


# Helical Gears

Pressure Angle 20°, Helix Angle 45°, Module 1.0, 1.5, 2.0, 2.5, 3.0

Feature: Spur gears used for the power transmission between unparallel shafts.

**Helical Gears – Pressure Angle 20°, Helix Angle 45°, Module 1.0, 1.5, 2.0, 2.5, 3.0**



RoHS10

Type			Material	Surface Treatment	Accessories
Straight Bore	Straight Bore+Tap	Keyway +Tap			
NEGHN	NEGTN	NEGKN	1045 Carbon Steel or Equivalent	Black Oxide	Set Screw (4137 Alloy Steel or Equivalent Black Oxide)
NEGHB	NEGTB	NEGKB			
NEGHS	NEGTS	NEGKS	304 Stainless Steel	—	Set Screw (304 Stainless Steel)
NEGHM	NEGTM	—	MC Nylon	—	Set Screw (304 Stainless Steel)

**Shaft Bore Specifications**

Straight Bore	Straight Bore+Tap	Keyway+Tap

Ⓛ Keyway Dimension Details P.1469.  
Ⓛ Positioning of keyway and teeth are not fixed.  
Ⓛ Set Screw is not included in Non-tapped Type products.

**Tapped Hole Dimension List**

Shaft Bore Dia. P <sub>HT</sub>	M (Coarse)	Accessories: Set Screw
6-12	M4	M4 x 3
13-17	M5	M5 x 4
18-30	M6	M6 x 5
31-45	M8	M8 x 6
46-65	M10	M10 x 8

Accuracy: New JIS B 1702-1 Class 9  
Previous JIS B 1702 Class 5

Part Number	Type	Module	Number of Teeth	Shaft Bore Dia. P <sub>HT</sub> (1 mm Increment)		Twisting Direction	d	D	B	H	L	ℓ	
				Straight Bore	Keyway + Tap								
Straight Bore NEGHN NEGHB NEGHS NEGHM	1.0	10	13	6-7	—	L	18.38	20.38	10	15	20	10	
			15	6-10	8		21.21	23.21		18			
			20	8-16	8-13		28.28	30.28		25			
			26	10-20	10-17		36.77	38.77		30			
			30	10-25	10-22		42.43	44.43		35			
			30	10-25	10-22		42.43	44.43		35			
	Straight Bore + Tap NEGTN NEGTB NEGTS NEGTM	1.5	15	10	8	—	R	21.21	24.21	15	16	25	10
				13	10-14	10-12		27.58	30.58		23		
				15	10-16	10-13		31.82	34.82		25		
				20	12-20	12-17		42.43	45.43		30		
				26	12-30	12-26		55.15	58.15		40		
				30	12-33	12-30		63.64	66.64		45		
Keyway + Tap NEGKN NEGKB NEGKS	2.0	20	10	12-13	12	L	28.28	32.28	20	22	35	15	
			13	12-20	12-17		36.77	40.77		30			
			15	12-25	12-22		42.43	46.43		35			
			20	15-33	15-30		56.57	60.57		45			
			26	20-46	20-44		73.54	77.54		60			
			30	20-51	20-47		84.85	88.85		65			
	2.5	25	25	10	12-17	12-14	R	35.36	40.36	22	26	38	16
				13	15-25	15-22		45.96	50.96		35		
				15	15-30	15-26		53.03	58.03		40		
				20	20-46	20-44		70.71	75.71		60		
				26	20-56	20-50		91.92	96.92		70		
				30	20-65	20-50		106.07	111.07		80		
3.0	30	30	10	15-24	15-21	L	42.43	48.43	25	34	43	18	
			13	20-33	20-30		55.15	61.15		45			
			15	20-38	20-34		63.64	69.64		50			
			20	20-46	20-44		84.85	90.85		60			
			26	20-65	20-50		110.31	116.31		80			
			30	20-65	20-50		127.28	133.28		90			

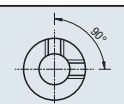
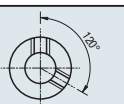
- Ⓛ Shaft Bore diameter 6.35 is available for Straight Bore and Straight Bore+Tap. Ⓛ Shaft Bore Dia. 9 is not available for Keyway+Tap.
- Ⓛ Select 10K as P dimension if you request keyway width of 4.0 mm (height 1.8 mm) for Keyway + Tap with shaft bore diameter of 10. P.1469
- Ⓛ Combine the same handedness (L and L or R and R) for unparallel shafts and different handedness (L and R) for parallel shafts.
- Ⓛ Helical gears generate axial thrust on shafts. Choose bearings that can withstand the axial thrust generated by the gears.
- Ⓛ Keyway + Tap is not available with a 13 teeth gear for a module of 1 and with 10 teeth gear for a module of 1.5.

