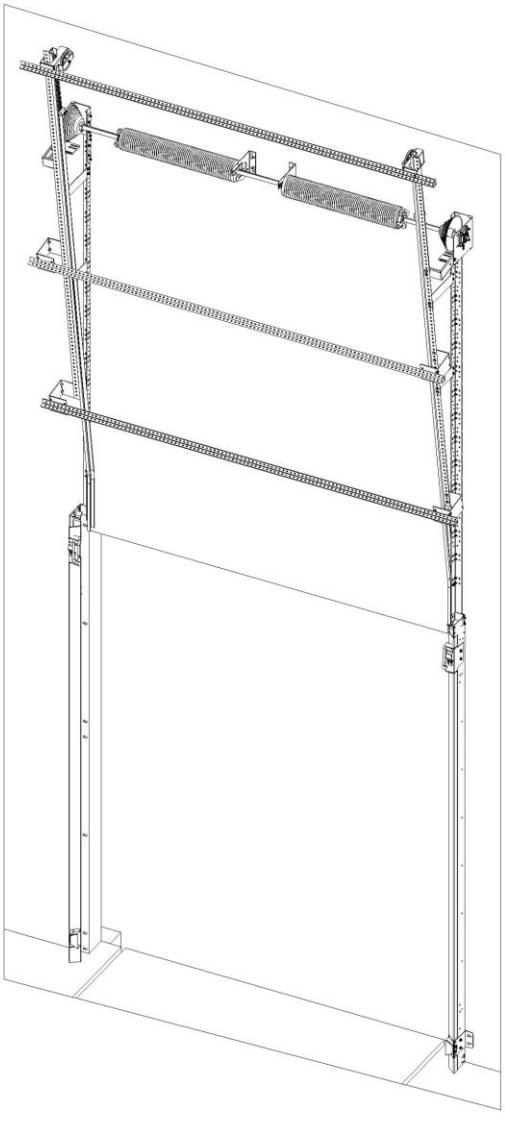
MxV™ INSTALLATION GUIDE

Torsion Spring Tilt-Back Door

Models DR0840-TS-3 thru DR0848-TS-3



MxV™ ENERGY-ABSORBING DOCK DOOR

A Product of DL Manufacturing

340 Gateway Park Drive
North Syracuse, NY 13212
Phone: 315-463-7348
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www.dlmanufacturing.com

Table of Contents

Approved Installer-Supplied Hardware & Fasteners

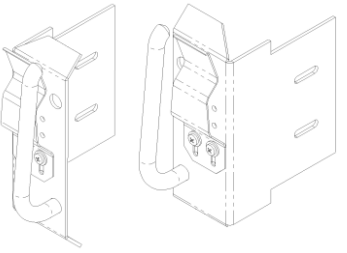
	Fastener Type / Hardware	Quantity
☐ Hardware for 2 Mounting Rails	Hollow Concrete Block – 3/8” x 1-1/2” hollow set drop in anchor and 3/8” washer. Concrete – 3/8” x 2” sleeve anchor and 3/8” washer. Structural Steel – 3/8” x 1-1/2” self tapping screws and 3/8” washer (If Welding, see welding section below) Wood backed by solid material – 3/8” x 3” Anchor and 3/8” washer. (Type of anchor used will depend on type of solid backing. See above methods)	14
☐ Hardware for 2 Bearing Plates and Spring Anchors	Hollow Concrete Block – 3/8” x 1-1/2” hollow set drop in anchor and 3/8” washer. Concrete – 3/8” x 2” sleeve anchor and 3/8” washer. Structural Steel – 3/8” x 1-1/2” self tapping screws and 3/8” washer (If Welding, see welding section below) Wood backed by solid material – 3/8” x 3” Anchor and 3/8” washer. (Type of anchor used will depend on type of solid backing. See above methods)	16
☐ Hardware for Header Seal Brush	Hollow Concrete Block – 5/16” x 1” TAPCON screws Concrete – 5/16” x 1” TAPCON screws Structural Steel – 5/16” x 1/2” self tapping screws and 5/16” washer Wood– 5/16” x 1” Anchor and 5/16” washer.	5 - 10
☐ Hardware for Top Side Seal Brushes	5/16” x 1/2” Self Tapping screws	4

Approved Welding Methods

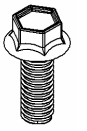
☐ Fillet Welds	1/8” Fillet weld 1-1/2” long every 18”
☐ Plug Welds	Plug weld every hole

Manufacturer-Supplied Hardware & Fasteners

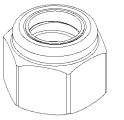
CP2143
Cotter Key
(QTY-2)



DR5166 & DR5165
Spring Plate
Assembly (L & R)
(QTY-1 EA.)



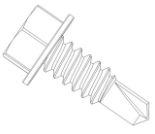
AT2018 1/4”
-20x3/4
Flange Bolt
(QTY-50))



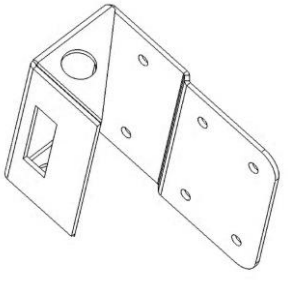
CP2091
5/16” Nylock
(QTY-16,18,20)

CP2046
1/4” – 20
Flange Lock
Nut
(QTY-54)

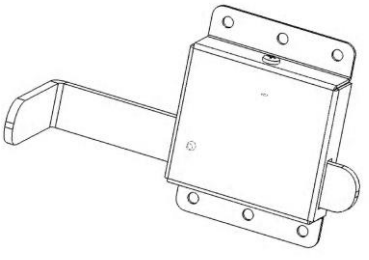
Mounting Rail
DR4726- Qty (0 or 2)
DR4411 – 8’6” (Qty2)



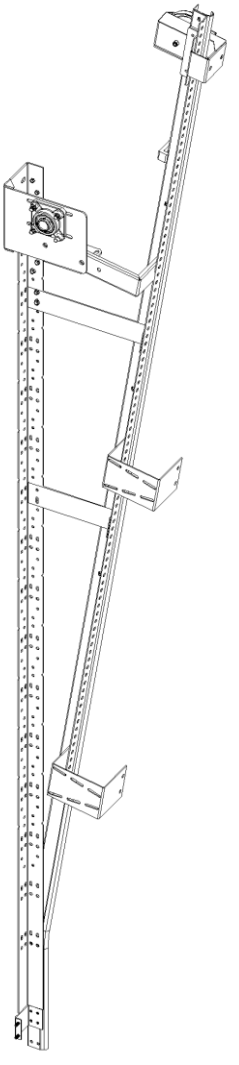
CP2189
#14 Tek Screw
Qty(20)



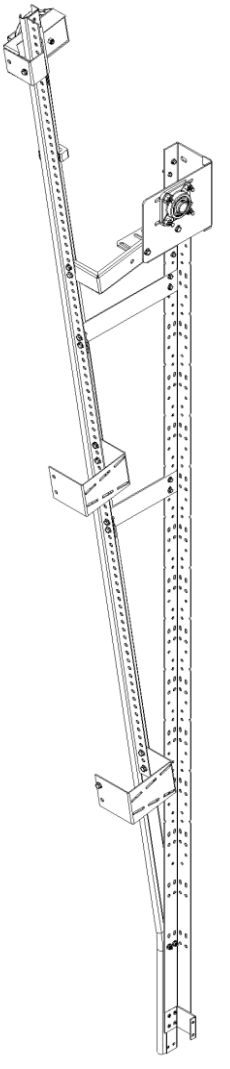
DR4695
Lock Receiver
(QTY-2)



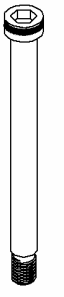
DR2184
Lock
(QTY-2)



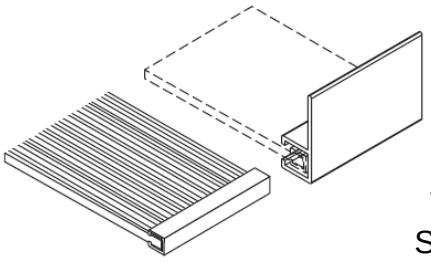
DR5267
Left Roller
Track Asm.
(QTY-1)



DR5266
Right Roller
Track Asm.
(QTY-1)

