



Lifting Clamp for U-Shaped Gutter (Automatic Internal Expanding Type)

BUC1000A



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.



brand lifting clamps are lifting equipment designed to improve work efficiency which have been developed for the purpose of transporting steel materials.

Proper use

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

High efficiency and cost-effectiveness

Advanced functions, rational design and versatile applications of finely and carefully designed  lifting clamps ensure high efficiency and cost-effectiveness.

Special safety features

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

Precautions for safe operation

Be sure to read this instruction manual carefully before use.

Improper use of lifting clamp may cause serious hazards such as dropping of lifting load. Be sure to read this instruction manual carefully before use and follow the instructions correctly.

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 minor 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 the content contains warnings and cautions. The specific contents of warning or caution are described at each sign.

The sign of ⚡ indicates prohibited actions.

The sign of ⚠ indicates that mandates or instructs a specific action.

The specific contents are written within or near the sign.

(The righthand figure indicates two-point lifting.)



Two point lift

*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 the crane or rigging work without a legal qualification. • Be sure to keep clear of the operation area 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.	 Instruction

2. Check before operation

 WARNING	
• Do not use clamp unsuitable for the operation method. • Do not use clamp of an abnormal condition; deformed, cracked, malfunctioning, worn, etc. • If the load is under the following conditions, do not use the clamp. (Material of brittle, high-hardness, low-hardness, extremely low-strength 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 the main body of the clamp. • 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.	 Instruction
 CAUTION	
• Do not use clamp for the load under the following conditions. (Load to be lifted is more than 150°C, or in an atmosphere or solution of acid or alkaline chemicals less than minus 20°C)	 Prohibited
• Sling to be used for the clamp shall be an appropriate one for lifting operation.	 Instruction

3. Operation and Rigging Instructions

 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: (stacked lifting, support-based lifting, tiered lifting, shared lifting and side-grip lifting) - Do not use clamps to extract steel sheet piles or to perform vertical lifting operations on them. - 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. - The load must be fully inserted into the jaw opening. - When you use the clamp with a lock mechanism, never fail to have the lock engaged.	 Instruction
 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 lifted by clamps. Also, never use them for carrying people. - 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)	 Instruction
 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.	 Instruction

5. Maintenance, storage and alteration

 WARNING	
• Never modify 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 any paint or mud sticking to the moving parts or grip parts of the clamp.	 Instruction
 CAUTION	
• Conduct maintenance and repair without any load attached. • Conduct maintenance and repair after posting a sign indicating that maintenance work is in process. • Never fail to lubricate oil on sliding sections of the clamp such as the rotating parts (around the pins) or guide grooves, etc. • Be sure to store clamps indoor.	 Instruction

Lifting Clamp for U-Shaped Gutter (Automatic Internal Expanding Type) BUC1000A

■ Uses

Clamps dedicated for lifting reinforced concrete U-shaped gutter, drop-lid type U-shaped gutter and bench flume.

■ Features

1. Since it is an internal expanding type, the clamps do not come into contact with the water line, allowing installation work to be performed while the water line remains in place.
2. It can be used even when there are obstacles such as blocks or walls on one side.
3. The automatic attachment/detachment mechanism speeds up the work process.
4. The roller at the bottom of the unit automatically adjusts the clamp position.
5. It has a wide clamping range, which can be easily adjusted by swapping out the adjustment plates.
6. By replacing the adjustment plates with the separately sold medium or long plates, the clamping range can be adjusted up to a maximum of 600 mm.
7. The pads feature a spike mechanism to securely clamp lifting loads.
8. The pads are made of special rubber and can also be used as non-marring pads by retracting the spikes.

