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

LIMITED LIFETIME WARRANTY

RENFROE™

MODELS TL/TLA CLAMPS

APPLICATION, OPERATION, AND MAINTENANCE MANUAL

Model TL

Model TLA

Model TL/TLA Clamp Operator's Manual

This Operator's Manual covers the application, operation, and maintenance of this RENFROE™ product. Operator's Manuals for other current RENFROE products are available upon request.

RENFROE

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 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.

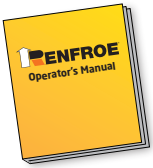
Notice of Exclusion of Warranty

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 manufacturer and/or its distributors with respect to applicable RENFROE products and subject matter described or contained herein.

RENFROE™ Clamp Oper

1

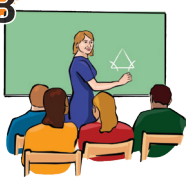


DO read and understand the Operator's Manual before using clamp.

2

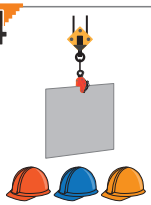
DO consult the Operators Manual or RENFROE when in doubt.

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 or use a heavy flexible connection.

8

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

9

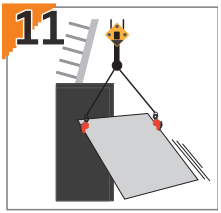
DO use correct clamp for job; **DON'T** use large capacity clamps to lift light loads.

10

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

ration Do's and Don'ts

11



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

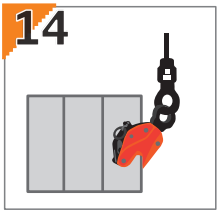
12

DO always refer to pre-lift inspection in Operator's Manual.

13

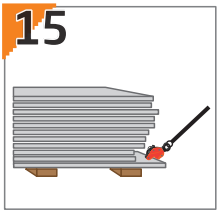
DO inspect clamp before each lift and follow inspection & maintenance instructions.

14



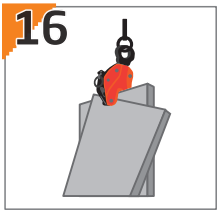
DON'T side load with a straight shackle clamp.

15



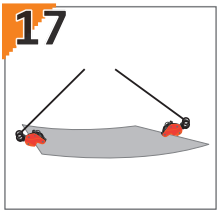
DON'T misuse (i.e. **DON'T** lift plate from bottom of plate stack).

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

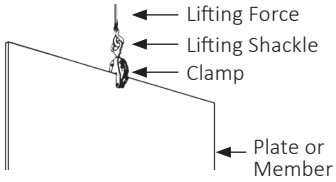
DO secure load before attaching clamp.

