

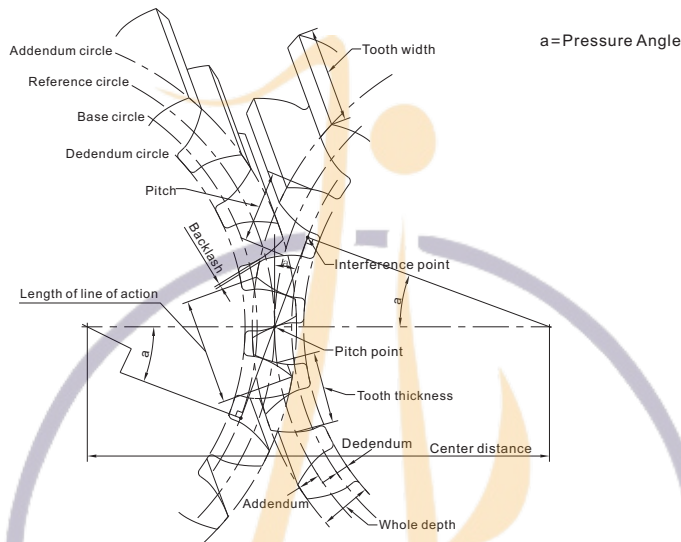
Spur Gears Product introduction

It is a wheel-shaped mechanical part that transmits torque by the meshing of teeth. The gear can realize the functions of changing the rotation speed and torque, changing the movement direction and changing the movement form through transmission with other tooth-shaped mechanical parts (such as another gear, rack, worm). Due to the advantages of high transmission efficiency, accurate transmission ratio, and large power range, gear mechanisms are widely used in industrial products. The gear teeth interlock with each other to drive the other gear to transmit power. To separate the two gears, you can also use chains, crawlers, and leather belts to drive the gears on both sides to transmit power.

Rack Gears Product introduction

The cylindrical gear of the rack and the helical cylindrical gear are used in pairs. The tooth profile is a straight line rather than an involute line (a flat surface for the tooth surface), which is equivalent to a cylindrical gear with an infinite circle radius. Divided into straight racks and helical racks, respectively.

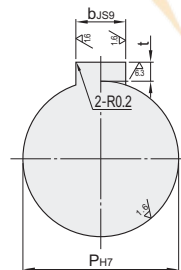
Gears total score names



Keyway Dimensions

Shaft Bore Dia.	P _{H7}	b _{JS9}	t
8N	8	3	1.4
10N	10		
10K	10	4	1.8
11N	11		
12N	12	5	2.3
13N	13		
14N	14	6	2.8
15N	15		
16N	16	8	3.3
17N	17		
18N	18	10	3.8
19N	19		
20N	20	12	4.3
21N	21		
22N	22	14	4.8
23N	23		
24N	24	16	5.3
25N	25		
26N	26	18	5.8
27N	27		
28N	28	20	6.3
29N	29		
30N	30	22	6.8
31N	31		
32N	32	24	7.3
33N	33		
34N	34	26	7.8
35N	35		
36N	36	28	8.3
37N	37		
38N	38	30	8.8

Shaft Bore Dia.	P _{H7}	b _{JS9}	t
39N	39	12	3.3
40N	40		
41N	41	14	3.8
42N	42		
43N	43	16	4.3
44N	44		
45N	45	18	4.8
46N	46		
47N	47	20	5.3
48N	48		
49N	49	22	5.8
50N	50		

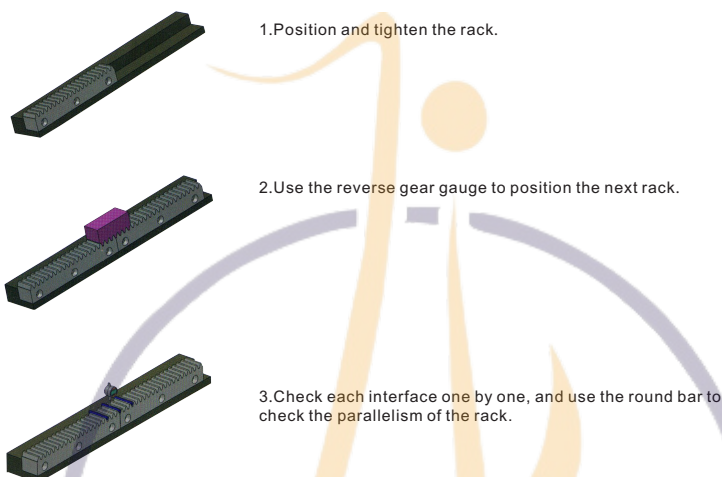


Precautions for use

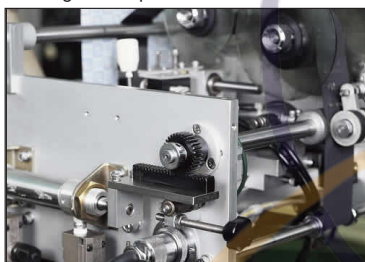
- ① Before using, please confirm whether the gear is installed in place.
- ② The contact of the gear cannot be biased towards one end.
- ③ Avoid using without side clearance.
- ④ With proper lubrication.
- ⑤ If the gear is exposed, be sure to install a protective cover to ensure safety.
- ⑥ Do not touch when the gear is rotating.
- ⑦ When there is abnormal noise and vibration during operation, please stop to confirm the gear meshing and assembly.

Rack assembly instructions

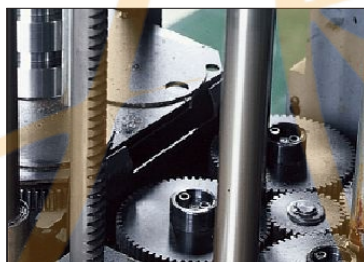
The rack can be docked to any length. During assembly, the gap between the two racks needs to be adjusted to match the tooth pitch. Locating pins are required for rack installation.



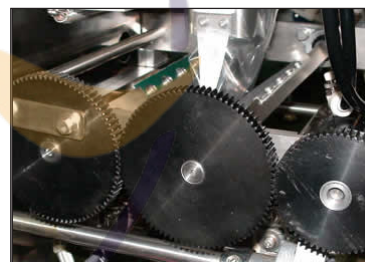
Usage example



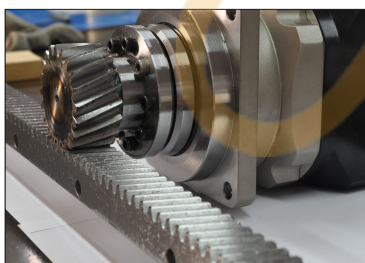
(For printing machinery)



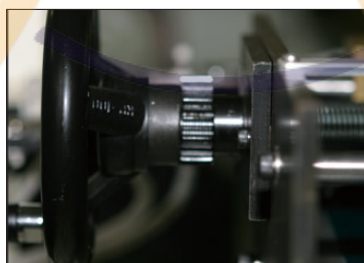
(For drilling machines)



(For woodworking machinery)



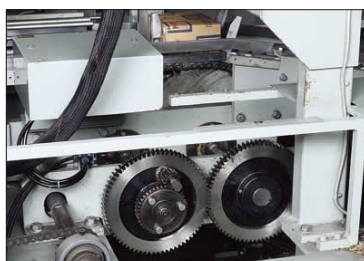
(Used for power transmission of servo motor)



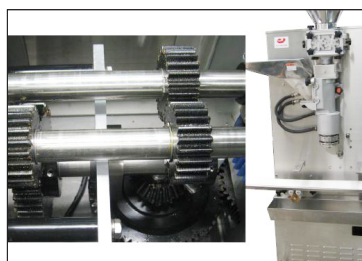
(For manual rocker)



