Lifting Clamp for Wooden Beam

BLC200

Operation Manual

This operation manual explains the basic operation and handling of the clamps. Please read this manual carefully before use and observe the precautions for safe operation.

SUPER TOOL CO., LTD.

SUPER brand lifting clamps are energy-saving lifting equipment which have been developed for the purpose of lifting, transporting and constructing wooden beam.

Proper use

Operate lifting clamps after carefully reading and understanding this instruction manual for enhancing efficiency and safety of operation.

Prime efficiency and economy

Advanced functions, reasonableness and versatile applications of finely and carefully designed SUPER lifting clamps ensure prime efficiency and economy.

Special considerations on safety

We conduct a pulling test with a load three times (or twice) of rated capacity and a manufacturing serial number is marked on each product, thus directing a special attention to safety.

Precautions for safety operation

Be sure to read this instruction manual carefully before use.

Mistaken use of lifting clamp may cause a danger such as dropping of load.
Education of “crane safety regulations,” “operation manual for lifting clamp,” “your company’s operation standards,” etc. should be given before actual operation not only to business owners who have purchased clamps but also to their operators to ensure that actual operators have acquired enough knowledge, safety information, and precautions of the clamps.
Safety precautions are divided into two classifications in this manual; “Warning” and “Caution,”.

WARNING:	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION:	Indicates a potentially hazardous situation which, if not avoided, could result in medium damage or slight injury, or could result in property damage.

While only mentioned in ⚠CAUTION, failure to comply with them still may lead to a serious disaster. As such, do not fail to pay attention both to WARNING and CAUTION which are of great importance.

Meanings of Signs

The signs of ◇! and ⚠ indicate that precautions should be taken.
The contents of warning or caution are described at each sign.
The sign of ⃠ indicates prohibited actions.
The sign of ❗ indicates that an action is enforced or instructed.
Two point lift for righthand figure.

※ After reading this manual, make sure to keep it at a place of easy access by any users.

1. Handling in general

WARNING	
● Do not operate until the contents of the operation manual, and caution tag/plate are thoroughly read and understood. ● Do not operate without a legal qualification. ● Be sure to clear of the area of the operation for lifting or turning a load against possible drop off or fall over. ● Do not use for other than intended purpose.	 Prohibited
● Make sure to execute an inspection periodically and before each operation.	 Instructed

2. Check before operation

WARNING	
● Do not use clamp unsuitable for the operation method. ● Do not use clamp of an abnormal condition; deformed, cracked, worn, malfunctioning, etc. ● If the load is under the following conditions, do not use clamp. (A material of fragile, high-hardness, low-hardness or extremely low-hardness, or a member with the gripping part tapered down more than 8°)	 Prohibited
● Check the type, rated capacity, clamp range, and “periodic inspection completed” label displayed on clamp body. ● The load to be lifted shall be within an allowable range of rated capacity of clamp. ● Thickness of load shall be within designated clamping range.	 Instructed
CAUTION	
● Do not use clamp for the load under the following conditions. (Load to be lifted is more than 150℃, or in an atmosphere or solution of acid or alkaline chemicals less than minus 20℃)	 Prohibited
● Sling to be used for the clamp shall be an appropriate one for lifting operation.	 Instructed

3. Lifting operation

WARNING	
● Do not use clamp, lifting at one point. (excluding special or custom ordered products) ● Do not use the clamp in the following ways of lifting: lifting of two or more individual objects at one time. (overlapped loads, padded load etc. , or side gripping) ● Do not use the clamp for pulling out steel plate sheet from the steel sheet pile or for vertical lifting of the sheet. ● Do not use the clamp when strong wind may threaten to cause any danger. ● Do not use the clamp for a hydraulic shovel.	 Prohibited
● Install two or more clamps in a balanced way to keep the balance of load.	 Two point lift
● The lifting angle of the clamps and the dividing angle should be kept within the allowable angles according to types. ● Load should be inserted to the innermost end of the jaw opening. ● When you use the clamp with a lock mechanism, never fail to have the lock engaged.	 Instructed
CAUTION	
● If oil, paint, scale, rust, etc. are on the gripping pad, do not use the clamp. ● Do not drop clamp or drag on the ground.	 Prohibited

4. Operation of a crane

WARNING	
● Never lift a load exceeding the rated capacity. ● Do not operate a crane in such a way as to give an impact to the load or the clamp. ● Do not allow a person to stand on the load or to carry him. ● Do not lift a load which is not free from any other objects. ● Do not release the lock of clamp while lifting load. ● Avoid unintended contact by load to an adjacent member or to the clamp, which has been removed from the load.	 Prohibited