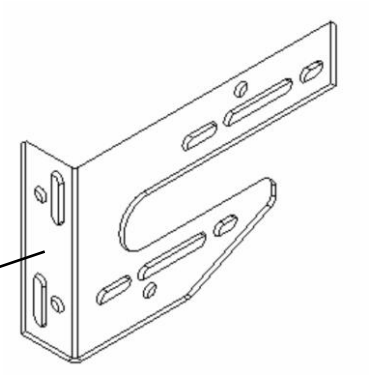


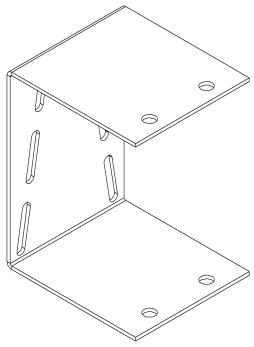
DR2082
3/8” x 3-3/4
Shoulder Bolt
(QTY-16,18,20)



DR4517
Top Side
Seal Brush
(QTY-4)

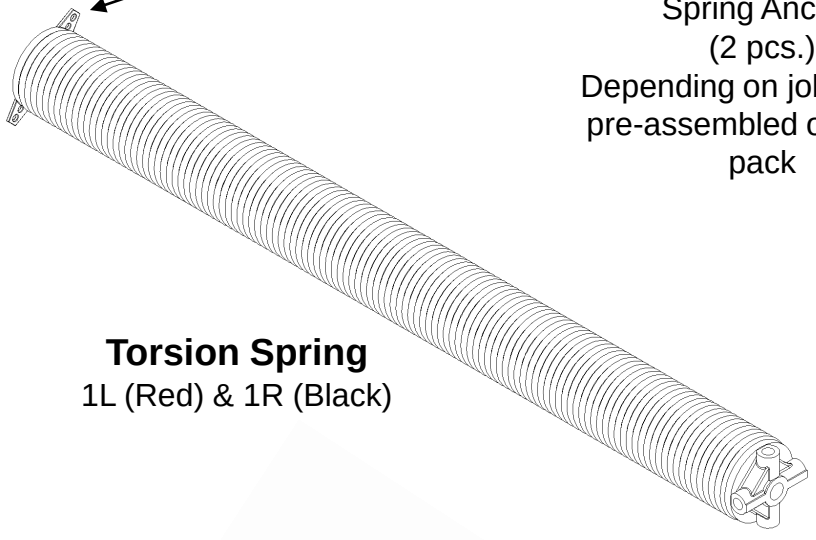
DR4516
Top Side
Seal Brush
Holder
(QTY-4)



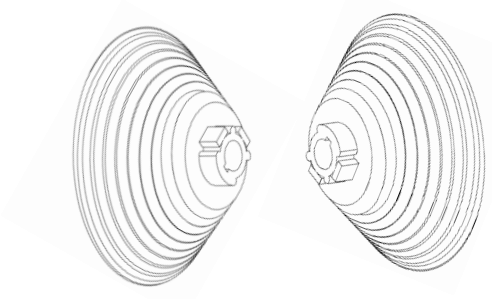


DR4417
C-Bracket
(QTY-4)

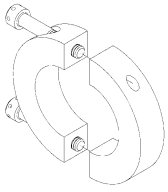
DR2114
Spring Anchor
(2 pcs.)
Depending on job may be pre-assembled on spring pack



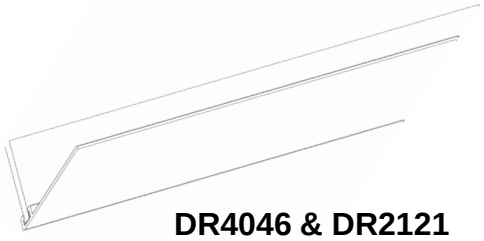
Torsion Spring
1L (Red) & 1R (Black)



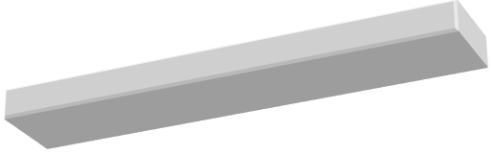
DR2086
Tilt-Back Drum
(L-red & R-black)
(QTY-2 pcs/set)



DR2095
1” Split Shaft
Collar
(QTY-2)



DR4046 & DR2121
Header Brush & Holder
(QTY-1 each)



DR2094
Shaft Key
1/4 x 1/4 x 3
Straight
(QTY-2)

1” Solid Shaft
DR2090 – 114”
DR2091 – 126”
DR2096 – 138”
(Keyed Full)

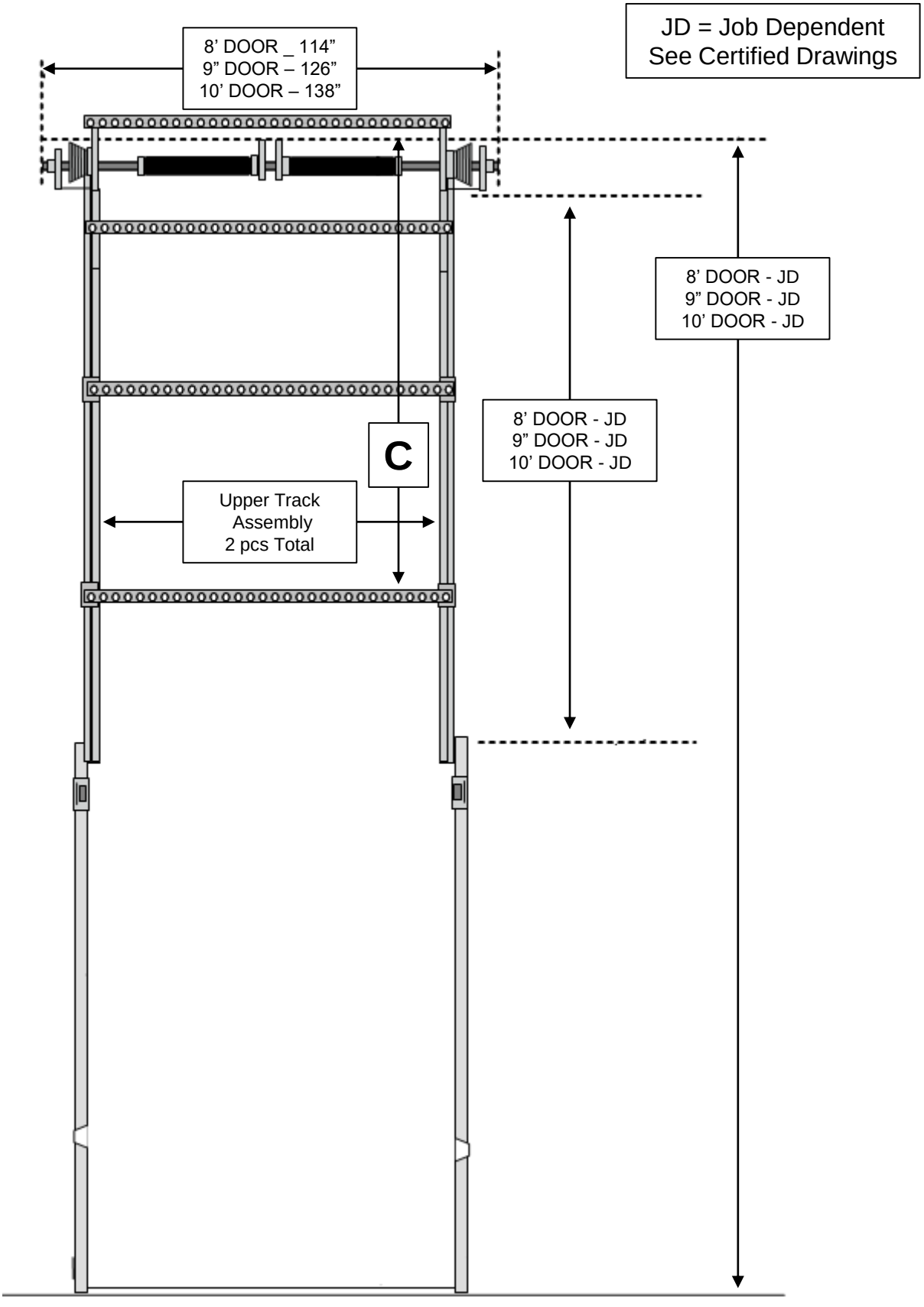


Figure 1 Key Measurements and Locations of Mounting Rails and Bearing Assemblies

>IMPORTANT!!!

