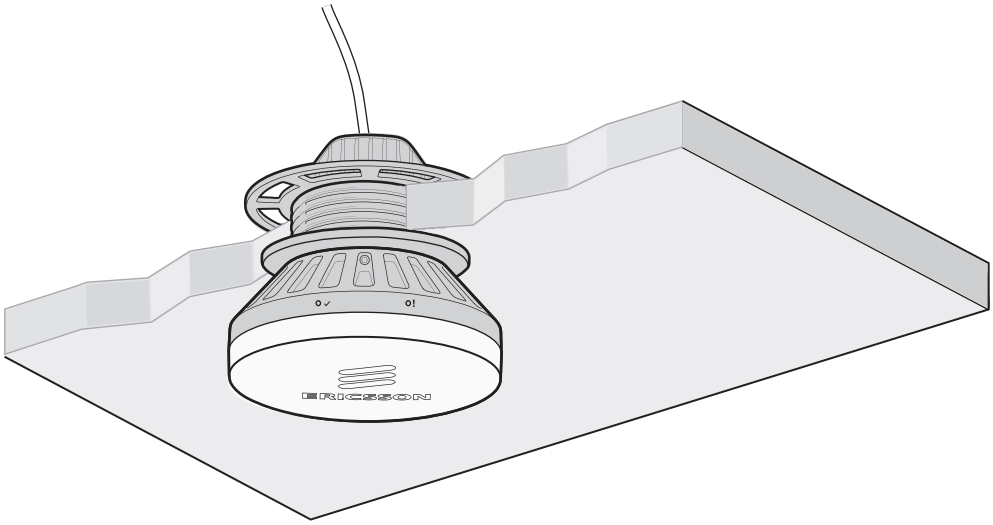
ERICSSON

Install Radio Dot

Installation Instructions



165/1531-FGB 101 0308/1 Uen M4B

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Contents

1 Introduction

This document describes how to install Radio Dots (RDs) in a Radio Dot System (RDS).

For information about the separation distance between RDs of different bands and RDs part of a MIMO configuration, refer to Radio Dot Description, 7/1551-FGB 101 0308/1.

Note: If installing a new RD 4442 B48 in a running Citizen's Band Radio Service (CBRS) system, additional steps are required. Refer to CBRS Support, 1/221 04-FGB 101 0308/1.

1.1 Target Group

This document is intended for the personnel involved in the site installation engineering process and those responsible for the installation, integration, and maintenance of RDS sites.

2 Prerequisites

This section contains information about the documentation, tools, equipment, and conditions required for the installation procedure.

2.1 Documents

Make sure that the following documents have been read and understood:

—Personal Health and Safety Information

—System Safety Information

See References on page 34 for required documents.

2.2 Tools and Equipment

The tools required for the installation are shown in Table 1:

Table 1 Tools and Equipment

Tool	Included in
Screwdrivers	Personal tools, LTT 601 135/1
Drill machine	-
Hollow cutting tool for drill machine	-

2.3 RD 2253 Limitations

The following limitations must be considered when deploying the RD 2253:

— The RD 2253 must be used in specific use cases only, such as elevator shafts and long hallways. In these scenarios, the possibility of triggering the AGC is lower and the risk of reduced coverage is minimized. For more information, see Locations for RDs with External Antennas on page 4.

— There is no detection or fault monitoring of the antenna connection. If the antenna is not connected or if the cable breaks, there is no detection by the RD.

— The connector used on the external antenna must be a male SubMiniature version A (SMA).

— There is no delay compensation for the external cabling or antenna.

2.4 RD 4442 Limitations

The following limitations must be considered when deploying the RD 4442:

— The IRU cannot connect to a Dual Band RD 4442 and a Single Band RD 2242 at the same time. The software performs a compatibility check and generates a configuration mismatch alarm if the capabilities of the dots are not the same. The IRU can connect to an RD 2243 B1, B3, B7, B25, B40A or B66A and the same band side of an RD 4442.

— The two sides of an RD 4442 cannot connect to the same IRU.

— When connecting the RD 4442 to the IRU, the Y-splitter must be used.

— The cable lengths from the two IRUs to the Y-splitter must be the same.

— The two sides of the RD 4442 cannot be connected to the same port number of two separate IRUs. Refer to the Y-splitter guidelines in Y-Splitter Guidelines, 11/1553-FGB 101 0308/1.

— All carriers provisioned in the same half of the RD 4442 must be contiguous.

— For multicarrier setup, the 20 MHz carrier must be placed at the edge of the carrier combination. The 15 MHz carriers must be placed at the edge of the carrier combination. The exception is 5+15+5.

— Each band is assigned to a specific port on the Y-Splitter. Refer to the Y-Splitter Guidelines for the table on port assignment on a band basis.

For further information on RD 4442 Deployment Configurations, refer to RDS Configuration Options, 1/1551-FGB 101 0308/1.

2.5 RD 4453 Limitations

The following limitations must be considered when deploying the RD 4453:

— The RD 4453 must be used in specific use cases only, such as elevator shafts and long hallways. In these scenarios, the possibility of triggering the AGC is lower and the risk of reduced coverage is minimized. For more information on the location for RDs with external antennas, see Locations for RDs with External Antennas on page 4.

— There is no detection or fault monitoring of the antenna connection. If an antenna is not connected or if the cable breaks, there is no detection by the RD.

— There is no delay compensation for the external cabling or antenna.

— The connector used on the external antenna must be a male SubMiniature version A (SMA).

— The IRU cannot connect to an RD 4453 and an RD 2242 at the same time. The software performs a compatibility check and generates a configuration mismatch alarm if the capabilities of the dots are not the same. The IRU can connect to an RD 2243 B1 or B3 and the same band side of an RD 4453.

— The two sides of an RD 4453 cannot connect to the same IRU.

— When connecting the RD 4453 to the IRU, the Y-splitter must be used.

— The cable lengths from the two IRUs to the Y-splitter must be the same.

— The two sides of the RD 4453 cannot be connected to the same port number of two separate IRUs. Refer to the Y-splitter guidelines in Y-Splitter Guidelines, 11/1553-FGB 101 0308/1.

— All carriers provisioned in the same half of the RD 4453 must be contiguous.

— For multicarrier setup, the 20 MHz carrier must be placed at the edge of the carrier combination. The 15 MHz carriers must be placed at the edge of the carrier combination. The exception is 5+15+5.

— Each band is assigned to a specific port on the Y-Splitter. Refer to the Y-Splitter Guidelines for the table on port assignment on a band basis.

2.6 Locations for RDs with External Antennas

The main concern of a high gain antenna on an RD is the possible reduction of coverage provided by other RDs on the IRU. The uplink AGC is triggered because of the higher input levels caused by the greater gain specified on the external antenna. A UE in close proximity to a high gain external antenna raises the dynamic range, and causes a decrease in signal strength on RDs with internal antennas on the IRU.

External antennas on RDs must be used in specific use cases only, such as elevator shafts and long hallways. In these scenarios, the possibility of triggering the AGC is lower and the risk of reduced coverage is minimized.

3 Unpack and Check Materials

This section describes how to unpack and check the materials.

The RD unit is transported in a box.

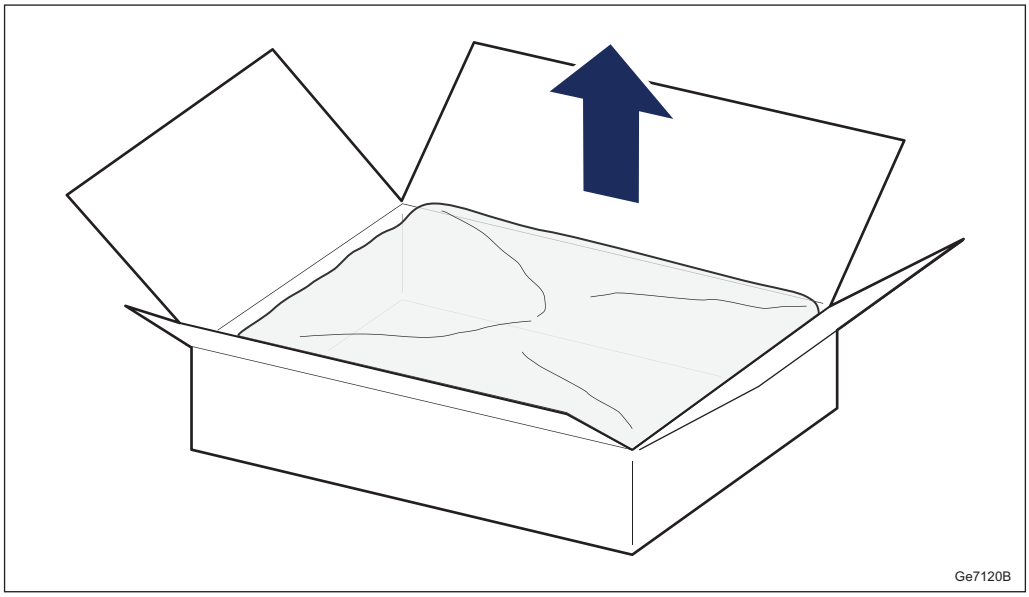
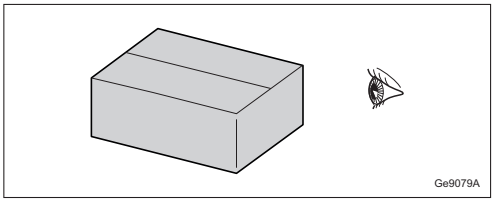


Figure 1 RD Unit Transport Box

Note: Do not leave the RD unit in an outdoor environment for more than one week prior to taking it into service. In cases where high humidity or cold temperatures applies, take the RD unit into service within 48 hours.

