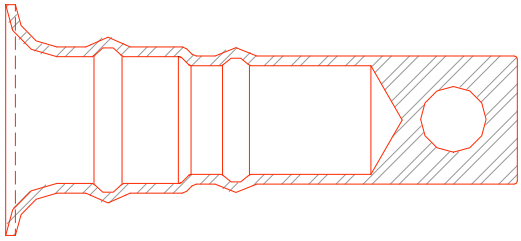
Reliance Industries, LLC

User Instructions

for

Installing the Concrete Embed Receiver

Model # 2250



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US Patent #6,551,041

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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 insure that this manual is stored in a manner that will make it available at any time to the user or installer 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 also 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 anchorage for fall arrest and is not intended as a lifting device for concrete slabs or for other heavy loads. In some cases, this product may be used for facilities applications. Consult Reliance Industries Engineering for your particular application.

The Receivers should always be handled in a manner that will protect them from damage or corrosion. This Receiver may be used only with original Reliance Industries Connectors and in accordance with the standards outlined below.

The use of this Receiver with connectors manufactured by others may impair its' function and safety. In such cases Reliance Industries and its' authorized representatives 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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Part Number and Model Designation

Model type:	Concrete Embed Receiver
Part Number:	2250
Proof Load: (in 4,500 PSI concrete after 24 hour cure)	5,000-lb. for fall arrest 12,000-lb. for horizontal lifeline (HLL) anchorage
Material:	Zinc-plated High-strength 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!

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 options for construction workers and when used with horizontal lifelines can provide them with mobility previously unattainable. What makes the 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 installed 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 into the concrete 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 Receiver is one component of an anchorage connector system that is designed to be permanently embedded in poured in place concrete. The Receiver may be attached to the face of the plywood forms, attached to the surface of steel deck forms, or bolted to the face of gang forms, all of which are commonly used in concrete construction. It may be mounted and used in any orientation.

When used with the Concrete Embed Connector (P/N 2260) the system provides a detachable fall arrest anchorage point for use by one or two persons using shock-absorbing lanyards or self-retracting lanyards with a 900-lb. maximum arrest force (MAF). The Concrete Embed Ball Lock Connector may also be used as an end anchorage point for horizontal lifelines or perimeter guardrail

applications. It is not to be used as a lifting device for heavy concrete slabs or other heavy construction work. Under certain conditions the Embed Receivers may be used to provide facilities supports for building wiring, piping, and ductwork, so long as these loads do not exceed 2,500-lbs. per anchor when used with the Permanent Concrete Embed Anchor Ring (P/N 2280) for support.

The Concrete Embed Connector (P/N 2260) may be used with remote connect equipment which allows the Connector to be installed, locked to the Receiver, and then removed from the Receiver up to 20-ft. overhead (see Figure 1b).

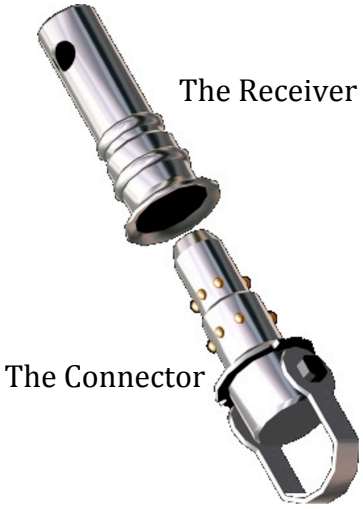
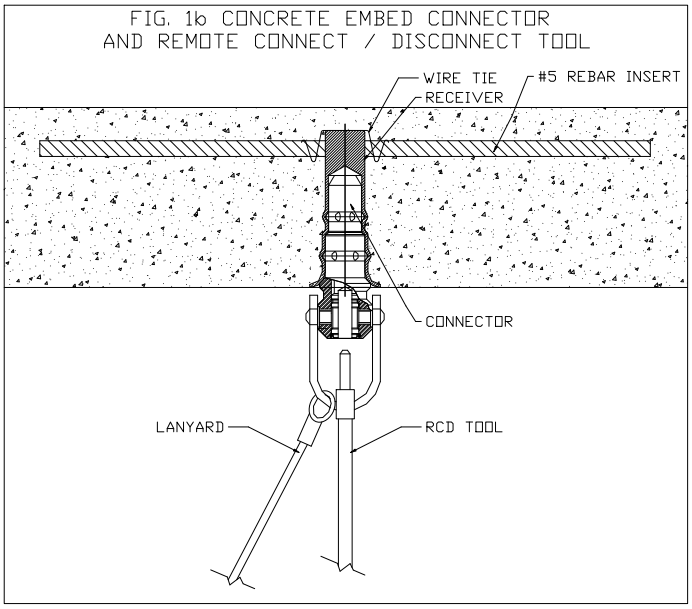


