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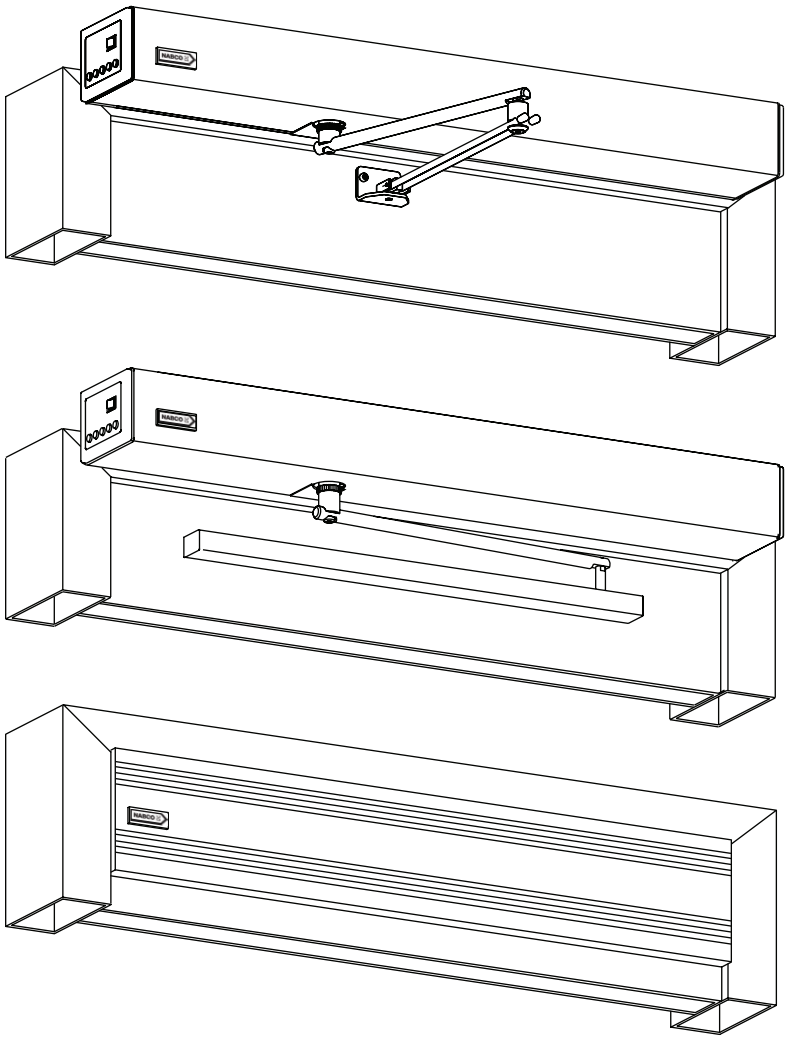
Model GT20
Swing Door Operator Assembly
Installation Manual



DN 1145

WARNING

- Turn OFF all power to the Automatic Door if a Safety System is not working.
- Instruct the Owner to keep all power turned OFF until corrective action can be achieved by a NABCO trained technician. Failure to follow these practices may result in serious consequences.
- NEVER leave a Door operating without all Safety detection systems operational.

Part #C-00164
Rev. 4/12/16

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Table of Contents

WARNING LABELS

Warning labels are universal and used to alert an individual of potential harm to one's self or to others. The following warning labels are listed in a hierarchy order that defines the most potential danger first, and the least potential danger last. Please refer to this page in the event that a warning label is displayed within this manual and further definition needs to be explained.

DANGER — **Indicates potentially dangerous situations. Danger is used when there is a hazardous situation where there is a *high* probability of severe injury or death. It should not be considered for property damage unless personal injury risk is present.**

WARNING — **Indicates a hazardous situation which has *some* probability of severe injury. It should not be considered for property damage unless personal injury risk is present.**

CAUTION — **Indicates a hazardous situation which *may result in a minor injury*. Caution should not be used when there is a possibility of serious injury. Caution should not be considered for property damage accidents unless a personal injury risk is present.**

Attention: **A situation where material could be damaged or the function impaired.**

Notice: **Indicates a statement of company policy as the message relates to the personal safety or protection of property. Notice should not be used when there is a hazardous situation or personal risk.**

Note: *Indicates important information that provides further instruction.*

GENERAL SAFETY RECOMMENDATIONS

DANGER **According UL 325 8.4, Do Not mount Operator onto flammable surfaces!**

WARNING **Read this "General Safety Recommendations" section before installing, operating or servicing the automatic door. Failure to follow these practices may result in serious consequences. If you do not understand the instruction, ask the installing qualified technician to teach you how to use the door.**

WARNING **Do not install, operate or service this product unless you have read and understand the General Safety Recommendations, Warning Labels, Installation and Operating Instructions contained in this manual. Failure to do so may result in bodily injury, or property damage.**

WARNING **If the door appears broken or does not seem to work correctly, it should be immediately removed from service until repairs can be carried out or a qualified service technician is contacted for corrective action.**

WARNING **The GT20 Swing Door Operator Assembly must not be mounted within locations presenting explosion hazards. The presence of flammable gases or smoke represents a considerable safety hazard.**

Attention: **Any modifications of the installation that are not described in this manual are not approved by the manufacturer.**

Notice: **This manual and the owner's manual must be given to and retained by the purchasing facility or end user.**

- When configuring the installation, it is essential to make sure local regulations are complied. It is particularly important to ensure Door Panels do not have any sharp edges. The secondary closing edges must be designed by customers in such a fashion as to eliminate any dangerous crushing and shearing points.
- Application limits must be observed.
- Choice of Fasteners depend on the construction base.
- The swing door drive mechanism GT20 may only be installed and operated for indoor use. If this condition cannot be fulfilled, the customer must provide sufficient protection from moisture.
- In order to guarantee the safety of the users at all times, the installation must have an AAADM inspection before it is put into service and during normal operation, at least once a year.
- It is inadmissible to bypass, shunt or disable the safety devices. Any defective safety devices may not be disconnected in order to continue the operation of the installation.
- Disconnect power at the branch circuit protection during all electrical or mechanical service. When uncertain whether power supply is disconnected, always verify using a voltmeter.

- All electrical troubleshooting or service must be performed by qualified electrical technicians and must comply with all applicable governing agency codes.
- It is the responsibility of the installing door technician to install all warning and instructional labels in accordance with ANSI 156.10 (Full Energy) or ANSI 156.19 (Low Energy) and verify compliance.
- It is the responsibility of the purchasing facility or end user to keep warning and instructional labels and literature legible, intact and with the door.
- Replacement labels and literature may be obtained from local NABCO Entrances, Inc. Distributors. If the name of the local distributor is unknown, contact NABCO Entrances, Inc. at 1-877-622-2694 for assistance.
- A safe and reliable function of the installation can only be guaranteed if it is operated with the original NABCO Entrances, Inc. accessories/spare parts. NABCO Entrances, Inc. declines all responsibility for damages resulting from unauthorized modifications of the installation or from the use of foreign accessories/spare parts.

DANGER **Do not place finger or uninsulated tools inside the electrical controller. Touching wires or other parts inside the enclosure may cause electrical shock, serious injury or death.**

DANGER **According UL 325 8.4, Do Not mount Operator onto flammable surfaces!**

CHAPTER 1: SCOPE

Section 1a: To the Installer

The purpose of this manual is to familiarize the installer and purchaser with the proper installation and operation of this system. It is essential that this equipment be properly installed and operational before the door is used by the public. It is the installer's responsibility to inspect the operation of the entrance system to be sure it complies with any applicable standards. In the United States, ANSI Standard 156.10 (Full Power) and ANSI Standard 156.19 (Low Energy) covers the GT20 Swing Door Operator Assembly. Other local standards or codes may apply. Use them in addition to the ANSI standard. Both Full Power and Low Energy Swing door Units are listed by UL according to UL325 and is identified as such on the label.

Instruct the building owners and operator on the essentials of the operation of this device. The owner should follow these instructions to determine whether the door is operating properly and should immediately call for service if there is any malfunction. All installation changes and adjustments must be made by qualified, NABCO trained technicians.

Replacement labels and literature may be obtained from local NABCO Entrances, Inc. Distributors. If the name of the local distributor is unknown, contact NABCO Entrances, Inc. at 1-877-622-2694 for assistance.

Section 1b: Objective

The Swing Door Operator assembly is designed to be installed onto the top surface of the Door Frame, or Door Panel, or between the Jamb Tubes under the Door Frame (OHC). This manual was created to offer step by step instructions.

CHAPTER 2: GETTING STARTED

WARNING **All wiring must conform to standard wiring practices and be in accordance with national and local electrical codes.**

Note: It is recommended for the Installer to use an Electrical Conduit to house all incoming 120 VAC wires.

Section 2a: Technical Data

Table 2-1 Electrical Specifications

Electricity	Description
Power Input	120 VAC (+10/-15%) 60 Hz 1.5 Amp
Auxiliary Power Output	24 VDC (±10%) 2A

Table 2-2 Operator Assembly Specifications

Specification	Description						
Weight Operator Assembly	23 pounds (10,5 kg)						
Motor Type	DC Brush Motor (with Encoder installed on Gear Box)						
Motor Voltage	30V						
Motor Power Rating	100 W						
Power consumption	Max. 560 W						
Maximum Door Weight	Full Energy	550 pounds (250 kg)					
	Low Energy	220 pounds (100 kg)					
Minimum Height of Door Panel	6 Feet (1.83m)						
Width of Door Panel	Full Energy	30” - 63” (762mm - 1,600mm)					
	Low Energy	30” - 48” (762mm - 1,219mm)					
Power Transmission	Outswing Arm	Adjustable Rods attached to Arm Shoe					
	Inswing Arm	Arm slides into Track					
Operator Assembly Dimensions	Surface Mount	Height	3-3/4” (95mm)	OHC	Height	6” (152.4mm)	
		Width	Varies		Width	Varies	
		Depth	4-3/4” (120mm)		Depth	5-1/2”(139.7mm)	
Operating/Shipping Temperature	5 to 122 ˚F (-15...+50 ˚C)						
Protection Type	IP 40 (IP 42*) Weather Resistant to Water and Dust						
Torque Output Shaft	Max. 59 pounds (80 Nm)						
Distance door hinge - Output Shaft	Mounting against Door Frame	11”					
	Door Panel mounting	15”					
Door Opening Angle	Max. 105˚						
Opening Speed	Max. 40˚ (opening degree per second)						
Closing Speed	Max. 40˚ (opening degree per second)						
Hold Open Time	0 - 60 seconds						
Hold Open Time Night	0 - 180 seconds						

Table 2-3 Input / Output Specifications

Input	Description	
Number of Signal Inputs	► 2 x Activation ► 3 x Safety Inputs (1 x Header mounted, 2 x Door mounted) ► 1 x Emergency Input	
Optically Isolated Input	(1) Wall Switch can activate multiple Units without using an Isolation Relay.	
Signal Suppression for Door Mounted Sensor	Signal Suppression determines what angle the door mounted sensor is ignored by the control.	
	► Pull Side	Programmable - 45 degrees to Full Open
	► Push Side	Programmable - 0 - 60 degrees
Output	**Description**	
Number of Outputs	► 1 x Electric Lock Form C Relay ► 1 x Electric Lock Status	

Table 2-4 Basic Features

Feature	Description	
Simultaneous Pair Synchronization	Pairs are synchronized to ease adjustability and to operate smoothly.	
Astragal Function	Opens and/or Closes (1) Door Panel slightly ahead of an opposite Door Panel.	
Independent Dual	(2) Independent Swing Doors operated by a (2) Operator Assemblies.	
Low Energy	Utilize a Knowing Act to open a Swing door.	
Full Energy	Utilize Sensor(s) to open a Swing door.	
Air Lock w/optional plug-in board	Activation of first Door Panel prevents second Door Panel from opening	
Power Boost	Power Close	
Hold Close	Applies pressure to keep Door closed	
Obstacle Detection	► Opening	Door Panel will reverse if an obstacle is detected.
	► Closing	
Inverse Operation	Programmable	In the event of a Power Failure or alarm, Inverse Operation opens the Door Panel under Spring Power for: ► Smoke Evacuation ► Egress Minimizes the need for battery back-up.
Wind Compensation	Control will gradually increase motor current to counteract wind pressure	

Table 2-5 Adjustable Options

Option	Description	
Sensitivity Adjustment for Obstacle Detection	Yes (on opening)	Adjusts how hard the Door Panel pushes against an Object before recycling.
	No (on opening)	
Time Delay Adjustment for Activation	0 - 60 seconds	Determines the amount of time “Power Open” is applied to the motor.
Electronic Delay Timer	0 - 4 seconds	Adjusts the amount of time the Door Panel hesitates before opening when locked.

Section 2b: Required Tools

► 6mm Allen Wrench
► 13mm Open Box / Combination Wrench

Section 2c: Windload

Table 2-6 Outswing Arm; Pushing Function

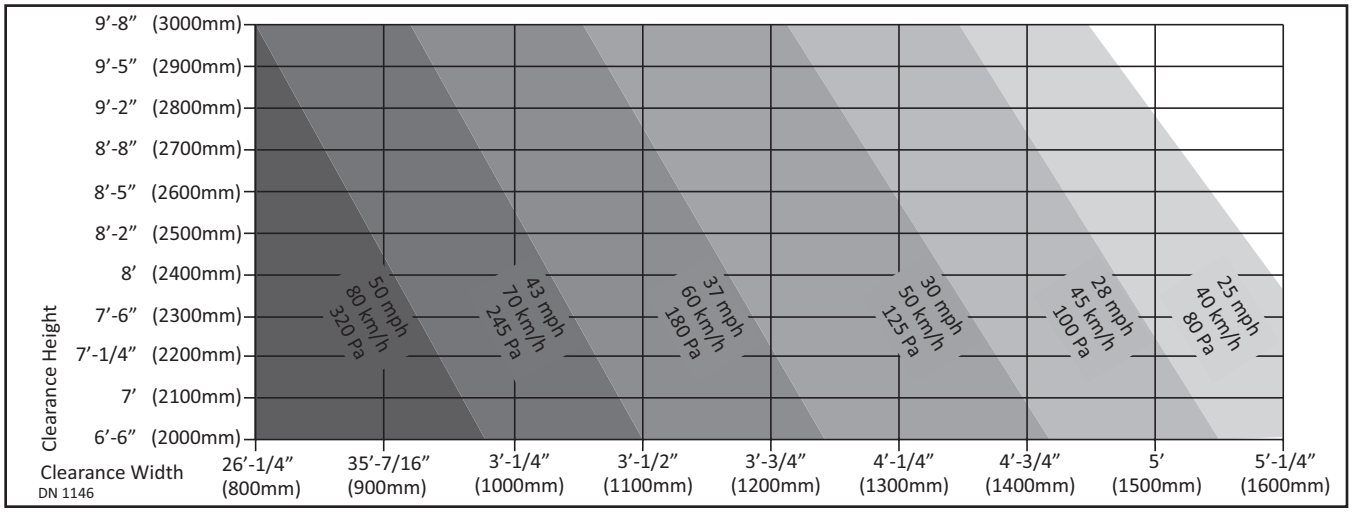


Table 2-7 Inswing Arm Pushing Function

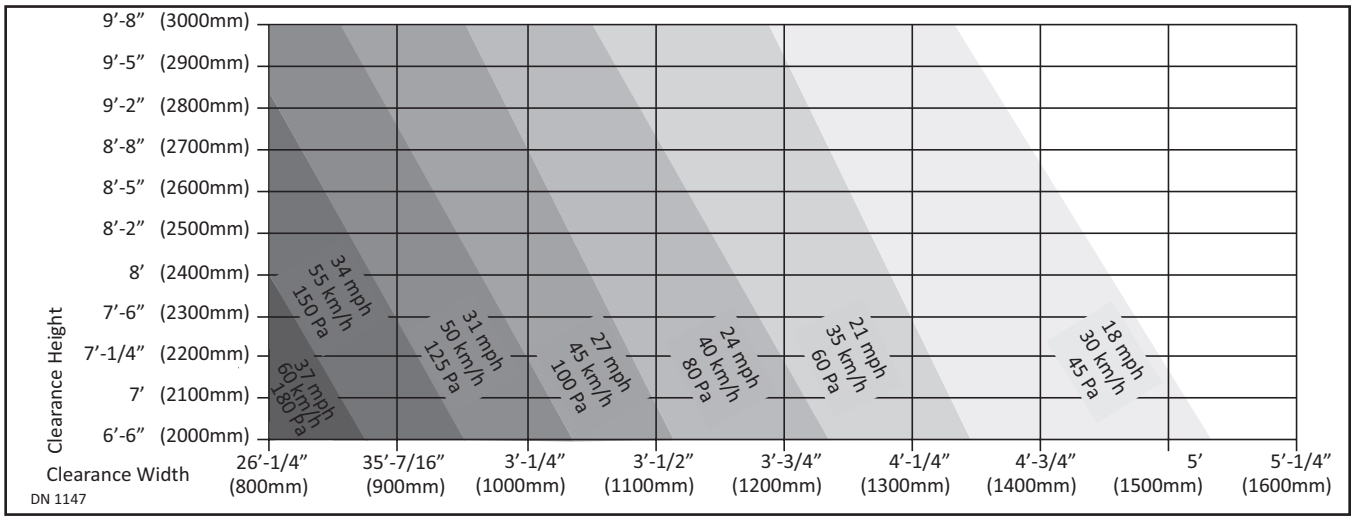
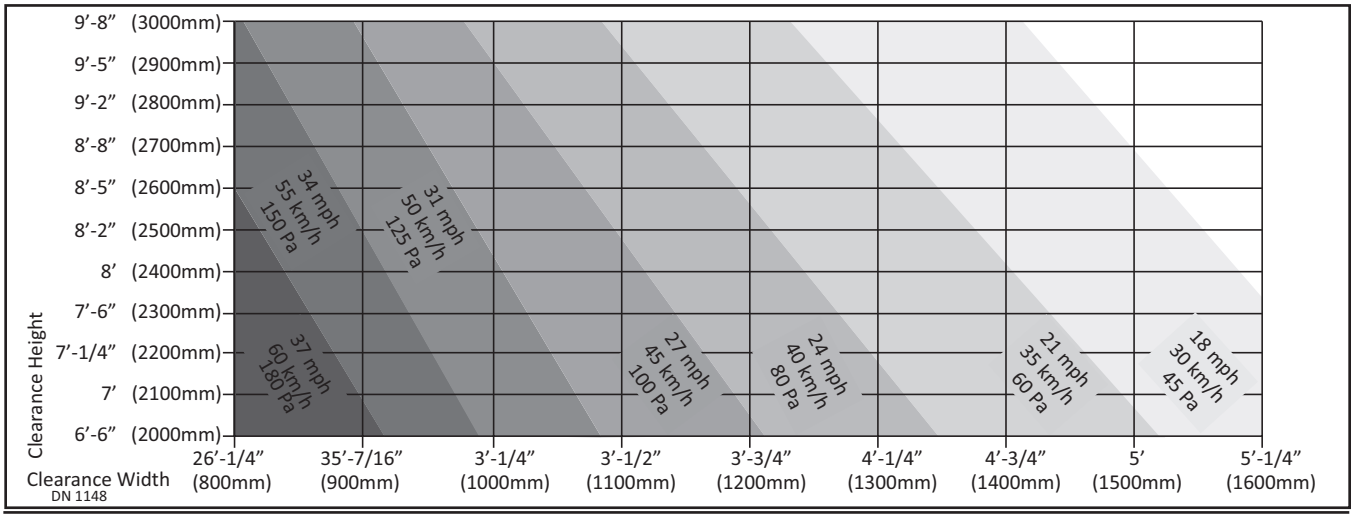


Table 2-8 Inswing Arm Pulling Function



Section 2d: Power Output

2.d.a: Full Power Swing Doors

- Utilize Sensor(s) to open a Swing door.
  Sensors activate the Control by detecting motion of pedestrians (or moving objects) coming into range.
- Must be compliant with ANSI Standard Code 156.10 to reduce chance of injury to pedestrians and wheeled traffic.

2.d.b: Low Energy Swing Doors

- Utilize a Knowing Act to open a Swing door.
  A conscious effort that is carried out in many different ways, including (but not limited to): manually opening/closing a Swing door; pressing various types of Push Plates; turning a Key switch; flipping a Rocker Switch; utilizing a keypad or card reader, etc.
- Must be compliant with the ANSI Standard Code 156.19 to reduce chance of injury to pedestrians and wheeled traffic.

Section 2e: Door Operation

2.e.a: With Power

- Standard Swing Door
  The Swing door automatically opens upon activation of a Sensor or a Knowing Act, and then fully closes after the programmed "hold-open" time has expired.
- Inverse Swing Door
  The Swing door automatically opens upon activation of a Sensor or a Knowing Act, and then fully closes after the programmed "hold-open" time has expired.

2.e.b: Without Power

- Standard Swing Door
  An internal spring located inside the Operator automatically CLOSES the Swing door. An internal Brake located inside the Motor allows the Swing door to fully close. The Swing door can be manually opened at any time.
- Inverse Swing Door
  An internal spring located inside the Operator automatically OPENS the Swing door (unless the Swing door has been locked with a Fail/Secure electric lock). An internal Brake located inside the Motor allows the Swing door to fully open with a slow, controlled motion.

Inverse Swing Door is suitable for:

- Escape Routes and/or Rescue Routes
- Extracting smoke from buildings
- Extracting heat from buildings

Notice: For Escape Routes, Rescue Routes, Exhausting Smoke or for Heat Applications; National and/or Local Requirements/Regulations may exist. Please ensure these Requirements/Regulations are fulfilled.

It is recommended to install a FAIL/SAFE electric lock on Swing doors using Inverse Swing Doors. During normal operation, the FAIL/SAFE lock applies continuous pressure to keep the Swing door in a fully closed position. During a Power Failure, the FAIL/SAFE lock automatically unlocks, thus allowing the Swing door to fully open.

DANGER **Do Not install Fail/Secure electric locks on Swing Doors using Inverse Swing Doors. Fail/Secure electric locks will not allow the Swing door to open during a Power Failure.**

Section 2f: Sealed Operator for Wet Environment

1. Seal all Header Seams with Sealing Compound and Transparent Adhesive Tape according to Figure 2-1.

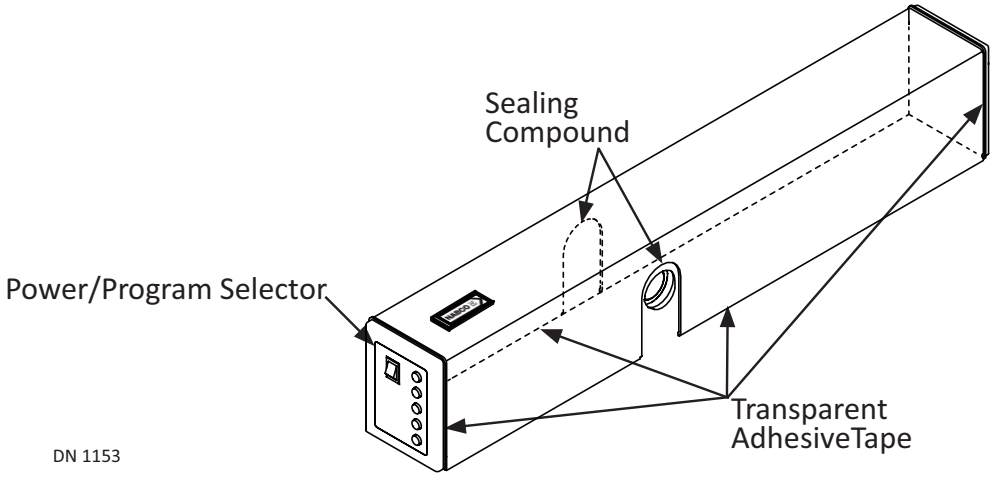
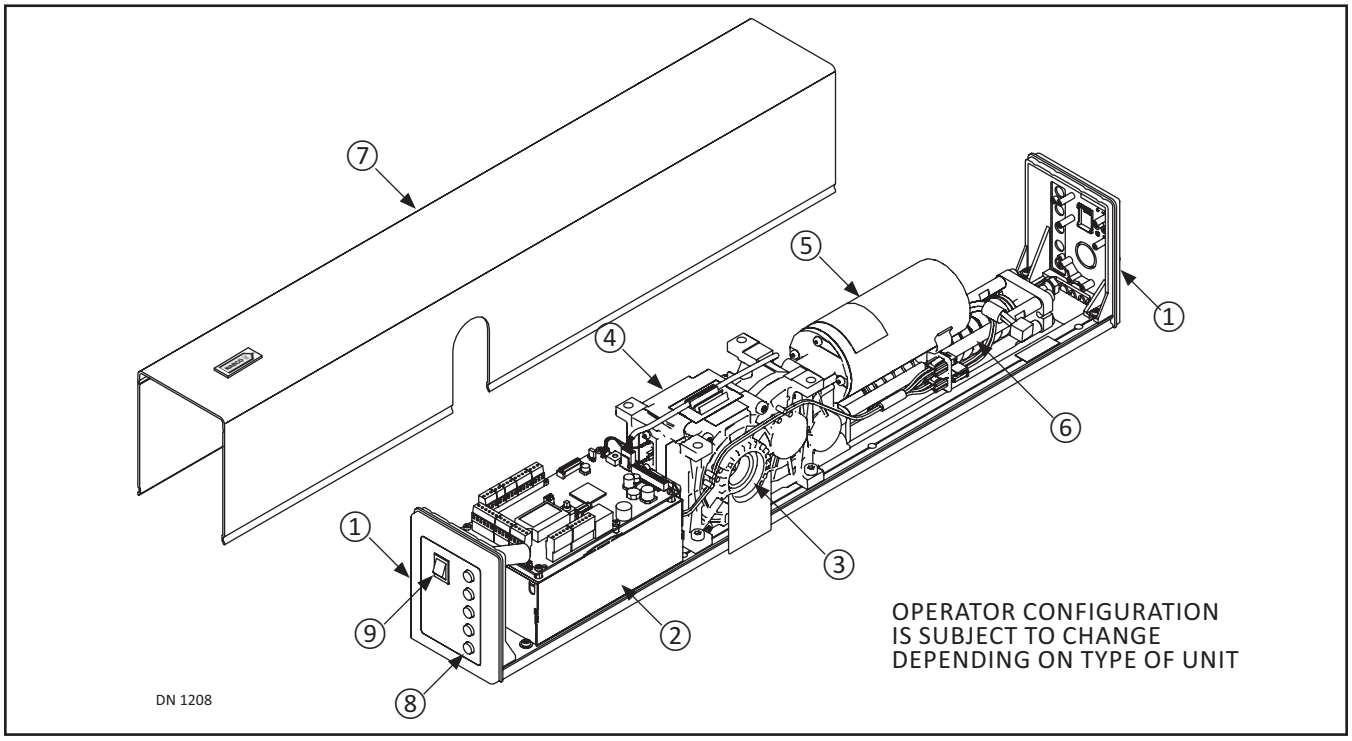


Figure 2-1 Seal the GT-20 Swing Door Operator to obtain Protection Type IP 42

CHAPTER 3: Types of Installation

- Standard Outswing
  - Outswing Arm connected to an Arm Shoe.
- Optional Outswing
  - Outswing Arm that slides into a Guide Track.
- Standard Inswing
  - Inswing Arm that slides into a Guide Track.
- Standard Dual Independent
  - Connected to separate Operator Assemblies and operate independently.
- Standard Simultaneous Pair
  - Both swing doors open at same time.
- Astragal Swing Doors
  - Connected to separate Operator Assemblies whereby the Master swing door opens first; The Slave swing door is delayed before opening, and then closes before the Master swing door.