Steps

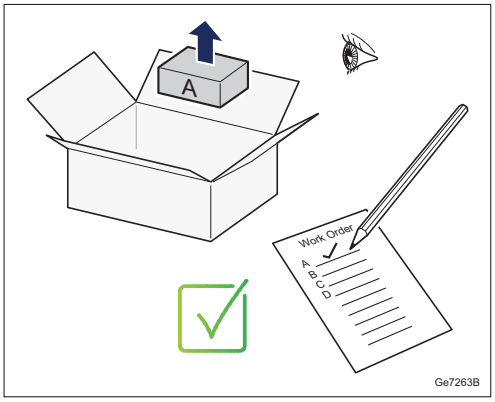
To unpack and check the materials:

1. 

   Examine the packaging for damage.

   If it is damaged, immediately register a complaint with the transport company. Ericsson recommends taking a photograph of the damages to improve the claim process.

   Note: Use the packaging for any return units, refer to Handling Faulty Equipment.

2. 

   Unpack the new RD and verify that the items delivered correspond to the packing list.

3. Dispose of the box in accordance with local regulations or Ericsson recommendations.

4 Install and Connect an RD

This section describes the RD hardware components and includes instructions on how to install the RD with different brackets.

Before starting the installation make sure that there is an installation plan showing where to install the RDs, refer to Radio Dot Description, 7/1551-FGB 101 0308/1.

4.1 RD Components

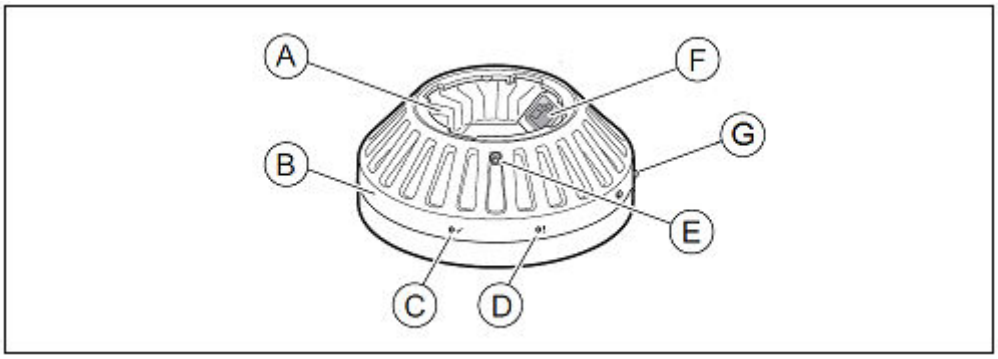


Figure 2 RD Components

Table 2 Key To RD Components

Position	Component
A	Cooling flanges
B	Housing
C(1)	Optical indicator (green)
D(1)	Optical indicator (red)
E	Locking screw
F	RDI interface (RJ45)
G(2)	External Antenna Connector

(1) RD 4442 has two sets of optical indicators; one on each side of the RD. RD 4453 also has two sets. For more information on optical indicators, refer to Radio Dot Description, 7/1551-FGB 101 0308/1.

(2) Applicable only to the RD 2253 and RD 4453. The RD 2253 has one set of two external antenna connectors. The RD 4453 has two sets of two external antenna connectors; one on each side of the RD. For more information, see External Antenna Connectors on page 7.

4.1.1 External Antenna Connectors

The RD 2253 and RD 4453 have external antenna connectors instead of internal antennas. These external antenna connectors allow the use of site specific

antennas on RDs to provide different coverage patterns in areas such as elevator shafts and long corridors. The RD 2253 has one set of two antenna connectors. The RD 4453 has two sets of antenna connectors; one on each side of the RD.

If the site specific antenna has an N-type connector, Ericsson recommends using an adapter cable to connect to the RD as an adapter is too heavy.

Ensure the antennas are installed correctly. There is no detection or fault monitoring of the antenna connection. If the antenna is not connected, or if the cable breaks, there is no detection by the RD.

Also, there is no delay compensation for the external cabling or antenna.

4.2 Installation Instructions

This section describes installation of the RD using different brackets. The installation and brackets are the same for RD 2242, RD 2243, RD 2253, RD 4442, and RD 4453.

Attention!

Before installing the RD using the standard ceiling mounting brackets, verify that the structural integrity of the tile material can support the unit weight (388 g for RD 2243, 381 g for RD 2253, 424 g for RD 4442, 422 g for RD 4453) plus the weight of the mounting bracket (46 g for short socket or 100 g for tall socket).

4.2.1 Installation in Ceiling Panels

This section describes how to install the RD in ceiling panels using the brackets shown in Figure 3 (short socket, model SXK 125 2817/1), Figure 4 (tall socket, model SXK 125 2859/1) and Figure 5 (tall socket, model SXK 125 2371/1). For more information about the brackets, refer to Radio Dot Description.

Note: SXK 125 2859/1 replaces SXK 125 2371/1.

SXK 125 2859/1 is only available in 4-packs as NTB 101 610/1.

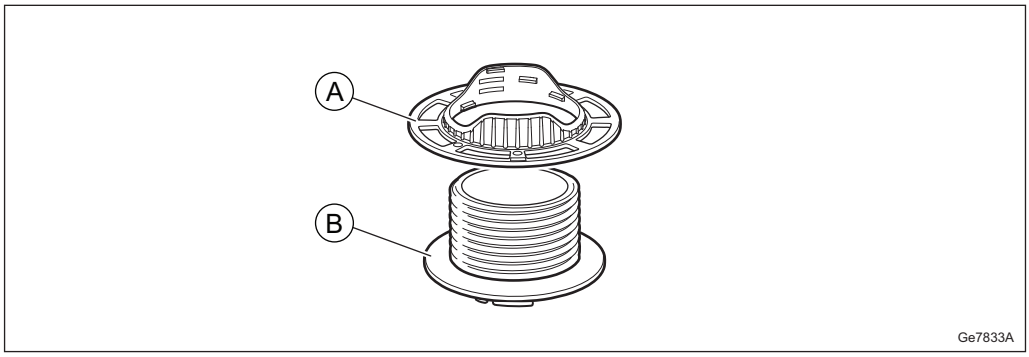


Figure 3 Standard Mounting Bracket for Ceiling Panels, Short Socket (Model SXK 125 2817/1)

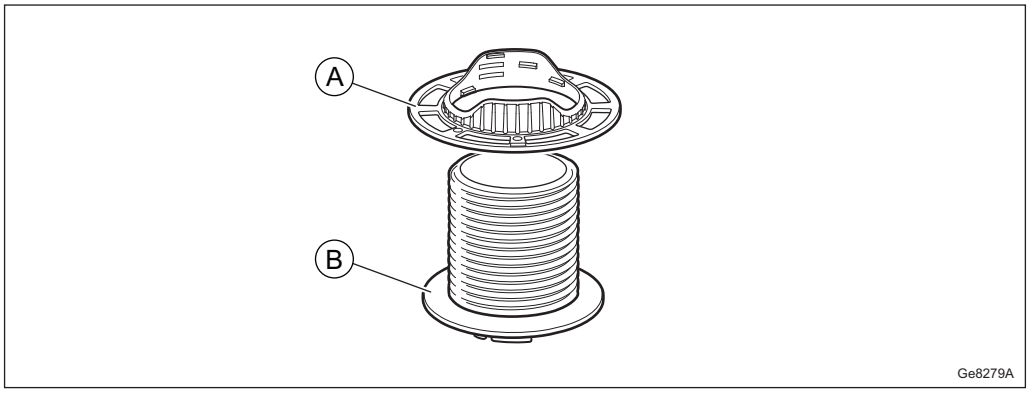


Figure 4 Mounting Bracket for Ceiling Panels, Tall Socket (Model SXK 125 2859/1)

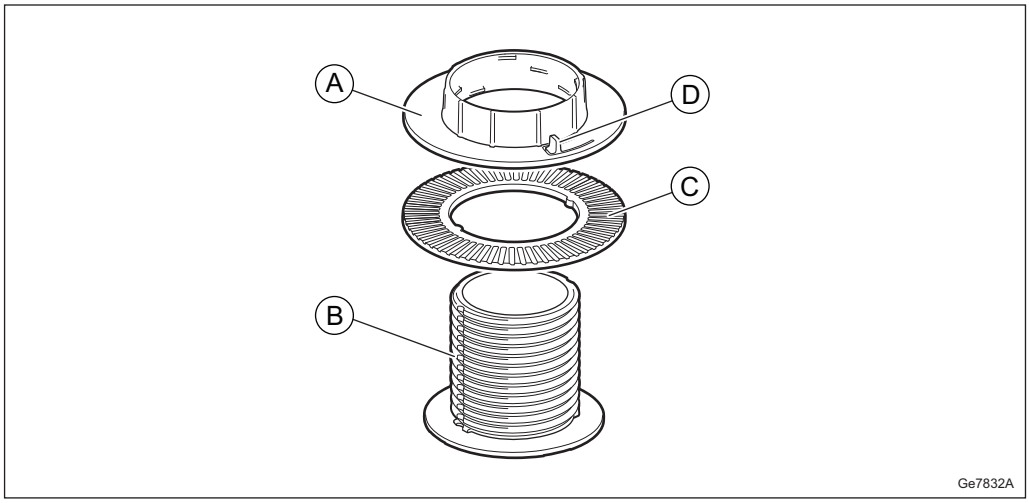


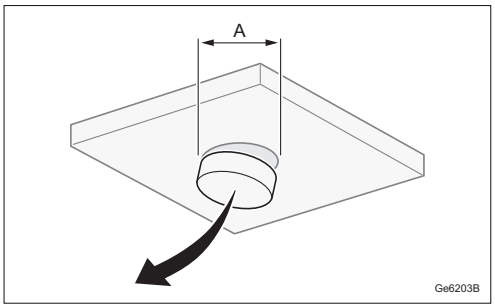
Figure 5 Mounting Bracket for Ceiling Panels, Tall Socket, Model SXK 125 2371/1

Table 3 Brackets for Installation in Ceiling Panels, Component List

Position	Component
A	Locking nut
B	Threaded socket
C	Locking washer
D	Locking pin

Steps

To install an RD in a ceiling panel:

1. 

   Use the site installation plan to locate where the RDs are to be installed.

   Use the cutting tool together with the drilling machine to cut a circular hole in the ceiling panel.

