



# **Safety Clamps, Inc.**

**“Big Bite” Lifting Clamps**

## **Operation, Maintenance and Repair Manual**

### **VL Series Clamps:**

#### **VL (AVL) Models**

(Includes VL (AVL) Models with the Universal Shackle,  
Auxiliary Lock, and/or Stainless Gripping Parts)

#### **VL-SJ**

#### **VLX (AVLX)**

#### **VL-Channel**

**\*Excludes VL-BC Model\***

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

### **Warning**

**Prior to operating your Safety Clamp, please ensure that  
All operators read and understand this manual.**

**Effective November 1, 2013**

This manual supersedes all previous VL manuals.

Serial # \_\_\_\_\_

Model \_\_\_\_\_

Maximum Rated  
Capacity in Tons \_\_\_\_\_

Jaw Opening \_\_\_\_\_

Safety Clamps, Inc.

## Repair Service Center

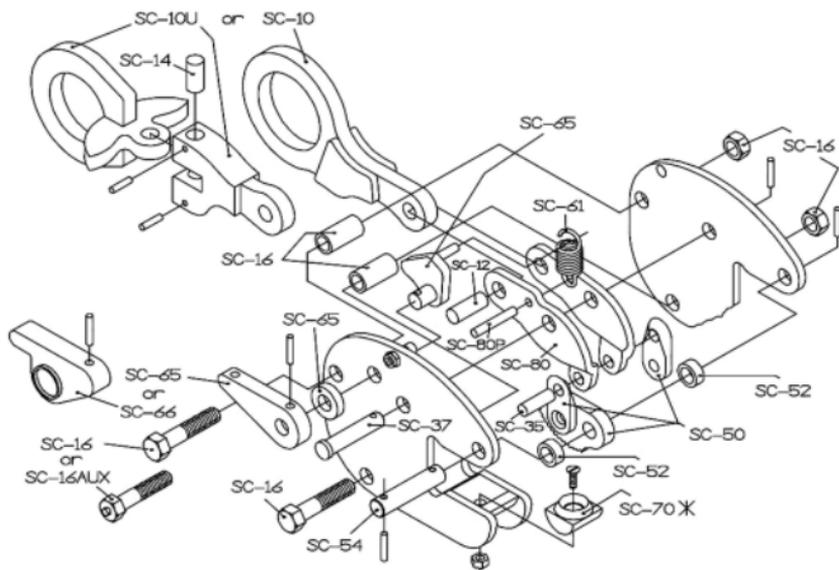
- ◆ Call 1-800-456-2809 for a Return Authorization Number.
- ◆ You will receive a written quote the same day we receive your Safety Clamp.
- ◆ Your Safety Clamp will be repaired, tested, recertified, painted, and shipped within 24 hours of authorization.
- ◆ We also perform quarterly, semiannual, and annual inspections and recertifications.
- ◆ It's that easy!

Call 1-800-456-2809 for more details!

## GENERAL INFORMATION

1. Always choose the proper clamp and rated capacity for the material to be lifted.
2. The “VL” series Safety Clamps include the “VL” and “AVL”, the “VL” and “AVL” models with the universal shackle, auxiliary lock, and/or stainless gripping cam and pad, and the “VL-Channel”, “VL-SJ”, “VLX”, and “AVLX” models.
3. The “VL” series Safety Clamps are designed for lifting, turning, and vertical transferring of steel plate, sheet, and/or structural shapes.
4. The “**VL**” (“**AVL**”) (including the “VL” and “AVL” models with the universal shackle, auxiliary lock, and/or stainless gripping cam and pad), “**VL-Channel**”, and “**VL-SJ**” models may be used to **lift material from a vertical position or from horizontal to vertical to horizontal through a 180° arc (Fig. 8)**.
5. **Never use the “VL-Channel” model to lift plate material.** The “VL-Channel” model is designed to attach to channel or bulb sections only (Fig. 10).
6. The “**VLX**” and “**AVLX**” models may be used to **lift material from a vertical position or from horizontal to vertical to horizontal through the same 90° arc only (Fig. 9)**.
7. Visual inspections should be conducted before and after each use. Monthly inspections should be conducted by certified personnel by disassembling the clamp and thoroughly checking each part.
8. Always store the clamp in the “locked open” position.

