



Spur  
Gears

Helical  
Gears

Internal  
Gears

Racks

CP Racks  
& Pinions

Miter  
Gears

Bevel  
Gears

Screw  
Gears

Worm  
Gear Pair

Bevel  
Gearboxes

Other  
Products



## ■ Features

### Characteristics of Pawls and Ratchets

- A simple structure used to restrict the rotational direction in one-way.
- The tips of pawls and the teeth of ratchets are induction hardened and therefore have superior durability.

## ■ Points to observe during use

- No secondary operations can be performed on tooth areas including the bottom land (approx. 1 to 2 mm), due to gear teeth induction hardened.
- The pawls are designed to prevent reverse rotation. They are not suitable for use as driving ratchets or driving rotation.
- SRT2/ 3-C is manufactured using a lost wax casting method.
- Regarding SRTB ratchets with hubs, please note the direction of teeth, viewing from the hub side. KHK can produce ratchets which have the teeth pointed in the opposite direction as a custom order item.

### ■ Bending strength of Ratchets

The allowable transmission forces  $F_b$  (N) of ratchets is the value calculated by the following formula.

$$F_b = \sigma_b \cdot \frac{b \cdot e^2}{6} \cdot \frac{1}{h} \cdot \frac{1}{S_F}$$

Also, the SRT Ratchet's allowable torque  $T$  (N · m) for bending strength is calculated by the following formula.

$$T = F_b \cdot r_f$$

Where

$\sigma_b$  = Bending stress (Assumed 225.55MPa)

$b$  = Face width E (mm)

$e$  = Root length (mm)

$$e = \text{Depth of teeth } (h) \times \tan\left(60 - \frac{360}{\text{No. of teeth } (z)}\right)$$

$h$  = Depth of teeth (H) (mm)

$S_F$  = Safety factor (Assumed 2)

$r_f$  = Tooth root radius (m)

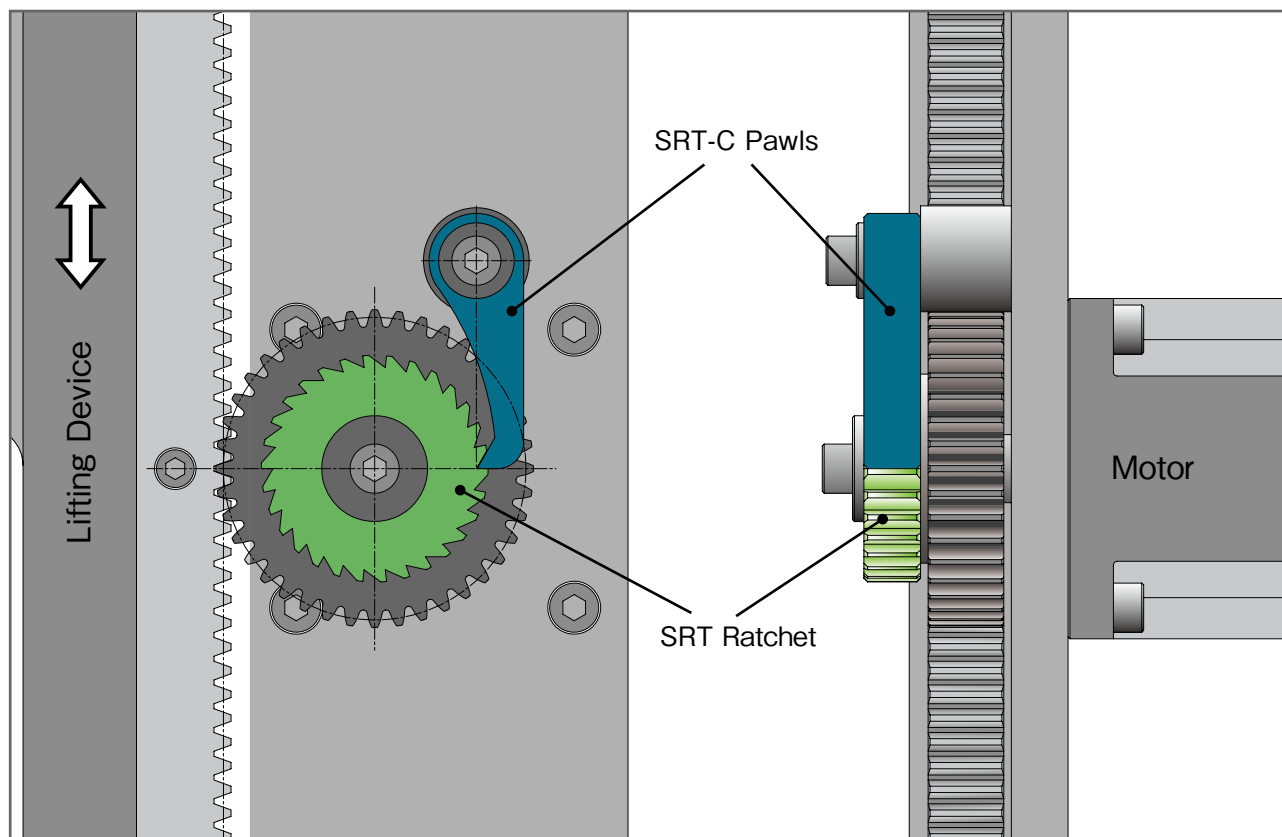
$$\rightarrow r_f = \frac{\text{Outside dia. } D - (2 \cdot h)}{2000}$$



