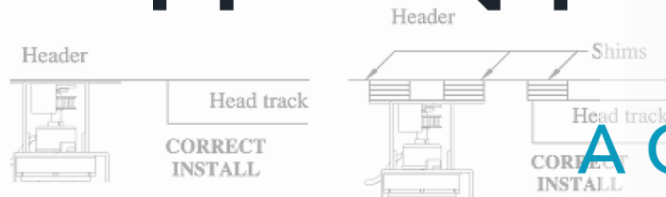


1/4"  
Connection  
Bracket

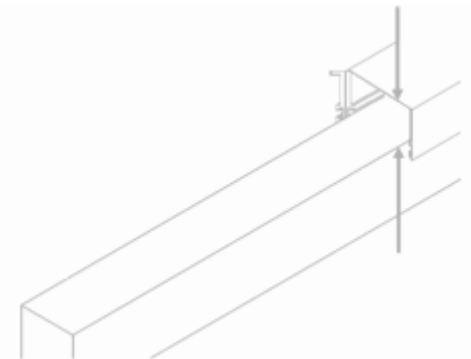
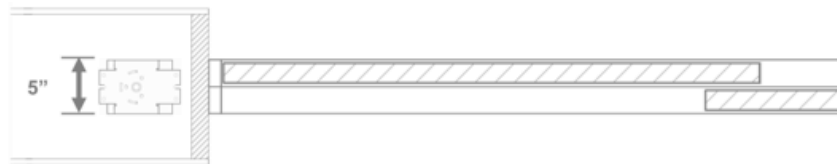
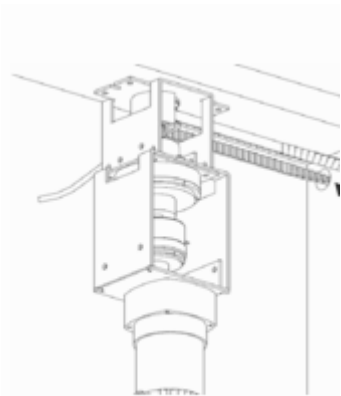


2" Collector Plate



A Caldwell Company

# Gx MECHANICAL INSTALLATION INSTRUCTIONS ONE-WAY & BI-PART DOORS



Y:\Automation Service\Docs\Series 500 Motor with G3 Controller\Gx Mechanical Installation Instructions.pptx

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Note: Starting with the G3 Controller, the mechanical & electrical installation guides have been separated into individual documents.

For electrical installation guides using the G1, G2 or G3 controllers, refer to our support Support site:

<https://inmotionsupport.freshdesk.com/support/solutions/folders/17000127115>

Disclaimer: The information provided here is a general guideline. The representations and drawings included show typical placements and configurations. Refer to shop drawings and building documents for information specific to individual applications.

# SAFETY TIPS

Safety is number one priority here at Caldwell. Certified Installers only, should be installing this product. Please be cautious of your surroundings during installation and use tools the proper way.

## Electrical Safety:

Whenever you work with power tools or on electrical circuits, there is a risk of electrical hazards, especially electrical shock. We recommend that all workers pay special attention to electrical hazards while installing this system. Coming in contact with an electrical voltage can cause current to flow through the body, resulting in electrical shock and burns. Serious injury or even death may occur.

**Note: Incorrect installation can lead to injury. Read and follow instructions contained in this manual carefully.**

## Safety Tips:

- Do not wear rings, watches or any loose clothing when installing or servicing the automation system.
- **Safety glasses** must be worn at all times
- Door system must be installed correctly before any automation is installed
- Watch for nails, sharp edges/corners, splintered wood, and uneven surfaces

## Recommended Safety Equipment:

- Safety Glasses



- Heavy Duty Gloves



- Hard Toe Shoes



- Knee Pads



- First Aid Kit



**Safety First!**

# PRE-INSTALLATION CHECKLIST

Prior to installing the automation system verify the following:



Does the door open AND close smoothly and easily?

Make sure the door moves freely over its entire length of travel.



Is the sill track in good condition and allows smooth door travel?

Make sure the track clear of construction debris.



Is the door level?

Make sure the track does not sag or rise excessively over the run.



Is the door plumb?

Verify the door is square “panel to panel” AND “panel to jams”.



Do we have the required  $\frac{3}{4}$ " clearance in the head track for the belt and hardware?

Measure and record the distance between the top of the door and head track in several locations over the length of the doors travel.



Ensure that a 110V, 60Hz, 15A circuit is located at the automation panel.

A dedicated circuit is recommended.



**If the above are not correct, have the installation corrected!**

# TOOL LIST

**In addition to safety equipment, standard framing contractor or carpenter tools are required.**

- Power Drill



- Drill Bit Kit



- 1/8" Shim Spacers



- Tape Measure



- 6' Jamb Level



- Alan Wrench Set



- Precision Screw Driver Kit



- Ladders



- Screw Driver



- Hammer



- Pulley Jig



- RJ 45 Crimper



- Electrical Tape



- Wire Cutters/Strippers



- Black Permanent Marker



- 2 1/8" & 1" Hole Saws



- Conductor Crimpers



- Paddle/Spade Bit Kit



- Laptop PC/SmartPhone

- Programming Cable

- Terminal Software

# PART IDENTIFICATION



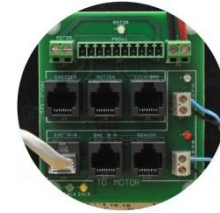
**Automation Panel, Power Cable & 6 foot 10 Pin Cable**



**RS485 Wired Adaptor & Cable**



**26-8 Flat Wire**



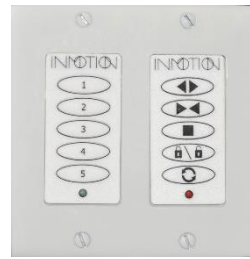
**Motor Assembly & Motor Break Out Board (BOB)**



**900MHz Wireless Remote**



**Wired, Wireless & Capacitive Touch Wall Switches**



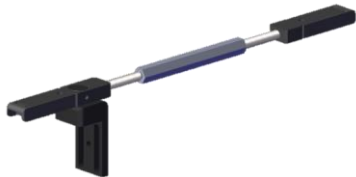
**Security Wall Switch Kit**



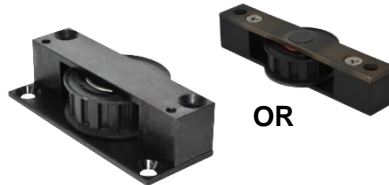
**900MHz Wireless Motion Detector**



**Wired Motion Detector**

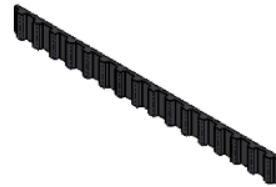


**Turnbuckle Belt Clamp & Mounting Bracket**

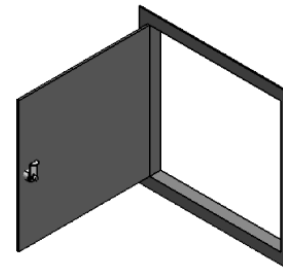


**Return Pulley**

OR



**3/8" & 1/2" Drive Belts**



**Access Panel**



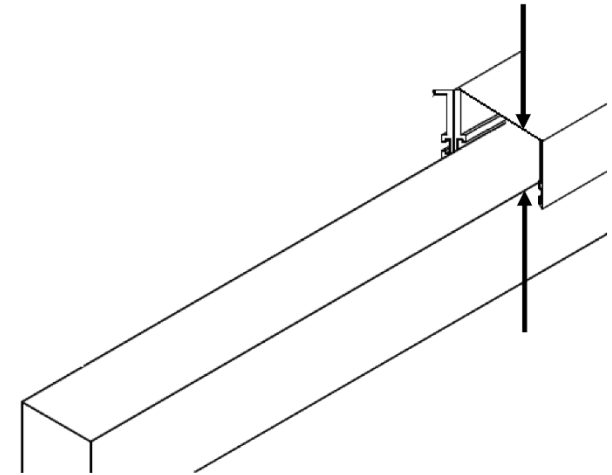
**IR Beam Detector**

# PRE-INSTALLATION CHECKS

- Before beginning, some things need to be checked to ensure a smooth installation.
- Ensure that a 110V, 60Hz, 15A (dedicated is preferred) circuit is within 6ft of; the Automation Panel.
- Pre-installation door checks:
  - Door Movement - Make sure that the door moves freely over its entire length of travel, and that it is square panel to panel and panel to jambs. If any problems are detected, contact the door installer or job superintendent to correct them.
  - Head Track Clearance - Sagging or distortion in the door head track may cause an interference with the drive belt or belt clamp assembly. Therefore, before beginning installation, measure and record the distance between the top of the door and the head track. This should be done at several locations over the length of the door travel.