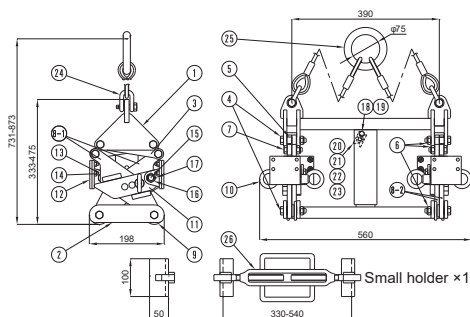
■ Specifications

● Standard

Item No.	Rated Capacity (kg)	Clamp Range (mm) Short Adjustment Plate (standard equipment)		Size of U-shaped gutter	Net Weight (kg)
BUC1000A	1,000	Short	Level ① 210-250	240•250	26
			Level ② 250-290	300	
			Level ③ 290-330	—	

*Clamping range applies when the inner walls of the U-shaped gutter are parallel.

*The size of U-shaped gutter follows JIS A5372.



●With Optional Parts Installed

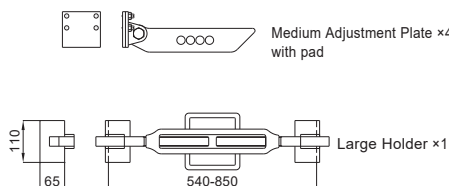
Item No.	Rated Capacity (kg)	Clamp Range (mm) Optional Adjustment Plate		Size of U-shaped gutter	Net Weight (kg)
BUM1000A Medium Set	1,000	Medium	Level ① 320-360	350•360	28
			Level ② 360-400	400	
			Level ③ 400-440	450	
			Level ④ 440-480	500	
BUF1000A Medium & Long Set	1,000	Medium	Level ① 320-360	350•360	28
			Level ② 360-400	400	
			Level ③ 400-440	450	
			Level ④ 440-480	500	
		Long	Level ① 480-520	550	31
			Level ② 520-560	600	
			Level ③ 560-600	—	

*Clamping range applies when the inner walls of the U-shaped gutter are parallel.

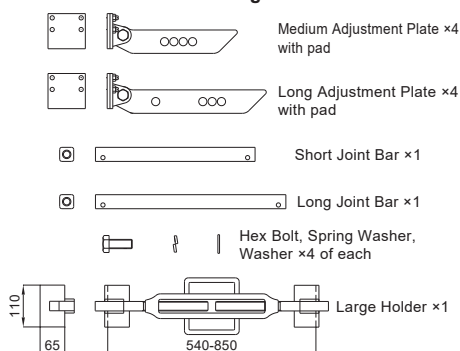
*The size of U-shaped gutter follows JIS A5372.

Set Contents

BUM1000A Medium Set



BUF1000A Medium & Long Set



Part No.	Part Name	Item No.	Set Q'ty
*1	Lifting Hook Section	—	—
2	Bottom Plate Section	BUCA1000A	1
3	Link	BUCB1000A	4
4	Hex Bolt A	BUCC1000A	8
5	Collar	BUCD1000A	4
6	Lock Nut A	BUCE1000A	12
7	Hex Bolt B	BUG1000A	4
8-1.2	Jaw L/R	BUCH1000A	2 each
9	Roller	BUCI1000A	4
10	Eye Nut	BUCJ1000A	4
11	Short Adjustment Plate	BUCK1000A	4
12	Pad	BUCL1000A	4
13	Spike	BUCN1000A	16
14	Hex Nut	BUCN1000A	16

Part No.	Part Name	Item No.	Set Q'ty
15	Hex Bolt C	BUCO1000A	4
16	Slotted Nut	BUCP1000A	4
17	Cotter Pin	BUCQ1000A	4
18	Hex Bolt D	BUCR1000A	1
19	Lock Nut B	BUCS1000A	1
20	Switch Claw	BUCT1000A	1
21	Pin for Switch Claw		1
22	Spring		2
23	Washer		2
24	Shackle	BUCU1000A	2
25	Ring/Wire	BUCV1000A	1
26	Small Cracking Prevention Holder	BUCW1000A	1

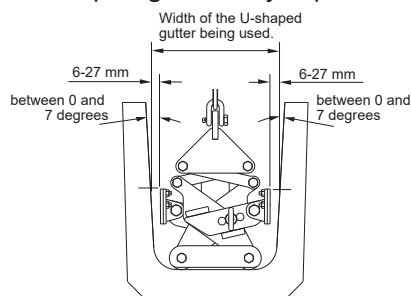
*1 The lifting hook section cannot be sold as a replacement part with an engraving.

