



HA/FA-8 operator installation instructions

IMPORTANT INSTALLATION INSTRUCTIONS

WARNING – to reduce the risk of severe injury or death:

1. READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS
2. Install only on a properly operating and balanced door. A door that is operating improperly could cause severe injury. Have qualified service personnel make repairs to cables, spring assemblies, and other hardware before installing the operator.
3. Remove all pull ropes and remove, or make inoperative, all locks (unless mechanically and/or electrically interlocked to the power unit) that are connected to the door before installing the operator.
4. Install the door operator at least 8 feet or more above the floor if the operator has exposed moving parts.
5. Do not connect the door operator to the source of power until instructed to do so.
6. Locate the control station: (a) within sight of the door, (b) at a minimum height of 5 feet so small children cannot reach it, and (c) away from all moving parts of the door.
7. Install the Entrapment Warning Placard next to the control station in a prominent location.
8. For products having a manual release, instruct the end user on the operation of the manual release.

Table of Contents

GENERAL INFORMATION 3
 Shipping Inspection 3
INSTALLATION CONSIDERATIONS 4
 Door condition 4
 Wind..... 4
 Power/control wires 4
HEADER AND GEARBOX INSTALLATION 4
 Pre-Mounting Header Box Instructions 4
 Push Header 5
 Pull Header..... 5
 Double Egress Header..... 6
 Motor Drive Installation 6
 Electrical Connection..... 6
ARM ASSEMBLY INSTALLATION 7
 Push Arm Installation 7
 Pull Arm Installation..... 7
TUNING OF MOTOR GEARBOX..... 8
 Door Stop Set – Windy Conditions 8
 Back check and Latching 8
 To set back check 8
 To set the latch 8
 Modifying spring tension..... 10
CONTROL ADJUSTMENTS & ANSI REQUIREMENTS 11
 ADA Adjustments..... 12
 Activating Devices..... 13
 Electric strike 13
FINAL INSTALLATION PROCEDURES..... 13
 Header Cover Installation 13
 Release for Service 13
 Safety Decals 13
 Owner’s Manual..... 15

GENERAL INFORMATION

The HA/FA-8 can be used for pull side and push side installation on the top doorjamb and in header applications. It is designed to meet the following codes and standards:

- ANSI A156.19 – for ADA – low energy swinging doors
- ANSI A117.1 Safety Code, Section 404.3 requirements
- ADA law section 4.13.12

Model	Ditec HA-8, FA-8
Dimensions	4.5”(W) x 6.5”(H) x 39” (L standard)
Weight	Approx 45lbs
Power supply	115±5VAC, 60Hz, 3A
Motor	1/5 hp, 24VDC, 3A
Rated operation	Continuous opening and closing cycles
Manual door opening/closing force during power failure	30 lbs.
Door opening/closing speed	Adjustable
Door opening/closing force	Adjustable

Shipping Inspection

Verify that the order was shipped complete and correct, including model number, door swing, color, and header width.

NOTE: The gearbox housing has the swing hand (L or R) stamped on the top of the motor mounting flange.

NOTE: If any of the above items are not correct, do not attempt to install the HA/FA-8 Swing Door Package! Report any incorrect items to the general contractor immediately. Do not proceed until all conditions are correct.

NOTE: NO CLAIMS FOR SHORTAGE WILL BE ALLOWED UNLESS REPORTED WITHIN 24 HOURS OF RECEIPT OF SHIPMENT

INSTALLATION CONSIDERATIONS

ADA Floor Space Requirements for Wheel Chair Manoeuvring

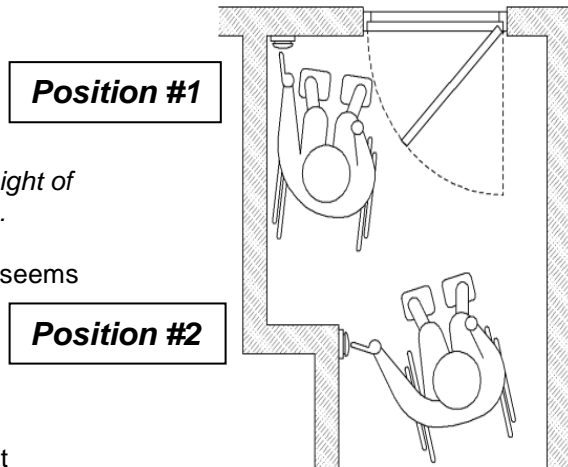
The owner may request the activation device location; however, the press switch must be in view of the door and not directly on the door or frame. See ANSI 117.1 Safety Code for further guidelines on switch requirements.

Position #1: should be a minimum of Two feet from the door latch.

Position #2: should be a minimum of Five feet from the door face.

NOTE: Activation switches shall have a minimum height of 36" and a maximum height of 48" from finished floors.

If your entrance maneuvering space is limited, and it seems impossible to meet the ADA requirements, the Ditec Automatics DS-18 slider operator may solve the problem.



Door condition

Door must move easily open and close (latch) without excessive force, weather stripping and threshold must not interfere with door movement.

Reveal

For out swing (push) door the reveal must be within the range of 0" to 14" for in swing (pull) 0" to 4" for special reveals, consult factory.

Wind

When installing on a door in a strong wind condition area, special adjustments should be made to the arm and doorstop position and possible adjustment to the closer spring tension (See page 13).

Power/control wires

Check that the electrical feed, all conduits, and electrical junction boxes (for push plates or other activation devices, if required) are correctly located in accordance with final approved shop drawings and within the guidelines of the enforced local electrical codes.

