SAFETY CLAMPS, INC.

HOME OF THE "BIG BITE" LIFTING CLAMP

Operation, Maintenance and Repair Manual for

HL Series Clamps

The HL Series includes models:

HL
HLW
HLD
HLDW

Excludes Model HL-Lock

Products manufactured by Safety Clamps, Inc. meet and/or exceed ANSI/ASME B30.20 standards

<u>Warning</u>

Prior to operating your Safety Clamp, please ensure <u>All</u> operators read and understand this manual.

Effective January 1, 2016

This manual supersedes all previous HL manuals.

Serial # _____

Model _____

Max. Rated Capacity
in Tons per Pair _____

Jaw Opening _____

Safety Clamps, Inc.
Repair Service Center

- Call 1-800-456-2809 for a Return Authorization Number.
  Include:
  Model
  Rated Capacity
  Serial Number
- You will receive a written quote within 24 hours of receipt of your Safety Clamp.
- Your Safety Clamp will be repaired, tested, re-certified, painted, and shipped within 24 hours of authorization.
- We also perform periodic inspections and re-certifications.
- It's that easy! Call 1-800-456-2809 for more details.

Register Your Clamp

Go to www.safetyclamps.com to register your clamp to receive the most appropriate service and product support for your clamp and new product updates as they come available.

10 Year Limited Warranty

All products manufactured by Safety Clamps, Inc. carry a limited warranty that the product is free from defects in materials and workmanship. This warranty applies only to the original end user of the clamp and is valid for 10 years from the date of purchase.

Conditions

This warranty only covers defects in materials and workmanship and only if the clamp has been inspected, maintained, and operated within the guidelines of the clamp's Operation, Maintenance, and Repair Manual. The warranty does not cover wear to parts such as pins, grippers, lock springs, etc. If a defect is found within the warranty period, the clamp will be repaired or replaced by determination of the manufacturer.

No warranty is given due to: regular wear; incorrect use; overload; modification of the clamp; improper maintenance and/or repair.

GENERAL INFORMATION

1. The HL series includes models:

   HL **(standard jaw opening with single gripping cam)**
   HLW **(extra wide jaw opening with single gripping cam)**

   HLD **(standard jaw opening with dual gripping cams)**
   HLDW **(extra wide jaw opening with dual gripping cams)**

2. The HL series Safety Clamps are Non Locking clamps that require a constant tension applied to the clamp throughout the entire operation.
3. The HL series Safety Clamps are designed to lift and transfer steel plate or bundles of steel plate in the horizontal position only.
4. The HL series models are used in pairs, sets of pairs, or in a tripod configuration (Fig. 1).
5. The HL series models with serrated grippers are rated to lift material with a hardness up to 450 Brinell (48 Rockwell C). For material harder than 450 Brinell, or for polished metals, use the HL series models with smooth steel or smooth stainless non marring grippers.
6. The rated capacity applies to one pair of lifting clamps with a top sling angle of up to sixty degrees (60°). As the top sling angle increases, the rated capacity of the pair of lifting clamps decreases (Fig. 2).
7. Always choose the proper clamp and rated capacity for the material to be lifted.
8. The operator must read and understand the Operator's Manual before using a Safety Clamp.