■ How to use

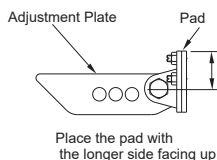
1. OPERATION METHOD

- (1) Adjust the clamp range by replacing the adjustment plate on the lifting clamp for U-shaped gutter (hereinafter, “clamp”) (or by replacing it with a plate separately sold) to match the width of the U-shaped gutter being used.
 - For JIS-standard U-shaped gutter, please refer to the specifications on pages 6–7 regarding the adjustment plate installing position.
 - For U-shaped gutter that do not comply with JIS standards, install the adjustment plate so that the distance from the inner wall of the U-shaped gutter to the top of the pad is between 6 and 27 mm on each side when using the standard short adjustment plate. (For the medium and long adjustment plates sold separately, the distance should be between 6 and 30 mm.)

*If the installation position is incorrect, there is a risk that the U-shaped gutter may slip off.



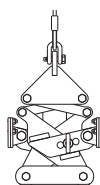
Check the installing direction of the adjustment plate.



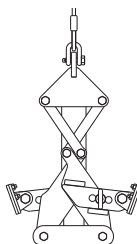
Caution:

- 1) Do not use for U-shaped gutter where the inclination of the inner wall exceeds 7°.
- 2) Replace and exchange all four parts at the same time, and be sure to tighten each eye nut securely.

- (2) Hook the clamp onto the crane hook and lift it briefly to check that it is in the open position shown in the figure below. If it is not, lower the crane hook until the clamp's wire is loosened and the clamp touches the ground. Lifting it again will return it to the open position.

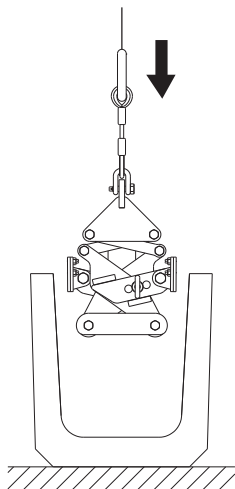


Open position

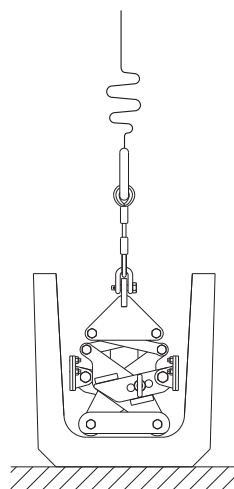


**Lock Position
(lifting position)**

- (3) Move the clamp in the open position to the center of gravity of the U-shaped gutter, lower the crane hook until the wire rope is loosened, and lower it to the bottom of the U-shaped gutter.



Slowly lower the clamp in the open position to the bottom of the U-shaped gutter.



The wire rope is completely loosened.

Caution:

Please check the inner walls of the U-shaped gutter for any foreign matter such as water, oil, sand, mud, ice, or snow. When found, remove them before use.

