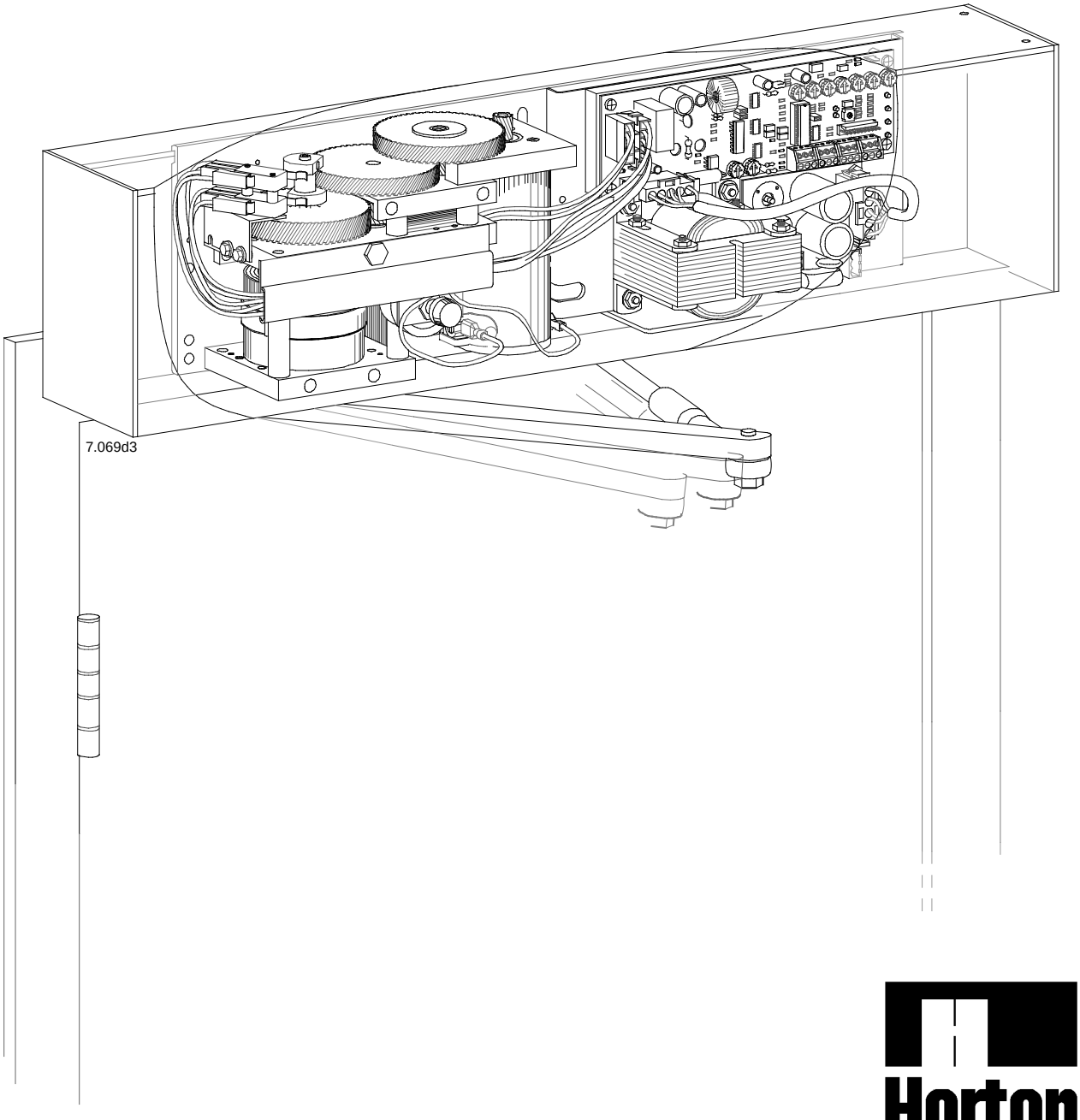
Series 7100 Easy Access™

Surface Applied Swing Door Operator

for C4190 Control

Installation Instructions

To be used in conjunction with H-SW C4190 Setup Instructions



Horton AUTOMATICS

G710, JAN 2001

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INSTRUCTIONS TO THE INSTALLER

To ensure safe and proper operation, this door is to be installed and adjusted by a trained and experienced installer with knowledge of:

- All applicable local codes
- ANSI A156.19 American National Standard for Power Assist and Low Energy Power Operated Doors.
- Horton Automatics recommendations for 7100 operators

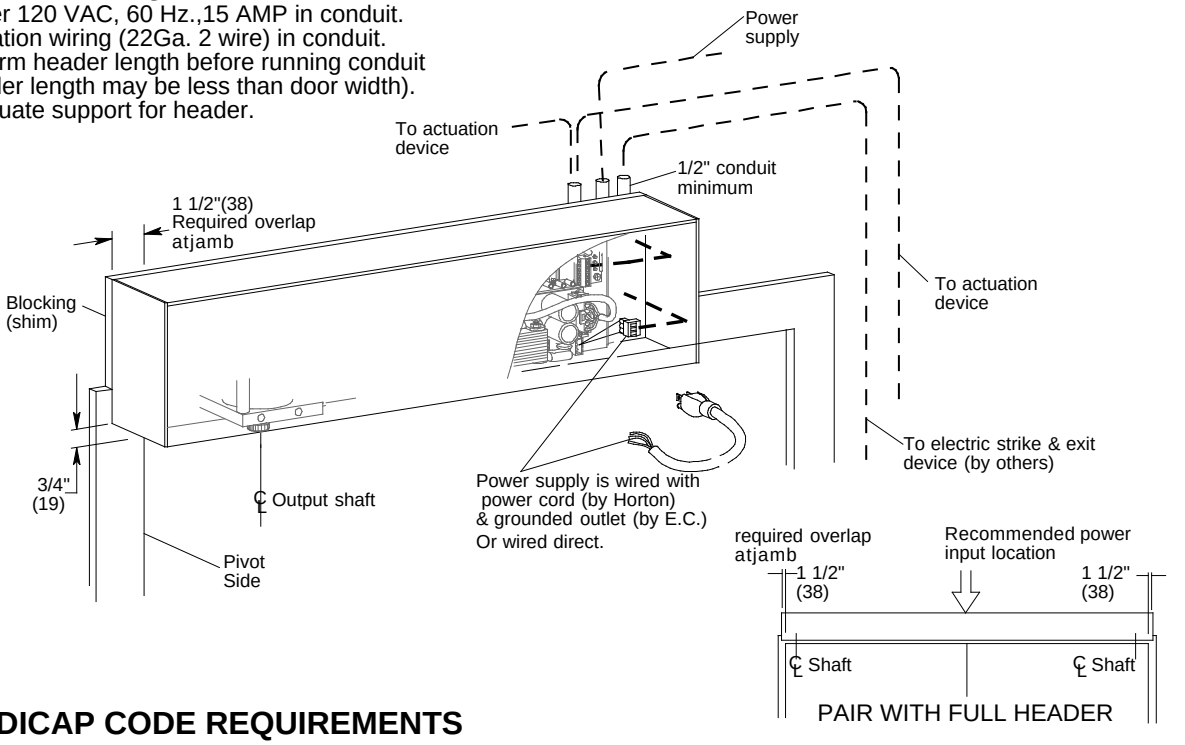
If there are any questions about these instructions call Horton Automatics Technical Assistance.

