



## **Universal Lifting Clamp for Concrete Material**

**Adjustable Clamp Range Type**

**(Pad Type)**


**AMC 250N**

**AMC 500N**

# **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

## ■ Applications

Apply this clamp to the carriage, loading and unloading of concrete products.

## ■ Features

1. You can obtain a wide range of clamping by changing the position of the ratch according to the size of the work.
2. You can lift the work well-balancedly by setting the shackle at the central gravity point.
3. Pads continue to always press against the work due to the spring built in the unit, which is ready to lift the work.
4. Use of polyurethane rubber material for pads does not damage the work.
5. Ensure the clamping of workpiece by applying spike mechanism for pad type.
6. The clamping power increases in proportion to the weight of the work, which ensures a safety operation.

## ■ Specification

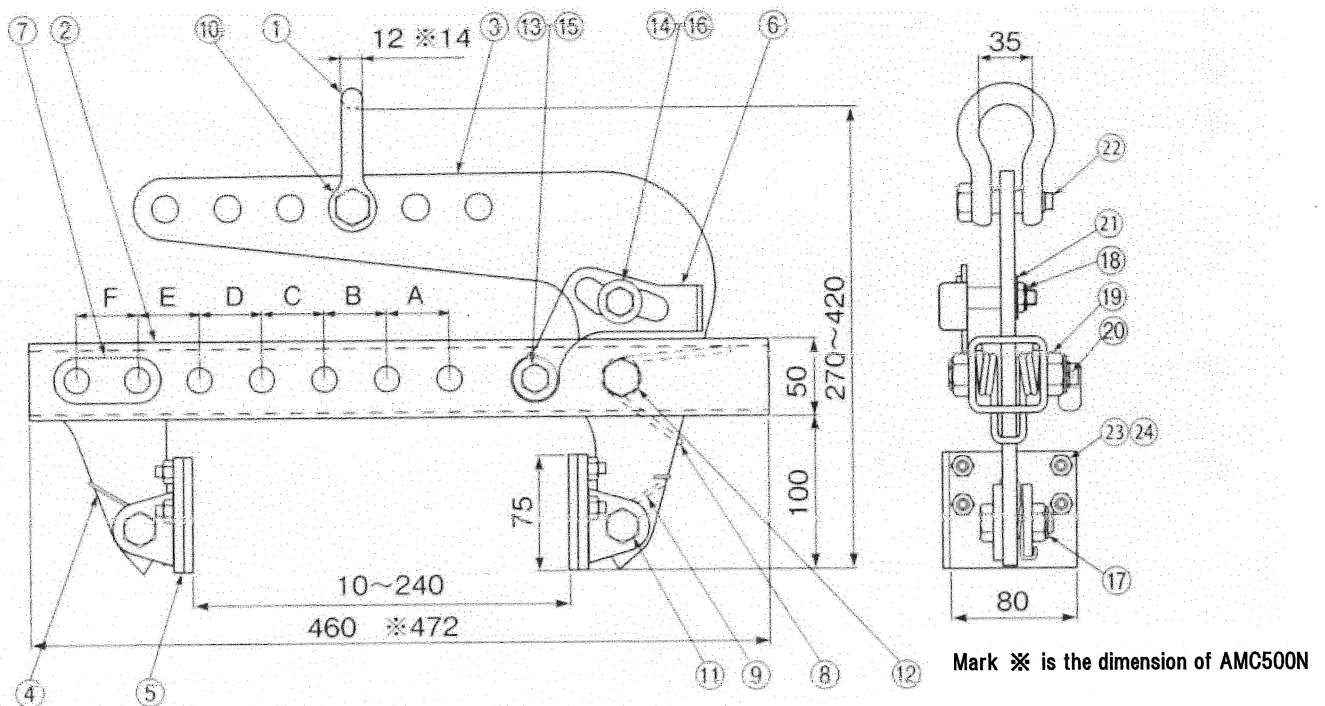
Item No.	Capacity	Clamping Ranges	N.W.
AMC 250N	250 kg	10~240mm	5.4 kg
AMC 500N	500 kg	10~240mm	7.5 kg

