $b_2 \times t_2$	螺 纹 孔 Set Screw		顶 锥 角 Face Angle δ_a	重 量 Weight $W(g)$
													M	l_s		
MGH R+ 8	$\phi 8$	1	$\phi 20$	$\phi 21.12$	20	$\phi 16$	8	12	13.43	10.56	4.5	-	M4	4	50°31'	16.0
MGH L+ 8	$\phi 8$	1	$\phi 20$	$\phi 21.12$	20	$\phi 16$	8	12	13.43	10.56	4.5	-	M4	4	50°31'	16.0
MGH R+ 10	$\phi 10$	1.25	$\phi 25$	$\phi 26.42$	25	$\phi 20$	10	15.5	17.13	13.21	6	-	M4	5	49°22'	32.0
MGH L+ 10	$\phi 10$	1.25	$\phi 25$	$\phi 26.42$	25	$\phi 20$	10	15.5	17.13	13.21	6	-	M4	5	49°22'	32.0
MGH R= 12	$\phi 12$	1.5	$\phi 30$	$\phi 31.85$	30	$\phi 24$	12	18.5	20.44	15.93	7	4 × 1.8	M5	6	50° 5'	54.9
MGH L= 12	$\phi 12$	1.5	$\phi 30$	$\phi 31.85$	30	$\phi 24$	12	18.5	20.44	15.93	7	4 × 1.8	M5	6	50° 5'	54.9
MGH R= 14	$\phi 14$	2	$\phi 40$	$\phi 40.88$	40	$\phi 32$	16	24	27.16	21.14	9	5 × 2.3	M5	8	48° 3'	137.6
MGH L= 14	$\phi 14$	2	$\phi 40$	$\phi 40.88$	40	$\phi 32$	16	24	27.16	21.14	9	5 × 2.3	M5	8	48° 3'	137.6
MGH R= 16	$\phi 16$	2.25	$\phi 45$	$\phi 46.03$	45	$\phi 36$	18	27.5	30.39	23.86	10	5 × 2.3	M6	9	49°22'	195.6
MGH L= 16	$\phi 16$	2.25	$\phi 45$	$\phi 46.03$	45	$\phi 36$	18	27.5	30.39	23.86	10	5 × 2.3	M6	9	49°22'	195.6

齿顶圆直径 d_a 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

MGH等径锥齿轮的特点

对齿部进行高频淬火处理。(HRC47 ~ 53)

齿孔进行了研磨加工。

标号[+]表示齿轮带有螺纹孔/带有固定螺钉。

标号[-]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。

作为设计原则, 这些都是不需要进行追加加工就可使用的产品。

The Feature of MGH miter gear series.

Gear tooth completed with induction harden. (HRC47 to 53)

Ground bore.

[+] : Gear with threaded hole / with set screw

[-] : Gear with key way and key / with threaded hole and set screw

Please install the MGH Miter gear series to your machine without any additional machining as a completed finished gear.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋 转 速 度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
MGH R+ 8	0.030	0.061	0.091	0.118	0.142	0.164	0.179
MGH R+ 10	0.062	0.125	0.184	0.234	0.280	0.322	0.348
MGH R= 12	0.107	0.215	0.297	0.387	0.460	0.525	0.568
MGH R= 14	0.251	0.488	0.680	0.847	0.998	1.150	1.245
MGH R= 16	0.357	0.679	0.940	1.163	1.379	1.583	1.710

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋 转 速 度 (min ⁻¹) revolution/min						
300	600	900	1,200	1,500	1,800	2,000
0.012	0.026	0.040	0.052	0.063	0.074	0.081
0.026	0.054	0.081	0.104	0.126	0.146	0.158
0.045	0.093	0.136	0.174	0.208	0.240	0.261
0.108	0.216	0.307	0.387	0.460	0.535	0.581
0.154	0.303	0.427	0.535	0.641	0.741	0.804

MGH直等径锥齿轮
STRAIGHT MITER GEARS

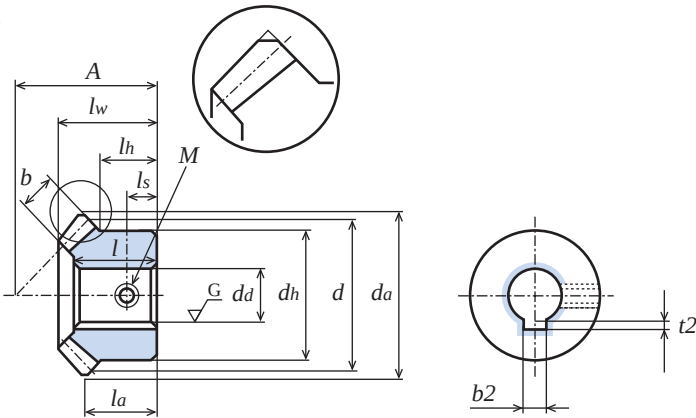
压力角20° 齿数20 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B 1704 4级
System of accuracy : JIS B1704 Class 4



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	孔 径	模数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角	重 量
	Bore Diameter	Module	Reference Diameter	Tip Diameter	Locating Distance	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle	Weight
	da(H7)	m	d	da	A	dh	lh	l	lw	la	b	b2 × t2	M	ls	δa	W(kg)
MGH = 18	φ18	2.5	φ 50	^(φ53.54) φ 51.66	50	φ 40	20	30	33.54	26.77	10.3	6 × 2.8	M6	10	49° 3'	0.26
MGH = 20	φ20	2.75	φ 55	^(φ58.89) φ 56.82	54	φ 44	21	32	35.54	28.45	10.8	6 × 2.8	M6	10.5	49° 3'	0.34
MGH = 22	φ22	3	φ 60	^(φ64.24) φ 61.99	58	φ 48	22	34	38.01	30.12	12	6 × 2.8	M6	11	49° 3'	0.43
MGH = 25A	φ25	3	φ 60	^(φ64.24) φ 61.99	58	φ 48	22	34	38.01	30.12	12	8 × 3.3	M8	11	49° 3'	0.40
MGH = 25B	φ25	3.5	φ 70	^(φ74.95) φ 72.32	66	φ 56	24	39.5	44.05	33.48	16.1	8 × 3.3	M8	12	49° 3'	0.68
MGH = 30	φ30	3.75	φ 75	^(φ80.30) φ 77.49	70	φ 60	25	41.5	46.52	35.15	17.3	8 × 3.3	M8	12.5	49° 3'	0.78
MGH = 32	φ32	4	φ 80	^(φ85.66) φ 82.65	74	φ 64	26	44	49.05	36.83	18.6	10 × 3.3	M8	13	49° 3'	0.94
MGH = 35	φ35	4.5	φ 90	^(φ96.36) φ 93.00	82	φ 72	28	48.5	54.05	40.18	21.1	10 × 3.3	M8	14	49° 3'	1.34
MGH = 40	φ40	5	φ100	^(φ107.07) φ103.32	90	φ 80	30	53	59.04	43.54	23.6	12 × 3.3	M8	15	49° 3'	1.77

齿顶圆直径da的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面，所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter da has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
MGH = 18	0.014	0.143	0.287	0.575	0.825	0.985	1.180
MGH = 20	0.018	0.186	0.373	0.743	1.016	1.273	1.509
MGH = 22	0.024	0.246	0.492	0.952	1.324	1.655	1.951
MGH = 25A	0.024	0.246	0.492	0.952	1.324	1.655	1.951
MGH = 25B	0.044	0.441	0.883	1.669	2.298	2.837	3.373
MGH = 30	0.054	0.542	1.084	2.168	2.784	3.438	4.087
MGH = 32	0.066	0.661	1.323	2.448	3.345	4.148	4.918
MGH = 35	0.094	0.949	1.899	3.420	4.636	5.781	6.818
MGH = 40	0.130	1.307	2.600	4.602	6.219	7.757	-

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
MGH = 18	0.003	0.036	0.075	0.154	0.221	0.281	0.335
MGH = 20	0.004	0.047	0.097	0.198	0.282	0.358	0.426
MGH = 22	0.005	0.061	0.125	0.251	0.356	0.450	0.533
MGH = 25A	0.005	0.061	0.125	0.251	0.356	0.450	0.533
MGH = 25B	0.009	0.109	0.226	0.441	0.619	0.774	0.929
MGH = 30	0.012	0.137	0.280	0.540	0.760	0.946	1.144
MGH = 32	0.015	0.167	0.345	0.655	0.912	1.144	1.368
MGH = 35	0.022	0.243	0.502	0.932	1.287	1.624	1.935
MGH = 40	0.030	0.338	0.694	1.266	1.737	2.197	-

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锥齿轮
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技术资料
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等径锥齿轮/锥齿轮

MITER AND BEVEL GEARS

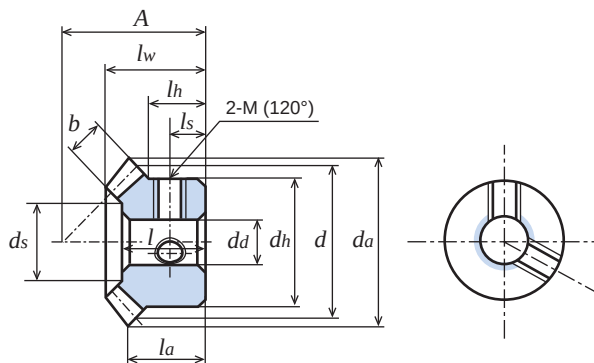
模数
MODULE

0.5/0.8/1/1.5

压力角20° 齿数比1:1、1:2
1:1 and 1:2 Ratio 20° PRESSURE ANGLE



New 新产品带有两个螺纹孔 (120°)
New item with two threaded holes (120°)



机械加工齿轮
Machined Gears

聚缩醛树脂 注射模塑成形产品 (黑色) 机械加工产品 (白色)
Material : Ploy Acetal Injection Molded Gear (black) Machined Gears (white)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	装配距离 Locating Distance A	孔径 Bore Diameter d_d	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection l_h	穴长度 Bore Length l	全长 Overall Length l_w	Tip Distance l_a	齿宽 Face Width b	螺纹孔 Set Screw $2-M(120^\circ)$ l_s		顶锥角 Face Angle δ_a	d_s	重量 Weight $W(g)$
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注射模塑成形产品 尽量不要对内孔进行追加工。因为孔面可能会出现由材料冷却时的气泡形成的气孔。
Injection Molded gears Additional machining to bore (d_d) is not advisable because 'voids' may be occur.

M50DM 20 — 1103	1	20	$\phi 10$	$\phi 10.70$	11	$\phi 3$	$\phi 8$	4	7	8	6.35	2.5	-	-	49° 3'	$\phi 4.9$	0.5
M80DM 20 — 1605	1	20	$\phi 16$	$\phi 17.10$	16	$\phi 5$	$\phi 12$	5	10	11	8.56	3.7	-	-	49° 3'	$\phi 9.5$	1.7
M1DM 20 — 2106	1	20	$\phi 20$	$\phi 21.40$	21	$\phi 6$	$\phi 16$	7	13	14.5	11.70	4.3	-	-	49° 3'	$\phi 11.8$	3.5
B80DM 20	2	20	$\phi 16$	$\phi 17.43$	22.5	$\phi 5$	$\phi 11$	5	10	10.79	6.86	4.5	-	-	29° 8'	$\phi 9.8$	1.7
B80DM 40	2	40	$\phi 32$	$\phi 32.71$	16.46	$\phi 6$	$\phi 20$	5	9.5	11.01	9.17	4.5	-	-	66° 0'	$\phi 22.9$	6.5

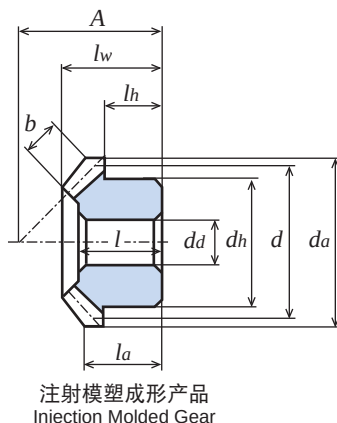
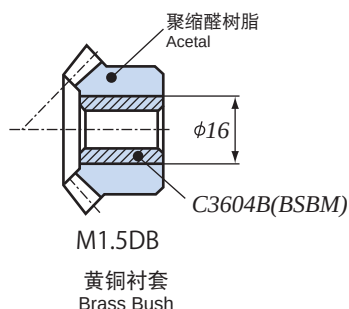
机械加工齿轮 Machined Gears

M1D 25 * 2306	1	25	$\phi 25$	$\phi 26.41$	23	$\phi 6$	$\phi 20$	8	13	14.70	11.21	5.3	2-M4	4	48° 51'	$\phi 15.0$	5.2
M1D 30 — 2608	1	30	$\phi 30$	$\phi 31.41$	26	$\phi 8$	$\phi 22$	8.9	14.5	15.89	11.71	6.2	-	-	47° 42'	$\phi 19.4$	8.3
M1D 30 * 2608	1	30	$\phi 30$	$\phi 31.41$	26	$\phi 8$	$\phi 22$	8.9	14.5	15.89	11.71	6.2	2-M4	4.5	47° 42'	$\phi 19.4$	8.1
M1.5D 20 — 2810	1	20	$\phi 30$	$\phi 32.12$	28	$\phi 10$	$\phi 24$	10	16.5	18.53	14.06	6.8	-	-	49° 3'	$\phi 17.7$	9.9
M1.5D 20 * 2810	1	20	$\phi 30$	$\phi 32.12$	28	$\phi 10$	$\phi 24$	10	16.5	18.53	14.06	6.8	2-M5	5	49° 3'	$\phi 17.7$	9.6
M1.5D 25 * 3410	1	25	$\phi 37.5$	$\phi 39.62$	34	$\phi 10$	$\phi 30$	11.5	19	21.26	16.31	7.5	2-M5	5.5	48° 51'	$\phi 23.8$	17.5
M1.5D 30 — 3812	1	30	$\phi 45$	$\phi 47.12$	38	$\phi 12$	$\phi 33$	12.34	21	22.83	16.56	9.3	-	-	47° 42'	$\phi 29.6$	27.3
M1.5D 30 * 3812	1	30	$\phi 45$	$\phi 47.12$	38	$\phi 12$	$\phi 33$	12.34	21	22.83	16.56	9.3	2-M5	6.5	47° 42'	$\phi 29.6$	26.8

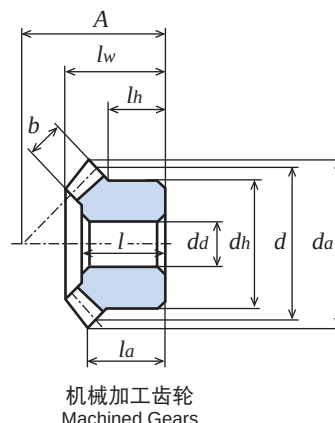
带有黄铜衬套的机械加工齿轮 Machined Gear with Brass Bush

M1.5DB 20 — 3295	1	20	$\phi 30$	$\phi 32.12$	32	$\phi 9.5(H8)$	$\phi 24$	14	20	22	18.06	6	-	-	49° 3'	$\phi 19.0$	29.6
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标号[*]表示齿轮带有两个螺纹孔/带有两个固定螺钉。
[*] : Gear with two threaded holes / with two set screws.



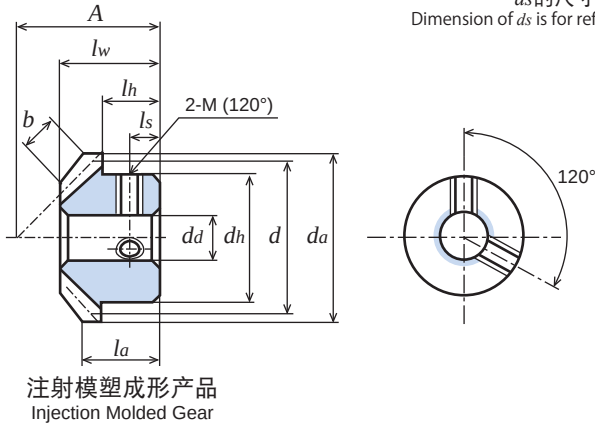
注射模塑成形产品
Injection Molded Gear



机械加工齿轮
Machined Gears



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds 的尺寸仅供参考。
Dimension of *ds* is for reference only.



注射模塑成形产品
Injection Molded Gear

材料：不锈钢 SUS304L
Material：Stainless Steel SUS304L

单位：mm
Dimensions：mm

产 品 型 号 Catalogue Number	模 数	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	全 长		齿 宽	螺 纹 孔		顶 锥 角	重 量
	Module	Number of Teeth	Pitch Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Overall Length	Tip Distance	Face Width	Set Screw		Face Angle	Weight
	<i>m</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_a(H8)</i>	<i>d_h</i>	<i>l_h</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>2-M(120°)</i>	<i>l_s</i>	<i>δ_a</i>	<i>W(g)</i>
M50SUM 20 * 1103	0.5	20	φ10	φ10.70	11	φ3	φ 8	4.25	8	6.35	2.5	2-M2.5	2.5	49°48′	2.6
M80SUM 20 * 1605	0.8	20	φ16	φ17.13	16	φ5	φ12	4.5	10.96	8.57	3.7	2-M3	2.5	49°48′	10.2
M1SUM 20 * 2106	1.0	20	φ20	φ21.41	21	φ6	φ16	7.5	14.49	11.71	4.3	2-M4	4.5	49°48′	22.0

模数尺寸为标称值，由于是金属粉末注射成型的产品，会根据一定的收缩率有若干尺寸的缩小。所以不得与其他生产方法的产品配套使用。只能与同样MIM (金属粉末注射成型) 方式生产的等径锥齿轮配套使用。

Module size of MIM miter gear is value of diminutive.
Some of dimensions differ from shrinkage ratio in the forming process.
MIM miter gear match with MIN miter gear only.

MIM系列的特征

- 金属粉末注射成型。
- 追加工时需要固定好齿顶圆。
- 追加工时可能会出现由材料冷却时产生的气泡形成的气孔。
- 齿轮带有螺纹孔，无固定螺钉。

Feature of MIM miter gear
Method of metal injection molding
Gear with threaded hole/without set screw
Please chuck the tip circle when additional machine work to the gear.
The void may be appeared when additional machine work to the gear.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min (min ⁻¹) of Bevel gears					
	100	200	400	600	800	1,000
M50SUM 20	0.5	1.1	2.2	3.3	4.4	5.6
M80SUM 20	2.1	4.3	8.7	13.1	17.5	21.9
M1SUM 20	3.7	7.6	15.3	22.9	30.6	37.8

容许传达能力是本公司社内进行的耐力测试的实验值。Allowable transfer capabilities are experiment value by our endurance test.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

ISO C45，SUS304与MIM产品的强度比较表

Comparison table (material/strength)

材料	强度比较	
S45C	1	1.67
SUS304	0.6	1
MIM (SUS304)	0.4	0.67

SUS等径锥齿轮

SUS MITER GEARS

模数
MODULE

0.8/1/

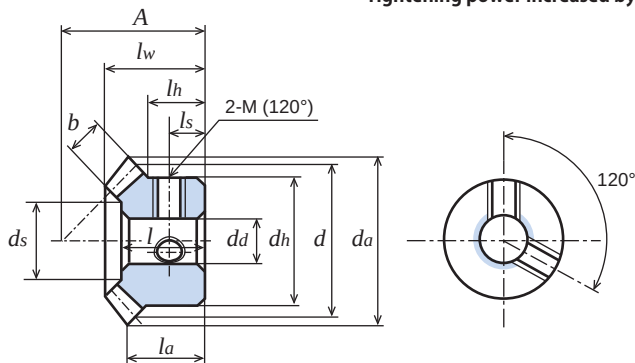
压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B 1704 4级
System of accuracy : JIS B1704 Class 4



新产品带有**两个螺纹孔 (120°)**
紧固能力增加 **1.6 倍**

New item with two threaded holes (120°)
Tightening power increased by 1.6 times.



材料 : 不锈钢 SUS304 (JIS G 4303)
Material : Stainless Steel SUS304 (JIS G 4303)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>d_a</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>dd(H8)</i>	轮毂外径 Hub Diameter <i>d_h</i>	轮毂长度 Hub Projection <i>l_h</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>l_w</i>	Tip Distance <i>l_a</i>	齿宽 Face Width <i>b</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δ_a</i>	顶锥角 <i>δ_s</i>	重量 Weight <i>W(g)</i>
													2-M(120°)	<i>l_s</i>			
● M80SU 20 — 1605	1	20	φ16	φ17.13	16	φ5	φ12	6	10	11	8.57	3.7	-	-	49° 3'	φ 9.5	8.9
● M80SU 20 * 1605	1	20	φ16	φ17.13	16	φ5	φ12	6	10	11	8.57	3.7	2-M3	3	49° 3'	φ 9.5	8.5
● M80SU 25 — 1805	1	25	φ20	φ21.13	18	φ5	φ16	6	10.5	11.67	8.57	4.7	-	-	48°51'	φ11.7	17.3
● M80SU 25 * 1805	1	25	φ20	φ21.13	18	φ5	φ16	6	10.5	11.67	8.57	4.7	2-M3	3	48°51'	φ11.7	16.8
● M80SU 30 — 2006	1	30	φ24	φ25.13	20	φ6	φ18	6	11	12.34	8.57	5.6	-	-	47°42'	φ14.1	24.8
● M80SU 30 * 2006	1	30	φ24	φ25.13	20	φ6	φ18	6	11	12.34	8.57	5.6	2-M4	3.5	47°42'	φ14.1	23.8
● M1SU 20 — 2106	1	20	φ20	φ21.41	21	φ6	φ16	9	13	14.53	11.71	4.3	-	-	49° 3'	φ11.8	19.9
● M1SU 20 * 2106	1	20	φ20	φ21.41	21	φ6	φ16	9	13	14.53	11.71	4.3	2-M4	4.5	49° 3'	φ11.8	19.1
● M1SU 25 — 2306	1	25	φ25	φ26.41	23	φ6	φ20	8	13	14.70	11.21	5.3	-	-	48°51'	φ15.0	34.1
● M1SU 25 * 2306	1	25	φ25	φ26.41	23	φ6	φ20	8	13	14.70	11.21	5.3	2-M4	4	48°51'	φ15.0	32.9
● M1SU 30 — 2608	1	30	φ30	φ31.41	26	φ8	φ22	8.9	14.5	15.89	11.71	6.2	-	-	47°42'	φ19.4	47
● M1SU 30 * 2608	1	30	φ30	φ31.41	26	φ8	φ22	8.9	14.5	15.89	11.71	6.2	2-M5	4.5	47°42'	φ19.4	45.2

标有●的产品为新产品。
Products with ● marks are new item.

SUS304产品没有螺纹孔。
标号[*]表示齿轮带有两个螺纹孔/无固定螺钉。
[*] : Gear with two threaded holes / without set screw.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M80SU 20	0.2	2.7	5.5	11.0	16.5	22.0	27.5
M80SU 25	0.4	4.6	9.3	18.7	28.1	37.5	46.6
M80SU 30	0.7	7.1	14.2	28.4	42.6	56.8	68.6
M1SU 20	0.5	5.1	10.2	20.5	30.8	41.1	51.0
M1SU 25	0.8	8.5	17.1	34.3	51.5	68.3	82.4
M1SU 30	1.2	12.8	25.6	51.3	77.0	99.3	119.2

上述数值为参考值。The above numerical value are reference value.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

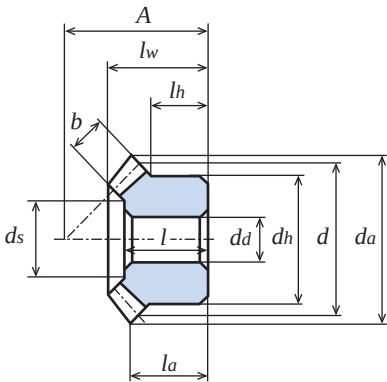
SUS等径锥齿轮
SUS MITER GEARS

模数
MODULE 1.5/2/2.5/3 压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B 1704 4级
System of accuracy : JIS B1704 Class 4



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



材料 : 不锈钢 SUS304 (JIS G 4303)
Material : Stainless Steel SUS304 (JIS G 4303)
单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>dd(H8)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W(g)</i>
													<i>M</i>	<i>ls</i>			
M1.5SU 20 – 2810	1	20	φ30	φ32.12	28	φ10	φ24	10	16.5	18.53	14.06	6.8	-	-	49° 3'	φ17.7	55.4
M1.5SU 25 – 3410	1	25	φ37.5	φ39.62	34	φ10	φ30	11.5	19	21.26	16.31	7.5	-	-	48°51'	φ23.7	107.6
M1.5SU 30 – 3812	1	30	φ45	φ47.12	38	φ12	φ33	12.34	21	22.83	16.56	9.3	-	-	47°42'	φ29.6	153.6
M2SU 20 – 3712	1	20	φ40	φ41.32 ^(φ42.83)	37	φ12	φ34	14	21	24	18.41	8.5	-	-	49° 3'	φ23.9	142.5
M2SU 25 – 4012	1	25	φ50	φ51.33 ^(φ52.83)	40	φ12	φ42	11	21	23.34	17.07	10.5	-	-	48°51'	φ32.3	229.6
M2SU 30 – 5116	1	30	φ60	φ61.36 ^(φ62.83)	51	φ16	φ44	16.79	28	30.77	22.41	12.4	-	-	47°42'	φ38.9	364.9
M2.5SU 20 – 4814	1	20	φ50	φ51.66 ^(φ53.54)	48	φ14	φ42	19	28	32.06	24.77	11.1	-	-	49° 3'	φ28.5	297.0
M3SU 20 – 5816	1	20	φ60	φ61.99 ^(φ64.24)	58	φ16	φ50	23	35	39.06	30.12	13.6	-	-	49° 3'	φ35.5	525.6

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M1.5SU 20 – 2810	1.7	17.9	35.8	71.7	107.6	138.6	166.4
M1.5SU 25 – 3410	2.7	27.9	55.8	111.6	163.5	207.2	246.7
M1.5SU 30 – 3812	4.3	43.3	86.7	173.4	246.3	309.5	365.9
M2SU 20 – 3712	4.0	40.8	81.6	163.2	236.5	298.9	355.1
M2SU 25 – 4012	6.7	67.0	134.0	268.0	402.1	536.1	670.1
M2SU 30 – 5116	10.2	102.7	205.5	397.2	550.3	681.6	803.6
M2.5SU 20 – 4814	8.1	81.9	163.9	325.8	456.3	570.6	671.6
M3SU 20 – 5816	14.3	143.5	287.0	554.6	768.4	951.7	1122.0

上述数值为参考值。The above numerical value are reference value.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

目次表 CONTENTS	齿轮信息 GEAR INFORMATION	齿轮箱 GEAR BOXES	无隙隙齿 ANTI BACKLASH SPUR GEARS	研磨直齿 GROUND SPUR GEARS	直齿 SPUR GEARS	内齿 INTERNAL GEARS	研磨齿 GROUND RACKS	齿 RACKS	斜齿・螺旋 HEICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿 BEVEL GEARS	技术资料 REFERENCE DATA
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SUS锥齿轮

SUS BEVEL GEARS

模数
MODULE

0.8/1/1.5/2 压力角20° 齿数比1:2
1:2 Ratio 20° PRESSURE ANGLE

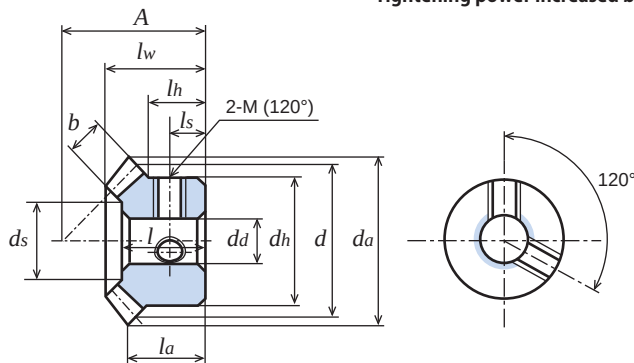
JIS B 1704 4级
System of accuracy : JIS B1704 Class 4



New

新产品带有两个螺纹孔 (120°)
紧固能力增加 1.6 倍

New item with two threaded holes (120°)
Tightening power increased by 1.6 times.



材料 : 不锈钢 SUS304 (JIS G 4303)
Material : Stainless Steel SUS304 (JIS G 4303)

单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆直 径	齿顶圆直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	螺 纹 孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_a</i> (H8)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	2-M(120°)	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (g)
B80SU 20 — 5	2	20	φ16	φ17.43	22.5	φ 5	φ12	5.5	10	10.79	6.86	4.5	-	-	29° 8'	φ 9.8	9.2
B80SU 40 — 6	2	40	φ32	φ32.72	16.46	φ 6	φ20	6	9.5	11.01	9.18	4.5	-	-	66° 0'	φ22.9	34.4
B80SU 20 * 5	2	20	φ16	φ17.43	22.5	φ 5	φ12	5.5	10	10.79	6.86	4.5	2-M3	2.5	29° 8'	φ 9.8	8.8
B80SU 40 * 6	2	40	φ32	φ32.72	16.46	φ 6	φ20	6	9.5	11.01	9.18	4.5	2-M4	3.5	66° 0'	φ22.9	33.2
B1SU 20 — 6	2	20	φ20	φ21.79	29.6	φ 6	φ16	8.6	14	15.03	10.05	5.7	-	-	29° 8'	φ12.1	21.6
B1SU 40 — 8	2	40	φ40	φ40.89	21.8	φ 8	φ25	8	13	15.02	12.69	5.7	-	-	66° 0'	φ28.4	72.6
B1SU 20 * 6	2	20	φ20	φ21.79	29.6	φ 6	φ16	8.6	14	15.03	10.05	5.7	2-M4	4	29° 8'	φ12.1	20.8
B1SU 40 * 8	2	40	φ40	φ40.89	21.8	φ 8	φ25	8	13	15.02	12.69	5.7	2-M5	4	66° 0'	φ28.4	70.4
B1.5SU 18 — 8	2	18	φ27	φ29.68	40.74	φ 8	φ22	12.5	21	22.96	14.41	9.8	-	-	29°25'	φ12.1	60.0
B1.5SU 36 — 10	2	36	φ54	φ55.34	26.75	φ10	φ30	10	15.5	18.54	14.59	9.8	-	-	66°17'	φ34.3	141.3
B2SU 18 — 10	2	18	φ36	φ37.81 ^(φ39.58)	53.12	φ10	φ28	15.12	27	29	18.01	12.6	-	-	29°25'	φ19.1	131.0
B2SU 36 — 12	2	36	φ72	φ73.79 ^(φ77.79) φ72.15	35.21	φ12	φ36	13	21	24.07	19	12.6	-	-	66°17'	φ47.6	316.2

标有●的产品为新产品。
Products with ● marks are new item.

SUS304产品没有螺纹孔。
标号[*]表示齿轮带有两个螺纹孔/无固定螺钉。
[*] : Gear with two threaded holes / without set screw.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
B80SU 20	0.3	3.5	7.0	14.1	21.1	28.2	35.2
B1SU 20	0.6	6.9	13.9	27.8	41.7	55.6	69.1
B1.5SU 18-8	2.1	21.3	42.7	85.5	128.3	168.1	202.5
B2SU 18-10	4.9	49.5	99.1	198.3	292.2	370.9	442.4

上述数值为参考值。The above numerical value are reference value.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

等径锥齿轮/锥齿轮

MITER AND BEVEL GEARS

模数
MODULE

0.5/0.8/1

压力角20° 齿数比1:1、1:2
1:1 and 1:2 Ratio 20° PRESSURE ANGLE

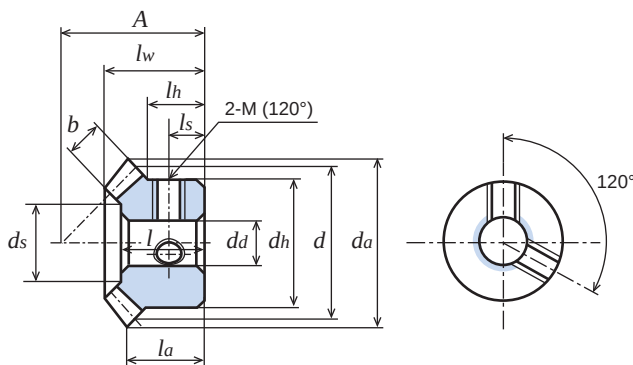
JIS B 1704 4级
System of accuracy : JIS B1704 Class 4



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.

d_s 的尺寸仅供参考。
Dimension of d_s is for reference only.



