



# **Internal Expanding Lifting Clamp for U-shaped Gutter (Pad Type)**

## **BUC240N**

### **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 energy-saving lifting equipment which have been developed for the purpose of transporting steel materials and processed products.

## **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  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

 <b>WARNING</b>	
<ul style="list-style-type: none"> <li>● Do not operate until the contents of the operation manual, and caution tag/plate are thoroughly read and understood.</li> <li>● Do not operate without a legal qualification.</li> <li>● Be sure to clear of the area of the operation for lifting or turning a load against possible drop off or fall over.</li> <li>● Do not use for other than intended purpose.</li> </ul>	 Prohibited
<ul style="list-style-type: none"> <li>● Make sure to execute an inspection periodically and before each operation.</li> </ul>	 Instructed



# 2. Check before operation





 <b>WARNING</b>	
<ul style="list-style-type: none"> <li>● Do not use clamp unsuitable for the operation method.</li> <li>● Do not use clamp of an abnormal condition; deformed, cracked, worn, malfunctioning, etc.</li> <li>● 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°)</li> </ul>	 Prohibited
<ul style="list-style-type: none"> <li>● Check the type, rated capacity, clamp range, and “periodic inspection completed” label displayed on clamp body.</li> <li>● The load to be lifted shall be within an allowable range of rated capacity of clamp.</li> <li>● Thickness of load shall be within designated clamping range.</li> </ul>	 Instructed
 <b>CAUTION</b>	
<ul style="list-style-type: none"> <li>● 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)</li> </ul>	 Prohibited
<ul style="list-style-type: none"> <li>● Sling to be used for the clamp shall be an appropriate one for lifting operation.</li> </ul>	 Instructed

### 3. Lifting operation






 <b>WARNING</b>	
<ul style="list-style-type: none"> <li>● Do not use clamp, lifting at one point. (excluding special or custom ordered products)</li> <li>● 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)</li> <li>● Do not use the clamp for pulling out steel plate sheet from the steel sheet pile or for vertical lifting of the sheet.</li> <li>● Do not use the clamp when strong wind may threaten to cause any danger.</li> <li>● Do not use the clamp for a hydraulic shovel.</li> </ul>	 Prohibited
<ul style="list-style-type: none"> <li>● Install two or more clamps in a balanced way to keep the balance of load.</li> </ul>	 Two point lift
<ul style="list-style-type: none"> <li>● The lifting angle of the clamps and the dividing angle should be kept within the allowable angles according to types.</li> <li>● Load should be inserted to the innermost end of the jaw opening.</li> <li>● When you use the clamp with a lock mechanism, never fail to have the lock engaged.</li> </ul>	 Instructed
 <b>CAUTION</b>	
<ul style="list-style-type: none"> <li>● If oil, paint, scale, rust, etc. are on the gripping pad, do not use the clamp.</li> <li>● Do not drop clamp or drag on the ground.</li> </ul>	 Prohibited

### 4. Operation of a crane

 <b>WARNING</b>	
<ul style="list-style-type: none"> <li>● Never lift a load exceeding the rated capacity.</li> <li>● Do not operate a crane in such a way as to give an impact to the load or the clamp.</li> <li>● Do not allow a person to stand on the load or to carry him.</li> <li>● Do not lift a load which is not free from any other objects.</li> <li>● Do not release the lock of clamp while lifting load.</li> <li>● Avoid unintended contact by load to an adjacent member or to the clamp, which has been removed from the load.</li> </ul>	 Prohibited

<ul style="list-style-type: none"> <li>● 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).</li> <li>● 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)</li> </ul>	 Instructed
 <b>CAUTION</b>	
<ul style="list-style-type: none"> <li>● Do not operate the crane in such a way as to drag the load along the ground.</li> <li>● Do not leave the crane (or winder, etc.) unattended from an operating position while keeping the load lifted with the clamp.</li> </ul>	 Prohibited
<ul style="list-style-type: none"> <li>● Raising and lowering operation by crane should be done slowly and carefully.</li> </ul>	 Instructed