## ● Table of clamping ranges

(Unit: mm)

Position of the hole of the adjustable pins	A	B	C	D	E	F
AMC 250N	10~40	40~80	80~120	120~160	160~200	200~240
AMC 500N						

## ● Major Dimensions

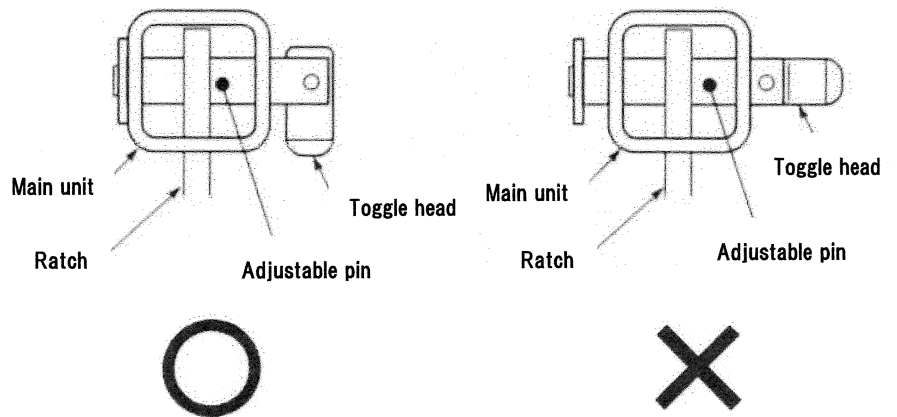


## ● Table of Parts

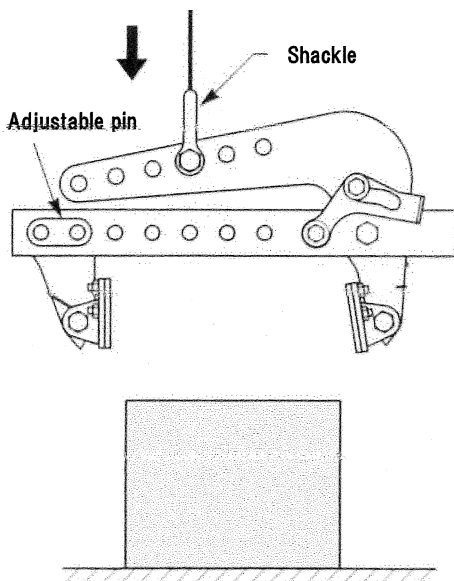
No.	Parts Name	Q'ty	No.	Parts Name	Q'ty	No.	Parts Name	Q'ty
1	Shackle	1	9	Spring for pads	2	17	U-nut	2
2	Main unit	1	10	Bolts of shackle	1	18	U-nut	2
3	Arm	1	11	Bolts for pads	2	19	U-nut	1
4	Ratch	1	12	Bolts for main unit	1	20	Spring pin	1
5	Pad	2	13	Bolts for lever (long)	1	21	Flat washer	4
6	Lever	1	14	Bolts for lever (short)	1	22	Throttle pin	1
7	Adjustable pin	1	15	Collar (long)	1	23-24	Spike · Hex nut	8
8	Spring for arm	1	16	Collar (short)	1			

### ■ Method of operation

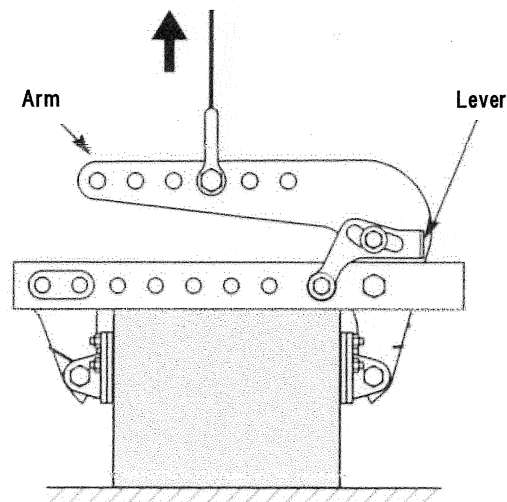
1. Adjust the position of the adjustable pin according to the sizes of the work. When shifting the position of the adjustable pin, put the pin through the main unit to the very end until the toggle head appear.