● Stop the lifting operation by crane for a moment when the load is applied to the lifting ring for safety checking. (depth of the load into the clamp opening; status of locking). ● Stop the operation of the crane just before the load reaches the ground, and check the following matters: (Inclination or falling over of the load and security around the landing area of the load)	 Instructed
⚠ CAUTION	
● Do not operate the crane in such a way as to drag the load along the ground. ● Do not leave the crane (or winder, etc.) unattended from an operating position while keeping the load lifted with the clamp.	 Prohibited
● Raising and lowering operation by crane should be done slowly and carefully.	 Instructed

5. Maintenance, storage and alteration

⚠ WARNING	
● Never alter the clamp and its accessories. ● Do not apply welding or heat to the clamp or its accessories. ● Do not use any other parts than our company's genuine parts. ● Clamps which require the repair should be stored at a different place so that they are not used mistakenly.	 Prohibited
● Persons with specialized knowledge designated by the business owner are to conduct maintenance and repairing work. ● When any abnormality with the clamp is found, do not use it and immediately repair or dispose. ● Remove, if any, paint or mud sticking to the moving parts of the clamp, cams, and pads.	 Instructed
⚠ CAUTION	
● Conduct maintenance and repairing without any load attached. ● Conduct maintenance and repairing after posting a sign indicating that you're on the maintenance work. ● Never fail to lubricate oil on the rotating parts of the clamp (around the pins), guide grooves, sliding parts, etc. ● Be sure to store clamps indoor.	 Instructed

Lifting Clamp for Wooden Beam BLC200

Operation Manual and Inspection Standards

Lifting Clamp for Wooden Beam

BLC200

■Uses

Clamps suitable for lifting, transporting and constructing wooden beam for wooden house (wooden beam only).

■Features

Lightweight, easy to operate, durable and safe double cam type.

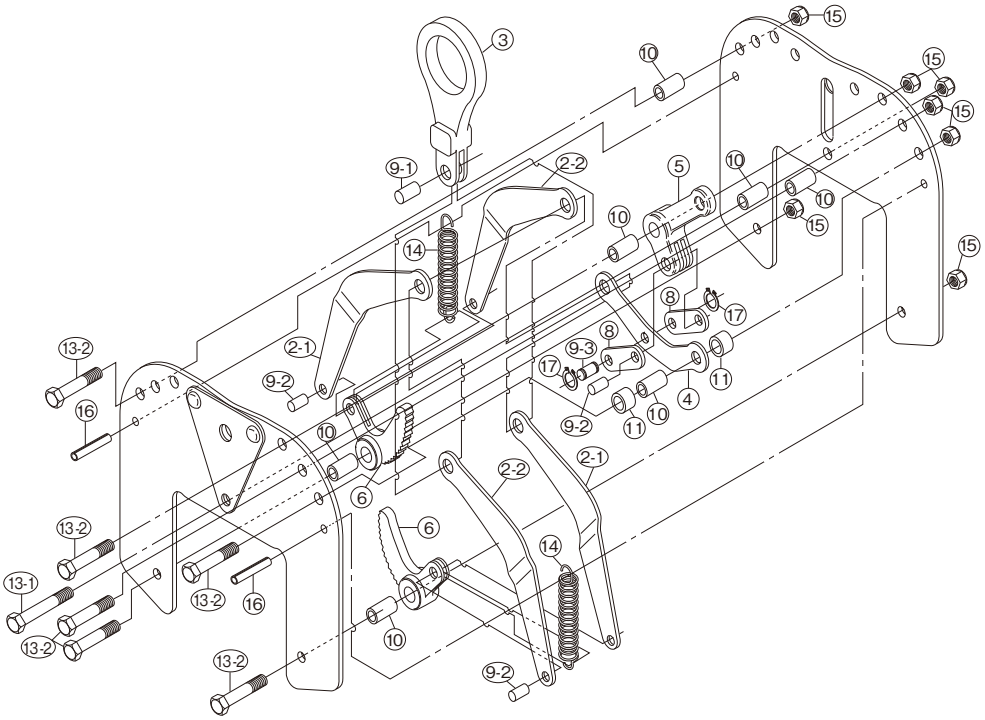
1. In proportion to the weight of the lifting load (beam), the clamping force increases and clamps more firmly.
2. The main body and other main parts are processed with optimal heat treatment, thus strong and durable.
3. When the tightening lock is released, the cam does not protrude into the opening, making it smooth and easy to attach and detach the beam with a single touch.
4. Removal of the beam can be done remotely, thus increasing work efficiency.

●Always use this clamp in pair with a balance.

■Specifications

Rated Capacity (kg)	Clamp Range (mm)	Net Weight (kg)
200	105-120	3.7

■ REPLACEMENT PARTS AND FITTINGS



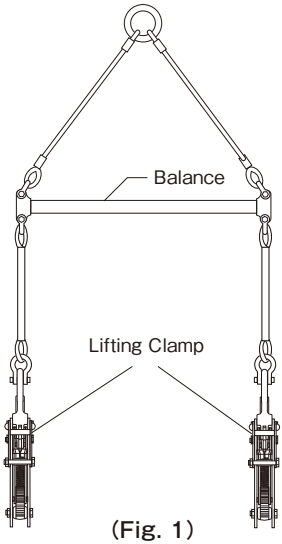
※ The main body is caulked by rivets and cannot be disassembled as shown.