20

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

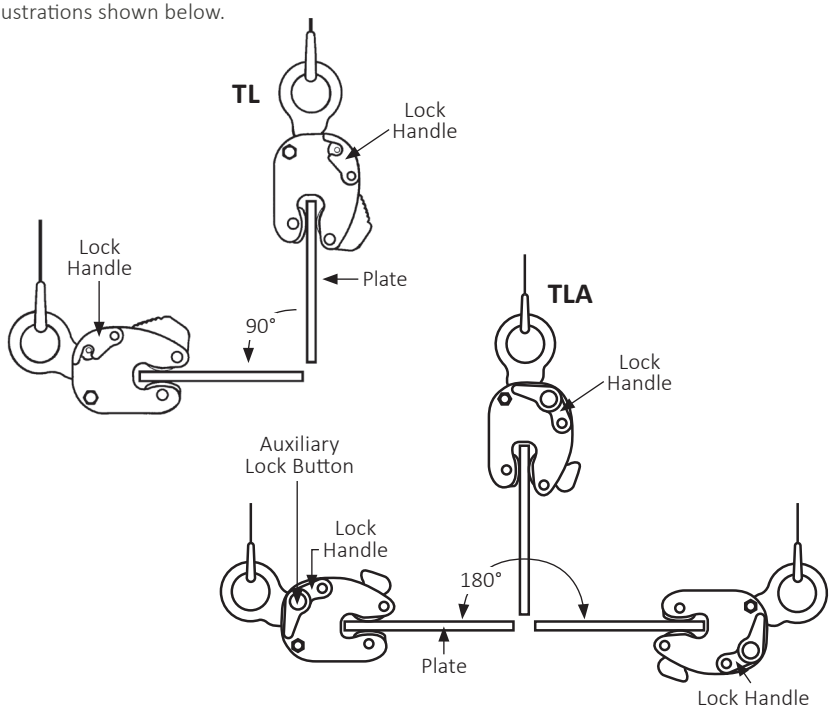
Vertical Lift

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.



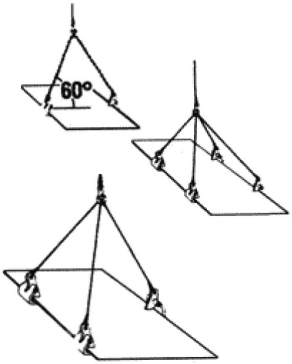
Vertical Turn/Lift

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 Application Section of specific Turn/Lift clamps for further detail. 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 not exceed one half rated capacity of clamp—refer to illustrations shown below.



Horizontal Lift

Clamps (used in pairs or multiples) are attached to the side edges of a plate or bundle of plates 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 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 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 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. **WARNING: For applications not covered by the above information, secure written recommendations from CALDWELL/RENFROE.**

> 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.

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 under 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 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 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 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 Section 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 gripping cam of clamp is retracted and removed when clamp is positioned on the plate. Tag line may be used to permit operator to remove pin from a greater distance from clamp. Refer to the Operation Section of specific model of “Lock Open Only” clamps for additional details. A typical “Lock Open Only” clamp is the Model RO.

Lock Closed-Lock Open

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 Section 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 member to which the clamp is being attached. Refer to Operation Section of specific models of the “Locking Wedge” clamps for additional details. Typical “Locking Wedge” clamps are Model A1, B1, B2, and PB.

Locking Screw

"Lock Screw" clamps depend on manually adjusting a screw to hold the gripping surface in place for lifting and removing the clamp from member being lifted. Refer to Operation Section 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 clamp from member being lifted. It is necessary to have position of clamp maintained on the member being lifted until a properly applied force is exerted to the lifting shackle. Refer to Operation Section 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 apprise the operator and all other affected persons of the existence of danger of which they should be but may not be aware and to enable the operator to protect themself and others where applicable against such danger. An attempt is made herein to warn against reasonable and reasonably foreseeable danger in the proper use and possible reasonable 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 those specific duties.

Qualified Person

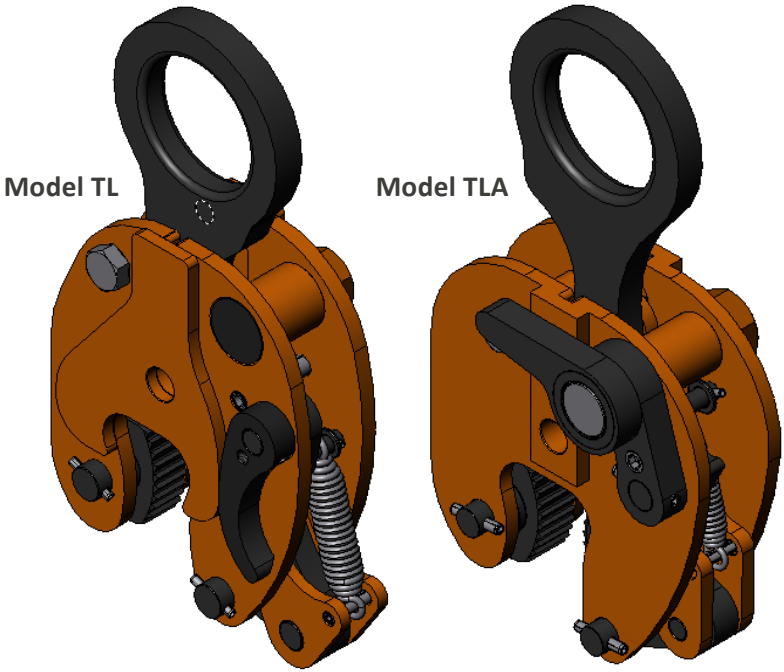
A person who, by possession of a recognized degree in an applicable field or certificate of professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve problems relating to the subject matter at hand.

