

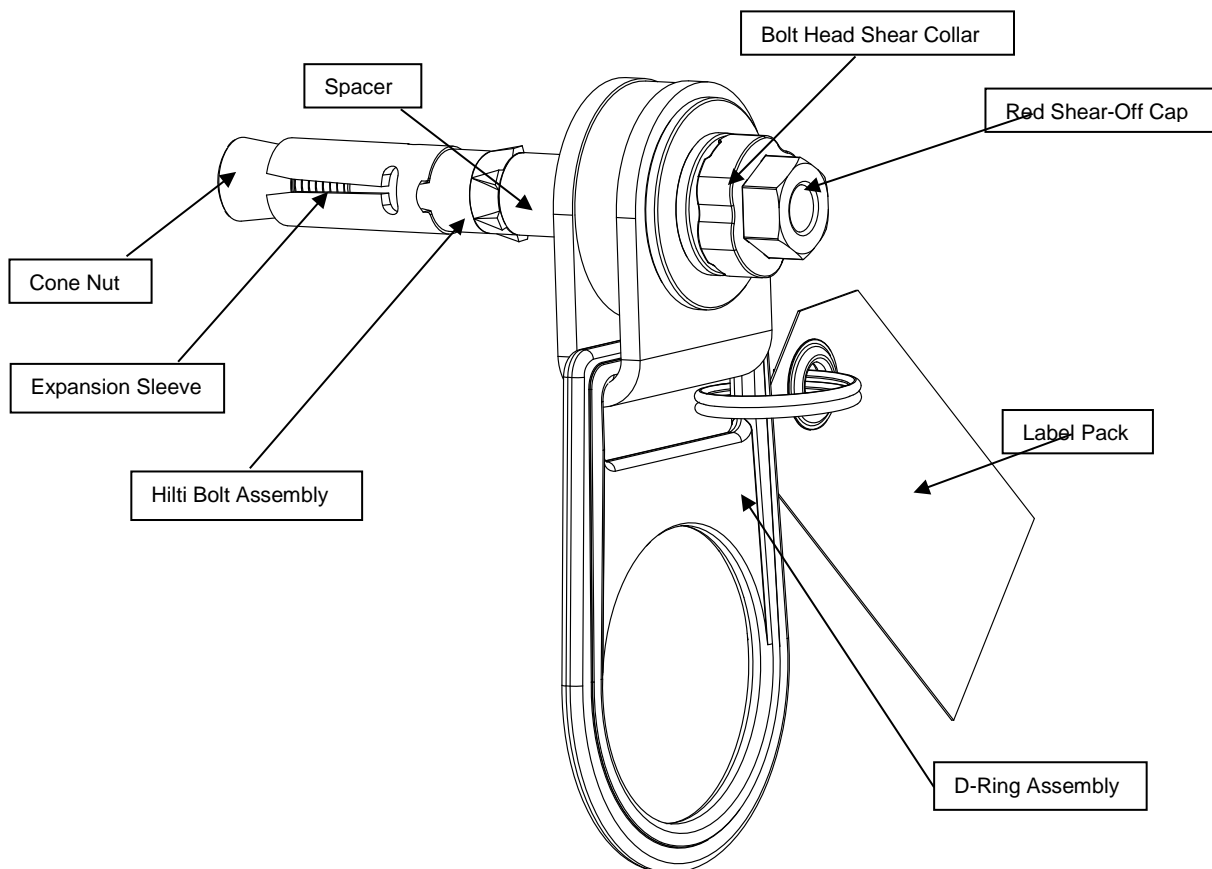
## User Instruction Manual Concrete Bolt Anchorage Connector (3070)

This manual is intended to meet the Manufacturer's Instructions as required by ANSI Z359.1 and ANSI A10.32, and should be used as part of an employee training program as required by OSHA.

**WARNING:** This product is part of a personal fall arrest, restraint, work positioning, personnel riding, or rescue system. The user must follow the manufacturer's instructions for each component of the system. These instructions must be provided to the user of this equipment. The user must read and understand these instructions before using this equipment. Manufacturer's instructions must be followed for proper use and maintenance of this equipment. Alterations or misuse of this equipment, or failure to follow these instructions, may result in serious injury or death.