Part No.	Part Name	Item No.	Q'ty
2-1	L-shaped link A	BLCL200	2
2-2	L-shaped link B		2
3	Shackle	BLCH200	1
4	Arm	BLCA200	1
5	Lever	BLCD200	1
6	Cam	BLCT200	2
8	Toggle link	BLCB200	2
9-1	Parallel pin (large)	BLCF200	1
9-2	Parallel pin (small)	BLCG200	3

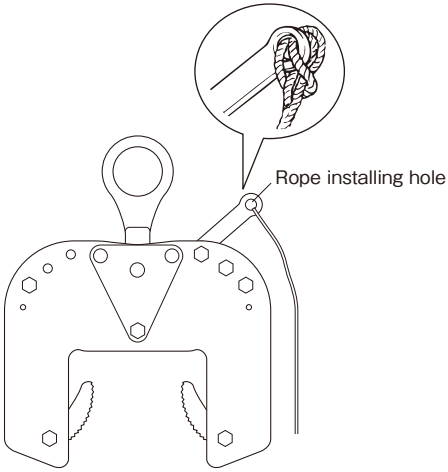
Part No.	Part Name	Item No.	Q'ty
9-3	Grooved pin	BLCE200	1
17	E-shaped retaining ring		2
10	Collar	BLCC200	7
11	Roller	BLCR200	2
13-1	Hex. bolt (long)	BLCJ200	1
13-2	Hex. bolt (short)	BLCK200	6
14	Spring	BLCS200	2
15	U-shaped nut	BLCN200	7
16	Spring pin	BLCP200	2

■ How to use

1) Be sure to use this clamp in pair with a balance. (Fig. 1)
2) When the tightening lock is released by remote control, attach the included remote control rope to the hole in the lever (rope installing hole) as shown in the figure below. (Fig. 2)



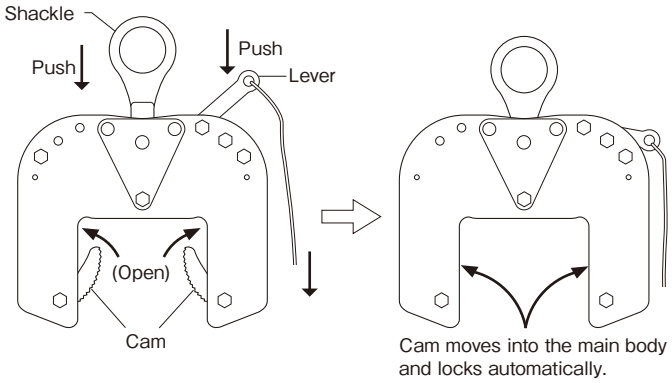
(Fig. 1)



(Fig. 2)

1. OPERATION METHOD

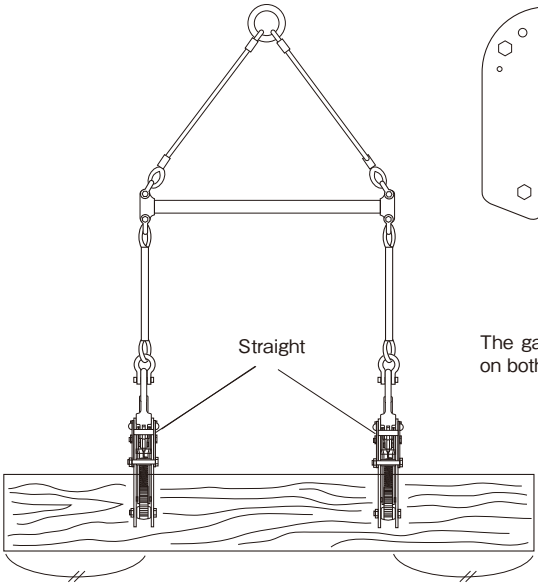
① Push the lever or shackle all the way down to retract the cam through the opening into the main body. The cam locks automatically. (Fig. 3)



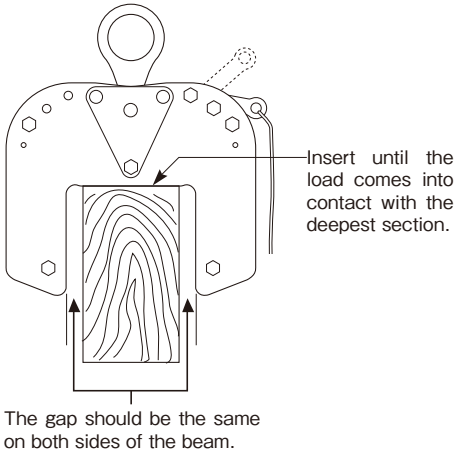
(Fig. 3)