Section 3a: Surface Mount Operator Assemblies



Header Components					
1	End Cap	4	Gear Box	7	Header Cover
2	GT20 Control	5	Motor	8	Program Selector
3	Output Shaft	6	Spring Unit (for spring-powered closing)	9	Power Switch

3.a.a: Outswing w/Arm Shoe

Operator Assembly is installed with a Lever Arm connected to adjustable Rods, connected to an Arm Shoe; to PUSH a Swing door open.

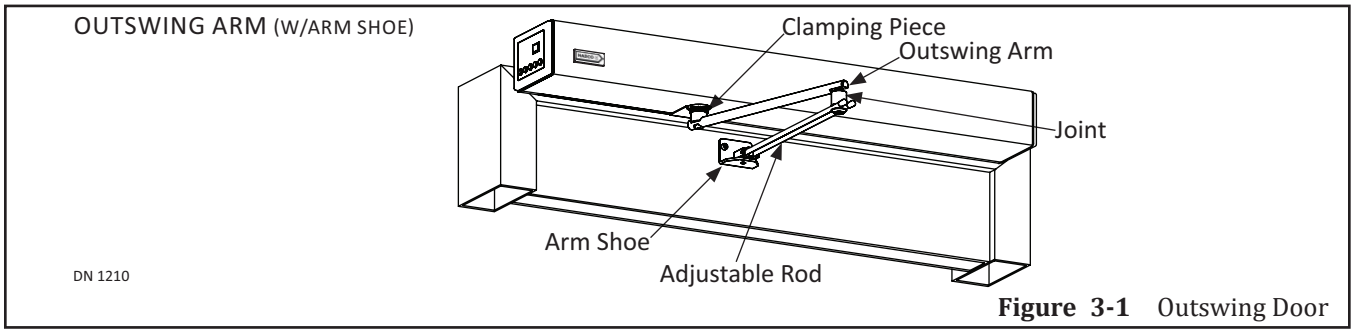


Figure 3-1 Outswing Door

3.a.b: Outswing w/Guide Track

Operator Assembly is installed with a Lever Arm connected to a Slide Block, that slides into a Guide Track; to PUSH a Swing door open.

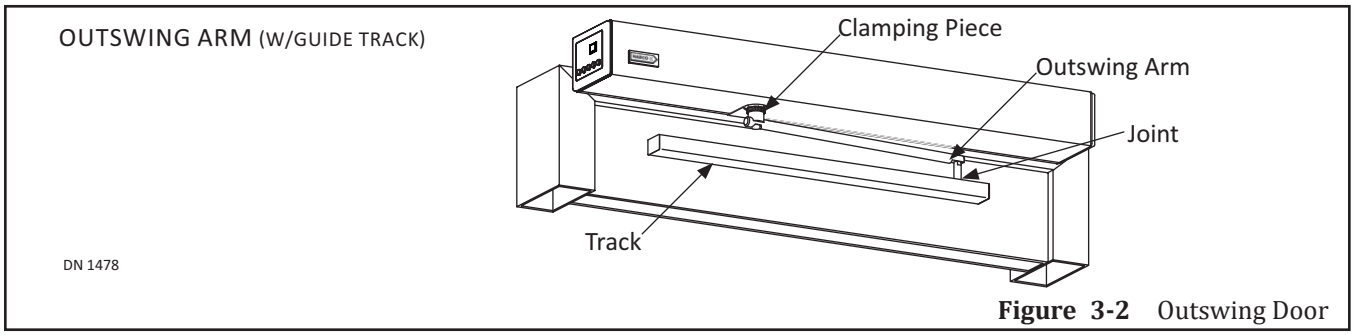


Figure 3-2 Outswing Door

3.a.c: Inswing

Operator Assembly is installed with a Lever Arm connected to a Slide Block that slides into a Guide Track, to PULL a Swing door open.

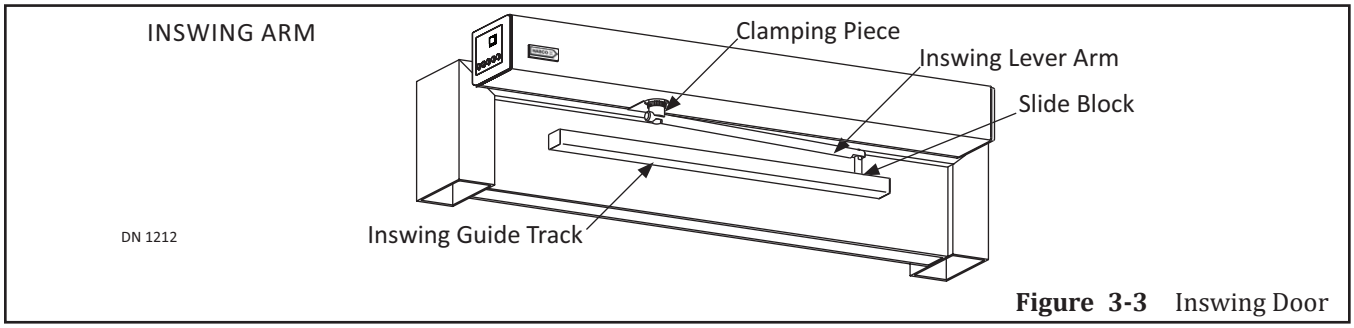


Figure 3-3 Inswing Door

3.a.d: Pair of Swing Doors

Operator Assembly can be an installed with an Outswing arm, or an Inswing arm, or a Combination of both (Inswing and Outswing). Double Swing doors can be:

- Dual Independent: Connected to separate Operator Assemblies and operate independently.
- Simultaneous Pair: Both swing doors open at same time.
- Astragal: Master swing door opens first. The Slave swing door is delayed before opening, and then closes before the Master swing door.

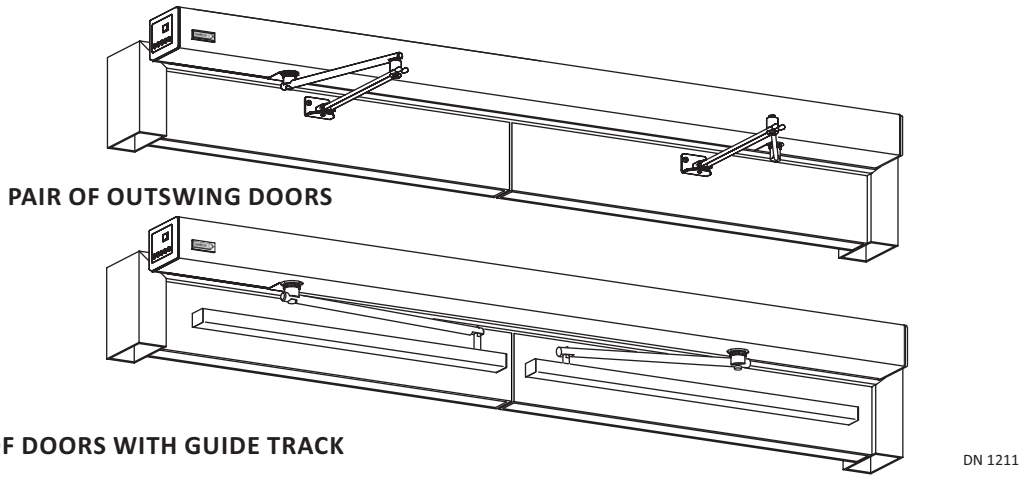


Figure 3-4 Simultaneous Pair Doors

Section 3b: Remove the Cover from the Operator

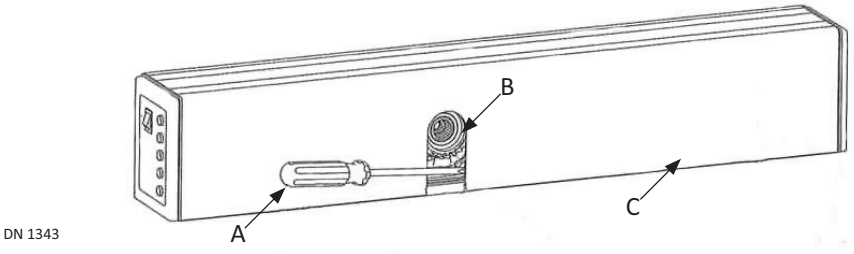
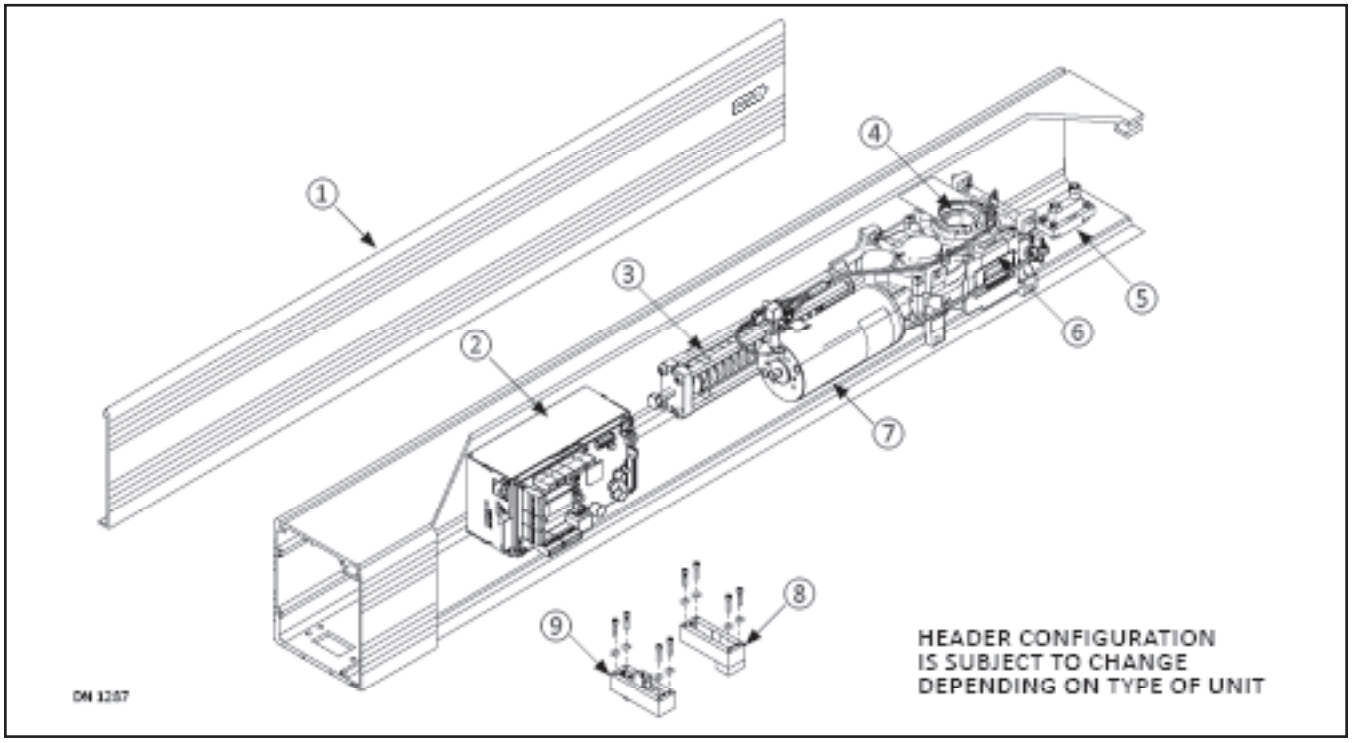


Figure 3-5 Note: Remove Header Cover

Note: To avoid unauthorized manipulations on the Drive/Control Unit and also to prevent the Cover from falling off, the Cover is tightly latched.

1. Obtain (1) Phillips Head Screwdriver (A).
2. Go to the space that is close to the Transmission Output (B).
3. With (1) Phillips Head Screwdriver, lift the edge of the Cover.
4. Pull the Cover off (while still in Position C) by hand.

Section 3c: Overhead Concealed (OHC) Operator Assembly



Header Components					
1	Header Cover	4	Output Shaft	7	Motor
2	GT20 Control	5	Top Pivot Assembly	8	Door Stop Assembly
3	Spring Unit (for spring-powered closing)	6	Gear Box	9	Panic Latch Assembly

The Overhead Concealed (OHC) Operator Assembly is installed inside the Door Frame (directly underneath the top, between (2) Jamb Tubes). The GT20 Operator can swing the Door Panel:

- Out; to the Exterior
- In; to the Interior

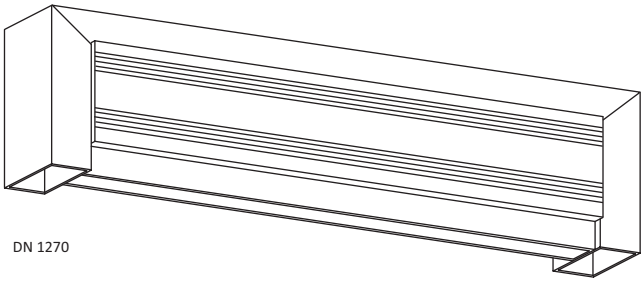


Figure 3-6 Overhead Concealed Operator Assembly

CHAPTER 4: INSTALL THE OUTSWING OPERATOR ASSEMBLY

WARNING **All Power must be turned OFF before installing the GT20 Outswing Operator Assembly.**

Section 4a: Prepare the Operator

1. Place the Operator on a flat surface with the Top facing up. Protect Operator from scratches.
2. Lift up and remove the Cover. Set aside. Please see Figure 4-1.

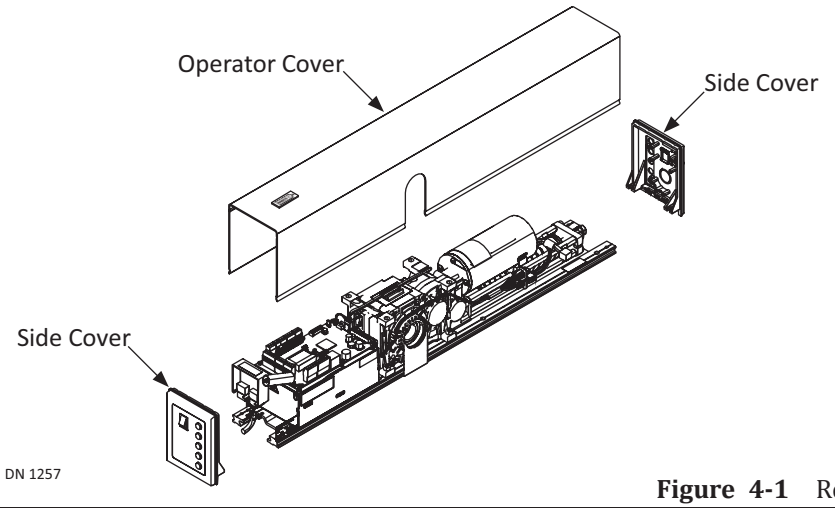


Figure 4-1 Remove the Operator Cover

Section 4b: Install the Operator to the Door Frame

1. From the top of the Door, measure 7/8 inches up and mark a horizontal line across the Door Frame. Please see Figure 4-2.
2. From the Center Line of Pivot, measure 8-1/2 inches across the Door Frame. Mark a vertical line across the existing horizontal line. This is the center of the first Screw hole used to secure the Operator.

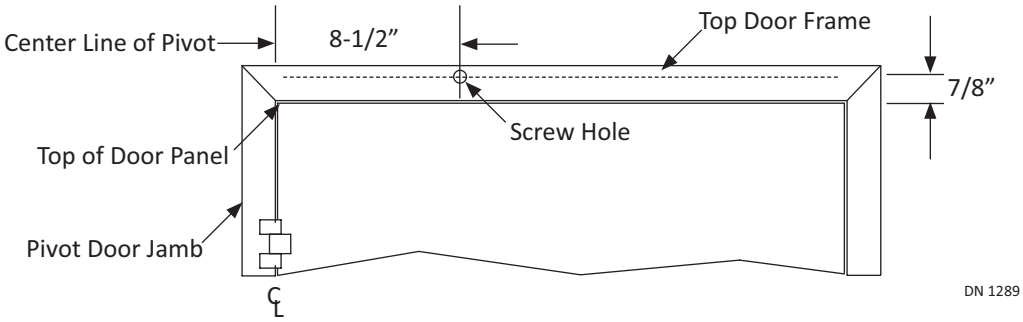


Figure 4-2 Measure to Mark Screw Holes

3. Locate (8) predrilled holes on the back of the Header.
4. Align the first pre-drilled screw hole to the measured mark and use the Header as a template to mark and drill (8) 1/4 inch screw holes. Ensure the Header is square and level.
5. Secure the Header to the Door Frame with (8) 1/4 inch Screws (Not supplied by NABCO). Do not install Header Cover at this time.

Section 4c: Install the Outswing Arm

The Outswing Arm consists of (2) major parts:

- The Lever Arm: Used to secure the Outswing Arm to the GT20 Operator.
- Arm Shoe Assembly: Used to secure the Outswing Arm to the Door Panel.

4.c.a: Install the Arm Shoe Assembly to the Door Panel

1. Pull the Ball out from the Socket Joint to separate the Outswing Arm. Set aside. Please see Figure 4-3.

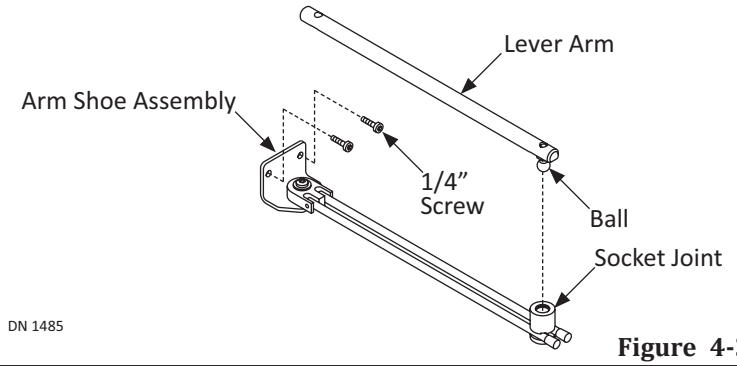


Figure 4-3 Outswing Arm Assembly

2. From the top of the Door, measure 2 inches down and mark a horizontal line across the face of Door Panel. Please see Figure 4-4.

3. From the Center Line of Pivot, measure 14-1/8 inches across the Door Panel. Mark a vertical line across the existing horizontal line. This is the center of the first Screw hole used to secure the Arm Shoe Assembly.

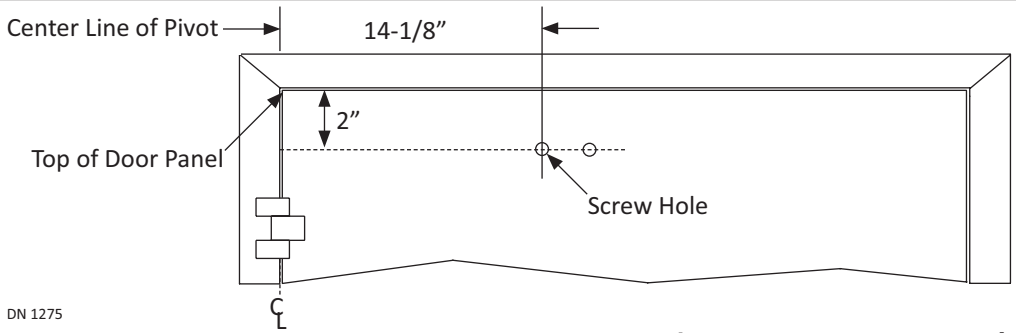


Figure 4-4 Measure to Mark Screw holes

4. The Arm Shoe Assembly can be installed with (2) 1/4 inch screws or with (2) Sex Bolts (a Sex Bolt kit has been provided by NABCO). Please see Figure 4-5.
   - If 1/4 inch screws are being used to secure the Arm Shoe Assembly:
     - Align the first pre-drilled screw hole to the measured mark and use the Arm Shoe as a template to mark and drill (2) 1/4 inch screw holes. Ensure the Header is square and level.
   - If Sex Bolts are being used to secure the Arm Shoe Assembly:
     - Align the first pre-drilled screw hole to the measured mark and use the Arm Shoe as a template to mark and drill (2) screw holes all the way through the Door Panel, so they are big enough to allow the sex bolts to be inserted. Ensure the Header is square and level.

5. Secure the Arm Shoe to the Swing Door with (2) 1/4 inch Screws or (2) 1/4 x 3/4 inch Sex Bolt Screws.

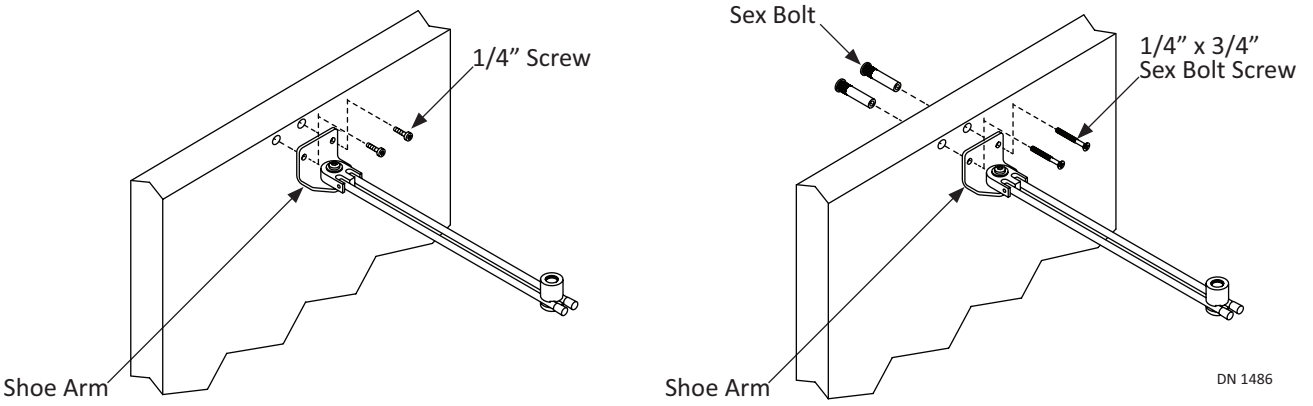


Figure 4-5 Secure the Arm Shoe to the Door Panel

Section 4d: Install the Lever Arm to the Operator

4.d.a: Slide the Stop Finger onto the Spindle Extension

Notice: NABCO supplies Open-Position Door Stops on all Surface Mount GT20 Operator Assemblies. It is recommended to install an auxiliary Door Stop (not provided by NABCO), especially for Swing doors installed in areas where windy conditions exist.

1. Loosen the Set Screw located on the side of the Stop Finger.
2. Slide the Stop Finger onto the Spindle Extension. Please see Figure 4-6.
   a. The Stop Finger must point in the same direction the Gear rotates to open the Door Panel.

