

On the Right Track

Installation Guide



on the right track
systems, inc

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General Introduction

Introduction

On The Right Track's worldwide patented cubicle curtain system includes a state-of-the-art track system that will give you years of ageless beauty and carefree enjoyment.

The following illustrated instructions have been provided to help you understand and take advantage of various scenarios and their appropriate installation techniques.

Following these instructions along with good building practices will deliver the highest quality installation. Failure to follow these instructions also risks voiding the OTRT warranty.

Local Building Codes

Please follow all building codes and good construction practices when installing the curtain track. In addition to local codes, be sure to follow the instructions in this guide. Failure to do so may void your OTRT warranty.

Tools required

Torx T15 & T30 Bits
Rubber mallet
Phillips screwdriver
Chop Saw with a non-ferrous aluminum blade or Hand Saw File
Laser Level
Measuring Tape
TE-CX 1/4" x 6" Hammer drill bit (for concrete anchors only)
HILTI 7/16" Drive Socket (for concrete anchors only)

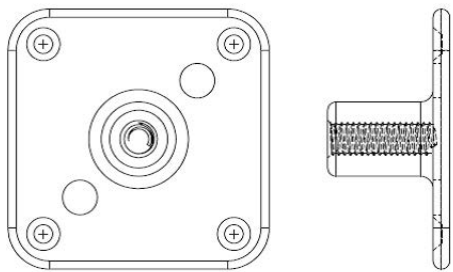
Additional Assistance

For additional assistance, be sure to view our installation videos at:
www.ontherighttrack.com/installers-resources

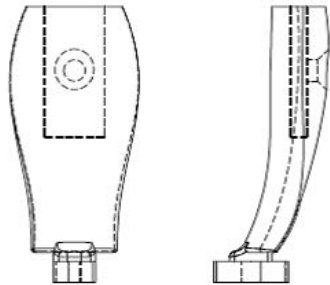
Patent No.: <http://ontherighttrack.com/patents>

Parts Glossary

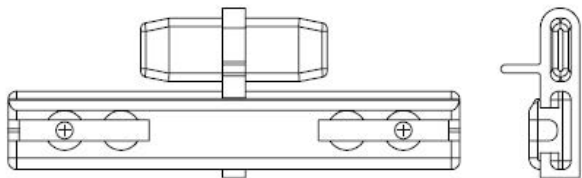
Components



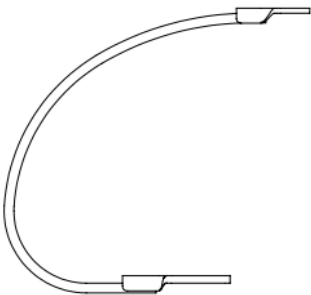
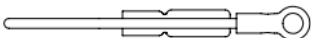
Part # OPTS-B03
Hard Ceiling Mounting Plate



Part # OPTS-E03 Hanger & Track Connector



Part # OPTS-F03 Track Connector



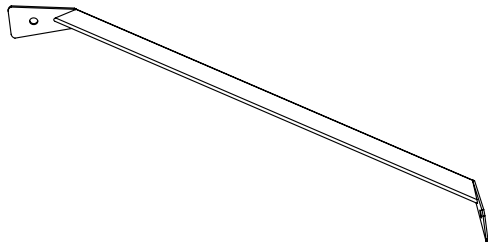
Part # OPTS-G03 Hanger



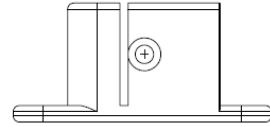
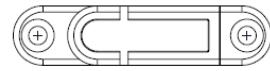
Part # OPTS-J03
Extensible Tube



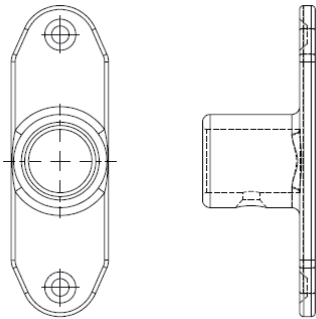
Part # OPTS-LZ Loading Zone



Part# OPTS-J03-SB
Support Bracket for Drops



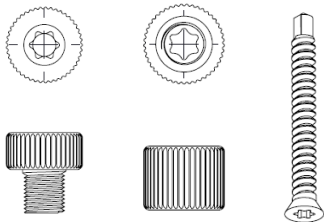
Part # OPTS-M03 End Cap



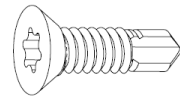
Part # OPTS-P03
Ceiling Vertical Mount Plate



Part # OPTS-Q03
Room Divider Wall Mount



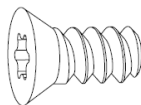
Part # OPTS-S03
Drop Ceiling Grid Mount



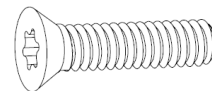
Part # OPTS-S302 5/32" x
13mm self tap screw



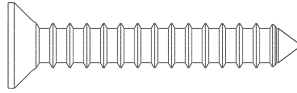
Part #OPTS-S03-2
Fastener



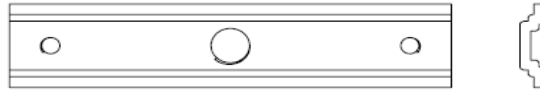
Part # OPTS-S102
5/32" x 8.2mm screw



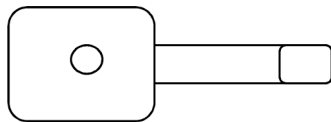
Part # OPTS-S602
5/32" x 16mm screw



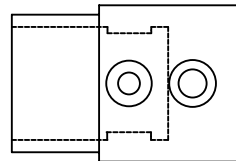
Part # OPTS-S902-1
(5/32 x 1" screw)



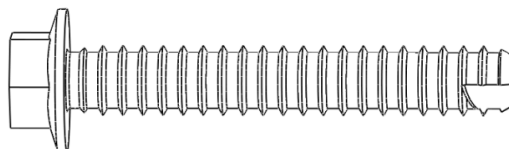
Part # OPTS-T03
Track Adapter



Part # OPTS-UO2
Curtain Stopper



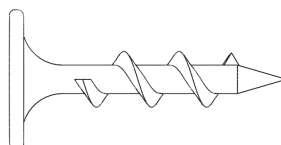
Part# OPTS-W03
Ceiling Blocking



Part# **OPTS-AN-C**
1/4" x 2 5/8" Anchor for Concrete and Masonry



Part# **OPTS-S602-CA**
1/6 x 1-1/2 Self Tapping Screw for CA



Part# **OPTS-S802-W**
1/4 x 1 1/2" Anchor

STRAIGHT TRACK



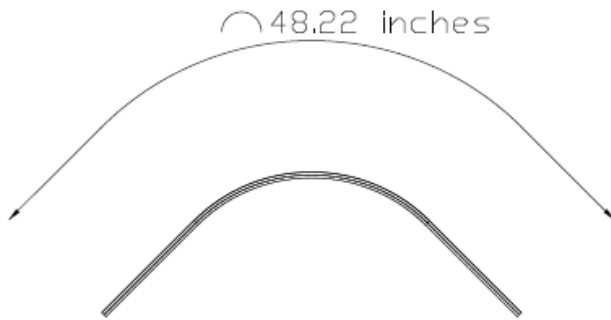
Part # OPTS-H803
180° 8 Ft Track

Part # OPTS-H503
180° 5 Ft Track

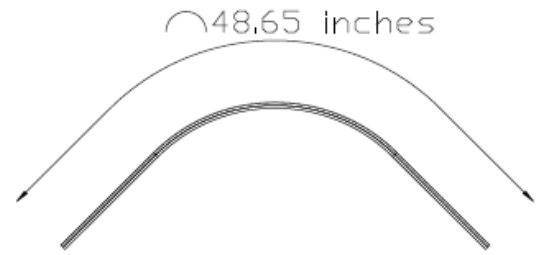
Part # OPTS-H403
180° 4 Ft Track

Part # OPTS-H303
180° 3 Ft Track

Bends



Part# OPTS- K103
90° 1 Ft Radius Track



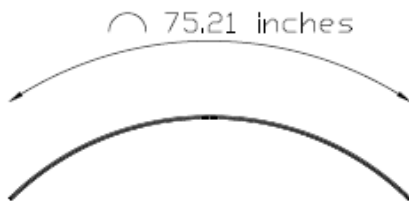
Part# OPTS- K1R03
90° Reversed 1 Ft Radius Track



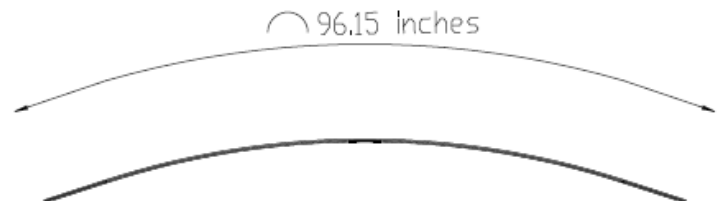
Part# OPTS- K203
90° 2 Ft Radius Track



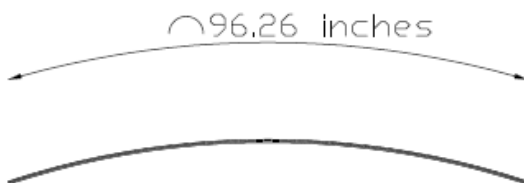
Part# OPTS- K2R03
90° Reversed 2 Ft Radius Track



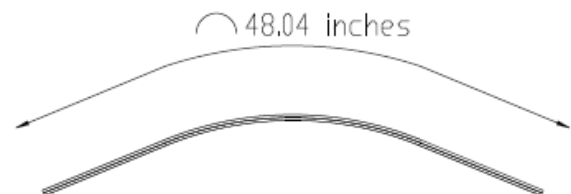
Part# OPTS- K403
90° 4 Ft Radius Track



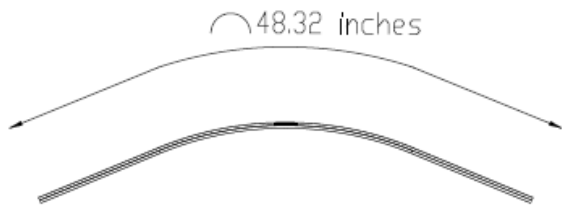
Part# OPTS- K403-10
4 Ft Radius Track (80% of semi-circle)



Part# OPTS- K5R03
90° Reversed 5 Ft Radius Track



Part# OPTS- L103
135° 1 Ft Radius Track



Part# OPTS- L1R03
135° Reversed 1 Ft Radius Track



Part# OPTS- L203
135° 2 Ft Radius Track



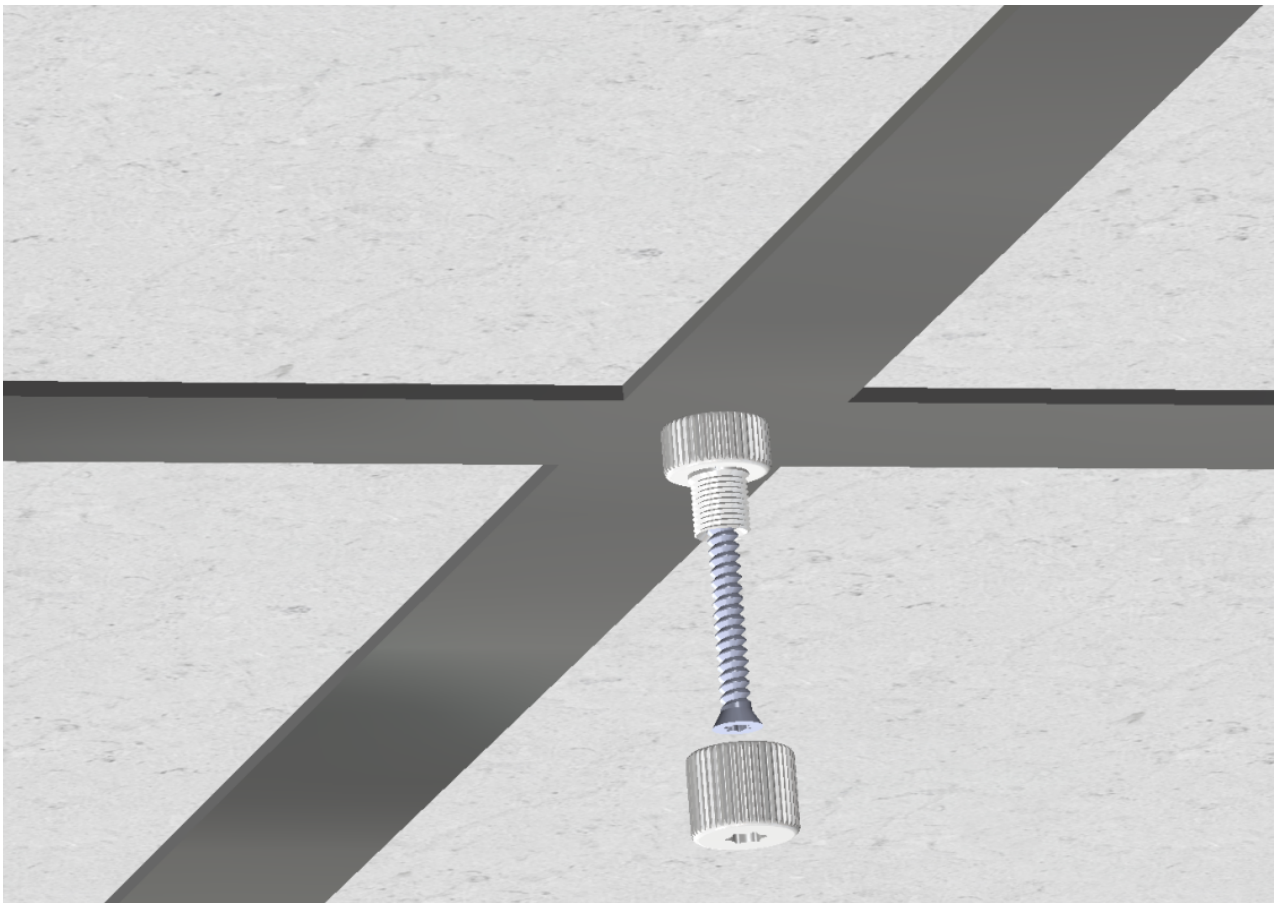
Part# OPTS- L2R03
135° Reversed 2 Ft Track

INSTALLING INTO ACT 15/16TH EXPOSED GRID

Directions:

1. The Drop Ceiling Grid Mount is a three piece mount. Assemble prior to attaching to drop ceiling grid work.
2. Secure a Drop Ceiling Mount piece (part# **OPTS-S03**) to the ACT grid using the included screw.
3. If using drops, use 2 pieces of **OPTS-S902-1** screws into a Ceiling Vertical Hanger Mount Plate (part# **OPTS-P03**)

If the drop is greater than 12", also attach a Support Bracket (part# **OPTS-J03-SB**) from the drop (part# **OPTS-J03**) to the ceiling.