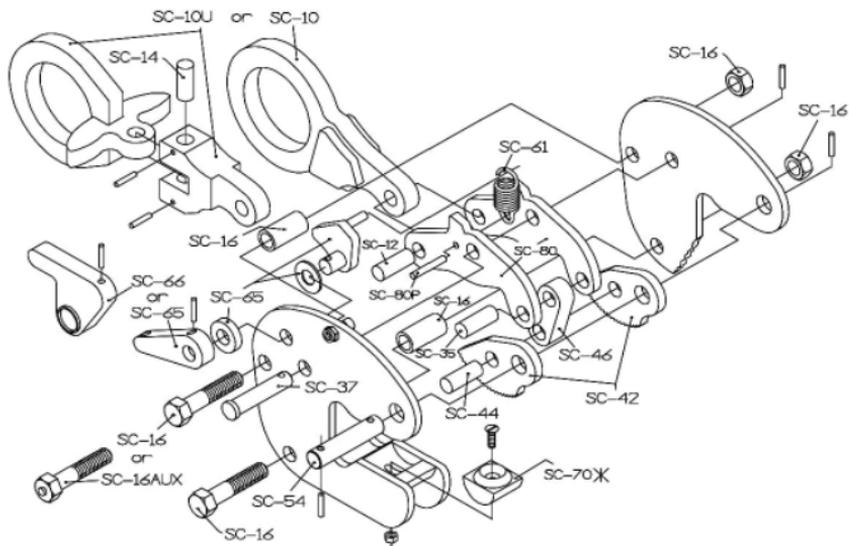
Parts numbers for 1/2 and 1 ton Models VL (AVL), VLX (AVLX), VL-Channel, and All VL-SJ capacities:



\* The "VL-Channel" model does not include the part # SC-70.

**Figure 1**

Parts numbers for 2 - 20 ton for All VL Models, VL-Channel, and VLX (excludes VL-SJ):



\* The "VL-Channel" model does not include the part # SC-70.

**Figure 1**

**WARNING**

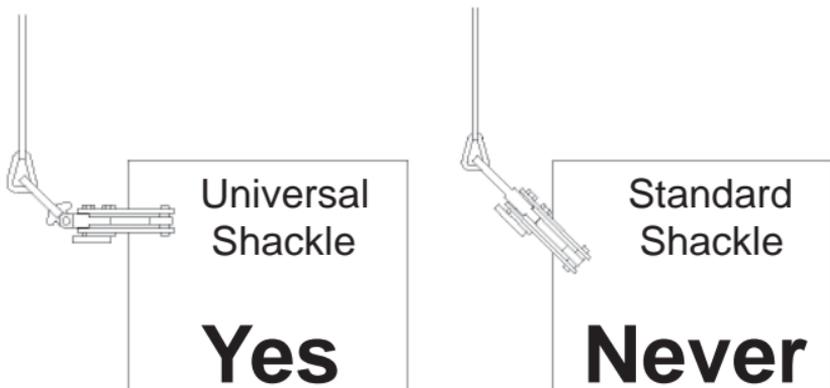
1. The “VL” series clamp should not be used to handle material with temperatures below 0° F or above 225° F. These temperature restrictions apply to both the ambient temperature and the temperature of the material to be lifted.
2. Do not use the “VL” series clamp for horizontal transfer of materials.
3. **Never** use the “**VL-Channel**” model to lift plate material. The “VL-Channel” model is designed to attach to channel or bulb sections only (Fig. 10).
4. Do not use clamps on materials with a hardness in excess of 450 Brinell.
5. Do not lift plate with mill scale, grease, or any other coatings that may prevent gripping surface from making solid contact with plate.
6. Do not lift material from the side with a “VL” series clamp (Fig. 2) unless using a Model “VL” or “AVL” with the Universal Shackle.  
**Note:** As the angle of side load increases, the rated capacity of the “VL” or “AVL” with the Universal Shackle **decreases** (Fig. 3).
7. Never exceed ten degrees (10°) side loading with a “VL” series clamp unless using a Model “VL” or “AVL” with the Universal Shackle (Fig. 4).  
**Note:** As the angle of side load increases, the rated capacity of the “VL” or “AVL” with the Universal Shackle **decreases** (Fig. 3).

