



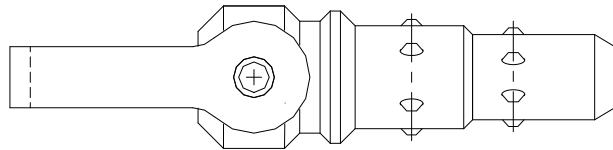
Reliance Industries, LLC

User Instructions

for the

Installation and Use of the Concrete Embed Connector

Model # 2260



Reliance Industries, LLC

PO Box 140008

Denver, CO 80214

Ph. (800) 488-5751

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User Instructions
2260 Concrete Embed Connector



Reliance Industries, LLC

US Patent #6,551,041

User Instructions
2260 Concrete Embed Connector



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General Information

Anyone using this system must be familiar with and understand the instructions outlined in this manual. Failure to use these products in accordance with these instructions could result in serious injury or death.

The owner and user of this product must ensure that this manual is stored in a manner that it will be available at any time to the user for consultation or review.

If requested, this manual, along with the inspection log, must be presented to the manufacturer for review. When the Concrete Embed Connector is returned to the manufacturer for any reason, this manual must be enclosed.

This product must be used in accordance with all applicable federal OSHA and state safety regulations.

This product is to be used as a personal protective device only and is not to be used to lift, maneuver, or carry heavy construction loads or for other purposes not related to personal fall arrest. It should always be handled in a manner that will protect it from damage or corrosion. This Connector may be used only in original Reliance Concrete Embed Receivers, designed, built, and installed specifically for that use.

Use of this Connector in systems produced by other manufacturers may impair its' function. In such cases, Reliance Industries and its' authorized dealers will refuse to accept any liability for its use.

It is the responsibility of the employer, as part of a total fall arrest rescue and evacuation program, to retain the manufacturer's instructions and make them readily available to all users. The employer must provide adequate training in the proper use and care of this product prior to use.

Manufacturer's Name and Address

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PO Box 140008
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Part Number and Model Designation

Model type: Concrete Embed Connector

Part Number: 2260

Material: Heat Treated Stainless Steel

Caution: For use ONLY with approved Reliance Industries Concrete embed system products. The use of non-approved components may result in serious injury or death!

Serial No. _____

Date of Manufacture _____

(To be completed by the User/Owner)

Date of Initial Operation _____

Operator/User _____

Location: Company _____

Address _____

Jobsite _____

Phone _____

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The Concrete Embed System

The Concrete Embed System consists of 2 parts (a Connector and a Receiver (see Figure 1a). When combined they form an anchor point that can be used for both individual anchorages and for horizontal lifeline anchorages. The system is designed specifically for use in concrete construction. It can provide easily identifiable, convenient, and safe anchorage points for construction workers and when used with horizontal lifelines can provide them with mobility previously unattainable in large concrete structures. What makes the Reliance Concrete Embed Anchorage system so unique is that the Receiver is connected to the rebar that is embedded in the concrete thereby providing strength that is dependent not just on the concrete, but on the Receiver itself. There is no need to wait 28 days for the concrete to come to full strength as is necessary for wedge or epoxy type anchors. In most cases the concrete can be used for fall arrest anchorage support from 8 to 24 hours after being poured, depending on concrete mix and rebar size and placement.

The heart of the system is the Concrete Embed Anchorage Receiver, which is embedded in the concrete during the pouring process. The Receiver gains its' high pull-out strength from its' unique shape and the fact that the Receiver is intentionally anchored with structural rebar that is inserted through a hole in the top of the Receiver. These Receivers can be used as fall arrest or horizontal lifeline anchorages during the construction process and continue to be available as fall arrest anchorages for maintenance or facilities support after the construction process is complete. The Receivers can be attached to a variety of concrete forms, such as plywood forms, steel decking, and steel gang forms. They can also be embedded using epoxy or welded into place. They can be installed and used in any orientation provided they are kept clean and free from rust and debris. Once the concrete Embed Receiver is securely anchored into place, it can be connected to with the Concrete Embed Connector either directly or using remote connect equipment.

