Identifier:	Revision:	Effective Date:	IRWIN SEATING COMPANY – TELESCOPIC DIVISION QUALITY POICY **Committed to Customer Satisfaction** Do It Right the First Time On Time and Complete Continual Improvement
Integra	**P**	**10/17/2025**	
Document Number:	**F7.1.1.114**		
Author:			

Integra Installation & Operation Guide

Disclaimers

The information contained in this document is the proprietary and exclusive property of **IRWIN** except as otherwise indicated. No part of this document, in whole or in part, may be reproduced, stored, transmitted, or used for design purposes without the prior written permission of **IRWIN**.

The information contained in this document is subject to change without notice.

The information in this document is provided for informational purposes only **IRWIN** specifically disclaims all warranties, express or limited, including, but not limited, to the implied warranties of merchantability and fitness for a particular purpose, except as provided for in a separate software license agreement.

Privacy Information

This document may contain information of a sensitive nature. This information should not be given to persons other than those who are involved in the project or who will become involved during the lifecycle.

Typographical Conventions

This document uses the following typographical conventions:

Bold

Command and option names appear in **bold** type in definitions and examples.

- Directories, files, partitions, and volumes also appear in bold.
- Interface controls (check boxes, radio buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, menu choices, menu names, and tabs)
- Keywords and parameters in text Italic

Variable information appears in *italic* type. This includes user-supplied information on command lines.

- Citations (titles of books, diskettes, and CDs)
- Emphasis of words
- Words defined in text Monospace

Who Should Read This Book?

- Those individuals who are responsible for installation of Irwin and its related components.
- **Certified Irwin Installers**
- Those individuals who plan the deployment of the telescopic system within your organization. Such as maintenance staff.

Document History

Paper copies are valid only on the day they are printed. Contact the author if you are in any doubt about the accuracy of this document.

Revision History

Revision Number	Revision Date	Summary of Changes	Author
L	8/22/2018	Added Runner Bar details for VersaTract	Michael Baker
M	11/10/2021	Added details for rear mounted cup holder	Nathan Day
N	8/7/23	Deleted Clint Denning as author and updated Irwin logo	Collin Baker
O	05/21/2025	Updated rail end cap installation instructions	George Scheidemantel
P	10/17/2025	Updated details for over-clamp mechanisms	Andrew Moeller

Approvals

This document requires the following approvals:

Name	Title

Distribution

This document has been distributed to:

Name	Title

Table of Contents

Table of Contents 5
1. Introduction 6
1.1 Purpose of this document 7
1.2 Identification 7
1.3 Reference information 7
1.4 Points of Contact 7
2. Installation Plan 8
2.1 Plan 8
2.2 Scope 8
2.3 Environment 8
2.4 Tools 9
2.5 Description of Chair Operations 10
2.6 Taking Inventory 12
2.7 Chair Layout and Installation 17
2.8 Miscellaneous Installation Details 35
3. Installer Requirements 39
3.1 Overview of installation 39
3.2 Known problems 39
3.3 Troubleshooting 40

1. Introduction

The following information has been prepared in order to assist you with the installation of the telescopic seating. It has been divided into sections which relate directly to the installation sequence. For your convenience, an index has been provided to help you locate applicable sections quickly and easily.

The installation portion of our business is extremely important. It is in this segment that the customer usually gets the first look at the equipment that they have purchased. Quality craftsmanship is imperative to the overall success of the product and its installation. We have worked very hard at the factory in order to prepare the materials especially for this project. Please review all information prior to starting the assembly work and if you have any questions concerning the work, contact the local distributor.

Thank you!

1.1 Purpose of this document

This Installation Manual has been written to aide in the Installation process of the Irwin product.

1.2 Identification

1.3 Reference information

- Identify current sources of information that can be used for reference.
- Identify the location, status, and owners for specifications, existing documentation, art work

1.4 Points of Contact

- Irwin
  610 E Cumberland Rd.
  Altamont, IL 62411
  PH# 618-483-6157
  FX# 618-483-5539

2. Installation Plan

This chapter includes the following sections:

- Plan
- Scope
- Environment
- Tools
- Staging the Materials

2.1 Plan

It is the sole responsibility of the Certified Irwin Installer to unload stage and erect the Irwin product.

It shall be the responsibility of the personnel unloading the materials to perform an accurate inventory at the time of unloading. For your convenience, a "bill of materials" (packet) has been provided for you. This information has been located in box #1 and can be found at the rear of the truck. You are responsible for erecting this seating system in strict compliance with these instructions, the field installation drawings, and the bill of materials supplied with the materials.

Any shortages or discrepancies must be reported within 48 hours of receiving the final truck load of materials. **Failure to report such shortages may place the financial burden of replacement on you! (See form F403.002.02 in Appendix.)**

If you believe modification work or corrective actions are necessary, you must first obtain approval for such modifications by contacting Customer Service @ **618-483-6157**, 7:30am to 4:00pm CST Monday thru Friday.

Unauthorized modifications to the materials may place certain liabilities on the installation company.

Any extra work which has not been authorized will not be reimbursed.

2.2 Scope

Outline the scope (i.e. boundaries) of the installation plan. Clarify areas which are not part of the installation effort.

2.3 Environment

For multi-site projects, identify all installation sites, including details of the following:

- Site(s) including layout diagrams
- Arrangements for site access
- Availability to system(s)
- Environment issues

2.4 Tools

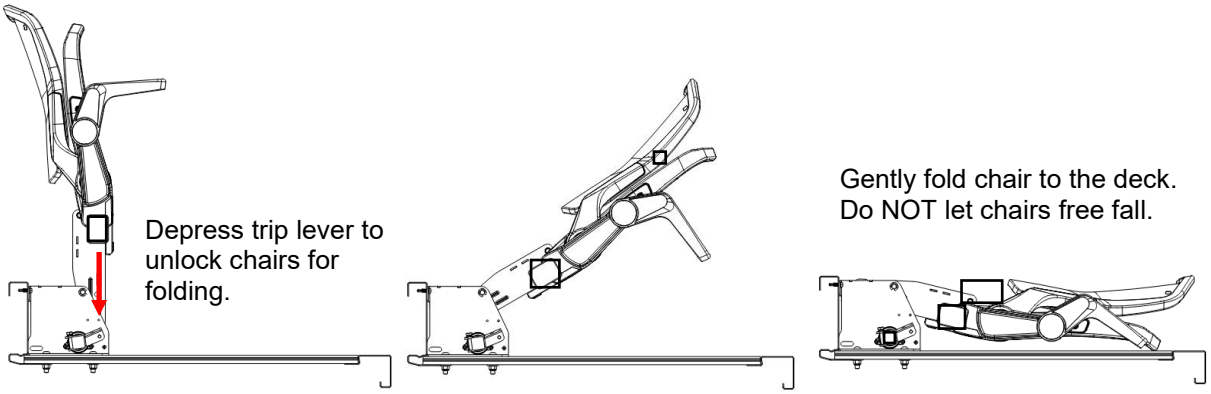
The following tools are minimum requirements for installing the Integra Chair:

- 1/4" Drive 90 degree reversible drill and variable speed 3/8" drill.
- Impact wrench (variable torque) with 16mm and 13 mm impact socket.
- 3/8" drive, 5/16”-3/8”- 7/16" - 9/16"-13mm-14mm -16mm , 17mm sockets & RATCHET.
- 3/8" drive 3/8"– 9/16” deep well socket.
- 1/4", 3/8”, & ½” Extensions 3” and 6” long.
- Wrenches, at least 2 of each. 3/8”, 9/16”, 13mm, 14mm, 16mm, 17mm,18mm
- Drift pins, chalk line. (Blue chalk)
- Dollies for material handling. Dollies must have non-marring wheels and not exceed the weight limits of the floor you are working over.
- Hammer & Rubber Mallet
- T20, T25, & T40 Torx Bits
- 6 mm Allen bit
- Steel drill bit size, 5/32”
- Wood & steel drill bits size, 25/64”
- ¾” speed bore bit (preferred), or ¾” Wood Spade Bit, and/or ¾” Hole Saw, ¾” drill bit
- Electric hammer drill with the following bits; 3/8
- Blow out pump (To clear out holes)
- Pencils & Markers
- Squares, levels (4’ & torpedo) and Tape Measures
- Tek Guns with 5/16” & 3/8” Bit
- Screw Drivers assorted & (#3 Phillips Bit)
- Remote Power light
- Standard Allen Wrenches/Bits
- Power cords
- Table Saw or Band Saw

2.5 Description of Chair Operations

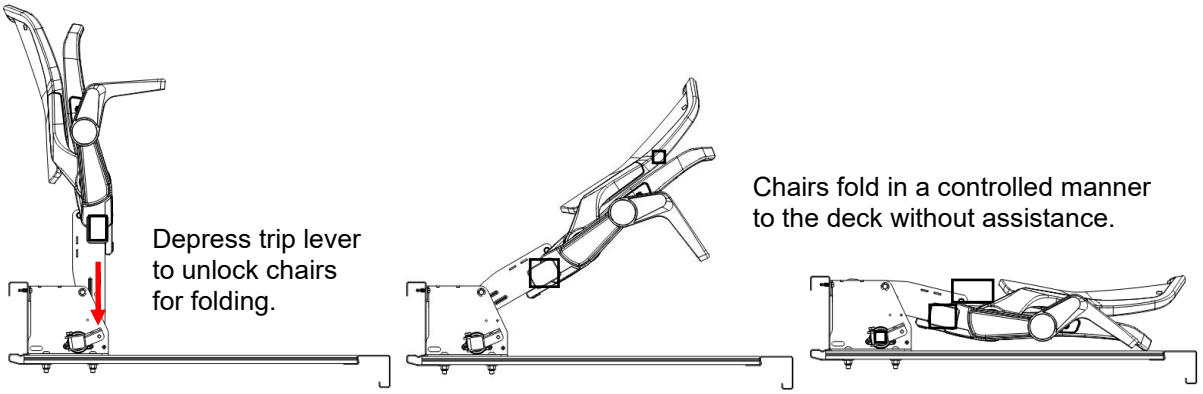
2.5.1 Manual Operation

In manual operation, the chair beam (maximum of (4) chairs on a beam) is released by a foot trip lever that allows the chairs to fully fold on the deck surface. The chairs must be lowered to the deck by the operator and not allowed to free fall. Allowing the chairs to free fall may cause damage to the chairs and deck structure. Chairs shall be folded starting at the lowest row and working your way up. Chairs should be stood up starting at the top row and working down. To lock the chairs in the upright, useable, position, raise the chairs until they are upright and locked out. You will likely hear an audible noise from the lock engaging that will indicate the chairs are in the upright position. *It is the responsibility of the operator to check and ensure that **all** chairs in each string are securely locked in the useable position prior to patron use.*



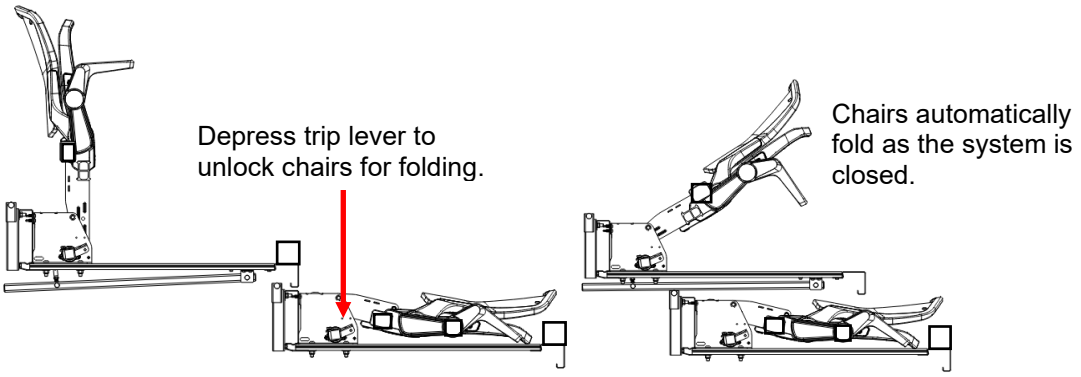
2.5.2 Semi-Automatic with Foot Release

With semi-automatic with foot release operation, the chair beam (maximum of (12) chairs on a beam) is released by a foot trip lever that allows the chairs to fully fold on the deck surface. The chairs will fold to the deck in a controlled manner and will not require the operator to fold the chair down. Once folded, the chairs will lay flat on the deck until the operator begins to stand them up to their upright position. This lift will be assisted to reduce the amount of effort required by the operator. Chairs shall be folded starting at the lowest row and working your way up. Chairs should be stood up starting at the top row and working down. To lock the chairs in the upright, useable, position, raise the chairs until they are upright and locked out. You will likely hear an audible noise from the lock engaging that will indicate the chairs are in the upright position. *It is the responsibility of the operator to check and ensure that **all** chairs in each string are securely locked in the useable position prior to patron use.*



2.5.3 Semi-Automatic with Automatic Release

With semi-automatic with automatic release operation, as the telescopic system closes, the chairs will automatically trip and fold to the deck surface. The exception is row 1, any programming row, any truncated row, and any last row in a recess configuration will require a foot release operation. Once folded, the chairs will lay flat on the deck until the operator begins to stand them up to their upright position. This lift will be assisted to reduce the amount of effort required by the operator. Chairs should be stood up starting at the top row and working down. To lock the chairs in the upright, useable, position, raise the chairs until they are upright and locked out. You will likely hear an audible noise from the lock engaging that will indicate the chairs are in the upright position. *It is the responsibility of the operator to check and ensure that **all** chairs in each string are securely locked in the useable position prior to patron use.*



2.6 Taking Inventory

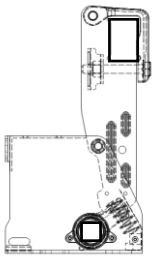
In the first box of hardware, you should have a packet of papers for the Integra chairs. You will need this packet to take inventory of the Integra chair components. Usually, the packet will contain a Shipping Report, Hardware Report, Integra Hardware Report, & Manufacturing Report. The Integra Hardware and Manufacturing reports are primarily for factory use. Also included in the packet are a chair layout drawing, the beam layout drawing, and job specific installation prints.