**Part Number Example**

Part Number: **NEGHN1.0** - No. of Teeth: **20** - Shaft Bore Dia. P<sub>HT</sub>: **10** - Twisting Direction: **L**

**Part Number Alterations**

Part Number: **NEGTN1.5** - No. of Teeth: **30** - Shaft Bore Dia. P<sub>HT</sub>: **20** - Twisting Direction: **R** - (KC90 / KC120): **KC90**


Alterations	Set Screw
Code	KC90 KC120
Spec.	Adds another set screw.  

# Rack Gears (L Dimension Standard)

Pressure Angle 20°, Module 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 3.0

Accuracy RGEA / RGEAR / RGEAB JIS B 1702 Class 4 or equivalent  
RGEAS / RGEAM / RGEAMR JIS B 1702 Class 5 or equivalent

**Rack Gears (L Dimension Standard) – Pressure Angle 20°, Module 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 3.0**



RoHS10

Type		Material	Surface Treatment
Both Ends Machined	Economy		
RGEA	RGEAR	1045 Carbon Steel or Equivalent	Black Oxide
RGEAB	—	Free-Cutting Brass Bar	—
RGEAS	—	304 Stainless Steel	—
RGEAM	RGEAMR	MC Nylon	—

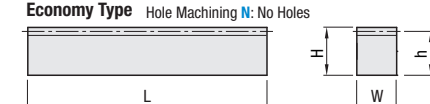
Ⓛ RGEAM / RGEAMR (MC Nylon) dimensions may change depending on the operating environment.

**Accuracy: Accumulated Pitch Error (μm)**

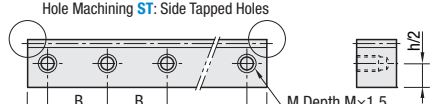
Module	Nominal, Overall Length L		
	100	101-300	301-500
0.5-1.5	54 (76)	65 (92)	72 (101)
2.0-3.0	62 (86)	73 (102)	80 (112)

Ⓛ Values in ( ) for RGEAS / RGEAM / RGEAMR

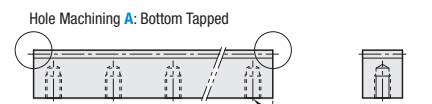
**Economy Type** Hole Machining N: No Holes