\* Note: When a 3/8" belt is used the minimum head track clearance will be somewhat less than 3/4".

**3/4" Head Track  
Clearance  
is Required (minimum)\***





# STANDARD COMPONENT PLACEMENT

When determining component locations, consider the visual impact on the end customer, ease of installation, and future serviceability. Figure below shows the typical location of components.



Note: 1 - Wall switches shown are for illustration and are available in multiple colors and button configurations.



# WIRELESS KIT COMPONENTS



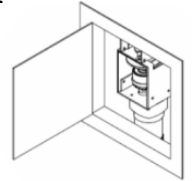
G2



G3



G1 & G1D



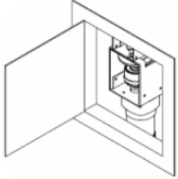
**Automation Panel** – The automation panel is an electrical enclosure box that varies depending on the controller generation, 1, 2 or 3. Both the G2 and G3 are smaller, black rectangular boxes while the G1 is a large beige hinged metal box. To ensure proper system operation, the G3 & G2 automation panels, need to be mounted within 6 feet (wire length) of the motor assembly. The G1 controller can be mounted up to 75' away from the motor and can be mounted in a remote location.

Each automation Panel comes with an electrical cord, so it can be plugged into a normal 110V, 60Hz, 15A, dedicated circuit.

The G1 & G2 controllers feature a 24V battery backup to allow the door to be operational for several hours without AC power. A fully charged battery will be able to keep a closed door's magnetic lock engaged for at least 4 hours without AC power. The G3 controller relies on an optional UPS to provide backup power.

- **Motor Assembly Access Panel** – Access to the motor assembly is required. Typically, this is done with a 12" x 12" Access Panel supplied by INMOTION.
- **Motor Assembly** – On a single pocket door or stacked door, the motor assembly is typically located opposite the lock side jamb or in an extended pocket.
- **Return Pulley** – The return pulley is located on the opposite end of the door from the motor assembly and in many instances can be installed within the head track. The return pulley comes in 2 sizes, 3/8" and 1/2"(shown) based on the belt size.
- **900 MHz Wireless Keypad (G1, G2 & G3)** – Wireless keypads can be installed anywhere the customer needs remote door access or can be used as wireless direct replacement for the wired keypad. The wireless keypad mounts in a single gang J-box and operates on 2 x CR123 lithium batteries. Any number of keypads can be paired to a single receiver. Wireless keypads do not have a reset button. Wireless keypads are supported by all controller generations.
- **900 MHz Wireless Motion Detector (G2 & G3 Only)** – Like the wireless keypad, this motion detector is paired to the receiver and operates on 2 x CR123 lithium batteries. The unit is mounted above the door entrance and provides the same functionality as the wired version. The sensor module must be ceiling mounted so that sensor faces downward. The wireless motion sensor is only supported with the G3 and G2 controllers. Its is NOT supported with the G1 controller.

# WIRED KIT COMPONENTS

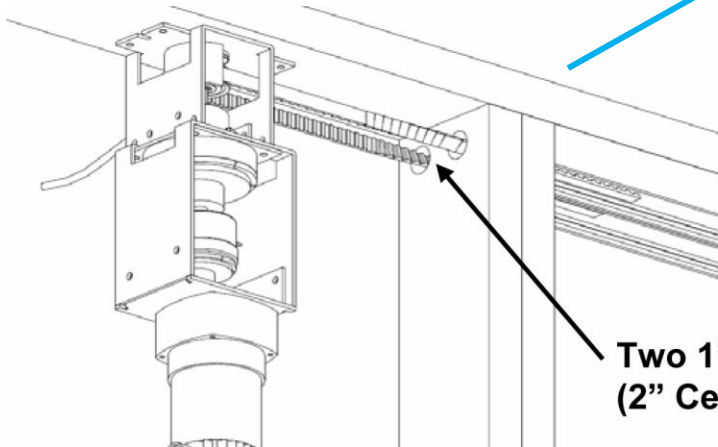


- **Automation Panel** – The same automation panel included with a wireless system is included with wired systems.
- **RS485 Adapter (G3 Only)** – G3 wired kits include the RS485 adapter, which enables the connection of wired accessories to the G3 controller. This adapter breaks out separate connectors for all wired accessories including wired indoor & exterior security wall switches, motion detectors (inside & outside) and an IR beam detector. It also includes a Bluetooth module enabling wireless configuration capabilities for the installer.
- **Motor Assembly Access Panel** – Access to the motor assembly is required. Typically this is done with a 12" x 12" Access Panel supplied by INMOTION.
- **Motor Assembly** – On a single pocket door or stacked door, the motor assembly is typically located opposite the lock side jamb or in an extended pocket.
- **Return Pulley** – The return pulley is located on the opposite end of the door from the motor assembly and in many instances can be installed within the head track. The return pulley comes in 2 sizes, 3/8" and 1/2"(shown) based on the belt size.
- **Wired Keypad** – Wired keypads connect to the RS485 adapter which is then connected to the G3 controller. The RS485 adapter is included with the wired kit.
- **Security Wall Switch (G1, G2 & G3)** – Intended for exterior, secure access to the home, this wall switch uses a 4 digit pin number to activate the normal Open, Close, Stop and Release functions of a typical wall switch.
- **Wired Motion Detector (G1, G2 & G3)** – The wired motion detector connects to the G1, G2 or G3 controller via the RS485 adaptor(G3 only). The G3 RS485 adapter supports 2 dedicated motion connections for indoor and exterior motion detection. The unit is mounted above the door entrance and can be wall or ceiling mounted.
- **IR Beam Detector(optional) (G1, G2 & G3)** – This optional component can replace a motion detector in the kit or be added for an additional safety measure. Included with the IR Beam kit is a single set of sensors that are mounted in the door frame about 12" above the floor. A single IR Beam controller can support 2 sets of sensors if for example beams are desired on both the interior and exterior of the door.



# CLEARANCE FOR BELT PATH

- **Clearance for Belt Path** – If the motor assembly is mounted outside the jamb (non-pocketing doors), two 1" holes (2" center to center) must be drilled for the belt. **Drilling the holes needs to be done before installing the motor assembly.**



Two 1" Holes  
(2" Center to Center)

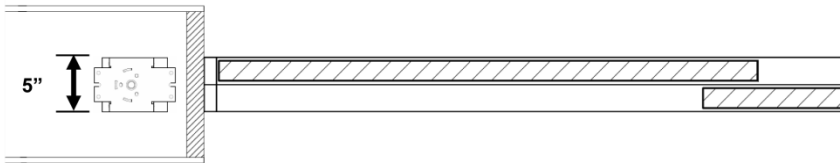


# MOTOR ASSEMBLY INSTALLATION

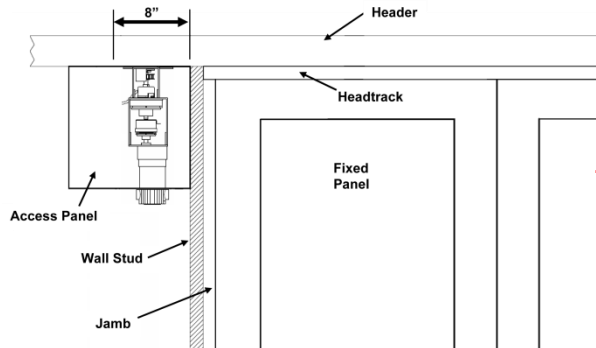
## Clearance Needed

### Typical Door Motor Placement

- Stacking Door Unit Installation of Motor Assembly - When installing the motor assembly, a minimum of 5 inches of clearance must be allowed, within the wall system. Top View of Clearance Needed for Motor Assembly Installation for Stacking Door Unit