② To ensure that the beam is clamped horizontally and that the beam is evenly distributed on both sides of the beam, install the clamp from above. (Fig. 4)

③ At this time, insert the beam until it comes into contact with the deepest section of the opening of the main body. (Fig. 5)



(Fig. 4)



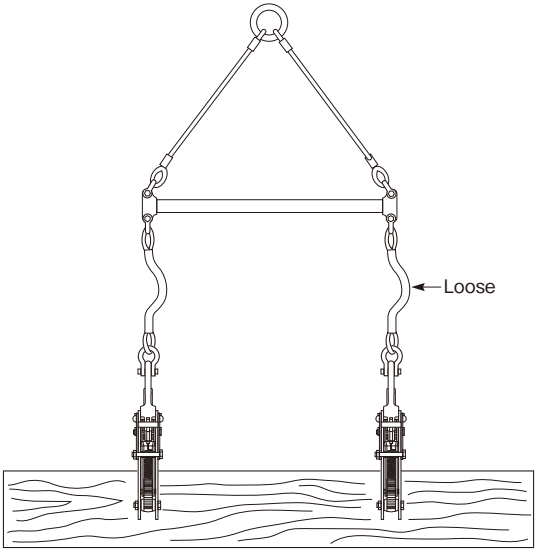
(Fig. 5)

④ Pull up the lever and clamp the beam with the cams on the left and right.

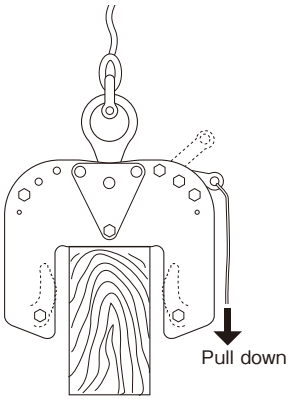
⑤ Wind up the crane and lift the beam slightly to check if the beam is horizontal, (the center of gravity), and the clamps are properly installed. If it is not the center of gravity, lower the crane and reinstall the clamps. If the clamps are installed properly, lift the beam as it is.

⑥ Lower the beam into place and install it.

⑦ Make sure that the slings to which the clamps are installed are sufficiently loose (Fig. 6), and then release the cams according to the procedure No. 1.



(Fig. 6)



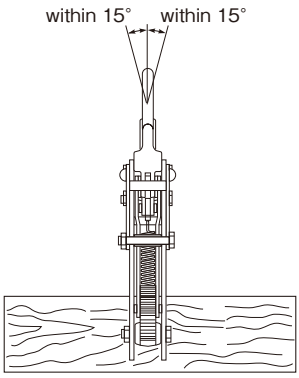
(Fig. 7)

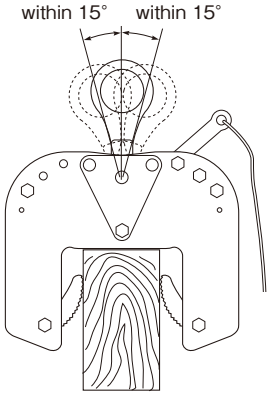
⑧ When releasing the cam by remote control, pull the rope for remote control downward until the lever stops to set the open lock of the cam. In this case, the beam should be temporarily fixed before setting the open lock. (Fig. 7)

⑨ After confirming that the cam of the clamp is released (it is inside the main body), remove the clamp by holding it directly by hand or by winding up the crane to remove it from the beam.

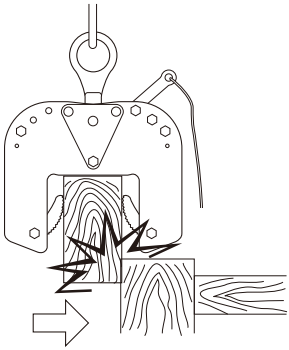
■ CAUTION

1. Be sure to use this clamp in pair with a balance.
2. This clamp is dedicated for lifting and installing wooden beam. Do not use for other materials such as steel or concrete.
3. This clamp can be used for vertical lifting, not for lateral lifting or turning over. However, it is possible to do so only for turning over operations, noting the following points.
    1) During operation, sufficient caution should be taken so that there is no danger of the clamp coming off the beam.
    2) Install the clamp with the lever facing down.
    3) Do not start lifting soon after turning over, but reinstall the clamp correctly after it has been turned over.
    4) After that, please do the same operation as vertical lifting.
4. Use within the maximum rated capacity.
    1) The rated capacity of this clamp is 200kg. Never lift a beam exceeding the rated capacity.
    2) When two clamps (Rated capacity: 200kg x 2pcs =400kg) and a balance are used as a set, the smaller of the two should be used as a standard with the balance's maximum capacity.
5. Use within the clamp range (grasp width). The clamp range is the beam dimension 102-123. Never use for load beyond the clamp range.
6. The lifting angle of the clamp must be within the range shown below.