HEADER AND GEARBOX INSTALLATION

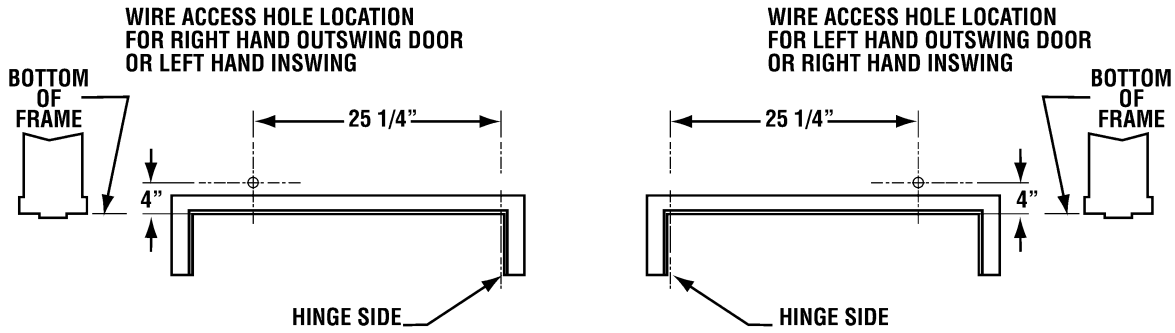
Pre-Mounting Header Box Instructions

Power supply may be pulled into the header at the same time the jamb/header assembly is positioned. Make sure all power is turned off before handling the supply wires. This should be done by a certified electrician and within the guidelines of the enforced local electrical codes.

Be sure there is proper support in the wall to secure the header at the vertical jambs, and behind the header at intervals between the vertical jambs. Secure the header to the top of the doorframe with the appropriate fasteners as indicated below.

The header is a 2 piece box consisting of the body (portion anchored to the door frame) and the cover (removable portion used during installation and service). Remove the aluminum header from its carton, flatten package and use flat package as a station to work on header box. Remove (2) ¼" x 20 NC Machine Screws anchoring the cover to the end plates. Carefully, set the cover in a location where it will not be damaged. The figure below illustrates the optimum location for low and high voltage wiring feeds. Place the body portion of the header on the doorframe (FIGURE 1), mark hole locations for high and low voltage wiring and drill holes. Also using a 3/8" drill, create a hole for the operator ON/OFF switch on the header body. This hole is usually on the strike side of the frame.

Holes should have any sharp edges and burrs removed and use an electrical bushing.

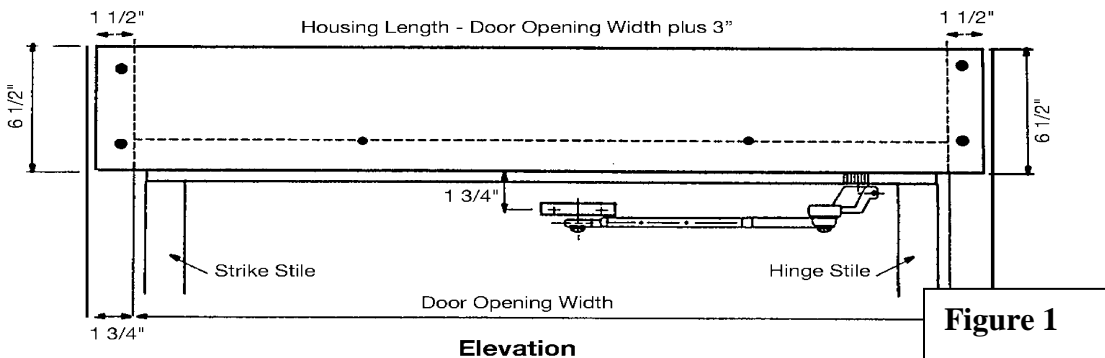


NOTE: If operator is installed on aluminum framing high and low voltage wiring can be routed through vertical and horizontal tubes.

Push Header

The header box on push installations is mounted flush to the bottom of the doorjamb header. It may require solid backing material to compensate for the thickness of the doorframe. Insure before fastening Header Box to the doorframe that your access holes for high and low voltage wires match. Header box should be centered between doorjamb. Header size is equal to door opening plus 3". This allows for a 1-1/2" space on either side of the Header Box to anchor the Header Box properly to the frame. The Header Box should be anchored with a minimum of (6) - #14 x 1" Pan Quad Type A screws (provided.)

- 2 screws should be used at either end (1/2" in from end plate) to fasten directly to the doors vertical jambs.
- 2 more screws fasten the Header Body to the bottom of the doorframe approximately 10" in from either end. The header should support 200lbs.



Pull Header

Note: Header on pull applications must be mounted so the main drive pinion safety washer and machine screw are above the top of the door.

Insure before fastening Header Box to the doorframe that your holes for high and low voltage wires match. Header box should be centered between doorjamb and **1 3/8" above the bottom of the doorframe (FIGURE 2)**. Header size is equal to door opening plus 3". This allows for a 1-1/2" space on either side of the Header Box to anchor the Header Box properly to the frame. The Header Box should be anchored with a minimum of 6 -#14 x 1" Pan Quad Type A screws (provided).

