**⚠WARNING** Before putting tool in service, take the manual to your supervisor.

LIMITED LIFETIME WARRANTY

# RENFROE®

# MODEL RSC CLAMP

APPLICATION, OPERATION, AND MAINTENANCE MANUAL

# RENFROE Model RSC 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.


**THE CALDWELL GROUP, INC.**

| Business Office | Manufacturing | Distribution Center |
|---|---|---|
| 200 State Street | 4080 Logistics Parkway | 2136 12th Street |
| Beloit, WI 53511 | Rockford, IL 61109 | Rockford, IL 61104 |

800.628.4263 | 815.229.5667 | caldwellinc.com

# Table of Contents



**⚠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

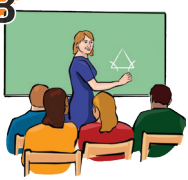
1


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

2

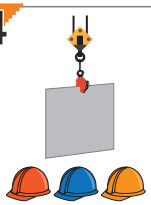
**DO** consult the operator manual or factory when in doubt.

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

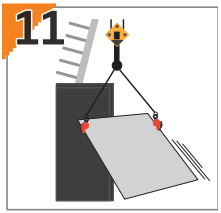
**DO** use the correct clamp for the job; **DON'T** use large capacity clamps to lift light loads.

10

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

# peration Do's and Don'ts

11



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

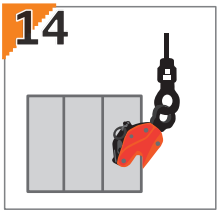
12

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

13

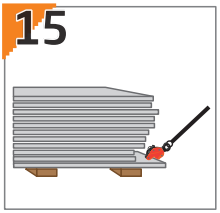
**DO** inspect clamp before each lift and follow inspection & maintenance instructions.

14



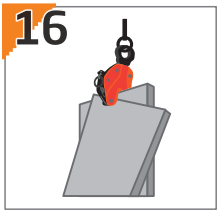
**DON'T** side load with a straight shackle clamp.

15



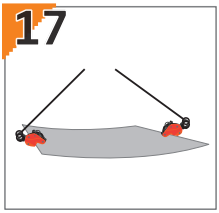
**DON'T** misuse (i.e. **DON'T** lift plate from bottom of plate stack).

16



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

17



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

18

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

19

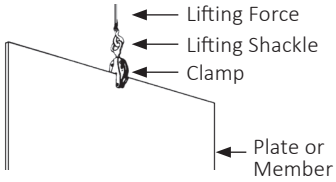
**DO** secure load before attaching clamp.

20


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

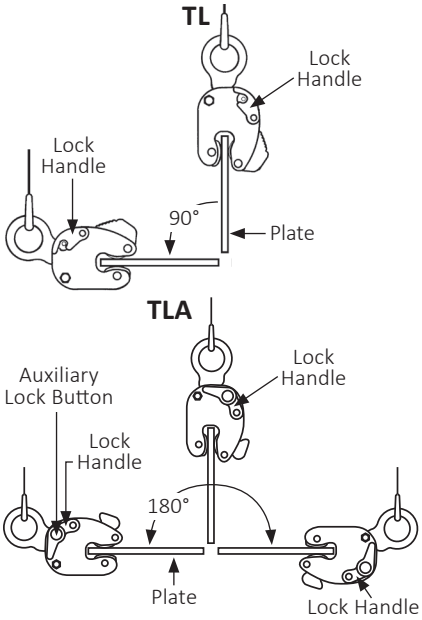
## Vertical Lift

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

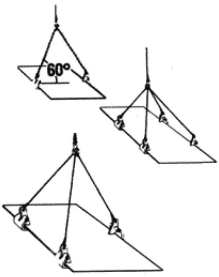
A vertical turn/lift clamp is a vertical lifting clamp specifically intended to turn a single plate or member through a ninety degree (90°) arc and back to vertical through the same ninety degree (90°) arc or from horizontal to vertical to horizontal through a one hundred and eighty degree (180°) arc. 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.