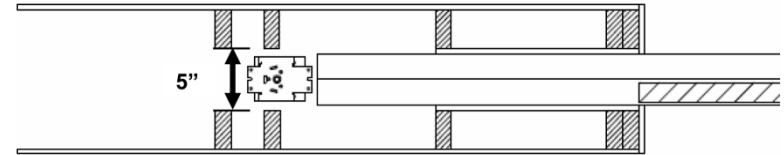
- A minimum of 8 inches\* (10" recommended) of clearance must be allowed from the wall stud. Side View of Clearance for Motor Assembly Installation for Stacking Door Unit



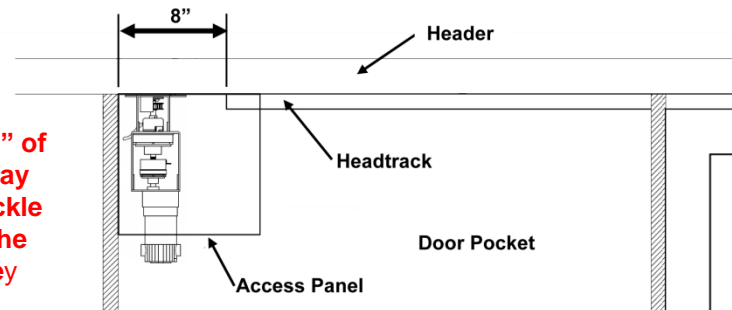
**\*Less than 8" of clearance may allow turnbuckle to run into the motor pulley**

### Pocketing Door Motor Placement

- Inside Door Pocket Installation of Motor Assembly - When installing the motor assembly, a minimum of 5 inches of clearance must be allowed, within the wall system. Top View of Clearance Needed for Motor Assembly Installation Inside Door Pocket



- A minimum of 8 inches\* (10" recommended) of clearance must be allowed from the end of the head track to the wall stud. Side View of Clearance for Motor Assembly Installation Inside Door Pocket

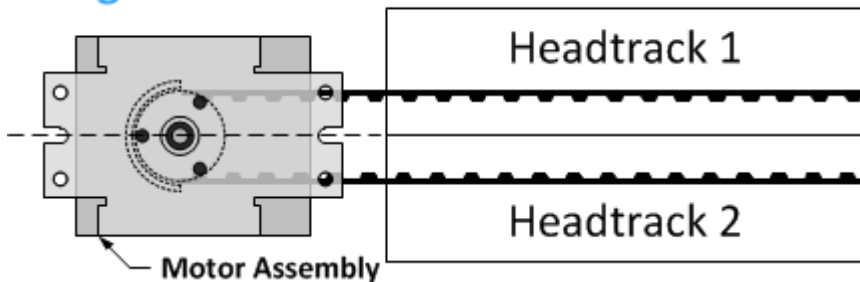


# MOTOR ASSEMBLY INSTALLATION

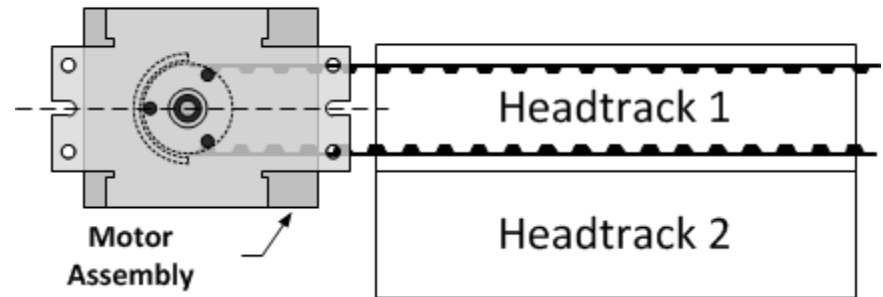
## Motor Placement

- Installation of Motor Assembly- Center the motor assembly between the two head tracks.

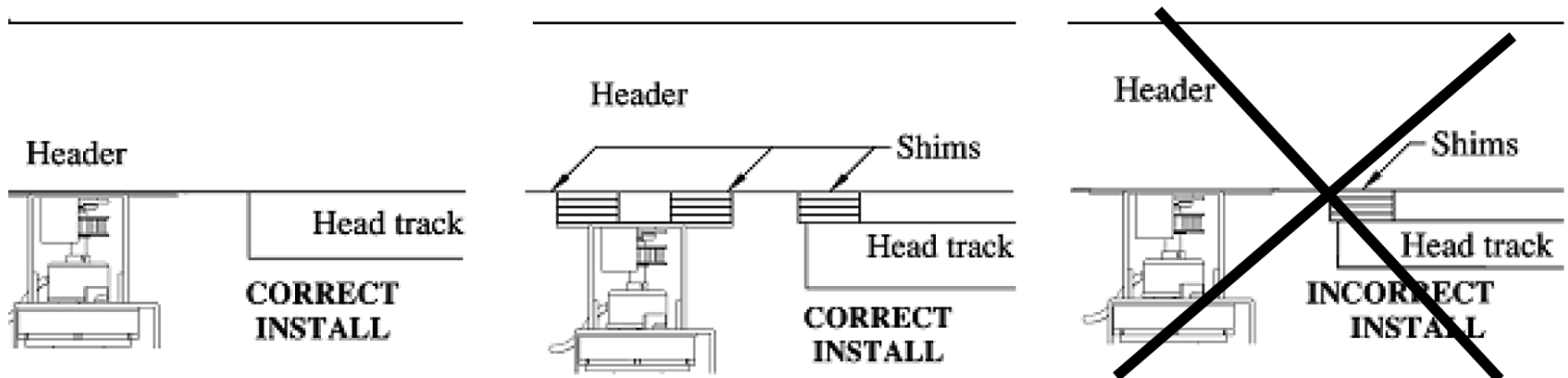
### Single Door Belt Placement



### Bi-Part Belt Placement



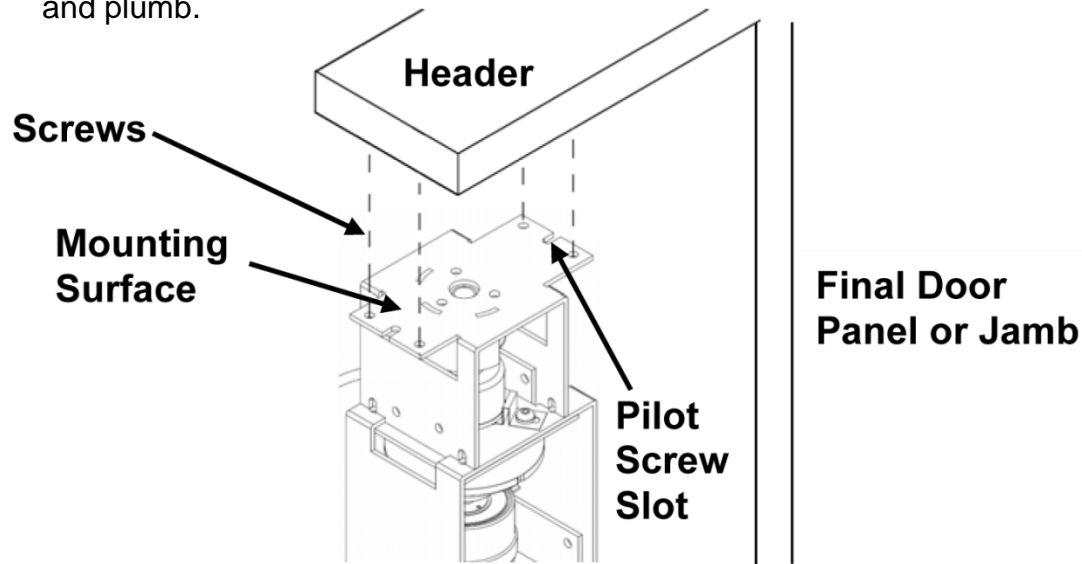
- Alignment - For proper drive belt operation, it is critical that the motor assembly is aligned on the same plane as the head track and that it is level. Under typical conditions, flush mounting the motor to the header will achieve proper alignment; however, if the head track has been shimmed, the motor assembly must be shimmed to match.