2.6.1 Mechanism Identification

There are five standard types of chair operations that may be utilized: Manual, Semi-Automatic with foot release, Semi-Automatic with automatic release, Fixed, and Movable Base. Each option has a different mechanism/base. Check each mechanism type against the ship list and report any shortages immediately.

2.6.1.1 Manual Mechanism

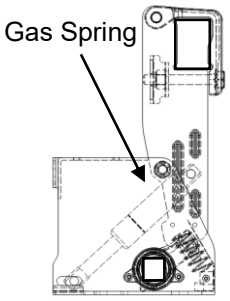
This mechanism is the basic fold down mechanism and does not include a gas spring. In some cases, it may be referred to as a semi-auto, no spring mechanism (SNS).



Manual Mechanism

2.6.1.2 Semi-Automatic with Foot Release Mechanism

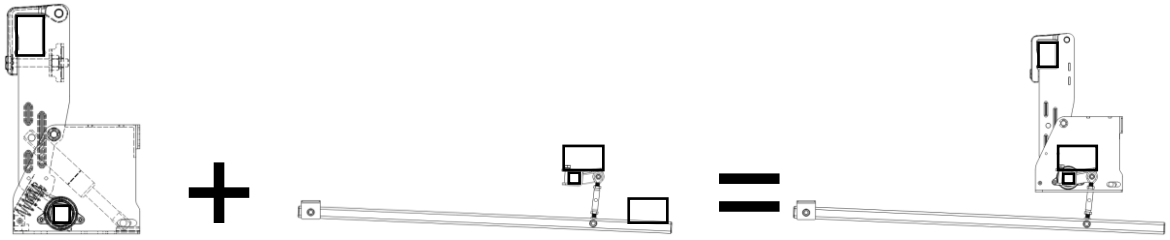
This mechanism is the basic fold down mechanism and includes a gas spring that helps control the folding of the chair and assists the operator when standing the chairs to the upright position.



Manual Assist Mechanism

Chair Combination (Back/Seat/Arm)	Spring Force (N)	Blue Cube Part & Irwin Part No.
Plastic/Plastic/No	300	FD7274-OE89225-GR
Plastic/Padded/No	300	FD7274-OE89225-GR
Padded/Padded/No	450	FD7274-OE89226-GR
Plastic/Plastic/Yes	550	FD7274-OE89227-GR
Plastic/Padded/Yes	550	FD7274-OE89227-GR
Padded/Padded/Yes	800	FD7274-OE89232-GR
High Back/Padded/No	800	FD7274-OE89232-GR
High Back/Padded/Yes	800	FD7274-OE89232-GR

2.6.1.3 Semi- Automatic with Automatic Release Mechanism



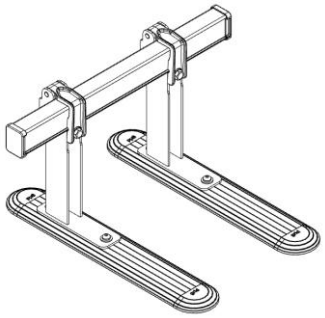
Mechanism **Linkage Assembly** **Semi-Automatic Assembly**

** Please note that a linkage assembly is not required for every bracket and will be specified per job.

The mechanism for semi-automatic operation is the same as that of the manual assist, the added linkages allow for the semi-automatic operation. **Table 1** above applies to semi-automatic mechanisms as well.

2.6.1.4 Movable Base Chair

Movable base beams will come assembled from the factory as shown below. The chair and arms will need to be assembled to the base.

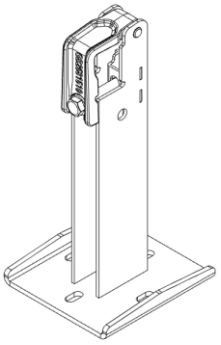


Movable Base Assembly

Once all items are identified, they should be checked against the shipping report. Any shortages should be immediately reported.

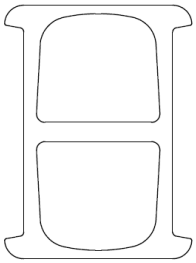
2.6.1.5 Fixed Tread Mount Stanchion

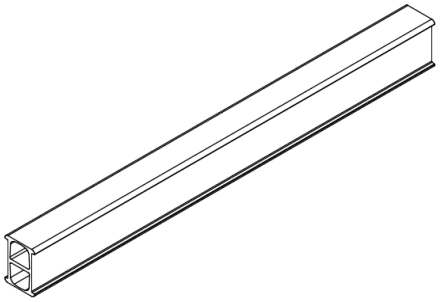
Fixed tread mount stanchions may be required if the chair is to be mounted to a concrete (or other) structure and is shown below. Once items are identified, they should be checked against the shipping report. Any shortages should be immediately reported.



2.6.2 Chair Rail Identification

The chair rail is an aluminum extrusion with a profile as shown below. This will either be black anodized or clear anodized in color depending on job specifications and will come in different lengths.





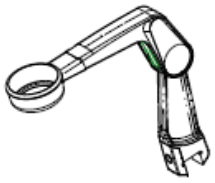
The packing list will also include a number of chair beams at specified length. Check the rail counts and rail lengths against the ship list. Any shortages should be reported immediately.

2.6.3 Chair Identification

There will be one size of chair module that is fully assembled and boxed from the factory. The shipping report contains the total number of each chair type. Each box should contain (6) chairs of similar color and upholstery. It will be necessary to check the shop drawings for plastic and upholstery colors. Each full box of arms should contain (12) arms with either a plastic arm rest or cup holder arm rest already assembled. Open every box and check against the shipping total. Tablet arms will be shipped in a crate at various quantities. Report any shortages immediately.

Chair Module

Arm Rest Assembly (IT440)



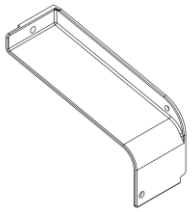
Cup Holder Assembly (IT443)

Scribe - Tablet Arm (IT490)

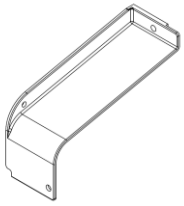
End Arm Rest Used with Tablet (IT410)

2.6.4 Dust Cover Identification

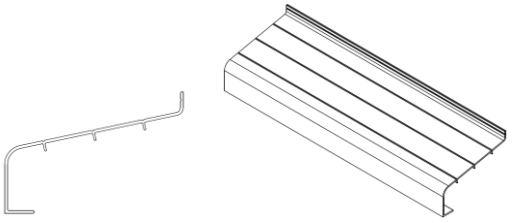
All fold-down chair operations (manual, semi-automatic with foot release, and semi-automatic with automatic release) will require dust covers that allow for easier cleaning of the telescopic system and keep debris away from the moving trip tube that allows the chair system to operate. There will be a Right Hand (RH) and Left Hand (LH) end cover, and an extruded PVC cover as shown below.



RH End Cover (IT72435)



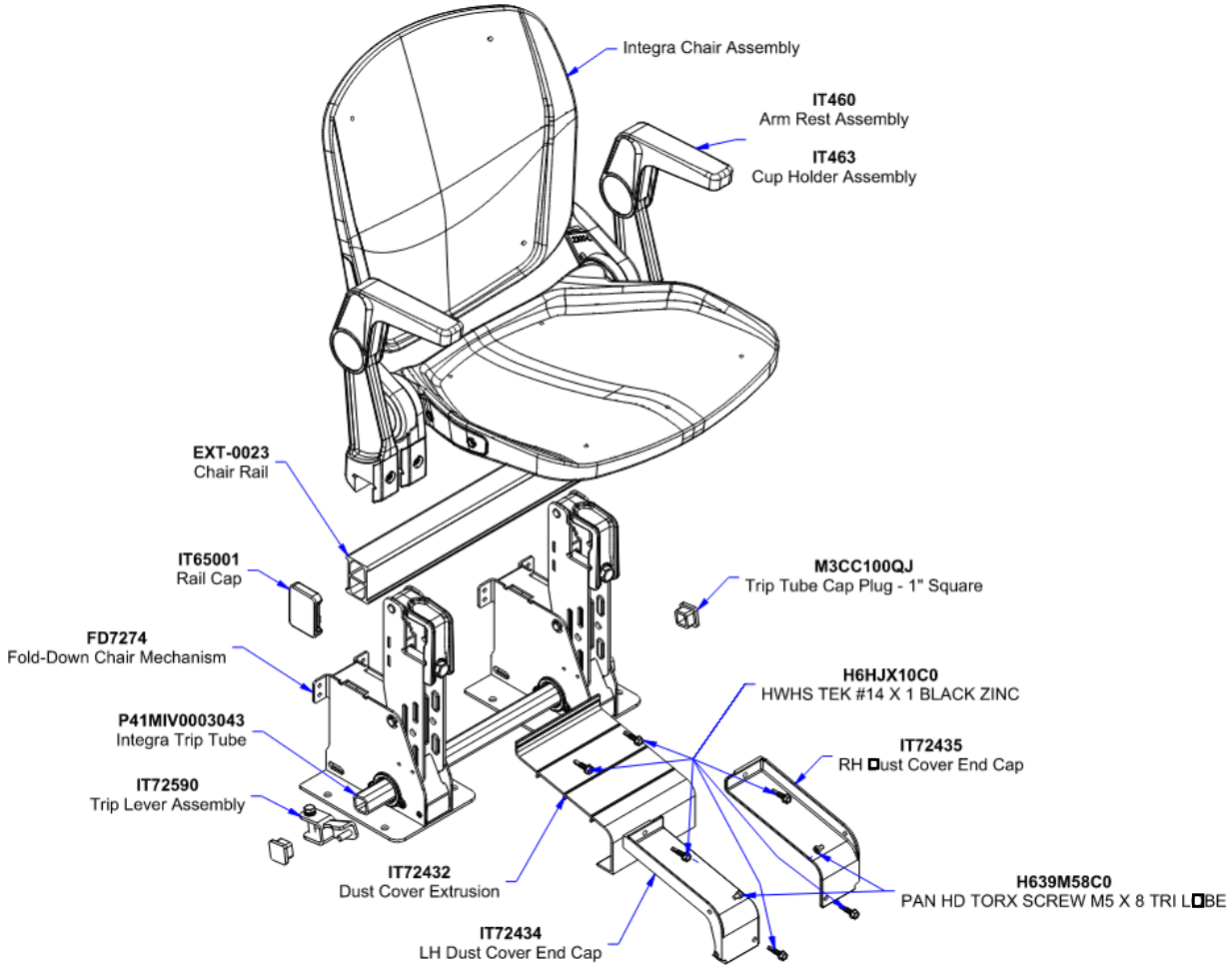
LH End Cover (IT72434)



Extruded PVC Dust Cover (IT72432)

The LH and RH end covers will have a count associated with them that should be checked against the ship report. The extruded PVC dust cover will come in 12 ft. 6 in. lengths that will require cutting to trim out and complete the product. These quantities should be checked against the ship list. Report any shortages immediately.

The hardware and small parts listed on the Hardware Report should be inventoried at unloading. These and other small items from the Shipping Report are pictured and labeled at the back of this manual. If there are shortages, please provide a complete detail of the missing item along with the Irwin part number.


