Detex Corporation, 302 Detex Drive, New Braunfels, Texas 78130-3045
830-629-2900 / 800-729-3839 / Fax 800-653-3839 / Text photos only: 830-481-6433 / INTERNET: www.detex.com

DETEX Low Energy Automatic Door Operator, Dual Egress (AO19-3)

AO19®

Drawing: 104700

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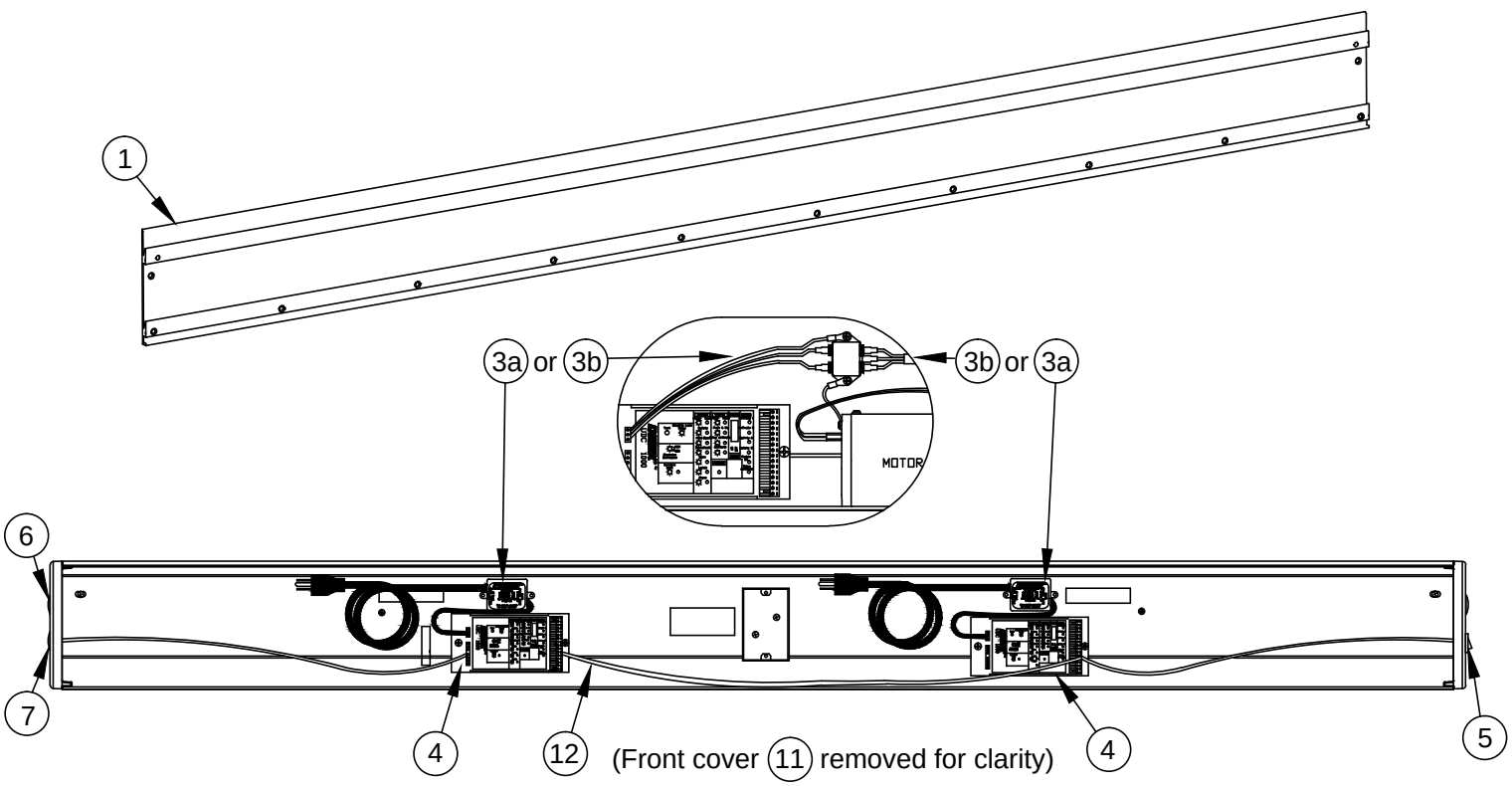
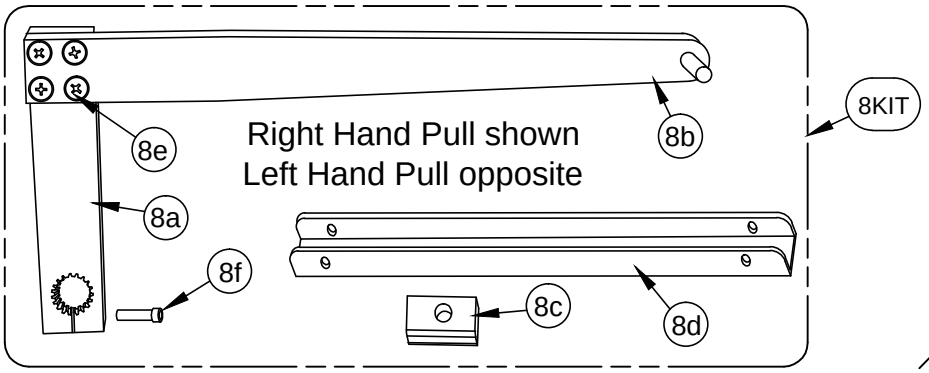
Should you have a Question/Problem with your Detex device please call Detex Technical Support from the job site at 1-800-729-3839 and choose option 2 on our menu. Please do not return the product to the distributor.

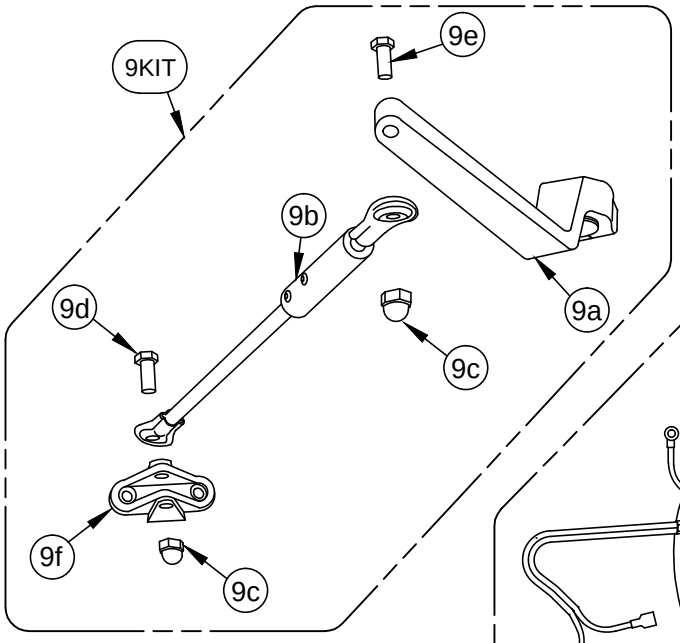
For WARRANTY information, scan code below or go to www.detex.com/warranty