Model TL/TLA Vertical Lifting Locking Clamp Series

The Model TLA is a vertical lifting clamp incorporating a “Lock Open” and a “Lock Closed” feature, and an auxiliary lock. The clamp is recommended for the turning of a single steel plate from horizontal to vertical to horizontal through a 180° arc. Turn to page 6 for illustrations. The auxiliary lock prevents the lock handle from moving from the “Lock Closed” position until the auxiliary lock button is manually depressed. The “Lock Open-Lock Closed” feature facilitates attaching and removing the clamp from the plate. Refer to Definitions for explanation of “Lock Open-Lock Closed” clamp.

The Model TL is identical to the Model TLA except that it does not contain the auxiliary lock. The Model TL is capable of turning a plate from horizontal to vertical and back through the same 90° arc. Turn to page 6 for illustrations.

For an exploded view of the clamp parts, turn to page 24 and 25. **WARNING: Refer to the sections on Operation and Maintenance for the approved procedures in the operation and maintenance of this product.**



Model TL/TLA Horizontal 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 appropriate capacity and plate thickness. The model designation, capacity, and plate thickness are stenciled on each clamp. **WARNING: Never exceed rated capacity or use on plates that are not within the range of plate thickness stenciled on the clamp. Lift only one plate on each lift.**

Always use a clamp with maximum plate thickness and rated capacity near equal to the thickness and weight of the plate being lifted.

STEP 3

Inspect clamp before each lift. **WARNING: Do not use if in need of repair.**

If in doubt, refer to the Maintenance section for detailed maintenance instructions and exploded view of the clamp for part identification.

A. Inspect gripping surfaces for wear and defects. Gripping surfaces must be sharp and free of foreign matter.

B. Inspect condition of body for wear, damage, and distortion, particularly in the area of the jaw opening.

C. Inspect lifting shackle and all pin holes for wear and damage.

D. The lock springs must have a definite amount of tension when the lock is moved to the “Lock Closed” position without material in the clamp. Lock Pawl must rest on body spacer sleeve.

E. On the Model TLA, the auxiliary lock button must have a positive spring action that projects it out to engage the lock handle when the handle is moved to the “Lock Closed” position.

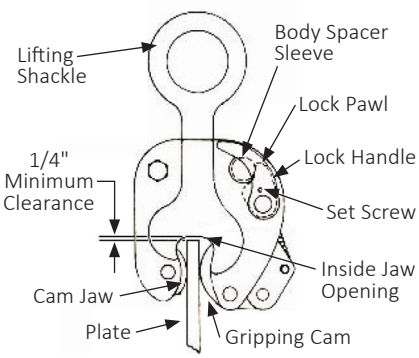
F. Remove any clamp from service in need of repair.

STEP 4

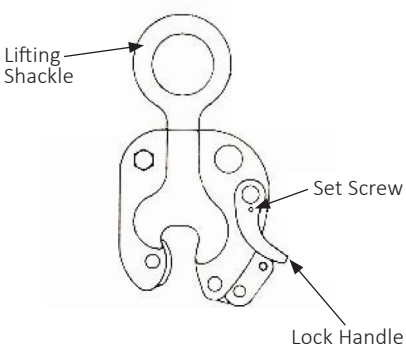
The clamp is a component of the rigging used in lifting or transporting a plate. It is important to use safe and adequate rigging. The lock is used to hold the clamp in place until the gripping mechanism is actuated by a force applied to the lifting shackle. **WARNING: Improper or excessively heavy rigging may interfere with the operation of the clamp and its ability to maintain a proper position on the plate. Never attach crane hook directly to the clamp—always use a sling between crane hook and clamp.**