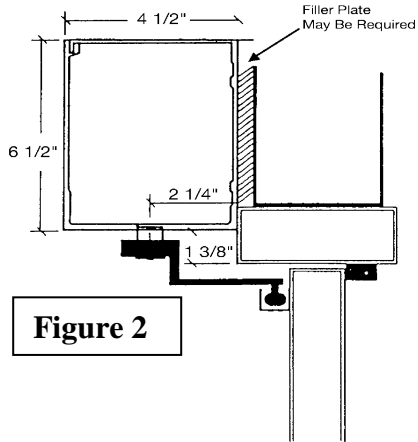


Figure 2

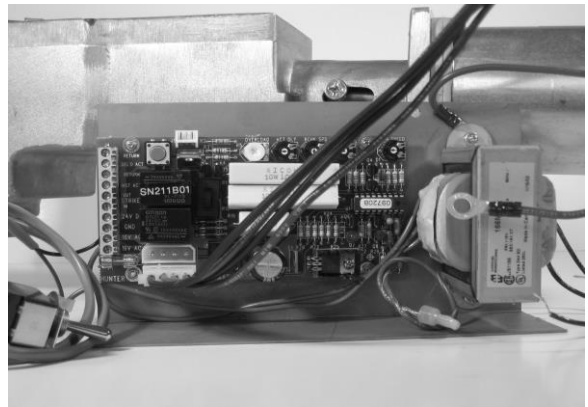
-2 screws should be used at either end (1/2" in from end plate) to fasten directly to the doors vertical jambs.
 -2 more screws fasten the Header Body to the bottom of the doorframe approx. 10" in from either end. The header body should be able to support a minimum of 200 lbs.

Double Egress Header

Due to double egress operators having (1) PULL type and (1) PUSH Type operator in the same housing the header must be mounted 1 3/8" above the doorframe. Furthermore, arm clearance issues for the PUSH type operator may arise. To insure the arm clears any existing doorstops please mount the arm according to Option 1 under Push Arm Installation.

Motor Drive Installation

Lift the drive unit into position inside the mounted body portion of the header. Install the back pair of mounting 1/4" X 20 NC 3/4" machine screws to secure the unit in place. The control board is now placed in the header and connect the motor wire leads (large four pin) as well as the back check and latch wire lead (small three pin) to the top of the board. The control is anchored inside the header casing by a supplied Velcro patch. Motor is plugged in the top position for right hand swing, bottom position for left hand swing. (LEFT HAND SHOWN)



WARNING: If the motor is not plugged into the circuit board there is no motor resistance against the spring, when manually opening the door. The door or arm will close very quickly if opened.

Electrical Connection

Electrical power can now be safely supplied to the HA/FA-8 operator. The 115±5VAC supply lines are connected to the black primary wires coming from the transformer and the **ground wire is attached to the operator header box**. Mount the power switch by drilling a hole in the header to the latch side of the unit.

The controller board settings have been pre-set prior to shipment. Adjustment information is detailed on page 16. It will be necessary for the door operator to be functional while adjustments and settings are made. A grey push actuator is mounted on the upper left corner of the circuit board to ease in the adjustment process. Power up the unit and push an activating device and check to make sure that the splined pinion drive rotates in the correct direction.

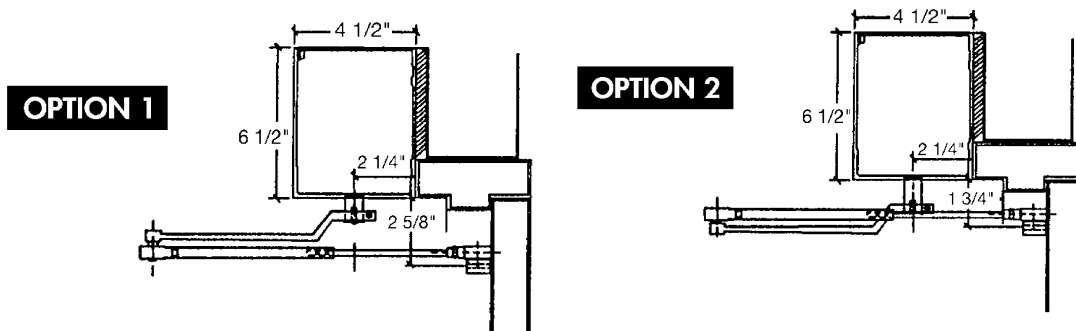
NOTE: THE GROUND WIRE FOR THE INCOMING 115±5VAC POWER AND THE SYSTEM GROUND WIRE CANNOT SHARE THE SAME GROUNDING STUD. GROUND THE INCOMING 115±5VAC ACCORDINGLY.

Note: installation of any extra wiring for controls or accessories into the header unit shall be secured out of the way of all moving parts and any sharp edges that may cut into the outer chasing of the wires.