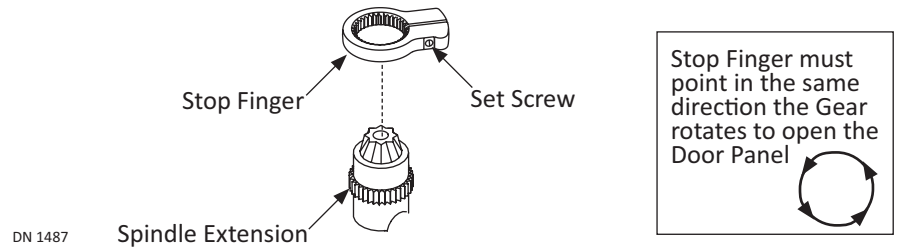


Figure 4-6 Slide the Stop Finger onto the Spindle Extension

4.d.b: Secure the Lever Arm to the Operator

1. Place the Spindle Extension onto the top of the Lever Arm. Align the bolt holes. Please see Figure 4-7.
2. From the bottom of the Lever Arm, slide (1) Bolt all the way up through both bolt holes.

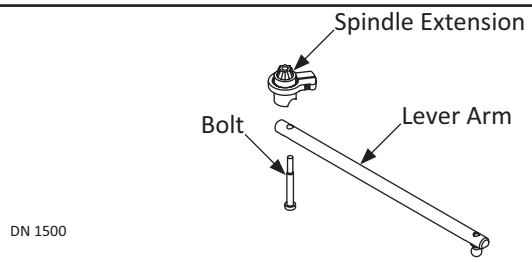


Figure 4-7 Secure the Spindle Extension

3. Position the Lever Arm as perpendicular as possible (90 degrees) with regard to the Door Panel. Please see Figure 4-8.
4. Insert the Spindle Extension into the Output Shaft. Tighten the Bolt.
5. Tighten the Bolt with a Torque Wrench:
   - The existing Bolt must be torqued appropriately (200 in-lb).
   - If the existing Bolt is removed; a new Bolt can be used providing Loctite is applied and torqued appropriately (200 in-lb).
   - Alternatively, the existing Bolt can be used providing it is first cleaned (existing Loctite removed), before fresh Loctite is applied and torqued appropriately (200 in-lb).

   a. Compatible Torque Wrenches: Grainger/Westward Fixed 3/8" Micrometer Torque Wrench, 50 to 250 In-Lb or Sears/Craftsman Micro-Clicker Torque Wrench 3/8" Drive 25 to 250 In-Lb.

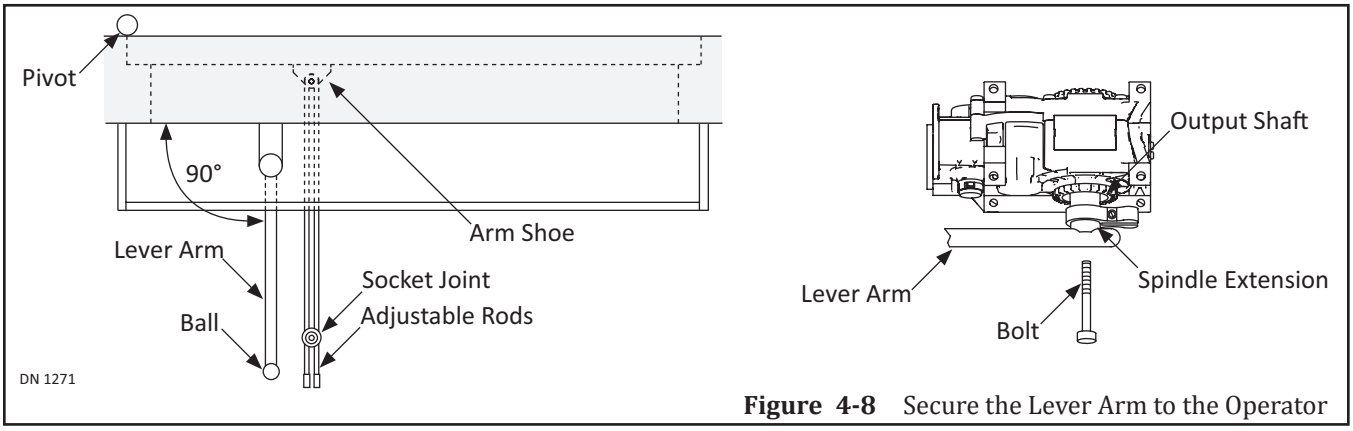


Figure 4-8 Secure the Lever Arm to the Operator

4.d.c: Connect the Lever Arm to the Arm Shoe Assembly

CAUTION **If Rod Arms touch the Door Frame they must be shortened.**

1. Manually close the Door Panel.
2. Connect the Ball into the Socket Joint. Please see Figure 4-9.
3. Slightly loosen the Bolt located at the bottom of the Socket Joint.
4. Position the Adjustable Rods so they are perpendicular as possible (90 degrees) with regard to the Door Panel.

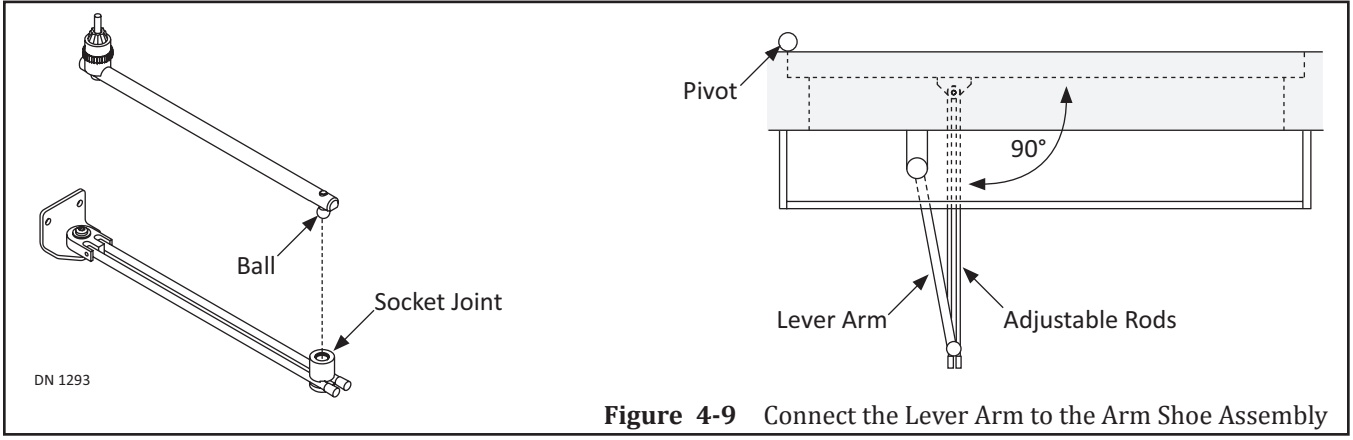


Figure 4-9 Connect the Lever Arm to the Arm Shoe Assembly

Section 4e: Adjustments

4.e.a: Stop Finger

If the Door Panel opens too far, or not far enough, and/or the Stop Finger is not positioned so it is just short of touching the Door Stop Eccentric in the fully open position; the Stop Finger and/or the Eccentric must be adjusted. There are two types of adjustments:

- Coarse: The Stop Finger is repositioned.
- Fine: The Eccentric is repositioned.

1. Manually open the Door Panel. The maximum door opening angle is 105 degrees.
2. Clamp the end of the Motor Shaft with a Vice Grip to keep It from rotating.
   - Coarse Adjustment:
     1. Loosen the Set Screw located on the side of Stop Finger.
     2. Slide the Stop Finger off the Gear Teeth.
     3. Rotate the Stop Finger clockwise/counterclockwise as needed.
     4. Slide the Stop Finger back onto the Gear Teeth.
     5. Tighten the Set Screw.
   - Fine Adjustment:
     1. Loosen the Eccentric with an Allen Wrench.
     2. Rotate the Eccentric clockwise/counterclockwise as needed.
     3. Tighten the Eccentric with an Allen Wrench.
3. Remove the Vice Grip.

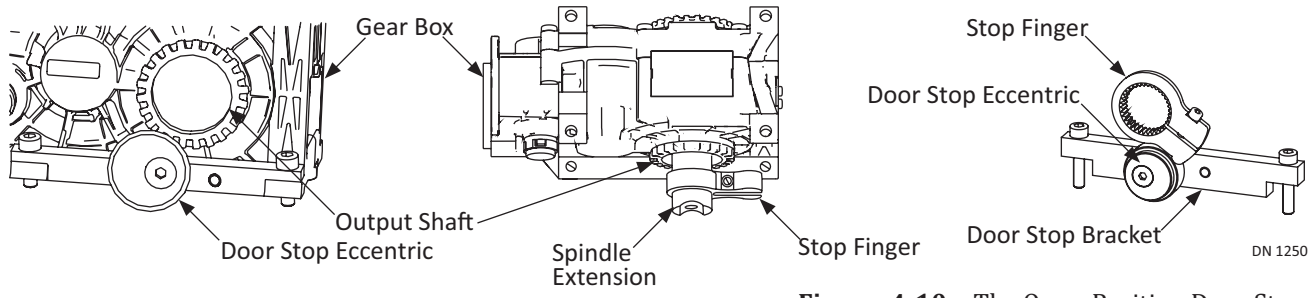


Figure 4-10 The Open-Position Door Stop

4.e.b: Adjustable Rods are too Long

The Adjustable Rods can be cut down to a shorter length whenever deemed necessary.

1. Cut each Adjustable Rod with a Hack Saw.
2. Slide a Rubber End Cap on each newly cut end of the Adjustable Rod. Please see Figure 4-11.

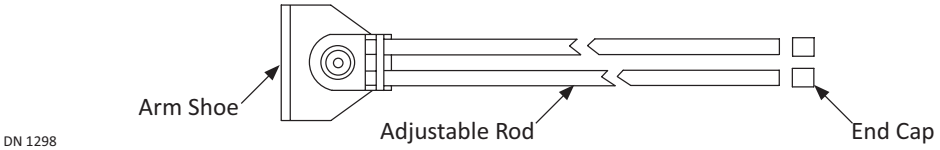


Figure 4-11 Shorten the Adjustable Rod

CHAPTER 5: INSTALL THE OUTSWING OPERATOR ASSEMBLY (W/TRACK)

Section 5a: Prepare the Operator

1. Place the Operator on a flat surface with the Top facing up. Protect Operator from scratches.
2. Lift up and remove the Cover. Set aside. Please see Figure 5-1.

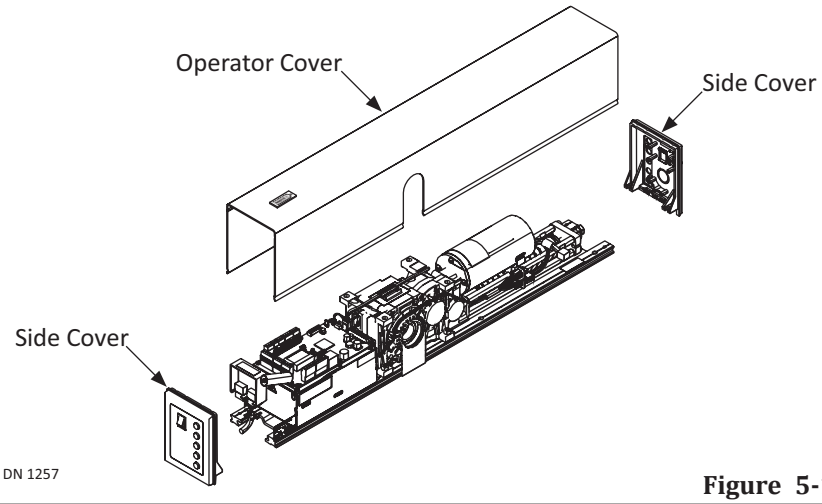


Figure 5-1 Prepare the Operator

Section 5b: Install the Operator to the Top Door Frame

1. From the top of the Door, measure 7/8 inch up and mark a horizontal line across the Door Frame. Please see Figure 5-2.
2. From the Center Line of Pivot, measure 8-1/2 inches across the Door Frame. Mark a vertical line across the existing horizontal line. This is the center of the first Screw hole used to secure the Operator.

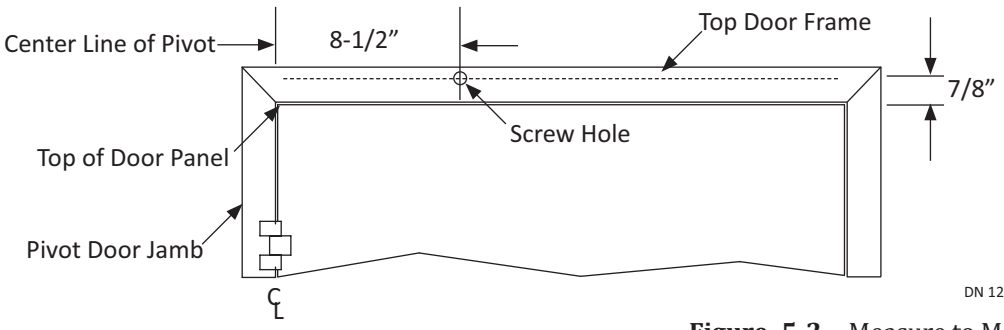


Figure 5-2 Measure to Mark Screw Holes

3. Locate and align the first pre-drilled screw hole on back of Header, to the measured mark. Use the Header as a template to mark and drill (8) 1/4 inch screw holes. Ensure the Header is square and level.
4. Secure the Header to the Door Frame with (8) 1/4 inch Screws (Not supplied by NABCO). Do not install Header Cover at this time.

Section 5c: Install the Guide Track Assembly

The Guide Track Assembly consists of (3) major parts: (1) Mounting Bracket, (1) Guide Track and (2) End Caps plus Hardware. Please see Figure 5-3.

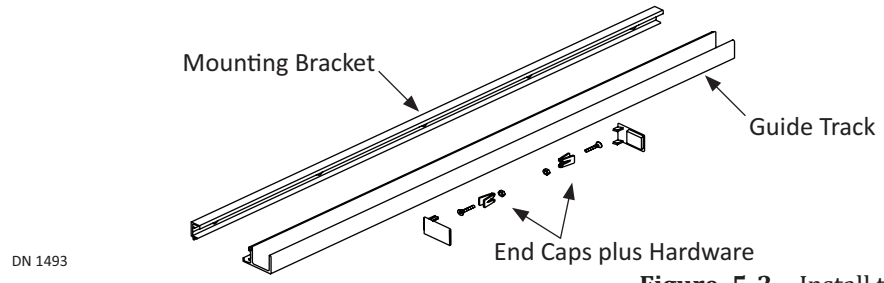


Figure 5-3 Install the Guide Track Assembly

5.c.a: Secure the Mounting Bracket to Door Panel

1. From the top of the Door, measure 2-1/2 inches down and mark a horizontal line across the face of the Door Panel. Please see Figure 5-4.
2. From the Center Line of Pivot, measure 5-1/2 inches across the Door Panel. Mark a vertical line across the existing horizontal line. This is the center of first Screw hole used to secure the Mounting Bracket.

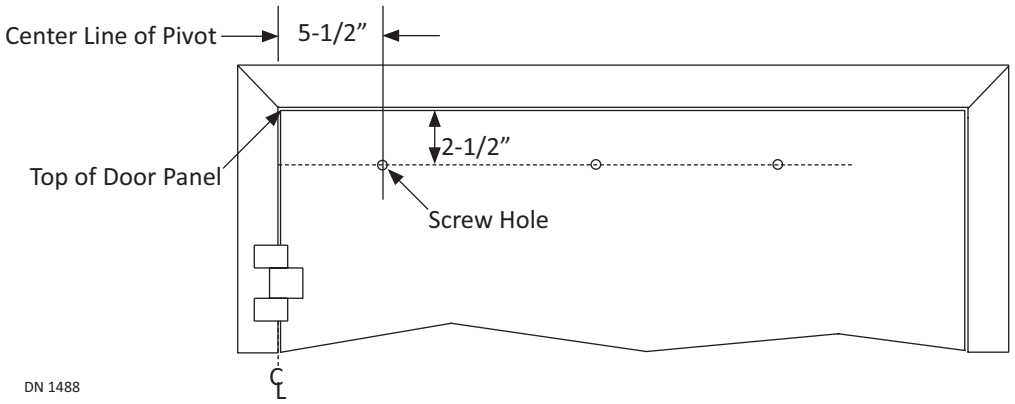


Figure 5-4 Measure to Mark Screw Holes

3. Align the first pre-drilled Screw hole to the measured mark. Use the Mounting Bracket as a template to mark and drill (3) screw holes for #10 Screws. Ensure the Mounting Bracket is square and level.
4. Secure the Mounting Bracket to the Door Panel with (3) #10 Screws. Please see Figure 5-5.

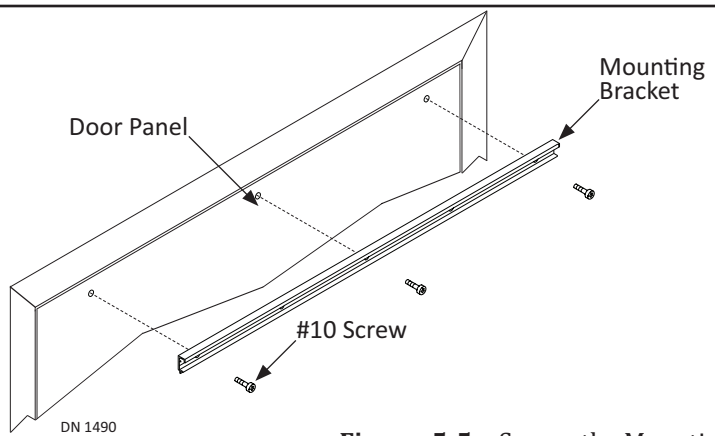


Figure 5-5 Secure the Mounting Bracket to the Door Panel

5.c.b: Secure the Guide Track to the Mounting Bracket

1. Assemble and then secure the Guide Track to the Mounting Bracket on each side, with: (1) nut, (1) Wedge Clamp, and (1) screw. Please see Figure 5-6.
2. Insert (1) end cap into each side.

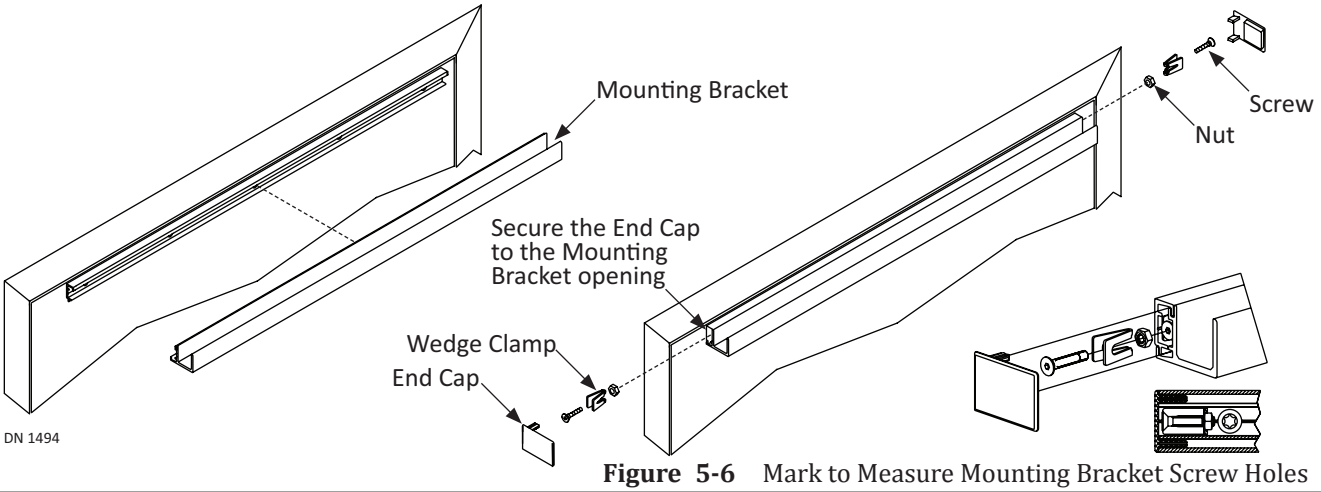


Figure 5-6 Mark to Measure Mounting Bracket Screw Holes

Section 5d: Install the Outswing Arm

Attention: While installing/uninstalling the Arm, it is recommended to clamp a Vice Grip onto the end of the Motor Shaft to keep It from rotating. Please see Figure 5-10.

Note: The more the Closing Spring is tightened by the Adjusting Screw, the more the Gear centers the Spindle Extension, thus the Inswing Arm. Go to the Adjustment Chapter within this manual to Adjust Preload.

5.d.a: Slide the Stop Finger onto the +20mm Spindle Extension

Notice: NABCO supplies Open-Position Door Stops on all Surface Mount GT20 Operator Assemblies. It is recommended to install an auxiliary Door Stop (not provided by NABCO), especially for Swing doors installed in areas where windy conditions exist.

1. Loosen the Set Screw located on the side of the Stop Finger. Please see Figure 5-7.
2. Slide the Stop Finger onto the Spindle Extension, so the Stop Finger points in same direction the Gear rotates to open the Door Panel.

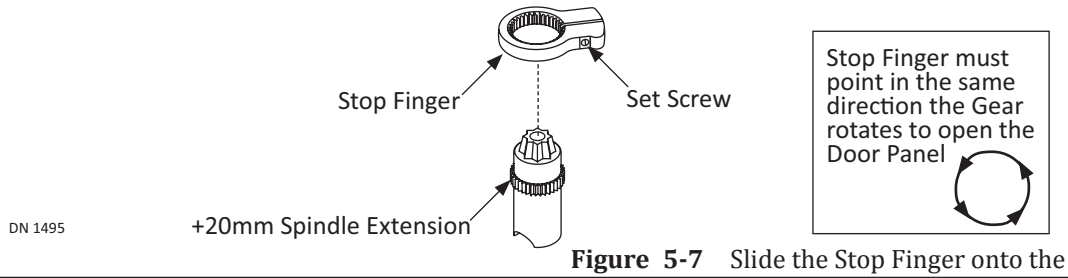


Figure 5-7 Slide the Stop Finger onto the Spindle Extension

5.d.b: Secure the Arm to the Operator

1. Open the Door Panel. Place the Spindle Extension onto the top of the Lever Arm. Align both holes. Please see Figure 5-9.
2. From the Bottom of the Lever Arm, slide (1) Bolt all the way up through both bolt holes.

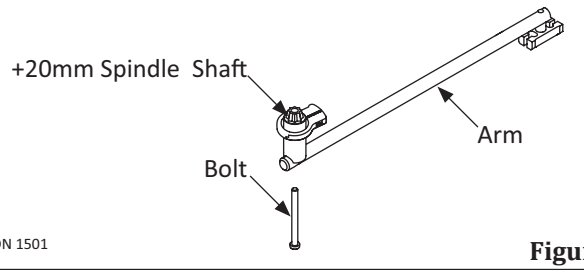


Figure 5-8 Secure the Spindle Extension

3. Insert the Slide Block into the Guide Track.
4. Position the Inswing Arm with a 15° offset. Please see Figure 5-9.
   a. To facilitate the installation: the Closing Spring can be completely released by means of the Adjusting Screw.

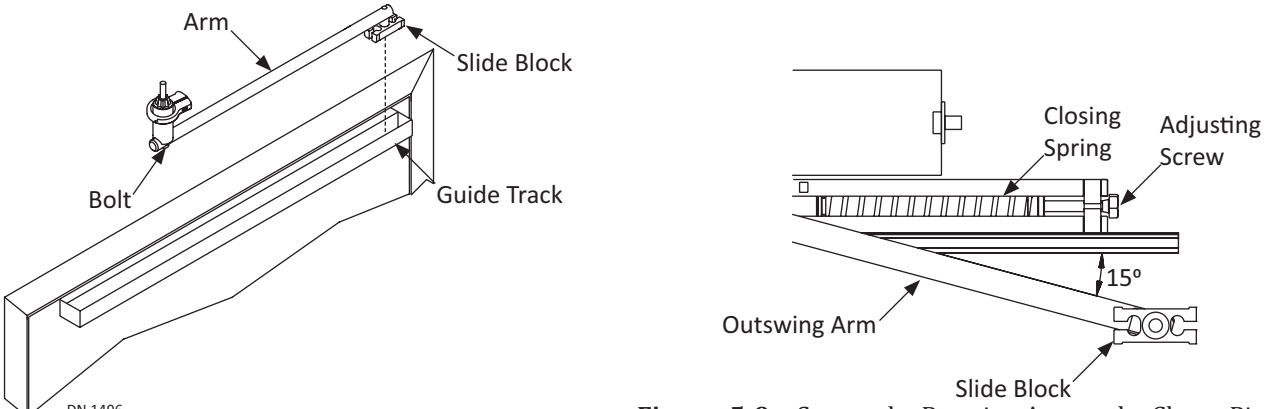


Figure 5-9 Secure the Rotating Arm to the Clamp Piece

5. Insert the Spindle Extension into the Output Shaft.
6. Tighten the Bolt with a Torque Wrench:
   - ▶ The existing Bolt must be torqued appropriately (200 in-lb).
   - ▶ If the existing Bolt is removed; a new Bolt can be used providing Loctite is applied and torqued appropriately (200 in-lb).
   - ▶ Alternatively, the existing Bolt can be used providing it is first cleaned (existing Loctite removed), before fresh Loctite is applied and torqued appropriately (200 in-lb).
   a. Compatible Torque Wrenches: Grainger/Westward Fixed 3/8" Micrometer Torque Wrench, 50 to 250 In-Lb or Sears/Craftsman Micro-Clicker Torque Wrench 3/8" Drive 25 to 250 In-Lb.