STEP 5

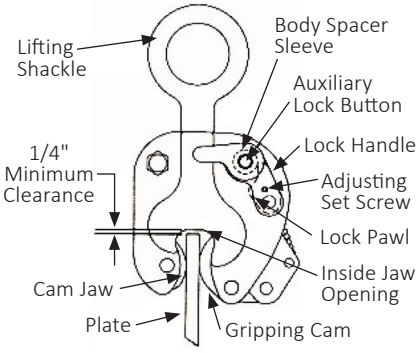
Move lock lever to "Open" position. Gripping cam is maintained in retracted position. Refer to illustration below.



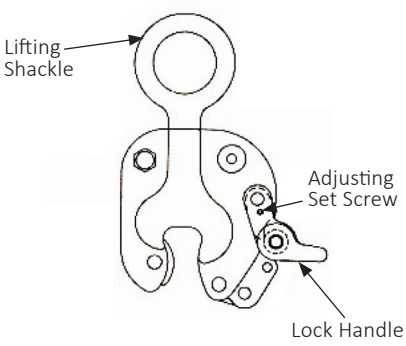
TL "LOCK CLOSED" POSITION



TL "LOCK OPEN" POSITION



TLA "LOCK CLOSED" POSITION

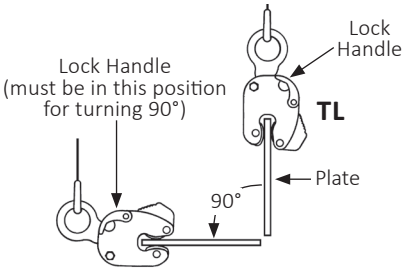


TLA "LOCK OPEN" POSITION

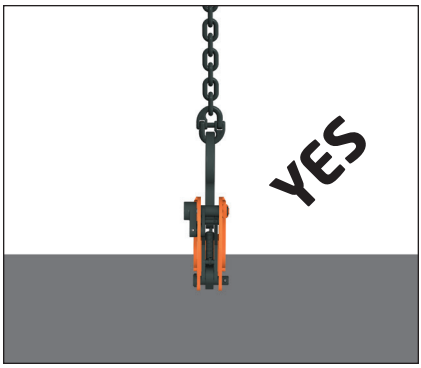
STEP 6

Position clamp on plate being lifted.

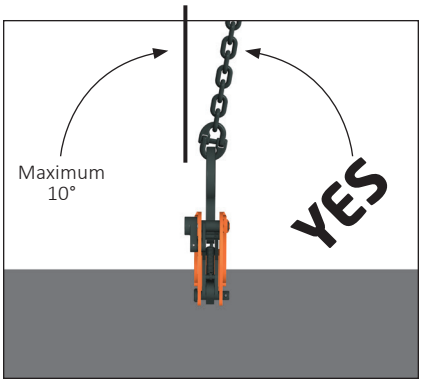
WARNING: When using the Model TL for lifting from horizontal to vertical, the clamp must be positioned with the lock handle always on the topside of plate when plate is in a horizontal position. See illustration on the right.



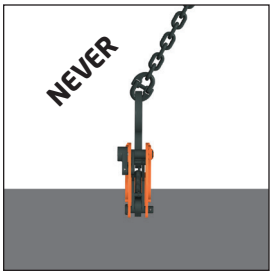
Do not allow inside of jaw opening to rest on edge of plate. Maintain 1/4" clearance. Refer to "Open" position illustration in Step 5. Position clamp so direction of force applied by the crane is in line with the lifting shackle. **WARNING: never exceed 10° side loading. Refer to photographs below.**



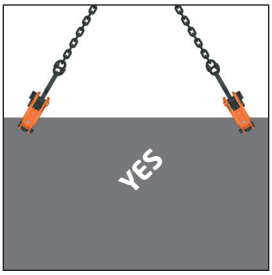
Sling directly above and in-line with the lifting shackle.