This system is provided with a variety of connectors that can be used for individual anchor points, horizontal lifeline anchor points and horizontal lifeline bypass supports. The ball-lock Connector is the primary connector in this system. It can be used with remote connect equipment that will enable connections and disconnections to be made up to 20 ft. overhead.

Intended Use and Purpose of the Equipment

The Concrete Embed Connectors (P/N 2260) are made to be used in Concrete Embed Receivers (P/N 2250) which have been permanently encased in concrete or permanently welded to steel beams (P/N 2255). The Connector may be installed and used in Receivers which are mounted in any direction. They provide a detachable fall arrest anchorage point and may be used as an anchorage for one or two persons using a shock-absorbing lanyard or a self-retracting lanyard with a 900-lb. maximum arrest force (MAF). The Concrete Embed Connector may also be used as an end anchorage point for perimeter guardrail applications or for horizontal lifelines.

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There are three types of Connectors that can be used with the Receiver. They are the Ball-lock Connector (P/N 2260), the Anchor Ring Connector (P/N 2280) and the Bypass Connector (P/N 2270). The use of each is described below.

Proper Method of Installation

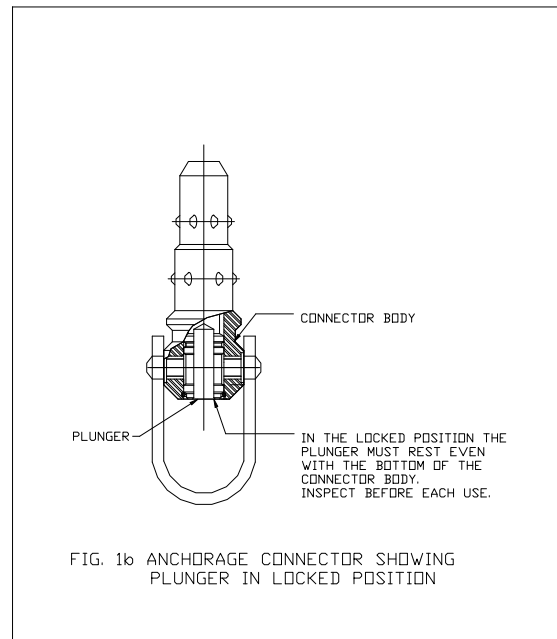
1.0 Inspection prior to use

- 1.1 Prior to use, inspect the Concrete Embed Connector for damage or contamination that would impair its' operation.
- 1.2 Check proper function by depressing the locking plunger. The plunger should move freely and snap back into place when released. All of the locking balls should move freely when the plunger is depressed. After the plunger is released it should move back freely and rest flush with the end of the Connector (see Figure 1).

CAUTION – Whenever the plunger rests flush with the end of the Connector body, all 12 locking balls are firmly locked in place. Whenever using the Connectors, if the plunger does not rest flush with the bottom of the Connector body either before or after insertion into the Receiver, immediately remove the Connector from use; mark as “UNUSABLE” and return to the factory for service. Train all users prior to use, to identify the locked position of the plunger.



Figure 1a



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2.0 Insertion and use of the Ball Lock Connector

- 2.1 Prior to use, inspect the Concrete Embed Receiver where the Connector is to be attached. It should be free from damage, rust, dirt, or debris, which might interfere with the proper attachment of the connector. If debris or concrete scale is present, it must be removed with a wire brush or scraper and then wiped clean. Receivers are best cleaned with a light penetrating oil spray such as WD-40 or compressed air, and then wiped clean.
- 2.2 Insert the Concrete Embed Connector into the Receiver.
- 2.3 Insert a pointed tool such as a screwdriver or the pointed end of a spud wrench in the hole in the end of the plunger and push (see Figure 2). The Connector plunger will push in releasing the locking balls and the Connector will snap into place.