INFORMATION TO BE PROVIDED BY THE DISTRIBUTOR TO THE OWNER

- Instructions on the safe operation of the door (after installation).
- Owners Manual M317 with explanation/demonstration of the daily safety check.
- Location of power on/off switch.
- Necessary warnings not covered in these general instructions.
- Date equipment shipped from Horton Automatics.
- Date equipment placed in service.
- Horton Automatics' invoice number for warranty reference.
- Equipment type and Accessories included.
- Phone number to call regarding problems or request for service.
- Emphasize that, if a potentially hazardous situation is suspected, the door should be taken out of automatic service until a professional inspection is made and the problem is corrected.

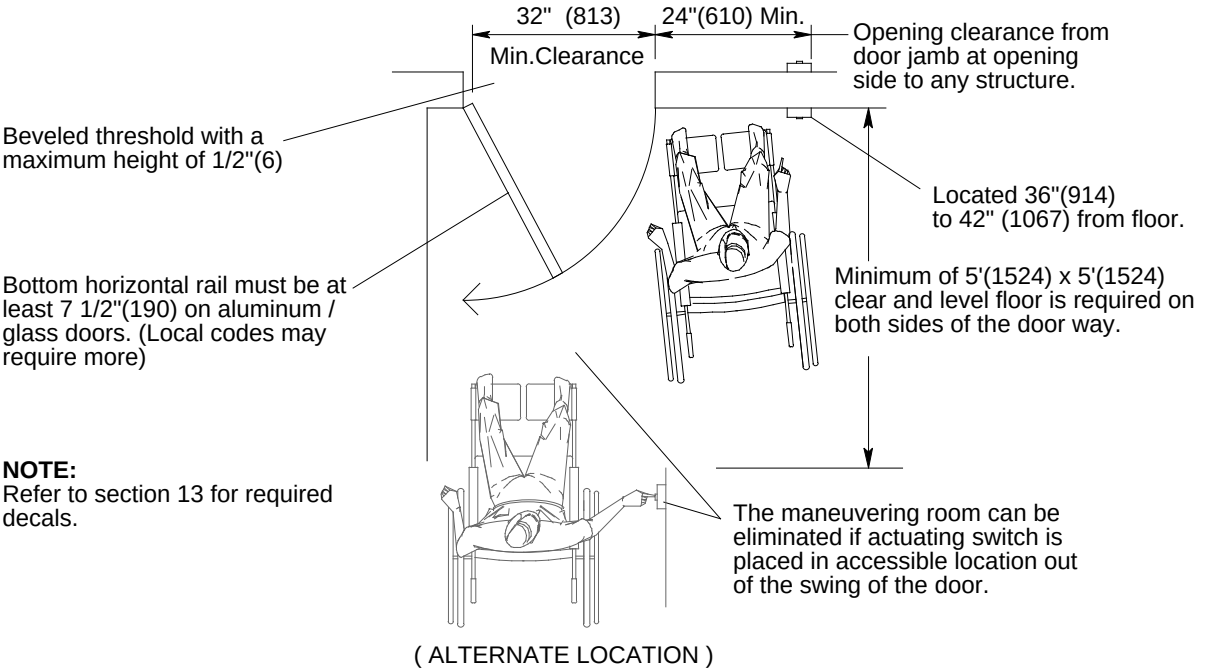
1. GENERAL REQUIREMENTS

- Power 120 VAC, 60 Hz.,15 AMP in conduit.
- Actuation wiring (22Ga. 2 wire) in conduit.
- Confirm header length before running conduit (header length may be less than door width).
- Adequate support for header.



2. HANDICAP CODE REQUIREMENTS

Switch location may be selected by the owner, however the switch must be in view of the door and not on the door or frame. See ANSI 117 for guide lines on switches.

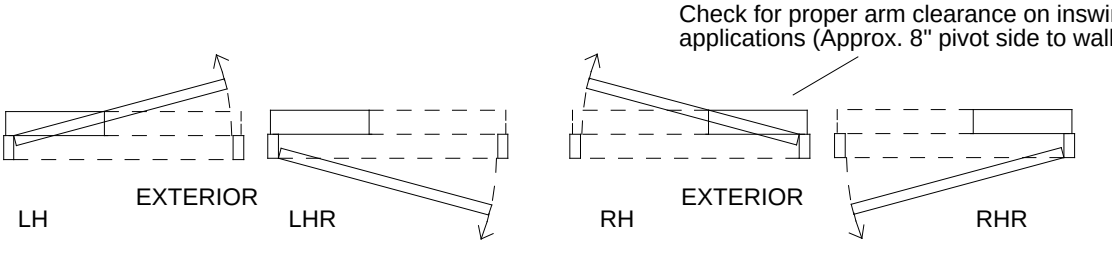


NOTE:
Refer to section 13 for required decals.

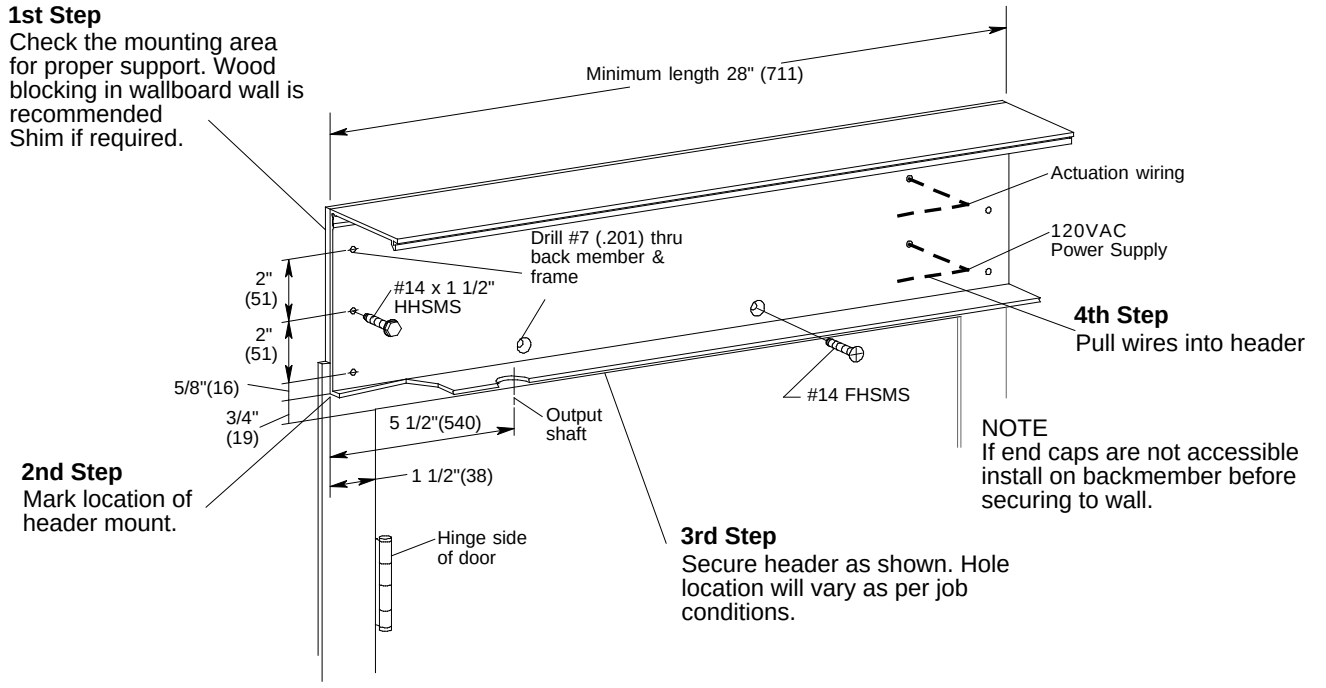
(ALTERNATE LOCATION)