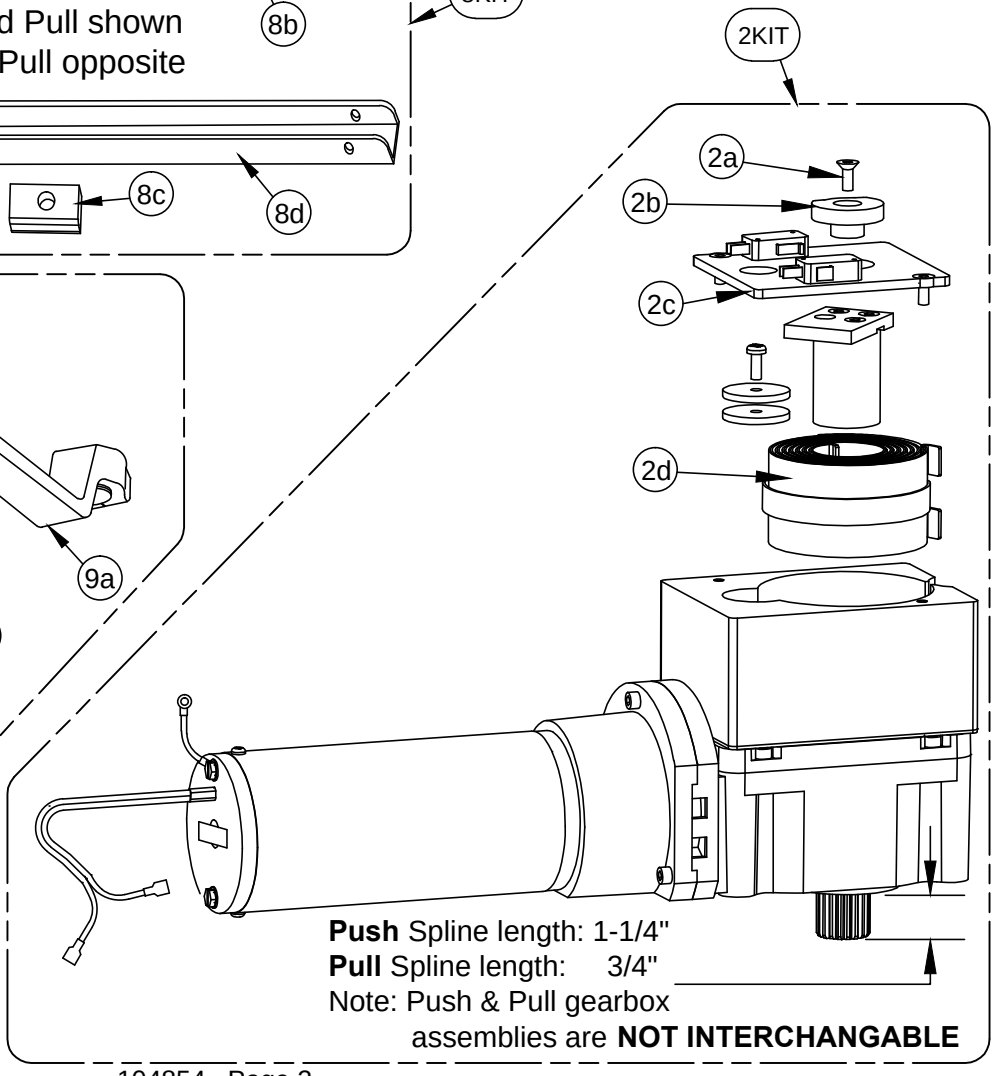
For device installation videos, scan code below or go to www.detex.com/videos

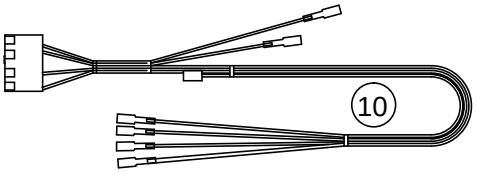
Owner's Copy


1
3a or 3b
3b or 3a
MOTOR
6
7
4
12
(Front cover 11 removed for clarity)
4
5


8KIT
Right Hand Pull shown
Left Hand Pull opposite
8e
8b
8a
8f
8c
8d


9KIT
9e
9b
9d
9a
9c
9f
9c

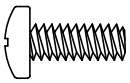
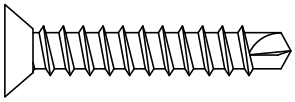
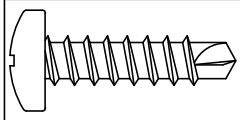
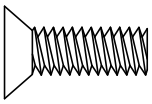
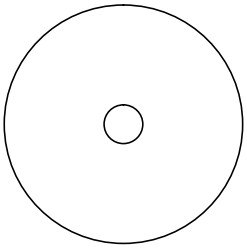

2KIT
2a
2b
2c
2d
Push Spline length: 1-1/4"
Pull Spline length: 3/4"
Note: Push & Pull gearbox
assemblies are **NOT INTERCHANGABLE**


10

PARTS BREAKDOWN		
Item	Order Part #	Description
1	12515-5	Hanger plate, AO19, Aluminum finish, 74" long
	12515-6	Hanger plate, AO19, Bronze finish, 74" long
	12515-7	Hanger plate, AO19, Aluminum finish, 90" long
	12515-8	Hanger plate, AO19, Bronze finish, 90" long
	12515-15	Hanger plate, AO19, Aluminum finish, 98.50" long
	12515-16	Hanger plate, AO19, Bronze finish, 98.50" long
2KIT	104796-4	S & R Motor-gearbox assembly, AO19, RH Pull (includes 2a-2d)
	104796-2	S & R Motor-gearbox assembly, AO19, LH Pull (includes 2a-2d)
	104796-3	S & R Motor-gearbox assembly, AO19, RH Push (includes 2a-2d)
	104796-1	S & R Motor-gearbox assembly, AO19, LH Push (includes 2a-2d)
2a	12407-2	Screw, mach, 10-32 x 1/2" , flat socket head
2b	12607	Cam, AO19
2c	104705	Switch plate subassembly
2d	105433	S & R AO19 Clock spring replacement kit
3a	105416-2	S & R Kit, 120VAC Line filter, 4 ft
3b	105416-5	S & R Kit, 120VAC Line filter, 4 ft (alternate build)
4	105421	S & R Controller, operator, UDC 1000
5	105422	S & R Switch, 3 way toggle, with cable & connector (for UDC Controller, independent units)
6	12905	Plug, hole, .875 dia.
7	12906	Plug, hole, 1.093 dia.
8KIT	104797-1	Pull Arm subassembly, Aluminum finish (includes 8a-8f)
	104797-2	Pull Arm subassembly, Bronze finish (includes 8a-8f)
8a	12781-1	Power Arm, AO19, Aluminum finish
	12781-2	Power Arm, AO19, Bronze finish
8b	12787-1	Forearm, AO19, Aluminum finish
	12787-2	Forearm, AO19, Bronze finish
8c	12784	Block, Arm Slide
8d	12785-1	Slide Track, Aluminum finish
	12785-2	Slide Track, Bronze finish
8e	102271-112	Screw, Mach, 1 /4-20 PFH, Stainless Steel
	102271-312	Screw, Mach, 1 /4-20 PFH, Stainless Steel, Black
8f	12742-1	Screw, Socket head cap, 1 /4-20 x 1", Stainless Steel
	12742-2	Screw, Socket head cap, 1 /4-20 x 1", Black
9KIT	104798-1	Push Arm subassembly, Aluminum finish (includes 9a-9f)
	104798-2	Push Arm subassembly, Bronze finish (includes 9a-9f)
9a	12731-1	Bent Arm, AO19, Aluminum finish
	12731-2	Bent Arm, AO19, Bronze finish
9b	104728-1	Push arm rod assembly, Aluminum finish, 20"
	104728-2	Push arm rod assembly, Bronze finish, 20"
9c	12741-1	Nut, acorn, 3/8-24 Aluminum finish
	12741-2	Nut, acorn, 3/8-24 Bronze finish
9d	12739-1	Screw, hex cap, 3/8-24 x 1-3/4" long, Aluminum finish
	12739-2	Screw, hex cap, 3/8-24 x 1-3/4" long, Bronze finish
9e	12743-1	Screw, hex cap, 3/8-24 x 1-1/4" long, Aluminum finish
	12743-2	Screw, hex cap, 3/8-24 x 1-1/4" long, Bronze finish
9f	12735-1	Door foot, AO19, Aluminum finish
	12735-2	Door foot, AO19, Bronze finish
10	104706	Micro harness, AO19
11	12516-5	Cover, AO19, Aluminum finish, 74" long (not shown)
	12516-6	Cover, AO19, Bronze finish, 74" long (not shown)
	12516-7	Cover, AO19, Aluminum finish, 90" long (not shown)
	12516-8	Cover, AO19, Bronze finish, 90" long (not shown)
	12516-15	Cover, AO19, Aluminum finish, 98.75" long (not shown)
	12516-16	Cover, AO19, Bronze finish, 98.75" long (not shown)
12	104707	Cable Sync Twin AO19 UDC 1000 (for simultaneous operation device only)