材料 : C3604B 黄铜 (ISO CuZn39Pb3)
Material : Brass (ISO CuZn39Pb3)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	装配距离 Locating Distance A	孔径 Bore Diameter $d_d(H8)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection l_h	穴长度 Bore Length l	全长 Overall Length l_w	Tip Distance l_a	齿宽 Face Width b	螺纹孔 Set Screw $2-M(120^\circ)$ l_s		顶锥角 Face Angle δ_a	d_s	重量 Weight $W(g)$
M50B 20 — 1103	1	20	$\phi 10$	$\phi 10.71$	11	$\phi 3$	$\phi 8$	5	7	8	6.35	2.5	-	-	49° 3'	$\phi 4.9$	2.9
M50B 20 * 1103	1	20	$\phi 10$	$\phi 10.71$	11	$\phi 3$	$\phi 8$	5	7	8	6.35	2.5	2-M2.5	2.5	49° 3'	$\phi 4.9$	2.7
M50B 25 * 1204	1	25	$\phi 12.5$	$\phi 13.21$	12	$\phi 4$	$\phi 11$	5	7	8.11	6.10	3.0	2-M3	3	48° 14'	$\phi 6.5$	4.9
M50B 30 * 1404	1	30	$\phi 15$	$\phi 15.71$	14	$\phi 4$	$\phi 12$	5	8	9.21	6.85	3.5	2-M3	3	47° 42'	$\phi 9.1$	7.6
B50B 20	2	20	$\phi 10$	$\phi 10.89$	15.52	$\phi 3$	$\phi 8$	5	8	8.54	5.74	3.2	-	-	29° 8'	$\phi 5.6$	3.2
B50B 40	2	40	$\phi 20$	$\phi 20.45$	10.56	$\phi 4$	$\phi 12$	4	6.3	7.31	6.01	3.2	-	-	66° 0'	$\phi 13.5$	8.9
B50B 20 * 3	2	20	$\phi 10$	$\phi 10.89$	15.52	$\phi 3$	$\phi 8$	5	8	8.54	5.74	3.2	2-M2.5	2.5	29° 8'	$\phi 5.6$	3.0
B50B 40 * 4	2	40	$\phi 20$	$\phi 20.45$	10.56	$\phi 4$	$\phi 12$	4	6.3	7.31	6.01	3.2	2-M3	2	66° 0'	$\phi 13.5$	8.5

M80B 20 — 1605	1	20	$\phi 16$	$\phi 17.13$	16	$\phi 5$	$\phi 12$	6	10	11	8.57	3.7	-	-	49° 3'	$\phi 9.5$	9.4
M80B 20 * 1605	1	20	$\phi 16$	$\phi 17.13$	16	$\phi 5$	$\phi 12$	6	10	11	8.57	3.7	2-M3	3	49° 3'	$\phi 9.5$	9.1
M80B 25 * 1805	1	25	$\phi 20$	$\phi 21.13$	18	$\phi 5$	$\phi 16$	6	10.5	11.67	8.57	4.7	2-M3	3	48° 51'	$\phi 11.7$	16.3
M80B 30 * 2006	1	30	$\phi 24$	$\phi 25.13$	20	$\phi 6$	$\phi 18$	6	11	12.34	8.57	5.6	2-M4	3.5	47° 42'	$\phi 14.1$	22.2
B80B 20	2	20	$\phi 16$	$\phi 17.43$	22.5	$\phi 5$	$\phi 12$	5.5	10	10.79	6.86	4.5	-	-	29° 8'	$\phi 9.8$	9.8
B80B 40	2	40	$\phi 32$	$\phi 32.72$	16.46	$\phi 6$	$\phi 20$	6	9.5	11.01	9.18	4.5	-	-	66° 0'	$\phi 22.9$	36.1
B80B 20 * 5	2	20	$\phi 16$	$\phi 17.43$	22.5	$\phi 5$	$\phi 12$	5.5	10	10.79	6.86	4.5	2-M3	3	29° 8'	$\phi 9.8$	9.5
B80B 40 * 6	2	40	$\phi 32$	$\phi 32.72$	16.46	$\phi 6$	$\phi 20$	6	9.5	11.01	9.18	4.5	2-M4	3	66° 0'	$\phi 22.9$	34.9

M1B 20 * 2106	1	20	$\phi 20$	$\phi 21.41$	21	$\phi 6$	$\phi 16$	9	13	14.53	11.71	4.3	2-M4	4.5	49° 3'	$\phi 11.8$	18.1
M1B 25 * 2306	1	25	$\phi 25$	$\phi 26.41$	23	$\phi 6$	$\phi 20$	8	13	14.70	11.21	5.3	2-M4	4	48° 51'	$\phi 15.0$	31.5
M1B 30 * 2608	1	30	$\phi 30$	$\phi 31.41$	26	$\phi 8$	$\phi 22$	8.9	14.5	15.89	11.71	6.2	2-M5	4.5	47° 42'	$\phi 19.4$	43.0

标号[*]表示齿轮带有两个螺纹孔/带有两个固定螺钉。

[*] : Gear with two threaded holes / with two set screws.

对应 RoHS 指令

从2006年11月份开始生产提供, 对应欧洲RoHS指令的产品。
We supplied the KG-products with RoHS compliance of EU to all our valued customers since November 2006

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直齿
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研磨齿
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斜齿・螺旋齿
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锥齿
BEVEL GEARS

技术资料
REFERENCE DATA

等径锥齿轮/锥齿轮
MITER AND BEVEL GEARS

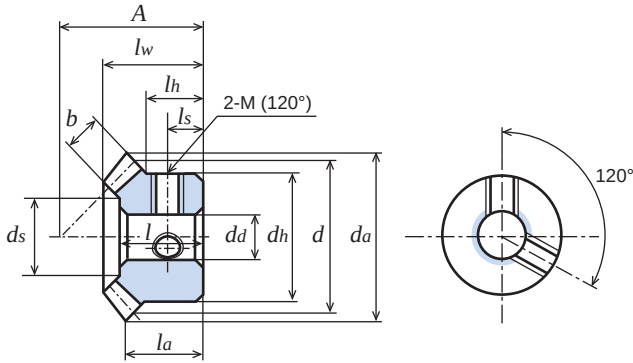
模数
MODULE 0.5

压力角20° 齿数比1:1、1:2
1:1 and 1:2 Ratio 20° PRESSURE ANGLE

JIS B 1704 3级
System of accuracy: JIS B1704 Class 3



New 新产品带有两个螺纹孔 (120°)
New item with two threaded holes (120°)



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da(H8)</i>	轮轂外径 Hub Diameter <i>dh</i>	轮轂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W(g)</i>
													2-M(120°)	<i>ls</i>			
M50S 20 — 1103	1	20	φ10	φ10.71	11	φ3	φ 8	5	7	8	6.35	2.5	-	-	49° 3'	φ 4.9	2.7
M50S 25 — 1204	1	25	φ12.5	φ13.21	12	φ4	φ11	5	7	8.11	6.10	3.0	-	-	48°14'	φ 6.5	5.2
M50S 30 — 1404	1	30	φ15	φ15.71	14	φ4	φ12	5	8	9.21	6.85	3.5	-	-	47°42'	φ 9.1	7.4
M50S 20 * 1103	1	20	φ10	φ10.71	11	φ3	φ 8	5	7	8	6.35	2.5	2-M2.5	2.5	49° 3'	φ 4.9	2.5
M50S 25 * 1204	1	25	φ12.5	φ13.21	12	φ4	φ11	5	7	8.11	6.10	3.0	2-M3	3	48°14'	φ 6.5	4.6
M50S 30 * 1404	1	30	φ15	φ15.71	14	φ4	φ12	5	8	9.21	6.85	3.5	2-M3	3	47°42'	φ 9.1	7.0
B50S 20	2	20	φ10	φ10.89	15.52	φ3	φ 8	5	8	8.54	5.74	3.2	-	-	29° 8'	φ 5.6	3.0
B50S 40	2	40	φ20	φ20.45	10.56	φ4	φ12	4	6.3	7.31	6.01	3.2	-	-	66° 0'	φ13.5	8.2
B50S 20 * 3	2	20	φ10	φ10.89	15.52	φ3	φ 8	5	8	8.54	5.74	3.2	2-M2.5	2.5	29° 8'	φ 5.6	2.8
B50S 40 * 4	2	40	φ20	φ20.45	10.56	φ4	φ12	4	6.3	7.31	6.01	3.2	2-M3	2	66° 0'	φ13.5	7.8

标有●的产品为新产品。
Products with ● marks are new item.

标号[*]表示齿轮带有两个螺纹孔/带有两个固定螺钉。
[*]: Gear with two threaded holes / with two set screws.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M50S 20	0.1	1.5	3.1	6.2	9.3	12.4	15.5
M50S 25	0.2	2.5	5.0	10.0	15.0	20.1	25.1
M50S 30	0.3	3.8	7.6	15.2	22.9	30.5	38.1
B50S 20	0.2	2.0	4.1	8.2	12.4	16.5	20.7

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

等径锥齿轮/锥齿轮
MITER AND BEVEL GEARS

模数
MODULE

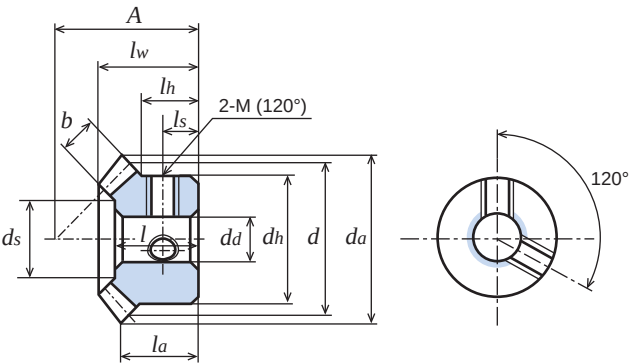
0.8

压力角20° 齿数比1:1、1:2
1:1 and 1:2 Ratio 20° PRESSURE ANGLE

JIS B 1704 3级
System of accuracy : JIS B1704 Class 3



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)
单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	齿数比 Ratio <i>u</i>	齿 数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装 配 距离 Locating Distance <i>A</i>	孔 径 Bore Diameter <i>da</i> (H7)	轮 毂 外 径 Hub Diameter <i>dh</i>	轮 毂 长 度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全 长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿 宽 Face Width <i>b</i>	螺 纹 孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重 量 Weight <i>W</i> (g)
													2-M(120°)	<i>ls</i>			
M80S 20 — 1605	1	20	φ16	φ17.13	16	φ5	φ12	6	10	11	8.57	3.7	-	-	49° 3'	φ 9.5	8.7
M80S 25 — 1805	1	25	φ20	φ21.13	18	φ5	φ16	6	10.5	11.67	8.57	4.7	-	-	48° 51'	φ 11.7	16.8
M80S 30 — 2006	1	30	φ24	φ25.13	20	φ6	φ18	6	11	12.34	8.57	5.6	-	-	47° 42'	φ 14.1	24.1
M80S 20 * 1605	1	20	φ16	φ17.13	16	φ5	φ12	6	10	11	8.57	3.7	2-M3	3	49° 3'	φ 9.5	8.4
M80S 25 * 1805	1	25	φ20	φ21.13	18	φ5	φ16	6	10.5	11.67	8.57	4.7	2-M3	3	48° 51'	φ 11.7	16.3
M80S 30 * 2006	1	30	φ24	φ25.13	20	φ6	φ18	6	11	12.34	8.57	5.6	2-M4	3	47° 42'	φ 14.1	23.1
B80S 20	2	20	φ16	φ17.43	22.5	φ5	φ12	5.5	10	10.79	6.86	4.5	-	-	29° 8'	φ 9.8	9.0
B80S 40	2	40	φ32	φ32.72	16.46	φ6	φ20	6	9.5	11.01	9.18	4.5	-	-	66° 0'	φ 22.9	33.4
B80S 20 * 5	2	20	φ16	φ17.43	22.5	φ5	φ12	5.5	10	10.79	6.86	4.5	2-M3	2.75	29° 8'	φ 9.8	8.7
B80S 40 * 6	2	40	φ32	φ32.72	16.46	φ6	φ20	6	9.5	11.01	9.18	4.5	2-M4	3	66° 0'	φ 22.9	32.3

标号[*]表示齿轮带有两个螺纹孔/带有两个固定螺钉。
[*] : Gear with two threaded holes / with two set screws.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M80S 20	0.6	6.0	12.1	24.2	36.3	48.4	60.6
M80S 25	1.0	10.3	20.6	41.3	61.9	82.6	103.3
M80S 30	1.5	15.6	31.2	62.5	93.8	124.9	156.2
B80S 20	0.7	7.7	15.5	31.0	46.5	62.0	77.6

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

目 录 表 CONTENTS	齿 轮 信 息 GEAR INFORMATION	齿 轮 箱 GEAR BOXES	无 背 隙 齿 轮 ANTI BACKLASH SPUR GEARS	研 磨 直 齿 轮 GROUND SPUR GEARS	直 齿 轮 SPUR GEARS	内 齿 轮 INTERNAL GEARS	研 磨 齿 条 GROUND RACKS	齿 条 RACKS	斜 齿 轮 · 螺 旋 齿 轮 HELICAL GEARS AND SCREW GEARS	蜗 轮 · 蜗 杆 WORMS AND WORM WHEELS	锥 齿 轮 BEVEL GEARS	技 术 资 料 REFERENCE DATA
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螺旋等径锥齿轮 SPIRAL MITER GEARS

模数
MODULE

1

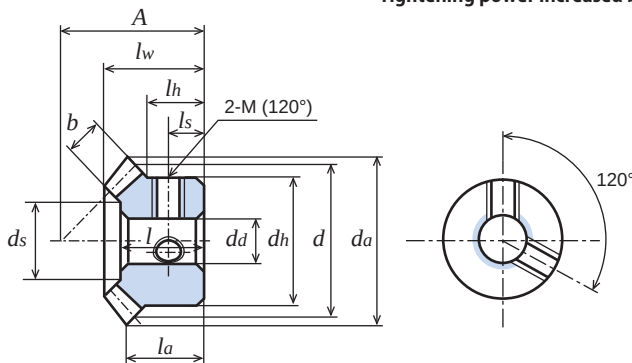
压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



New 新产品带有**两个螺纹孔 (120°)**
紧固能力增加 **1.6 倍**

New item with two threaded holes (120°)
Tightening power increased by 1.6 times.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	装配距离 Locating Distance A	孔径 Bore Diameter $\phi d(H7)$	轮毂外径 Hub Diameter ϕd_h	轮毂长度 Hub Projection l_h	穴长度 Bore Length l	全长 Overall Length l_w	Tip Distance l_a	齿宽 Face Width b	键槽 Key Way $b_2 \times t_2$	螺纹孔 Set Screw		顶锥角 Face Angle δ_a	顶锥角 Face Angle δ_s	重量 Weight $W(g)$
														M	l_s			
M1S 20R — 2106	1	20	$\phi 20$	$\phi 21.12$	21	$\phi 6$	$\phi 16$	9	13	14.43	11.56	4.5	-	-	-	50°31'	$\phi 11.3$	19.7
M1S 20L — 2106	1	20	$\phi 20$	$\phi 21.12$	21	$\phi 6$	$\phi 16$	9	13	14.43	11.56	4.5	-	-	-	50°31'	$\phi 11.3$	19.7
M1S 20R * 2108	1	20	$\phi 20$	$\phi 21.12$	21	$\phi 8$	$\phi 16$	9	13	14.43	11.56	4.5	-	2-M4	4.5	50°31'	$\phi 11.3$	16.9
M1S 20L * 2108	1	20	$\phi 20$	$\phi 21.12$	21	$\phi 8$	$\phi 16$	9	13	14.43	11.56	4.5	-	2-M4	4.5	50°31'	$\phi 11.3$	16.9
M1S 30R — 2610	1	30	$\phi 30$	$\phi 31.09$	26	$\phi 10$	$\phi 22$	9	14.5	15.67	11.54	6.2	-	-	-	48°21'	$\phi 19.4$	43.0
M1S 30L — 2610	1	30	$\phi 30$	$\phi 31.09$	26	$\phi 10$	$\phi 22$	9	14.5	15.67	11.54	6.2	-	-	-	48°21'	$\phi 19.4$	43.0
M1S 30R * 2610	1	30	$\phi 30$	$\phi 31.09$	26	$\phi 10$	$\phi 22$	9	14.5	15.67	11.54	6.2	-	2-M5	4.5	48°21'	$\phi 19.4$	41.5
M1S 30L * 2610	1	30	$\phi 30$	$\phi 31.09$	26	$\phi 10$	$\phi 22$	9	14.5	15.67	11.54	6.2	-	2-M5	4.5	48°21'	$\phi 19.4$	41.5
M1S 30R * 2610H	1	30	$\phi 30$	$\phi 31.09$	26	$\phi 10(H8)$	$\phi 22$	9	14.5	15.67	11.54	6.2	-	2-M5	4.5	48°21'	$\phi 19.4$	41.5
M1S 30L * 2610H	1	30	$\phi 30$	$\phi 31.09$	26	$\phi 10(H8)$	$\phi 22$	9	14.5	15.67	11.54	6.2	-	2-M5	4.5	48°21'	$\phi 19.4$	41.5

标有 ● 的产品为新产品。

Products with ● marks are new item.

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.

标号[*]表示带有两个螺纹孔/带有两个固定螺钉。[*]: Gear with two threaded holes / with two set screws.

	齿数比 Ratio	导程角 Pitch Angle		轴角 Shaft Angle
等径锥齿轮 Miter gear	1:1	45°		90°
锥齿轮 Bevel gear	1:2	小齿轮 Pinion Gear	26° 34' 63° 26'	90°
	1:3	小齿轮 Pinion Gear	18° 26' 71° 34'	90°

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
M1S 20R — 2106	34.9	69.9	104.9	134.6	161.0	185.2	200.2
M1S 30R * 2610	84.0	168.0	222.5	279.2	329.7	395.6	428.5
M1S 30R * 2610H	73.3	146.6	198.1	254.5	298.5	348.7	387.5

上述数字相当于JGMA公式, 仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min							
300	600	900	1,200	1,500	1,800	2,000	
4.6	9.35	14.1	18.2	21.9	25.4	27.6	
16.1	32.5	49.1	58.7	69.9	80.3	87.7	
43.6	90.0	130.7	167.2	200.4	230.8	250.8	

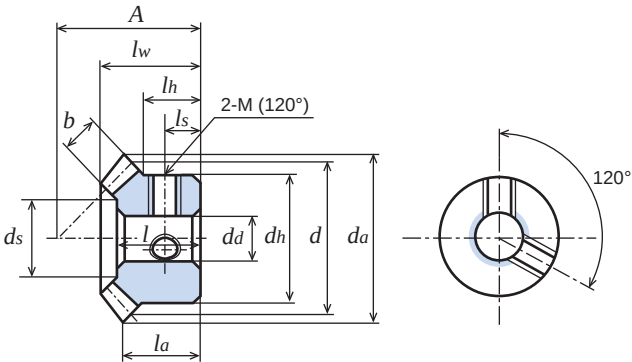
螺旋锥齿轮
SPIRAL BEVEL GEARS

模数 MODULE 1
压力角20° 齿数比1:2、1:3 螺旋角35°
1:1 and 1:2 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)
单位: mm
Dimensions: mm

Table with 18 columns: Product Model, Ratio, Number of Teeth, Reference Diameter, Tip Diameter, Locating Distance, Bore Diameter, Hub Diameter, Hub Projection, Bore Length, Overall Length, Tip Distance, Face Width, Set Screw, Face Angle, Tip Distance, Weight. It lists various gear models like B1S 20L-8, B1S 40R-10, etc.

标有●的产品为新产品。
Products with ● marks are new item.
产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47~53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[*]表示带有两个螺纹孔/带有两个固定螺钉。[*]: Gear with two threaded holes / with two set screws.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

Table with 8 columns: Product Model, 300, 600, 900, 1,200, 1,500, 1,800, 2,000. It shows bending strength values for different gear models.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

Table with 8 columns: Product Model, 300, 600, 900, 1,200, 1,500, 1,800, 2,000. It shows surface durability values for different gear models.

上述数字相当于JGMA公式, 仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

目录表 CONTENTS
齿轮信息 INFORMATION
齿形图 GEAR BOXES
无隙背锥齿轮 ANTI BACKLASH SPUR GEARS
研磨直齿轮 GROUND SPUR GEARS
直齿轮 SPUR GEARS
内齿轮 INTERNAL GEARS
研磨齿条 GROUND RACKS
齿条 RACKS
斜齿轮・螺旋锥齿轮 HELICAL GEARS AND SPIRAL BEVEL GEARS
蜗轮・蜗杆 WORMS AND WORM WHEELS
锥齿轮 BEVEL GEARS
技术资料 REFERENCE DATA

螺旋等径锥齿轮

SPIRAL MITER GEARS

模数
MODULE

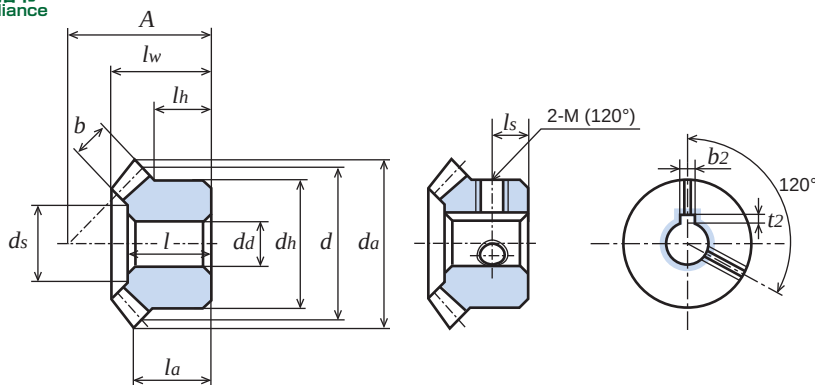
1.5

压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051)

Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>d_a</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>d_d</i> (H7)	轮毂外径 Hub Diameter <i>d_h</i>	轮毂长度 Hub Projection <i>l_h</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>l_w</i>	Tip Distance <i>l_a</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b₂ × t₂</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δ_a</i>	<i>d_s</i>	重量 Weight <i>W</i> (g)
														2-M	<i>l_s</i>			
M1.5S 20R - 2810	1	20	φ30	φ31.85	28	φ10	φ24	10	16.5	18.44	13.93	7	-	-	-	50° 5'	φ17.2	54.7
M1.5S 20L - 2810	1	20	φ30	φ31.85	28	φ10	φ24	10	16.5	18.44	13.93	7	-	-	-	50° 5'	φ17.2	54.7
M1.5S 20R - 2810H	1	20	φ30	φ31.85	28	φ10(H8)	φ24	10	16.5	18.44	13.93	7	-	-	-	50° 5'	φ17.2	54.7
M1.5S 20L - 2810H	1	20	φ30	φ31.85	28	φ10(H8)	φ24	10	16.5	18.44	13.93	7	-	-	-	50° 5'	φ17.2	54.7
M1.5S 20R # 2810H	1	20	φ30	φ31.85	28	φ10(H8)	φ24	10	16.5	18.44	13.93	7	3 × 1.4	2-M4	5	50° 5'	φ17.2	54.1
M1.5S 20L # 2810H	1	20	φ30	φ31.85	28	φ10(H8)	φ24	10	16.5	18.44	13.93	7	3 × 1.4	2-M4	5	50° 5'	φ17.2	54.1
M1.5S 20R # 2812H	1	20	φ30	φ31.85	28	φ12(H8)	φ24	10	16.5	18.44	13.93	7	4 × 1.8	2-M4	5	50° 5'	φ17.2	49.1
M1.5S 20L # 2812H	1	20	φ30	φ31.85	28	φ12(H8)	φ24	10	16.5	18.44	13.93	7	4 × 1.8	2-M4	5	50° 5'	φ17.2	49.1

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	300	600	900	1,200	1,500	2,000
M1.5S 20R - 2810	123.2	246.4	348.1	435.2	512.0	580.3
M1.5S 20R - 2810H	107.5	215.1	306.9	387.5	460.0	525.5

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
300	600	900	1,200	1,500	1,800	2,000
16.7	33.9	48.4	61.1	72.8	83.6	91.3
45.5	93.8	136.2	174.2	208.8	240.5	261.4

螺旋等径锥齿轮
SPIRAL MITER GEARS

模数
MODULE

1.5

压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

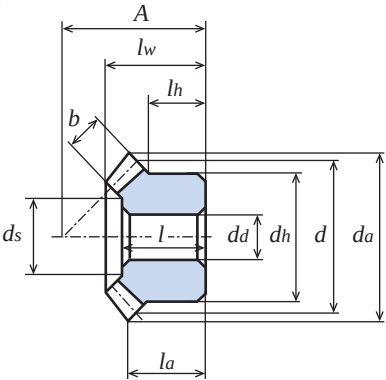
JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.

ds的尺寸仅供参考。
Dimension of ds is for reference only.

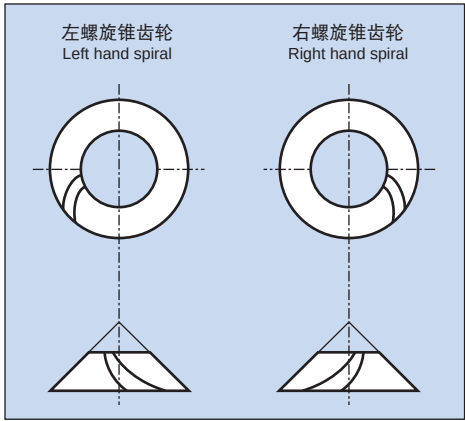


ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

Table with 18 columns: Product Model, Ratio, Number of Teeth, Reference Diameter, Tip Diameter, Locating Distance, Bore Diameter, Hub Diameter, Hub Projection, Bore Length, Overall Length, Tip Distance, Face Width, Key Way, Set Screw, Face Angle, Tip Diameter, Weight. It lists specifications for models M1.5S 30R, M1.5S 30L, M1.5S 30R #, and M1.5S 30L #.

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.



容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

Table with 7 columns: Product Model, and 6 columns for rotational speeds (300, 600, 900, 1,200, 1,500, 1,800, 2,000 rpm) showing bending strength values.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

Table with 7 columns: Product Model, and 6 columns for rotational speeds (300, 600, 900, 1,200, 1,500, 1,800, 2,000 rpm) showing surface durability values.

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

螺旋锥齿轮 SPIRAL BEVEL GEARS

模数
MODULE

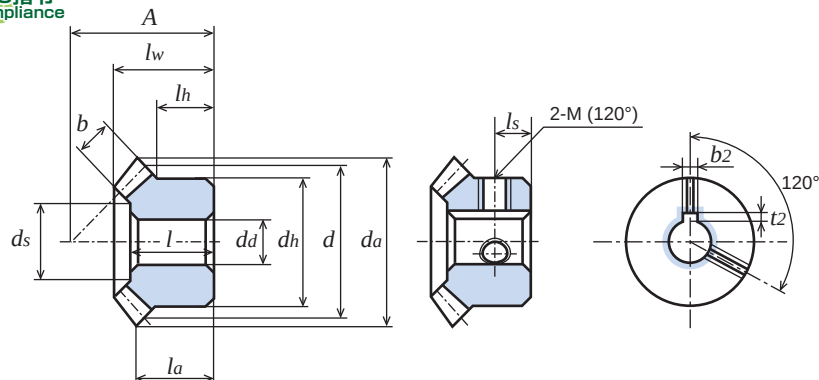
1.5

压力角20° 齿数比1:2、1:3 螺旋角35°
1:2 and 1:3 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da(H7)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b2 × t2</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W(g)</i>
														2-M	<i>ls</i>			
B1.5S 18L - 8	2	18	φ27	φ30.09	40.74	φ8	φ22	12.49	21	22.96	14.51	9.8	-	-	-	30°44'	φ12.2	59.6
B1.5S 18L - 8H	2	18	φ27	φ30.09	40.74	φ8 (H8)	φ22	12.49	21	22.96	14.51	9.8	-	-	-	30°44'	φ12.2	59.6
B1.5S 18L # 10H	2	18	φ27	φ30.09	40.74	φ10 (H8)	φ22	12.49	21	22.96	14.51	9.8	3 × 1.4	2-M4	6.5	30°44'	φ12.2	54.2
B1.5S 36R - 10	2	36	φ54	φ54.76	26.75	φ10	φ30	9	15.5	18.01	14.01	9.8	-	-	-	65°57'	φ34.3	143.0
B1.5S 36R - 10H	2	36	φ54	φ54.76	26.75	φ10 (H8)	φ30	9	15.5	18.01	14.01	9.8	-	-	-	65°57'	φ34.3	143.0
B1.5S 36R # 15H	2	36	φ54	φ54.76	26.75	φ15 (H8)	φ30	9	15.5	18.01	14.01	9.8	5 × 2.3	2-M4	4.5	65°57'	φ34.3	130.6
B1.5S 15L - 8	3	15	φ22.5	φ25.99	46	φ8	φ19.5	11.75	21.1	22.19	12.83	10.1	-	-	-	22°28'	φ11.7	41.9
B1.5S 15L - 8H	3	15	φ22.5	φ25.99	46	φ8 (H8)	φ19.5	11.75	21.1	22.19	12.83	10.1	-	-	-	22°28'	φ11.7	41.9
B1.5S 45R - 12	3	45	φ67.5	φ68.01	30	φ12	φ37.5	12	19.4	22.31	19.51	10.1	-	-	-	73°56'	φ46.6	283.0
B1.5S 45R - 12H	3	45	φ67.5	φ68.01	30	φ12 (H8)	φ37.5	12	19.4	22.31	19.51	10.1	-	-	-	73°56'	φ46.6	283.0

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

	齿数比 Ratio	导程角 Pitch Angle		轴角 Shaft Angle
等径锥齿轮 Miter gear	1:1	45°		90°
锥齿轮 Bevel gear	1:2	小齿轮 Pinion Gear	26° 34' 63° 26'	90°
	1:3	小齿轮 Pinion Gear	18° 26' 71° 34'	90°

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
B1.5S 18L - 8	149.1	298.3	430.0	540.3	638.6	726.7	780.6
B1.5S 18L - 8H	130.2	260.4	377.8	479.2	571.2	654.9	706.8
B1.5S 15L - 8	126.2	252.5	375.3	475.5	566.1	648.5	699.4
B1.5S 15L - 8H	110.2	220.4	328.2	419.2	502.9	580.1	628.3

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min							
300	600	900	1,200	1,500	1,800	2,000	
23.5	47.4	69.0	87.5	104.5	120.3	130.2	
63.9	131.8	194.6	232.5	300.9	347.8	377.1	
17.8	36.0	53.9	68.9	82.6	95.5	103.6	
48.7	100.5	152.4	197.1	238.5	277.7	302.2	

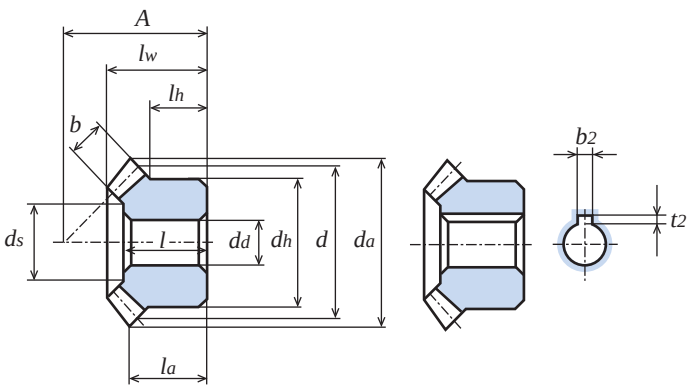
螺旋等径锥齿轮
SPIRAL MITER GEARS

模数 MODULE 2
压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)
单位: mm
Dimensions: mm

Table with 18 columns: Product Model, Ratio, Number of Teeth, Reference Diameter, Tip Diameter, Locating Distance, Bore Diameter, Hub Diameter, Hub Projection, Bore Length, Overall Length, Tip Distance, Face Width, Key Way, Set Screw, Face Angle, ds, Weight. It lists various gear models like M2S 20R-3712, M2S 20L-3712, etc.

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)
Allowable transfer capability table (kW) Bending Strength
Table with 7 columns: Product Model, 300, 600, 900, 1,200, 1,500, 1,800, 2,000 rpm.

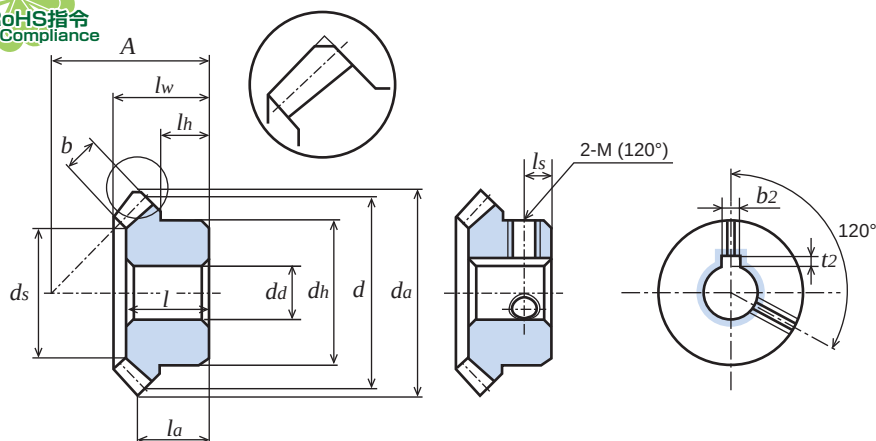
容许传达动力表 齿面强度 (kW)
Allowable transfer capability table (kW) Surface Durability
Table with 7 columns: Product Model, 300, 600, 900, 1,200, 1,500, 1,800, 2,000 rpm.