## 5. Maintenance, storage and alteration

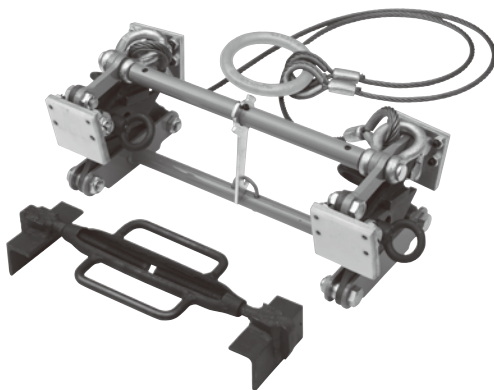
 <b>WARNING</b>	
<ul style="list-style-type: none"> <li>● Never alter the clamp and its accessories.</li> <li>● Do not apply welding or heat to the clamp or its accessories.</li> <li>● Do not use any other parts than our company's genuine parts.</li> <li>● Clamps which require the repair should be stored at a different place so that they are not used mistakenly.</li> </ul>	 Prohibited
<ul style="list-style-type: none"> <li>● Persons with specialized knowledge designated by the business owner are to conduct maintenance and repairing work.</li> <li>● When any abnormality with the clamp is found, do not use it and immediately repair or dispose.</li> <li>● Remove, if any, paint or mud sticking to the moving parts of the clamp, cams, and pads.</li> </ul>	 Instructed
 <b>CAUTION</b>	
<ul style="list-style-type: none"> <li>● Conduct maintenance and repairing without any load attached.</li> <li>● Conduct maintenance and repairing after posting a sign indicating that you're on the maintenance work.</li> <li>● Never fail to lubricate oil on the rotating parts of the clamp (around the pins), guide grooves, sliding parts, etc.</li> <li>● Be sure to store clamps indoor.</li> </ul>	 Instructed



# **Internal Expanding Lifting Clamp for U-shaped Gutter (Pad Type)**

## **BUC240N**

**Operation Manual and Inspection Standards**







# Internal Expanding Lifting Clamp for U-shaped Gutter (Pad Type) BUC240N

## ■ Uses

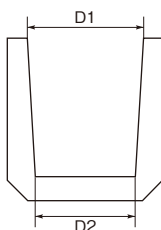
Clamps dedicated for lifting reinforced concrete U-shaped gutter, drop-lid type U-shaped gutter and U-shaped underground cable box.