ARM ASSEMBLY INSTALLATION

Push Arm Installation

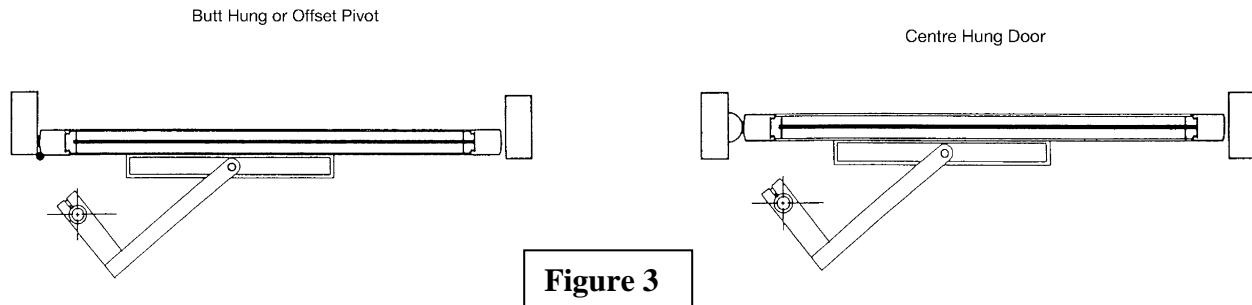
1. To lock the drive from returning to the closed position manually rotate the drive coupler until a $\frac{1}{4}$ " X 20 NC threaded hole is exposed through the cast housing coupler window (figure 4 A&B). Thread a provided machine screw in this hole. Now slide the door arm on the main spline pinion and rotate (this may require multiple rotations) until the stop block engages the casting stopper lug. The spring is now fully loaded.
2. Install the arm component consisting of door shoe and adjustable rod on door; there are three configurations available (Option 1-2-3). The first hole on door shoe should be 14" from the doorframe for standard pivot doors.
3. Install the cast arm on pinion spline so that arm is protruding from header box at slightly more than 90 degrees (closer to face of door). Insure arm will not come loose by using the provided $\frac{1}{4}$ " fender washer and $\frac{1}{4}$ " X 20 NC dome head machine screw.
4. Position the rod alongside the sleeve and mark the cut line on the rod 1-1/2" past the second set screw.
5. Remove door shoe and rod assembly. Cut rod. Reattach cut rod and shoe assembly.
6. Insert cut rod into sleeve and tighten setscrews.
7. Take completely assembled arm off pinion spline by removing $\frac{1}{4}$ " fender washer and $\frac{1}{4}$ " X 20 NC dome head machine screw.
8. Open door to desired full open position and reinstall the complete arm assembly onto the pinion spline.
9. After final installation of the cast arm make certain that the Allen bolt is fully tighten using a $\frac{3}{16}$ " Allen wrench, torque to approximately 20 lbs. Fasten the $\frac{1}{4}$ " fender washer with a $\frac{1}{4}$ " X 20 NC dome head machine screw is fastened into the bottom of the splined pinion.
10. Remove $\frac{1}{4}$ " X 20 NC machine screw from the coupler and the door will close.



Pull Arm Installation

1. To lock the drive from returning to the closed position manually rotate the drive coupler until a $\frac{1}{4}$ " X 20 NC threaded hole is exposed through the cast housing coupler window (figure 4 A&B). Thread a provided $\frac{1}{4}$ " X 20 NC machine screw in this hole. Now slide the door arm on the main spline pinion and rotate (this may require multiple rotations) until the stop block engages the casting stopper lug. The spring is now fully loaded.
2. Open the door and install the Z-arm on the pinion spline so that roller makes contact with face of the door in fully open position (maximum 90 degrees). After final installation of the Z-arm make certain that the Allen bolt is fully tighten using a $\frac{3}{16}$ " Allen wrench, torque to approximately 20 lbs. As a security precaution a $\frac{1}{4}$ " inch fender washer with a $\frac{1}{4}$ " X 20 NC dome head machine screw is fastened into the bottom of the main spline pinion.

3. Remove ¼ "X 20 NC machine screw from the coupler and the roller pushes on door making the door close.
4. Where this roller makes contact with the door in the closed position is the centre point for pull track (figure 3)
5. Remove a track end cap, insert track roller and replace end cap.
6. Mount track assembly to door, maintaining level, attaching securely with two No. 14 X 2 ½" countersunk sheet metal screws provided.



TUNING OF MOTOR GEARBOX

Door Stop Set – Windy Conditions

Set the door to mechanically open to 110 to 115 degrees and have the door stop electronically at 90 to 95 degrees by tuning the back check speed to maximum (clockwise). The doors will time out at 90 degrees. If a strong wind gust occurs the door will have an additional 10 to 15 degrees of movement to shear the effect.