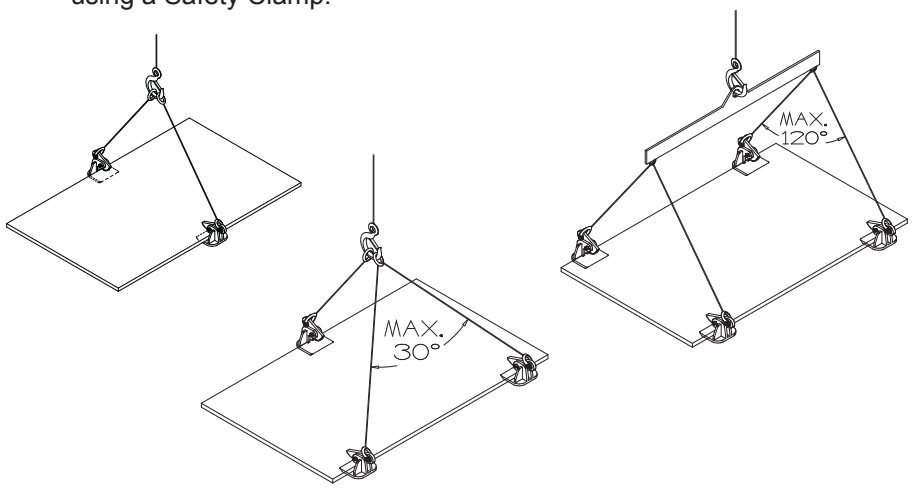


Figure 1

OPERATING AIDS

1. The HL series clamps should not be used to handle material with temperatures below 0° F or above 225° F. These temperature restrictions apply to both the ambient temperature and the temperature of the material to be lifted.
2. Never use the HL series clamps for vertical movement of materials.
3. Do not use clamps with serrated grippers on materials with a hardness **in excess** of 450 Brinell (48 Rockwell C). For material harder than 450 Brinell, or for polished metals, use the HL series models with smooth steel or smooth stainless non marring grippers.
4. Do not lift plate with mill scale, grease, or any other coatings that may prevent gripping surface from making solid contact with plate.
5. Never exceed fifteen degrees (15°) side load with an HL series clamp (Fig. 3).
6. Never exceed ninety degrees (90°) angle between material and sling (Fig. 4).
7. Always use a sling to lift each clamp.
8. Make sure the load to be lifted is properly balanced. More than one pair of clamps may be needed to balance the load.
9. Never use on plates or bundles of plates that are sagging and not able to support themselves (Fig. 7).
10. When lifting a bundle of plates, ensure the edges are even and up against the back jaw plate of each clamp. Never lift bundles of plate with the edges uneven (Fig. 6).
11. Never lift or transfer material over or near people.
12. Do not alter clamp. Do not weld, grind, or modify the clamp in any way.
13. If a clamp has been overloaded or damaged in any way, take the clamp out of service immediately.
14. Do not improvise and misuse the clamp. Always use correct clamp for the lift.
15. The rated lift capacity for the HL series clamps is for one pair of clamps. The rated capacity for each clamp is half the rated capacity for the pair.

Safety Clamps, Inc. HL Series Clamps

Figure 2: The rated capacity of the HL series clamps decreases as the top angle of the slings increases.

Top Sling Angle		% Maximum Rated Capacity
0° to 60°	=	100%
60+° to 90°	=	75%
90+° to 120°	=	50%

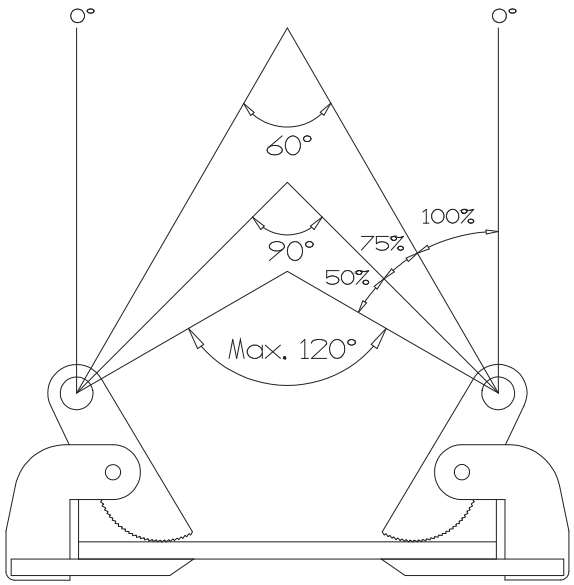


Figure 3:
Never exceed fifteen degrees (15°) side load with an HL series clamp.

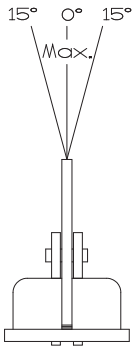
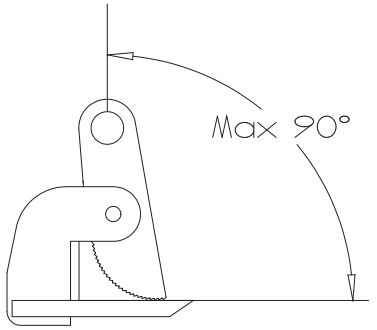


Figure 4:
Never exceed ninety degrees (90°) angle between material and sling.



OPERATION

Inspection Before and After Each Use

The Safety Clamps inspection procedures meet and/or exceed the requirements set forth in the ASME B30.20 Below-the-Hook Lifting Devices guideline.

1. Before using any Safety Clamp, the operator must read and understand the Operator's Manual in its entirety.
2. All Safety Clamps should be inspected before and after each use. Do not use if any components are bent, elongated, gouged, nicked excessively, worn, and/or damaged. Make sure that pins and other mechanical fasteners are secure.
3. Be sure the clamp to be used is the proper clamp for the job. Check the rated capacity per pair (P.P.) and jaw opening stenciled on the Identification Tag. Both should equal or exceed the requirements for the load to be lifted.

