



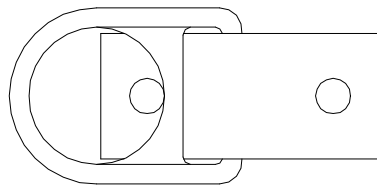
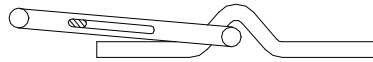
**Reliance Industries, LLC**

# Operating instructions

for the

## **D-Ring Anchorage**

Model # 3066, 3068



**Reliance Industries, LLC**  
**10790 West 50<sup>th</sup> Ave. # 1200**  
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## Important Instructions!

These instructions must be kept on file and available for the users reference at **all** times. The users must read and full understand these instructions or have the instructions explained in detail before using this equipment. **Failure to observe these instructions could result in serious injury or death.**

Prior to use, all workers must be trained in the proper use of all systems and equipment.

A Training and Instruction review should be repeated at regular intervals.

A rescue plan must be prepared; the workers must be trained in its use, and rescue equipment must be on hand prior to any use of this equipment.

Any questions regarding these instructions should be directed to:

Reliance Industries, LLC  
PO Box 140008  
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## Important OSHA Regulations Covering the Use of Personal Fall Arrest Anchorages

**OSHA 1926.502 (d)(15):**

Anchorage used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000-lb (22 kN) per employee attached, or shall be designed, installed, and used as follows:

**(d)(15)(i):**

as part of a complete personal fall arrest system which maintains a safety factor of at least two; and

**(d)(15)(ii):**

under the supervision of a qualified person.

**OSHA 1926.502 (d)(16)(iii):**

Personal fall arrest systems shall be rigged such that an employee can neither free-fall more than 6-ft. nor contact any lower surface.

**OSHA 1926.502 (d)(21):**

Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.

**OSHA 1926.502 (d)(19):**

Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

## System Description

The Reliance D-ring Anchorage is an anchorage point designed for use as an attachment of personal fall arrest devices by bolting it to a standard steel structure or anchoring it into approved concrete structures. It provides a means of attaching an anchorage in locations where other forms of tie-offs may not be possible.

This anchorage is one component of a personal fall arrest system. The system is used in conjunction with a full-body harness for the worker, a shock absorbing vertical lifeline or self-retracting lanyard (SRL) with 900-lb. Maximum Arrest Force (MAF) using double-action single-locking snap hooks to attach to the D-ring Anchorage and the harness. Non-shock absorbing lanyards and retractables that do not have “slip-clutch” type internal shock absorbers with a 900 lb. maximum MAF are **NOT** allowed for use as vertical lifelines to attach to this system. Any attachments to the D-ring Anchorage must transfer fall arrest forces to the body through the dorsal d-ring of the full body harness only. Harness side and chest d-rings are not allowable lanyard connection points.

## Anchorage Point Considerations

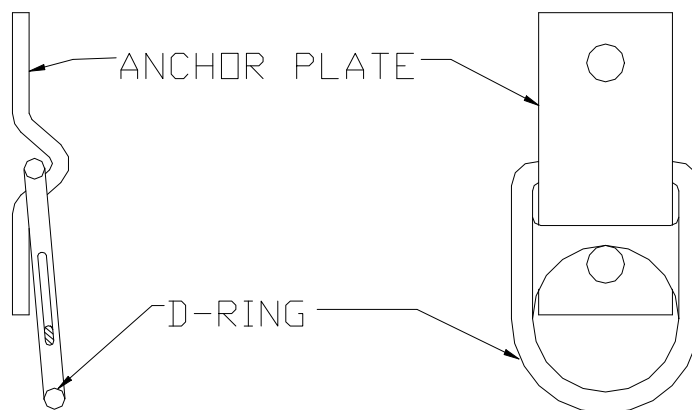
The strength of the structure to which this HLL anchorage connector is attached must be at least 3,600-lb. per person attached to the structure. Only one person may be attached to an anchorage at any one time. If multiple people require anchor points at the same time, additional anchorages may be installed, but the structure must be examined to ensure that it possesses a minimum strength greater than the number of D-ring Anchorages installed times 3,600-lb. This strength must be certified by a qualified person and must be verifiable by either calculation or testing. Anchorage locations must be selected carefully. Considerations must be made of the potential for swing falls. If in question, consult Reliance Engineering staff for proper design requirements.