Section 5e: Adjustments

5.e.a: Door Panel does not Fully Close

1. Manually open the Door Panel until the Bolt located under the Spindle Extension can be accessed.
2. Clamp the end of the Motor Shaft with a Vice Grip to keep It from rotating. Please see Figure 5-10.

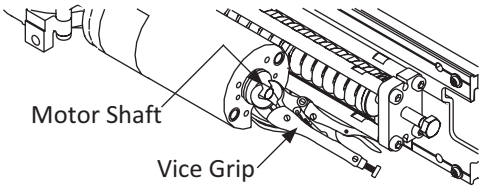


Figure 5-10 Clamp Vice Grip to Motor Shaft

3. Loosen the Bolt located underneath the Spindle Extension.
4. Close the Door Panel until the Spindle Extension rotates (1) Gear Tooth. Tighten the Bolt.
5. Remove the Vice Grip. Close the Door Panel. Repeat steps if deemed necessary.
6. Adjust the Finger Stop accordingly.

5.e.b: Adjust the Stop Finger

1. Manually open the Door Panel.
2. Clamp the end of the Motor Shaft with a Vice Grip to keep It from rotating.
   - ▶ Coarse Adjustment (Stop Finger is repositioned):
     1. Loosen the Set Screw located on the side of Stop Finger.
     2. Slide the Stop Finger off the Gear Teeth.
     3. Rotate the Stop Finger clockwise/counterclockwise as needed.
     4. Slide the Stop Finger back onto the Gear Teeth. Tighten the Set Screw.
   - ▶ Fine Adjustment (Eccentric is repositioned):
     1. Loosen the Eccentric with an Allen Wrench.
     2. Rotate the Eccentric clockwise/counterclockwise as needed.
     3. Tighten the Eccentric with an Allen Wrench.
3. Remove the Vice Grip.

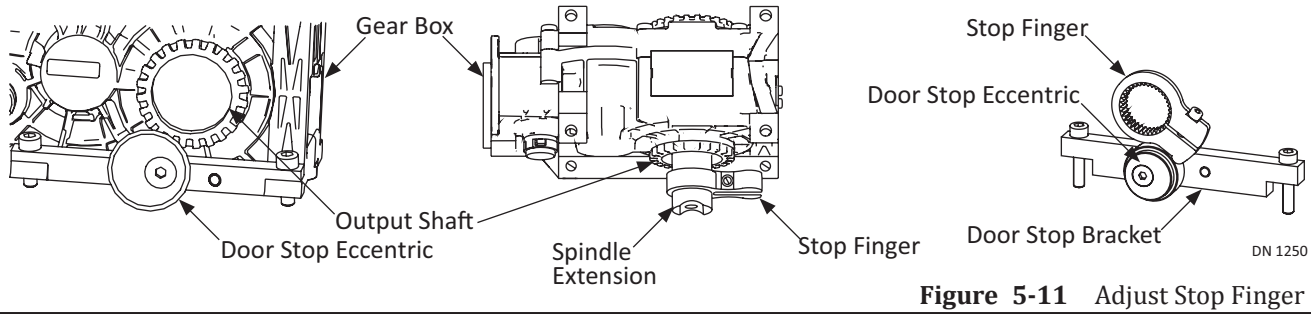


Figure 5-11 Adjust Stop Finger

CHAPTER 6: INSTALL THE INSWING OPERATOR ASSEMBLY

Section 6a: Prepare the Operator

1. Place the Operator on a flat surface with Top facing up. Protect Operator from scratches.
2. Lift up and remove the Cover. Set aside. Please see Figure 6-1.

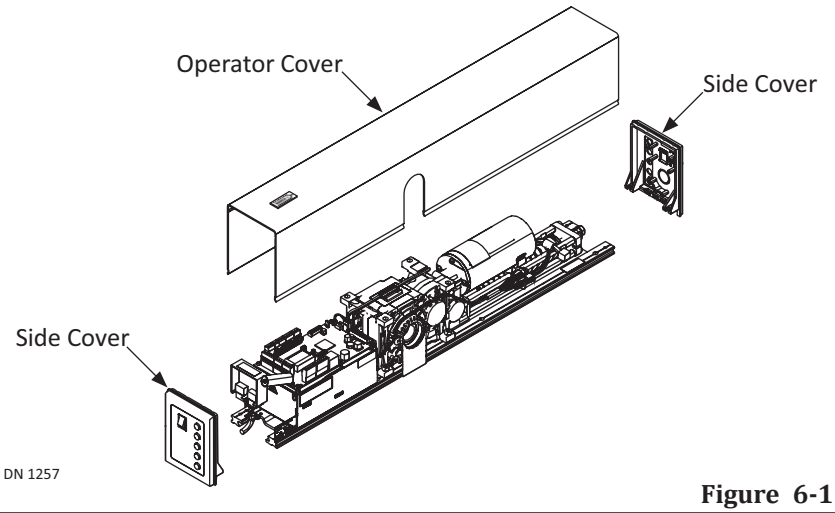


Figure 6-1 Prepare the Operator

Section 6b: Install the Operator to the Top Door Frame

1. From the top of the Door, measure 2-1/8 inches up and mark a horizontal line across the Door Frame. Please see Figure 6-2.
2. From the Center Line of Pivot, measure 8-1/2 inches across the Door Frame. Mark a vertical line across the existing horizontal line. This is the center of the first Screw hole used to secure the Operator.

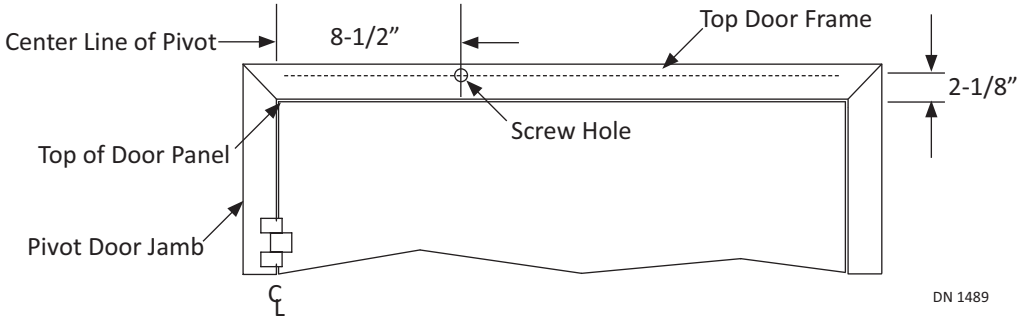


Figure 6-2 Measure to Mark Horizontal Line on Face of Top Door Frame

3. Locate (8) predrilled holes on the back of the Header.
4. Align the first pre-drilled screw hole to the measured mark and use the Header as a template to mark and drill (8) 1/4 inch screw holes. Ensure the Header is square and level.
5. Secure the Header to the Door Frame with (8) 1/4 inch Screws (Not supplied by NABCO).
6. Do not install Header Cover at this time.

Section 6c: Install the Guide Track Assembly

The Guide Track Assembly consists of (3) major parts: (1) Mounting Bracket, (1) Guide Track, and (2) End Caps plus Hardware. Please see Figure 6-3.

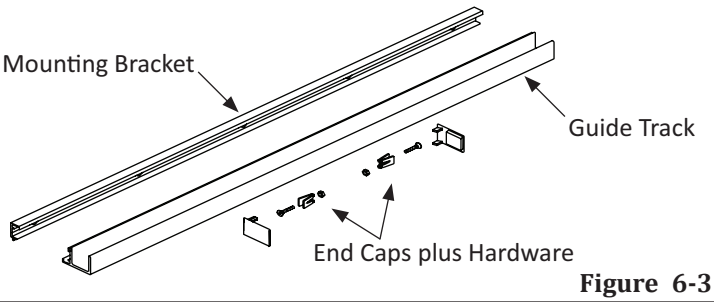


Figure 6-3 Guide Track Assembly

1. From the top of the Door, measure 1/2 inch down and mark a horizontal line across the face of Door Panel. Please see Figure 6-4.
2. From the Center Line of Pivot, measure 5-1/2 inches across the Door Panel. Mark a vertical line across the existing horizontal line. This is the center of the first Screw hole used to secure the Arm Shoe Assembly.

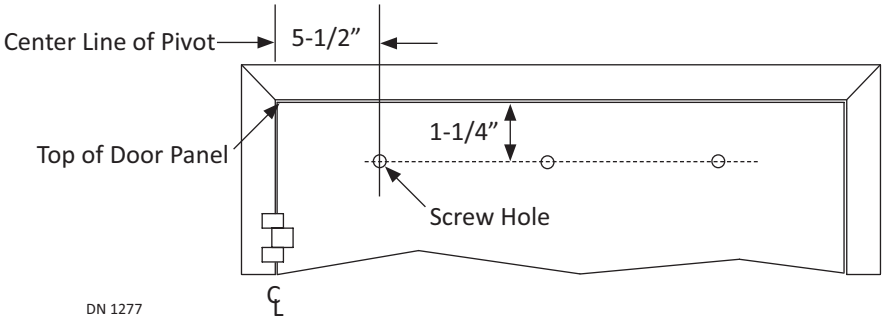


Figure 6-4 Measure to Mark Inswing Track Screw Holes

3. Align the first pre-drilled Screw hole to the measured mark. Use the Mounting Bracket as a template to mark and drill (3) screw holes for #10 Screws. Ensure the Mounting Bracket is square and level.
4. Secure the Mounting Bracket to the Door Panel with (3) #10 Screws. Please see Figure 6-5.

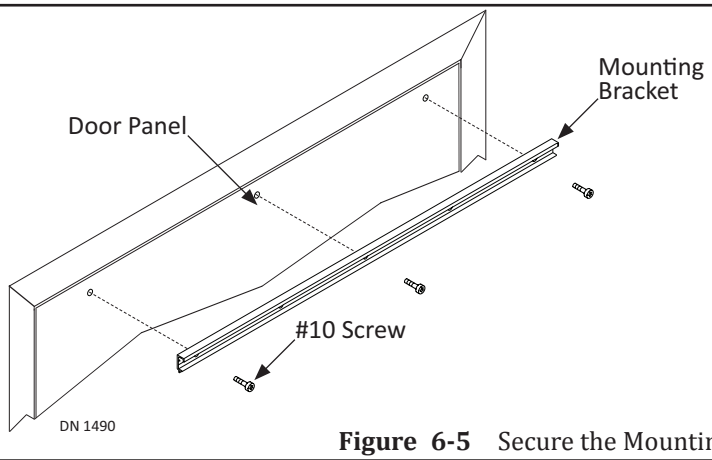


Figure 6-5 Secure the Mounting Bracket to the Door Panel

6.c.a: Secure the Guide Track to the Mounting Bracket

1. Secure the Guide Track to the Mounting Bracket on each side, with: (1) nut, (1) Wedge Clamp, and (1) screw. Please see Figure 6-6.
2. Insert (1) end cap into each side.

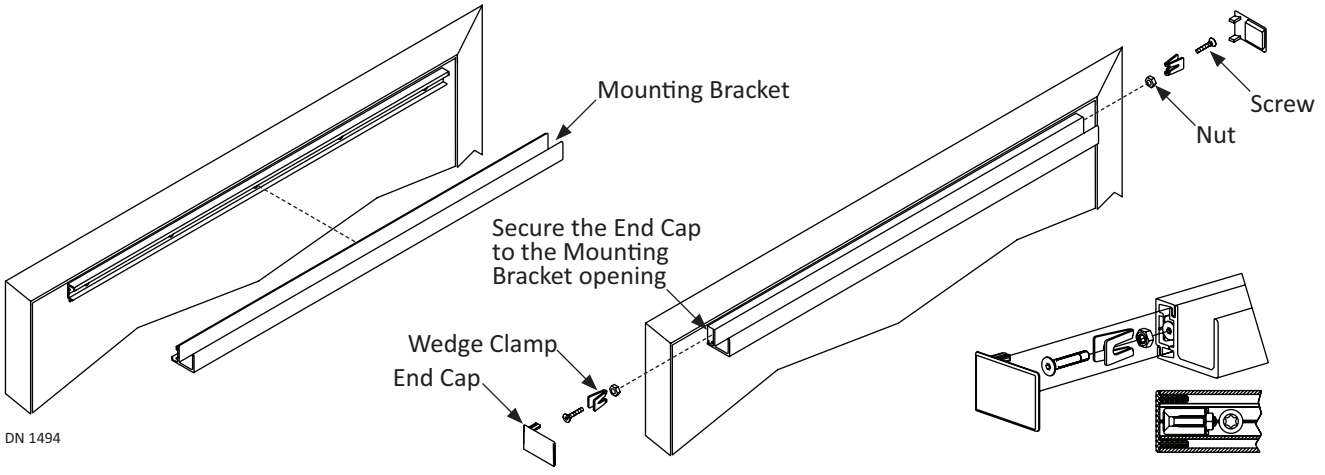


Figure 6-6 Secure the Guide Track to the Mounting Bracket

Section 6d: Install the Arm

Attention: **While installing/uninstalling the Arm, it is recommended to clamp a Vice Grip onto the end of the Motor Shaft to keep It from rotating. Please see Figure 6-10.**

Note: The more the Closing Spring is tightened by the Adjusting Screw, the more the Gear centers the Spindle Extension, thus the Inswing Arm.

Note: Go to the Adjustment Chapter within this manual for Adjusting the Preload.

6.d.a: Slide the Stop Finger onto the Spindle Extension

Notice: **NABCO supplies Open-Position Door Stops on all Surface Mount GT20 Operator Assemblies. It is recommended to install an auxiliary Door Stop (not provided by NABCO), especially for Swing doors installed in areas where windy conditions exist.**

1. Loosen the Set Screw located on the side of the Stop Finger. Please see Figure 6-7.
2. Slide the Stop Finger onto the Spindle Extension.
   a. The Stop Finger must point in the same direction the Gear rotates to open the Door Panel.

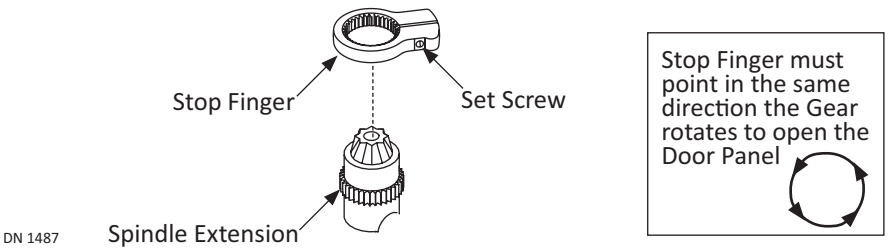


Figure 6-7 Slide the Stop Finger onto the Spindle Extension

6.d.b: Secure the Arm to the Operator

1. Place the Spindle Extension onto the top of the Lever Arm. Align both holes. Please see Figure 6-8.
2. From the Bottom of the Lever Arm, slide (1) Bolt all the way up through both bolt holes.

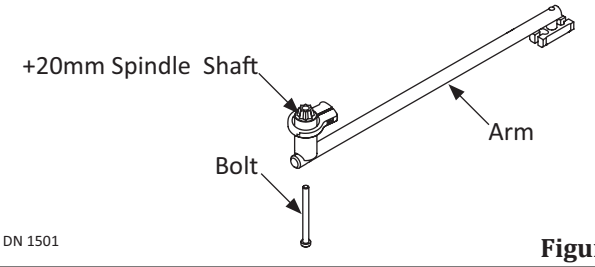


Figure 6-8 Secure the Spindle Extension

3. Open the Door Panel.
4. Insert the Slide Block into the Guide Track.
5. Position the Inswing Arm with a 15° offset. Please see Figure 6-9.
   a. To facilitate the installation: the Closing Spring can be completely released by means of the Adjusting Screw.

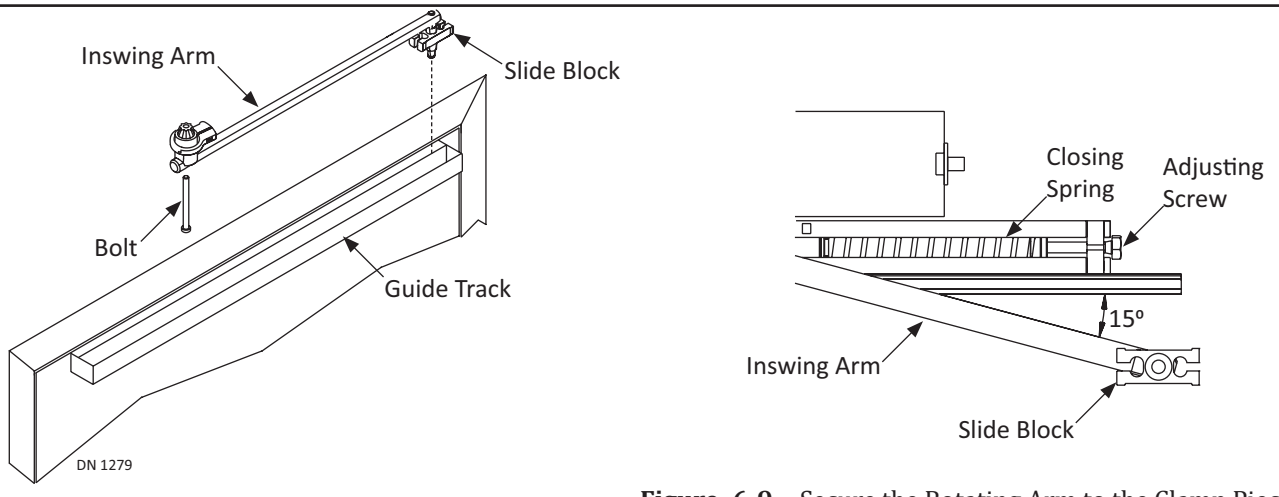


Figure 6-9 Secure the Rotating Arm to the Clamp Piece

6. Insert the Spindle Extension into the Output Shaft.
7. Tighten the Bolt with a Torque Wrench:
   - The existing Bolt must be torqued appropriately (200 in-lb).
   - If the existing Bolt is removed; a new Bolt can be used providing Loctite is applied and torqued appropriately (200 in-lb).
   - Alternatively, the existing Bolt can be used providing it is first cleaned (existing Loctite removed), before fresh Loctite is applied and torqued appropriately (200 in-lb).

   a. Compatible Torque Wrenches: Grainger/Westward Fixed 3/8” Micrometer Torque Wrench, 50 to 250 In-Lb or Sears/Craftsman Micro-Clicker Torque Wrench 3/8” Drive 25 to 250 In-Lb.

Section 6e: Adjustments

6.e.a: Door Panel does not Fully Close

1. Manually open the Door Panel until the Bolt located under the Spindle Extension can be accessed.
2. Clamp the end of the Motor Shaft with a Vice Grip to keep It from rotating. Please see Figure 6-10.

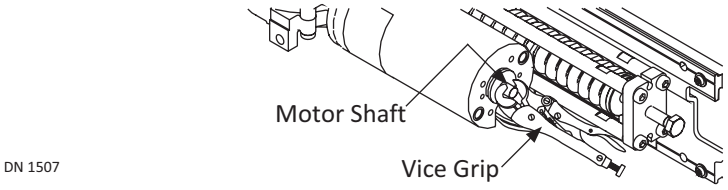


Figure 6-10 Clamp Vice Grip to Motor Shaft

3. Loosen the Bolt located underneath the Spindle Extension.
4. Close the Door Panel until the Spindle Extension rotates (1) Gear Tooth. Tighten the Bolt.
5. Remove the Vice Grip. Close the Door Panel. Repeat steps if deemed necessary.
6. Adjust the Finger Stop accordingly.

6.e.b: Adjust the Stop Finger

1. Manually open the Door Panel.
2. Clamp the end of the Motor Shaft with a Vice Grip to keep It from rotating. Please see Figure 6-11.
   - ▶ Coarse Adjustment (Stop Finger is repositioned.):
     1. Loosen the Set Screw located on the side of Stop Finger.
     2. Slide the Stop Finger off the Gear Teeth.
     3. Rotate the Stop Finger clockwise/counterclockwise as needed.
     4. Slide the Stop Finger back onto the Gear Teeth. Tighten the Set Screw.
   - ▶ Fine Adjustment (Eccentric is repositioned):
     1. Loosen the Eccentric with an Allen Wrench.
     2. Rotate the Eccentric clockwise/counterclockwise as needed.
     3. Tighten the Eccentric with an Allen Wrench.
3. Remove the Vice Grip.

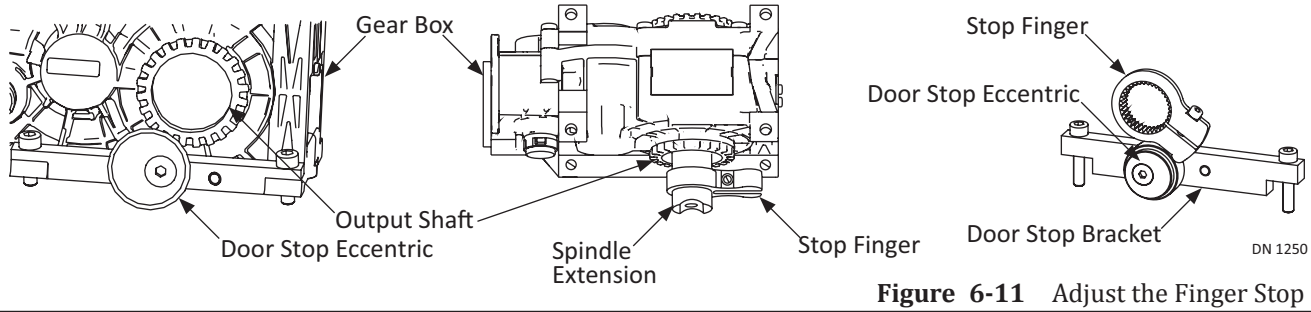


Figure 6-11 Adjust the Finger Stop

CHAPTER 7: INSTALL THE INSWING OPERATOR ASSEMBLY: W/REVEAL

Section 7a: Prepare the Operator

1. Place the Operator on a flat surface with Top facing up. Protect Operator from scratches.
2. Lift up and remove the Cover. Set aside. Please see Figure 7-1.

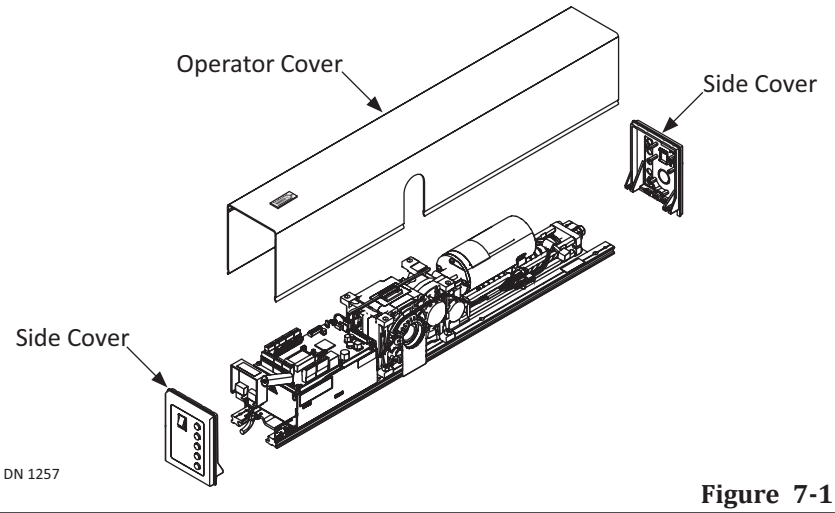


Figure 7-1 Prepare the Operator

Section 7b: Install the Operator to the Top Door Frame

1. From the top of the Door, measure 2-1/8 inches up and mark a horizontal line across the Door Frame. Please see Figure 7-2.
2. From the Center Line of Pivot, measure 8-1/2 inches across the Door Frame. Mark a vertical line across the existing horizontal line. This is the center of the first Screw hole used to secure the Operator.