2. Adjust the position of the shackle according to the central gravity points.

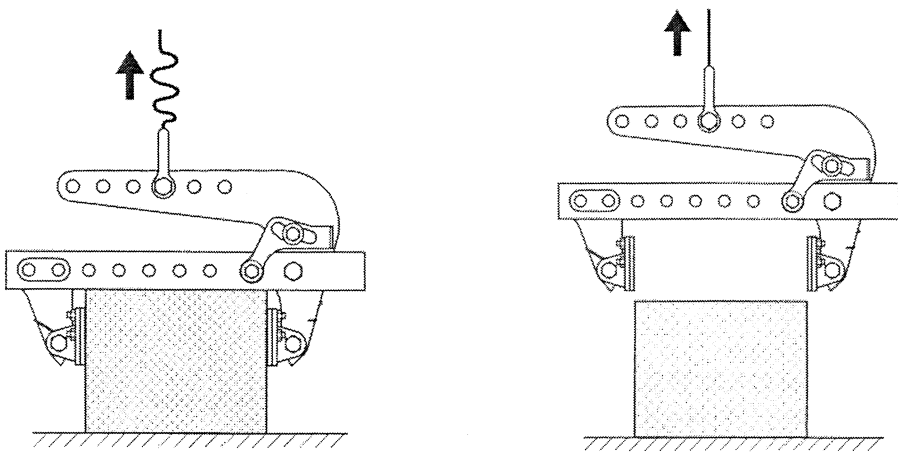


3. When the release lever is raised by pressing down the arm with your hand, you are now in a position to lift the work.



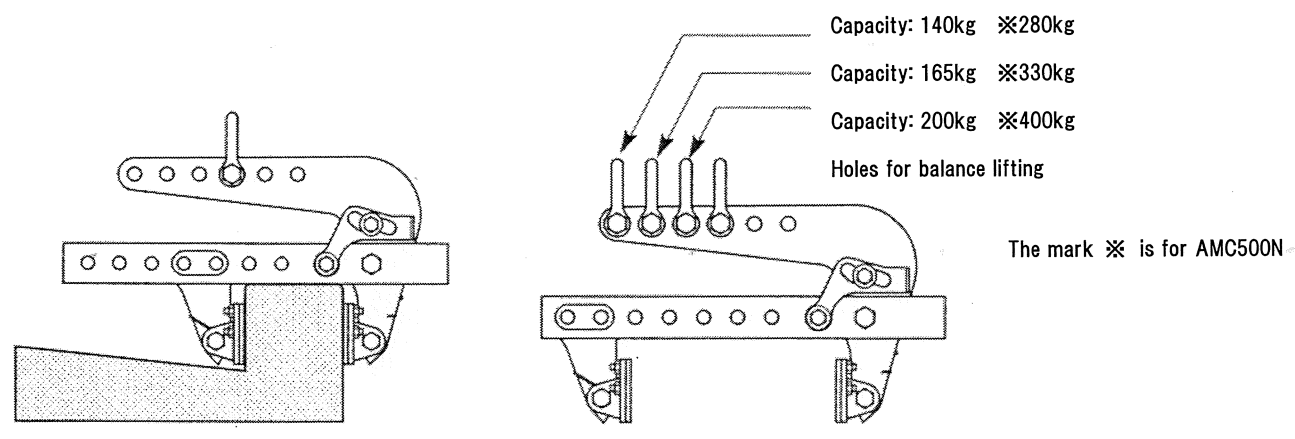
- (4) After carrying the work to the destination, lower the clamp till the wire rope is fully loosened.