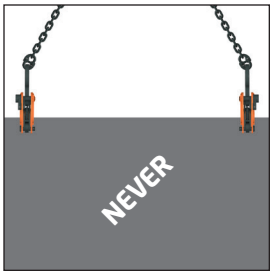
Maximum allowable side loading.



Excessive side loading.



Clamps in-line with sling.



Clamps not in-line with sling.

STEP 7

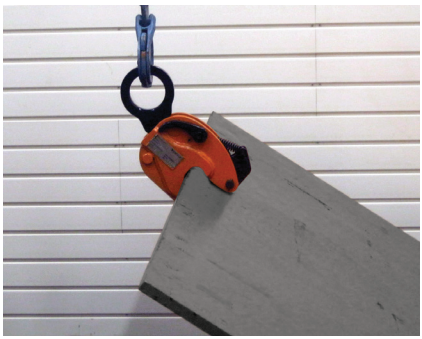
Make certain the gripping surfaces of the clamp are fully in contact with the plate and not partially on and off the edge of the plate.

STEP 8

Place the lock lever in the “Lock Closed” position. Lock Pawl must rest on Body Spacer Sleeve. Spring now exerts force on gripping cam. On Model TLA make certain the auxiliary lock button projects from the housing and fully engages the lock handle. **WARNING: Lift only when clamp is in the “Lock Closed” position. Refer to “Closed” position illustration in Step 5 and photograph below.**

STEP 9

Commence lift. **WARNING: Operators should position themselves away from and fully clear of the member to be lifted. Plates being turned have a tendency to slide. Do not commence lift until all personnel are clear of the area of the lift. Never stand under or near a member being lifted. Refer to photograph below.**



STEP 10

To remove clamp after plate is fully supported and at rest in a stable position, relax the lifting force. Be sure to keep hands clear (depress auxiliary lock button on Model TLA) and move lock handle to “Lock Open” position. Remove clamp from plate. Refer to illustrations in Step 5.

STEP 11

Inspect 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 clamp until it has been properly labeled.**

Inspection kits are available from the distributor or RENFROE. Kit contains:

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

Model TL/TLA Horizontal 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 gripping surfaces for wear and defects—gripping surfaces must be sharp and free of foreign matter.
- The lock spring must have a definite amount of tension when the lock is moved to the "Lock Closed" position without material in the clamp.
- Inspect the condition of the body for wear, damage, and distortion, particularly in the area of the jaw opening.
- Inspect lifting shackle and all pin holes for wear and 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 clamps 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 as described in the Periodic Inspection Procedure below timed according to the clamps 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.

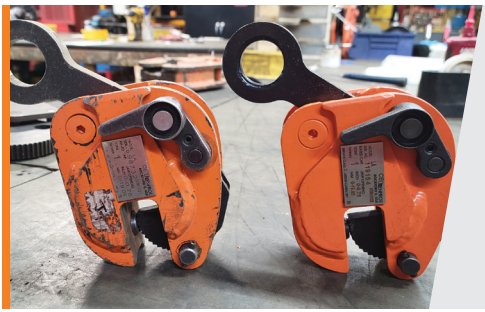
Repair (Replacement of Worn Parts):
During regular maintenance, when replacing parts that are worn, a record should be made of the parts replaced. After the replacement of worn parts, clamps need not be load tested if using RENFROE parts. Non-RENFROE parts are not approved and shall not be used.

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. The latter 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 TL/TLA Periodic Inspection Procedures

STEP 1

Verify the identity of the clamp by checking the identification plate on the clamp body. If the identification plate is missing or not legible, an RFID chip (Radio Frequency Identification Device) is embedded in the clamp body or a clamp component. If the identification plate is missing and the RFID chip is unavailable, call the factory for instructions on returning the clamp for recertification.