3. OPERATOR HANDING

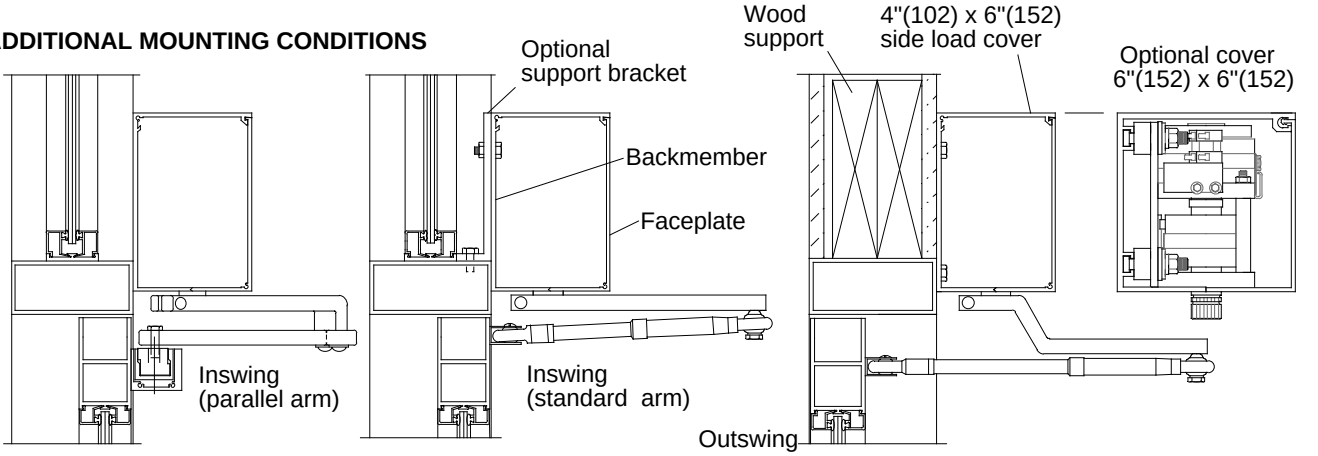
Confirm handing of door before installing operator. Refer to section12 for instructions if changing hand of operator is required.



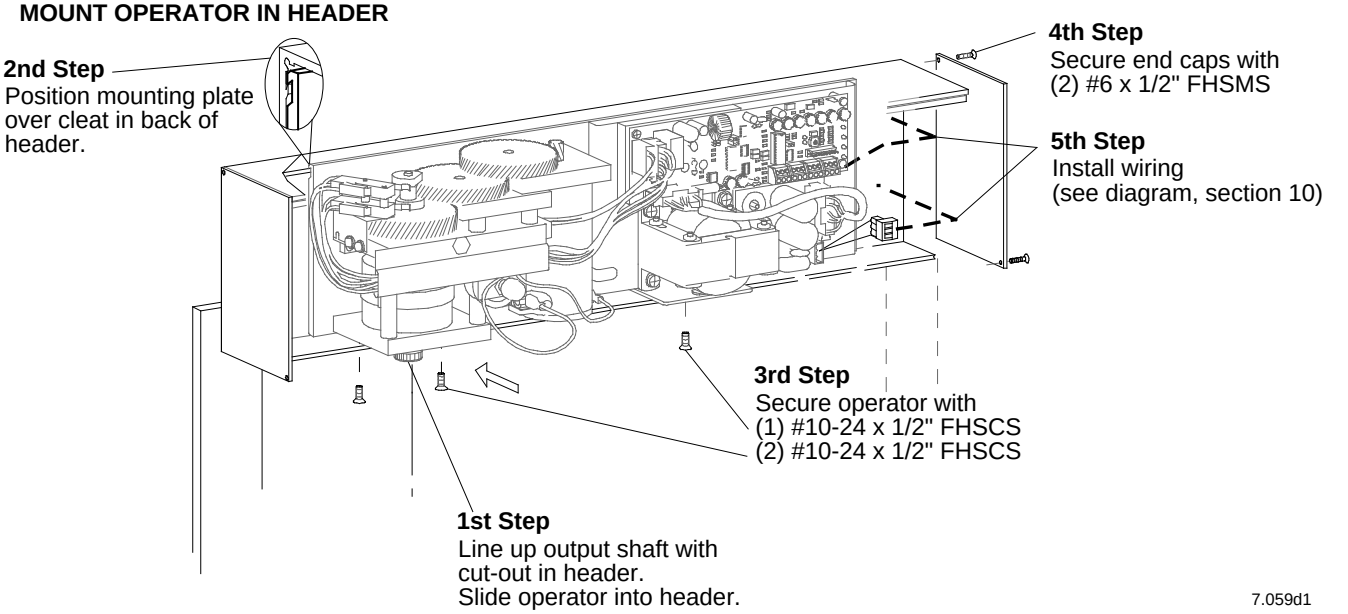
4. INSTALLATION - SURFACE APPLIED SERIES 7100



ADDITIONAL MOUNTING CONDITIONS



MOUNT OPERATOR IN HEADER



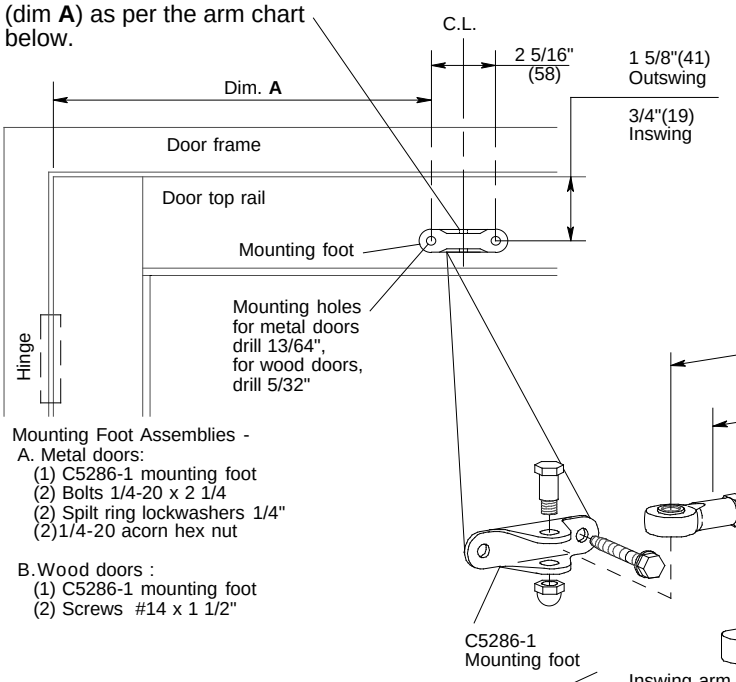
7.059d1

5. INSTALLING ADJUSTABLE CONNECTING ARM

NOTE: For inswing doors without arm clearance, see section 7 for parallel arm installation.