(5) When you press down the arm with your hand, the release lock is set on, and in such a state of release, you can lift the clamp alone.



**Attention:**

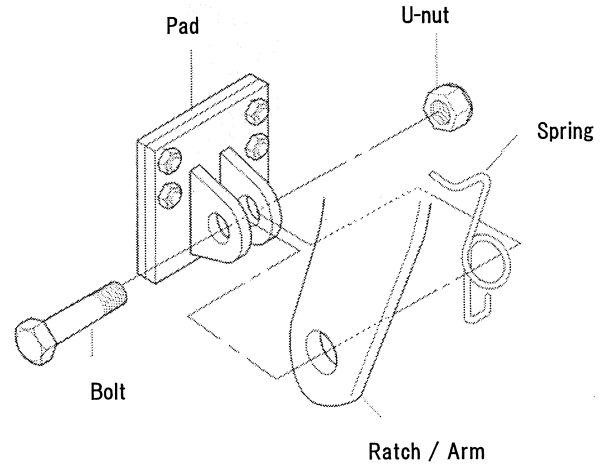
This clamp can be used to lift the eccentric work as per the below drawing well-balancedly by setting the shackle at the central gravity point. But, when lifting well-balancedly, adjust the shackle attaching position and subtract the lifting load capacity.



■ Replacing method for parts

(1) Replacing method for pads

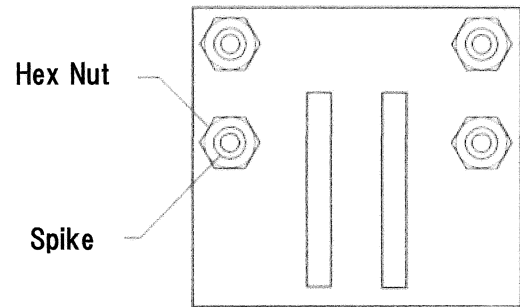
- ① Loosen the bolt and U-nut and detach the pad and spring.
- ② Attach the new pad and spring to the ratch.
- ③ Tighten the bolt and U-nut.



## (2) Adjusting and replacing method of spikes

When using pad as non-marring pad or spike is worn, the spikes need to be adjusted and repaired.

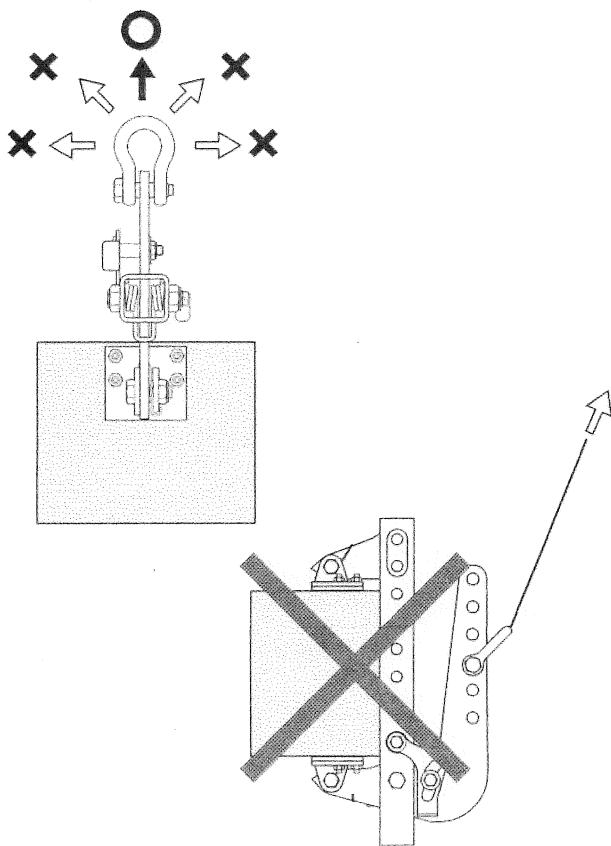
- ① Loosen the hex nut, and adjust and replace by turning the spikes by hex wrench or flat-head screw driver
- ② Tighten the hex nut.