## ■ Features

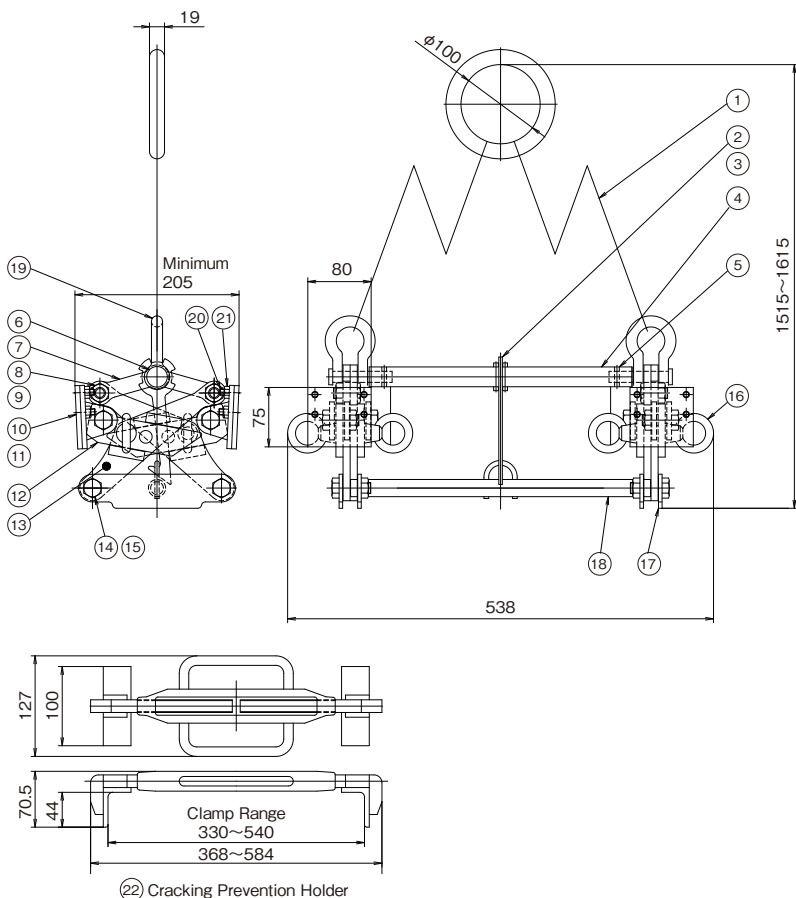
1. Including a holder for preventing the cracking of U-shaped gutter.  
(Be sure to use it with the main body as a set.)
2. Two-level clamp adjustment type.
3. The inside clamping avoids touching the alignment levelling strings, and makes unnecessary to leave a clearance space outside the load.
4. The spike design of the pads allows to grip firmly the load.
5. The pad surface is made of special rubber, and can also be used as a non-marring type pad by retracting the spikes.
6. Switching to the open lock is easy with a single touch operation of the stopper.

## ■ Specifications

Item No.	Rated Capacity (kg)	N.W. (kg)	Clamp Range (mm) (2 Level Adjustment Type)	Applicable type of U-shaped gutter and reference size			
				Size Name and Standard Size	D1(mm)	D2(mm)	Length (mm)
BUC240N	500	12	Level 1 220~240	U-shaped 240	240	220	600~2000
				Drop-Lid Type U-shaped Gutter 250	250	230	
			Level 2 260~290	Underground Cable Box 250×250	270	250	
				U-shaped and Drop-lid Type U-shaped Gutter 300A,300B,300C	300	260~280	



# ■REPLACEMENT PARTS AND FITTINGS

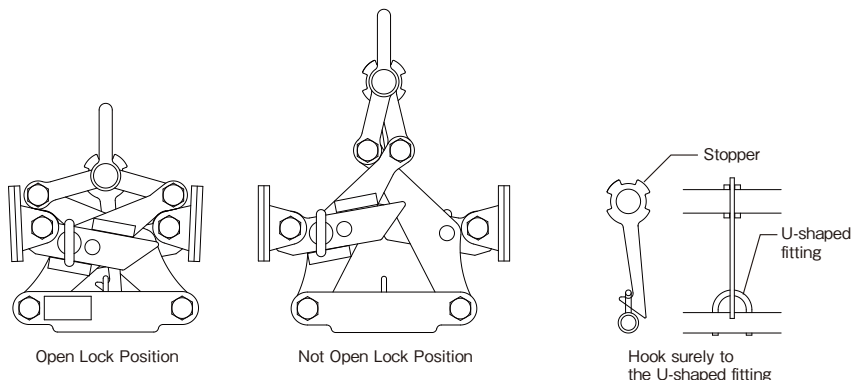


Part No.	Part Name	Q'ty	Part No.	Part Name	Q'ty
1	Shackle, Wire Rope	1	12	Adjustment Plate	4
2	Rock Lever	1	13	Claw	4
3	Spring Pin ( $\phi 6 \times 35$ )	2	14	Claw Support Pin	4
4	Connecting Pipe	1	15	Collar	4
5	Spring Pin ( $\phi 6 \times 25$ )	2	16	I-shaped Nut	4
6	Shackle Support Pin	2	17	Main Body Plate	2
7	Link	4	18	Main Body	1
8	Link Support Pin	4	19	Shackle	2
9	U-shaped Nut	12	20	Spike	16
10	Pad	4	21	Nut	16
11	Pad Support Pin	4	22	Cracking Prevention Holder	1

