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has been withdrawn.

JAPANESE INDUSTRIAL STANDARD

**Shapes and Dimensions of Helical
Gears for General Use**

JIS B 1722 -1974

Translated and Published

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JAPANESE INDUSTRIAL STANDARD

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Shapes and Dimensions of
Helical Gears for General UseB 1722-1974
(Reaffirmed: 1983)1. Scope

This Japanese Industrial Standard specifies shapes and dimensions of standard helical gears of 1.5 to 4 mm in normal module for general use.

2. Classification

The gears are classified according to the shape into six types as Types 0A, 0B, 0C, 1A, 1B and 1C (see Attached Figs.).

3. Tooth Profile

The tooth profile shall be the involute tooth profile specified in JIS B 1701-Involute Gear Tooth Profile and Dimensions, i.e., the normal pressure angle being 20° , the addendum equal to the normal module, the dedendum equal to 1.25 times the normal module.

4. Shape and Dimensions

The shape and dimensions of the gears shall be as follows:

(1) Shape The shape shall be as shown in Attached Figure.

(2) Normal Module The normal module shall conform to the values given below:
1.5 mm, 2 mm, 2.5 mm, 3 mm, 4 mm

(3) Helix Angle The helix angle shall be of the following three kinds:
 $11^\circ 21' 54''$, $15^\circ 56' 33''$, $19^\circ 22' 12''$

Applicable Standards:

JIS B 0701-Roundness and Chamferdimension of Machine Parts (Machining)

JIS B 0901-Diameter of Shafts

JIS B 1301-Sunk Key

JIS B 1302-Woodruff Keys and Their Corresponding Keyways

JIS B 1701-Involute Gear Tooth Profile and Dimensions

- (4) **Face Width** For the face width* three classes are specified according to the magnitude of helix angle as normal width (N) for $19^{\circ}22'12''$, medium width (M) for $15^{\circ}56'33''$, and wide width (W) for $11^{\circ}21'54''$, and the values of the face width shall conform to Table 1.

Note* Normal width shall be nearly equal to 12 times of the normal module, medium width to 15 times, and wide width to 20 times.

Table 1 Face Width

No. of teeth	Face width (mm)											
32 and over	18	24	30	32	36	38	40	45	50	60	80	
30 and under	20	26	33	35	39	42	45	50	55	65	85	

- (5) **Number of Teeth** The number of teeth shall conform to Table 2. The range of the number of teeth shall be as given in Table 3 according to the normal module, type, helix angle, and face width.

Table 2 Number of Teeth

16	17	18	19	20	21	22	24	26	28
30	32	34	36	38	40	42	45	48	
50	55	60	65	70	80	90	100		

Table 3 Range of Number of Teeth

Type	Face width	Module (mm)				
		1.5	2	2.5	3	4
0A	Normal width	18 ~ 50	18 ~ 45	17 ~ 45	16 ~ 36	16 ~ 30
	Medium width	20 ~ 50	17 ~ 48	19 ~ 45	18 ~ 42	17 ~ 38
	Wide width	22 ~ 50	22 ~ 50	20 ~ 45	19 ~ 45	18 ~ 45
0B, 0C	Normal width	20 ~ 50	19 ~ 45	19 ~ 45	18 ~ 36	16 ~ 30
1A	Normal width	—	48 ~ 80	48 ~ 60	38 ~ 60	32 ~ 55
	Medium width	—	50 ~ 100	48 ~ 60	45 ~ 80	40 ~ 70
	Wide width	—	55 ~ 100	48 ~ 80	48 ~ 90	48 ~ 70
1B, 1C	Normal width	55 ~ 80	48 ~ 100	48 ~ 80	38 ~ 90	32 ~ 70

- (6) Dimensions of Various Parts The dimensions of various parts [number of teeth z , diameter of pitch circle d , diameter of tip circle d_1 , diameter of root circle d_r , face width b , hole diameter d , chamfer c , outside diameter of hub d_h , length of hub l , dimensions of keyway (width b_2 , depth t_2 , and radius of corner r_2), inside diameter of rim d_i , and thickness of web b_w] shall conform to Attached Tables 1 to 37.

The hole diameter d conforms to JIS B 0901-Diameter of Shafts, chamfer c to JIS B 0701-Roundness and Chamfer dimension of Machine Parts (Machining), dimensions of keyway (b_2 , t_2 , and r_2) to JIS B 1301-Sunk Key and JIS B 1302-Woodruff Keys and Their Corresponding Keyways.

5. Designation

The designation shall be specified by the following:

- (1) JIS number or title of JIS
- (2) Symbol indicating type
- (3) Normal module
- (4) Number of teeth
- (5) Face width (Normal width is expressed by N, medium width by M, and wide width by W.)

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- (6) Hole diameter (For corresponding face width, if single diameter is provided, it is expressed by 1, if two diameters are provided, the smaller is expressed by 1, and the larger by 2.)
- (7) Direction of helix (For right hand it is expressed by R and for left hand by L.)