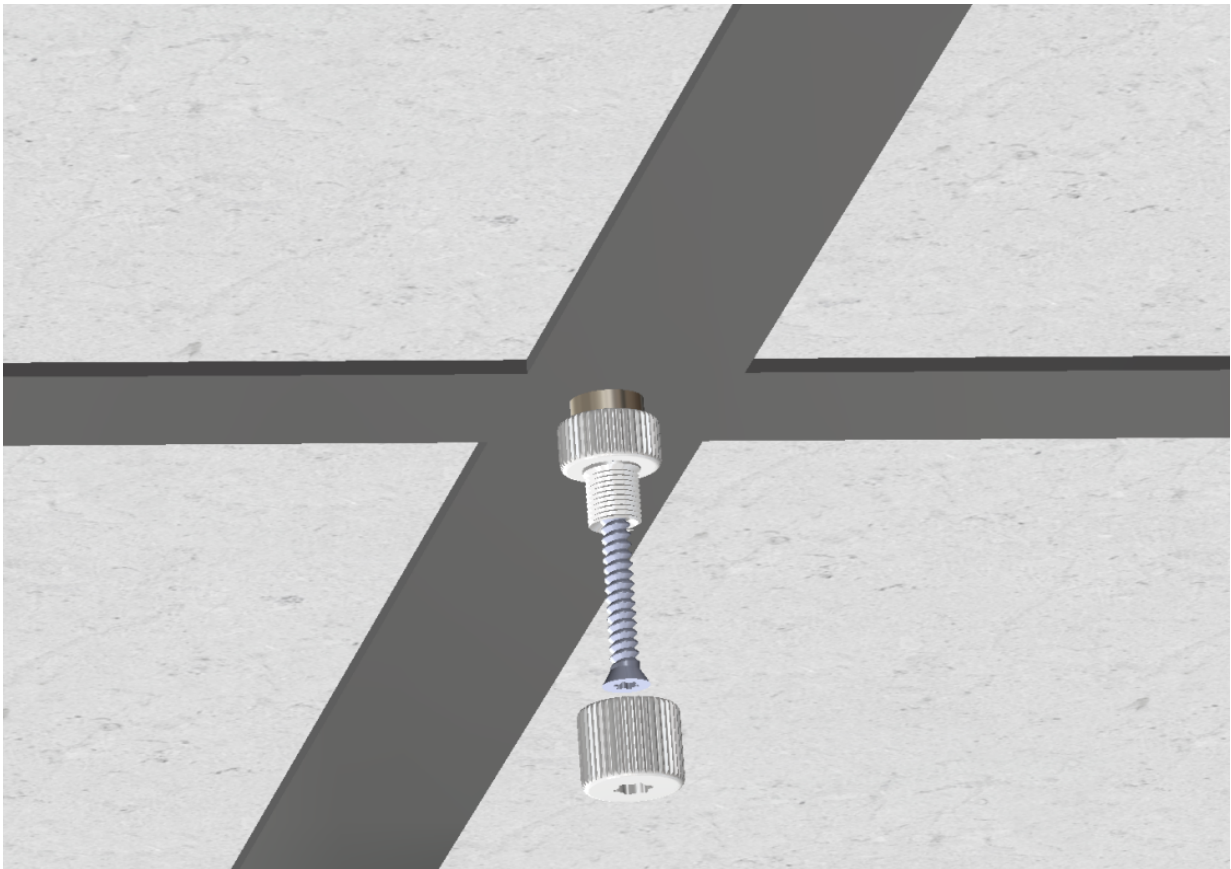
Notes:

- The ceiling mount should be 6" away from the wall and then installed every 24".
- If this installation is in California and you are using drops, the maximum drop distance allowed is 24".
- **ONCE COMPLETE, PLEASE GO TO PAGE 14.**

INSTALLING INTO ACT 9/16" EXPOSED GRID WITH RECESSED TILES

Directions:

1. The Drop Ceiling Grid Mount is a three piece mount. Assemble prior to attaching to drop ceiling grid work.
2. Secure a Drop Ceiling Mount piece (part# **OPTS-S03**) to the ACT grid using the included screw and placing 1 spacer (part# **OPTS-SP02**) under neath each .
3. If using drops, use 2 pieces of **OPTS-S902-1** screws into a Ceiling Vertical Hanger Mount Plate (part# **OPTS-P03**)
 - If the drop is greater than 12", also attach a Support Bracket (part# **OPTS-J03-SB**) from the drop (part# **OPTS-J03**) to the ceiling.



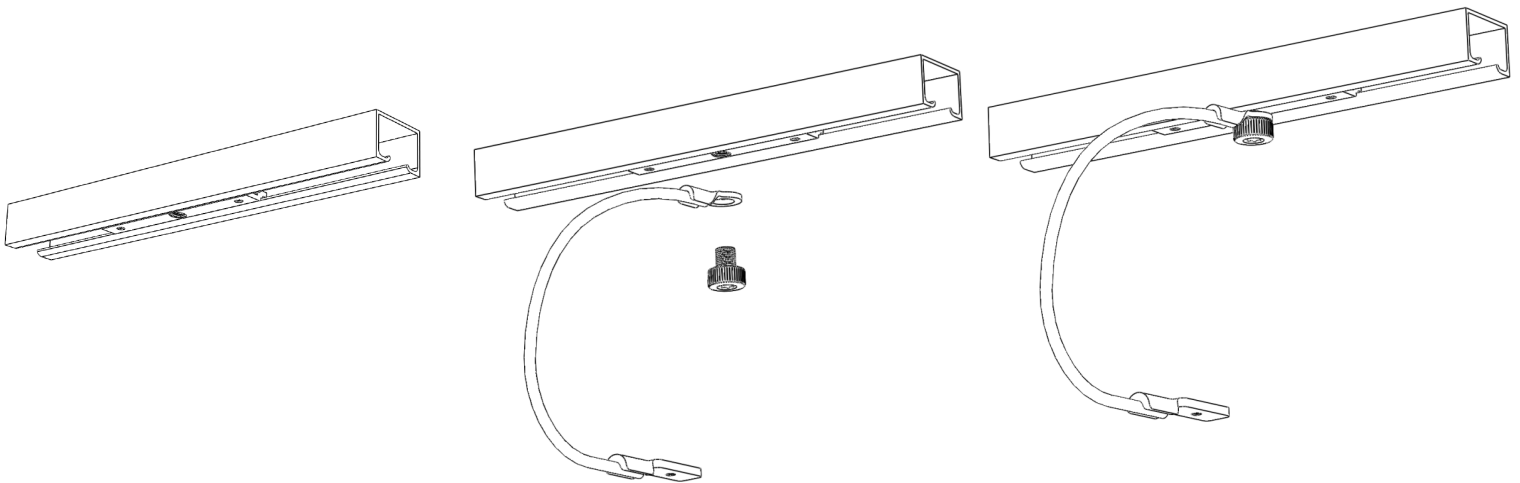
Notes:

- Using spacers will allow the Drop Ceiling Grid Mount to be installed without interfering with the recessed tiles.
- The ceiling mount should be 6" away from the wall and then installed every 24".
- If this installation is in California and you are using drops , the maximum drop distance allowed is 24".
- **ONCE COMPLETE, PLEASE GO TO PAGE 14.**

INSTALLING INTO TRADITIONAL CUBICLE CURTAIN TRACK (With 1/2" opening at bottom)

Directions:

1. Insert the Track Adapter (part# **OPTS-T03**) into pre-installed traditional track.
2. Secure a Fastener (part# **OPTS-S03-2**) to the Track Adapter through a Hanger (part# **OPTS-G03**) using the middle hole.
3. if using drops, use 2 pieces of **OPTS-S602** screws into a Ceiling Vertical Hanger Mount Plate (part# **OPTS-P03**) and Track Adapter (part# **OPTS-T03**).



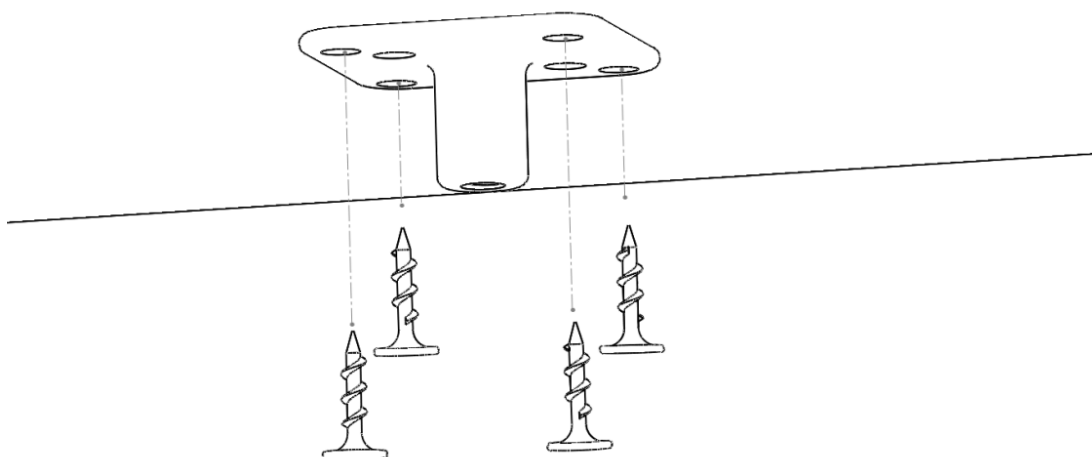
Notes:

- The ceiling mount should be 6" away from the wall and the installed every 24".
- If this installation is in California, you will need to also install an **OPTS-S602-CA** screw through one of the open holes on the Track Adapter (part# **OPTS-T03**) and all the way through both the traditional track and ceiling above it.
- If this installation is in California and you are also using drops, the maximum drop distance allowed is 24".
- **ONCE COMPLETE, PLEASE GO TO PAGE 14.**

INSTALLING INTO GYPSUM BOARD CEILINGS

Directions:

1. Please check local city and state regulations regarding the installation into gypsum board ceilings before proceeding.
2. Attach a Hard Ceiling Mount Plate (part# **OPTS-B03**) to the ceiling using 4 pieces of **OPTS-S802-W** anchors.
3. If using drops, use 3 pieces of **OPTS-S802-W** anchors into a Ceiling Vertical Hanger Mount Plate (part# **OPTS-P03**)
 - If the drop is greater than 12", also attach a Support Bracket (part# **OPTS-J03-SB**) from the drop (part# **OPTS J03**) to the ceiling.



