



KENFROE®

MODEL 300-S CLAMP

APPLICATION, OPERATION, AND MAINTENANCE MANUAL





RENFROE Model 300-S Manual

This manual contains important information to help you install, operate, maintain, and service this clamp. Study the contents thoroughly before putting the clamp into use. You can download additional copies of this manual at caldwellinc.com.

The RENFROE brand has been trusted and preferred by international lifting clamp users for more than 50 years. They are manufactured by The Caldwell Group, Inc. in Rockford, IL, and sold via a worldwide network of stocking distributors who exemplify the same high-quality performance and service standards the RENFROE brand stands for.

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WARNING

Prior to selection, operation, and/or maintenance of RENFROE products, read and understand the information provided in this manual.

The understanding and use of the definitions are important in determining the limitations and proper application of RENFROE products.

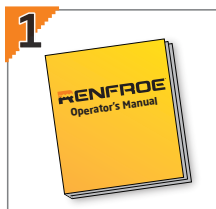
Failure to review and utilize recommended applications, operation, and maintenance instructions may result in serious injury to operator and others.

Notice of Exclusion of Warranty

RENFROE has herein set forth in conspicuous language an exclusion of any warranty either expressed or implied, which is not specifically and particularly contained herein. Please refer to that statement for representations and warranties of products manufactured by RENFROE.

This publication supersedes all previously published and/or distributed information by the manufacturer and/or its distributors with respect to applicable RENFROE products and subject matter described or contained herein.

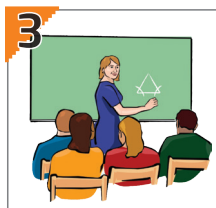
RENFROE® Clamp Op



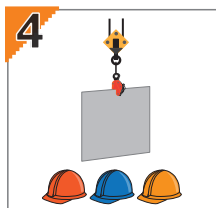
1 **DO** read and understand the operator manual before using clamp.



2 **DO** consult the operator manual or factory when in doubt.



3 **DO** attend a RENFROE factory training class to establish proper clamp use.



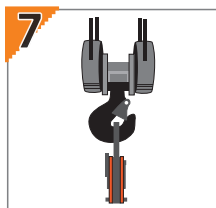
4 **DON'T** lift over workers, safety areas, or personnel.



5 **DO** lock clamp closed with lock; **DON'T** lift with lock in open position.



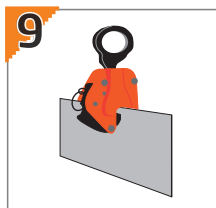
6 **DON'T** use a connection that may release the clamp.



7 **DON'T** attach clamp directly to crane hook nor use a heavy flexible connection.



8 **DO** use a flexible connection between crane hook and clamp shackle.

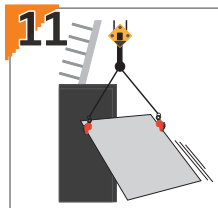


9 **DO** use the correct clamp for the job; **DON'T** use large capacity clamps to lift light loads.



10 **DO** use clamps within their rated capacity; **DON'T** overload clamps.

Operation Do's and Don'ts



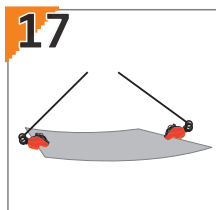
DO use enough clamps to balance the load;
DON'T lift loads that are not balanced.



DON'T rush—and **DON'T** lift more than one plate at a time with a vertical clamp.



DO always refer to pre-lift inspection in operator manual.



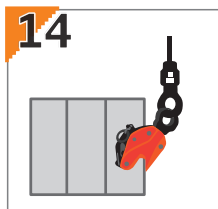
DON'T lift plate horizontally with a vertical lift only clamp.



DO inspect clamp before each lift and follow inspection & maintenance instructions.



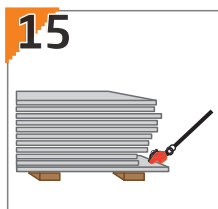
DON'T alter the clamp; **DON'T** grind, weld or modify the clamp in any manner.



DON'T side load with a straight shackle clamp.



DO secure load before attaching clamp.