8. Do not lift more than one plate at a time.
9. Make sure the load to be lifted is properly balanced.
10. Never lift or transfer material over or near people.
11. Never lift material with the handle in the “open” position (Fig. 6).
12. Always use a sling to lift the clamp. Always position the clamp in line with the sling (Fig. 5).
13. If a clamp has been overloaded or damaged in any way, take the clamp out of service until proper repairs and/or testing has been completed (see “Monthly Inspection” items 2 and 3 for description of overload symptoms).

## BEFORE USE INSPECTION

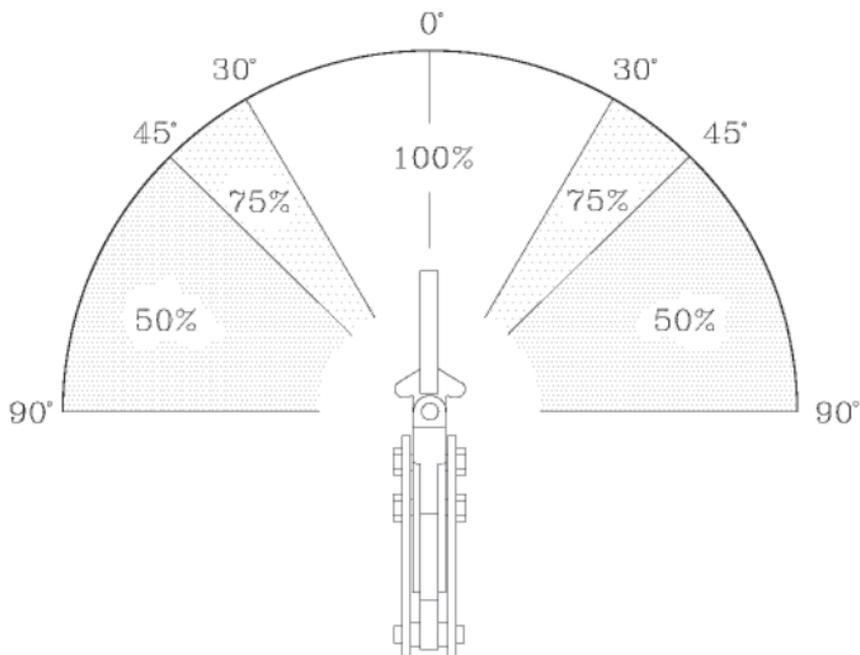
1. All Safety Clamps should be inspected regularly for signs of wear and/or damage.
2. Be sure the clamp to be used is the proper clamp for the job. Check the rated capacity and jaw opening stenciled on the clamp. Both should equal or exceed the requirements of the load to be lifted.
3. Inspect gripping cams (SC-50 or SC-42, Fig. 1) and gripping pad (SC-70, Fig. 1) for wear and/or damage. Make sure gripping surfaces are sharp and clean.
4. Inspect working parts and joints. Lubricate these regularly and make sure they move freely.
5. Inspect body, jaw opening, and lifting shackle for deformation, fractures, or any other damage.

6. Inspect lock spring (SC-61, Fig. 1) for tension. To do this, lock the clamp in the closed position and push in on the lifting shackle. There should be strong resistance to your pressure on the lifting shackle.
7. Make sure that all roll pins are securely in place.
8. Never use a clamp in need of repair.
9. If damage is identified or suspected, Safety Clamps, Inc. will inspect and repair your Safety Clamp for a nominal charge.



**Figure 2:** Never lift material from the side with a “VL” series clamp unless using a Model “VL” or “AVL” with the Universal Shackle.

**Note:** As the angle of side load increases, the rated capacity of the “VL” or “AVL” with the Universal Shackle decreases (Fig. 3).



**Figure 3:** The Universal Shackle permits side loading of the lifting shackle at 100% of rated capacity from vertical to 30°, 75% of rated capacity from 31° to 45°, and 50% rated capacity from 46° to 90°.