Track support and alignment are critical!!!

The following conditions are required for the installation of the MxV door:

- Door jamb is plumb and true
- Adequate mounting surface available for mounting rails and pulley brackets.
- Door jamb and walls must be inspected for decay, damage, crumbling etc. If a solid surface does not exist, the door jamb or wall must be repaired or rebuilt.

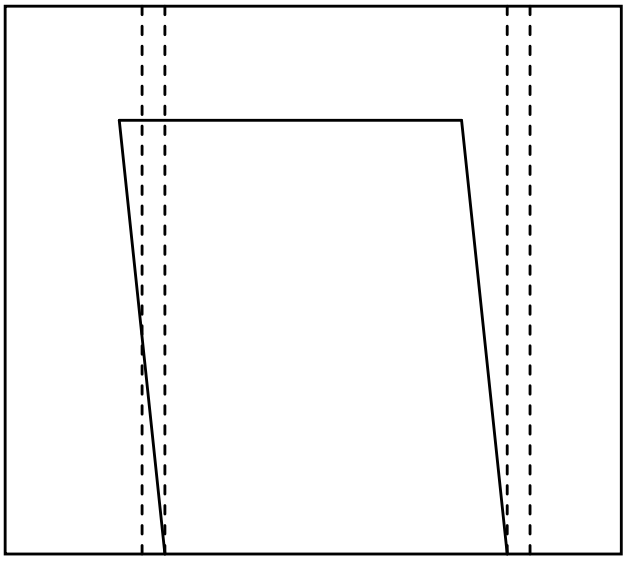


Figure 2. Proper track alignment when door frame is out of square. (Not shown to scale.)

Required Tools

☐ Measuring Tape	☐ 1/8” Hex Driver
☐ Plumb Bob	☐ (2) 3/16” Hex Drivers
☐ 4’ Long Level	☐ 3/8” Wrench or nut driver
☐ Drill with 1/4” drill bits	☐ 7/16” Wrench or nut driver
☐ Pliers or Vise Grip	☐ 1/2” Wrench or nut driver
☐ Torsion Spring winding bars	☐ Phillips & Flat Head Screwdrivers

Proper alignment of the Mounting Rails is critical to proper operation of the door. Use a plumb bob and level to ensure that each rail is level and square before fastening it to the door frame. In addition, if the door frame is not square, set rails so that they align with each other rather than with the door frame. (SEE FIGURE 2)

>IMPORTANT!!!

Installers may determine that installation conditions require welding mounting rails rather than using fasteners. *(Do not attach track to the Mounting Rail until the Mounting Rail is securely fastened to the wall.)*

INSTALLERS MUST FOLLOW O.S.H.A. & LOCAL SAFETY GUIDELINES!!!

> Preparing To Install the MxV Tilt-Back Door

NOTE:

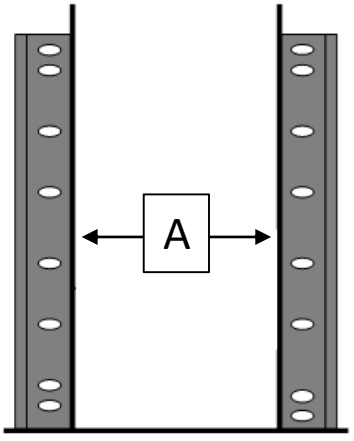
The MxV door is built to customer specifications. Verify that measurements taken on the job site match those specified in the approval drawing provided with the door. If measurements DO NOT match those specified in the approval drawing please call our Service Department toll free for assistance. **1-866-235-7468**

1. Check parts list to verify that all required factory-supplied parts are present.
2. Gather all required installer-supplied fasteners and hardware. **(See "Approved Installer-supplied Hardware & Fasteners" page 1.)**
3. Verify the minimum clearance to the sides and above the door. **(SEE FIGURE 1 ON PAGE 4.)**

>Installing the Mounting Rails and Plastic Door Tracks

Figure 3

Mounting Rail positioning.



1. Take polyester foam strip and stick the side with PSA against mounting rail. Place foam on exterior face of the mounting rail's short leg. The foam should be compressed between the mounting rail and wall when door is installed **(See Figure 4).**
2. Ensure that foam does not totally cover the mounting holes in the short leg of the mounting rail.

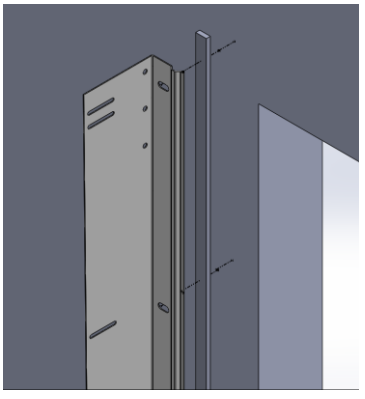


Figure 4

Attaching Mounting Rail Foam

NOTE:

Mounting rails may be shimmed out from the door frame up to ½" to align them with each other. If the door frame is out of plumb by more than ½", contact factory before proceeding with install.

1. Align short leg of Mounting Rails with the door jamb so the distance apart matches the "A" dimension on the approval drawing. If you cannot locate this measurement in the included paperwork, please call DL Manufacturing. If there are short pcs of mounting rail, locate them at the bottom of the stack closest to the floor.
2. Attach Mounting rails to wall using approved installer-supplied fasteners. Ensure Mounting Rails maintain the same spacing all the way to the top. Rails MUST BE kept level/plumb throughout. MOUNTING RAIL SPACING tolerance is ± 1/8". Re-measure spacing between Mounting Rails now.

>IMPORTANT!!!

Do not attach plastic track to mounting rail until mounting rail is attached to the wall.

NOTE:

Plastic tracks are mounted on the mounting rails. Plastic tracks are labeled to indicate position. BL=bottom left. BR=bottom right.

3. Attach the plastic door tracks onto the installed mounting rail on both sides of the door opening (BR + BL.)
   - Slide the track over the mounting rail so the webbed portion is pointing into the door opening.
   - Ensure that the track is flush to the floor and fully seated over the mounting rail.
   - Using the pre-drilled holes in the mounting rail as guides, drill ¼" holes through the track. Apply heavy pressure to the track while drilling holes to ensure the track will be fully seated.
   - Insert ¼" – 20 x ¾" flange bolt through the holes so that the head is outside the track (touching the mounting rail) and the ¼"-20 flange nuts are inside the track (touching the plastic track.) **(SEE FIGURE 5)**

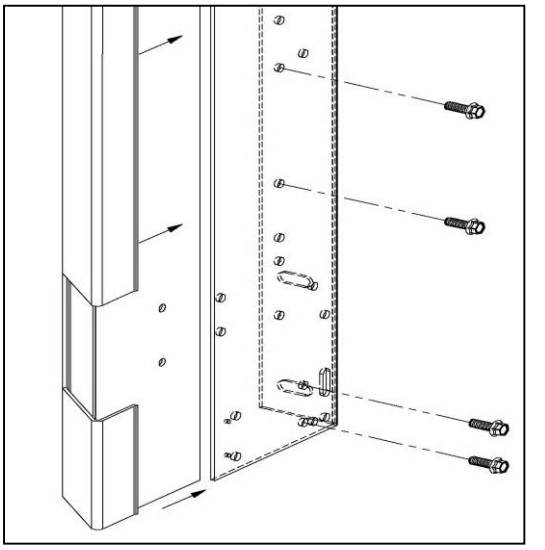


Figure 5 Attaching plastic door track.