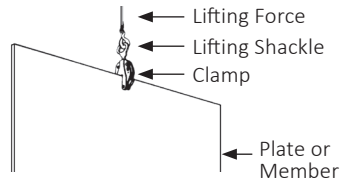
DON'T misuse (i.e. **DON'T** lift plate from bottom of plate stack).



DO use only RENFROE replacement parts to assure proper operation of the clamp.

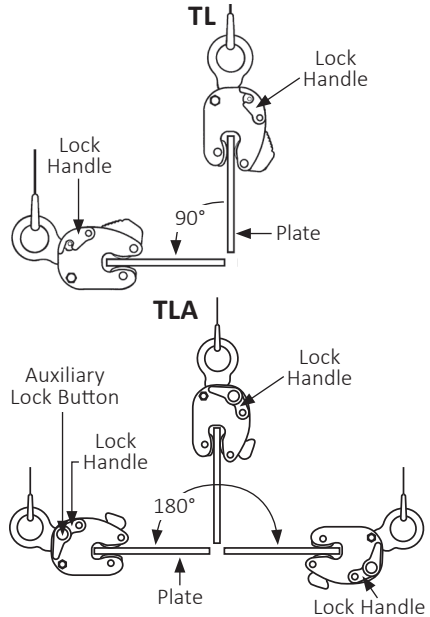
Vertical Lift

The lifting of a single plate or member in which the lifting force exerted by the rigging is directly above and in line with the lifting shackle as shown in the illustration on the right.



Vertical Turn/Lift

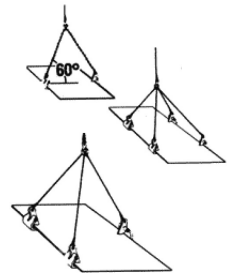
A vertical turn/lift clamp is a vertical lifting clamp specifically intended to turn a single plate or member through a ninety degree (90°) arc and back to vertical through the same ninety degree (90°) arc or from horizontal to vertical to horizontal through a one hundred and eighty degree (180°) arc. Refer to the Application section of specific turn/lift clamps for further details. During the turning operation, the edge of the plate opposite the edge to which the clamp is attached should always be in contact with a supporting surface such as a factory floor and the load on the clamp must not exceed the rated capacity of the clamp—refer to illustrations shown on the right.



Horizontal Lift

Clamps (used in pairs or multiples) are attached to the side edges of a plate positioned horizontally to the floor level. The rigging attached to clamps is generally multi-legged slings with the connecting point of the slings being approximately centered between the distance separating the clamps. Refer to illustrations shown on the right.

WARNING: The capacity of all horizontal clamps is based on a sling angle of sixty degrees (60°). Sling angles less than sixty degrees (60°) increase the load exerted on the clamps. Never exceed the rated capacity of a single clamp.



Steel Plates

Unless otherwise specified, lifting clamps are manufactured to handle hot-rolled steel plates whose Brinell hardness (HBW) does not exceed 300. **WARNING: Do not lift plates with coatings or mill scale that prevent the gripping surfaces of the clamp from making positive contact with the base metal.**

Finished and Polished Plates

Steel plates in this category have other than hot-rolled surfaces such as stainless steel, etc., and are generally handled using a non-marring clamp that incorporate smooth-gripping surfaces. **WARNING: For applications using clamps with serrated gripping surfaces on finished or polished plates, secure written recommendations from CALDWELL/RENFROE.**

Structural Members and Fabricated Sections

Unless otherwise specified, clamps described as capable of handling structural members and fabricated sections are limited to hot-rolled steel whose Brinell hardness does not exceed 300 HBW. **WARNING: For applications not covered by the above information, secure written recommendations from CALDWELL/RENFROE.**

Rated Capacity

The rated capacity of a RENFROE product is based on the product being in “new” or “as new” condition and represents the maximum load the product is to be subjected to when utilized in the manner described in this manual. Wear, misuse, abuse, and other factors relating to usage may reduce the rated capacity. Shock loading and the factors listed must be taken into consideration when selecting a RENFROE product for a given application.

Plate Thickness

The minimum and maximum plate/wall thickness a clamp specified for handling plates is capable of lifting. **WARNING: Never use a clamp for lifting a plate where the plate/wall thickness is less than or greater than the minimum and maximum stenciled on the clamp.**

For applications not covered by the above information, secure written recommendations from CALDWELL/RENFROE.