## D-Ring Anchorage Components

The D-Ring Anchorage consists of the following standard approved and compatible components (see Figure 1):

- 1 ea. D-Ring Anchorage Bracket, Zn plated for Bolt-on version (P/N 3066) (Rated for 5,000 lb. maximum load.)
- 1 ea. 2-3/16-in. D-Ring, heavy duty, Zn plated carbon steel (Rated for 14,500 lb. maximum load.)
- 2 ea. 5/8-11 Grade 5 Hex Head cap screws with nuts and lock washers.

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**Figure 1**

The Reliance D-ring HLL Anchorage is designed for use with the approved, above listed components only. Substitutions or replacements with non-approved components will endanger the system integrity and may affect the safety and reliability of the total system.

## Personal Fall Arrest Equipment for Use with the D-Ring Anchorage

It is of utmost importance in the design of personal fall arrest systems to understand the nature and type of work being performed in an area prior to the installation of fall protection equipment. Anchorages for personal fall arrest systems should be located such that they position the attachment point directly overhead (or as much so as possible) to help reduce or eliminate the possibility of a swing fall.

Care should also be used in selecting a harness. Harnesses with sewn down back pads can limit as much as 1 ft. of back pad slippage during fall arrest, giving additional safety. If the system will be used where a worker could encounter a head first free-fall, a non-secured back pad can slide down the webbing to the small of the back, allowing the worker to fall out of the harness through the top by allowing the harness straps to slip over the shoulders. For this reason, we recommend the use of harnesses with Reliance Industries style high friction back pads. The use of body belts as fall arrest anchorages is not allowed under OSHA guidelines.

## Installation

Installation of lifeline anchorages should be done under the supervision of a Qualified Person trained in their design and use. Use only parts that have been qualified as compatible components by Reliance Industries. Ensure that the minimum anchorage strength is at least 3,600-lb. A qualified person must certify the anchorage locations and documentation kept on hand.

### D-Ring Anchorage Installation Procedures

**NOTE:** Approved fall protection must be worn during lifeline D-Ring Anchorage installation at all times. Do not use the anchorage until the system has been completely installed, inspected, and approved for use by a Qualified Person.

**WARNING:** **DO NOT** mount in an orientation in which the D-Ring can be side-loaded (see Figure 4).

#### Installation Method for P/N 3066 D-ring Anchorage

1. Determine the location of the Bolt-on D-ring Anchorage (see Figures 2 and 3 for acceptable mounting orientations).
2. Mark 2 holes on 3-in. centerline to match the hole spacing on the Anchorage Plate.
3. Drill 2 each 21/32-in. diameter holes through the anchorage structure. Install the D-ring over the Anchorage Plate and bolt to the required surface using 2 each 5/8-in. Grade 5 plated steel bolts with nuts, washers, and lock washers. Torque to 90 ft-lb.
4. If attaching to thick steel plate with blind holes, drill 2 each 27/64-in. holes 1-1/2-in. deep in the steel plate and tap 1/2-13 UNC thread with full form threads 1-in. deep. Install the D-Ring Anchor using 2 each zinc plated 1/2-13 x 1-in. Grade 5 bolts, flat washer and lock washer. Torque to 50 ft-lb.
5. If attaching to concrete that can be through drilled, use 5/8-11 Grade 5 plated threaded rod cut to the required length with nuts, washers, and lock washers at each end. For exterior installations 18-8 stainless steel threaded rod and hardware may be used.
6. If attaching to a concrete block wall, the pullout strength of the block may not be adequate. In this case a much larger back plate must be used to spread the load over a greater wall area. Consult Reliance Engineering or a licensed and registered Professional Engineer for exact strength requirements. Remember that the anchorages must support at least 2 times the anticipated load with design certification to meet OSHA regulations. Expansion anchors will not work with concrete block. Epoxy or through bolting offers the best choice, but either method **MUST** be designed and certified by a Qualified Person.