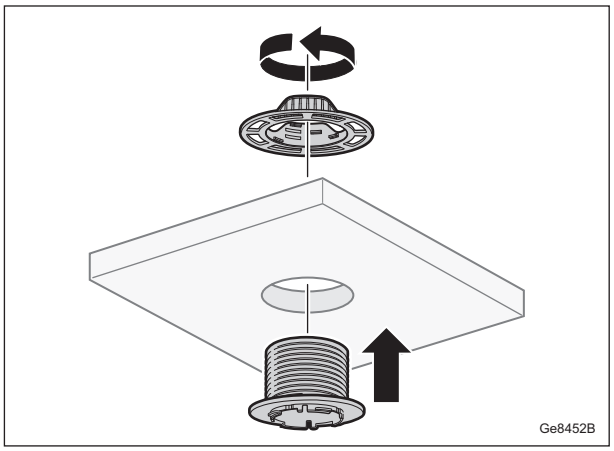
   A = 60 ± 1 mm for hard ceiling panels and A = 58 ± 2 mm for soft ceiling panels.

   Hard ceiling panels are made of plywood, plastic, steel, or another kind of material that is hard and thin.

   Soft ceiling panels are usually acoustic suspended tiles or a layer of insulation on top of gypsum.

   Ceilings can be as thin as 1 mm, for example a mesh metal ceiling.

2. Install the mounting socket:

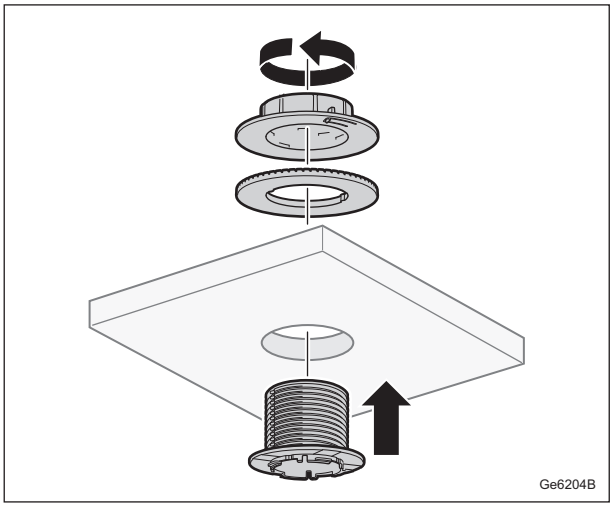
   a. 

   Models SXK 125 2817/1 and SXK 125 2859/1

   Insert the threaded mounting socket from beneath.

   Tighten the threaded locking nut.

b.



Model SXK 125 2371/1

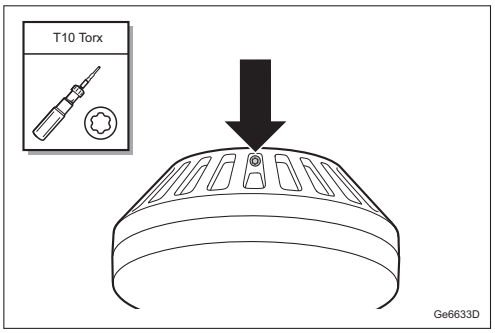
Insert the threaded mounting socket from beneath.

Put on the plastic washer from the top. Rifled side upwards.

Tighten the threaded locking nut.

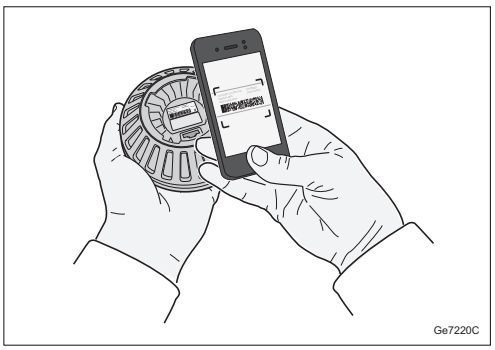
Turn the nut until you hear the locking pin snap into its locked position.

3.



Unscrew the RD locking screw from its captive position.

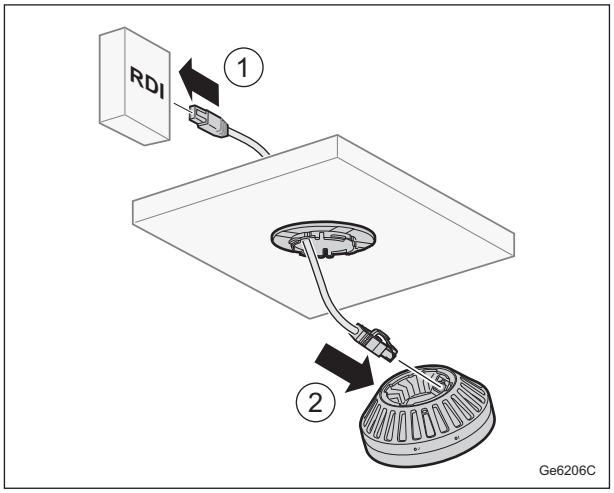
4.



Using the iQR scanning application together with your mobile telephone, scan the iQR code inside the RD. This will render an RD unique identity for an inventory record.

5. Connect cables:

a.

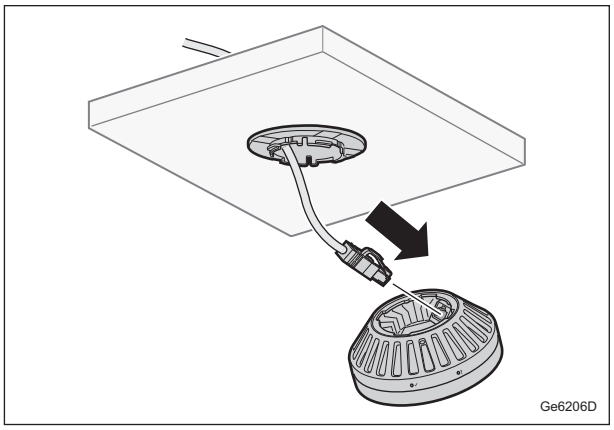


With connection box

Connect the RDI jumper cable to the connection box.

Then connect the RDI jumper cable to the RD.

b.



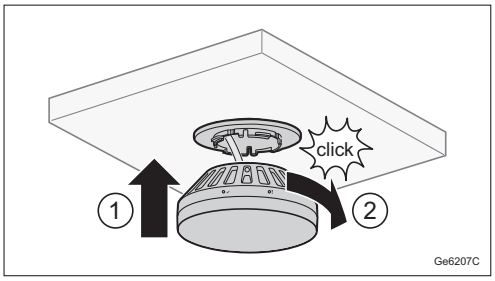
Without connection box

Connect the RDI feeder cable to the RD.

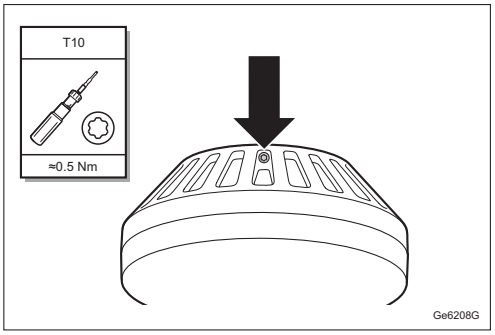
Refer to RDI Cabling Guidelines, 15/1553-FGB 101 0308/1, for more information on RDI installation.

Note: Avoid sharp bends when installing the cable.

6.



Insert the RD in the socket and turn it slightly clockwise until a "click" is heard.

7. 

Gently tighten the locking screw to prevent the RD from being removed without using tools.

4.2.2 Installation of RD Enclosure in Ceiling Panel

This section describes how to install the RD Enclosure in ceiling panels using the brackets shown in Figure 3 (short socket, model SXK 125 2817/1), Figure 4 (tall socket, model SXK 125 2859/1) and Figure 5 (tall socket, model SXK 125 2371/1). For more information about the brackets and RD Enclosures, refer to Radio Dot Description.

Note: SXK 125 2859/1 replaces SXK 125 2371/1.

SXK 125 2859/1 is only available in 4-packs as NTB 101 610/1.

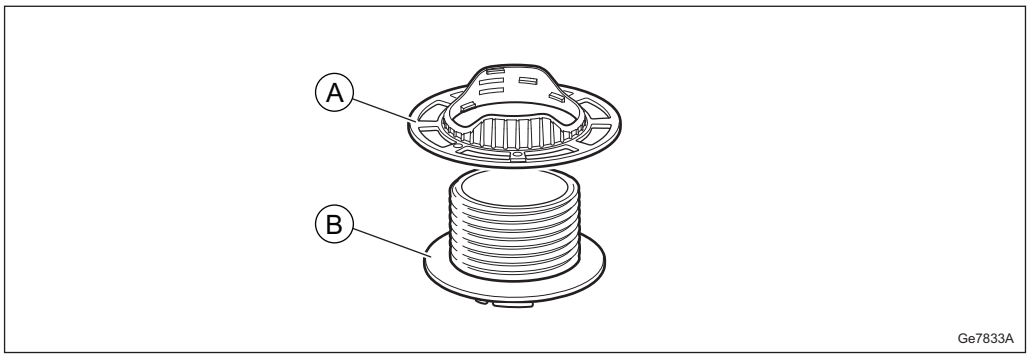


Figure 6 Standard Mounting Bracket for Ceiling Panels, Short Socket (Model SXK 125 2817/1)