Figure 1a



The Receiver may also be used with the Concrete Embed Anchor Ring (P/N 2280). It is a low-cost single person anchorage insert that may be inserted into the Receiver and then bolted to prevent removal. The Ring, once bolted in place, may be left for ready access when needed, or it may be unbolted and removed, allowing the Concrete Embed Receiver to be used for other purposes.

Caution – The Concrete Embed Anchor Ring may only be used in the vertical position. Do not side load (see Figure 3). This Anchor Ring is not to be used to anchor horizontal lifelines.

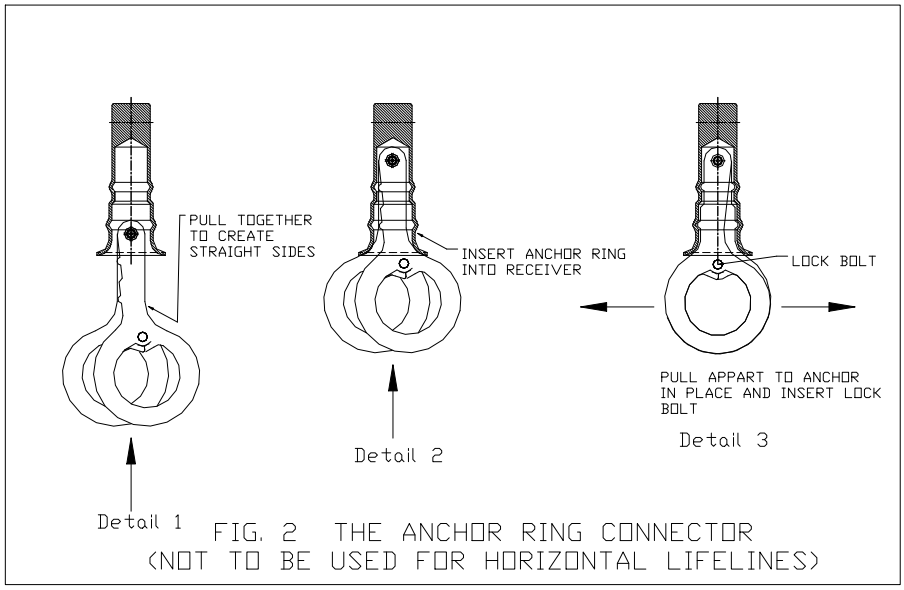
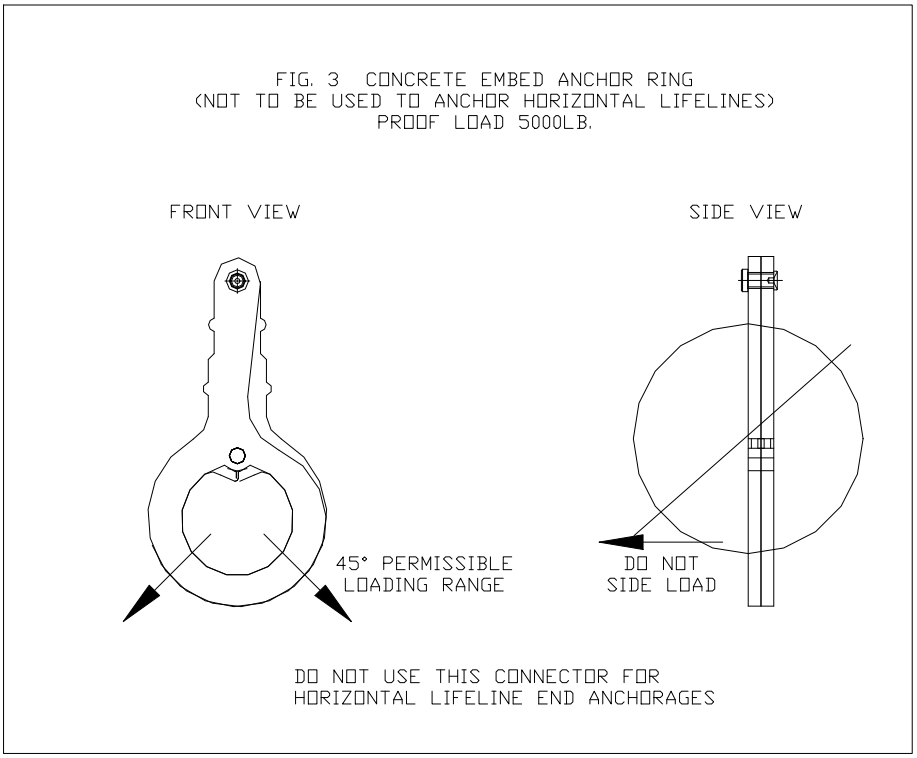