## ■How to use

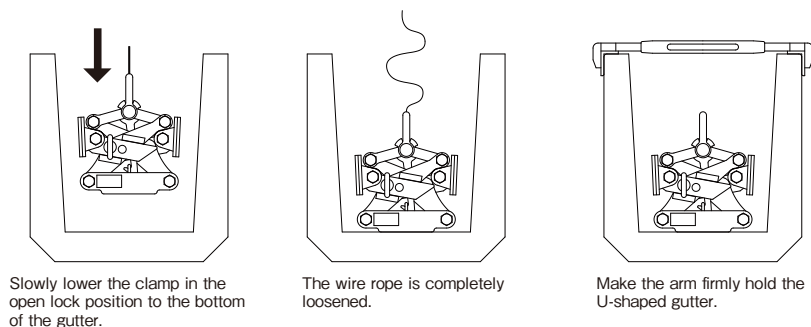
### 1. Preparation for lifting

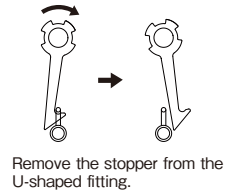
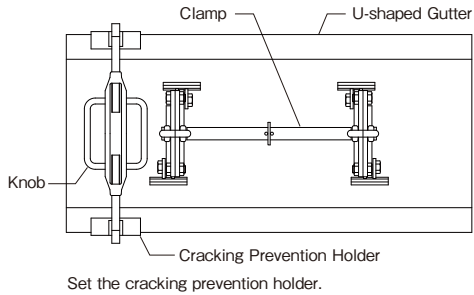
Lift the clamp and check that it is in the open lock position as shown in the figure below. If not, hook the stopper onto the U-shaped fitting on the main body and lift it again to open it.



### 2. Setting to the U-shaped gutter

Move the clamp in the open lock position onto the U-shaped gutter and lower it to the bottom of the gutter until the wire rope is completely loosened. Next, set the cracking prevention holder just beside the clamp. At this point, rotate the knob on the main body to make the arm firmly hold the U-shaped gutter. Next, remove the stopper from the U-shaped fitting, and then the load can be lifted.





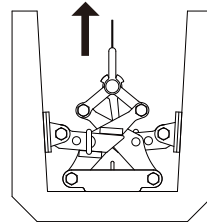
### Caution:

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

## 3. Lifting

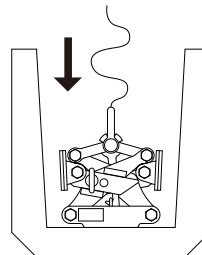
When the load is lifted, the clamp gets automatically into tightening position.

When you hoist the crane, the U-shaped gutter is firmly gripped and lifted.



## 4. Moving and landing

After moving the U-shaped gutter to the target place and confirming that it is stable, hoist down until the wire rope is completely loosened.

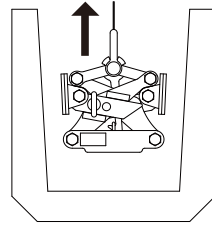


## 5. Removing

Hook the stopper to the U-shaped fitting and lift again to set the clamp in the open lock position and then you can move the clamp alone to the next load to be operated.

### Caution:

When the wire rope is lowered, the stopper may automatically hook onto the U-shaped fitting. When lifting the load again due to positioning of the U-shaped gutter, etc., be sure to check that the stopper is not hooked onto the U-shaped fitting.