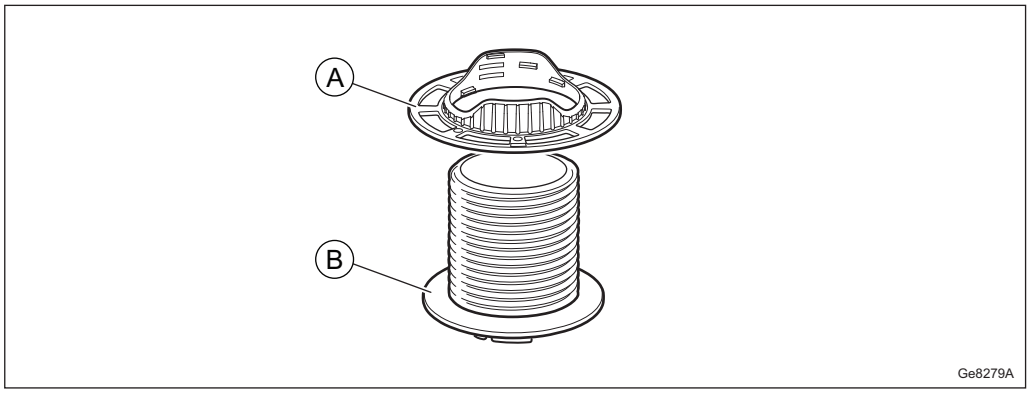


Figure 7 Mounting Bracket for Ceiling Panels, Tall Socket (Model SXK 125 2859/1)

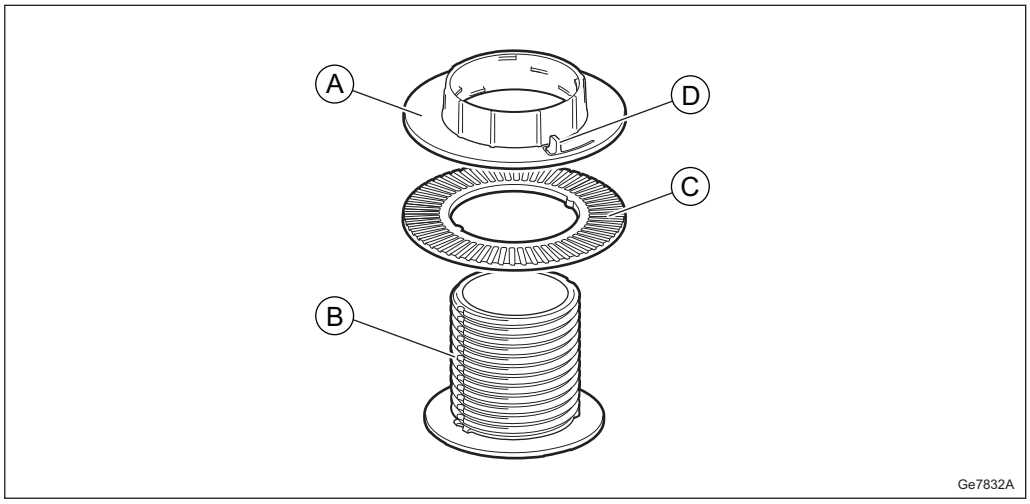


Figure 8 Mounting Bracket for Ceiling Panels, Tall Socket, Model SXK 125 2371/1

Table 4 Brackets for Installation in Ceiling Panels, Component List

Position	Component
A	Locking nut
B	Threaded socket
C	Locking washer
D	Locking pin

The Radio Dot Enclosure is available in two options:

— 2 Radio Dot enclosure - Product Number SDD5131065/1

— 3 Radio Dot Enclosure - Product Number SDD5131066/1

Figure 9 RD Enclosure

Note: The following figure is only a reference to the dimensions of the enclosures and is not to scale. It is not to be used as a template for drilling or piercing the ceiling.

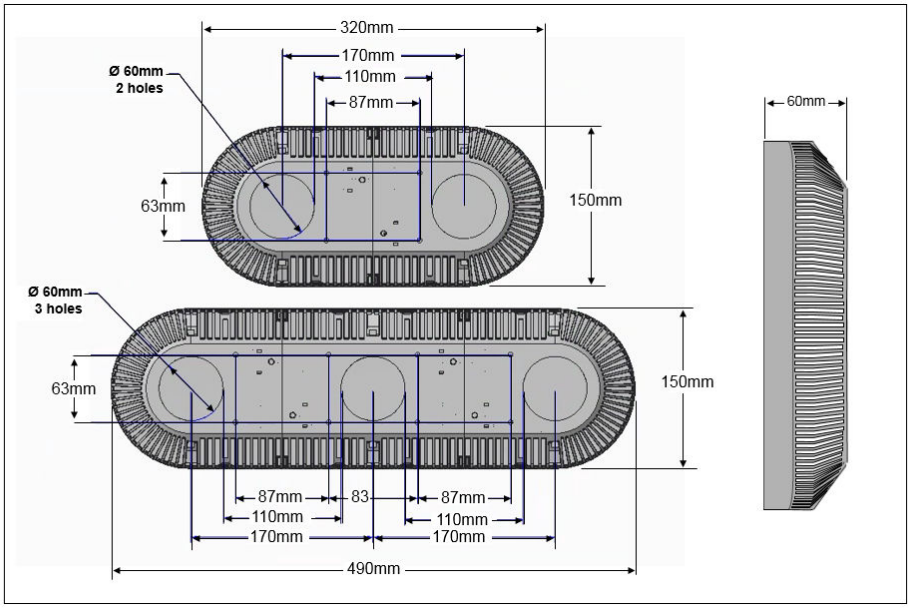
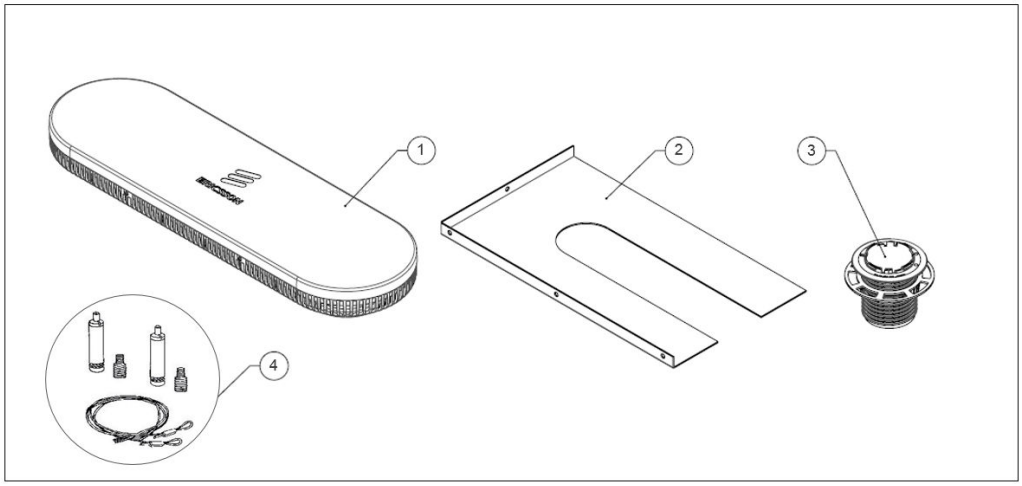


Figure 10 Radio Dot Enclosures Dimensions

Prerequisites

Before starting the installation, have all the necessary tools available and the following:

1. RD Enclosure for 2 or 3 RDs (SDD5131065/1 or SDD5131066/1)
2. 2 Ceiling Tile Support for DOT Cover (SXA1030104/1)
3. 2 or 3 Chimney Ceiling Bracket Assemblies (SXK1252817/1 or SXK1252859/1 or SXK1252371/1)
4. Ceiling Tile Wire Suspension for DOT Enclosure (NSF90111/1) (**Optional**)



Tools:

— T10 Torx screwdriver

— Circular cutting tool & Drill

— Impact drill with concrete bit (Optional)

Note: The Ceiling Tile Support for DOT Cover and the Ceiling Tile Wire Suspension for DOT Enclosure must to be ordered separately from the RD Enclosure. For ceiling tiles, the Ceiling Tile Support for DOT Cover is mandatory. The Ceiling Tile Wire Suspension for DOT Enclosure is optional depending on the ceiling structure.

Steps

To install an RD in a ceiling panel:

1. Use the site installation plan to locate where the RDs are to be installed.
2. Use the cutting tool together with the drilling machine to cut a circular hole in the ceiling panel for each of the RD (2 or 3). Refer to the Dimensions figure for the distance needed between holes (170 mm).

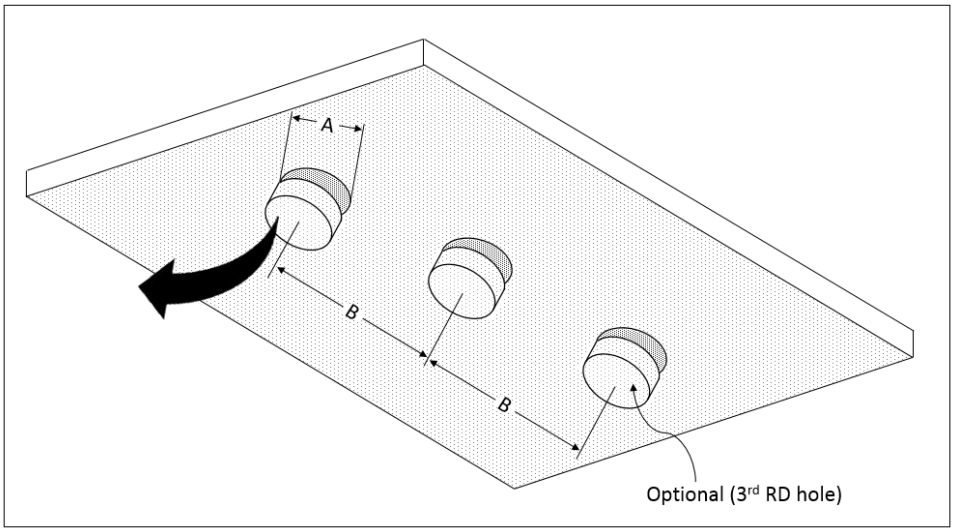
   A = 65 mm.

   B = 170 ± 1 mm center to center between holes.