Example: JIS B 1722-0A 3 - 25 N 1 R

Type ———

Normal module ———

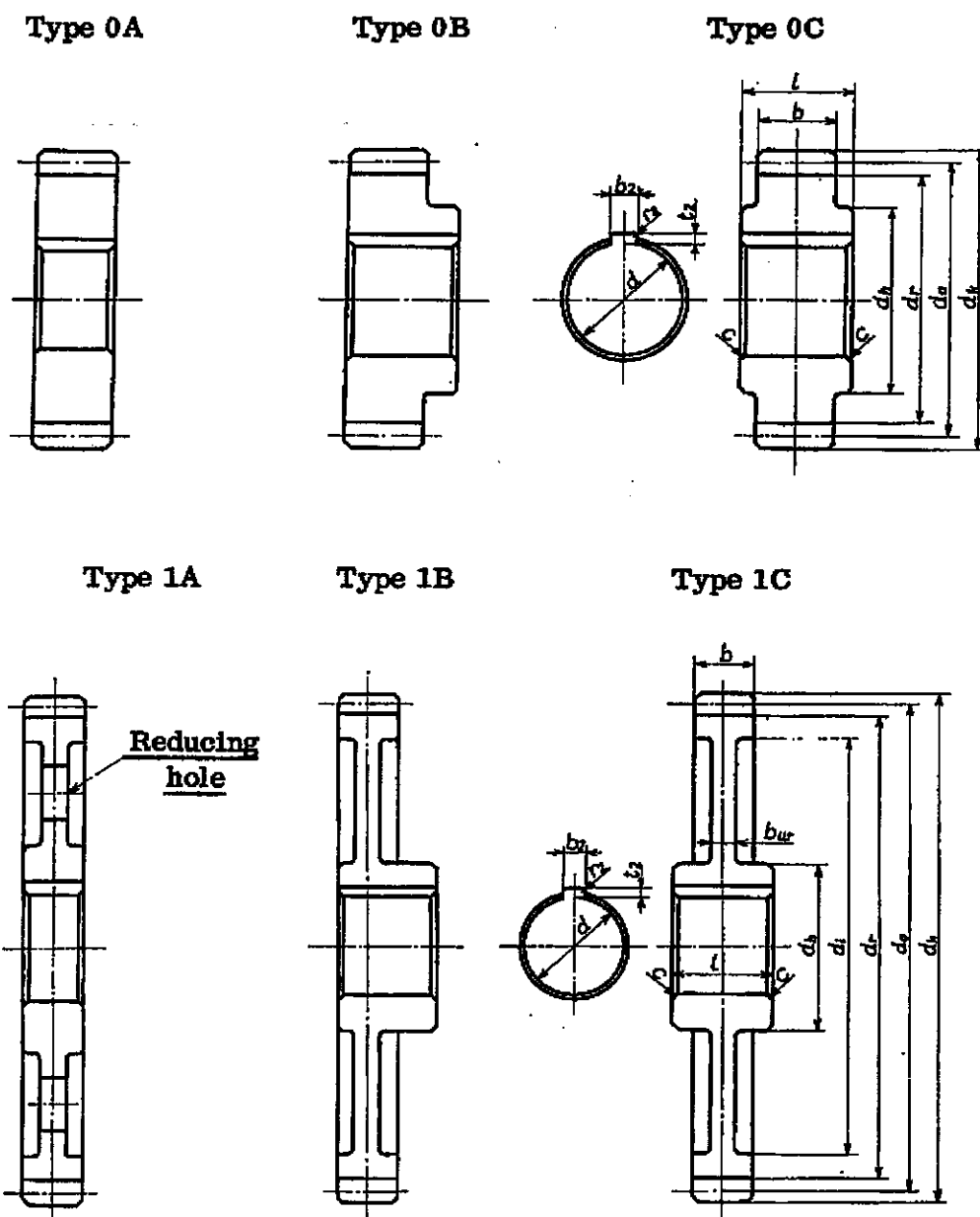
Direction of helix ———

Hole diameter ———

Face width, helix angle ———

No. of teeth ———

Attached Figure



- Remarks 1. The shape of chamfer in the contour is shown as an example.
2. For Type 1 reducing holes may be made suitably.

Attached Table 1 Dimensions of Gears, Normal Module 1.5 mm Type 0A
(Helix Angle $19^{\circ}22'12''$)

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer c	Keyway		
										b_2	t_2	r_2
0A1.5-	18 N 1	R or L	18	28.62	31.62	24.87	20	14	0.5	3*	1.4*	0.08~0.16
	19 N 1		19	30.21	33.21	26.46						
	20 N 1		20	31.80	34.80	28.05						
	21 N 1		21	33.39	36.39	29.64						
	22 N 1		22	34.98	37.98	31.23						
	24 N 1		24	38.16	41.16	34.41						
	25 N 1		25	39.75	42.75	36.00	16		4	1.8		
	26 N 1		26	41.34	44.34	37.59						
	28 N 1		28	44.52	47.52	40.77						
	30 N 1		30	47.70	50.70	43.95						
	32 N 1		32	50.88	53.88	47.13						
	34 N 1		34	54.06	57.06	50.31						18
	36 N 1		36	57.24	60.24	53.49						
	38 N 1		38	60.42	63.42	56.67						
	40 N 1		40	63.60	66.60	59.85						
	42 N 1		42	66.78	69.78	63.03						
	45 N 1		45	71.55	74.55	67.80	20	1				
	48 N 1		48	76.32	79.32	72.57						
50 N 1	50	79.50	82.50	75.75								

Note: Dimensions marked with * show the keyway for which woodruff key is used.