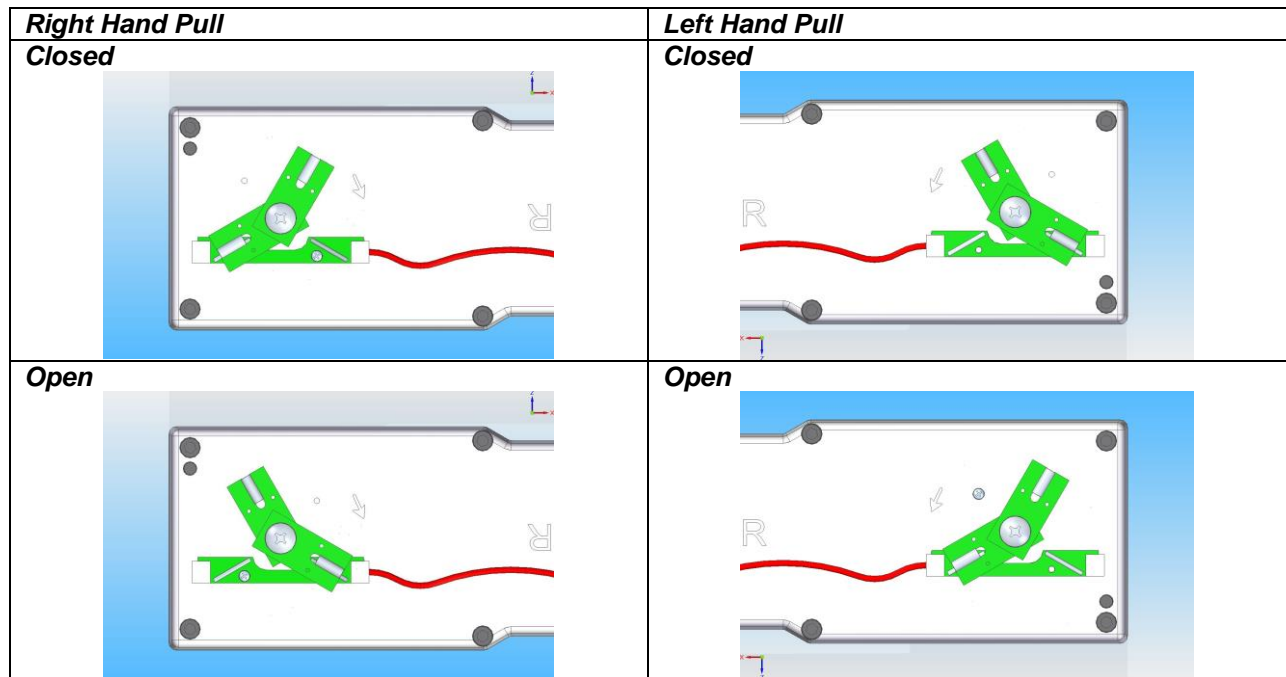
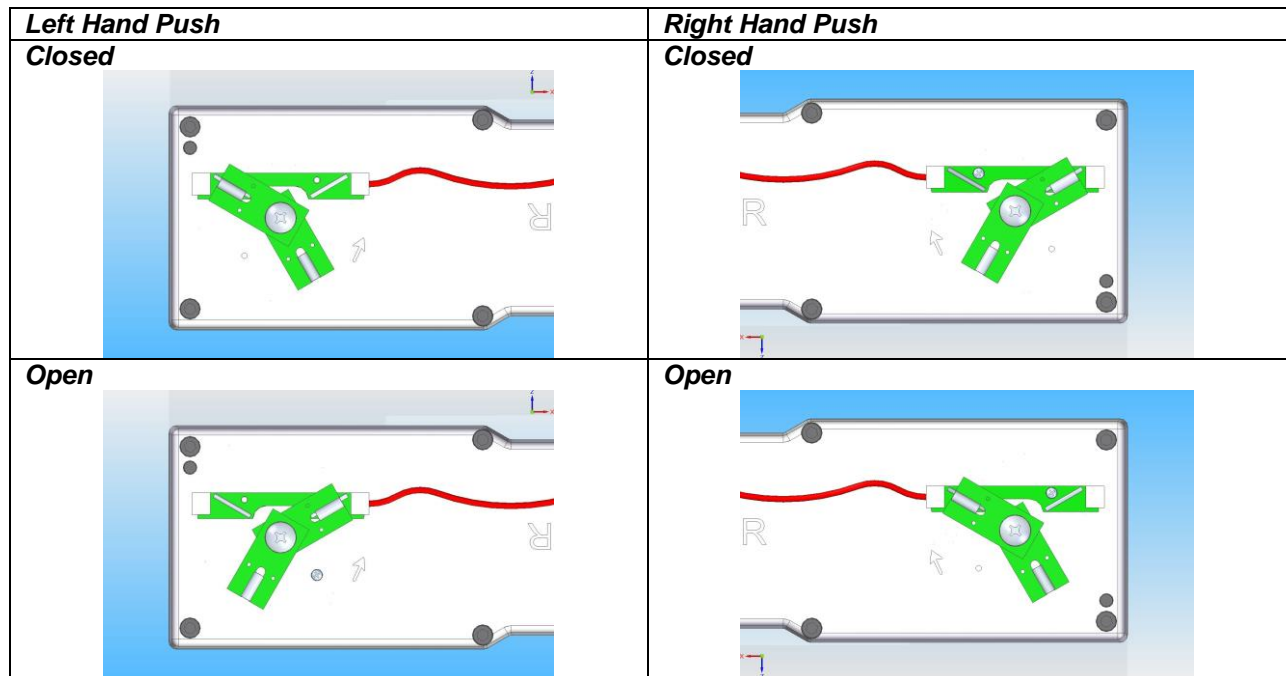
Back check and Latching

To set back check

1. Open the door to the fully open position magnet #1 (lower magnet) should cross over the back check switch (where **grey wire** conductor plugs into green circuit board) engaging back check speed 10 degrees prior to the door reaching fully open. The control board slows the door to a gently stop at the fully open position. Doors shall be adjusted so back check will not occur before 60 degrees of opening (maximum, preferred at 10 degrees before full open)

To set the latch

2. When the door is in the close position, magnet #2 (upper magnet) should be over the latch reed switch. This magnet signals the controller to slow the closing door speed before stopping at the latch or doorstop.



Modifying spring tension

By removing the drive stopper from the main pinion splines and repositioning, you can increase or decrease the spring tension for windy conditions, or increased latch pressure. The drive unit must be removed from the header to make this adjustment. Note: This will also change the manual opening and closing force (Check your code settings).

1. To lock the drive from moving manually rotate the drive coupler until a ¼" X 20 NC threaded hole is exposed through the cast housing coupler window (figure 4 A&B). Thread a machine screw in this hole.
2. Now slide the door arm on the main spline pinion and rotate until the stop block is 180 degrees from the casting stopper lug.
3. Lightly undo the Allen cap screw in the stop block and before removing mark the spline position of the pinch gap on the stop block (figure 5).
4. You can now remove the stop block and reinstall MAXIMUM 4-6 splines in either direction from the factory setting.
5. Moving the stop block forward to the opening travel will decrease the tension and moving the stop block away from the opening travel will increase the tension (figure 6).
6. Slide the stop block down the splines to the casting and re-tighten the Allen cap screw.
7. Reinstall the drive unit into the header and with the door arm slipped back onto the splines, rotate the main pinion till the stop block engages the casting stopper.
8. You can now reinstall the door arm in the correct position for backstop and re-tighten. You may have to adjust your back-check, latch activation