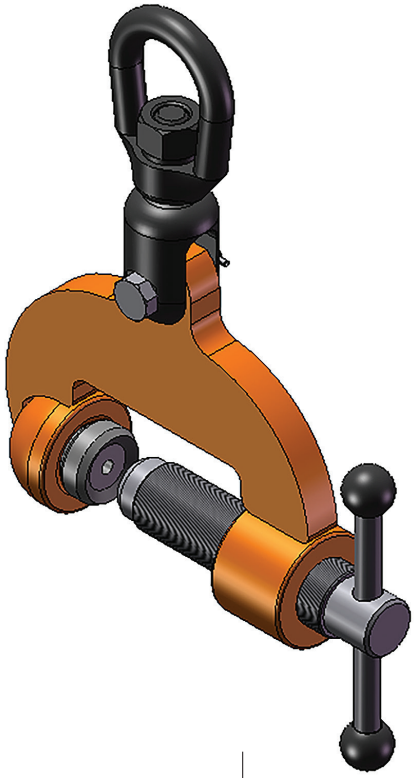
## Qualified Person

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

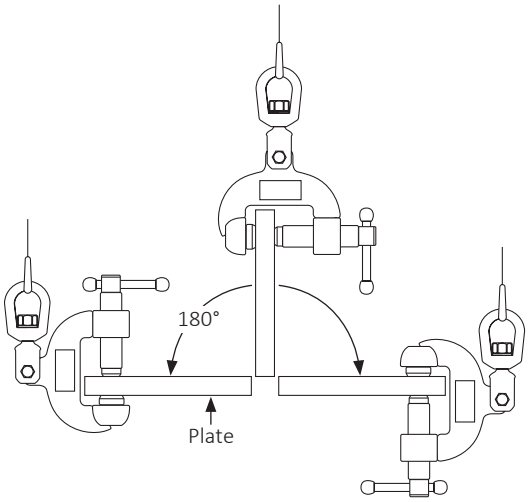
Download a copy of the most current RENFROE catalog to see the full-line selection here:
**caldwellinc.com/caldwell-catalog-library**

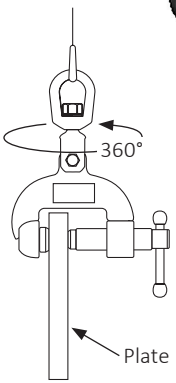
# Model RSC Rotating Screw Clamp Series



The Model RSC Clamp is a vertical lift clamp capable of lift and turn operations from the horizontal through 180° arc. The suspended load may also be rotated 360° about the vertical axis. Refer to illustrations below. Side loading is limited to 10° from the vertical axis. Refer to additional instructions in the Operation section. The adjusting screw is used to accommodate various thicknesses of material and to facilitate attachment of the clamp to the plate or member to be lifted. Refer to definition pages for explanation of "Locking Screw" clamp.

For an exploded view of the clamp parts, turn to page 23. **WARNING: Refer to the Operation and Maintenance & Inspection sections for the approved operation and maintenance procedures of this product.**



# Model RSC Rotating Screw 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 appropriate capacity and thickness range. The model designation, capacity, and plate thickness are stenciled on each clamp. **WARNING: Never exceed rated capacity or use on material whose thickness is not within the range of the jaw opening stenciled on the clamp. Lift only one member on each lift.**

**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 gripping surfaces for wear and defects. Gripping surfaces must be sharp and free of foreign matter. The screw cup and swivel jaw should turn freely. Set screw must not protrude from either the screw cup or the swivel jaw.

D. Screw should turn freely. Inspect for wear and damage. Internal springs must hold swivel jaw and screw cup in “Centered” position with the gripping surfaces at 90° to the length of the screw. **WARNING: Do not use clamp unless springs are in place and are holding the swivel jaw and screw cup at 90° to the length of the screw.**

E. Inspect condition of the body for wear and damage, particularly on the inside of the jaw opening.

F. Inspect condition of the lifting shackle and shackle screw for wear and damage. Shackle yoke must pivot freely about the shackle screw. Shackle eye must rotate freely about the shackle yoke.