Integra Chair Assembly
IT460
Arm Rest Assembly
IT463
Cup Holder Assembly
EXT-0023
Chair Rail
IT65001
Rail Cap
M3CC100QJ
Trip Tube Cap Plug - 1" Square
FD7274
Fold-Down Chair Mechanism
H6HJX10C0
HWHS TEK #14 X 1 BLACK ZINC
P41MIV0003043
Integra Trip Tube
IT72435
RH Dust Cover End Cap
IT72590
Trip Lever Assembly
IT72432
Dust Cover Extrusion
H639M58C0
PAN HD TORX SCREW M5 X 8 TRI LOBE
IT72434
LH Dust Cover End Cap

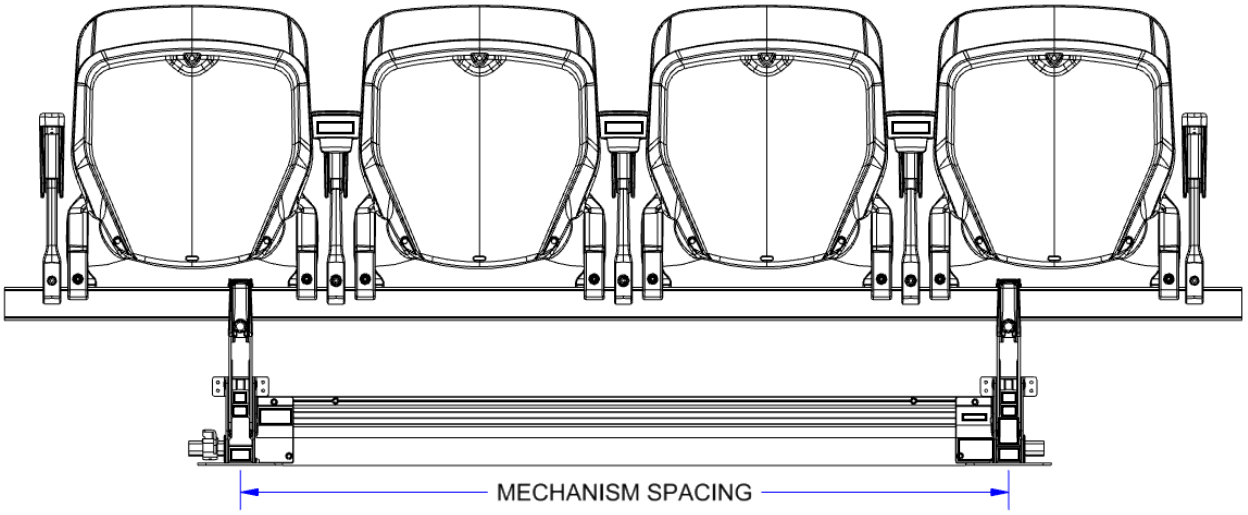
2.7 Chair Layout and Installation

2.7.1 Chair Beam Layout

** DO NOT Attach Chairs until beams are secured to deck surface!

When laying out the chair beams on the platform decks, you must follow the Chair Beam Layout. There will be one sheet, in plan view, with the job Layout drawings. This sheet shows the chair rails and identifies the rail length as well as location (chart at bottom of drawing shows summary of chair rails for group shown). This shall be utilized to properly locate all the chair rails on the platform deck as it will show distances to the aisles, gaps between consecutive rails, and the distances to the edge of a section.

After the beams have been properly positioned on the platform, the trip tubes (1" x 1" x 11 Ga. Tube) shall be properly identified to match each chair beam. For manual chairs, the below diagram identifies the trip tube length for the corresponding gang of chairs.



MANUAL CHAIR BEAM

# OF CHAIRS	MECHANISM SPACING	TRIP TUBE LENGTH
4	55"	60"
3	40"	46"
2	28"	34"
1	12"	18"

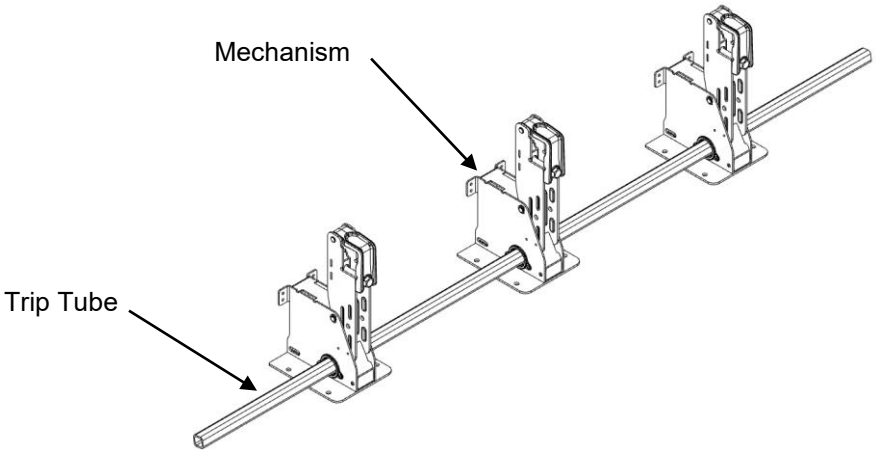
When semi-automatic with foot release or semi-automatic with automatic release operation is required, the trip tube length will be 12" shorter than the chair beam length.

2.7.1.1 Mechanism Installation

Once the trip tubes have been properly identified and positioned in their corresponding place on the deck, the mechanisms are ready to be installed. The layout drawings will show the general location of the mechanisms with a "zero" position for ease of positioning. Please Note: You may shift the mechanisms to the left or right to avoid obstructions, such as deck supports, to make drilling and installing easier. However, the following guidelines must be followed when doing so;

1. The chair rail overhang *may not* exceed 17 ¾". This is measured from the center of the bracket to the end of the aluminum rail extrusion.
2. Mechanisms *may not* be spaced such that the center to center distance of consecutive mechanisms exceeds 55" (span).
3. A ratio of (2) chairs to (1) mechanism *may not* be exceeded. For example, (7) chairs would require (4) mechanisms.
4. Make sure that when the mechanisms are positioned, they are in a location where the attachment bolt through the deck will not interfere with a top stop or other moving piece of understructure below.

Reference the Chair Layout which will identify the chair operation. Section 2.5.1 identifies the mechanism that will be utilized based on operation and chair type. Once the proper mechanisms have been identified, slide the number of mechanisms required for that beam onto the corresponding trip tube as shown below. ***NOTE: If chair operation is semi-automatic with foot release or semi-automatic with automatic release and the chair beam has an odd number of chairs, there will be a mechanism labeled "SNS" (Semi-Auto No Spring) included on the beam. This is simply a mechanism that does not have a gas spring (manual) and its position is denoted on the mechanism layout drawings (refer to legend).***



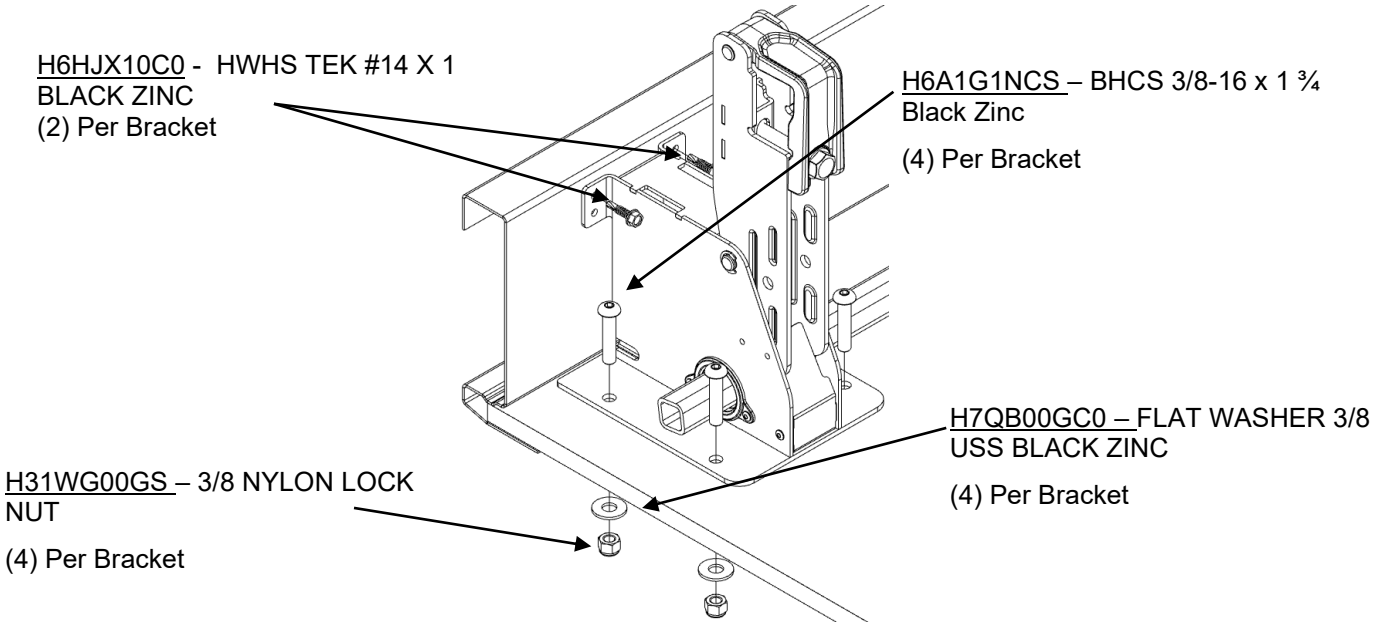
Push the sub-assembly up against the rear beam and properly space out the mechanisms for attachment, applying the (4) rules above. It is important to have the tube through the mechanisms prior to mounting the mechanisms to the deck. This will keep things square and help ensure proper operation once installation is complete. Once the trip tube is through all the mechanisms, install the black cap plugs in each end of the trip tube. See page 15 for detail.

NOTE: Before anchoring the mechanisms, if semi-automatic with automatic release operation is required, ensure that at least one of the mechanism slots (within the chair beam being installed) at the back is clear of any deck supports or other obstructions below. This slot will need to be router/drilled out for the trip mechanism that operates the chair and will require clearance for the linkage to be installed. If possible, avoid this being the far right mechanism (while looking at the bleacher) on the beam. Also, if tablet arms are required, see tablet arm section before anchoring.

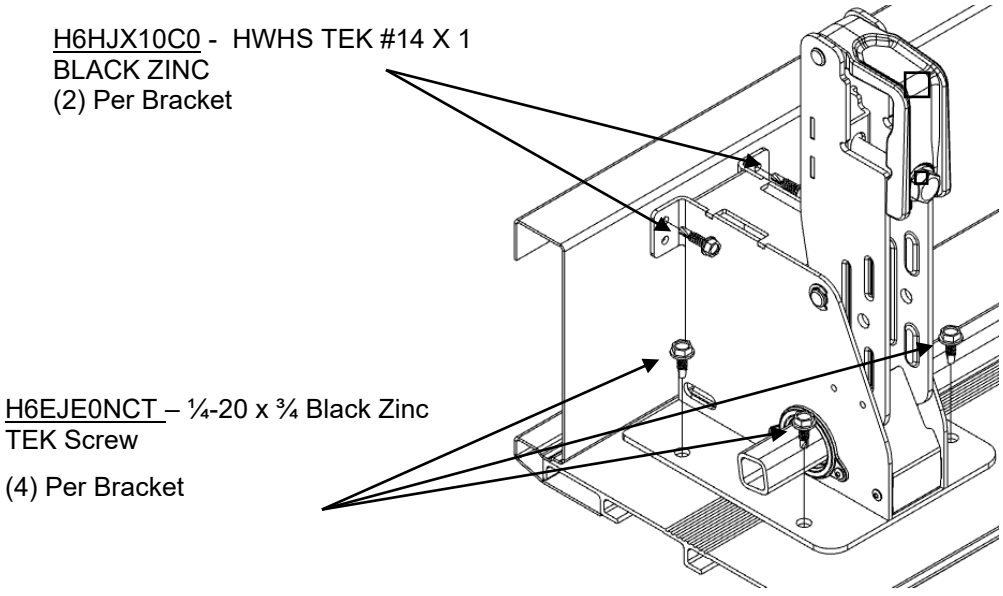
The anchoring hardware will depend on the type of beam and the decking material. On a carpeted deck, the carpet should be burned with a soldering iron prior to applying decking attachment hardware. The holes in the base plate of the mechanism shall be used as a drill template.

When plywood decking (or carpet over plywood) is utilized, 25/64" Dia. holes shall be drilled through the decking surface for through bolting of the mechanism as shown below.

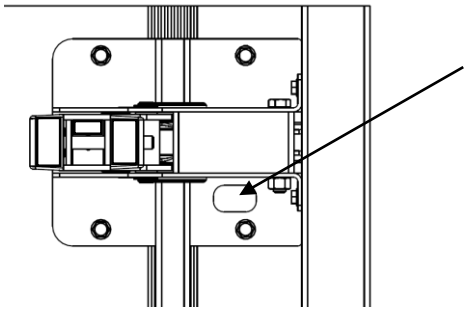
*** It is recommended to drill through the decking prior to attaching with tek screws. If a bracket has to be moved, the tek screw holes will not get covered up but it is possible the dust cover will cover the holes in the deck. ****



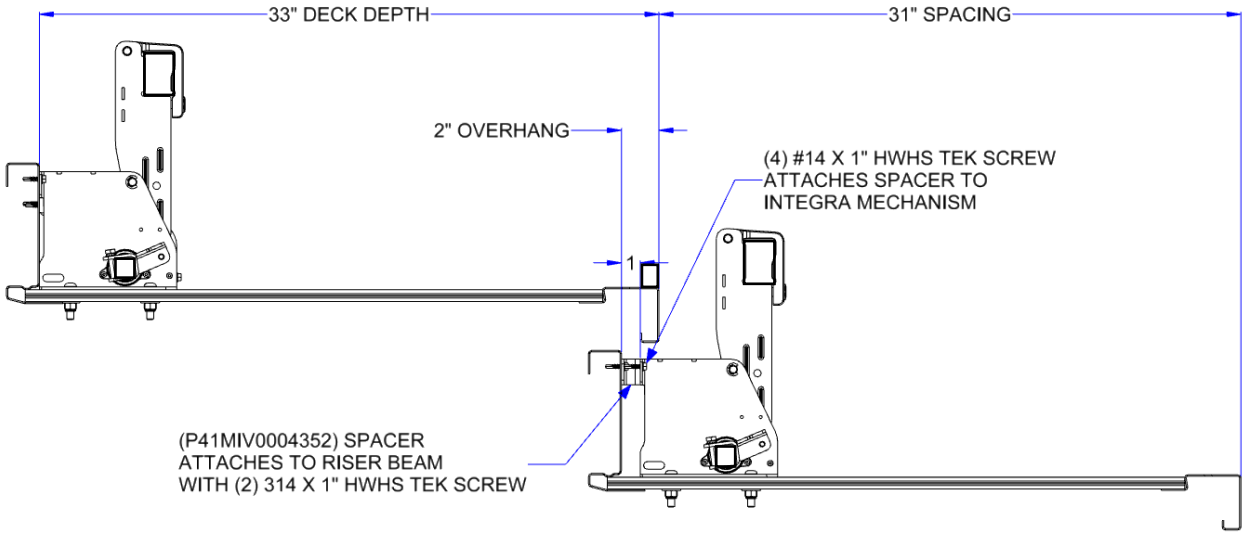
Plywood Decking



Aluminum Decking



There may be special conditions where the chairs need to be spaced forward of the rear beam. These conditions will either require a backer plate or a spacer that spaces the mechanism out from the rear beam as shown in the figure below. This particular illustration shows a standard 1” spacer that allows the chair to be placed on higher rises that have a deck overhang to meet required spacing. If this situation occurs, the runner bar will need to be spaced forward the same amount to allow for proper operation, or a special runner bar will be supplied.