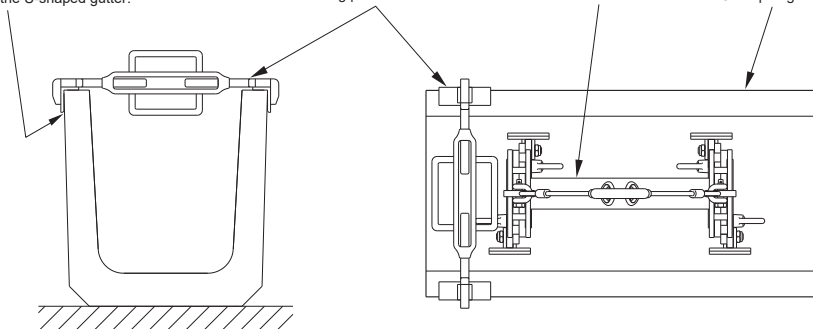
- (4) Set the cracking prevention holder just beside the clamp. At this point, tighten it securely so that the arm firmly holds the U-shaped gutter.

Make the arm firmly hold the U-shaped gutter.

Cracking prevention holder

Clamp

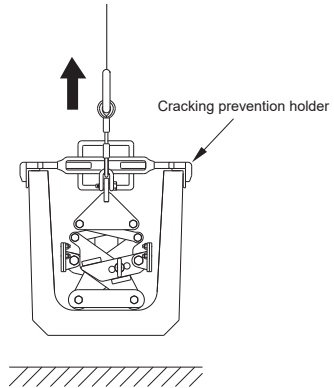
U-shaped gutter



Caution:

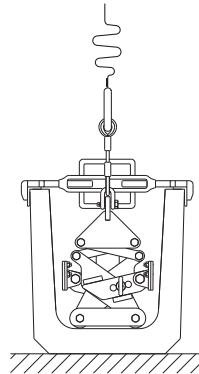
Be sure to use the cracking prevention holder. If lifted without using it, the U-shaped gutter may crack, causing accidents.

- (5) Wind up the crane hook, and the clamp automatically will grip the U-shaped gutter and lift it.

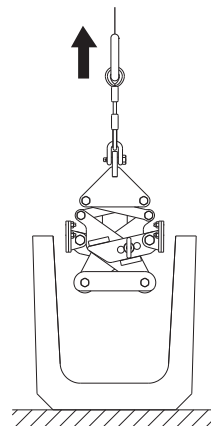


- (6) Be sure to check that the U-shaped gutter is stable before moving it to its destination.

- (7) After moving to the destination, lower the crane hook and set the U-shaped gutter down. Check to make sure the U-shaped gutter is stable on the ground, and continue lowering it until the wire rope is completely loosened.



- (8) Lift the crane hook. The clamp will automatically release, and only the clamp will be lifted.



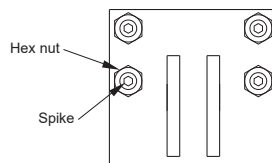
- (9) If you perform the same operation, repeat from the procedure described in (3).

2. How to replace parts

(1) How to adjust and replace spikes

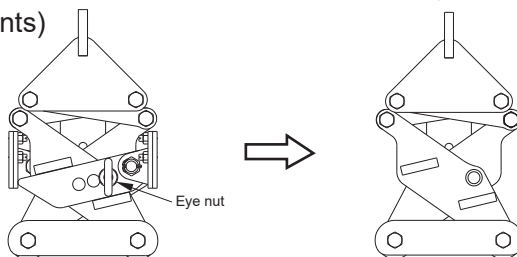
When the pad is used as a non-marring pad, or the spikes are worn, you will need to adjust or replace the spikes.

- ① Loosen the hex nut and use a hex wrench or flathead screwdriver to turn the spike to adjust or replace it.
- ② Tighten the hex nut.