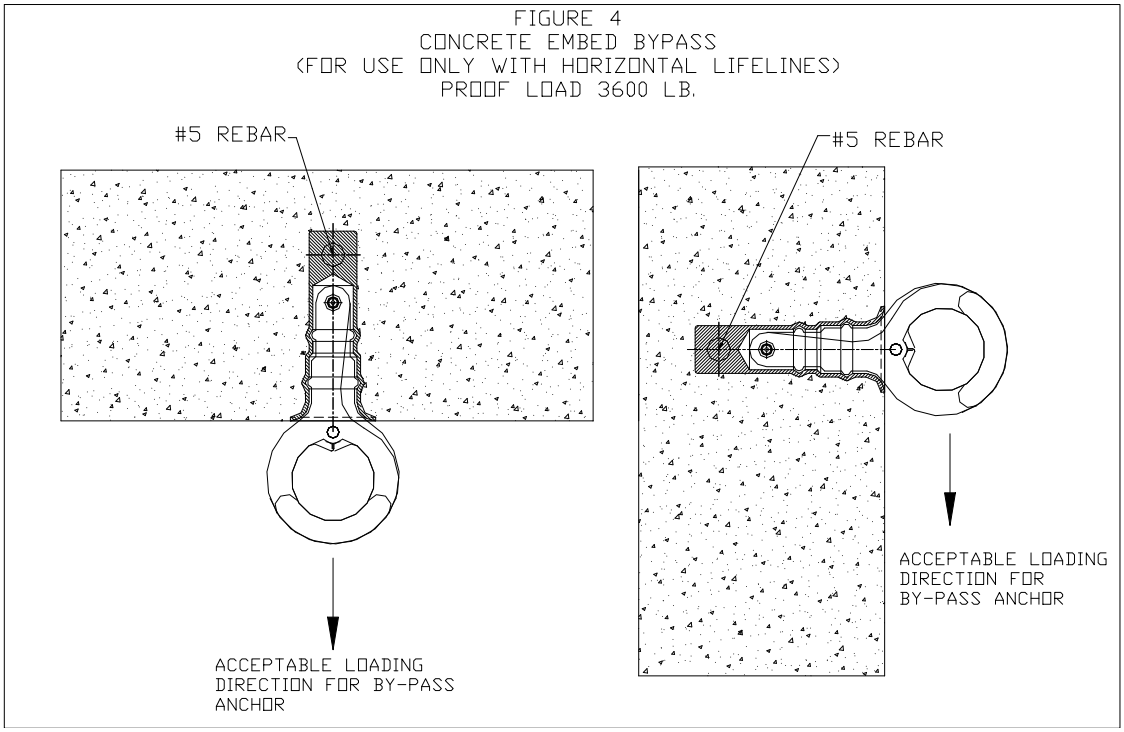


FIG. 2 THE ANCHOR RING CONNECTOR
(NOT TO BE USED FOR HORIZONTAL LIFELINES)



The Receiver may also be used with the Concrete Embed Bypass (P/N 2270). It is used for horizontal lifeline applications only. It acts as an intermediate support for the wire rope of a horizontal lifeline system to help reduce total fall distances while allowing the snaphooks of lanyards and SRLs to pass from one side of the Bypass Ring to the other without having to unhook from the line. The Bypass Anchor is intended for use only as a bypass ring for horizontal lifelines and may not be used as a fall arrest anchorage or for any other purpose (see Figure 4).



