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

LIMITED LIFETIME WARRANTY

RENFROE™

MODEL WHSR CLAMP

APPLICATION, OPERATION, AND MAINTENANCE MANUAL

Model WHSR 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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200 State Street
Beloit, WI 53511
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.

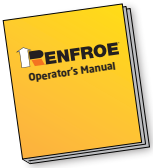
Notice of Exclusion of Warranty

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

RENFROE™ Clamp Oper

1

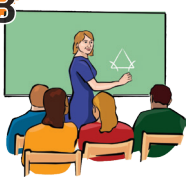


DO read and understand the Operator's Manual before using clamp.

2

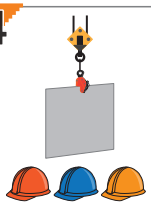
DO consult the Operators Manual or RENFROE when in doubt.

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

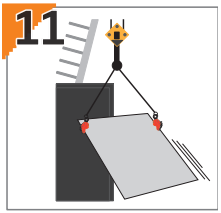
DO use correct clamp for job; **DON'T** use large capacity clamps to lift light loads.

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.

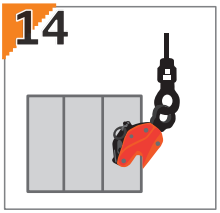
12

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

13

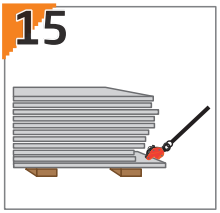
DO inspect clamp before each lift and follow inspection & maintenance instructions.

14



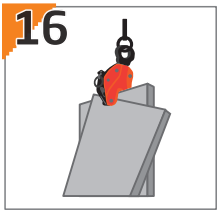
DON'T side load with a straight shackle clamp.

15



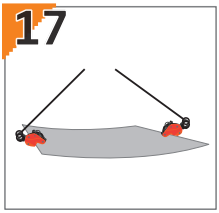
DON'T misuse (i.e. **DON'T** lift plate from bottom of plate stack).

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

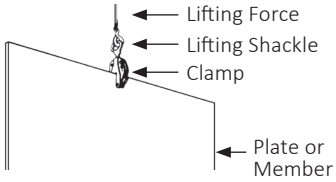
DO secure load before attaching clamp.

20

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

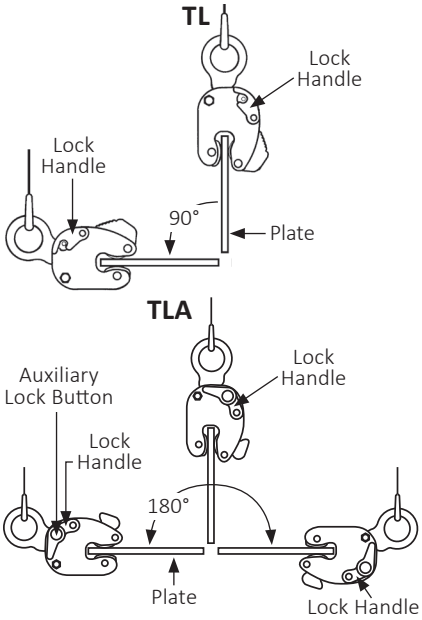
Vertical Lift

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.



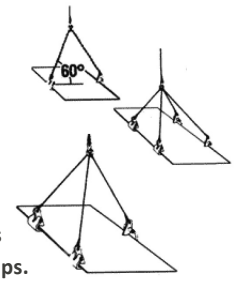
Vertical Turn/Lift

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 on the right.



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.**

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 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.

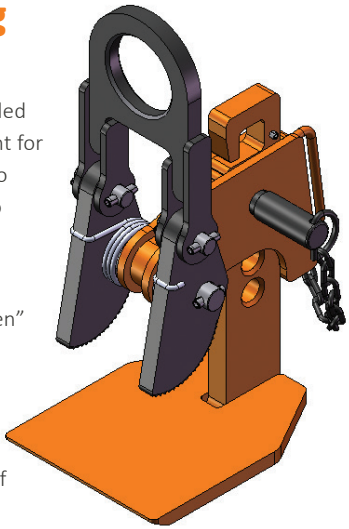
Qualified Person

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.