Your particular part or configuration may not be shown: Contact Detex technical support at 800-729-3839 (option 2)

Device hardware kit: p/n 106121-1 for Aluminum finish
Device hardware kit: p/n 106121-2 for Bronze finish

	Fastener Part No	Drill Bit
	P/N: 12405-1 (stainless) or 12405-2 (black) 8-32 x 3/8" PPH	
	P/N: 12403-1 (stainless) or 12403-2 (black) 10-32 x 1/2" PPH	
	P/N: 103277-324 #14 x 1-1/2" PFH	1/8 pilot hole recommended for self-drilling screws
	P/N: 103276-63 #14 x 1" PPH	1/8 pilot hole recommended for self-drilling screws
	P/N: 102271-112 (stainless) or 102271-312 (black) 1/4-20 x 3/4" PFH	
	P/N: 12783-1 (stainless) or 12783-2 (black) 1-1/4" dia, .203 dia center hole	

Tools Required:

Safety Glasses
Power Drill
Tape Measure
Level
Pencil
Wire Stripper/Crimper
Hacksaw
Bar clamps or large C clamps
Allen wrench set
Thin brush
Knife
Level
3/16", 3/8" & 1/2" drill bits
#2 & #3 Phillips bits
3/16" x 1-1/4" Tapcon screws
1/4-20 or #14 flathead screws

CAUTION
Read this notice before installing or servicing

The Detex Low Energy Automatic Door Operator must be installed to comply with the latest revision of ANSI /BHMA A156.19 (American National Standard for Power Assist and Low Energy Power Operated Doors) and upon completion of installation, the owner should have an inspection performed by an AAADM certified inspector. In special applications where safety sensors are used on low energy doors, the sensors and the related adjustments should comply with the criteria set forth in ANSI/BHMA A156.10 (American National Standard for Power Operated Pedestrian Doors).

Failure to conform to these requirements may cause operating failures which can result in serious injury or property damage. It is the owner's responsibility to assure the reliable and safe operation of this device; routine service and inspection should be performed at least annually by an AAADM certified inspector. More frequent service may be required when the operating environment or other conditions dictate or if required by the local authority having jurisdiction. Proper operation should be checked everyday by the owner. Detex Corporation accepts no liability for property damage, warranty claims or personal injury, if this Detex product is not properly installed for compliance to these requirements by a qualified automatic door operator installer and also properly maintained and inspected by the owner to operate as required by ANSI/BHMA A156.19 (or ANSI/BHMA A156.10 where required).

General Conditions

The Detex Low Energy Automatic Door Operator is designed for Residential, Commercial and Industrial use. If it is to be retrofitted on to an existing door and frame, it is important that the door is in good condition and swings freely, without restriction. It is also important that the header is sturdy and the operator must be fastened securely using the appropriate fasteners.

WARNING: To reduce the risk of injuries to persons – Use this operator on doors **less than 300lbs** (refer to ANSI open and closing speeds).

All electrical wiring must comply with the National Electrical Code.

Not compatible with GFI (Ground Fault Interrupt) Breaker.

The Detex Low Energy Automatic Door Operator must be installed to comply with ANSI/BHMA A156.19 standards.
It is not a solution to wind or stack air conditions.

Beware that the door should: 1) open to at least 32" of clear opening; 2) have 5' x 5' of flat floor on both sides; 3) be protected at bottom rail, 7 1/2" up; 4) threshold must meet ADA Guidelines; and 5) a commercial or residential swinging pedestrian door shall not close with a force greater than 15 lb. at the latch side of the closing stile and shall not close through the final 10 degrees in less than 1.5 seconds.

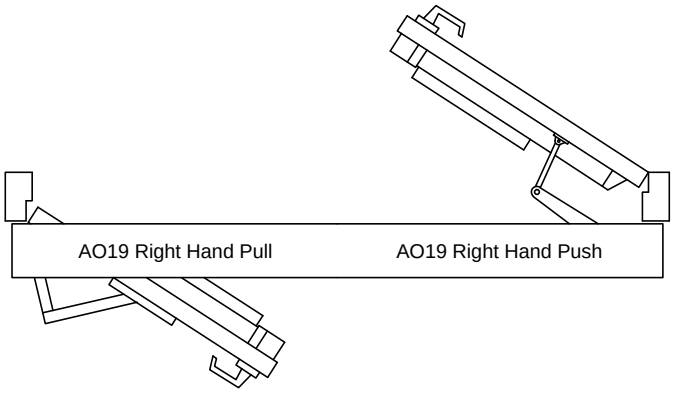
Receiving Inspection

Verify that the device ordered is the correct model for the door application. **Check for correct handing and size.**
Inspect package for possible shipping damages. Carefully cut tape and open cardboard shipping box. Packed into this box you will typically find arm assembly, door decal(s), complete low energy operator and instruction documents. Remove items and place them carefully aside so they will not be damaged or lost. Using a #2 Phillips, remove the cover screws and lift bottom edge of cover & pull out. Remove packing and inspect all items before continuing.

Contact Factory on damages and missing equipment

NOTE:

The configuration shown below is the configuration described in this instruction.
Opposite configuration installation process is similar.

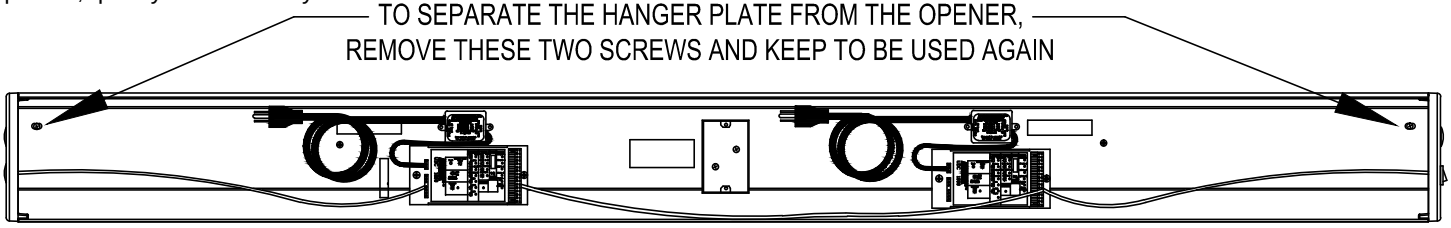


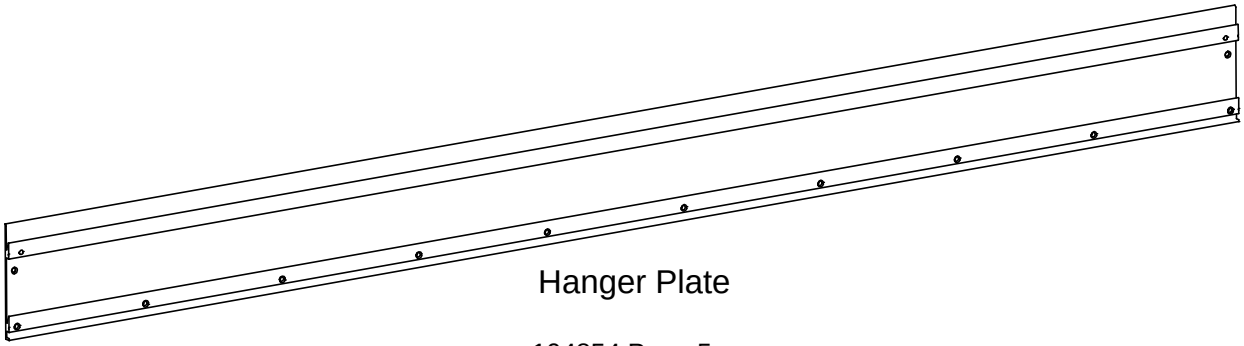
(DUAL EGRESS)

Remove the countersunk screws to remove front cover. Screws will be re-used when re-installing cover.
Unit is shipped with screws in the 2 outside hole locations only.
Extra screws are provided in the hardware kit for the remaining screw holes when re-installing the cover.