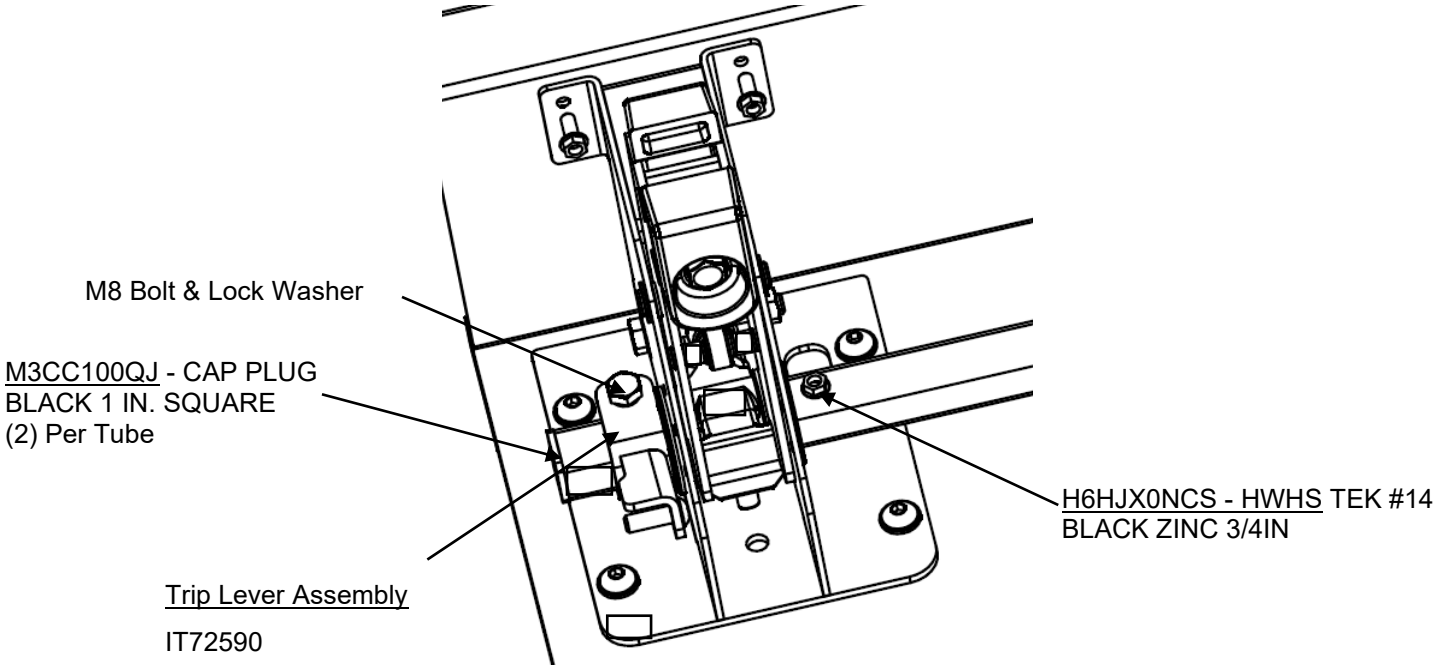
If a backer plate is required, the plate is slightly larger than the base plate of the mechanism. This will require the mechanism to be positioned such that the backer plate does not interfere with any understructure.

Furthermore, if a runner bar assembly is required, it will be moved forward the same 1” dimension that the spacer moves the mechanism.

The following sections break down the installation based on operation of the chair (manual, semi-automatic with foot release, semi-automatic with automatic release, concrete/fixed).

2.7.1.1.1 Manual & Semi-Automatic with Foot Release Installation Detail

Once the mechanisms are attached to the deck surface as shown above, the next step will be to attach the trip lever and apply a TEK screw to secure the trip tube in place. The trip lever slides over the tube and is then tightened down to clamp onto the trip tube. This should be placed within 1" of the vertical side plate of the mechanism. *Do not overtighten. If threads are stripped out, a new part will be required.* See below diagram for detail. The trip lever for manual and manual assist operation should *always* be placed to the outside of the outer most mechanism of each chair beam assembly. If semi-automatic with foot release operation is required, place the trip lever on the side of the mechanism towards the aisle. *NOTE: To give a nice finish look, before tightening the trip lever, align the trip tubes at aisle locations. Also, whenever possible, minimize the amount of trip tube sticking out in the unshrouded areas.*

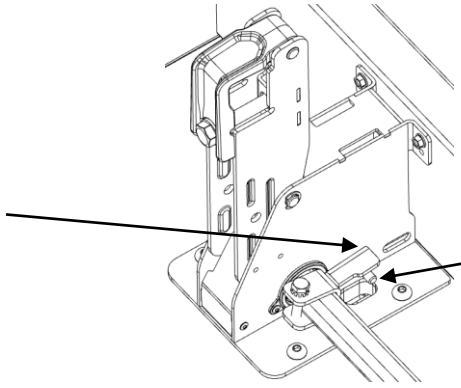


2.7.1.1.2 Semi-Automatic with Automatic Release Mechanism Installation Detail

If semi-automatic with automatic release operation is required, the following instructions shall be followed to properly install the required linkages. As noted above, the mechanisms should have been installed such that atleast (1) mechanism was located such that the slot was clear of any deck structure to allow for the linkage to be installed.

Once this is confirmed, identify which bracket will accept the semi-auto mechanism linkage. ***NOTE: The optimal location is in the middle of the chair beam. The far right (looking at the bleacher) mechanism should be avoided. This is so the linkages are covered by the dust cover.***

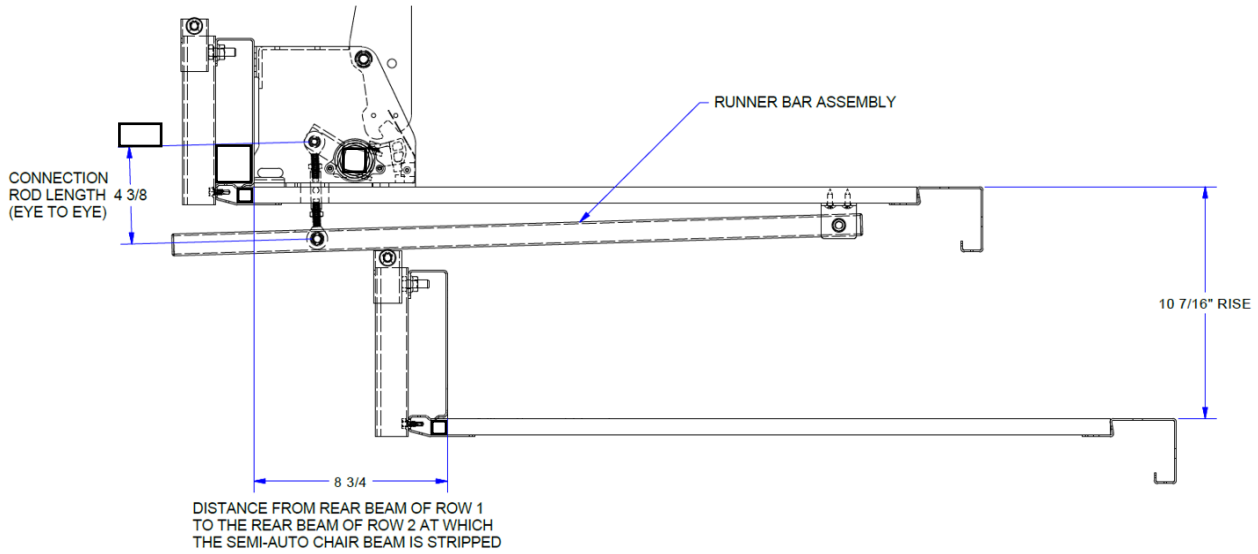
Using a ¾" spade bit, ¾" speed bore bit, or ¾" hole saw, drill out the deck through the rear slot of the identified mechanism. Once the slot is clear, the trip lever assembly shall be placed onto the trip tube so that it is up against the mechanism (see below). Do *not* clamp trip lever on at this time.

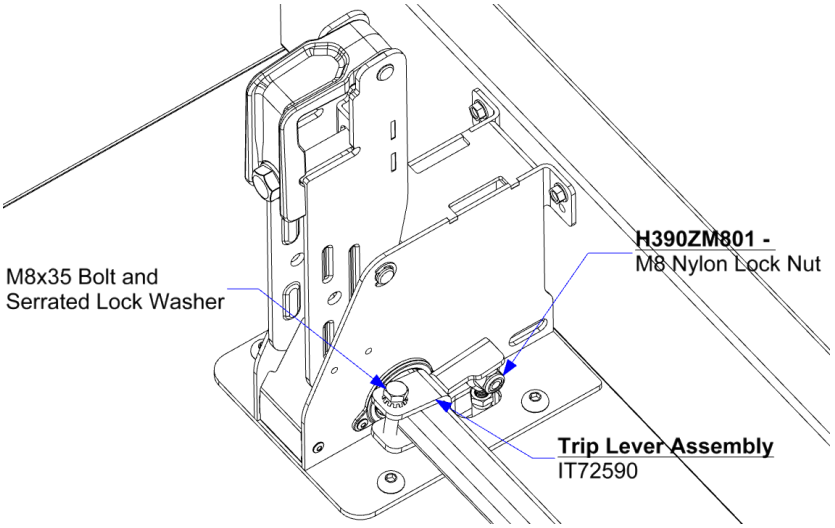


Once the clamp is around the tube, locate the connecting rod and determine the eyelet center distance (CONROD LENGTH) from the below chart. Once the eyelets are located properly (make sure they are also aligned), tighten the nuts down on the connecting rod to hold them in place.

The chart below reflects the set length for the connecting rod based on the rise. This chart will repeat itself for every 1" change in rise. For example, at 10, 11, 12, etc., the connecting rod length would be 4" center to center. At 10.75, 11.75, 12.75, etc., the connecting rod length would be 4.18" center to center.