**Attached Table 2 Dimensions of Gears, Normal Module 1.5 mm Types 0B and 0C
(Helix Angle 19°22'12")**

Unit: mm

[illegible]

Note: Dimensions marked with * show the keyway for which woodruff key is used.

**Attached Table 3 Dimensions of Gears, Normal Module 1.5 mm Types 1B and 1C
(Helix Angle 19°22'12")**

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of lip circle d_k	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thick-ness of web b_w
												b_2	l_2	r_2		
1B1.5- 1C1.5-	55 N 1	R or L	55	87.45	90.45	83.70	18	20	1	35.5	25	5	2.3	0.16~ 0.25	74	5
	55 N 2							22		42.5		6	2.8			
	60 N 1		60	95.40	98.40	91.65		22		42.5		6	2.8	0.16~ 0.25	82	
	60 N 2							25		45						
	65 N 1		65	103.35	106.35	99.60		25		45		6	2.8	0.16~ 0.25	90	
	65 N 2							28		50		8	3.3			
	70 N 1		70	111.30	114.30	107.55		25		45		6	2.8	0.16~ 0.25	98	
	70 N 2							28		50		8	3.3			
	80 N 1		80	127.20	130.20	123.45		25		45		6	2.8	0.16~ 0.25	114	
	80 N 2							28		50		8	3.3			

Unit: napp

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Unit: mpa

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Attached Table 8 Dimensions of Gears, Normal Module 2 mm Type 1A
(Helix Angle 19°22'12")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w
												b_2	t_2	r_2		
1A2-	48 N 1	R or L	48	101.76	105.76	96.76		25	1	45	24	6	2.8	0.16~ 0.25	84	6.3
	50 N 1		50	106.00	110.00	101.00									88	
	55 N 1		55	116.60	120.60	111.60									99	
	60 N 1		60	127.20	131.20	122.20	24	50		8		3.3	109			
	65 N 1		65	137.80	141.80	132.80							120			
	70 N 1		70	148.40	152.40	143.40							130			
	80 N 1		80	169.60	173.60	164.60	31.5	56		152						

Attached Table 9 Dimensions of Gears, Normal Module 2 mm Types 1B and 1C
(Helix Angle 19°22'12")

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w		
											b_2	t_2	r_2				
1B2- 1C2-	48 N 1	R or L	48	101.76	105.76	96.76	24	28	50	32	8	3.3	0.16~ 0.25	84	6.3		
	50 N 1		50	106.00	110.00	101.00								88			
	55 N 1		55	116.60	120.60	111.60								99			
	60 N 1		60	127.20	131.20	122.20		31.5	56		10			109			
	65 N 1		65	137.80	141.80	132.80								120			
	70 N 1		70	148.40	152.40	143.40								130			
	80 N 1		80	169.60	173.60	164.60		35	60	8	0.25~ 0.40	152					
	90 N 1		90	190.80	194.80	185.80		31.5	56	8	0.16~ 0.25	173					
	90 N 2							35	60	10	0.25~ 0.40						
	100 N 1							100	212.00	216.00	207.00	31.5	56	8		0.16~ 0.25	194
	100 N 2											35	60	10		0.25~ 0.40	

Attached Table 10 Dimensions of Gears, Normal Module 2 mm Type 0A
(Helix Angle 15°56'33")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_s	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer c	Keyway		
										b_2	l_2	r_2
0A2-	17 M 1	R or L	17	35.36	39.36	30.36	33	20	1	5	2.3	0.16~0.25
	18 M 1		18	37.44	41.44	32.44		22		6	2.8	
	19 M 1		19	39.52	43.52	34.52						
	20 M 1		20	41.60	45.60	36.60						
	21 M 1		21	43.68	47.68	38.68						
	22 M 1		22	45.76	49.76	40.76						
	24 M 1		24	49.92	53.92	44.92	25	8	3.3			
	25 M 1		25	52.00	56.00	47.00						
	26 M 1		26	54.08	58.08	49.08						
	28 M 1		28	58.24	62.24	53.24						
	30 M 1		30	62.40	66.40	57.40						
	32 M 1		32	66.56	70.56	61.56				30	28	
	34 M 1		34	70.72	74.72	65.72						
	36 M 1		36	74.88	78.88	69.88						
	38 M 1		38	79.04	83.04	74.04						
	40 M 1		40	83.20	87.20	78.20						
	42 M 1		42	87.36	91.36	82.36						
	45 M 1		45	93.60	97.60	88.60						
	48 M 1		48	99.84	103.84	94.84	31.5					