   Warning: Never exceed the rated capacity or use on material that is not within the jaw range of the clamp.
4. Do not use the clamp if the Identification Tag or the Warning Tag is missing or illegible.
5. Inspect the gripping cam(s) (Part # 42, Fig. 5) for wear and defects. Inspect holes for roundness. If elongated, this is an indication that the clamp has been overloaded and must be taken out of service. Gripping surfaces must be sharp and free of foreign matter. Check that the gripping cam(s) pivot freely between the uprights.
6. Inspect condition of body for wear, damage and distortion, particularly in the area of the jaw opening and holes for pins.
7. Inspect the gripping cam body pin (Part # 54, Fig. 5) for wear and damage.
8. On models HLD and HLDW, inspect the lifting shackle (Part # 10, Fig. 5) and the lifting shackle pin (Part # 12, Fig. 5) for wear and damage.
9. Remove from service and tag any clamp in need of repair indicating the problem area and bring to supervisor's attention. A full periodic inspection is to be performed at this time by qualified personnel (see periodic inspection, p. 9). The next periodic inspection will be timed from when the clamp is returned to service.
10. Make sure that all roll pins are securely in place.
11. Never use a clamp in need of repair.

Part #	Parts List for HL Series Models
HLD-10	Lifting Shackle for Models HLD and HLDW
HLD-12	Lifting Shackle Pin with roll pins for Models HLD and HLDW
HL-42	Serrated Gripping Cam for Model HL
HLW-42	Serrated Gripping Cam for Model HLW
HLD-42	Serrated Gripping Cam for Model HLD
HLDW-42	Serrated Gripping Cam for Model HLDW
HL-54	Gripping Cam Body Pin with roll pins for all Models Note: 2 required per body for Models HLD and HLDW

Note:
Designate smooth steel non marring gripping cam with 42NM.
Designate smooth stainless non marring gripping cam with 42NMST.

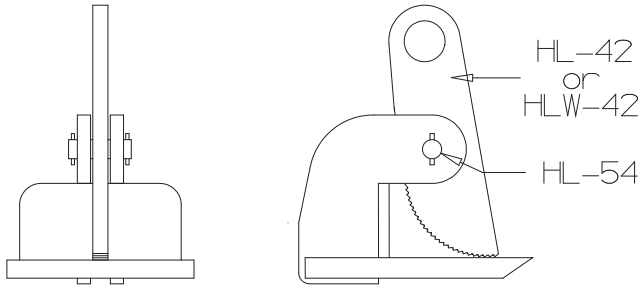


Figure 5 - HL and HLW

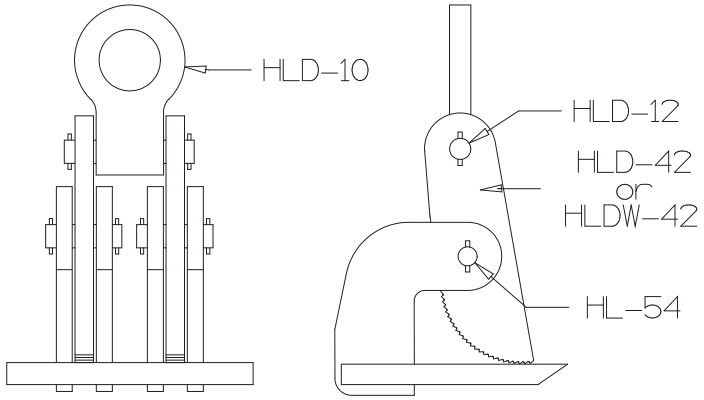


Figure 5 - HLD and HLDW

OPERATION

Loading the clamp

1. When placing the clamps onto the plate, the edge of the plate should be against the back jaw plate of each clamp (Fig. 6). When lifting more than one plate, ensure the edges of the plates are even (Fig. 6).
2. Position the clamps so the load is balanced when lifted. When using more than one pair of clamps, make sure the clamps are positioned to share equal loads.
3. Position the clamps so the direction of force applied by the crane is in line with the gripping cams.

   WARNING: Never exceed 15° side loading with a HL series clamp (Fig. 3).

4. Make certain the base plate of each lifting clamp is positioned flat against the bottom of the plate. This will ensure the gripping cam will engage the top of the plate at the correct point of lift when the lifting force is applied.

   WARNING: Always ensure the clamps are positioned properly on the material. Not properly seating the clamps may cause the clamps to tilt on the material once the lift begins. Check this by applying light tension to the slings and clamps without lifting the plate, then pull up on the gripping cam while pushing in on the base of the clamp body. Do this to all clamps used in the lift.