RISE	CONROD LENGTH	TRIP DISTANCE	SPRING COMP. DISTANCE
XX.000	4.000	15.500	0.700
XX.063	4.000	11.500	0.750
XX.125	4.087	11.000	0.741
XX.188	4.087	9.500	0.760
XX.250	4.180	9.880	0.716
XX.313	4.250	9.750	0.700
XX.375	4.313	9.400	0.690
XX.438	4.375	8.750	0.685
XX.500	4.000	15.500	0.700
XX.563	4.000	11.500	0.750
XX.625	4.087	11.000	0.741
XX.688	4.087	9.500	0.760
XX.750	4.180	9.880	0.716
XX.813	4.250	9.750	0.700
XX.875	4.313	9.400	0.690
XX.938	4.375	8.750	0.685

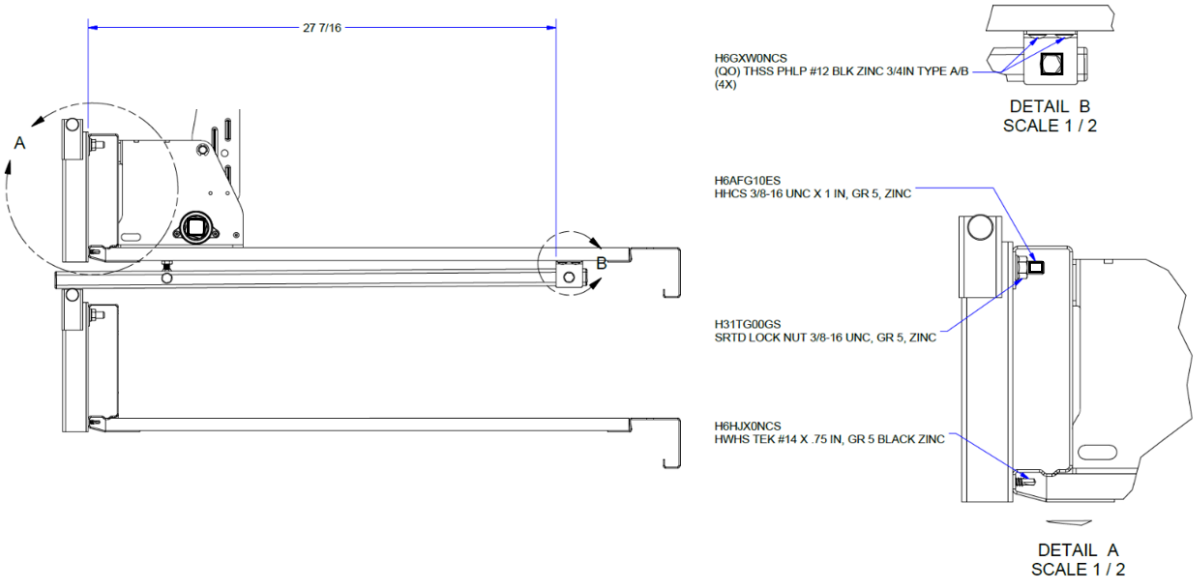




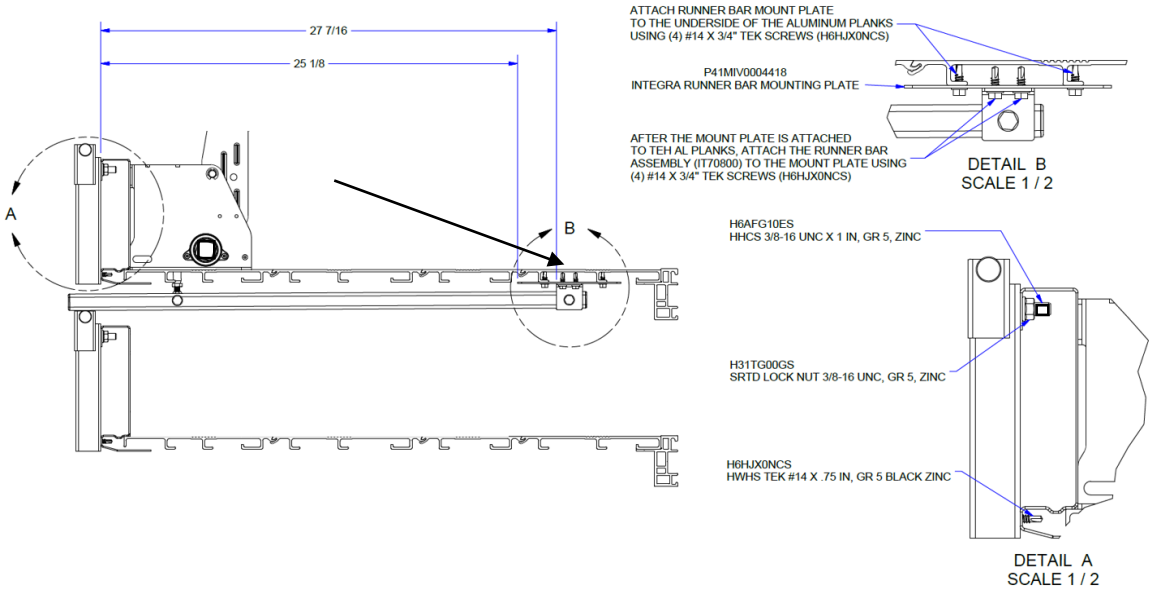
Attach the connecting rod to the trip lever using an M8 Nylon Lock Nut. From the top side of the deck, drop the connecting rod through the slot and position the trip lever onto the trip tube. Ensure the trip tube is properly positioned left to right and tighten M8x35 bolt. *Do not overtighten. If threads are stripped out, a new part will be required.* Install #14 x ¾ TEK screw into the trip tube to secure tube in place (See Page 19 for More Detail) located direclty to the left of a mechanism within the chair beam assembly.

Next identify the runner bar assembly and connect the other end of the connnecting rod eyelet to the runner bar assembly in the open slot with M8 hardware that is already attached.

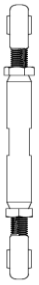
If the decking material has a plywood base, follow the below illustration to attach the runner bar assembly. This is the linkage that will connect to the connecting rod and trip the chairs as the bleacher closes. *The runner bar must be installed so that it is in line with the slot in the mechanism*. This detail also shows the runner bar support assembly and method of installation. This will be required on the deck below and aligned with the designated runner bar.



If the decking surface is aluminum, follow the below illustration for the runner bar assembly.



Note: Once the entire system is installed, there may be some required adjustment needed on the connecting rod to fine tune the system. This can be done by loosening the nuts and using a crescent wrench on the flats of the connecting rod.



2.7.1.1.3 Fixed Bracket Installation

INSTALLATION REQUIREMENTS

No product guarantee can be assured without meeting the requirements for the embedding material.

Concrete

Minimum 3” concrete, minimum 1-1/2” free of obstructions, minimum 1-1/2-2” embedment depth, and minimum of 3000 psi concrete is required.

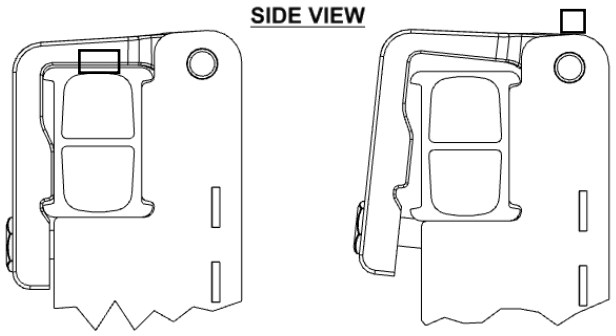
Steel surfaces:

The most common method would be to use a threaded fastener from above and a nut with a washer from below. If approved by the project engineers, threaded fasteners can be used to fix stanchions to the surface by tapping holes into the steel.

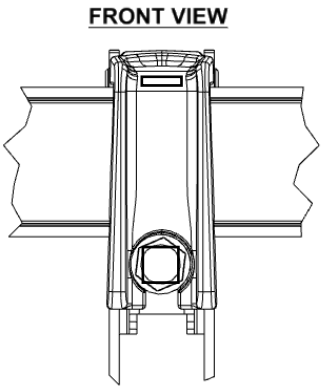
1. Check that drawings match physical site (especially overall row dimensions). Any differences need to be reported immediately to resolve possible revised seat count/seating plan with client.
2. Determine stanchion distance from riser.
3. Identify locations of stanchions and mark this out accurately on the surface to be drilled (either tread or riser), to indicate the stanchion centre locations.
4. On sites where ascending rows are equal length (straight rows and square blocks) only the very top and bottom rows need to be marked out individually. The rest of the stanchions’ positions can be determined by stringing a line between top and bottom rows and marking all other rows in between.
5. If the drilling is done manually without a jig, the hole positions need to be marked out accurately. A chalk line will be required to mark out correct distance from the riser. With every stanchion in position on the center markings, the base plate holes can be marked. The side holes are used as the primary fixing locations and the top and bottom (or front and back) holes are provided as an alternative option if needed.
6. A cover-meter can be used to check for sub-surface steel reinforcement before drilling. If the presence of re-bar is detected, the markings can be moved ¾” to either side (left/right only, not back/forth).
7. Make sure drilling jig (if used) is correctly set for specific job; minimum effective embedment depth etc.
8. Ensure that the center of the 3/8” drill-bit is on the exact spot before drilling each set of holes.
9. Trial three sets of holes and check anchor embedment depth/protrusion height by installing a stanchion (see below) on each and tightening them properly.
10. Always construct a stanchion with rail and chair (see below) before drilling the complete stand to check correct seat height and other dimensions.
11. Drill row by row and change out drill bits after every 100 holes. (May need to be more frequent with harder concrete)
12. Report any abnormalities, such as drill getting stuck, hitting re-bar, hitting air pockets (drilling too easy), immediately for a solution to be implemented.
13. Operator must understand that the drill does the work. If any difficulties occur, something is wrong - bit is blunt, steel re-bar interference, etc. When hitting re-bar, the stanchion needs to be moved ¾” to the left or right. Likewise, if it becomes too easy to drill, you may be in an air pocket, and the anchors won’t work. To solve this problem the stanchion needs to be moved to the left or right by 3”.
14. Blow the dust out of the holes with a hand pump after a row has been drilled.
15. Disassemble slides on drilling jig and clean off dust when it starts to bind up.
16. Sweep up terrace before next steps.
17. Mount stanchions over anchor holes.
18. Insert Hilti anchors through clearance holes in steel base plate and into concrete, tap in with lump hammer. Do not tighten nuts in this step.
19. Follow embedment and torque requirements on Hilti hardware box to secure stanchions.
20. Follow below steps of attaching chair rail.

2.7.1.2 Chair Rail Installation

Once the trip lever (or semi-auto assembly) is properly attached to the trip tube as shown above, the next step will be to install the chair rail on the mechanisms per the Chair Beam Layout drawing. Position the rail on the mechanisms in the designated location and install the rail as shown below. **NOTE:** *There may be some markings on the rail due to the anodizing process. These markings should be placed so that they point toward the ground as to not be visible.* Tighten the M12 Bolt and Nylon lock nut (already attached) with a 19 mm socket to a *required* torque of 33.2 ft-lb.

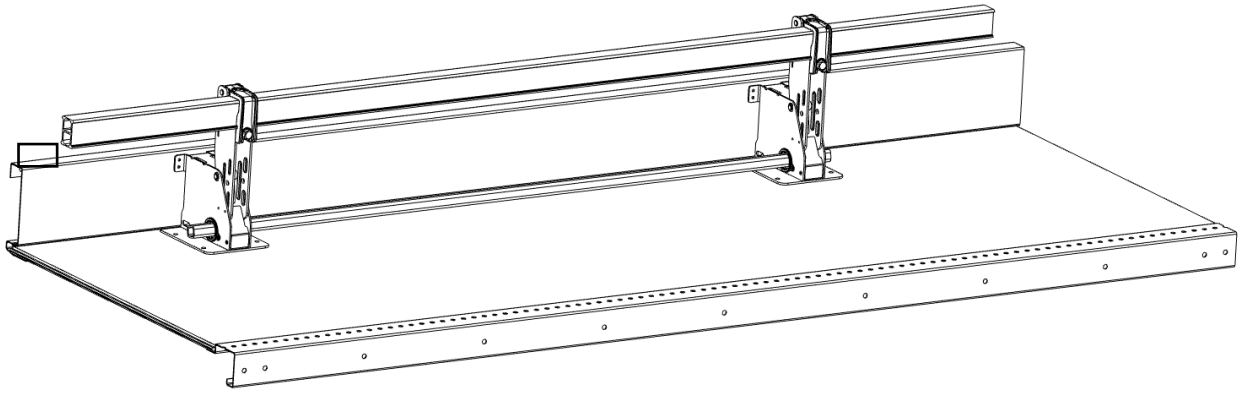


B. Clamp-Set NOT properly engaged



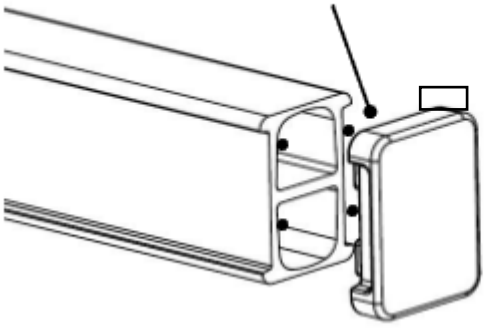
A. Clamp-Set properly engaged

WARNING: Engagement of clamps to rail lip is critical to the function and safety of the system. Failure to ensure clamps are correctly fitted could result in injury.

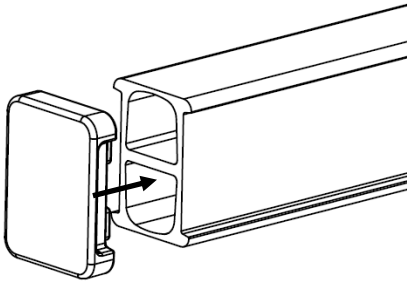


Once the rail is attached, check the Beam Layout Drawing to see if an end cap is required. If the cap is required, use a cold chisel or flat blade screwdriver with hammer as shown below to create a protrusion of the aluminum. This will keep the cap from coming loose.

Rail End Cap
IT-65001



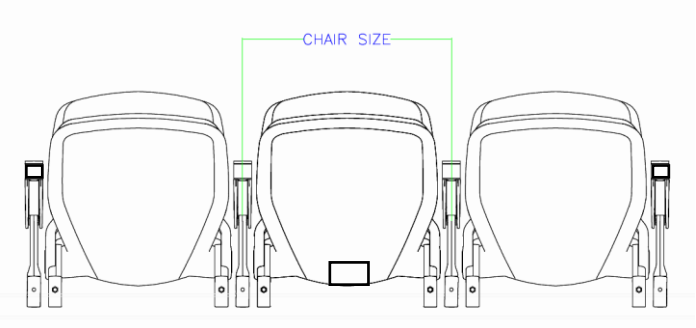
crimp protrusions (x4)
Are to be made by installers with cold chisel or flat blade screwdriver to prevent the cap from coming loose



Once protrusions are created, press end cap on to rail or tap with rubber mallet to seat.