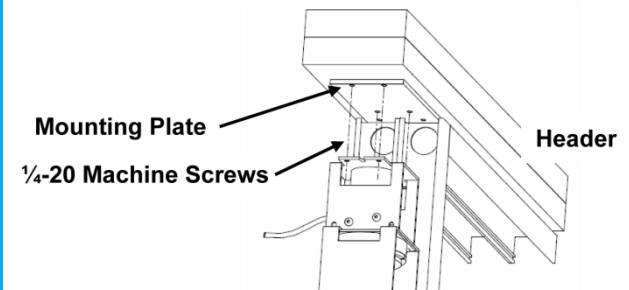
# MOTOR ASSEMBLY INSTALLATION

## Motor Assembly Installation

- The motor assembly should be installed beyond the end of the final door panel or door jamb.
- **Important Note:** The motor assembly must be mounted to a solid support member such as a 2"x8" header.
- To make installation easier, first install a drywall or wood screw in the pilot screw slot to center and support the motor assembly. Then attach the motor assembly to the header using the four (4) 3" - #12 lag screws supplied. Once the motor assembly is attached, check to make sure that it is centered, square, level, and plumb.



- **Mounting Plate** - To make installation of the motor assembly easier and more accurate, several door manufacturers have incorporated an INMOTION "Western Mounting Plate" as part of their door system. This plate is pre-drilled to directly accept the motor assembly.
- **Important Note:** The mounting plate and motor assembly must be anchored to a solid support member such as a 2"x8" header.

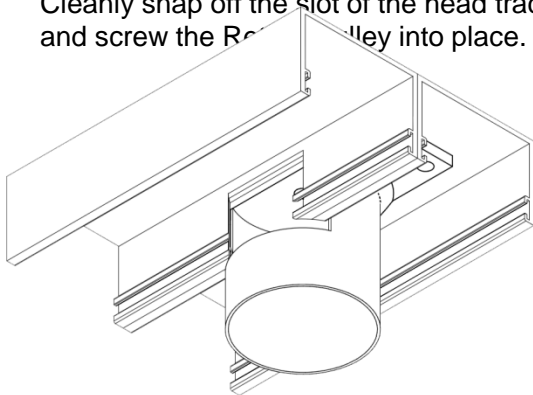


# PULLEY INSTALLATION

**Note: Inline Return Pulley Installation Shown.** Return Pulley can also be installed beyond the end of the door. Contact for Details.

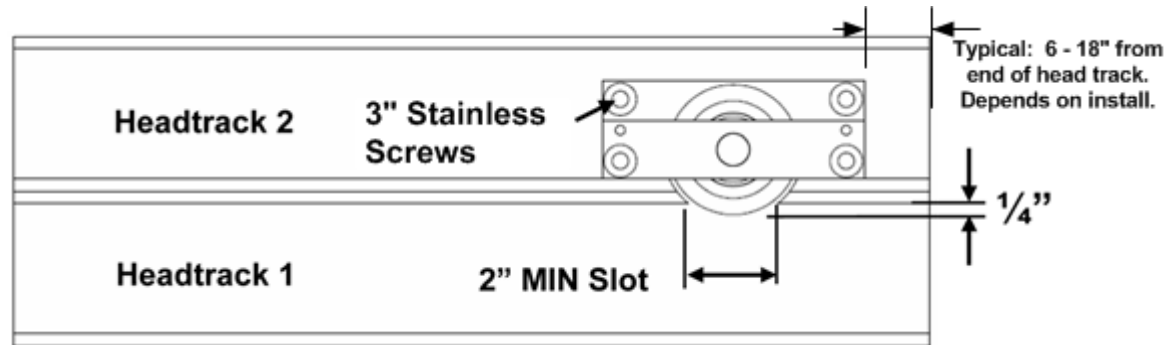
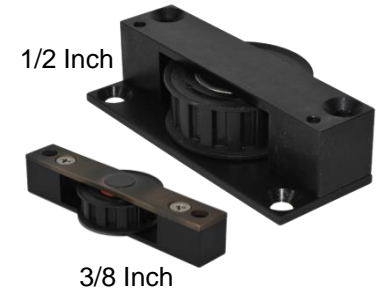


- **Pulley Jig:** A pulley jig is recommended to drill the proper size cut out in the head track.
- Place in head track where the Return Pulley will go. (Note: Same screw locations, so you will be re-using the holes drilled to install the Return Pulley).
- Using a 2 1/8" hole saw, cut the head track. Cut until the base of the track and remove the Pulley Jig.
- Cleanly snap off the slot of the head track and screw the Return Pulley into place.



Pulley Jig In Head Track

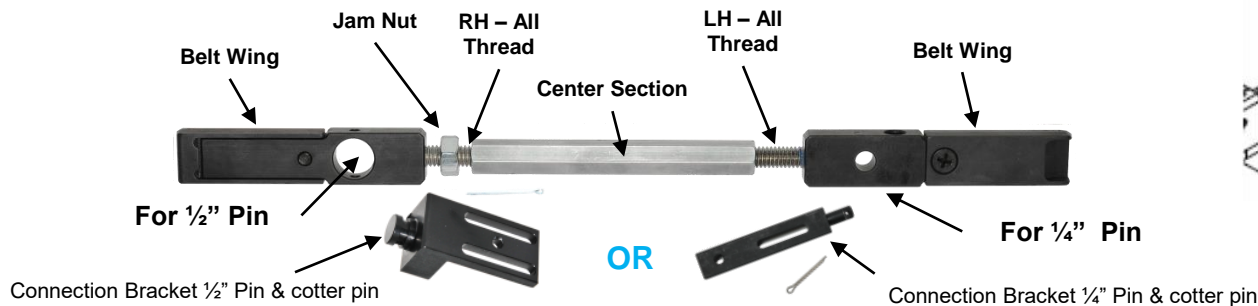
- In-line Installation of Return Pulley: A slot which is a minimum of 2 inches in length needs to be cut into the head tracks. (Pulley Jig sold by DIM Recommended- Shown Right) This enables the drive belt to pass through from head track 1 to head track 2. The Return Pulley should only protrude beyond the wall of the head track approximately 1/4". Attach the Return Pulley to the head track and header using the supplied 3" – stainless screws.
- Note: A 3/8" Low Profile Return Pulley is available for 3/8" belt systems.
- Bottom View of In-line Return Pulley Installation When Using Two Head Tracks:



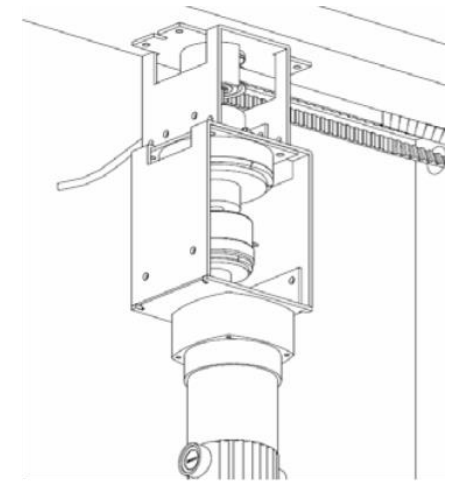
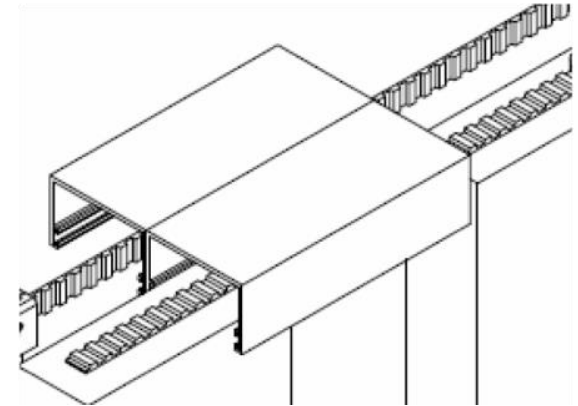
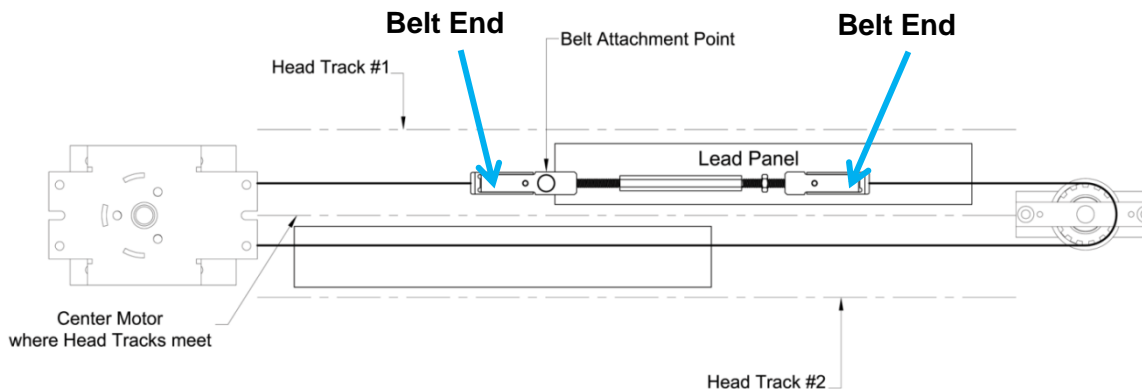


# THREADING THE BELT

- Belt Path- Each direction of the belt rides in a separate head track unless the door is a bi-part where both belt directions ride in a single track.
- Thread the belt- First ensure that there aren't any twists in the belt. Then thread the belt through both the Motor's Pulley and the Return Pulley with the opening of the belt where the Turnbuckle will be placed. The open ends of the belt should always end up in the 1<sup>st</sup> head track.



## Reversible Turnbuckle – Supports 1/4" AND 1/2" Pin Sizes



Motor Belt Routing For Reference

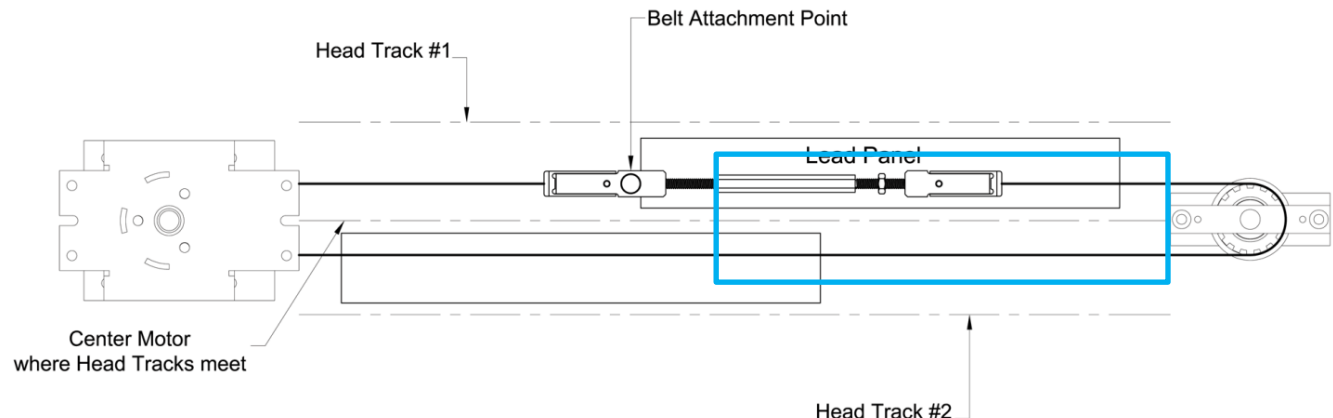
# TURNBUCKLE INSTALLATION

## Attaching the Turnbuckle to the Belt (Belt Clamp Assembly)

1. Twist to nearly fully extend the turnbuckle while ensuring at least 5 threads of engagement of both the left hand (LH) and right hand (RH) all-thread into the center section.
2. Cut the belt close to one of the teeth. Ensure that both ends of the belt are facing up AND cut squarely.
3. Insert the drive belt (teeth up- as shown) through the belt wing and install one 8 – 32 X 3/8" machine screw to hold the belt wing to the belt clamp.
4. Trimming the Belt: Pull the belt tight-take as much slack out of the belt as possible- without leaving the belt too short and also ensuring full engagement of the belt with the belt clamp. Cut the belt close to one of the teeth. Insert the drive belt (teeth up) through the other belt wing and install one 8 – 32 X 3/8" machine screw to hold belt wing to the belt clamp.
5. Tighten the turnbuckle belt clamp assembly by rotating the center section initially by hand and then with a 3/8" wrench.
6. Once the belt has been adequately tensioned, tighten the jam nut against the center section using a 7/16" wrench.
7. Ensure that both ends of the belt are still facing up and have not rotated relative to each other.



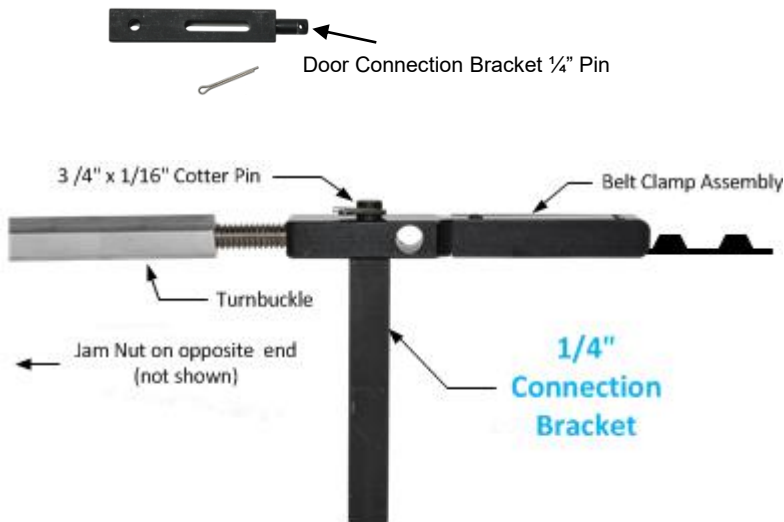
**. TIP: Position the turnbuckle near the center of the track for easier tightening!**



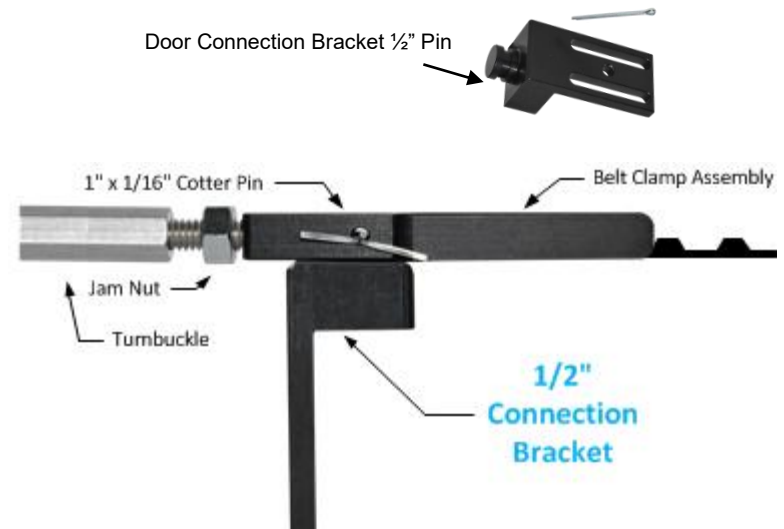
# TURNBUCKLE INSTALLATION

## Attaching the Connection Bracket to the Turnbuckle

- The bracket is installed on the interlocking stile, at the top of the lead door panel.
  1. Make sure the belt is tight and the jam nut is tight!
  2. Pull the belt, belt clamp assembly & turnbuckle over the top of the lead door(panel).
  3. Insert the door connection bracket "pin" through the  $\frac{1}{2}$ " or  $\frac{1}{4}$ " clamp assembly hole.
  4. Complete the attachment by inserting the Cotter Pin through the appropriate hole and bending its pins around the pin. **DO THIS PRIOR TO ATTACHING THE BRACKET !**