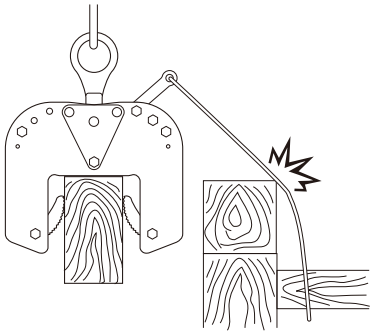




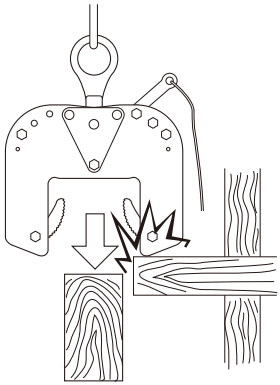
7. Never hit objects during operation.
   1) Do not hit clamp or beam against objects, or apply shock to the clamp or beam by moving or stopping suddenly. The sling may loosen momentarily or a heavy load may be applied, causing the beam to fall. Take special care to ensure that the beam itself is not scraped off by the cam and fall due to shaking or swinging of the beam.



   2) Hooking on the lever or rope for remote control is dangerous because the force applies in the direction of trying to open the cam.



   3) During lifting and lowering operation, if the clamp hits an object or rides on an object, the sling will loosen and the cam will lose its tightening force, causing any fall accidents.



8. All personnel must be clear of the area of operation. During lifting operation, take sufficient care to ensure that there is no danger of the beam falling even if the clamp is released and the beam falls, and do not enter the area of operation.
9. Do not throw, drop the clamp or leave it out in the rain.
10. Be sure to conduct maintenance and inspection by referring to the inspection standards.

■ HOW TO DISASSEMBLE AND ASSEMBLE

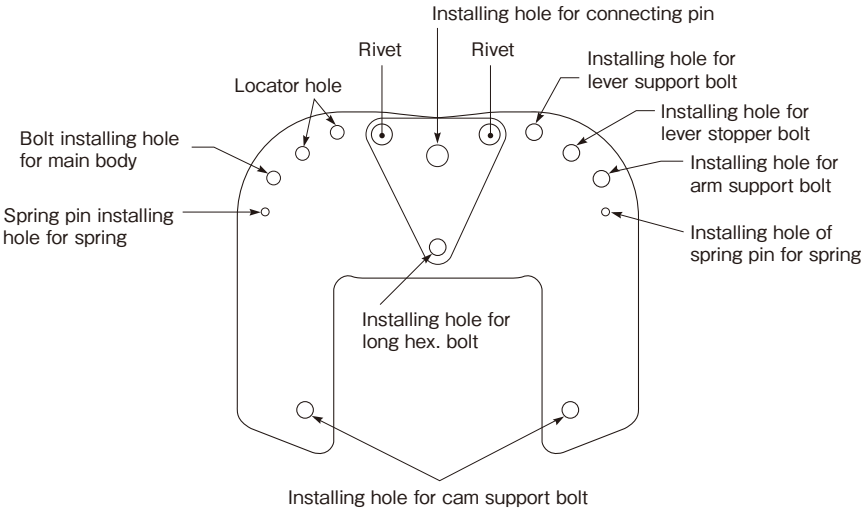
●Tools required

Work table, 2 pcs of wrench (13mm), One-handed hammer, Pin punch (8mm), Driver, etc.

■DISASSEMBLING

Please refer to the assembly drawing.

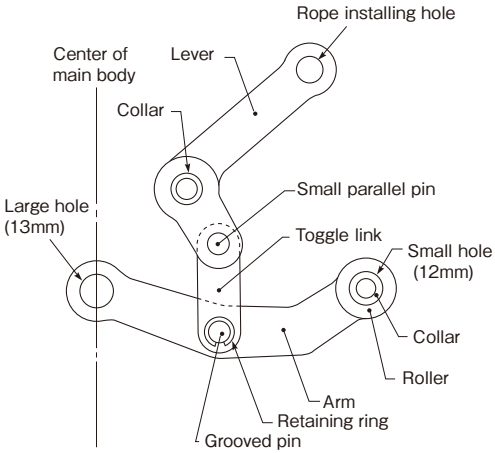
1. Remove the bolt (long), nut and collar in the center of the main body.
2. Push upward the lever (in clamped condition), remove the left and right cam support bolt and nut, pull out the cam, and remove the connecting pin and spring.
3. Remove the spring pin for installing spring. (Pull out spring.)
4. Pull out the bolt for lever, lever stopper and arm support bolt.
5. Pull upward the shackle and remove the connecting pin (large parallel pin) from the hole (installing hole for pin) in the upper center of the main body, and then remove all remaining parts (except riveted parts). Remove the retaining ring from the pin connecting the arm to the
6. toggle link and disassemble. (Completed)