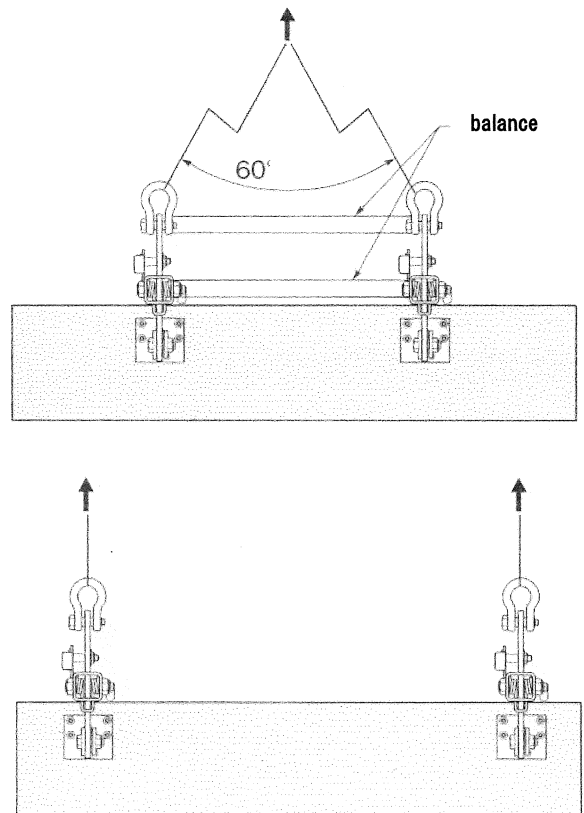
## Cautions

### ■ Cautions in operation

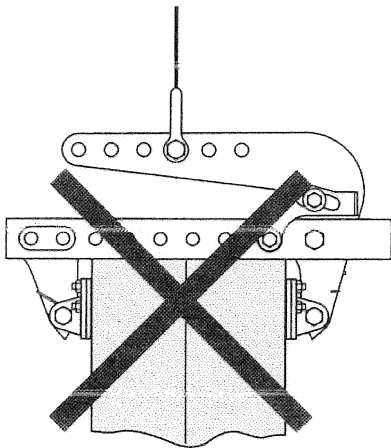
2. Lifting must be in principle vertical lifting. Pulling the clamp sideways deprives the clamping strength from the pads. Never execute a horizontal pulling



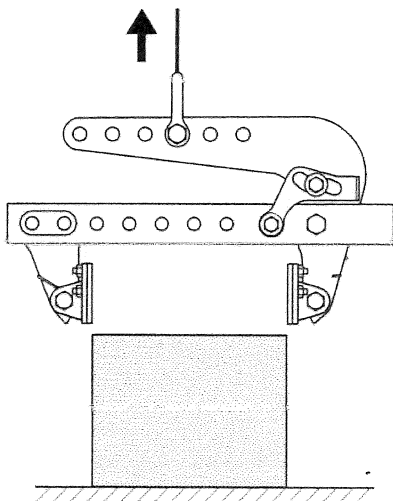
1. When you lift the work at two points, use the simple balance so that the work is vertically lifted at two points.



