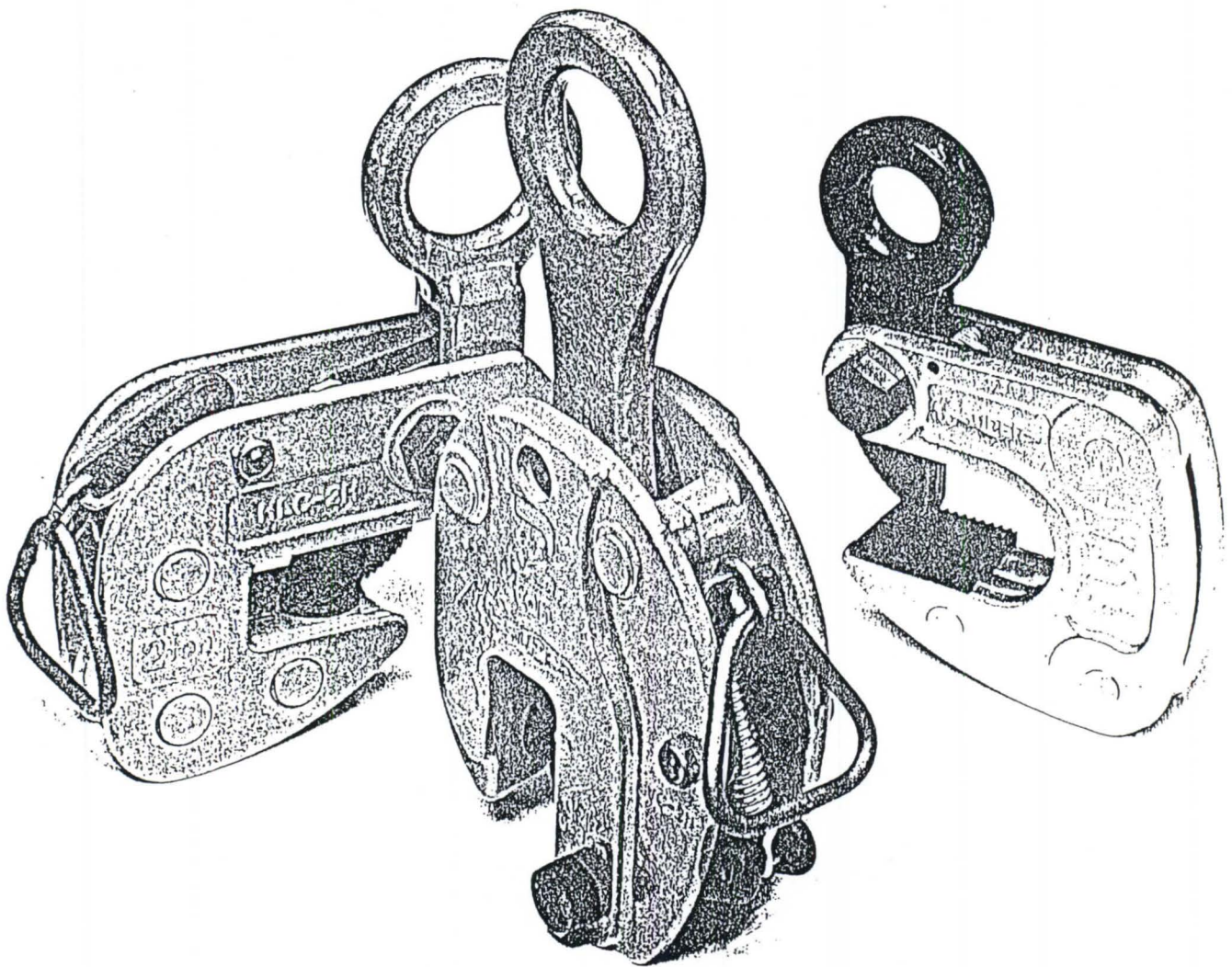


SAFETY LIFTING CLAMPS



INSTRUCTION FOR OPERATION
OF
"SUPER" BRAND
LIFTING CLAMPS



SUPER TOOL CO., LTD.

OSAKA, JAPAN

I N S T R U C T I O N S F O R U S E

Keep these instructions within easy access of operations.