The procedure for removal of the Bolt-on Anchorage is the opposite of installation.

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### Installation Method for P/N 3068 Weld-on D-ring Anchorage

1. Determine the location of the Weld-on D-ring Anchorage (see Figures 2 and 3 for acceptable mounting orientations).
2. Remove scale and rust from welding location with a stiff metal brush.
3. Install D-ring onto formed bracket prior to welding. Weld with a 5/16-in. minimum fillet weld using 70,000-PSI minimum strength MIG wire or electrode in the indicated areas shown in Figure 5. Take care not to weld d-ring; d-ring must freely swivel after welding.
4. Using a wire brush, remove any weld spatter and smoke from anchor plate.
5. Paint d-ring anchor plate with a zinc rich primer to help reduce corrosion.

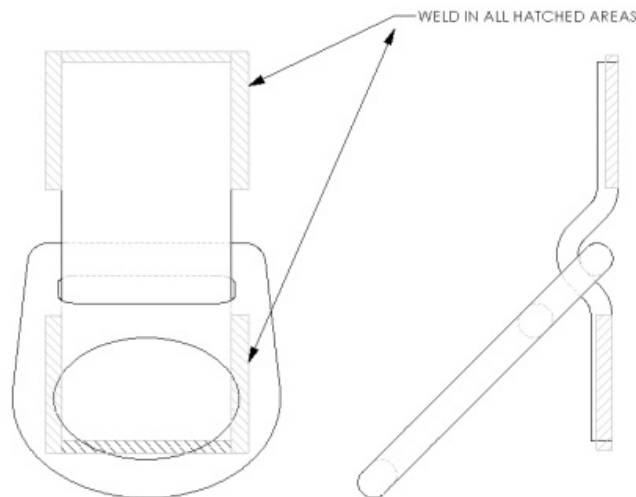


Figure 5

The only method to remove a welded on D-ring Anchorage Plate is to grind or cut the weld surrounding the formed plate. Once removed, the surface can be ground flush and painted. Once a D-ring Anchorage Plate has been welded into place, it may not be removed and re-installed at another location, it must be destroyed.



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NOTE: While the pictures below show the 3066 Bolt-on version of the D-ring Anchorage, then 3066 Weld-on D-ring Anchorage is to be installed only in those orientations shown below as acceptable.

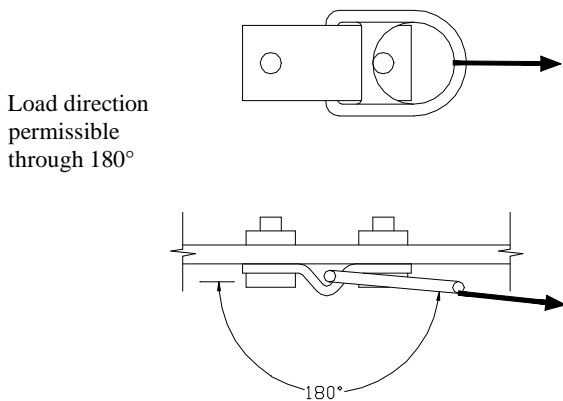


Figure 2

Load direction permissible through 180°

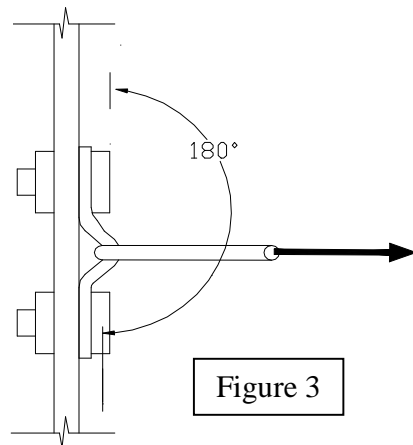


Figure 3

DO NOT side load

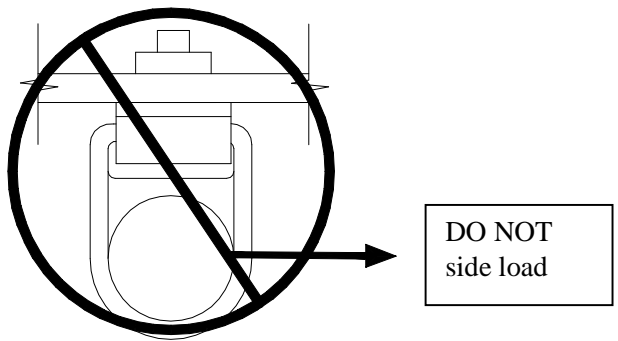


Figure 4

## Training

It is the responsibility of the employer to train all workers prior to using this system (per OSHA 1926.503 (a)(1)). The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