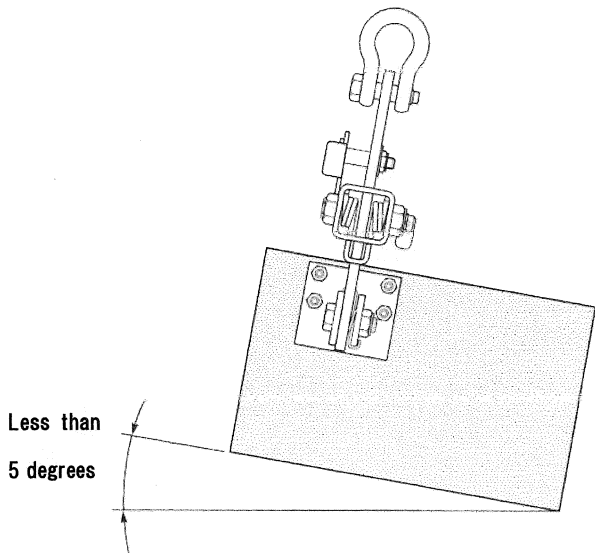
3. You are not allowed to lift a pile of U-shaped gutters, concrete boards at one time.



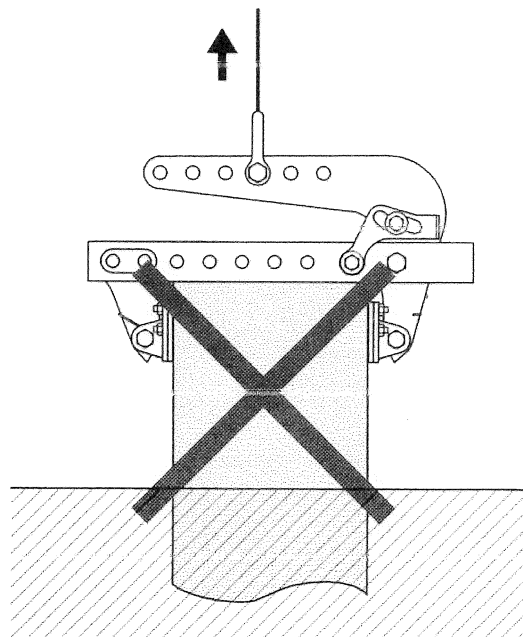
4. Ensure that the pads have securely clamped the work before the lifting operation.



5. If you lift the work away from its central gravity point, the gripping position of the clamp threatens to slide, which may cause an incident. So, never do that.



6. Never apply this clamp to the extracting buried concrete products.



■ **Cautions for safety**

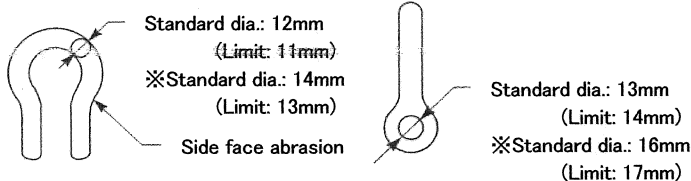
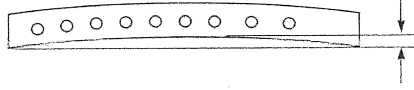
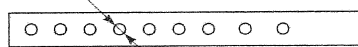
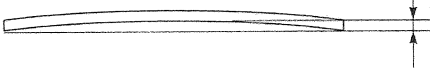
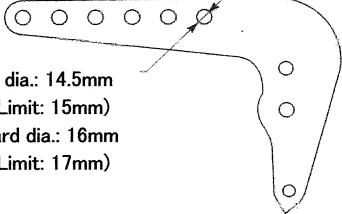

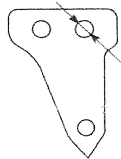

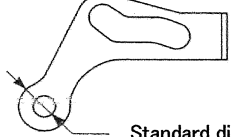
1. Do not use this unit beyond the allowable load and outside the clamping ranges.
2. Do not apply this unit to any other products than concrete ones.
3. Do not apply this unit to concrete products under curing.
4. Do not enter the area where the lifted work may drop.
5. Do not give any impact to the work or the lifting clamp.
6. Avoid any abrupt movement or stop of the work.