Proper Method of Installation

The Concrete Embed Receiver is one component of an anchorage connector system. It must be installed by attaching it to the forms and sealing with its protective gasket or urethane insert to prevent wet concrete from entering the Receiver and hardening. Do not use the Concrete Embed Receivers or their Connectors until a Qualified Person (as described under OSHA regulations) has inspected the Concrete Embed Receivers and their locations to ensure their placement is correct and that they are clean and approved for use.

The Concrete Embed Receiver may be used in any orientation when placed in concrete, but the method of installation will vary depending on the method of concrete forming and construction being used. For a method of concrete construction not listed here, please contact Reliance Industries for further technical assistance.

1.0 Inspection

1.1 Prior to installation, inspect the Concrete Embed Receiver to be sure that there is no damage to the Receiver. Check dimensionally to be certain that the Receiver has not been damaged in shipment. Inspect the ball grooves to assure there is no rust or corrosion. Insert the Connector into the Receiver as a gauge to see that it locks and swivels freely prior to installation.

1.2 If humidity is a problem or if the concrete forms will be left on the concrete more than 24 hours, the inside of the Receiver should be coated with a light layer of grease to resist corrosion. Wipe clean after removing the forms and again prior to use.

1.3 It is the responsibility of the customer to verify that the structure into which the Receiver will be embedded is of sufficient size and strength after curing to support the intended loads. 5,000-lbf. Per person is required for personal fall arrest anchorages, and 10,000-lbf. Is required for Skyline Horizontal Lifeline systems.

2.0 Installation of the Concrete Embed Receivers

The Concrete Embed Receivers are designed to be mounted to the surface of a variety of concrete forms. Each form requires that the Receiver be sealed so that concrete and moisture cannot enter the Receiver during the pouring process. Two types of seals are available. The first is the simple neoprene washer (P/N 2240) that is placed on the form under the Receiver. When the Receiver is nailed into place, the washer is captured between the form and the Receiver providing a seal. The second type of seal that is used is the urethane insert (P/N 2241). Either type of seal may be used but the urethane insert offers greater resistance to contamination because it snaps into the Receiver and seals across a larger surface area. The urethane plug may also be used as a permanent removable plug to keep contaminants out of the Receiver after the concrete is finished. Always apply a light coating of grease or oil to the urethane insert prior to inserting it into the Receiver to provide an additional vapor barrier during the pouring process.

2.1 Installing the Receiver on Wood forms

2.1.1 Installation using the neoprene washer

The Concrete Embed Receiver may be installed in wood forms by placing a neoprene washer on the form in the desired location, placing the Receiver over the top and then nailing down the Receiver to the form through the three slots in the periphery of the Receiver using ring shank nails. Once the Receiver has been secured in place, a piece of #5 rebar at least 24-in. long is positioned through the hole in the top of the Receiver and centered. (**Note:** the Receivers should **ALWAYS** be oriented so that the 24-in. long rebar will cross other rebar in the form.) It should be tied with a wire tie to the top of the Receiver as shown in Figure 1b. If the Receiver has been

placed in an area where workers might step on the rebar during the pouring process then rebar saddles should be used at each end of the rebar for support (see Detail 1 of Figure 5).