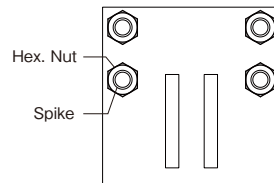


## ■ How to replace parts

### 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.

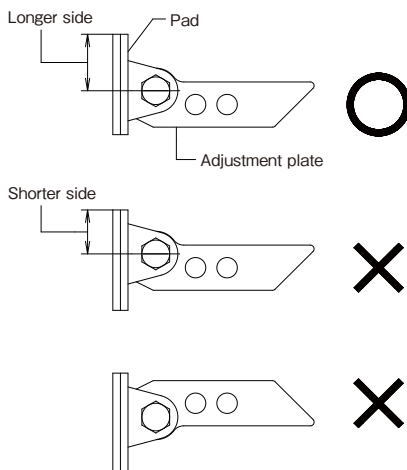


## ■ WARNING:

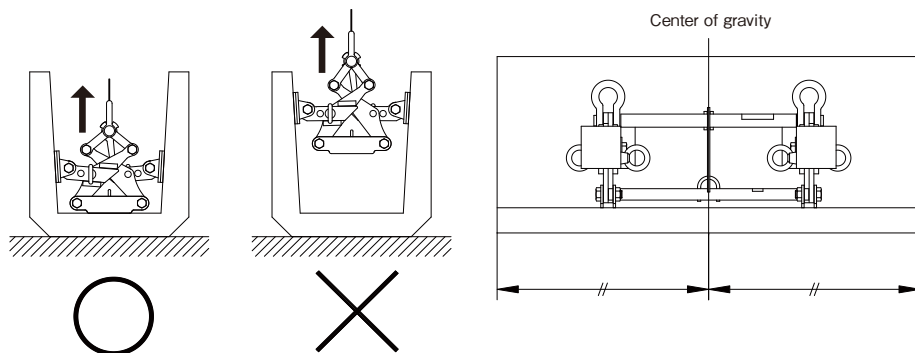
### PRECAUTIONS FOR USE

1. All personnel must be clear of the area of operation during lifting. Especially, it is extremely dangerous to enter under the lifting load. Please do not enter under any circumstances.

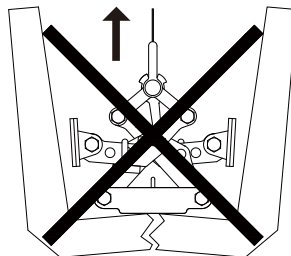
2. Never lift U-shaped gutters that exceed the applicable clamp range. Adjust the adjustment plate according to the size of the U-shaped gutter to be lifted. Also, install the pads correctly with the long side facing upward.



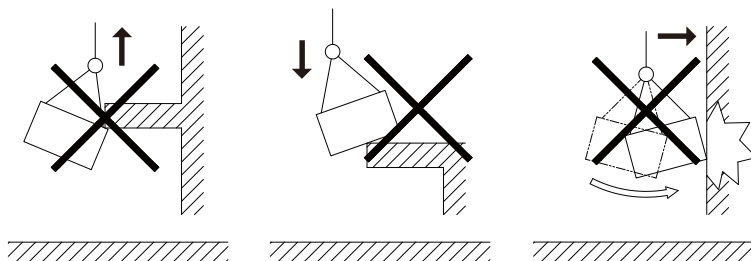
3. Confirm the weight of the load. Never use for the load beyond the clamp range.
4. Be sure to set the clamp in the center and lift the center of gravity of the U-shaped gutter. Be sure to set the clamp at the bottom of gutter.



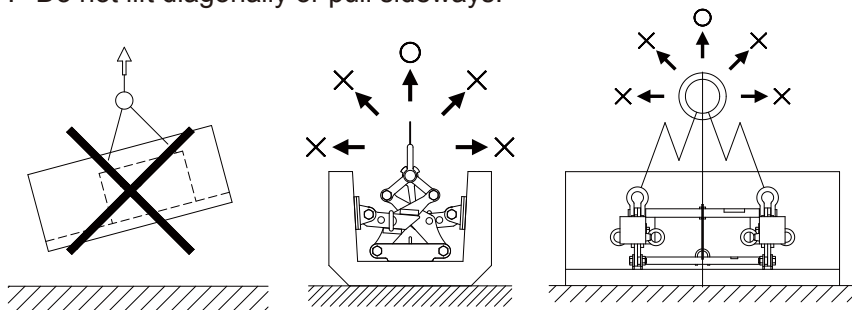
5. Do not apply sudden shock loads.  
This may cause the clamp to break or fall off.