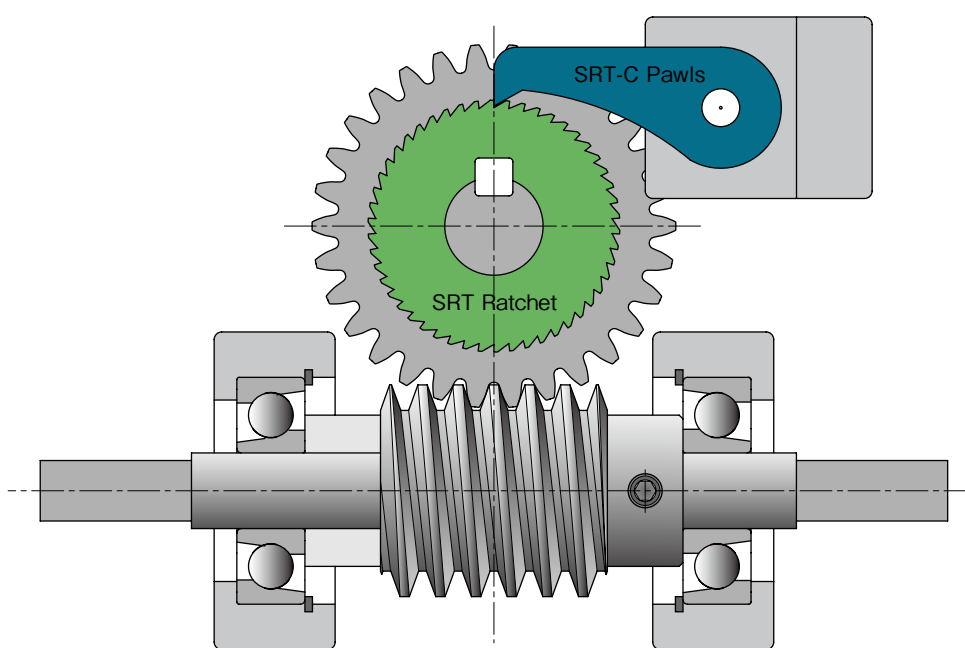
Assembly example: KHK Stock Gears Sample Units

Application

\* The illustration is a design example, not a design for machinery or a device in actual use.