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 WHSR Horizontal Lifting Non-Locking Clamp Series

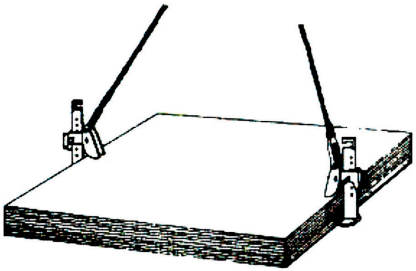


The Model WHSR is an adjustable, horizontal clamp intended to be used in pairs, sets of pairs, or in a tripod arrangement for transporting steel plates in the horizontal position. Refer to Illustrations shown below. In addition to incorporating two gripping cams, the jaw opening may be adjusted by the positioning of a pin in the body of the clamp.

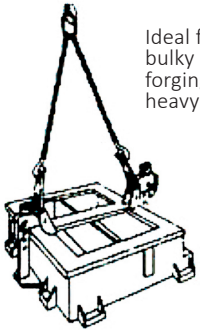
The gripping cams are spring loaded to remain in the "Open" position until the load is applied. This feature permits the clamp to be easily applied and removed from the load. The Model WHSR is a "Non-Locking" clamp and requires constant tension applied to lifting shackle throughout the entire operation. Refer to Definitions for explanation of "Non-Locking" clamp.

Normally furnished with serrated gripping surfaces, it is available with smooth-faced bronze or stainless steel surfaces to prevent marring when handling polished plates.

For an exploded view of the clamp parts, turn to page 25. **WARNING: The rated capacity is based on a sling angle of 60°. Refer to Illustration A on page 12. Sling angles less than 60° increase load on clamp. Refer to Operation section, Step 3, for correct loading of clamp with sling angles less than 60°. Sling angles greater than 60° reduces gripping force. Do not exceed 60°. Always use an adequate number of clamps to assure a balanced load. Never exceed the rated capacity of a single clamp. Never use on plate or bundle of plates that are not able to support themselves without sagging. Refer to Illustration B on page 12. Refer to the sections on Operation and Maintenance for the approved procedures in the operation and maintenance of this product.**



Handles bundles of steel plate of varying thickness.



Ideal for handling bulky items such as forgings, castings, heavy sections, etc.

ILLUSTRATION A

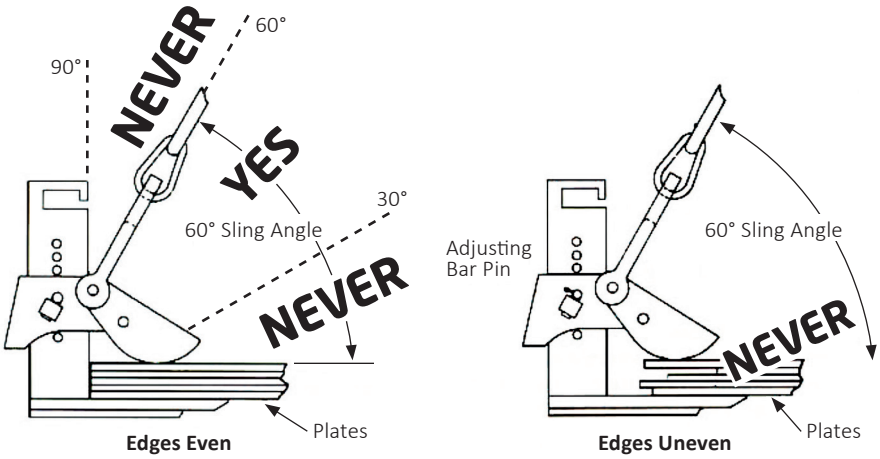
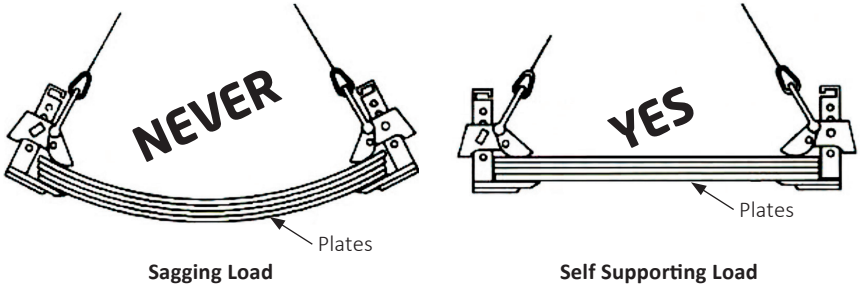


ILLUSTRATION B



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: marketing@caldwellinc.com.** You never know ... we might make you famous on our blog or social media pages!