6. During lifting, special attention must be given to prevent the main body and U-shaped gutter from its unintended contact with any other objects. The shock and looseness of wire rope may cause fall accident.



7. Do not lift diagonally or pull sideways.



8. Never use it to pull out existing U-shaped gutter.

9. Do not drop or apply shock to the clamp.

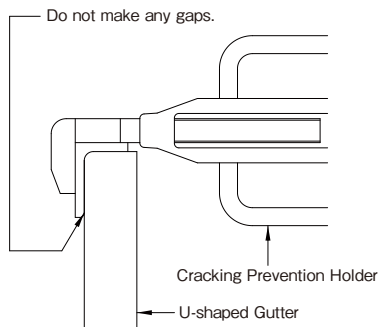
10. Do not use the pad and U-shaped gutter with water, snow, ice, oil, sand, mud, etc. They may cause any slip of U-shaped gutter. Remove them with a dry cloth before use.



11. When lifting, be sure to set the cracking prevention holder just beside the clamp and make the arm firmly hold the U-shaped gutter.

**Caution:**

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



12. Do not modify in any way, such as by cutting, heating or welding.
13. Periodic lubrication is required at the sliding section. Please take care not to get oil on the pad surface.
14. Please conduct daily inspections to ensure that there are no abnormalities in the operation of each part based on the inspection standards. Please pay special attention to the permissible limit of use.
15. This clamp is dedicated for lifting reinforced concrete. Using it with materials other than concrete products (iron plates, steel materials) may cause any slip and is dangerous. Please refrain from using it under any circumstances.

## ■ CAUTION:

- ◆ Before use, be sure to check and inspect the pads for wear, damage, and other abnormalities.
- ◆ Do not use for any objects other than concrete material.
- ◆ Use within the rated capacity.
- ◆ Use within the clamp range.
- ◆ 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 apply shock to the load or lifting clamp.
- ◆ Do not move or stop the load suddenly.
- ◆ Do not use for any curing concrete material.
- ◆ Do not alter. Heating, modifying, etc. will significantly reduce the quality (strength).
- ◆ Do not use the pad and the load with water, oil, sand, mud, ice, snow, etc. Remove them from the load before use.

## ■ OTHER:



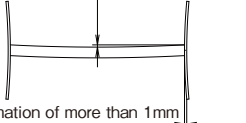
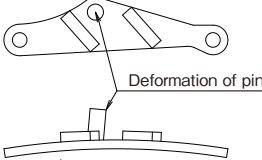


- ◆ Inquiries for Repair Parts and Repair.  
If repair parts or repairs are required, stop using this clamp and contact your distributor.

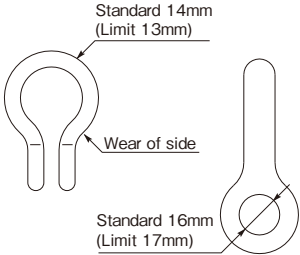
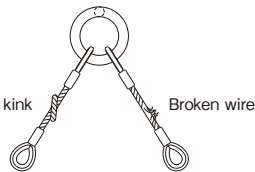
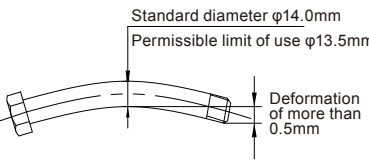
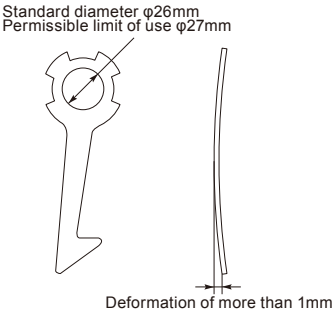
## ■ DAILY INSPECTION:


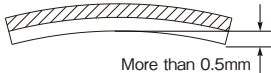
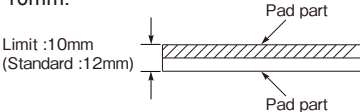
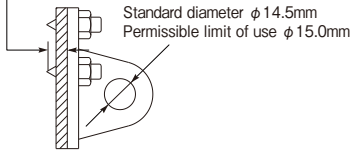
Conduct daily checks and maintenance to prevent the loss of safety and efficiency.