(For automatic working platform)



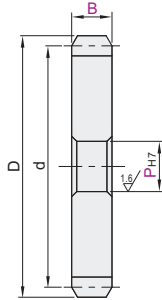
(For packaging machinery)



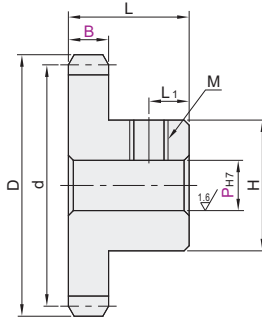
(For automatic machine tools)

Code	Type	Material		Hardness	Surface Treatment
		GB	Equiv.		
VNC02	Straight Bore	45	S45C	—	Black Oxide
VNC11		0Cr18Ni9	SUS304		—
VNC22	Straight Bore + Tap	45	S45C	—	Black Oxide
VNC31		0Cr18Ni9	SUS304		—

Gear Shape A Shape



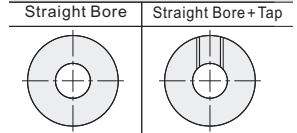
B Shape



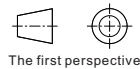
3.2/



Shaft Bore Specifications P Shape Selection



❗ The Straight Bore+Tap is only suitable for B-shape.



Unhardened gear accuracy JIS B 1702-1Class 8

Part Number		Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7}	d	D	H	L	L ₁	M
Code	Module				Straight Bore Straight Bore+Tap						
Straight Bore VNC02 VNC11	0.5	20			3 4 5	10	11	8.5		3	M3
		24				12	13				
		25				12.5	13.5				
		26				13	14				
		28	3			14	15		9		
		30			3	15	16				
		32			4	16	17				
		35			5	17.5	18.5	10			
		36		A		18	19				
		40			6	20	21				
Straight Bore+Tap VNC22 VNC31	0.5	42				21	22			3	M3
		45		B		22.5	23.5				
		48				24	25				
		50				25	26				
		52	2			26	27		8		
		60				30	31				
		70			5 6 7 8 9	35	36				
		80			10 11 12	40	41	20			
		100				50	51				
		120				60	61				



Optional Processing

Alterations	Adds another set screw at 90° position	Adds another set screw at 120° position	Change Tapped Hole Dimensions
Code	HC90	HC120	MC()
Spec.	❗ Adds another set screw at 90° position. ❗ Not applicable to Shape A.	❗ Adds another set screw at 120° position. ❗ Not applicable to Shape A.	❗ Change the dimension of M3 tapped hole to M4. ❗ Not applicable to Shape A.



Please order as shown

Part Number	Number of Teeth	B	Gears Shape	P _{H7}	d
VNC02	20	3	A	3 4 5	10
VNC22	24	3	B	3 4 5 6	12
VNC31	25	3	B	3 4 5 6	12.5

VNC02-0.5-25-B3-B-P6

❑ Optional Processing

Part Number	Number of Teeth	B	Gears Shape	P _{H7}	Optional Processing Code
VNC22	20	3	A	3 4 5	
VNC31	24	3	B	3 4 5 6	HC90 HC120 MC()
VNC02	25	3	B	3 4 5 6	

VNC22-0.5-25-B3-B-P6-HC90



Discount price
Per 1~4 5~
Price 100% Additional Application

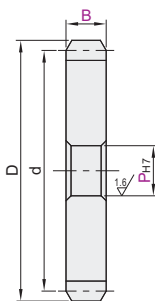


Delivery
12

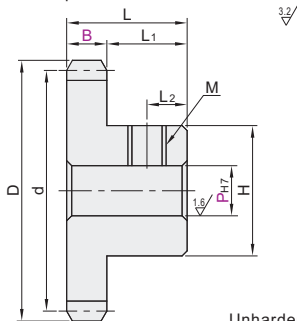
Code	Type	Material		Hardness	Surface Treatment
		GB	Equiv.		
VNF02	Straight Bore	45	S45C	—	Black Oxide
VNF03		0Cr18Ni9	SUS304	—	—
VNF22		45	S45C	HRC40~45	Black Oxide
VNF23	Straight Bore+Tap	45	S45C	—	—
VNF31		0Cr18Ni9	SUS304	—	—
VNF42		45	S45C	HRC40~45	Black Oxide
VNF43	Keyway+Tap	45	S45C	—	—
VNF51		0Cr18Ni9	SUS304	—	—



Gear Shape A Shape



B Shape



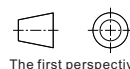
Shaft Bore Specifications P Shape Selection

Straight Bore	Straight Bore+Tap	Keyway+Tap

- ① The Straight Bore+Tap is only suitable for B-shape.
- ② If the Keyway+Tap is A-shaped, there are no screw holes and set screws.
- ③ For Keyway dimensions, please refer to the product introduction.

Unhardened gear accuracy JIS B 1702-1 Class 8

Hardened gear accuracy JIS B 1702-1 Class 9



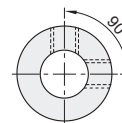
Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7} 1 mm Inc.		d	D	H	L	L ₁	L ₂	M
						Straight Bore	Keyway+Tap							
Straight Bore	VNF02 VNF03 VNF11	1.0	20	10	A	6~10	8N	20	22	16				
			21					21	23	18				
			22					22	24			10		
			23			6~12	8N 10N	23	25			(B=10)		
			24					24	26	20				
			25	12	B			25	27				4	M4
			26			6~15	8N~12N	26	28	22				
			27			8~17	10N~12N	27	29	24		8		
			28			6~17	8N~15N	28	30			(B=12)		
			29			8~17		29	31	26				
Straight Bore + Tap	VNF22 VNF23 VNF31	1.0	30	10	A	8~18	10N~15N	30	32	27				
			32					32	34					
			34					34	36	28				
			35	12	B			35	37					
			36					36	38					
			38					38	40					
			40			8~20	10N~17N	40	42	30				
			42					42	44					
			44					44	46					
Keyway+Tap	VNF42 VNF43 VNF51	1.0	45	10	A			45	47					
			46			8~30	10N~27N	46	48	44				
			48					48	50					
			50					50	52					
			52					52	54	20				
			54	12	B	8~32	10N~28N	54	56					
			55					55	57	46				
			56					56	58					
			58					58	60		10	5	M5	
			60					60	62					
			62	10	A			62	64					
			64			10~35	12N~31N	64	66	50				
			65					65	67					
			66					66	68					
			68					68	70					
			70	12	B	10~39	12N~35N	70	72	56				
			72					72	74					
			75					75	77					
			80					80	82					
			84					84	86					
			85	10	A			85	87					
			90			10~42	15N~38N	90	92	60				
			95					95	97					
			96					96	98					
			100			17~38N		100	102					
			110	12	B			110	112	70				
			111			17~49	17N~45N	111	113					
			120					120	122					



Optional Processing

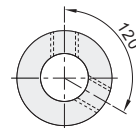
Code	Spec.
------	-------

HC90 Adds another set screw at 90° position



Ordering Code HC90
① Adds another set screw at 90° position.
② Not applicable to Shape A.

HC120 Adds another set screw at 120° position



Ordering Code HC120
① Adds another set screw at 120° position.
② Not applicable to Shape A.

MC() Change Tapped Hole Dimensions

Ordering Code MC4

④ Tapped hole designation table

Number of Teeth	MC
16~32	M4
36~50	M3 M5

⑤ Not applicable to Shape A.



Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7} (1 mm Inc.)	d
VNF22	1.0	20	10	A	6~10	8N	20
VNF22	1.0	21	12	B	6~12	8N 10N	21

VNF22—1.0—21—B12—B—P8

④ Optional Processing

Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7} (1 mm Inc.)	Optional Processing Code
VNF22	1.0	20	10	A	6~10	8N	HC90 HC120 MC()
VNF22	1.0	21	12	B	6~12	8N 10N	

VNF22—1.0—21—B12—B—P8—HC90



Discount price	Per	1~4	5~
Price	100%	Additional quotation	

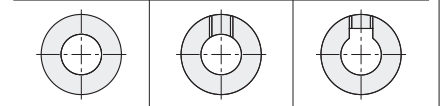


Delivery	12
----------	----

Code	Type	Material		Hardness	Surface Treatment
		GB	Equiv.		
VNJ02	Straight Bore	45	S45C	—	Black Oxide
VNJ03		0Cr18Ni9	SUS304	—	
VNJ11		0Cr18Ni9	SUS304	—	
VNJ22	Straight Bore+Tap	45	S45C	HRC40~45	Black Oxide
VNJ23		0Cr18Ni9	SUS304	—	
VNJ31		0Cr18Ni9	SUS304	—	
VNJ42	Keyway+Tap	45	S45C	HRC40~45	Black Oxide
VNJ43		0Cr18Ni9	SUS304	—	
VNJ51		0Cr18Ni9	SUS304	—	

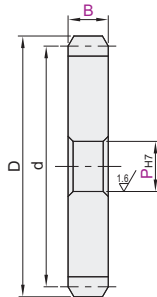


Shaft Bore Specifications P Shape Selection

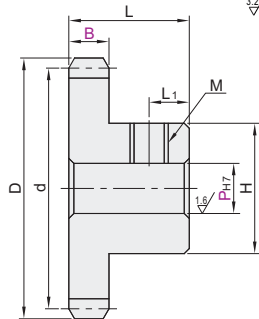


- ① The Straight Bore+Tap is only suitable for B-shape.
- ② If the Keyway+Tap is A-shaped, there are no screw holes and set screws.
- ③ For Keyway dimensions, please refer to the product introduction.

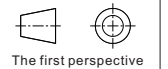
Gear Shape A Shape



B Shape



Unhardened gear accuracy JIS B 1702-1 Class 8
Hardened gear accuracy JIS B 1702-1 Class 9



Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P.H7 1 mm Inc.		d	D	H	L	L1	M
						Straight Bore	Keyway+Tap						
Straight Bore	VNJ02	1.5	14	15	A	6~8		21	24	16	24	4.5	
			15			6~12		22.5	25.5	18			
			16			6~12		24	27	20			
			17			6~13		25.5	28.5	21			
			18			6~13	8N~12N	27	30	22			
			19			6~15	8N~12N	28.5	31.5	24			M4
			20			6~16		30	33	25			
			21			6~16		31.5	34.5	25			
			22			6~17		33	36	26			
			23			6~18	8N~13N	34.5	37.5	27			
			24			6~20	8N~15N	36	39	30			
			25			6~20	8N~15N	37.5	40.5	30			
			26			6~22	8N~17N	39	42	32			
			27			6~23	8N~18N	40.5	43.5	34			
Straight Bore + Tap	VNJ22	1.5	28	15	A	6~24	8N~19N	42	45	35	27	6	M5
			29			6~24	8N~19N	43.5	46.5	35			
			30			6~24	8N~19N	45	48	35			
			32			6~24	8N~19N	48	51	35			
			34			6~28	8N~24N	51	54	40			
			35			6~28	8N~24N	52.5	55.5	40			
			36			6~31	8N~28N	54	57	40			
			38			6~31	8N~28N	57	60	40			
			40			6~31	8N~28N	60	63	45			
			42			6~31	8N~28N	63	66	45			
Keyway+Tap	VNJ42	1.5	44	15	B	8~31	10N~28N	66	69	50	55	65	M6
			45			8~31	10N~28N	67.5	70.5	50			
			46			8~35	10N~31N	69	72	50			
			48			8~35	10N~31N	72	75	50			
			50			8~35	10N~31N	75	78	50			
			52			8~35	10N~31N	78	81	50			
			54			8~35	10N~31N	81	84	50			
			55			12~35	12N~31N	82.5	85.5	50			
			56			12~35	12N~31N	84	87	50			
			58			12~35	12N~31N	87	90	50			
			60			12~35	12N~31N	90	93	50			
			62			12~35	12N~31N	93	96	50			
			64			12~38	12N~35N	96	99	55			
			65			12~38	12N~35N	97.5	100.5	55			
			66			12~38	12N~35N	99	102	55			
			68			12~38	12N~35N	102	105	55			
			70			12~38	12N~35N	105	108	55			
			72			12~38	12N~35N	108	111	55			
			75			12~45	12N~42N	112.5	115.5	65			
			80			12~45	12N~42N	120	123	65			
			84			12~45	12N~42N	126	129	65			
			85			12~45	12N~42N	127.5	130.5	65			
			90			12~45	12N~42N	135	138	65			
			95			12~45	12N~42N	142.5	145.5	65			
			100			12~45	12N~42N	150	153	65			
			120			12~49	12N~45N	180	183	70			



Code	Spec.								
HC90	Adds another set screw at 90° position ① Adds another set screw at 90° position. ② Not applicable to Shape A.								
HC120	Adds another set screw at 120° position ① Adds another set screw at 120° position. ② Not applicable to Shape A.								
MC()	Change Tapped Hole Dimensions ③ Tapped hole designation table <table border="1"> <thead> <tr> <th>Number of Teeth</th><th>MC</th></tr> </thead> <tbody> <tr> <td>15~24</td><td>M3 M5</td></tr> <tr> <td>25~48</td><td>M4 M6</td></tr> <tr> <td>50~80</td><td>M5 M8</td></tr> </tbody> </table> ④ Not applicable to Shape A.	Number of Teeth	MC	15~24	M3 M5	25~48	M4 M6	50~80	M5 M8
Number of Teeth	MC								
15~24	M3 M5								
25~48	M4 M6								
50~80	M5 M8								



Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P.H7	Optional Processing
VNJ22	1.5	15	14	A	6~8	8N~12N	HC90 MC120 MC()
VNJ22	1.5	15	15	A	6~12	8N~12N	HC90 MC120 MC()
VNJ22	1.5	15	16	A	6~12	8N~12N	HC90 MC120 MC()

Discount price Per 1~4 5~ Price 100% Additional quotation	Delivery 12
--	---------------------------

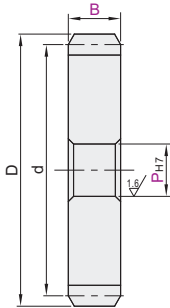
Spur Gears

Module 2.0 Pressure Angle 20°

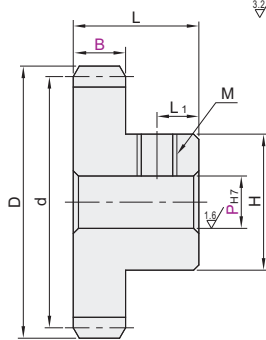
Code	Type	Material		Hardness	Surface Treatment
		GB	Equiv.		
VNL02	Straight Bore	45	S45C	—	Black Oxide
VNL03		0Cr18Ni9	SUS304	—	—
VNL11	Straight Bore+Tap	45	S45C	HRC40~45	Black Oxide
VNL22		0Cr18Ni9	SUS304	—	—
VNL23	Keyway+Tap	45	S45C	HRC40~45	Black Oxide
VNL32		0Cr18Ni9	SUS304	—	—
VNL33	Keyway+Tap	45	S45C	HRC40~45	Black Oxide
VNL41		0Cr18Ni9	SUS304	—	—

Gear Shape

A Shape

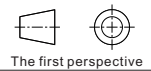


B Shape



1/8"

Unhardened gear accuracy JIS B 1702-1 Class 8
Hardened gear accuracy JIS B 1702-1 Class 9



Shaft Bore Specifications P Shape Selection

Straight Bore	Straight Bore+Tap	Keyway+Tap

- ① The Straight Bore+Tap is only suitable for B-shape.
- ② If the Keyway+Tap is A-shaped, there are no screw holes and set screws.
- ③ For Keyway dimensions, please refer to the product introduction.