Jaw Opening

The minimum and maximum plate/wall thickness a clamp specified for handling plates is capable of lifting. **WARNING: Never use a clamp for lifting a plate where the plate/wall thickness is less than or greater than the minimum and maximum stenciled on the clamp.**

Operating Temperatures

Unless specified in the Application section of the individual model, the approved operating temperature of RENFROE clamps is from 0°F (-18°C) to a maximum of 200°F (93°C). The minimum and maximum temperatures apply to both ambient and the material being handled by the clamp. **WARNING: Secure written authorization from CALDWELL/RENFROE before using clamps in temperatures other than shown.**

Hot Lifts

The Model R and S clamps are available in modifications that are capable of making lifts where the temperatures of the plate or member being lifted exceeds 200°F (93°C). Depending on conditions, a lift may exceed 1000°F (538°C). The exact application and temperatures of the plates or member to be handled are critical in selecting the proper mode. **WARNING: Secure written instructions from CALDWELL/RENFROE for all hot lift applications.**

Locking Clamps

Locking clamps are divided into the categories listed below. With the exception of the “locking wedge” and “locking screw” type, the purpose of the locks is to facilitate the attaching and removing of the clamp from the plate or member being handled.

Lock Closed

An over-center, spring-loaded mechanism in which the spring exerts a force on the gripping cam when the lock handle is moved to the “Lock Closed” position. When the handle is moved to unlocked position, the force exerted by the spring is relaxed and the gripping cam may be retracted by pushing the lifting shackle into body of clamp. Refer to the operation sections of specific models of “Lock Closed” clamps for additional details. Typical “Lock Closed” clamps are Models DG, FR, and M.

Lock Open Only

Normally used on hot lift clamps and consists of a manually operated lock stop pin that is inserted when the gripping cam of the clamp is retracted and removed when the clamp is positioned on the plate. A tag line may be used to permit the operator to remove the pin at a greater distance from the clamp. Refer to the Operation sections of specific models of “Lock Open Only” clamps for additional details. A typical “Lock Open Only” clamp is the Model RO.

Lock Open-Lock Closed

An over-center, spring-loaded mechanism in which the spring exerts a force on the gripping cam when the lock handle is moved to the “Lock Closed” position. When the handle is moved to the “Lock Open” position, the gripping cam is maintained in the retracted position for ease in installing the clamp on a plate or member. The Model FRD contains individual “Lock Open” and “Lock Closed” mechanisms that must be operated separately. Refer to the Operation sections of specific models of the “Lock Open-Lock Closed” clamps for additional details. Typical “Lock Open-Lock Closed” clamps are Models FRD, R, S, SD, SEA, SX, TL, TLA, TLC, and the J Series.

Locking Wedge

Locking wedge is a fluted steel wedge that is driven in place with a hammer. The body of the wedge is positioned in a slot in the clamp body with the fluted edges contacting the plate or member to which the clamp is being attached. Refer to Operation sections of specific models of the locking wedge clamps for additional details. Typical locking wedge clamps are Model A1, B1, B2, and PB.

Locking Screw

Locking screw clamps depend on manually adjusting a screw to hold the gripping surface in place for lifting and removing the clamp from the plate or member being lifted. Refer to operation sections of a specific model of “Locking Screw” clamps for additional details. Typical “Locking Screw” clamps are Models AC, ACP, NM, PC, SCP, and SCPA.

Non-Locking

Non-locking clamps have no mechanisms to aid in attaching or removing the clamp from the plate or member being lifted. It is necessary to properly position the clamp on the plate or member so that the appropriate force is applied to the lifting shackle. Refer to Operation sections of specific models of the non-locking clamps for additional details. Typical non-locking clamps are Model AST, ASTL, BD, LHC, LHD, and WHSR.

Warning

A pointing out and notice of danger. The purpose of a “WARNING” is to alert the operator and all other affected individuals of potential dangers they should be – but may not be – aware of, and to enable the operator to take appropriate action to protect themselves and others, where applicable, from such hazards. An attempt is made in this manual to warn against reasonable and reasonably foreseeable danger in the proper use and possible misuse of CALDWELL/ RENFROE products described in this manual.