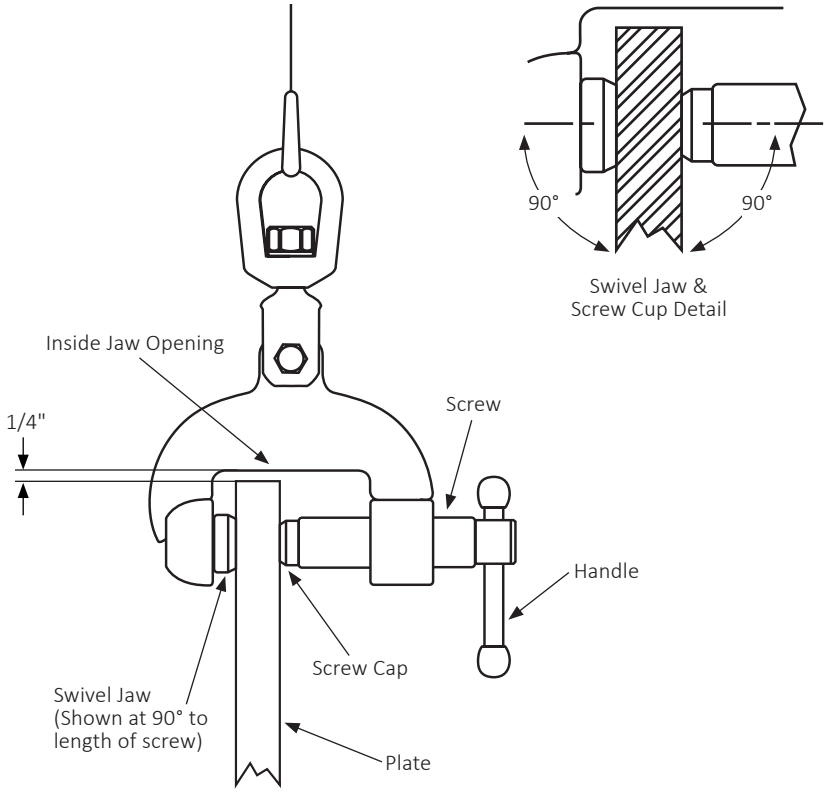
G. Remove from service any clamp in need of repair.

**STEP 4**

A clamp is a component of the rigging used in lifting or transporting a plate. 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 plate. Never attach the crane hook directly to the clamp—always use a flexible sling between the crane hook and clamp.**

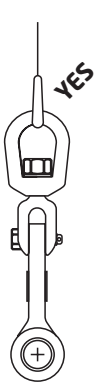
**STEP 5**

Position the clamp on the plate to be lifted. Do not allow inside of the jaw opening to rest on the plate to be lifted. Maintain 1/4" clearance. Refer to illustration below.

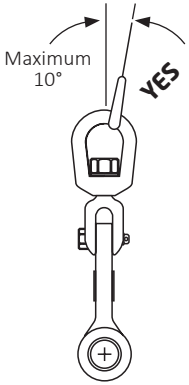


**STEP 6**

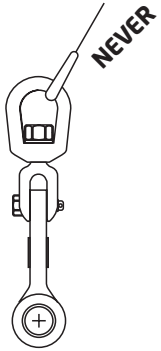
Position the clamp so the direction of force applied by the crane is in line with the lifting shackle. Refer to illustrations below. **WARNING: Never exceed 10° side loading. Do not use clamp unless springs are in place and are holding the swivel jaw and screw cup at 90° to the length of the screw.**



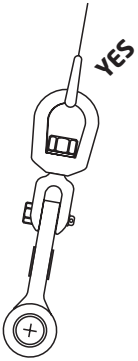

**Sling directly above and in-line with the lifting shackle.**




**Maximum allowable side loading.**




**Excessive side loading.**




**Sling directly in-line with lifting shackle.**

**STEP 7**

Tighten screw making certain that both gripping surfaces are parallel to the surface of the member being lifted and are not partially on and off the edge of the member. Refer to illustration on page 13. Using handle (if provided), tighten the screw hand tight first, then 1/4 turn. Do not over tighten. For applications where the member is repeatedly lifted, repositioned, or tension in the lifting force relaxed, always recheck torque on the adjusting screw and the clamp's position on the member before resuming lift. **WARNING: Apply required torque on the screw. Do not over tighten.**

**STEP 8**

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

**STEP 9**

To remove clamp (after load is fully supported and at rest in a stable position) relax lifting force and loosen screw. Lift clamp from plate.