Model WHSR Horizontal Lifting Non-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

The Model WHSR, rated individually, is used in pairs, multiples of pairs, or tripods.

Model WHSR has an adjustable jaw opening. When used in pairs or multiples, set all of the clamps at the same jaw opening whenever possible or in such a manner that the plates being lifted remain horizontal and do not tilt. **WARNING: Never exceed rated capacity or use on plates that are not within the range of plate thickness stenciled on the clamp.**

STEP 3

Select clamp with proper capacity and jaw opening range. Use of sling angles under 60° increases the load on the clamps. Use chart below to determine maximum capacity weight per clamp when using sling angle less than 60°.

Rated Capacity in Tons			
Model Capacity	Sling Angle		
	60°	45°	30°
WHSR 1/2	.5	.35	.25
WHSR 1-1/2	1.5	1.05	0.75
WHSR 3	3.0	2.1	1.5
WHSR 6	6.0	4.25	3.0
WHSR 8	8.0	5.65	4.0

WARNING: Always use an adequate number of clamps to assure a balanced load. Never use on plates or bundles of plates that are not able to support themselves without sagging or stacked without sagging or stacked without edges being even. Refer to Illustrations A and B.

STEP 4

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

If in doubt, refer to the Maintenance section on Page 19 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 of cams for wear and defects. Gripping surfaces must be sharp and free of foreign matter.

D. Inspect condition of body for wear, damage, and distortion. Take particular note of the intersection of the vertical upright and the footpad.

E. Inspect footpad for distortion of bending indicating the clamp has been subjected to overloading.

F. Inspect lifting shackle and all pin holes for wear and elongation.

G. Inspect cam spring for distortion and damage.

H. Inspect adjustable bar pin for wear and damage.

I. Inspect safety pin assembly for wear and damage. Spring must be in place. Safety pin assembly must engage adjusting bar pin a firm manner holding it securely in place.

J. Inspect lifting shackle for wear and damage.

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

STEP 5

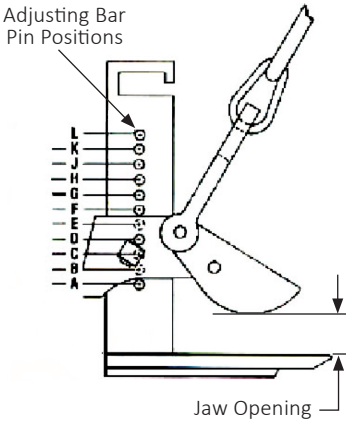
The clamp is a component of the rigging used in the lifting or transporting of plates. It is important to use safe and adequate rigging. Each clamp is manually held in place until the gripping mechanism of the clamp is activated by a force applied to the lifting shackle. **WARNING: Improper or excessively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

The clamp springs are intended to hold the cams in the “Open” position to facilitate mounting the clamps on the plates.

STEP 6

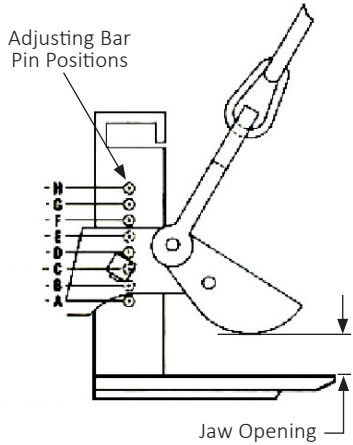
Adjust clamp jaw opening by positioning the adjusting bar pin according to thickness of load the be lifted. Refer to photograph and chart below for proper positioning of adjusting par pin.

½-, 1½-, AND 3-TON CAPACITIES



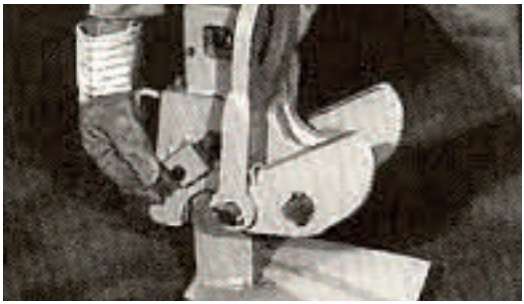
Pin Position	Jaw Opening (in.)
A	0 – 1-1/2
B	1-5/8 – 3
C	3-1/8 – 4-1/2
D	4-5/8 – 6
E	6-1/8 – 7-1/2
F	7-5/8 – 9
G	9-1/8 – 10-1/2
H	10-5/8 – 12
J	12-1/8 – 13-1/2
K	13-5/8 – 15
L	15-1/8 – 16