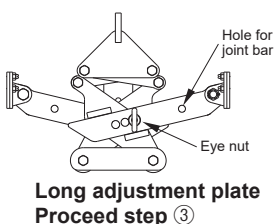
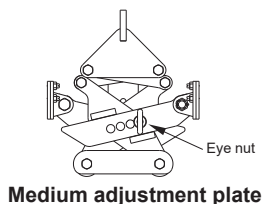


(2) How to replace the adjustment plate (sold separately)

- ① Loosen the eye nuts and remove the standard adjustment plate (short). (4 points)

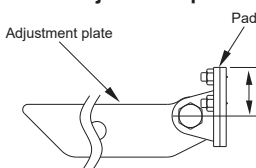


- ② Install the adjustment plate (medium or long) for replacement and tighten the eye nuts. (4 points)



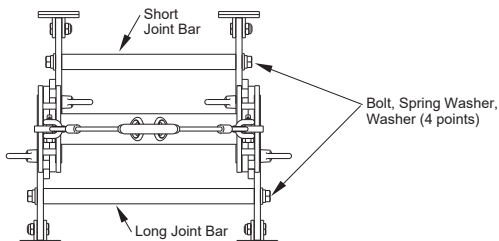
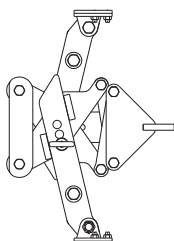
Proceed step ③

Check the installing direction of the adjustment plate.



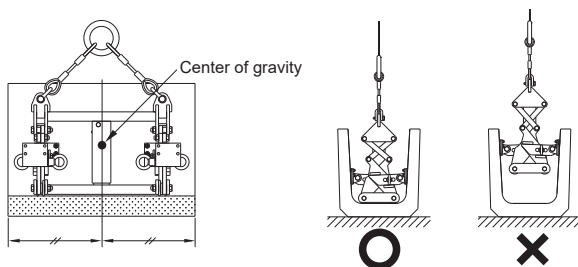
Place the pad with the longer side facing up.

- ③ If using the long adjustment plate, after installing the adjustment plate, secure the short and long connecting pipes using the included bolts, spring washers, and washers. (4 points)

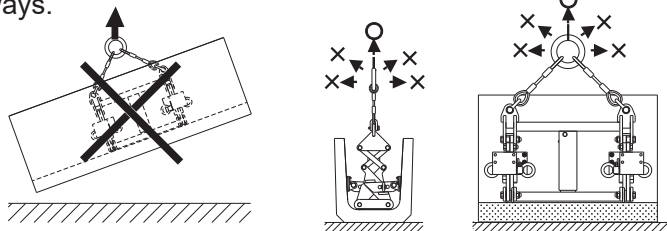


■ Cautions for operation

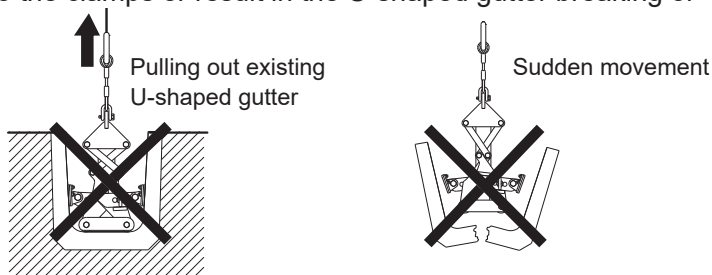
- ◆ Be sure to position the clamps exactly in the center and lift the U-shaped gutter by its center of gravity. Also, be sure to place the clamps at the bottom.



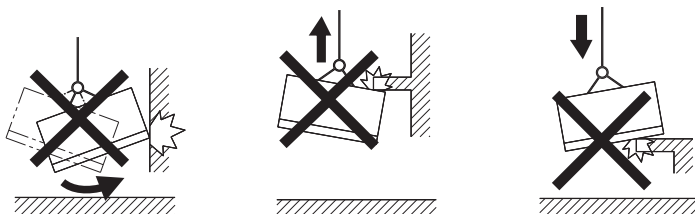
- ◆ Do not lift the load with the center of gravity off-center, at an angle, or pull it sideways.



- ◆ Do not pull out existing U-shaped gutter or perform any operations that subject them to sudden impacts. (Sudden movements can cause damage to the clamps or result in the U-shaped gutter breaking or falling.)