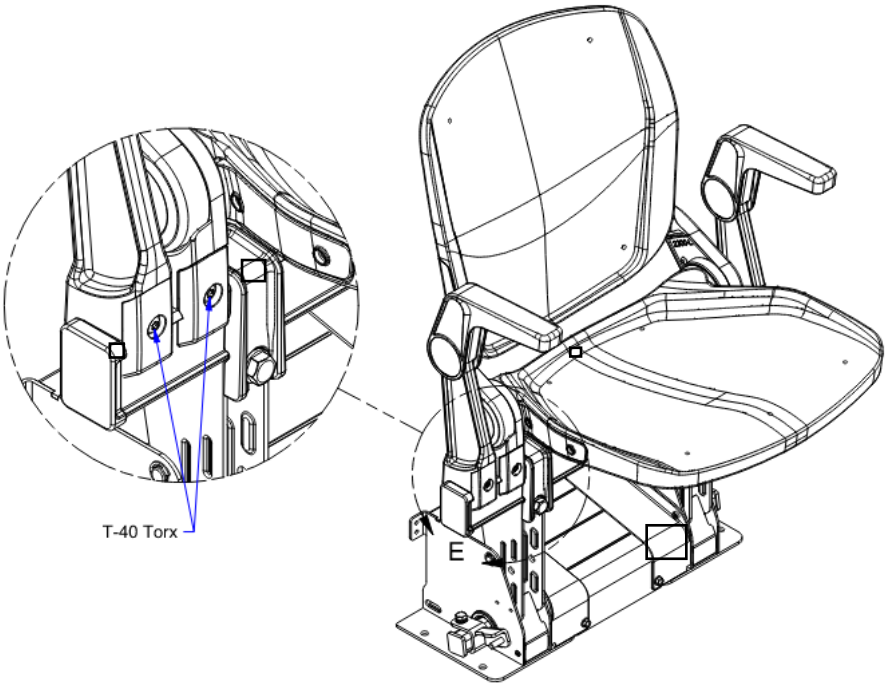
2.7.1.3 Chair and Arm Installation

The next step is to attach the chairs and arms as required by the Chair Layout drawing. The chair size will be determined by a measurement from center of arm to center of arm; or if no arms are required, chair size will be determined by the distance from a common point between two consecutive chairs.



Place the chairs and arms on the rail and space them properly. Note: If desired, spacers can be made to easily space chairs out properly throughout a job.

Using a **6 mm Allen bit**, tighten the chairs and arms to the rail with a torque setting of **22 ft-lbf** of force. ***WARNING****: Over tightening the screw can lead to premature failure of the seating clamp. When setting the chairs and arms, it is critical that the clamps are not clamped on the lip of the rail and are clamped to the flat surface of the rail. See above illustration (page 19) for proper clamp set engagement.*



Tighten screws with 6 mm Allen bit set at 22 ft.-lbf.

2.7.1.3.1 Dust Cover Installation

Note: *Before dust covers are installed, ensure proper operation of all chair beam assemblies. If the job is semi-automatic with automatic release, it is suggested that the system be cycled several times to ensure proper operation. If adjustments are needed, the dust cover will not have to be removed to work on the chair system. All debris and dirt should be cleared and removed prior to cover installation.*

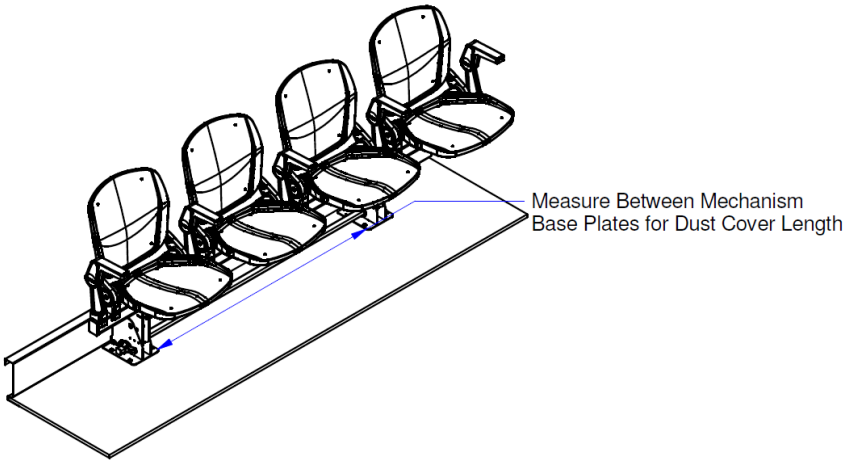
** DUST COVERS ARE NOT USED WITH FIXED STANCHIONS**

Once operation is validated, follow the below instructions to properly install the dust covers.

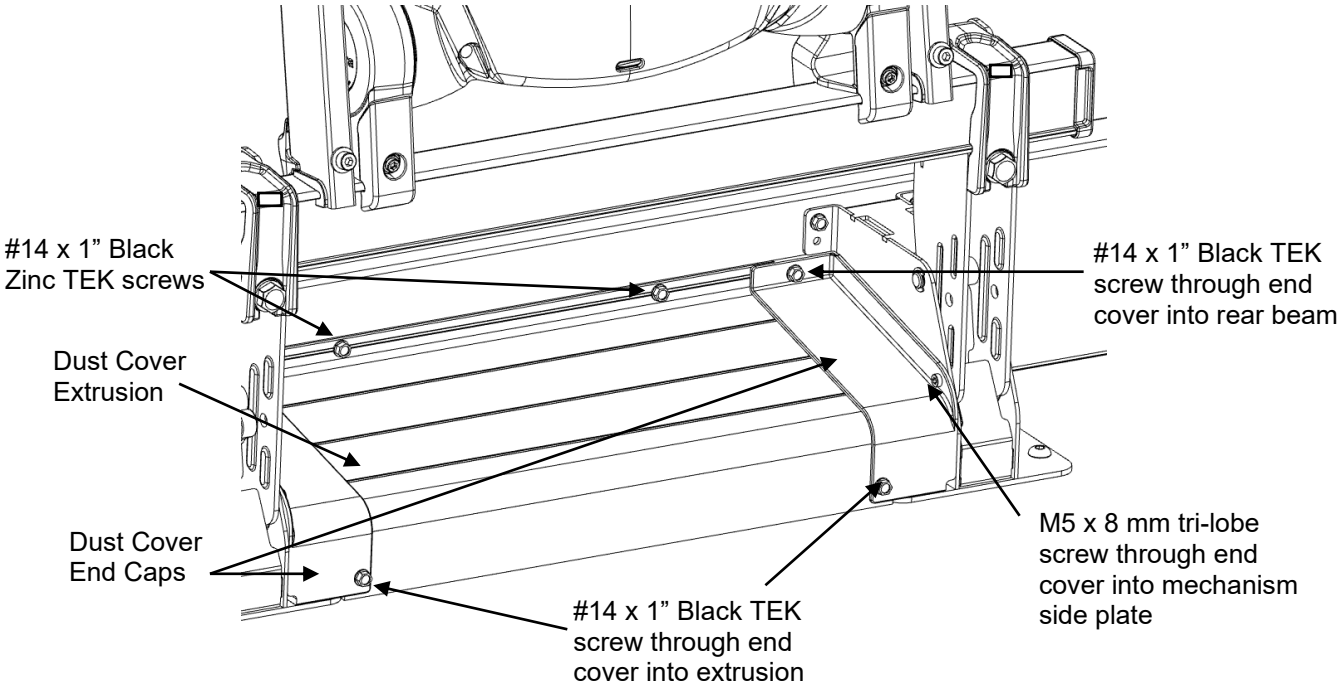
For manual operation, dust covers will not be between every mechanism. They will only be between the mechanisms on a chair beam as this will allow for access to the trip lever to fold the chairs down on the platform. They will not span between mechanisms of consecutive chair beams.

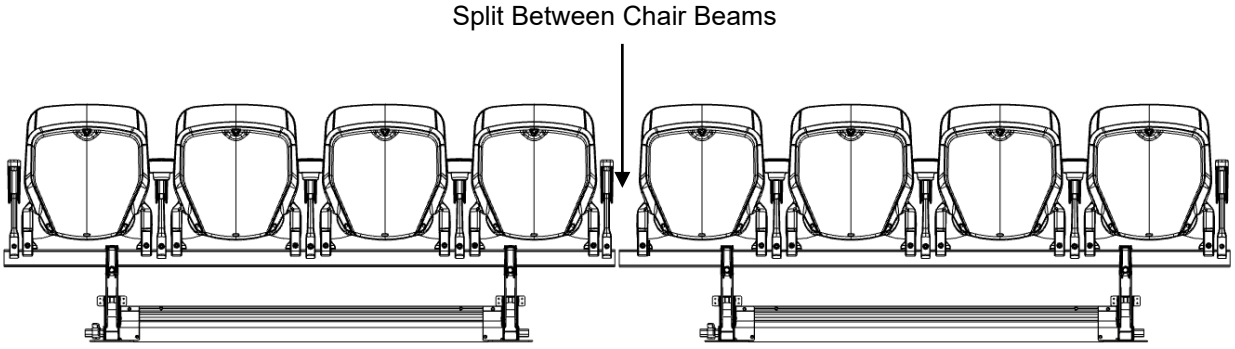
For semi-automatic operation, dust covers will span all mechanisms between an aisle to cover up the trip tube and linkage assembly that is above the deck.

Take a measurement between the base plates of the mechanisms where the dust cover is going to be installed. This measurement will be the length that the dust cover extrusion needs to be cut to. Using a table saw or band saw, cut the dust cover extrusion to the required length.

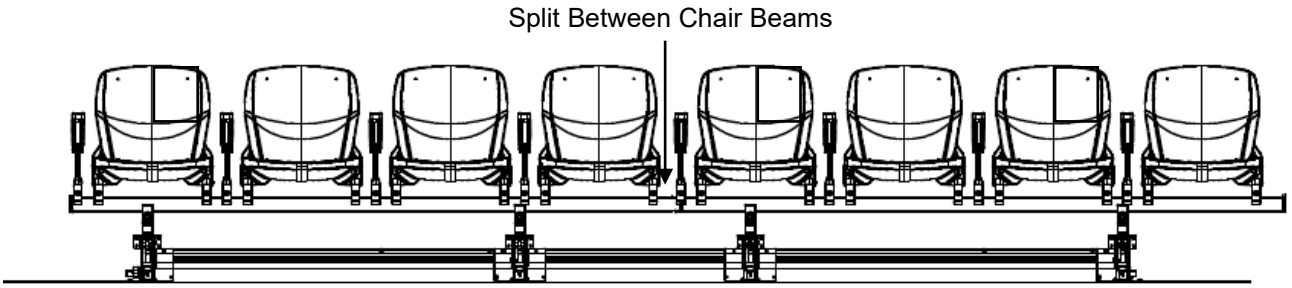


Once the cover is cut, place it up against the rear beam between the mechanism base plates as shown below. Using an end dust cover, place it appropriately up the side of the mechanism and attach M5 x 8mm screw into side of mechanism. This will help hold the extruded dust cover in place for easier attachment. Align the top of the dust cover to the bottom of the rear attachment flange of the mechanism and attach with #14 x 1” Black Zinc TEK screws located a maximum of 16” apart. These should be located in the groove at the top for consistency. Once the extrusion is in place, the RH and LH End Dust Covers can be installed as shown below. The top of the end dust cover should butt up against the bottom of the rear attachment flange of the mechanism and against the side plate of the mechanism.





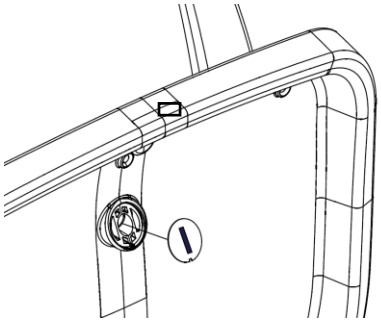
Manual Chair Dust Cover Illustration



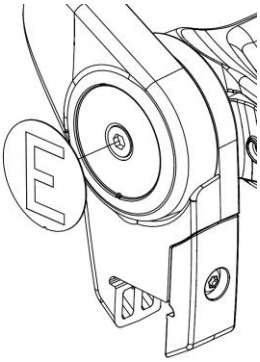
Semi-Automatic Dust Cover Illustration

2.7.1.4 Seat Number and Aisle Letter Installation

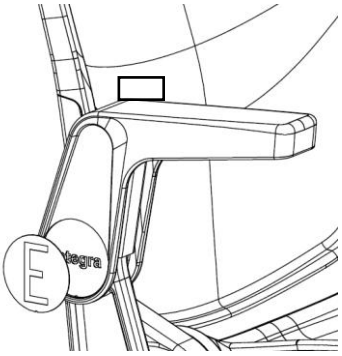
1. Seat numbers are applied by tearing a small hole in the plastic and sticking them on, ensuring that the groove and notch match up.
2. Before applying seat numbers wipe relevant area clean with spirit cloth to remove all dirt and oil residue. Clean entire row before starting to apply seat numbers to allow evaporation time for the areas to dry out properly.
3. Pull off adhesive cover, stick number disk to relevant seat (aligning notch and groove) and apply pressure to face of disk with circular motion around the edges, using a dry cloth.
4. Row numbers/letters are applied by removing the 'Integra' badge on the side of the chair carefully with a flat head screwdriver and replacing it with the appropriate number/letter when arm rests are not present. When arm rests are present, the tag shall be placed on the arm as shown below. Use groove and notch for proper alignment of tag.