Figure 4A

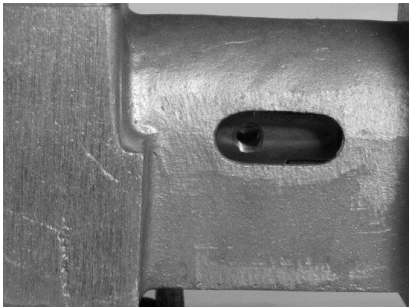


Figure 4B

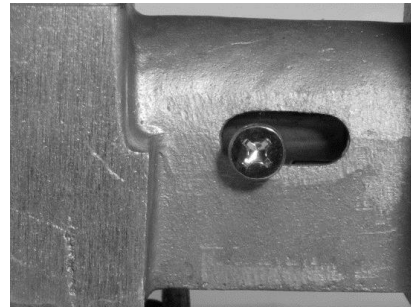
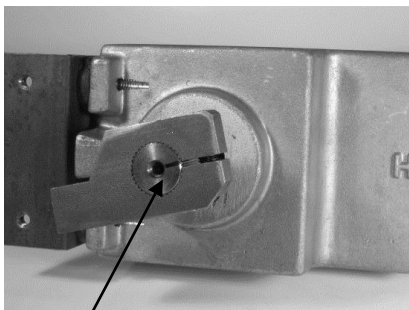
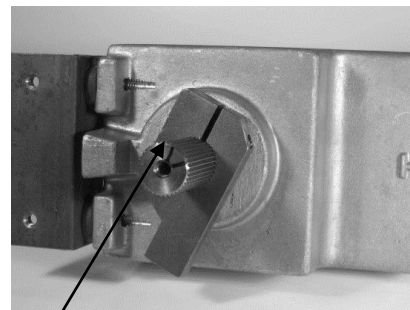


Figure 5



Marked line

Figure 6

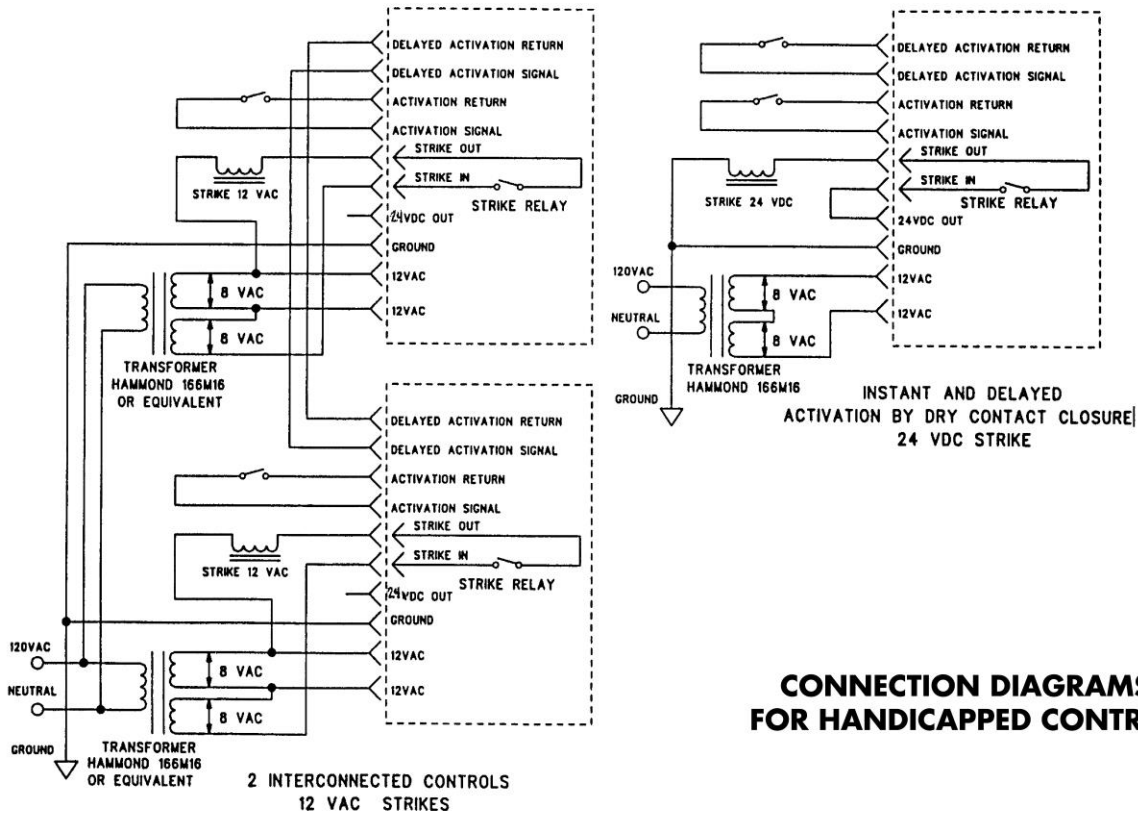
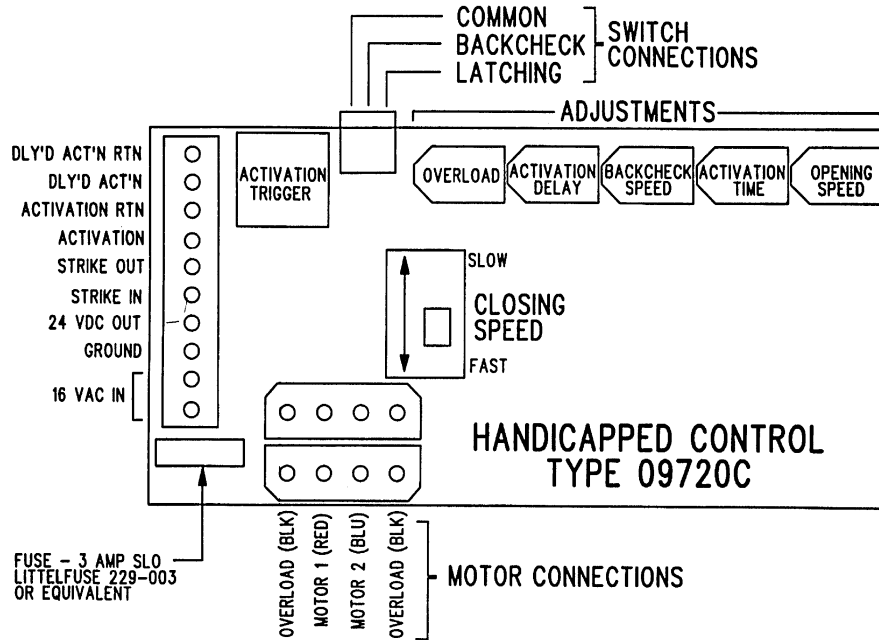