- ◆ While lifting and moving, do not allow the main body or the U-shaped gutter to collide with or become caught on other objects. (This can cause the wire rope to be loosened, resulting in a fall.)



■ CAUTION

- ◆ Before use, be sure to check and inspect the pads for wear, damage and other abnormalities on all parts.
- ◆ Do not use for any objects other than precast concrete material.
- ◆ Use within the rated capacity.
- ◆ Use within the clamp range.
- ◆ Be sure to clear of the area of the operation for lifting a load against possible drop off.
- ◆ Do not apply shock to the load or clamp.
- ◆ Do not move or stop the load suddenly.
- ◆ Do not use for any precast concrete materials under curing.
- ◆ Do not modify. Heating, machining, etc. will significantly reduce the quality (strength).
- ◆ Do not use the pad or the load attached with foreign substances such as water, oil, sand, mud, ice, or snow. Be sure to remove any such substances from the load before use.

■ OTHER

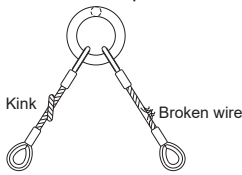
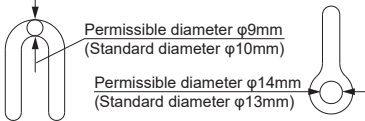
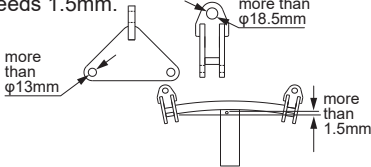
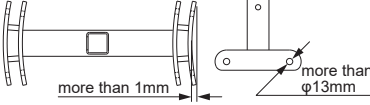
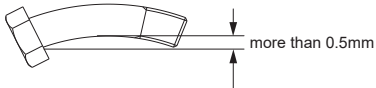
- ◆ Inquiries for Repair Parts and Repair.
If repair parts or repairs are required, stop using this clamp and contact your distributor.

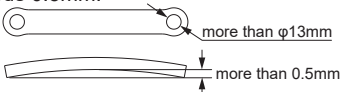
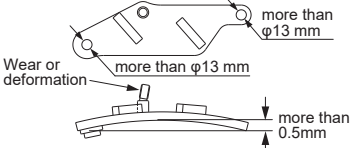
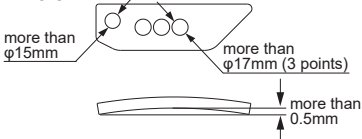
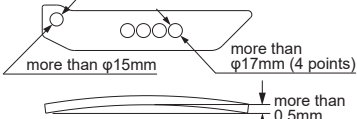
■ DAILY INSPECTION

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

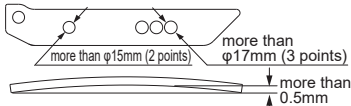
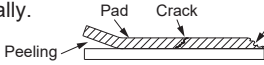
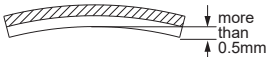
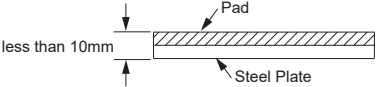
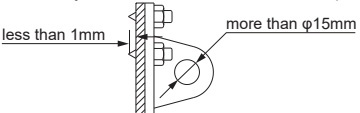
1. Check that there are no abnormalities at the ring or wire rope.
2. Check that there are no cracks or damage for the main body or welding part.
3. Check that the bolt, nut and pin, etc. are installed in good condition.
4. Check for wear or loss of the pad and spike.
5. Check that the movement and lubrication condition of each part are good.
6. Refer to other inspection standards.