>Installing the Door Panels

Door panels are numbered to indicate the order of installation. **(SEE FIGURE 6)** Install panel 1, which has the bottom seal brush, first; install panel 2 second, panel 3 third, etc. Install the panel with the header seal and the cable attachment last

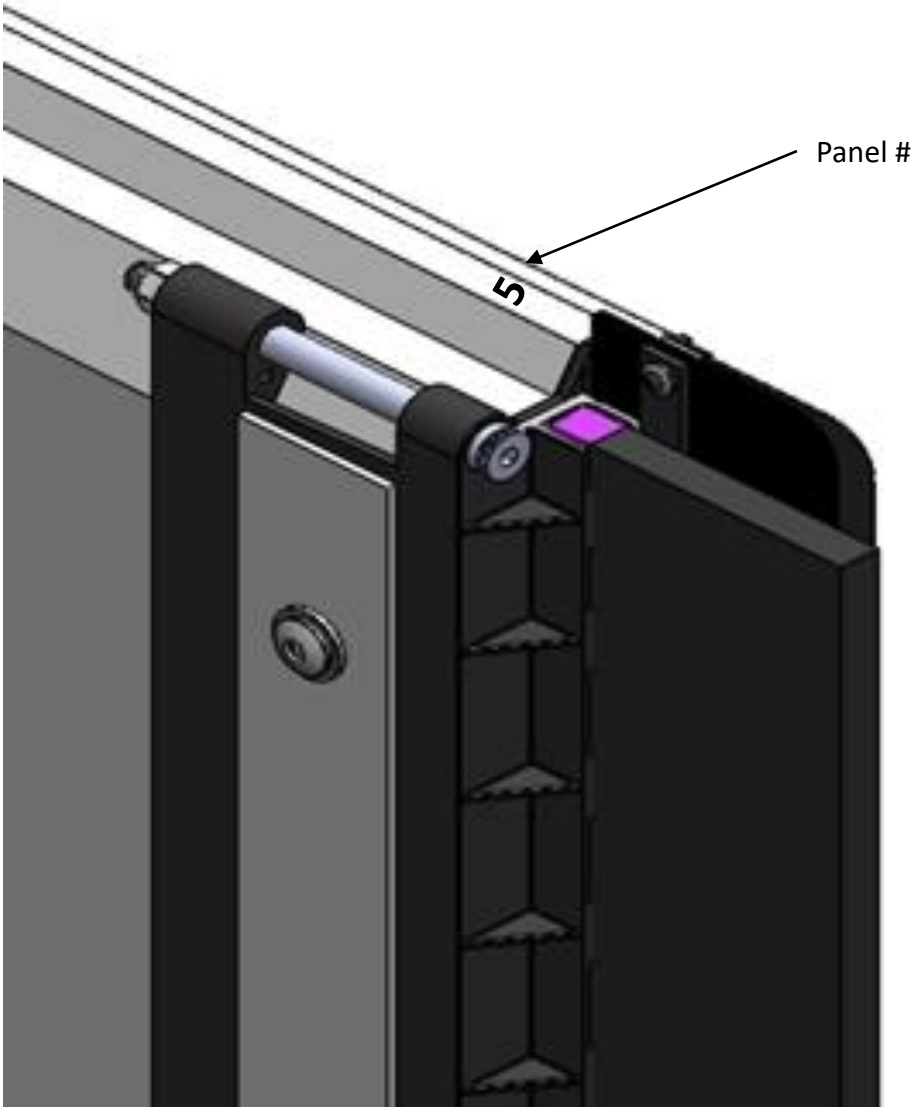


Figure 6
Door panel numbering.

>Installing the Door Panels contd.

1. Attach pull down strap to lower bolt on right side of Bottom Panel (panel 1). **(SEE FIGURE 7)**
2. Attach cables to Lift Brackets on top panel. **(SEE FIGURE 8)**
3. Position panel 1 (with the bottom brush seal) so that the bottom seal brush is pointed *outward* and the hinges are on the inside.
4. Feed the brushes into the brush guide ensuring all bristles are captured in the brush guide.
5. Lower the panel to the floor.
6. Repeat this procedure for the next panel (panel 2), lowering it to the top edge of the previously installed panel. Be sure not to pinch bristles or the gap flap between panels.
7. Insert supplied DR2082 3/8 x 3-3/4” shoulder bolt through the hinge with the threads facing the track, and secure with supplied 5/16” nylock. Repeat on other side of door.

Repeat steps until all panels are installed. ***(DO NOT INSTALL SHOULDER BOLTS CONNECTING TOP 2 PANELS AT THIS TIME)***

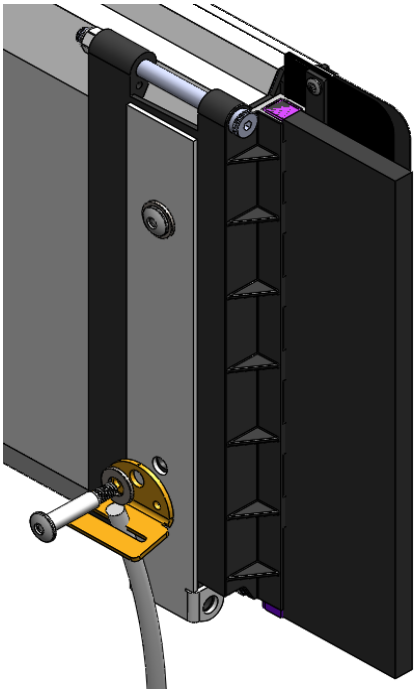


Figure 7
Attaching pull down strap.

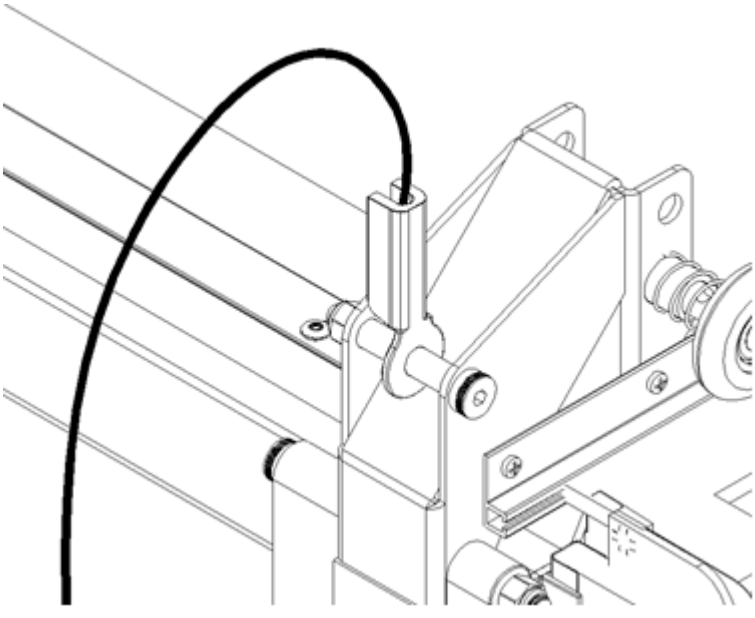


Figure 8
Attaching cables to lift brackets

>Installing the Top Side Seal Brushes

1. Position the Top Side Seal Brush Assembly so that the DR4517 Top Side Seal Brushes makes contact with the brush attached to the top panel and close the gap between the wall and brush guide.
   (See Figure 9)
2. Mark the location of the Top Side Seal Brush Assembly.
3. Remove the top panel to make installation easier.
4. Using (2) approved fasteners, **(SEE PAGE 1)** attach the Top Side Seal Brush Assembly to the Mounting Rail. Ensure brush holder is seated against brush guide in plastic track.
5. Repeat on other side.
6. Install remaining 2 Shoulder Bolts connecting top 2 panels at this time.