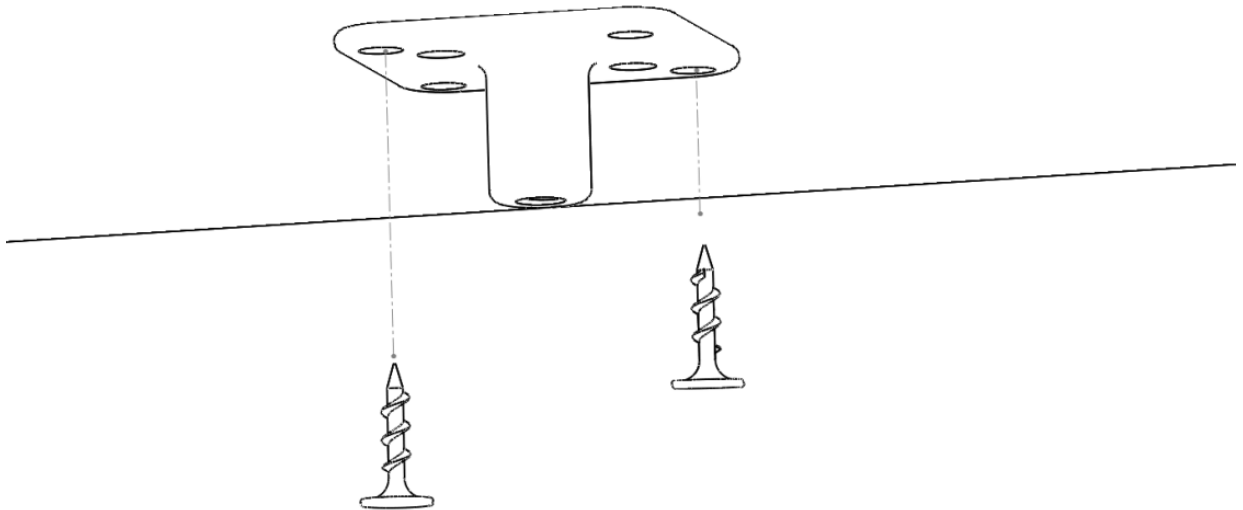
Notes:

- The anchors should be installed using a very low torque setting on your drill or with an ordinary Phillips screwdriver. DO NOT OVER-TORQUE SCREWS.
- A laser level is very useful when laying out locations for the hard ceiling mount plates.
- The ceiling mount should be 6" away from the wall and then installed every 24".
- If this installation is in California and you are using drops, the maximum drop distance allowed is 24".
- **ONCE COMPLETE PLEASE GO TO PAGE 14.**

INSTALLING INTO PLYWOOD CEILINGS

Directions:

1. Attach a Hard Ceiling Mounting Plate (part# **OPTS-B03**) to the ceiling using 2 pieces of **OPTS-S802-W** anchors.
2. If using drops, use 3 pieces of **OPTS-S802-W** anchors into a Ceiling Vertical Hanger Mount Plate (part# **OPTS-P03**).
 - If the drop is greater than 12", also attach a Support Bracket (part# **OPTS-J03-SB**) from the drop (part# **OPTS-J03**) to the ceiling.



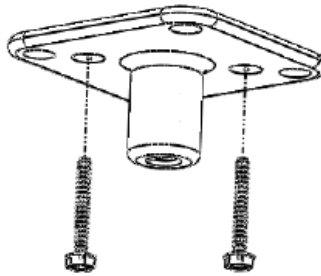
Notes:

- The anchors should be installed using a very low torque setting on your drill or with an ordinary Phillips screwdriver. **DO NOT OVER-TORQUE SCREWS.**
- A laser level is very useful when laying out locations for the hard ceiling mount plates.
- The ceiling mount should be 6" away from the wall and then installed every 24".
- If this installation is based in California, the maximum drop distance allowed when installed into plywood substrate is 20".
- **ONCE COMPLETE, PLEASE GO TO PAGE 14.**

INSTALLING INTO CONCRETE/MASONRY CEILINGS

Directions:

1. Attach a Hard Ceiling Mounting Place (part# **OPTS-B03**) to the ceiling using 2 pieces of **OPTS-AN-C** anchors.
 - a. In order to stay within code, please refer to the Appendix on page 25 for detailed anchor installation instructions and building code information.
2. If using drops, use 1 piece of **OPTS-AN-C** anchor into a Ceiling Vertical Hanger Mount Plate (part# **OPTS-P03**)
 - If the drop is greater than 12", also attach a Support Bracket (part# **OPTS-J03-SB**) from the drop (part# **OPTS-J03**) to the ceiling.



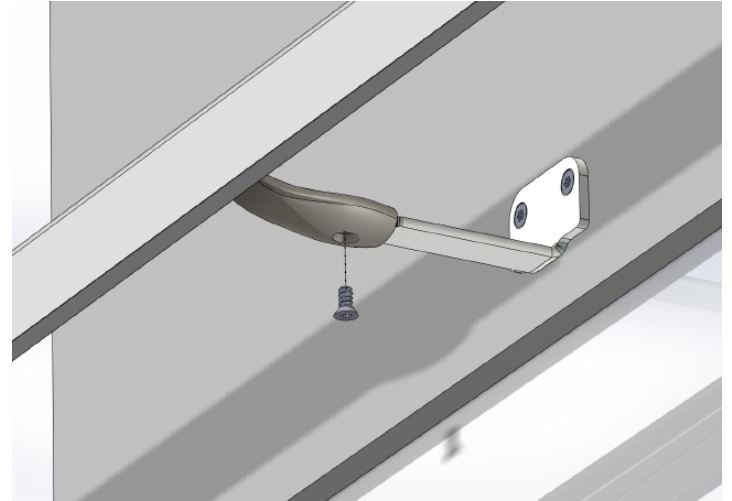
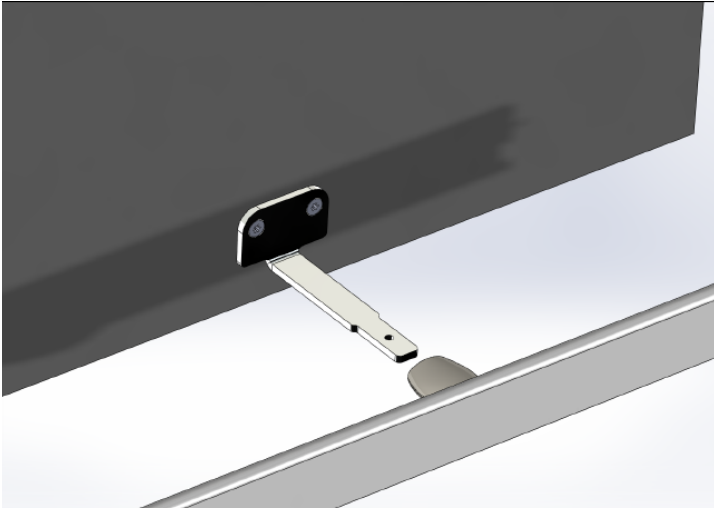
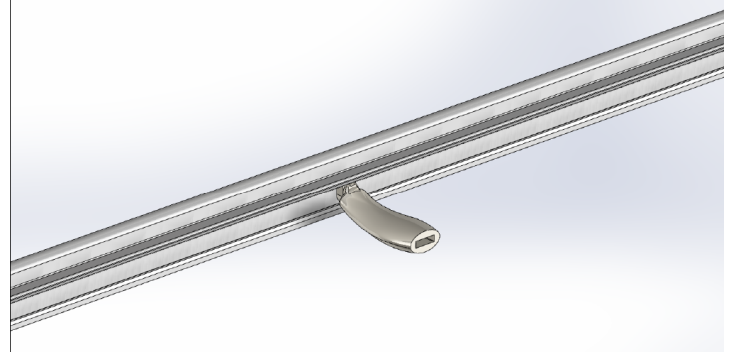
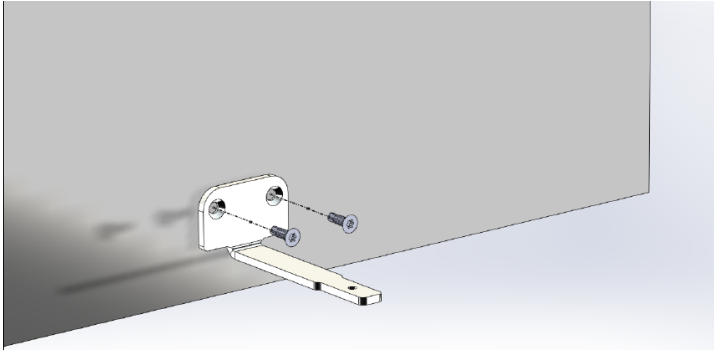
Notes:

- A laser level is very useful when laying out locations for the hard ceiling mount plates.
- The ceiling mount should be 6" away from the wall and then installed every 24".
- In order to stay within code, please refer to the Appendix on page 23 for detailed anchor installation instructions and building code information.
- If this installation is in California and you are using drops, the maximum drop distance allowed is 24".
- **ONCE COMPLETE, PLEASE GO TO PAGE 14.**

INSTALLING INTO A WALL/SOFFIT

Directions:

1. Attach a Wall Mounting Plate (part# **OPTS-Q03**) to the wall using 2 pieces of **OPTS-S802-W** anchors.
2. After the Track and Hanger Connector (part# **OPTS-E03**) has been inserted into the back of the track, slide it on to the Wall Mounting Plate and secure it with an **OPTS-S102** screw.



Notes:

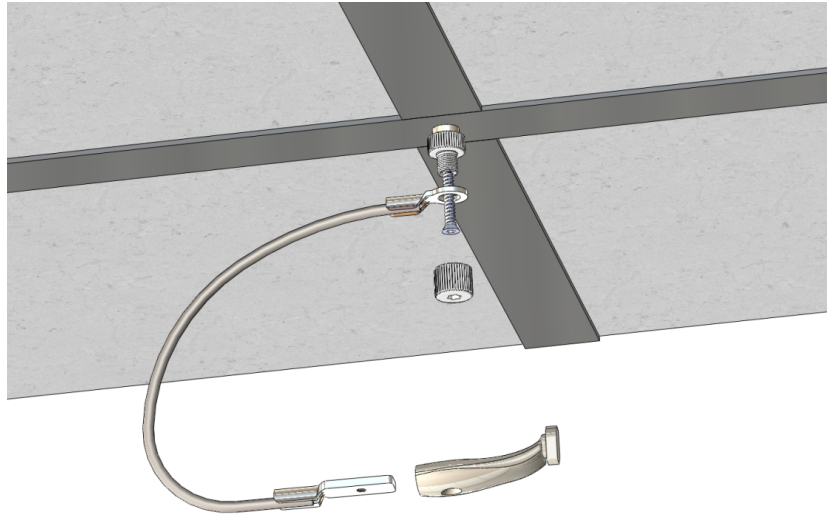
- The anchors should be installed using a very low torque setting on your drill or with an ordinary Phillips screwdriver. **DO NOT OVER-TORQUE SCREWS.**
- A laser level is very useful when laying out locations for the wall mount plates.
- The wall mount should be installed every 24".

PARTS ASSEMBLY

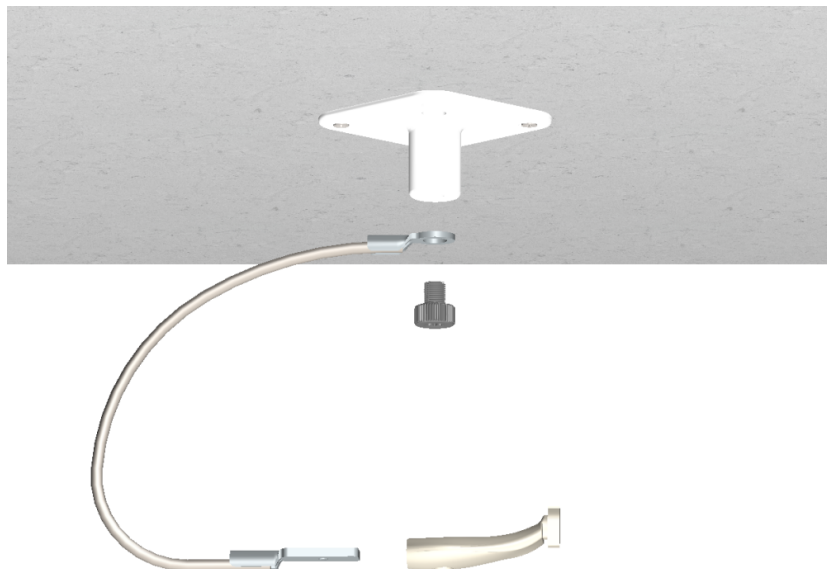
Directions:

1. Attach the Hanger (part# **OPTS-G03**) to the appropriate ceiling mount piece (dependent on ceiling type) and secure.

ACT Grid Mount :



Hard Ceiling Mount :



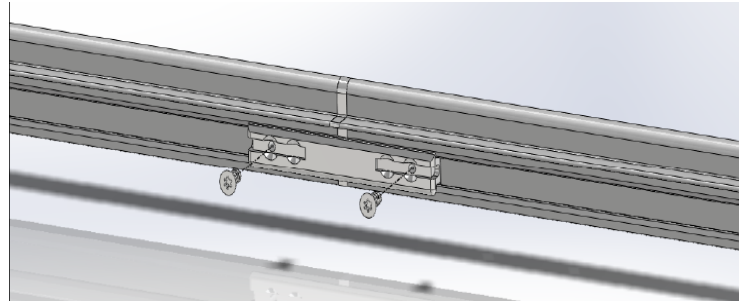
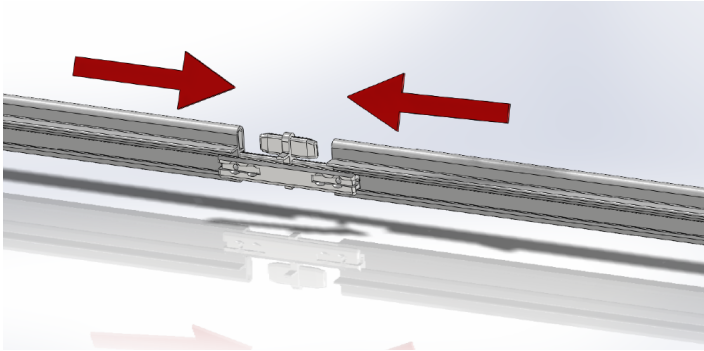
Notes:

- Once all the Hangers have been installed, go back and insert the other ends into the Hanger & Track Connectors (part# **OPTS-E03**) installed on page 16. This is secured using an **OPTS-S102** screw.
- The first hanger assembly (**OPTS-G03**) should be 6" away from the wall and then installed every 24".