Attached Table 11 Dimensions of Gears, Normal Module 2 mm Type 1A
(Helix Angle 15°56'33")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_s	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_m
												b_2	l_2	r_2		
1A2-	50 M 1	R or L	50	104.00	108.00	99.00	30	28	1	50	30	8	3.3	0.16~0.25	83	9
	55 M 1		55	114.40	118.40	109.40		31.5		56					93	
	60 M 1		60	124.80	128.80	119.80									103	
	65 M 1		65	135.20	139.20	130.20									114	
	70 M 1		70	145.60	149.60	140.60		35				60			124	
	80 M 1		80	166.40	170.40	161.40				145						
	90 M 1		90	187.20	191.20	182.20				166						
	100 M 1		100	208.00	212.00	203.00				187						

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Attached Table 12 Dimensions of Gears, Normal Module 2 mm Type 0A
(Helix Angle $11^{\circ}21'54''$)

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer c	Keyway				
									b_2	t_2	r_2		
0A2-	22 W 1	R or L	22	44.88	48.88	39.88	45	25	1	6	2.8	0.16~0.25	
	24 W 1		24	48.96	52.96	43.96							
	25 W 1		25	51.00	55.00	46.00							
	26 W 1		26	53.04	57.04	48.04							
	28 W 1		28	57.12	61.12	52.12							
	30 W 1		30	61.20	65.20	56.20							
	32 W 1		32	65.28	69.28	60.28	40	28		8	3.3		
	34 W 1		34	69.36	73.36	64.36							
	36 W 1		36	73.44	77.44	68.44							
	38 W 1		38	77.52	81.52	72.52							
	40 W 1		40	81.60	85.60	76.60							
	42 W 1		42	85.68	89.68	80.68							
	45 W 1		45	91.80	95.80	86.80							31.5
	48 W 1		48	97.92	101.92	92.92							
	50 W 1		50	102.00	106.00	97.00							

Attached Table 13 Dimensions of Gears, Normal Module 2 mm Type 1A
(Helix Angle $11^{\circ}21'54''$)

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w
											b_2	t_2	r_2		
1A2-	55 W 1	55	112.20	116.20	107.20	40	31.5	1	56	40	8		0.16~0.25	91	12.5
	60 W 1	60	122.40	126.40	117.40									101	
	65 W 1	65	132.60	136.60	127.60									111	
	70 W 1	70	142.80	146.80	137.80		35		60		10	3.3	0.25~0.40	121	
	80 W 1	80	163.20	167.20	158.20									142	
	90 W 1	90	183.60	187.60	178.60									162	
	100 W 1	100	204.00	208.00	199.00		42		67		12			183	

Unit: name[illegible]

Attached Table 16 Dimensions of Gears, Normal Module 2.5 mm Type 1A
(Helix Angle $19^{\circ}22'12''$)

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_s	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thick-ness of web b_w
												b_2	t_2	r_2		
1A2.5-	48 N 1	R or L	48	127.20	132.20	120.95	30	28	1	50	30	8	3.3	0.16~0.25	104	8
	50 N 1		50	132.50	137.50	126.25		31.5		56					110	
	55 N 1		55	145.75	150.75	139.50									123	
	60 N 1		60	159.00	164.00	152.75									136	

Attached Table 17 Dimensions of Gears, Normal Module 2.5 mm Types 1B and 1C
(Helix Angle $19^{\circ}22'12''$)

Unit: mm

Notation			No. of teeth	Diameter of pitch circle	Diameter of tip circle	Diameter of root circle	Face width	Hole dia- meter	Cham- fer	Outside diameter of hub	Length of hub	Keyway			Inside diameter of rim	Thick- ness of web
												z	d_0	d_s		
1B2.5- 1C2.5-	48 N 1	R or L	48	127.20	132.20	120.95	30	31.5	1	56	40	8	3.3	0.16~ 0.25	104	8
	50 N 1		50	132.50	137.50	126.25		35		60		10		0.25~ 0.40	110	
	55 N 1		55	145.75	150.75	139.50		60		10		0.25~ 0.40		123		
	60 N 1		60	159.00	164.00	152.75		60		10		0.25~ 0.40		136		
	65 N 1		65	172.25	177.25	166.00		35		60		10		0.25~ 0.40	150	
	65 N 2							42		67		12				
	70 N 1		70	185.50	190.50	179.25		35		60		10		0.25~ 0.40	163	
	70 N 2							42		67		12				
	80 N 1		80	212.00	217.00	205.75		35		60		10		0.25~ 0.40	189	
	80 N 2							42		67		12				

Attached Table 18 Dimensions of Gears, Normal Module 2.5 mm Type 0A
(Helix Angle 15°56'33")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of lip circle d_k	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Keyway		
										b_2	t_2	r_2
0A2.5-	19 M 1	R or L	19	49.40	54.40	43.15	42	25	1	6	2.5	0.16~0.25
	20 M 1		20	52.00	57.00	45.75						
	21 M 1		21	54.60	59.60	48.35						
	22 M 1		22	57.20	62.20	50.95						
	24 M 1		24	62.40	67.40	56.15						
	25 M 1		25	65.00	70.00	58.75						
	26 M 1		26	67.60	72.60	61.35	28					
	28 M 1		28	72.80	77.80	66.55						
	30 M 1		30	78.00	83.00	71.75						
	32 M 1		32	83.20	88.20	76.95						
	34 M 1		34	88.40	93.40	82.15						
	36 M 1		36	93.60	98.60	87.35		38				
	38 M 1		38	98.80	103.80	92.55						
	40 M 1		40	104.00	109.00	97.75						
	42 M 1		42	109.20	114.20	102.95						
45 M 1	45	117.00	122.00	110.75	35							