Designated Person

A person selected by the employer or the employer’s representative as being competent to perform specific duties.

Qualified Person

A person who, by possession of a recognized degree in an applicable field or certificate of professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve problems relating to the subject matter at hand.



Download a RENFROE Catalog

Download a copy of the most current RENFROE catalog to see the full-line selection here:

caldwellinc.com/caldwell-catalog-library

Model 300-S Vertical Lifting Locking Clamp Series

The model 300-S is used for vertical lifting and transporting of metal drums. The model 300-S is capable of handling one drum and incorporates an “over-center” locking mechanism which secures the clamp to the drum.

For an exploded view of the clamp parts, turn to page 20. **WARNING: Use only on metal drums.**



Model 300-S Vertical Lifting Locking Clamp Series

STEP 1

Before using any RENFROE clamp, refer to the Application section to confirm the operation to be undertaken is an appropriate application for this product.

STEP 2

Select the proper diameter clamp for the drum to be lifted. The model designation, capacity, and drum diameter are stenciled on each clamp. **WARNING: Never exceed rated capacity or use other than the proper diameter clamp. The model 300-S is to be used only in the handling of steel drums.**

STEP 3

Inspect the clamp before each lift. **WARNING: Do not use if in need of repair. If in doubt, refer to the Maintenance & Inspection section for detailed maintenance instructions and exploded view of the clamp for part identification.**

- A. Check the clamp to be certain the identification and warning tags are present and legible.
- B. Do not use the clamp if the tags are missing or illegible.
- C. Inspect the master link and link chain legs for wear and damage.
- D. Inspect the circular body of the clamp for wear, distortion and damage.
- E. Inspect the lock handle mechanism for wear, distortion, or damage.
- F. Remove from service any clamp in need of repair.

STEP 4

A clamp is a component of the rigging used in lifting or transporting drums. It is important to use safe and adequate rigging. **WARNING: Improper or excessively heavy rigging may interfere with the operation of the clamp and its ability to maintain a proper position on the drums.**

STEP 5

With the locking pin removed and the handle in the "Open" position, install the clamp on the drum, confirming that all rim brackets are resting on the top edge of the drum.



STEP 6

Move the lock handle to “Closed” position and reinsert the locking pin. **WARNING: The lock handle must have a very positive over-center position and the entire circular body of the clamp must fit tightly around the circumference and under the top flange of the drum. Lift only when the lock handle is in “closed” position.**

If the clamp body does not fit snugly around the circumference of the drum, refer to Step 3 of the Maintenance Section for details on adjusting the diameter of the body.

WARNING: A clamp whose circular body is distorted should be removed from service.

**STEP 7**

Commence lift. **WARNING: The operator should be positioned away from and fully clear of the drum to be lifted. Do not commence lift until all personnel are clear of the area of the lift. Never stand under or near a drum being lifted.**



STEP 8

To remove clamps—after the drum is fully supported and at rest in a stable position, relax the force applied to the clamp, remove the locking pin, and move the handle to the open position. Lift the clamp from the drum.

STEP 9

Inspect the clamp. Remove from service if in need of repair. **WARNING: In the event the stenciling is worn and not legible or the tag containing the model, capacity, or other pertinent information is missing, do not use the clamp until it has been properly relabeled.**

Inspection tools are available. Find inspection forms, maintenance record forms, and survey report forms at caldwellinc.com/renfro. Danger tags and inspection stickers are available upon request.

Lifting Clamp
Survey Report

Inventory and
Maintenance Record

Lifting Clamp
Inspection Report

Inspection
Stickers

Danger Tag

RENFROE clamps are constructed so the wearing parts may be replaced by using the RENFROE Rebuild Kits. Kits contain all parts generally replaced due to normal wear. To order a rebuild kit, talk to your distributor or call Caldwell at 800.628.4263 or 815.229.5667.



Model 300-S Vertical Lifting Locking Clamp Series

The severity of service to which the clamp is subjected in the workplace determines the frequency and type of inspection procedure required for the clamp. The frequency and type of inspection is determined by the clamp owner. RENFROE acknowledges the ASME B30.20 safety standard which sets forth minimum inspection requirements for “Below-the-Hook” lifting devices and the RENFROE recommended inspection schedule meets and/or exceeds the ASME inspection recommendations.