Part Number		Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7} 1 mm Inc.		d	D	H	L	L ₁	M
Code	Module				Straight Bore	Keyway+Tap						
Straight Bore VNL02 VNL03 VNL11	2.0	12	20	A	8	8N	24	28	18	32	6	M5
		13			8~11	8N	26	30	20			
		14			8~15	8N~12N	28	32	20			
		15			8~16	8N~12N	30	34	24			
		16			8~19	8N~14N	32	36	25			
		17			8~21	8N~17N	34	38	28			
		18			8~23	8N~19N	36	40	30			
		19			8~25	8N~21N	38	42	31			
		20			8~28	8N~23N	40	44	33			
		21			8~31	8N~26N	42	46	34			
		22			8~33	8N~28N	44	48	36			
		23			8~35	8N~30N	46	50	37			
		24			8~38	8N~33N	48	52	40			
		25			8~40	8N~35N	50	54	42			
		26			8~42	8N~37N	52	56	44			
		27			8~45	8N~40N	54	58	45			
		28			8~48	8N~43N	56	60	48			
		29			8~50	8N~45N	58	62	47			
		30			8~52	8N~47N	60	64	48			
		32			10~35	10N~31N	64	68	50			
		34			10~36	10N~33N	66	70	52			
		35			10~38	10N~35N	68	72	54			
		36			10~40	10N~37N	70	74	55			
		38			10~42	10N~38N	72	76	55			
		40			10~45	10N~41N	76	80	58			
		42			10~48	10N~44N	80	84	60			
		44			10~50	10N~46N	84	88	62			
		45			10~52	10N~48N	88	92	64			
		46			10~55	10N~51N	90	94	65			
		48			10~58	10N~54N	92	96	65			
		50			10~60	10N~56N	96	100	68			
		52			10~62	10N~58N	100	104	70			
		54			10~65	10N~61N	104	108	72			
		55			10~68	10N~64N	108	112	74			
		56			10~70	10N~66N	110	114	75			
		58			10~72	10N~68N	112	116	75			
		60			10~75	10N~71N	116	120	78			
		62			10~78	10N~74N	120	124	80			
		64			10~80	10N~76N	124	128	82			
		65			10~82	10N~78N	128	132	84			
		66			10~85	10N~81N	130	134	85			
		68			10~88	10N~84N	136	140	88			
		70			10~90	10N~86N	140	144	90			
		72			10~92	10N~88N	144	148	92			
		75			10~95	10N~91N	150	154	95			
		80			10~100	10N~96N	160	164	100			
		85			10~105	10N~101N	170	174	105			
		90			10~110	10N~106N	180	184	110			
		95			10~115	10N~111N	190	194	115			
		100			10~120	10N~116N	200	204	120			



Code	Spec.						
HC90	Adds another set screw at 90° position ① Adds another set screw at 90° position. ② Not applicable to Shape A.						
HC120	Adds another set screw at 120° position ① Adds another set screw at 120° position. ② Not applicable to Shape A.						
MC()	Change Tapped Hole Dimensions ① Tapped hole designation table <table border="1"> <tr> <th>Number of Teeth</th><th>MC</th></tr> <tr> <td>15~24</td><td>M4 M6</td></tr> <tr> <td>25~60</td><td>M5 M8</td></tr> </table> ② Not applicable to Shape A.	Number of Teeth	MC	15~24	M4 M6	25~60	M5 M8
Number of Teeth	MC						
15~24	M4 M6						
25~60	M5 M8						



	Part Number	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7}	
Code	Module				Straight Bore + Tap	Keyway + Tap
VNL32	2.0	12	20	A	8	
VNL33	2.0	13	20	B	8~11	8N
		14				

VNL32-2.0-14-B20-B-P8N

Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7}	Optional Processing Code
VNL32	2.0	12	12	A	8	8N	HC90
VNL33	2.0	13	13	B	8~11	8N	HC120
VNL32-2.0-14-B20-B-P8N							MC()

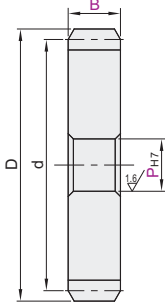
Discount price	Per 1~4 5~	Price 100% Additional quotation
Delivery	12	



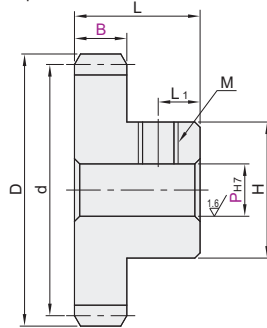
Code	Type	Material		Hardness	Surface Treatment
		GB	Equiv.		
VNP02	Straight Bore	45	S45C	—	Black Oxide
VNP03				HRC40~45	
VNP12				—	
VNP13	Straight Bore+Tap	45	S45C	HRC40~45	Black Oxide
VNP22				—	
VNP23	Keyway+Tap	—	—	HRC40~45	—

Gear Shape

A Shape

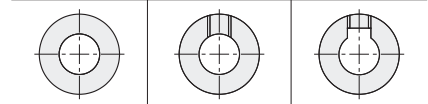


B Shape



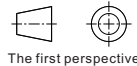
3.2/

Shaft Bore Specifications P Shape Selection



- ① The Straight Bore+Tap is only suitable for B-shape.
- ① If the Keyway+Tap is A-shaped, there are no screw holes and set screws.
- ① For Keyway dimensions, please refer to the product introduction.

Unhardened gear accuracy JIS B 1702-1 Class 8
Hardened gear accuracy JIS B 1702-1 Class 9



Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7} 1 mm Inc.		d	D	H	L	L ₁	M
						Straight Bore	Keyway+Tap						
Straight Bore VNP02 VNP03			12	25	A	8~13	8N	30	35	23	38	6.5	M5
			14			8~15	8N~12N	35	40	25			
			15			8~20	8N~15N	37.5	42.5	30			
			16			8~22	8N~17N	40	45	32			
			17			8~24	8N~19N	42.5	47.5	35			
			18			8~26	8N~22N	45	50	38			
			19			8~27		47.5	52.5	39			
			20			8~28	8N~23N	50	55	40			
			21			8~29	8N~25N	52.5	57.5	42			
			22			8~30	8N~27N	55	60	44			
			23			8~32	8N~28N	57.5	62.5	46			
			24			8~33	8N~30N	60	65	48			
			25			8~35	8N~31N	62.5	67.5	50			
			26			8~38	8N~35N	65	70	55			
			27			8~42	8N~38N	67.5	72.5	60			
			28					70	75				
			29			8~43	8N~39N	72.5	77.5	62			
			30			8~45	8N~41N	75	80	65			
			32			8~49	8N~45N	80	85				
			34					85	90	70			
Straight Bore + Tap VNP12 VNP13			35			10~49	10N~45N	87.5	92.5				
			36					90	95				
			38			10~52	10N~48N	95	100	75	42	8.5	
			40					100	105				
Keyway+Tap VNP22 VNP23			42	25	B			105	110				M6
			44			10~56	10N~50N	110	115	80			
			45					112.5	117.5				
			46					115	120				
			48			10~59		120	125				
			50			12~59	12N~50N	125	130				
			52					130	135				
			54					135	140				
			55			15~59	15N~50N	137.5	142.5				
			56					140	145				
			58					145	150				
			60					150	155	85			
			62					155	160				
			64					160	165				
			65					162.5	167.5				
			68			25~59	25N~50N	170	175				
			70					175	180				
			72					180	185				
			75					187.5	192.5				
			80					200	205				