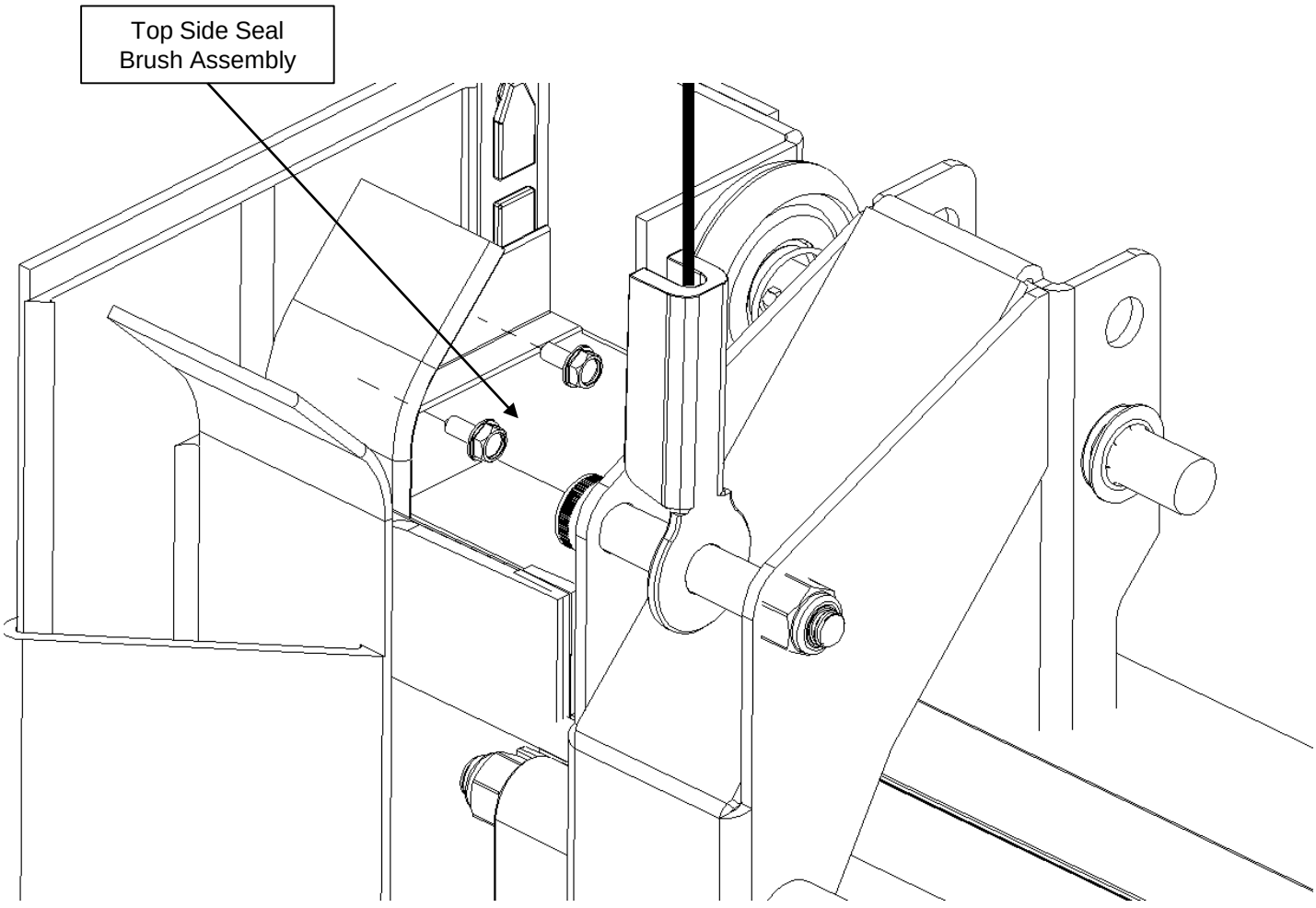


Figure 9 Installing Top Side Seal Brushes.

> Installing the Roller Track and End Bearing Assemblies

1. Attach Upper Track Assembly to Mounting Rail *(Use 4' Level to ensure Upper Mounting Rail Assembly is plumb.)* **(SEE FIGURE 10)**

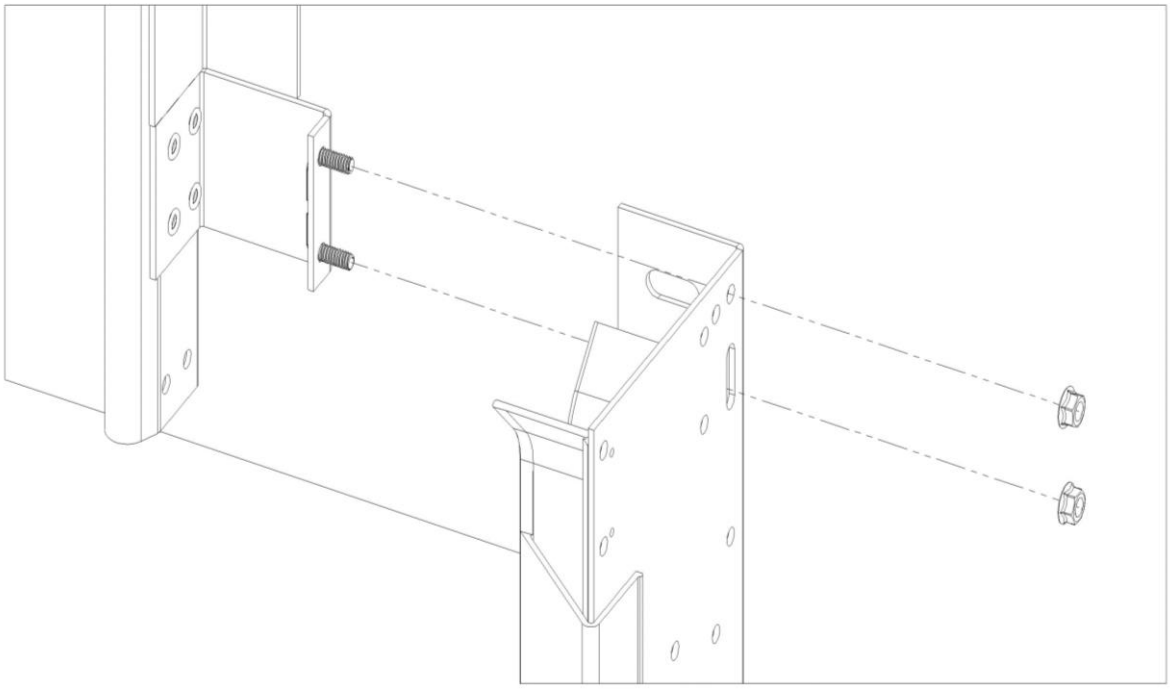


Figure 10 Attaching Upper Track Assembly to Mounting Rail.

2. Attach Bearing Assemblies to mounting surface. *(Use 4' Level to ensure Upper Mounting Rail Assembly is plumb.)* **(SEE FIGURE 11)**

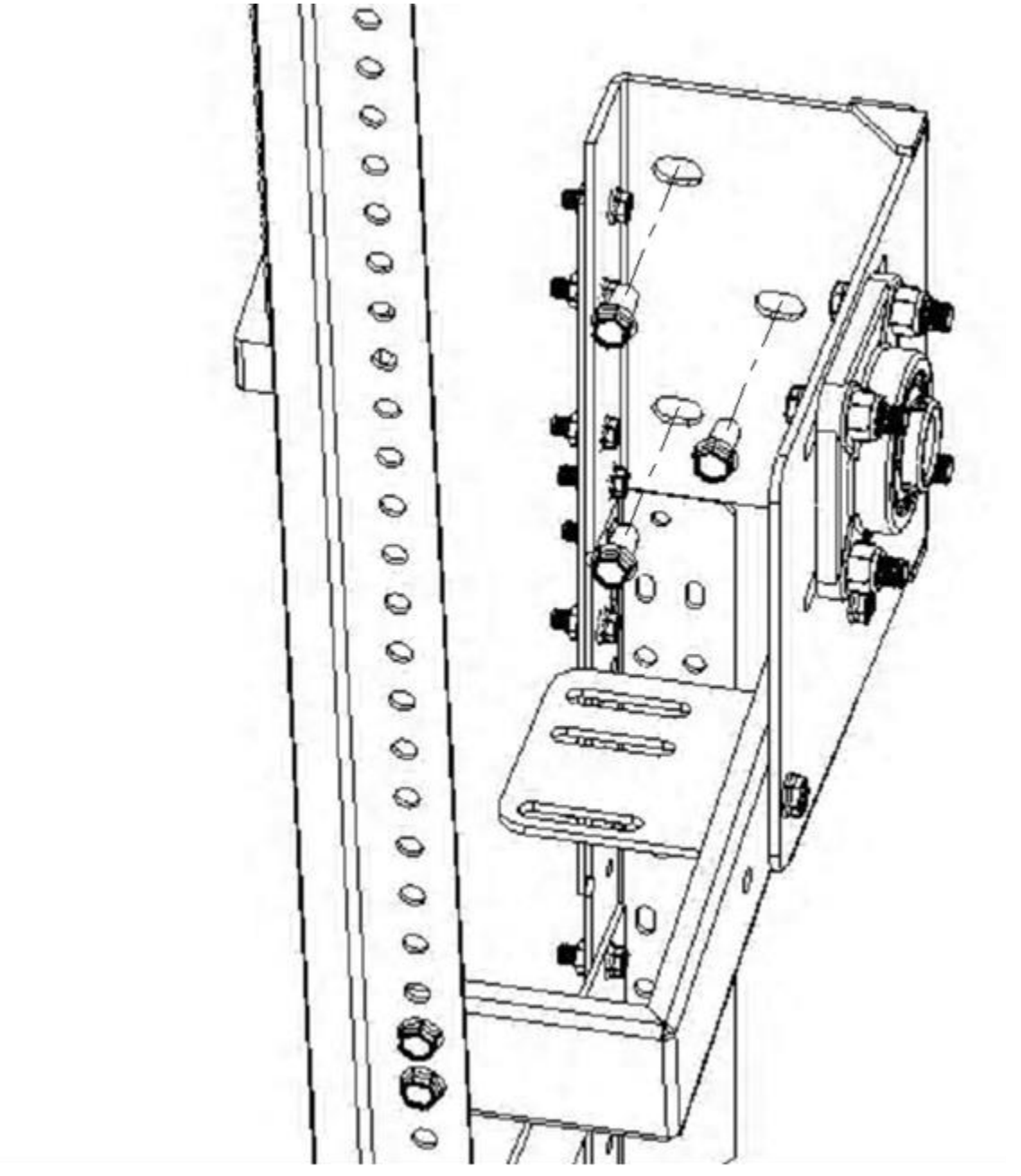


Figure 11 Attaching Bearing Assemblies to wall.