Seat Number Installation

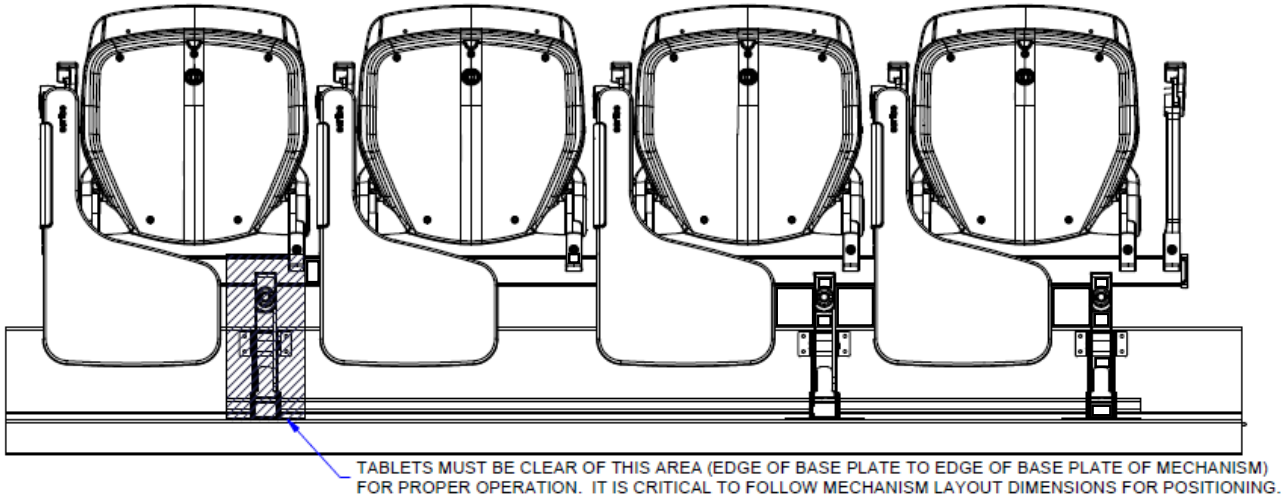


Aisle Letter When No Arms



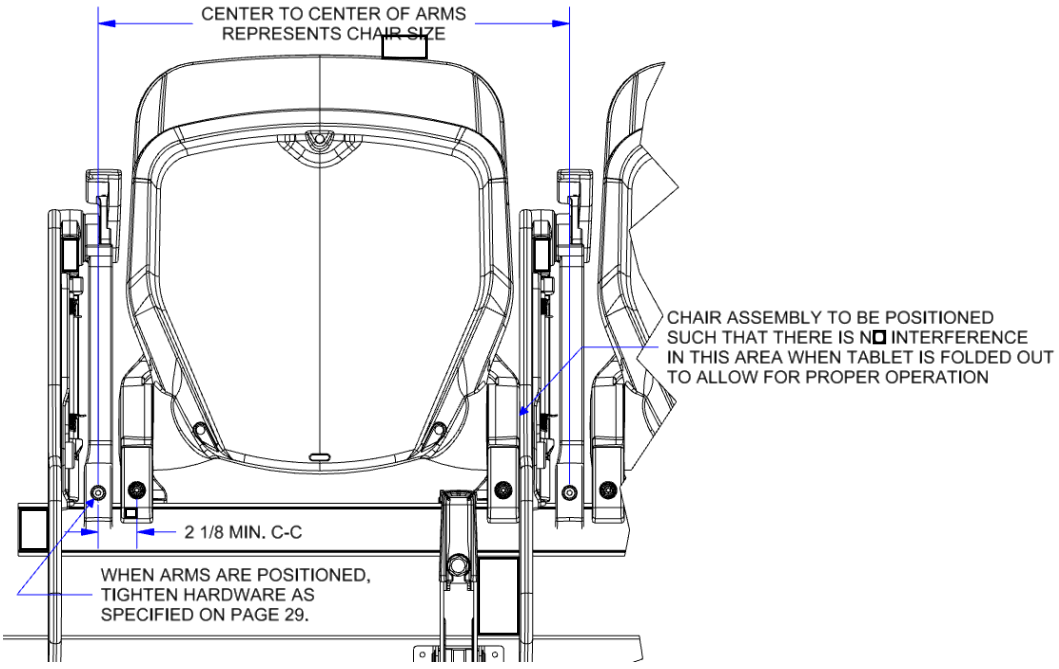
Aisle Letter When Arms Present

2.7.1.5 Tablet Arm Installation

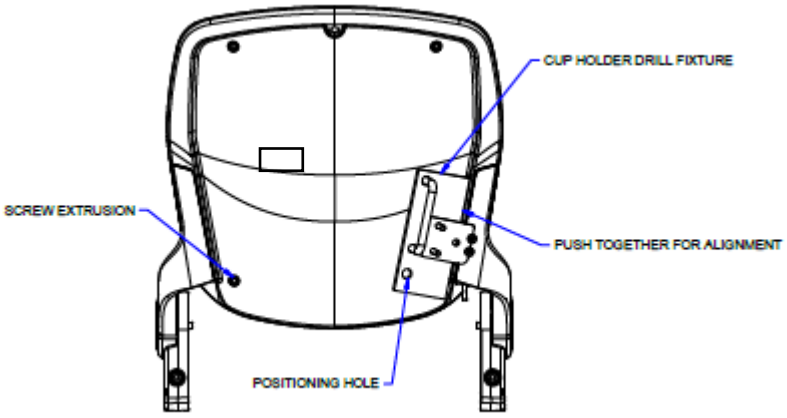


Standard installation methods above will apply for tablet arm jobs with the following exceptions.

1. There will be no dust covers to attach with the tablet arm arrangement
2. Mechanisms must be installed where identified on layout drawings as a mechanism cannot be placed within a tablet arm area when viewed from the front. It must be clear as shown above to allow the chairs to properly fold flat on the deck.
3. End caps will be placed on both ends of every rail.
4. Chairs will not be centered between arms, but must be positioned such that when the tablet is folded to the side, it does not contact the adjacent chair as shown below.
5. Ensure that the tablet arm adjacent to the aisle does not interfere with the aisle step when operating between the up and down position.
6. A beam with (4) chairs will require a minimum of (3) mechanisms as shown to abide by the overhang and span rules laid out for the rail in the above instruction.
7. IT410 is a unique arm rest that is only used with tablet arms at the end of a string of chairs.



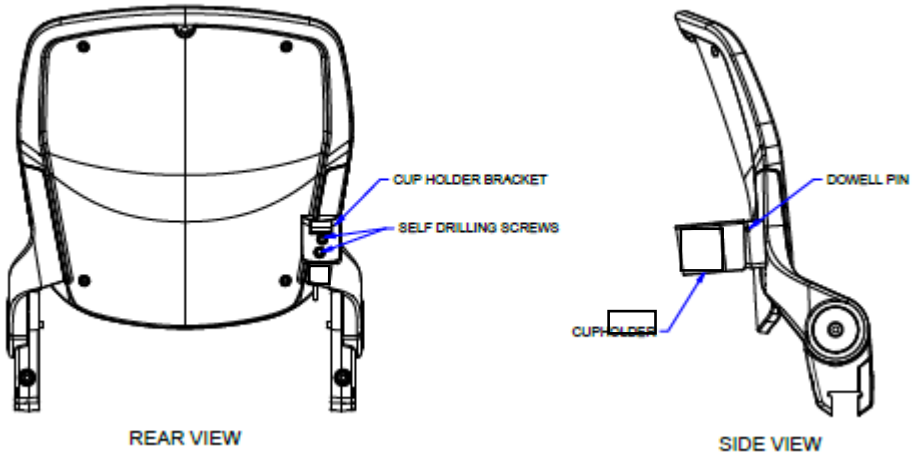
2.7.1.6 Drilling Rear Mounted Cup Holders



All chair assemblies come with right hand side pre-drilled for cupholders. Use below instructions for drilling left hand side or right hand side on cup holder additions.

1. Place cup holder drill fixture over the screw extrusion found on the lower part of the chair back.
2. Push the drill fixture over until it makes contact with the entire edge of chair back for alignment.
3. Drill holes through drill bushings using a 5/32” diameter drill bit through the chair engine but not through the plastic.

2.7.1.7 Installing Rear Mounted Cup Holders

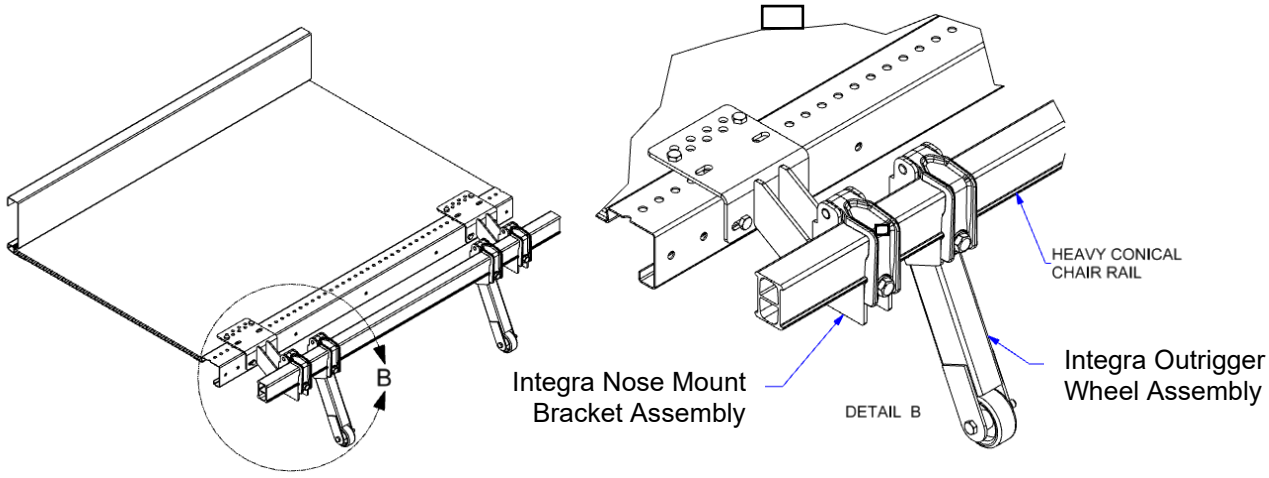


1. Use self-drilling screws included with cup holder to fasten cup holder bracket to chair engine in pre-drilled holes. You will **NOT** be able to use a magnetic impact nut driver to install the self drilling screws. You will have to use an impact adapter/extension to a standard or thin walled socket in order to fit in the cup holder bracket holes.
2. Attach cup holder to the bracket using the included dowell pin.
3. Check for functionality.