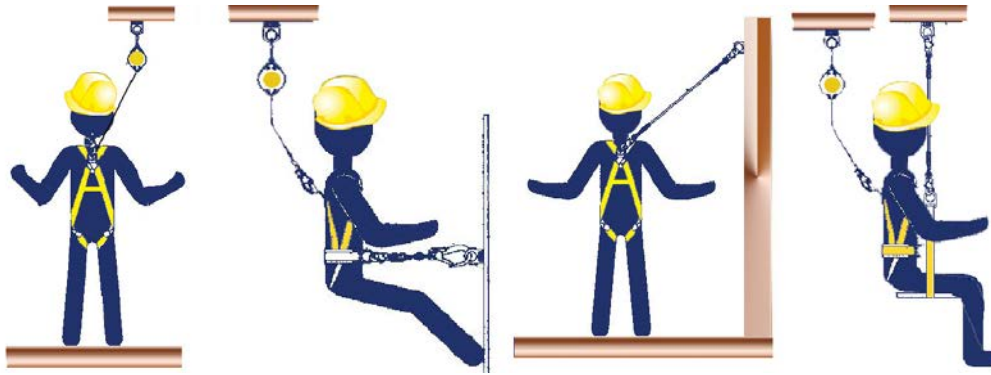
**IMPORTANT:** If you have questions on the use, care, or suitability of this equipment for your application, contact Reliance Industries.

**Description:** Reliance 3070, Alloy steel anchor bolt, stainless steel D-ring bracket, forged steel D-ring.



## APPLICATIONS

**PURPOSE:** The Concrete Bolt Anchorage Connector is designed for use as an attachment of a personal fall arrest, restraint, work positioning, personnel riding, or rescue system to an anchorage as shown below.



1. **PERSONAL FALL ARREST:** The Concrete Bolt Anchorage Connector is used as a component of a personal fall arrest system to protect the user in the event of a fall. Personal fall arrest systems typically include a full body harness and a connecting subsystem (energy absorbing lanyard [EAL] or self retracting lanyard [SRL]).
  2. **RESTRAINT:** The Concrete Bolt Anchorage Connector is used as a component of a restraint system to prevent the user from reaching a fall hazard. Restraint systems typically include a full body harness and a lanyard or restraint line.
  3. **WORK POSITIONING:** The Concrete Bolt Anchorage Connector is used as a component of a work positioning system to support the user at a work position. Work positioning systems typically include a full body harness, positioning lanyard, and a back-up personal fall arrest system.
  4. **PERSONNEL RIDING:** The Concrete Bolt Anchorage Connector is used as a component of a personnel riding system to suspend or transport the user vertically. Personnel riding systems typically include a full body harness, boatswain's chair or seat board, and a back-up personal fall arrest system.
  5. **RESCUE:** The Concrete Bolt Anchorage Connector is used as a component of a rescue system. Rescue systems are configured depending on the type of rescue.
- WARNING:** Do not use the Concrete Bolt Anchorage Connector for applications not addressed in this manual.

**LIMITATIONS:** Consider the following application limitations before using this equipment:

**A. CAPACITY:** The Concrete Bolt Anchorage Connector is designed for use by persons with a combined weight (clothing, tools, etc.) of no more than 310 lbs. No more than one personal protective system may be connected at one time. **Note: For emergency rescues it may be acceptable to connect more than one system if the anchorage will support the anticipated loads.**

**B. FREE FALL:** EAL personal fall arrest systems used with this equipment must be rigged to limit the free fall to six feet (ANSI Z359.1). SRL personal fall arrest systems used with this equipment must be rigged to limit the free fall in accordance to manufactures recommendations. See the personal fall arrest system manufacturer's instructions for more information. Restraint systems must be rigged so that no vertical free fall is possible. Work positioning systems must be rigged so that free fall is limited to two feet or less. Personnel riding systems must be rigged so that no vertical free fall is possible. Rescue systems must be rigged so that no vertical free fall is possible.