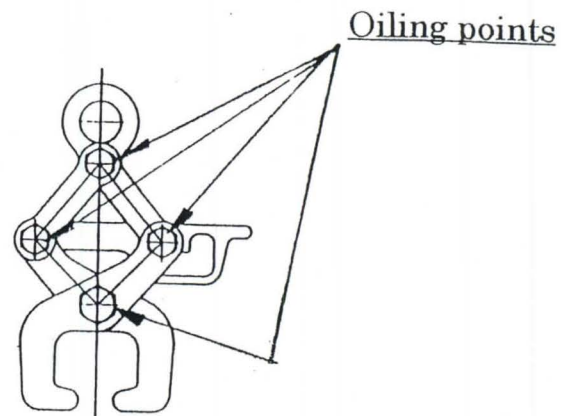
It is important that operators understand these warnings and instructions before using.

WARNINGS

- Use with a pair always.
- Do not use clamp for others than applicable rail.
- Do not hit clamps and rail to obstacles during transporting.
- All personnel must stand clear of load while it is being lifted or moved.
- Transport rail smoothly and do not make sudden start or stop.
- Never put your finger into the groove hole for link support pin.
- When there is something wrong in movement, do not use clamp.
- Do not modify clamp by welding or likes.
- Oil at the joints occasionally as shown in Fig below.

RAIL CLAMP

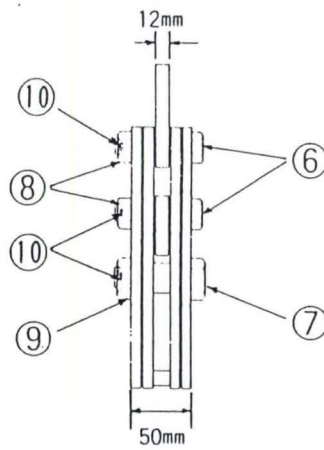
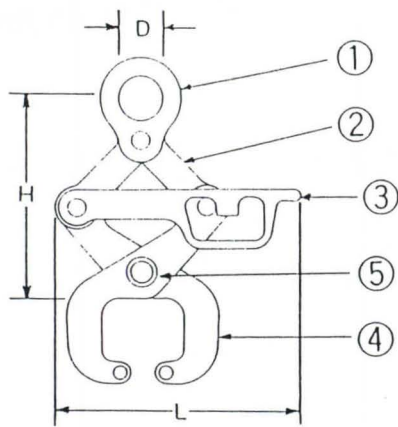
MODEL : R G C



Dimensions in mm

Item No.	Capacity (ton)	Applicable rail (size)	H	L	Weights (kg)
RGC 10	1	6 kg, 9 kg, 10 kg	198	205	5
RGC 15	1	12 kg, 15 kg, 22 kg	198	205	5
RGC 30	1	30 kg, 37 kg	198	205	5
RGC 50	1	40 kgN, 50 kg, 50 kgN, 60 kg	198	205	5
RGC 75	1	CR73K, CR74K	228	238	5
RGC 100	1	CR100K, CR101K	234	253	5





NO.	Part name	NO.	Part name
1	Shackle	6	Support bolt
2	Link	7	Support Bolt (Large)
3	Lever	8	Castle nut
4	Claw	9	Castle nut (Large)
5	Collar	10	Sprit pin

RAILCLAMP

Model No. RGC

OPERATING METHOD

1. Install crane hook and shackle link of clamp with shackle, wire rope or likes.
2. In case of Fig. 1, start to operate from procedure No.4.

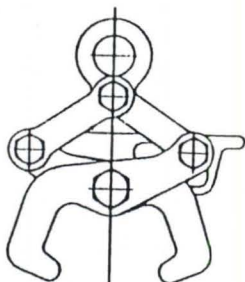


Fig. 1

3. In case of Fig. 2, after landing clamp, pulling the lever up to the direction of arrow and lowering shackle link, the gripping claws are open and in the state as shown in Fig. 1.

Caution: Never put your finger into the groove hole for link support pin as the gripping claws are releasing when pulling the lever up.

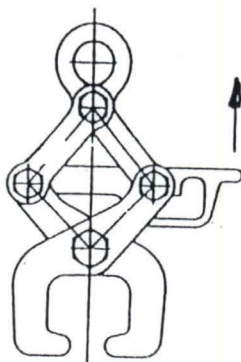


Fig. 2

4. In the state as shown in Fig. 1, lift and move clamp onto rail.

At that time, match centers of clamp and rail as shown in Fig. 3 and land clamp slowly onto rail as shown in Fig.4.