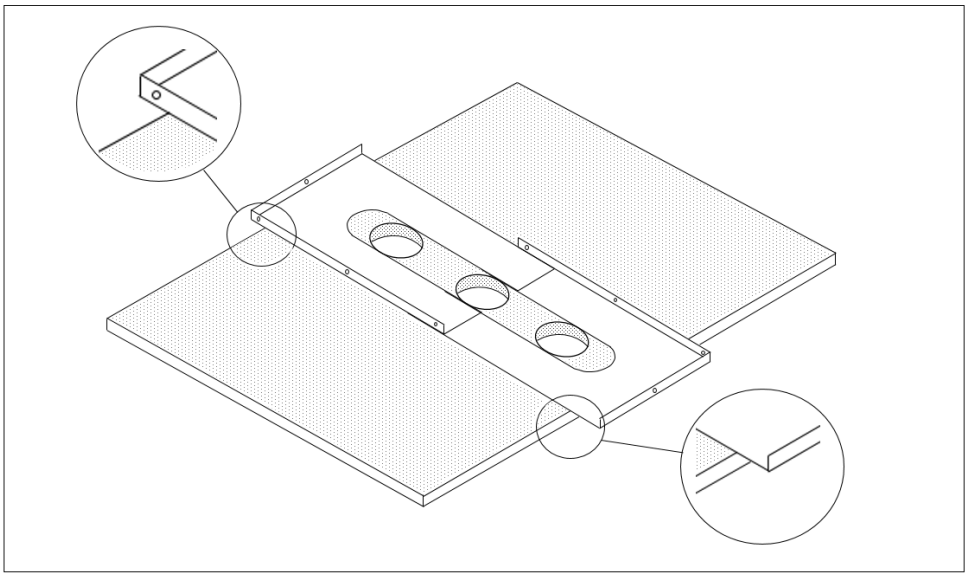
   Hard ceiling panels are made of plywood, plastic, steel, or another kind of material that is hard and thin.

   Soft ceiling panels are usually acoustic suspended tiles or a layer of insulation on top of gypsum.

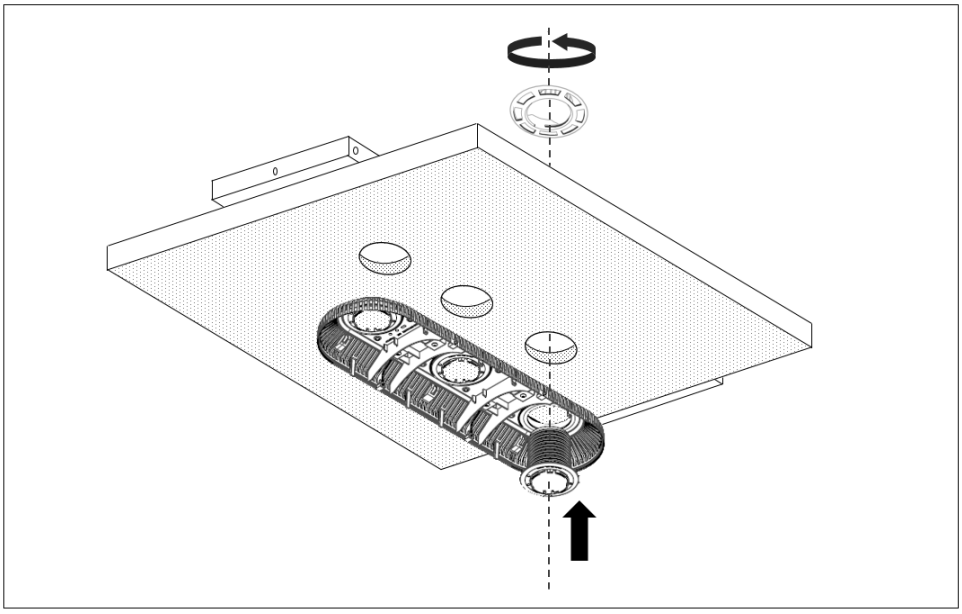
   Ceilings can be as thin as 1 mm, for example a mesh metal ceiling.



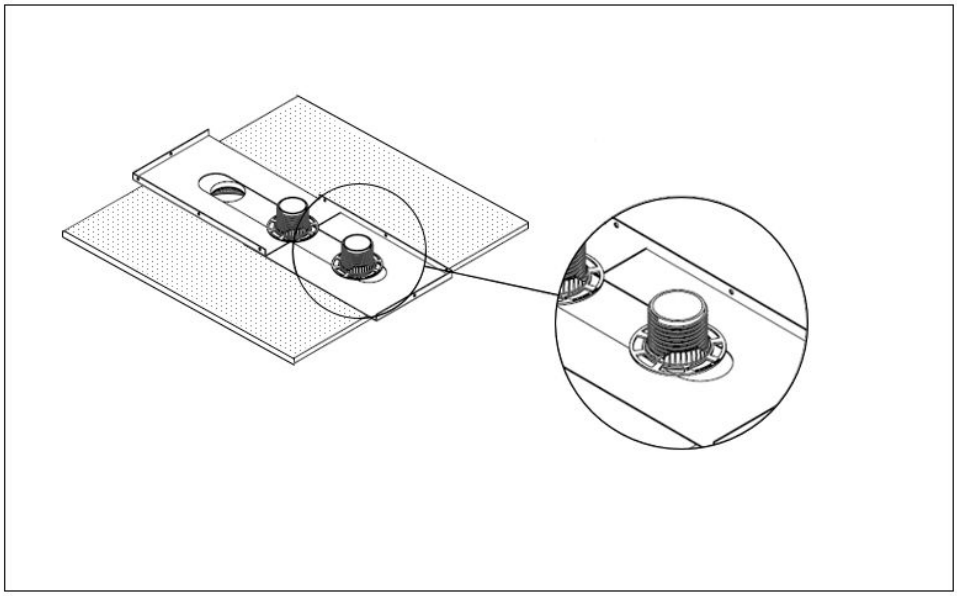
3. Place the Back Plate on the back of the ceiling panel.



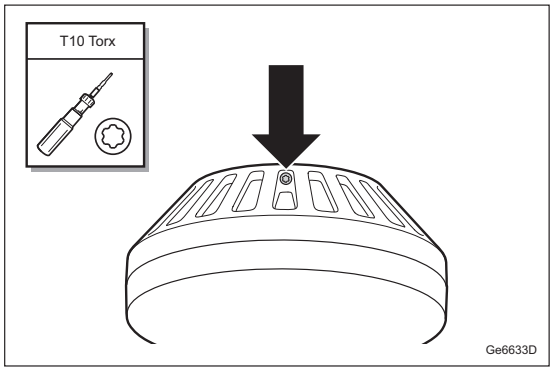
4. Install the mounting brackets through the enclosure holes. Only use the Bracket assemblies stated above.



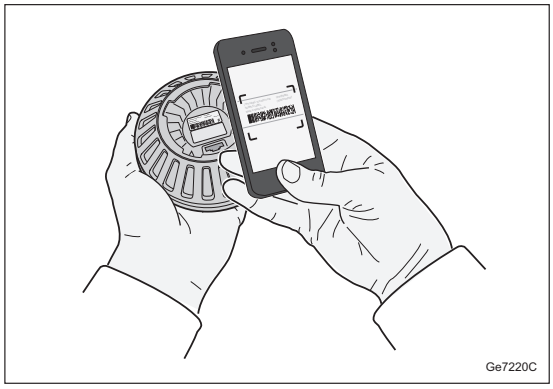
5. Screw in and tighten the threaded locking nut.



6. Place the tile assembly back on the drop ceiling hangers.
7. Optionally, install the tension wire to the concrete ceiling and to the back plate at both ends.
8. Unscrew the RD locking screw from its captive position.

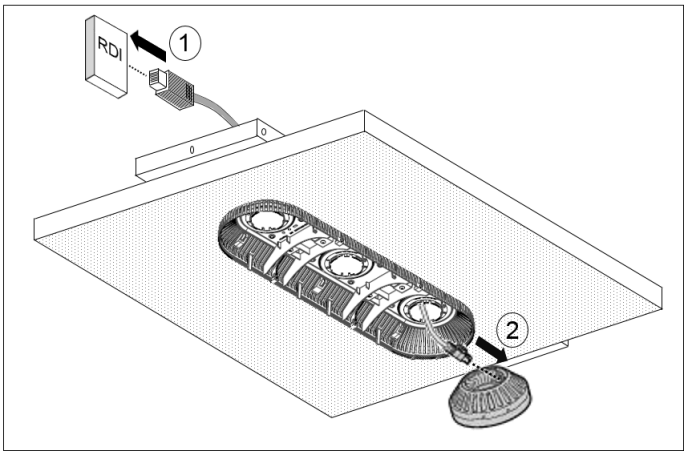


9. Using the iQR scanning application together with your mobile telephone, scan the iQR code inside the RD. This will render an RD unique identity for an inventory record.

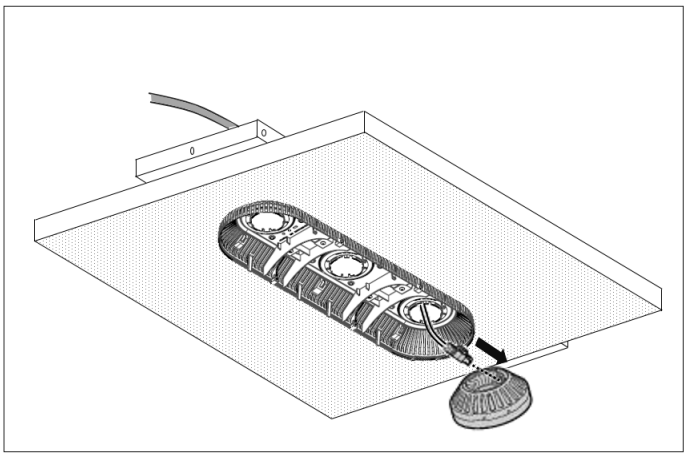


10. Connect cables:

    a. With connection box: Connect the RDI jumper cable to the connection box. Then connect the RDI jumper cable to the RD.