Installation Preparation

The hanger plate is unique to the Detex Low Energy Automatic Door Operator. It allows the installation to be performed by one person, quickly and efficiently.





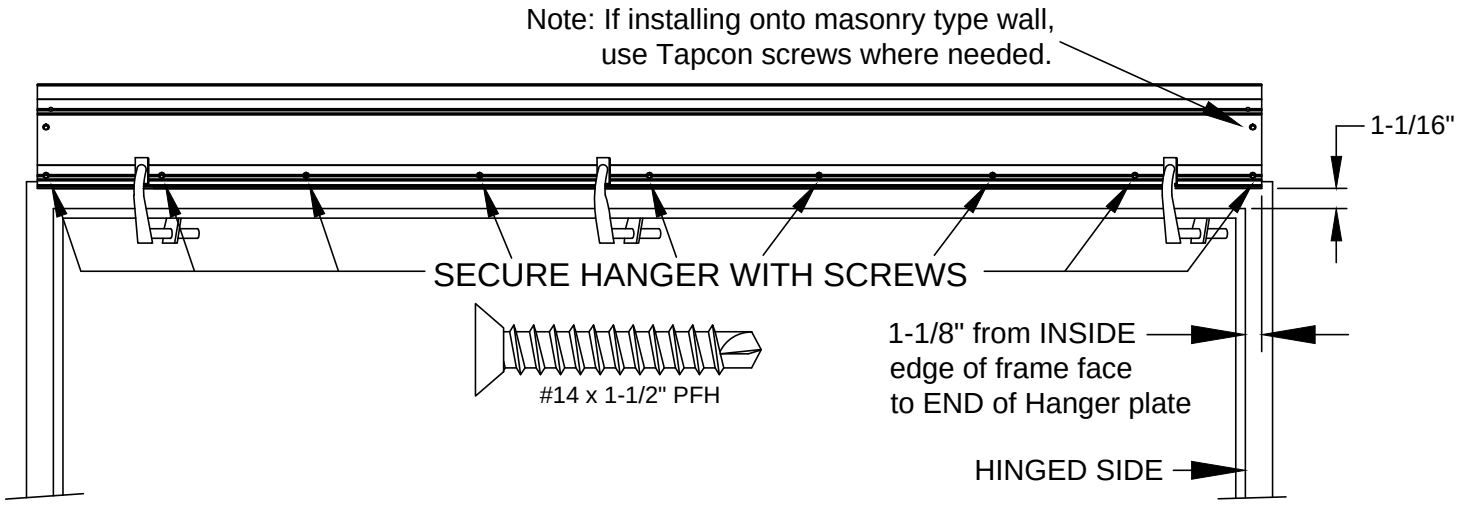
Hanger Plate

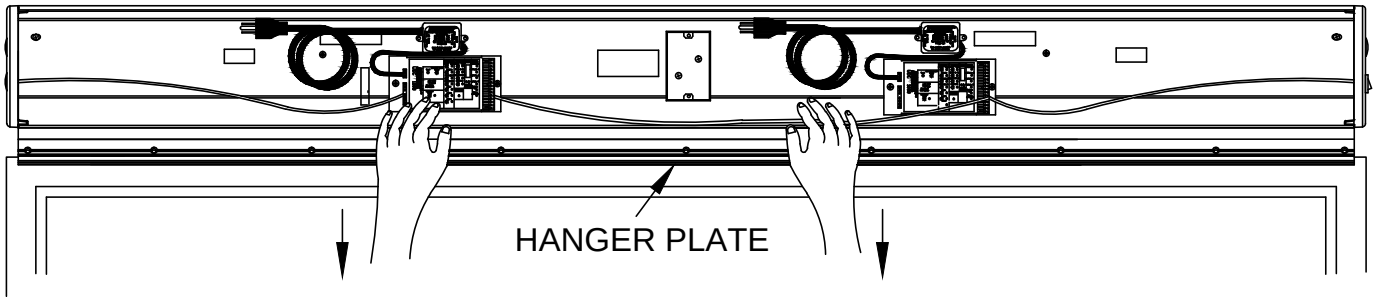
Hanger Plate Installation

The edge of the hanger plate should be located 1-1/8" past the inside edge of the frame face on the hinged side of the frame, level and 1-1/16" above the bottom of the door frame. Bar clamp the hanger plate. Using hanger plate, mark and drill holes into header frame, solid wall or wall stud.

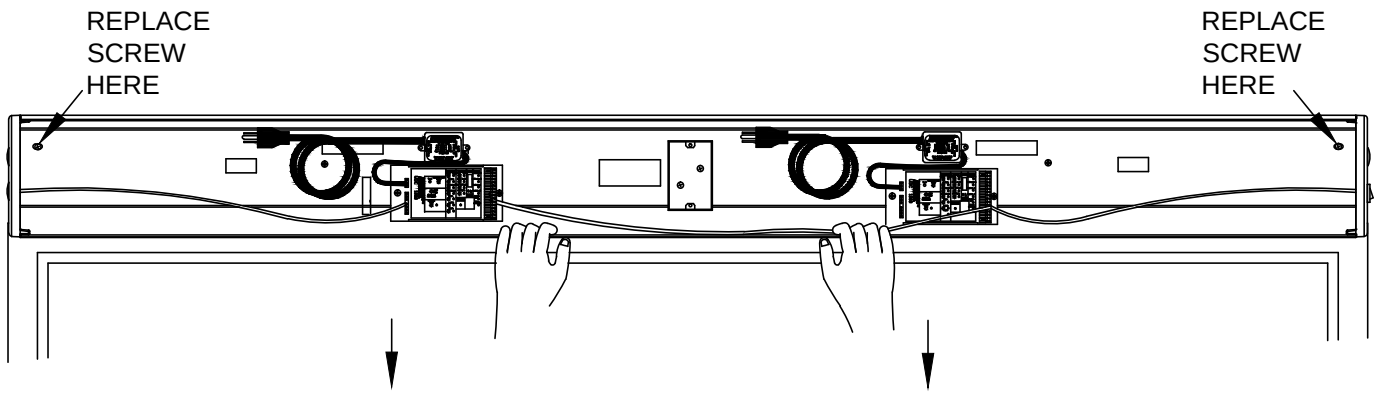
Fasten using appropriate type and size screws (Detex recommends using flat head type).

Note: Drilling debris accumulated in hanger groove tracks can prevent the operator from seating uniformly when mounting. Remove debris with thin brush. Masking tape can also be used to prevent debris from collecting in groove.





Lift the operator and lower onto the webs of the hanger plate bracket.
Be sure both top and bottom are engaged.



Once they are seated, pull down until unit is completely flush and screws can be replaced in top corners.

Motor-Gearbox Assembly Installation

Remove MOTOR-GEARBOX ASSEMBLIES from their cartons and match them to the proper ends of the case: see **Receiving Inspection** view on page 5. Motors will be marked with a label as either LH PUSH, LH PULL, RH PUSH or RH PULL.

With the motor end away and slightly below the open edge of the case, insert the ASSEMBLY shaft through the hole in the bottom of the case (see below).

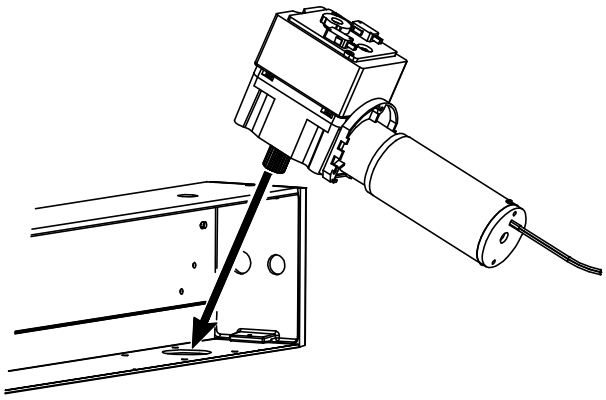
Carefully lift and turn the ASSEMBLY into the case, being careful not to damage the switches on the top (see below).