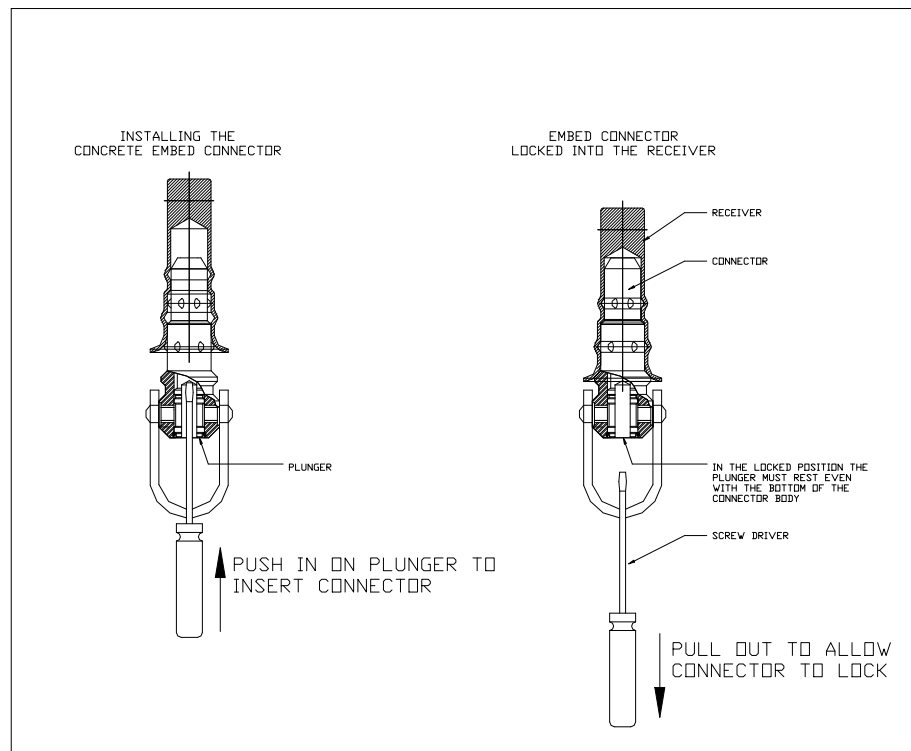


Fig. 2

- 2.4 When the pointed tool is removed from the Connector, the plunger will automatically return to a position flush with the bottom of the Connector indicating that all 12 of the locking balls are locked into place (see Figure 2).

WARNING - The plunger is designed to be flush with the bottom of the Connector for safety. This reduces the chance of accidental disengagement due to an object that might strike the Connector during a fall. For increased safety, the Connector is designed so that the rows of locking balls are on two different diameters. This assures that each row of balls can lock only in

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its own designated ball groove. This assures that an error cannot be made by achieving a lock in only one row of ball grooves, additionally, the Connectors' plunger is designed so that all of the locking balls must lock together. This means that if the Connector is inserted into a Receiver that is damaged or contaminated with debris that keeps even one ball from being able to lock into its' designated ball groove, then none of the balls can lock, enabling the Connector to be easily removed and thus indicating that an unsafe condition exists.

- 2.5 For the reasons stated in the Warning above, always inspect the Connector after insertion into the Receiver. The Connector should snap into place with a clear and audible snap. Inspect the plunger to see if it is flush with the bottom of the Connector body (see Figure 1). Spin the Connector in the Receiver. It should spin freely to any position with no resistance. If in doubt of conformance to any of the above conditions, remove the Connector immediately, clean the Receiver and Connector and inspect for damage. Re-insert and inspect again. If any non-conforming conditions continue to exist, remove the Connector and mark the Receiver "UNUSABLE" and plug it so that it cannot be used again.

Always pull firmly on the connector after insertion into the Receiver to confirm that it is locked securely in place.

WARNING – ALWAYS check the Connector plunger to be certain that it is flush with the bottom of the Connector when locked into the Receiver. To not do so could result in serious injury or death.

3.0 Removal of the Ball Lock Connector

- 3.1 To remove the Concrete Embed Connector insert a pointed tool into the plunger in the bottom of the Connector (see Figure 2) and push the plunger into its' fully depressed position. While holding the plunger in, pull back on the swivel shackle at the same time. The ball lock will be released and the Connector can be removed.