5. Once the clamps are properly loaded onto the material, the clamps are now ready to make a lift.

   WARNING: The operator and all other personnel should be fully clear of the lifting area.

   WARNING: Always ensure the edges of the plates are even when lifting more than one plate. Never lift when the edges are uneven.

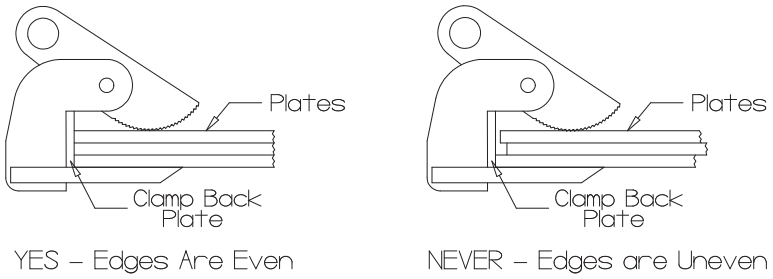


Figure 6

OPERATION

Lift and Transfer of Material

1. As the operator begins to make the lift, ensure the load is balanced. If the load is not balanced, lower the material and adjust the position of the clamps accordingly and follow the guidelines under the “Loading the clamp” section. **Never** lift or transfer material when the load is not balanced.
2. Never use on plates or bundles of plates that are sagging and not able to support themselves (Fig. 7).
3. During transfer of the material from one location to another, the operator should ensure the load is steady during transfer and not allow the load to bump or strike other objects.

   WARNING: The HL Series clamps do not have a locking mechanism. A constant force must be maintained on the lifting clamps throughout the entire operation.

4. Upon reaching the material’s destination, lower the clamps and material to a secure position until the tension is relieved on the gripping cams (Part # 42, Fig. 5).
5. Once the load is at rest and secured, rotate the gripping cams away from the material and remove the clamps from the plate.
6. Inspect clamps according to procedures listed on page 4. Remove from service if in need of repair.

Warning

Operator must follow all guidelines in each section before making a lift.

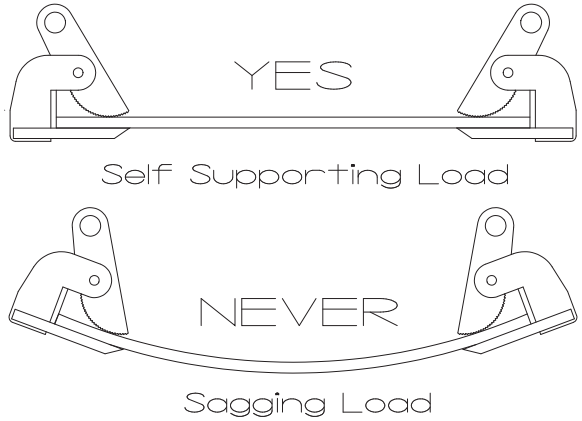


Figure 7

INSPECTION AND MAINTENANCE

The Safety Clamps Inspection and Maintenance schedule and procedures meet and/or exceed the requirements set forth in the ASME B30.20 Below-the-Hook Lifting Devices guideline. The severity of service the clamp is subjected to will determine the frequency and type of inspection required for the clamp and will be determined by the clamp owner.

Inspection Before and After Each Use

1. Before using any Safety Clamp, the operator must read and understand the Operator's Manual in its entirety.
2. All Safety Clamps should be inspected before and after each use. Do not use if any components are bent, elongated, gouged, nicked excessively, worn, and/or damaged. Make sure that pins and other mechanical fasteners are secure.
3. Be sure the clamp to be used is the proper clamp for the job. Check the rated capacity per pair (P.P.) and jaw opening stenciled on the Identification Tag. Both should equal or exceed the requirements for the load to be lifted.

   Warning: Never exceed the rated capacity or use on material that is not within the jaw range of the clamp.
4. Do not use the clamp if the Identification Tag or the Warning Tag is missing or illegible.
5. Inspect the gripping cam(s) (Part # 42, Fig. 5) for wear and defects. Inspect holes for roundness. If elongated, this is an indication that the clamp has been overloaded and must be taken out of service. Gripping surfaces must be sharp and free of foreign matter. Check that the gripping cam(s) pivot freely between the uprights.
6. Inspect condition of body for wear, damage and distortion, particularly in the area of the jaw opening and holes for pins.
7. Inspect the gripping cam body pin (Part # 54, Fig. 5) for wear and damage.
8. On models HLD and HLDW, inspect the lifting shackle (Part # 10, Fig. 5) and the lifting shackle pin (Part # 12, Fig. 5) for wear and damage.
9. Remove from service and tag any clamp in need of repair indicating the problem area and bring to supervisor's attention. A full periodic inspection is to be performed at this time by qualified personnel (see periodic inspection, p. 9). The next periodic inspection will be timed from when the clamp is returned to service.
10. Make sure that all roll pins are securely in place.
11. Never use a clamp in need of repair.