Secure the ASSEMBLY to the bottom of the case with the 1/4-20 x 1 3/4" Phillips flathead screws provided.

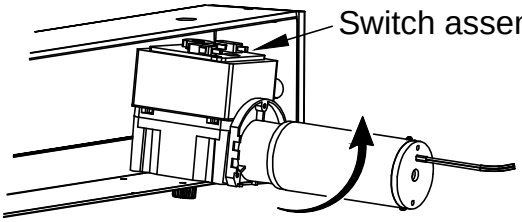
Attach the motor ground wire (green) to the back of the case where labeled with the 10-24 x 1/4" Phillips button head screw provided.

Connect the white plug of the ASSEMBLY harness into the UDC 1000 Controller.

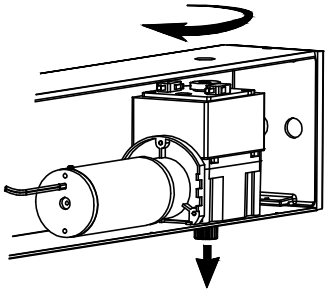
Repeat process for opposite side.



With ASSEMBLY perpendicular to enclosure, insert splined shaft into shaft hole

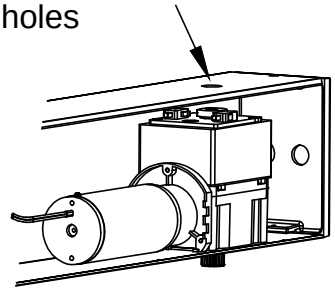


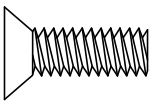
Rotate ASSEMBLY to an almost horizontal position being careful not to let switch assembly hit enclosure



Rotate ASSEMBLY into enclosure, letting shoulder of gearbox drop down into shaft hole. Align screw holes at bottom and apply **blue thread locker** to all 4 screws before tightening

<u>DO NOT</u> route **ANY WIRES** thru enclosure top holes





1/4-20 x 3/4" PFH

Apply **blue thread locker**

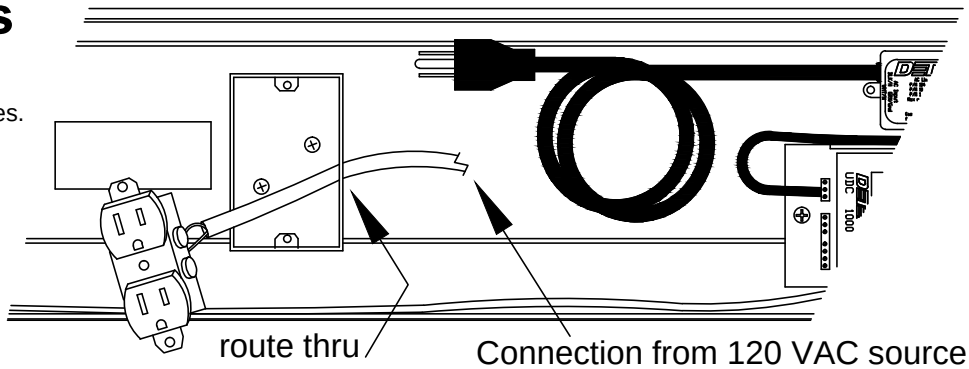
(note: for clarity, switch wires not shown in views)

120 VAC Connections

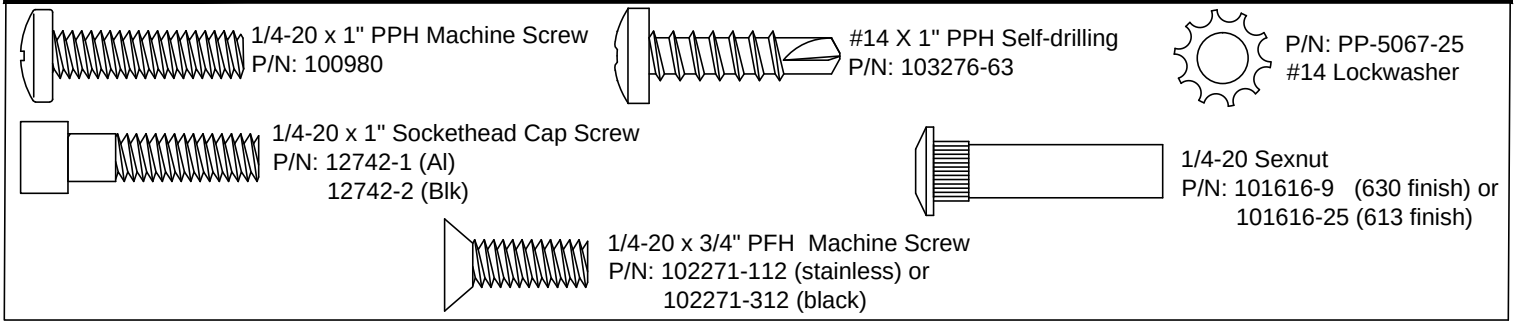
Have a licensed electrician bring 120 VAC to the Detex Low Energy Automatic Door Operator in accordance with all local and state electrical codes.

Be sure the 120 VAC power source is turned off before proceeding.
The 120 VAC power line can be run thru the knockout hole at the end of the operator case and into the outlet box provided.
DO NOT route ***ANY WIRES*** thru enclosure top hole.

You should inspect all wiring at this time before turning on power and connecting electrical cord to outlet connector.

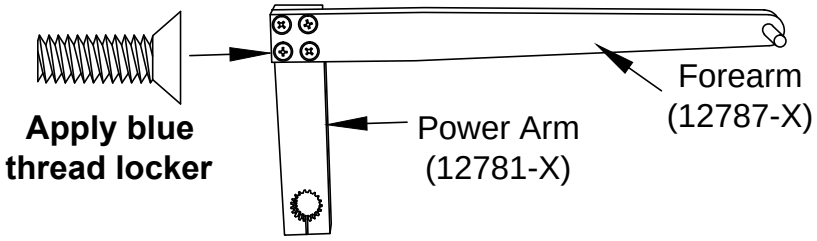


Pull Arm hardware:

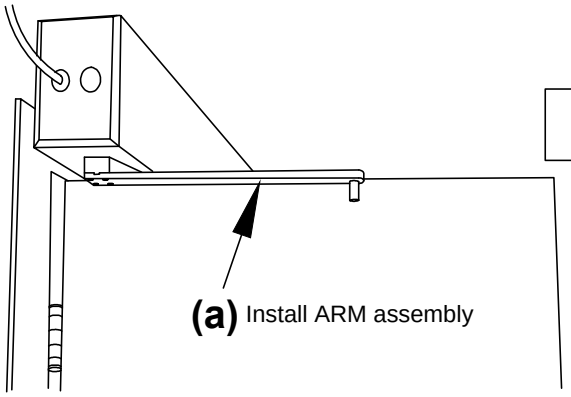


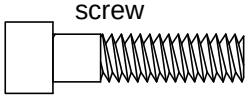
Assemble PULL Arm

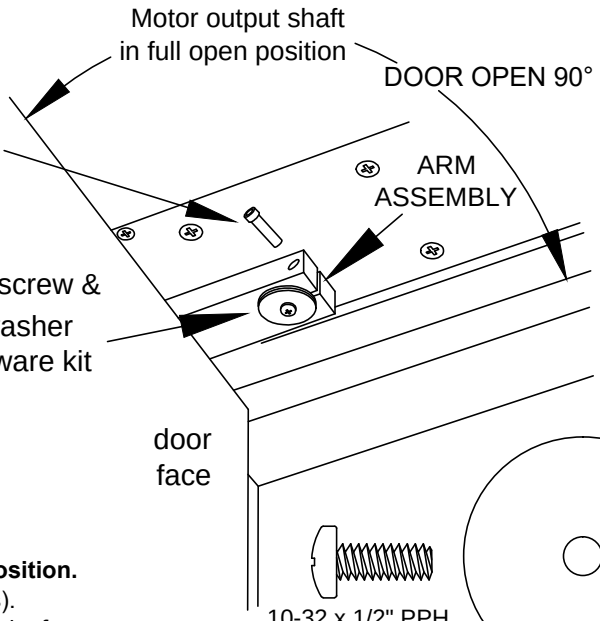
Assemble the Power Arm & Forearm using the four countersunk 1/4-20 screws provided.