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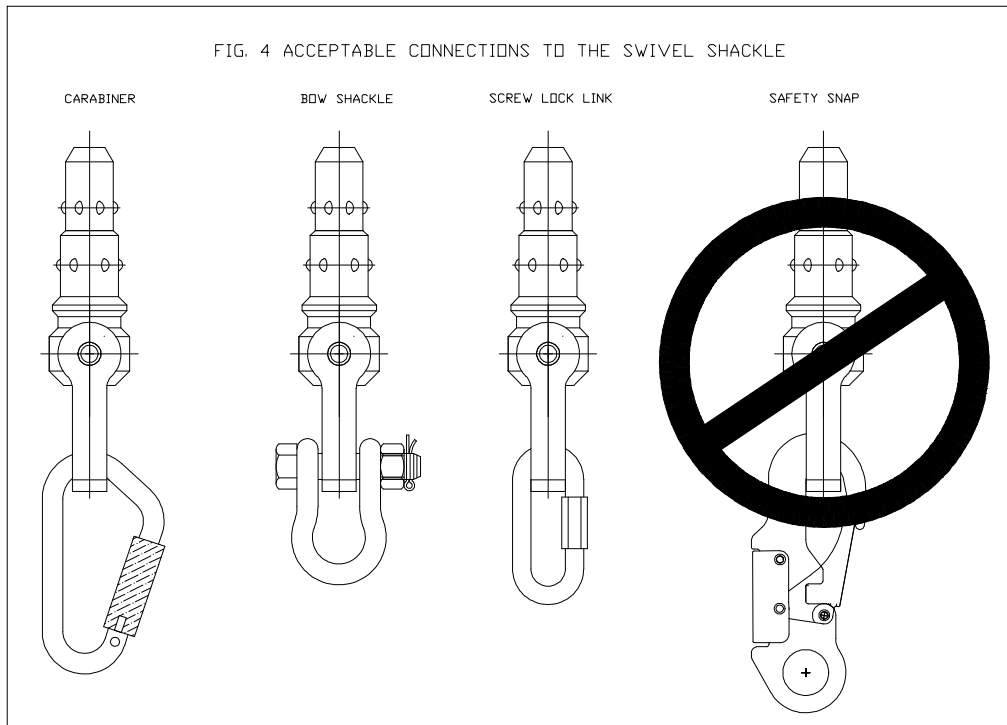
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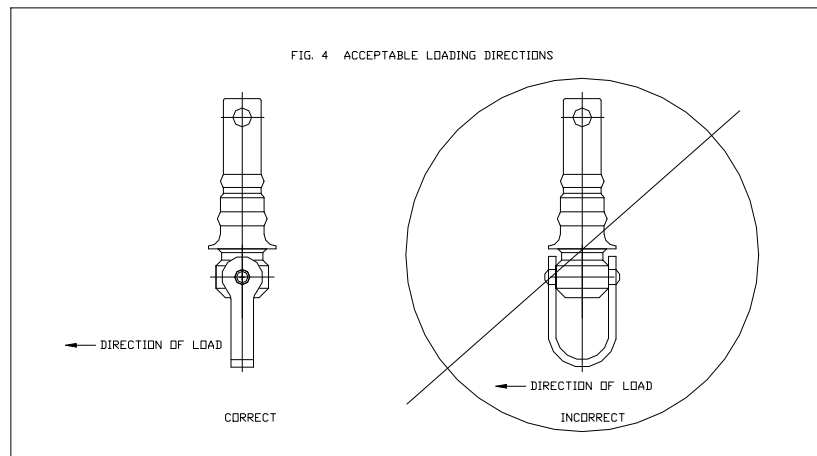
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4.0 Use of the Concrete Embed Connector

4.1 The Concrete Embed Connector may be used as an anchorage for either a personal fall arrest system or a horizontal lifeline. In cured high-strength concrete and with the rebar present in the Receiver, the Connector can be pulled in any direction to 10,000-lbs. This will provide a suitable anchorage for 2 persons or an anchorage for a horizontal lifeline system. The swivel shackle on the Connector must be connected to using a locking carabiner, a bow shackle, or a screw lock link. Do not attach with a safety snap (see Figure 3).



- 4.2 When using the Connector in an application that might quickly side load the Connector, always orient the Connector so that the swivel shackle can pull in the correct direction (see Figure 4).