1. Check that there are no abnormalities for 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, split pin, etc. are installed in the good condition.
4. Check that there are no wear or cracks for pad or spike.
5. Check if the movement and lubrication condition of each part are good.
6. Refer to other inspection standards.

# INSPECTION STANDARDS FOR BLC240N

Item	Inspection method	Limit of use	Remedy
Link	<p>Measure the deformation of pin hole.</p> <p>Visually check or measure to find bending or deformation.</p>	<p>When the degree of deformation or wear exceed 0.5mm. (Pin hole)</p> <p>When the degree of deformation or wear exceed 1mm. (Bending)</p> <p>Deformation of more than 1mm</p>  <p>Standard diameter <math>\phi 14.5\text{mm}</math> Permissible limit of use <math>\phi 15.0\text{mm}</math></p> <p>Deformation of more than 1mm</p>  <p>Standard diameter <math>\phi 14.5\text{mm}</math> Permissible limit of use <math>\phi 15.0\text{mm}</math></p> <p>Deformation of more than 1mm</p>  <p>When the abnormal noise or sticking occur.</p>  <p>Standard diameter <math>\phi 14.5\text{mm}</math> Permissible limit of use <math>\phi 15.0\text{mm}</math></p>	<p>Replace</p>
		<p>Deformation of more than 1mm</p>  <p>Stamped side</p>  <p>Standard diameter <math>\phi 14.5\text{mm}</math> Permissible limit of use <math>\phi 15.0\text{mm}</math></p>	Discard

Item	Inspection method	Limit of use	Remedy
<b>Shackle</b>	<p>Visually check or use color dyes to find cracks or scratches.</p> <p>Measure wear of lifting part.</p> <p>Measure deformation of hole.</p>	<p>When found visually.</p> 	Replace
<b>Wire Rope</b>	<p>Visually check for damage or broken wire.</p> <p>Visually check for kink.</p> <p>Visually check for rust.</p>		Replace
<b>Bolt &amp; Pin</b>	<p>Visually check or measure wear of shaft part.</p> <p>Visually check or measure bending or deformation.</p>	<p>When the degree of deformation or wear exceed 0.5mm.</p> 	Replace
<b>Stopper</b>	<p>Measure the deformation of pin hole.</p> <p>Visually check or measure bending or deformation.</p>	<p>When the degree of deformation or wear exceed 1mm.</p> 	Replace

Item	Inspection method	Limit of use	Remedy
<b>Spike &amp; Pad</b>	Visually check for cracks, damage and peeling off of the pad.	<p>When visually found crack, damage and peeling off of the pad.</p> 	Replace
	Visually check or measure for deformation.	<p>When found more than 0.5mm deformation.</p> 	
	Visually check or measure for wear of rubber pad.	<p>When the thickness is less than 10mm.</p> <p>Limit :10mm (Standard :12mm)</p> 	
	Visually check or measure for wear or deformation of bolt hole and if the protrusion of the spike is appropriate.	<p>When found wear or deformation of more than 0.5mm from the standard dimensions.</p> <p>When the protrusion of the spike is less than 1mm. (When used as a non-marring pad, lower the pad approximately 1mm below the surface of the pad.)</p> <p>Less than 1mm</p> 	
	Visually check or measure for wear, deformation or crack of the spike.	<p>When the width of wear exceeds 1.5mm or any wear or crack are found.</p> 