PULL Arm Positioning



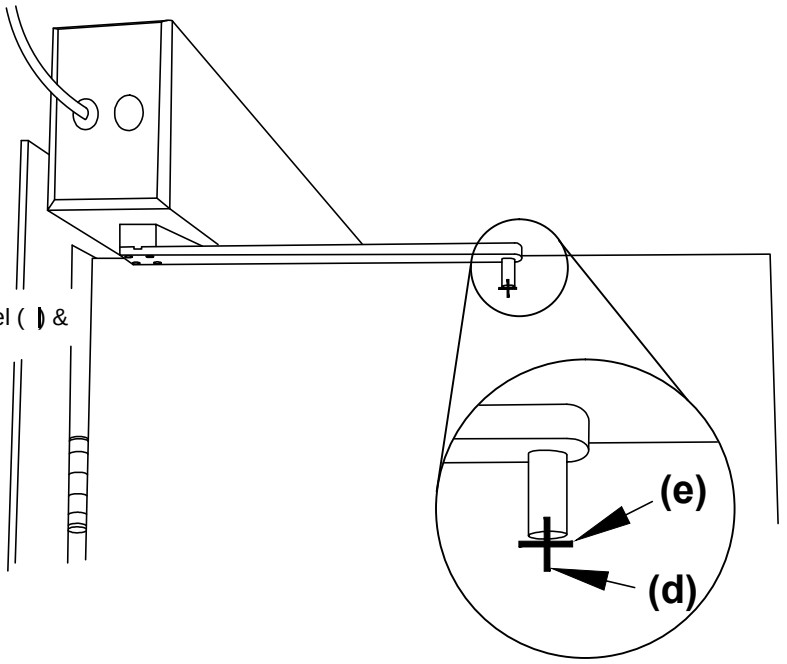




The UDC 1000 controller must be plugged in and powered up.
The controls are preset to approximate settings.
Refer to instruction 104827.

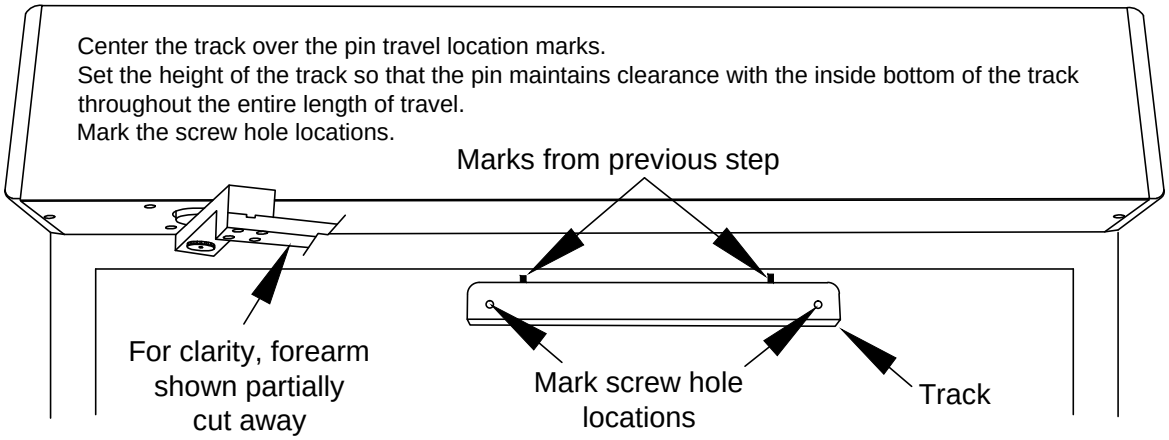
Set the toggle switch located at the end of the enclosure to the HOLD position.
The operator will activate and the motor output shaft will rotate 240° (degrees).
(a) Install the arm assembly so the forearm is rotated to 90° & parallel to door leaf.
(b) secure by tightening screw.
(c) While in the full open position, install the safety washer & screw with **blue thread locker** to the bottom of shaft.

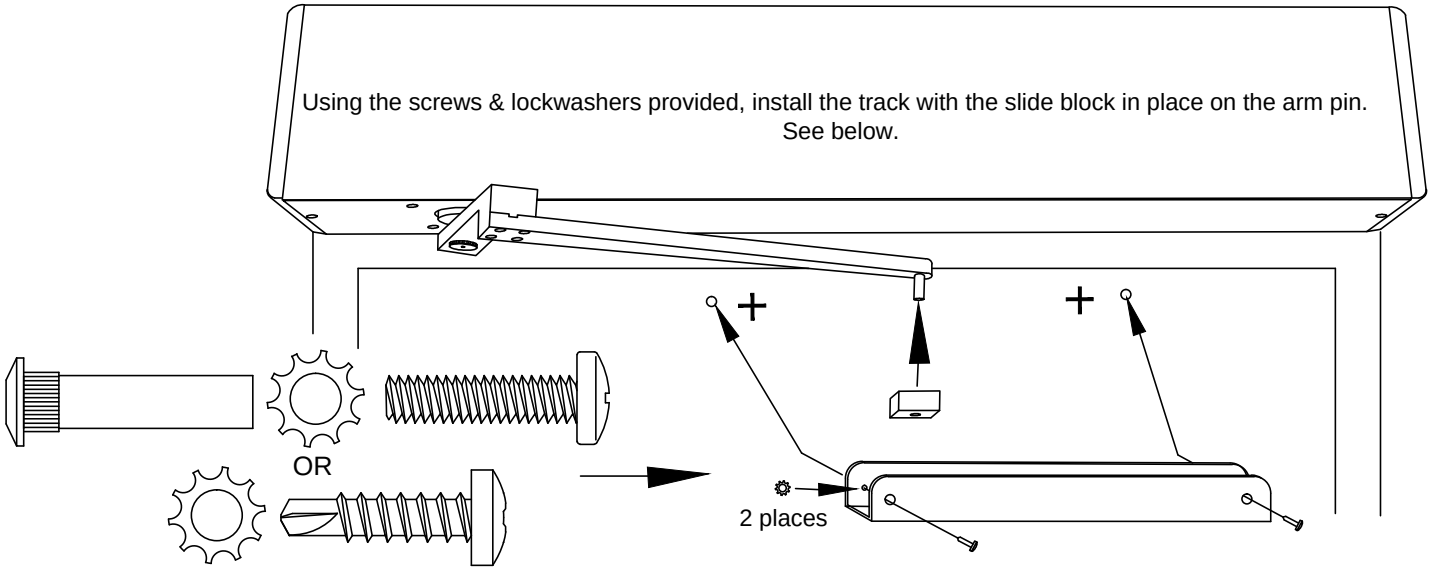
Track Position & Installation



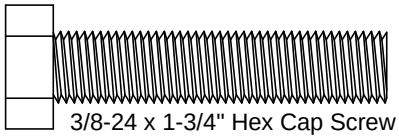
With the door and gear motor in full open position:
(d) on the door, mark the forearm pin location for the end point of travel ( ) &
(e) mark the location of the bottom of the pin ( ).

Close the door & turn the 3-way toggle switch to the "OFF" position.
The arm will rotate to the closed position.
In the closed position, repeat the steps above & mark the arm pin location for the opposite endpoint of travel and location of the bottom of the pin.