CONNECTING THE TRACK CONNECTOR

Directions:

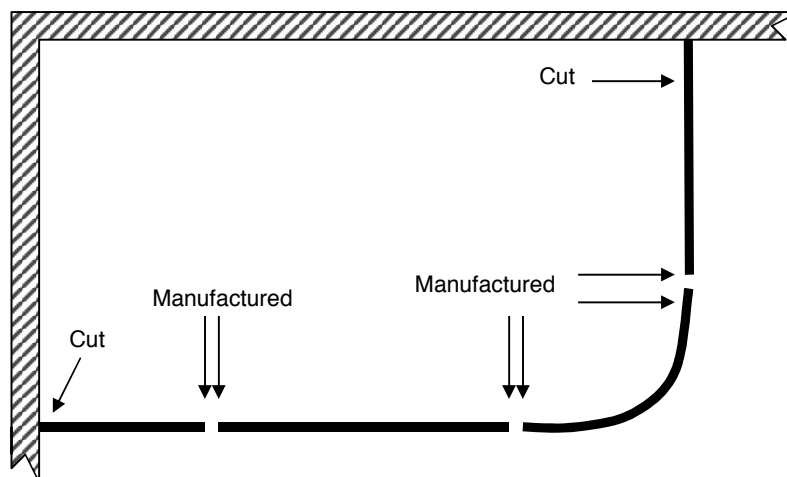
1. Join together two pieces of track by sliding the Track Connector (part# **OPTS- F03**) into each adjoining end of track.
2. Make sure the piece is all the way in and snug. You may need to use a rubber mallet to achieve this.
3. Once the piece is in place, secure with 2 pieces of **OPTS-S102**.



Note:

- During the installation process, it may become necessary to cut the track in order to get a perfect fit. Be sure to take care in cutting the end of the track that does not join to another track. Manufactured/ finished ends of the track are ideal for joining with the Connector piece. Cut ends may be capped off at the end of the track by using an End Cap (part# OPTS-M03). Also make sure all connections are perfectly straight 180 degrees. Please see the below example for further clarification:

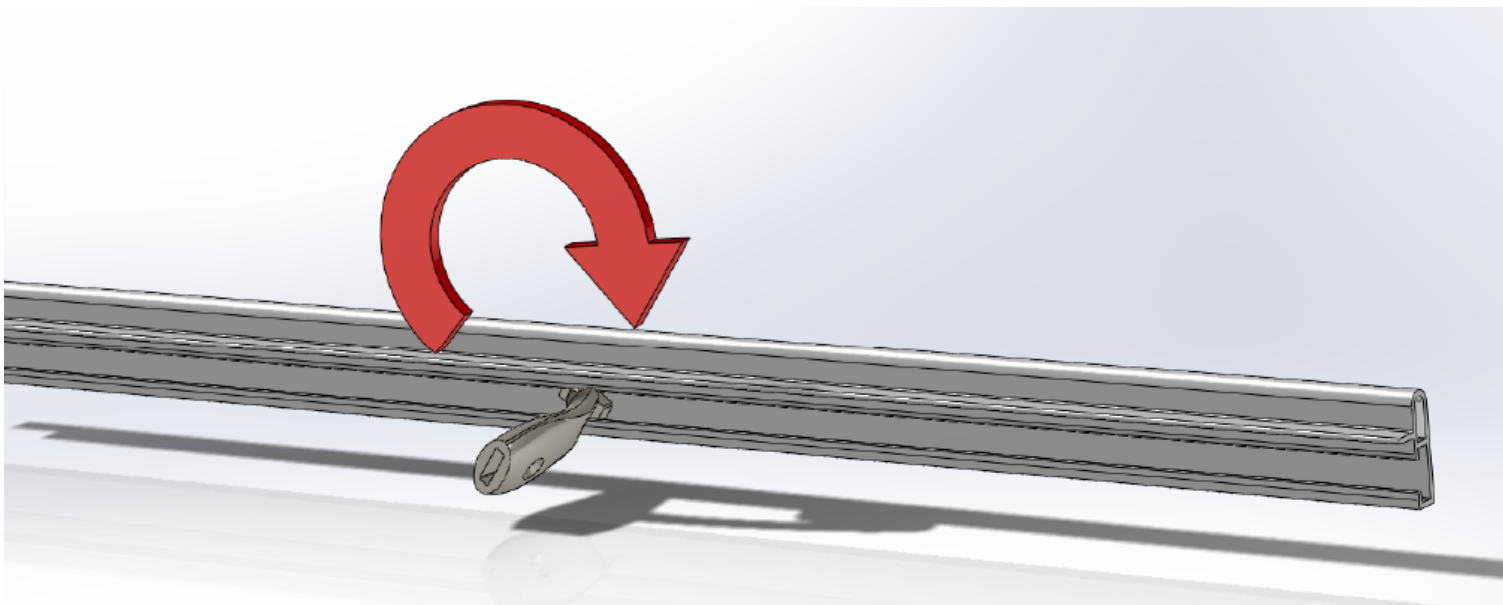
Example:



CONNECTING THE HANGER & TRACK CONNECTOR

Directions:

1. Make sure the track is right side up. This will be evident by noting a smooth rounded top and a lip at the bottom.
2. Place the end of the Hanger & Track Connector (part# **OPTS-E03**) into the groove on the back side of the track and turn clockwise 1/4 turn. This will lock the piece into place.
3. If you need to reposition, simply reverse the process.
4. The other end of this piece connects to the hanger (part# **OPTS-G03**) that should be suspended from the ceiling (done earlier). This is secured using an **OPTS-S102** screw.



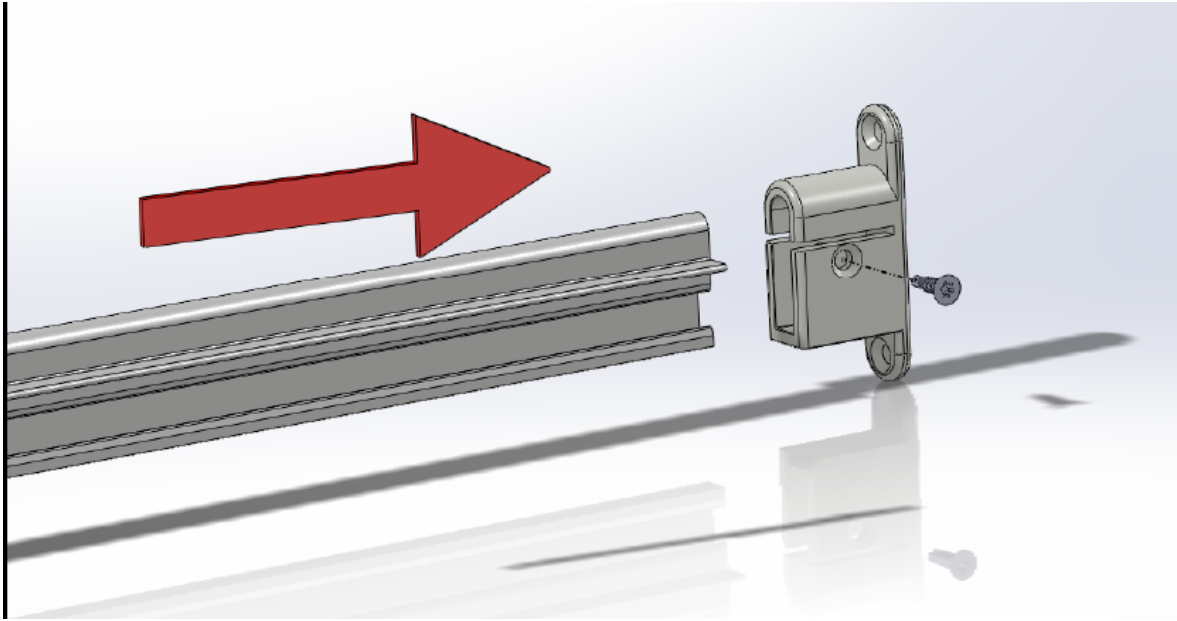
Note:

- The Hanger & Track Connector should only be turned in a clockwise direction.

CONNECTING THE END CAP

Directions:

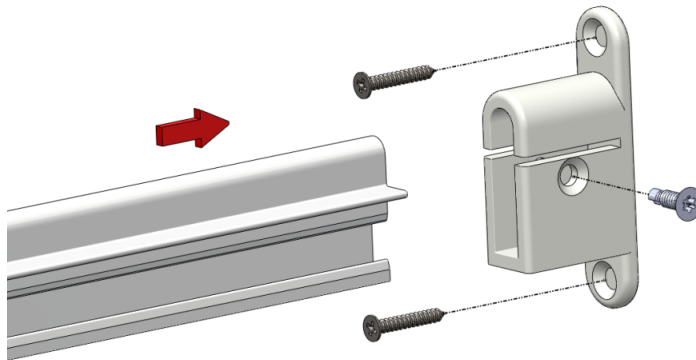
To connect an End Cap (part# **OPTS-M03**), simply slide into place and secure with a self-tapping screw (part# **OPTS-S302**) on the front.



CONNECTING TO THE WALL

Directions:

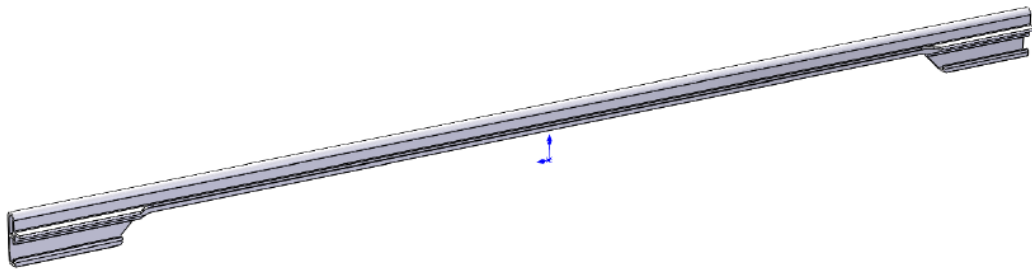
Use 2 pieces of **OPTS-802-W** anchors to secure to the wall.



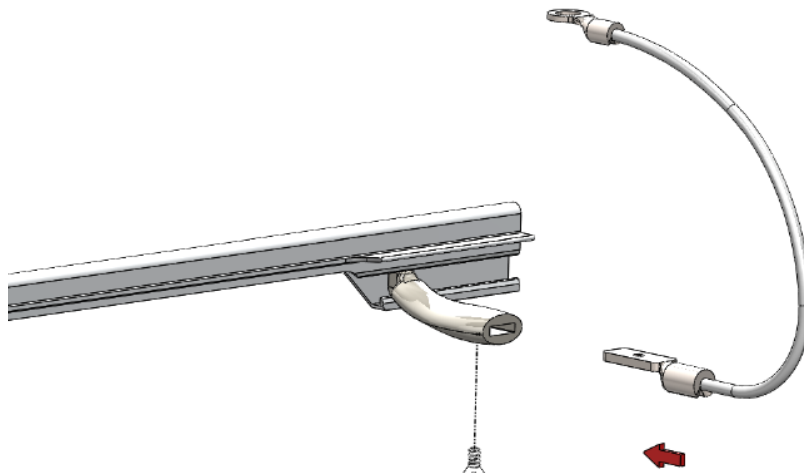
INSTALLING A LOADING ZONE

Directions:

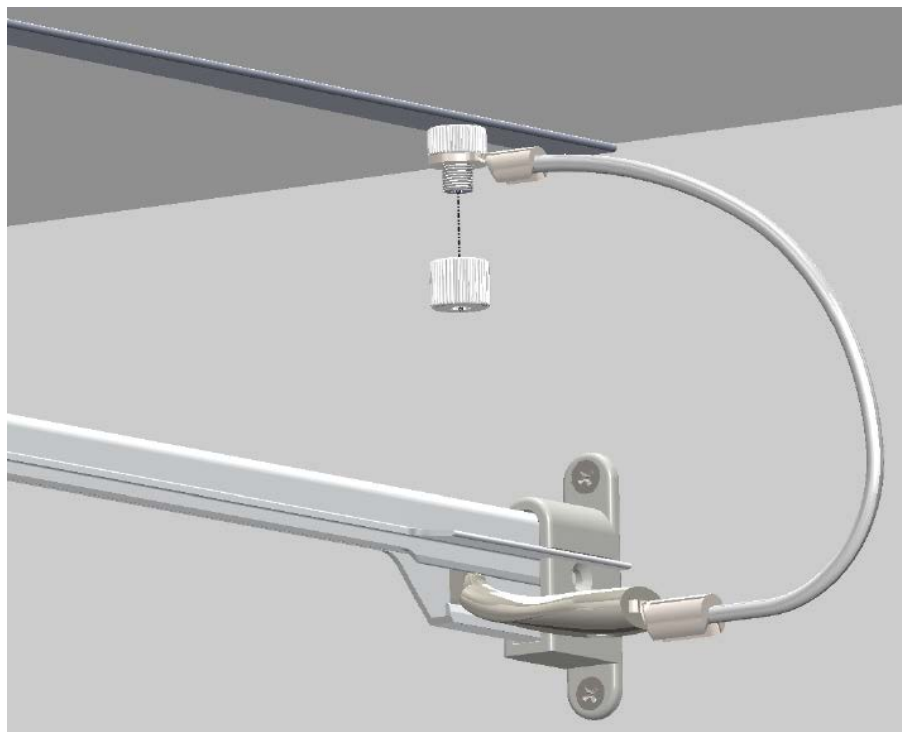
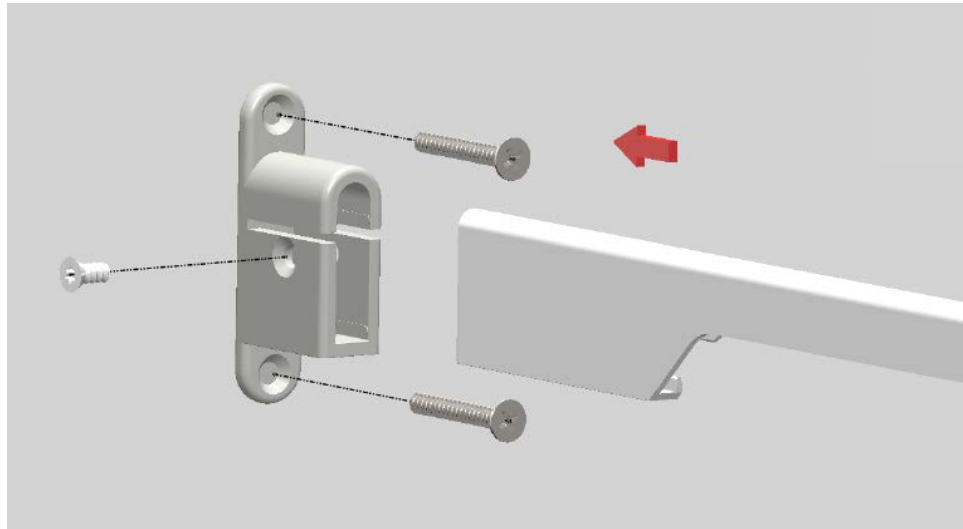
1. Install first Drop Ceiling Grid Mount piece (part# **OPTS-S03**) 2" away from the wall.
2. Make sure the Loading Zone (part# **OPTS-LZ**) is right side up. This will be evident by noting a smooth rounded top and a flat edge at the bottom.



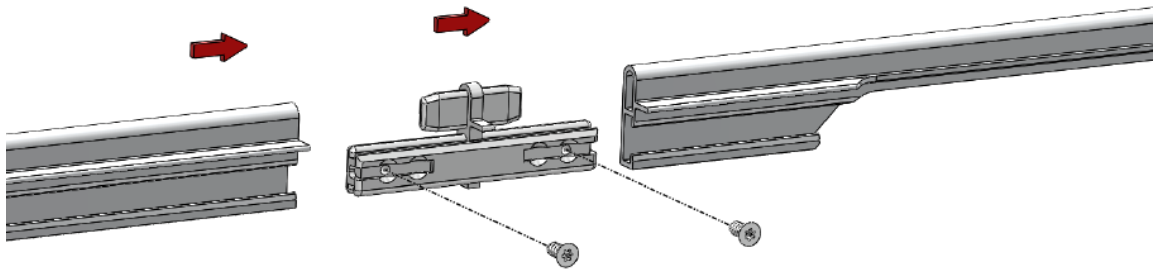
3. Place the hanger and track connector (part# **OPTS-E03**) into the first groove on the back side of the Loading Zone track and turn clockwise 1/4 turn. Attach the other end to a hanger (part# **OPST-G03**) and secure with an **OPTS-S102** screw. Connect the hanger to the S03 piece from Step 1.



4. Fasten the Loading Zone (part# **OPTS-LZ**) to the wall with an End Cap (part# **OPTS-M03**), which is secured using two anchors (part# **OPTS-S802-W**).



5. Attach the other end of the Loading Zone to adjacent track using a track connector (part# **OPTS-F03**) and two **OPTS-S102** screws.



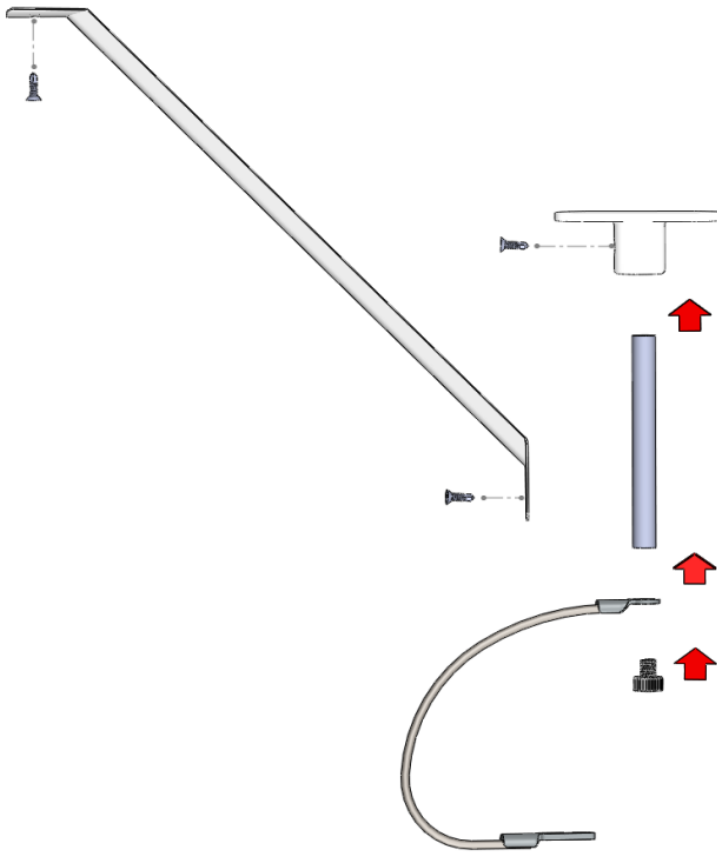
Notes:

- Make sure that the Loading Zone is level when installed.

INSTALLING DROPS

Directions:

1. Insert an Extensible Tube (part# **OPTS-J03**) into the Ceiling Vertical Hanger Mount Plate (part# **OPTS-P03**). You may need a rubber mallet to completely insert the tube. **This should be done before you attach the mount plate to the ceiling.** Also be sure to insert the cut end into the plate (or the end that does not have a hole).
2. Secure with an **OPTS-S302** screw.
3. Attach a Hanger (part# **OPTS-G03**) and secure with an **OPTS-S03-2** fastener.
4. If the drop is equal or greater than 12", also attach a support bracket (part# **OPTS-J03-SB**) from the drop (part# **OPTS-J03**) to the ceiling.



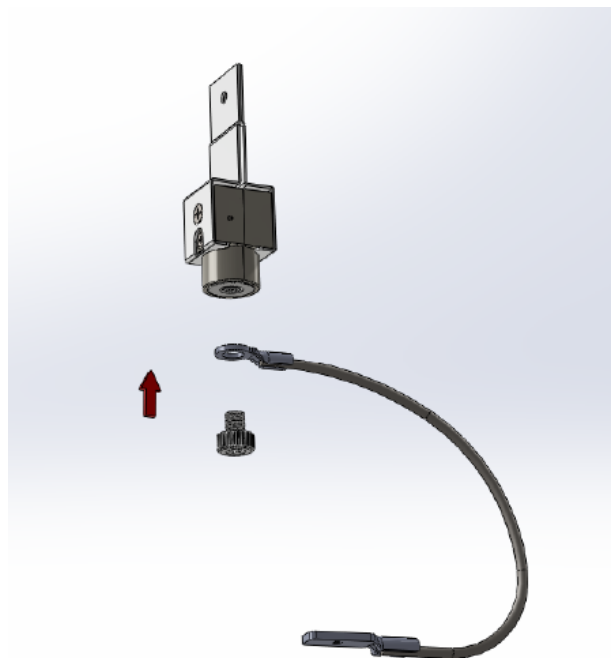
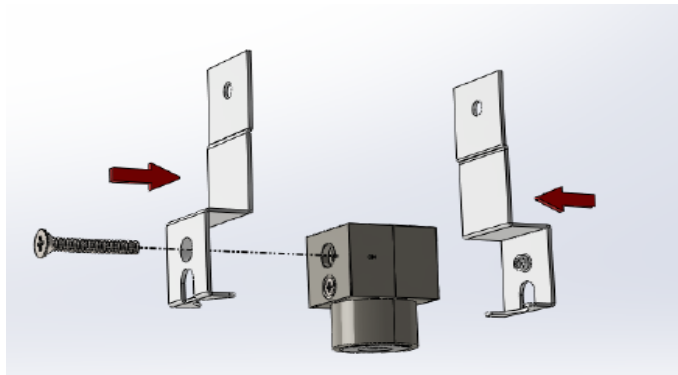
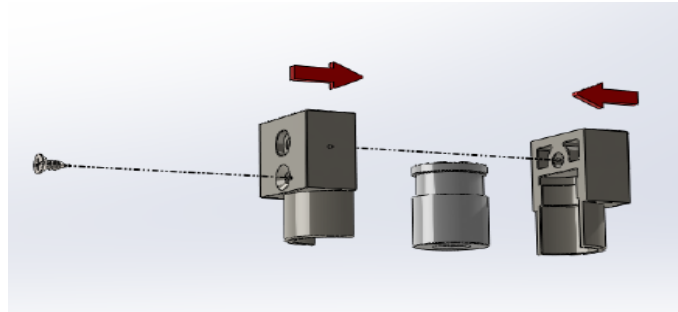
Notes:

- Our Extensible Tubes are used to drop the rail to a specific height. These come in 6", 1' and 2' sizes and may need to be cut to size in the field before installation.
- The Mount Plate is designed to taper so that once the tube has been completely inserted, it will not flex. For instructions on installing the Ceiling Vertical Hanger Mount Plate (part# OPTS-P03) into the ceiling, please refer to the appropriate ceiling page in this manual.
- The ceiling mount should be 6" away from the wall and then installed every 24".
- If this installation is in California and you are using drops, the maximum drop distance allowed is 20" when installed into plywood substrate, and 24" into other materials.

INSTALLING GRID BLOCKING

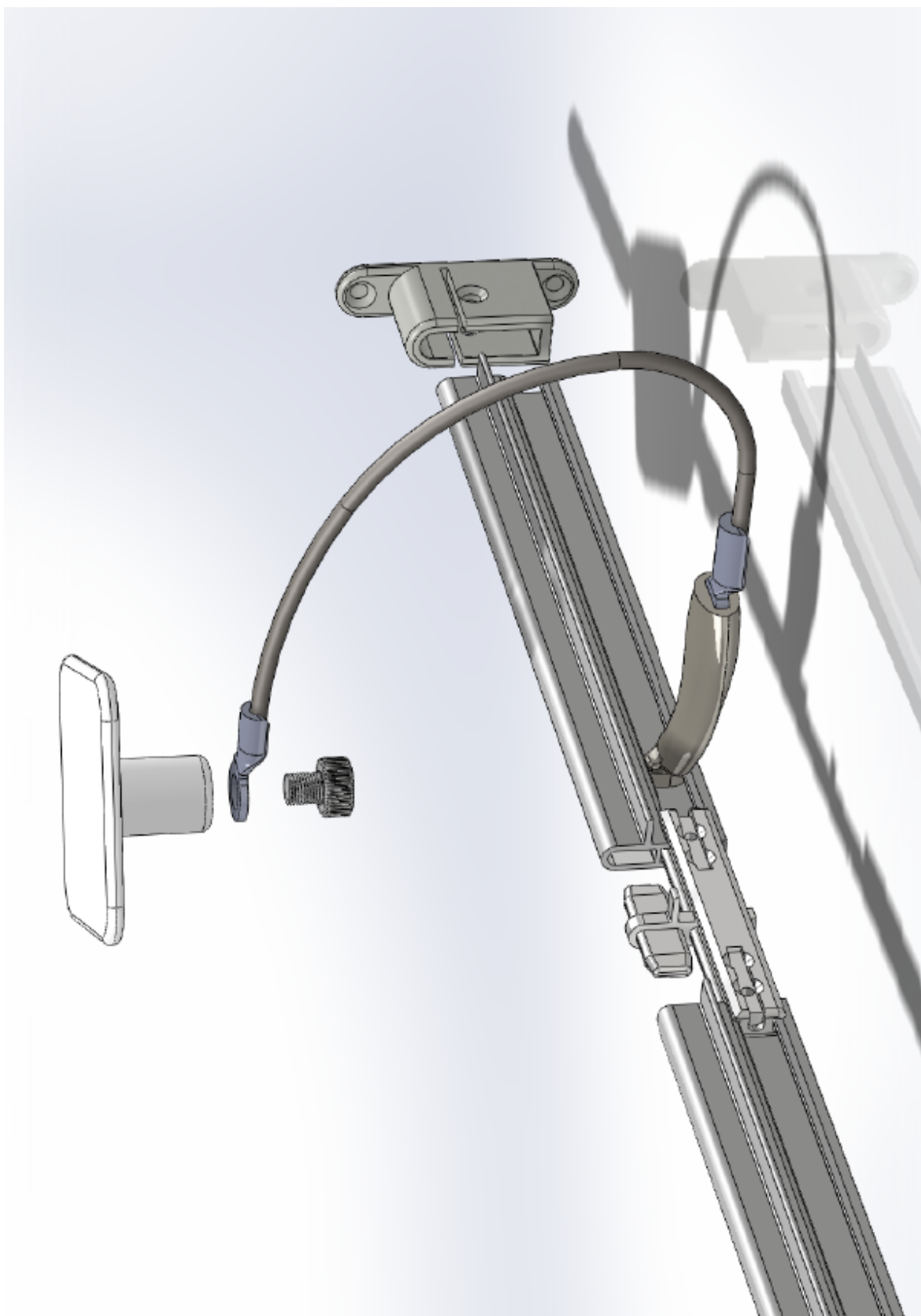
Directions:

1. Attach left and right clips to the cover and around the ACT grid. Then secure with a 27 mm screw.
2. Attach a hanger (part# **OPTS-G03**) and secure with a fastener (part# **OPTS-S03-2**).