STEP 2

Completely disassemble clamp. RENFROE recommends a magnetic particle, ultrasonic, or similar methods for determining damage to the clamp or components.

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, internal and external surfaces for fractures, wear and distortion.

B. Inspect shackle pin guide slots located inside body. Guide slots must be smooth and free of indentations where shackle pin may seat. Refer to exploded view.

C. Inspect all load bearing pin holes for wear and elongation.

D. Inspect inside jaw opening for displaced metal and distortion.

E. Inspect clearance of lock handle assembly mounting hole for wear. Clearance with shaft of lock handle assembly should be minor. Mounting holes that are worn oversized may cause the lock handle to malfunction. Refer to exploded view. **WARNING: Replace clamps containing fractures, elongated holes, distorted jaw openings and clamp bodies with metal in jaw opening displaced.**

STEP 5

Lifting Shackle (TL/TLA-1 in parts diagrams on pages 24 and 25):

A. Inspect lifting shackle eye for elongation and wear at point where the eye engages the sling attachment.

B. Inspect shackle pin holes for wear and elongation. The difference between the pin diameter and the hole should not exceed 10%.

C. Inspect shackle body for bending.

An elongated shackle eye indicates overloading. Elongated shackle pin holes indicate wear and possible overloading. Bent shackle indicates excessive side-loading. **WARNING: Replace shackles that are bent, show excessive wear at eye, or have elongated eye or shackle pin holes.**

STEP 6

Cam Assembly (TL/TLA-2 in parts diagrams on pages 24 and 25):

A. Inspect cams for chipped or worn teeth. Teeth must be sharp and free of foreign matter.

B. Inspect cam straps for distortion and fractures.

C. Inspect pin holes in the cam straps for elongation and wear. **WARNING: Replace cam assemblies that have cams with worn or damaged teeth, that contain fractures, or that have cams and cam straps with elongated pin holes.**

STEP 7

Shackle Pin and Cam Pin and Cam Jaw Pin (TL/TLA-3 and TL/TLA-4 in parts diagrams on pages 24 and 25):

A. Inspect all pins for:

1. Distortion
2. Surface blemishes
3. Wear
4. Fractures

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

STEP 8

Cam Jaw (TL/TLA-5 in parts diagrams on pages 24 and 25):

A. Inspect cam jaw for chipped or worn teeth. Teeth must be sharp and free of foreign matter.

B. Inspect pin hole for elongation and wear.

C. Inspect cam jaw for fractures. **WARNING: Replace cam jaws with worn or damaged teeth, fractures, or elongated pin holes.**

STEP 9

Body Bolt & Sleeve, Body Bolt, and Body Spacer (TL/TLA-6, TL-7 and TL/TLA-10 in parts diagrams on pages 24 and 25):

A. Inspect body spacer sleeve for wear at position where sleeves contact shackle.

B. Inspect body bolts and sleeve. When replacing bolt, tighten the bolt and nut, then centerpunch bolt and nut at joint of thread to lock nut in place. **WARNING: Replace body bolt, nut, and sleeve if worn or damaged.**

STEP 10

Auxiliary Lock Housing and Sleeve (TLA-7 in parts diagrams on page 25):

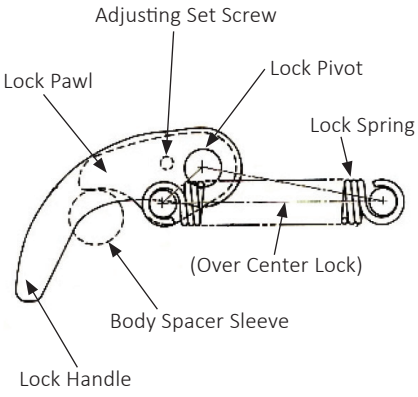
A. Inspect auxiliary lock housing for distortion and wear.