INSPECTION AND MAINTENANCE

Periodic Inspection

A periodic inspection is to be performed by qualified personnel. The inspection will be performed based on the level of service of the clamp:

Normal Service:	**Annual Inspection**
Heavy Service:	**Semi-Annual Inspection**
Severe Service:	**Quarterly**

1. **Verify and record the model, rated capacity, jaw opening, and serial number of the clamp which is stenciled on the Identification Tag.** If the tag is missing or not legible, the serial number is stamped into the body of the clamp. Contact Safety Clamps, Inc. and we can identify your clamp and issue an RGA number to return the clamp to us. We will replace the Identification Tag at no charge.
2. **Completely disassemble the clamp.** Disassembly directions are on page 10.
3 **Remove all dirt, grease, and other foreign matter** that may inhibit proper inspection of the clamp body or clamp components.
4. **Clamp Body Inspection**
   a.) Inspect all welds and all internal and external surfaces for fractures, wear, and distortion.
   b.) Inspect all pin holes for wear and elongation.
   c.) Inspect inside the jaw opening for displaced metal and distortion.

   Warning: Replace lifting clamps containing any fractures, elongated holes, jaw opening with displaced metal, and/or distorted jaw openings.
5. **Lifting Shackle Inspection - Models HLD & HLDW (Part # 10, Fig. 5)**
   a.) Inspect the lifting eye for elongation and wear at the point where the eye engages the sling attachment.
   b.) Inspect the shackle pin hole for wear and elongation.
   c.) Inspect the shackle body for bending.
   Note: An elongated shackle eye indicates overloading. An elongated shackle pin hole indicates wear and possible overloading. A bent shackle indicates excessive side-loading.

   Warning: Replace shackles that are bent, show excessive wear, or have elongated eye or shackle pin holes.

INSPECTION AND MAINTENANCE

Periodic Inspection - cont'd

6. **Gripping Cam (Part # 42, Fig. 5) Inspection**
   a.) Inspect the gripping cam(s) for chipped or worn teeth. The teeth must be sharp and free of foreign matter.
   b.) Inspect pin holes for elongation and wear.

   Warning: Replace gripping cam(s) (Part # 42) that have worn or damaged teeth, that contain fractures, and that have elongated pin holes.

7. **Lifting Shackle Pin (Part # 12) and Gripping Cam Body Pin (Part # 54) Inspection (Refer to Fig. 5)**
   a.) Inspect all pins for:
   Distortion
   Surface blemishes
   Wear
   Fractures

   Warning: Replace pins that are distorted, have surface scars, are worn, or contain fractures.

8. **Clamp Assembly Inspection**
   a.) After re-assembling the clamp, check the operation of the clamp. All parts should move freely without binding. Refer to the exploded view (Fig. 5) of the clamp for proper location of all component parts.

   Warning: All retaining pins and fasteners must be in place.

9. **Maintenance Log Entry**
   After any work is performed on the clamp, the maintenance log book must be updated to show verification of these repairs. The log book will be kept and maintained by the company maintenance personnel.

Disassembly

Refer to exploded views on page 5 for part numbers.

1. For Models HLD and HLDW, remove roll pins for the lifting shackle pin (Part # 12) and remove lifting shackle pin and lifting shackle.
2. Remove roll pins for the gripping cam body pin (Part # 54) and remove body pin from the clamp body.
3. Remove the gripping cam(s) (Part # 42).

Safety Clamps, Inc. HL Series Clamps

INSPECTION AND MAINTENANCE

Warning

Do Not:

Do not fix, straighten, or heat treat the clamp body or any clamp parts.

Do not modify, weld, or change the clamp body or clamp parts in any way.

Do not use any heating methods to clean parts.

Do:

Use only Genuine Safety Clamps Parts when replacing any part on a Safety Clamp.

Do put enough value in yourself and those around you to follow all guidelines in this manual for the protection of everyone.

Notes

Inspection and Repair Log

Date	Inspection/Repair	Performed by:

Inspection and Repair Log

Date	Inspection/Repair	Performed by:

Safety Clamp Inspection Reports are available at www.safetyclamps.com/lifting-clamp-support/

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See inside front cover for details.

Call, Fax, or email Us Today!

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