The employer shall assure that, as necessary, each employee has been trained by a competent person qualified in the following areas:

- a. OSHA regulations governing the use of personal fall arrest systems.
- b. Ability to recognize potential fall and workplace hazards.
- c. Method of inspection of safety equipment.
- d. Rescue procedures.
- e. Installation and removal techniques.

## Planning for Rescue

Prior to system use, a rescue plan must be prepared, the workers must be trained in its use, and the rescue equipment must be on hand to implement it in case of a fall.

Typical rescue plans include (but are not limited to) the following items:

1. List of equipment that must be readily accessible in the event of an emergency and the names of those workers certified to use or operate that equipment.
2. Emergency contact phone numbers (ambulance, hospital, fire department...) and a means to contact them (cell phone, emergency radio).
3. List of employees on the site, and the specific tasks they will perform to effect the rescue.

The equipment that will be used to aid in the rescue of any worker must be attached to structural anchorages independent of those used by the fallen worker. During installation of lifeline anchorages, rescue anchorages and equipment attachment anchorages should be installed and clearly marked in such a manner as to provide a means to rescue a worker in any position along the work area.

## Inspection

Prior to each use, the worker must inspect the system for any physical damage, wear, corrosion or missing parts. If the D-Ring Anchorage has seen a fall arrest load, it must be removed from service until it is

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inspected by a competent person who either replaces or repairs and re-certifies the components for use again. If an inspection reveals a problem or unsafe condition, remove the entire system from service until it can be re-certified by a competent person.

## Servicing

A qualified person trained in the inspection and servicing of system components must carry out servicing of this system. The company's safety officer should maintain a record log of all servicing and inspection dates. The system and all components must be withdrawn from service if subjected to fall arrest forces. Those components may be returned to service only after being certified by a qualified person. Only original Reliance Industries equipment replacement parts are approved for use in this system. Contact Reliance Engineering with questions and when in need of assistance.

## Warnings and Limitations

Proper care should always be taken to visually scan the work area prior to use. Remove any obstruction, debris, and other materials from and beneath the work area that could cause injuries or interfere with the operation of this system. Be cautious of swing fall hazards if working horizontally to the side of the anchorage. Always use the shortest lanyard length possible to connect to the anchorage. Be aware of the movements of others in the work area at the same time to ensure that the vertical lifelines do not become entangled. If lifelines do become entangled and a fall occurs, the sudden motion in the lifelines could pull others off balance.

Users should be familiar with pertinent regulations governing the use of this system and its components. Only trained and competent personnel should install and supervise the use of this system.

Use only Reliance Industries, LLC supplied or qualified compatible components.

**If you have any questions regarding the correct installation or use of this product DO NOT USE. Call Reliance Engineering at Ph. (303) 424-8650 or Fax (303) 424-8670.**

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## Inspection Log for 3066/3068 D-Ring Anchorage Plate

Company: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_  
 Job Site: \_\_\_\_\_ Anchor No.: \_\_\_\_\_ System No.: \_\_\_\_\_

Describe non-conforming conditions in the boxes below:

Inspection Criteria	Missing Parts	Label Readable	Corrosion	Deformed Parts	Excessive Loading
D-ring present?					
D-ring not deformed?					
D-ring swings free?					
Structure unchanged and capable of taking full load as required?					
Nuts tight? (Bolt-on version)					

Has a Rescue Plan been prepared? \_\_\_\_\_

Is Rescue Equipment on hand? \_\_\_\_\_

Have workers been trained in the Rescue Procedures and been given a copy of the Rescue Plan? \_\_\_\_\_