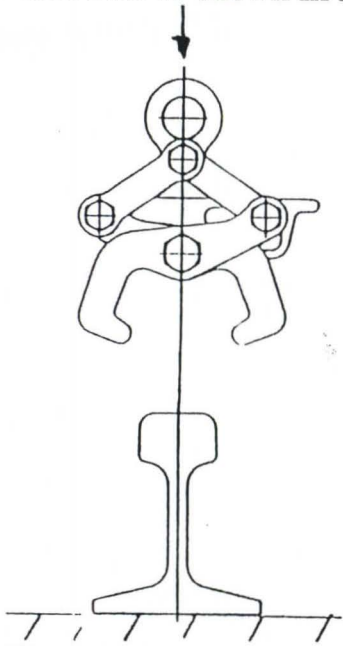


Fig. 3

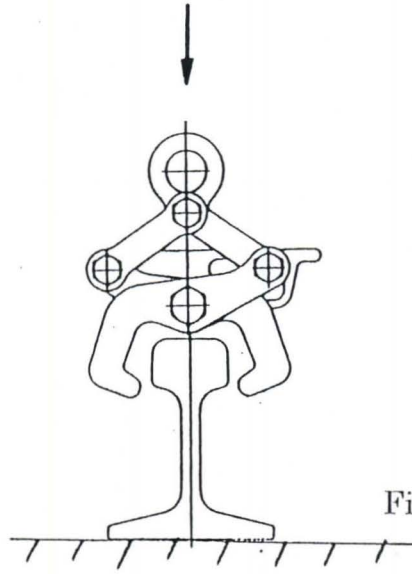


Fig. 4

5. On pulling the lever up to the direction of arrow and winding the crane hook up slowly, rail is gripped as shown in Fig. 5.

And then push the lever down to the direction of arrow and wind the crane hook up further to be lifted in the state as shown in Fig. 6.

(After confirmed that the clamp has positive grip, lift and move it to the destination)

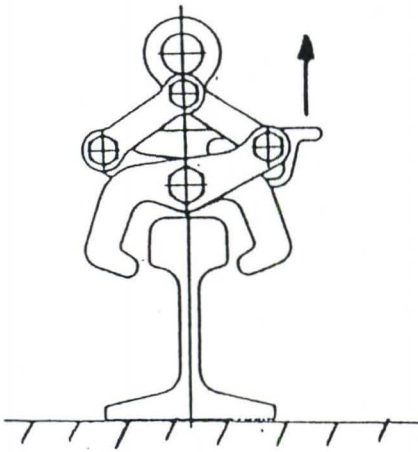


Fig. 5

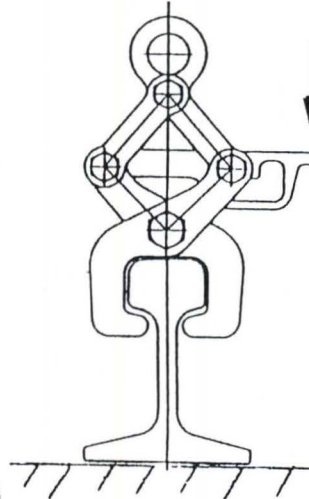
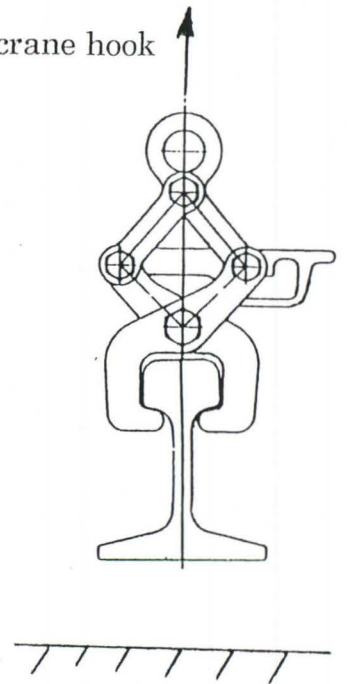


Fig. 6



6. During transporting, do not hit clamp and rail to obstacles. When reached the destination, wind the crane hook down as shown in Fig. 7 and land rail slowly. (Make sure that the land has been completely stabilized)

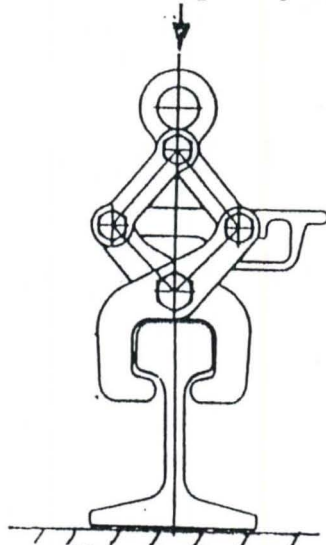


Fig. 7

7. After landed completely, on pulling the lever up to the direction of arrow and pushing the crane hook down, the gripping claws are open and in the state as shown in Fig.8.