■ ASSEMBLING

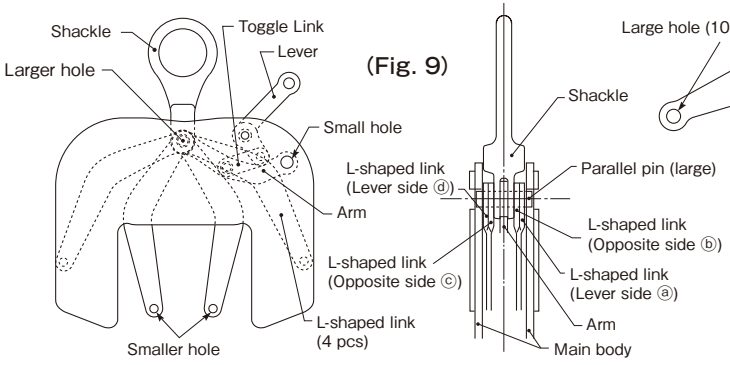
1. Install the toggle links (2 pcs) to the arm with a grooved pin and retaining ring (2 pcs) so that the arm is sandwiched. (Fig. 8)
2. Connect the lever and toggle link with parallel pin, insert the collar into the bolt hole of the lever, install it to the main body with bolt (short), and temporarily tighten with nut. (Fig. 8)

● Install the arm so that the larger hole in the arm is in the center of the body and the end of the lever (rope installing hole) is toward the side.

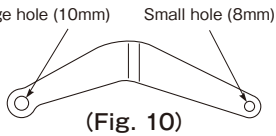


(Fig. 8)

3. Pull the end of the arm (smaller hole side) out of the main body and push the roller (2 pcs) into the inside of the main body by inserting collar on both sides of the arm. (Fig. 8)
4. Place the main body on its side so that the hole (installing hole for connecting pin) in the top of the main body is off the work table.
5. Installing large parallel pin (Fig. 9, 10)
   1) Hold the pin in your hand, slightly peeking the tip out from under the installing hole, insert one L-shaped link ⓐ on the lever side with the larger hole through the opening of the main body, and pass the pin through it. (Do not let it protrude too much.)



(Fig. 9)

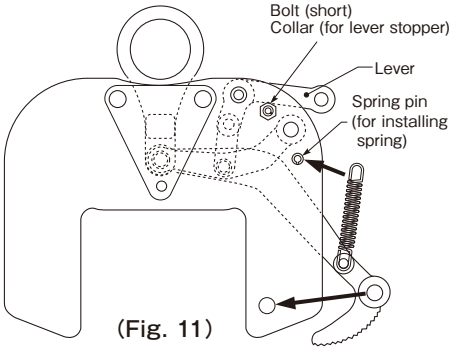


(Fig. 10)

2) Install one L-shaped link ⓑ on the opposite side in the same manner.
3) Insert the shackle from the top of the main body and thread the pin through. (Do not let it come out of the arm installing groove.)
4) Insert the arm into the shackle and pass the pin through in the same way.
5) Insert the remaining L-shaped link ⓒ on the opposite side between the shackle and the main body and pass the pin through.
6) Finally, install the remaining L-shaped link ⓓ on the lever-side and push the shackle down by pushing the pin to the center to prevent the pin from falling out of the main body.

Attention: The large parallel pin should be installed in for the length of its thickness for each part that is attached one at a time. (During this time, the pin should be held in one hand to prevent it from falling out.)

6. Temporarily tighten the arm (collar and roller) with bolt (short) and nut.
7. Install the collar to the lever stopper bolt (short) and temporarily tighten it with the nut. (This will prevent the large parallel pin from slipping out.) (Fig. 11)
8. Insert the spring pins for the right and left springs into the center of the inner width of the main body with the slit facing down. (Fig. 11)
9. With the lever lowered (the cam is in the open position),



(Fig. 11)

1) pull out the L-shaped links (2 pcs) on one side, and install the cam and spring (with the cut end inside) between the L-shaped links with the small parallel pin. (Fig. 11)
2) pull the spring and hook one end to the spring pin that has been driven in halfway to the end of the spring pin. (Fig. 11)

10. Raise the lever and install the collar to the cam and tighten it temporarily with the short bolt and nut.
11. Install the cam on the opposite side in the same manner as the procedure No. 9 and 10.
12. Install the bolt (long), collar, and nut, and tighten the bolt and nut firmly.
13. Tighten the other bolt and nut firmly, and check the working condition, etc. (Completed)

■ MAINTENANCE AND INSPECTION

1. Maintenance

Daily maintenance is important for efficient and safe operation even under the severe use condition and for such purposes, please comply with the followings.