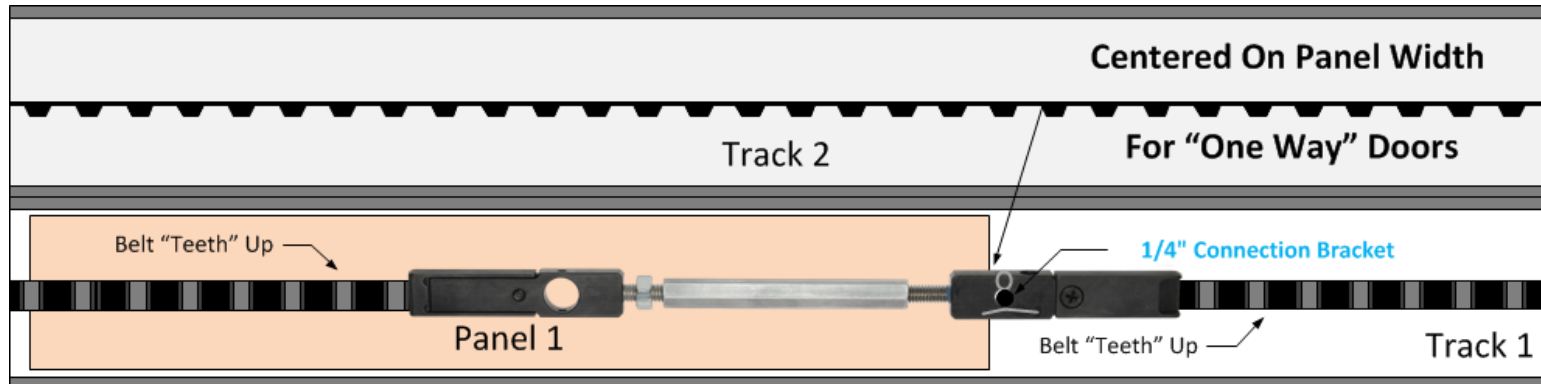


OR

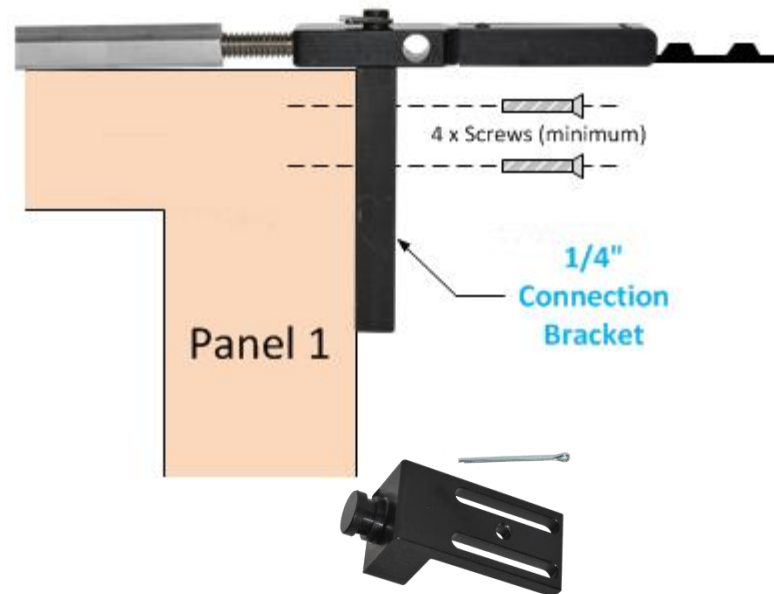


# TURNBUCKLE INSTALLATION

## “One Way” Door Turnbuckle



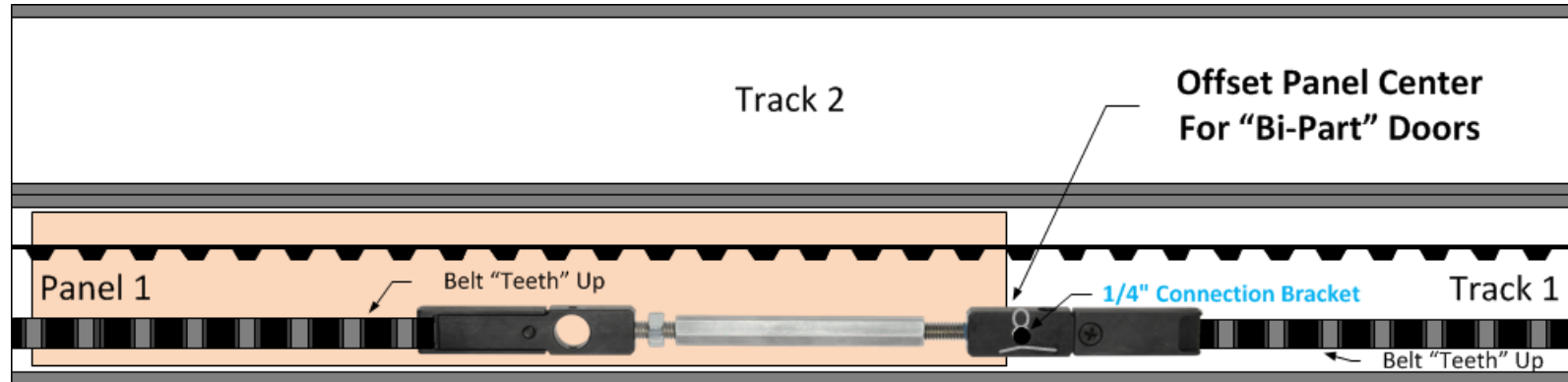
1. **Position** the connection bracket centered on the door width.  
*Note: Most of the turnbuckle assembly should be positioned above the door so that only the belt clamp is visible.*
2. **Make sure** the turnbuckle assembly is adjusted so that the belt teeth point up and the assembly is flush with the top of the panel.
3. **Attach** the bracket with at least 4 screws to the panel.



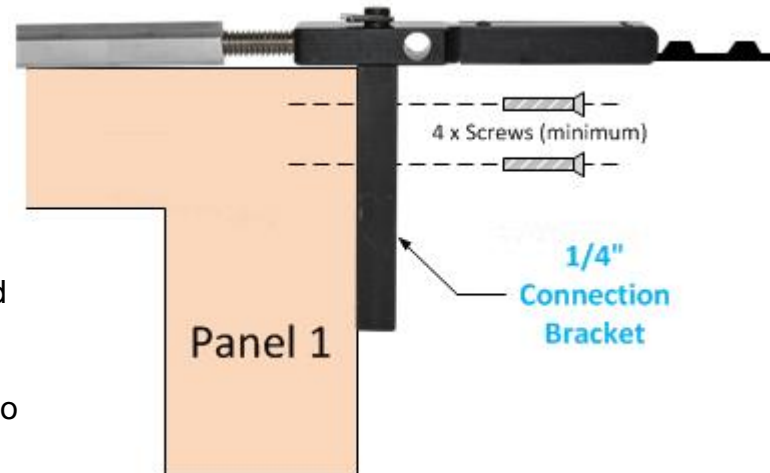
1/4" Connection Bracket used for clarity. 1/2" Connection Bracket can also be used here.