CAUTION - Never use the Connector if it cannot rotate freely in the Receiver. Inspect and verify before each use.

- 4.3 When using the Concrete Embed Connector near glass, sharp or hot objects or near concrete edges that might tear or cut the webbing of an elastomer shock-absorbing lanyard always use shock absorbing lanyards that are made of steel wire rope.
- 4.4 When using this system in an application that might create a 12-ft. free fall always use with steel cable Force II shock-absorbing lanyards.
- 4.5 Prior to use, a Competent Person must inspect the Concrete Embed Receivers to which the Connectors will be attached to verify that they have been installed correctly and in concrete of sufficient strength to support the intended loads. The manufacturer makes no claims as to the suitability of the anchorage for any intended use. It is the responsibility of the Customer to verify that the anchorage structure provided will support the loads that will be imposed on this anchorage connector system.

5.0 Insertion and use of the Anchor Ring Connector

- 5.1 Prior to use inspect the Receiver as outlined in Section 2.1.

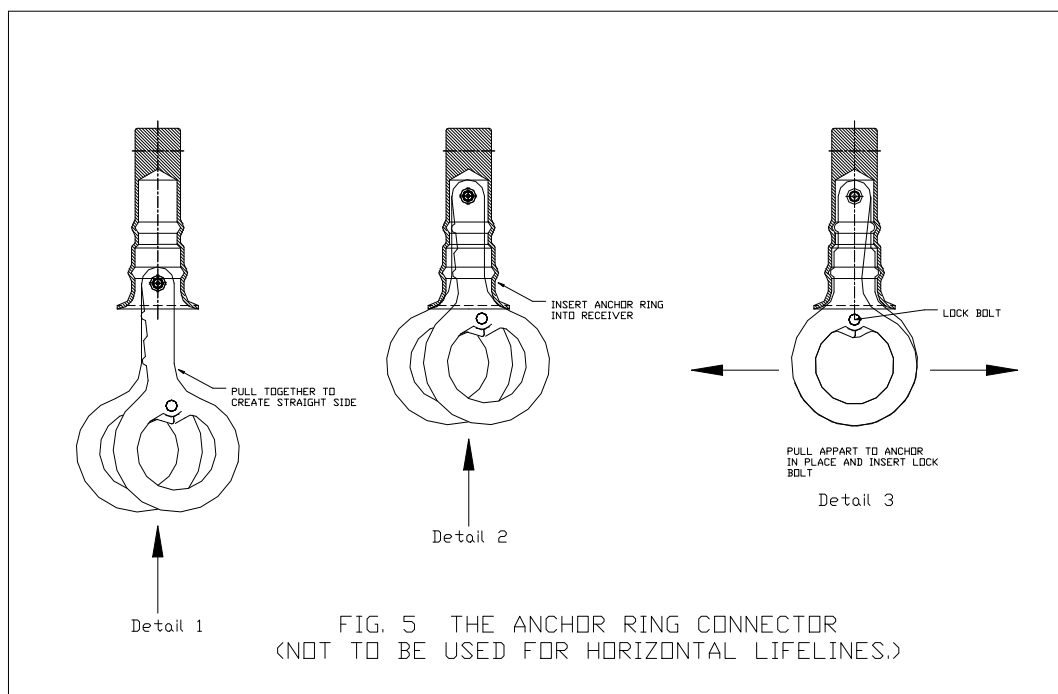
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5.2 Pull the sides of the Anchor Ring Connector to create straight sides as shown in Detail 1 of Figure 5.