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

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JIS B1704 3级 (齿部高频淬火产品: 4级)

System of Accuracy : JIS B 1704 Class 3



Material : Carbon Steel (ISO C45)

单位: mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>da</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b₂ × t₂</i>	2-M	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (g)
M2S 30R — 5116	1	30	φ60	^(φ62.42) φ60.94	51	φ16	φ44	17	28	30.53	22.21	12.4	-	-	-	47°54′	φ38.9	358.4
M2S 30L — 5116	1	30	φ60	^(φ62.42) φ60.94	51	φ16	φ44	17	28	30.53	22.21	12.4	-	-	-	47°54′	φ38.9	358.4
M2S 30R — 5116H	1	30	φ60	^(φ62.42) φ60.94	51	φ16(H8)	φ44	17	28	30.53	22.21	12.4	-	-	-	47°54′	φ38.9	358.4
M2S 30L — 5116H	1	30	φ60	^(φ62.42) φ60.94	51	φ16(H8)	φ44	17	28	30.53	22.21	12.4	-	-	-	47°54′	φ38.9	358.4
M2S 30R # 5120H	1	30	φ60	^(φ62.42) φ60.94	51	φ20(H8)	φ44	17	28	30.53	22.21	12.4	6 × 2.8	2-M5	8.5	47°54′	φ38.9	331.9
M2S 30L # 5120H	1	30	φ60	^(φ62.42) φ60.94	51	φ20(H8)	φ44	17	28	30.53	22.21	12.4	6 × 2.8	2-M5	8.5	47°54′	φ38.9	331.9

标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

标号[#]表示齿轮带有键槽/带有键，带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 d_a 的()括号内的数据是理论值。因为进行了与轴芯平衡的切面,所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
M25 30R — 5116	0.682	1.205	1.607	2.040	2.463	2.880	3.154
M25 30R — 5116H	0.596	1.073	1.455	1.814	2.139	-	-

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
300	600	900	1,200	1,500	1,800	2,000
0.140	0.253	0.346	0.450	0.557	0.669	0.744
0.371	0.690	0.952	1.202	1.432	-	-

螺旋锥齿轮 SPIRAL BEVEL GEARS

模数
MODULE

2

压力角20° 齿数比1:2、1:3 螺旋角35°
1:2 and 1:3 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

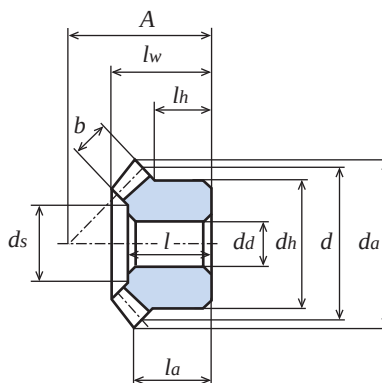
JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.

d_s 的尺寸仅供参考。
Dimension of d_s is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	装配距离 Locating Distance A	孔径 Bore Diameter $d_a(H7)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection l_h	穴长度 Bore Length l	全长 Overall Length l_w	Tip Distance l_a	齿宽 Face Width b	键槽 Key Way $b_2 \times t_2$	螺纹孔 Set Screw		顶锥角 Face Angle δ_a	d_s	重量 Weight $W(g)$
														2-M	l_s			
B2S 18L - 10	2	18	$\phi 36$	$\phi 38.35$ ($\phi 40.20$)	53.12	$\phi 10$	$\phi 28$	15.12	27	29.36	18.17	13	-	-	-	30°53'	$\phi 17.4$	130.3
B2S 18L - 10H	2	18	$\phi 36$	$\phi 38.35$ ($\phi 40.20$)	53.12	$\phi 10(H8)$	$\phi 28$	15.12	27	29.36	18.17	13	-	-	-	30°53'	$\phi 17.4$	130.3
B2S 18L # 12H	2	18	$\phi 36$	$\phi 38.35$ ($\phi 40.20$)	53.12	$\phi 12(H8)$	$\phi 28$	15.12	27	29.36	18.17	13	4 × 1.8	2-M5	7.5	30°53'	$\phi 17.4$	122.0
B2S 36R - 12	2	36	$\phi 72$	$\phi 71.41$ ($\phi 73.05$)	35.21	$\phi 12$	$\phi 36$	12	21	23.54	18.26	13	-	-	-	66° 6'	$\phi 46.7$	318.4
B2S 36R - 12H	2	36	$\phi 72$	$\phi 71.41$ ($\phi 73.05$)	35.21	$\phi 12(H8)$	$\phi 36$	12	21	23.54	18.26	13	-	-	-	66° 6'	$\phi 46.7$	318.4
B2S 36R # 20H	2	36	$\phi 72$	$\phi 71.41$ ($\phi 73.05$)	35.21	$\phi 20(H8)$	$\phi 36$	12	21	23.54	18.26	13	6 × 2.8	2-M5	6	66° 6'	$\phi 46.7$	284.0
B2S 15L - 10	3	15	$\phi 30$	$\phi 33.35$ ($\phi 34.66$)	62	$\phi 10$	$\phi 26$	16.33	28.9	30.2	17.78	13.4	-	-	-	22°19'	$\phi 16.6$	104.0
B2S 15L - 10H	3	15	$\phi 30$	$\phi 33.35$ ($\phi 34.66$)	62	$\phi 10(H8)$	$\phi 26$	16.33	28.9	30.2	17.78	13.4	-	-	-	22°19'	$\phi 16.6$	104.0
B2S 45R - 14	3	45	$\phi 90$	$\phi 89.16$ ($\phi 90.68$)	40	$\phi 14$	$\phi 50$	16	25.9	29.76	26.02	13.4	-	-	-	73°47'	$\phi 62.3$	680.6
B2S 45R - 14H	3	45	$\phi 90$	$\phi 89.16$ ($\phi 90.68$)	40	$\phi 14(H8)$	$\phi 50$	16	25.9	29.76	26.02	13.4	-	-	-	73°47'	$\phi 62.3$	680.6

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
B2S 18L - 10	0.355	0.697	0.966	1.196	1.396	1.617	1.771
B2S 18L - 10H	0.310	0.611	0.857	1.073	1.264	1.452	1.575
B2S 15L - 10	0.304	0.608	0.859	1.074	1.264	1.433	1.552
B2S 15L - 10H	0.265	0.531	0.757	0.956	1.135	1.297	1.403

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min							
300	600	900	1,200	1,500	1,800	2,000	
0.057	0.114	0.160	0.200	0.238	0.280	0.309	
0.155	0.314	0.448	0.569	0.677	0.784	0.854	
0.043	0.088	0.125	0.159	0.189	0.217	0.237	
0.118	0.243	0.353	0.452	0.542	0.624	0.679	

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锥齿
BEVEL GEARS

技术资料
REFERENCE DATA

螺旋等径锥齿轮

SPIRAL MITER GEARS

模数
MODULE

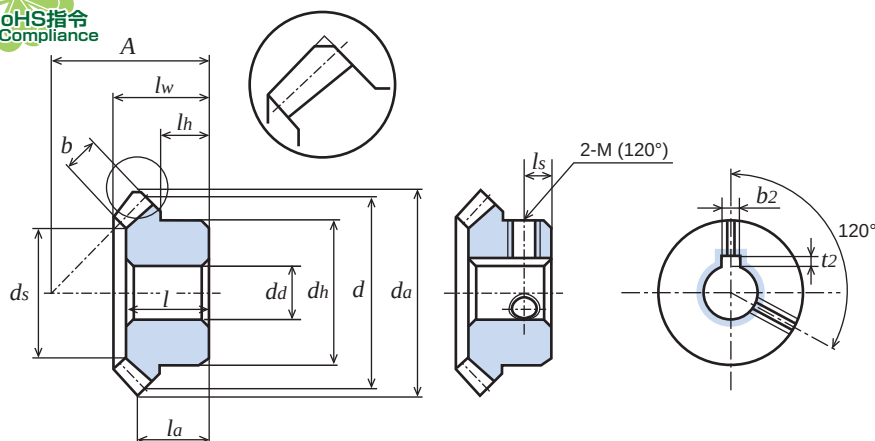
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压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051)

Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b2 × t2</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	顶锥距离 <i>ds</i>	重量 Weight <i>W</i> (g)
														2-M	<i>ls</i>			
M2.5S 20R - 4814	1	20	φ50	φ51.14 (φ53.02)	48	φ14	φ42	19	28	31.77	24.51	11.1	-	-	-	49°20'	φ28.6	292.4
M2.5S 20L - 4814	1	20	φ50	φ51.14 (φ53.02)	48	φ14	φ42	19	28	31.77	24.51	11.1	-	-	-	49°20'	φ28.6	292.4
M2.5S 20R - 4814H	1	20	φ50	φ51.14 (φ53.02)	48	φ14(H8)	φ42	19	28	31.77	24.51	11.1	-	-	-	49°20'	φ28.6	292.4
M2.5S 20L - 4814H	1	20	φ50	φ51.14 (φ53.02)	48	φ14(H8)	φ42	19	28	31.77	24.51	11.1	-	-	-	49°20'	φ28.6	292.4
M2.5S 20R # 4820H	1	20	φ50	φ51.14 (φ53.02)	48	φ20(H8)	φ42	19	28	31.77	24.51	11.1	6 × 2.8	2-M5	9.5	49°20'	φ28.6	255.8
M2.5S 20L # 4820H	1	20	φ50	φ51.14 (φ53.02)	48	φ20(H8)	φ42	19	28	31.77	24.51	11.1	6 × 2.8	2-M5	9.5	49°20'	φ28.6	255.8
M2.5S 30R - 6318	1	30	φ75	φ76.2 (φ78.05)	63	φ18	φ55	20	34.5	37.07	27.03	15	-	-	-	48° 3'	φ50.6	708.7
M2.5S 30L - 6318	1	30	φ75	φ76.2 (φ78.05)	63	φ18	φ55	20	34.5	37.07	27.03	15	-	-	-	48° 3'	φ50.6	708.7
M2.5S 30R - 6318H	1	30	φ75	φ76.2 (φ78.05)	63	φ18(H8)	φ55	20	34.5	37.07	27.03	15	-	-	-	48° 3'	φ50.6	708.7
M2.5S 30L - 6318H	1	30	φ75	φ76.2 (φ78.05)	63	φ18(H8)	φ55	20	34.5	37.07	27.03	15	-	-	-	48° 3'	φ50.6	708.7
M2.5S 30R # 6325H	1	30	φ75	φ76.2 (φ78.05)	63	φ25(H8)	φ55	20	34.5	37.07	27.03	15	8 × 3.3	2-M6	10	48° 3'	φ50.6	641.9
M2.5S 30L # 6325H	1	30	φ75	φ76.2 (φ78.05)	63	φ25(H8)	φ55	20	34.5	37.07	27.03	15	8 × 3.3	2-M6	10	48° 3'	φ50.6	641.9

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
M2.5S 20R - 4814	0.562	1.036	1.402	1.721	2.089	2.435	2.663
M2.5S 20R - 4814H	0.491	0.916	1.259	1.556	1.850	2.115	-
M2.5S 30R - 6318	1.274	2.174	2.959	3.777	4.576	5.345	5.835
M2.5S 30R - 6318H	1.117	1.953	2.647	3.281	-	-	-

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
300	600	900	1,200	1,500	1,800	2,000
0.080	0.150	0.207	0.260	0.322	0.383	0.425
0.214	0.411	0.576	0.721	0.865	0.997	-
0.269	0.472	0.663	0.873	1.093	1.311	1.454
0.709	1.278	1.763	2.213	-	-	-

螺旋锥齿轮 SPIRAL BEVEL GEARS

模数
MODULE

2.5

压力角20° 齿数比1:2、1:3 螺旋角35°
1:2 and 1:3 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

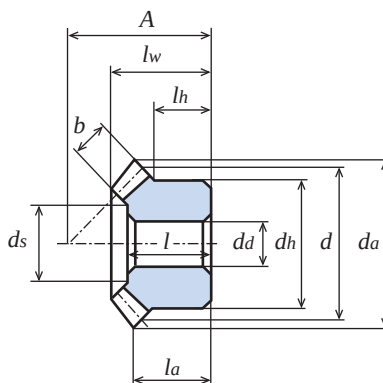
JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.

d_s 的尺寸仅供参考。
Dimension of d_s is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆直 径	齿顶圆直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_i</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b</i> × <i>t</i> ₂	2- <i>M</i>	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (kg)
B2.5S 18L — 12	2	18	φ45	φ ^(φ50.25) 48.63	64.29	φ12	φ36	17.04	32	34.98	20.6	16.7	-	-	-	30°53′	φ21.2	0.25
B2.5S 18L — 12H	2	18	φ45	φ ^(φ50.25) 48.63	64.29	φ12(H8)	φ36	17.04	32	34.98	20.6	16.7	-	-	-	30°53′	φ21.2	0.25
B2.5S 18L # 15H	2	18	φ45	φ ^(φ50.25) 48.63	64.29	φ15(H8)	φ36	17.04	32	34.98	20.6	16.7	5 × 2.3	2-M5	8.5	30°53′	φ21.2	0.24
B2.5S 36R — 14	2	36	φ90	φ ^(φ91.32) 89.88	42.55	φ14	φ50	14	25	28.14	21.37	16.7	-	-	-	66° 6′	φ57.6	0.64
B2.5S 36R — 14H	2	36	φ90	φ ^(φ91.32) 89.88	42.55	φ14(H8)	φ50	14	25	28.14	21.37	16.7	-	-	-	66° 6′	φ57.6	0.64
B2.5S 36R # 25H	2	36	φ90	φ ^(φ91.32) 89.88	42.55	φ25(H8)	φ50	14	25	28.14	21.37	16.7	8 × 3.3	2-M6	7	66° 6′	φ57.6	0.58
B2.5S 15L — 10	3	15	φ37.5	φ ^(φ43.13) 41.90	77.93	φ10(H8)	φ32	20.76	36.5	38.45	22.62	17	-	-	-	21°36′	φ18.9	0.21
B2.5S 15L — 10H	3	15	φ37.5	φ ^(φ43.13) 41.90	77.93	φ10(H8)	φ32	20.76	36.5	38.45	22.62	17	-	-	-	21°36′	φ18.9	0.21
B2.5S 45R — 16	3	45	φ112.5	φ ^(φ113.28) 112.2	40.67	φ16	φ60	14	24.5	28.05	23.09	17	-	-	-	73° 3′	φ78.3	1.01
B2.5S 45R — 16H	3	45	φ112.5	φ ^(φ113.28) 112.2	40.67	φ16(H8)	φ60	14	24.5	28.05	23.09	17	-	-	-	73° 3′	φ78.3	1.01

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.

标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 d_a 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
B2.5S 18L - 12	0.710	1.337	1.824	2.230	2.677	3.129	3.417
B2.5S 18L - 12H	0.620	1.179	1.631	2.019	2.395	2.749	2.968
B2.5S 15L - 10	0.607	1.183	1.634	2.019	2.351	2.748	3.008
B2.5S 15L - 10H	0.530	1.037	1.452	1.814	2.133	2.458	2.664

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min							
300	600	900	1,200	1,500	1,800	2,000	
0.117	0.224	0.310	0.387	0.473	0.561	0.623	
0.314	0.615	0.867	1.086	1.301	1.505	1.633	
0.088	0.174	0.244	0.306	0.362	0.430	0.475	
0.237	0.479	0.683	0.864	1.027	1.193	1.298	

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研磨齿条
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齿条
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技术资料
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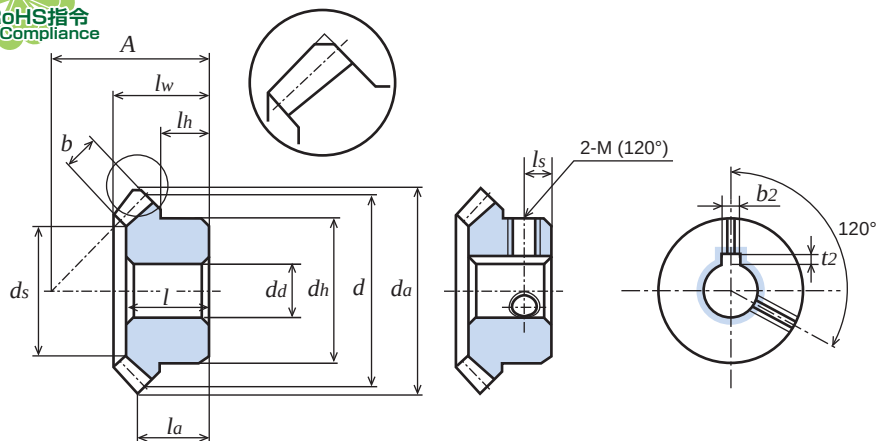
模数
MODULE 3

压力角20° 齿数比1:1 螺旋角35°
1:1 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b2 × t2</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W</i> (kg)
														2-M	<i>ls</i>			
M3S 20R - 5816	1	20	φ60	(φ63.66) φ61.39	58	φ16	φ50	23	35	38.95	29.83	14	-	-	-	49°30'	φ34.4	0.52
M3S 20L - 5816	1	20	φ60	(φ63.66) φ61.39	58	φ16	φ50	23	35	38.95	29.83	14	-	-	-	49°30'	φ34.4	0.52
M3S 20R - 5816H	1	20	φ60	(φ63.66) φ61.39	58	φ16(H8)	φ50	23	35	38.95	29.83	14	-	-	-	49°30'	φ34.4	0.52
M3S 20L - 5816H	1	20	φ60	(φ63.66) φ61.39	58	φ16(H8)	φ50	23	35	38.95	29.83	14	-	-	-	49°30'	φ34.4	0.52
M3S 20R # 5825H	1	20	φ60	(φ63.66) φ61.39	58	φ25(H8)	φ50	23	35	38.95	29.83	14	8 × 3.3	2-M6	11.5	49°30'	φ34.4	0.44
M3S 20L # 5825H	1	20	φ60	(φ63.66) φ61.39	58	φ25(H8)	φ50	23	35	38.95	29.83	14	8 × 3.3	2-M6	11.5	49°30'	φ34.4	0.44
M3S 30R - 7522	1	30	φ90	(φ93.46) φ91.28	75	φ22	φ66	24	40	44.38	31.73	18.6	-	-	-	47°11'	φ57.4	1.19
M3S 30L - 7522	1	30	φ90	(φ93.46) φ91.28	75	φ22	φ66	24	40	44.38	31.73	18.6	-	-	-	47°11'	φ57.4	1.19
M3S 30R - 7522H	1	30	φ90	(φ93.46) φ91.28	75	φ22(H8)	φ66	24	40	44.38	31.73	18.6	-	-	-	47°11'	φ57.4	1.19
M3S 30L - 7522H	1	30	φ90	(φ93.46) φ91.28	75	φ22(H8)	φ66	24	40	44.38	31.73	18.6	-	-	-	47°11'	φ57.4	1.19
M3S 30R # 7530H	1	30	φ90	(φ93.46) φ91.28	75	φ30(H8)	φ66	24	40	44.38	31.73	18.6	8 × 3.3	2-M6	12	47°11'	φ57.4	1.08
M3S 30L # 7530H	1	30	φ90	(φ93.46) φ91.28	75	φ30(H8)	φ66	24	40	44.38	31.73	18.6	8 × 3.3	2-M6	12	47°11'	φ57.4	1.08

产品型号末尾的[H]表示齿部高频淬火的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 da 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter da has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	300	600	900	1,200	1,500	1,800	2,000
M3S 20R - 5816	1.006	1.777	2.370	3.008	3.632	4.247	4.651
M3S 20R - 5816H	0.878	1.582	2.146	2.674	3.155	-	-
M3S 30R - 7522	2.180	3.635	5.101	6.515	7.883	-	-
M3S 30R - 7522H	1.922	3.291	4.481	-	-	-	-

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
300	600	900	1,200	1,500	1,800	2,000
0.146	0.263	0.360	0.469	0.580	0.696	0.774
0.387	0.719	0.993	1.253	1.493	-	-
0.470	0.813	1.180	1.573	1.937	-	-
1.237	2.184	3.026	-	-	-	-

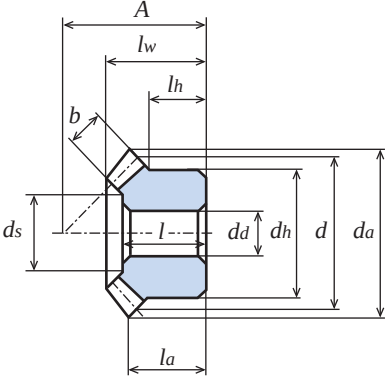
螺旋锥齿轮
SPIRAL BEVEL GEARS

模数 MODULE 3 压力角20° 齿数比1:2、1:3 螺旋角35°
1:2 and 1:2 Ratio 20° PRESSURE ANGLE 35° SPIRAL ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45) 单位: mm
Dimensions: mm

Table with 19 columns: Product Model, Ratio, Number of Teeth, Reference Diameter, Tip Diameter, Locating Distance, Bore Diameter, Hub Diameter, Hub Projection, Bore Length, Overall Length, Tip Distance, Face Width, Key Way, Set Screw, Face Angle, Tip Distance, Weight. Rows include models like B3S 18L-15, B3S 18L-15H, B3S 18L # 20H, B3S 36R-16, B3S 36R-16H, B3S 36R # 30H, B3S 15L-12, B3S 15L-12H, B3S 45R-18, B3S 45R-18H.

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47~53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

Table with 8 columns: Product Model, 300, 600, 900, 1,200, 1,500, 1,800, 2,000. Rows include models B3S 18L-15, B3S 18L-15H, B3S 15L-12, B3S 15L-12H.

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

Table with 8 columns: Product Model, 300, 600, 900, 1,200, 1,500, 1,800, 2,000. Rows include models B3S 18L-15, B3S 18L-15H, B3S 15L-12, B3S 15L-12H.

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技术资料 REFERENCE DATA

等径锥齿轮 MITER GEARS

模数
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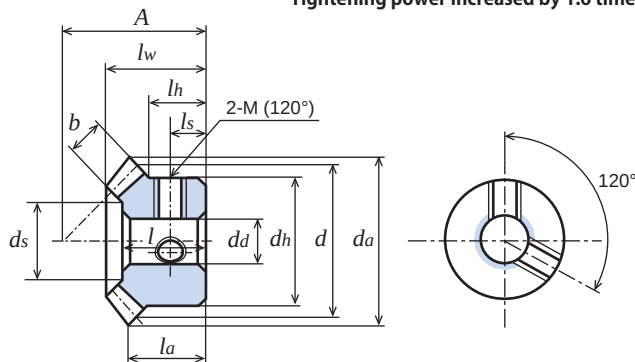
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压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B 1704 3级
System of Accuracy : JIS B1704 Class 3



New 新产品带有**两个螺纹孔 (120°)**
紧固能力增加 **1.6 倍**
New item with two threaded holes (120°)
Tightening power increased by 1.6 times.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆直径	齿顶圆直径	装 配 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_d</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b₂ × t₂</i>	2- <i>M</i>	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (g)
M1S 20 — 2106	1	20	φ20	φ21.41	21	φ 6	φ16	9	13	14.53	11.71	4.3	-	-	-	49° 3'	φ11.8	19.7
M1S 20 * 2106	1	20	φ20	φ21.41	21	φ 6	φ16	9	13	14.53	11.71	4.3	-	2-M4	4.5	49° 3'	φ11.8	18.9
M1S 20 * 2108	1	20	φ20	φ21.41	21	φ 8	φ16	9	13	14.53	11.71	4.3	-	2-M4	4.5	49° 3'	φ11.8	16.9
M1S 20 — 1406	1	20	φ20	φ21.41	14	φ 6	φ16	2	6	7.53	4.71	4.3	-	-	-	49° 3'	φ11.8	10.2
M1S 20 = 1408	1	20	φ20	φ21.41	14	φ 8	φ16	2	6	7.53	4.71	4.3	3 × 1.4	-	-	49° 3'	φ11.8	9.0
M1S 25 — 2306	1	25	φ25	φ26.41	23	φ 6	φ20	8	13	14.7	11.21	5.3	-	-	-	48°51'	φ15.0	33.2
M1S 25 * 2308	1	25	φ25	φ26.41	23	φ 8	φ20	8	13	14.7	11.21	5.3	-	2-M4	4	48°51'	φ15.0	30.0
M1S 25 * 2310	1	25	φ25	φ26.41	23	φ10	φ20	8	13	14.7	11.21	5.3	-	2-M4	4	48°51'	φ15.0	27.3

标号[*]表示带有两个螺纹孔/带有两个固定螺钉。[*]: Gear with two threaded holes / with two set screws.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M1S 20 — 2106	1.0	10.5	21.2	42.3	63.5	84.7	104.7
M1S 25 — 2306	1.7	17.5	35.0	70.0	105.0	139.9	169.1

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

等径锥齿轮
MITER GEARS

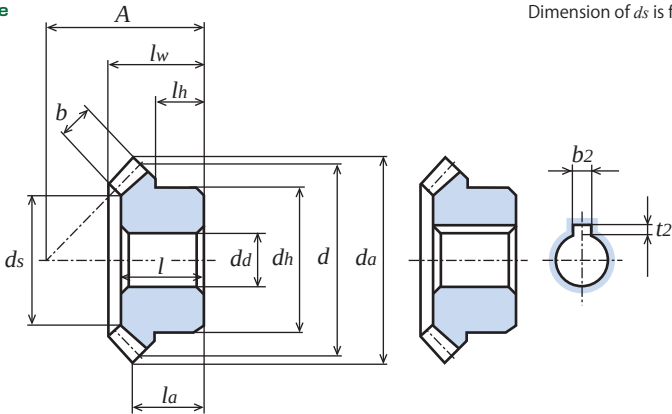
模数
MODULE 1

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B 1704 3级
System of Accuracy : JIS B1704 Class 3



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b</i> 2 × <i>t</i> 2	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W</i> (g)
														2-M	<i>ls</i>			
M1S 30 — 2608	1	30	φ30	φ31.41	26	φ 8	φ22	8.9	14.5	15.89	11.71	6.2	-	-	-	47°42'	φ19.4	46.4
M1S 30 * 2608	1	30	φ30	φ31.41	26	φ 8	φ22	8.9	14.5	15.89	11.71	6.2	-	2-M5	4.5	47°42'	φ19.4	44.7
M1S 30 * 2610	1	30	φ30	φ31.41	26	φ10	φ22	8.9	14.5	15.89	11.71	6.2	-	2-M5	4.5	47°42'	φ19.4	41.8
M1S 30 * 2612	1	30	φ30	φ31.41	26	φ12	φ22	8.9	14.5	15.89	11.71	6.2	-	2-M5	4.5	47°42'	φ19.4	38.3
M1S 30 — 2008	1	30	φ30	φ31.41	20	φ 8	φ22	2.9	8.5	9.89	5.71	6.2	-	-	-	47°42'	φ19.4	30.9
M1S 30 = 2010	1	30	φ30	φ31.41	20	φ10	φ22	2.9	8.5	9.89	5.71	6.2	3 × 1.4	-	-	47°42'	φ19.4	28.7
M1S 30 = 2012	1	30	φ30	φ31.41	20	φ12	φ22	2.9	8.5	9.89	5.71	6.2	4 × 1.8	-	-	47°42'	φ19.4	26.2

标号[*]表示带有两个螺纹孔/带有两个固定螺钉。[*]: Gear with two threaded holes / with two set screwsw.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M1S 30 — 2608	2.6	26.2	52.4	104.7	157.2	202.7	241.9

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

目次表 CONTENTS	齿轮信息 GEAR INFORMATION	齿轮箱 GEAR BOXES	无隙隙齿轮 ANTI BACKLASH SPUR GEARS	研磨直齿轮 GROUND SPUR GEARS	直齿轮 SPUR GEARS	内齿轮 INTERNAL GEARS	研磨齿条 GROUND RACKS	齿条 RACKS	斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿轮 BEVEL GEARS	技术资料 REFERENCE DATA
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锥齿轮

MITER AND BEVEL GEARS

模数
MODULE

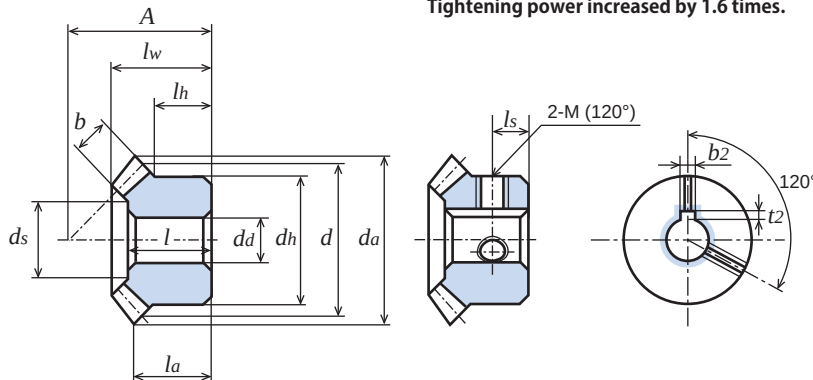
1

压力角20° 齿数比1:2、1:3

1:2 and 1:3 Ratio 20° PRESSURE ANGLE

JIS B 1704 3级
System of Accuracy : JIS B1704 Class 3

New

新产品带有两个螺纹孔 (120°)
紧固能力增加 1.6 倍New item with two threaded holes (120°)
Tightening power increased by 1.6 times.

ISO C45 机械构造用碳素钢 (JIS G 4051)

Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	螺 纹 孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Set Screw		Face Angle		Weight
													M	l _s			
B1S 20 — 6	2	20	φ20	φ21.79	29.6	φ 6	φ16	8.6	14	15.03	10.05	5.7	-	-	29° 8'	φ12.1	21.3
B1S 20 * 6	2	20	φ20	φ21.79	29.6	φ 6	φ16	8.6	14	15.03	10.05	5.7	2-M4	4	29° 8'	φ12.1	20.5
B1S 20 * 8	2	20	φ20	φ21.79	29.6	φ 8	φ16	8.6	14	15.03	10.05	5.7	2-M4	4	29° 8'	φ12.1	18.3
B1S 40 — 8	2	40	φ40	φ40.89	21.8	φ 8	φ25	8	13	15.02	12.69	5.7	-	-	66° 0'	φ28.4	71.7
B1S 40 * 8	2	40	φ40	φ40.89	21.8	φ 8	φ25	8	13	15.02	12.69	5.7	2-M5	4	66° 0'	φ28.4	69.6
B1S 40 * 10	2	40	φ40	φ40.89	21.8	φ10	φ25	8	13	15.02	12.69	5.7	2-M5	4	66° 0'	φ28.4	67.0
B1S 15 — 6	3	15	φ15	φ17.67	31	φ 6	φ13	8.17	14.4	15.16	8.95	6.7	-	-	22°17'	φ 8.0	12.0
B1S 15 * 6	3	15	φ15	φ17.67	31	φ 6	φ13	8.17	14.4	15.16	8.95	6.7	2-M4	4	22°17'	φ 8.0	11.4
B1S 45 — 10	3	45	φ45	φ45.37	20	φ10	φ25	8	12.9	14.97	13.06	6.7	-	-	73°27'	φ31.1	86.0
B1S 45 * 10	3	45	φ45	φ45.37	20	φ10	φ25	8	12.9	14.97	13.06	6.7	2-M5	4	73°27'	φ31.1	84.2

标号[*]表示带有两个螺纹孔/带有两个固定螺钉。[*]: Gear with two threaded holes / with two set screws.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (kW) Bending Strength

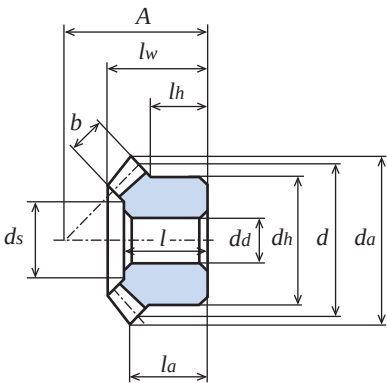
产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
B1S 20 - 6	1.3	13.8	27.7	55.5	83.3	111.1	138.0
B1S 15 - 6	1.1	11.3	22.6	45.6	68.5	91.2	113.4

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

JIS B 1704 3级
System of Accuracy : JIS B1704 Class 3



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>dd</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	顶锥角 Face Angle δ_a	<i>ds</i>	重量 Weight <i>W</i> (g)
M1.25S 20 – 2408	1	20	$\phi 25$	$\phi 26.77$	24	$\phi 8$	$\phi 20$	8.99	14	16	12.38	5.5	49° 3′	$\phi 14.4$	33.1
M1.25S 25 – 2808	1	25	$\phi 31.25$	$\phi 33.02$	28	$\phi 8$	$\phi 26$	9.75	15.5	17.35	13.26	6.2	48° 51′	$\phi 19.9$	64.0
M1.25S 30 – 3210	1	30	$\phi 37.5$	$\phi 39.27$	32	$\phi 10$	$\phi 28$	10	17	18.85	14.13	7	47° 42′	$\phi 25.2$	88.6

	齿数比 Ratio	导程角 Pitch Angle			轴角 Shaft Angle
等径锥齿轮 Miter gear	1 : 1	45°			90°
锥齿轮 Bevel gear	1 : 2	小齿轮 Pinion Gear	26° 34′ 63° 26′		90°
	1 : 3	小齿轮 Pinion Gear	18° 26′ 71° 34′		90°

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M1.25S 20 – 2408	2.0	20.9	41.9	83.9	125.9	167.1	206.7
M1.25S 25 – 2808	3.2	32.5	65.0	130.2	195.0	249.6	298.2
M1.25S 30 – 3210	4.6	46.9	93.9	187.7	274.3	347.8	414.3

上述数字相当于JGMA公式，仅供参考。The above numerical values are equivalent to JGMA formulas as reference only.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

目次表 CONTENTS	齿轮信息 GEAR INFORMATION	齿轮箱 GEAR BOXES	无侧隙齿轮 ANTI BACKLASH SPUR GEARS	研磨直齿轮 GROUND SPUR GEARS	直齿轮 SPUR GEARS	内齿轮 INTERNAL GEARS	研磨齿条 GROUND RACKS	齿条 RACKS	斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿轮 BEVEL GEARS	技术资料 REFERENCE DATA
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等径锥齿轮 MITER GEARS

模数
MODULE

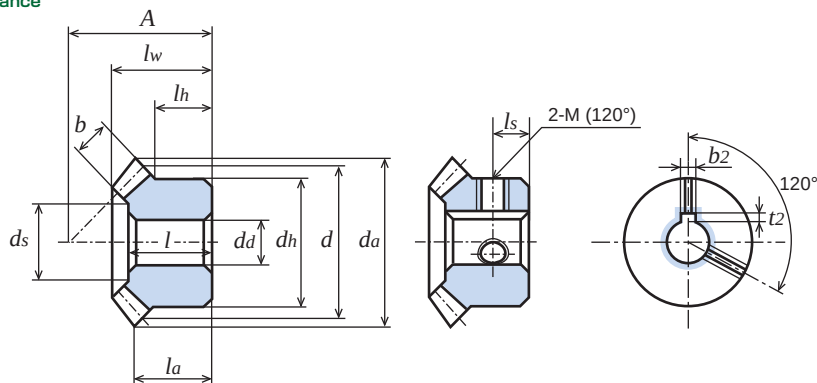
1.5

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
														2-M	ls			
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_a</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b</i> × <i>t</i> 2	2-M	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (g)
M1.5S 20 – 2810	1	20	φ30	φ32.12	28	φ10	φ24	10	16.5	18.53	14.06	6.8	-	-	-	49° 3′	φ17.7	54.9
M1.5S 20 – 2810H	1	20	φ30	φ32.12	28	φ10(H8)	φ24	10	16.5	18.53	14.06	6.8	-	-	-	49° 3′	φ17.7	54.9
M1.5S 20 # 2810H	1	20	φ30	φ32.12	28	φ10(H8)	φ24	10	16.5	18.53	14.06	6.8	3 × 1.4	2-M4	5	49° 3′	φ17.7	53.7
M1.5S 20 # 2812H	1	20	φ30	φ32.12	28	φ12(H8)	φ24	10	16.5	18.53	14.06	6.8	4 × 1.8	2-M4	5	49° 3′	φ17.7	49.0
M1.5S 20 – 2110	1	20	φ30	φ32.12	21	φ10	φ24	3	9	11	7.06	6	-	-	-	49° 3′	φ19.0	32.8
M1.5S 20 – 2110H	1	20	φ30	φ32.12	21	φ10(H8)	φ24	3	9	11	7.06	6	-	-	-	49° 3′	φ19.0	32.8
M1.5S 20 = 2110H	1	20	φ30	φ32.12	21	φ10(H8)	φ24	3	9	11	7.06	6	3 × 1.4	-	-	49° 3′	φ19.0	32.5
M1.5S 25 – 3410	1	25	φ37.5	φ39.62	34	φ10	φ30	11.5	19	21.26	16.31	7.5	-	-	-	48°51′	φ23.7	106.5
M1.5S 25 – 3410H	1	25	φ37.5	φ39.62	34	φ10(H8)	φ30	11.5	19	21.26	16.31	7.5	-	-	-	48°51′	φ23.7	106.5

产品型号末尾的[H]表示齿部高频淬火的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.