Code	Spec.						
HC90	Adds another set screw at 90° position ① Adds another set screw at 90° position. ① Not applicable to Shape A.						
	Adds another set screw at 120° position ① Adds another set screw at 120° position. ① Not applicable to Shape A.						
MC()	Change Tapped Hole Dimensions ① Tapped hole designation table <table border="1"> <tr> <th>Number of Teeth</th><th>MC</th></tr> <tr> <td>15~24</td><td>M4 M6</td></tr> <tr> <td>25~50</td><td>M5 M8</td></tr> </table> ① Not applicable to Shape A.	Number of Teeth	MC	15~24	M4 M6	25~50	M5 M8
Number of Teeth	MC						
15~24	M4 M6						
25~50	M5 M8						



Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7}	Keyway+Tap
VNP02	2.5	12	25	A	8~13	8N	
VNP02	2.5	14	25	B	8~15	8N~12N	
VNP02	2.5	15	25	B	8~20	8N~15N	

VNP02-2.5-15-B-25-B-P8

Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7}	Keyway+Tap	Optional Processing
VNP22	2.5	12	25	A	8~13	8N		HC90 HC120
VNP22	2.5	14	25	B	8~15	8N~12N		MC()
VNP22	2.5	15	25	B	8~20	8N~15N		MC()

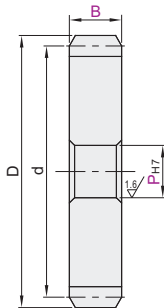
VNP22-2.5-15-B-25-B-P10N-HC90

Discount price	Per 1~4 5~	Price 100%	Additional quotation	Delivery 12
----------------	------------	------------	----------------------	-------------

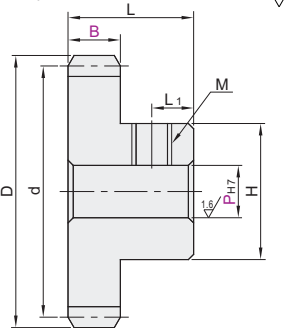
Code	Type	Material		Hardness	Surface Treatment
		GB	Equiv.		
VNR02	Straight Bore	45	S45C	—	Black Oxide
VNR03		0Cr18Ni9	SUS304	—	
VNR22	Straight Bore+Tap	45	S45C	HRC40~45	Black Oxide
VNR23		0Cr18Ni9	SUS304	—	
VNR31	Keyway+Tap	45	S45C	HRC40~45	Black Oxide
VNR42		0Cr18Ni9	SUS304	—	
VNR43	Keyway+Tap	45	S45C	HRC40~45	Black Oxide
VNR51		0Cr18Ni9	SUS304	—	

Gear Shape

A Shape

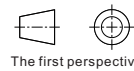


B Shape



3/2

Unhardened gear accuracy JIS B 1702-1 Class 8
Hardened gear accuracy JIS B 1702-1 Class 9



Shaft Bore Specifications P Shape Selection

Straight Bore	Straight Bore+Tap	Keyway+Tap

- ① The Straight Bore+Tap is only suitable for B-shape.
- ① If the Keyway+Tap is A-shaped, there are no screw holes and set screws.
- ① For Keyway dimensions, please refer to the product introduction.

Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7} 1 mm Inc.		d	D	H	L	L ₁	M
						Straight Bore	Keyway+Tap						
Straight Bore	VNR02 VNR03 VNR11	3.0	12			12~17	12N	36	42	27			
			14			12~22	12N~16N	42	48	32			
			15			12~24	12N~19N	45	51	35			M5
			16					48	54				
			17			12~28	12N~23N	51	57	40			
			18			12~30	12N~25N	54	60	44			
			19			12~31	12N~26N	57	63	45			
			20			12~35	12N~31N	60	66	50			
			21			12~36	12N~33N	63	69	52			
			22			12~37	12N~34N	66	72	54			
Straight Bore + Tap	VNR22 VNR23 VNR31	3.0	23			12~39	12N~35N	69	75	56			
			24			12~40	12N~37N	72	78	58			
			25			12~42	12N~38N	75	81	60			
			26					78	84				
			27			12~45	12N~42N	81	87	65			
			28			12~49	12N~45N	84	90	70			
			29					87	93				
			30					90	96	75			
			32		A	12~52	12N~48N	96	102				
			34					102	108				
Keyway+Tap	VNR42 VNR43 VNR51	3.0	35	30				105	111				
			36			12~56	12N~50N	108	114				
			38		B			114	120				
			40			12~59		120	126				M6
			42					126	132				
			44			20~59	20N~50N	132	138				
			45					135	141				
			46					138	144				
			48					144	150				
			50					150	156				
			52					156	162				
			54					162	168				
			55					165	171				
			56			25~59		168	174				
			58				25N~50N	174	180				
			60					180	186				
			62					186	192				
			64					192	198				
			65					195	201				
			68					204	210				
			70			25~63		210	216				
										90			



Code	Spec.						
HC90	Adds another set screw at 90° position ① Adds another set screw at 90° position. ① Not applicable to Shape A.						
	Adds another set screw at 120° position ① Adds another set screw at 120° position. ① Not applicable to Shape A.						
MC()	Change Tapped Hole Dimensions ① Tapped hole designation table <table> <tr> <th>Number of Teeth</th><th>MC</th></tr> <tr> <td>12~16</td><td>M4 M6</td></tr> <tr> <td>18~40</td><td>M5 M8</td></tr> </table> ① Not applicable to Shape A.	Number of Teeth	MC	12~16	M4 M6	18~40	M5 M8
Number of Teeth	MC						
12~16	M4 M6						
18~40	M5 M8						



Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7}	Keyway+Tap
VNR02	3.0	12	30	A	12~17	12N	
VNR11	3.0	14	30	B	12~22	12N~16N	
VNR22	3.0	15	30	B	12~24	12N~19N	

VNR02-3.0-15-B30-B-P12

Part Number	Code	Module	Number of Teeth	B	Gears Shape	Shaft Bore Dia. P _{H7}	Keyway+Tap	Optional Processing Code
VNR42	3.0	14	30	A	12~17	12N		HC90
VNR43	3.0	14	30	B	12~22	12N~16N		MC()
VNR43	3.0	14	30	B	12~24	12N~19N		

VNR42-3.0-15-B30-B-P12N-HC90

Discount price	Delivery
Per 1~4 5~	
Price 100% Additional quotation	12

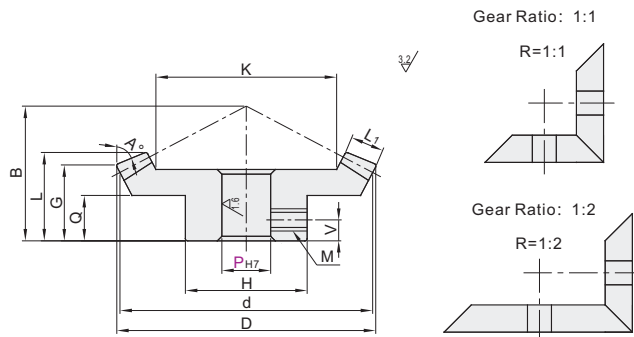
Straight Bevel Gears

◀ Module 1.0/1.5/2.0

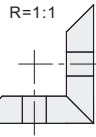
Pressure Angle 20°



Code	Type	Material		Surface Treatment
		GB	Equiv.	
VNY01	Straight Bore	45	S45C	Black Oxide
VNY11	Straight Bore + Tap			
VNY21	Keyway Bore + Tap			



Gear Ratio: 1:1



Gear Ratio: 1:2



Shaft Bore Specifications P Shape Selection		
Straight Bore	Straight Bore + Tap	Keyway Bore + Tap

① For Keyway dimensions, please refer to the product introduction.