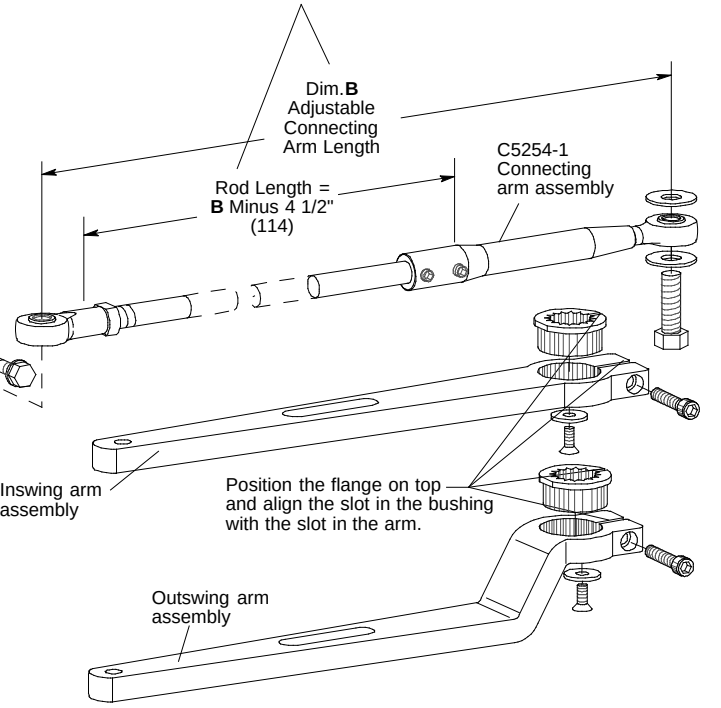
1st Step

Locate and mount the foot (dim **A**) as per the arm chart below.



2nd Step

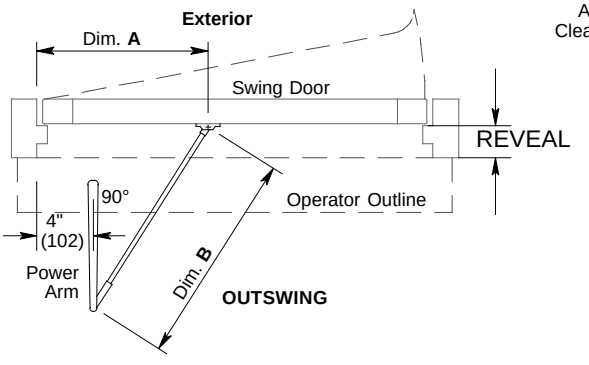
Determine the proper length of the adjustable rod (dim **B**) and cut as required.

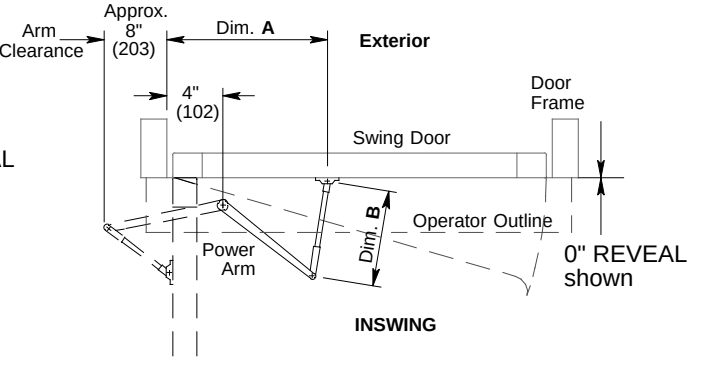


3rd Step

Assemble the connecting arm and attach it to the mounting foot.

STANDARD ARM CONNECTIONS





ARM LENGTH CHART

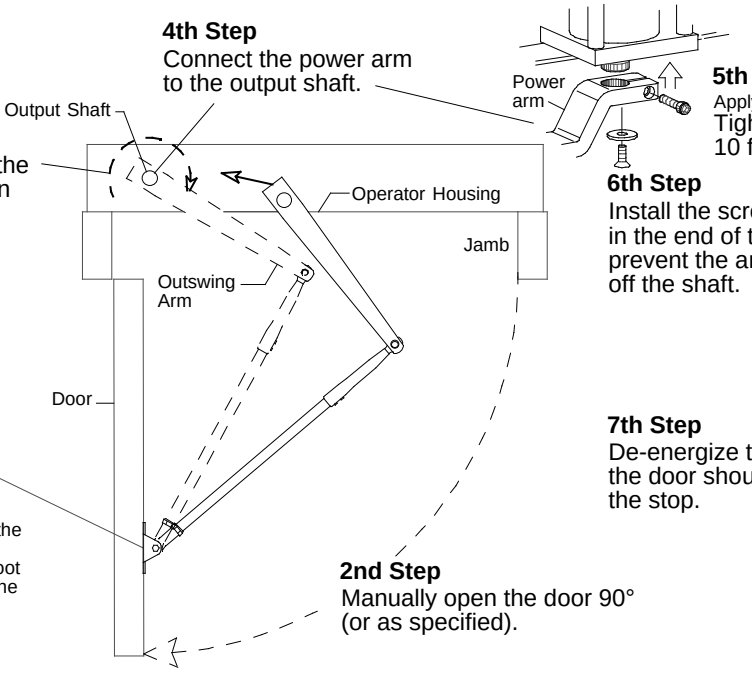
	BUTT HINGE OR OFFSET PIVOT				CENTER PIVOT 2 3/4" *			
	INSWING		OUTSWING		INSWING		OUTSWING	
REVEAL	A	B	A	B	A	B	A	B
0	13"(303)	10"(254)	16"(406)	17 1/8"(435)	17"(432)	9"(229)	16"(406)	16 1/2"(419)
1/2"(13)	13"(303)	10"(254)	16"(406)	17 1/2"(445)	17"(432)	9"(229)	16"(406)	16 7/8"(429)
1"(25)	13"(303)	10"(254)	16"(406)	17 3/4"(451)	17 1/2"(445)	9 1/2"(241)	16"(406)	17"(438)
1 1/2"(38)	14"(356)	10"(254)	16"(406)	18 1/4"(464)	17 1/2"(445)	9 1/2"(241)	16"(406)	17 3/4"(451)
2"(51)	14"(356)	10 1/2"(268)	16"(406)	18 1/4"(464)	18"(457)	10"(254)	17"(432)	18 3/4"(476)
2 1/2"(64)	14"(356)	11 1/2"(292)	16 1/2"(419)	19 1/4"(489)	19"(483)	10 1/2"(268)	17"(432)	19"(483)
3"(76)	15"(381)	12 1/2"(317)	16 1/2"(419)	19 3/4"(489)	19"(483)	10 1/2"(268)	18"(457)	20"(508)
3 1/2"(89)	16"(406)	11"(379)	16 1/2"(419)	20 1/8"(511)	19"(483)	10 1/2"(268)	18"(457)	20 1/2"(521)
4"(102)	17"(432)	12"(305)	17"(432)	20 3/4"(527)	25"(635)	17"(432)	19"(483)	21 1/2"(546)