标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M1.5S 20 - 2810	3.7	37.1	74.4	148.9	223.3	287.6	344.7
M1.5S 20 - 2810H	3.4	34.4	68.9	137.8	206.7	267.0	321.6
M1.5S 20 - 2110	3.3	33.5	67.0	134.1	201.1	259.2	310.8
M1.5S 20 - 2110H	3.1	31.7	63.5	127.0	190.5	246.2	296.4
M1.5S 25 - 3410	5.6	56.5	113.1	226.3	331.5	419.3	499.1
M1.5S 25 - 3410H	5.3	53.6	107.2	214.4	314.6	400.3	478.5

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.2	2.8	5.7	11.7	18.1	23.4	27.6
0.7	8.0	16.5	34.0	52.0	68.0	82.8
0.2	2.6	5.3	10.6	15.5	20.8	25.1
0.6	7.4	15.2	31.4	48.0	62.8	76.4
0.5	5.1	10.5	21.3	31.4	40.2	48.4
1.3	14.7	30.4	62.7	93.6	120.6	145.6

等径锥齿轮
MITER GEARS

模数
MODULE

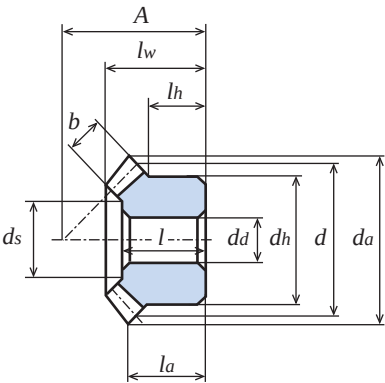
1.5

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b2 × t2</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W</i> (g)
														2-M	<i>ls</i>			
M1.5S 30 – 3812	1	30	φ45	φ47.12	38	φ12	φ33	12.34	21	22.83	16.56	9.3	-	-	-	47°42'	φ29.6	152.0
M1.5S 30 – 3812H	1	30	φ45	φ47.12	38	φ12(H8)	φ33	12.34	21	22.83	16.56	9.3	-	-	-	47°42'	φ29.6	152.0
M1.5S 30 # 3812H	1	30	φ45	φ47.12	38	φ12(H8)	φ33	12.34	21	22.83	16.56	9.3	4 × 1.8	2-M4	6.5	47°42'	φ29.6	150.1
M1.5S 30 # 3815H	1	30	φ45	φ47.12	38	φ15(H8)	φ33	12.34	21	22.83	16.56	9.3	5 × 2.3	2-M4	6.5	47°42'	φ29.6	139.0
M1.5S 30 # 3816H	1	30	φ45	φ47.12	38	φ16(H8)	φ33	12.34	21	22.83	16.56	9.3	5 × 2.3	2-M4	6.5	47°42'	φ29.6	135.0

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	1,000
M1.5S 30 – 3812	8.8	88.3	176.7	353.5	501.8	630.0
M1.5S 30 – 3812H	8.3	83.2	166.5	333.1	475.1	599.9

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min					
10	100	200	400	600	1,000
0.9	9.5	19.1	38.7	55.6	70.7
2.3	26.4	54.5	112.5	163.3	208.9

目次表 CONTENTS	齿轮信息 GEAR INFORMATION	齿形箱 GEAR BOXES	无侧隙齿轮 ANTI BACKLASH SPUR GEARS	研磨直齿轮 GROUND SPUR GEARS	直齿轮 SPUR GEARS	内齿轮 INTERNAL GEARS	研磨齿条 GROUND RACKS	齿条 RACKS	斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿轮 BEVEL GEARS	技术资料 REFERENCE DATA
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锥齿轮 BEVEL GEARS

模数
MODULE

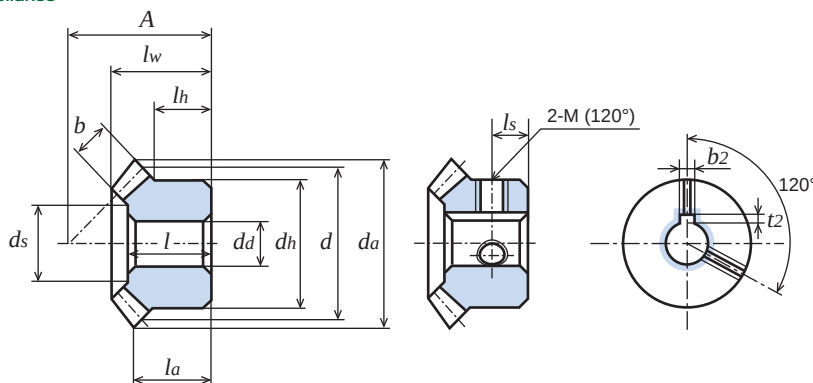
1.5

压力角20° 齿数比1:2
1:2 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b2 × t2</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W</i> (g)
														2-M	<i>ls</i>			
B1.5S 18 - 8	2	18	φ27	φ29.68	40.74	φ8	φ22	12.5	21	22.96	14.41	9.8	-	-	-	29°25'	φ12.2	59.4
B1.5S 18 - 8H	2	18	φ27	φ29.68	40.74	φ8 (H8)	φ22	12.5	21	22.96	14.41	9.8	-	-	-	29°25'	φ12.2	59.4
B1.5S 18 # 10H	2	18	φ27	φ29.68	40.74	φ10 (H8)	φ22	12.5	21	22.96	14.41	9.8	3 × 1.4	2-M4	6.5	29°25'	φ12.2	54.5
B1.5S 36 - 10	2	36	φ54	φ55.34	26.75	φ10	φ30	10	15.5	18.54	14.59	9.8	-	-	-	66°17'	φ34.3	139.9
B1.5S 36 - 10H	2	36	φ54	φ55.34	26.75	φ10 (H8)	φ30	10	15.5	18.54	14.59	9.8	-	-	-	66°17'	φ34.3	139.9
B1.5S 36 # 10H	2	36	φ54	φ55.34	26.75	φ10 (H8)	φ30	10	15.5	18.54	14.59	9.8	3 × 1.4	2-M4	5	66°17'	φ34.3	138.6
B1.5S 36 # 15H	2	36	φ54	φ55.34	26.75	φ15 (H8)	φ30	10	15.5	18.54	14.59	9.8	5 × 2.3	2-M4	5	66°17'	φ34.3	126.0

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (W)

Allowable transfer capability table (W) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
B1.5S 18 - 8	4.4	44.4	88.8	170.3	255.4	334.6	403.0
B1.5S 18 - 8H	4.1	41.1	82.2	164.4	246.6	323.5	390.8

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)

Allowable transfer capability table (W) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.3	3.9	7.6	15.8	23.9	31.4	38.1
1.0	11.6	24.0	49.6	75.7	100.6	122.7

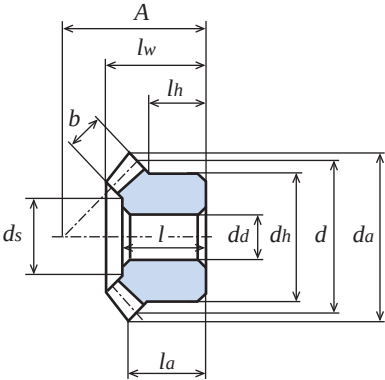
锥齿轮
BEVEL GEARS

模数
MODULE 1.5 压力角 20° (普通齿) 齿数比 1 : 3
1 : 3 Ratio 20° PRESSURE ANGLE FULL DEPTH TOOTH

JIS B1704 3级 (齿部高频淬火产品 : 4级)
System of Accuracy : JIS B 1704 Class 3
(Induction hardened products : Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)
单位 : mm
Dimensions : mm

Table with 19 columns: Product Model, Ratio, Number of Teeth, Reference Diameter, Tip Diameter, Locating Distance, Bore Diameter, Hub Diameter, Hub Projection, Bore Length, Overall Length, Tip Distance, Face Width, Key Way, Set Screw, Face Angle, ds, Weight. Rows include B1.5S 15-8, B1.5S 15-8H, B1.5S 15 # 8H, B1.5S 45-12, B1.5S 45-12H, B1.5S 45 # 15H, B1.5S 45 # 16H.

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H] : Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#] : Gear with key way and threaded hole / with key and screw.

Table with 4 columns: Gear Type, Ratio, Pitch Angle, Shaft Angle. Rows include Miter gear (1:1, 45°, 90°) and Bevel gear (1:2, 1:3, 26° 34', 63° 26', 18° 26', 71° 34', 90°).

容许传达动力表 弯曲强度 (W)
Allowable transfer capability table (W) Bending Strength
Table with 7 columns: Product Model, 10, 100, 200, 400, 600, 800, 1,000 rpm.
The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (W)
Allowable transfer capability table (W) Surface Durability
Table with 7 columns: Product Model, 10, 100, 200, 400, 600, 800, 1,000 rpm.

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直齿轮 SPUR GEARS
内齿轮 INTERNAL GEARS
研磨齿条 GROUND RACKS
齿条 RACKS
斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS
蜗轮・蜗杆 WORMS AND WORM WHEELS
锥齿轮 BEVEL GEARS
技术资料 REFERENCE DATA

等径锥齿轮 MITER GEARS

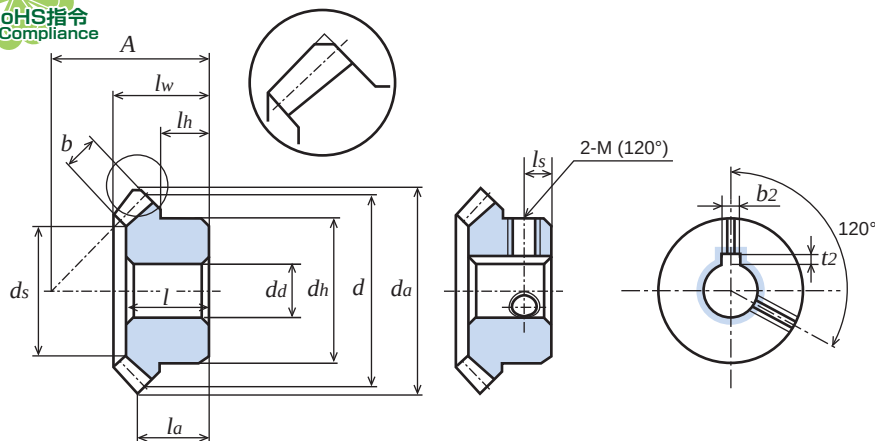
模数
MODULE 2

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	装配距离 Locating Distance A	孔径 Bore Diameter $d_d(H7)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection l_h	穴长度 Bore Length l	全长 Overall Length l_w	Tip Distance l_a	齿宽 Face Width b	键槽 Key Way $b_2 \times t_2$	螺纹孔 Set Screw		顶锥角 Face Angle δ_a	顶锥距 d_s	重量 Weight $W(g)$
														2-M	l_s			
M2S 20 - 3712	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	37	$\phi 12$	$\phi 34$	14	21	24	18.41	8.5	-	-	-	49° 3'	$\phi 23.9$	141.0
M2S 20 - 3712H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	37	$\phi 12(H8)$	$\phi 34$	14	21	24	18.41	8.5	-	-	-	49° 3'	$\phi 23.9$	141.0
M2S 20 # 3712H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	37	$\phi 12(H8)$	$\phi 34$	14	21	24	18.41	8.5	4 × 1.8	2-M5	7	49° 3'	$\phi 23.9$	138.4
M2S 20 # 3715H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	37	$\phi 15(H8)$	$\phi 34$	14	21	24	18.41	8.5	5 × 2.3	2-M5	7	49° 3'	$\phi 23.9$	127.4
M2S 20 # 3716H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	37	$\phi 16(H8)$	$\phi 34$	14	21	24	18.41	8.5	5 × 2.3	2-M5	7	49° 3'	$\phi 23.9$	123.5
M2S 20 - 2812	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	28	$\phi 12$	$\phi 34$	5	12	15	9.41	8.5	-	-	-	49° 3'	$\phi 23.9$	84.9
M2S 20 - 2812H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	28	$\phi 12(H8)$	$\phi 34$	5	12	15	9.41	8.5	-	-	-	49° 3'	$\phi 23.9$	84.9
M2S 20 = 2812H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	28	$\phi 12(H8)$	$\phi 34$	5	12	15	9.41	8.5	4 × 1.8	-	-	49° 3'	$\phi 23.9$	84.2
M2S 20 = 2815H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	28	$\phi 15(H8)$	$\phi 34$	5	12	15	9.41	8.5	5 × 2.3	-	-	49° 3'	$\phi 23.9$	77.8
M2S 20 = 2816H	1	20	$\phi 40$	$\phi 41.32$ ($\phi 42.83$)	28	$\phi 16(H8)$	$\phi 34$	5	12	15	9.41	8.5	5 × 2.3	-	-	49° 3'	$\phi 23.9$	75.5
M2S 25 - 4012	1	25	$\phi 50$	$\phi 51.33$ ($\phi 52.83$)	40	$\phi 12$	$\phi 42$	10.99	21	23.34	16.41	10.5	-	-	-	48° 51'	$\phi 32.3$	227.0
M2S 25 - 4012H	1	25	$\phi 50$	$\phi 51.33$ ($\phi 52.83$)	40	$\phi 12(H8)$	$\phi 42$	10.99	21	23.34	16.41	10.5	-	-	-	48° 51'	$\phi 32.3$	227.0

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M2S 20 - 3712	0.008	0.083	0.167	0.334	0.484	0.611	0.726
M2S 20 - 3712H	0.007	0.078	0.156	0.313	0.455	0.578	0.689
M2S 25 - 4012	0.013	0.139	0.279	0.554	0.777	0.971	1.143
M2S 25 - 4012H	0.013	0.131	0.262	0.522	0.735	0.923	1.091

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

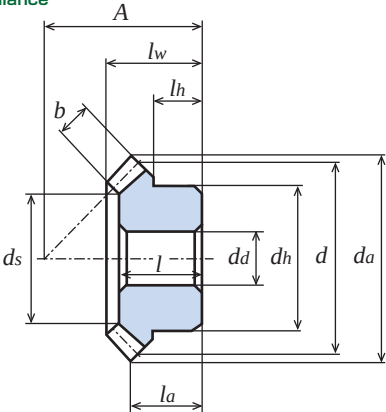
旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.001	0.006	0.013	0.027	0.040	0.051	0.061
0.001	0.018	0.038	0.079	0.117	0.151	0.182
0.001	0.013	0.026	0.054	0.076	0.097	0.115
0.003	0.037	0.076	0.156	0.224	0.285	0.340

等径锥齿轮
MITER GEARS

模数
MODULE 2

压力角20° 齿数比1: 1
1 : 1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品 : 4级)
System of Accuracy : JIS B 1704 Class 3
(Induction hardened products : Class 4)



订购时请写入明确完整的产品型号。

Please refer to the catalogue reference while ordering.

ds的尺寸仅供参考。
Dimension of ds is for reference only.

ISO C45 机械构造用碳素钢 (JIS G 4051)
Material : Carbon Steel (ISO C45)

单位 : mm
Dimensions : mm

产品型号 Catalogue Number	齿数比 Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d'	齿顶圆直径 Tip Diameter da	装配距离 Locating Distance A	孔径 Bore Diameter da(H7)	轮毂外径 Hub Diameter dh	轮毂长度 Hub Projection lh	穴长度 Bore Length l	全长 Overall Length lw	Tip Distance la	齿宽 Face Width b	键槽 Key Way b2 × t2	螺纹孔 Set Screw		顶锥角 Face Angle δa	ds	重量 Weight W(g)
														2-M	ls			
M2S 30 — 5116	1	30	φ60	φ61.36 ^(φ62.83)	51	φ16	φ44	16.79	28	30.77	22.41	12.4	-	-	-	47°42'	φ38.9	361.4
M2S 30 — 5116H	1	30	φ60	φ61.36 ^(φ62.83)	51	φ16(H8)	φ44	16.79	28	30.77	22.41	12.4	-	-	-	47°42'	φ38.9	361.4
M2S 30 # 5118H	1	30	φ60	φ61.36 ^(φ62.83)	51	φ18(H8)	φ44	16.79	28	30.77	22.41	12.4	6 × 2.8	2-M5	8.5	47°42'	φ38.9	344.4
M2S 30 # 5120H	1	30	φ60	φ61.36 ^(φ62.83)	51	φ20(H8)	φ44	16.79	28	30.77	22.41	12.4	6 × 2.8	2-M5	8.5	47°42'	φ38.9	333.3

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H] : Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#] : Gear with key way and threaded hole / with key and screw.

齿顶圆直径da的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。
The numeric indicated in the bracket () under the column. Outside diameter da has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
M2S 30 — 5116	0.020	0.209	0.418	0.809	1.121	1.388
M2S 30 — 5116H	0.019	0.197	0.394	0.765	1.066	1.328

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min					
10	100	200	400	600	800
0.002	0.023	0.047	0.092	0.129	0.163
0.005	0.064	0.132	0.265	0.376	0.474

目次表 CONTENTS	齿轮信息 GEAR INFORMATION	齿轮箱 GEAR BOXES	无隙隙齿轮 ANTI BACKLASH SPUR GEARS	研磨直齿轮 GROUND SPUR GEARS	直齿轮 SPUR GEARS	内齿轮 INTERNAL GEARS	研磨齿条 GROUND RACKS	齿条 RACKS	斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿轮 BEVEL GEARS	技术资料 REFERENCE DATA
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锥齿轮 BEVEL GEARS

模数
MODULE

2

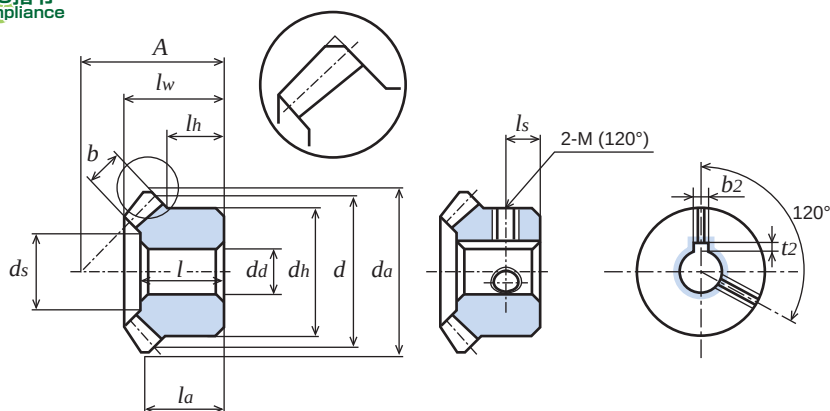
压力角20° 齿数比1:2

1:2 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051)

Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_i</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b₂ × t₂</i>	2-M	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (g)
B2S 18 — 10	2	18	φ36	^(φ39.58) φ37.81	53.12	φ10	φ28	15.12	27	29	18.01	12.6	-	-	-	29°25′	φ19.1	129.6
B2S 18 — 10H	2	18	φ36	^(φ39.58) φ37.81	53.12	φ10(H8)	φ28	15.12	27	29	18.01	12.6	-	-	-	29°25′	φ19.1	129.6
B2S 18 # 12H	2	18	φ36	^(φ39.58) φ37.81	53.12	φ12(H8)	φ28	15.12	27	29	18.01	12.6	4 × 1.8	2-M5	8	29°25′	φ19.1	119.8
B2S 36 — 12	2	36	φ72	^(φ73.79) φ72.15	35.21	φ12	φ36	13	21	24.07	19	12.6	-	-	-	66°17′	φ47.6	313.0
B2S 36 — 12H	2	36	φ72	^(φ73.79) φ72.15	35.21	φ12(H8)	φ36	13	21	24.07	19	12.6	-	-	-	66°17′	φ47.6	313.0
B2S 36 # 18H	2	36	φ72	^(φ73.79) φ72.15	35.21	φ18(H8)	φ36	13	21	24.07	19	12.6	6 × 2.8	2-M5	6.5	66°17′	φ47.6	285.8
B2S 36 # 20H	2	36	φ72	^(φ73.79) φ72.15	35.21	φ20(H8)	φ36	13	21	24.07	19	12.6	6 × 2.8	2-M5	6.5	66°17′	φ47.6	276.1

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 d_a 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋 转 速 度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
B2S 18 — 10	0.010	0.102	0.204	0.408	0.602	0.764	0.912
B2S 18 — 10H	0.009	0.095	0.190	0.380	0.562	0.716	0.857

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

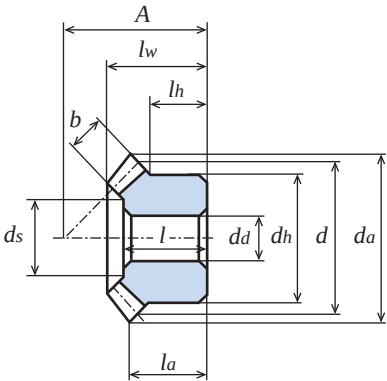
Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.010	0.010	0.020	0.040	0.060	0.077	0.093
0.002	0.027	0.057	0.118	0.177	0.228	0.276

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

Table with 19 columns: Product Model, Ratio, Number of Teeth, Reference Diameter, Tip Diameter, Locating Distance, Bore Diameter, Hub Diameter, Hub Projection, Bore Length, Overall Length, Tip Distance, Face Width, Key Way, Set Screw, Face Angle, Tip Distance, Weight. Rows include B2S 15, B2S 45, and B2S 45 # models.

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47~53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

Table with 4 columns: Gear Type, Ratio, Pitch Angle, Shaft Angle. Rows include Miter gear and Bevel gear with different ratios and pinion gear details.

容许传达动力表 弯曲强度 (kW)
Allowable transfer capability table (kW) Bending Strength
Table with 8 columns: Product Model, 10, 100, 200, 400, 600, 800, 1,000 rpm.

容许传达动力表 齿面强度 (kW)
Allowable transfer capability table (kW) Surface Durability
Table with 8 columns: Product Model, 10, 100, 200, 400, 600, 800, 1,000 rpm.

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

目录表 CONTENTS
齿轮信息 INFORMATION
齿轮箱 GEAR BOXES
无侧隙齿轮 ANTI BACKLASH SPUR GEARS
研磨直齿轮 GROUND SPUR GEARS
直齿轮 SPUR GEARS
内齿轮 INTERNAL GEARS
研磨齿条 GROUND RACKS
齿条 RACKS
斜齿轮・螺旋齿轮 HELICAL GEARS AND SCREW GEARS
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锥齿轮 BEVEL GEARS
技术资料 REFERENCE DATA

等径锥齿轮

MITER GEARS

模数
MODULE

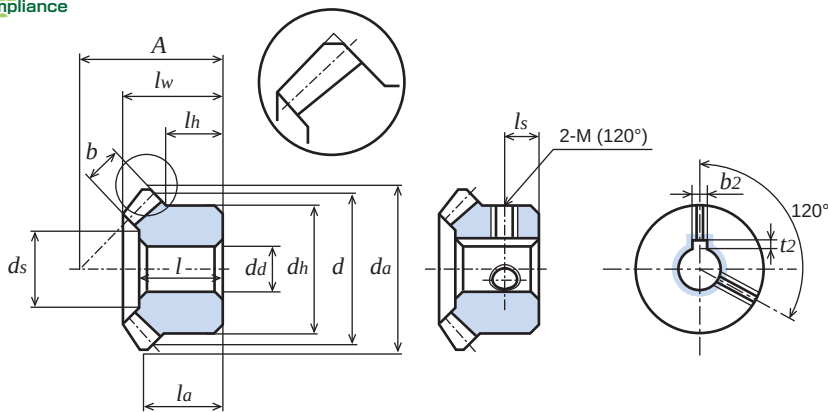
2.5

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051)

Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>d_a</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>d_a(H7)</i>	轮毂外径 Hub Diameter <i>d_h</i>	轮毂长度 Hub Projection <i>l_h</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>l_w</i>	Tip Distance <i>l_a</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b₂ × t₂</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δ_a</i>	<i>d_s</i>	重量 Weight <i>W(g)</i>
														2-M	<i>l_s</i>			
M2.5S 20 - 4814	1	20	φ50	φ51.66 (φ53.54)	48	φ14	φ42	19	28	32.06	24.77	11.1	-	-	-	49° 3'	φ28.5	294.0
M2.5S 20 - 4814H	1	20	φ50	φ51.66 (φ53.54)	48	φ14(H8)	φ42	19	28	32.06	24.77	11.1	-	-	-	49° 3'	φ28.5	294.0
M2.5S 20 # 4815H	1	20	φ50	φ51.66 (φ53.54)	48	φ15(H8)	φ42	19	28	32.06	24.77	11.1	5 × 2.3	2-M5	9.5	49° 3'	φ28.5	284.7
M2.5S 20 # 4816H	1	20	φ50	φ51.66 (φ53.54)	48	φ16(H8)	φ42	19	28	32.06	24.77	11.1	5 × 2.3	2-M5	9.5	49° 3'	φ28.5	279.5
M2.5S 20 # 4818H	1	20	φ50	φ51.66 (φ53.54)	48	φ18(H8)	φ42	19	28	32.06	24.77	11.1	6 × 2.8	2-M5	9.5	49° 3'	φ28.5	266.7
M2.5S 20 # 4820H	1	20	φ50	φ51.66 (φ53.54)	48	φ20(H8)	φ42	19	28	32.06	24.77	11.1	6 × 2.8	2-M5	9.5	49° 3'	φ28.5	253.7
M2.5S 20 - 3514	1	20	φ50	φ51.66 (φ53.54)	35	φ14	φ42	6	15	19.06	11.77	11.1	-	-	-	49° 3'	φ28.5	168.3
M2.5S 20 - 3514H	1	20	φ50	φ51.66 (φ53.54)	35	φ14(H8)	φ42	6	15	19.06	11.77	11.1	-	-	-	49° 3'	φ28.5	168.3
M2.5S 20 = 3515H	1	20	φ50	φ51.66 (φ53.54)	35	φ15(H8)	φ42	6	15	19.06	11.77	11.1	5 × 2.3	-	-	49° 3'	φ28.5	164.3
M2.5S 20 = 3518H	1	20	φ50	φ51.66 (φ53.54)	35	φ18(H8)	φ42	6	15	19.06	11.77	11.1	6 × 2.8	-	-	49° 3'	φ28.5	154.5
M2.5S 20 = 3520H	1	20	φ50	φ51.66 (φ53.54)	35	φ20(H8)	φ42	6	15	19.06	11.77	11.1	6 × 2.8	-	-	49° 3'	φ28.5	147.5
M2.5S 25 - 5016	1	25	φ62.5	φ64.16 (φ66.04)	50	φ16	φ52	13.5	27	29.42	20.52	13.5	-	-	-	48° 51'	φ40.8	441.2
M2.5S 25 - 5016H	1	25	φ62.5	φ64.16 (φ66.04)	50	φ16(H8)	φ52	13.5	27	29.42	20.52	13.5	-	-	-	48° 51'	φ40.8	441.2

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M2.5S 20 - 4814	0.016	0.169	0.338	0.672	0.941	1.177	1.385
M2.5S 20 - 4814H	0.015	0.157	0.314	0.626	0.881	1.108	1.309
M2.5S 25 - 5016	0.027	0.279	0.558	1.069	1.480	1.829	2.171
M2.5S 25 - 5016H	0.026	0.261	0.522	1.005	1.398	1.737	2.051

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.001	0.013	0.028	0.056	0.080	0.101	0.121
0.003	0.038	0.079	0.162	0.232	0.295	0.353
0.002	0.027	0.055	0.107	0.150	0.189	0.229
0.006	0.075	0.154	0.307	0.435	0.547	0.653

等径锥齿轮
MITER GEARS

模数
MODULE

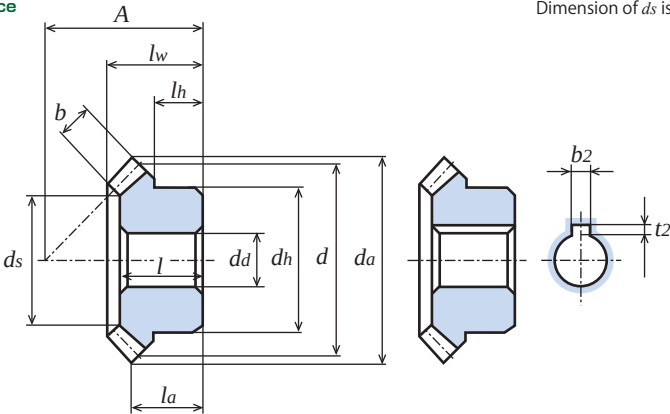
2.5

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio	齿数 Number of Teeth	分度圆直径 Reference Diameter	齿顶圆直径 Tip Diameter	装配距离 Locating Distance	孔径 Bore Diameter	轮毂外径 Hub Diameter	轮毂长度 Hub Projection	穴长度 Bore Length	全长 Overall Length	Tip Distance	齿宽 Face Width	键槽 Key Way	螺纹孔 Set Screw		顶锥角 Face Angle	重量 Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>da</i>	<i>A</i>	<i>da</i> (H7)	<i>dh</i>	<i>lh</i>	<i>l</i>	<i>lw</i>	<i>la</i>	<i>b</i>	<i>b</i> × <i>t</i> ₂	2-M	<i>ls</i>	<i>δa</i>	
M2.5S 30 – 6318	1	30	φ75	^(φ78.54) φ76.7	63	φ18	φ55	20.5	34.5	37.71	27.27	15.5	-	-	-	47°42'	φ49.1 711.1
M2.5S 30 – 6318H	1	30	φ75	^(φ78.54) φ76.7	63	φ18(H8)	φ55	20.5	34.5	37.71	27.27	15.5	-	-	-	47°42'	φ49.1 711.1
M2.5S 30 # 6320H	1	30	φ75	^(φ78.54) φ76.7	63	φ20(H8)	φ55	20.5	34.5	37.71	27.27	15.5	6 × 2.8	2-M5	10.5	47°42'	φ49.1 688.1
M2.5S 30 # 6325H	1	30	φ75	^(φ78.54) φ76.7	63	φ25(H8)	φ55	20.5	34.5	37.71	27.27	15.5	8 × 3.3	2-M6	10.5	47°42'	φ49.1 637.2
M2.5S 30 – 5016	1	30	φ75	^(φ78.54) φ76.7	50	φ16	φ55	7.5	21.5	24.71	14.27	15.5	-	-	-	47°42'	φ49.1 503.6
M2.5S 30 – 5016H	1	30	φ75	^(φ78.54) φ76.7	50	φ16(H8)	φ55	7.5	21.5	24.71	14.27	15.5	-	-	-	47°42'	φ49.1 503.6
M2.5S 30 = 5020H	1	30	φ75	^(φ78.54) φ76.7	50	φ20(H8)	φ55	7.5	21.5	24.71	14.27	15.5	6 × 2.8	-	-	47°42'	φ49.1 481.7
M2.5S 30 = 5025H	1	30	φ75	^(φ78.54) φ76.7	50	φ25(H8)	φ55	7.5	21.5	24.71	14.27	15.5	8 × 3.3	-	-	47°42'	φ49.1 450.9