# TURNBUCKLE INSTALLATION

## "Bi-Part" Door Turn Buckle Installation



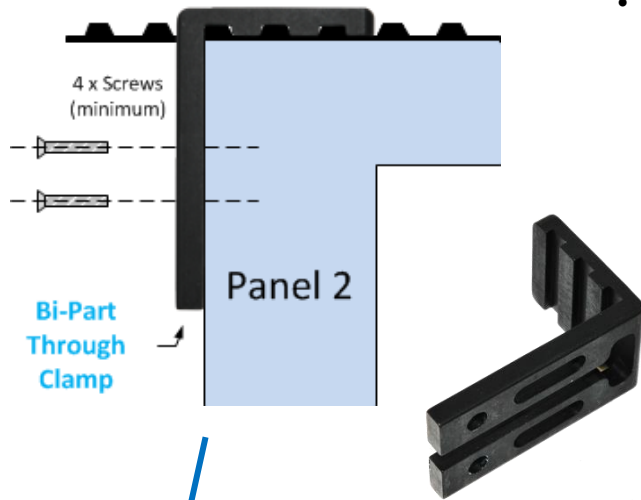
1. **Position** the connection bracket **OFF CENTER** on the door width. *With the belt completely inside Track 1, you need extra space for the return side of the belts connection in the **next step**.*
2. **Make sure** the turnbuckle assembly is adjusted so that the belt teeth point up and the assembly is flush with the top of the panel.
3. **Attach** the bracket with at least 4 screws to the panel.



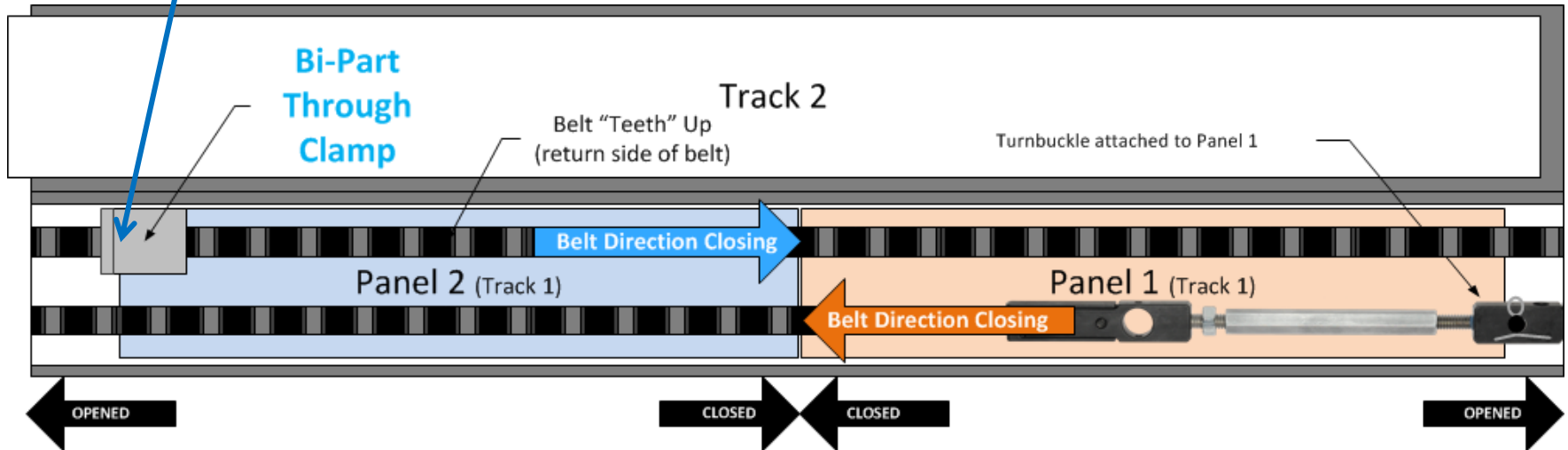
1/4 " Connection Brackets typically used for Bi-Parts due to space constraints.

# BI-PART THROUGH CLAMP

*After the turnbuckle has been installed(Bi-Part Only)*

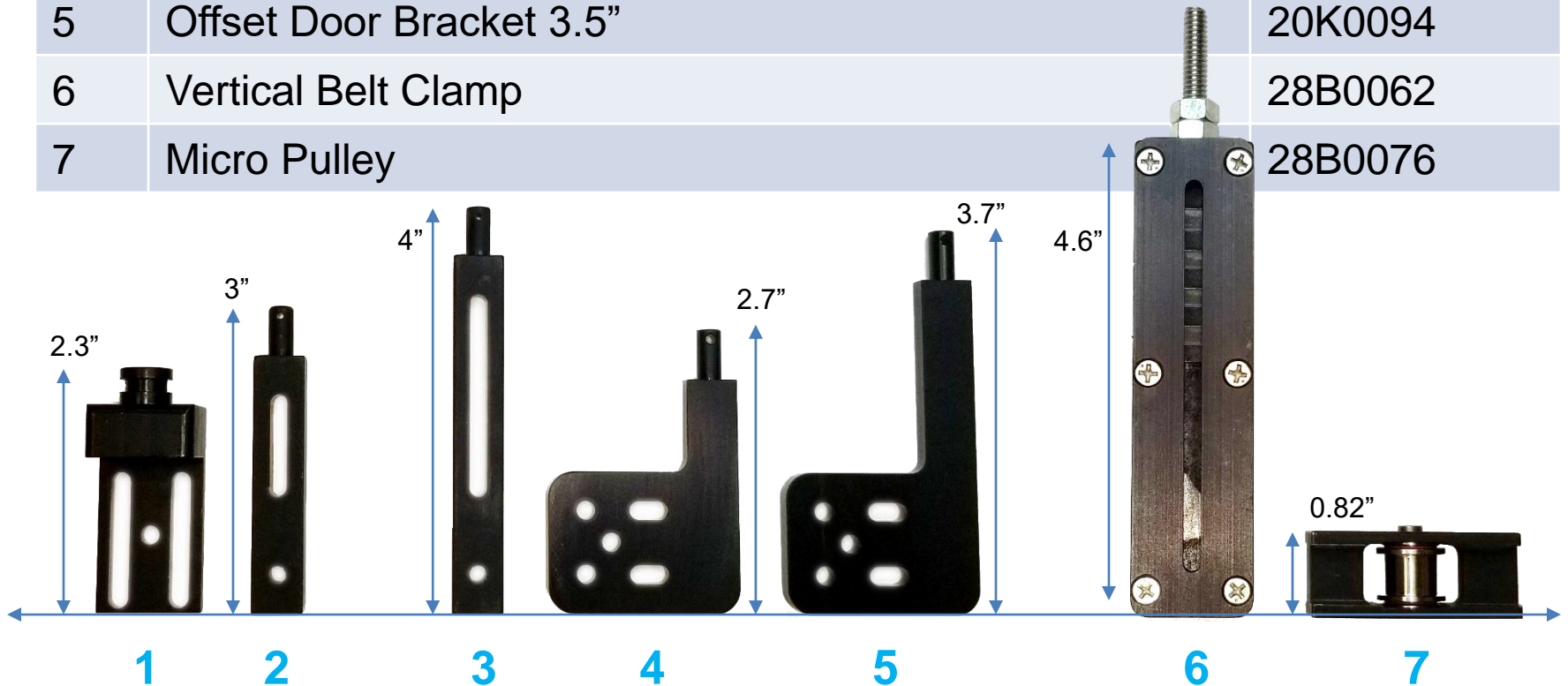


- Installation of “Bi-Part Through Clamp” for Panel 2 The “through clamp” attaches to the return side of the belt to panel 2. The return side of the belt runs in the opposite direction as compared to panel 1.
  1. The turnbuckle should be fully tensioned and attached to **Panel 1** before proceeding.
  2. Position and Center all the doors in their normally closed position. i.e. Bi-Part doors closed at the center.
  3. Slide the “through clamp” over the return side of the belt using the slot on the long edge of the bracket.
  4. Position the “through clamp” over the return belt making sure its teeth fully engage the belt and the Bi-Part doors are held in a closed position with no gap.
  5. Attach the through bracket with four(4) #8 x 1” attachment screws.