INSPECTION STANDARDS FOR BUC1000A

Item	Inspection method	Limit of use	Action								
Ring & Wire	Visually check or use color dyes to find scratches, cracks, broken wires or rust. Measure wear or deformation Visually check for kink.	(Please follow the JIS inspection standards.) 	Replace								
Shackle	Visually check or use color dyes to find scratches or cracks. Measure wear of lifting part. Measure wear or deformation of bolt hole.	When the degree of wear or deformation exceeds 1mm from the standard diameter. 	Replace								
Lifting Hook Section	Measure wear or deformation of bolt hole. Visually check or measure to find bending or deformation.	When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the degree of bending or deformation exceeds 1.5mm. 	Discard								
Bottom Plate Section	Measure wear or deformation of bolt hole. Visually check or measure to find bending or deformation.	When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the degree of bending or deformation exceeds 1mm. 	Replace								
Bolt, Nut & Cotter Pin	Measure wear of the shaft of bolt. Visually check or measure the bending or deformation. Visually check the installation condition of nut or cutter pin.	When the diameter of any part of circumference of shaft is less than the respective size in the table below. <table border="1" data-bbox="565 1228 823 1292"> <tr> <td>Screw Size</td><td>M8</td><td>M12</td><td>M14</td></tr> <tr> <td>D (mm)</td><td>7.5</td><td>11.5</td><td>13.5</td></tr> </table> When the degree of bending or deformation exceeds 0.5mm.  When found coming off or looseness.	Screw Size	M8	M12	M14	D (mm)	7.5	11.5	13.5	Replace Adjust by tightening
Screw Size	M8	M12	M14								
D (mm)	7.5	11.5	13.5								

Item	Inspection method	Limit of use	Action
Link	Measure wear or deformation of bolt hole. Visually check or measure to find bending or deformation.	When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the degree of bending or deformation exceeds 0.5mm. 	Replace
Jaw	Visually check or use color dyes to find scratches or cracks. Measure wear or deformation of bolt hole. Visually check or measure to find bending or deformation. Visually check or measure to find wear or deformation of support pin.	When found visually. When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the degree of bending or deformation exceeds 0.5mm. When found visually. 	Replace
Short Adjustment Plate (standard equipment)	Visually check or use color dyes to find scratches or cracks. Measure wear or deformation of bolt hole. Visually check or measure to find bending or deformation.	When found visually. When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the degree of bending or deformation exceeds 0.5mm. 	Replace
*Medium Adjustment Plate	Visually check or use color dyes to find scratches or cracks. Measure wear or deformation of bolt hole. Visually check or measure to find bending or deformation.	When found visually. When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the degree of bending or deformation exceeds 0.5mm. 	Replace

*Parts marked with * are sold separately.

Item	Inspection method	Limit of use	Action
*Long Adjust-ment Plate	Visually check or use color dyes to find scratches or cracks. Measure wear or deformation of bolt hole. Visually check or measure to find bending or deformation.	When found visually. When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the degree of bending or deformation exceeds 0.5mm. 	Replace
*Short or Long Joint Bar	Visually check or measure to find bending or deformation.	When the degree of bending or deformation exceeds 1mm. 	Replace
Pad	Visually check for cracks, chips or peeling on the pad. Visually check or measure to find bending or deformation. Visually check or measure to find wear of rubber pad. Measure wear or deformation of bolt hole. Measure if the protrusion of the spike is appropriate. Visually check or measure wear, deformation or chips of spike.	When found any cracks, chips or peeling visually.  When the degree of bending or deformation exceeds 0.5mm.  When the thickness is less than 10mm.  When the diameter of any part of circumference of any hole exceeds the respective size in the figure below. When the protrusion of the spike is less than 1mm. (When using it as a non-marring pad, set it approximately 1mm below the surface of the pad.)  When the width of wear exceeds 1.5mm. When found deformation or chips. 	Replace Adjust by tightening Replace
Auto-matic Sec-tion	Move the lifting hook up and down to check whether the auto (automatic attachment/-detachment) mechanism operates properly. Check the installation condition.	When the section is not operating in a cycle of opening and closing. When the hex bolt D is missing or loose.	Replace Adjust by tightening

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