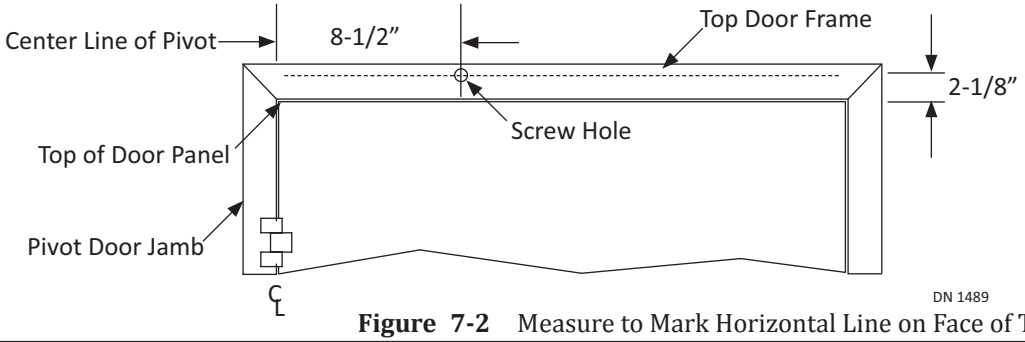


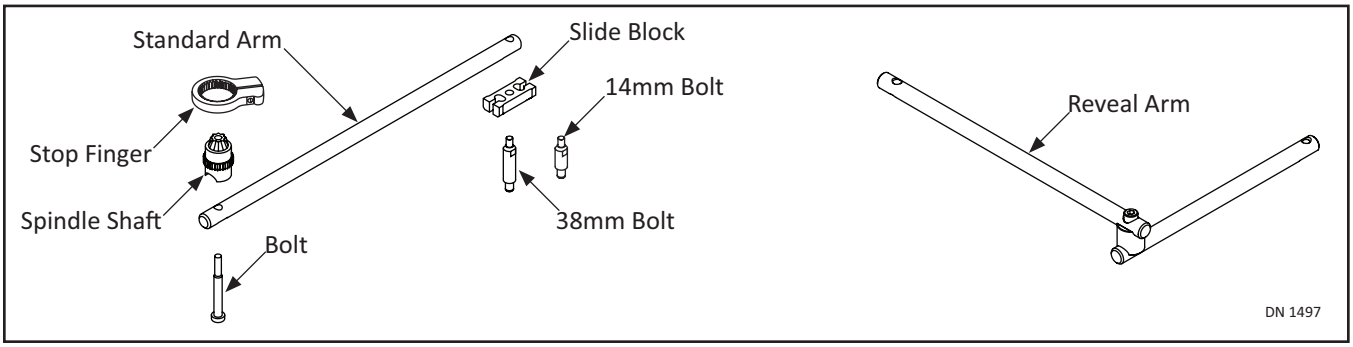
Figure 7-2 Measure to Mark Horizontal Line on Face of Top Door Frame

3. Locate (8) predrilled holes on the back of the Header.
4. Align the first pre-drilled screw hole to the measured mark and use the Header as a template to mark and drill (8) 1/4 inch screw holes. Ensure the Header is square and level.
5. Secure the Header to the Door Frame with (8) 1/4 inch Screws (Not supplied by NABCO).
6. Do not install Header Cover at this time.

Section 7c: Replace the Standard Arm

(2) Arm boxes that have been shipped by NABCO contain:

- Standard Arm Assembly
  - (1) Arm
  - (1) Spindle Extension, (1) Finger Stop, and (1) Slide Block with a 14mm and/or a 38mm Bolt.
  - Guide Track Assembly plus End Caps/Hardware.
- (1) Reveal Arm
  - The Reveal Arm is unhanded because the arms can be reversed, but not turned upside down.
  - The Slide Block must always be secured to the short arm.



1. Take out contents shipped within the Standard Arm Assembly box. Please see Figure 7-3.
2. If necessary, remove the Slide Block from the Standard Arm. Set aside.
3. Discard the Standard Arm.
4. Some Units are shipped with a 38mm Bolt. Due to a redesign of the Reveal Arm, only (1) 14mm Bolt is used to secure the Slide Block. Discard the 38mm Bolt (if shipped).
5. Obtain the Reveal Arm.
6. Place the Slide Block under the end of the Short Arm. Align the bolt holes.
7. Slide (1) 14mm Bolt through the Slide Block and the Reveal Arm.
8. Go under the Slide Block. Secure the 14mm Bolt to the Reveal Arm with (1) Ring Clamp.

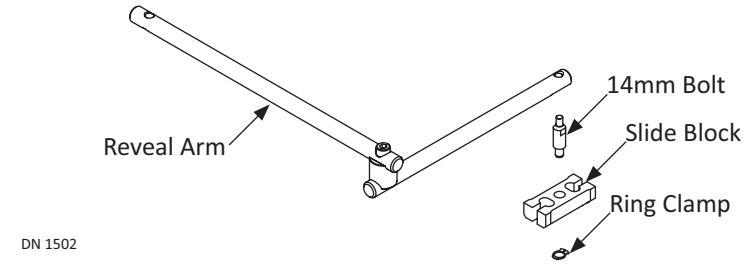


Figure 7-3 Secure the Slide Block to the Reveal Arm

Section 7d: Install the Guide Track Assembly

The Guide Track Assembly consists of (3) major parts:

- (1) Mounting Bracket
  - Used to secure the Guide Track to the Door Panel.
- (1) Guide Track
  - Used to guide the Inswing Arm as the Door Panel opens/closes.
- (2) End Caps plus Hardware
  - Used to secure the Guide Track to the Mounting Bracket.

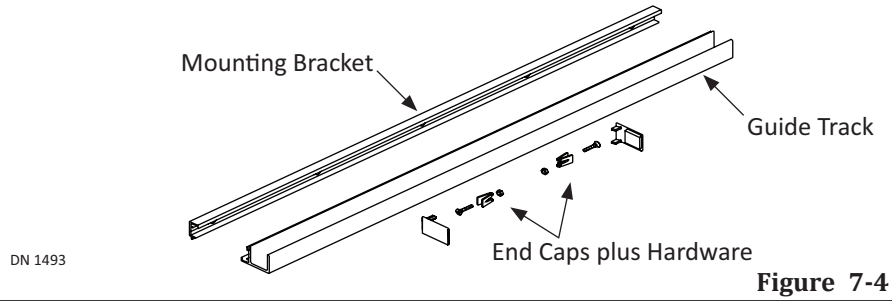


Figure 7-4 Install the Guide Track

7.d.a: Secure the Mounting Bracket to Door Panel

1. From the top of the Door, measure 1-5/8 inches down and mark a horizontal line across the face of Door Panel. Please see Figure 7-5.
2. From the Center Line of Pivot, measure 5-1/2 inches across the Door Panel. Mark a vertical line across the existing horizontal line. This is the center of the first Screw hole used to secure the Arm Shoe Assembly.

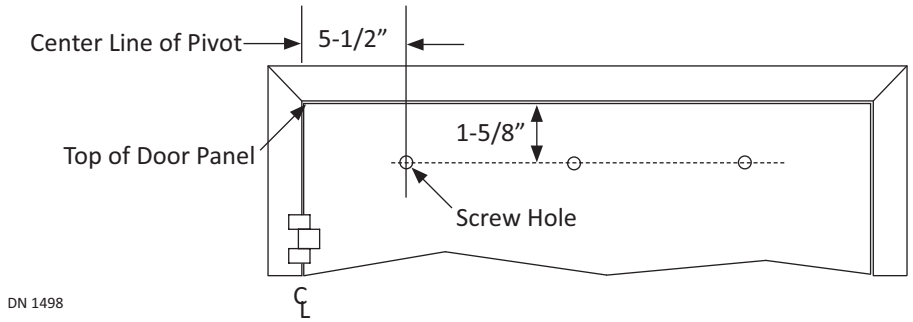


Figure 7-5 Measure to Mark Inswing Track Screw Holes

3. Align the first pre-drilled Screw hole to the measured mark and use the Mounting Bracket as a template to mark and drill (3) screw holes for #10 Screws. Ensure the Mounting Bracket is square and level.
4. Secure the Mounting Bracket to the Swing Door with (3) #10 Screws (not provided by NABCO). Please see Figure 7-6.

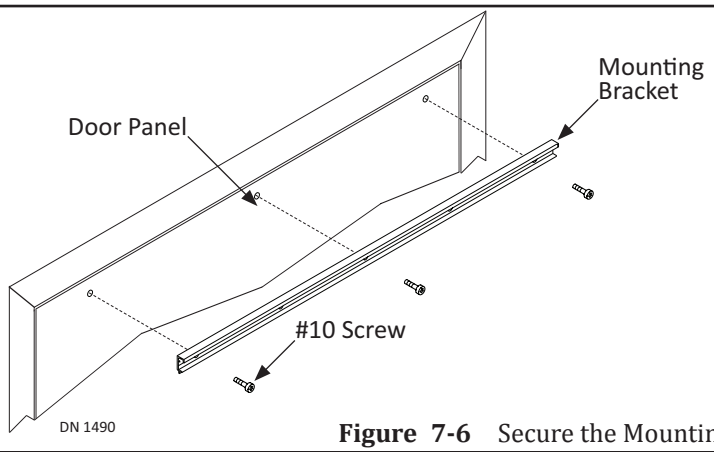


Figure 7-6 Secure the Mounting Bracket to the Door Panel

7.d.b: Secure the Guide Track to the Mounting Bracket

1. Assemble and then secure the Guide Track to the Mounting Bracket on each side, with: (1) nut, (1) Wedge Clamp, and (1) screw. Please see Figure 7-7.
2. Insert (1) end cap into each side.

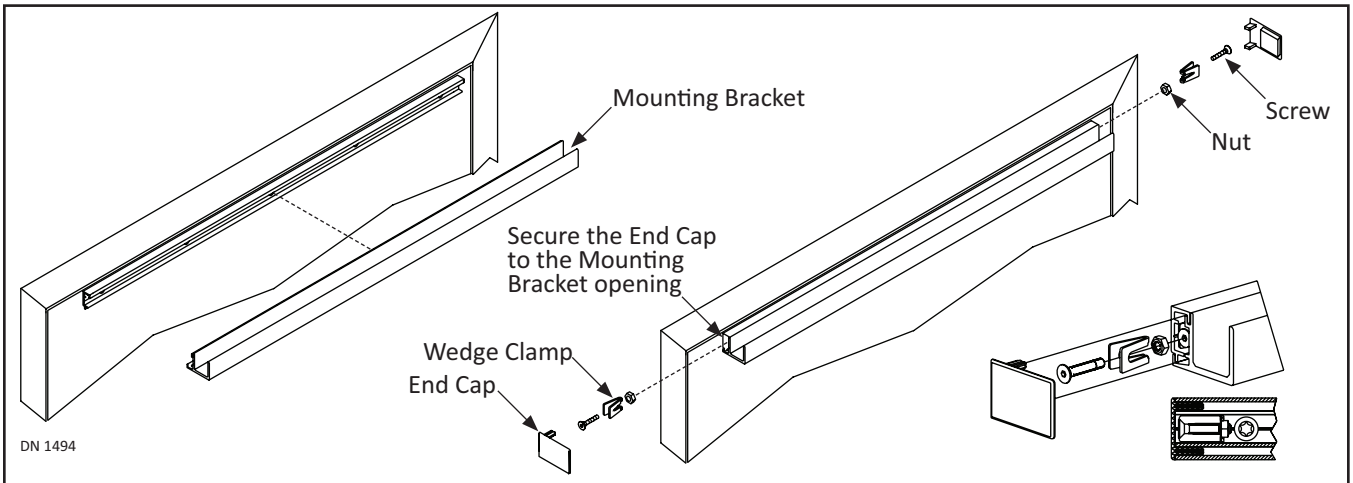


Figure 7-7 Secure the Guide Track to the Mounting Bracket

Section 7e: Install the Arm

7.e.a: Slide the Stop Finger onto the Spindle Extension

Notice: NABCO supplies Open-Position Door Stops on all Surface Mount GT20 Operator Assemblies. It is recommended to install an auxiliary Door Stop (not provided by NABCO), especially for Swing doors installed in areas where windy conditions exist.

1. Loosen the Set Screw located on the side of the Stop Finger. Please see Figure 7-8.
2. Slide the Stop Finger onto the Spindle Extension.
   a. The Stop Finger must point in the same direction the Gear rotates to open the Door Panel.

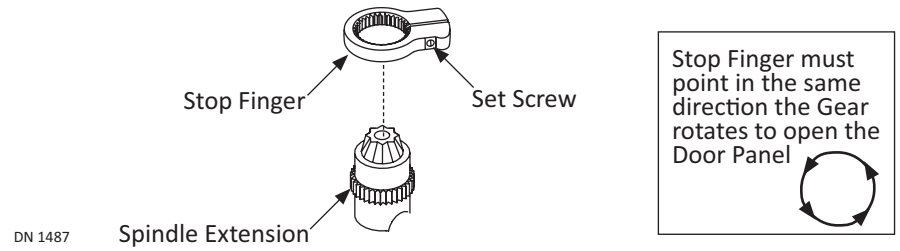


Figure 7-8 Slide the Stop Finger onto the Spindle Extension

7.e.b: Install the Arm to the Operator

Attention: While installing/uninstalling the Inswing Arm, it is recommended to clamp a Vice Grip onto the end of the Motor Shaft to keep the Gear from rotating. Please see Figure 7-10.

Note: The more the Closing Spring is tightened by the Adjusting Screw, the more the Gear centers the Spindle Extension, thus the Inswing Arm.

Note: Go to the Adjustment Chapter within this manual for Adjusting the Preload.

1. Open the Door Panel.
2. Insert the Slide Block into the Guide Track.
3. Position the Inswing Arm with a 15° offset. Please see Figure 7-9.
   a. To facilitate the installation: the Closing Spring can be completely released by means of the Adjusting Screw.

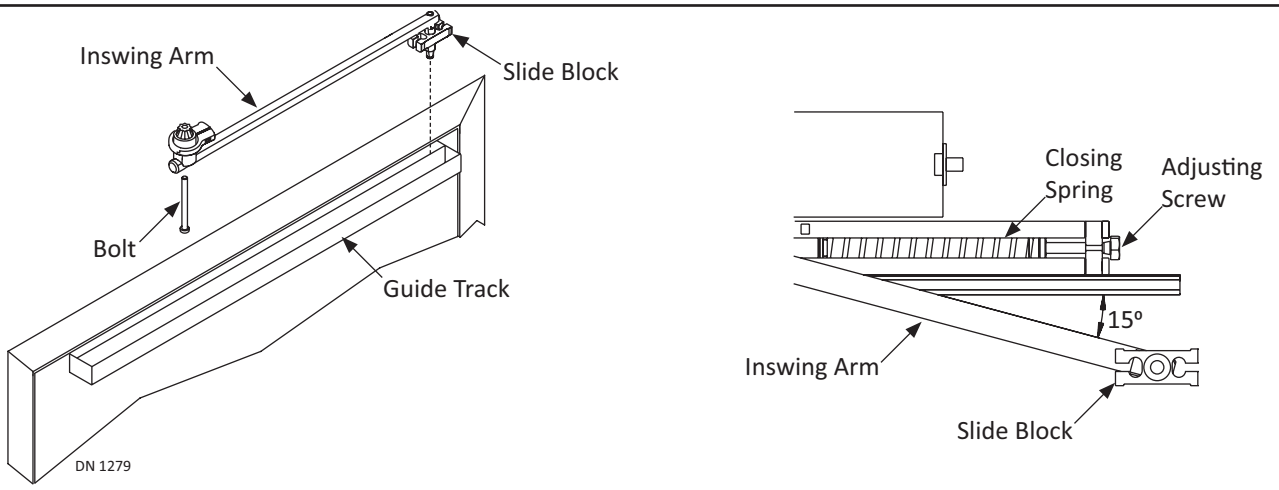


Figure 7-9 Secure the Rotating Arm to the Clamp Piece

4. Insert the Spindle Extension into the Output Shaft.
5. Tighten the Bolt with a Torque Wrench:
   - The existing Bolt must be torqued appropriately (200 in-lb).
   - If the existing Bolt is removed; a new Bolt can be used providing Loctite is applied and torqued appropriately (200 in-lb).
   - Alternatively, the existing Bolt can be used providing it is first cleaned (existing Loctite removed), before fresh Loctite is applied and torqued appropriately (200 in-lb).

   a. Compatible Torque Wrenches: Grainger/Westward Fixed 3/8" Micrometer Torque Wrench, 50 to 250 In-Lb or Sears/Craftsman Micro-Clicker Torque Wrench 3/8" Drive 25 to 250 In-Lb.

Section 7f: Adjustments

7.f.a: Door Panel does not Fully Close

1. Manually open the Door Panel until the Bolt located under the Spindle Extension can be accessed.
2. Clamp the end of the Motor Shaft with a Vice Grip to keep It from rotating. Please see Figure 7-10.

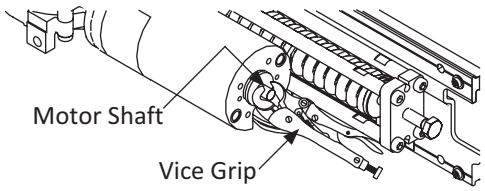


Figure 7-10 Clamp Vice Grip to Motor Shaft

3. Loosen the Bolt located underneath the Spindle Extension.
4. Close the Door Panel until the Spindle Extension rotates (1) Gear Tooth. Tighten the Bolt.
5. Remove the Vice Grip. Close the Door Panel. Repeat steps if deemed necessary.
6. Adjust the Finger Stop accordingly.

7.f.b: Adjust the Stop Finger

1. Manually open the Door Panel.
2. Clamp the end of the Motor Shaft with a Vice Grip to keep It from rotating. Please see Figure 7-11.
   - ► Coarse Adjustment (Stop Finger is repositioned):
     1. Loosen the Set Screw located on the side of Stop Finger.
     2. Slide the Stop Finger off the Gear Teeth.
     3. Rotate the Stop Finger clockwise/counterclockwise as needed.
     4. Slide the Stop Finger back onto the Gear Teeth. Tighten the Set Screw.
   - ► Fine Adjustment (Eccentric is repositioned):
     1. Loosen the Eccentric with an Allen Wrench.
     2. Rotate the Eccentric clockwise/counterclockwise as needed.
     3. Tighten the Eccentric with an Allen Wrench.
3. Remove the Vice Grip.

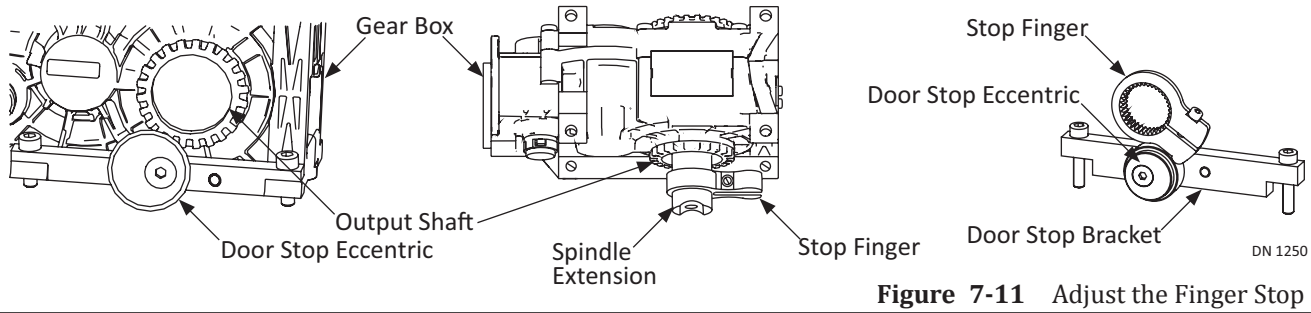


Figure 7-11 Adjust the Finger Stop

CHAPTER 8: INSTALL THE OHC OPERATOR ASSEMBLY

CAUTION

A pedestrian Door that does not have Its glass sections installed at the Factory shall specify that the glazing material employed is to comply with the requirement in UL 325 par.29.5.1:

"The glazing material in both fixed and sliding panels of all sliding doors and in all unframed swinging doors shall comply with the requirements in the Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings, ANSI Z97.1. Glazing material for other pedestrian doors shall also comply with ANSI Z97.1, except that single strength or heavier glass may be used for those portions of doors involving a glazed area of less than 1ft² (0.9 m²) and having no dimension greater than 18 in (457 mm)".

Section 8a: Prep the Jamb Tubes

1. Measure the full width of each Jamb Tube. Draw a vertical line down the center.
2. Obtain (1) Jamb Drilling Template provided by NABCO.
3. Place the Jamb Drilling Template at the top of Jamb Tube so it is flush. Align the center to the previously drawn center mark.
4. Adhere the Jamb Drilling Template to each Jamb Tube. Please see Figure 8-1.
   a. The Jamb Drilling Template is removable.

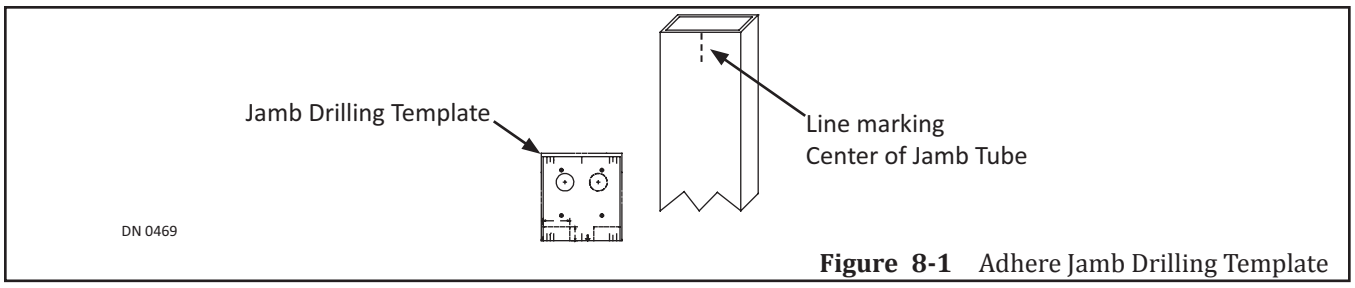


Figure 8-1 Adhere Jamb Drilling Template

5. Drill (4) .391 diameter holes through (4) clearly marked (A)s on the Template. Countersink each screw hole.
   a. It is recommended to drill tap threads for anchors in a steel or aluminum structure.
6. Obtain (4) Rivnuts provided by NABCO. Install (1) Rivnut into each drilled .391 hole.
7. Drill (1) 1-1/4 inch diameter hole through (1 of 2) clearly marked (B)s on the Template to allow incoming 120 VAC Power.
8. Remove the Template from the Strike Jamb, then adhere same Template to the Pivot Jamb.
9. Repeat steps.
10. Remove the Template. Set aside.

Section 8b: Install the Header to Jamb Tubes

1. Determine which Jamb tube is the Pivot Jamb and the Strike Jamb.
   a. Swing door pivots on side of Pivot Jamb.
   b. Swing door locks on side of Strike Jamb.
2. Position each Jamb tube at both sides of the Header. Please see Figure 8-2.
   a. Be sure to orientate the frame in relation to the outside of building/room.

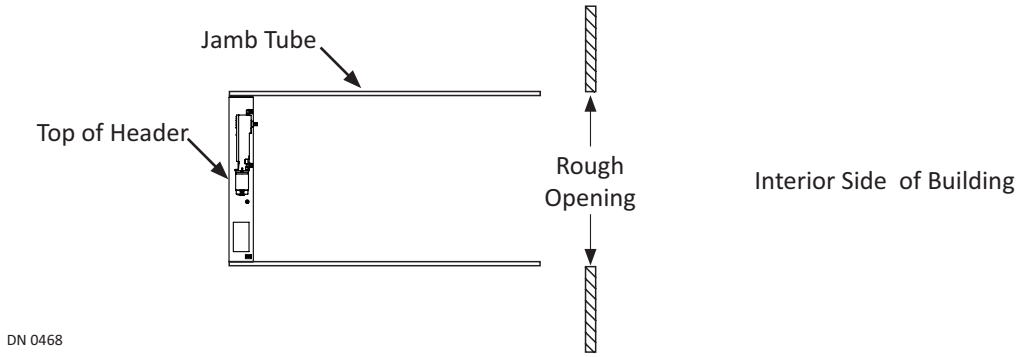


Figure 8-2 Layout Header and Jamb Tubes

3. Secure Header to both Jamb Tubes with (8) 1/4-20 x 3/4 inch Hex Head Cap Screws and (8) 1/4 inch Star Washers from the Parts bag provided within the Header. Please see Figure 8-3.

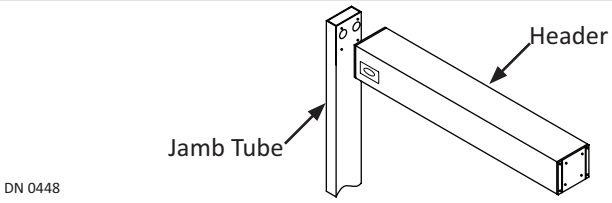


Figure 8-3 Secure Bottom Load Header to Jamb Tubes

Section 8c: Prepare the Rough Opening

Note: Make allowances for tile or other existing materials that may change the floor height.

Note: Use of a supplemental door stop is always required.

1. Ensure the Rough Opening is the correct size. Please see Figure 8-4.
   - The width of the Rough Opening should equal:

     FRAME WIDTH + 1/4 INCH ON EACH SIDE

   - The height of the Rough Opening should equal:

     FRAME HEIGHT + 1/4 INCH
2. Check to make sure that the floor is level across the entire opening.