Accuracy: JIS B 1704:1978(Class 4)

Part Number		Nominal	Shaft Bore Dia. P_{H7} 1 mm Inc.		Number of Teeth	Gear Ratio	Mating Gear Number	H	d	D	K	B	L
Code	Module		Straight Bore Straight Bore + Tap	Keyway Bore + Tap									
Straight Bore VNY01	1.0	2020	6~8	6~8	20	1:1	2020	16	20	21.41	11.8	21	14.53
		2525	6~10	8~10	25		2525	20	25	26.41	15	23	14.7
		3030	8~12	8~12	30		3030	22	30	31.41	19.4	26	15.89
		2040	6~8	6~8	20	1:2	4020	16	20	21.79	12.1	29.6	15.03
Straight Bore + Tap VNY11	1.5	4020	8~12	8~12	40		2040	25	40	40.89	28.4	21.8	15.02
		2020	10~12	10~12	20	1:1	2020	24	30	32.12	17.7	28	18.53
		2525	10~14	10~14	25		2525	30	37.5	39.62	23.7	34	21.26
		3030	12~16	12~16	30		3030	33	45	47.12	29.6	38	22.83
Keyway Bore + Tap VNY21	2.0	1836	8~12	8	18	1:2	3618	22	27	29.68	12.2	40.74	22.96
		3618	10~15	10~15	36		1836	30	54	55.34	34.3	26.75	18.54
		2020	12~14	12~14	20		2020	34	40	41.32	23.9	37	24
		2525	12~14	12~14	25	1:1	2525	42	50	51.33	32.3	40	23.34
		3030	16~18	16~18	30		3030	44	60	61.36	38.9	51	30.77
		1836	10	10	18	1:2	3618	28	36	37.81	19.1	53.12	29
		3618	12~14	12~14	36		1836	36	72	72.15	47.6	35.21	24.07

Part Number		Nominal	Number of Teeth	G	Q	V	L1	A	M
Code	Module								
Straight Bore VNY01	1.0	2020	20	11.71	9	4.5	4.3	49°3'	M4
		2525	25	11.21	8	4	5.3	48°51'	M5
		3030	30	11.71	8.9	4.5	6.2	47°42'	M5
		2040	20	10.05	8.6	4	5.7	29°8'	M4
Straight Bore + Tap VNY11	1.5	4020	40	12.69	8	4	5.7	66°0'	M5
		2020	20	14.06	10	5	6.8	49°3'	M4
		2525	25	16.31	11.5	5	7.5	48°51'	M5
		3030	30	16.56	12.34	6	9.3	47°42'	M5
Keyway Bore + Tap VNY21	2.0	1836	18	14.41	12.5	6	9.8	29°25'	M4
		3618	36	14.59	10	5	9.8	66°17'	M5
		2020	20	18.41	14	7	8.5	49°3'	M5
		2525	25	16.41	10.99	5	10.5	48°51'	M5
		3030	30	22.41	16.79	8	12.4	47°42'	M6
		1836	18	18.01	15.12	7	12.6	29°25'	M4
		3618	36	19	13	6.5	12.6	66°17'	M5

① Spiral bevel gears from different manufacturers may not mesh correctly.

② Specify 10K as the P dimension if keyway width of 4.0 mm (height 1.8 mm) for Keyway Bore + Tap with shaft bore diameter of 10 is desired.



Please order
as shown

Part Number	Code	Module	Nominal	Shaft Bore Dia. P_{H7}
VNY01	①	①	2020	6~8
VNY01	①	①	2525	6~10

VNY01 — 1.0 — 2020 — P8

② Optional Processing

Part Number	Code	Module	Nominal	Shaft Bore Dia. P_{H7}	Optional Processing Code
VNY01	①	①	2020	6~8	HC90
VNY01	①	①	2525	6~10	HC120

VNY11 — 1.0 — 2020 — P8 — HC90



Optional
Processing

Alterations	Adds another set screw at 90° position	Adds another set screw at 120° position
Code	HC90	HC120
Spec.	Ordering Code HC90 ① Adds another set screw at 90° position. ① Not applicable to Straight Bore.	Ordering Code HC120 ① Adds another set screw at 120° position. ① Not applicable to Straight Bore.



Discount price
Per 1~4 5~
Price 100% Additional
quotation



Delivery
10

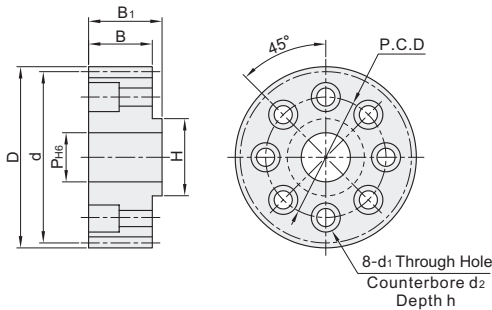
Ground Helical Gears/Ground Helical Racks

Ground Helical Gears

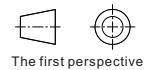
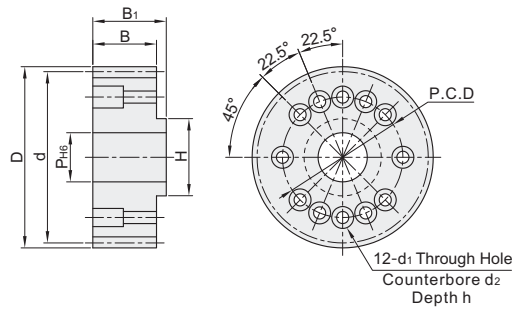
Code	Type	Material	Surface Treatment	Hardness	Left Helix Angle	Accuracy Grade
VNX01	Grinding Type	SCM440	—	HRC55~60	19°31'42"	JIS B 1702-1 Class 6



A Shape



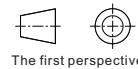
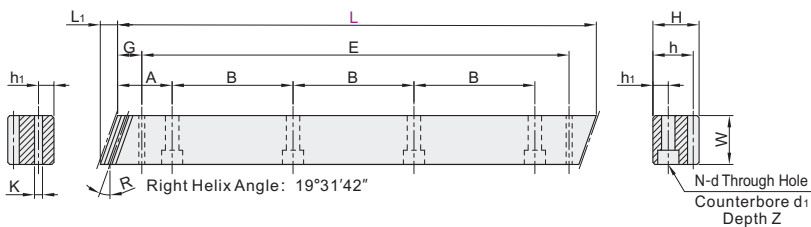
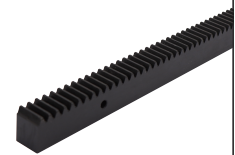
B Shape