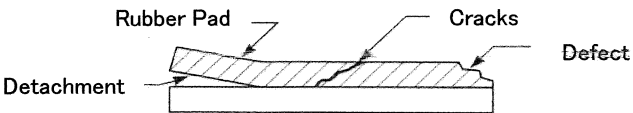
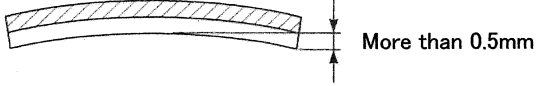
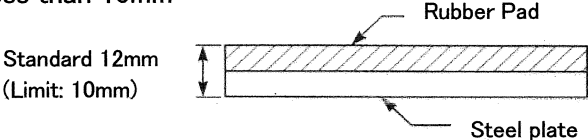
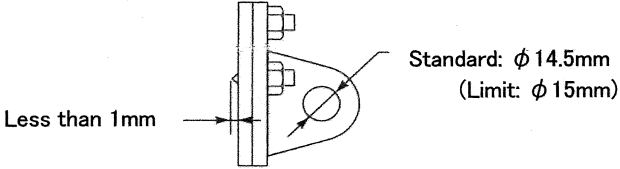
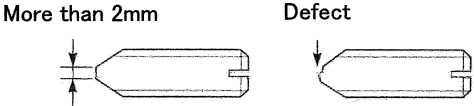
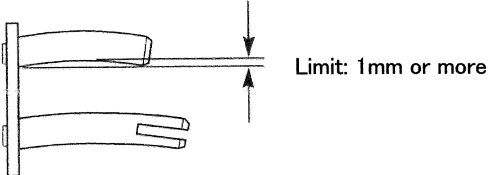
■ **Cautions for management**

1. Never fail to check before use for detachment and the level of abrasion of the polyurethane rubber pads and abnormalities with any other parts.
2. Periodically fill in oil to moving parts.
3. Do not remodel the unit. Addition of heat and any processing will substantially degrade the quality (strength) of the unit.
4. When water, oil, sands, ice, or snow is on the surface of the concrete products to lift, there threatens to be a slipping accident. Never fail to remove any of them from the concrete products.

■ INSPECTION STANDARDS

The mark ※ is for the dimension of AMC500N

Category	Inspection Method	Limit of use	Counter-measures
Shackle	<ul style="list-style-type: none"> <li>● Check for cracks on the shackle. (by visual check or color check)</li> <li>● Check for abrasion of the lifting part of the shackle (by measuring device)</li> <li>● Check for abrasion or deformation of pin hole (by measuring device)</li> </ul>	<ul style="list-style-type: none"> <li>● When confirmed by visual checking</li> <li>● When hole diameter, even one part of circumference exceeds the size as per the below table.</li> </ul> 	Replacement
Main unit	<ul style="list-style-type: none"> <li>● Check for deflection or deformation (by visual check or measuring device)</li> <li>● Check for abrasion or deformation of pin hole (by measuring device)</li> </ul>	<p>Limit: 1mm or more</p>   <p>Standard dia.: 14.5mm (Limit: 15mm)          ※Standard dia.: 16.5mm (Limit: 17.5mm)</p>	Replacement
Arm	<ul style="list-style-type: none"> <li>● Check for deflection or deformation (by visual check or measuring device)</li> <li>● Check for abrasion or deformation of pin hole (by measuring device)</li> </ul>	<p>Limit: 1mm or more</p>   <p>Standard dia.: 14.5mm (Limit: 15mm)          ※Standard dia.: 16mm (Limit: 17mm)</p>	Disposal
Ratch	<ul style="list-style-type: none"> <li>● Check for deflection or deformation. (by visual check or measuring device)</li> <li>● Check for abrasion or deformation of pin hole (by measuring device)</li> </ul>	<p>Limit: 1mm or more</p>   <p>Standard dia.: 14.5mm (Limit: 15mm)          ※Standard dia.: 16mm (Limit: 17mm)</p>	Disposal
Lever	<ul style="list-style-type: none"> <li>● Check for deflection or deformation. (by visual check or measuring device)</li> <li>● Check for abrasion or deformation of pin hole (by measuring device)</li> </ul>	<p>Limit: 1mm or more</p>   <p>Standard dia.: 14.5mm (Limit: 15mm)</p>	Replacement