Note: The ceiling mount should be 6" away from the wall and then installed every 24".
on the right track
systems, inc

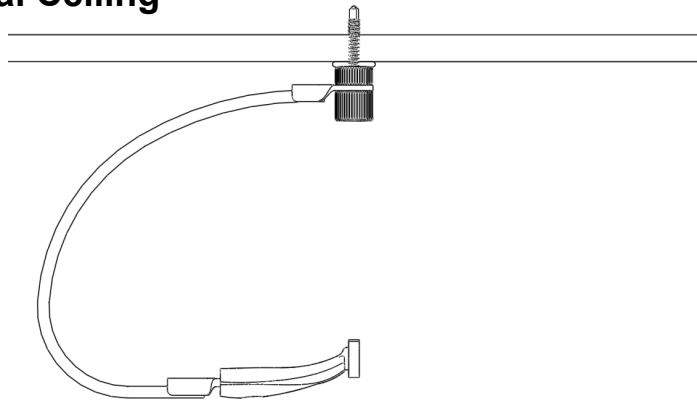
TRACK ASSEMBLY



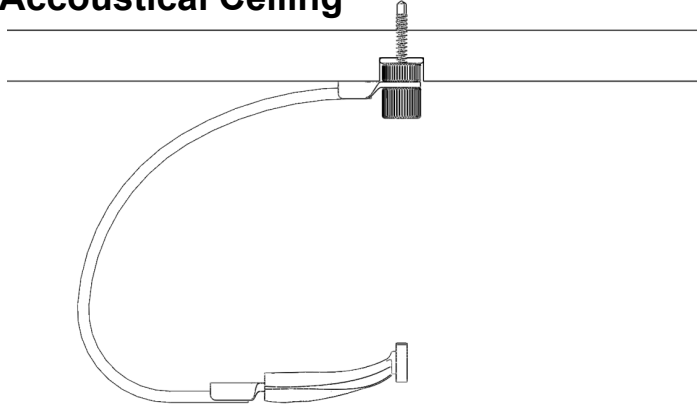
TRACK ASSEMBLY WITH DROPS



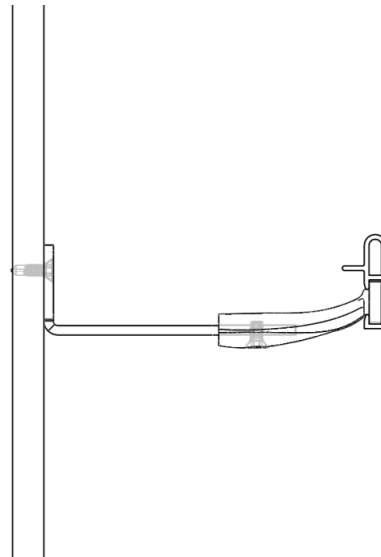
Accoustical Ceiling



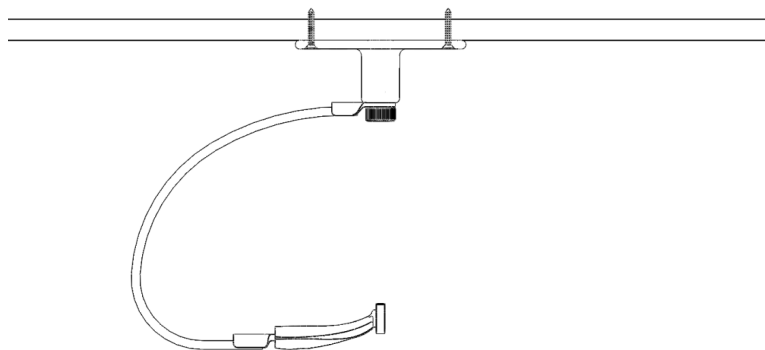
Recessed Accoustical Ceiling



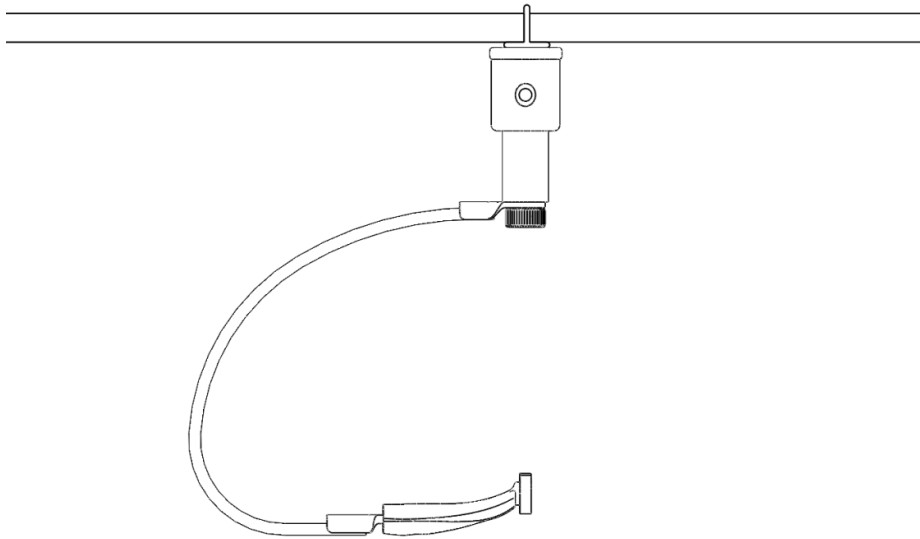
Wall Mount



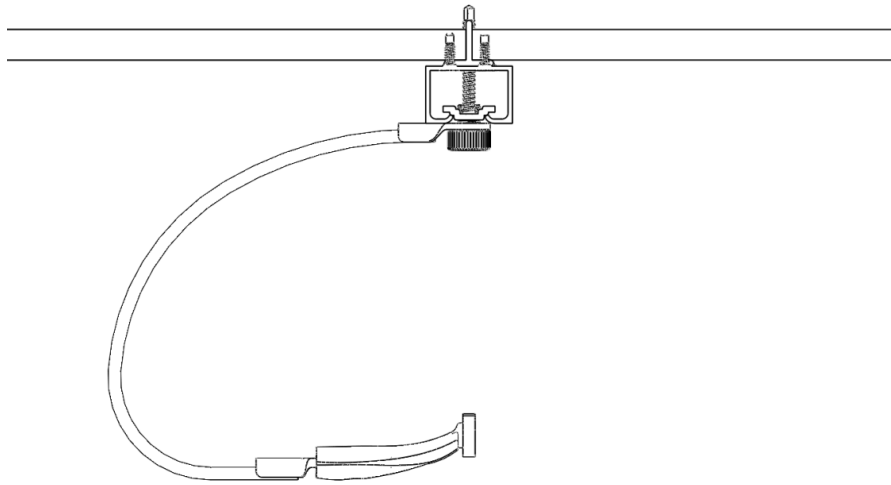
Finished Ceiling



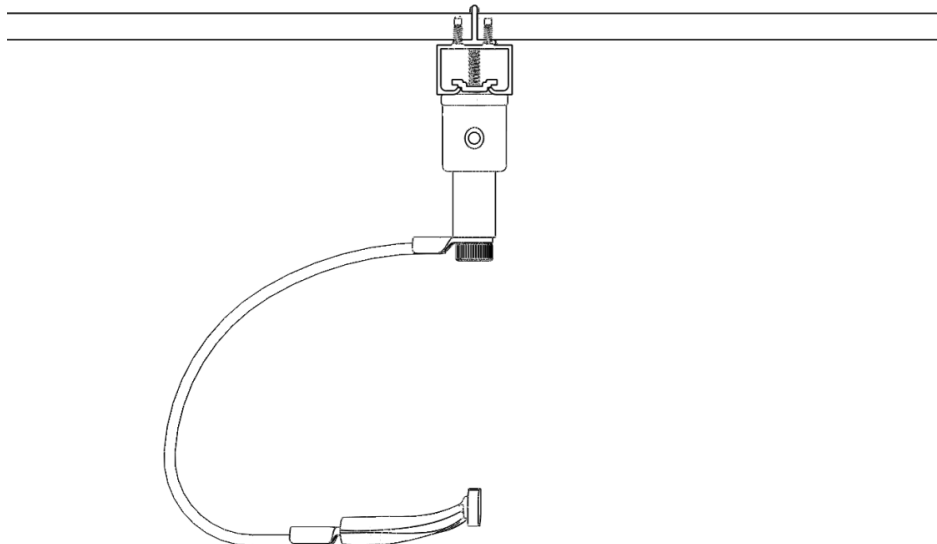
ACT with Drops



Traditional Track



Traditional Track With Drops



3.3.5 KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor

3.3.5.1 Product Description

3.3.5.2 Material Specifications

3.3.5.3 Technical Data

3.3.5.4 Installation Instructions

3.3.5.5 Ordering Information



Listings/Approvals

ICC-ES (International Code Council)
ESR-3027
(Cracked & Uncracked Concrete)
AC 106 ESR Pending
(Grout filled concrete masonry)
City of Los Angeles
Research Report No. 25897



Independent Code Evaluation

IBC® / IRC® 2009 (AC 193 / ACI 355.2)
IBC® / IRC® 2006 (AC 193 / ACI 355.2)
IBC® / IRC® 2003 (AC 193 / ACI 355.2)

3.3.5.1 Product Description

Hilti KWIK HUS-EZ (KH-EZ) anchors are comprised of a body with hex washer head. The anchor is manufactured from carbon steel and is heat treated. It has a minimum 0.0003 inch (8 µm) zinc coating in accordance with DIN EN ISO 4042. The KWIK HUS-EZ (KH-EZ) system is available in a variety of lengths with diameters of 1/4 inch, 3/8 inch, 1/2 inch, 5/8 inch and 3/4 inch (6.4mm, 9.5mm, 12.7mm, 15.9mm and 19.1mm). The hex head is larger than the diameter of the anchor and is formed with serrations on the underside. The anchor body is formed with threads running most of the length of the anchor body. The anchor is installed in a predrilled hole with a powered impact wrench or torque wrench. The anchor threads cut into the concrete on the sides of the hole and interlock with the base material during installation. Applicable base materials include normal-weight concrete, structural lightweight concrete, lightweight concrete over metal deck, and grout filled concrete masonry.

Guide Specifications

Screw anchors shall be KWIK HUS-EZ as supplied by Hilti, Inc. Anchors shall be manufactured from heat treated carbon steel material, zinc plated to a minimum thickness of 8µm. Anchor head shall display name of manufacturer, product name, diameter and length. Anchors shall be installed using a drill bit of same nominal diameter as anchor.

Product Features

- Suitable for cracked and uncracked normal weight and lightweight concrete, and grout filled concrete masonry.
- Suitable for seismic and nonseismic loads.
- Quick and easy to install.

- Length and diameter identification clearly stamped on head facilitates quality control and inspection after installation.
- Through fixture installation improves productivity and accurate installation.
- Thread design enables quality setting and exceptional load values in wide variety of base material strengths.
- Anchor is fully removable
- Anchor size is same as drill bit size and uses standard diameter drill bits.
- Suitable for reduced edge distances and spacing.

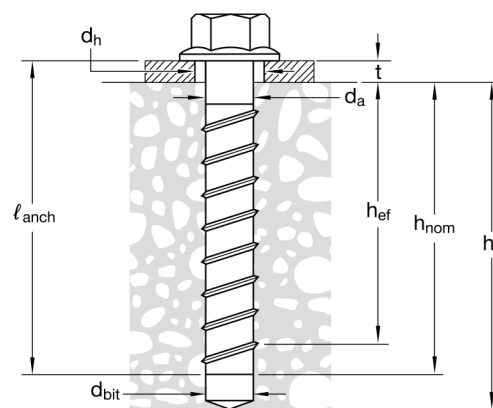
3.3.5.2 Material Specifications

Hilti KWIK HUS-EZ anchors are manufactured from carbon steel. The anchors are bright zinc plated to a minimum thickness of 8µm.