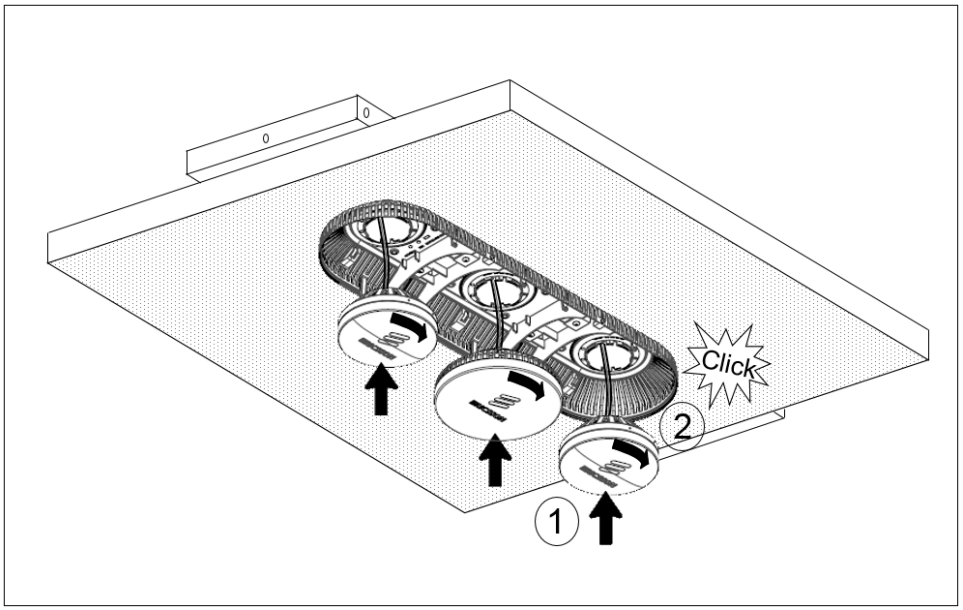
    b. Without connection box: Connect the RDI feeder cable to the RD.



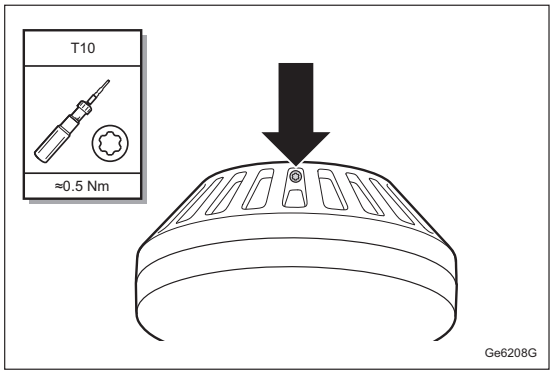
Refer to RDI Cabling Guidelines, 15/1553-FGB 101 0308/1, for more information on RDI installation.

Note: Avoid sharp bends when installing the cable.

11. Insert the RD in the socket and turn it slightly clockwise until a "click" is heard.

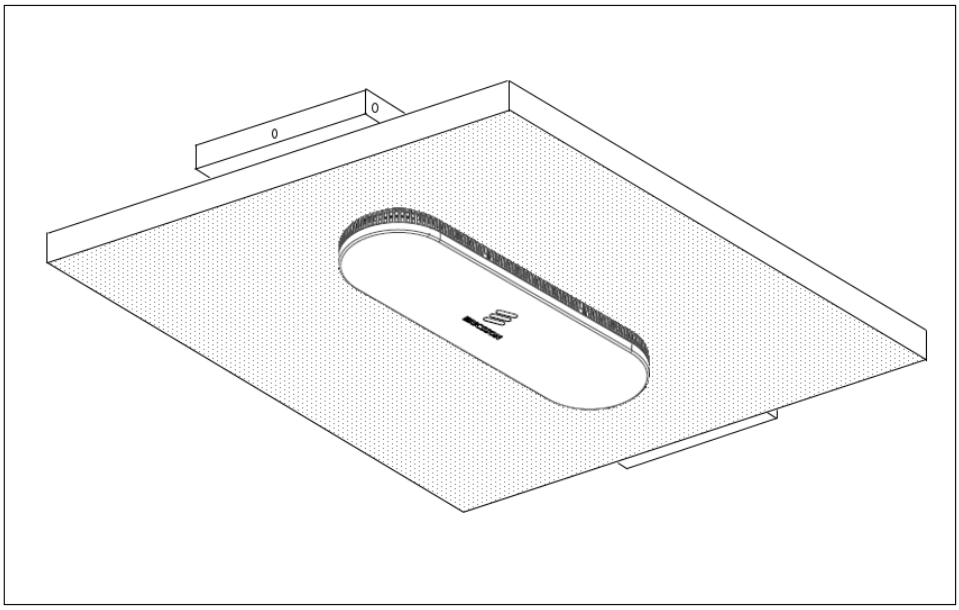


12. Gently tighten the locking screw to prevent the RD from being removed without using tools.



13. Repeat steps 6 to 10 for each additional Radio Dot.

14. Install the RD Enclosure cover.



4.2.3 Installation on Hard Surfaces

The following instruction describes how to install the RD on hard surfaces, such as concrete ceilings, using the bracket shown in Figure 11.

The bracket used for these installations is *SEF 901 313/1*. Note that this bracket is only available in packs of four (4) through the following product numbers:

— NTB 101 608/1 (Grey color)

— NTB 101 608/2 (White color)

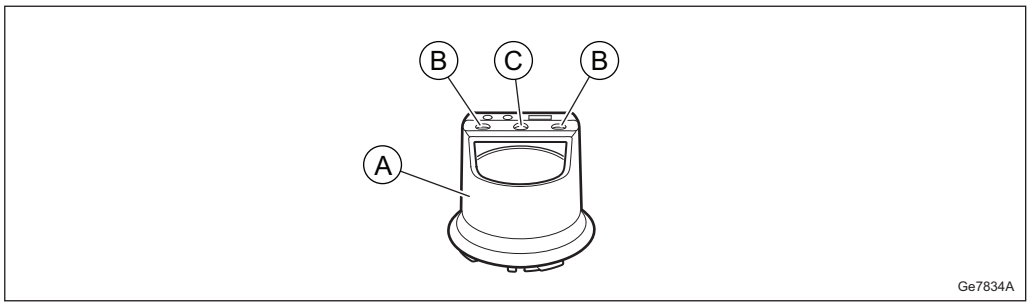


Figure 11 Bracket for Hard Surfaces, Pipes, Rails, and Similar

Table 5 Bracket for Hard Surfaces, Pipes, Rails, and Similar

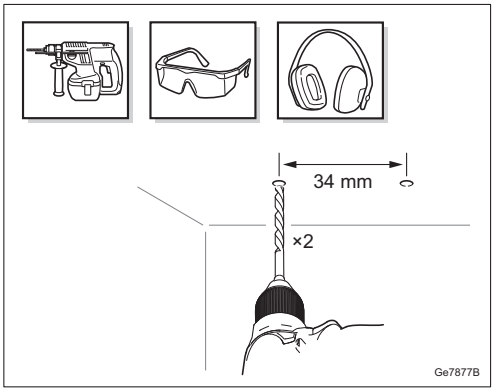
Position	Component
A	Socket

Position	Component
B	Mounting hole
C	Mounting hole(1)

(1) Mounting hole for optional mounting on pipes, rails, ceiling panel t-bars and similar, see Installation on T-bars on page 25.

Steps

To install an RD on hard surfaces:

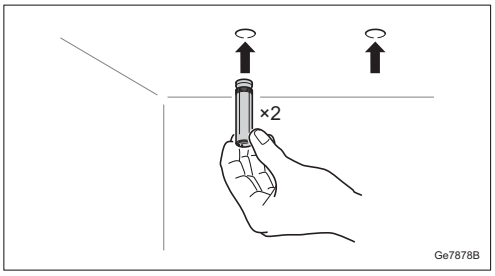
1. 

   Use the site installation plan to locate where the RDs are to be installed.

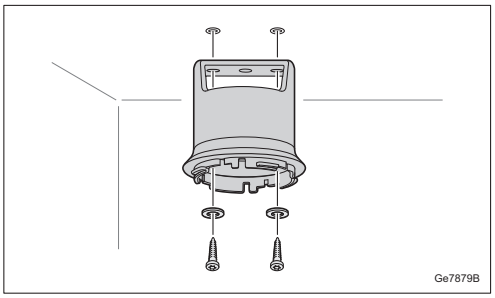
   Drill holes for the two mounting screws.

   The distance between the holes is 34 mm.

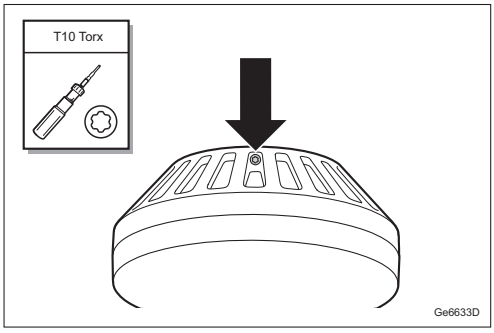
   Bracket clearance holes are 5 mm in diameter.

2. 

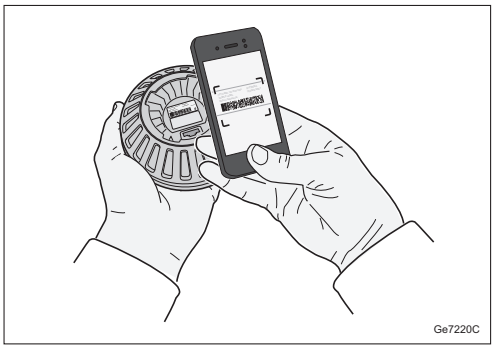
   Insert plugs if required.

3. 

   Insert screws in the two plugs. Fasten the bracket.