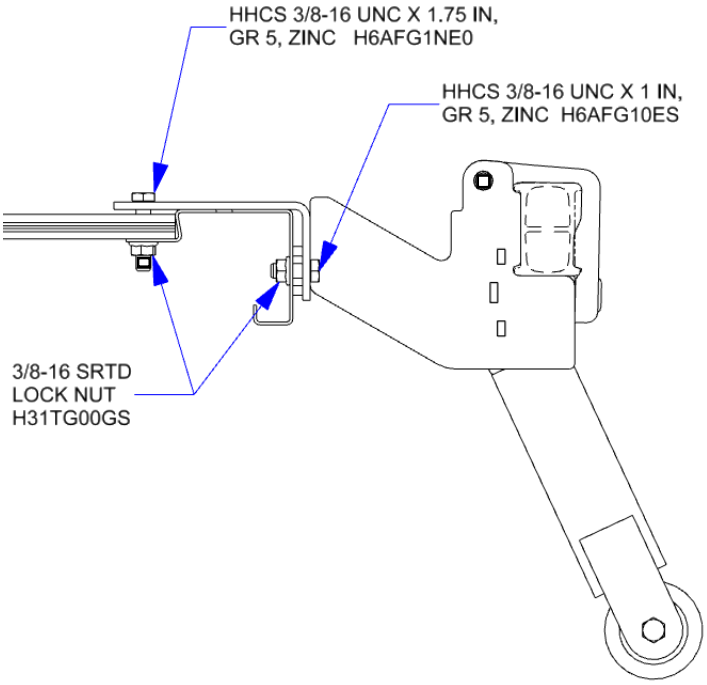
2.8 Miscellaneous Installation Details

2.8.1 Row 1 Nose mounted Integra Chairs w/Outrigger

**Note: Design might vary per row rise.*



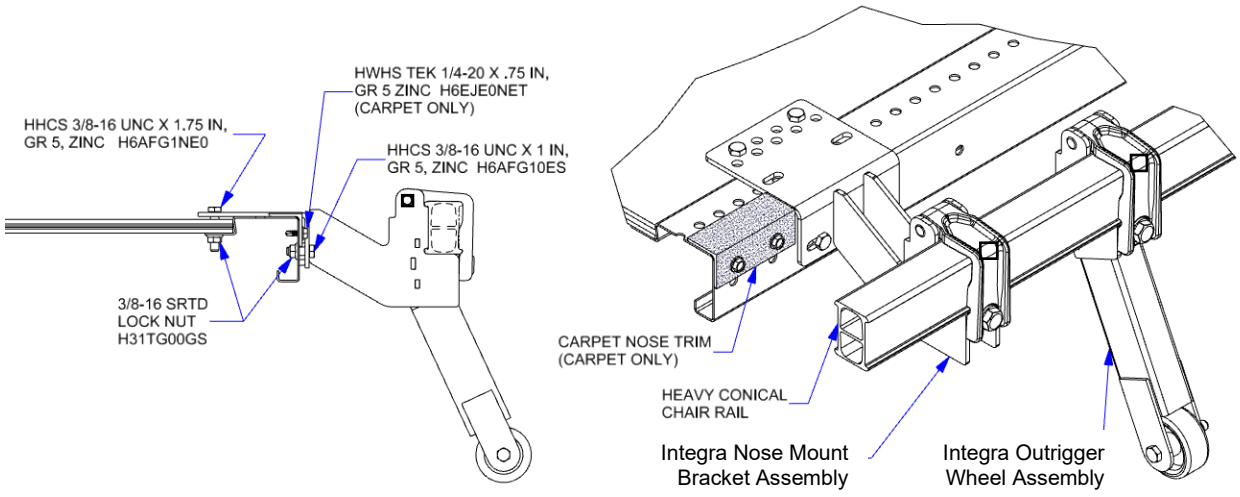
Row 1 Nosemounted Integra Chair Beam



Row 1 Nosemounted Integra Chair Beam & Hardware

2.8.2 Row 1 Nose mounted Integra Chairs w/Outrigger & Carpet

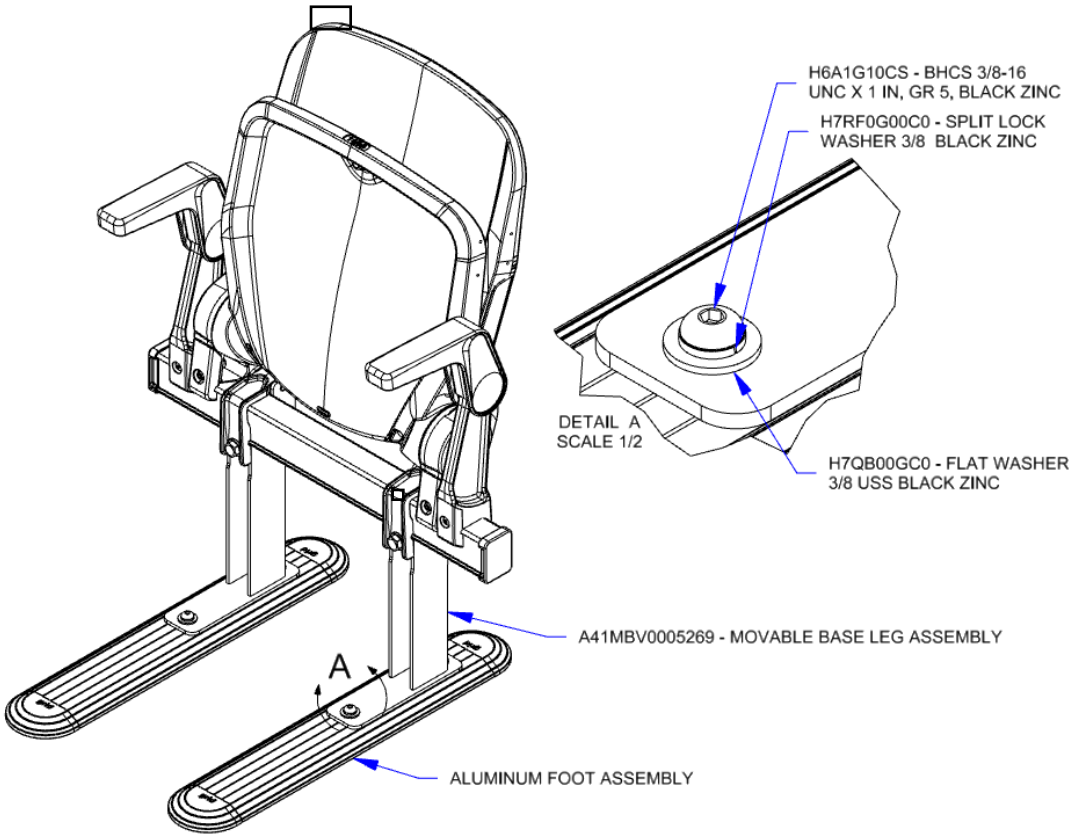
**Note: Design might vary per row rose.*



Carpet Trim Detail & Hardware

Carpet Application:

1. Apply carpet over the deck and the top of the nose.
2. Attach Integra nosemount brackets to nose and deck.
3. Cut Carpet Nose Trim into pieces that fit between brackets.
4. Attach remaining components (Outrigger Assembly, Chair Rail Etc.

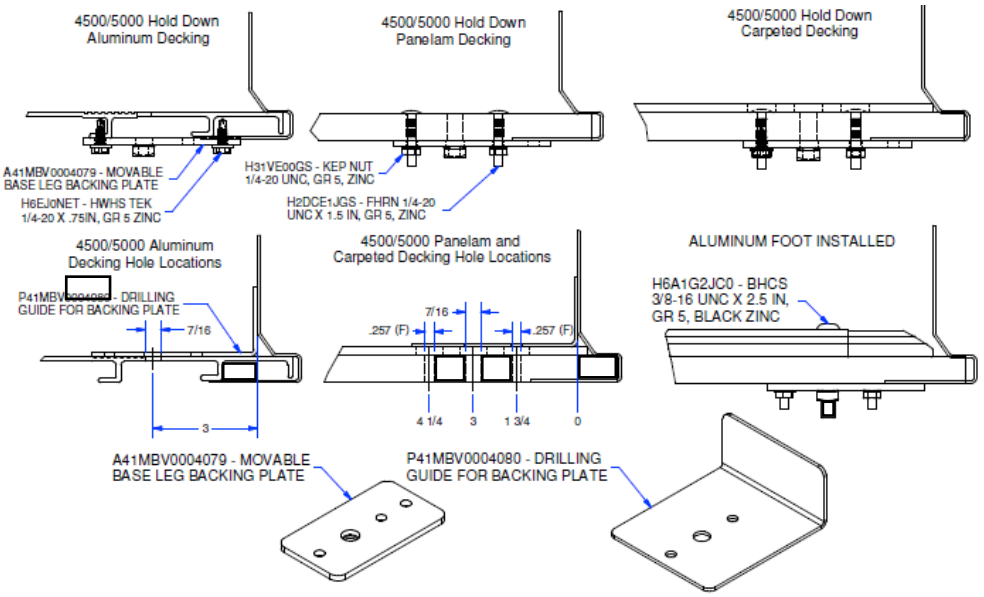


2.8.3 Movable Base Chairs

1. Layout the aluminum foot assemblies following the layout drawings.
2. Attach movable base leg assembly to aluminum foot assembly using above hardware.

   *It is critical that any chairs to be used on a wood floor have felt pads on the bottom of the feet.
3. Assemble remaining chair components (chair rail, chair, armrests, endcaps, etc.).
   a. Chair rail overhang may not exceed 4 1/4”.
4. Hold Down Assembly
   a. When chairs are located on the telescopic decks, a hold down assembly will be required.
   b. Drilling holes
      i. Use drilling guide for hole locations.
      ii. Only the center hole will be used with aluminum decking.
      iii. If Carpeted decking is used, ¾” holes will need to be punched before drilling.

c. Attach hold downs to deck using hardware detailed below.



3. Installer Requirements

It is the responsibility if the Irwin Certified Installer to obtain all tools and employees to fully erect the Irwin product.

This chapter includes the following sections:

- Overview of installation
- Known Problems

3.1 Overview of installation

Once the materials have been properly staged and inventoried, you are ready to begin the installation.

WARNING:

It has been reported, and verified by us, that some red and black chalks have stained floors and walls and are not easily removed. For this reason it is highly recommended that red and black not be used.

Chairs should be installed when the telescopic system is fully opened.

3.2 Known problems

- The Irwin office hours are 7:30 AM to 4:00 PM cst, Monday through Friday @ **618-483-6157 OR 877-597-1122**
- Parts orders called in after 12:00 noon can not be shipped the same day.
- This manual is to be left with the customer and should be used during the demonstration.
- The installer is responsible for all clean up of construction debris related to the installation of the product. **Dirt, dust, and debris may become embedded in the wheels causing damage to the floor and equipment.**
- The installer is responsible for the removal of marking tape and tags from all parts and components; after product is installed (It is recommended that factory tags stay on parts during installation).
- The installer is responsible for removal of all "extra" parts from the job site upon completion of the work.
- The bill of materials, field installation drawings, and manual are found in hardware box #1.
- Special parts and applications will be shown on field installation drawings.

3.3 Troubleshooting

Should you encounter a problem with the operation of the chairs, please check the following.

1. Chairs with semi-automatic operation and automatic release are not tripping.

A. **Is the runner bar engaged with the runner bar support throughout the operation of the unit?** If no, ensure that the runner bar is mounted perpendicular to the deck and that the runner bar support is directly underneath and vertical.

B. **Is the connecting rod adjusted properly to allow for enough stroke to release the locking lever?** If no, loosen the jam nuts and lengthen the connecting rod by turning the center body of the linkage to allow for more stroke. NOTE; IF THE CONNECTING ROD IS MADE TO BE TOO LONG, DAMAGE WILL OCCUR. Use small incremental adjustments until the right length is found to trip the chairs properly. This feature may be necessary due to field conditions and allows for field adjustment for this reason.

2. Chairs do not fold completely on the deck, therefore damaging chairs and hampering platform operation.

A. **Is the proper spring in the mechanism as specified on page 12 for the chair combination in question?** Check the label color. If the color is incorrect, find the proper mechanism and spring combination and match them up to the chair combination properly.

B. **Are the screws on the dust cover end caps over tightened?** If yes, the screw end could be digging in to the folding arm and not allowing the chair to fold properly. Sometimes scratch will be visible. Touch up scratch and loosen screws.

C. **Is there trash or other obstruction under the chairs preventing them from folding completely?** If yes, remove the trash or item.

D. **None of the above items are causing the problem, perform the following.**

1. Using a crescent wrench, with the system open, trip the chairs and stand them up multiple times to "work" the chairs and ensure everything is free. Operate the system and see if the chairs fold to the deck completely.

2. If item (1) does not work, remove (1) gas spring from the chair beam(s) that are not folding properly to get them to fully fold to the deck.

Appendix A

Glossary of Terms and Abbreviations that are listed in this Installation Manual.

Glossary of Terms

List and define all terms that establish meaning within the context of the installation plan.

Term	Meaning
Rise	Vertical distance between any common points on sequential decks.
Spacing	Horizontal distance between any common points on sequential decks.
Seating Row	Seating Rows are defined as the number of rows of plastic seat modules or wood seat boards.
Left Hand Side	Left Hand Side of the bleacher is defined when viewed from front facing the rear of the bleacher.

Abbreviations

Provide a list of the acronyms and abbreviations used in this document.

Acronym	Meaning
LH	Left Hand
RH	Right Hand

Appendix B

Fastener Torque Table

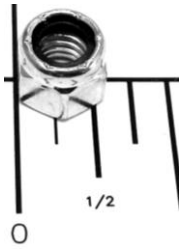
The following are the recommendations by Irwin for all structural connections within our bleacher products. Below is a table of our recommended torque values.

It should be noted that applying full effort by a worker with an ordinary spud wrench may cause damage to fasteners, or in the case of wood members, damage to the members itself.

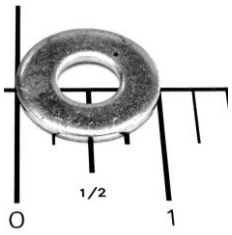
Materials	Diameter(in)	Torque(lb-ft)	Torque(lb-in)	Torque (N-m)
Steel to Steel	1/4	8.8	106.2	12
	5/16	18.4	221.3	25
	3/8	34.6	415	47
	7/16	51.6	619.5	70
	1/2	77.4	929.3	105
Wood to Steel	1/4	2.0	24	2.7
	5/16	2.5	30	3.4

Appendix C

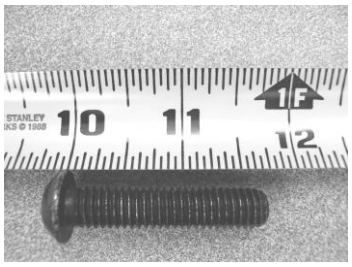
Hardware:



3/8-16 Nyloc Nut



3/8 Flat Washer

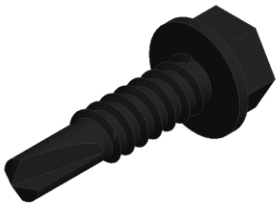


3/8-16 X 1 ¾” B.H.C.S.

H6HJX0NCS

Description: #14 x 3/4" Black HWHS Tek Screw

H6HJX10C0



Description: #14 x 1" Black HWHS Tek Screw