**STEP 10**

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/renfroe. Danger tags and inspection stickers are available upon request.**


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 RSC Rotating Screw 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 gripping surfaces for wear and defects—gripping surfaces must be smooth and free of foreign matter. The screw cup and swivel jaw should turn freely. Set screw must not protrude from either the screw cup pad or the swivel jaw pad.
- Screw should turn freely. Inspect for wear and damage. Internal springs must hold swivel jaw and screw cup in "centered" position with the gripping surfaces at 90° to the length of the screw. **WARNING: Do not use clamp unless springs are in place and are holding the swivel jaw and screw cup at 90° to the length of the screw.**
- Inspect the condition of the body for wear, damage, and distortion, particularly in the area of the jaw opening.
- Inspect condition of the lifting shackle and shackle screw for wear and damage. Shackle yoke must pivot freely about the shackle screw. Shackle eye must rotate freely about the shackle yoke.
- 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.**

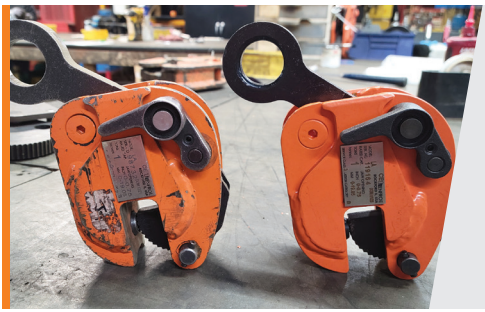
**Repair (Replacement of worn parts):**
During regular maintenance, when replacing parts that are worn, a record should be made of the parts replaced. After the replacement of worn parts, clamps need not be load tested if using RENFROE parts. Non-RENFROE parts are not approved and must not be used.

**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 RSC 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 surfaces of the body plate that come into contact with the shackle yoke for wear, damage or distortion.

C. Inspect the shackle screw hole for wear and elongation.

D. Inspect inside of swivel jaw block for displaced metal, fractures, or distortion. Inspect condition of wave spring retaining groove. Groove must be free of displaced metal, foreign matter, or worn edges.

E. Inspect inside of screw block for worn threads, fractures, and displaced metal. **WARNING: Replace clamps containing fractures, elongated holes, distorted jaw openings, distorted and worn threads, jaw openings with displaced metal, or damaged spring retaining grooves.**

**STEP 5**

Screw:

A. Inspect for distortion, damaged threads, and wear.

B. Inspect for fractures, particularly in the area where the screw cup mounts and on the opposite end where the hole is provided for the handle.

C. Inspect the wave spring retaining groove. Groove must be free of displaced metal, worn edges, and foreign matter. **WARNING: Replace screws that are bent, have distorted and worn threads, contain fractures, or have worn retaining spring grooves.**

**STEP 6**

Screw Cup:

A. To remove the screw cup, tighten the internal set screw until the screw cup lifts free of the screw. Removal of the screw cup destroys the internal wave spring. The used spring must be discarded and replaced with a new unit. **WARNING: Discard used wave spring. Do not attempt to reassemble clamp with old spring. Always install new wave spring after disassembly of the screw cup.**

B. Inspect the screw cup for fractures, damage, and wear. Serrations must be sharp and free of imperfections and foreign matter. Retaining spring groove must be free of displaced metal, worn edges, or foreign matter. **WARNING: Replace worn, dull, or damaged screw cups.**

C. To install the screw cup, insert lubricant into the recess of the screw. The recommended lubricant is Molybdenum Disulfide grease. Install the new wave spring into retaining groove of the screw cup. The spring must be fully retained in the groove width and centered about its axis. Lightly lubricate set screw threads with Molybdenum Disulfide grease. Install the set screw. Set screw must be fully contained within the body of the screw cup and must not protrude from either side. Press the screw cup into the screw recess until the wave spring locks into the screws retaining groove.

