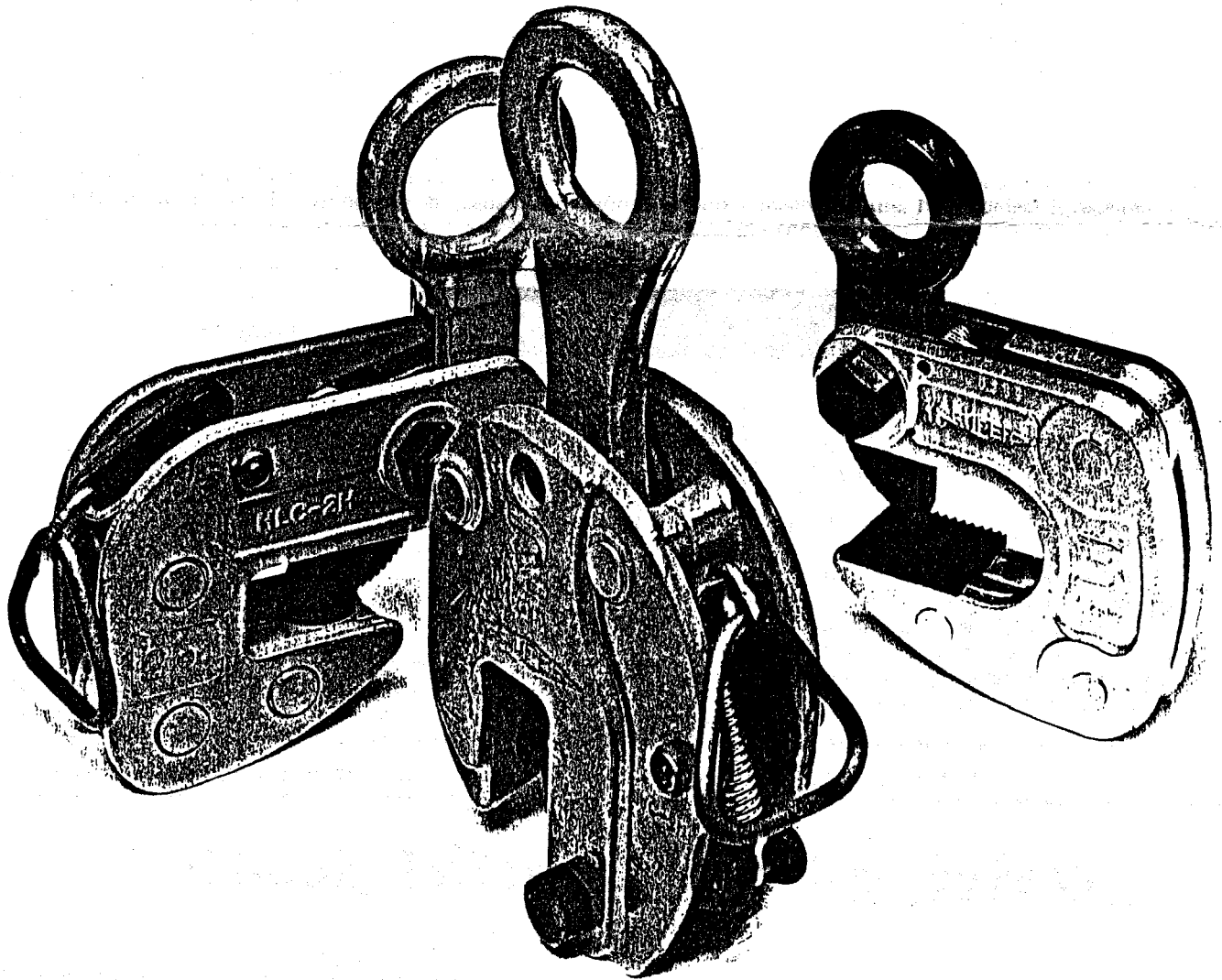


# SAFETY LIFTING CLAMPS



INSTRUCTION FOR OPERATION  
OF  
"SUPER" BRAND  
LIFTING CLAMPS



**SUPER TOOL CO., LTD.**

OSAKA, JAPAN

# "SUPER" CLAMPS Maintenance and Repair

Check periodically, repair and replace parts, and use correctly in order to use the clamps over the full service life, safely.

## Common Check Points

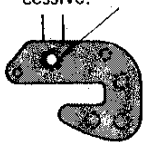
- ★ Check the main body for distortion or flaw.
- ★ Make sure the opening is normal (check if widened).
- ★ Check if the shackle is distorted.
- ★ Check the shackle pin hole for widening or looseness.
- ★ Check cam and pad teeth for defect or wear.
- ★ Check cam pin hole in main body for widening.
- ★ 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

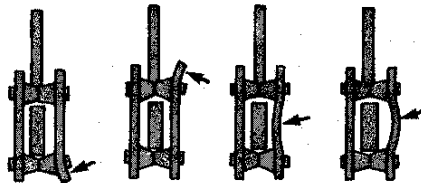
When clearance between bolt and hole exceeds 1 mm, and deflection of cam or shackle becomes excessive.