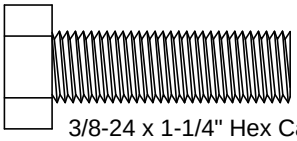




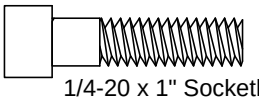
Push Arm hardware:
(some of the hardware is shipped pre-assembled)



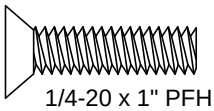
3/8-24 x 1-3/4" Hex Cap Screw
P/N: 12739-1 (Al)
12739-2 (Blk)



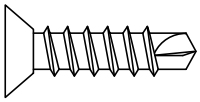
3/8-24 x 1-1/4" Hex Cap Screw
P/N: 12743-1 (Al)
12743-2 (Blk)



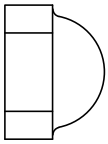
1/4-20 x 1" Sockethead Cap Screw
P/N: 12742-1 (Al)
12742-2 (Blk)



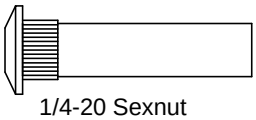
1/4-20 x 1" PFH Machine Screw
P/N: 102271-116 (stainless) or
102271-316 (black)



#14 x 1 PFH Self-drilling screw
P/N: 103277-316



3/8-24 Acorn Nut
P/N: 12741-1 (Al)
12741-2 (Blk)



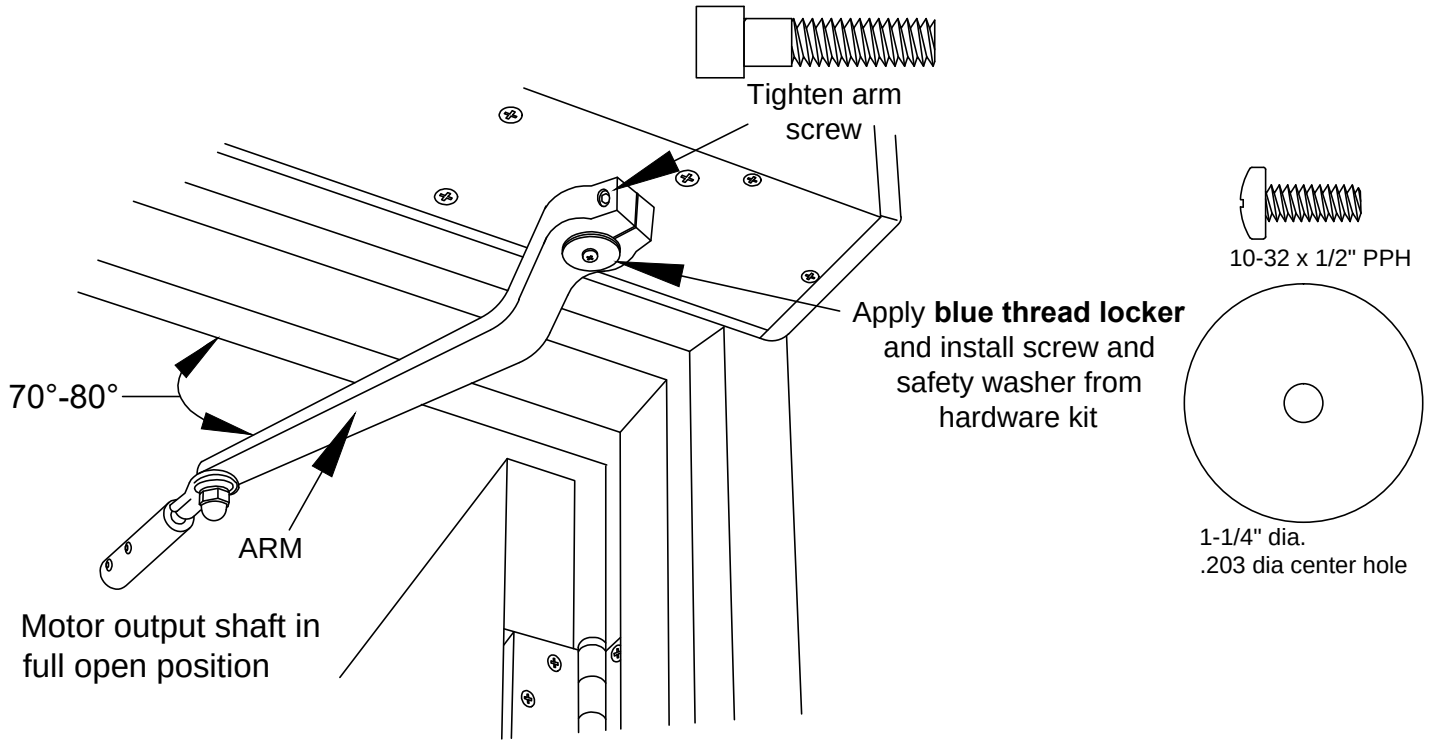
1/4-20 Sexnut
P/N: 101616-9 (630 finish) or
101616-25 (613 finish)

Push Arm Installation

The UDC 1000 controller must be plugged in and powered up. The controls are preset to approximate settings. Refer to instruction 104827.

Set the toggle switch located at the end of the enclosure to the HOLD position.

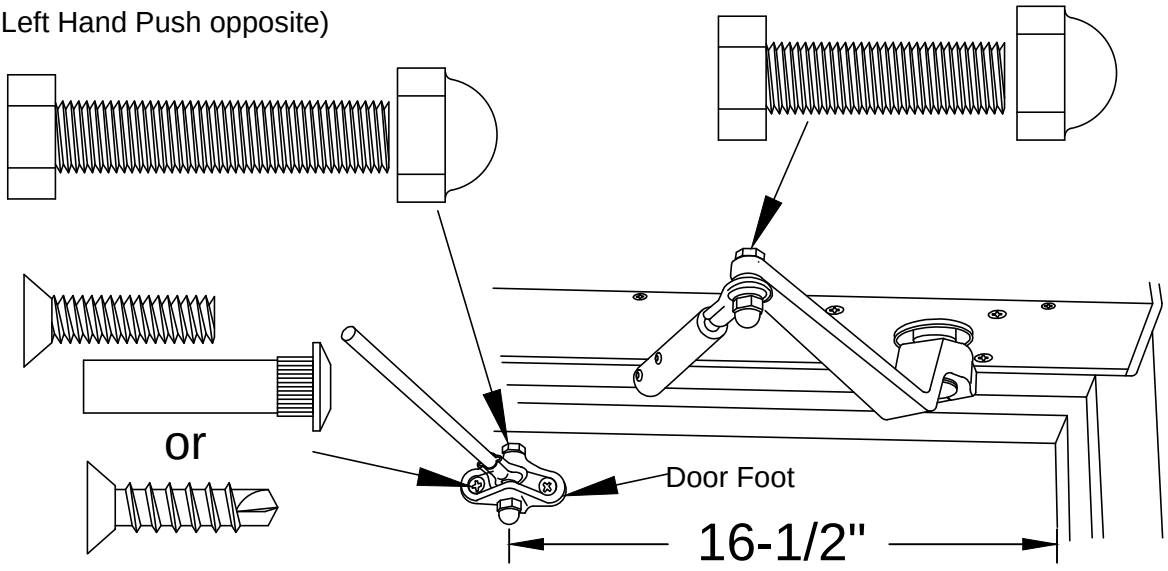
The operator will activate and the motor output shaft will rotate 240° (degrees). While in the full open position, attach the arm onto the shaft so that it is pointed at a 70°-80° (degrees) angle through the door opening.
Tighten the screw on the arm to secure it to the shaft.
Be sure the motor gear shaft is in full open position by forcing arm to rotate to it's stop position.
If you can rotate gear shaft beyond it's position, increase the "BACK-CHECK" and HOLD speeds.
Switch toggle to OFF then back to "HOLD".
Realign arm in proper position.
Tighten the arm screw on the arm to secure it to the shaft and install the 10-32 x 1/2" screw with **blue thread locker** and the safety washer to the bottom of shaft.