Before using a clamp, operators should be trained by a qualified person to visually inspect a lifting clamp that will include, but not be limited to, the following:

Every-Lift Inspection:

A visual inspection by the operator before and after each lift made by the clamp.

- Check the clamp to be certain the identification and warning tags are present and legible.
- Do not use the clamp if the tags are missing or illegible.
- Inspect master link and link chain legs for wear and damage.
- Inspect circular body of the clamp for wear, distortion and damage.
- Inspect the lock handle mechanism for wear, distortion or damage.
- Remove any clamp from service in need of repair.



Choose Factory Refurbish & Recertification

Do you currently offer clamp refurbishing and recertifications? Count on CALDWELL/RENFROE to handle refurbishments in total for you or to supplement your in-house capabilities. To begin the quote process or learn more about the program, call our customer service department. We'll explain how things work and get you started right away. If requested, we can also provide a certificate of proof test.

Call us at 800.628.4263.

WARNING: Do not use the clamp if in need of repair. If, during the Every-Lift Inspection, the operator believes the clamp exhibits excessively worn parts or is damaged, the clamp should be inspected by a qualified person who will make a determination as to its fitness to make a lift. At this time, the condition of the clamp should be noted and recorded. After inspection by the qualified person, it may be decided that a periodic inspection procedure is necessary.

Frequent Inspection:

A visual inspection (see Every-Lift Inspection) by an operator or other designated person timed according to the clamp's service class.

Normal Service	Monthly
Heavy Service	Weekly to Monthly
Severe Service	Daily to Weekly

If, during the Frequent Inspection, the operator believes the clamp exhibits excessively worn parts or is damaged, the clamp should be inspected by a qualified person who will make a determination as to its fitness to make a lift. At this time, the condition of the clamp should be noted and recorded. After inspection by the qualified person, it may be decided that a periodic inspection procedure is necessary.

Periodic Inspection:

A recorded inspection by a qualified person, timed according to the clamp's service class.

Normal Service	Annual
Heavy Service	Semi-Annual
Severe Service	Quarterly

If during any inspection a condition is found which leads to a periodic inspection, then the next periodic inspection is due from the time the clamp is returned to service. See the table below.

Normal Service	1 Year
Heavy Service	6 Months
Severe Service	3 Months

WARNING: If any hazardous condition is found that may cause injury to the operator or other personnel, then the clamp should be subjected to a periodic inspection by a qualified person.

Repair (Replacement of worn parts):

During regular maintenance, when replacing parts that are worn, a record should be made of the parts replaced. After the replacement of worn parts, clamps need not be load tested if using RENFROE parts. Non-RENFROE parts are not approved and must not be used.

Repair (Replacement of damaged parts):

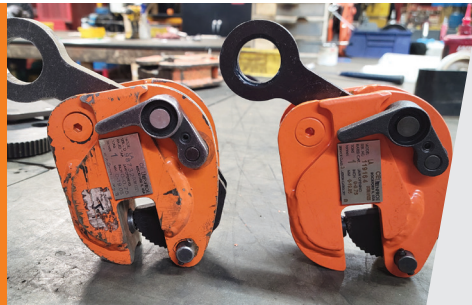
During a repair in which parts are replaced due to damage, a record should be made of the repair. At this time, the clamp should be marked with the following information as per the ASME B30.20 requirements:

- Name and address of the repairer
- Repairer's unit identification
- Clamp weight (if altered)
- Rated load (if altered)
- ASME BTH-1 Design Category (if altered)
- ASME BTH-1 Service Class (if altered)

RFID

Some RENFROE clamps are fitted with an RFID chip and can be clearly identified by means of an ID number. This can be captured using the RUD ID EASY-CHECK® (reading device) and transferred to the EYE-D.NET system, for example. This application assists you in managing and documenting your components.

Further information can be found online or from your RENFROE contact.



RENFROE Clamps 101: Repair, Rebuild, or Replace?