Example: SRT Ratchets used as a free-fall prevention mechanism of a lift device\*



Example: ratchets used for complete reverse prevention of worm gears \*

Spur Gears

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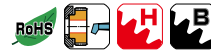
Bevel Gears

Screw Gears

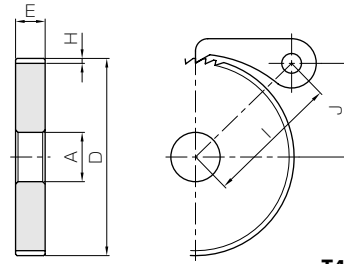
Worm Gear Pair

Bevel Gearboxes

Other Products



Specifications	
Angle of teeth	60°
Material	S45C
Heat treatment	Induction hardened teeth
Tooth hardness	45 ~ 55HRC



T4

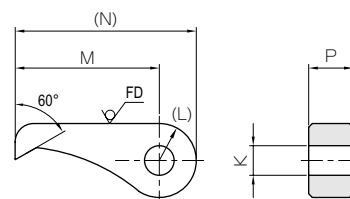
Catalog No.	Pitch	No. of teeth	Shape	Bore	Hub dia.	Outside dia.	Face width	Hub width	Total length	Depth of teeth	Center distance	Mounting distance																					
				A	B	D	E	F	G	H	I	J																					
SRT2/3-50 SRT2/3-60 SRT2/3-80 SRT2/3-90 SRT2/3-100	2.09	50 60 80 90 100	T4	10 10 12 12 12	—	33.3 40 53.3 60 66.6	6	—	6	1	33.84 35.51 39.48 41.73 44.11	15.67 19 25.67 29 32.33																					
SRT1-50 SRT1-60 SRT1-80 SRT1-90 SRT1-100		3.14		50 60 80 90 100		T4					12 15 15 15 15	—	50 60 80 90 100	12	—	12	1.6	45.48 48.24 54.73 58.35 62.16	23.4 28.4 38.4 43.4 48.4														
SRT2-30 SRT2-40 SRT2-50 SRT2-60				6.28							30 40 50 60		T4					15 15 15 15	—	60 80 100 120	15	—	15	3.1	61.23 66.23 72.28 79.14	26.9 36.9 46.9 56.9							
SRT3-30 SRT3-40 SRT3-50											9.42							30 40 50		T4					15 20 20	—	90 120 150	20	—	20	5	76.32 85.15 95.52	40 55 70
SRT4-30 SRT4-40 SRT4-50																		12.56							30 40 50		T4					20 20 20	—
SRTB2/3-50 SRTB2/3-60 SRTB2/3-80 SRTB2/3-90 SRTB2/3-100	2.09		50 60 80 90 100		T9		10 10 12 12 12	—	33.3 40 53.3 60 66.6	6															10							16	
SRTB1-50 SRTB1-60 SRTB1-80 SRTB1-90 SRTB1-100		3.14	50 60 80 90 100			T9	12 15 15 15 15		—		35 40 50 50 50	12		12	24	1.6	45.48 48.24 54.73 58.35 62.16			23.4 28.4 38.4 43.4 48.4													
SRTB2-30 SRTB2-40 SRTB2-50 SRTB2-60			6.28	30 40 50 60			T9				15 15 15 15		—				50 60 80 65	15	14	29	3.1	61.23 66.23 72.28 79.14	26.9 36.9 46.9 56.9										
SRTB3-30 SRTB3-40 SRTB3-50				9.42							30 40 50						T9					15 20 20	—	75 80 85		20	16	36	5	76.32 85.15 95.52	40 55 70		
SRTB4-30 SRTB4-40 SRTB4-50											12.56											30 40 50		T9						20 20 20	—		90 90 100

(Caution on Product Characteristics) ① Regarding SRTB ratchets with hubs, please note the direction of teeth, viewed from the hub side. KHK can produce ratchets that have teeth pointed in the opposite direction as a custom order item.  
 (Caution on Secondary Operations) ① Due to gear teeth induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 1 to 2 mm).