Part Number		Number of Teeth	Gears Shape	P _{H6}	H	d	D	B	B ₁	d ₁	d ₂	h	P.C.D	Circumference L	Modification coefficient x	Weight kg
Code	Module															
VNX01	2.0	33	A Shape	20	31.5	71.6	75.3	26	30	6.6	11	14	50	220	0.3928	0.7
		37				80.2	84.06							246.76	0.4209	0.9
	3.0	40	B Shape	20	40	86.4	90.2	35	39	10	10	63	300	266.69	0.3792	1
		30				95.49	101.49							300	0	1.5

Ground Helical Racks

Code	Type	Material	Surface Treatment	Hardness	Right Helix Angle	Accuracy Grade
VNX51	Fine Milling Type	S45C	—	HRC50~55	19°31'42"	JIS B 1702-1 Class 9
VNX61	Grinding Type		Grinding			JIS B 1702-1 Class 6



Part Number		L	L ₁	Number of Teeth	W	H	h	A	B	Number of Holes N	h ₁	d	d ₁	Z	G	E	K
Code	Module																
VNX51 VNX61	2.0	500	8.5	75	24	24	22	62.5	125	4	8	7	11	7	31.7	436.6	5.7
		1000		150						8						936.6	
	3.0	500	10.3	50	29	29	26	62.5	125	4	9	10	15	9	35	430	7.7
		1000		100						8						930	

Ground Helical Gears

Part Number		Number of Teeth
Code	Module	
VNX01	2.0	33
		37

VNX01—2.0—33

VNX01—2.0—33

Ground Helical Racks

Part Number		L
Code	Module	
VNX51	2.0	500
		1000

VNX51—2.0—L500

VNX51—2.0—L500



Please order as shown



Discount price
Per 1~4 5~
Price 100% Additional quotation



Delivery
12

Code	Type	Material	Hardness	Surface Treatment
VNU01	L Dimension Configurable	S45C	—	Black Oxide
VNU02	L Dimension Configurable		HRC40~45	
VNU21	L Dimension Standard	S45C	—	Black Oxide
VNU22	L Dimension Standard		HRC40~45	

Unhardened gear accuracy JIS B 1702-1 Class 8

Hardened gear accuracy JIS B 1702-1 Class 9

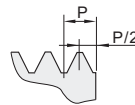
L Dimension Configurable

VNU01/02

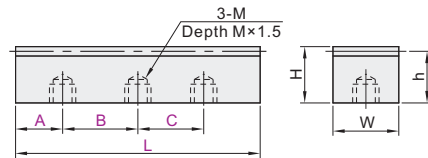
ZA (No Hole Machining)



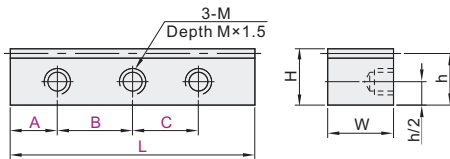
Enlarged View of End Face



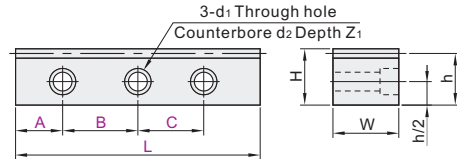
ZB(3 Screw Holes at the Bottom)



ZC(3 Screw Holes on the Side)



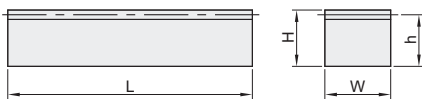
ZD(3 Counterbore on Side)



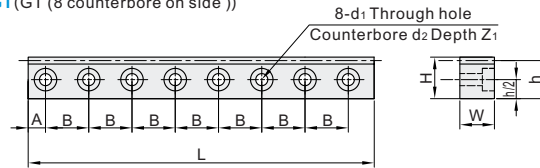
L Dimension Standard

VNU21/22

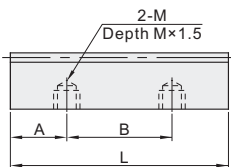
GA (No Hole Machining)



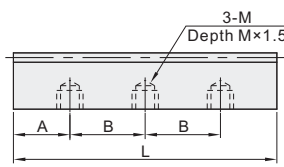
GT (GT (8 counterbore on side))



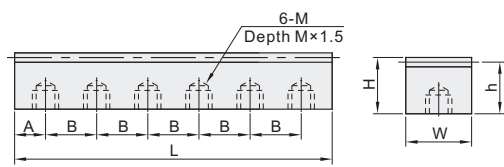
GB(2 Screw Holes at the Bottom)



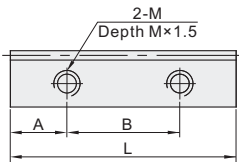
GC(3 Screw Holes at the Bottom)



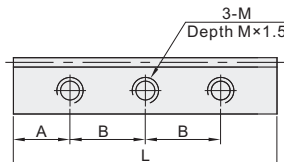
GQ(6 Screw Holes at the Bottom)



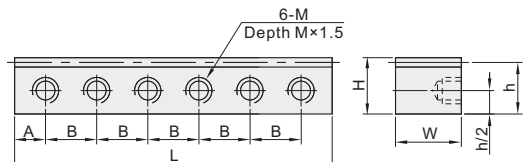
GD(2 Screw Holes on the Side)



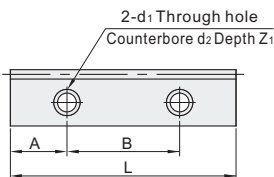
GE(3 Screw Holes on the Side)



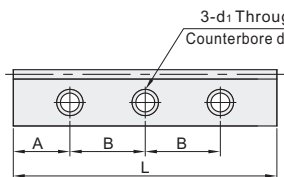
GR(6 Screw Holes on the Side)



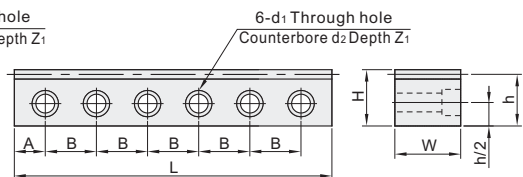
GF(2 Counterbore on Side)



GP(3 Counterbore on Side)



GS(6 Counterbore on Side)



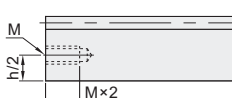
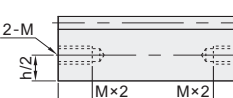
☑ L Dimension Configurable

Part Number			L	Hole Position A/B/C	P Pitch	W	H	h	d ₁	d ₂	Z ₁	M
Code	Module	Hole Machining										
VNU01 VNU02	1.0	ZA (No Hole Machining)	20~480	5~475	3.142	10	12	11	3.5	6.5	3.5	M3
	1.5	ZB (3 Screw Holes at the Bottom)			4.712	15	20	18.5	4.5	8	4.5	M4
	2.0	ZC (3 Screw Holes on the Side)			6.283	20	25	23	5.5	9.5	5.5	M5
	2.5	ZD (3 Counterbore on Side)			7.854	25	30	27.5	6.5	11	6.5	M6
	3.0				9.424	30	35	32	9	14	9	M8