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

	齿数比 Ratio	导程角 Pitch Angle		轴角 Shaft Angle
等径锥齿轮 Miter gear	1:1	45°		90°
锥齿轮 Bevel gear	1:2	小齿轮 Pinion Gear	26° 34' 63° 26'	90°
	1:3	小齿轮 Pinion Gear	18° 26' 71° 34'	90°

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
M2.5S 30 – 6318	0.040	0.408	0.817	1.517	2.070	2.557
M2.5S 30 – 6318H	0.038	0.385	0.771	1.439	1.978	2.444

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.004	0.046	0.094	0.177	0.247	0.312	0.387
0.011	0.128	0.264	0.509	0.712	0.891	1.069

锥齿轮 BEVEL GEARS

模数
MODULE

2.5

压力角20° 齿数比1:2
1:2 Ratio 20° PRESSURE ANGLE

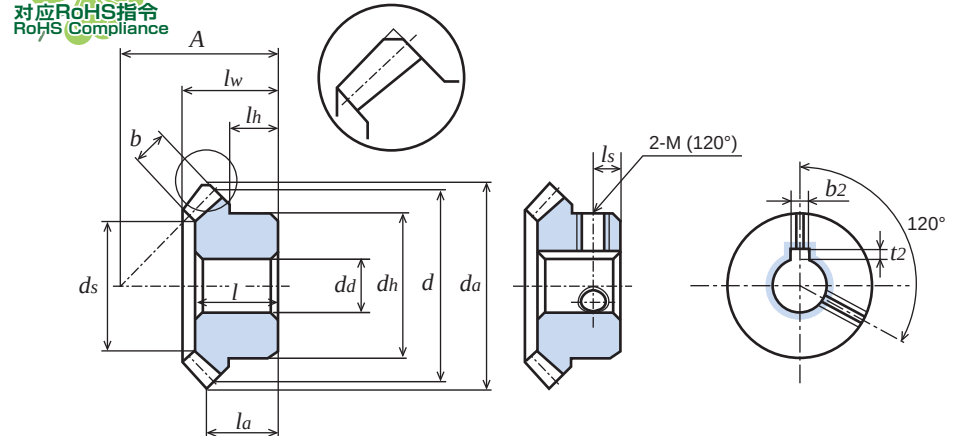
JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



对应RoHS指令
RoHS Compliance



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b</i> ₂ × <i>t</i> ₂	螺纹孔 Set Screw		顶锥角 Face Angle <i>δ</i> _a	<i>d</i> _s	重量 Weight <i>W</i> (kg)
														2-M	<i>l</i> _s			
B2.5S 18 – 12	2	18	φ45	φ47.27 (φ49.47)	64.29	φ12	φ36	17	32	34.97	20.41	16.7	-	-	-	29°25'	φ21.1	0.25
B2.5S 18 – 12H	2	18	φ45	φ47.27 (φ49.47)	64.29	φ12(H8)	φ36	17	32	34.97	20.41	16.7	-	-	-	29°25'	φ21.1	0.25
B2.5S 18 # 15H	2	18	φ45	φ47.27 (φ49.47)	64.29	φ15(H8)	φ36	17	32	34.97	20.41	16.7	5 × 2.3	2-M5	8.5	29°25'	φ21.1	0.23
B2.5S 36 – 14	2	36	φ90	φ90.18 (φ92.24)	42.55	φ14	φ50	15	25	29.01	22.29	16.7	-	-	-	66°17'	φ57.5	0.64
B2.5S 36 – 14H	2	36	φ90	φ90.18 (φ92.24)	42.55	φ14(H8)	φ50	15	25	29.01	22.29	16.7	-	-	-	66°17'	φ57.5	0.64
B2.5S 36 # 20H	2	36	φ90	φ90.18 (φ92.24)	42.55	φ20(H8)	φ50	15	25	29.01	22.29	16.7	6 × 2.8	2-M5	7.5	66°17'	φ57.5	0.61
B2.5S 36 # 25H	2	36	φ90	φ90.18 (φ92.24)	42.55	φ25(H8)	φ50	15	25	29.01	22.29	16.7	8 × 3.3	2-M6	7.5	66°17'	φ57.5	0.57

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47～53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
 标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 d_a 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。
 The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
B2.5S 18 — 12	0.020	0.209	0.418	0.837	1.189	1.494	1.767
B2.5S 18 — 12H	0.019	0.192	0.385	0.771	1.100	1.389	1.649

The above references are JGMA standard.
 动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

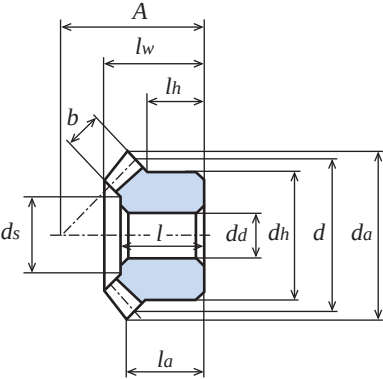
Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.002	0.021	0.042	0.085	0.122	0.155	0.186
0.005	0.057	0.118	0.243	0.353	0.452	0.542

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b2 × t2</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W</i> (kg)
														2-M	<i>ls</i>			
B2.5S 15 – 10	3	15	φ 37.5	φ 42.74 ^(φ44.18)	77.93	φ10(H8)	φ32	20.8	38.5	40.41	22.79	19	-	-	-	22°17'	φ18.2	0.22
B2.5S 15 – 10H	3	15	φ 37.5	φ 42.74 ^(φ44.18)	77.93	φ10(H8)	φ32	20.8	38.5	40.41	22.79	19	-	-	-	22°17'	φ18.2	0.22
B2.5S 15 # 15H	3	15	φ 37.5	φ 42.74 ^(φ44.18)	77.93	φ15(H8)	φ32	20.8	38.5	40.41	22.79	19	5 × 2.3	2-M5	10.5	22°17'	φ18.2	0.19
B2.5S 45 – 16	3	45	φ112.5	φ111.6 ^(φ113.44)	40.67	φ16	φ60	14	24.5	28.74	23.32	19	-	-	-	73°27'	φ74.1	1.10
B2.5S 45 – 16H	3	45	φ112.5	φ111.6 ^(φ113.44)	40.67	φ16(H8)	φ60	14	24.5	28.74	23.32	19	-	-	-	73°27'	φ74.1	1.10
B2.5S 45 # 20H	3	45	φ112.5	φ111.6 ^(φ113.44)	40.67	φ20(H8)	φ60	14	24.5	28.74	23.32	19	6 × 2.8	2-M5	7	73°27'	φ74.1	1.07
B2.5S 45 # 25H	3	45	φ112.5	φ111.6 ^(φ113.44)	40.67	φ25(H8)	φ60	14	24.5	28.74	23.32	19	8 × 3.3	2-M6	7	73°27'	φ74.1	1.04

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

	齿数比 Ratio	导程角 Pitch Angle		轴角 Shaft Angle
等径锥齿轮 Miter gear	1:1	45°		90°
锥齿轮 Bevel gear	1:2	小齿轮 Pinion Gear	26° 34' 63° 26'	90°
	1:3	小齿轮 Pinion Gear	18° 26' 71° 34'	90°

容许传达动力表 弯曲强度 (kW)
Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
B2.5S 15 – 10	0.019	0.197	0.394	0.789	1.155	1.464
B2.5S 15 – 10H	0.018	0.183	0.366	0.732	1.074	1.366

容许传达动力表 齿面强度 (kW)
Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.001	0.017	0.034	0.070	0.104	0.133	0.160
0.004	0.047	0.098	0.203	0.304	0.392	0.473

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

目次表 CONTENTS	齿轮信息 GEAR INFORMATION	齿轮箱 GEAR BOXES	无隙隙齿 ANTI BACKLASH SPUR GEARS	研磨直齿 GROUND SPUR GEARS	直齿 SPUR GEARS	内齿 INTERNAL GEARS	研磨齿 GROUND RACKS	齿 RACKS	斜齿・螺旋 HEICAL GEARS AND SCREW GEARS	蜗轮・蜗杆 WORMS AND WORM WHEELS	锥齿 BEVEL GEARS	技术资料 REFERENCE DATA
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等径锥齿轮 MITER GEARS

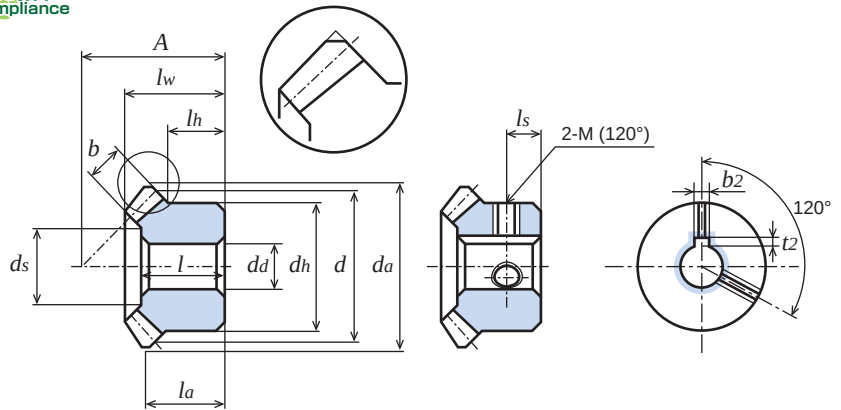
模数
MODULE 3

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>d_a</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da(H7)</i>	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b₂ × t₂</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δ_a</i>	<i>d_s</i>	重量 Weight <i>W(g)</i>
														2-M	<i>l_s</i>			
M3S 20 — 5816	1	20	φ60	φ61.99 ^(φ64.24)	58	φ16	φ50	23	35	39.06	30.12	13.6	-	-	-	49° 3'	φ35.5	520.3
M3S 20 — 5816H	1	20	φ60	φ61.99 ^(φ64.24)	58	φ16(H8)	φ50	23	35	39.06	30.12	13.6	-	-	-	49° 3'	φ35.5	520.3
M3S 20 # 5818H	1	20	φ60	φ61.99 ^(φ64.24)	58	φ18(H8)	φ50	23	35	39.06	30.12	13.6	6 × 2.8	2-M6	11.5	49° 3'	φ35.5	498.1
M3S 20 # 5820H	1	20	φ60	φ61.99 ^(φ64.24)	58	φ20(H8)	φ50	23	35	39.06	30.12	13.6	6 × 2.8	2-M6	11.5	49° 3'	φ35.5	481.9
M3S 20 # 5825H	1	20	φ60	φ61.99 ^(φ64.24)	58	φ25(H8)	φ50	23	35	39.06	30.12	13.6	8 × 3.3	2-M6	11.5	49° 3'	φ35.5	431.2
M3S 20 — 4216	1	20	φ60	φ61.99 ^(φ64.24)	42	φ16	φ50	7	19	23.06	14.12	13.6	-	-	-	49° 3'	φ35.5	298.9
M3S 20 — 4216H	1	20	φ60	φ61.99 ^(φ64.24)	42	φ16(H8)	φ50	7	19	23.06	14.12	13.6	-	-	-	49° 3'	φ35.5	298.9
M3S 20 = 4218H	1	20	φ60	φ61.99 ^(φ64.24)	42	φ18(H8)	φ50	7	19	23.06	14.12	13.6	6 × 2.8	-	-	49° 3'	φ35.5	288.4
M3S 20 = 4220H	1	20	φ60	φ61.99 ^(φ64.24)	42	φ20(H8)	φ50	7	19	23.06	14.12	13.6	6 × 2.8	-	-	49° 3'	φ35.5	279.5
M3S 20 = 4225H	1	20	φ60	φ61.99 ^(φ64.24)	42	φ25(H8)	φ50	7	19	23.06	14.12	13.6	8 × 3.3	-	-	49° 3'	φ35.5	251.7
M3S 25 — 6020	1	25	φ75	φ77 ^(φ79.24)	60	φ20	φ65	17.5	32	35.31	24.62	16.2	-	-	-	48° 51'	φ48.1	785.6
M3S 25 — 6020H	1	25	φ75	φ77 ^(φ79.24)	60	φ20(H8)	φ65	17.5	32	35.31	24.62	16.2	-	-	-	48° 51'	φ48.1	785.6

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 d_a 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M3S 20 — 5816	0.029	0.297	0.594	1.148	1.591	1.971	2.323
M3S 20 — 5816H	0.027	0.275	0.551	1.068	1.489	1.854	2.184
M3S 25 — 6020	0.048	0.482	0.964	1.789	2.442	3.016	3.667
M3S 25 — 6020H	0.045	0.451	0.902	1.684	2.315	2.861	3.400

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.002	0.025	0.050	0.098	0.139	0.175	0.209
0.006	0.068	0.140	0.281	0.398	0.503	0.598
0.004	0.048	0.097	0.184	0.256	0.323	0.401
0.011	0.131	0.272	0.523	0.732	0.916	1.100

等径锥齿轮
MITER GEARS

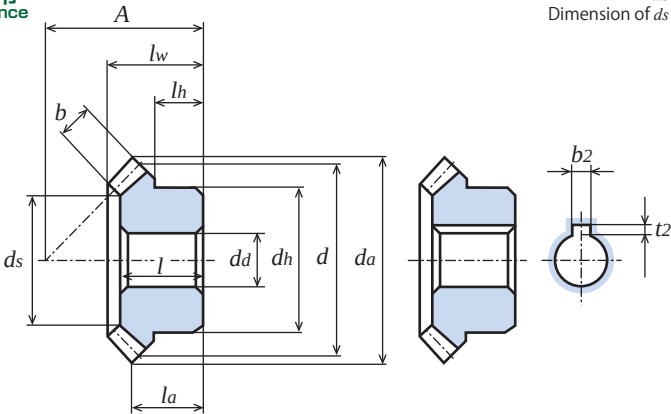
模数
MODULE 3

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
*ds*的尺寸仅供参考。
Dimension of *ds* is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>da</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>da</i> (H7)	轮毂外径 Hub Diameter <i>dh</i>	轮毂长度 Hub Projection <i>lh</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>lw</i>	Tip Distance <i>la</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b2</i> × <i>t2</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δa</i>	<i>ds</i>	重量 Weight <i>W</i> (kg)
														2-M	<i>ls</i>			
M3S 30 – 7522	1	30	φ90	^(φ94.24) φ92.04	75	φ22	φ66	23.64	40	44.65	32.12	18.6	-	-	-	47°42'	φ57.3	1.20
M3S 30 – 7522H	1	30	φ90	^(φ94.24) φ92.04	75	φ22(H8)	φ66	23.64	40	44.65	32.12	18.6	-	-	-	47°42'	φ57.3	1.20
M3S 30 # 7525H	1	30	φ90	^(φ94.24) φ92.04	75	φ25(H8)	φ66	23.64	40	44.65	32.12	18.6	8 × 3.3	2-M6	12	47°42'	φ57.3	1.16
M3S 30 # 7530H	1	30	φ90	^(φ94.24) φ92.04	75	φ30(H8)	φ66	23.64	40	44.65	32.12	18.6	8 × 3.3	2-M6	12	47°42'	φ57.3	1.09
M3S 30 – 6020	1	30	φ90	^(φ94.24) φ92.04	60	φ20	φ66	8.64	25	29.65	17.12	18.6	-	-	-	47°42'	φ57.3	0.85
M3S 30 – 6020H	1	30	φ90	^(φ94.24) φ92.04	60	φ20(H8)	φ66	8.64	25	29.65	17.12	18.6	-	-	-	47°42'	φ57.3	0.85
M3S 30 = 6025H	1	30	φ90	^(φ94.24) φ92.04	60	φ25(H8)	φ66	8.64	25	29.65	17.12	18.6	8 × 3.3	-	-	47°42'	φ57.3	0.81
M3S 30 = 6030H	1	30	φ90	^(φ94.24) φ92.04	60	φ30(H8)	φ66	8.64	25	29.65	17.12	18.6	8 × 3.3	-	-	47°42'	φ57.3	0.74

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

	齿数比 Ratio	导程角 Pitch Angle		轴角 Shaft Angle
等径锥齿轮 Miter gear	1:1	45°		90°
锥齿轮 Bevel gear	1:2	小齿轮 Pinion Gear	26° 34' 63° 26'	90°
	1:3	小齿轮 Pinion Gear	18° 26' 71° 34'	90°

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
M3S 30 – 7522	0.070	0.706	1.413	2.522	3.394	4.322
M3S 30 – 7522H	0.066	0.666	1.332	2.399	3.254	4.056

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.008	0.082	0.166	0.303	0.418	0.547	0.678
0.020	0.225	0.464	0.862	1.190	1.502	1.790

锥齿轮 BEVEL GEARS

模数
MODULE

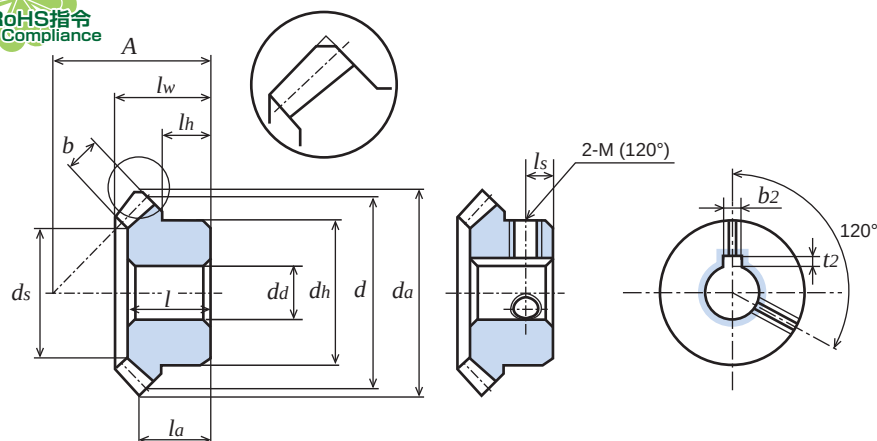
3

压力角20° 齿数比1:2
1:2 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio u	齿数 Number of Teeth z	分度圆直径 Reference Diameter d	齿顶圆直径 Tip Diameter d_a	装配距离 Locating Distance A	孔径 Bore Diameter $d_d(H7)$	轮毂外径 Hub Diameter d_h	轮毂长度 Hub Projection l_h	穴长度 Bore Length l	全长 Overall Length l_w	Tip Distance l_a	齿宽 Face Width b	键槽 Key Way $b_2 \times t_2$	螺纹孔 Set Screw		顶锥角 Face Angle δ_a	顶圆直径 d_s	重量 Weight $W(kg)$
														2-M	l_s			
B3S 18 - 15	2	18	$\phi 54$	$\phi 56.72$ ($\phi 59.37$)	75.27	$\phi 15$	$\phi 41$	18	37	40.06	22.61	20	-	-	-	29°25'	$\phi 27.4$	0.39
B3S 18 - 15H	2	18	$\phi 54$	$\phi 56.72$ ($\phi 59.37$)	75.27	$\phi 15(H8)$	$\phi 41$	18	37	40.06	22.61	20	-	-	-	29°25'	$\phi 27.4$	0.39
B3S 18 # 16H	2	18	$\phi 54$	$\phi 56.72$ ($\phi 59.37$)	75.27	$\phi 16(H8)$	$\phi 41$	18	37	40.06	22.61	20	5 × 2.3	2-M6	9	29°25'	$\phi 27.4$	0.38
B3S 18 # 20H	2	18	$\phi 54$	$\phi 56.72$ ($\phi 59.37$)	75.27	$\phi 20(H8)$	$\phi 41$	18	37	40.06	22.61	20	6 × 2.8	2-M6	9	29°25'	$\phi 27.4$	0.35
B3S 36 - 16	2	36	$\phi 108$	$\phi 108.2$ ($\phi 110.68$)	52.32	$\phi 16$	$\phi 60$	19	31	36.06	28	20	-	-	-	66°17'	$\phi 68.9$	1.15
B3S 36 - 16H	2	36	$\phi 108$	$\phi 108.2$ ($\phi 110.68$)	52.32	$\phi 16(H8)$	$\phi 60$	19	31	36.06	28	20	-	-	-	66°17'	$\phi 68.9$	1.15
B3S 36 # 25H	2	36	$\phi 108$	$\phi 108.2$ ($\phi 110.68$)	52.32	$\phi 25(H8)$	$\phi 60$	19	31	36.06	28	20	8 × 3.3	2-M6	9.5	66°17'	$\phi 68.9$	1.07
B3S 36 # 30H	2	36	$\phi 108$	$\phi 108.2$ ($\phi 110.68$)	52.32	$\phi 30(H8)$	$\phi 60$	19	31	36.06	28	20	8 × 3.3	2-M6	9.5	66°17'	$\phi 68.9$	1.02

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 d_a 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
B3S 18 - 15	0.036	0.361	0.722	1.419	1.979	2.465
B3S 18 - 15H	0.033	0.332	0.665	1.310	1.837	2.300

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

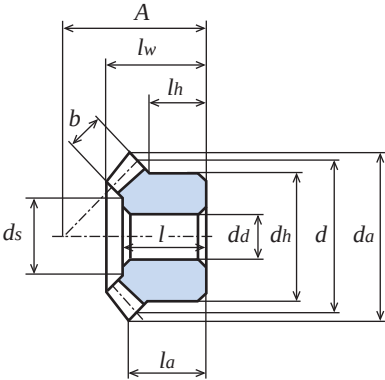
Allowable transfer capability table (kW) Surface Durability

	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
	0.003	0.037	0.074	0.148	0.209	0.264
	0.009	0.100	0.207	0.420	0.600	0.761

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
ds的尺寸仅供参考。
Dimension of ds is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)
单位: mm
Dimensions: mm

Table with 19 columns: Product Number, Ratio, Number of Teeth, Reference Diameter, Tip Diameter, Locating Distance, Bore Diameter, Hub Diameter, Hub Projection, Bore Length, Overall Length, Tip Distance, Face Width, Key Way, Set Screw, Face Angle, Tip Distance, Weight. Rows include B3S 15-12, B3S 15-12H, B3S 15 # 16H, B3S 45-18, B3S 45-18H, B3S 45 # 25H, B3S 45 # 30H.

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

Table with 4 columns: Ratio, Pitch Angle, Shaft Angle. Rows include Miter gear (1:1, 45°, 90°) and Bevel gear (1:2, 1:3, 90°).

容许传达动力表 弯曲强度 (kW)
Allowable transfer capability table (kW) Bending Strength
Table with 7 columns: Product Number, 10, 100, 200, 400, 600, 800, 1,000. Rows include B3S 15-12, B3S 15-12H.

容许传达动力表 齿面强度 (kW)
Allowable transfer capability table (kW) Surface Durability
Table with 7 columns: Product Number, 10, 100, 200, 400, 600, 800, 1,000. Rows include B3S 15-12, B3S 15-12H.

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

等径锥齿轮 MITER GEARS

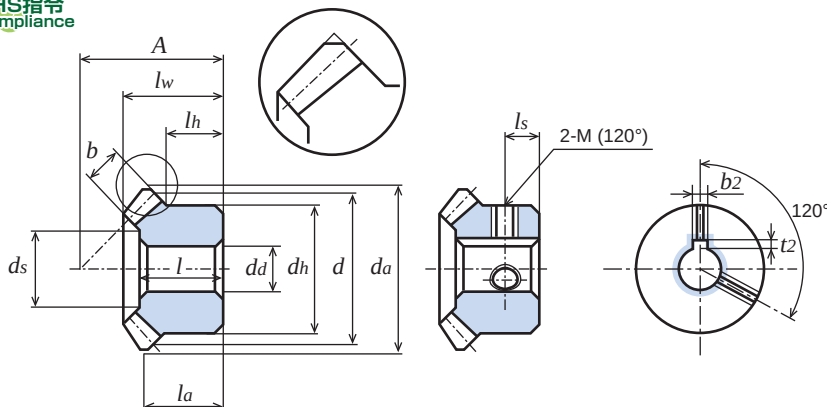
模数
MODULE 4

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆直 径	齿顶圆直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺 纹 孔		顶 锥 角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_a</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b₂ × t₂</i>	2-M	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (kg)
M4S 20 – 7520	1	20	φ80	^(φ85.66) φ82.65	75	φ20	φ64	27	45	50.05	37.83	18.6	-	-	-	49° 3′	φ47.3	1.14
M4S 20 – 7520H	1	20	φ80	^(φ85.66) φ82.65	75	φ20(H8)	φ64	27	45	50.05	37.83	18.6	-	-	-	49° 3′	φ47.3	1.14
M4S 20 # 7525H	1	20	φ80	^(φ85.66) φ82.65	75	φ25(H8)	φ64	27	45	50.05	37.83	18.6	8 × 3.3	2-M8	13.5	49° 3′	φ47.3	1.06
M4S 20 # 7530H	1	20	φ80	^(φ85.66) φ82.65	75	φ30(H8)	φ64	27	45	50.05	37.83	18.6	8 × 3.3	2-M8	13.5	49° 3′	φ47.3	0.98

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋 转 速 度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M4S 20 — 7520	0.071	0.719	1.438	2.634	3.577	4.465	5.421
M4S 20 — 7520H	0.066	0.663	1.327	2.448	3.349	4.150	4.920

The above references are JGMA standard.

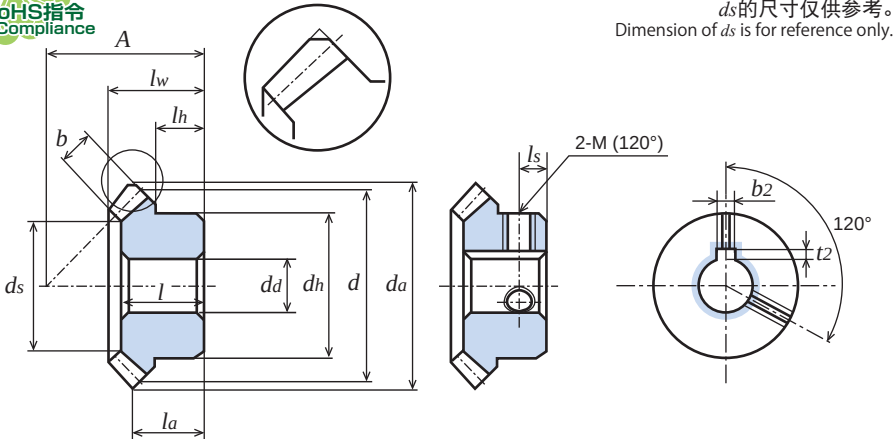
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.006	0.062	0.126	0.236	0.327	0.418	0.516
0.015	0.168	0.347	0.660	0.920	1.154	1.382

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
 d_s 的尺寸仅供参考。
Dimension of d_s is for reference only.

ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio	齿数 Number of Teeth	分度圆直径 Reference Diameter	齿顶圆直径 Tip Diameter	装配距离 Locating Distance	孔径 Bore Diameter	轮毂外径 Hub Diameter	轮毂长度 Hub Projection	穴长度 Bore Length	全长 Overall Length	Tip Distance	齿宽 Face Width	键槽 Key Way	螺纹孔 Set Screw		顶锥角 Face Angle	d_s	重量 Weight
	u	z	d	d_a	A	$d_d(H7)$	d_h	l_h	l	l_w	l_a	b	$b_2 \times t_2$	2-M	l_s	δ_a		
B4S 18 - 20	2	18	$\phi 72$	$\phi 75.63^{(\phi 79.16)}$	99.73	$\phi 20$	$\phi 55$	23.5	48	52.02	29.52	25.8	-	-	-	29°25'	$\phi 37.6$	0.94
B4S 18 - 20H	2	18	$\phi 72$	$\phi 75.63^{(\phi 79.16)}$	99.73	$\phi 20(H8)$	$\phi 55$	23.5	48	52.02	29.52	25.8	-	-	-	29°25'	$\phi 37.6$	0.94
B4S 18 # 20H	2	18	$\phi 72$	$\phi 75.63^{(\phi 79.16)}$	99.73	$\phi 20(H8)$	$\phi 55$	23.5	48	52.02	29.52	25.8	6 × 2.8	2-M8	12	29°25'	$\phi 37.6$	0.92
B4S 18 # 25H	2	18	$\phi 72$	$\phi 75.63^{(\phi 79.16)}$	99.73	$\phi 25(H8)$	$\phi 55$	23.5	48	52.02	29.52	25.8	8 × 3.3	2-M8	12	29°25'	$\phi 37.6$	0.86
B4S 36 - 22	2	36	$\phi 144$	$\phi 144.3^{(\phi 147.58)}$	71.56	$\phi 22$	$\phi 75$	23	42	49.53	39.14	25.8	-	-	-	66°17'	$\phi 92.7$	2.89
B4S 36 - 22H	2	36	$\phi 144$	$\phi 144.3^{(\phi 147.58)}$	71.56	$\phi 22(H8)$	$\phi 75$	23	42	49.53	39.14	25.8	-	-	-	66°17'	$\phi 92.7$	2.89
B4S 36 # 30H	2	36	$\phi 144$	$\phi 144.3^{(\phi 147.58)}$	71.56	$\phi 30(H8)$	$\phi 75$	23	42	49.53	39.14	25.8	8 × 3.3	2-M8	11.5	66°17'	$\phi 92.7$	2.77
B4S 36 # 40H	2	36	$\phi 144$	$\phi 144.3^{(\phi 147.58)}$	71.56	$\phi 40(H8)$	$\phi 75$	23	42	49.53	39.14	25.8	12 × 3.3	2-M10	11.5	66°17'	$\phi 92.7$	2.58

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
B4S 18 - 20	0.083	0.833	1.667	3.118	4.268	5.237
B4S 18 - 20H	0.077	0.773	1.546	2.908	4.007	4.943

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.008	0.088	0.178	0.339	0.473	0.592	0.736
0.021	0.239	0.494	0.958	1.344	1.679	2.018

锥齿轮 BEVEL GEARS

模数
MODULE

4

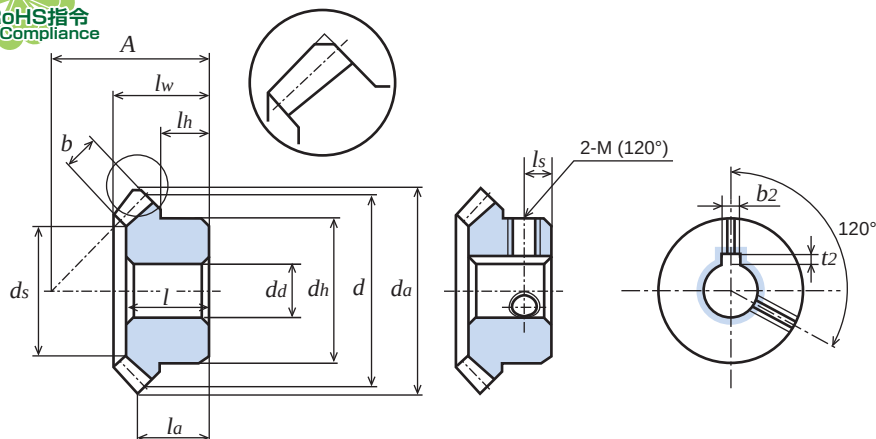
压力角20° 齿数比1:3

1:3 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)

对应RoHS指令
RoHS Compliance

已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051)

Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产品型号 Catalogue Number	齿数比 Ratio <i>u</i>	齿数 Number of Teeth <i>z</i>	分度圆直径 Reference Diameter <i>d</i>	齿顶圆直径 Tip Diameter <i>d_a</i>	装配距离 Locating Distance <i>A</i>	孔径 Bore Diameter <i>d_a(H7)</i>	轮毂外径 Hub Diameter <i>d_h</i>	轮毂长度 Hub Projection <i>l_h</i>	穴长度 Bore Length <i>l</i>	全长 Overall Length <i>l_w</i>	Tip Distance <i>l_a</i>	齿宽 Face Width <i>b</i>	键槽 Key Way <i>b₂ × t₂</i>	螺纹孔 Set Screw		顶锥角 Face Angle <i>δ_a</i>	<i>d_s</i>	重量 Weight <i>W(kg)</i>
														2-M	<i>l_s</i>			
B4S 15 - 16	3	15	φ 60	φ 68.38 (φ70.69)	119.14	φ16(H8)	φ52	27.8	57	59.67	30.92	31	-	-	-	22°17'	φ 31.1	0.85
B4S 15 - 16H	3	15	φ 60	φ 68.38 (φ70.69)	119.14	φ16(H8)	φ52	27.8	57	59.67	30.92	31	-	-	-	22°17'	φ 31.1	0.85
B4S 15 # 20H	3	15	φ 60	φ 68.38 (φ70.69)	119.14	φ20(H8)	φ52	27.8	57	59.67	30.92	31	6 × 2.8	2-M8	14	22°17'	φ 31.1	0.78
B4S 45 - 25	3	45	φ 180	φ 178.6 (φ181.5)	65.47	φ25	φ80	22	40	46.55	37.71	31	-	-	-	73°27'	φ 117.6	4.28
B4S 45 - 25H	3	45	φ 180	φ 178.6 (φ181.5)	65.47	φ25(H8)	φ80	22	40	46.55	37.71	31	-	-	-	73°27'	φ 117.6	4.28
B4S 45 # 30H	3	45	φ 180	φ 178.6 (φ181.5)	65.47	φ30(H8)	φ80	22	40	46.55	37.71	31	8 × 3.3	2-M8	11	73°27'	φ 117.6	4.19
B4S 45 # 40H	3	45	φ 180	φ 178.6 (φ181.5)	65.47	φ40(H8)	φ80	22	40	46.55	37.71	31	12 × 3.3	2-M10	11	73°27'	φ 117.6	4.02

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

齿顶圆直径 d_a 的 () 括号内的数据是理论值。因为进行了与轴芯平衡的切面, 所以实际齿顶圆直径要比理论值小。

The numeric indicated in the bracket () under the column. Outside diameter d_a has been machined flat. With this process, the outer diameter is smaller than the theory with respect to shaft center to parallel.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产品型号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
B4S 15 - 16	0.082	0.821	1.642	3.173	4.396	5.445
B4S 15 - 16H	0.075	0.758	1.517	2.940	4.099	5.104

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

	旋转速度 (min ⁻¹) revolution/min					
	10	100	200	400	600	800
	0.007	0.076	0.153	0.301	0.423	0.533
	0.018	0.207	0.427	0.853	1.210	1.526

等径锥齿轮
MITER GEARS

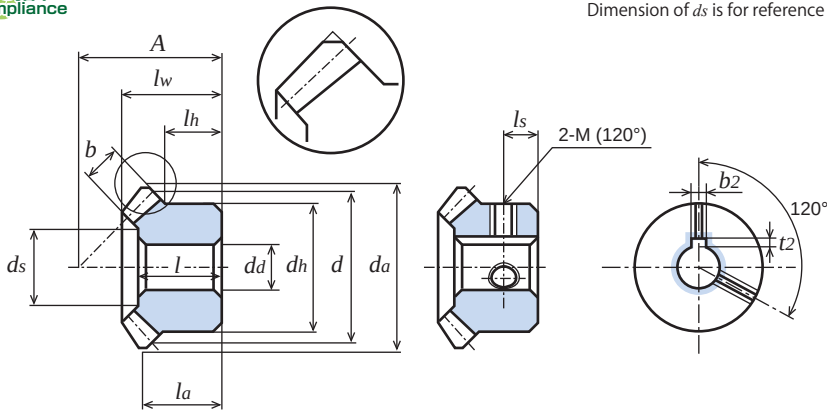
模数
MODULE 5

压力角20° 齿数比1:1
1:1 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



订购时请写入明确完整的产品型号。
Please refer to the catalogue reference while ordering.
 d_s 的尺寸仅供参考。
Dimension of d_s is for reference only.