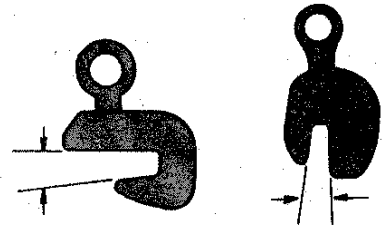
(Wear of pin or pin hole)



(Flaw of main body)



(Distortion of main body)

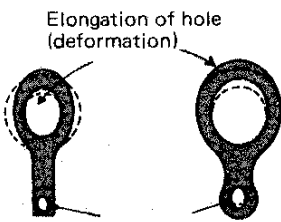


(Widening of opening)

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)



Elongation of hole (deformation)



Distortion (deformation)

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.

(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.

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

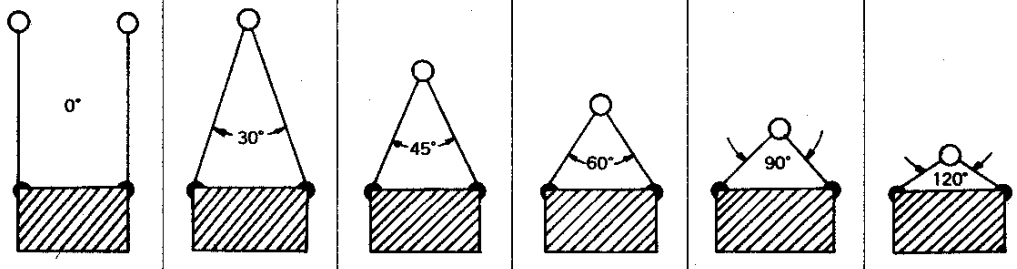
## Check Twice to Confirm Safety.

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.

# 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 (safety 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  $W = \frac{D^2}{C}$

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

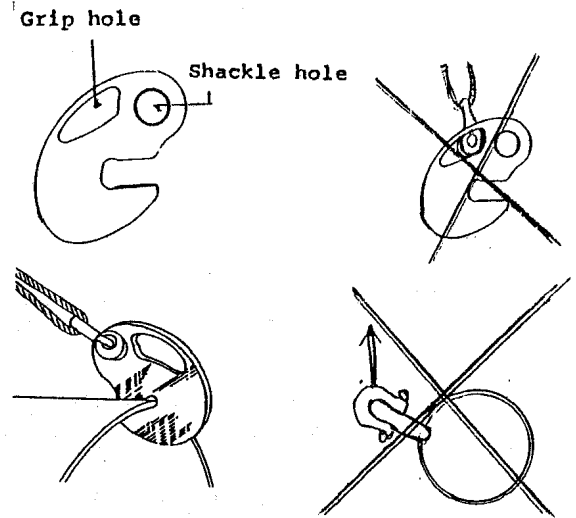
# OPERATING INSTRUCTION FOR " SUPER " BRAND LIFTING CLAMPS

## PIPE HOOK

Model: PHC

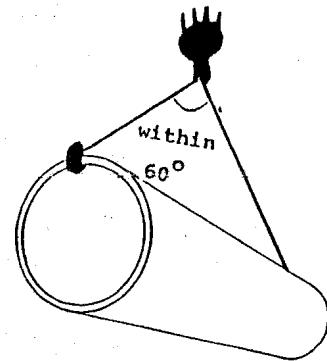
### Operating method

- 1) Be **sure** that a wire rope or shackle is **correctly** installed to the shackle hole of **the** hook as shown in left.
- 2) Insert the mouth of the hook into the pipe end sufficiently to the most deepest mouth of the hook by holding the grip hole by a hand.
- 3) Start the lift operation after confirming that the position of the hook is on the most top surface of the pipe.



### Caution

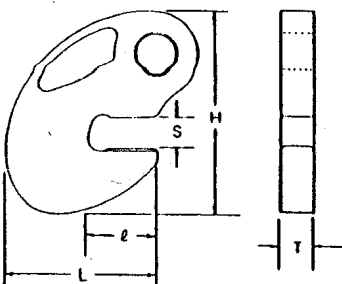
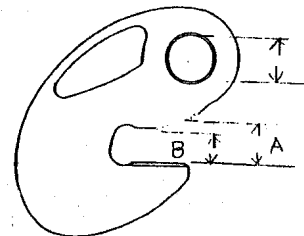
- 1) Do not load to an object to be lifted excessive safety working load of Pipe hook (Capacity of Pipe Hook).
- 2) Use two wire ropes having the same length.
- 3) The lifting angle should be within 60 degrees.
- 4) Do not re-model Pipe hook by welding or cutting with a burnner.



### Safety check

Please check the following points periodically:

- 1) Deformation and wear of the shackle hole  
Discard ---- over 0.5 mm
- 2) Deformation of the mouth-opening  
Discard ----- in case of 5 mm per 100 mm in the difference between A and B.
- 3) Crack or flaw in the body  
Discard ----- when above is observed by eyes or the mthod of color check.



ITEM NO.	Capacity (tons)	T	L	ℓ	S	H	D	Unit:mm
								Weight (tons)
PHC- 1/2	0.5	12	90	32	16	92	18	0.5
PHC- 1	1	16	118	42	19	122	23	1.0
PHC- 2	2	19	159	57	24	164	30	2.1
PHC- 3	3	25	193	70	28	198	36	4.1
PHC- 5	5	32	248	90	35	253	46	8.5



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