# OPTIONAL HARDWARE

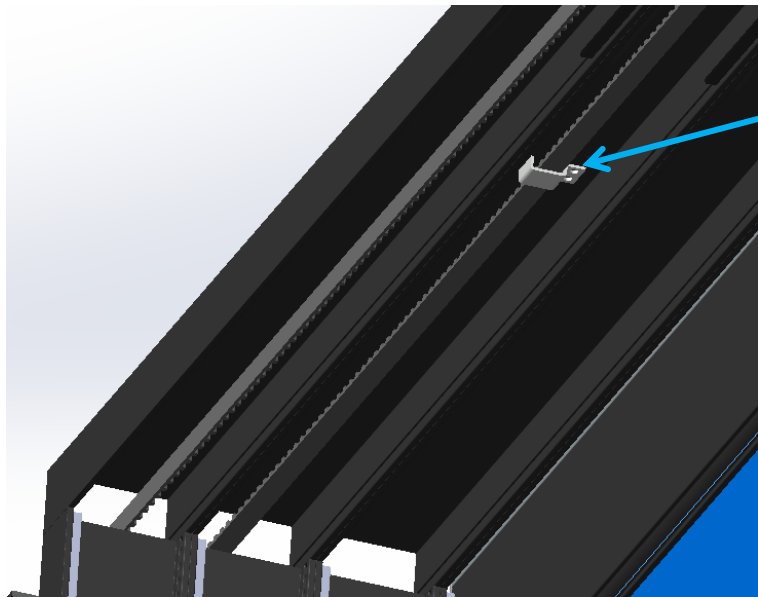
#	Description	Part Number
1	½" Mounting Pin (standard for comparison)	28B0022
2	¼" Mounting Pin (standard for comparison)	28B0079
3	¼" x 3.5" Mounting Pin	28B0116
4	Door Bracket	20K0078
5	Offset Door Bracket 3.5"	20K0094
6	Vertical Belt Clamp	28B0062
7	Micro Pulley	28B0076



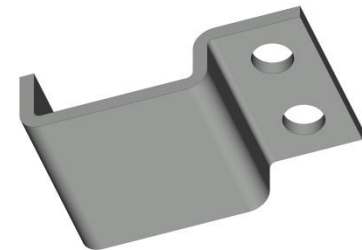
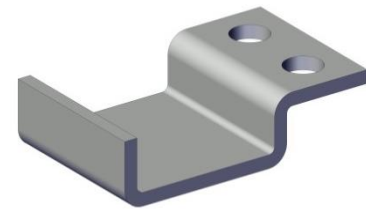


# BELT RETAINER CLIP INSTALLATION

- Installation of belt retainer clips Belt retainer clips are used to prevent the belt from sagging, flapping, and rubbing. The retainer clips also help keep the belt teeth in the “up” orientation.
- Important Note: Retainer clip is installed in the 2<sup>nd</sup> head track, in the middle of the daylight opening. Do not place belt retainer clips within the lead door head track. This will interfere with the belt clamp assembly during door travel. Always be sure to keep drive belt teeth facing up.
- Install belt retainer clips using the 8 – 24 X 1” self tapping screws. Multiple clips can be added, throughout the door opening, as needed.



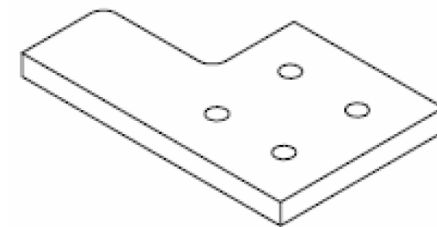
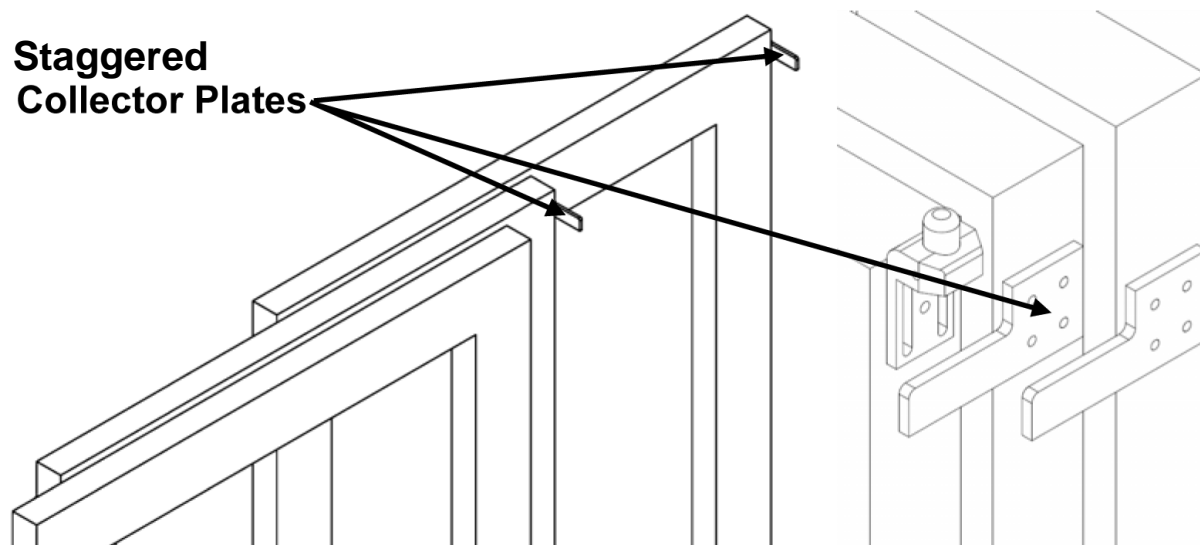
Retainer Clip



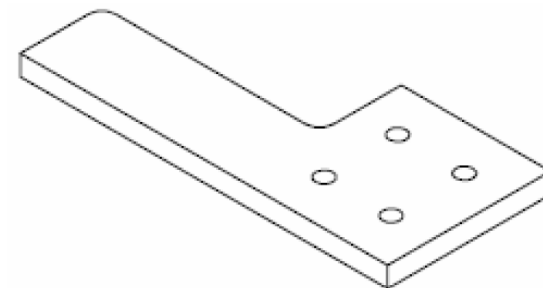
Retainer Clip

# DOOR COLLECTOR PLATES

- Installation of Door Collector Plates – When a multi-panel sliding door is closing, factory interlockers “collect” the next door panel. For doors that do not have opening interlockers, collector plates need to be installed at the top of each door (except the lead panel).
- Depending on the thickness of the door panels 1” or 2” collector plates are used. Install door collector plates using four (4) #8 x 1” attachment screws provided. Make sure the door collector plates are installed on the back side of the door panels.



**1” Collector Plate**



**2” Collector Plate**

# AUTOMATION SYSTEM INSTALLATION

- Mechanical Installation Complete:
  - Before beginning the electrical installation, check for rubs and interferences by manually moving the door over the entire length of its travel. Make sure that the door moves freely over its entire length of travel, and that it is square panel to panel and panel to jambs. If any problems are detected, contact the door installer to correct them. Everything must be working properly **mechanically** before beginning the **electrical** installation.
- Electrical Installation:
  - The electrical installation is documented separately on our support site for each controller generation:  
<https://inmotionsupport.freshdesk.com/support/solutions/folders/17000127115>
  - G3 Automation Installation Instructions\_(v070).pdf
  - G2 Automation Installation Instructions.pdf
  - G1 Automation Installation Instructions.pdf

# CARE & TROUBLESHOOTING

## Care During Construction:

- **Motors and Electrical Components MUST be protected after installation, before the home is finished being built.** It is recommended to cover the components after installation before the construction is complete.
- **Avoid Duct Tape-** Chemicals in the adhesives can remove finishes. 3M Blue Painter's tape is recommended.
- **Avoid rolling heavy objects over the track.** This can cause damage.
- To prevent clogging or damage to guide bearings, **tracks should be protected from construction debris** at all times.
- Do not leave door system open and exposed in wet weather conditions.

## Maintenance:

INMOTION automation systems requires little to no maintenance. However, the best protection for the automation system is to keep the door in good working order by following the door manufacturer's recommended maintenance.

# CUSTOMER SERVICE

- Customer Service: For customer service, please call the toll free number **1-800-426-7113**.
- [www.inmotion.company](http://www.inmotion.company) — then select “Support” from the header for access to additional support material.
- [www.caldwellmfgco.com](http://www.caldwellmfgco.com) — Select “Technical Support” then “Automation Technical Support” from the header for access to additional support material.