**C. FALL CLEARANCE:** There must be sufficient clearance below the user to arrest a fall before the user strikes the ground or other obstruction. The clearance required is dependent on the following factors:

- Deceleration distance
- Movement of harness attachment element
- Free fall distance
- Elevation of D-ring Anchorage Connector
- Worker height
- Connecting subsystem length

See the personal fall arrest system manufacturer's instructions for more information.



**D. SWING FALLS:** Swing falls occur when the anchorage point is not directly above the point where a fall occurs. The force of striking an object in a swing fall may cause serious injury or death. Minimize swing falls by working as close to the anchorage point as possible. Do not permit a swing fall if injury could occur.

Swing falls will significantly increase the clearance required when a self retracting lifeline or other variable length connecting subsystem is used.

**E. ENVIRONMENTAL HAZARDS:** Use of this equipment in areas with environmental hazards may require additional precautions to prevent injury to the user or damage to the equipment. Hazards may include, but are not limited to: heat, chemicals, corrosive environments, high voltage power lines, gases, moving machinery, and sharp edges. Contact Reliance if you have questions about using this equipment where environmental hazards exist.

**F. TRAINING:** This equipment must be installed and used by persons trained in its correct application and use.

## INSTALLATION AND USE

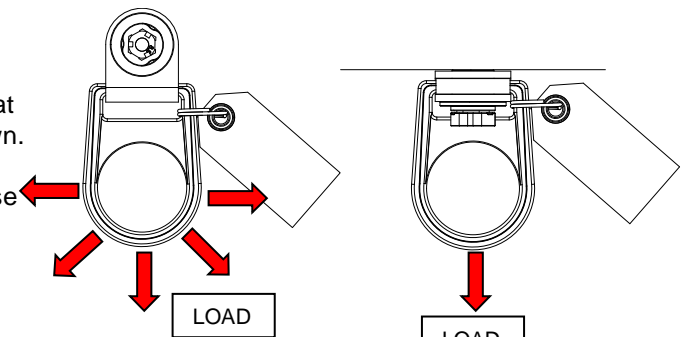
**BEFORE EACH USE** of this equipment inspect it according to this manual.

- ✓ **PLAN** your system before installation. Consider all factors that will affect your safety during use of this equipment. The following list gives important points to consider when planning your system: Look to layout below.
- ✓ **ANCHORAGE:** Select a rigid anchorage capable of supporting the loads 5000-lbs or certified by a Qualified Person to 3600-lbs.
- ✓ **SHARP EDGES:** Avoid working where system components may be in contact with, or abrade against, unprotected sharp edges.
- ✓ **AFTER A FALL:** Components which have been subjected to the forces of arresting a fall must be removed from service and destroyed.
- ✓ **RESCUE:** The employer must have a rescue plan when using this equipment. The employer must have the ability to perform a rescue quickly and safely.

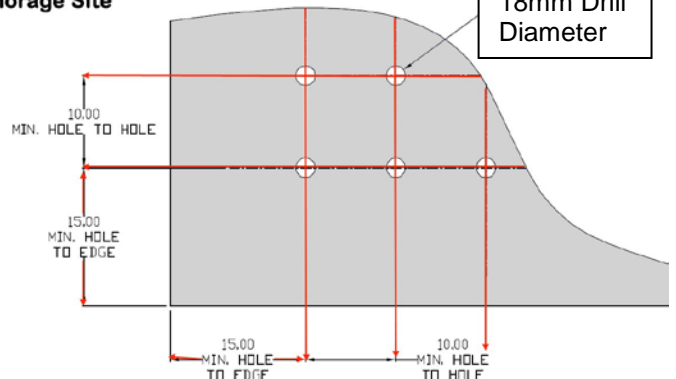
### INSTALLATION REQUIREMENTS:

#### 1. CONCRETE BOLT ANCHORAGE CONNECTOR (CBAC) LOCATION:

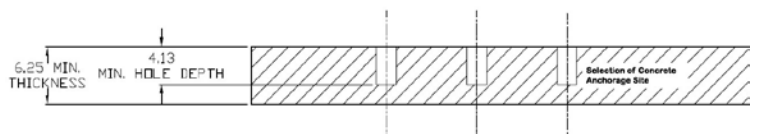
Select a location on a suitable strength anchorage that will provide overall safety and proper loading as shown. The concrete must have a minimum compressive strength of 3000 psi. The CBAC is not intended for use in lightweight concrete, hollow block, brick, grout, or stone. The concrete base material must be at least 6 1/4-inches thick.