***NOTE:** If reveal is greater than 4" consult factory.*

* For 3 3/4" center pivot add 1" to dim. A

6. SETTING THE OPEN STOP and LOADING OPERATOR SPRING

CAUTION: When installing the power arm or when servicing any swing door operator, be sure to keep your face, hands and arms clear of the power arm's swing path**. SERIOUS INJURY** could result should the operator be accidentally activated to an open position or should the operator return to a relaxed position.
The power arm must be located correctly on the output shaft so that when the operator is fully open the door will be positioned at 90° from its frame. To set the open stop and load the spring, follow the instructions below.



4th Step
Connect the power arm to the output shaft.

5th Step
Apply Loc Tite242.
Tighten screw to 10 foot- pounds (13.5N)

3rd Step
Energize the operator to rotate the out put shaft to full-open position against its internal stop.
This action winds the spring.

6th Step
Install the screw and washer in the end of the shaft to prevent the arm from walking off the shaft.

1st Step
Foot and rod should be attached to the door in the correct length and position.

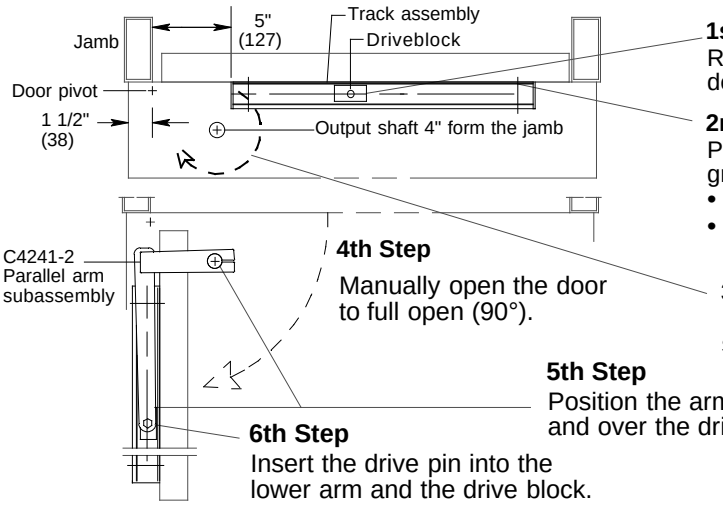
ALTERNATE METHOD
On out swing units only,position the door in the closed position andthe arm at 90° to the door. Attach the foot and rod to the door. Thenremove the arm from the output shaft.

7th Step
De-energize the operator; the door should close against the stop.

2nd Step
Manually open the door 90° (or as specified).

7. INSTALLING PARALLEL ARM & TRACK

For application on butt hung, offset or center pivot inswing doors with or without breakout capability.



1st Step
Remove 1 endcap and slide C4557 delrin drive block in track.

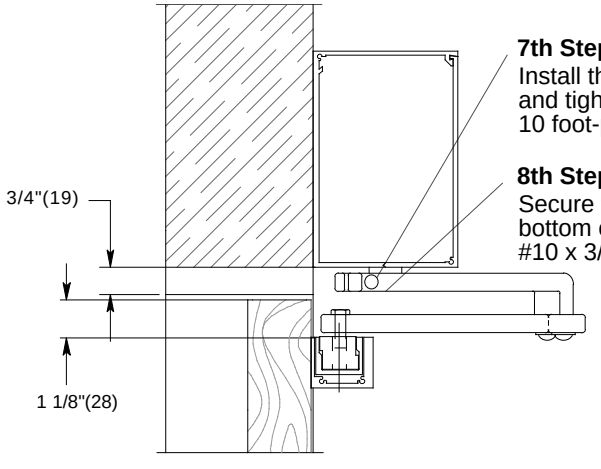
2nd Step
Position track on door 1" or (1 1/8" if reveal is greater than zero) from top of door.
- Mark hole locations & drill (2) #7 holes in door.
- Mount track with (2) #14x3" FHSMS.

3rd Step
Energize the operator and allow the output shaft to rotate to maximum open position.

4th Step
Manually open the door to full open (90°).

5th Step
Position the arm under the output shaft and over the drive block.

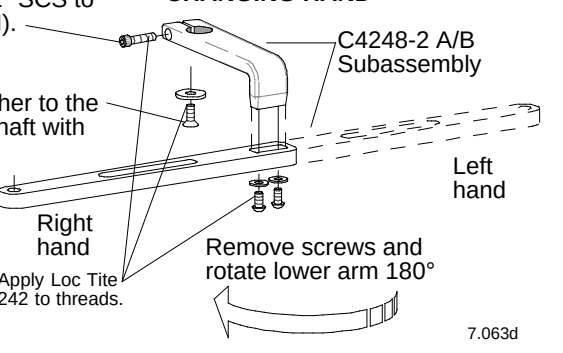
6th Step
Insert the drive pin into the lower arm and the drive block.



7th Step
Install the arm on the output shaft and tighten the 1/4"x 1" SCS to 10 foot-pounds (13.5N).

8th Step
Secure the 1 1/4" washer to the bottom of the output shaft with #10 x 3/8" FHMS.

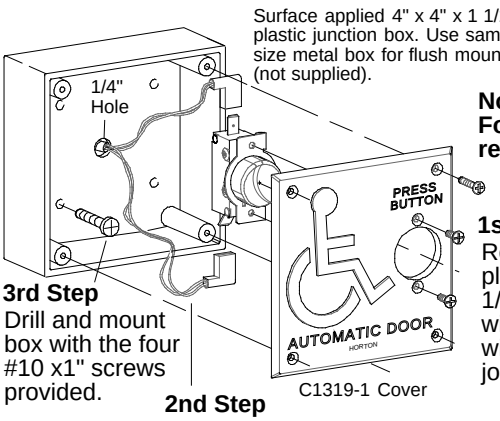
CHANGING HAND



7.063d

8. INSTALLING ACTUATION SWITCHES

C1316-2 SWITCH ASSEMBLY



Note: See Section 2 For switch location requirements.

1st Step
Remove cover plate and drill 1/4" hole for wiring. Location will vary with job conditions.

3rd Step
Drill and mount box with the four #10 x1" screws provided.

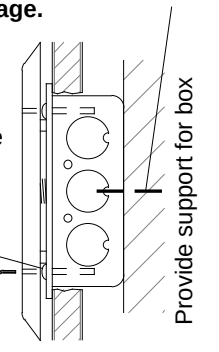
2nd Step
Pull the low voltage wire into the box.

