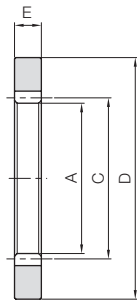




Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating

* The precision grade of products with a module of less than 0.8 is equivalent to the value shown in the table.



T1

Catalog Number	Module	No. of teeth	Shape	Outside dia.			Face width	Allowable torque (N·m)				Backlash (mm)	Weight (kg)
				A	C	D		Bending strength	Surface durability	Bending strength	Surface durability		
SI0.5-60	m0.5	60	T1	29	30	50	5	3.75	0.67	0.38	0.068	0.04~0.15	0.049
SI0.5-80		80		39	40	60		4.85	0.75	0.49	0.077		0.062
SI0.5-100		100		49	50	70		5.97	0.87	0.61	0.089		0.074
SI0.8-60	m0.8	60		46.4	48	75	15.4	2.87	1.57	0.29	0.16	0.05~0.16	0.16
SI0.8-80		80		62.4	64	90	19.9	3.24	2.03	0.33	0.20		
SI0.8-100		100		78.4	80	105	24.5	3.75	2.50	0.38	0.23		
SI1-60	m1	60		58	60	90	30.0	5.95	3.06	0.61	0.28	0.09~0.21	0.28
SI1-80		80		78	80	110	38.8	6.59	3.96	0.67	0.35		
SI1-100		100		98	100	130	47.8	7.64	4.87	0.78	0.43		
SI1.5-50	m1.5	50		72	75	115	87.1	20.9	8.88	2.13	0.70	0.11~0.25	0.70
SI1.5-60		60		87	90	130	101	20.6	10.3	2.10	0.81		
SI1.5-80		80		117	120	160	131	23.3	13.4	2.38	1.04		
SI1.5-100	100	147		150	190	161	27.0	16.5	2.75	1.26			
SI2-50	m2	50		96	100	150	206	50.3	21.0	5.13	1.54	0.12~0.28	1.54
SI2-60		60		116	120	170	240	50.5	24.5	5.15	1.79		
SI2-80		80	156	160	210	311	57.0	31.7	5.81	2.28			
SI2-100	100	196	200	250	382	65.7	39.0	6.70	2.77				
SI2.5-50	m2.5	50	120	125	185	403	101	41.1	10.3	2.87	0.14~0.31	2.87	
SI2.5-60		60	145	150	210	469	101	47.8	10.3	3.33			
SI2.5-80		80	195	200	260	607	114	61.9	11.6	4.25			
SI3-50	m3	50	144	150	220	697	178	71.0	18.1	4.79	0.15~0.35	4.79	
SI3-60		60	174	180	250	811	178	82.7	18.2	5.57			

- [Caution on Product Characteristics] ① The backlash values shown in the table are the theoretical values for the normal direction for the internal ring in mesh with an SS spur gear.
 ② The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 207 for more details.
 ③ Please check for the involute interference, trochoid interference and trimming interference prior to using internal gears.
- [Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 207) when performing modifications and/or secondary operations for safety concerns.
 KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.
 ② Avoid performing secondary operations that narrow the tooth width, as it affects precision and strength.

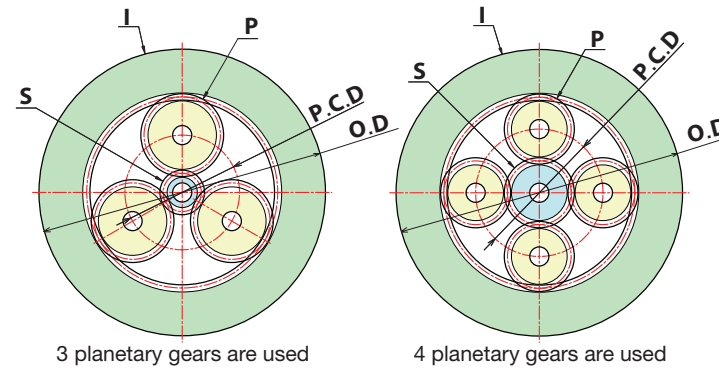
Ground internal gears are available.



Klingelberg Gear Grinding Machine VIPER 500W

Internal ground gear machining range	
Maximum gear accuracy	JIS B 1702-1:1998 Grade N5 (former JIS Grade 1)
Maximum module	About m4 (DP6, CP12), special sizes available
Max. helix angle	27°, right/left helix direction available
Maximum outer diameter	φ 500mm
Minimum inner diameter	φ 150mm
Maximum weight	500 kgf (jig weight included)

Planetary Gear Systems created by using KHK Stock Gears



3 planetary gears are used

4 planetary gears are used

KHK's stock internal and spur gears working together will allow you to create planetary gear devices. "In the table below, we introduce examples of planetary gear systems created with a stationary internal gear. When used as speed reducers, the input is the sun gear and the output is the carrier. "Selection of the number of teeth also enables you to create various planetary gear devices with different transmission