3.3.5.3 Technical Data

The data contained in Tables 1-5 of this section have been evaluated in accordance with AC 193. For more detail, see ICC-ES ESR 3027.

Figure 1 — KWIK HUS-EZ anchor installation details



KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor 3.3.5

Table 1 — KWIK HUS-EZ Specification Table^{1,2,3}

Characteristic	Symbol	Units	Nominal Anchor Diameter (inches)											
			1/4	3/8	1/2	5/8	3/4							
Nominal Diameter	d_a	in.	1/4	3/8	1/2	5/8	3/4							
Drill Bit Diameter	d_{bit}	in.	1/4	3/8	1/2	5/8	3/4							
Baseplate Clearance Hole Diameter	d_h	in.	3/8	1/2	5/8	3/4	7/8							
Installation Torque ⁴	T_{inst}	ft-lbf	18	40	45	85	115							
Impact Wrench Torque Rating ³	T_{impact}	ft-lbf	114	137	114	450	137	450	450	450				
Nominal Embedment depth	h_{nom}	in.	1-5/8	2-1/2	1-5/8	2-1/2	3-1/4	2-1/4	3	4-1/4	3-1/4	5	4	6-1/4
Effective Embedment Depth	h_{ef}	in.	1.18	1.92	1.11	1.86	2.50	1.50	2.16	3.22	2.39	3.88	2.92	4.84
Minimum Hole Depth	h_o	in.	2	2-7/8	1-7/8	2-3/4	3-1/2	2-5/8	3-3/8	4-5/8	3-5/8	5-3/8	4-3/8	6-5/8
Critical Edge Distance ²	c_{ac}	in.	2.00	2.78	2.10	2.92	3.75	2.75	3.75	5.25	3.63	5.81	4.41	7.28
Minimum Spacing at critical edge Distance	$s_{min,cac}$	in.	1.50	2.25	3	4								
Minimum Edge Distance ²	c_{min}	in.	1.50	1.75										
Minimum Spacing at Minimum Edge Distance	s_{min}	in.	3	4										
Minimum Concrete Thickness	h_{min}	in.	3.25	4.125	3.25	4	4.875	4.5	4.75	6.75	5	7	6	8.125
Wrench socket size	-	in.	7/16	9/16	3/4	15/16	1-1/8							
Head height	-	in.	0.24	0.35	0.49	0.57	0.70							
Effective tensile stress area	A_{se}	in. ²	0.045	0.086	0.161	0.268	0.392							
Minimum specified ultimate strength	f_{uta}	psi	134,000	106,225	120,300	112,540	90,180	81,600						

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m, 1 psi = 6.89 Pa, 1 in² = 645 mm², 1 lb/in = 0.175 N/mm

- The data presented in this table is to be used in conjunction with the design criteria of ACI 318 Appendix D.
- For installations through the soffit of steel deck into concrete (see Figure 2) anchors installed in the lower flute may be installed with a maximum 1 inch offset in either direction from the center of the flute.
- Because of variability in measurement procedures, the published torque of an impact tool may not correlate properly with the above setting torques. Over-torquing can damage the anchor and/or reduce its holding capacity.
- $T_{inst,max}$ applies to installations using a calibrated torque wrench.

3.3.5 KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor

Table 2 — KWIK HUS EZ (KH EZ) Tension Strength Design Information^{1,2,3,4,5}

Characteristic	Symbol	Units	Nominal Anchor Diameter(inches)											
			1/4	3/8			1/2			5/8		3/4		
Anchor Category 1,2 or 3			1											
Nominal Embedment Depth	h_{nom}	in.	1-5/8	2-1/2	1-5/8	2-1/2	3-1/4	2-1/4	3	4-1/4	3-1/4	5	4	6-1/4
Steel Strength in Tension (ACI 318 D 5.1) ⁶														
Tension Resistance of Steel	N_{sa}	lb.	6070		9125	10335		18120			24210		32013	
Reduction Factor for Steel Strength ²	Φ_{sa}	-	0.65											
Concrete Breakout Strength in Tension (ACI 318 D.5.2)														
Effective Embedment Depth	h_{ef}	in.	1.18	1.92	1.11	1.86	2.50	1.52	2.16	3.22	2.39	3.88	2.92	4.84
Critical Edge Distance	c_{ac}	in.	2.00	2.78	2.10	2.92	3.74	2.75	3.67	5.25	3.63	5.82	4.81	7.28
Effectiveness Factor — Uncracked Concrete	k_{uncr}	-	24					27						
Effectiveness Factor — Cracked Concrete	k_{cr}	-	17											
Modification factor for cracked and uncracked concrete ⁵	$\Psi_{c,N}$	-	1.0											
Reduction Factor for Concrete Breakout Strength ²	Φ_{cb}	-	0.65 (Condition B)											
Pullout Strength in Tension (Non Seismic Applications) (ACI318 D.5.3)														
Characteristic pullout strength, uncracked concrete (2,500psi)	$N_{p,uncr}$	lb.	1305 ⁴	2348 ⁴	N/A									
Characteristic pullout strength, cracked concrete (2500 psi)	$N_{p,cr}$	lb.	632 ⁴	1166 ⁴	728 ⁴	N/A								
Reduction factor for pullout strength ²	Φ_p	-	0.65 (Condition B)											
Pullout Strength in Tension (Seismic Applications) (ACI 318 D.5.3)														
Characteristic Pullout Strength, Seismic (2,500 psi)	N_{eq}	lb.	632 ⁴	1166 ⁴	728 ⁴	N/A								
Reduction Factor for Pullout Strength ² (2,500 psi)	Φ_{eq}	-	0.65 (Condition B)											
Axial Stiffness in Service Load Range														
Uncracked Concrete	β_{uncr}	lb/in.	760,000											
Cracked Concrete	β_{cr}		293,000											

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m, 1 psi = 6.89 Pa, 1 in² = 645 mm², 1 lb/in = 0.175 N/mm

- 1 The data in this table is intended for use with the design provisions of ACI 318 Appendix D; for anchors resisting seismic load combinations the additional requirements of D.3.3 shall apply.
- 2 Values of Φ in this table apply when the load combinations for ACI 318 Section 9.2, IBC Section 1605.2.1 are used and the requirements of ACI 318 D.4.4 for Condition B are met. If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ must be used. For situations where reinforcement meets the requirements of Condition A, ACI 318 Section D.4.4 provides the appropriate ϕ factor.
- 3 N/A denotes that pullout resistance does not govern and does not need to be considered.
- 4 The characteristic pullout resistance for concrete compressive strengths greater than 2500 psi may be increased by multiplying the value in the table by $(f'_c/2,500)^{1/2}$ for psi or $(f'_c/17.2)^{1/2}$ for MPa.
- 5 For sand-lightweight concrete, multiply concrete capacity values and pullout values by 0.60.

KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor 3.3.5

Table 3 — KWIK HUS EZ (KH EZ) Shear Strength Design Information^{1,2,3,4,5}

Characteristic	Symbol	Units	Nominal Anchor Diameter (inches)											
			1/4		3/8			1/2			5/8		3/4	
Anchor Category	1,2 or 3	1												
Embedment Depth	h_{nom}	in.	1-5/8	2-1/2	1-5/8	2-1/2	3-1/4	2-1/4	3	4-1/4	3-1/4	5	4	6-1/4
Steel Strength in Shear (ACI 318 D 6.1) ^{4, 5}														
Shear Resistance of Steel — Static	V_{sa}	lb.	1548		4057	5185		9245			11221		16662	
Shear Resistance of Steel — Seismic	V_{eq}	lb.	1393		2524	3111		5547			6733		11556	
Reduction Factor for Steel Strength	Φ_{sa}	-	0.60											
Concrete Breakout Strength in Shear (ACI 318 D.6.2)														
Nominal Diameter	d_a	in.	0.250		0.375			0.500			0.625		0.750	
Load Bearing Length of Anchor	ℓ_e	in.	1.18	1.92	1.11	1.86	2.50	1.52	2.16	3.22	2.39	3.88	2.92	4.84
Reduction Factor for Concrete Breakout Strength	Φ_{cb}	-	0.70											
Concrete Pryout Strength in Shear (ACI 318 D.6.3)														
Coefficient for Pryout Strength	k_{cp}	1.0				2.0	1.0		2.0	1.0	2.0			
Reduction Factor for Pryout Strength	Φ_{cp}	-	0.70											

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m, 1 psi = 6.89 Pa, 1 in² = 645 mm², 1 lb/in = 0.175 N/mm

- 1 The data in this table is intended for use with the design provisions of ACI 318 Appendix D
- 2 Values of Φ in this table apply when the load combinations for ACI 318 Section 9.2, IBC Section 1605.2.1 are used and the requirements of ACI 318 D.4.4 for Condition B are met. If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ must be used. For situations where reinforcement meets the requirements of Condition A, ACI 318 D.4.4 provides the appropriate Φ factor.
- 3 Reported values for steel strength in shear are based on test results per ACI 355.2, Section 9.4 and must be used for design in lieu of calculated results using equation D-20 of ACI 318.
- 4 The KWIK HUS-EZ (KH-EZ) is considered a brittle steel element as defined by ACI 318 D.1.
- 5 For sand-lightweight concrete, multiply concrete breakout and concrete pryout values by 0.60.

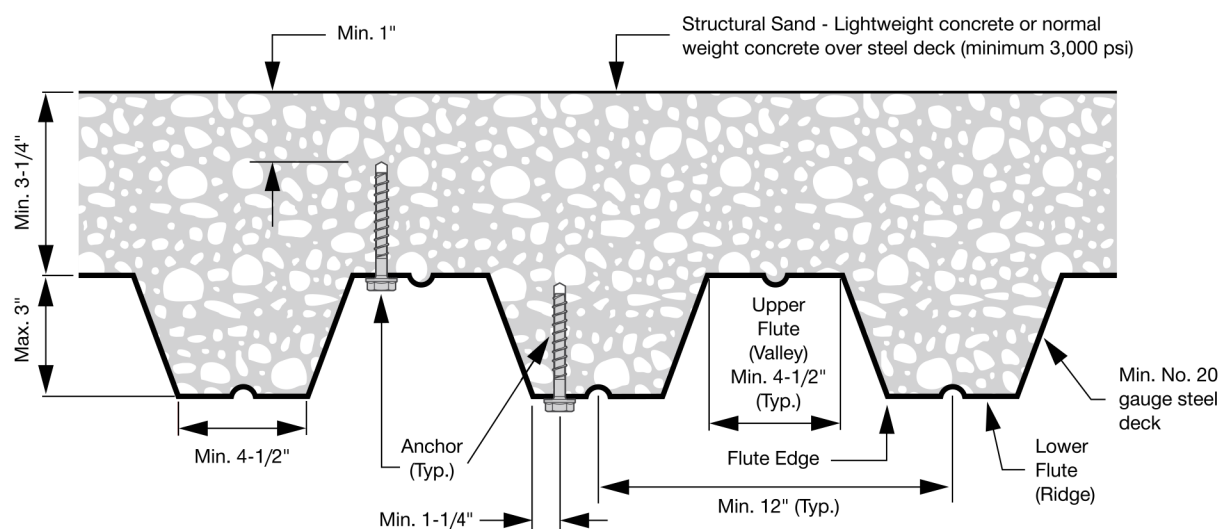
3.3.5 KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor

Table 4 – KWIK HUS-EZ (KH-EZ) Tension and Shear Design Data for Installation in the Underside of Concrete-Filled Profile Steel Deck Assemblies^{1,2,3,4,5}

Characteristic	Symbol	Units	Lower Flute											Upper Flute					
			Anchor Diameter																
			1/4		3/8			1/2			5/8		3/4	1/4		3/8		1/2	
Embedment	h_{nom}	in.	1-5/8	2-1/2	1-5/8	2-1/2	3-1/4	2-1/4	3	4-1/4	3-1/4	5	4	1-5/8	2-1/2	1-5/8	2-1/2	2-1/4	
Minimum Hole Depth	h_{hole}	in.	2	2-7/8	1-7/8	2-3/4	3-1/2	2-5/8	3-3/8	4-5/8	3-5/8	5-3/8	4-3/8	2	2-7/8	1-7/8	2-7/8	2-5/8	
Effective Embedment Depth	h_{ef}	in.	1.18	1.92	1.11	1.86	2.50	1.52	2.16	3.22	2.39	3.88	2.92	1.18	1.92	1.11	1.86	1.52	
Pullout Resistance, (uncracked concrete)	$N_{p,deck,uncr}$	lb.	1210	1875	1285	2240	3920	1305	3060	5360	4180	9495	4180	1490	1960	1015	2920	1395	
Pullout Resistance (cracked concrete and seismic loads)	$N_{p,deck,cr}$	lb.	860	1330	1120	1965	3430	925	2170	3795	3070	7385	2630	1055	1390	885	2560	985	
Steel Strength in Shear	$V_{sa,deck}$	lb.	1205	2210	1670	1511	3605	1605	2922	3590	3470	4190	3762	1205	3265	3935	6090	7850	
Steel Strength in Shear, Seismic	$V_{sa,deck,eq}$	lb.	1080	1988	935	905	2163	963	1750	2154	2082	2514	2609	1080	2937	2203	3650	4710	

- 1 Installation must comply with Figure 2.
- 2 The values in this table are derived in accordance with ACI 318 Appendix D, Section D.5.3.2.
- 3 The values for ϕ_p in tension can be found in Table 2 of this report and the values for ϕ_{sa} in shear can be found in Table 3.
- 4 For installations through the soffit of steel deck into concrete (see Figure 2) anchors installed in the lower flute shall be installed with a maximum 1 inch offset in either direction from the centerline of the flute.
- 5 The characteristic pullout resistance for concrete compressive strengths greater than 3,000 psi may be increased by multiplying the value in the table by $(f'_c/3,000)^{1/2}$ for psi or $(f'_c/20.7)^{1/2}$ for MPa.