1) Designate the use standards and control.
2) Keep clamps indoor and do not leave them outdoor.
3) Check the followings to maintain in a good condition.
   (a) Operating condition.
   (b) Any abrasion, damage, or clogging at teeth of cam.
   (c) Deformation of main body - at jaw opening in particular.
4) Separate conforming clamps and other hazardous items identified during use or inspection and designate the defective sections. Perform maintenance any soon.
5) Perform inspection and maintenance once a week by referring to “Inspection Standards”. Lubricate sliding sections periodically. (However, remove oil at teeth of cam and pad.)

2. Periodic Inspection

Perform periodic inspection in accordance with the periodic inspection and maintenance standards. Functions and life of clamps may differ in a great degree as they are used in varieties of fields under different conditions of use. Therefore, preparation and practice of effective handling/inspection standards manual by users themselves are recommended. We ask you to establish complete maintenance and control for assurance of safety in reference to our Manufacturer’s Inspection Standards of our clamp. Clamp is designed for easy replacement of parts and therefore, do not fail to replace defective parts. Also, keeping spare parts at all times is recommended.

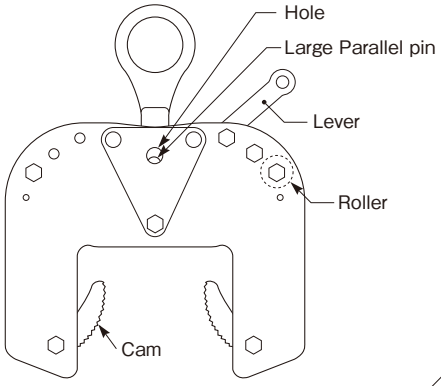
For your preparation of the standards, pay special attention to the followings.

1) Operation and maintenance standards
   (a) Preparation of use criteria (shape of load and operating methods).
   (b) Thorough understanding and compliance of cautions on handling.
   (c) Maintenance and storage.
   (d) Rules of inspection and check at site.
2) Standards on periodic inspection
   (A) Establishing dates of periodic inspection.
   (B) Establishing inspection and maintenance methods.
   (a) Inspecting period.
   (b) Person in charge of the inspection.
   (c) Inspection site.
   (d) Tools and devices for inspection.
   (e) Establishment of permissible limit of use.
   (f) Explicit designation of maintenance and repair methods.

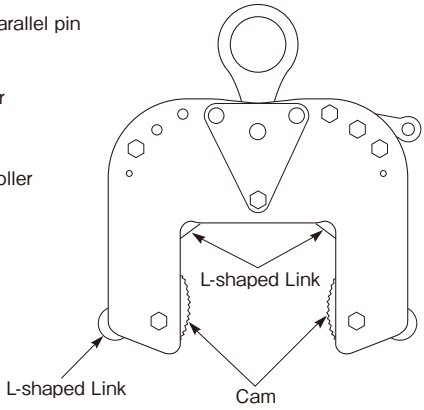
■ DAILY INSPECTION

Conduct daily checks and maintenance to prevent the loss of safety and efficiency.

1. Check that there are no cracks at the main body or each part of the shackle.
2. Check if the bolts, nuts, and pins, etc. are installed in good condition.
3. Check if the movement and lubrication condition of each part are good.
4. Check for wear, loss, or clogging of the teeth.
5. Check for the working condition.
    1) Check if all parts work properly.
    2) Check if the lever stops in both open and close position.
    3) Check for any danger of the large parallel pin falling out of the hole in the body when the shackle is pulled up fully (clamped). (Fig. 12)
    4) Check if the teeth of the cam do not protrude into the opening of the main body when the clamp is opened. (Fig. 13)
    5) Check if the L-shaped link does not protrude to the part shown in the figure below. (Fig. 13)
    6) Check if the rollers rotate smoothly.
    7) Check if the spring have sufficient repulsive force.

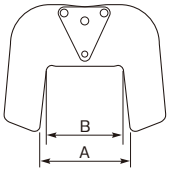
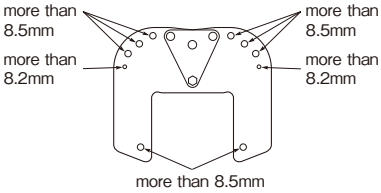
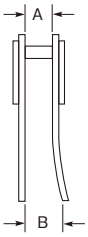
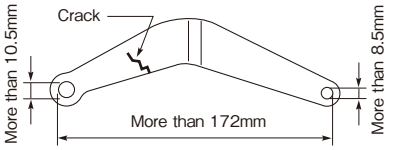