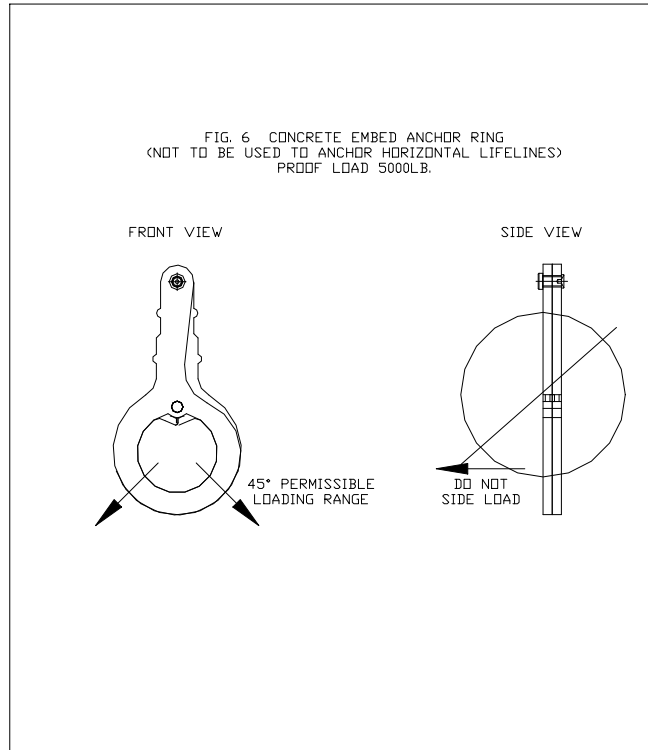
- 5.3 Insert the Anchor Ring Connector into the Receiver as shown in Detail 2 of Figure 5.
- 5.4 Pull the sides of the Anchor Ring apart until it snaps and locks into place. Insert a 5/16-in. x 1-in. long bolt through the lock hole in the Anchor Ring and tighten a nut to the other side. See Detail 3 of Figure 5.
- 5.5 The Anchor Ring is now ready for use as a one man, 5,000-lb. proof-load anchorage only. It is to be used only with 900-lb. Maximum Arrest Force (MAF) shock-absorbing lanyards. It can be loaded in the directions shown in Fig. 6.
- 5.6 The Anchor Ring is NOT to be used for horizontal lifelines.

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6.0 Insertion and use of the Bypass Anchor

- 6.1 Prior to use inspect the Receiver as outlined in Section 2.1.
- 6.2 The Bypass can be inserted according to the procedure outlined in Section 5.2, 5.3, and 5.4.
- 6.3 The Bypass Anchor is to be used only for horizontal lifeline bypass supports. It is not a personal fall arrest anchor and cannot be used for such.

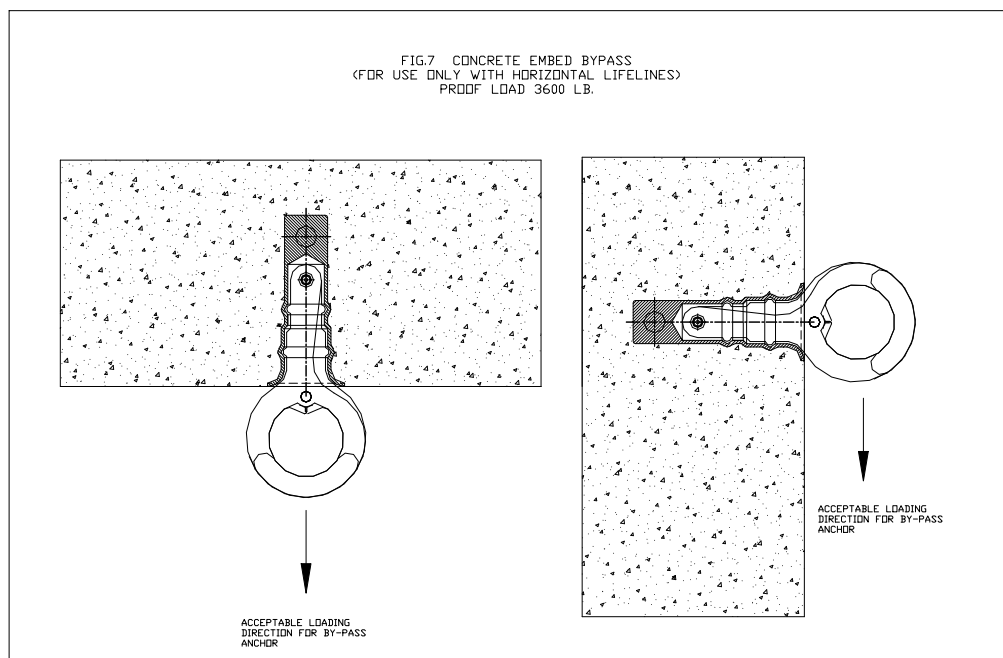
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6.4 The Bypass Anchor can be used in the horizontal or vertical position as shown in Fig.7.