5- AND 8-TON CAPACITIES



Pin Position	Jaw Opening (in.)
A	0 – 2
B	2-1/8 – 4
C	4-1/8 – 6
D	6-1/8 – 8
E	8-1/8 – 10
F	10-1/8 – 12
G	12-1/8 – 14
H	14-1/8 – 16

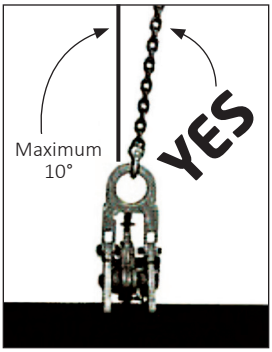
STEP 7
Make certain the safety pin assembly is engaging the groove in the adjusting bar pin.



STEP 8
Assemble the clamps on the plates so the edges of the plates are positioned to the full depth of the clamp footpads. Refer to Illustration A, page 12.

Position clamp so the direction of force applied by the crane is in line with the lifting shackle.
WARNING: Never exceed 10° side loading.

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



Maximum allowable side loading.

Excessive side loading.

STEP 9

Each person must make certain the gripping cams and lifting pads are fully in contact with the plates and not partially on and off the edge of the plates.

STEP 10

Each person must hold a clamp in place until lifting sling is tight enough to maintain clamps' position on plates. **WARNING: A constant force must be maintained on the lifting shackles throughout the entire operation.**

STEP 11

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

STEP 12

To remove clamp after plate is fully supported and at rest in a stable position, relax the lifting force. Remove clamps from the plates.

STEP 13

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 WHSR Horizontal Lifting Non-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.
- Inspect condition of body for wear, damage, and distortion. Take particular note of the intersection of the vertical upright and the footpad.
- Inspect footpad for distortion of bending indicating the clamp has been subjected to overloading.
- Inspect lifting shackle and all pin holes for wear and elongation.
- Inspect cam spring for distortion and damage.
- Inspect adjustable bar pin for wear and damage.
- Inspect safety pin assembly for wear and damage. Spring must be in place. Safety pin assembly must engage adjusting bar pin a firm manner holding it securely in place.
- Remove any clamp from service in need of repair.

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.

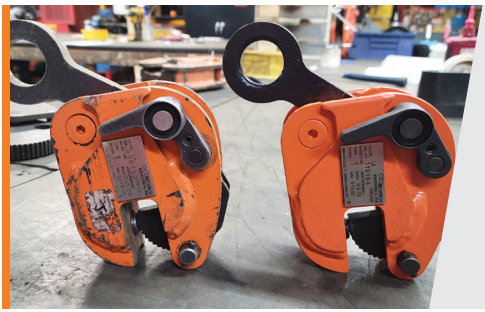
Repair (Replacement of Worn Parts):
During regular maintenance, when replacing parts that are worn, a record should be made of the parts replaced. After the replacement of worn parts, clamps need not be load tested if using RENFROE parts. Non-RENFROE parts are not approved and shall not be used.

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 WHSR Horizontal Lifting Non-Locking Clamp Series

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.

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 welds and internal and external surfaces for fractures and distortions. RENFROE recommends a dye penetrate or similar method of detecting indications on the clamp. If an indication is found, it may be necessary to use a magnetic particle, ultrasonic, or similar methods for determining damage to the clamp or components.

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

C. Inspect adjusting holes located in upright of body for wear, and distortion.

D. Inspect upright portion of body for bending.

E. Inspect food-pad for distortion or bending. Foot-pad should form a 90° angle with the upright.

F. Inspect welds at junction of foot-pad and upright. **WARNING: Replace clamps containing fractures, elongated holes, distorted jaw openings and metal in jaw opening displaced by excessive wear or side loading.**

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.

STEP 5

Lifting Shackle (WHSR-1 in parts diagrams on page 25):

A. Inspect welds and body for fractures, wear, and distortion.

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

C. Inspect shackle pin holes for wear and elongation.

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

Adjustable Bar (WHSR-2 in parts diagrams on page 25):

The adjustable bar is not a replacement part, but is matched with each clamp body. In order to replace either the adjustable bar or the body, the clamp must be returned to the factory.