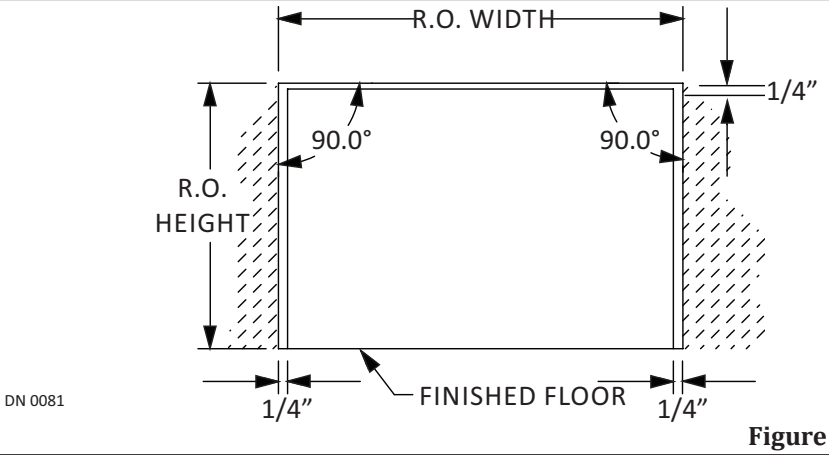


Figure 8-4 Masonry Opening

Section 8d: Install the Frame to Building

Note: It is recommended to pull incoming 120 VAC Power wires through the end of Header for a single Swing door or the middle of Header for a simultaneous pair Swing door. It is also recommended to install wires into an Electrical conduit.

Note: It is recommended to countersink holes as required to flush the surface.

Note: It is recommended to drill tap threads for anchors in a steel or aluminum structure.

1. Lift to position the assembled Frame into the rough opening. Insert all incoming wiring through the 1-1/4 inch hole located on side of Header. Please see Figure 8-5.
2. Plumb Jamb tubes in both planes to ensure the rough opening allows a 1/4 inch clearance. Shim back of Jamb as required.

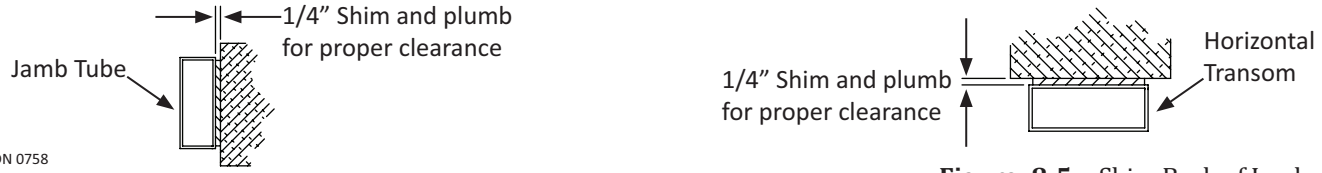


Figure 8-5 Shim Back of Jamb

3. Plumb the Header at the top to ensure the rough opening allows a 1/4 inch clearance. Shim top of Header as required.

8.d.a Anchor Placement for Jamb Tubes

Use 1/4 inch diameter anchors with a minimum of 3 per Jamb Tube, maximum is 48 inches on center. Drill 1/4 inch diameter holes in the face of Jamb and then countersink each hole. Anchors and Fasteners must be appropriate for the type of structure being fastened into. Anchors and Fasteners are not provided by NABCO.

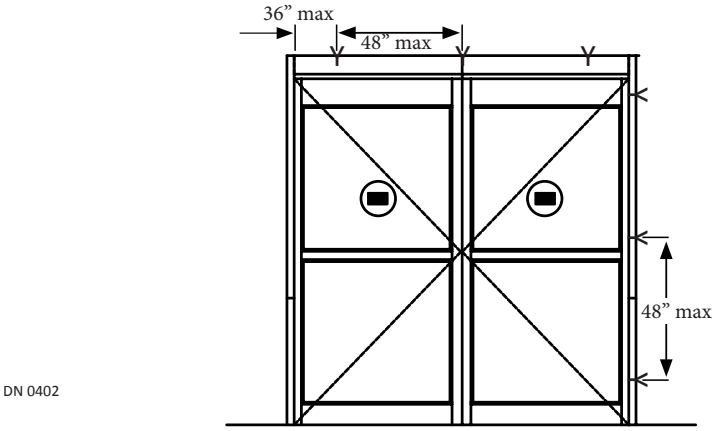


Figure 8-6 Anchor Placement

4. Secure the Frame with 1/4 inch Fasteners not provided by NABCO.

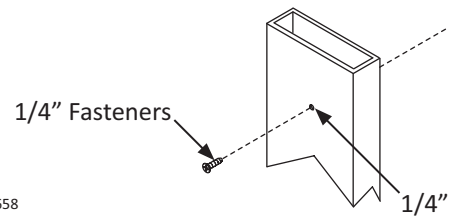


Figure 8-7 Screw Anchors

Section 8e: Install the Finger Guard

Note: Screws must be appropriate for the type of structure being fastened into. Screws are not provided by NABCO.

Note: Do not overtighten screws to prevent deforming Weatherstrip Extrusion. Ensure each screw is flush to the Jamb tube.

1. Go to the top of the Pivot Jamb tube, at the center, drop a Plumb Line to the floor.
2. Mark the Center line on the inside face of the Pivot Jamb Tube.
   a. It is recommended to use a level.
3. Obtain the Finger Guard Mounting Plate.
4. Insert the Weather Strip into both channels located on the Finger Guard Mounting Plate. Please see Figure 8-8.
   a. Sprayed silicone (not included) inside the Channels may ease the insertion of the Weather Strip.

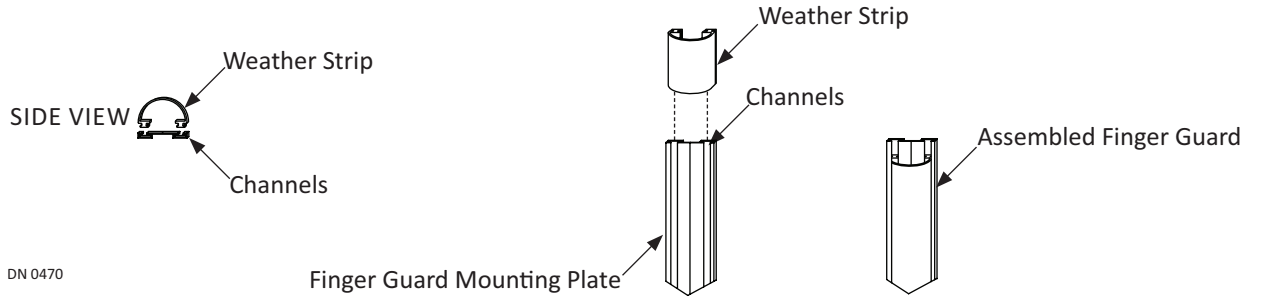


Figure 8-8 Install Weather Strip onto Finger Guard Mounting Plate

5. Line up the Center Notch located down the full length of the Finger Guard Mounting Plate, with the Center Mark located on the Pivot Jamb Tube. Please see Figure 8-9.
   a. It is recommended to use a level.
6. Drill (3-4) 1/8 inch evenly spaced screw holes down the Finger Guard Assembly.
   a. Each screw hole must go through the Weather Strip, Mounting Plate and the Pivot Jamb Tube.
7. Secure the Finger Guard Mounting Plate onto the Pivot Jamb with 1/8 x 1 inch self tapping Screws (zinc or steel plated).

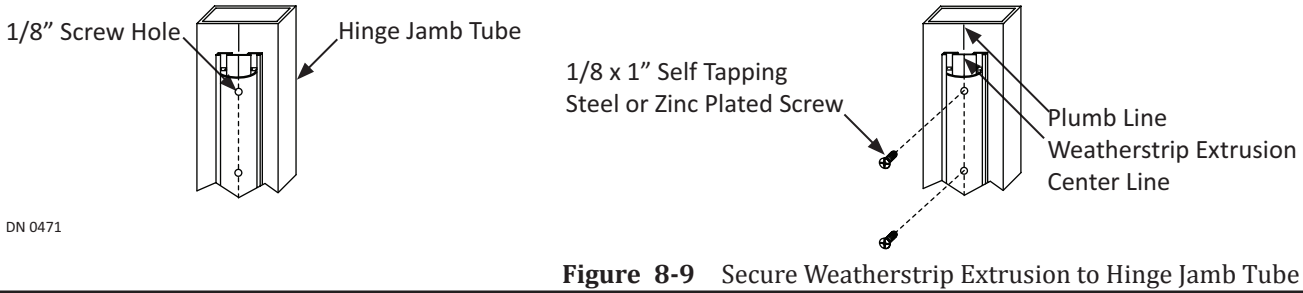


Figure 8-9 Secure Weatherstrip Extrusion to Hinge Jamb Tube

Section 8f: Install the Floor Pivot

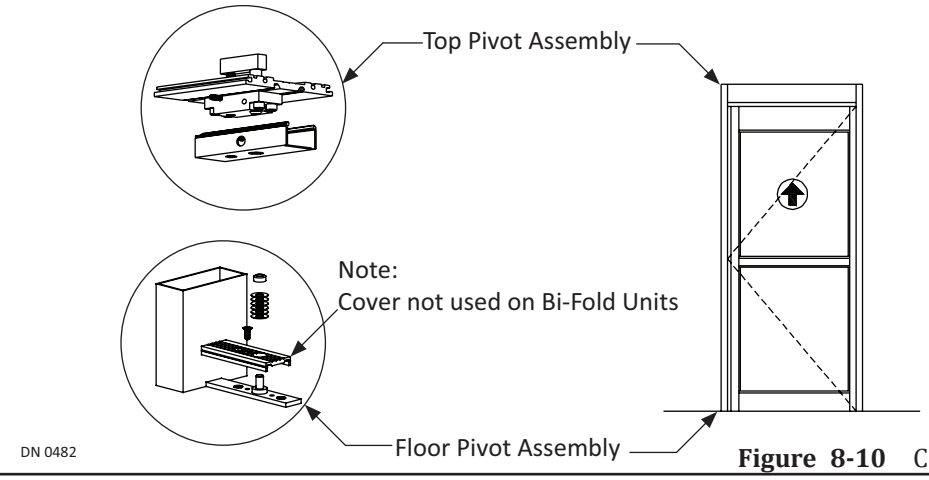


Figure 8-10 Center Pivot Locations

1. Obtain the Floor Pivot Assembly. Please see Figure 8-11.
   a. The Pivot Shaft is not centered on the Floor Pivot. One end is used:
      - With Finger Guard; the Pivot Shaft will measure 3.75 inches away from the Pivot Jamb.
      - Without Finger Guard; the Pivot Shaft will measure 2.75 inches away from the Pivot Jamb.

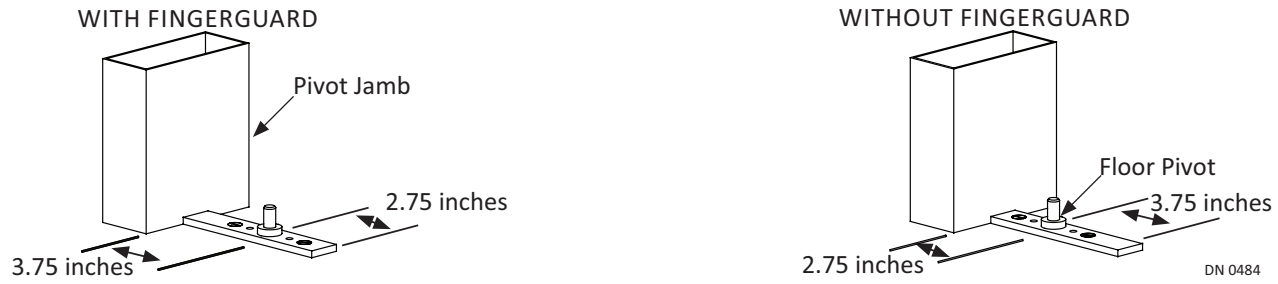


Figure 8-11 Position Floor Pivot according to Finger Guard Installation

2. Measure and mark the center of the Pivot Jamb and the Floor Pivot.
3. Butt the center mark of the Floor Pivot up against the center mark of the Pivot Jamb.
4. Align both Pivot Shafts. Drop a Plumb Line from the Top Pivot Shaft to the Floor Pivot Shaft. The Plumb Line must drop down the center.
5. Use the Floor Pivot as a template to mark and drill (2) holes for #14 x 1 inch Blue anchors provided by NABCO. Please see Figure 8-12.
6. Insert (2) #14 x 1" Blue anchors into each anchor hole.
7. Secure the Floor Pivot with (2) #14 x 1-1/2 inch Slotted Flat Head Screws provided by NABCO.

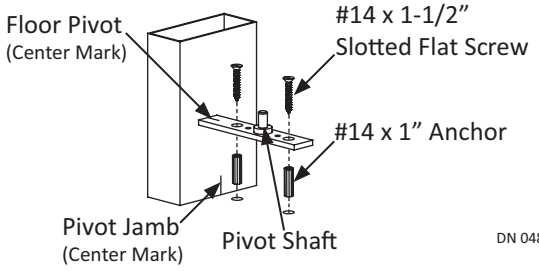


Figure 8-12 Install Floor Pivot

8. Secure the Pivot Cover onto the Floor Pivot with (1) 1/4-20 x 7/16 inch Flat Head Machine Screw. Please see Figure 8-13.
   a. Cover Plate is not used on Bi-Fold Units.

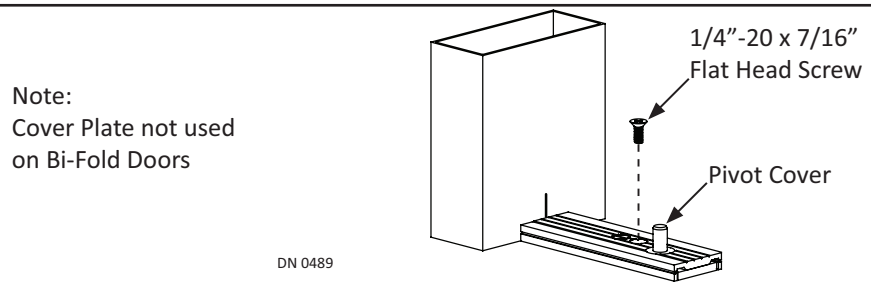


Figure 8-13 Install Pivot Cover onto Floor Pivot

Section 8g: Temporarily Install the Saddle Threshold

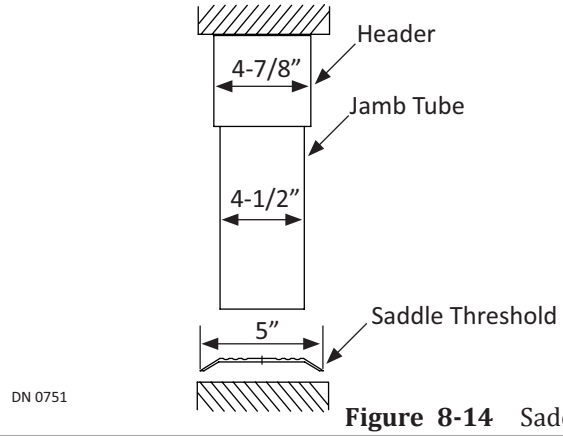


Figure 8-14 Saddle Track installed on Surface only

1. Obtain the Saddle Threshold. The Pivot Side of the Saddle Threshold has a cut out for the Pivot Plate. Place the Pivot Side of the Saddle Threshold over the Floor Pivot Assembly. Please see Figure 8-15.
   a. Ensure the Saddle Track is centered to the Strike Jamb and square.

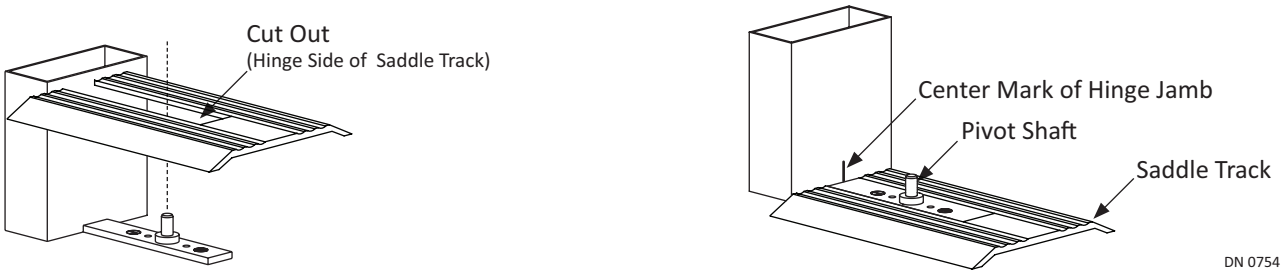


Figure 8-15 Place Saddle Track over Floor Pivot

2. Square and center the Saddle Threshold to the Strike Jamb.
3. Obtain #10 x 1-1/2 inch sheet metal screws and anchors (per length of the Saddle Threshold).
4. In the center of the Saddle Threshold, approximately 4 inches from the cutout for the Pivot Plate, mark (1) screw hole. Please see Figure 8-16.
5. In the center of the Saddle Threshold, approximately 4 inches from the Strike Jamb, mark (1) screw hole.

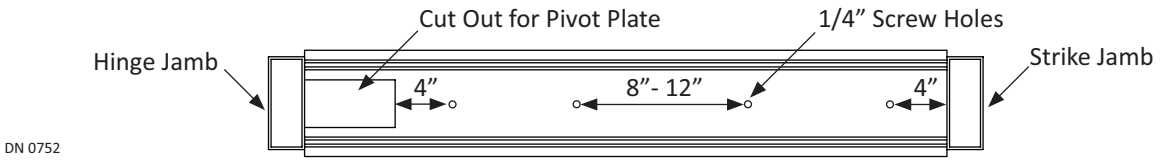


Figure 8-16 Mark and Drill Holes on Saddle Track

6. Mark remaining screw holes 8 - 12 inches apart and evenly spaced.
7. Drill screw holes into the floor no less than 1-1/2 inch deep for #14 x 1" anchors.
8. Remove the Saddle Threshold. Set aside.
9. Insert #14 x 1" plastic anchors into the drilled screw holes. Please see Figure 8-17.
10. Secure the Floor Track with #10 x 1-1/2 inch sheet metal screws (Not provided by NABCO).
    a. Do not overtighten screws to prevent deforming the Saddle Threshold.

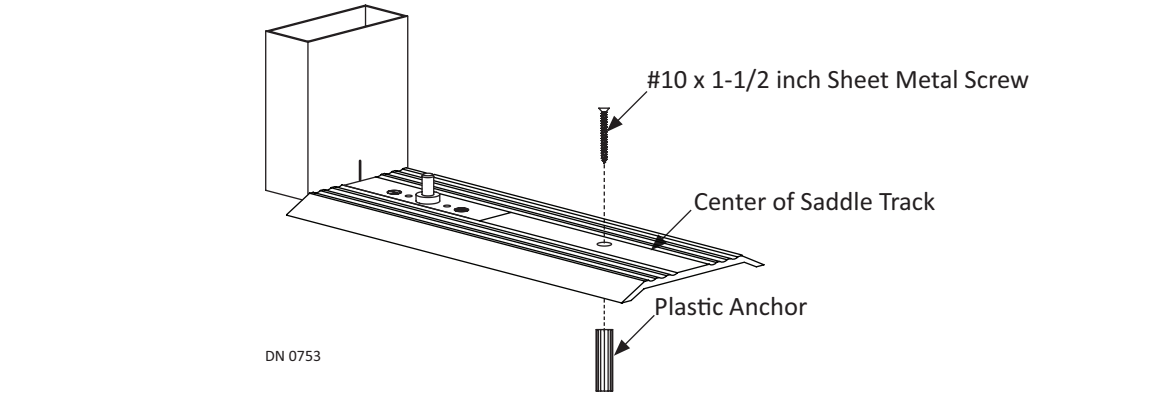


Figure 8-17 Secure Floor Track to Floor Surface

Section 8h: Install the Swing Door Provided By NABCO

FOR UNITS NOT PROVIDED BY NABCO
SKIP TO SECTION 8I

1. Go to the Pivot side of Header.
2. Loosen the Set Screw located directly above the Pivot Shaft. Please see Figure 8-18.
3. Go to the Self Riser screw located underneath the top Pivot.
4. Turn the Self Riser Screw counter-clockwise to retract the Center Pivot Shaft.

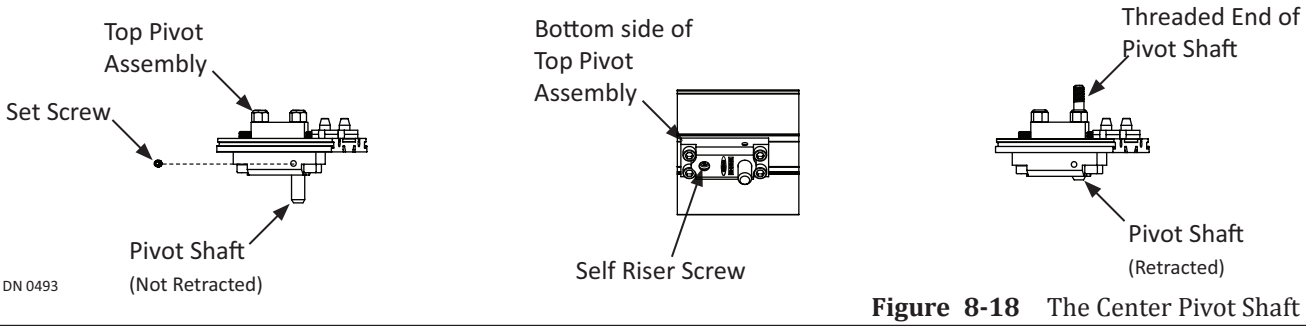


Figure 8-18 The Center Pivot Shaft

5. Go to the bottom Pivot Assembly. Locate the Ball Bearing. Insert the Ball Bearing onto the Floor Pivot Shaft. Please see Figure 8-19.

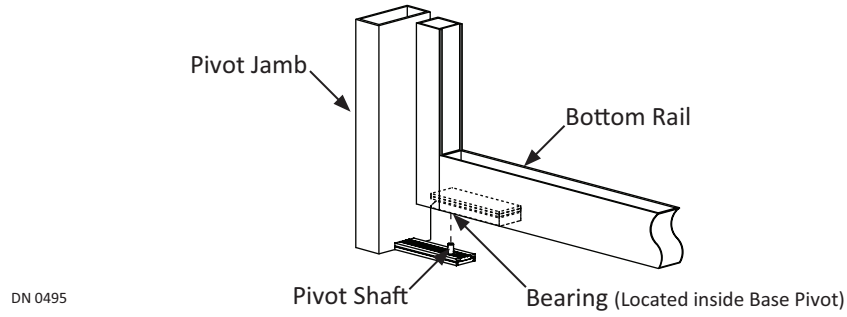


Figure 8-19 Install Swing door onto Floor Pivot Shaft

6. Go to the Top Rail. Locate the Track Assembly. Please see Figure 8-20.
7. With a flat head screwdriver, turn the Self Riser Screw clockwise until the Riser Bar is all the way down into the Bearing.
   a. Tighten the Riser Bar tight to the base Pivot Plate to ensure the Pivot Shaft is fully engaged inside the Bushing.

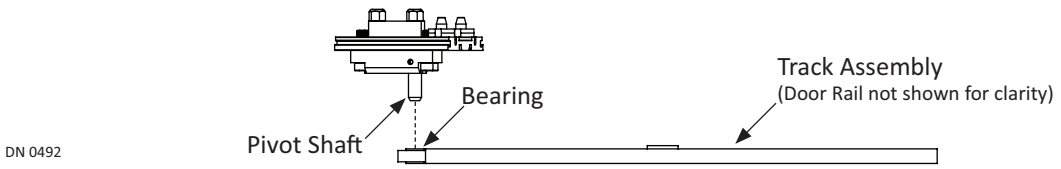
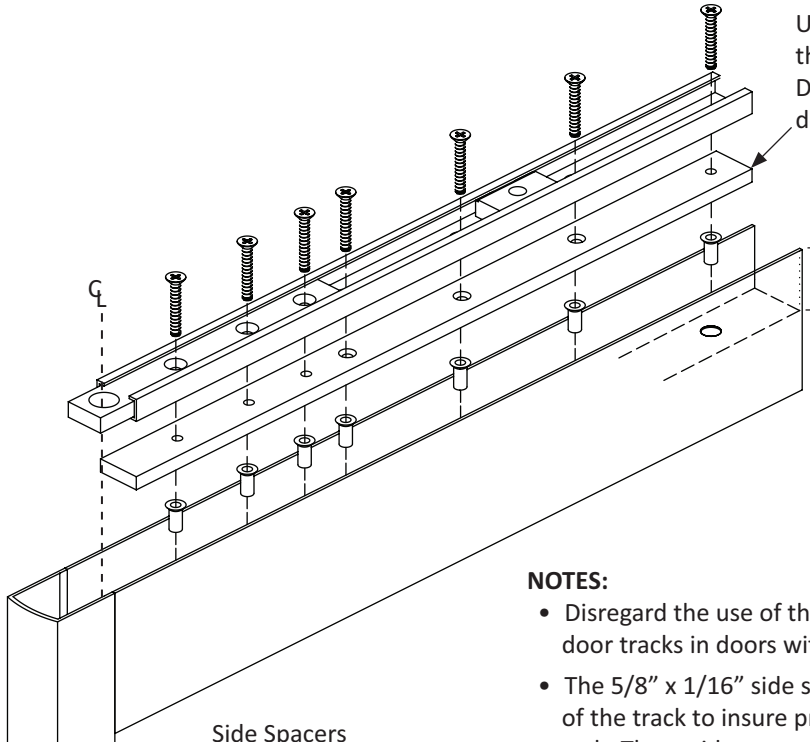
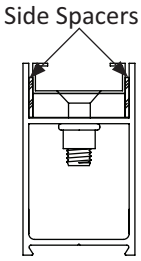


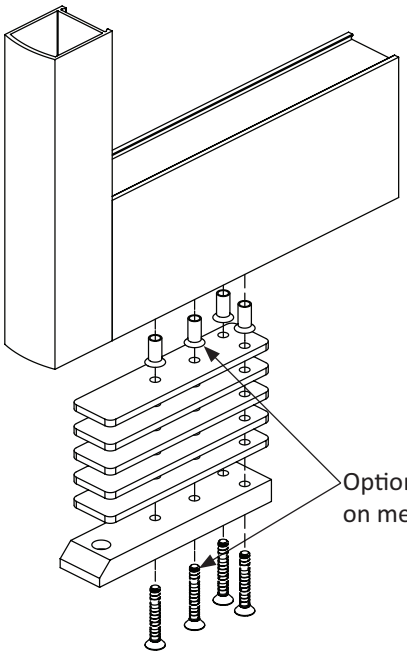
Figure 8-20 Line up Top Pivot Receiver with Top Pivot Shaft

CONTINUE TO SECTION 8J

Section 8i: Install the Swing Door NOT PROVIDED BY NABCO







NOTES:

- Disregard the use of the 3/8” inch spacer block when installing door tracks in doors with a web depth of 5/8”.
- The 5/8” x 1/16” side spacers should be installed on either side of the track to insure proper centering of the track in the door web. These side spacers may be left in the door or be removed after the track is securely in place.
- Use the 1/4-20 rivnuts for attaching the pivots and track to door if the door web is not thick enough for sufficient thread engagement.