Attached Table 19 Dimensions of Gears, Normal Module 2.5 mm Type 1A
(Helix Angle 15°56'33")

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_k	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_k	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w
											b_2	t_2	r_2		
1A2.5-	48 M 1	48	124.80	129.80	118.55	38	35	1	60	38	10	3.3	0.25~0.40	98	12.5
	50 M 1	50	130.00	135.00	123.75									103	
	55 M 1	55	143.00	148.00	136.75									116	
	60 M 1	60	156.00	161.00	149.75									129	

Attached Table 20 Dimensions of Gears, Normal Module 2.5 mm Type 0A
(Helix Angle $11^{\circ}21'54''$)

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_k	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer c	Keyway		
										b_2	t_2	r_2
0A2.5-	20 W 1	R or L	20	51.00	56.00	44.75	55	25	1	6	2.8	0.16~0.25
	21 W 1		21	53.55	58.55	47.30		28		8	3.3	
	22 W 1		22	56.10	61.10	49.85						
	24 W 1		24	61.20	66.20	54.95						
	25 W 1		25	63.75	68.75	57.50						
	26 W 1		26	66.30	71.30	60.05						
	28 W 1		28	71.40	76.40	65.15						
	30 W 1		30	76.50	81.50	70.25	50	31.5		10	0.25~0.40	
	32 W 1		32	81.60	86.60	75.35						
	34 W 1		34	86.70	91.70	80.45						
	36 W 1		36	91.80	96.80	85.55						
	38 W 1		38	96.90	101.90	90.65						
	40 W 1		40	102.00	107.00	95.75						
	42 W 1		42	107.10	112.10	100.85						
	45 W 1		45	114.75	119.75	108.50						

Attached Table 21 Dimensions of Gears, Normal Module 2.5 mm Type 1A
(Helix Angle $11^{\circ}21'54''$)

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_k	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w
												b_2	t_2	r_2		
1A2.5-	48 W 1	R or L	48	122.40	127.40	116.15	50	35	1	60	50	10	3.3	0.25~0.40	96	16
	50 W 1		50	127.50	132.50	121.25		42		67		12			101	
	55 W 1		55	140.25	145.25	134.00									114	
	60 W 1		60	153.00	158.00	146.75									126	
	65 W 1		65	165.75	170.75	159.50									139	
	70 W 1		70	178.50	183.50	172.25									152	
	80 W 1		80	204.00	209.00	197.75									177	

Attached Table 22 Dimensions of Gears, Normal Module 3 mm Type 0A
(Helix Angle 19°22'12")

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_k	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Keyway			
									b_2	t_2	r_2	
0A3-	16 N 1	R or L	16	50.88	56.88	43.38	39	22	1	6	2	0.16~0.25
	17 N 1		17	54.06	60.06	46.56						
	18 N 1		18	57.24	63.24	49.74						
	19 N 1		19	60.42	66.42	52.92						
	20 N 1		20	63.60	69.60	56.10						
	21 N 1		21	66.78	72.78	59.28						
	22 N 1		22	69.96	75.96	62.46	28					
	24 N 1		24	76.32	82.32	68.82						
	25 N 1		25	79.50	85.50	72.00						
	26 N 1		26	82.68	88.68	75.18						
	28 N 1		28	89.04	95.04	81.54						
	30 N 1		30	95.40	101.40	87.90		36				
32 N 1	32	101.76	107.76	94.26								
34 N 1	34	108.12	114.12	100.62								
36 N 1	36	114.48	120.48	106.98	31.5							

Attached Table 23 Dimensions of Gears, Normal Module 3 mm Types 0B and 0C
(Helix Angle 19°22'12")

Unit: mm

Notation			No. of teeth	Diameter of pitch circle	Diameter of tip circle	Diameter of root circle	Face width	Hole dia- meter	Cham- fer	Outside diameter of hub	Length of hub	Keyway		
												b_2	t_2	r_2
0B3- 0C3-	18 N 1	R or L	18	57.24	63.24	49.74	39	28	1	50	45	8	3.3	0.16~ 0.25
	19 N 1		19	60.42	66.42	52.92								
	20 N 1		20	63.60	69.60	56.10								
	21 N 1		21	66.78	72.78	59.28								
	22 N 1		22	69.96	75.96	62.46								
	24 N 1		24	76.32	82.32	68.82								
	25 N 1		25	79.50	85.50	72.00	31.5	56						
	26 N 1		26	82.68	88.68	75.18								
	28 N 1		28	89.04	95.04	81.54								
	30 N 1		30	95.40	101.40	87.90								
	32 N 1		32	101.76	107.76	94.26								
	34 N 1		34	108.12	114.12	100.62								
36 N 1	36	114.48	120.48	106.98										

