

Spur Gears (Bearing Built-In Type)

Pressure Angle 20°, Module 1.0, 1.5, 2.0

Feature: Bearing built-in spur gears can be used for reversing rotations and synchronizing.

Spur Gears (Bearing Built-In Type) – Pressure Angle 20°, Module 1.0, 1.5, 2.0

RoHS 10

Type	Material		Surface Treatment
	Main Body	Bearings	
GEABD	1045 Carbon Steel or Equivalent	Steel	—
GEABDB			Black Oxide
GEABDG			Electroless Nickel Plating
GEABDM	MC Nylon	—	—

Accuracy: Accumulated Pitch Error (μm)

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

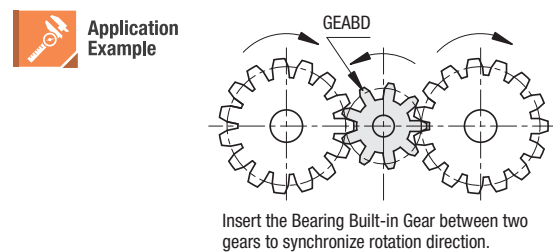
For bearing 1 Pc.

For bearing 2 Pcs.

*Bearing Accuracy JIS B 1514 Class 0 (B) Bearings are press-fit (C) For Shafting, refer to cantilever shafts. P.912–957

Part Number Type	Module	No. of Teeth	B	d ₁	d Reference Dia.	D Tip Dia.	G Root Dia.	GEABD / GEABDB / GEABDG			GEABDM						
								Bearing No.	D ₁	b	S	Bearing No.	D ₁	b	S		
GEABD	1.0	20	12	5	20	22	17.5	695ZZx1	13	4	4	—	—	—			
		24		8	24	26	21.5	688ZZx1	16	5	3.5	—	—	—			
		25		8	25	27	22.5	698ZZx1	19	6	3	678ZZx1	12	3.5	4.25		
		30		10	30	32	27.5	6900ZZx1	22	6	3	6700ZZx1	15	4	4		
		35		10	35	37	32.5	6900ZZx1	22	6	3	6900ZZx1	22	6	3		
		40		12	40	42	37.5	6901ZZx1	24	6	3	6901ZZx1	24	6	3		
		48		12	48	50	45.5	6901ZZx1	24	6	3	6901ZZx1	24	6	3		
		50		12	50	52	47.5	6901ZZx1	24	6	3	6901ZZx1	24	6	3		
		60		12	60	62	57.5	6901ZZx1	24	6	3	6901ZZx1	24	6	3		
		GEABDB		1.5	15	15	5	22.5	25.5	18.75	695ZZx2	13	4	3.5	—	—	—
					16		8	24	27	20.25	688ZZx1	16	5	5	—	—	—
					20		10	30	33	26.25	6900ZZx1	22	6	4.5	6700ZZx2	15	4
24	10		36		39		32.25	6000ZZx1	26	8	3.5	6900ZZx1	22	6	4.5		
25	10		37.5		40.5		33.75	6000ZZx1	26	8	3.5	6900ZZx1	22	6	4.5		
26	10		39		42		35.25	6000ZZx1	26	8	3.5	6900ZZx1	22	6	4.5		
28	12		42		45		38.25	6001ZZx1	28	8	3.5	6001ZZx1	28	8	3.5		
30	12		45		48		41.25	6001ZZx1	28	8	3.5	6001ZZx1	28	8	3.5		
40	12		60		63		56.25	6001ZZx1	28	8	3.5	6001ZZx1	28	8	3.5		
48	15		72		75		68.25	6002ZZx1	32	9	3	6002ZZx1	32	9	3		
50	15		75		78		71.25	6002ZZx1	32	9	3	6002ZZx1	32	9	3		
60	15		90		93		86.25	6002ZZx1	32	9	3	6002ZZx1	32	9	3		
GEABDG	2.0	15	20	8	30	34	25.5	698ZZx2	19	6	4	678ZZx2	12	3.5	6.5		
		20		10	40	44	35.5	6200ZZx1	30	9	5.5	6900ZZx2	22	6	4		
		24		12	48	52	43.5	6201ZZx1	32	10	5	6201ZZx1	32	10	5		
		25		12	50	54	45.5	6201ZZx1	32	10	5	6201ZZx1	32	10	5		
		30		15	60	64	55.5	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5		
		32		15	64	68	59.5	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5		
		36		15	72	76	67.5	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5		
		40		15	80	84	75.5	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5		
		48		20	96	100	91.5	6004ZZx1	42	12	4	6004ZZx1	42	12	4		
		50		20	100	104	95.5	6004ZZx1	42	12	4	6004ZZx1	42	12	4		
		60		25	120	124	115.5	6005ZZx1	47	12	4	6005ZZx1	47	12	4		