Figure 2 – Installation of KWIK HUS-EZ (KH-EZ) in Soffit of Concrete Over Steel Deck Floor and Roof Assemblies



- 1 Anchors may be placed in the upper or lower flute of the steel deck profile provided the minimum concrete cover above the drilled hole is satisfied. Anchors in the lower flute may be installed with a maximum 1-inch offset in either direction from the center of the flute. The offset distance may be increased proportionally for profiles with lower flute widths greater than those shown provided the minimum lower flute edge distance is also satisfied.

KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor 3.3.5

Table 5 – KWIK HUS-EZ (KH-EZ) Allowable Stress Design Values for Illustrative Purposes^{1,2,3,4,5,6,7,8,9,12}

Nominal Anchor Diameter [in.]	Embedment Depth, h_{nom} [in.]	Effective Embedment Depth, h_{ef} [in.]	Allowable Tension Load ¹⁰ [lbs]	Allowable Shear Load ¹¹ [lbs]
1/4	1 5/8	1.18	589	645
	2-1/2	1.92	1060	645
3/8	1-5/8	1.11	633	682
	2-1/2	1.86	1374	1480
	3-1/4	2.50	2141	2160
1/2	2-1/4	1.52	1142	1230
	3	2.16	1934	2083
	4-1/4	3.22	3521	3852
5/8	3-1/4	2.39	2252	2425
	5	3.88	4657	4675
3/4	4	2.92	3041	6549
	6-1/4	4.84	6489	6943

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

- 1 Single anchor with static tension or shear load only.
- 2 Concrete determined to remain uncracked for the life of the anchorage.
- 3 Load combinations are taken from ACI 318 Section 9.2 (no seismic loading).
- 4 40% dead load and 60% live load, controlling load combination 1.2D + 1.6L.
- 5 Calculation of weighted average for conversion factor $\alpha = 1.2(0.4) + 1.6(0.6) = 1.44$.
- 6 $f'_c = 2,500$ psi (normal weight concrete).
- 7 $c_{a1} = c_{a2} \geq c_{ac}$, see Table 1.
- 8 $h \geq h_{min}$, see Table 1.
- 9 Values are for Condition B where supplementary reinforcement in accordance with ACI 318 D.4.4 is not provided.
- 10 Allowable Tension Load = factored Load (Lessor of N_p or Concrete Breakout from Table 2) $\div 1.44$
- 11 Allowable Shear Load = factored Load (Lessor of V_{sa} or Concrete Pryout from Table 3) $\div 1.44$
- 12 Values are for single anchors installed without influence of base material edge distance or adjacent anchors.

3.3.5 KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor

Table 6 – Allowable Tension Loads for KWIK HUS-EZ Installed in Grout-Filled Masonry Walls (lb)^{1,2,7,8}

Anchor Diameter (inches)	Embedment (inches) ³	Loads @ C _{cr} and S _{cr}	Spacing			Edge Distance		
			Critical - S _{cr} (inches) ⁴	Minimum - S _{min} (inches) ⁴	Load Reduction Factor at S _{min} ⁶	Critical - C _{cr} (inches) ⁵	Minimum C _{min} (inches) ⁵	Load Reduction Factor ⁶
1/4	1 5/8	530	4	2	0.70	4	4	1.00
	2 1/2	910		4	1.00			
3/8	1 5/8	535	4	2	0.70	4	4	1.00
	2 1/2	895	6	4	0.80			
	3 1/4	1210						
1/2	2 1/4	710	4	2	0.60	4	4	1.00
	3	1110	8	4				
	4 1/4	1515						
5/8	3 1/4	1155	10	4	0.60	10	4	1.00
	5	1735						
3/4	4	1680	12	4	0.60	12	4	1.00
	6 1/4	2035						

Table 7 – Allowable Shear Loads for KWIK HUS-EZ Installed in Grout-Filled Masonry Walls (lb)^{1,2,7,8}

Anchor Diameter (inches)	Embedment (inches) ³	Load at C _{cr} and S _{cr}	Spacing			Edge Distance			
			Critical - S _{cr} (inches) ⁴	Minimum - S _{min} (inches) ⁴	Load Reduction Factor at S _{min} ⁶	Critical - C _{cr} (inches) ⁵	Minimum - C _{min} (inches) ⁵	Load Reduction Factor at C _{min}	
								Load Direction Perpendicular to Edge	Load Direction Parallel to Edge
1/4	1 5/8	675	4	4	1.00	4	4	1.00	1.00
	2 1/2	840						1.00	1.00
3/8	1 5/8	1140	6	4	0.94	6	4	0.61	1.00
	2 1/2	1165						0.70	1.00
	3 1/4	1190						0.70	1.00
1/2	2 1/4	1845	8	4	0.88	8	4	0.50	1.00
	3	2055						0.45	0.94
	4 1/4	2745						0.40	0.89
5/8	3 1/4	3040	10	4	0.36	10	4	0.36	0.82
	5	3485						0.34	0.92
3/4	4	3040	10	4	0.36	12	4	0.36	0.82
	6 1/4	3485						0.34	0.92

1 All values are for anchors installed in fully grouted masonry with minimum masonry prism strength of 1500psi. Concrete masonry units shall be light-weight or normal-weight.

2 Anchors may not be installed within one inch in any direction of a vertical joint.

3 Embedment depth is measured from the outside face of the concrete masonry embedment.

4 S_{cr} is anchor spacing where full load values in the Table may be used. S_{min} is the minimum anchor spacing for which values are available and installation is recommended. Spacing is measured from the center of one anchor to the center of an adjacent anchor.

5 C_{cr} is the edge distance where full load values in the table may be used. C_{min} is the minimum edge distance for which values are available and installation is recommended. Edge distance is measured from the center of the anchor to the closest edge.

6 Load reduction factors are multiplicative, both spacing and edge distance load reduction factors must be considered.

Load values for anchors installed at less than C_{cr} or S_{cr} must be multiplied by the appropriate load reduction factor based on actual edge distance (C) or spacing (S).

7 Linear interpolation of load values between minimum spacing (S_{min}) and critical spacing (S_{cr}) and between minimum edge distance (C_{min}) and critical edge distance (C_{cr}) is permitted.

8 For combined loading: For 1/4" diameter - $\frac{T_{\text{applied}}}{T_{\text{allowable}}} + \frac{V_{\text{applied}}}{V_{\text{allowable}}} \leq 1$ For 3/8" - 3/4" diameter - $\left(\frac{T_{\text{applied}}}{T_{\text{allowable}}}\right)^{5/3} + \left(\frac{V_{\text{applied}}}{V_{\text{allowable}}}\right)^{5/3} \leq 1$

KWIK HUS-EZ (KH-EZ) Carbon Steel Screw Anchor 3.3.5

Table 8 – KWIK HUS-EZ Allowable Loads Installed In Top of Grout-Filled Concrete Masonry Construction (lb)

Anchor Diameter (inches)	Minimum Embedment Depth (inches) ²	Minimum Edge Distance (inches)	Minimum Spacing (inches)	Minimum End Distance (inches)	Tension	Shear	
						Perpendicular to Edge of Masonry Wall	Parallel to Edge of Masonry Wall
1/2	4 1/4	1 3/4	8	4	680	305	1110
5/8	5	1 3/4	10	5	1310	305	1165

1 All values are for anchors installed in fully grouted masonry with minimum masonry prism strength of 1500psi. Concrete masonry units shall be light-weight or normal-weight.

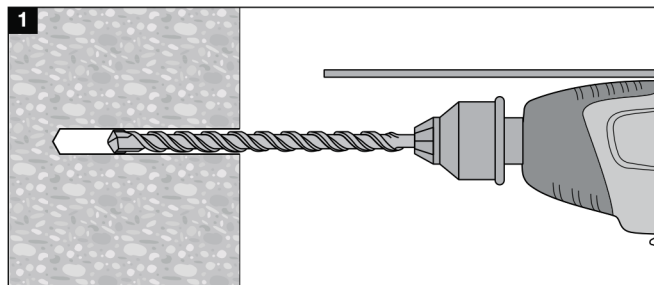
2 Embedment depth is measured from the top of the masonry construction.

3 For combined loading: For 1/4" diameter - $\frac{T_{\text{applied}}}{T_{\text{allowable}}} + \frac{V_{\text{applied}}}{V_{\text{allowable}}} \leq 1$ For 3/8" - 3/4" diameter - $\left(\frac{T_{\text{applied}}}{T_{\text{allowable}}}\right)^{5/3} + \left(\frac{V_{\text{applied}}}{V_{\text{allowable}}}\right)^{5/3} \leq 1$

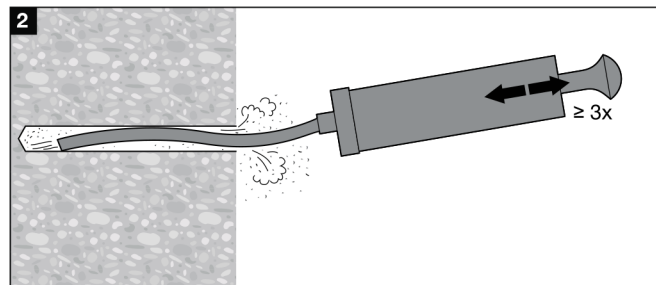
3.3.5.4 Installation Instructions

Drill holes in base material using carbide-tipped masonry drill bits complying with ANSI B212.15-1994. The nominal drill bit diameter must be equal to that of the anchor. The minimum drilled hole depth is given in Table 1. Prior to installation, dust and debris must be removed from the drilled hole using a hand pump, compressed air or a vacuum. The anchor must be installed into the predrilled hole using a powered impact wrench or installed with a torque wrench until the proper nominal embedment depth is obtained. The impact wrench

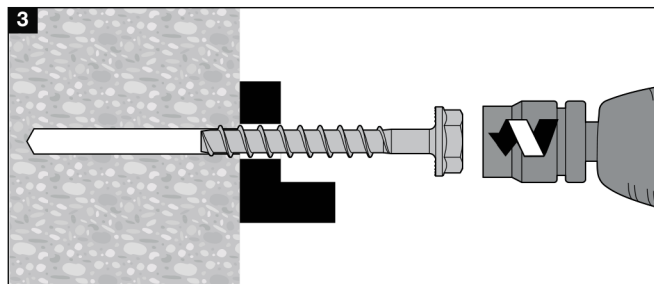
torque, T_{impact} and installation torque, T_{inst} for the manual torque wrench must be in accordance with Table 1. The KWIK HUS-EZ (KH-EZ) may be loosened by a maximum of one turn and reinstalled with a socket wrench or powered impact wrench to facilitate fixture attachment or realignment. For member thickness and edge distance restrictions for installations into the soffit of concrete on steel deck assemblies, see Figure 2.



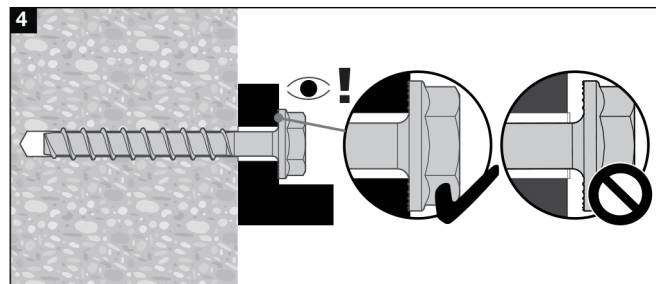
Drill hole in base material using proper diameter drill bit.



Clean drilled hole to remove debris.



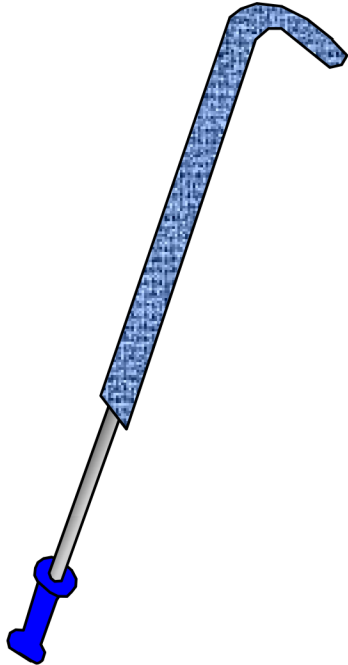
Fasten anchor tightly against fastened part.



Install anchor using proper impact tool or torque wrench.

MAINTENANCE

(The Only Track Maintenance You will Ever Need)



Step 1:

Bend the end of a micro-fiber high-duster head at a 90 degree angle.

Step 2:

Spray the inside of curve of the high-duster head with “***Pledge Revitalizing Oil***”.



Step 3:

Run the high-duster along the top of the rail to clean and maintain “Quiet Glide”.