7.0 Remote Connect/Disconnect

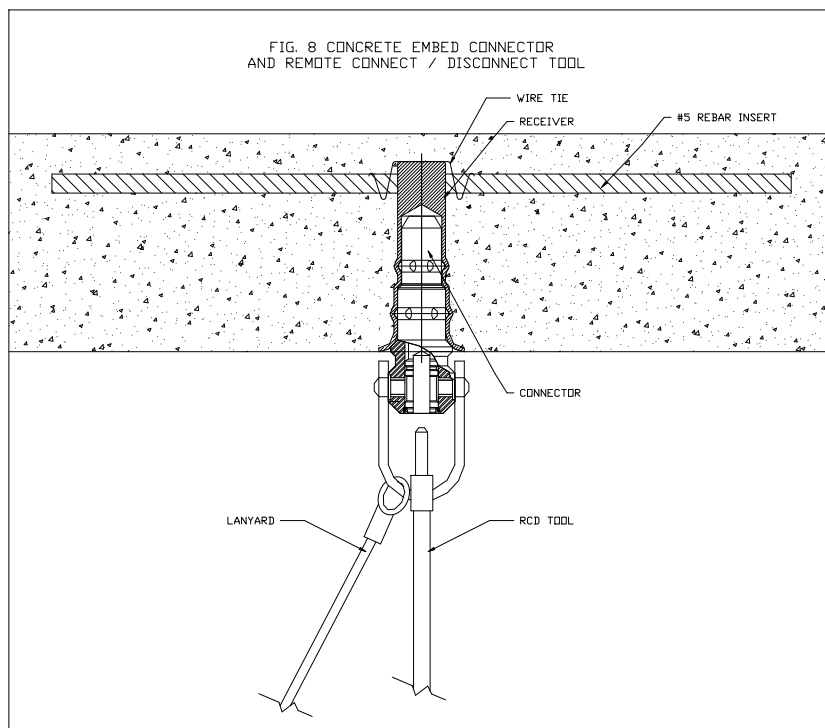
- 7.1 The Ball Lock Connector is designed so that it can also be used remotely to connect and disconnect from anchorages up to 20-ft. away.
- 7.2 To install the Connector remotely attach the Remote Connect Tool (P/N 2262) to the end of the RCD Pole (P/N 3022). Insert the pin of the Remote Connect Tool into the bottom of the plunger. Raise the Pole, Tool, and Connector to the location of the desired Receiver. Insert the Connector into the end of the Receiver. A simple push will cause the plunger to push in releasing the locking balls and allow the Connector to snap into the Receiver and lock into place.
- 7.3 To remove the Connector remotely, raise the Remote Connect Tool and push it into the bottom of the plunger. While pushing up on the plunger to release the locking balls pull down on the lanyard attached to the swivel shackle. This will allow the Connector to slide out of the Receiver and be supported by the Remote Connect Tool. Lower the Pole to retrieve the Connector. See Figure 8.

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General Cautions

This product should be used only in accordance with these instructions, and the instructions of the Concrete Embed Receiver, and in accordance with all state, federal and local safety regulations. The worker must read, heed and understand all warnings and instructions called out in the labels and operating instructions prior to use. Any hazards to safe and proper operation must be eliminated prior to use.

The manufacturer is not responsible for damages resulting from an improper application or use of this product. Proper application also means following the operating instructions, workplace geometry, workplace hazards and the conditions of inspection and maintenance.

The user must have a rescue plan, be trained in the use of this plan and the means at hand to implement it when using this equipment.

Damaged products and products having already been used for arresting a fall must be removed from service until they are inspected by the factory or a qualified person who can repair, replace, or re-certify them for use.

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Whenever the structure, or general work area in which any Concrete Embed product is installed is altered, the suitability of the fall protection equipment must be re-certified by a Qualified Person who must determine if the fall protection equipment will still function in an appropriate and safe manner. Periodic inspections should be conducted by this Qualified Person at least once yearly.