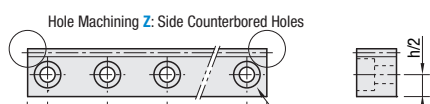
Hole Machining ST: Side Tapped Holes



Hole Machining A: Bottom Tapped

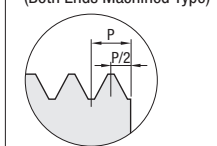


Hole Machining Z: Side Counterbored Holes



Equation:  $F = \frac{L - B \times (K-1)}{2}$

**Enlarged View of End Face (Both Ends Machined Type)**



Module	P Tolerance
0.5-2.0	-0.1
2.5 or 3.0	-0.4

Part Number	Type	Module	Nominal	Hole Machining	Number of Effective Teeth	L	P (Pitch)	W	H	h	B (Hole Pitch)	M (Coarse)	d <sub>1</sub>	d <sub>2</sub>	Z <sub>1</sub>	K (No. of Holes)	Available Types																										
																	Hole Machining N	Hole Machining A	Hole Machining ST	Hole Machining Z	Hole Machining Z																						
1045 Carbon Steel or Equivalent Both Ends Machined Type RGEA	1.0	100	300	N	30 (29)	98.43 (98)	3.142	10	12	11	180	M3	3.5	6.5	3.5	—	—	—	—	—	—																						
																						95 (94)	298.45 (303)	—	2	•	•	•	•	•													
																						159	499.51 (505)	—	3	•	•	•	•	•													
																						21 (20)	97.64 (101)	—	—	•	•	•	•	•													
																						63 (62)	296.88 (303)	—	2	•	•	•	•	•													
																						106 (105)	499.51 (505)	—	3	•	•	•	•	•													
	2.0	300	100	A	15 (14)	96.85 (98)	6.283	20	25	23	180	M5	5.5	9.5	5.5	—	—	—	—	—	—	—																					
																							47 (46)	296.85 (303)	—	2	•	•	•	•	•												
																							79	496.37 (505)	—	3	•	•	•	•	•												
																							12 (11)	96 (100)	—	—	•	•	•	•	•												
																							38 (37)	296 (303)	—	2	•	•	•	•	•												
																							63	494.8 (505)	—	3	•	•	•	•	•												
Economy Type RGEAR	2.5	300	N	38 (37)	296 (303)	7.854	25	30	27.5	180	M5	5.5	9.5	5.5	—	—	—	—	—	—	—																						
																						10 (9)	95.29 (101)	—	2	•	•	•	•	•													
																						31 (30)	295.29 (303)	—	3	•	•	•	•	•													
																						53 (52)	499.51 (505)	—	3	•	•	•	•	•													
																						10 (9)	95.29 (101)	—	—	•	•	•	•	•													
																						31 (30)	295.29 (303)	—	2	•	•	•	•	•													
Free-Cutting Brass Bar RGEAB	0.5	300	N	192	301.59	1.571	3	9	8.5	—	—	—	—	—	—	—	—	—	—	—	—																						
																						120	301.59	2.513	4	10	9.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
																						0.8	300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
																						1.0	300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
																						1.5	300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
																						2.0	300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
304 Stainless Steel RGEAS	1.0	300	N	95	298.45	3.142	10	10	9	—	—	M3	3.5	6.5	3.5	—	—	—	—	—	—																						
																						159	499.51	—	2	•	•	•	•	•													
																						63	296.88	—	3	•	•	•	•	•													
																						106	499.51	—	—	•	•	•	•	•													
																						79	496.37	—	2	•	•	•	•	•													
																						159	999.02	—	3	•	•	•	•	•													
	2.0	500	1000	A	63	296.88	4.712	15	15	13.5	180	M4	4.5	8	4.5	—	—	—	—	—	—	—																					
																							106	499.51	—	2	•	•	•	•	•												
																							79	496.37	—	3	•	•	•	•	•												
																							159	999.02	—	6	•	•	•	•	•												
																							63	296.88	—	—	•	•	•	•	•												
																							127	997.45	—	3	•	•	•	•	•												
Economy Type RGEAMR	2.5	500	N	53	499.51	7.854	25	30	27.5	180	M5	5.5	9.5	5.5	—	—	—	—	—	—	—																						
																						106	999.03	—	2	•	•	•	•	•													
																						127	997.45	—	3	•	•	•	•	•													
																						53	499.51	—	6	•	•	•	•	•													
																						106	999.03	—	—	•	•	•	•	•													
																						127	997.45	—	3	•	•	•	•	•													
MC Nylon RGEAM	0.5	300	N	192	301.59	1.571	3	9	8.5	—	—	—	—	—	—	—	—	—	—	—	—																						
																						120	301.59	2.513	4	10	9.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
																						0.8	300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
																						1.0	300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
																						1.5	500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
																						2.0	500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Ⓛ Economy Type is only available for Hole Machining N (No Hole Machining). Ⓛ No. of Effective Teeth ( ) and L ( ) are the value of Economy Type.

**Part Number Example**

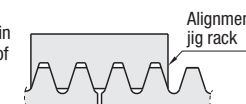
Part Number: **RGEA1.0** - Nominal: **500** - Hole Machining: **A**

**Part Number Alterations**

Part Number: **RGEAS1.5** - Nominal: **500** - Hole Machining: **N** - (MC / WMC): **MC4**

## How to Connect Rack Gears (Both Ends Machined Type)

MISUMI Rack Gears (Both Ends Machined Type) are end machined with negative pitch tolerance in length. When connecting the racks, use a piece of rack (rack gear in the same module) as a spacer jig as shown below to properly adjust the pitch.



Alterations	One End Tapped		Both Ends Tapped	
	MC	WMC	WMC5	WMC5
Code	MC5	WMC5	WMC5	WMC5
Spec.	Ordering Code: MC5	Ordering Code: WMC5	Ordering Code: WMC5	Ordering Code: WMC5
	