



■ 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. 2 to 3 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)

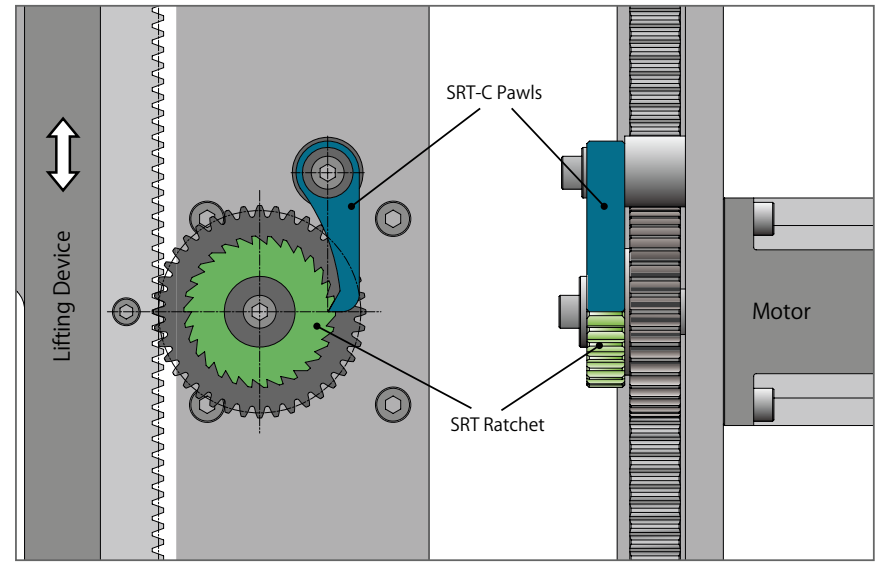
$$\rightarrow r_f = \frac{\text{Outside dia. } D - (2 \cdot h)}{2000}$$



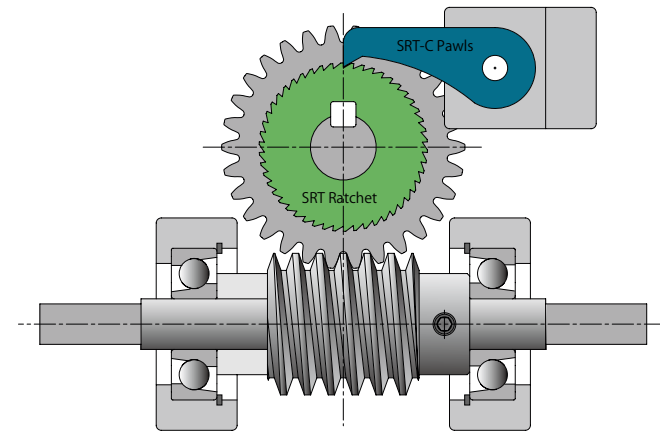
Assembly example: KHK Stock Gears Sample Units

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\*

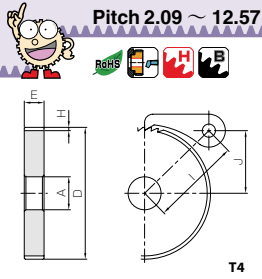


Example: ratchets used for complete reverse prevention of worm gears\*

# SRT Ratchets



Specifications	
Angle of teeth	60°
Material	S45C
Heat treatment	Induction hardened teeth
Tooth hardness	50 ~ 60HRC



Pitch 2.09 ~ 12.57



Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

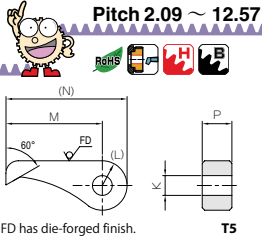
Bevel Gearboxes

Other Products

# SRT-C Pawls



Specifications	
Angle of teeth	60°
Material	S45C
Heat treatment	Induction hardened teeth
Tooth hardness	50 ~ 60HRC



Pitch 2.09 ~ 12.57

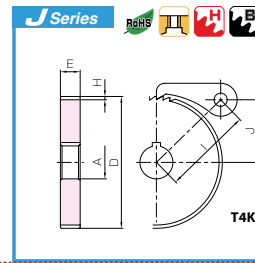


\* FD has die-forged finish.

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.