D. Attempt to remove the screw cup from the screw by hand. The screw cup should move approximately 1/16" as the spring compresses. If the screw cup can be removed by hand, either the spring is not properly sealed or the screw cup and/or screw retaining groove is worn beyond acceptable limits.

E. Check the screw cup for proper operation. The screw cup must rotate freely in the screw and swivel 3° in all directions. Spring must return screw to “centered” position when deflected. **WARNING: If the screw cup can be removed by hand or if the spring does not center the screw cup, remove clamp from service until the unit is repaired.**

**STEP 7**

Swivel Jaw:

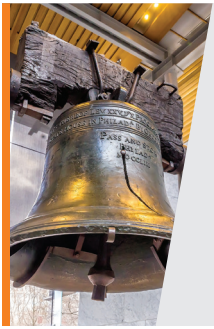
A. To remove the swivel jaw, tighten internal set screw until the swivel jaw lifts free of the swivel block. Removal of the swivel jaw destroys the internal wave spring. The used wave spring must be discarded and replaced by a new unit. **WARNING: Discard used wave spring. Do not attempt to reassemble the clamp with the old spring. Always install the new wave spring after disassembly of the swivel jaw.**

B. Inspect the swivel jaw for fractures, damage, and wear. Serrations must be sharp and free of imperfections and foreign matter. The retaining spring groove must be free of displaced metal, worn edges, and foreign matter. **WARNING: Replace worn, dull, or damaged swivel jaws.**

C. To install the swivel jaw, insert lubricant into the recess of the swivel block. The recommended lubricant is Molybdenum Disulfide grease. Install new wave spring into retaining groove of the swivel jaw. The spring must be fully retained in the groove width and centered about its axis. Lightly lubricate the set screw threads with Molybdenum Disulfide grease. Install the set screw. Set screw must be fully contained within the body of the swivel jaw and not protrude from either side. Press the swivel jaw into the swivel blocks spring retaining groove.

D. Attempt to remove the swivel jaw from swivel block by hand. The swivel jaw should move approximately 1/16" as the spring compresses. If the swivel jaw can be removed by hand, either the spring is not properly seated or the swivel jaw and/or swivel block retaining groove is worn beyond acceptable limits.

E. Check the swivel jaw for proper operation. The swivel jaw must rotate freely in the swivel block and swivel 5° in all directions. Spring must return the swivel jaw to the "centered" position when it is deflected. **WARNING: If the swivel jaw can be removed from the swivel block by hand or if the spring does not center the swivel jaw, remove the clamp from service until the unit is properly repaired.**



## Did You Know?

Custom RENFROE clamps have been trusted as part of lifting processes in many important, historical, and iconic projects. For instance, the U.S. Liberty Bell, the symbol of our nation, has been moved twice. In both cases, RENFROE was called on to provide a specific beam clamp to make those moves as safe as possible. Also, when the Gateway Arch was constructed in St. Louis, RENFROE clamps were used to move over 900 million tons of stainless steel.

**STEP 8**
Shackle Screw:

A. Inspect the shackle screw for distortion, surface blemishes, wear, and fractures. **WARNING: Replace any shackle screw that is distorted, bent, has surface scars, is worn, or contains fractures.**

**STEP 9**
Handle Assembly:

A. Inspect the handle for distortion or damage.

B. Make certain that the retaining spiral pins are installed evenly and do not protrude out from either side of the handle collars. **WARNING: Replace handles that are bent, distorted, or worn.**

**STEP 10**
After reassembly, check operation of the clamp. All parts should move freely without binding. Refer to exploded view on page 23 for proper positions of component parts. **WARNING: All retaining pins, screws, and springs must be in place before returning clamp to service.**