New mounting line to increase tension

CONTROL ADJUSTMENTS & ANSI REQUIREMENTS

Adjusting elements are close to live electrical parts.

Electronic Controls



CONNECTION DIAGRAMS FOR HANDICAPPED CONTROL

ADA Adjustments

Adjust the Ditec Automatic HA/FA-8 operator to the ANSI A156.19 standard for low energy operated doors.

The following specifications are based on neutral air pressure conditions.

Opening Speed

Minimum opening time to back check or 80 degrees is 3 seconds or longer. Total opening time shall be 4 seconds or longer.

Closing speed

The minimum closing time to latch check depends on the size and weight of the door as follows:

Door Leaf Width – in (mm)	Up to 100 lbs (45kg):	Up to 140 lbs (64kg):
36 (914) & Under	2.0 secs	2.3 secs
42 (1067)	2.3 secs	2.7 secs
48 (2119)	2.8 secs	3.2 secs

For doors of other weights and widths, use the following formula:

$$T = \frac{D\sqrt{W}}{188}$$

Where W=Weight of door (lbs), D=Width of door (in) and T=Closing time to latch check (sec).

Latch check

The door must not close through the final 10 degrees in less than 1.5 seconds.

Adjustments of 09720N Controller for ADA Doors

Adjustments are provided for Opening Speed, Back check Speed, Activation Time, Activation Delay, and Overload Current with LED indicator. A two- position switch allows selection of Closing Speed.

Detection of an overload - current is persisting for longer than 2 seconds will cause the door to close. The recommended procedure for adjustment of the control is as follows:

1. Turn the Overload (current) control fully clockwise to increase the current limit to maximum and prevent any detection entirely. This setting can be used to inhibit the overload detection / shutdown feature.
2. Adjust Opening Speed as desired. Note: that the control has a built in time reference of 4.0 seconds. Operation of the door will not be affected, but, if the door moves from closed to back check in less than 4.0 seconds, the LED will flash as the door begins to close to indicate that the opening speed may be a little fast.
3. Lock or obstruct the door and apply an Activation Trigger. Turn the Overload control counter clockwise until the LED becomes steadily illuminated, to indicate detection of excessive current. The control may be turned counter clockwise a little more to ensure positive detection. After two seconds the door will close.
4. Adjust the Activation Time (hold open) as desired, Minimum of 5 seconds
5. Adjust the Activation Delay Time as desired. This will depend on the distance of the activation devices to the door
6. Operate the slide switch to select the desired Closing Speed.

Activating Devices

The Ditec Automatics HA/FA-8 is compatible with all devices using a dry contact switch, usually hardwired or radio controlled. Jamb mounted switches can be used but are not practical for individuals using a wheelchair because of their range of motion (positioning their wheelchair to clear the door actually opening) and sometimes limited strength to push a button too far away. (See ADA drawing on page 6) In a vestibule entrance a switch must be installed in the vestibule space to prevent entrapment and the doors can be sequenced to ease the traffic flow and limit the time of both doors being open to outside weather conditions. A person using a wheelchair needs a minimum of 48" clearance to the door swing for doors in series.

Electric strike

Electric strike 24 VDC power is supplied from the board on an ADA unit. When the door is triggered a contact closure occurs across terminals 5 and 6 to energize the strike. The contract closure is applied 200 msec. Before door activates and continues for 2 seconds after the door begins to open. The electric strike operation is achieved by connecting 24 VDC to strike in (terminal 4 to terminal 5 of the terminal block) and connecting the strike power wires to strike out (terminal 6) and ground (terminal 3)

FINAL INSTALLATION PROCEDURES

Header Cover Installation

After all adjustments have been finished, the face cover must be installed to the header box. There are 8 counter sunk screw locations on the underside of the face cover, the outside pairs, mount to the header box. The inside pairs thread into the drive unit mounts, take care starting the ¼ X 20 NC machine screws as the mounting brackets are steel and rubber mounted, allowing them to sometimes be slightly off-centre to the face cover holes.