**Selection of Concrete Anchorage Site**



2. The mounting hole for the CBAC must be located at least 15 inches from any free edge and far enough away from any obstruction or feature that will keep the D-ring from rotating freely when a personal fall arrest system is attached to it. When mounting more than one CBAC is mounted on an anchorage, they must be separated by at least 10 inches. Drill bits used to create the mounting holes must conform to ANSI B212.15.



**INSTALLATION:** (Refer to Hilti Guide at the end of this manual for pictorial details)

**Step 1.** Use a rotary hammer and 18-mm bit to drill a hole to a depth of 4 1/8 in.

**Step 2.** Clean the hole using a blow-out bulb or compressed air. The hole must be free of debris for the CBAC to develop full strength.

**Step 3.** Use a hammer to drive the CBAC into the hole. The CBAC must be seated firmly against the D-ring flange. Do not expand the anchor bolt by hand before installation.

**Step 4.** Tighten the bolt using a 3/4-in. (19mm) wrench. The red cap will shear off when the anchor has been tightened properly. A torque wrench is not required for installation. When the red cap has sheared off the anchor, no further adjustment is necessary.



**MAKING CONNECTIONS:** When using a hook to connect to the Concrete Bolt Anchorage Connector (CBAC), ensure roll-out cannot occur. Roll-out occurs when interference between the hook and mating connector causes the hook gate to unintentionally open and release. Self locking snap hooks and carabiners must be used to reduce the possibility of roll-out. Do not use hooks or connectors that will not completely close over the D-Ring. See subsystem manufacturer's instructions for information on connecting to the CBAC.

## **TRAINING.**

It is the responsibility of the user and the purchaser of this equipment to assure that they are familiar with these instructions, trained in the correct care and use of, and are aware of the operating characteristics, application limits, and the consequences of improper use of this equipment.

**IMPORTANT:** Training must be conducted without exposing the user to a fall hazard. Training should be repeated on an annual basis.

## **SYSTEM REQUIREMENTS**

**COMPONENT COMPATIBILITY:** Reliance equipment is designed for use with Reliance approved components and subsystems only. Substitutions or replacements made with non-approved components or subsystems may jeopardize compatibility of equipment and may affect the safety and reliability of the complete system.

**CONNECTORS COMPATIBILITY:** Connectors are considered to be compatible with connecting elements when they have been designed to work together in such a way that their sizes and

shapes do not cause their gate mechanisms to inadvertently open regardless of how they become oriented. Contact Reliance if you have any questions about compatibility. Connectors (snaphooks, carabiners, and D-rings) must be capable of supporting at least 5,000 lbs. Connectors must be compatible with the anchorage or other system components. Do not use equipment that is not compatible. Non-compatible connectors may unintentionally disengage. Connectors must be compatible in size, shape, and strength. Self-locking snap hooks and carabiners are required by ANSI Z359.1 and OSHA.

**NOTE:** *Large throat opening snap hooks should not be connected to standard size D-rings or similar objects which will result in a load on the gate if the hook or D-ring twists or rotates. Large throat snap hooks are designed for use on fixed structural elements such as rebar or cross members that are not shaped in a way that can capture the gate of the hook. See the Reliance lanyard manual for detailed concerns.*

**PERSONAL FALL ARREST SYSTEM:** Personal fall arrest systems used with this equipment must meet applicable state, federal, OSHA, and ANSI requirements. A full body harness must be worn when this equipment is used as a component of a personal fall arrest system. As required by OSHA, the personal fall arrest system must be capable of arresting the user's fall with a maximum arresting force of 1,800 lbs., and limit the free fall to six feet or less.