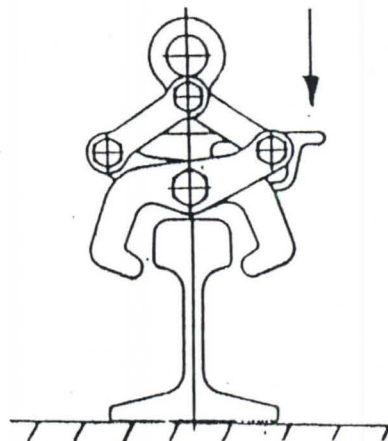
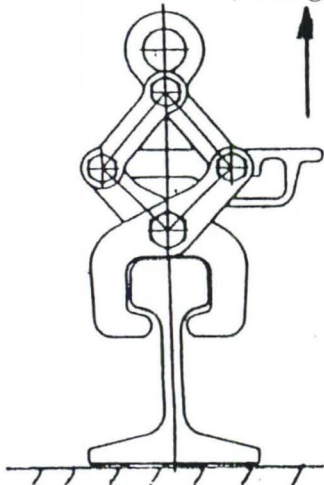


Fig. 8

8. Wind the crane hook up and then only clamp goes up as shown in Fig. 9.

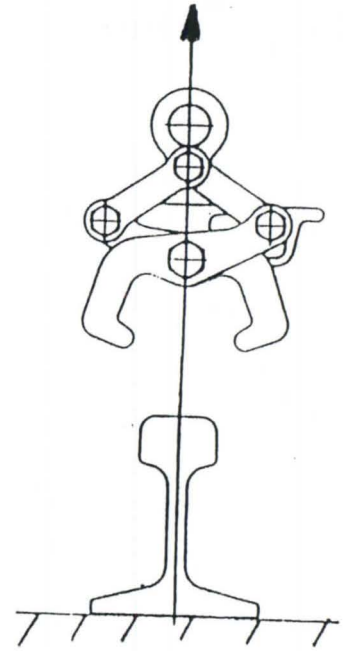


Fig. 9

9. Repeat the same procedure from No. 4 for continuous work.

LIFTING ANGLE AND SAFE LOAD OF WIRE ROPE

The maximum allowable load ((safe load)) of wire rope also varies with the lifting angle.
Therefore, select a wire rope of proper diameter in consideration of the lifting angle.
((The breakage load specified in the table below refers to No.4. 6 x 24A class of JIS G 3525.))

Correlation between Lifting Angle and Safe Load of Wire Rope (in two-point lifting)

D Wire rope dia (mm)	σ Breakage load (tons)	W Safe load (on one rope) W=σ/S (safely factor S=6) (tons)						
			(Changes in lifting efficiency due to lifting angle, %)					
			100%	96%	92%	86%	70%	50%
Max. allowable load (safe load) on two wire ropes (tons)								
8	3.21	0.54	1.08	1.04	0.99	0.93	0.76	0.54
9	4.06	0.68	1.36	1.31	1.25	1.17	0.95	0.68
10	5.02	0.84	1.68	1.61	1.55	1.44	1.18	0.84
11.2	6.29	1.05	2.1	2.02	1.93	1.81	1.47	1.05
12.5	7.84	1.31	2.62	2.52	2.41	2.25	1.83	1.31
14	9.83	1.64	3.28	3.15	3.02	2.82	2.3	1.64
16	12.8	2.13	4.26	4.09	3.92	3.66	2.98	2.13
18	16.2	2.7	5.4	5.18	4.97	4.64	3.78	2.7
20	20.1	3.35	6.7	6.43	6.16	5.76	4.69	3.35
22.4	25.2	4.2	8.4	8.06	7.73	7.22	5.88	4.2
25	31.3	5.22	10.44	10.02	9.6	8.98	7.31	5.22
28	39.3	6.55	13.1	12.58	12.05	11.27	9.17	6.55
30	45.1	7.52	15.04	14.44	13.84	12.93	10.53	7.52
31.5	49.8	8.3	16.6	15.94	15.27	14.28	11.62	8.3
33.5	56.3	9.38	18.76	18.01	17.26	16.13	13.13	9.38
35.5	63.2	10.53	21.06	20.22	19.38	18.11	14.74	10.53

Note: For four-point lifting, multiply the corresponding figure in the table by 2 to find the maximum allowable load (safe load).