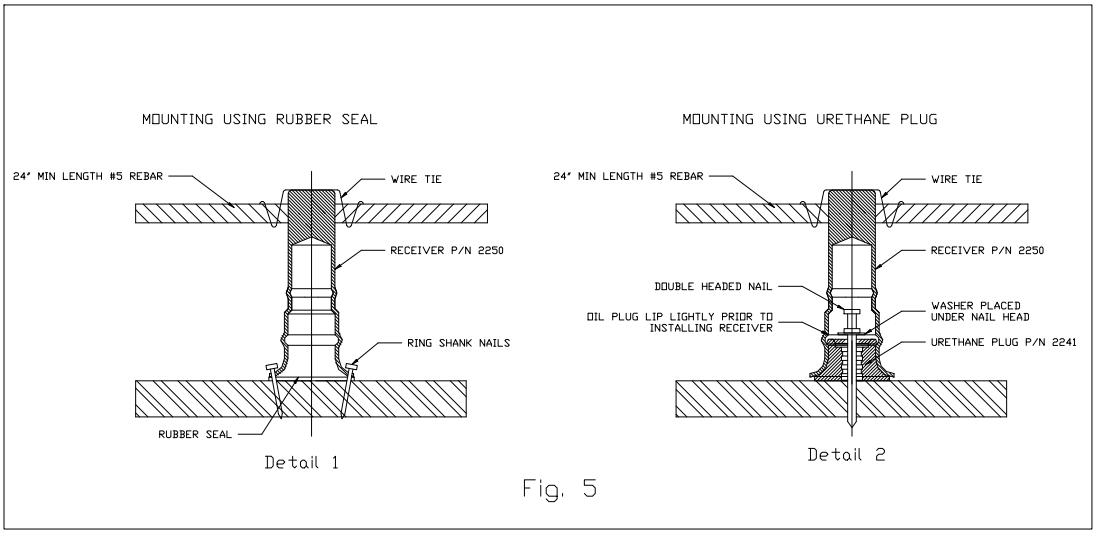


Fig. 5

2.1.2 Installation using the urethane plug

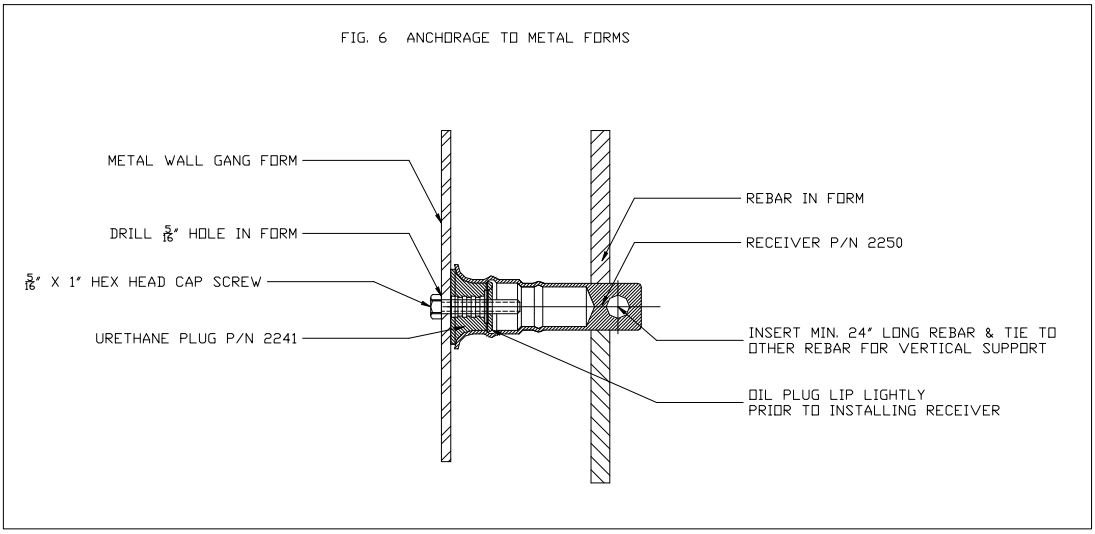
The Concrete Embed Receiver may be installed in wood forms using the urethane plug (P/N 2241). This is done by placing the urethane plug on the wood form in the desired location. A small washer is then placed over the hole in the top of the plug and a double-headed nail is driven down through the center hole into the form. A light oil is then wiped around the lip of the urethane plug and the Receiver is snapped over the plug into place. Once the Receiver has been secured in place, a piece of #5 rebar at least 24-in. long is positioned through the hole in the top of the Receiver and centered. (**Note:** the Receivers should **ALWAYS** be oriented so that the 24-in. long rebar will cross other rebar in the form.) It should be tied with a wire tie to the top of the Receiver as shown in Figure 5. If the Receiver has been placed in an area where workers might step on the rebar during the pouring process then rebar saddles should be used at each end of the rebar for support (see Detail 2 of Figure 5).