Installation Instructions:

- Prepare Swing door as shown.
- Install (7) 1/4-20 rivnuts in the web located inside the Top Rail.
- Place the Track, which has been lubricated at the NABCO Factory with lightweight grease, on top of the Spacer Block. Use the Side Spacers where needed.
- Line up Screw holes with rivnuts.
- Secure the Track and Spacer Block (if used) with (7) 1/4-20 x 1-1/2” phillips flat head screws.

DN 0756
DN 0133

Figure 8-21 Install the Track and Base Pivot

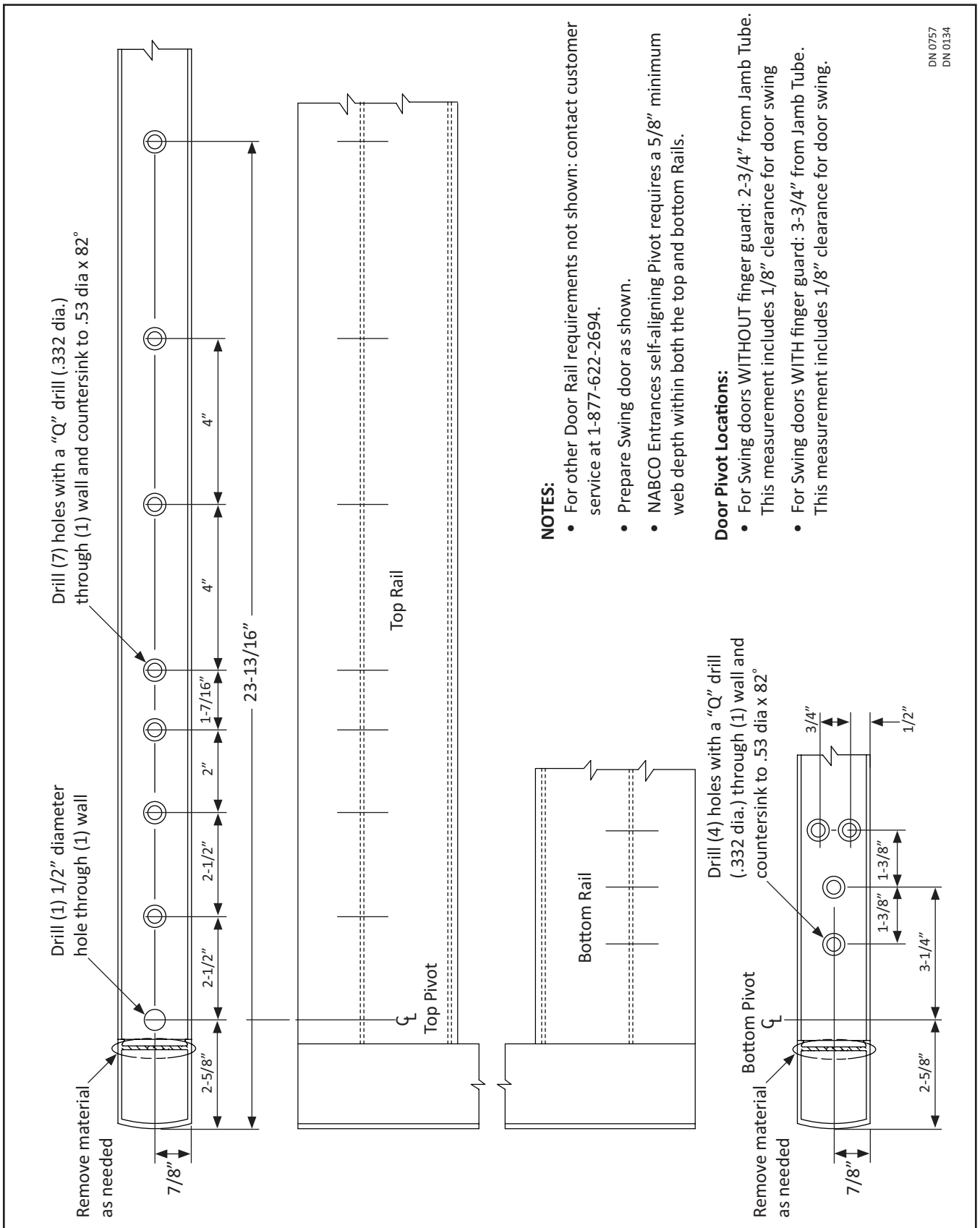


Figure 8-22 Pivot Shaft Measurements

8.i.a: Prep the Door Rail

The inside wall of the Pivot Stile may butt up against the Door Rail (at the very top). If the Track needs to extend past the Door Rail, the inside wall will need to be milled out to match the width and depth of the Web. This may need to be done to the top Door Rail and/or the bottom Door Rail. Please see Figure 8-23.

Figure 8-23 Mill out the inside wall of the Pivot Stile

8.i.b: Install the Base Pivot into the Bottom Door Rail

1. Lay the Swing door on a flat surface that is sturdy enough to keep the door stable, and high enough to see while drilling. Protect Swing door from scratches.
2. Go to the Bottom Rail on the Pivot side of Swing Door. Measure to find the center inside the Web. Mark a horizontal line all the way across the full width of the Web face.
3. From the outer edge of the Pivot Stile measure:
   - With the Finger Guard; 3-5/8 inches.
   - Without the Finger Guard; 2-5/8 inches.
4. Mark a vertical line across the horizontal line onto the Web face. This is the center of the Bearing.
5. From that mark, measure another 3-1/4 inches. Mark a vertical line across the horizontal line onto the Web face. This is the center of the second .322 diameter anchor hole.
6. Obtain (1) Spacer. Center the Spacer inside the Web. Align the second screw hole to the second anchor hole marked onto the Web face.
7. Use the Spacer as a template to mark the remaining (3) anchor holes.
   a. Ensure the Spacer is aligned and centered.
   b. Refer to Section 8b for detailed measurements.
8. Drill (4) .322 anchor holes.
9. Countersink the (4) anchor holes to .53 diameter x 82 degrees.
   a. It is recommended to drill tap threads for anchors in a steel or aluminum structure.
10. Insert (4) 1/4-20 tapped Rivnuts into the (4) .322 anchor holes.
11. Obtain the Base Pivot assembly. Please see Figure 8-24.
12. Place (1-4) Spacers on the bottom side of the Pivot Base.
    a. The Gel filled Bearing is located on the top side of the Pivot Base.
13. Insert the Pivot Base assembly up into the Web.
    a. Add/subtract spacers until the Base Pivot is flush to the outside edge of the Door Rail.
14. Secure the Pivot Base to the Web with (4) 1/4 - 20 x 2 inch Phillips Head Machine Screws.

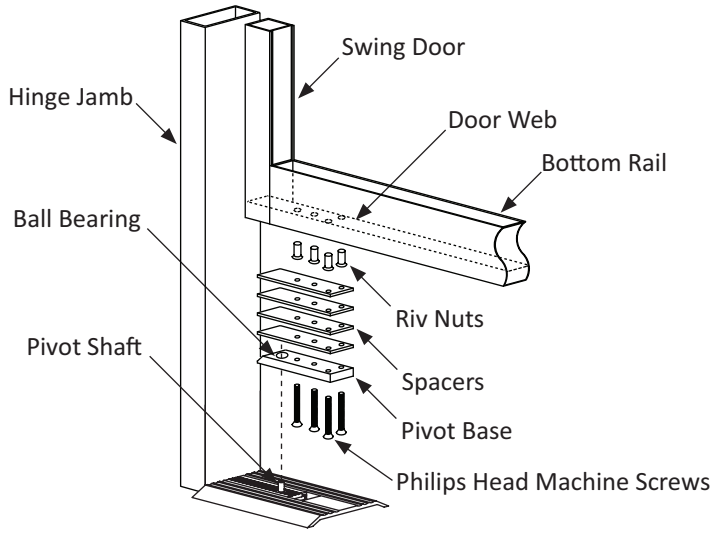


Figure 8-24 Base Pivot Assembly

8.i.c: Partially Install the Track inside the Top Door Rail

1. Lay the Swing door on a flat surface that is sturdy enough to keep the door stable, and high enough to see while drilling. Protect Swing door from scratches.
2. Go to the Top Rail on the Pivot side of Swing Door. Measure to find the center inside the Web. Mark a horizontal line all the way across the full width of the Web face.
3. From the outer edge of the Pivot Stile measure 23-13/16 inches. Mark a vertical line across the horizontal line onto the Web Face. This is the center of (1) .322 anchor hole.
4. Drill (1) .322 anchor hole.
5. Countersink the anchor hole to .53 diameter x 82 degrees.
   a. It is recommended to drill tap threads for anchors in a steel or aluminum structure.
6. Insert (1) 1/4-20 tapped Rivnut into the .322 anchor hole.
7. Obtain the Track Assembly. Please see Figure 8-25.
8. Place (1) Spacer Block inside the Web according to the Web Depth:
   - 5/8 inch deep: No Spacer Block is required.
   - 7/8 inch deep: Insert 1/4 inch Spacer Block.
   - 1 inch deep: Insert 3/8 inch Spacer Block.
   - 1-9/16 inch deep: Insert (2) 3/8 inch Spacer Blocks.
9. Place (1) Track on top of the Spacer Block (or the Web if a Spacer Block is not used).
   a. Ensure the Pivot Pin Receiver is on the Pivot Side of the Web.
10. Place (2) 5/8 " x 1/16" Side Spacers on either side of the Track.
    a. Side Spacers are used to ensure proper centering of Track.

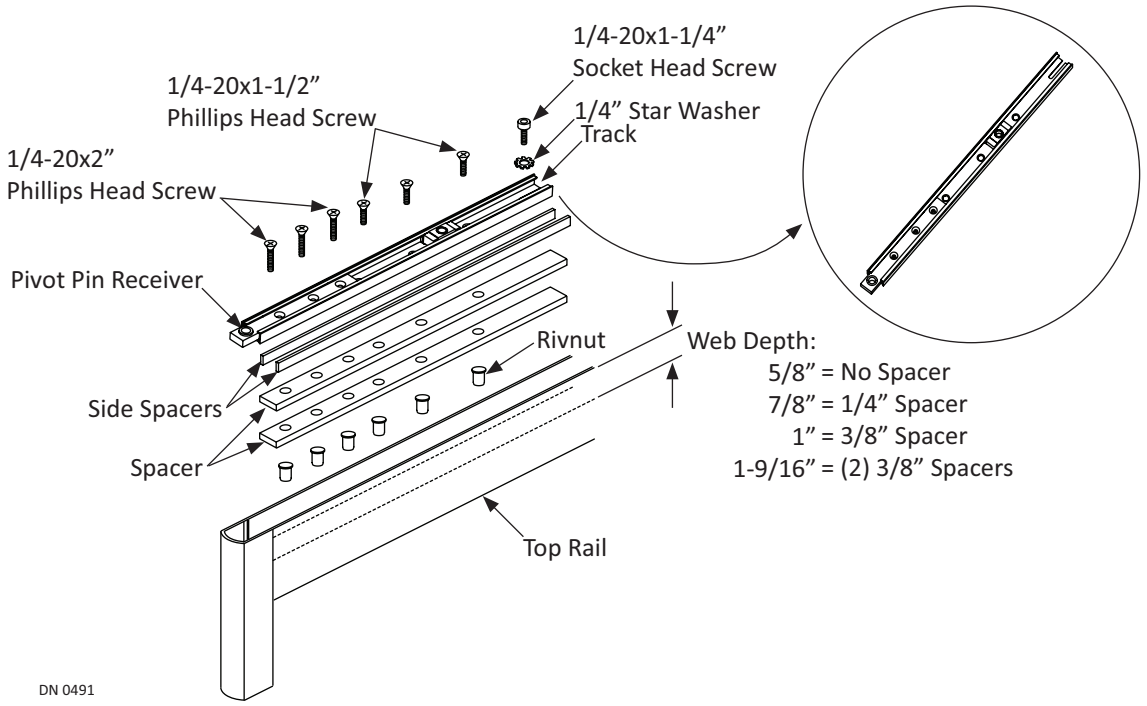


Figure 8-25 Top Rail Track Assembly

11. From the outer edge of the Pivot Stile measure:
    - With the Finger Guard; 3-5/8 inches.
    - Without the Finger Guard; 2-5/8 inches
12. Slide the Track towards the Pivot Stile or away from the Pivot Stile until the Bearing is centered to that measurement. Please see Figure 8-26.
13. Locate the Slot at the end of the Track. Locate the Pre-drilled screw hole.
14. Secure the Track to the Web with (1) 1/4 inch Star Washer and (1) 1/4-20 x 1-1/4 inch Socket Head screw. Tighten but do not overtighten. The Socket Head screw may need to be loosened one more time.

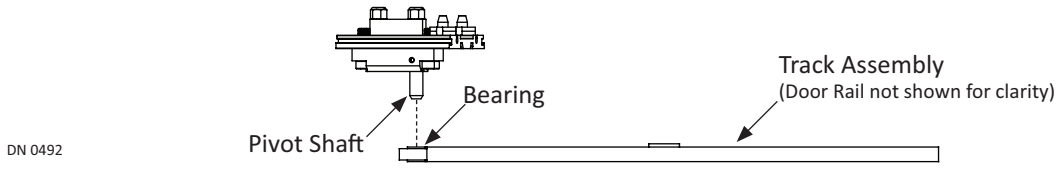


Figure 8-26 Insert the Top Pivot Shaft into the Bearing

8.i.d: Temporally Install the Swing Door

1. Go to the Pivot side of Header. Locate the Pivot Assembly.
2. Loosen the Set Screw located directly above the Pivot Shaft. Please see Figure 8-27.
3. Go to the Self Riser screw located underneath the Pivot Assembly.
4. Turn the Self Riser Screw counter-clockwise to retract the Pivot Shaft.

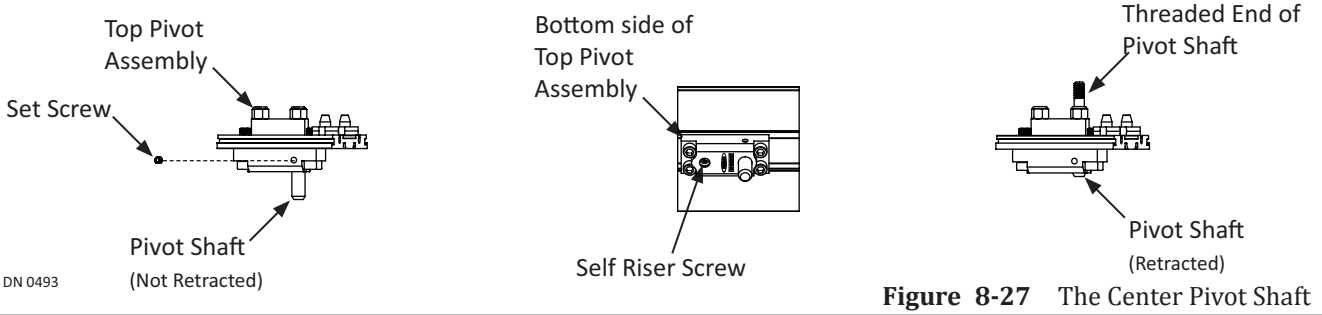


Figure 8-27 The Center Pivot Shaft

5. Go to the bottom Door Rail. Slide the Bearing onto the Pivot Shaft.

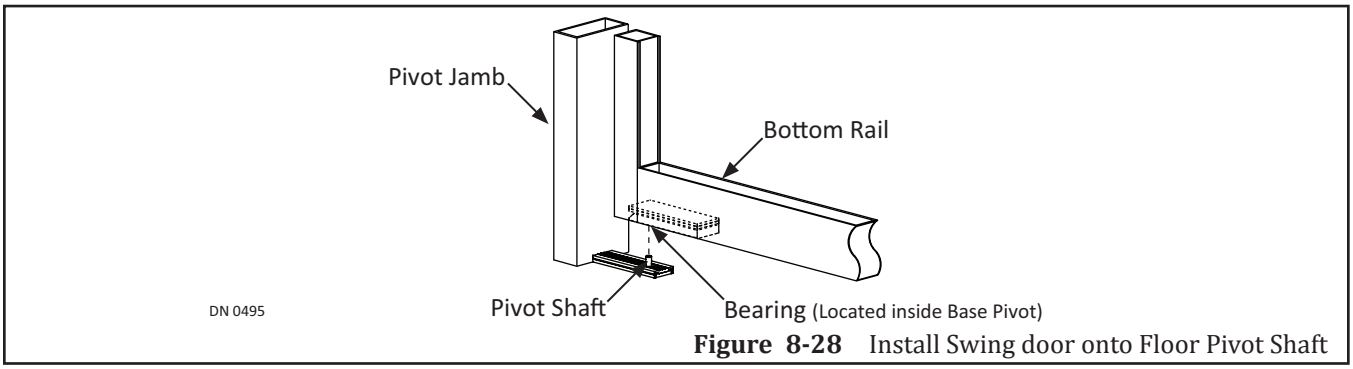


Figure 8-28 Install Swing door onto Floor Pivot Shaft

6. Go to the top Door Rail. Turn the Self Riser Screw clockwise to insert the Pivot Shaft into the Bearing.
7. With a flat head screwdriver, turn the Self Riser Screw clockwise until the Pivot Shaft is inserted all the way down into the Bearing.
8. Tighten the Set Screw, do not overtighten. The Set Screw may have to be loosened one more time.

8.i.e: Adjust the Swing Door Height

1. Measure for proper clearance:
   - Top of Swing door must be: 1/8 inch to 1/16 inch from Header.
   - Bottom of Swing door must be: 3/16 inch to 1/16 inch from Floor (or threshold).
2. Remove the Swing door.
3. Slide (1-6) Spacer Shims onto the Pivot Shaft to adjust the Swing door for proper clearance.
4. Slide (1) Self Aligner Cap on top of the (1-6) Spacer Shims. Reinstall the Swing door.

Figure 8-29 Install Shims and Self Aligner Cap onto Floor Pivot Shaft

8.i.f: Align the Swing Door

1. Fully open the Swing door.
2. Go to the Track Assembly located inside the Top Rail.
3. Loosen (1) 1/4-20 x 1-1/4 inch Socket Head Screw.
4. Slide the Track Assembly back and forth until the Swing door is properly aligned.
   a. It is recommended to use a Level.
5. Tighten the Socket Head Screw but do not tighten all the way down.
   a. The Socket Head Cap Screw may need to be loosened one more time.

8.i.g: Permanently Install the Track inside the Top Door Rail

1. Fully open the Swing door.
2. Use the Track as a template. Mark a vertical line across the horizontal line inside each pre-drilled screw hole. Each mark is the center of (6) .322 anchor holes.
3. Remove the Swing door.
4. Lay the Swing door on a flat surface that is sturdy enough to keep the door stable, and high enough to see while drilling.
   a. Protect Swing door from scratches.
5. Drill (6) .322 anchor holes.
6. Countersink the anchor hole to .53 diameter x 82 degrees.
   a. It is recommended to drill tap threads for anchors in a steel or aluminum structure.
7. Insert (6) 1/4-20 tapped Rivnut into each .322 anchor hole.
8. Secure the Track to the Web with (3) 1/4-20 x 2 inch Socket Head screws and (3) 1/4-20 x 1-1/2 inch Phillips Head screws. Tighten but do not overtighten.

8.i.h: Permanently Install the Swing Door

1. Follow instructions within subsection 8.i.d.

Section 8j: Install the Swing Arm

8.j.a Prep the Swing Arm

1. Obtain the Swing Arm.
2. With an 5/16 inch Allen Wrench, remove the Pivot Screw and (3) Washers. Obtain the Bolt (shipped separately) and set aside. Please see Figure 8-30.

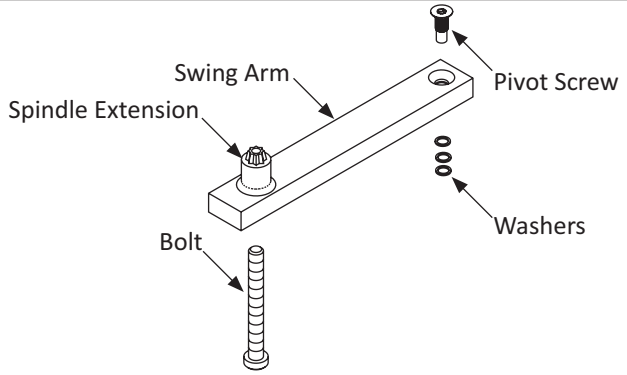


Figure 8-30 Prepare the Swing Arm

8.j.b Secure the Arm to the Operator

CAUTION **Power must be turned OFF during the Swing Arm installation.**

Attention: While installing/uninstalling the Arm, it is recommended to clamp a Vice Grip onto the end of the Motor Shaft to keep It from rotating. Please see Figure 8-31.

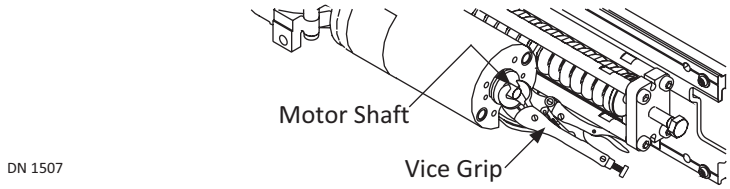


Figure 8-31 Clamp Vice Grip to Motor Shaft

3. Open the Door Panel.
4. Insert the Spindle Extension into the Output Shaft. Please see Figure 8-32.
5. Position the Swing Arm with a 15° offset.
   a. To facilitate the installation: the Closing Spring can be completely released by means of the Adjusting Screw.
6. Secure the Swing Arm to the Operator with (1) Bolt.

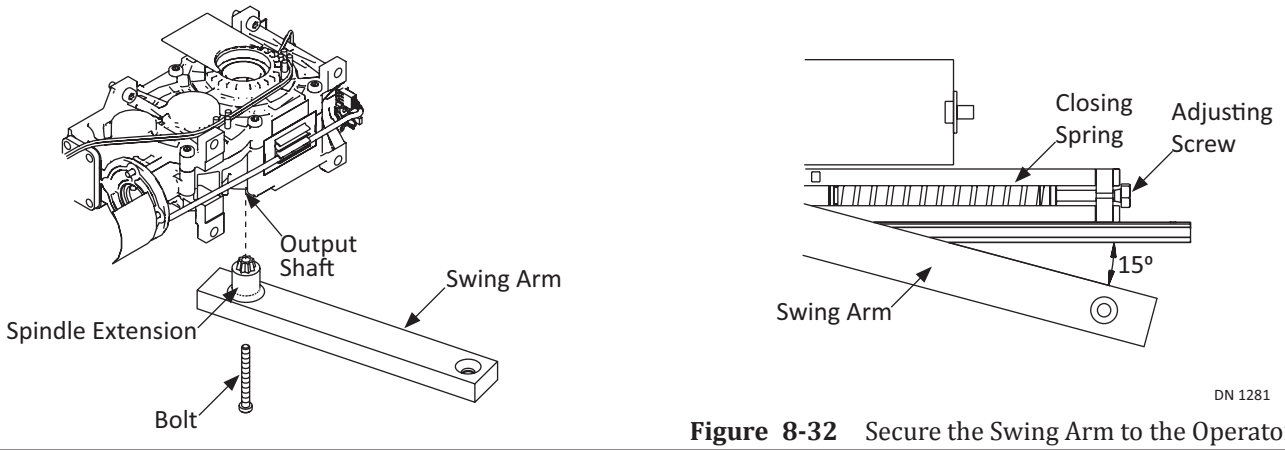


Figure 8-32 Secure the Swing Arm to the Operator

8.j.c Secure the Swing Arm to the Swing Door

1. Go to the end of the Swing Arm. Align the Pivot Screw hole to the Slide Block. Please see Figure 8-33.
2. Check to see how many Washers will be necessary to install between the Swing Arm and the Swing door.
   - 3 for 3/16 inch Clearance Door
   - 2 for 1/8 inch Clearance Door
   - 1 for 1/16 inch Clearance Door
3. Hold the washers in place while inserting the Pivot Screw through the hole and into the Slide Block. Tighten the Pivot Screw.