Simplified calculation method of wire rope diameter and safe load (one-point lifting)

1) $D = \sqrt{W \times C}$

2) $W = \frac{D^2}{C}$

Where D : wire rope diameter(mm)

W : safe load (tons)

C : constant=120

(safety factor S=6)

★To find the diameter of wire rope for 3 tons:

① $D = \sqrt{W \times C}$

$D = \sqrt{3 \times 120} = \sqrt{360} = 19 \rightarrow 20 \text{ mm}$

★To find the service load (safe load) on 25mm diameter wire rope:

② $W = \frac{D^2}{C}$

$W = \frac{25^2}{120} = \frac{625}{120} = 5.2 \rightarrow 5.2 \text{ ton}$

Select the type and capacity best suited to the job. Check periodically, repair and replace parts, and use correctly in order to use the clamps over the full service life, safely.

Common Check Points

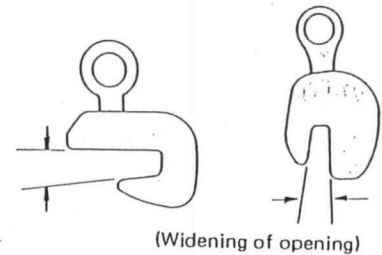
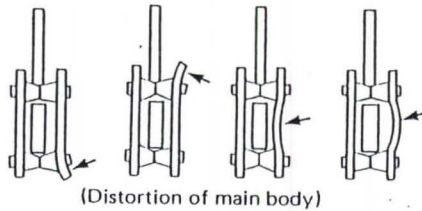
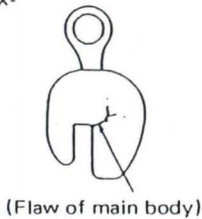
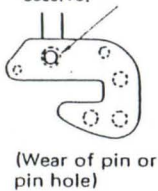
- ★ Check the main body for distortion or flaw.
- ★ Make sure the opening is normal (check if widened).
- ★ Check if the shackle is distorted.
- ★ Check the shackle pin hole for widening or looseness.
- ★ Check cam and pad teeth for defect or wear.
- ★ Check cam pin hole in main body for widening.
- ★ Check if cam pin is worn and thinned.
- ★ Check the performance of tightening lock (handle, lever), shackle, and other mechanism.

Check all the listed items. Inspect according to the Checking Standard.

Most items may be checked visually or by touching. To measure the safety point distance and opening size, use slide calipers or the like to obtain precise measurements.

DISCARD

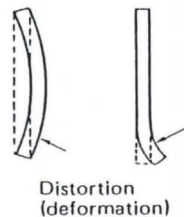
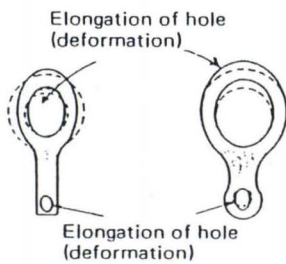
When clearance between bolt and hole exceeds 1 mm, and deflection of cam or shackle becomes excessive.



Discard the clamp if obvious flaw or distortion is found in the main body. Defects in the main body cannot be repaired in the light of safety. The main body may be cracked or deformed only after several uses if it is used incorrectly. Dent or swelling of main body, or widening of opening may be caused by overload or wrong manner of use. If the defect is repaired by welding, hardening, or pressing, the original strength is not recovered. When used and controlled correctly, the clamp may be safely used for a long time only by replacing parts.

REPLACE

(Shackle)



(Cam and pad)

Clamping capacity	Wear limit width of cam, pad
0.5 ton	0.6mm or more
1 ton	0.7mm or more
2 tons	0.8mm or more
3 tons	0.9mm or more
5 tons	1.0mm or more



When worn as shown above, replace immediately. Or, if not worn, when even one tooth is missing, replace also immediately. The wear rate is accelerated when stainless steel or other hard material is clamped. Or when plates of specified thickness are continuously clamped, only particular threads will be worn in a short time. In such a case, too, replace immediately.

Regard the shackle as part of body. If deformed as shown above, replace it immediately. If deformed shackle is straightening up, the initial strength is not restored.

Besides, replace the support pins, bolts, springs, and other parts according to the Checking Standard.

Check Twice to Confirm Safety.

Check the type capacity of clamp. Is the wire rope proper? How about its size and length? Overloaded or not? Where's the center of gravity? Is the material inserted fully? Is it locked securely? Lift at two points for an object longer than a meter. Lift at three or four points where the center of gravity is hard to locate. Is the lifting angle proper? Check all these items, and confirm them once again. Lift, carry, touch down slowly. Be careful not to hit against surrounding objects while carrying. Keep off hands. Do not enter hazardous zone. Always pay attention to safety.