2.2 Installing the Receiver to metal forms

2.2.1 Installation using the urethane plug

The Concrete Embed Receiver may be installed in metal forms when using the urethane plug. A 5/16-in. hole is drilled through the form in the desired location. Using a 5/16-in. x 1-in. long bolt, the urethane plug is bolted to the inside of the metal form. A light layer of lubricant is put on the lip of the urethane plug and the Receiver is snapped over the plug and into place. Once the Receiver has been secured in place, a piece of #5 rebar at least 24-in. long is positioned through the hole in the top

of the Receiver and centered. (**Note:** the Receivers should **ALWAYS** be oriented so that the 24-in. long rebar will cross other rebar in the form to give it additional pullout strength.) The urethane plug will pop out of the Receiver when the form is removed leaving the Receiver ready for use.



2.3 Attaching the Receiver to metal decking

2.3.1 Installation using the metal decking insert

To install the Receivers in metal decking a 2-in. diameter hole must be cut through the decking using a hole saw at the desired location (NOTE: A flat "valley" or "peak" of 2.25-in. minimum width must be present to allow for the Receiver to proper seal against the surface). With the metal decking insert (P/N 2243) in place inside the Receiver, the eye of the eyebolt and the crossbar of the decking insert are then inserted through the hole. The Receiver is then centered on the hole and pulled up until the crossbar touches the underside of the metal decking. The Receiver is then spun in a clockwise direction until it screws down into place with the urethane insert inside the 2-in. hole and the lip of the Receiver resting on

the top of the metal decking. It only needs to be snugged into place. Do not over tighten or it will pull the insert out of the Receiver (see Figure 7).