>Installing the Torsion Springs

1. Check stacked panels for level.
2. Lock door or tie off pull down strap to prevent door from opening while winding torsion springs.
3. Install Center Shaft Supports to wall
    a. Remove the Center Shaft Supports from the Torsion Springs.
    b. Center the Supports between both End Bearing Assemblies, ensuring the Spring Shaft will be level.
    c. Attach Center Shaft Supports to wall.
4. Installing the Spring Shaft
    a. Slide left Cable Drum(red mark), left spring(red mark), left spring bearing, right spring bearing, right spring(black mark) and right cable drum(black mark) onto the spring shaft in the order above.
    b. Insert each end of the shaft into Bearing Assemblies and ensure shaft is centered between assemblies.
    c. Secure bearings so the center of the spring shaft is 5.75” off the wall.
    d. Attach Torsion Springs to Spring Anchors. (SEE FIGURE 12)
5. Run right cable up and over outside of pulley. (SEE FIGURE 13)
6. Run cable under drum and attach cable to drum. Make sure the cable is seated properly in the grooves of the drum.
7. Turn shaft so the keyway in the drum and shaft line up and insert shaft key.
8. Fasten Vise Grips to the spring shaft with the handle braced against the wall to keep the cables taut.
9. Space cable drum so it is centered in line with the upper pulley bracket.
10. Tighten set screws on cable drum.
11. Repeat on left side.
12. Refer to “Installer Information” sheet for Torsion Spring winding information.
13. Be sure to lubricate the springs when done winding. Failure to do so will result in corrosion, decreased performance and possible damage!

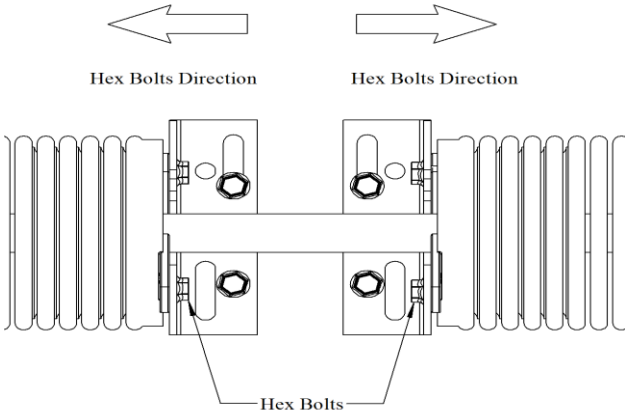


Figure 12 Installing Spring Anchors

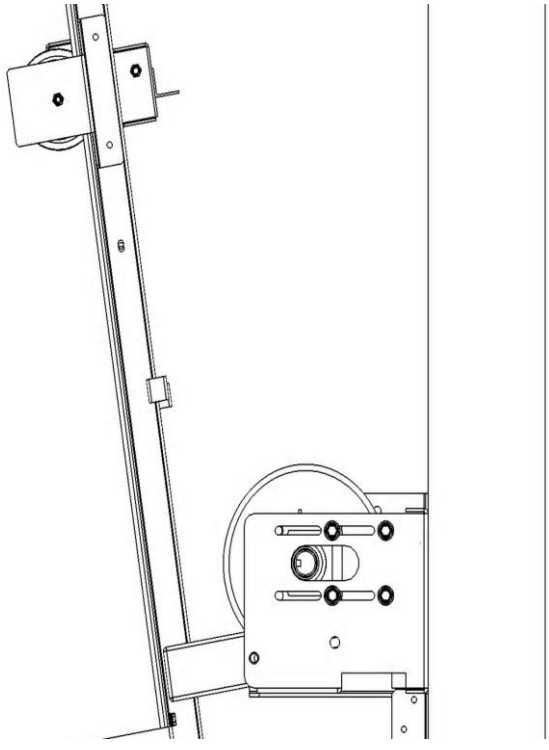


Figure 13 Attaching cable

>Installing the Wind Load Bar Assembly

Attach Wind Load Bar Assembly to mounting rail on each side, using provided CP2189 #14 Tek Screws. **(SEE FIGURE 14)**

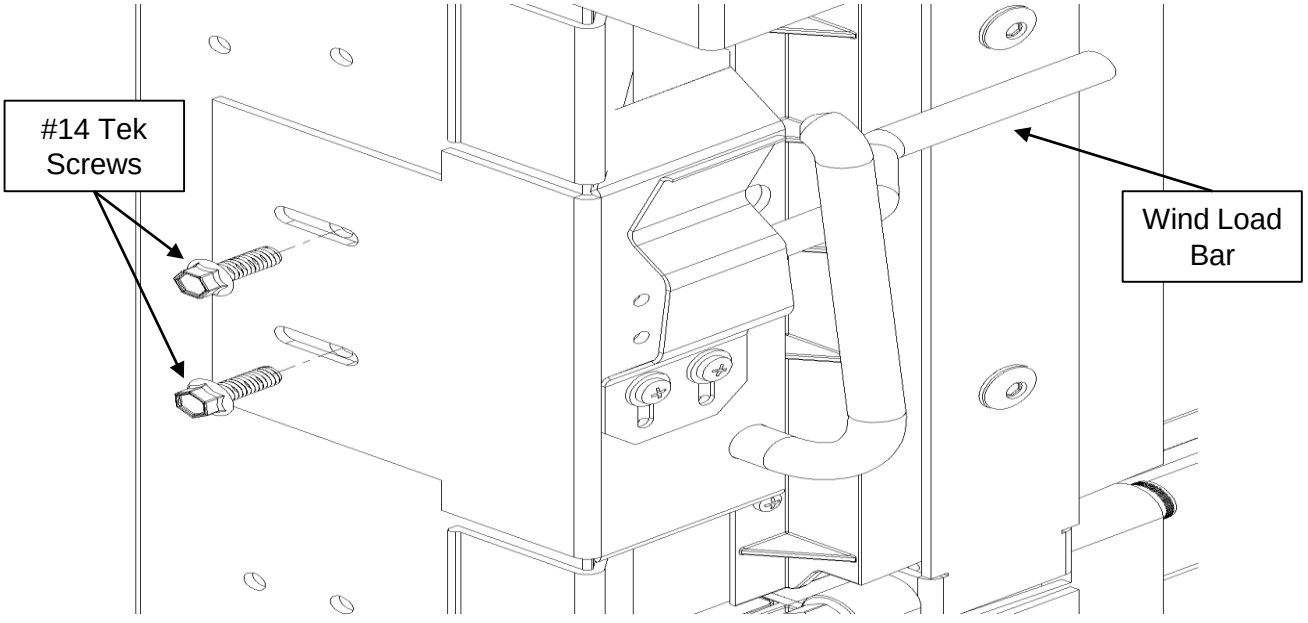


Figure 14 Installing the Wind Load Bar Assembly.

>Installing the Lock Receiver

1. Attach the slide locks to the metal end cap braces (1-LH, 1-RH) on Panel 4 using at least (2) CP2189 Tek Screws on each slide lock.
2. Engage the slide bar of the lock and position the lock receivers so the top of the slot in the receiver is bottomed out on the top of the slide lock.
3. Once positioned properly, fasten the lock receivers to the track and mounting rail using at least (2) CP2189 Tek screws per receiver.