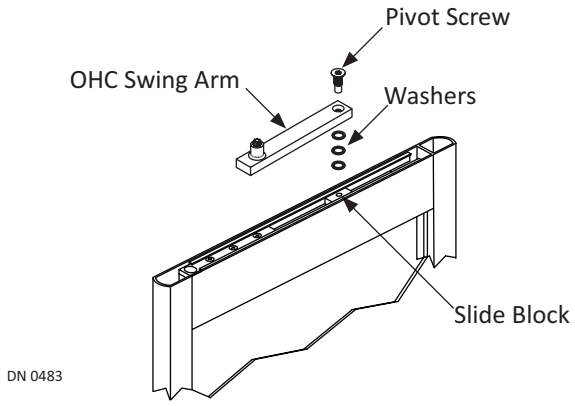


Figure 8-33 Secure the Swing Arm to the Swing Door

Section 8k: 120 VAC General Wiring

WARNING **Shut the installation site, branch Circuit Breaker OFF. Failure to do so may result in serious personal or fatal injury. When uncertain whether power supply is disconnected, always verify using a voltmeter.**

WARNING **All high voltage electrical connections must be made by licensed electricians according to National and Local electrical codes/regulations.**

CAUTION **Permanent wiring shall be employed as required by local codes.**

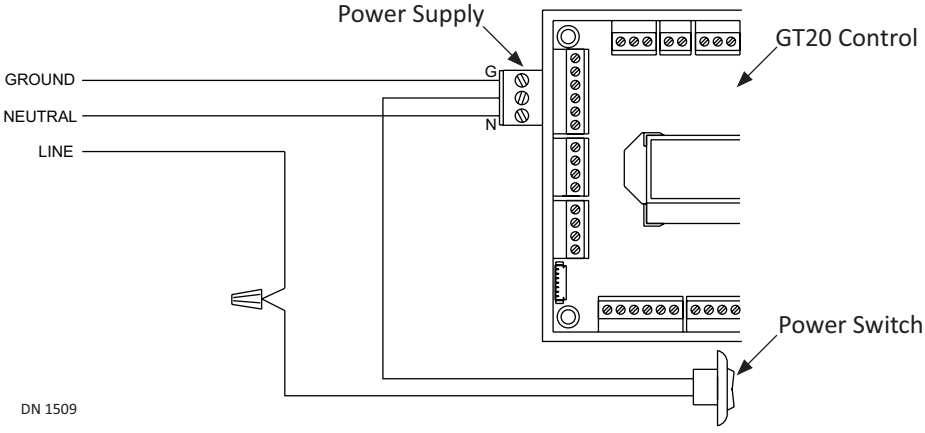
CAUTION **Keep all Incoming 120 VAC wiring separate from low voltage wiring within Header. 120 VAC Power wires must be routed (separate from other wiring) located near the top of inside Header.**

CAUTION **Ensure that the Grounding of the Electric Power Supply is installed/connected in a proper way (especially the PE Cable from the Building Side).**

Attention: Insert all Incoming 120 VAC Power wires into the pre drilled Electric Service Access Hole located at the left or right side of Header End Cap.

Note: It is recommended for the Installer to house all Incoming 120 VAC wires within an Electrical Conduit.

Note: For detailed wiring, please refer to the GT20 Swing Door Wiring and Programming Manual P/N 15-14984.



CHAPTER 9: THE MOTOR CONNECTOR HARNESS

WARNING **!!! If a panic breakout latch is installed and the motor is plugged in backwards or the wrong arms are chosen during programming, there is a possibility that the door can burst open unexpectedly towards the installer once TEACH mode is initiated !!!**

The Motor Connector Harness is used to ensure proper Swing Door operation during Manual Mode or during a Power Outage/No Power. The Motor Connector Harness is connected to the Motor Harness with (1) of two Male Connectors. Each Male Connector is identified by color: (Y) Green and (X) Orange. Please see Figure 9-1.

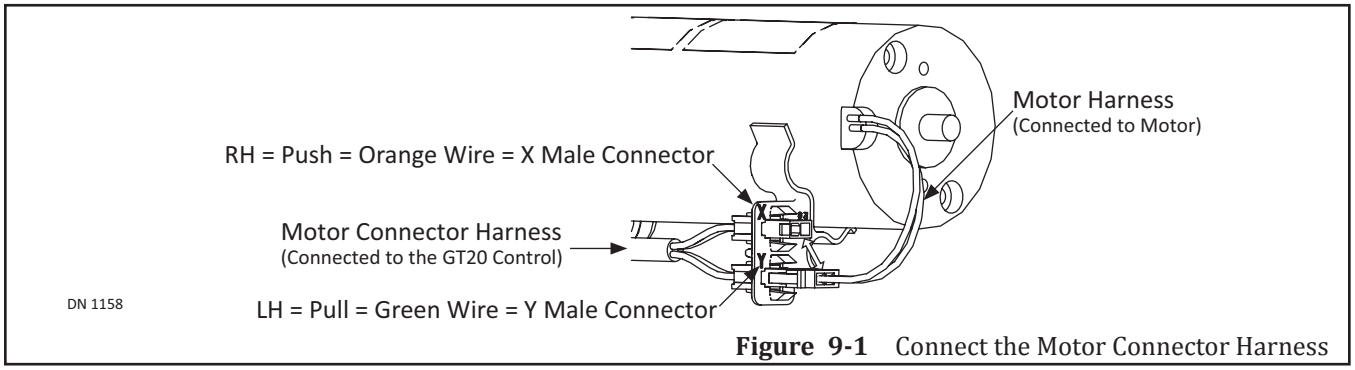


Figure 9-1 Connect the Motor Connector Harness

Before connecting the Male Connector, the installer must first determine the Handing of the door (that determines the Spindle Rotation) and then refer to Chapter 16 under the Parameter Menu (ROD).

Section 9a: Handing

9.a.a: Determine Handing from standing underneath the GT20 Operator

Open the Swing door. Butt your back against the Pivot side of Swing door. Swing out the (right or left) arm in the direction the Swing door opened.

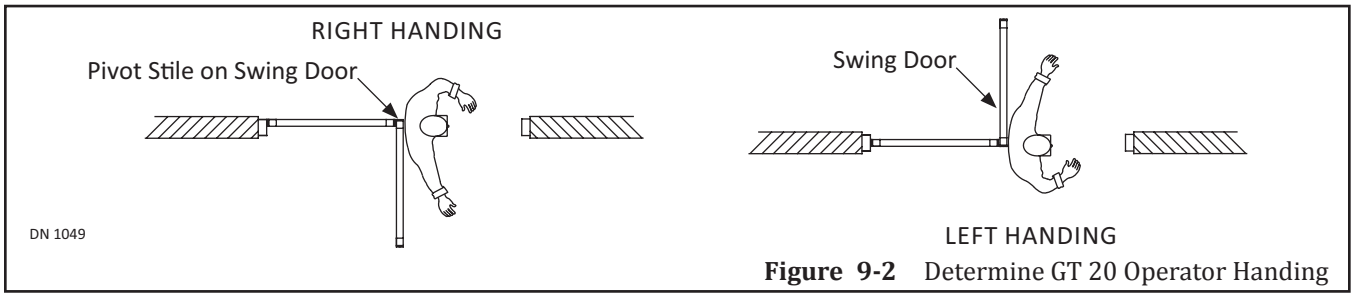


Figure 9-2 Determine GT 20 Operator Handing

9.a.b: Determine Handing from direction the OHC Swing Door opens

- If the Swing Arm swings underneath the Threshold to open, it is an Outswing Unit.
- If the Swing Arm does not swing underneath the Threshold to open, it is an Inswing Unit.

Figure 9-3 Determine OHC Handing

Section 9b: Determine the Spindle Rotation

The spindle rotation determines whether the door is pushed open or pulled open. Please see Figure 9-4.

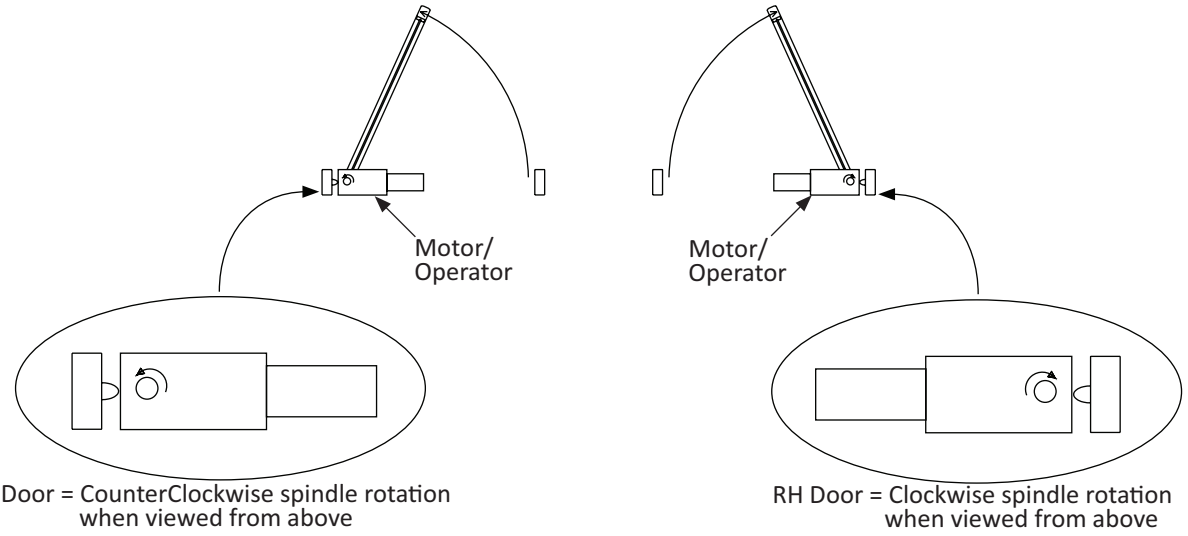


Figure 9-4 Operator Spindle Rotation

Section 9c: Determine the Parameter

The Parameter Menu is displayed on the LCD screen located on the GT20 Control. The Element "ROD" must be selected in order to program the appropriate Unit Type, and Value. If the Male Connector is not correctly programmed, the door can burst open unexpectedly during TEACH. Please refer to Table 9-1 as a guide to select the appropriate Unit for each Male Connector.

Table 9-1 Handing and Spindle Rotation

Male Connector	GT20	GT20 Inverse	OHC
X = Orange	RH = Clockwise = Push	RH = Counterclockwise = Pull	RH = Clockwise = Push
Y = Green	LH = Counterclockwise = Pull	LH = Clockwise = Push	LH = Counterclockwise = Pull

WARNING **Turn Power OFF before installing the Motor Connector Harness.**

WARNING **Clear the area of any persons or objects in the path of moving Door Panel, in order to avoid injuries or damages.**

Section 9d: Connect the Male Connector to the Motor Harness

1. Ensure all Power is turned OFF.
2. Connect the Motor Connector Harness to the Motor Harness according to the Handing. Please see Figure 9-1.
3. Go to the GT20 Control. Locate the FSlam Potentiometer.
   a. The FSlam Potentiometer is a blue square labeled "R522".
4. Ensure the FSlam Potentiometer is turned fully counter clockwise.

Attention: **FSlam potentiometer must always be turned fully counterclockwise. The FSlam potentiometer is used to govern Latch Check speed when power is turned OFF.**

5. Go to the Parameter menu located within the GT20 Swing Door Wiring and Programming Manual; P/N 15-14984.

Section 9e: Test the Swing Door

1. Manually *OPEN* the Door Panel to the Full Open position, then let it go.
   a. The Swing door should slow down before reaching the Fully Closed Position.
   b. If the Door Panel slams shut, the Motor Connector Harness is connected wrong.
      1. Swap the connections to the Motor.
      2. Test the Door Operation again.

Section 9f: Test the Inverse Door

1. Manually *CLOSE* the Door Panel to the Full *CLOSE* position, then let it go.
   a. The Swing door should slow down before reaching the Fully *OPEN* Position.
   b. If the Door Panel slams open, the Motor Connector Harness is connected wrong.
      1. Swap the connections to the Motor.
      2. Test the Door Operation again.

CHAPTER 10: 120 VAC GENERAL WIRING

DANGER **Shut the installation site, branch Circuit Breaker OFF. Failure to do so may result in serious personal or fatal injury. When uncertain whether power supply is disconnected, always verify using a voltmeter.**

WARNING **All high voltage electrical connections must be made by licensed electricians according to National and Local electrical codes/regulations.**

CAUTION **Permanent wiring shall be employed as required by local codes.**

CAUTION **Keep all Incoming 120 VAC wiring separate from low voltage wiring within Header. 120 VAC Power wires must be routed (separate from other wiring) located near the top of inside Header.**

CAUTION **Ensure that the Grounding of the Electric Power Supply is installed/connected in a proper way (especially the PE Cable from the Building Side).**

Attention: **Depending upon the installation, the Power Switch/Program Selector may have to be installed on the opposite side of the Header. If 120 VAC Power wires must be installed from Hinge Side of Header, ensure all wires are securely clipped to prevent pinching of the wires during the Motor/Operator installation process.**

Note: Please see "The Motor Connector Harness" chapter within this manual for wiring details.

1. Connect the Main Power Supply.
2. Mount the Side Cover.

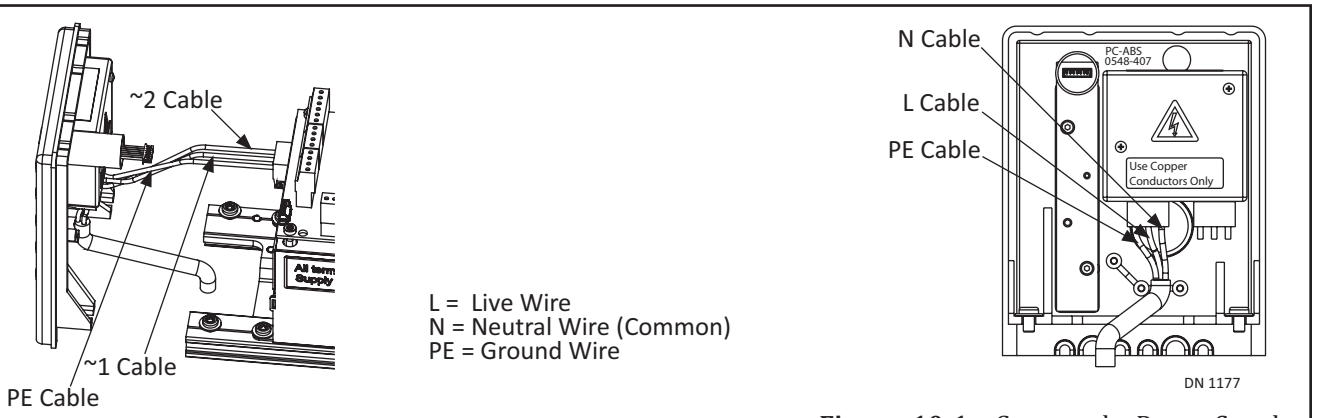


Figure 10-1 Connect the Power Supply

CHAPTER 11: ADJUSTMENTS

CAUTION

- **Check that the Door may be opened without power applied to the Unit.**
- **Check the force required to open the Door with power disconnected, shall not be greater than 50 pounds (222.4N).**
- **Check that the door does not close with a force greater than 30 pounds (133.4N) at the Latch Side of the closing stile, and does not close the final 10 degrees in less than 1.5 seconds.**

Section 11a: Adjust Preload

- By default, Pre-load for the Closing Spring is: X* = 1-1/32 inch (26 mm).
- The Set Screw needs to be shortened by 3/8 inch (10mm) if it butts up against the side cover where the Power/Mode Switch is installed.
- Pre-load adjustments must be done before carrying out the automatic set-up procedure.
- Adjust the spring pressure so Door Panels correctly engage existing locks.
- Close Spring force can be ***reduced*** on Standard Installations.

1. Close the Door Panel. Go to the Closing Spring.
2. Locate the Adjusting Screw.
3. Adjust distance X* according to Table 11-1 or Table 11-2.
4. Open the Door Panel at least 60 degrees, then let it go.
   a. If the Door Panel fails to fully close, repeat Steps 1 - 4.

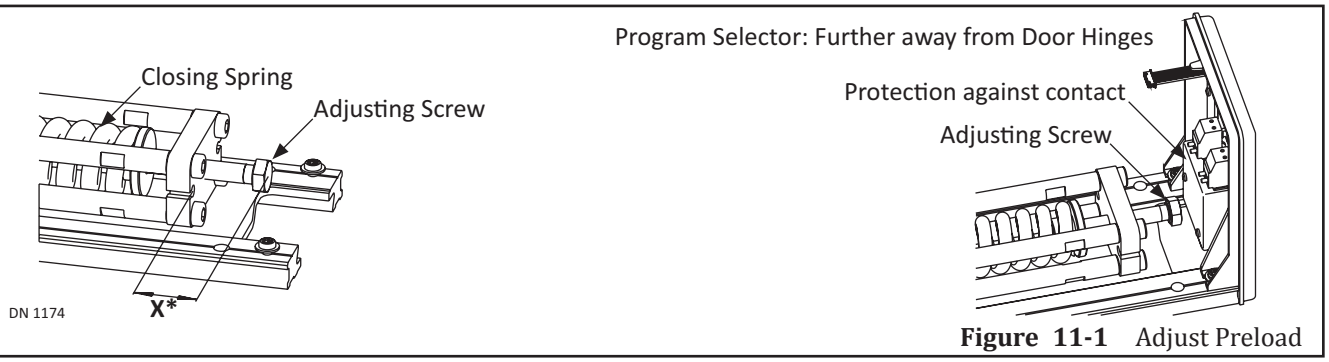


Figure 11-1 Adjust Preload

Table 11-1 Standard GT20 Swing Door Operator Assembly

Door Panel Width	37-3/8"	43-3/8"	49-1/4"	55-1/8"	63"
Closing torque 0...4	13.2 lb/ft;18 Nm	19 lb/ft; 26 Nm	27.2 lb/ft; 37 Nm	39.7 lb/ft; 54 Nm	64 lb/ft 87 Nm
Outswing Arm attached to Arm Shoe (pushing function)					
Measure X*	1-1/2"	1-3/8"	1-1/8"	7/8"	3/4"
Inswing Arm slides into Guide Track (pulling function)					
Measure X*	1-3/8"	1-3/16"	7/8"	5/8"	1/2"
Outswing using Inswing Arm slides into Long Guide Track (pushing function)					
Measure X*	1-1/4"	1-1/8"	7/8"	9/16"	1/2"
OHC (Pushing and Pulling function)					
Measure X*	1-1/4" (overall door width)				

- X* = Approximate value for a Reveal of 0 mm.
- ANSI 156.10 reference = Amount of Force required to prevent a *stopped* power operated Swing Door from moving in the direction of closing shall not exceed 30 lb. if measured 1 inch from the lock edge of the Door Panel at any point during the closing cycle."

Table 11-2 Value according to National Regulations

Door Panel Width	37-3/8"	43-3/8"	49-1/4"	55-1/8"	63"
Swing Rod attached to Arm Shoe (pushing function)					
Measure X*	1-9/16"	1-7/16"	1-1/4"	1-1/16"	7/8"
Swing Arm slides into Guide Track (pulling function)					
Measure X*	1-1/2"	1-3/8"	1-1/8"	7/8"	3/4"
Outswing using Inswing Arm slides into Long Guide Track (pushing function)					
Measure X*	1-7/16"	1-5/16"	1-1/16"	3/4"	11/16"

- * Measure X is an approximated value for a Reveal of 0mm.
- Increase the Spring Tension only as little as necessary.
- The Operator Assembly must be able to open the Door Panel safely from any position.

Section 11b: FSlam Potentiometer (Power OFF)

CAUTION

- **Only adjust the Cam when absolutely necessary.**
- **During a Power Failure or when Power is turned OFF, ONLY adjust the Cam if the FSlam Potentiometer will not close the Door after repeated adjustment attempts have been made. The Cam can be adjusted to vary the angle where the slam function will start.**

Note: The FSlam Potentiometer is utilized for Standard Application only (not Inverse Application).

When Power is OFF or during Manual Mode, the Motor slows the Door Panel down to a constant closing speed until the Full Closed position is reached and the Door Panel is locked. This is done by utilizing the FSlam potentiometer (accelerated force). To ensure the FSlam parameter setting is correct:

1. Open the door Panel 90 degrees, then let it go.
   a. If the Door Panel fails to fully close and then lock, adjustments are deemed necessary.
      1. Go to the GT20 Control.
      2. Go to either side of the GT20 Control to locate a Blue square. Please see Figure 11-2.
         a. Exact location Depends upon the type of installation.
      3. With a flat head screwdriver turn the Potentiometer:
         - Clockwise for maximum accelerated force.
         - Counterclockwise for minimum accelerated force.

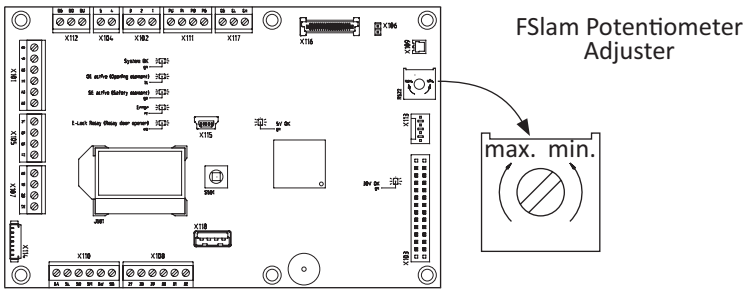


Figure 11-2 Adjust Closing Force

11.b.a: Adjust the Activation Angle

Note: By default, the FSlam Angle (from the Fully Closed Position) is approximately 5 degrees.

1. Carefully pry the Service Cover from the gearbox housing with a flathead screwdriver.
2. Locate the Cam Disk. Please see Figure 11-3.
   a. The Locking Screw may be positioned under Cam Setting 1 or Cam Setting 2.
3. Slightly loosen the Locking Screw with a 1.5mm socket wrench.
4. According to Table 11-3, turn the Cam Disk clockwise or counterclockwise to adjust the Angle.
   a. Angle range is between 5 degrees - 15 degrees.
5. Tighten the Locking Screw.
6. Open the Door Panel 45 degrees, then let it go.
   - ▶ If the Door Panel locks:
     - Snap the Service Cover back onto the Gearbox Housing.
   - ▶ If the Door Panel fails to lock:
     - Repeat steps 1 - 5 accordingly.

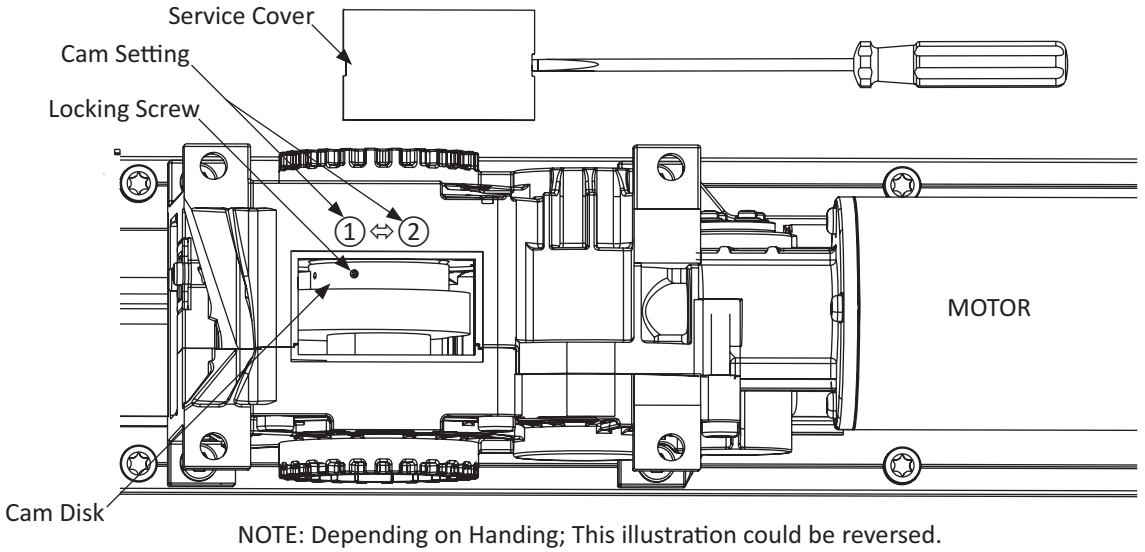


Figure 11-3 Adjust Activation Angle

Table 11-3 Angle Range

Angle Range according to Cam Setting			
Setting	**Swing Arm**	**Mount**	**Angle Range**
1	Inswing Arm (pull)	Frame	Smaller
	Outswing Arm (push)	Frame	Bigger
	Inswing Arm (push)	Frame	Bigger
	Inswing Arm (push)	Door Panel	Bigger
2	Inswing Arm (pull)	Frame	Bigger
	Outswing Arm (push)	Frame	Smaller
	Inswing Arm (push)	Frame	Smaller
	Inswing Arm (push)	Door Panel	Smaller