Know your options when you find a lifting clamp that's showing wear on the CALDWELL blog here:

caldwellinc.com/blog

Model 300-S Periodic Inspection Procedures

STEP 1

Confirm the identity of the clamp by checking the identification (I.D.) plate on the clamp body. If the I.D. plate is missing or not legible, remove the clamp from service and contact Caldwell for further instructions. In some cases, an RFID chip may be embedded in the clamp and can help you identify the unit, but you must still contact Caldwell to determine the next steps, which may include obtaining a replacement I.D. and warning tags or recertification before returning the clamp to service. **NOTE: Newer clamps with forged bodies will have the clamp I.D. information and safety labels embossed on the clamp body. If the I.D. is not legible, contact the factory for instructions on returning the clamp for recertification.**

STEP 2

Completely disassemble the clamp.

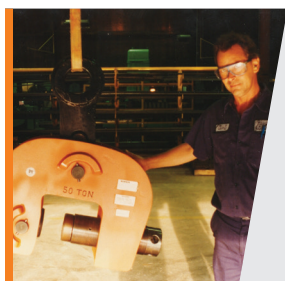
STEP 3

Remove all dirt, grease, and other matter that may inhibit proper inspection of the clamp body or clamp components.

STEP 4

Body:

- A. Inspect the welds for fractures. RENFROE recommends a dye penetrate or similar method of detecting fractures or other discontinuities on the clamp. If any discontinuities are found, it may be necessary to use a magnetic particle, ultrasonic, or similar methods for determining damage to the clamp or components.
- B. Inspect master link and link chain legs for wear and damage. Refer to the exploded view on page 20.
- C. Inspect the lock handle mechanism for wear, distortion and damage.



Show Us Your Renfro!

Do you have a “vintage” RENFROE clamp that’s still in good working order? Do you have a brand new clamp that’s lifting something cool? We’d love to see YOUR RENFROE clamp in action. **Snap a photo and send it to: lsympson@caldwellinc.com.** You never know ... we might make you famous on our blog or social media pages!

- D. Circular Body—Inspect welds and surfaces for fractures, wear, and damage, particularly the lugs that attach the link chain legs to the circular body.
- E. Clamp body must fit snugly around the circumference of the drum. To adjust the circumference of the clamp, place the lock handle in “Locked” position, loosen the locking set screw in the adjusting screw block, tighten the adjusting screw until the clamp fits tightly around the circumference of the drum, move the lock handle to “Open” position, tighten the adjusting screw two full turns, return the lock handle to “Locked” position, and tighten the locking set screw.



- F. The locking cam must have positive “Over Center” position and be fully engaged with the locking cam recess. Refer to the exploded view on page 20.