Speed ratio Note 1	Stock gears used in the system										Allowable transmission torque (kgf·m)				Total weight (kg)			
	Internal gears (I)			Planetary gears (P)				Sun gear (S)			Sun gear_T1		Planetary carrier_T2					
	OD(mm)	Catalog Number	No. of teeth	Catalog Number	No. of teeth	Quantity	P.C.D(mm)	Equal angles	Catalog Number	No. of teeth	Bending strength	Surface durability	Bending strength	Surface durability				
6	90	SI1-60	60	SSA1-24	24	3	36	120°	SSS1-12	12	0.58	0.0023	3.47	0.11	0.48			
	130	SI1.5-60		SSA1.5-24			54		SS1.5-12		1.77	0.0081	10.7	0.40	1.20			
	170	SI2-60		SSA2-24			72		SS2-12		4.21	0.020	25.2	0.99	2.66			
	210	SI2.5-60		SSA2.5-24			90		SS2.5-12		8.21	0.040	49.3	1.98	5.03			
	250	SI3-60		SSA3-24			108		SS3-12		14.2	0.070	85.2	3.49	8.57			
	110	SI1-80		SSA1-32			32		3		48	120°	SS1-16	16	0.99	0.0047	5.96	0.24
	160	SI1.5-80	SSA1.5-32	72	SS1.5-16	3.35		0.026		20.1	1.32		1.72					
	210	SI2-80	SSA2-32	96	SS2-16	7.95		0.064		47.7	3.22		3.85					
	260	SI2.5-80	SSA2.5-32	120	SS2.5-16	15.5		0.13		93.2	6.45		7.33					
	105	SI0.8-100	SS0.8-40A	40	4	48		90°		SS0.8-20A	20		0.95		0.0082	5.68	0.41	0.59
	130	SI1-100	SSA1-40			60				SS1-20			1.85		0.016	11.1	0.82	0.84
	190	SI1.5-100	SSA1.5-40			90	SS1.5-20		6.24	0.058		37.5	2.90	2.62				
250	SI2-100	SSA2-40	120			SS2-20	14.8		0.14	88.8		7.09	6.01					
60	SI0.5-80	SS0.5-30B	30			4	25		90°	SS0.5-20A		20	0.23	0.0012	1.13	0.070	0.12	
90	SI0.8-80	SS0.8-30C					40			SS0.8-20A			0.93	0.0050	4.65	0.30	0.40	
110	SI1-80	SSA1-30		50	SS1-20		1.82	0.010		9.08	0.60		0.59					
160	SI1.5-80	SSA1.5-30		75	SS1.5-20		6.13	0.035		30.63	2.13		1.86					
210	SI2-80	SSA2-30		100	SS2-20		14.5	0.087		72.6	5.21		4.18					
260	SI2.5-80	SSA2.5-30		125	SS2.5-20		28.4	0.17		142	10.4		7.97					
3	60	SI0.5-80	80	20	4	30	90°	SSG0.5-40B	40	0.46	0.0016	1.39	0.10	0.13				
	90	SI0.8-80				SS0.8-20A		48		SS0.8-40A	1.89	0.0068	5.68	0.41	0.35			
	110	SI1-80				SSA1-20		60		SS1-40	3.70	0.014	11.1	0.82	0.60			
	160	SI1.5-80				SSA1.5-20		90		SS1.5-40	12.5	0.048	37.5	2.91	1.77			
	210	SI2-80				SSA2-20		120		SS2-40	29.6	0.12	88.8	7.12	3.93			
	260	SI2.5-80				SSA2.5-20		150		SS2.5-40	57.8	0.24	173	14.3	7.47			
	70	SI0.5-100	SS0.5-25B	25	3	37.5	120°	SS0.5-50B	50	0.47	0.0020	1.42	0.12	0.16				
	130	SI1-100	SSA1-25			75		SS1-50		3.79	0.017	11.4	1.01	0.75				
	190	SI1.5-100	SSA1.5-25			112.5		SS1.5-50		12.8	0.060	38.4	3.58	2.24				
	250	SI2-100	SSA2-25			150		SS2-50		30.4	0.15	91.1	8.79	5.02				

Calculation of Allowable Transmission Torque

M ... Made to Order

One advantage of a planetary gear system is that they share load burdens by grouping multiple planetary gears. This enables high torque capacity transmission.

The following formula is the calculation method for T1 (Allowable transmission torque of Sun Gear) and T2 (Allowable transmission torque of Planetary Carrier), shown in the table.

$$T1 = Ts \cdot Zp \cdot \eta \quad (\text{kgf} \cdot \text{m}) \quad \dots (1)$$

$$T2 = Ts \cdot Zp \cdot u \cdot \eta \quad (\text{kgf} \cdot \text{m}) \quad \dots (2)$$

Here,

Ts : Allowable transmission torque for a Sun gear (kgf·m) on a meshed pair of sun gear and planetary gear.

For a sun gear meshed with a planetary gear, the number of revolutions is set to 100rpm.

Zp : Number of planetary gears used in the system

u : Speed ratio

η : Contact efficiency for torque transmission

In consideration of machining accuracy, variation in tooth thickness or other factors on the planetary carrier, the contact efficiency is set to 75%.