## MONTHLY INSPECTION

Safety Clamps, Inc. recommends that all of its clamps be disassembled and thoroughly inspected by certified personnel at least once per month in accordance with the following procedures:

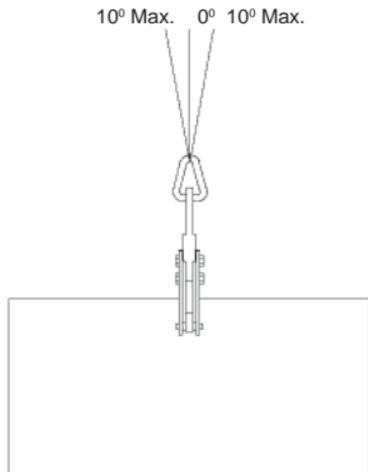
1. When disassembling a clamp, clearly label each part so that the clamp can be properly assembled. Disassembly instructions are provided in the “Maintenance and Repair” section of this manual.
2. After disassembly, check for body deformation, fractures, and/or any other signs of damage in the body and/or parts. Check all drilled holes and shackle for roundness. Any elongation of holes, shackle, and/or a stretched jaw opening, is an indication that the clamp has been overloaded and should not be used.
3. Check pins and body bolts to ensure they are straight. Make sure they are not worn and/or damaged.
4. Inspect gripping cams (SC-50 or SC-42, Fig. 1) and gripping pad (SC-70, Fig. 1). Make sure they are sharp and clean. Do not attempt to sharpen these yourself. If gripping surfaces are worn and/or damaged, replace them with genuine Safety Clamps’ parts.
5. All parts should be cleaned and free of dirt and debris.

### WARNING

•Do not use any blasting or heating method to clean parts.

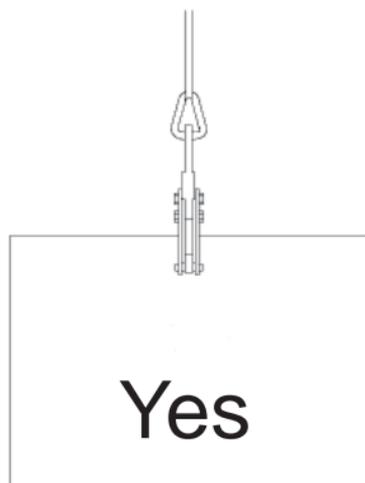
6. When replacing parts, use only genuine Safety Clamps' parts.
7. After assembling the clamp, ensure that all roll pins are in place, then lubricate all joints and make sure the clamp works freely and properly.

Remember, never use a clamp in need of repair. If in doubt about the condition of your clamp, Safety Clamps, Inc. will inspect and repair your Safety Clamp for a nominal charge.

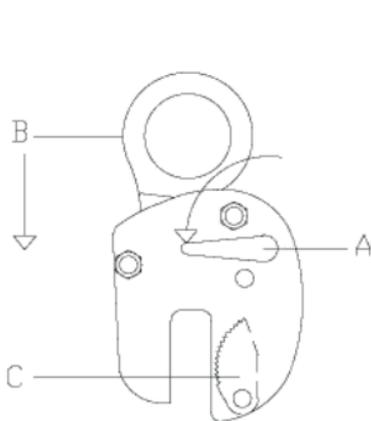


**Figure 4:** Never exceed ten degrees ( $10^\circ$ ) side loading with a “VL” series clamp unless using a Model “VL” or “AVL” with the Universal Shackle.

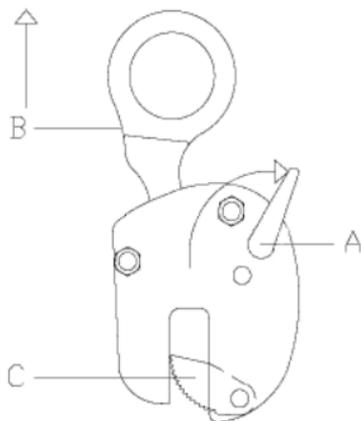
**Note:** As the angle of side load increases, the rated capacity of the “VL” or “AVL” with the Universal Shackle decreases (Fig. 3).