ISO C45 机械构造用碳素钢 (JIS G 4051)
Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆 直 径	齿顶圆 直 径	装 配 距 离	孔 径	轮 毂 外 径	轮 毂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_d</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b₂ × t₂</i>	2- <i>M</i>	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (kg)
M5S 20 — 9025	1	20	φ100	^(φ107.07) φ103.3	90	φ25	φ80	30	53	59.04	43.54	23.6	-	-	-	49° 3'	φ59.2	2.11
M5S 20 — 9025H	1	20	φ100	^(φ107.07) φ103.3	90	φ25(H8)	φ80	30	53	59.04	43.54	23.6	-	-	-	49° 3'	φ59.2	2.11
M5S 20 # 9030H	1	20	φ100	^(φ107.07) φ103.3	90	φ30(H8)	φ80	30	53	59.04	43.54	23.6	8 × 3.3	2-M10	15	49° 3'	φ59.2	2.00
M5S 20 # 9040H	1	20	φ100	^(φ107.07) φ103.3	90	φ40(H8)	φ80	30	53	59.04	43.54	23.6	12 × 3.3	2-M10	15	49° 3'	φ59.2	1.76

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋转速度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
M5S 20 — 9025	0.142	1.421	2.825	4.949	6.669	8.574	10.318
M5S 20 — 9025H	0.130	1.308	2.601	4.603	6.220	7.758	-

The above references are JGMA standard.
动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.012	0.127	0.255	0.458	0.635	0.836	1.040
0.030	0.338	0.694	1.267	1.743	2.201	-

锥齿轮 BEVEL GEARS

模数
MODULE

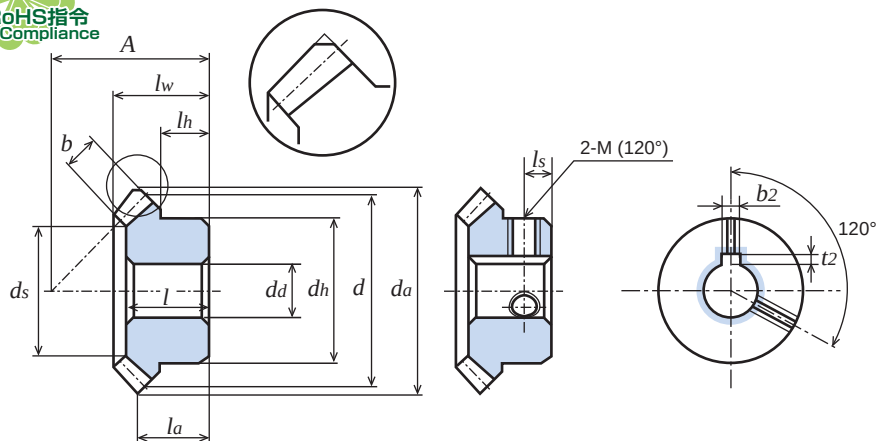
5

压力角20° 齿数比1:2
1:2 Ratio 20° PRESSURE ANGLE

JIS B1704 3级 (齿部高频淬火产品: 4级)
System of Accuracy: JIS B 1704 Class 3
(Induction hardened products: Class 4)



已进行规格改进, 无需进行紧固加工。
Additional machining on tightening is not necessary.



ISO C45 机械构造用碳素钢 (JIS G 4051) Material: Carbon Steel (ISO C45)

单位: mm
Dimensions: mm

产 品 型 号 Catalogue Number	齿数比	齿 数	分度圆直 径	齿顶圆直 径	装 配 距 离	孔 径	轮 轂 外 径	轮 轂 长 度	穴长度	全 长		齿 宽	键 槽	螺纹孔		顶锥角		重 量
	Ratio	Number of Teeth	Reference Diameter	Tip Diameter	Locating Distance	Bore Diameter	Hub Diameter	Hub Projection	Bore Length	Overall Length	Tip Distance	Face Width	Key Way	Set Screw		Face Angle		Weight
	<i>u</i>	<i>z</i>	<i>d</i>	<i>d_a</i>	<i>A</i>	<i>d_d</i> (H7)	<i>d_h</i>	<i>l_h</i>	<i>l</i>	<i>l_w</i>	<i>l_a</i>	<i>b</i>	<i>b₂ × t₂</i>	2- <i>M</i>	<i>l_s</i>	<i>δ_a</i>	<i>d_s</i>	<i>W</i> (kg)
B5S 18 — 22	2	18	φ 90	^(φ98.94) φ 94.54	122	φ22	φ 66	26	58	61.89	34.24	31.7	-	-	-	29°25′	φ 52.2	1.72
B5S 18 — 22H	2	18	φ 90	^(φ98.94) φ 94.54	122	φ22(H8)	φ 66	26	58	61.89	34.24	31.7	-	-	-	29°25′	φ 52.2	1.72
B5S 18 # 25H	2	18	φ 90	^(φ98.94) φ 94.54	122	φ25(H8)	φ 66	26	58	61.89	34.24	31.7	8 × 3.3	2-M10	13	29°25′	φ 52.2	1.65
B5S 18 # 30H	2	18	φ 90	^(φ98.94) φ 94.54	122	φ30(H8)	φ 66	26	58	61.89	34.24	31.7	8 × 3.3	2-M10	13	29°25′	φ 52.2	1.55
B5S 36 — 28	2	36	φ180	^(φ184.47) φ180.4	86.23	φ28	φ100	28	49	58.47	45.70	31.7	-	-	-	66°17′	φ116.8	5.38
B5S 36 — 28H	2	36	φ180	^(φ184.47) φ180.4	86.23	φ28(H8)	φ100	28	49	58.47	45.70	31.7	-	-	-	66°17′	φ116.8	5.38
B5S 36 # 40H	2	36	φ180	^(φ184.47) φ180.4	86.23	φ40(H8)	φ100	28	49	58.47	45.70	31.7	12 × 3.3	2-M10	14	66°17′	φ116.8	5.11
B5S 36 # 50H	2	36	φ180	^(φ184.47) φ180.4	86.23	φ50(H8)	φ100	28	49	58.47	45.70	31.7	14 × 3.8	2-M10	14	66°17′	φ116.8	4.83

产品型号末尾的[H]表示齿部高频淬火过的产品。硬度为HRC47 ~ 53。[H]: Gear tooth surface completed with induction hardening, Hardness HRC 47 to 53.
标号[#]表示齿轮带有键槽/带有键, 带有螺纹孔/带有固定螺钉。[#]: Gear with key way and threaded hole / with key and screw.

容许传达动力表 弯曲强度 (kW)

Allowable transfer capability table (kW) Bending Strength

产 品 型 号 Catalogue Numbers	旋 转 速 度 (min ⁻¹) revolution/min						
	10	100	200	400	600	800	1,000
B5S 18 — 22	0.160	1.605	3.211	5.731	7.712	9.822	11.888
B5S 18 — 22H	0.149	1.493	2.987	5.380	7.297	9.094	10.727

The above references are JGMA standard.

动力换算公式请确认第26页。Please refer to the conversion formulas of power on page26.

容许传达动力表 齿面强度 (kW)

Allowable transfer capability table (kW) Surface Durability

旋转速度 (min ⁻¹) revolution/min						
10	100	200	400	600	800	1,000
0.017	0.175	0.353	0.644	0.889	1.162	1.440
0.042	0.472	0.974	1.809	2.497	3.152	3.754

参考资料

硬度换算表

钢铁维氏硬度的各类近似值换算表

维氏硬度	布氏硬度 10mm球·负荷3000kgf			洛氏硬度 ⁽²⁾				洛氏表面硬度钻石圆锥压头			肖氏硬度	抗拉强度 (近似值) MPa (kgf/mm ²) ⁽¹⁾	维氏硬度 负荷
	标准球	Hult-gren 球	碳化钨球	A标度负荷 60kgf钻石 圆锥压头	B标度负荷 100kgf径 1/16in球	C标度负荷 150kgf钻石 圆锥压头	D标度负荷 100kgf钻石 圆锥压头	15-N 标度负荷 15kgf	30-N 标度负荷 30kgf	45-N 标度负荷 45kgf			
940	-	-	-	85·6	-	68·0	76·9	93·2	84·4	75·4	97	-	940
920	-	-	-	85·3	-	67·5	76·5	93·0	84·0	74·8	96	-	920
900	-	-	-	85·0	-	67·0	76·1	92·9	83·6	74·2	95	-	900
880	-	-	(767)	84·7	-	66·4	75·7	92·7	83·1	73·6	93	-	880
860	-	-	(757)	84·4	-	65·9	75·3	92·5	82·7	73·1	92	-	860
840	-	-	(745)	84·1	-	65·3	74·8	92·3	82·2	72·2	91	-	840
820	-	-	(733)	83·8	-	64·7	74·3	92·1	81·7	71·8	90	-	820
800	-	-	(722)	83·4	-	64·0	73·8	91·8	81·1	71·0	88	-	800
780	-	-	(710)	83·0	-	63·3	73·3	91·5	80·4	70·2	87	-	780
760	-	-	(698)	82·6	-	62·5	72·6	91·2	79·7	69·4	86	-	760
740	-	-	(684)	82·2	-	61·8	72·1	91·0	79·1	68·6	84	-	740
720	-	-	(670)	81·8	-	61·0	71·5	90·7	78·4	67·7	83	-	720
700	-	615	(656)	81·3	-	60·1	70·8	90·3	77·6	66·7	81	-	700
690	-	610	(647)	81·1	-	59·7	70·5	90·1	77·2	66·2	-	-	690
680	-	603	(638)	80·8	-	59·2	70·1	89·8	76·8	65·7	80	-	680
670	-	597	630	80·6	-	58·8	69·8	89·7	76·4	65·3	-	-	670
660	-	590	620	80·3	-	58·3	69·4	89·5	75·9	64·7	79	-	660
650	-	585	611	80·0	-	57·8	69·0	89·2	75·5	64·1	-	-	650
640	-	578	601	79·8	-	57·3	68·7	89·0	75·1	63·5	77	-	640
630	-	571	591	79·5	-	56·8	68·3	88·8	74·6	63·0	-	-	630
620	-	564	582	79·2	-	56·3	67·9	88·5	74·2	62·4	75	-	620
610	-	557	573	78·9	-	55·7	67·5	88·2	73·6	61·7	-	-	610
600	-	550	564	78·6	-	55·2	67·0	88·0	73·2	61·2	74	-	600
590	-	542	554	78·4	-	54·7	66·7	87·8	72·7	60·5	-	2055 (210)	590
580	-	535	545	78·0	-	54·1	66·2	87·5	72·1	59·9	72	2020 (206)	580
570	-	527	535	77·8	-	53·6	65·8	87·2	71·7	59·3	-	1985 (202)	570
560	-	519	525	77·4	-	53·0	65·4	86·9	71·2	58·6	71	1950 (199)	560
550	(505)	512	517	77·0	-	52·3	64·8	86·6	70·5	57·8	-	1905 (194)	550
540	(496)	503	507	76·7	-	51·7	64·4	86·3	70·0	57·0	69	1860 (190)	540
530	(488)	495	497	76·4	-	51·1	63·9	86·0	69·5	56·2	-	1825 (186)	530
520	(480)	487	488	76·1	-	50·5	63·5	85·7	69·0	55·6	67	1795 (183)	520
510	(473)	479	479	75·7	-	49·8	62·9	85·4	68·3	54·7	-	1750 (179)	510
500	(465)	471	471	75·3	-	49·1	62·2	85·0	67·7	53·9	66	1705 (174)	500
490	(456)	460	460	74·9	-	48·4	61·6	84·7	67·1	53·1	-	1660 (169)	490
480	448	452	452	74·5	-	47·7	61·3	84·3	66·4	52·2	64	1620 (165)	480
470	441	442	442	74·1	-	46·9	60·7	83·9	65·7	51·3	-	1570 (160)	470
460	433	433	433	73·6	-	46·1	60·1	83·6	64·9	50·4	62	1530 (156)	460
450	425	425	425	73·3	-	45·3	59·4	83·2	64·3	49·4	-	1495 (153)	450
440	415	415	415	72·8	-	44·5	58·8	82·8	63·5	48·4	59	1460 (149)	440
430	405	405	405	72·3	-	43·6	58·2	82·3	62·7	47·4	-	1410 (144)	430
420	397	397	397	71·8	-	42·7	57·5	81·8	61·9	46·4	57	1370 (140)	420
410	388	388	388	71·4	-	41·8	56·8	81·4	61·1	45·3	-	1330 (136)	410
400	379	379	379	70·8	-	40·8	56·0	81·0	60·2	44·1	55	1290 (131)	400
390	369	369	369	70·3	-	39·8	55·2	80·3	59·3	42·9	-	1240 (127)	390
380	360	360	380	69·8	(110·0)	38·8	54·4	79·8	58·4	41·7	52	1205 (123)	380
370	350	350	350	69·2	-	37·7	53·6	79·2	57·4	40·4	-	1170 (120)	370
360	341	341	341	68·7	(109·0)	36·6	52·8	78·6	56·4	39·1	50	1130 (115)	360
350	331	331	331	68·1	-	35·5	51·9	78·0	55·4	37·8	-	1095 (112)	350
340	322	322	322	67·6	(108·0)	34·4	51·1	77·4	54·4	36·5	47	1070 (109)	340
330	313	313	313	67·0	-	33·3	50·2	76·8	53·6	35·2	-	1035 (105)	330

钢铁维氏硬度的各类近似值换算表

维氏硬度	布氏硬度 10mm球·负荷3000kgf			洛氏硬度 ⁽²⁾				洛氏表面硬度钻石圆锥压头			肖氏硬度	抗拉强度 (近似值) MPa (kgf/mm ²) ⁽¹⁾	维氏硬度 负荷
	标准球	Hult-gren 球	碳化钨球	A标度负荷 60kgf钻石 圆锥压头	B标度负荷 100kgf 1/16in球	C标度负荷 150kgf钻石 圆锥压头	D标度负荷 100kgf钻石 圆锥压头	15-N 标度负荷 15kgf	30-N 标度负荷 30kgf	45-N 标度负荷 45kgf			
320	303	303	303	66·4	(107·0)	33·2	49·4	76·2	52·3	33·9	45	1005 (103)	320
310	294	294	294	65·8	-	31·0	48·4	75·6	51·3	32·5	-	980 (100)	310
300	284	284	284	65·2	(105·5)	29·8	47·5	74·9	50·2	31·1	42	950 (97)	300
295	280	280	280	64·8	-	29·2	47·1	74·6	49·7	30·4	-	935 (96)	295
290	275	275	275	64·5	(104·5)	28·5	46·5	74·2	49·0	29·5	41	915 (94)	290
285	270	270	270	64·2	-	27·8	46·0	73·8	48·4	28·7	-	905 (92)	285
280	265	265	265	63·8	(103·5)	27·1	45·3	73·4	47·8	27·9	40	890 (91)	280
275	261	261	261	63·5	-	26·4	44·9	73·0	47·2	27·1	-	875 (89)	275
270	256	256	256	63·1	(102·0)	25·6	44·3	72·6	46·4	26·2	38	855 (87)	270
265	252	252	252	62·7	-	24·8	43·7	72·1	45·7	25·2	-	840 (86)	265
260	247	247	247	62·4	(101·0)	24·0	43·1	71·6	45·0	24·3	37	825 (84)	260
255	243	243	243	62·0	-	23·1	42·2	71·1	44·2	23·2	-	805 (82)	255
250	238	238	238	61·6	99·5	22·2	41·7	70·6	43·4	22·2	36	795 (81)	250
245	233	233	233	61·2	-	21·3	41·1	70·1	42·5	21·1	-	780 (79)	245
240	228	228	228	60·7	98·1	20·3	40·3	69·6	41·7	19·9	34	765 (78)	240
230	219	219	219	-	96·7	(18·0)	-	-	-	-	33	730 (75)	230
220	209	209	209	-	95·0	(15·7)	-	-	-	-	32	695 (71)	220
210	200	200	200	-	93·4	(13·4)	-	-	-	-	30	670 (68)	210
200	190	190	190	-	91·5	(11·0)	-	-	-	-	29	635 (65)	200
190	181	181	181	-	89·5	(8·5)	-	-	-	-	28	605 (62)	190
180	171	171	171	-	87·1	(6·0)	-	-	-	-	26	580 (59)	180
170	162	162	162	-	85·0	(3·0)	-	-	-	-	25	545 (56)	170
160	152	152	152	-	81·7	(0·0)	-	-	-	-	24	515 (53)	160
150	143	143	143	-	78·7	-	-	-	-	-	22	490 (50)	150
140	133	133	133	-	75·0	-	-	-	-	-	21	455 (46)	140
130	124	124	124	-	71·2	-	-	-	-	-	20	425 (44)	130
120	114	114	114	-	66·7	-	-	-	-	-	-	390 (40)	120
110	105	105	105	-	62·3	-	-	-	-	-	-	-	110
100	95	95	95	-	56·2	-	-	-	-	-	-	-	100
95	90	90	90	-	52·0	-	-	-	-	-	-	-	95
90	86	86	86	-	48·0	-	-	-	-	-	-	-	90
85	81	81	81	-	41·0	-	-	-	-	-	-	-	85

备考：粗体字的数字来自ASTME140表1(SAE-ASM-ASTM一起进行调整的)

注：(1)用括号()表示的单位及数字是，根据JIS Z 8438的换算表，从psi换算过来的。其中1MPa=1N/mm²。

(2)表中括号()内的数据是很少使用的领域的的数据。所以作为参考值来表示。

(3)引用于JIS钢铁手册

钢铁维氏C硬度的各类近似值换算表

洛氏C规格硬度	维氏硬度	布氏硬度 10mm球·负荷3000kgf			洛氏硬度 ⁽²⁾			洛氏表面硬度钻石圆锥压头			肖氏硬度	抗拉强度 (近似值) MPa (kgf/mm ²) ⁽¹⁾	洛氏C规格硬度
		标准球	Hult-gren球	碳化钨球	A标度负荷 60kgf钻石 圆锥压头	B标度负荷 100kgf径 1/16in球	D标度负荷 100kgf钻石 圆锥压头	15-N 标度负荷 15kgf	30-N 标度负荷 30kgf	45-N 标度负荷 45kgf			
68	940	-	-	-	85·6	-	76·9	93·2	84·4	75·4	97	-	68
67	900	-	-	-	85·0	-	76·1	92·9	83·6	74·2	95	-	67
66	865	-	-	-	84·5	-	75·4	92·5	82·8	73·3	92	-	66
65	832	-	-	(739)	83·9	-	74·5	92·2	81·9	72·0	91	-	65
64	800	-	-	(722)	83·4	-	73·8	91·8	81·1	71·0	88	-	64
63	772	-	-	(705)	82·8	-	73·0	91·4	80·1	69·9	87	-	63
62	746	-	-	(688)	82·3	-	72·2	91·1	79·3	68·8	85	-	62
61	720	-	-	(670)	81·8	-	71·5	90·7	78·4	67·7	83	-	61
60	697	-	613	(654)	81·2	-	70·7	90·2	77·5	66·6	81	-	60
59	674	-	599	(634)	80·7	-	69·9	89·8	76·6	65·5	80	-	59
58	653	-	587	615	80·1	-	69·2	89·3	75·7	64·3	78	-	58
57	633	-	575	595	79·6	-	68·5	88·9	74·8	63·2	76	-	57
56	613	-	561	577	79·0	-	67·7	88·3	73·9	62·0	75	-	56
55	595	-	546	560	78·5	-	66·9	87·9	73·0	60·9	74	2075 (212)	55
54	577	-	534	543	78·0	-	66·1	87·4	72·0	59·8	72	2015 (205)	54
53	560	-	519	525	77·4	-	65·4	86·9	71·2	58·6	71	1950 (199)	53
52	544	(500)	508	512	76·8	-	64·6	86·4	70·2	57·4	69	1880 (192)	52
51	528	(487)	494	496	76·3	-	63·8	85·9	69·4	56·1	68	1820 (186)	51
50	513	(475)	481	481	75·9	-	63·1	85·5	68·5	55·0	67	1760 (179)	50
49	498	(464)	469	469	75·2	-	62·1	85·0	67·6	53·8	66	1695 (173)	49
48	484	451	455	455	74·7	-	61·4	84·5	66·7	52·5	64	1635 (167)	48
47	471	442	443	443	74·1	-	60·8	83·9	65·8	51·4	63	1580 (161)	47
46	458	432	432	432	73·6	-	60·0	83·5	64·8	50·3	62	1530 (156)	46
45	446	421	421	421	73·1	-	59·2	83·0	64·0	49·0	60	1480 (151)	45
44	434	409	409	409	72·5	-	58·5	82·5	63·1	47·8	58	1435 (146)	44
43	423	400	400	400	72·0	-	57·7	82·0	62·2	46·7	57	1385 (141)	43
42	412	390	390	390	71·5	-	56·9	81·5	61·3	45·5	56	1340 (136)	42
41	402	381	381	381	70·9	-	56·2	80·9	60·4	44·3	55	1295 (132)	41
40	392	371	371	371	70·4	-	55·4	80·4	59·5	43·1	54	1250 (127)	40
39	382	362	362	362	69·9	-	54·6	79·9	58·6	41·9	52	1215 (124)	39
38	372	353	353	353	69·4	-	53·8	79·4	57·7	40·8	51	1180 (120)	38
37	363	344	344	344	68·9	-	53·1	78·8	56·8	39·6	50	1160 (118)	37
36	354	336	336	336	68·4	(109·0)	52·3	78·3	55·9	38·4	49	1115 (114)	36
35	345	327	327	327	67·9	(108·5)	51·5	77·7	55·0	37·2	48	1080 (110)	35
34	336	319	319	319	67·4	(108·0)	50·8	77·2	54·2	36·1	47	1055 (108)	34
33	327	311	311	311	66·8	(107·5)	50·0	76·6	53·3	34·9	46	1025 (105)	33
32	318	301	301	301	66·3	(107·0)	49·2	76·1	52·1	33·7	44	1000 (102)	32
31	310	294	294	294	65·8	(106·0)	48·4	75·6	51·3	32·5	43	980 (100)	31
30	302	286	286	286	65·3	(105·5)	47·7	75·0	50·4	31·3	42	950 (97)	30
29	294	279	279	279	64·7	(104·5)	47·0	74·5	49·5	30·1	41	930 (95)	29

钢铁对洛氏C硬度相近的换算值

洛氏C规格硬度	维氏硬度	布氏硬度 10mm球·负荷3000kgf			洛氏硬度 ⁽²⁾			洛氏表面硬度钻石圆锥压头			肖氏硬度	抗拉强度 (近似值) MPa (kgf/mm ²) ⁽¹⁾	洛氏C规格硬度
		标准球	Hult-gren球	碳化钨球	A标度负荷 60kgf钻石 圆锥压头	B标度负荷 100kgf径 1/16in球	D标度负荷 100kgf钻石 圆锥压头	15-N 标度负荷 15kgf	30-N 标度负荷 30kgf	45-N 标度负荷 45kgf			
28	286	271	271	271	64·3	(104·0)	46·1	73·9	48·6	28·9	41	910 (93)	28
27	279	264	264	264	63·8	(103·0)	45·2	73·3	47·7	27·8	40	880 (90)	27
26	272	258	258	258	63·3	(102·5)	44·6	72·8	46·8	26·7	38	860 (88)	26
25	266	253	253	253	62·8	(101·5)	43·8	72·2	45·9	25·5	38	840 (86)	25
24	260	247	247	247	62·4	(101·0)	43·1	71·6	45·0	24·3	37	825 (84)	24
23	254	243	243	243	62·0	100·0	42·1	71·0	44·0	23·1	36	805 (82)	23
22	248	237	237	237	61·5	99·0	41·6	70·5	43·2	22·0	35	785 (80)	22
21	243	231	231	231	61·0	98·5	40·9	69·9	42·3	20·7	35	770 (79)	21
20	238	226	226	226	60·5	97·8	40·1	69·4	41·5	19·6	34	760 (77)	20
(18)	230	219	219	219	-	96·7	-	-	-	-	33	730 (75)	(18)
(16)	222	212	212	212	-	95·5	-	-	-	-	32	705 (72)	(16)
(14)	213	203	203	203	-	93·9	-	-	-	-	31	675 (69)	(14)
(12)	204	194	194	194	-	92·3	-	-	-	-	29	650 (66)	(12)
(10)	196	187	187	187	-	90·7	-	-	-	-	28	620 (63)	(10)
(8)	188	179	179	179	-	89·5	-	-	-	-	27	600 (61)	(8)
(6)	180	171	171	161	-	87·1	-	-	-	-	26	580 (59)	(6)
(4)	173	165	165	165	-	85·5	-	-	-	-	25	550 (56)	(4)
(2)	166	158	158	158	-	83·5	-	-	-	-	24	530 (54)	(2)
(0)	160	152	152	152	-	81·7	-	-	-	-	24	515 (53)	(0)

注：(1)粗体字的数字来自ASTME140表1(SAE-ASM-ASTM一起进行调整的)

(2)用括号()表示的单位及数字是，根据JIS Z 8438的换算表，从psi换算过来的。其中1MPa=1N/mm²。

(3)引用于JIS钢铁手册

常用配合孔的尺寸容差

单位： μm

尺寸的区分 (mm)		B	C		D			E			F			G		H					
超过	以下	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	H11
-	3	+180 +140	+85 +60	+100	+34	+45 +20	+60	+24	+28 +14	+39	+12	+16 +6	+20	+8 +2	+12	+6	+10	+14 0	+25	+40	+60
3	6	+188 +140	+100 +70	+118	+48	+60 +30	+78	+32	+38 +20	+50	+18	+22 +10	+28	+12 +4	+16	+8	+12	+18 0	+30	+48	+75
6	10	+208 +150	+116 +80	+138	+62	+76 +40	+98	+40	+47 +25	+61	+22	+28 +13	+35	+14 +5	+20	+9	+15	+22 0	+36	+58	+90
10	14	+220	+138	+165	+77	+93	+120	+50	+59	+75	+27	+34	+43	+17	+24	+11	+18	+27	+43	+70	+110
14	18	+150	+95			+50			+32			+16		+6				0			
18	24	+244	+162	+194	+98	+117	+149	+61	+73	+92	+33	+41	+53	+20	+28	+13	+21	+33	+52	+84	+130
24	30	+160	+110			+65			+40			+20		+7				0			
30	40	+270 +170	+182 +120	+220	+119	+142	+180	+75	+89	+112	+41	+50	+64	+25	+34	+16	+25	+39	+62	+100	+160
40	50	+280 +180	+192 +130	+230																	
50	65	+310 +190	+214 +140	+260	+146	+174	+220	+90	+106	+134	+49	+60	+76	+29	+40	+19	+30	+46	+74	+120	+190
65	80	+320 +200	+224 +150	+270																	
80	100	+360 +220	+257 +170	+310	+174	+207	+260	+107	+126	+159	+58	+71	+90	+34	+47	+22	+35	+54	+87	+140	+220
100	120	+380 +240	+267 +180	+320																	
120	140	+420 +260	+300 +200	+360	+208	+245	+305	+125	+148	+185	+68	+83	+106	+39	+54	+25	+40	+63	+100	+160	+250
140	160	+440 +280	+310 +210	+370																	
160	180	+470 +310	+330 +230	+390																	
180	200	+525 +340	+355 +240	+425	+242	+285	+355	+146	+172	+215	+79	+96	+122	+44	+61	+29	+46	+72	+115	+185	+290
200	225	+565 +380	+375 +260	+445																	
225	250	+605 +420	+395 +280	+465																	
250	280	+690 +480	+430 +300	+510	+271	+320	+400	+162	+191	+240	+88	+108	+137	+49	+69	+32	+52	+81	+130	+210	+320
280	315	+750 +540	+460 +330	+540																	
315	355	+830 +600	+500 +360	+590	+299	+350	+440	+182	+214	+265	+98	+119	+151	+54	+75	+36	+57	+89	+140	+230	+360
355	400	+910 +680	+540 +400	+630																	
400	450	+1010 +760	+595 +440	+690	+327	+385	+480	+198	+232	+290	+108	+131	+165	+60	+83	+40	+63	+97	+155	+250	+400
450	500	+1090 +840	+635 +480	+730																	

备考：表中的各段中，上面的数据是上尺寸容差，下面的数据是下尺寸容差。

常用配合孔的尺寸公差

单位: μm

尺寸的区分 (mm)		Js				K		M		N		P		R	S	T	U	X
超过	以下	Js6	Js7	Js8	Js9	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
-	3	±3	±5	±7	±12.5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	-	-18 -28	-20 -30
3	6	±4	±6	±9	±15	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	-	-19 -31	-24 -36
6	10	±4.5	±7.5	±11	±18	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	-	-22 -37	-28 -43
10	14	±5.5	±9	±13.5	±21.5	+2 -9	+6 -12	-4 -15	0 -18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	-	-26 -44	-33 -56
14	18					-38												
18	24	±6.5	±10.5	±16.5	±26	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -48	-	-33 -54	-46 -67
24	30					-33 -54	-40 -61	-56 -77										
30	40	±8	±12.5	±19.5	±31	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-31 -59	-39 -64	-51 -61	-
40	50					-45 -70	-61 -86											
50	65	±9.5	±15	±23	±37	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60	-42 -72	-55 -85	-76 -106	-
65	80					-32 -62	-48 -78	-64 -94	-91 -121									
80	100	±11	±17.5	±27	±43.5	+4 -18	+10 -25	-6 -28	0 -35	-16 -38	-10 -45	-30 -52	-21 -59	-38 -73	-58 -93	-78 -113	-111 -146	-
100	120					-41 -76	-66 -101	-91 -126	-131 -166									
120	140	±12.5	±20	±31.5	±50	+4 -21	+12 -28	-8 -33	0 -40	-20 -45	-12 -52	-36 -61	-28 -68	-48 -88	-77 -117	-107 -147	-	-
140	160													-50 -90	-85 -125	-119 -159		
160	180													-53 -93	-93 -133	-131 -171		
180	200	±14.5	±23	±36	±57.5	+5 -24	+13 -33	-8 -37	0 -46	-22 -51	-14 -60	-41 -70	-33 -79	-60 -106	-105 -151	-	-	-
200	225													-63 -109	-113 -159			
225	250													-67 -113	-123 -169			
250	280	±16	±26	±40.5	±65	+5 -27	+16 -36	-9 -41	0 -52	-25 -57	-14 -66	-47 -79	-36 -88	-74 -126	-	-	-	-
280	315					-78 -130												
315	355	±18	±28.5	±44.5	±70	+7 -29	+17 -40	-10 -46	0 -57	-26 -62	-16 -73	-51 -87	-41 -93	-87 -144	-	-	-	-
355	400					-93 -150												
400	450	±20	±31.5	±48.5	±77.5	+8 -32	+18 -45	-10 -50	0 -63	-27 -67	-17 -80	-55 -95	-45 -108	-103 -166	-	-	-	-
450	500					-109 -172												