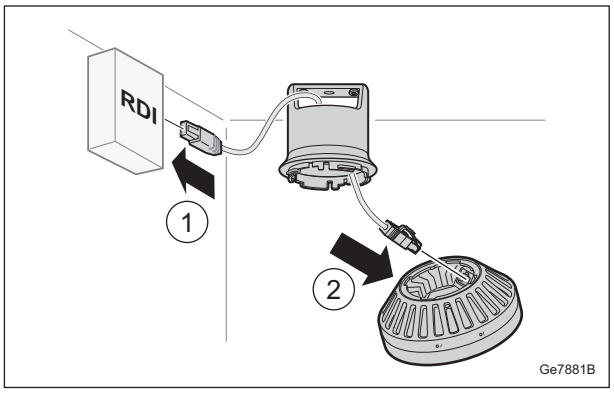
4. 

Unscrew the RD locking screw from its captive position.

5. 

Using the iQR scanning application together with your mobile telephone, scan the iQR code inside the RD. This renders the RD a unique identity in the inventory record.

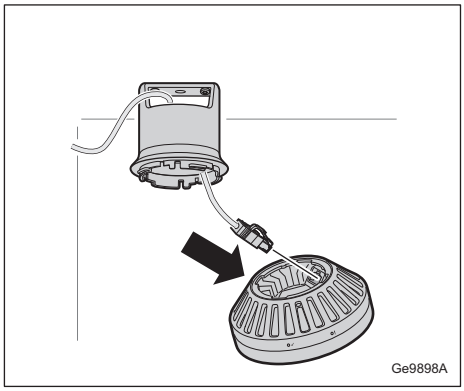
6. Connect cables:

a. 

With connection box

Connect the RDI jumper cable to the connection box.

Then connect the RDI jumper cable to the RD.

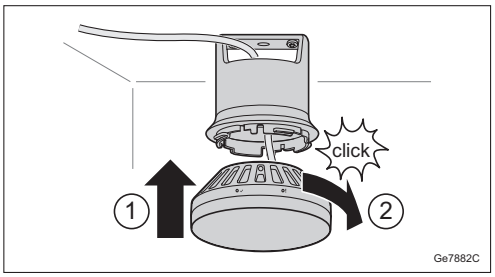
b. 

Without connection box

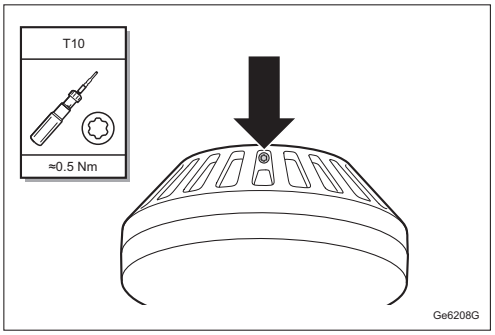
Connect the RDI feeder cable to the RD.

Refer to RDI Cabling Guidelines for more information on RDI installation.

Note: Avoid sharp bends when installing the cable.

7. 

Insert the RD in the socket and turn it slightly clockwise until a "click" is heard.

8. 

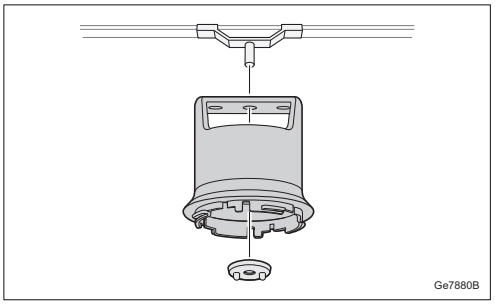
Gently tighten the locking screw to prevent the RD from being removed without using tools.

4.2.4 Installation on T-bars

Note: The Clip used to fasten the bracket to a T-Bar of a drop ceiling must be procured from a local drop ceiling supplier.

Steps

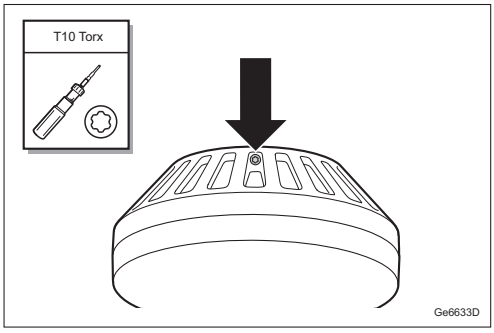
To install an RD on t-bars using a twist clip:

1. 

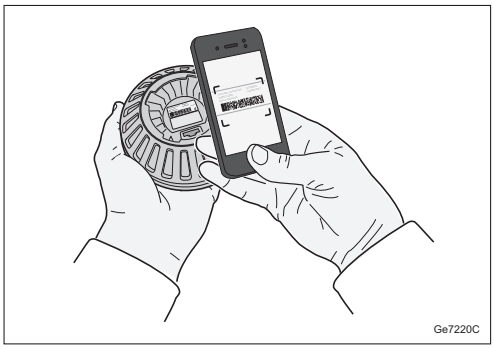
Use the site installation plan to locate where the RDs are to be installed.

Use the bracket center hole to fasten the bracket onto a ceiling panel t-bar using a twist clip.

The bracket center hole is 6.5 mm in diameter.

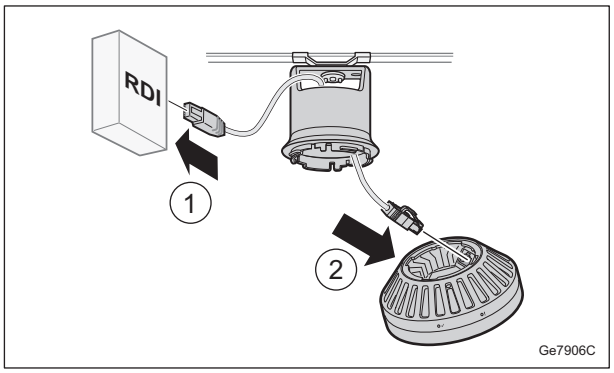
2. 

Unscrew the RD locking screw from its captive position.

3. 

Using the iQR scanning application together with your mobile telephone, scan the iQR code inside the RD. This renders the RD a unique identity in the inventory record.

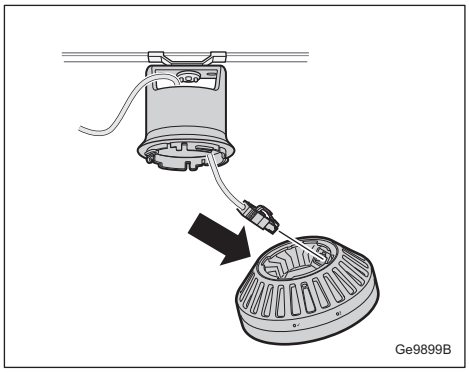
4. Connect cables:

a. 

With connection box

Connect the RDI jumper cable to the connection box.

Then connect the RDI jumper cable to the RD.

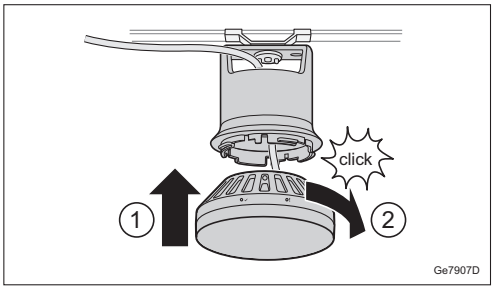
b. 

Without connection box

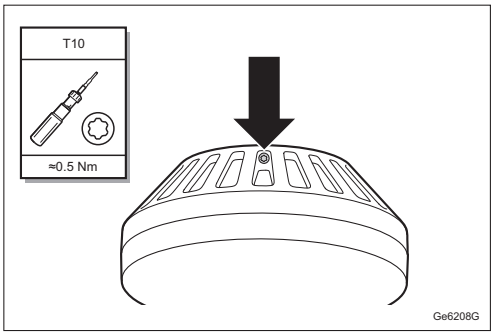
Connect the RDI feeder cable to the RD.

Refer to RDI Cabling Guidelines for more information on RDI installation.

Note: Avoid sharp bends when installing the cable.

5. 

Insert the RD in the socket and turn it slightly clockwise until a "click" is heard.

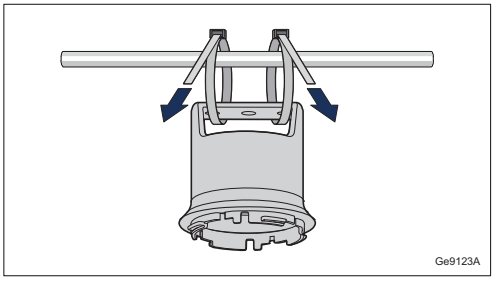
6. 

Gently tighten the locking screw to prevent the RD from being removed without using tools.

4.2.5 Installation on Pipes and Rails

Steps

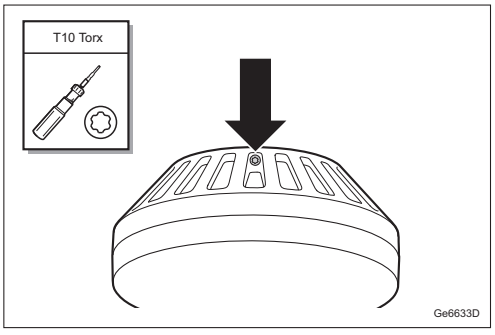
To install an RD on pipes and rails using hose clamps:

1. 

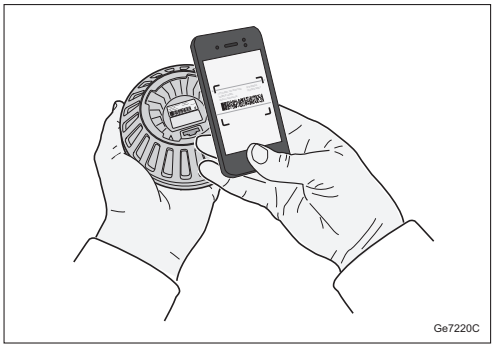
Use the site installation plan to locate where the RDs are to be installed.

Wrap and tighten the hose clamps around the bracket and the pipe.

Always attach the bracket in a level position.