(SEE FIGURE 15)

Figure 15 Attaching Lock Receiver Assembly. (Right Side shown.)

>Installing the Header Seal Brush Assembly

NOTE:

Plastic tracks are mounted on the mounting rails. Plastic tracks are labeled to indicate position. BL=bottom left. BR=bottom right.

1. Cut holder and brush to same length as door opening.
2. Crimp ends of Header Seal Brush Assembly to ensure brush does not come out.
3. Set Header Brush Assembly on top of Top Panel Brush Seal.
4. Attach Header Seal Brush Assembly to header using approved fasteners.
   (SEE PAGE 1) **(SEE FIGURE 16)**

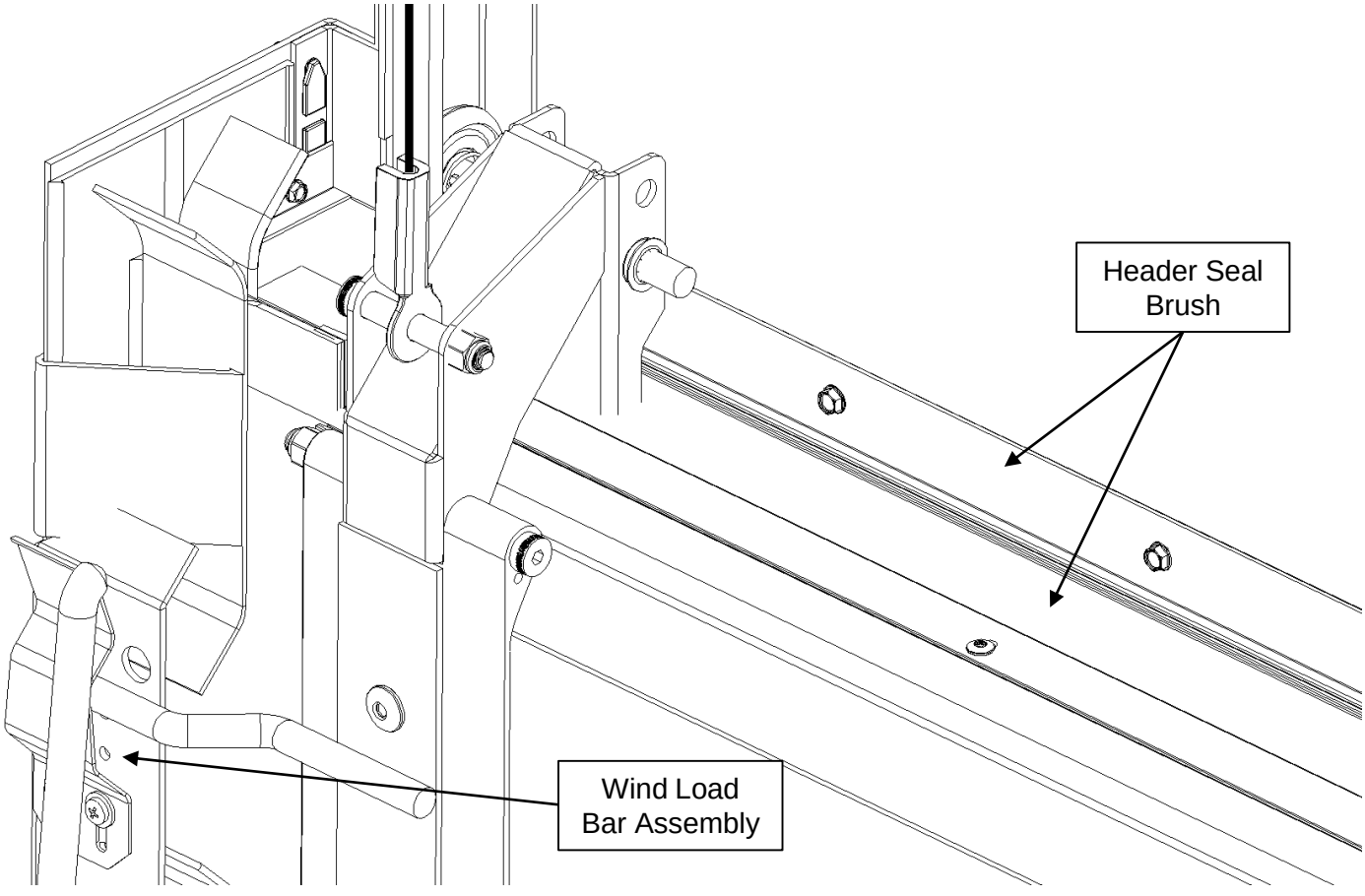


Figure 16 Installing Header Seal Brush Assembly

>Installing the Safety Brackets & Perforated Angle

1. Attach Perforated Angle between spring stops. *(Distance between Roller Tracks should match measurement on Installer Information Sheet. Section E)* **(SEE FIGURE 17)**

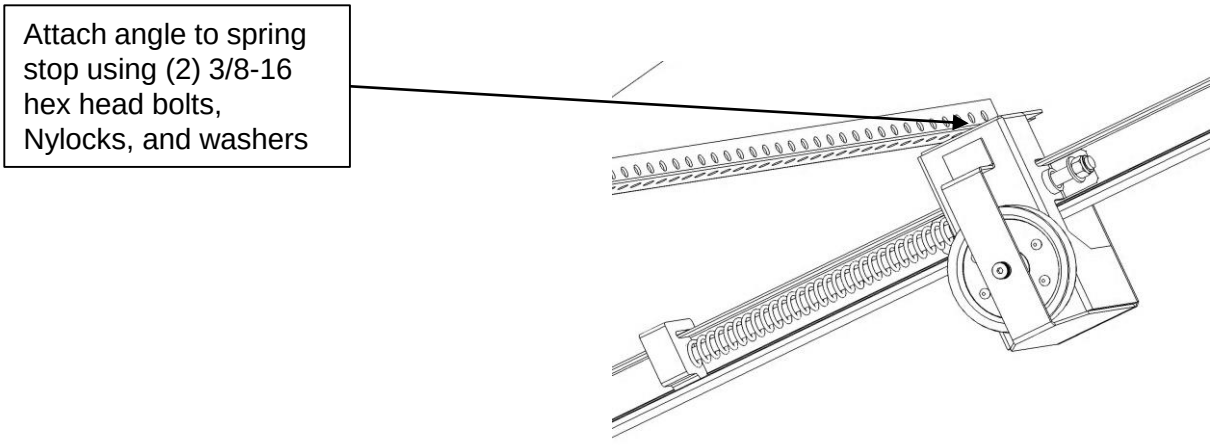


Figure 17 Attaching Perforated Angle between Spring Stops.

2. Attach C-Brackets to Tilt-Back Roller Track and Perforated Angle to C-Brackets. *(Distance between Roller Tracks should match measurement on Installer Information Sheet. Section E)* **(SEE FIGURE 18)**