備考：表中的各段中，上面的数据是上尺寸公差，下面的数据是下尺寸公差。

常用配合轴的尺寸公差

单位：μm

尺寸的区分 (mm)		js				k		m		n	p	r	s	t	u	x
超过	以下	js5	js6	js7	js8	k5	k6	m5	m6	n6	p6	r6	s6	t6	u6	x6
-	3	±2	±3	±5	±7	+4 0	+6	+6 +2	+8	+10 +4	+12 +6	+16 +10	+20 +14	-	+24 +18	+26 +20
3	6	±2.5	±4	±6	±9	+6 +1	+9	+9 +4	+12	+16 +8	+20 +12	+23 +15	+27 +19	-	+31 +23	+36 +28
6	10	±3	±4.5	±7.5	±11	+7 +1	+10	+12 +6	+15	+19 +10	+24 +15	+28 +19	+32 +23	-	+37 +28	+43 +34
10	14	±4	±5.5	±9	±13.5	+9 +1	+12	+15 +7	+18	+23 +12	+29 +18	+34 +23	+39 +28	-	+44 +33	+51 +40
14	18															+56 +45
18	24	±4.5	±6.5	±10.5	±16.5	+11 +2	+15	+17 +8	+21	+28 +15	+35 +22	+41 +28	+48 +35	-	+54 +41	+67 +54
24	30													+54 +41	+61 +48	+77 +64
30	40	±5.5	±8	±12.5	±19.5	+13 +2	+18	+20 +9	+25	+33 +17	+42 +26	+50 +34	+59 +43	+64 +48	+76 +60	-
40	50													+70 +54	+86 +70	
50	65	±6.5	±9.5	±15	±23	+15 +2	+21	+24 +11	+30	+30 +20	+51 +32	+60 +41	+72 +53	+85 +66	+106 +87	-
65	80											+62 +43	+78 +59	+94 +75	+121 +102	
80	100	±7.5	±11	±17.5	±27	+18 +3	+25	+28 +13	+35	+45 +23	+59 +37	+73 +51	+93 +71	+113 +104	+146 +124	-
100	120											+76 +54	+101 +79	+126 +104	+166 +144	
120	140	±9	±12.5	±20	±31.5	+21 +3	+28	+33 +15	+40	+52 +27	+68 +43	+88 +63	+117 +92	+147 +122	-	-
140	160											+90 +65	+125 +100	+159 +134		
160	180	±10	±14.5	±23	±36	+24 +4	+33	+37 +17	+46	+60 +31	+79 +50	+106 +77	+151 +122	-	-	-
200	225											+109 +80	+159 +130			
225	250	±11.5	±16	±26	±40.5	+27 +4	+36	+43 +20	+52	+66 +34	+88 +56	+126 +94	-	-	-	-
250	280											+130 +98				
280	315	±12.5	±18	±28.5	±44.5	+29 +4	+40	+46 +21	+57	+73 +37	+98 +62	+144 +108	-	-	-	-
315	355											+150 +114				
355	400	±13.5	±20	±31.5	±48.5	+32 +5	+45	+50 +23	+63	+80 +40	+108 +68	+166 +126	-	-	-	-
400	450											+172 +132				
450	500	±13.5	±20	±31.5	±48.5	+32 +5	+45	+50 +23	+63	+80 +40	+108 +68	+172 +132	-	-	-	-
500	550											+172 +132				

备考：表中的各段中，上面的数据是上尺寸公差，下面的数据是下尺寸公差。

常用配合轴的尺寸公差

单位：μm

尺寸的区分 (mm)		b	c	d		e			f			g		h						
超过	以下	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	h10	h11
-	3	-140 -165	-60 -85	-20 -34	-45	-24	-14 -28	-39	-12	-16	-20	-2	-6 -8	0 -4 -6 -10 -14 -25 -40 -60						
3	6	-140 -170	-70 -100	-30 -48	-60	-32	-20 -38	-50	-18	-22	-28	-4	-9 -12	0 -5 -8 -12 -18 -30 -48 -75						
6	10	-150 -186	-80 -116	-40 -62	-76	-40	-25 -47	-61	-22	-28	-35	-5	-11 -14	0 -6 -9 -15 -22 -36 -58 -90						
10	14	-150 -193	-95 -138	-50 -77	-93	-50	-32 -59	-75	-27	-34	-43	-6	-14 -17	0 -8 -11 -18 -27 -43 -70 -110						
14	18																			
18	24	-160 -212	-110 -162	-65 -98	-117	-61	-40 -73	-92	-33	-41	-53	-7	-16 -20	0 -9 -13 -21 -33 -52 -84 -130						
24	30																			
30	40	-170 -232	-120 -182	-80		-75	-50 -89	-112	-41	-50	-64	-9	-20 -25	0 -11 -16 -25 -39 -62 -100 -160						
40	50	-180 -242	-130 -192	-119 -142		-75	-89 -112		-41	-50	-64	-20	-25							
50	65	-190 -264	-140 -214	-100		-90	-60 -106	-134	-49	-60	-76	-10	-23 -29	0 -13 -19 -30 -46 -74 -120 -190						
65	80	-200 -274	-150 -224	-146 -174		-90	-106 -134		-49	-60	-76	-23	-29							
80	100	-220 -307	-170 -257	-120		-107	-72 -126	-159	-58	-71	-90	-12	-27 -34	0 -15 -22 -35 -54 -87 -140 -220						
100	120	-240 -327	-180 -267	-174 -207		-107	-126 -159		-58	-71	-90	-27	-34							
120	140	-260 -360	-200 -300																	
140	160	-280 -380	-210 -310	-145 -208	-245	-125	-85 -148	-185	-68	-83	-106	-14	-32 -39	0 -18 -25 -40 -63 -100 -160 -250						
160	180	-310 -410	-230 -330																	
180	200	-340 -455	-240 -355																	
200	225	-380 -495	-260 -375	-170 -242	-285	-146	-100 -172	-215	-79	-96	-122	-15	-35 -44	0 -20 -29 -46 -72 -115 -185 -290						
225	250	-420 -535	-280 -395																	
250	280	-480 -610	-300 -430	-190		-162	-110 -191	-240	-88	-108	-137	-17	-40 -49	0 -23 -32 -52 -81 -130 -210 -320						
280	315	-540 -670	-330 -460	-271 -320		-162	-191 -240		-88	-108	-137	-40	-49							
315	355	-600 -710	-360 -500	-210		-182	-125 -214	-265	-98	-119	-151	-18	-43 -54	0 -25 -36 -57 -89 -140 -230 -260						
355	400	-680 -820	-400 -540	-299 -350		-182	-214 -265		-98	-119	-151	-43	-54							
400	450	-760 -915	-440 -595	-230		-198	-135 -232	-290	-108	-131	-165	-20	-47 -60	0 -27 -40 -63 -97 -155 -250 -400						
450	500	-840 -995	-480 -635	-327 -385		-198	-232 -290		-108	-131	-165	-47	-60							

备考：表中的各段中，上面的数据是上尺寸公差，下面的数据是下尺寸公差。

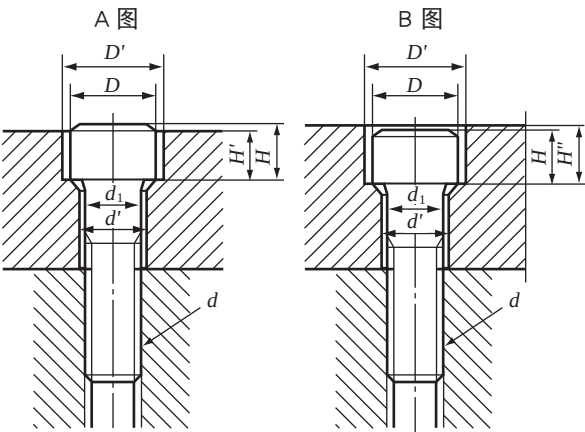
m 制普通螺纹及 m 制细牙螺纹的螺纹底孔参考尺寸

单位：mm

螺纹的标称	螺距				参考用钻头螺纹底孔	
	普通螺纹	细牙螺纹			普通螺纹	螺纹衬套
M1	0.25	0.2			0.75	
M1.1	0.25	0.2			0.85	
M1.2	0.25	0.2			0.95	
M1.4	0.3	0.2			1.1	
M1.6	0.35	0.2			1.25	
M1.8	0.35	0.2			1.45	
M2	0.4	0.25			1.6	2.1
M2.2	0.45	0.25			1.75	2.4
M2.5	0.45	0.35			2.1	2.6
M3	0.5	0.35			2.5	3.1
M3.5	0.6	0.35			2.9	3.7
M4	0.7	0.5			3.3	4.2
M4.5	0.75	0.5			3.8	3.6
M5	0.8	0.5			4.2	5.2
M6	1	0.75			5	6.3
M8	1.25	0.75	1		6.8	8.4
M10	1.5	0.75	1	1.25	8.5	10.5
M12	1.75	1	1.25	1.5	10.3	12.5
M14	2	1	1.25	1.5	12	14.5
M16	2	1	1.5	1.5	14	16.5
M18	2.5	1	1.5	2	15.5	19
M20	2.5	1	1.5	2	17.5	21
M22	2.5	1	1.5	2	19.5	23
M24	3	1	1.5	2	21	25
M27	3	1	1.5	2	24	28
M30	3.5	1	1.5	2	26.5	31

JISB0205,0207拔粹

以下内容主要为做参考而记载。并非规格品的一部分。

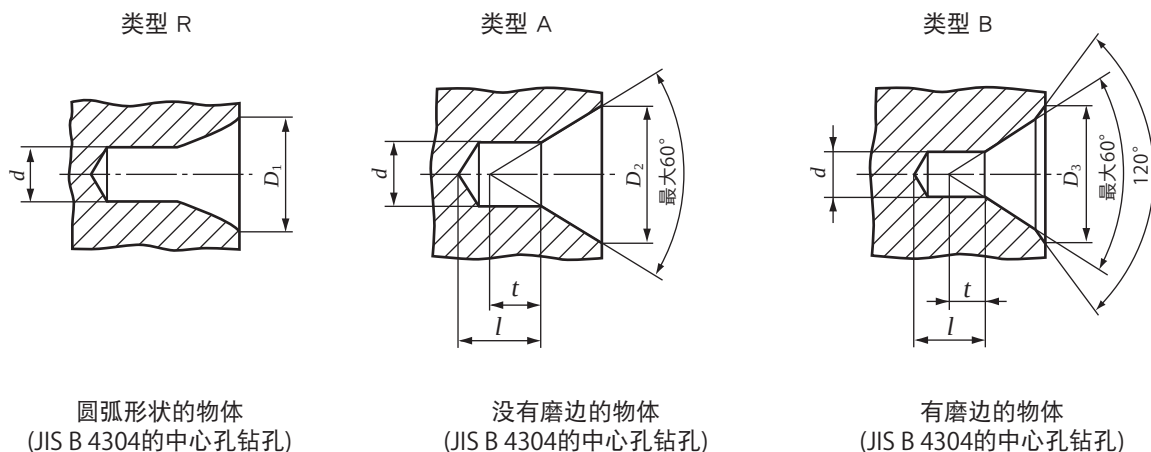


对内六角螺栓的铰孔及螺栓孔的尺寸

单位 : mm

螺纹的标称 (d)	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M33	M36	M39	M42	M45	M48	M52
d _i	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30	33	36	39	42	45	48	52
d'	3.4	4.5	5.5	6.6	9	11	14	16	18	20	22	24	26	30	33	36	39	42	45	48	52	56
D	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45	50	54	58	63	68	72	78
D'	6.5	8	9.5	11	14	17.5	20	23	26	29	32	35	39	43	48	54	58	62	67	72	76	82
H	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30	33	36	39	42	45	48	52
H'	2.7	3.6	4.6	5.5	7.4	9.2	11	12.8	14.5	16.5	18.5	20.5	22.5	25	28	31	34	37	39	42	45	49
H''	3.3	4.4	5.4	6.5	8.6	10.8	13	15.2	17.5	19.5	21.5	23.5	25.5	29	32	35	38	41	44	47	50	54

备考：上述螺栓的孔径(d')是JIS B 1001(螺栓孔径及铰孔径)的螺栓孔2级。



注：尺寸 l 是根据中心孔钻头长度而定，不可小于 t 。

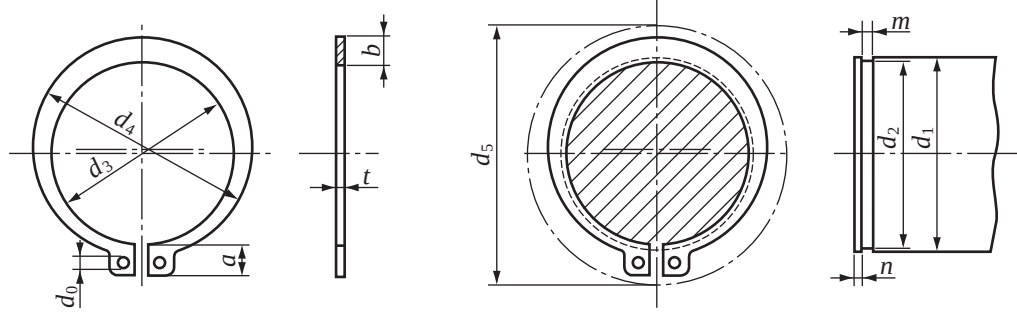
所推荐的中心孔的尺寸

单位：mm

d 标称	类型 R 根据JIS B 4304				
	类型 A 根据JIS B 4304		类型 B 根据JIS B 4304		
	D_1 标称	D_2 标称	t 参考	D_3 标称	t 参考
(0.5)		1.06	0.5		
(0.63)		1.32	0.6		
(0.8)		1.70	0.7		
1.0	2.12	2.12	0.9	3.15	0.9
(1.25)	2.65	2.65	1.1	4	1.1
1.6	3.35	3.35	1.4	5	1.4
2.0	4.25	4.25	1.8	6.3	1.8
2.5	5.3	5.30	2.2	8	2.2
3.15	6.7	6.70	2.8	10	2.8
4.0	8.5	8.50	3.5	12.5	3.5
(5.0)	10.6	10.60	4.4	16	4.4
6.3	13.2	13.20	5.5	18	5.5
(8.0)	17.0	17.00	7.0	22.4	7.0
10.0	21.2	21.20	8.7	28	8.7

备考：用括号显示的标称，尽量不用。

C 型轴用扣环(参考)



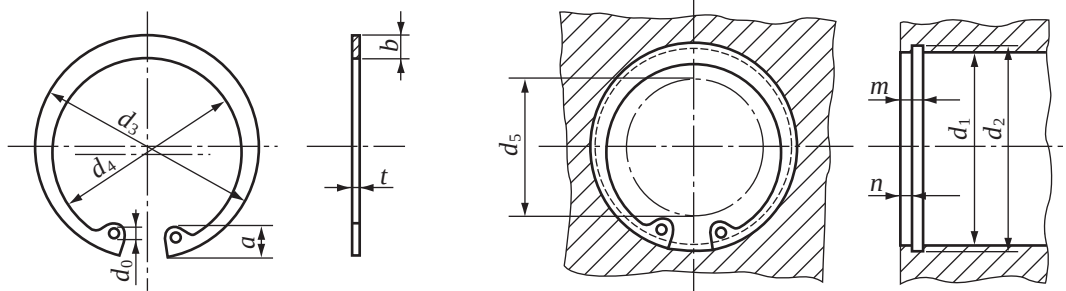
将扣环套入所使用的轴的时候, 不能使直径为 d_0 的孔的位置藏到沟里。

d_5 是套到轴上时的外径的最大直径。

单位: mm

标称		扣环							所适用的轴(参考)							
1	2	d_s		t		b	a	d_0 (最小)	d_s	d_i	d_z		m		n (最小)	
		基准 尺寸	容差	基准 尺寸	容差						基准 尺寸	容差	基准 尺寸	容差		
10		9.3	±0.15	1	±0.05	1.6	3	1.2	17	10	9.6	0 -0.09	1.15	+0.14 0	1.5	
	11	10.2				1.8	3.1		1.5	18	11	10.5				0 -0.11
12		11.1				1.8	3.2			19	12	11.5				
14		12.9				2	3.4	1.7	22	14	13.4					
15		13.8				2.1	3.5		23	15	14.3					
16		14.7				2.2	3.6		24	16	15.2					
17		15.7				2.2	3.7		25	17	16.2					
18		16.5				2.6	3.8	26	18	17						
	19	17.5	2.7	3.8	2	27	19	18	0 -0.21	1.35						
20		18.5	2.7	3.9		CC	20	19								
22		20.5	2.7	4.1		31	22	21								
	24	22.2	3.1	4.2		33	24	22.9								
25		23.2	3.1	4.3		34	25	23.9		1.75						
	26	24.2	3.1	4.4		35	26	24.9								
28		25.9	3.1	4.6		38	28	26.6								
30		27.9	3.5	4.8		40	30	28.6								
32		29.6	1.6	±0.06	2	3.5	5	43	32	30.3	0 -0.25	1.95				
35		32.2				4	5.4	46	35	33						
	36	33.2				4	5.4	47	36	34						
	38	35.2	±0.25	1.8	±0.07	4.5	5.6	50	38	36	0 -0.25	2.2				
40		37				4.5	5.8	53	40	38						
	42	38.5				4.5	6.2	55	42	39.5						
45		41.5				4.8	6.3	58	45	42.5						
	48	44.5				4.8	6.5	62	48	45.5		2.7				
50		45.8				5	6.7	64	50	47						
55		50.8				5	7	70	55	52						
	56	51.8				5	7	71	56	53						
60		55.8	±0.45	2	±0.08	5.5	7.2	75	60	57	0 -0.3	3.2				
65		60.8				6.4	7.4	81	65	62						
70		65.5				6.4	7.8	86	70	67						
75		70.5				7	7.9	92	75	72						
80		74.5				7.4	8.2	97	80	76.5		4.2				
85		79.5				8	8.4	3	103	85			81.5			
90		84.5				8	8.7		108	90			86.5			
95		89.5				8.6	9.1		114	95			91.5			
100		94.5	9	9.5	119	100	96.5		+0.18 0	3						
	105	98	9.5	9.8	125	105	101									
110		103	±0.55	4	±0.09	9.5	10	131		110	106	0 -0.54	4			
120		113				10.3	10.9	143		120	116					

C 型孔用扣环(参考)



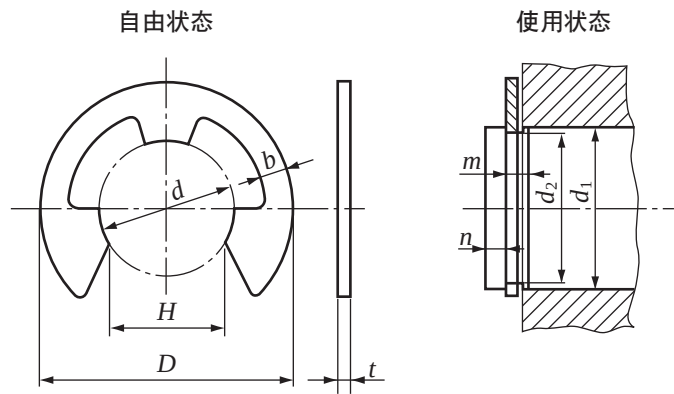
将扣环放入所使用的孔的时候，不能使直径为 d_0 的孔的位置藏到沟里。

d_5 是放入孔里时的内径的最小直径。

单位：mm

标称		扣环							所适用的轴(参考)						
		d_3		t		b	a	d_0	d_5	d_1	d_2		m		n (最小)
1	2	基准尺寸	容差	基准尺寸	容差	大约	大约	最小			基准尺寸	容差	基准尺寸	容差	
10		10.7	±0.18	1	±0.05	1.8	3.1	1.2	3	10	10.4	+0.11 0	1.15	1.5	
11		11.8				1.8	3.2	1.5	4	11	11.4				
12		13.0				1.8	3.3		5	12	12.5				
	13	14.1				1.8	3.5	1.7	6	13	13.6				
14		15.1				2.0	3.6		7	14	14.6				
	15	16.2				2.0	3.6		8	15	15.7				
16		17.3	2.0	3.7	8	16	16.8								
	17	18.3	±0.20	1.2	±0.06	2.0	3.8	2	9	17	17.8	+0.21 0	1.35		
18		19.5				2.5	4.0		10	18	19.0				
19		20.5				2.5	4.0		11	19	20.0				
20		21.5				2.5	4.0		12	20	21.0				
22		23.5				2.5	4.1	13	22	23.0	+0.25 0				1.75
	24	25.9				2.5	4.3	15	24	25.2					
25		26.9	3.0	4.4	16	25	26.2								
	26	27.9	3.0	4.6	16	26	27.2								
28		30.1	3.0	4.6	18	28	29.4								
30		32.1	±0.25	1.6	±0.07	3.0	4.7	2.5	20	30		31.4	+0.30 0	1.95	
32		34.4				3.5	5.2		21	32	33.7				
35		37.8				3.5	5.2		24	35	37.0				
	36	38.8				3.5	5.2		25	36	38.0				
37		39.8				3.5	5.2		26	37	39.0				
	38	40.8				4.0	5.3		27	38	40.0				
40		43.5	±0.4	1.8	±0.08	4.0	5.7	3	28	40	42.5	+0.35 0	2.2		
42		45.5				4.0	5.8		30	42	44.5				
45		48.5				4.5	5.9		33	45	47.5				
47		50.5				4.5	6.1		34	47	49.5				
	48	51.5				4.5	6.2		35	48	50.5				
50		54.2				4.5	6.5		37	50	53.0				
52		56.2	±0.45	2	±0.09	5.1	6.5	3.5	39	52	55.0	+0.54 0	2.7		
55		59.2				5.1	6.5		41	55	58.0				
	56	60.2				5.1	6.6		42	56	59.0				
60		64.2				5.5	6.8		46	60	63.0				
62		66.2				5.5	6.9		48	62	65.0				
	63	67.2				5.5	6.9		49	63	66.0				
	65	69.2	±0.55	2.5	±0.08	5.5	7.0	3	50	65	68.0	+0.63 0	3.2		
68		72.5				6.0	7.4		53	68	71.0				
	70	74.5				6.0	7.4		55	70	73.0				
72		76.5				6.6	7.4		57	72	75.0				
75		79.5				6.6	7.8		60	75	78.0				
80		85.5				7.0	8.0		64	80	83.5				
85		90.5	±0.65	3	±0.09	7.0	8.0	3.5	69	85	88.5	+0.18 0	4		
90		95.5				7.6	8.3		73	90	93.5				
95		100.5				8.0	8.5		77	95	98.5				
100		105.5				8.3	8.8		82	100	103.5				
	105	112.0				8.9	9.1		86	105	109.0				
110		117.0				8.9	10.2		89	110	114.0				
	112	119.0	±0.65	4	±0.09	8.9	10.2	3.5	90	112	116.0	+0.54 0	4.2		
	115	122.0				9.5	10.2		94	115	119.0				
120		127.0				9.5	10.7		98	120	124.0				
125		132.0				10.0	10.7		103	125	129.0				

E 型扣环(参考)



备考：形状表示一例。

单位：mm

标称	扣环								适用的轴										
	<i>d</i>		<i>D</i>		<i>H</i>		<i>t</i>		<i>b</i>	<i>d</i> 的区分			<i>d</i> ₂		<i>m</i>		<i>n</i>		
	基准尺寸	容差	基准尺寸	容差	基准尺寸	容差	基准尺寸	容差	大约	超过	以下	基准尺寸	容差	基准尺寸	容差	(最小)			
0.8	0.8	0 -0.08	2	±0.1	0.7	0 -0.25	0.2	±0.02	0.3	1	1.4	0.8	+0.05 0	0.3	+0.05 0	0.4			
1.2	1.2	0 -0.09	3		1		0.3	±0.025	0.4	1.4	2	1.2	+0.06 0	0.4		0.6			
1.5	1.5		4		1.3		0.4	±0.03	0.6	2	2.5	1.5		0.5		0.8			
2	2		5	1.7	0.4		0.7		2.5	3.2	2	0.7			+0.1 0	1.2			
2.5	2.5		6	2.1	0.4		0.8		3.2	4	2.5						+0.075 0	0.9	1.5
3	3		7	2.6	0.6		0.9		4	5	3								
4	4	0 -0.12	9	3.5	±0.04	0.6	1.1	5	7	4	1.15		+0.14 0	4					
5	5		11	4.3		0.6	1.2	6	8	5		1.7							
6	6		12	5.2		0.8	1.4	7	9	6					2.2				
7	7		14	6.1		0.8	1.6	8	11	7						2.5			
8	8		0 -0.15	16		6.9	0.8	1.8	9	12	8		2.8						
9	9	18		7.8		0.8	2	10	14	9	3.1								
10	10	20		8.7	1	2.2	11	15	10	3.5									
12	12	23		10.4	1	2.4	13	18	12			3.8							
15	15	29		13	1.6	2.8	16	24	15				4.1						
19	19	37	16.5	1.6	4	20	31	19	4.5										
24	24	44	20.8	2	5	25	38	24		4.8									

向 SI 单位切换时容易出现问题的单位换算率表

	N	dyn	kgf
力量	1	1×10^5	1.01972×10^{-1}
	1×10^{-5}	1	1.01972×10^{-6}
	9.806 65	9.80665×10^5	1

	Pa	bar	kgf/cm ²	atm	mmH ₂ O	mmHg 又は Torr
压力	1	1×10^{-5}	1.01972×10^{-5}	9.86923×10^{-6}	1.01972×10^{-1}	7.50062×10^{-3}
	1×10^5	1	1.019 72	9.86923×10^{-1}	1.01972×10^4	7.50062×10^2
	9.80665×10^4	9.80665×10^{-1}	1	9.67841×10^{-1}	1×10^4	7.35559×10^2
	1.01325×10^5	1.013 25	1.033 23	1	1.03323×10^4	7.60000×10^2
	9.806 65	9.80665×10^{-5}	1×10^{-4}	9.67841×10^{-5}	1	7.35559×10^{-2}
	1.33322×10^2	1.33322×10^{-3}	1.35951×10^{-3}	1.31579×10^{-3}	1.35951×10	1

注 IPa=IN/m²

	Pa	Mpa or N/mm ²	kfg/mm ²	kgf/cm ²
应力	1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
	1×10^6	1	1.01972×10^{-1}	1.01972×10
	9.80665×10^6	9.806 65	1	1×10^2
	9.80665×10^4	9.80665×10^{-2}	1×10^{-2}	1

	Pa·s	cP	P
粘度	1	1×10^3	1×10
	1×10^{-3}	1	1×10^{-2}
	1×10^{-1}	1×10^2	1

注 IP = Idyn·s/cm² = Ig/cm·S,
IPa·s = IN·s/m², IcP = ImPa·s

Reference data

Hardness conversion table

Approximate conversion values compared with Vickers hardness of Steel

Vickers hardness	Brinell hardness 10 mm ball 3000kgf			Rockwell hardness ⁽²⁾				Rockwell superficial hardness diamond cone penetrator			Shore hardness	Tensile strength (Approx. value) MPa (kgf/mm ²) ⁽¹⁾	Vickers hardness Load
	Standard ball	Hult-gren ball	Tungsten carbide ball	Scale A Load 60kgf Diamond cone penetrator	Scale B Load 100kgf 1/16 inch Ball	Scale C Load 150kgf Diamond cone penetrator	Scale D Load 100kgf Diamond cone penetrator	15-N Scale Load 15 kgf	30-N Scale Load 30 kgf	45-N Scale Load 45 kgf			
940	-	-	-	85·6	-	68·0	76·9	93·2	84·4	75·4	97	-	940
920	-	-	-	85·3	-	67·5	76·5	93·0	84·0	74·8	96	-	920
900	-	-	-	85·0	-	67·0	76·1	92·9	83·6	74·2	95	-	900
880	-	-	(767)	84·7	-	66·4	75·7	92·7	83·1	73·6	93	-	880
860	-	-	(757)	84·4	-	65·9	75·3	92·5	82·7	73·1	92	-	860
840	-	-	(745)	84·1	-	65·3	74·8	92·3	82·2	72·2	91	-	840
820	-	-	(733)	83·8	-	64·7	74·3	92·1	81·7	71·8	90	-	820
800	-	-	(722)	83·4	-	64·0	73·8	91·8	81·1	71·0	88	-	800
780	-	-	(710)	83·0	-	63·3	73·3	91·5	80·4	70·2	87	-	780
760	-	-	(698)	82·6	-	62·5	72·6	91·2	79·7	69·4	86	-	760
740	-	-	(684)	82·2	-	61·8	72·1	91·0	79·1	68·6	84	-	740
720	-	-	(670)	81·8	-	61·0	71·5	90·7	78·4	67·7	83	-	720
700	-	615	(656)	81·3	-	60·1	70·8	90·3	77·6	66·7	81	-	700
690	-	610	(647)	81·1	-	59·7	70·5	90·1	77·2	66·2	-	-	690
680	-	603	(638)	80·8	-	59·2	70·1	89·8	76·8	65·7	80	-	680
670	-	597	630	80·6	-	58·8	69·8	89·7	76·4	65·3	-	-	670
660	-	590	620	80·3	-	58·3	69·4	89·5	75·9	64·7	79	-	660
650	-	585	611	80·0	-	57·8	69·0	89·2	75·5	64·1	-	-	650
640	-	578	601	79·8	-	57·3	68·7	89·0	75·1	63·5	77	-	640
630	-	571	591	79·5	-	56·8	68·3	88·8	74·6	63·0	-	-	630
620	-	564	582	79·2	-	56·3	67·9	88·5	74·2	62·4	75	-	620
610	-	557	573	78·9	-	55·7	67·5	88·2	73·6	61·7	-	-	610
600	-	550	564	78·6	-	55·2	67·0	88·0	73·2	61·2	74	-	600
590	-	542	554	78·4	-	54·7	66·7	87·8	72·7	60·5	-	2055 (210)	590
580	-	535	545	78·0	-	54·1	66·2	87·5	72·1	59·9	72	2020 (206)	580
570	-	527	535	77·8	-	53·6	65·8	87·2	71·7	59·3	-	1985 (202)	570
560	-	519	525	77·4	-	53·0	65·4	86·9	71·2	58·6	71	1950 (199)	560
550	(505)	512	517	77·0	-	52·3	64·8	86·6	70·5	57·8	-	1905 (194)	550
540	(496)	503	507	76·7	-	51·7	64·4	86·3	70·0	57·0	69	1860 (190)	540
530	(488)	495	497	76·4	-	51·1	63·9	86·0	69·5	56·2	-	1825 (186)	530
520	(480)	487	488	76·1	-	50·5	63·5	85·7	69·0	55·6	67	1795 (183)	520
510	(473)	479	479	75·7	-	49·8	62·9	85·4	68·3	54·7	-	1750 (179)	510
500	(465)	471	471	75·3	-	49·1	62·2	85·0	67·7	53·9	66	1705 (174)	500
490	(456)	460	460	74·9	-	48·4	61·6	84·7	67·1	53·1	-	1660 (169)	490
480	448	452	452	74·5	-	47·7	61·3	84·3	66·4	52·2	64	1620 (165)	480
470	441	442	442	74·1	-	46·9	60·7	83·9	65·7	51·3	-	1570 (160)	470
460	433	433	433	73·6	-	46·1	60·1	83·6	64·9	50·4	62	1530 (156)	460
450	425	425	425	73·3	-	45·3	59·4	83·2	64·3	49·4	-	1495 (153)	450
440	415	415	415	72·8	-	44·5	58·8	82·8	63·5	48·4	59	1460 (149)	440
430	405	405	405	72·3	-	43·6	58·2	82·3	62·7	47·4	-	1410 (144)	430
420	397	397	397	71·8	-	42·7	57·5	81·8	61·9	46·4	57	1370 (140)	420
410	388	388	388	71·4	-	41·8	56·8	81·4	61·1	45·3	-	1330 (136)	410
400	379	379	379	70·8	-	40·8	56·0	81·0	60·2	44·1	55	1290 (131)	400
390	369	369	369	70·3	-	39·8	55·2	80·3	59·3	42·9	-	1240 (127)	390
380	360	360	380	69·8	(110·0)	38·8	54·4	79·8	58·4	41·7	52	1205 (123)	380
370	350	350	350	69·2	-	37·7	53·6	79·2	57·4	40·4	-	1170 (120)	370
360	341	341	341	68·7	(109·0)	36·6	52·8	78·6	56·4	39·1	50	1130 (115)	360
350	331	331	331	68·1	-	35·5	51·9	78·0	55·4	37·8	-	1095 (112)	350
340	322	322	322	67·6	(108·0)	34·4	51·1	77·4	54·4	36·5	47	1070 (109)	340
330	313	313	313	67·0	-	33·3	50·2	76·8	53·6	35·2	-	1035 (105)	330

Approximate conversion values compared with Vickers hardness for Steel

Vickers hardness	Brinell hardness 10 mm ball 3000kgf			Rockwell hardness ⁽²⁾				Rockwell superficial hardness diamond cone penetrator			Shore hardness	Tensile strength (Approx. value) MPa (kgf/mm ²) ⁽¹⁾	Vickers hardness Load
	Standard ball	Hult-gren ball	Tungsten carbide ball	Scale A Load 60kgf Diamond cone penetrator	Scale B Load 100kgf 1/16 inch Ball	Scale C Load 150kgf Diamond cone penetrator	Scale D Load 100kgf Diamond cone penetrator	15-N Scale Load 15 kgf	30-N Scale Load 30 kgf	45-N Scale Load 45 kgf			
320	303	303	303	66·4	(107·0)	33·2	49·4	76·2	52·3	33·9	45	1005 (103)	320
310	294	294	294	65·8	-	31·0	48·4	75·6	51·3	32·5	-	980 (100)	310
300	284	284	284	65·2	(105·5)	29·8	47·5	74·9	50·2	31·1	42	950 (97)	300
295	280	280	280	64·8	-	29·2	47·1	74·6	49·7	30·4	-	935 (96)	295
290	275	275	275	64·5	(104·5)	28·5	46·5	74·2	49·0	29·5	41	915 (94)	290
285	270	270	270	64·2	-	27·8	46·0	73·8	48·4	28·7	-	905 (92)	285
280	265	265	265	63·8	(103·5)	27·1	45·3	73·4	47·8	27·9	40	890 (91)	280
275	261	261	261	63·5	-	26·4	44·9	73·0	47·2	27·1	-	875 (89)	275
270	256	256	256	63·1	(102·0)	25·6	44·3	72·6	46·4	26·2	38	855 (87)	270
265	252	252	252	62·7	-	24·8	43·7	72·1	45·7	25·2	-	840 (86)	265
260	247	247	247	62·4	(101·0)	24·0	43·1	71·6	45·0	24·3	37	825 (84)	260
255	243	243	243	62·0	-	23·1	42·2	71·1	44·2	23·2	-	805 (82)	255
250	238	238	238	61·6	99·5	22·2	41·7	70·6	43·4	22·2	36	795 (81)	250
245	233	233	233	61·2	-	21·3	41·1	70·1	42·5	21·1	-	780 (79)	245
240	228	228	228	60·7	98·1	20·3	40·3	69·6	41·7	19·9	34	765 (78)	240
230	219	219	219	-	96·7	(18·0)	-	-	-	-	33	730 (75)	230
220	209	209	209	-	95·0	(15·7)	-	-	-	-	32	695 (71)	220
210	200	200	200	-	93·4	(13·4)	-	-	-	-	30	670 (68)	210
200	190	190	190	-	91·5	(11·0)	-	-	-	-	29	635 (65)	200
190	181	181	181	-	89·5	(8·5)	-	-	-	-	28	605 (62)	190
180	171	171	171	-	87·1	(6·0)	-	-	-	-	26	580 (59)	180
170	162	162	162	-	85·0	(3·0)	-	-	-	-	25	545 (56)	170
160	152	152	152	-	81·7	(0·0)	-	-	-	-	24	515 (53)	160
150	143	143	143	-	78·7	-	-	-	-	-	22	490 (50)	150
140	133	133	133	-	75·0	-	-	-	-	-	21	455 (46)	140
130	124	124	124	-	71·2	-	-	-	-	-	20	425 (44)	130
120	114	114	114	-	66·7	-	-	-	-	-	-	390 (40)	120
110	105	105	105	-	62·3	-	-	-	-	-	-	-	110
100	95	95	95	-	56·2	-	-	-	-	-	-	-	100
95	90	90	90	-	52·0	-	-	-	-	-	-	-	95
90	86	86	86	-	48·0	-	-	-	-	-	-	-	90
85	81	81	81	-	41·0	-	-	-	-	-	-	-	85

Remark : Bold figure indicates values from Table 1 of ASTM E 140. (SAE-ASM-ASTM combined and adjusted)

Note : (1) Units and Numerical values in brackets () are converted from psi conversion table of JIS Z 8438 with 1MPa = 1N/ mm²

(2) Figures in brackets () from table are seldom used and mainly for reference only.