If the maximum free fall distance must be exceeded, the end-user must document, based on test data, that the maximum arresting force will not be exceeded, and the personal fall arrest system will function properly.

When the free-fall is greater than six feet, Reliance recommends using a personal fall arrest system incorporating a Reliance Blackmax Energy Absorbing Lanyard. Reliance has performed testing using the Blackmax Energy Absorbing Lanyard in free falls up to twelve feet to ensure the maximum arresting force does not exceed 1,800 lbs.

## **INSPECTION**

Inspection of the CBAC and its connection to the structure ***must be performed***

- Prior to each use and,
  - Formal inspection at least annually by a competent person other than the user. The frequency of formal inspections should be based on conditions of use or exposure. Record the results in a log sheet
1. Inspect the bolt head for damage and verify it is tight to the D-Ring assembly, If the bolt head is loose the Concrete Bolt Anchorage Connector (CBAC) may not be properly installed or may have been tampered with. Any CBAC that shows signs of tampering must be removed from service. It may not be used for fall arrest, fall restraint, work positioning or rescue applications.
  2. Inspect the anchor for proper embedment. The D-ring flange must be seated firmly against the concrete.
  3. Inspect the D-ring for damage or corrosion. Inspect the D-ring for cracks or wear that may affect strength and operation. Inspect the D-ring bracket for damage or deformation. The bracket should swivel freely on the bolt. Inspect the bracket for cracks or wear that may affect strength and operation.
  4. Inspect the system components according to the manufacturer's instructions.
  5. Record the inspection results in the inspection log.
  6. If inspection reveals an unsafe or defective condition, remove the Concrete Bolt Anchorage Connector from service and destroy it.

**EQUIPMENT RECORD**

PART NUMBER

SERIAL NUMBER

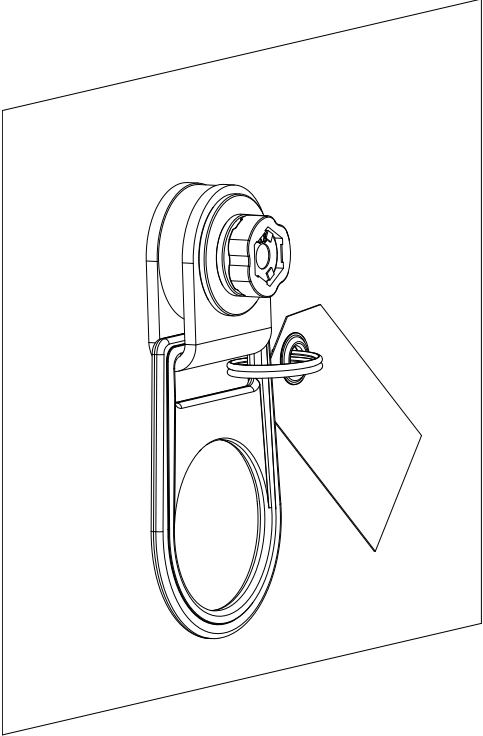
DATE MANUFACTURED

PURCHASE DATE

ASSIGNED TO

**INSPECTION RECORD**

DATE	INSPECTOR	PASS/FAIL



**Specifications:**  
**D-ring Bracket:** Stainless Steel  
**D-ring:** Forged Alloy Steel  
**Anchor Bolt:** Alloy Steel  
**Capacity:** 310 lbs.  
**Weight:** 1.2 lbs.  
**Size:** 5.73" long x 3" wide x 4.44" height  
**Minimum Breaking Strength:** 5,000 lbs.