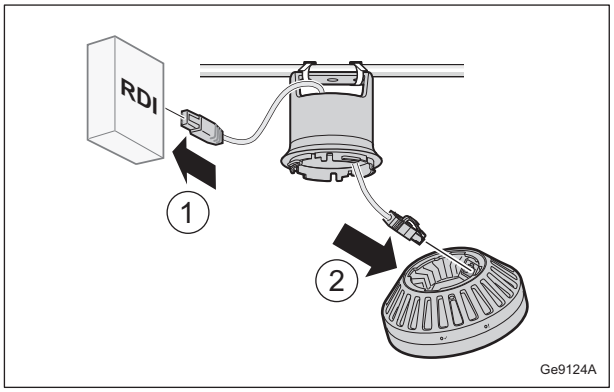
2. 

Unscrew the RD locking screw from its captive position.

3. 

Using the iQR scanning application together with your mobile telephone, scan the iQR code inside the RD. This renders the RD a unique identity in the inventory record.

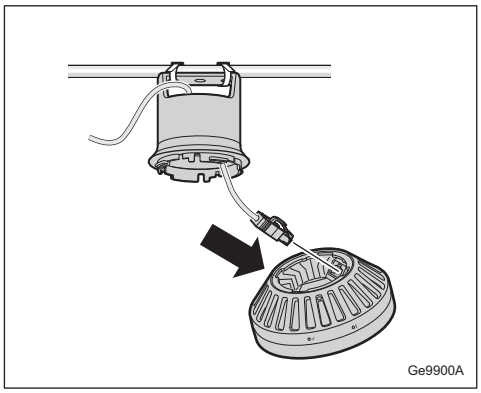
4. Connect cables:

a. 

With connection box

Connect the RDI jumper cable to the connection box.

Then connect the RDI jumper cable to the RD.

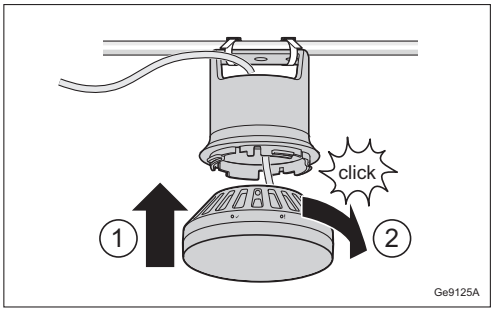
b. 

Without connection box

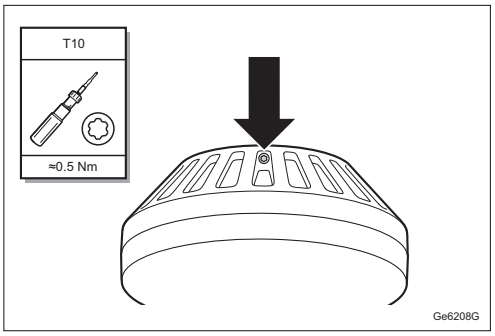
Connect the RDI feeder cable to the RD.

Refer to RDI Cabling Guidelines for more information on RDI installation.

Note: Avoid sharp bends when installing the cable.

5. 

Insert the RD in the socket and turn it slightly clockwise until a "click" is heard.

6. 

Gently tighten the locking screw to prevent the RD from being removed without using tools.

4.2.6 Installation on Wall Surface

This section describes how to install the RD on a wall surface using the brackets shown in Figure 12, white wall bracket (SEF 901 335/1) ordered in packs of 4 as NTB 101 0031/1.

For more information about the brackets, refer to Radio Dot Description.

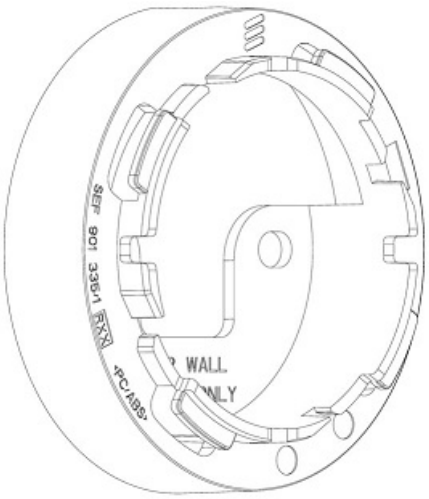


Figure 12 Wall Mounting Bracket SEF 901 335/1

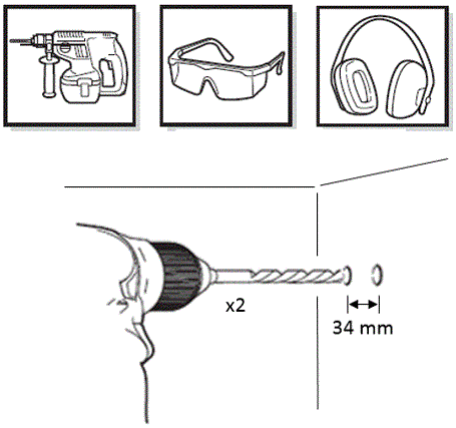
Steps

1. Use the site installation plan to locate where the RD is to be installed.
2. Using protective gear, drill holes for the two mounting screws.

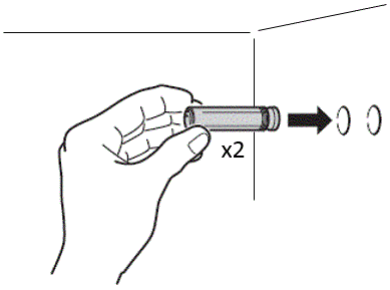
   The top of the bracket must be at least 20 cm from the ceiling. Drill the holes at a minimum of 23.3 cm from the ceiling.

   The distance between the holes is 34 mm.

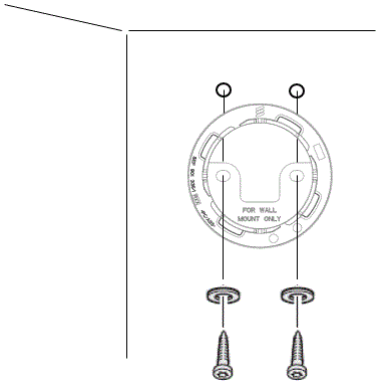
   Bracket clearance holes are 5 mm in diameter.



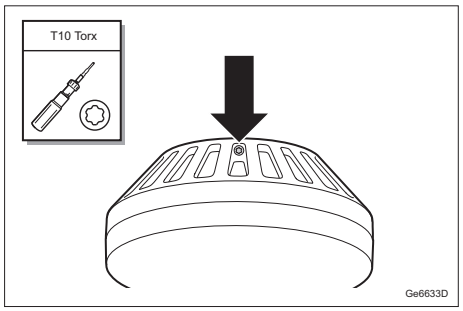
3. Insert plugs if required.



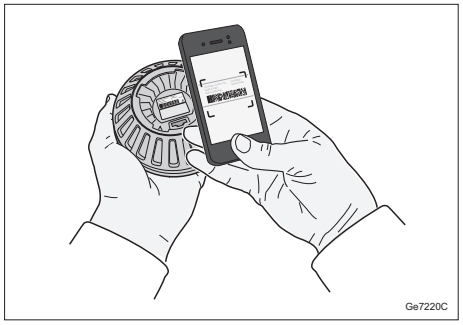
4. Insert screws in the two plugs. Fasten the bracket.



5. Unscrew the RD locking screw to its captive position.

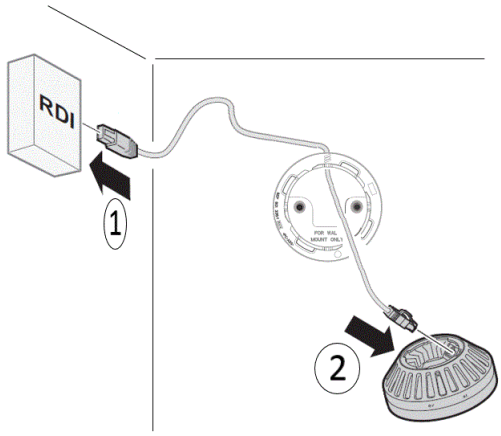


6. Using the iQR scanning application together with your mobile telephone, scan the iQR code inside the RD. This will render the RD a unique identity in the inventory record.

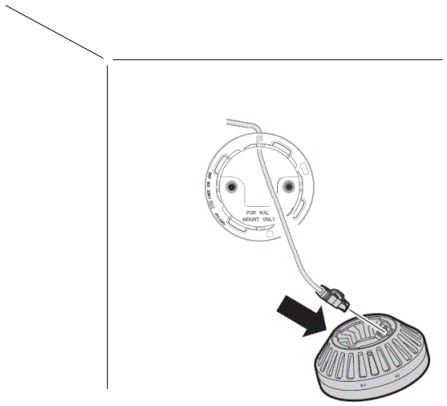


7. Connect cables:

    a. For a cable with a connection box, connect the RDI jumper cable to the connection box, then connect the RDI jumper cable to the RD.



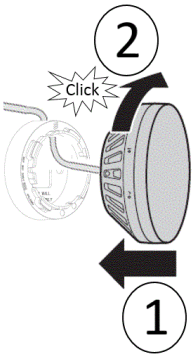
b. For a cable without connection box, connect the RDI feeder cable to the RD.



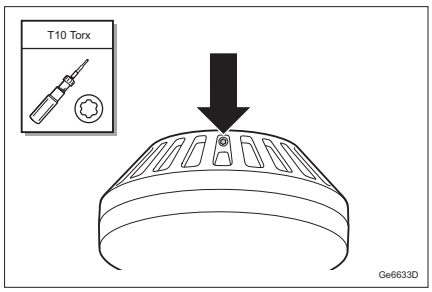
Refer to RDI Cabling Guidelines, 15/1553-FGB 101 0308/1, for more information on RDI installation.

Note: Avoid sharp bends when installing the cable.

8. Insert the RD in the socket and turn it slightly clockwise until a "click" is heard.



9. Gently tighten the locking screw to prevent the RD from being removed without using tools.



5 References

- Personal Health and Safety Information, 124 46-2885
- System Safety Information, 124 46-2886
- RDI Cabling Guidelines, 15/1553-FGB 101 0308/1
- Handling Faulty Equipment, 2/1541-LZA 701 6001/1
- Radio Dot Description, 7/1551-FGB 101 0308/1