C1260 SWITCH ASSEMBLY

Note: Junction box not included in assembly.

1st Step
Pull the 24 VAC, 2 conductor wire into the box and connect to the microswitch terminals. **Do not connect to high voltage.**

2nd Step
Attach the microswitch & pushplate to the junction box using the four Allen screws provided.



9. OPERATOR ADJUSTMENTS

The following information is provided as a recommendation for safe operating speed adjustments and should be adhered to when installing or servicing the series 7000 swing door operator. See ANSI 156.19.

L.OUT: Lock Out Time Delay - Sets the length oftime neededtoignore the safetysensor during door closing. Rotate clockwise to increase.

DELAY: Time Delay Adjustment - Suggested setting is 5 seconds minimum after full open. Rotate clockwise to increase.

HOLD: Hold Voltage Function - Control switches to hold-open voltage after a nominal 10-12 second delay from beginning to actuate signal. Also sets speed for Stop& Seek mode. Rotate clockwise to increase.

SPEED: Open Speed Adjustment - Sets the open speed of the operator.Rotate clockwise to increase.

DACCL: Open Deceleration Adjustment - Determines how quickly the door slows after the open check switch is tripped. Rotate clockwise to increase.

CHECK: Open Check Speed Adjustment - Sets the speed after the open check switch falls onto thecam flat. Rotate clockwise to increase.

ACCEL: Open Acceleration Adjustment - Sets motor acceleration to open speed setting. Rotate clockwise to increase.

CloseCheck Switch Cam: Adjust for switchto fall onto cam flat when door is 10 deg from full-closed.

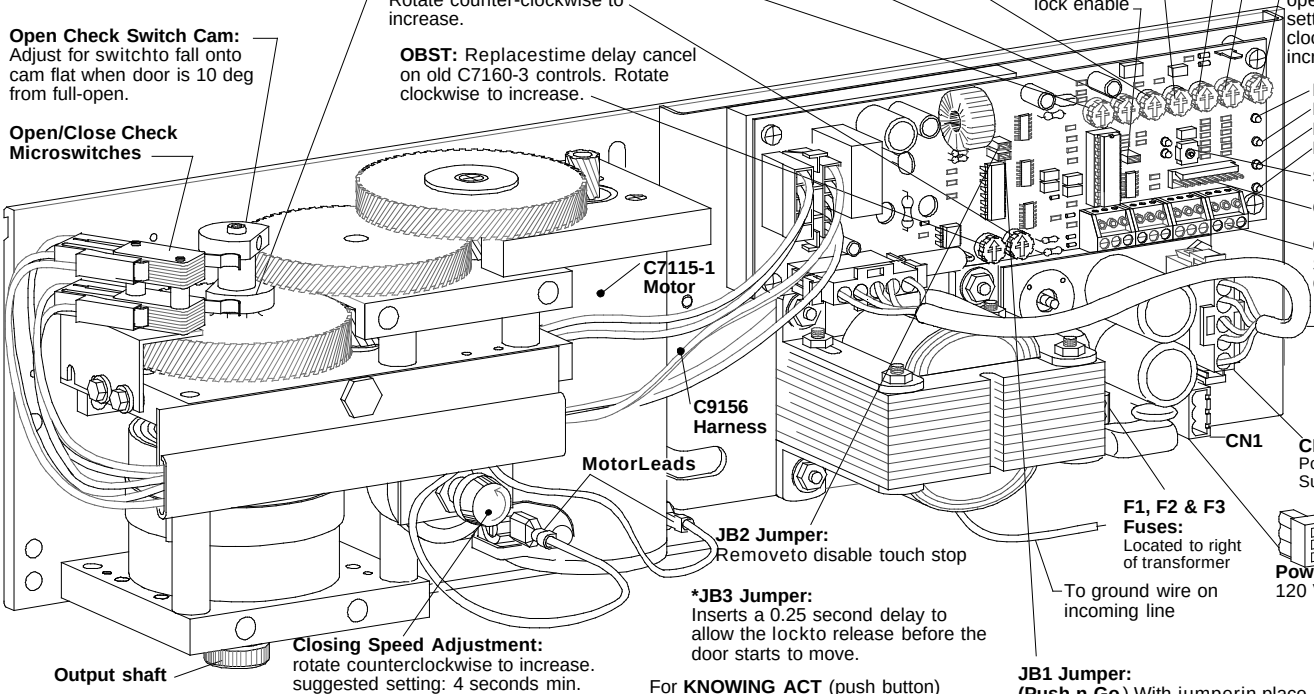
LIMIT: Current Limiting - Sets the amountof opening force. Rotate counter-clockwise to increase.

***JB3Jumper** lock enable

Open Check Switch Cam: Adjust for switchto fall onto cam flat when door is 10 deg from full-open.

OBST: Replacestime delay cancel on old C7160-3 controls. Rotate clockwise to increase.

Open/Close Check Microswitches



For **KNOWING ACT** (push button) see **ANSI156.10 sec.9** & Sect 10 of G710.

JB1 Jumper: (Push-n-Go) With jumperin place, a slight pushon the door will actuate the operator and open the door.

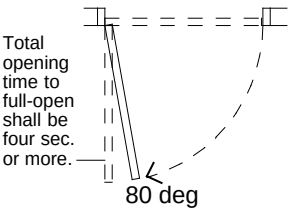
7.065d2

ANSI CHART - OPENING & CLOSING TIME IN SECONDS

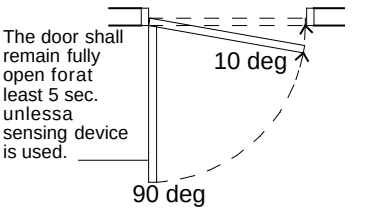
DoorLeaf Width in Inches(mm)	DoorWeightinPounds (kg)				
	100 (45.4)	125 (56.7)	150 (68.0)	175 (79.4)	200 (90.7)
30 (762)	3.0 Sec.	3.0 Sec.	3.0 Sec.	3.0 Sec.	3.5 Sec.
36 (914)	3.0	3.5	3.5	4.0	4.0
42(1067)	3.5	4.0	4.0	4.5	4.5
48(1219)	4.0	4.5	4.5	5.0	5.5

The force required to prevent a door from opening or closing shall not exceed 15 lbf (67N) applied one inch (25) from the latch edge at any point of opening or closing.The kinetic energy of a door in motion shall not exceed 1.25 lbf (5.56N). **Note:** To be in compliance with the force and energy requirements set closing and opening speeds as per the chart above.

Power Failure: manual pressure not to exceed 15 lbf (67N) at a point one inch (25) from the latch edge (may vary by local code).



OPENING TIME: Doorsshall be field adjusted sothat opening time toopen check or80 deg shall be three sec. or more.