A. Inspect welds and internal and external surfaces for fractures, wear, and distortions.

B. Inspect all pin holes for wear and elongation.

C. Inspect handle mounted on back of adjustable bar for damage. The handle must be in place to aid in making adjustments. **WARNING: Replace clamps with adjustable bars containing fractures, elongated holes, or distorted body.**

STEP 7

Adjustable Bar Pin (WHSR-3 in parts diagrams on page 25):

A. Inspect adjustable bar pin for distortion, surface blemishes, wear, and fractures. **WARNING: Replace if distorted, worn, or containing surface scars or fractures.**

STEP 8

Safety Pin Assembly (WHSR-4 in parts diagrams on page 25):

A. Inspect safety pin assembly for wear and damage.

B. Inspect spring for distortion or damage.

C. Make certain safety pin hold down screw is tight. Safety pin slide must engage in groove in adjusting bar pin in a firm manner, holding in securely in place. **WARNING: Replace all components of the safety pin assembly that are worn or damaged, and springs that do not maintain safety pin slide firmly extended.**

STEP 9

Shackle Pin and Cam Pin (WHSR-5 and WHSR-7 in parts diagrams on page 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 10

Gripping Cam (WHSR-6 in parts diagrams on page 25):

A. Inspect cams for chipped or worn teeth. Teeth must be sharp and free of foreign matter. Inspect cams for fractures, particularly at the cam pin holes.

B. The Model WHSR is also supplied with gripping surfaces of the cams plated with stainless steel or bronze. Inspect cams for damage to bronze or stainless steel gripping surfaces. **WARNING: Replace cams with worn or damaged teeth, containing fractures, and having elongated pin holes. Replace bronze or stainless steel cams that have worn gripping surfaces.**

STEP 11

Cam Spring (WHSR-8 in parts diagrams on page 25):

A. Inspect cam springs for distortion or damage. Cam springs are intended to hold the cams in the "Open" position to facilitate mounting the clamps on the plates. **WARNING: Replace springs that are damaged and are not capable of holding the cams in the "Open" position.**

STEP 12

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.**

Exclusion of Warranty

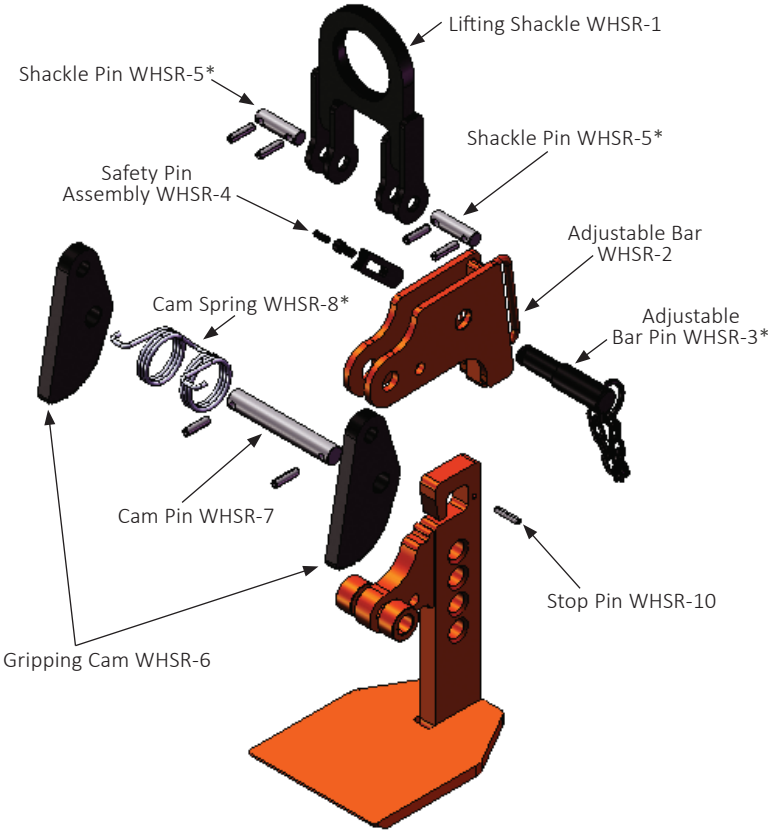
There exists no warranties neither expressed nor implied which extend beyond the descriptions or statements contained in the face or any part hereof.

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. Learn more about RENFROE Inspection Kits on page 18.



*These parts are included in the RENFROE Repair Kit.

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. And, 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 wear parts.** Factory-built replacement parts offer you the best outcome when a replacement of a wear 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, 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

CALDWELL®
LIFTING SOLUTIONS

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IN STOCK

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

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