SRT-C  
Pawls



Specifications	
Angle of teeth	60°
Material	S45C
Heat treatment	Induction hardened teeth
Tooth hardness	42 ~ 55HRC



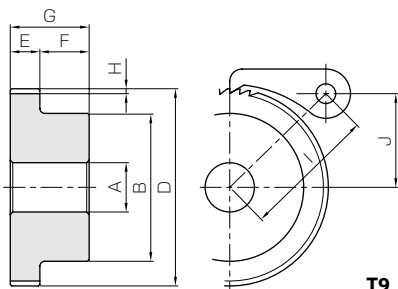
\* FD has die-forged finish.

T5

Catalog No.	Shape	K	(L)	M	(N)	P	Weight (kg)
SRT2/3-C	T5	5	(8)	30	(38)	6	0.020
SRT1-C		8	(10)	39	(49)	12	0.057
SRT2-C		10	(12.5)	55	(67.5)	15	0.13
SRT3-C		12	(15)	65	(80)	20	0.23
SRT4-C		13	(18)	80	(98)	25	0.38

(Caution on Product Characteristics) ① The pawls are designed to prevent reverse rotation. They are not suitable for use as driving ratchets or driving rotation.  
 ② SRT2/3-C is manufactured using a lost wax casting method.

Ratchets



Allowable torque (N · m)	Allowable torque (kgf · m)	Weight (kg)	Catalog No.
Bending strength	Bending strength		
3.07	0.31	0.035	<b>SRT2/3-50</b>
4.10	0.42	0.053	<b>SRT2/3-60</b>
6.00	0.61	0.096	<b>SRT2/3-80</b>
7.11	0.73	0.12	<b>SRT2/3-90</b>
8.24	0.84	0.15	<b>SRT2/3-100</b>
14.7	1.50	0.16	<b>SRT1-50</b>
19.5	1.99	0.24	<b>SRT1-60</b>
29.4	3.00	0.44	<b>SRT1-80</b>
34.5	3.52	0.56	<b>SRT1-90</b>
39.4	4.02	0.70	<b>SRT1-100</b>
29.0	2.96	0.28	<b>SRT2-30</b>
49.2	5.02	0.53	<b>SRT2-40</b>
70.8	7.22	0.85	<b>SRT2-50</b>
94.3	9.61	1.24	<b>SRT2-60</b>
92.6	9.44	0.86	<b>SRT3-30</b>
158	16.1	1.58	<b>SRT3-40</b>
229	23.3	2.54	<b>SRT3-50</b>
226	23.0	1.89	<b>SRT4-30</b>
385	39.3	3.53	<b>SRT4-40</b>
559	57.0	5.66	<b>SRT4-50</b>
3.07	0.31	0.067	<b>SRTB2/3-50</b>
4.10	0.42	0.10	<b>SRTB2/3-60</b>
6.00	0.61	0.16	<b>SRTB2/3-80</b>
7.11	0.73	0.21	<b>SRTB2/3-90</b>
8.24	0.84	0.24	<b>SRTB2/3-100</b>
14.7	1.50	0.24	<b>SRTB1-50</b>
19.5	1.99	0.34	<b>SRTB1-60</b>
29.4	3.00	0.61	<b>SRTB1-80</b>
34.5	3.52	0.73	<b>SRTB1-90</b>
39.4	4.02	0.87	<b>SRTB1-100</b>
29.0	2.96	0.47	<b>SRTB2-30</b>
49.2	5.02	0.82	<b>SRTB2-40</b>
70.8	7.22	1.14	<b>SRTB2-50</b>
94.3	9.61	1.59	<b>SRTB2-60</b>
92.6	9.44	1.40	<b>SRTB3-30</b>
158	16.1	2.17	<b>SRTB3-40</b>
229	23.3	3.22	<b>SRTB3-50</b>
226	23.0	2.75	<b>SRTB4-30</b>
385	39.3	4.38	<b>SRTB4-40</b>
559	57.0	6.72	<b>SRTB4-50</b>

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