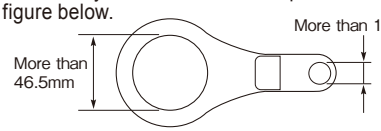
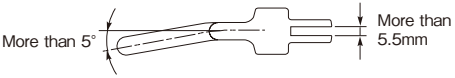
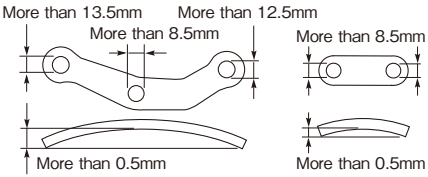
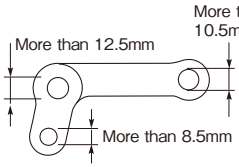
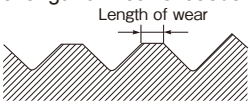
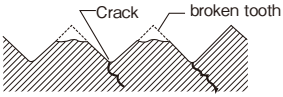
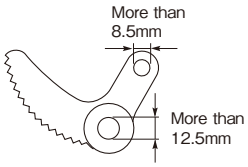
(Fig. 12)

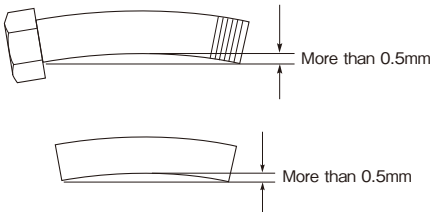
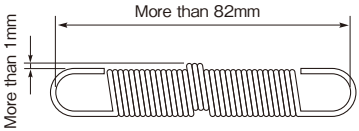


(Fig. 13)

■ INSPECTION STANDARDS FOR BLC200

Item	Inspection method	Limit of use	Remedy
Main Body	Visually check or use color dyes to find cracks.	When found visually.	Discard
	Measure the jaw opening.	When the difference of “A” and “B” exceeds 2.5mm or more against 100mm in depth. (2.5%) 	
	Measure wear or deformation of bolt hole.	When the diameter of any one part of circumference of any hole exceeds the respective size in the figure below. 	
	Visually check or measure to find deformation of any other parts.	When the difference of “A” and “B” exceeds 2mm. 	
L-shaped Link	Visually check or use color dyes to find cracks.	When found visually.	Replace
	Measure wear or deformation of pin hole.	When the diameter of any one part of circumference of any hole exceeds the respective size in the figure below. When the distance between holes of any one part of circumference of any hole exceeds the respective size in the figure below. Or when the distance of each hole in a set (4 pieces) varies by 0.5 mm or more. 	

Item	Inspection method	Limit of use	Remedy
Shackle	Visually check or use color dyes to find cracks. Measure wear or deformation of shackle and pin hole. Visually check or measure for bending.	When found visually. When the diameter of any one part of circumference of any hole exceeds the respective size in the figure below.  When the permanent deformation exceeds more than 5°from the center line of the main body.  	Replace
Arm & Toggle Link	Visually check or measure for deformation. Measure wear or deformation of pin hole.	When the degree of deformation exceeds 0.5mm. When the diameter of any one part of circumference of any hole exceeds the respective size in the figure below.  	Replace
Lever	Visually check or use color dyes to find cracks. Measure wear or deformation of rope installing hole and pin hole.	When found visually. When the diameter of any one part of circumference of any hole exceeds the respective size in the figure.  	Replace
Cam	Visually check and measure the degree of wear. Visually check or use color dyes to find cracks at the bottom cam teeth. Measure wear of bolt hole and pin hole.	When the length of wear exceeds 0.5mm.  When found visually.  When the diameter of any one part of circumference of any hole exceeds the respective size in the figure.  	Replace

<table>
<tr><th>Item</th><th>Inspection method</th><th>Limit of use</th><th>Remedy</th></tr>
<tr><td rowspan="3">Bolt & Pin</td><td>Measure the wear of shaft part.</td><td>When the diameter of any one part of circumference of any shaft is less than the respective size in the table below.
(mm)<table><tr><th colspan="2">Bolt</th><th colspan="2">Parallel pin</th><th rowspan="2">Grooved pin</th></tr><tr><th>Long</th><th>Short</th><th>Large</th><th>Small</th></tr><tr><td>7.5</td><td>7.5</td><td>9.5</td><td>7.5</td><td>7.5</td></tr></table></td><td rowspan="3">Replace</td></tr>
<tr><td>Visually check or use color dyes to find cracks.</td><td>When found visually.</td></tr>
<tr><td>Visually check or measure for deformation.</td><td>When the degree of deformation exceeds 0.5mm.
 
</td></tr>
<tr><td>Spring</td><td>Visually check or measure for deformation and stretching.</td><td>When the adequate repulsive power is lost due to deformation or any other reasons.
When the deformation of more than 1mm or total length exceeds the dimensions in the figure below.
 
</td><td>Replace</td></tr>
</table>