Part Number Example: GEABD1.0 - 20 - 12



Round Rack Gears / Worm / Worm Wheel

L Dimension Standard / L Configurable Pressure Angle 20°

Round Rack Gears – L Dimension Standard & Configurable Pressure Angle 20°

RoHS 10

Type	Material	Surface Treatment
RGMA	1045 Carbon Steel or Equivalent	Black Oxide
RGMAS	303 Stainless Steel	—

Accuracy: Accumulated Pitch Error (μm)

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

Enlarged View of End Face

End Machining

(C) For the L configurable type, this can be positioned as desired at one end

Type	Module	Nominal	Effective Number of Teeth (Z)	D (h9)	(L)	h	L Configurable			
							Part Number Type	Module	Overall Length L 1 mm Increment	D (h9)
RGMA 1045 Carbon Steel or Equivalent	0.5	300	192	8	301.59	7.5	RGMAL 1045 Carbon Steel or Equivalent	50–280	8	7.5
		300	120							7.2
	1.0	300	95	10	298.45	9				9
	500	159	499.51	10	499.51	9				9
	1.5	300	63	15	296.88	13.5				13.5
	500	106	499.51	15	499.51	13.5				13.5
	2.0	300	47	20	295.31	18	18			
	500	79	496.37	20	496.37	18	18			
	2.5	300	38	25	298.45	22.5	22.5			
	500	63	494.80	25	494.80	22.5	22.5			
	3.0	300	31	30	292.17	27	27			
	500	53	499.51	30	499.51	27	27			
RGMAS 303 Stainless Steel	0.5	300	192	8	301.59	7.5	RGMASL 303 Stainless Steel	50–280	8	7.5
		300	120							7.2
	1.0	300	95	10	298.45	9				9
	500	159	499.51	10	499.51	9				9
	1.5	300	63	15	296.88	13.5				13.5
	500	106	499.51	15	499.51	13.5				13.5
	2.0	300	47	20	295.31	18	18			
	500	79	496.37	20	496.37	18	18			
	2.5	300	38	25	298.45	22.5	22.5			
	500	63	494.80	25	494.80	22.5	22.5			
	3.0	300	31	30	292.17	27	27			
	500	53	499.51	30	499.51	27	27			

Part Number Example: RGMA1.0 - 500 - MC

Part Number Alterations: RGMA1.0 - 500 - MC5

Code	One End Tapped MC			Both Ends Tapped WMC		
	Module	M Selection		Module	M Selection	
Spec.	0.5	3 4 5		0.5	3 4 5	
	0.8	3				
	1.0	4 5				
	1.5–3.0	4 5 6				

Worm WGEAU

Material: 1045 Carbon Steel or Equivalent
Surface Treatment: Black Oxide
Tooth Surface Hardness: 12 HRC min. or less
Accessory: Set Screw M4
Accuracy Grade: JIS B 1702 Class 4 Equivalent (Tooth Surface Finish: Rolled)

Worm Wheel WGEAH

Material: Phosphor Bronze (CAC502)
Accuracy Grade: JIS B 1702 Class 4 Equivalent (Tooth Surface Finish: Machined)

Worm

Part Number Type	Module	Number of Starts	Shaft Bore Dia. P ₁₇ Straight Bore + Tap	Twisting Direction	Advance Angle	d	D	L	ℓ
WGEAU	0.8	1	6	R (Right)	3°17'	14	15.6	30	5
		2	6		6°34'				
WGEAU	1.0	1	6	R (Right)	3°35'	16	18	32	5
		2	6		7°11'				

Datum Section of Gears: Normal to Tooth / Datum Plane for Gear Cutting: Bore
Caution: As high thrust load is applied to worm, be sure to fix it tightly when attaching to shaft. Avoid using with the worm gear pushed against the wheel or axially offset condition.

Worm Wheel

Part Number Type	Module	No. of Teeth	Number of Starts	Shaft Bore Dia. P ₁₇ Straight Bore	Twisting Direction	d	D	B	H	L	ℓ	F Engagement Center Distance	Allowable Torque (Nm) Tooth Surface Strength	Backlash (mm)	Reduction Ratio
WGEAH	0.8	20	2	5	R (Right)	16.11	17.6	9	12	18	9	15	0.86	0.04–0.22	1/10
		30	1	5		24.04	25.6		18			1.89	1/30		
		40	1	6		24.16	25.6		18			1.87	1/15		
		50	1	8		32.05	33.6		20			3.24	1/40		
		50	1	8		40.06	41.6		25			4.90	1/50		
WGEAH	1.0	20	1	6	R (Right)	20.05	23	10	16	20	10	18	1.58	0.06–0.24	1/20
		30	1	6		20.16	23		16			1.54	1/10		
		40	1	8		30.07	33		20			3.38	1/30		
		50	1	8		30.24	33		20			3.35	1/15		
		50	1	8		40.08	43		26			5.79	1/40		
50	1	8	50.10	53	30	8.76	1/50								

(C) As worm wheels are modified according to F (engagement center distance), spiral bevel gears from different manufacturers may not match correctly.

Part Number Example: WGEAU1.0 - 20 - 1 - 6 - R