<p>Pad</p>	<ul style="list-style-type: none"> <li>● Check for cracks or defect on the polyurethane rubber pad (Visual check)</li> <li>● Check for deflection or deformation. (by visual check or measuring device)</li> <li>● Check for abrasion of the polyurethane rubber pad.(by visual check or measuring device)</li> <li>● Check for abrasion or deformation of pin hole. Check for protuberance dimension of spike .(by visual check or measuring device)</li> <li>● Check for abrasion or deformation of spike .(by visual check or measuring device)</li> </ul>	<ul style="list-style-type: none"> <li>● When the cracks, defect, or detachment were detected by visual check</li> </ul>  <ul style="list-style-type: none"> <li>● When deflection or deformation of more than 0.5mm were detected</li> </ul>  <ul style="list-style-type: none"> <li>● When the polyurethane rubber pad is reduced to less than 10mm</li> </ul>  <ul style="list-style-type: none"> <li>● When the abrasion or deformation of more than 0.5mm than standard dimension were detected. When the protuberance dimension of spike become less than 1mm. (When using as non-marring pad, lower the spike by 1mm from the pad surface.)</li> </ul>  <ul style="list-style-type: none"> <li>● When the abrasion width of more than 1.5mm or defects were detected.</li> </ul> 	<p>Replacement</p>									
<p>Spring</p>	<ul style="list-style-type: none"> <li>● Check for deformation or extension</li> <li>● Check for the falling</li> </ul>	<ul style="list-style-type: none"> <li>● When there is no regular repulsive force</li> </ul>	<p>Replacement</p>									
<p>Adjustable pin</p>	<ul style="list-style-type: none"> <li>● Check for abrasion or deformation of adjustable pin shaft. (by measuring device)</li> <li>● Check for deflection or deformation (by visual check or measuring device)</li> </ul>	<ul style="list-style-type: none"> <li>● When one part of shaft diameter become less than the below dimensions.</li> </ul> <table border="1" data-bbox="592 1697 1310 1800"> <thead> <tr> <th>Size</th> <th>Standard dimension</th> <th>Limit dimension</th> </tr> </thead> <tbody> <tr> <td>AMC250N</td> <td>14.0</td> <td>13.5</td> </tr> <tr> <td>AMC500N</td> <td>16.0</td> <td>15.5</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>● When deflection or deformation of more than 1mm were detected.</li> </ul> 	Size	Standard dimension	Limit dimension	AMC250N	14.0	13.5	AMC500N	16.0	15.5	<p>Replacement</p>
Size	Standard dimension	Limit dimension										
AMC250N	14.0	13.5										
AMC500N	16.0	15.5										

Bolt and Nut

● Check for abrasion or deformation of adjustable pin shaft.  
(by measuring device)

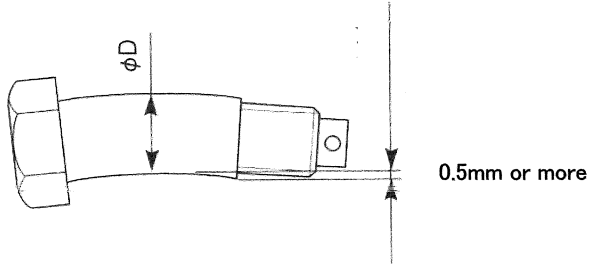
● Check for deflection or deformation (by visual check or measuring device)

● Check for detachment of split pin

● When one part of shaft diameter become less than the below dimensions.

Screw size	M10	M14	M16
D(mm)	9.5	13.5	15.5

● When deflection or deformation of more than 0.5mm were detected.



● When defect, loosening, or detachment were detected.

Replacement