(3) Iron and Steel quoted from JIS hand book

Approximate converted values compared with Rockwell hardness for Steel (1)

Rockwell Scale C hardness	Vickers hardness	Brinell hardness 10 mm ball 3000kgf			Rockwell hardness ⁽²⁾			Rockwell superficial hardness diamond cone penetrator			Shore hardness	Tensile strength (Approx. value) MPa (kgf/mm ²) ⁽¹⁾	Rockwell Scale C hardness
		Standard ball	Hult-gren ball	Tungsten carbide ball	Scale A Load 60kgf Diamond cone penetrator	Scale B Load 100kgf 1/16 inch Ball	Scale D Load 100kgf Diamond cone penetrator	15-N Scale Load 15 kgf	30-N Scale Load 30 kgf	45-N Scale Load 45 kgf			
68	940	-	-	-	85·6	-	76·9	93·2	84·4	75·4	97	-	68
67	900	-	-	-	85·0	-	76·1	92·9	83·6	74·2	95	-	67
66	865	-	-	-	84·5	-	75·4	92·5	82·8	73·3	92	-	66
65	832	-	-	(739)	83·9	-	74·5	92·2	81·9	72·0	91	-	65
64	800	-	-	(722)	83·4	-	73·8	91·8	81·1	71·0	88	-	64
63	772	-	-	(705)	82·8	-	73·0	91·4	80·1	69·9	87	-	63
62	746	-	-	(688)	82·3	-	72·2	91·1	79·3	68·8	85	-	62
61	720	-	-	(670)	81·8	-	71·5	90·7	78·4	67·7	83	-	61
60	697	-	613	(654)	81·2	-	70·7	90·2	77·5	66·6	81	-	60
59	674	-	599	(634)	80·7	-	69·9	89·8	76·6	65·5	80	-	59
58	653	-	587	615	80·1	-	69·2	89·3	75·7	64·3	78	-	58
57	633	-	575	595	79·6	-	68·5	88·9	74·8	63·2	76	-	57
56	613	-	561	577	79·0	-	67·7	88·3	73·9	62·0	75	-	56
55	595	-	546	560	78·5	-	66·9	87·9	73·0	60·9	74	2075 (212)	55
54	577	-	534	543	78·0	-	66·1	87·4	72·0	59·8	72	2015 (205)	54
53	560	-	519	525	77·4	-	65·4	86·9	71·2	58·6	71	1950 (199)	53
52	544	(500)	508	512	76·8	-	64·6	86·4	70·2	57·4	69	1880 (192)	52
51	528	(487)	494	496	76·3	-	63·8	85·9	69·4	56·1	68	1820 (186)	51
50	513	(475)	481	481	75·9	-	63·1	85·5	68·5	55·0	67	1760 (179)	50
49	498	(464)	469	469	75·2	-	62·1	85·0	67·6	53·8	66	1695 (173)	49
48	484	451	455	455	74·7	-	61·4	84·5	66·7	52·5	64	1635 (167)	48
47	471	442	443	443	74·1	-	60·8	83·9	65·8	51·4	63	1580 (161)	47
46	458	432	432	432	73·6	-	60·0	83·5	64·8	50·3	62	1530 (156)	46
45	446	421	421	421	73·1	-	59·2	83·0	64·0	49·0	60	1480 (151)	45
44	434	409	409	409	72·5	-	58·5	82·5	63·1	47·8	58	1435 (146)	44
43	423	400	400	400	72·0	-	57·7	82·0	62·2	46·7	57	1385 (141)	43
42	412	390	390	390	71·5	-	56·9	81·5	61·3	45·5	56	1340 (136)	42
41	402	381	381	381	70·9	-	56·2	80·9	60·4	44·3	55	1295 (132)	41
40	392	371	371	371	70·4	-	55·4	80·4	59·5	43·1	54	1250 (127)	40
39	382	362	362	362	69·9	-	54·6	79·9	58·6	41·9	52	1215 (124)	39
38	372	353	353	353	69·4	-	53·8	79·4	57·7	40·8	51	1180 (120)	38
37	363	344	344	344	68·9	-	53·1	78·8	56·8	39·6	50	1160 (118)	37
36	354	336	336	336	68·4	(109·0)	52·3	78·3	55·9	38·4	49	1115 (114)	36
35	345	327	327	327	67·9	(108·5)	51·5	77·7	55·0	37·2	48	1080 (110)	35
34	336	319	319	319	67·4	(108·0)	50·8	77·2	54·2	36·1	47	1055 (108)	34
33	327	311	311	311	66·8	(107·5)	50·0	76·6	53·3	34·9	46	1025 (105)	33
32	318	301	301	301	66·3	(107·0)	49·2	76·1	52·1	33·7	44	1000 (102)	32
31	310	294	294	294	65·8	(106·0)	48·4	75·6	51·3	32·5	43	980 (100)	31
30	302	286	286	286	65·3	(105·5)	47·7	75·0	50·4	31·3	42	950 (97)	30
29	294	279	279	279	64·7	(104·5)	47·0	74·5	49·5	30·1	41	930 (95)	29

Approximate converted values compared with Rockwell hardness for Steel (1)

Rockwell Scale C hardness	Vickers hardness	Brinell hardness 10 mm ball 3000kgf			Rockwell hardness ⁽²⁾			Rockwell superficial hardness diamond cone penetrator			Shore hardness	Tensile strength (Approx. value) MPa (kgf/mm ²) ⁽¹⁾	Rockwell Scale C hardness
		Standard ball	Hult-gren ball	Tungsten carbide ball	Scale A Load 60kgf Diamond cone penetrator	Scale B Load 100kgf 1/16 inch Ball	Scale D Load 100kgf Diamond cone penetrator	15-N Scale Load 15 kgf	30-N Scale Load 30 kgf	45-N Scale Load 45 kgf			
28	286	271	271	271	64·3	(104·0)	46·1	73·9	48·6	28·9	41	910 (93)	28
27	279	264	264	264	63·8	(103·0)	45·2	73·3	47·7	27·8	40	880 (90)	27
26	272	258	258	258	63·3	(102·5)	44·6	72·8	46·8	26·7	38	860 (88)	26
25	266	253	253	253	62·8	(101·5)	43·8	72·2	45·9	25·5	38	840 (86)	25
24	260	247	247	247	62·4	(101·0)	43·1	71·6	45·0	24·3	37	825 (84)	24
23	254	243	243	243	62·0	100·0	42·1	71·0	44·0	23·1	36	805 (82)	23
22	248	237	237	237	61·5	99·0	41·6	70·5	43·2	22·0	35	785 (80)	22
21	243	231	231	231	61·0	98·5	40·9	69·9	42·3	20·7	35	770 (79)	21
20	238	226	226	226	60·5	97·8	40·1	69·4	41·5	19·6	34	760 (77)	20
(18)	230	219	219	219	-	96·7	-	-	-	-	33	730 (75)	(18)
(16)	222	212	212	212	-	95·5	-	-	-	-	32	705 (72)	(16)
(14)	213	203	203	203	-	93·9	-	-	-	-	31	675 (69)	(14)
(12)	204	194	194	194	-	92·3	-	-	-	-	29	650 (66)	(12)
(10)	196	187	187	187	-	90·7	-	-	-	-	28	620 (63)	(10)
(8)	188	179	179	179	-	89·5	-	-	-	-	27	600 (61)	(8)
(6)	180	171	171	161	-	87·1	-	-	-	-	26	580 (59)	(6)
(4)	173	165	165	165	-	85·5	-	-	-	-	25	550 (56)	(4)
(2)	166	158	158	158	-	83·5	-	-	-	-	24	530 (54)	(2)
(0)	160	152	152	152	-	81·7	-	-	-	-	24	515 (53)	(0)

Note : (1) Units and Numerical values in bracket () is converted from psi conversion table of JIS Z 8438 with 1Mpa = 1N/ mm²

(2) Figures in brackets () from table are seldom used and mainly for reference only.

(3) Iron and Steel quoted from JIS hand book

Commonly used fitting tolerances for bore dimensions

Unit : μm

Dimensions (mm)		B	C		D			E			F			G		H						
Above	Below	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	H11	
-	3	+180 +140	+85 +60	+100	+34	+45 +20	+60	+24	+28 +14	+39	+12	+16 +6	+20	+8 +2	+12	+6	+10	+14 0	+25	+40	+60	
3	6	+188 +140	+100 +70	+118	+48	+60 +30	+78	+32	+38 +20	+50	+18	+22 +10	+28	+12 +4	+16	+8	+12	+18 0	+30	+48	+75	
6	10	+208 +150	+116 +80	+138	+62	+76 +40	+98	+40	+47 +25	+61	+22	+28 +13	+35	+14 +5	+20	+9	+15	+22 0	+36	+58	+90	
10	14	+220	+138	+165	+77	+93	+120	+50	+59	+75	+27	+34	+43	+17	+24	+11	+18	+27	+43	+70	+110	
14	18	+150	+95			+50			+32			+16		+6				0				
18	24	+244	+162	+194	+98	+117	+149	+61	+73	+92	+33	+41	+53	+20	+28	+13	+21	+33	+52	+84	+130	
24	30	+160	+110			+65			+40			+20		+7				0				
30	40	+270 +170	+182 +120	+220	+119	+142 +80	+180	+75	+89 +50	+112	+41	+50 +25	+64	+25 +9	+34	+16	+25	+39 0	+62	+100	+160	
40	50	+280 +180	+192 +130	+230																		
50	65	+310 +190	+214 +140	+260	+146	+174 +100	+220	+90	+106 +60	+134	+49	+60 +30	+76	+29 +10	+40	+19	+30	+46 0	+74	+120	+190	
65	80	+320 +200	+224 +150	+270																		
80	100	+360 +220	+257 +170	+310	+174	+207 +120	+260	+107	+126 +72	+159	+58	+71 +36	+90	+34 +12	+47	+22	+35	+54	+87	+140	+220 0	
100	120	+380 +240	+267 +180	+320																		
120	140	+420 +260	+300 +200	+360	+208	+245 +145	+305	+125	+148 +85	+185	+68	+83 +43	+106	+39 +14	+54	+25	+40	+63 0	+100	+160	+250	
140	160	+440 +280	+310 +210	+370																		
160	180	+470 +310	+330 +230	+390																		
180	200	+525 +340	+355 +240	+425	+242	+285 +170	+355	+146	+172 +100	+215	+79	+96 +50	+122	+44 +15	+61	+29	+46	+72 0	+115	+185	+290	
200	225	+565 +380	+375 +260	+445																		
225	250	+605 +420	+395 +280	+465																		
250	280	+690 +480	+430 +300	+510																		
280	315	+750 +540	+460 +330	+540	+271	+320 +190	+400	+162	+191 +110	+240	+88	+108 +56	+137	+49 +17	+69	+32	+52	+81 0	+130	+210	+320	
315	355	+830 +600	+500 +360	+590																		
355	400	+910 +680	+540 +400	+630																		
400	450	+1010 +760	+595 +440	+690	+327	+385 +230	+480	+198	+232 +135	+290	+108	+131 +68	+165	+60 +20	+83	+40	+63	+97 0	+155	+250	+400	
450	500	+1090 +840	+635 +480	+730																		

Remark : For each cell in the table above, values in the top row shows upper limit of tolerance and values in the bottom row shows lower limit of tolerance.

Commonly used fitting tolerances for bore dimensions

Unit : μm

Dimensions (mm)		Js				K		M		N		P		R	S	T	U	X
Above	Below	Js6	Js7	Js8	Js9	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
-	3	±3	±5	±7	±12.5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	-	-18 -28	-20 -30
3	6	±4	±6	±9	±15	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	-	-19 -31	-24 -36
6	10	±4.5	±7.5	±11	±18	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	-	-22 -37	-28 -43
10	14	±5.5	±9	±13.5	±21.5	+2 -9	+6 -12	-4 -15	0 -18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	-	-26 -44	-33 -51
14	18					-44 -56												
18	24	±6.5	±10.5	±16.5	±26	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -48	-	-33 -54	-46 -67
24	30					-33 -54	-40 -61	-56 -77										
30	40	±8	±12.5	±19.5	±31	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-31 -59	-39 -64	-51 -61	-
40	50					-45 -70	-61 -86											
50	65	±9.5	±15	±23	±37	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60	-42 -72	-55 -85	-76 -106	-
65	80					-32 -62	-48 -78	-64 -94	-91 -121									
80	100	±11	±17.5	±27	±43.5	+4 -18	+10 -25	-6 -28	0 -35	-16 -38	-10 -45	-30 -52	-21 -59	-38 -73	-58 -93	-78 -113	-111 -146	-
100	120					-41 -76	-66 -101	-91 -126	-131 -166									
120	140	±12.5	±20	±31.5	±50	+4 -21	+12 -28	-8 -33	0 -40	-20 -45	-12 -52	-36 -61	-28 -68	-48 -88	-77 -117	-107 -147	-	-
140	160													-50 -90	-85 -125	-119 -159		
160	180													-53 -93	-93 -133	-131 -171		
180	200	±14.5	±23	±36	±57.5	+5 -24	+13 -33	-8 -37	0 -46	-22 -51	-14 -60	-41 -70	-33 -79	-60 -106	-105 -151	-	-	-
200	225													-63 -109	-113 -159			
225	250													-67 -113	-123 -169			
250	280	±16	±26	±40.5	±65	+5 -27	+16 -36	-9 -41	0 -52	-25 -57	-14 -66	-47 -79	-36 -88	-74 -126	-	-	-	-
280	315					-78 -130												
315	355	±18	±28.5	±44.5	±70	+7 -29	+17 -40	-10 -46	0 -57	-26 -62	-16 -73	-51 -87	-41 -93	-87 -144	-	-	-	-
355	400					-93 -150												
400	450	±20	±31.5	±48.5	±77.5	+8 -32	+18 -45	-10 -50	0 -63	-27 -67	-17 -80	-55 -95	-45 -108	-103 -166	-	-	-	-
450	500					-109 -172												

Remark : For each cell in the table above, values in the top row shows upper limit of tolerance and values in the bottom row shows lower limit of tolerance.

Commonly used fitting tolerances for axis dimensions

Unit : μm

Dimensions (mm)		js				k		m		n	p	r	s	t	u	x
Above	Below	js5	js6	js7	js8	k5	k6	m5	m6	n6	p6	r6	s6	t6	u6	x6
-	3	± 2	± 3	± 5	± 7	+4 0	+6	+6 +2	+8	+10 +4	+12 +6	+16 +10	+20 +14	-	+24 +18	+26 +20
3	6	± 2.5	± 4	± 6	± 9	+6 +1	+9	+9 +4	+12	+16 +8	+20 +12	+23 +15	+27 +19	-	+31 +23	+36 +28
6	10	± 3	± 4.5	± 7.5	± 11	+7 +1	+10	+12 +6	+15	+19 +10	+24 +15	+28 +19	+32 +23	-	+37 +28	+43 +34
10	14	± 4	± 5.5	± 9	± 13.5	+9 +1	+12	+15 +7	+18	+23 +12	+29 +18	+34 +23	+39 +28	-	+44 +33	+51 +40
14	18															+56 +45
18	24	± 4.5	± 6.5	± 10.5	± 16.5	+11 +2	+15	+17 +8	+21	+28 +15	+35 +22	+41 +28	+48 +35	-	+54 +41	+67 +54
24	30													+54 +41	+61 +48	+77 +64
30	40	± 5.5	± 8	± 12.5	± 19.5	+13 +2	+18	+20 +9	+25	+33 +17	+42 +26	+50 +34	+59 +43	+64 +48	+76 +60	-
40	50													+70 +54	+86 +70	
50	65	± 6.5	± 9.5	± 15	± 23	+15 +2	+21	+24 +11	+30	+30 +20	+51 +32	+60 +41	+72 +53	+85 +66	+106 +87	-
65	80											+62 +43	+78 +59	+94 +75	+121 +102	
80	100	± 7.5	± 11	± 17.5	± 27	+18 +3	+25	+28 +13	+35	+45 +23	+59 +37	+73 +51	+93 +71	+113 +104	+146 +124	-
100	120											+76 +54	+101 +79	+126 +104	+166 +144	
120	140	± 9	± 12.5	± 20	± 31.5	+21 +3	+28	+33 +15	+40	+52 +27	+68 +43	+88 +63	+117 +92	+147 +122	-	-
140	160											+90 +65	+125 +100	+159 +134		
160	180											+93 +68	+133 +108	+171 +146		
180	200	± 10	± 14.5	± 23	± 36	+24 +4	+33	+37 +17	+46	+60 +31	+79 +50	+106 +77	+151 +122	-	-	-
200	225											+109 +80	+159 +130			
225	250											+113 +84	+169 +140			
250	280	± 11.5	± 16	± 26	± 40.5	+27 +4	+36	+43 +20	+52	+66 +34	+88 +56	+126 +94	-	-	-	-
280	315											+130 +98				
315	355	± 12.5	± 18	± 28.5	± 44.5	+29 +4	+40	+46 +21	+57	+73 +37	+98 +62	+144 +108	-	-	-	-
355	400											+150 +114				
400	450	± 13.5	± 20	± 31.5	± 48.5	+32 +5	+45	+50 +23	+63	+80 +40	+108 +68	+166 +126	-	-	-	-
450	500											+172 +132				

Remark : For each cell in the table above, values in the top row shows upper limit of tolerance and values in the bottom row shows lower limit of tolerance.

Commonly used fitting tolerances for axis dimensions

Unit : μm

Dimensions (mm)		b	c	d		e			f			g		h						
Above	Below	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	h10	h11
-	3	-140 -165	-60 -85	-20 -34	-45	-24	-14 -28	-39	-12	-6 -16	-20	-2 -6	-8	-4	-6	-10	0 -14	-25	-40	-60
3	6	-140 -170	-70 -100	-30 -48	-60	-32	-20 -38	-50	-18	-10 -22	-28	-4 -9	-12	-5	-8	-12	0 -18	-30	-48	-75
6	10	-150 -186	-80 -116	-40 -62	-76	-40	-25 -47	-61	-22	-13 -28	-35	-5 -11	-14	-6	-9	-15	0 -22	-36	-58	-90
10	14	-150 -193	-95 -138	-50 -77	-93	-50	-32 -59	-75	-27	-16 -34	-43	-6 -14	-17	-8	-11	-18	0 -27	-43	-70	-110
14	18																			
18	24	-160 -212	-110 -162	-65 -98	-117	-61	-40 -73	-92	-33	-20 -41	-53	-7 -16	-20	-9	-13	-21	0 -33	-52	-84	-130
24	30																			
30	40	-170 -232	-120 -182	-80 -119	-142	-75	-50 -89	-112	-41	-25 -50	-64	-9 -20	-25	-11	-16	-25	0 -39	-62	-100	-160
40	50	-180 -242	-130 -192																	
50	65	-190 -264	-140 -214	-100		-90	-60 -106	-134	-49	-30 -60	-76	-10 -23	-29	-13	-19	-30	0 -46	-74	-120	-190
65	80	-200 -274	-150 -224	-146 -174																
80	100	-220 -307	-170 -257	-120		-107	-72 -126	-159	-58	-36 -71	-90	-12 -27	-34	-15	-22	-35	0 -54	-87	-140	-220
100	120	-240 -327	-180 -267	-174 -207																
120	140	-260 -360	-200 -300																	
140	160	-280 -380	-210 -310	-145 -208	-245	-125	-85 -148	-185	-68	-43 -83	-106	-14 -32	-39	-18	-25	-40	0 -63	-100	-160	-250
160	180	-310 -410	-230 -330																	
180	200	-340 -455	-240 -355																	
200	225	-380 -495	-260 -375	-170 -242	-285	-146	-100 -172	-215	-79	-50 -96	-122	-15 -35	-44	-20	-29	-46	0 -72	-115	-185	-290
225	250	-420 -535	-280 -395																	
250	280	-480 -610	-300 -430	-190		-162	-110 -191	-240	-88	-56 -108	-137	-17 -40	-49	-23	-32	-52	0 -81	-130	-210	-320
280	315	-540 -670	-330 -460	-271 -320																
315	355	-600 -710	-360 -500	-210		-182	-125 -214	-265	-98	-62 -119	-151	-18 -43	-54	-25	-36	-57	0 -89	-140	-230	-260
355	400	-680 -820	-400 -540	-299 -350																
400	450	-760 -915	-440 -595	-230		-198	-135 -232	-290	-108	-68 -131	-165	-20 -47	-60	-27	-40	-63	0 -97	-155	-250	-400
450	500	-840 -995	-480 -635	-327 -385																

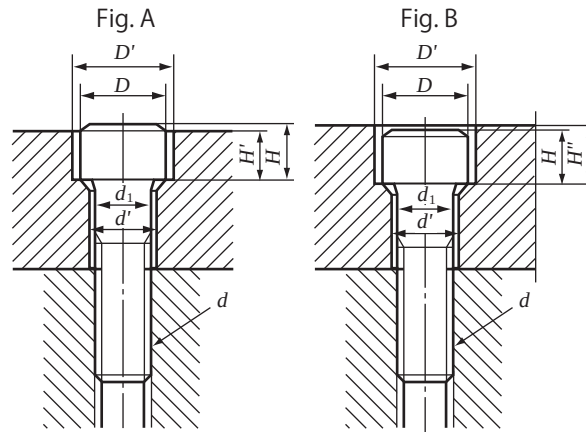
Remark : For each cell in the table above, values in the top row shows upper limit of tolerance and values in the bottom row shows lower limit of tolerance.

Metric coarse and Fine screw threads

Extracted from JIS B0205, 0207

Nominal threads	Pitch P			
	Coarse screw	Fine screw		
M1	0.25	0.2		
M1.1	0.25	0.2		
M1.2	0.25	0.2		
M1.4	0.3	0.2		
M1.6	0.35	0.2		
M1.8	0.35	0.2		
M2	0.4	0.25		
M2.2	0.45	0.25		
M2.5	0.45	0.35		
M3	0.5	0.35		
M3.5	0.6	0.35		
M4	0.7	0.5		
M4.5	0.75	0.5		
M5	0.8	0.5		
M6	1	0.75		
M8	1.25	0.75	1	
M10	1.5	0.75	1	1.25
M12	1.75	1	1.25	1.5
M14	2	1	1.25	1.5
M16	2	1	1.5	1.5
M18	2.5	1	1.5	2
M20	2.5	1	1.5	2
M22	2.5	1	1.5	2
M24	3	1	1.5	2
M27	3	1	1.5	2
M30	3.5	1	1.5	2

Following details are for reference only and not part of JIS standard.



Spot facing and Thread hole for Hexagon socket head cap screws

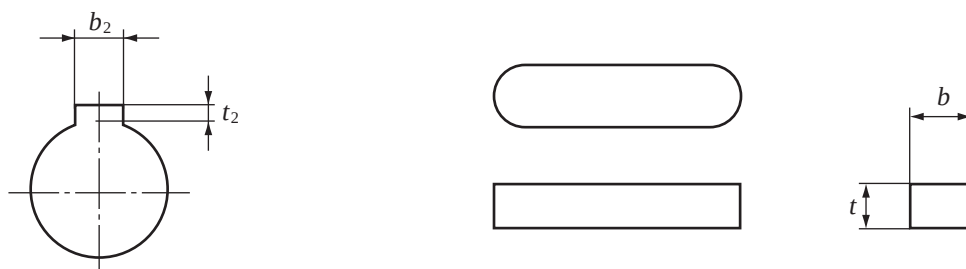
Unit: mm

Nominal thread (d)	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M33	M36	M39	M42	M45	M48	M52
d_1	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30	33	36	39	42	45	48	52
d'	3.4	4.5	5.5	6.6	9	11	14	16	18	20	22	24	26	30	33	36	39	42	45	48	52	56
D	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45	50	54	58	63	68	72	78
D'	6.5	8	9.5	11	14	17.5	20	23	26	29	32	35	39	43	48	54	58	62	67	72	76	82
H	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30	33	36	39	42	45	48	52
H'	2.7	3.6	4.6	5.5	7.4	9.2	11	12.8	14.5	16.5	18.5	20.5	22.5	25	28	31	34	37	39	42	45	49
H''	3.3	4.4	5.4	6.5	8.6	10.8	13	15.2	17.5	19.5	21.5	23.5	25.5	29	32	35	38	41	44	47	50	54

Remark: Thread holes (d') provide Class 2 from JIS B 1001 (Thread holes and Spot facing holes)

Parallel key and Key Way

Dimensions and tolerances for KG-gear with Key way are equivalent to JIS B1301.



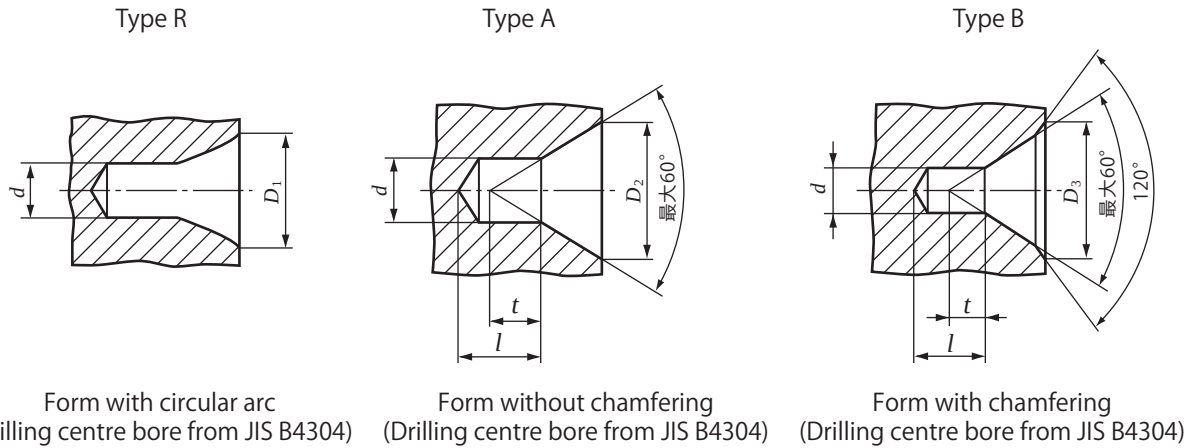
Tolerances for Key

$b \times t$	3 × 3	4 × 4	5 × 5	6 × 6	8 × 7	10 × 8	12 × 8	14 × 9
b Tolerance (h)	h9	h9	h9	h9	h9	h9	h9	h9
t Tolerance (h)	h9	h9	h9	h9	h11	h11	h11	h11

Key way for KG-STOCK GEARS

Unit : mm

Dimensions	Bore dimensions	Key way $b_2 \times t_2$	Width		Depth	
			b_2	Tolerance Js 9	t_2	Tolerance
$\phi 8 \sim \phi 10$	$\phi 8$	3×1.4	3	± 0.0125	1.4	$+0.1$ 0
	$\phi 10$					
$\phi 10 \sim \phi 12$	$\phi 12$	4×1.8	4	± 0.015	1.8	
$\phi 12 \sim \phi 17$	$\phi 14$	5×2.3	5		2.3	
	$\phi 15$					
	$\phi 16$					
$\phi 17 \sim \phi 22$	$\phi 18$	6×2.8	6		2.8	
	$\phi 20$					
	$\phi 22$					
$\phi 22 \sim \phi 30$	$\phi 25$	8×3.3	8	± 0.018	3.3	$+0.2$ 0
	$\phi 28$					
	$\phi 30$					
$\phi 30 \sim \phi 38$	$\phi 32$	10×3.3	10	3.3		
	$\phi 35$					
$\phi 38 \sim \phi 44$	$\phi 40$	12×3.3	12	± 0.0215	3.3	
$\phi 44 \sim \phi 50$	$\phi 45$	14×3.8	14		3.8	
	$\phi 50$					



Note* : Length ' l ' is based on centre drill but length must be longer than dimension ' t '.

Centre bore (recommended)

Unit : mm

Nominal d	Type				
	Type R JIS B4304	Type A JIS B4304		Type B JIS B4304	
	D_1 Nominal	D_2 Nominal	t Reference	D_3 Nominal	t Reference
(0.5)		1.06	0.5		
(0.63)		1.32	0.6		
(0.8)		1.70	0.7		
1.0	2.12	2.12	0.9	3.15	0.9
(1.25)	2.65	2.65	1.1	4	1.1
1.6	3.35	3.35	1.4	5	1.4
2.0	4.25	4.25	1.8	6.3	1.8
2.5	5.3	5.30	2.2	8	2.2
3.15	6.7	6.70	2.8	10	2.8
4.0	8.5	8.50	3.5	12.5	3.5
(5.0)	10.6	10.60	4.4	16	4.4
6.3	13.2	13.20	5.5	18	5.5
(8.0)	17.0	17.00	7.0	22.4	7.0
10.0	21.2	21.20	8.7	28	8.7

Using figures in bracket () is not advisable.

Reference data

Conversion table for SI units (International System of Units)

	N	dyn	kgf
Force	1	1×10^5	$1.019\,72 \times 10^{-1}$
	1×10^{-5}	1	$1.019\,72 \times 10^{-6}$
	9.806 65	$9.806\,65 \times 10^5$	1

	Pa	bar	kgf/cm ²	atm	mmH ₂ O	mmHg or Torr
Pressure	1	1×10^{-5}	$1.019\,72 \times 10^{-5}$	$9.869\,23 \times 10^{-6}$	$1.019\,72 \times 10^{-1}$	$7.500\,62 \times 10^{-3}$
	1×10^5	1	1.019 72	$9.869\,23 \times 10^{-1}$	$1.019\,72 \times 10^4$	$7.500\,62 \times 10^2$
	$9.806\,65 \times 10^4$	$9.806\,65 \times 10^{-1}$	1	$9.678\,41 \times 10^{-1}$	1×10^4	$7.355\,59 \times 10^2$
	$1.013\,25 \times 10^5$	1.013 25	1.033 23	1	$1.033\,23 \times 10^4$	$7.600\,00 \times 10^2$
	9.806 65	$9.806\,65 \times 10^{-5}$	1×10^{-4}	$9.678\,41 \times 10^{-5}$	1	$7.355\,59 \times 10^{-2}$
	$1.333\,22 \times 10^2$	$1.333\,22 \times 10^{-3}$	$1.359\,51 \times 10^{-3}$	$1.315\,79 \times 10^{-3}$	$1.359\,51 \times 10$	1

Note IPa=IN/m²

	Pa	Mpa or N/mm ²	kfg/mm ²	kgf/cm ²
Stress	1	1×10^{-6}	$1.019\,72 \times 10^{-7}$	$1.019\,72 \times 10^{-5}$
	1×10^6	1	$1.019\,72 \times 10^{-1}$	$1.019\,72 \times 10$
	$9.806\,65 \times 10^6$	9.806 65	1	1×10^2
	$9.806\,65 \times 10^4$	$9.806\,65 \times 10^{-2}$	1×10^{-2}	1

	Pa·s	cP	P
Coefficient of viscosity	1	1×10^3	1×10
	1×10^{-3}	1	1×10^{-2}
	1×10^{-1}	1×10^2	1

Note IP = Idyn·s/cm² = Ig/cm·S,
IPa·s = IN·s/m², IcP = ImPa·s

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