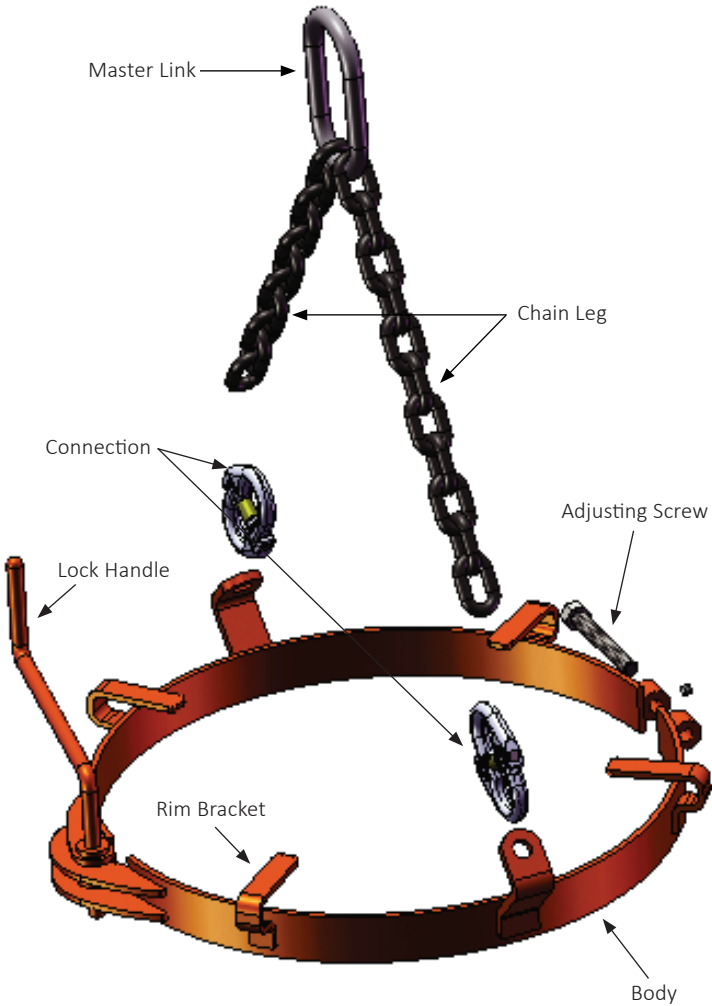
GENERAL

RENFROE products may be returned to the factory for inspection and refurbishment in accordance with an established fee schedule.

Use only RENFROE replacement parts in order to maintain the maximum efficiency and safety features originally built into the product. Contact CALDWELL Customer Service for instructions on ordering replacement parts.

WARNING: Replace clamps containing fractures, damaged and distorted bodies, worn or damaged master link or chain legs, and worn or distorted lock handles and locking mechanisms.

WARNING: Do not weld, grind, or modify the clamp body or component parts in any manner. In the event the stenciling is worn and not legible or the I.D. tag containing the model, capacity, or other pertinent information is missing, do not use the clamp until it has been properly labeled.



Exclusion of Warranty

There exists no warranties neither expressed nor implied which extend beyond the descriptions or statements contained in this manual or any part hereof.

FOR OVER 70 YEARS, RENFROE HAS PRODUCED THE MOST RELIABLE, DURABLE CLAMPS IN THE INDUSTRY

In an independent test against two other manufacturers with comparable clamps, RENFROE proved to be the most durable in horizontal and vertical cycle/fatigue testing.

- The test was conducted by Rexnord Innovation Center (RIC), a completely independent accredited laboratory
- RENFROE'S LPA model completed 10 times more cycles in the horizontal configuration than its nearest competitor
- RENFROE load tests every one of its clamps ensuring that the company maintains its reputation for having the most durable clamps in the market
- Fatigue testing was performed on the three manufacturers' comparable clamps in both vertical and horizontal orientations



TEST RESULTS: FROM REXNORD INNOVATION CENTER

Horizontal Fatigue Test

RENFROE	1,664,928 Cycles
Supplier #1	Only 159,672 Cycles
Supplier #2	Only 79,352 Cycles

Vertical Fatigue Test

RENFROE	2,000,000 Cycles
Supplier #1	2,000,000 Cycles
Supplier #2	Only 817,310 Cycles

Register Now for **RENFROE** Inspection & Maintenance Training

Get 1.5 days of robust classroom sessions and interactive hands-on guidance and leave with a complete understanding of how clamps work and a demonstrated competency of how they should be maintained.

TOPICS INCLUDE:

- Renfro history and clamp definitions
- Clamp safety
- Clamp types and how they work
- How to choose the right clamp
- How to perform clamp inspections
- How to rebuild clamps
- How to perform safe lifts

WHO SHOULD ATTEND?

- Job-site inspectors, maintenance staff, and safety leaders
- Riggers and crane operators
- Rigging distributor reps

Bring your whole team! You take care of transportation costs and Caldwell will cover the rest: meals, lodging and training.

Get more information here:
caldwellinc.com/training



Training for **CALDWELL** and **RUD** products also available!



IN STOCK OUT STANDING

BTH LIFTERS READY TO SHIP TODAY

When you need it, you need it right now. Your job is hard enough without having to chase down what should be an easy-to-find Caldwell spreader beam, Renfro plate clamp, or RUD lifting point. With Caldwell backing you up, it really is easy. No chasing required... because more than 400 of our best-selling items are in stock and ready to roll. Every day.

And better yet, they ship for free.



**WANT TO KNOW MORE? CALL 800.628.4263 OR
ASK YOUR CALDWELL DEALER FOR DETAILS.**





800.628.4263 | 815.229.5667 | contact@caldwellinc.com
caldwellinc.com



Ask us about in-stock RENFROE clamps!
Large selection, ready to ship.