Release for Service

Before leaving the job site

1. Clean up the work area.
2. Make sure all bolts are tight
3. Clean glass
4. Install safety decals

Safety Decals

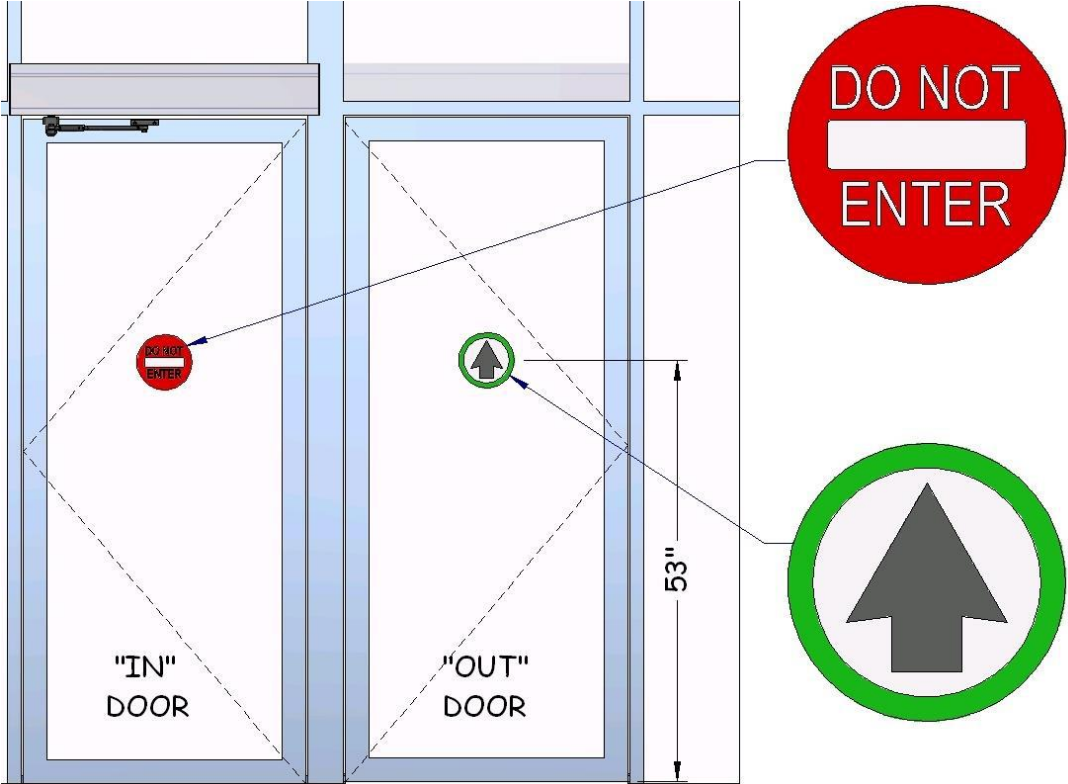
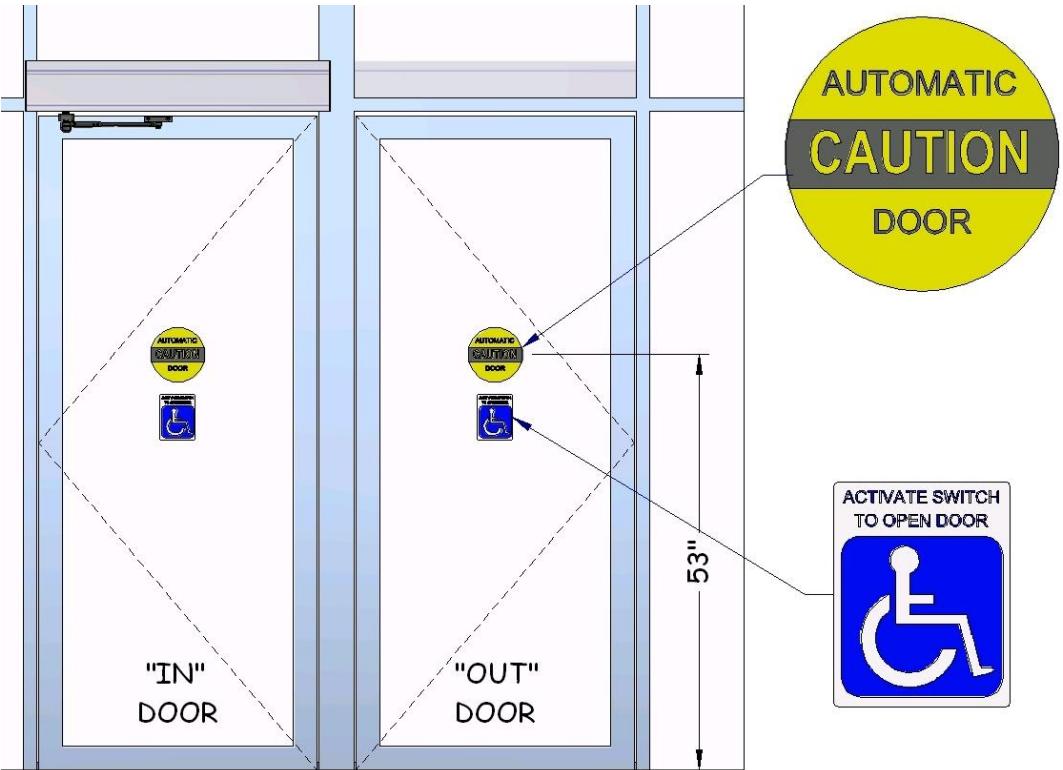
Install all safety, traffic control, and instruction decals to the door as required. This is very important. Failure to do this leaves the installer LIABLE for any accident that might occur. This must be done!

A summary of the ANSI standard 156.19 requirements for safety decals:

Each decal shall be mounted on the door at a height of $58 \pm 5"$ (1470 ± 130 mm) from the floor to the centre line of the sign. The sign chosen will depend on the classification of the door operator.

Clean the area well and apply the decal by removing the upper portion of the backing and rolling the decal onto the door. Check to confirm the decal is straight. Use a flat edged soft spreader to smooth out the decal. Remove the lower backing from the decal and smooth out any air pockets.

Sticker Placement



Owner's Manual

Present the key and the AAADAM owner's manual to the owner or general contractor.

Demonstrate the unit; review all safety features as well as the safety check that is to be performed by the owner each morning.