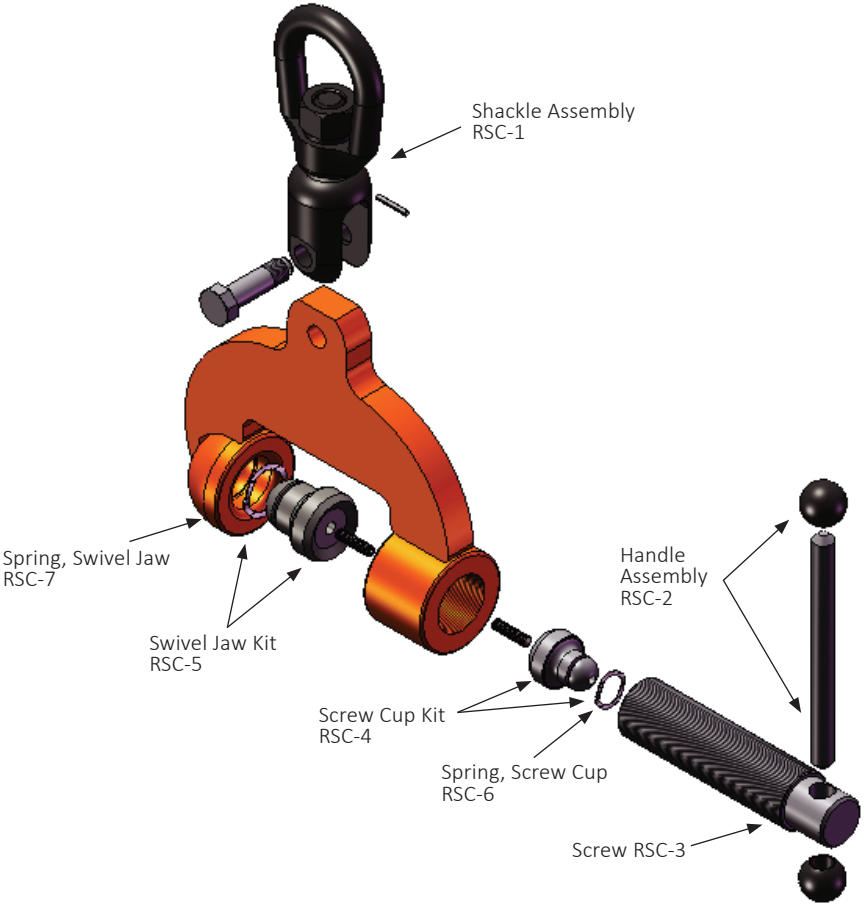
**GENERAL**
RENFROE products may be returned to the factory for inspection and refurbishment in accordance with an established fee schedule.

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: 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.**


## Show Us Your Renfroe!

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!




## 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.

# 5 WAYS TO PROTECT YOUR CLAMP INVESTMENT

1. **Inspect clamps per ASME B30.20 standards.** A visual ***Every Lift Inspection*** is required each time the clamp is used. A more in-depth ***Frequent Inspection*** can be required daily, weekly or monthly, depending on the clamp's service class. Recorded ***Periodic Inspections*** can be required quarterly, semi-annually or yearly, depending on service class.

2. **Establish a good maintenance protocol.** Ensure all employees know how inspections work. Provide them with adequate time and training to perform those inspections. Clearly identify requirements and get your safety team involved with ongoing monitoring of the program to make sure it continues as designed.

3. **Know when to repair, rebuild or replace.** Know your options when you find a lifting clamp that's showing wear.
**Go to the Caldwell Blog here: caldwellinc.com/blog**

4. **Use RENFROE Rebuild Kits to replace worn parts.** Factory-built replacement parts offer you the best outcome when a replacement of a worn part is needed.

5. **Refurbish and recertify clamps at the RENFROE Service Center.** 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. If requested, we can also provide a certificate of proof test. **Call us at 800.628.4263.**

# 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
- Fatigue testing was performed on the three manufacturers' comparable clamps in both vertical and horizontal orientations
- 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


## 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:**

- Renfroe 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, Renfroe 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.**

CALDWELL LIFTING SOLUTIONS

RENFROE

RUD

IN STOCK

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


caldwellinc.com | 800.628.4263 | 815.229.5667

CALDWELL®
LIFTING SOLUTIONS

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


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

OM-211-RSC • 061926-500