Unit: mm

Notation			No. of teeth <i>z</i>	Diameter of pitch circle <i>d₀</i>	Diameter of tip circle <i>d₁</i>	Diameter of root circle <i>d_r</i>	Face width <i>b</i>	Hole diameter <i>d</i>	Chamfer <i>c</i>	Outside diameter of hub <i>d_k</i>	Length of hub <i>l</i>	Keyway			Inside diameter of rim <i>d_i</i>	Thickness of web <i>b_w</i>
												<i>b₂</i>	<i>t₂</i>	<i>r₂</i>		
1A3-	38 N 1	R or L	38	120.84	126.84	113.34	36	31.5	1	56	36	8	3.3	0.16~ 0.25	93	10
	40 N 1		40	127.20	133.20	119.70								99		
	42 N 1		42	133.56	139.56	126.06								106		
	45 N 1		45	143.10	149.10	135.60								115		
	48 N 1		48	152.64	158.64	145.14	35	60	10	3.3	0.25~ 0.40	125				
	50 N 1		50	159.00	165.00	151.50						131				
	55 N 1		55	174.90	180.90	167.40						147				
	60 N 1		60	190.80	196.80	183.30						163				

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_s	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thick-ness of web b_w
												b_2	t_2	r_2		
1B3- 1C3-	38 N 1	R or L	38	120.84	126.84	113.34	36	35	1	60	45	10	3.3			93
	40 N 1		40	127.20	133.20	119.70										99
	42 N 1		42	133.56	139.56	126.06										106
	45 N 1		45	143.10	149.10	135.60										115
	48 N 1		48	152.64	158.64	145.14		42		67				125		
	50 N 1		50	159.00	165.00	151.50								131		
	55 N 1		55	174.90	180.90	167.40								147		
	60 N 1		60	190.80	196.80	183.30								163		
	65 N 1		65	206.70	212.70	199.20		42		67	50	12		0.25~ 0.40		179
	65 N 2							45		71				0.40~ 0.60		
	70 N 1		70	222.60	228.60	215.10		42		67				0.25~ 0.40	195	
	70 N 2							45		71				0.40~ 0.60		
80 N 1	80	254.40	260.40	246.90	42	67	0.25~ 0.40	226								
80 N 2					45	71	0.40~ 0.60									
90 N 1	90	286.20	292.20	278.70	42	67	56	0.25~ 0.40	258							
90 N 2					45	71		0.40~ 0.60								

Attached Table 26 Dimensions of Gears, Normal Module 3 mm Type 0A
(Helix Angle $15^{\circ}56'33''$)

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Keyway		
										b_2	t_2	r_2
0A3-	18 M 1	R or L	18	56.16	62.16	48.66	50	28	1	8	3.3	0.16~0.25
	19 M 1		19	59.28	65.28	51.78						
	20 M 1		20	62.40	68.40	54.90						
	21 M 1		21	65.52	71.52	58.02						
	22 M 1		22	68.64	74.64	61.14						
	24 M 1		24	74.88	80.88	67.38						
	25 M 1		25	78.00	84.00	70.50						
	26 M 1		26	81.12	87.12	73.62	31.5					
	28 M 1		28	87.36	93.36	79.86						
	30 M 1		30	93.60	99.60	86.10						
	32 M 1		32	99.84	105.84	92.34						
	34 M 1		34	106.08	112.08	98.58						
	36 M 1		36	112.32	118.32	104.82						
	38 M 1		38	118.56	124.56	111.06						
	40 M 1		40	124.80	130.80	117.30						
	42 M 1		42	131.40	137.40	123.90	45	35		10		
					42							

Attached Table 27 Dimensions of Gears, Normal Module 3 mm Type 1A
(Helix Angle $15^{\circ}56'33''$)

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w	
											b_2	t_2	r_2			
1A3-	45 M 1	R or L	45	140.40	146.40	132.90	45	42	1	67	45	12	3.3	0.25~ 0.40	122	14
	48 M 1		48	149.76	155.76	142.26									122	
	50 M 1		50	156.00	162.00	148.50									128	
	55 M 1		55	171.60	177.60	164.10									144	
	60 M 1		60	187.20	193.20	179.70	45		71					159		
	65 M 1		65	202.80	208.80	195.30								175		
	70 M 1		70	218.40	224.40	210.90								190		
	80 M 1		80	249.60	255.60	242.10								222		

Attached Table 28 Dimensions of Gears, Normal Module 3 mm Type 0A
(Helix Angle 11°21'54")