B. Inspect auxiliary lock button. The button must move in and out of housing without binding. The spring must be capable of maintaining button in extended position. **WARNING: Replace the auxiliary lock if damaged or the auxiliary lock button spring does not maintain the button in the extended position.**

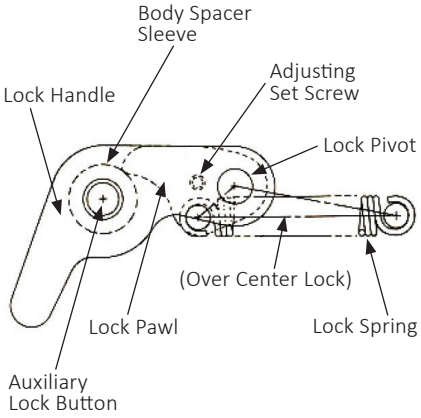
STEP 11

Lock Spring (TL/TLA-8 in parts diagrams on pages 24 and 25):

A. Inspect lock spring for distortion. Spring must have a definite amount of tension when moved to the "Lock Closed" position without material in the clamp. Lock Pawl must rest on body spacer sleeve. See illustration below. **WARNING: Replace if damaged, distorted, or lacking proper tension.**



TL "LOCK CLOSED" POSITION



TLA "LOCK CLOSED" POSITION

STEP 12

Lock Handle Assembly (TL/TLA-9 in parts diagrams on pages 24 and 25):

A. Inspect for damage and wear, particularly in the area where the lock handle engages the auxiliary lock's locking button.

B. Inspect lock handle for binding, particularly when moving lock handle to the "Lock Closed" position. If binding does occur, adjust set screw in body of lock handle to provide adequate clearance. On Model TLA the auxiliary lock button must fit completely inside radius of opening in lock handle. Refer to "Closed" position illustrated on page 22.

C. Inspect lock assembly pivot shaft for wear. Shaft must have "Slip Fit" with lock handle pivot hole. Refer to exploded view.

Clamps with capacities of 4 tons and above incorporate bearings at position where shaft of lock handle assembly mounts in body. **WARNING: Replace lock assemblies that have worn or damaged parts, fit loosely in the body mounting hole and do not have a definite Over Center/Lock Closed position. Replace worn and damaged bearings.**

STEP 13

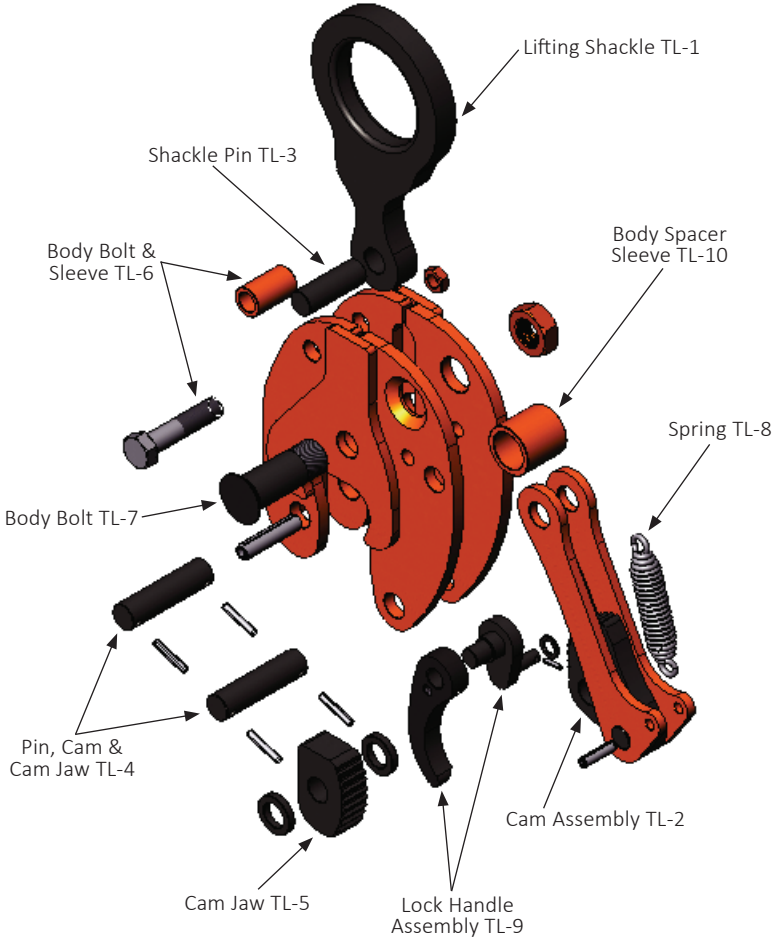
After reassembly, check operation of clamp. All parts should move freely without binding. Refer to exploded view for proper location of component parts. **WARNING: All retaining pins and fasteners must be in place, including cam jaw washers where required.**