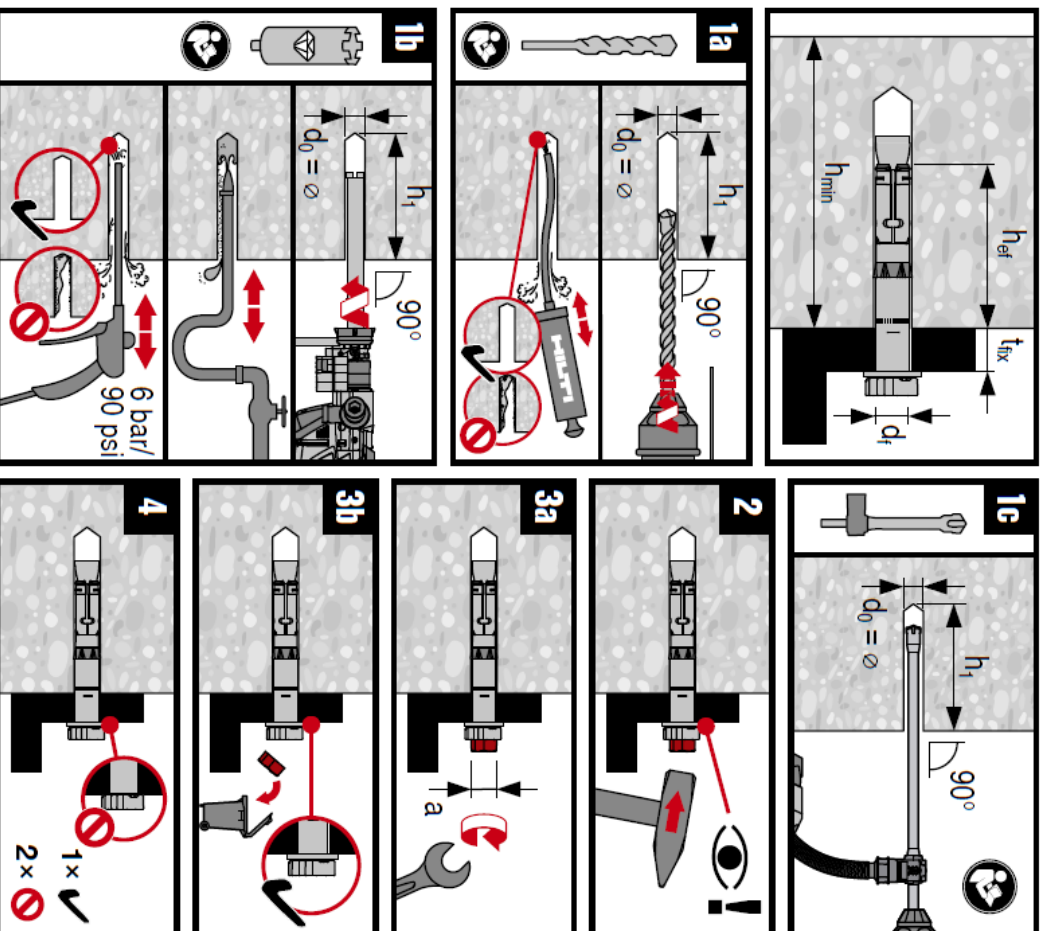
**Concrete D-ring Anchor and Bolt:**  
**3070-1      D-ring Assembly with 1 Bolt**

**Contact:**  
 Reliance Industries, LLC  
*Reliance Fall Protection*  
 Products 2801 Battleground Rd  
 Deer Park, TX  
 (888) 362-2826  
<http://www.relsafe.com/>



# HSL4-B

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HSL4-B	$t_{fix}$ [mm]	$h_{ei}$ [mm]	$h_{min}$ [mm]	$h_1$ [mm]	$d_0$ [mm]	$d_i$ [mm]	$a$ [mm]
M12 $\varnothing$ 18x121	5/-/-						
M12 $\varnothing$ 18x131	15/-/-						
M12 $\varnothing$ 18x141	25/-/-	80	160	105	18	20	19
M12 $\varnothing$ 18x166	50/25/-						
M16 $\varnothing$ 24x151	10/-/-						
M16 $\varnothing$ 24x166	25/-/-	100	200	125	24	26	24
M16 $\varnothing$ 24x191	50/25/-						
M20 $\varnothing$ 28x178	10/-/-						
M20 $\varnothing$ 28x198	30/-/-	125	250	155	28	31	30
M20 $\varnothing$ 28x228	60/30/-						
M24 $\varnothing$ 32x203	10/-/-						
M24 $\varnothing$ 32x223	30/-/-	150	300	180	32	35	36
M24 $\varnothing$ 32x231	60/30/-						