Inspection, Maintenance and Storage

The user of this product is responsible for the inspection and maintenance of the Concrete Embed Connector. The user shall inspect equipment before each use to ensure that the equipment is in serviceable condition and operating correctly.

A yearly inspection of this product must be performed by a Qualified Person capable of determining the suitability for use.

This product must be removed from service immediately after any fall arrest load has been applied and returned to the manufacturer with this manual and its' inspection log.

The user must tag and remove equipment from field service any equipment that has been subjected to a fall arrest. An authorized inspection is then required to determine if any of the components of the fall arrest system are suitable for further use.

When any inspection reveals defects in, damage to, or inadequate maintenance of equipment, the equipment shall be tagged as "UNUSABLE" and be permanently removed from service or undergo adequate corrective maintenance by means of an authorized inspection before return to service.

The Concrete Embed products are not serviceable by the user and must be returned to the factory for service. The manufacturer assumes no liability for products used after alteration or repaired by the customer.

Inspect for:

- Missing or damaged lock balls
- Deformed U-shackle
- Sticking or slow moving plunger
- Contamination
- Loose screws

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Cleaning

The Concrete Embed Connector may be cleaned if necessary with a solvent based oil such as WD-40.

Receivers secured in concrete will, in general, need very little cleaning. In some areas, where debris may blow into the Receiver, compressed air or a wire brushing may be used to clean the Receiver, spraying with a light oil such as WD-40 to ensure that the ball grooves are free of debris and will assist with the function of the Connector to be used with the Receiver. For long-term protection the Receiver may be coated with a light layer of grease to inhibit corrosion. Always wipe Receivers clean prior to use. Receivers may (for long term protection) be plugged with removable urethane inserts that can be provided by the manufacturer.

CAUTION – DO NOT use Connectors in Receivers that are rusted or damaged. Identify them as “UNUSABLE”, plug, and refrain from use.

Care should be taken when using acids, chemicals, and other concrete cleansing products around the Concrete Embed Receiver and Connector. These products can damage the protective finish of both the Connector and Receiver allowing it to be susceptible to rust and corrosion. When using solvents and cleaners around the Connector, all traces that enter the Connector should be immediately washed away with a solvent based oil such as WD-40.

DO NOT install Receivers around or near chloric acid.

For applications where the Concrete Embed Receiver may be easily contaminated with debris (such as those mounted in exterior surfaces or rooftops), “pop-in” urethane plugs are available which can easily be installed when the Receivers are not in use. For rooftops or areas exposed to the elements or corrosive environments, stainless steel connectors should be used.

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Formal Inspection

Buyer/client:

Product description: Concrete Embed Connector **Model No. 2260**

Year of Manufacture: Feb-02

Date of purchase:

Date of first use:

Name of user:

This formal inspection grid and log has to be filed at the buyers department of occupational health and safety and is to be sent along with the product for the annual formal inspection through a competent person. Only completely inspected products are subject of the product warranty and liability of the distributor and manufacturer.

Inspected according to specifications outlined by manufacturer:

By:	Date:	By:	Date:
Stamp	Signature	Stamp	Signature
By:	Date:	By:	Date:
Stamp	Signature	Stamp	Signature
By:	Date:	By:	Date:
Stamp	Signature	Stamp	Signature

The inspector confirms with his signature the compliance of his inspection with all specifications as outlined by the manufacturer and as required by standards and regulations pertaining to occupational health and safety and fall protection.

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Inspection Checklist

Concrete Embed Connector, Model No.: 2260

	1. Year	2. Year	3. Year	4. Year	5. Year	6. Year
	Date	Date	Date	Date	Date	Date
By a qualified person:	Inspector	Inspector	Inspector	Inspector	Inspector	Inspector

Concrete Embed Connector:

No Corrosion						
No deformation						
Functioning condition						
Connector spins freely when inserted into Receiver						
No play in Receiver when inserted						
All 12 balls lock into place when plunger released						
U-shackle present and pivots freely						
No changes to attachment structure						

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