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer c	Keyway			
									b_2	t_2	r_2	
0A3-	19 W 1	R or L	19	58.14	64.14	65	28	1	8		0.16~0.25	
	20 W 1		20	61.20	67.20							53.70
	21 W 1		21	64.26	70.26							56.76
	22 W 1		22	67.32	73.32		59.82					
	24 W 1		24	73.44	79.44		65.94					
	25 W 1		25	76.50	82.50		69.00					
	26 W 1		26	79.56	85.56	72.06	60			10	3.3	0.25~0.40
	28 W 1		28	85.68	91.68	78.18						
	30 W 1		30	91.80	97.80	84.30						
	32 W 1		32	97.92	103.92	90.42			35			
	34 W 1		34	104.04	110.04	96.54						
	36 W 1		36	110.16	116.16	102.66						
	38 W 1		38	116.28	122.28	108.78			42			
	40 W 1		40	122.40	128.40	114.90						
	42 W 1		42	128.52	134.52	121.02						
45 W 1	45	137.70	143.70	130.20								

Attached Table 29 Dimensions of Gears, Normal Module 3 mm Type 1A
(Helix Angle 11°21'54")

Unit: mm

Notation			No. of teeth	Diameter of pitch circle	Diameter of tip circle	Diameter of root circle	Face width	Hole dia- meter	Cham- fer	Outside diameter of hub	Length of hub	Keyway			Inside diameter of rim	Thick- ness of web
												b_2	t_2	r_2		
z	d_0	d_t	d_r	b	d	c	d_h	l	b_2	t_2	r_2	d_i	b_w			
1A3-	48 W 1	R or L	48	146.88	152.88	139.38	60	42	1	67	60	12	3.3	0.25~ 0.40	114	18
	50 W 1		50	153.00	159.00	145.50									120	
	55 W 1		55	168.30	174.30	160.80									135	
	60 W 1		60	183.60	189.60	176.10									151	
	65 W 1		65	198.90	204.90	191.40		45		71		14	3.8		166	
	70 W 1		70	214.20	220.20	206.70									181	
	80 W 1		80	244.80	250.80	237.30									212	
	90 W 1		90	275.40	281.40	268.30									242	

Attached Table 30 Dimensions of Gears, Normal Module 4 mm Type 0A
(Helix Angle 19°22'12")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer c	Keyway						
										b_2	t_2	r_2				
0A4-	16 N 1	R or L	16	67.84	75.84	57.84	55	28	1	8	3.3	0.16~0.25				
	17 N 1		17	72.08	80.08	62.08										
	18 N 1		18	76.32	84.32	66.32										
	19 N 1		19	80.56	88.56	70.56										
	20 N 1		20	84.80	92.80	74.80										
	21 N 1		21	89.04	97.04	79.04		31.5								
	22 N 1		22	93.28	101.28	83.28										
	24 N 1		24	101.76	109.76	91.76										
	25 N 1		25	106.00	114.00	96.00										
	26 N 1		26	110.24	118.24	100.24										
	28 N 1		28	118.72	126.72	108.72		35		10	0.25~0.40					
	30 N 1		30	127.20	135.20	117.20										

Attached Table 31 Dimensions of Gears, Normal Module 4 mm Types 0B and 0C
(Helix Angle 19°22'12")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer c	Outside diameter of hub d_h	Length of hub l	Keyway		
												b_2	t_2	r_2
0B4- 0C4-	16 N 1	R or L	16	67.84	75.84	57.84	55	31.5	1	56	63	8	3.3	0.16~ 0.25
	17 N 1		17	72.08	80.08	62.08								
	18 N 1		18	76.32	84.32	66.32								
	19 N 1		19	80.56	88.56	70.56								
	20 N 1		20	84.80	92.80	74.80								
	21 N 1		21	89.04	97.04	79.04		35		60		10		0.25~ 0.40
	22 N 1		22	93.28	101.28	83.28								
	24 N 1		24	101.76	109.76	91.76								
	25 N 1		25	106.00	114.00	96.00								
	26 N 1		26	110.24	118.24	100.24								
28 N 1	28	118.72	126.72	108.72	42	67	71							
30 N 1	30	127.20	135.20	117.20										

Attached Table 32 Dimensions of Gears, Normal Module 4 mm Type 1A
(Helix Angle 19°22'12")

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_k	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w
											b_2	t_2	r_2		
1A4-	32 N 1	R gr L	32	135.68	143.68	125.68	35	1	60	50	10	3.3	0.25~ 0.40	100	12.5
	34 N 1		34	144.16	152.16	134.16								42	
	36 N 1		36	152.64	160.64	142.64	117								
	38 N 1		38	161.12	169.12	151.12	126								
	40 N 1		40	169.60	177.60	159.60	134								
	42 N 1		42	178.08	186.08	168.08	143								
	45 N 1		45	190.80	198.80	180.80	155								
	48 N 1		48	203.52	211.52	193.52	168								
	50 N 1		50	212.00	220.00	202.00	177								
	55 N 1		55	233.20	241.20	223.20	198								