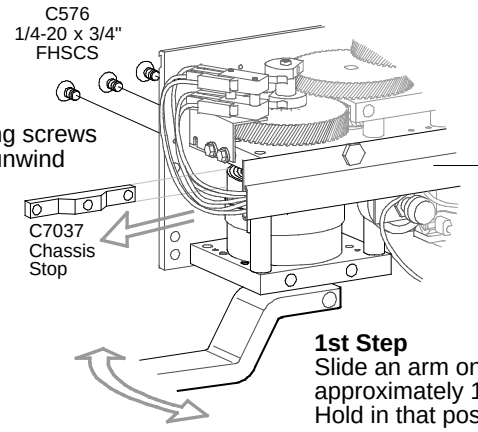
CLOSING TIME: Doorsshall be field adjusted to close from 90 deg to10 deg in three seconds or longer.Doors shallclose from 10deg to fully closed in 1.5 sec. or more.

10. CHANGING OPERATOR HAND AND/OR CLOSING SPRING

The following information is provided as a guide for:
- Removing and replacing a broken spring.
- Changing spring direction.
- Changing both spring direction and operator hand.
- Changing operator hand but not spring direction.

NOTE: IN ALL CASES, SECURE THE BASE PLATE OF THE GEAR TRAIN ASSEMBLY (PREFERABLY IN A VISE) WITH THE OUTPUT SHAFT FACING UP.

REMOVING THE SPRING:

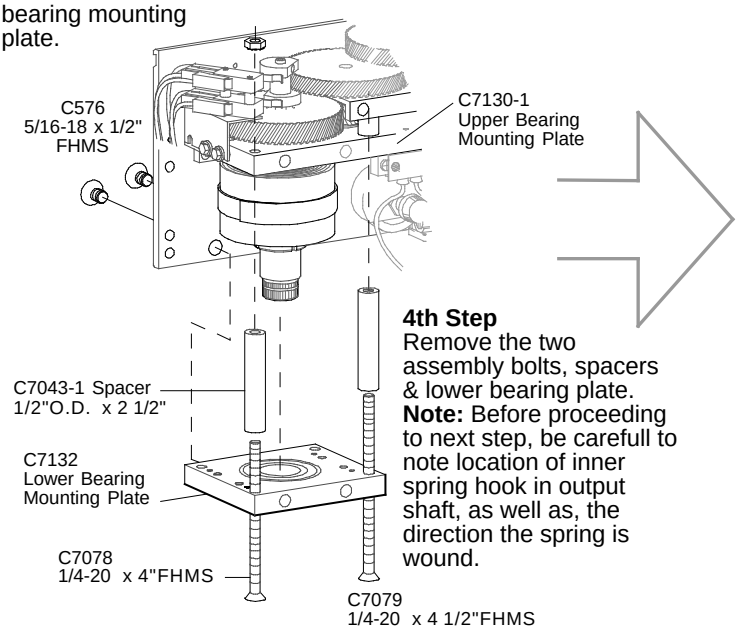


2nd Step
Remove three chassis mounting screws thus allowing spring to slowly unwind and push out the chassis stop. Remove both arm and chassis stop.

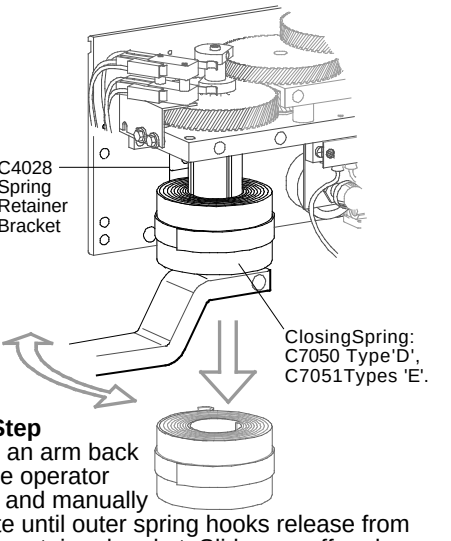
Optional Step
To clear work space, detach C7083 Wire Guide & Operator Wiring Harness from upper bearing plate and move out of way.

1st Step
Slide an arm on the operator shaft and manually rotate arm approximately 1/4 turn to relieve pressure on chasis stop. Hold in that position.

3rd Step
Remove the two screws for lower bearing mounting plate.



4th Step
Remove the two assembly bolts, spacers & lower bearing plate. **Note:** Before proceeding to next step, be carefull to note location of inner spring hook in output shaft, as well as, the direction the spring is wound.



5th Step
Slide an arm back on the operator shaft and manually rotate until outer spring hooks release from spring retainer bracket. Slide arm off and remove spring.

IF SPRING WAS BROKEN:

A. Replace new spring on output shaft. Be careful to place inner spring hook in same slot in shaft as before.

B. Reinstall lower bearing plate with it's assembly bolts, spacers and mounting screws.

C. Slide arm on output shaft and manually rotate until the outer spring hooks clip into the spring retainer bracket. Next rotate the shaft approximately 1/2 turn (180°) and hold in that position.

D. Reinstall chassis stop and secure with mounting screws. Allow arm to slowly counter-rotate until the stop lug on the output shaft rests against the chassis stop. The spring is now preloaded for most general applications.

IF CHANGING SPRING DIRECTION FROM LH TO LHR OR RH TO RHR (INSWING TO OUTSWING):

A. After spring is removed, turn upside-down and replace on output shaft (after shaft has been rotated 1/4 turn). Be careful to place inner spring hook in same slot in shaft as before.

B. Reinstall the rest of the assembly as outlined in steps B thru D (left).

C. Reverse motor leads at potentiometer (see Operator Adjustments, Section #9).

IF CHANGING BOTH SPRING DIRECTION & OPERATOR HAND (FROM LHR TO RHR OR RHR TO LHR) :

A. After changing spring direction, as outlined above, follow steps on next page for changing operator hand.

B. After both tasks are done, reverse motor leads at potentiometer (see Operator Adjustments, Section #9).

IF CHANGING OPERATOR HAND BUT NOT SPRING DIRECTION (FROM LH TO RHR OR RH TO LHR):