**Figure 5:** Always position the clamp in line with the sling.



**Figure 6**



**Figure 7**

## HOW TO USE THE “VL” SERIES SAFETY CLAMPS

1. Prior to use inspect the clamp in accordance with procedures provided under the section titled “Before Use Inspection” in this manual.
2. For the “VL” series Safety Clamps, open the jaw by releasing the locking handle down (A, Fig. 6), and pushing shackle (B) into the clamp until the lock engages and gripping cams (C) are in the raised position clear of the jaw opening. If using a clamp with the **auxiliary lock**, push the auxiliary lock button until the plunger is clear of the locking handle and then release the locking handle down.
3. Place the jaw of the lifting clamp around the material to be lifted. Make sure the clamp is positioned so the gripping surfaces are in full contact with the material. For the “**VL-Channel**” model, refer to Fig. 10 for proper material loading. Center the clamp so the load is balanced when lifted.
4. When using more than one clamp to lift material, make sure clamps are positioned to share equal loads. Place the clamps on a straight line with the slings (Fig. 5). Maintain a minimum angle of sixty degrees (60°) between the clamp and the material to be lifted.
5. Secure the clamp in the “locked closed” position. Do this by raising the handle (A, Fig. 7) until it is positioned against the stop (D) and pulling the shackle (B) away from the clamp. This will bring the gripping cams (C) down in the locked position against the material to be lifted. If using a clamp with the **auxiliary lock**, make sure the auxiliary lock plunger has securely locked into the handle.

**WARNING**

- Never lift material with the handle in the “open” position (Fig. 6).
  - Always use a sling to lift the clamp.
6. The clamp and material are now ready for transfer.
  7. Upon reaching the material's destination, lower the clamp and material to a secure position until the tension is relieved on the lifting shackle.
  8. Repeat the process to “lock open” the clamp. This allows the user to remove the clamp from the material and use it again or store the clamp.

**WARNING**

- The “VL” series clamp should not be used to handle material with temperatures below 0° F or above 225° F. These temperature restrictions apply to both the ambient temperature and the temperature of the material to be lifted.
- Do not use clamps on materials with a hardness in excess of 450 Brinell.
- Do not use the “VL” series clamp for horizontal transfer of materials.
- Do not lift plate with mill scale, grease, or any other coatings that may prevent gripping surface from making solid contact with plate.
- Do not lift more than one plate at a time.
- Never lift or transfer material over or near people.

- Do not lift material from the side with a “VL” series clamp (Fig. 2) unless using a Model “VL” or “AVL” with the Universal Shackle.

**Note:** As the angle of side load increases, the rated capacity of the “VL” or “AVL” with the Universal Shackle **decreases** (Fig. 3).

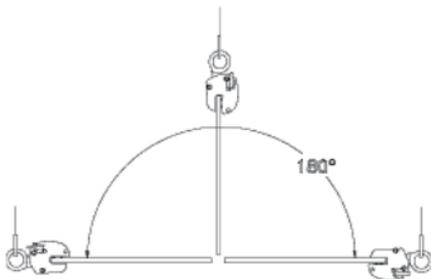
- Never exceed ten degrees (10°) side loading with a “VL” series clamp unless using a Model “VL” or “AVL” with the Universal Shackle (Fig. 4).

**Note:** As the angle of side load increases, the rated capacity of the “VL” or “AVL” with the Universal Shackle **decreases** (Fig. 3).

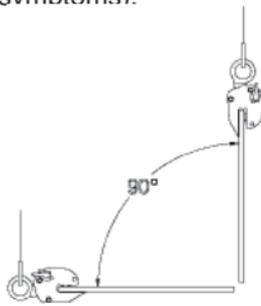
- Never lift material with the handle in the “open” position.

- Always use a sling to lift the clamp. Always position the clamp in line with the sling (Fig. 5).

- If a clamp has been overloaded or damaged in any way, take the clamp out of service until proper repairs and/or testing has been completed (see “Monthly Inspection” items 2 and 3 for description of overload symptoms).