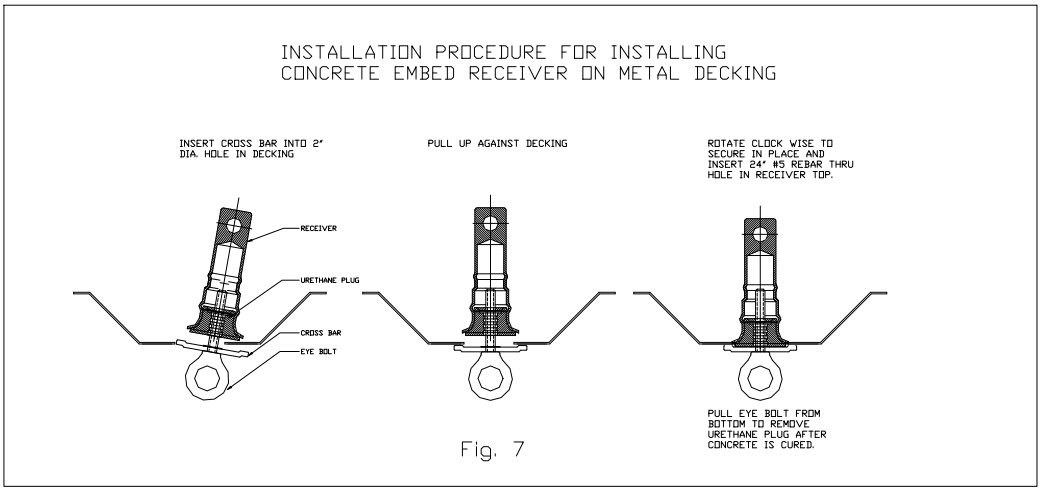


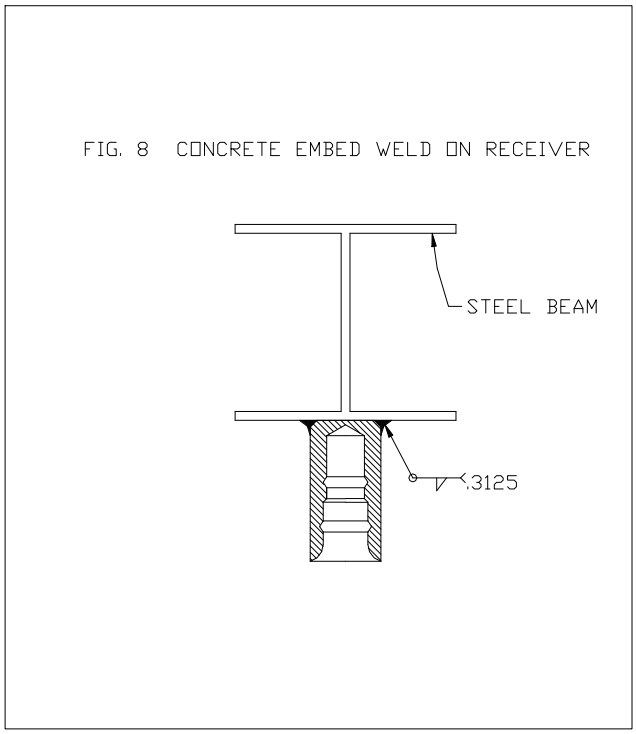
Fig. 7

With the Receiver now positioned install the rebar through the cross-hole as described in Section 2.2.1. Use rebar saddles if necessary.

After the concrete has been poured and cured, the urethane inserts may be removed with a hooked pole from beneath the metal deck by hooking into the eye and pulling straight down. The Receivers are then ready to receive the Connector to provide support for personal fall arrest systems or provide horizontal lifeline anchorages once the urethane insert is removed.

2.4 Attaching weld-on Receivers to steel structures

Weld-on Receivers (P/N 2255) may be attached to steel I-beams or other steel structures by welding. Use a minimum 70,000-PSI tensile strength welding wire with a minimum 5/16-in. radius fillet and weld fully around the Receiver. Steel weld-on Receivers are for interior use ONLY. Do not paint the inside of the Receiver. Stainless steel weld-on Receivers must be used for exterior or corrosive applications. It is the responsibility of the customer to verify that the structure, to which a Receiver will be attached, is of sufficient strength to support the intended loads and bending moments.



General Cautions

This product should be used only in accordance with these instructions, the instructions of the device to be used with the Concrete Embed Receiver (the Concrete Embed Connector, the Permanent Anchor Ring, or the Concrete Embed Bypass), 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. 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 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.

Whenever the structure, or general work area in which any Concrete Embed Receiver is installed is altered, the suitability of the fall protection anchorage 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. This Qualified Person should conduct periodic inspections at least once yearly.

Inspection, Maintenance and Storage

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

A Qualified Person capable of determining the suitability for use should perform a yearly inspection of all Receivers being used to assure not only the condition of the Receivers but also the condition of the concrete to which it is attached.

In addition to this, the product must be identified and removed from service immediately after any fall arrest load has been applied until it has been inspected by a Qualified Person and re-certified for use.

The user must tag and remove equipment from field service that has been subjected to a fall arrest. An authorized inspection is then required to determine if the other components of the horizontal lifeline 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.

Cleaning

Prior to placement in concrete, the Concrete Embed Receivers may be cleaned if necessary with a solvent based oil such as WD-40 that do not contain chlorine or chemicals corrosive to steel or zinc. The contractor may line the inside of the Receiver with grease to keep concrete that might leak into the Receiver from sticking and resist corrosion. Once the Receiver is secured in concrete, the Receiver should be cleaned and inspected. In some areas, where debris may blow into the Receiver, compressed air or a wire brush may be used to clean the Receiver. Spraying with a light oil and wiping clean will ensure that the ball grooves are free of debris and will aid 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 the Receivers clean prior to use.

Caution – Do not use Connectors in Receivers that are rusted or damaged. Rusted or damaged Receivers should be marked "UNUSABLE" and plugged so they cannot be used.

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

For applications in rooftops, roadways, or building exteriors, or any area where the Concrete Embed Receiver may be contaminated with debris, the urethane plug (P/N 2241) may be used as a seal to prevent exposure when not in use. For exterior applications and rooftops it is recommended to use stainless steel Receivers for long-term corrosion resistance.

Formal Inspection

Buyer/client:

Product description: Concrete Embed Receiver **Model No. 2250**

Year of Manufacture:

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.

Inspection Checklist

Concrete Embed Receiver, Model No.: 2250

	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 Receiver:						
No Corrosion						
No deformation						
Functioning condition						
Receiver spins freely when inserted						
No play in Receiver when inserted						
No changes to attachment structure						