Attached Table 33 Dimensions of Gears, Normal Module 4 mm Types 1B and 1C
(Helix Angle 19°22'12")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_k	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w			
												b_2	t_2	r_2					
1B4- 1C4-	32 N 1	R or L	32	135.68	143.68	125.68	50	42	1	67	63	12	3.3	0.25~ 0.40	100	12.5			
	34 N 1		34	144.16	152.16	134.16									109				
	36 N 1		36	152.64	160.64	142.64									117				
	38 N 1		38	161.12	169.12	151.12									126				
	40 N 1		40	169.60	177.60	159.60									134				
	42 N 1		42	178.08	186.08	168.08		45		71					143				
	45 N 1		45	190.80	198.80	180.80									155				
	48 N 1		48	203.52	211.52	193.52									168				
	50 N 1		50	212.00	220.00	202.00									177				
	55 N 1		55	233.20	241.20	223.20									198				
	60 N 1		60	254.40	262.40	244.40		42		67					71		12	3.3	219
	60 N 2							45		71							12	3.3	240
	65 N 1							45		71							12	3.3	
	65 N 2							50		80							14	3.8	
70 N 1	70	296.80	304.80	286.80	45	71	71	12	3.3	261									
70 N 2					50	80		14	3.8										

Attached Table 34 Dimensions of Gears, Normal Module 4 mm Type 0A
(Helix Angle 15°56'33")

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_1	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Keyway		
									b_2	t_2	r_2
0A4-	17 M 1	17	70.72	78.72	60.72	65	31.5	1	8		0.16~0.25
	18 M 1	18	74.88	82.88	64.88						
	19 M 1	19	79.04	87.04	69.04						
	20 M 1	20	83.20	91.20	73.20						
	21 M 1	21	87.36	95.36	77.36						
	22 M 1	22	91.52	99.52	81.52						
	24 M 1	24	99.84	107.84	89.84	60	35		10	3.3	0.25~0.40
	25 M 1	25	104.00	112.00	94.00						
	26 M 1	26	108.16	116.16	98.16						
	28 M 1	28	116.48	124.48	106.48						
	30 M 1	30	124.80	132.80	114.80						
	32 M 1	32	133.12	141.12	123.12						
	34 M 1	34	141.44	149.44	131.44						
	36 M 1	36	149.76	157.76	139.76						
	38 M 1	38	158.08	166.08	148.08		45		12		

Attached Table 35 Dimensions of Gears, Normal Module 4 mm Type 1A
(Helix Angle 15°56'33")

Unit: mm

Notation			No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_1	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w			
												b_2	t_2	r_2					
1A4-	40 M 1	R or L	40	166.40	174.40	156.40	60	45	1	71	60	12	3.3	0.25~ 0.40	124	18			
	42 M 1		42	174.72	182.72	164.72									132				
	45 M 1		45	187.20	195.20	177.20									145				
	48 M 1		48	199.68	207.68	189.68		50		80		14	3.8		157				
	50 M 1		50	208.00	216.00	198.00									166				
	55 M 1		55	228.80	236.80	218.80									186				
	60 M 1		60	249.60	257.60	239.60		56		90		16	4.3		207				
	65 M 1		65	270.40	278.40	260.40									228				
	70 M 1		70	291.20	299.20	281.20									249				

Attached Table 36 Dimensions of Gears, Normal Module 4 mm Type 0A
(Helix Angle $11^{\circ}21'54''$)

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole dia- meter d	Cham- fer. c	Keyway			
									b_2	t_2	r_2	
0A4-	18 W 1	R or L	18	73.44	81.44	63.44	85	35	1	10	3.3	0.25~0.40
	19 W 1		19	77.52	85.52	67.52						
	20 W 1		20	81.60	89.60	71.60						
	21 W 1		21	85.68	93.68	75.68						
	22 W 1		22	89.76	97.76	79.76						
	24 W 1		24	97.92	105.92	87.92						
	25 W 1		25	102.00	110.00	92.00						
	26 W 1		26	106.08	114.08	96.08						
	28 W 1		28	114.24	122.24	104.24	42					
	30 W 1		30	122.40	130.40	112.40						
	32 W 1		32	130.56	138.56	120.56						
	34 W 1		34	138.72	146.72	128.72						
	36 W 1		36	146.88	154.88	136.88						
	38 W 1		38	155.04	163.04	145.04						
	40 W 1		40	163.20	171.20	153.20						
42 W 1	42	171.36	179.36	161.36								
45 W 1	45	183.60	191.60	173.60	80	45	50	14	3.8			

Attached Table 37 Dimensions of Gears, Normal Module 4 mm Type 1A
(Helix Angle $11^{\circ}21'54''$)

Unit: mm

Notation		No. of teeth z	Diameter of pitch circle d_0	Diameter of tip circle d_t	Diameter of root circle d_r	Face width b	Hole diameter d	Chamfer c	Outside diameter of hub d_h	Length of hub l	Keyway			Inside diameter of rim d_i	Thickness of web b_w
											b_2	t_2	r_2		
1A4-	48 W 1	48	195.84	203.84	185.84	80	50	1	80	80	14	3.8	0.25~0.40	153	25
	50 W 1	50	204.00	212.00	194.00									162	
	55 W 1	55	224.40	232.40	214.40									182	
	60 W 1	60	244.80	252.80	234.80									202	
	65 W 1	65	265.20	273.20	255.20									223	
	70 W 1	70	285.60	293.60	275.60									243	

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