**Figure 8**



**Figure 9**

**DISASSEMBLY AND REPAIR**

Safety Clamps should always be inspected and operated in accordance with the appropriate section of this manual. If the clamp is suspected of being damaged during operation, or evidence of wear and/or damage is found during inspection, the clamp may be disassembled and repaired as follows:

**DISASSEMBLY**

1. When disassembling a clamp for inspection or repair, label each part so that the clamp can be assembled properly.
2. To disassemble the “VL” series Safety Clamps:
  - a). Remove roll pins from the SC-54 pin and SC-37 pin (Fig. 1), and remove the SC-54 and SC-37 pins from the body.
  - b). Remove the roll pins from the lock assembly SC-65 (Fig. 1).
  - c). Pull the handle out and remove the lock and spring assemblies SC-65 and SC-61 (Fig. 1).
  - d). **For all models with a 1/2 or 1 ton rated lift capacity and the 2 ton Model VL-SJ**, remove the SC-35 pin and SC-50 gripping cam.  
**For all other rated lift capacities of the “VL” series clamps**, remove the SC-35 pin, SC-44 pin, and SC-42 gripping cams.
  - e). Grip the lifting shackle SC-10 (Fig. 1) and pull inside assembly out of the back of the clamp.
  - f). Remove the remaining pins from the inside assembly and separate the remaining parts.
  - g). To disassemble the Universal Shackle, remove the roll pin at one end of the connecting joint and remove the SC-14 pin.

- f). Remove the SC-70 gripping pad by removing the lock nut from the retaining screw (Fig. 1).

### REPAIR

1. Clean all parts to ensure they are free of dirt, and excess or gummed lubricants.

### **WARNING**

**Do not use any blasting or heating method to clean parts.**

2. Inspect the clamp components in accordance with instructions contained under the “Monthly Inspections” section of this manual.
3. If damaged components are found -

#### **DO NOT**

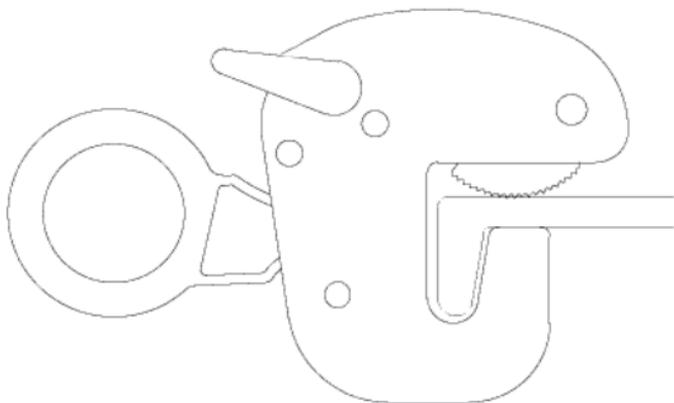
- Fix, straighten, or heat treat any part of a Safety Clamp.**
- Modify, weld, or change the clamp body or parts in any way.**

#### **DO**

- Replace any worn and/or damaged parts with genuine Safety Clamps’ parts.**
- If in doubt about the condition of your clamp, Safety Clamps, Inc. will inspect and repair your Safety Clamp for a nominal charge.**

### **WARNING**

**Safety Clamps, Inc. uses materials which are of strength and hardness in excess of those used by many competitor clamp manufacturers. Using parts other than those provided by Safety Clamps, Inc. could cause the clamp to operate improperly, or reduce the strength of the clamp to below the clamps specified operating limits.**



**Figure 10**

## ASSEMBLY

To assemble the “VL” series Safety Clamps:

1. Refer to the clamp diagram (Fig. 1) and reverse the disassembly process described on the previous pages.
2. Check that all roll pins are securely in place.
3. Lubricate all moving parts.
4. Make sure the clamp functions properly and that parts move freely without binding.

## Notes



**“Big Bite” Lifting Clamps by  
Safety Clamps, Inc.**

Established 1962

**Call, Fax, or E-mail Us Today!**

Safety Clamps, Inc.  
233 Santa Barbara Ave.  
Jacksonville, FL 32254

**[www.safetyclamps.com](http://www.safetyclamps.com)**

**E-mail: [info@safetyclamps.com](mailto:info@safetyclamps.com)**

Phone: 904-781-2809  
Fax: 904-786-2116  
Toll Free: 800-456-2809

**Effective November 1, 2013**

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