GENERAL

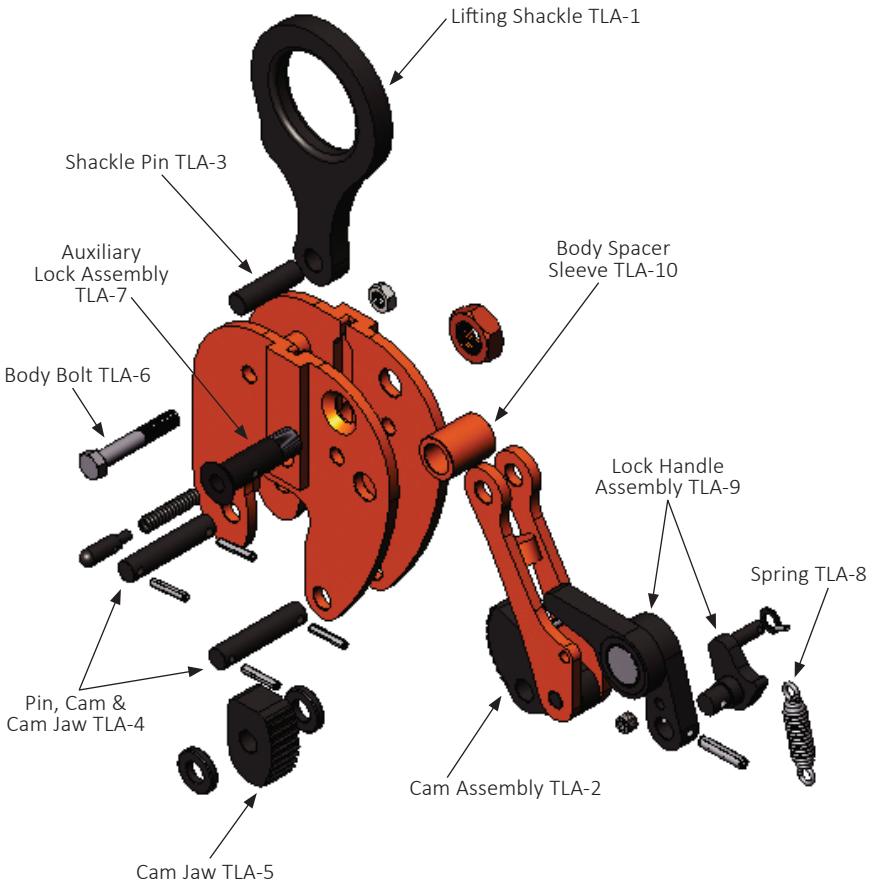
RENFROE products may be returned to the factory for inspection and refurbishment in accordance with an established fee schedule.

Use only RENFROE replacement parts to insure maximum efficiency and safety factor originally built into the product. Refer to 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 tag containing the model, capacity, or other pertinent information is missing, do not use clamp until it has been properly labeled.



MODEL TL EXPLODED VIEW



MODEL TLA EXPLODED VIEW

Notes

Exclusion of Warranty

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

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

In an independent test against two other manufacturers with comparable clamps, J.C. 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

TESTS 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

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