SRT



J Series



Ratchets  
Newly added



To order J Series products, please specify; Catalog No. + J + BORE

Bore	* The product shapes of J Series items are identified by background color.																		
Keyway Js9	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Screw size	4 x 1.8			5 x 2.3			6 x 2.8			8 x 3.3			10 x 3.3			12 x 3.3		14 x 3.8	
Catalog No.	-																		
SRT2/3-50 J BORE																			
SRT2/3-60 J BORE																			
SRT2/3-80 J BORE																			
SRT2/3-90 J BORE																			
SRT2/3-100 J BORE																			
SRT1-50 J BORE																			
SRT1-60 J BORE																			
SRT1-80 J BORE																			
SRT1-90 J BORE																			
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- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within 2 working-days (excludes the day ordered), after placing an order. Please allow additional shipping time to get to your local distributor.
  - ② Number of products we can process for one order is 1 to 20 units. For quantities of 21 or more pieces, we need to quote price and lead time.
  - ③ Keyways are made according to JIS B1301 standards, Js9 tolerance.
  - ④ Certain products which would otherwise have a very long tapped hole are conterbored to reduce the length of the tap.
  - ⑤ Areas of products which have been re-worked will not be black oxide coated.
  - ⑥ For products having a tapped hole, a set screw is included.

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

Bevel Gearboxes

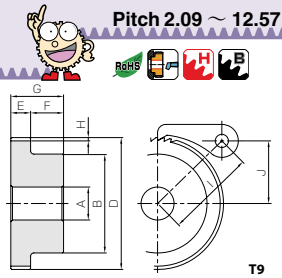
Other Products

SRT-C  
Pawls

# SRTB Ratchets



Specifications	
Angle of teeth	60°
Material	S45C
Heat treatment	Induction hardened teeth
Tooth hardness	50 ~ 60HRC
Screw offset (K)	Half of (F)

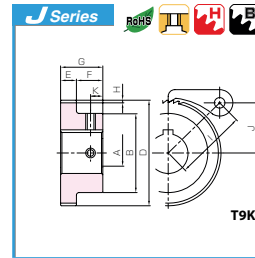


Pitch 2.09 ~ 12.57



# SRTB

Ratchets  
Newly added



To order J Series products, please specify; Catalog No. + J + BORE

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	Allowable torque (N · m)	Allowable torque (kgf · m)	Weight (kg)
				A	B	D	E	F	G	H	I	J	Bending strength	Bending strength	
SRTB2/3-50	2.09	50	T9	10	25	33.3	6	10	16	1	33.84	15.67	3.07	0.31	0.067
SRTB2/3-60		60		30	40	35.51					19	4.10	0.42	0.10	
SRTB2/3-80		80		12	35	53.3					39.48	25.67	6.00	0.61	0.16
SRTB2/3-90		90		12	40	60					41.73	29	7.11	0.73	0.21
SRTB2/3-100		100		12	40	66.6					44.11	32.33	8.24	0.84	0.24
SRTB1-50	3.14	50	T9	12	35	50	12	12	24	1.6	45.48	23.4	14.7	1.50	0.24
SRTB1-60		60		15	40	60					48.24	28.4	19.5	1.99	0.34
SRTB1-80		80		15	50	80					54.73	38.4	29.4	3.00	0.61
SRTB1-90		90		15	50	90					58.35	43.4	34.5	3.52	0.73
SRTB1-100		100		15	50	100					62.16	48.4	39.4	4.02	0.87
SRTB2-30	6.28	30	T9	15	50	60	15	14	29	3.1	61.23	26.9	29.0	2.96	0.47
SRTB2-40		40		15	60	80					66.23	36.9	49.2	5.02	0.82
SRTB2-50		50		15	60	100					72.28	46.9	70.8	7.22	1.14
SRTB2-60		60		15	65	120					79.14	56.9	94.3	9.61	1.59
SRTB3-30	9.42	30	T9	15	75	90	20	16	36	5	76.32	40	92.6	9.44	1.40
SRTB3-40		40		20	80	120					85.15	55	158	16.1	2.17
SRTB3-50		50		20	85	150					95.52	70	229	23.3	3.22
SRTB4-30	12.57	30	T9	20	90	120	25	18	43	7.4	95.74	52.6	226	23.0	2.75
SRTB4-40		40		20	90	160					108.03	72.6	385	39.3	4.38
SRTB4-50		50		20	100	200					122.37	92.6	559	57.0	6.72

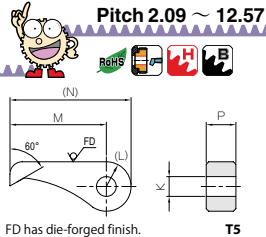
**Caution on Product Characteristics:** ① Regarding SRTB ratchets with hubs, please note the direction of teeth, viewed from the hub side. KHK can produce ratchets that have teeth pointed in the opposite direction as a custom order item.  
② Due to heat treating, some deformation of the bore may occur. It may be necessary to ream the bore to bring to the stated dimensions.

**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. 2 to 3 mm).

# SRT-C Pawls



Specifications	
Angle of teeth	60°
Material	S45C
Heat treatment	Induction hardened teeth
Tooth hardness	50 ~ 60HRC



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Catalog No.	—																			
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SRTB2/3-80 J BORE																				
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