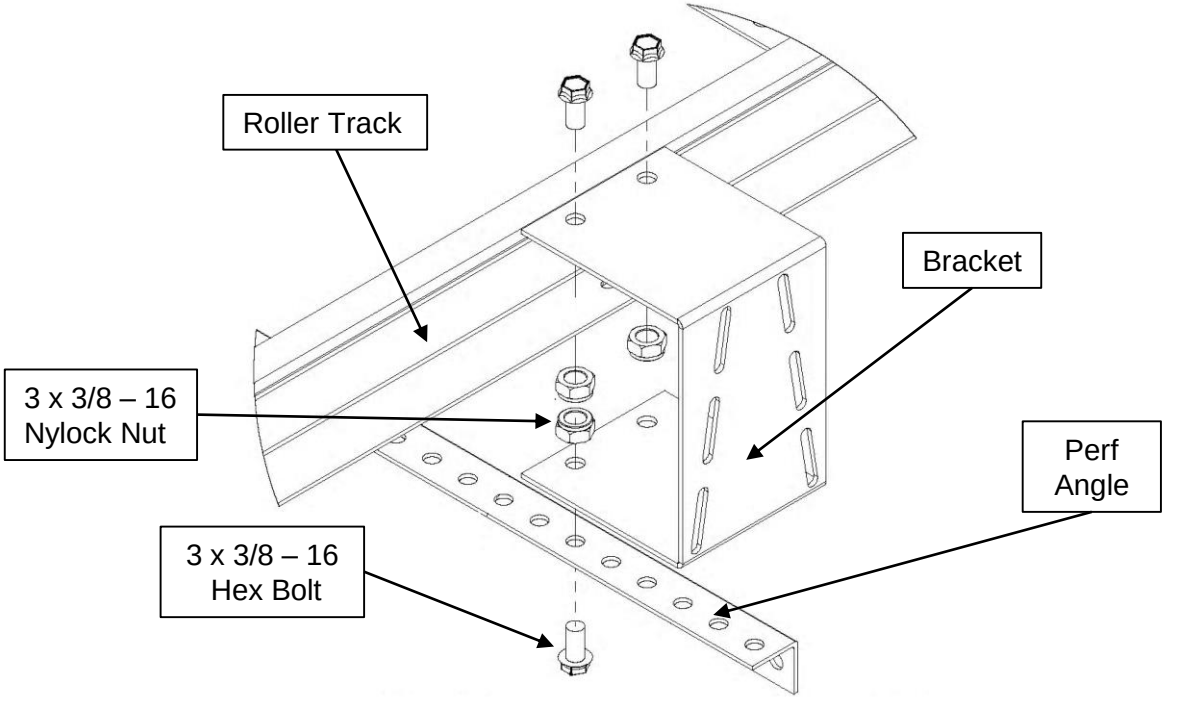


Figure 18 Attaching Perforated Angle and C-Brackets

>Final Door Installation Checklist

☐ 1. Cycle door to confirm smooth, easy operation
- Door does not drift down into door opening when fully opened.
- Brush is fully seated in the brush guide of the track
- Rollers move freely in roller track.
- Roller wheels feed into the roller track without banging or binding
- Cables do not rub on track at any point

☐ 2. MxV door is sealed at all points
- Top Side Seals are contacting the Header Seal Brush
- Header Seal Brush is contacting Top Panel Brush at all points.
- Gap Flaps are properly seated in the brush guide of the track and are not pinched between panels
- Bottom Seal Flaps are fully seated in the brush guide of the track in the bottom corners.

NOTE:

Plastic tracks are mounted on the mounting rails. Plastic tracks are labeled to indicate position. BL=bottom left. BR=bottom right.

☐ 3. Ensure the Mounting Rail and Bearing Assemblies are securely mounted after several cycles of operation.

☐ 4. Ensure the MxV door can be knocked out into the door jamb and reset.
- Knock door out into the door jamb.
- Pull door back in past the door jamb.
- Raise door slowly to reset brushes back into the door track.
- Ensure that cables are not getting caught on any of the hardware.

Installation Company:
_____
Installer Name:
_____
Date of Installation:
_____
Jobsite Name and Location:
_____
Installer Notes:
_____
_____
_____

MUST Fax COMPLETED Sheet to (315) 463-8559 ATTN: Service Department

>Door Troubleshooting Guide

SYMPTOM	PROBABLE CAUSE	SOLUTION
CABLES RUBBING ON CABLE GUIDE	A. Cable Drum is not properly aligned. B. Spring Shaft is not aligned properly.	A. Loosen set screws on Cable Drum and slide drum into proper position over cable guide. **(See Figure 17)** B. Move spring shaft to align properly.
DOOR RAISES EASILY, CLOSES HARD	A. Too much spring tension	A. Remove spring tension
DOOR RAISES HARD, CLOSES EASILY	A. Not enough spring tension	A. Add more spring tension.
DOOR OPERATES WITH TOO MUCH RESISTANCE	A. Door is not level. B. Broken spring C. Door tracks are not plumb.	A. Check cable length and adjust accordingly. B. Replace spring C. Re-measure track spacing and adjust accordingly.
DOOR DOES NOT ENGAGE LOCK RECEIVER	A. Lock Receiver Hood is not properly installed.	A. Properly align Lock Receiver Hood.
AIR LEAKAGE OR LIGHT SHOWING	A. Side Brushes are pinched or damaged. B. Door tracks are not plumb. C. Side Brushes and/or Gap Flaps are not in the track guide. D. Gap Flap is pinched between panels.	A. Check and repair Side Brushes B. Re-measure track spacing and adjust accordingly. C. Reset Side Brushes and/or Gap Flaps into the track Guide. D. Separate panels and reset Gap Flap in proper position.
DOOR DOES NOT KNOCK OUT OF DOOR JAMB	A. Door tracks are not centered on door opening. B. Obstruction in door jamb.	A. Detach and re-center door tracks. B. Remove obstruction from door jamb.

>MxV Maintenance Procedures

	ITEM	PROCEDURE	MAINTENANCE INTERVALS	
			6 Months	12 Months
1	Cable Drums	Check all set screws and shaft keys and securely tighten.	X	
2	Cables	Lube & check for signs of abnormal wear or damage. Inspect all cables. Replace if needed.	X	
3a	Counterweigh t Doors	Inspect and check cable assembly, safety cog, cable tensioning device and counterweight basket assembly. Check and securely tighten all screws. Looks for signs of wear on cable.	**Every 6 months**	
3b	Counterweigh t Doors	Inspect bushing on tensioner arm for signs of wear every 6 months. Replace bushing after 15,000 cycles, or if showing signs of wear.	**Every 6 months**	
4	Torsion Spring Doors	Lubricate torsion spring, operate door to ensure the door clears the header. Adjust spring as necessary.	**Every 6 months**	
5	Seals	Check to ensure that seals aren't torn or fray.	**As Needed**	
6	Brush	Inspect for fraying	X	
7	End Caps/Hinges	Check for signs of abnormal wear or damage.	X	
8	Panels	Check for signs of abnormal wear or damage.		X
9	Track	Check for signs abnormal wear or damage		X
10	Track	Check for proper track spacing and alignment.		X
11	Track	Check and properly secure all track anchors.	X	
12	Track	Inspect corrective slots in tracks to ensure brush is properly resetting in track.	X	
13	Fasteners	Check and properly secure all fasteners.	X	
14	Spring Plate	Check the spring clip for proper positioning.	X	
15	Labels	Inspect all labels. Replace as needed.	X	
16	Panels	Clean with soap and hot water only. Call DL Manufacturing before using other cleaners.	**As Needed**	

WARRANTY POLICY

NOTE: Do not paint doors. Painting door without factory written authorization will void all warranties

All Products (excluding bulbs) manufactured by DL Manufacturing are warranted to be free from defects for a period of 12 months from the date of shipment, excluding doors, which have a warranty period of 12 months from date of installation or 18 months from shipment, whenever occurs first.

This warranty does not cover unreasonable/improper use or use beyond rated conditions, improper storage, negligence or accident; damage because of incorporated use of equipment with Goods, after Customer has or reasonably should have, knowledge of any defect; or improperly installed by any other Person that is unauthorized by DL Manufacturing.

This warranty is subject to customer covenants to inform all subsequent buyers of the Goods of the limitation on and exclusive of warranties provided for herein. Customer hereby indemnifies and agrees to hold DL Manufacturing harmless from and against all losses, costs and expenses, including reasonable attorney's fees incurred by DL Manufacturing as a result of any third party claim relating to the purchase, sale or use of, or otherwise relating to, the Goods covered by this Agreement.

In no event shall DL Manufacturing be required to repair, replace or reimburse Customer for more than the part or material that is found to be defective and DL Manufacturing's liability shall in such event be no greater than the invoiced price of the item and shall not include labor, shipping or other costs incurred in connection with the reshipment of defective Goods to DL Manufacturing or the reinstallation of such Goods after any repair or replacement. The remedy set forth in this paragraph is expressly agreed to be the sole and exclusive remedy for any breach of warranty. This warranty is exclusive and in lieu of all other warranties expressed or implied, including but not limited to any warranty of merchantability or of fitness for a particular purpose.

Limitation of Liability - In no event as a result of breach of contract, warranty or negligence shall DL Manufacturing be liable for special, or consequential damages including but not limited to loss of profits or revenues, loss of any equipment, cost of capital, cost of substitute equipment, facilities or services, downtime costs or claims of purchasers of the Customer for such damages. Additionally, DL Manufacturing will not be liable for any delay in the performance of contracts and orders, or in the shipment and delivery of goods, or for any damage suffered by the Customer by reason of delay, when such delay is, directly or indirectly, caused by force majeure, including war, Government interference, strikes, embargoes, shortage of labor, fuel, fires, floods, or any other cause or cause whether or not similar in nature to any of those herein before specified beyond DL Manufacturing's control.