☑ L Dimension Standard

Part Number Code	Module	Nominal	Hole Machining	Z Number of Effective Teeth	L	P Pitch	W	H	h	d ₁	d ₂	Z ₁	A	B	M	No. of Holes
VNU21 VNU22	1.0	100	GA	30	94.25	3.142	10	12	11	3.5	6.5	3.5	—	—	—	—
		300	GA	95	298.45								59.23	180	M3	2
			GB GD GF										—	—	—	—
		500	GA	159	499.51								69.76	180	M3	3
			GC GE GP										—	—	—	—
	1.5	1000	GA	318	999	4.712	15	20	18.5	4.5	8	4.5	62.42	124.88	—	8
			GT										—	—	—	—
		100	GA	21	98.96								—	—	—	—
			GB GD GF	63	296.88								58.44	180	M4	2
			GC GE GP	106	499.51								69.76	180	M4	3
	2.0	1000	GA	212	999.03	6.283	20	25	23	5.5	9.5	5.5	62.42	124.88	—	8
			GT										—	—	—	—
		100	GA	15	94.25								—	—	—	—
			GB GD GF	47	295.31								57.66	180	M5	2
			GC GE GP	79	496.37								68.19	180	M5	3
	2.5	1000	GA	160	1005.28	7.854	25	30	27.5	6.5	11	6.5	62.83	125.66	—	8
			GT										—	—	—	—
		100	GA	12	94.25								—	—	—	—
			GB GD GF	38	298.45								59.23	180	M5	2
			GC GE GP	63	494.8								67.4	180	M5	3
	3.0	1000	GA	128	1005.31	9.424	30	35	32	9	14	9	62.83	125.66	—	8
			GT										—	—	—	—
		100	GA	10	94.25								—	—	—	—
			GB GD GF	31	292.17								56.09	180	M5	2
			GC GE GP	53	499.51								69.76	180	M5	3
		1000	GA	108	1017.90								63.63	127.23	—	8

① GA (No Hole Machining), GB (2 Screw Holes at the Bottom), GC (3 Screw Holes at the Bottom), GD (2 Screw Holes on the Side), GE (3 Screw Holes on the Side), GF (2 Counterbore on Side), GP (3 Counterbore on Side), GQ (6 Screw Holes at the Bottom), GR (6 Screw Holes on the Side), GS (6 Counterbore on Side), GT (8 Counterbore on Side).

 Optional Processing	Alterations	One End Tapped	Both Ends Tapped													
	Code	MA ()	MB ()													
Spec.		Ordering Code MA4 <table><tr><th>Module</th><th>M Selection</th></tr><tr><td>1.0</td><td>3 4</td></tr><tr><td>1.5~3.0</td><td>4 5 6</td></tr></table>	Module	M Selection	1.0	3 4	1.5~3.0	4 5 6		Ordering Code MB3 <table><tr><th>Module</th><th>M Selection</th></tr><tr><td>1.0</td><td>3 4</td></tr><tr><td>1.5~3.0</td><td>4 5 6</td></tr></table>	Module	M Selection	1.0	3 4	1.5~3.0	4 5 6
	Module	M Selection														
1.0	3 4															
1.5~3.0	4 5 6															
Module	M Selection															
1.0	3 4															
1.5~3.0	4 5 6															

☑ L Dimension Standard

Part Number Code	Module	Nominal	Hole Machining
VNU21	1.0	100	GA
VNU22	1.5	300	GB GD

VNU21-1.0-300-GB

☑ Optional Processing

Part Number Code	Module	Hole Machining	L	Hole Position A/B/C	Optional Processing Code
VNU01	1.0	ZA	20~480	5~475	MA () MB ()
VNU02	1.5	ZB			

VNU01-1.0-ZB-L200-A30-B30-C30-MB4



Discount price	
Per	1~4 5~
Price	100% Additional quotation



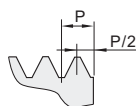
Delivery	
	10

Code	Type	Material	Hardness	Surface Treatment
VNU31	Number of Holes	S45C	—	Black Oxide
VNU32	Configurable Type		HRC40~45	

Unhardened gear accuracy JIS B 1702-1 Class 8

Hardened gear accuracy JIS B 1702-1 Class 9

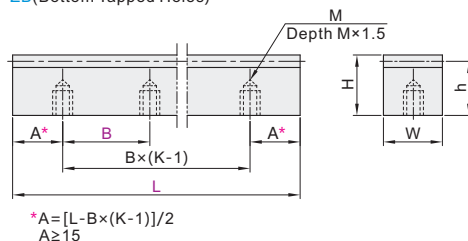
Enlarged View of End Face



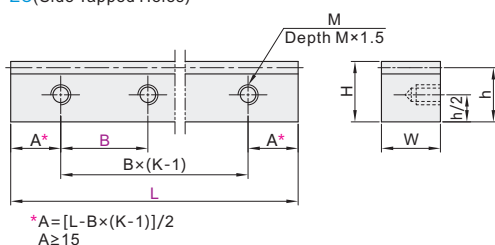
ZA (No Hole Machining)



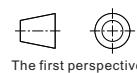
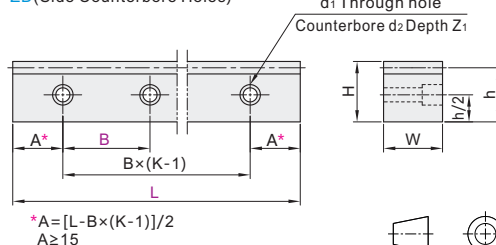
ZB (Bottom Tapped Holes)



ZC (Side Tapped Holes)



ZD (Side Counterbore Holes)



Part Number	Hole Machining	L Overall Length 1 mm Inc.	K No. of Holes	B Hole Pitch 1 mm Inc.	P Pitch	W	H	h	d ₁	d ₂	Z ₁	M (Coarse)
VNU31	1.0 ZA (No Hole Machining)	500~980	2~6		3.142	10	12	11	3.5	6.5	3.5	M3
VNU32	1.5 ZB (Bottom Tapped Holes)			50~500	4.712	15	20	18.5	5.5	9.5	5.5	M5
	2.0 ZC (Side Tapped Holes)	500~1980	2~12		6.283	20	25	23	6.5	11	6.5	M6
	2.5 ZD (Side Counterbore Holes)				7.854	25	30	27.5	9	14	9	M8
	3.0				9.424	30	35	32	11	17.5	11	M10



Optional Processing

Alterations	One End Tapped	Both Ends Tapped												
Code	MA ()	MB ()												
Spec.														
	Ordering Code MA4 <table><tr><th>Module</th><th>M Selection</th></tr><tr><td>1.0</td><td>3 4</td></tr><tr><td>1.5~3.0</td><td>4 5 6</td></tr></table>	Module	M Selection	1.0	3 4	1.5~3.0	4 5 6	Ordering Code MB3 <table><tr><th>Module</th><th>M Selection</th></tr><tr><td>1.0</td><td>3 4</td></tr><tr><td>1.5~3.0</td><td>4 5 6</td></tr></table>	Module	M Selection	1.0	3 4	1.5~3.0	4 5 6
	Module	M Selection												
1.0	3 4													
1.5~3.0	4 5 6													
Module	M Selection													
1.0	3 4													
1.5~3.0	4 5 6													



Please order as shown

Part Number	Hole Machining	L	K	B
VNU31	1.0 ZB	500~980	2~6	50~500
VNU32	1.0 ZB	500~980	2~6	50~500

VNU32-1.0-ZB-L500-K5-B50

Optional Processing

Part Number	Hole Machining	L	K	B	Optional Processing
VNU31	1.0 ZB	500~980	2~6	50~500	MA4
VNU32	1.0 ZB	500~980	2~6	50~500	MB ()

VNU32-1.0-ZB-L500-K5-B50-MA4



Discount price
Per 1~5 6~
Price 100% Additional quotation



Delivery
11