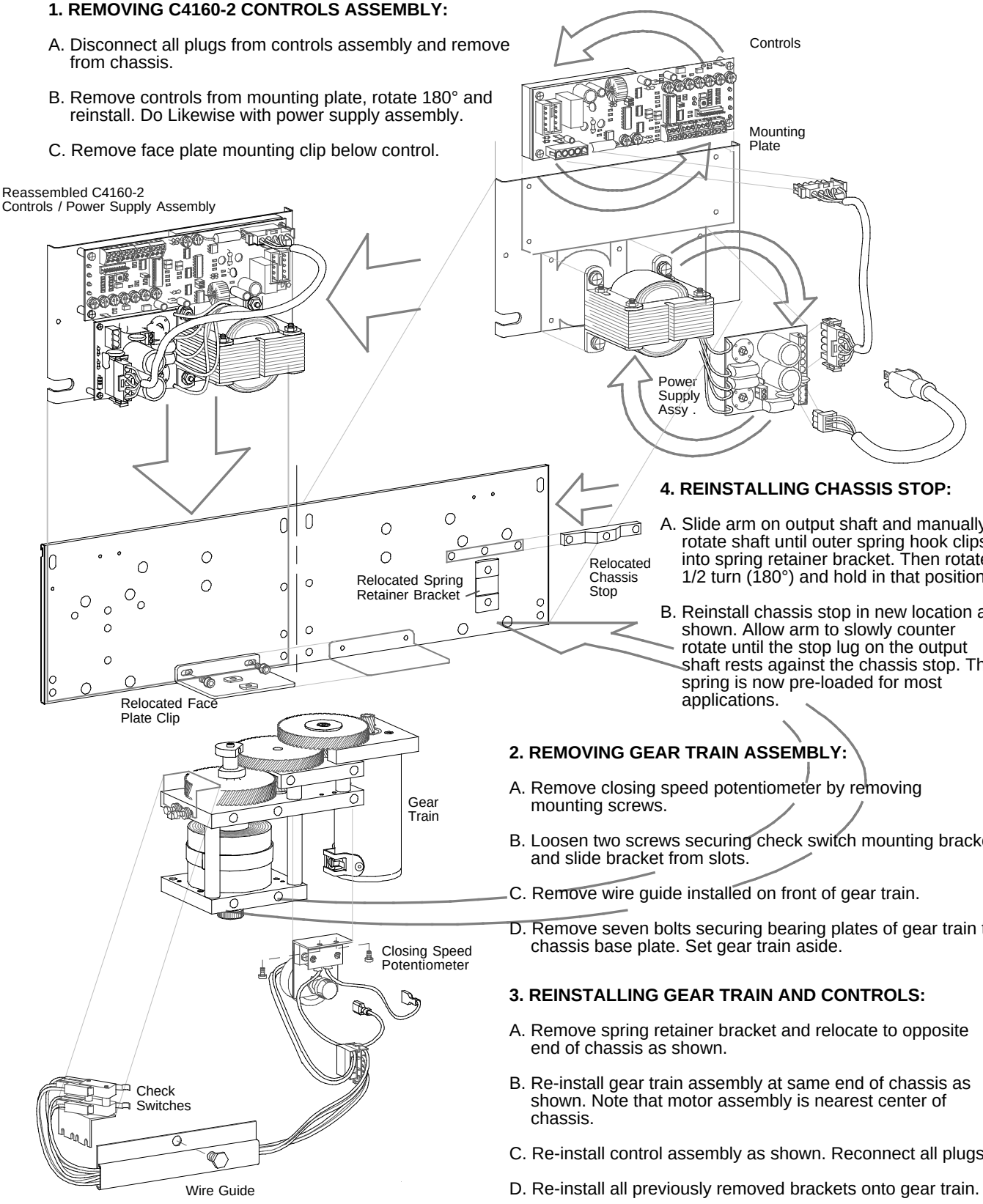
Follow the steps outlined in the previous page for removing the chassis stop and allowing the spring to unwind. The gear train and controls will then have to be moved to opposite sides of the operator base plate chassis.

1. REMOVING C4160-2 CONTROLS ASSEMBLY:

A. Disconnect all plugs from controls assembly and remove from chassis.

B. Remove controls from mounting plate, rotate 180° and reinstall. Do Likewise with power supply assembly.

C. Remove face plate mounting clip below control.



4. REINSTALLING CHASSIS STOP:

A. Slide arm on output shaft and manually rotate shaft until outer spring hook clips into spring retainer bracket. Then rotate 1/2 turn (180°) and hold in that position.

B. Reinstall chassis stop in new location as shown. Allow arm to slowly counter rotate until the stop lug on the output shaft rests against the chassis stop. The spring is now pre-loaded for most applications.

2. REMOVING GEAR TRAIN ASSEMBLY:

A. Remove closing speed potentiometer by removing mounting screws.

B. Loosen two screws securing check switch mounting bracket and slide bracket from slots.

C. Remove wire guide installed on front of gear train.

D. Remove seven bolts securing bearing plates of gear train to chassis base plate. Set gear train aside.

3. REINSTALLING GEAR TRAIN AND CONTROLS:

A. Remove spring retainer bracket and relocate to opposite end of chassis as shown.

B. Re-install gear train assembly at same end of chassis as shown. Note that motor assembly is nearest center of chassis.

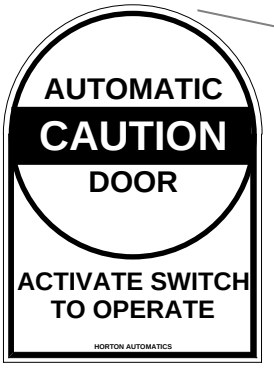
C. Re-install control assembly as shown. Reconnect all plugs.

D. Re-install all previously removed brackets onto gear train.

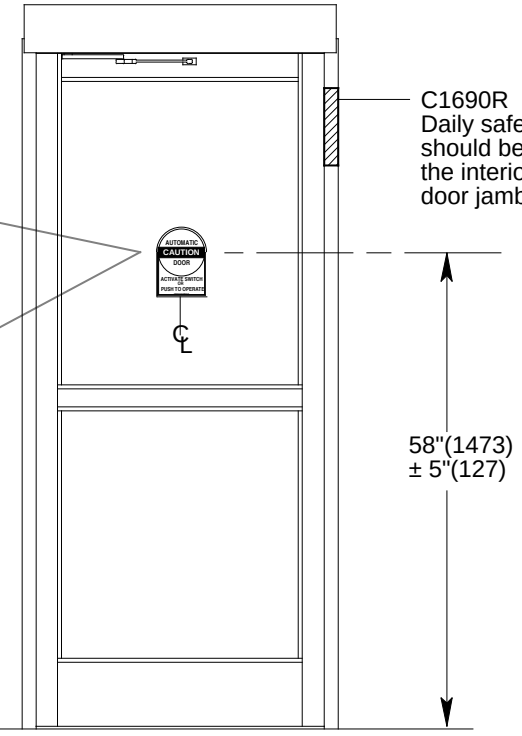
NOTE: AFTER SPRING IS PRE-LOADED IT WILL BE NECESSARY TO ADJUST OPEN CHECK CAM AND CLOSE CHECK CAM WHEN OPERATOR IS INSTALLED.

11. PLACEMENT OF SAFETY DECALS

Decals should be a minimum of 6"(152) diameter and be visible from both sides of the door. Apply decals as shown.



C7280
Required to meet ANSI standards. This decal is included with each door package.

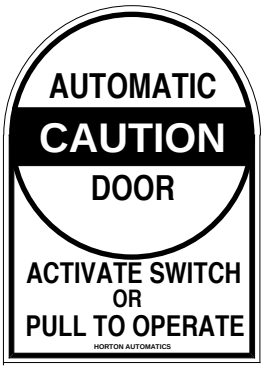


C1690R
Daily safety check decal should be adhered to the interior side of the door jamb in full view .

58"(1473)
± 5"(127)

THE DECALS SHOWN BELOW ARE AVAILABLE OPTIONS.

C7282



C7281

For Push-n-Go™ option (locate each each side of door)

C1688

C1631-3

For one-way traffic non-approach side.

12. S7900 FIRE DOOR OPERATOR

The following must be met to comply with UL requirements for Fire Rated Door Operators With Automatic Closers.

1 - Provisions must be furnished to remove power from the operator upon activation of the fire alarm.

2 - S7900 operator must be installed with UL approved "Fire Exit Hardware" type GXHX as found in the UL Building Materials Directory.

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