(Right Hand Push shown Left Hand Push opposite)

Door Foot Installation

(Right Hand Push shown Left Hand Push opposite)



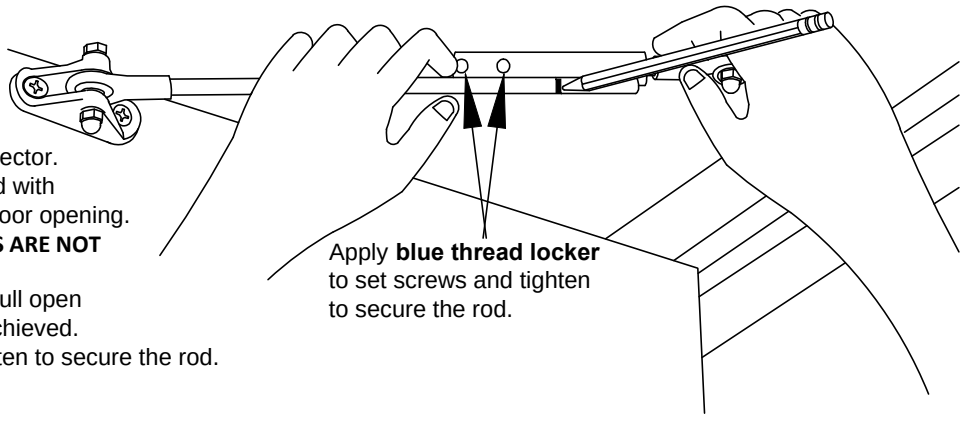
Turn the 3-way toggle switch to the OFF position and close the door.
The center of the door foot should be located 16-1/2" from the hinge side of the door frame stop and should be level when the rod is inserted in the sleeve attached to the arm.

Mark the door for the door foot holes and secure the foot to the door with the supplied screws (sexnut use is optional).

Rod Adjustment

Open the door and turn the 3-way toggle switch to the “HOLD” position.
The arm will rotate to the full open position.

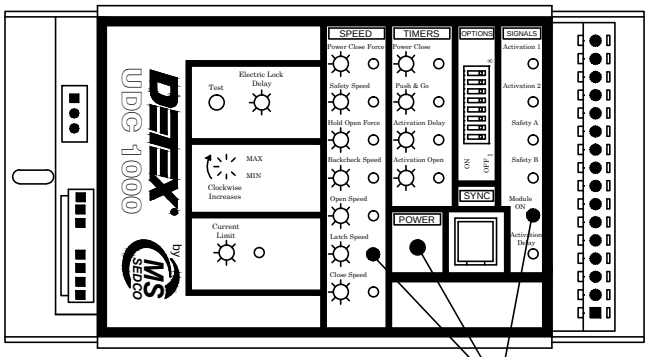
With the door opened to approximately 90°, hold the steel rod next to the rod connector at the end of the arm.
Mark and cut the rod so it will fit into the rod connector.
The rod length should allow the rod to be secured with both set screws and allow for adjustment of the door opening.
NOTE: ROTATE CONNECTOR SO THAT SETSCREWS ARE NOT FACING TOWARDS THE FLOOR.
Insert the rod into the connector with the door in full open position and adjust until the desired opening is achieved.
Apply **blue thread locker** to set screws and tighten to secure the rod.



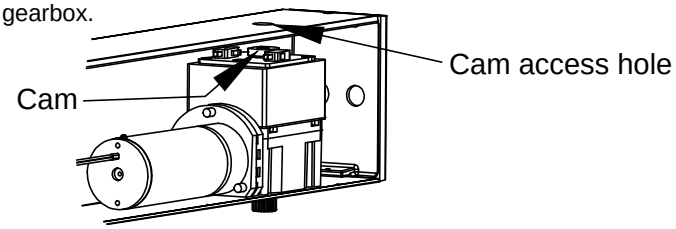
Low Voltage Activation Connections

Before any adjustments can be made the following check must be performed. First the arm must be properly connected to the door leaf. The power must be connected and the switch in the ON position. The door leaf must be fully closed.

Examine the UDC 1000 controller. The **Latch Speed**, **POWER** and **Module ON** lights must be on (see detail below).
If the **Close Speed** light is on, review the arm assembly location by manually opening door leaf until it is stopped by internal stop.
If the door arm rotates well beyond 80 degrees refer back to arm installation directions.
If arm stops at approximately 80 degrees, allow the leaf to close.



The LATCH-CHECK AND BACK-CHECK are controlled via the cam on top of the gearbox. Access is thru the top of the operator case directly above the gearbox.



With door closed: Using a 1/8th inch Allen wrench, gently loosen the screw that holds the cam in place. Rotate cam in the closing rotation direction until the **Close Speed** light turns off and the **Latch Speed** light turns on. Hold the cam in place while gently retightening the holding screw.

DO NOT OVER TIGHTEN AS THAT WILL DAMAGE THE CAM.

Test the LATCH-CHECK position by manually opening the door leaf until you see **Latch Speed** light turn off and the **Close Speed** light turn on. This should be approximately 4 inches from Jamb. Fine tune adjustment as necessary. If the lights fail to work call for factory assistance.

When satisfactory operation is achieved, reinstall front cover and screws.

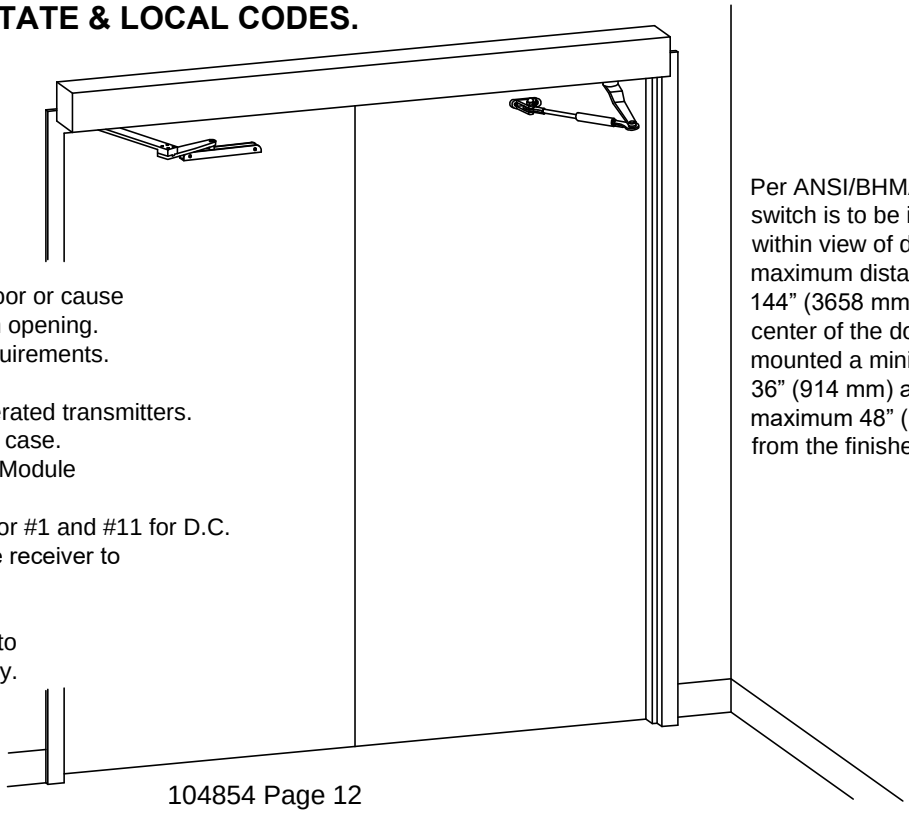
THE DETEX LOW ENERGY AUTOMATIC DOOR OPERATOR IS TO BE USED WITH APPROVED SWITCHES.

You must disconnect all voltage sources before attempting to install an accessory.

Typically you will use a wall mounted, hard wired push button for activation. You must provide wire from the push button switch to the Control Module inputs. Knockouts are available on the enclosure for wire runs. The connections are terminated on **terminals #1 and #2 of the Control Module**. Refer to the diagram included with the Control Module.

ALL WIRING MUST MEET ALL STATE & LOCAL CODES.

Button Location



Locate the buttons securely to a wall or post.
Be sure the button is not blocked by opened door or cause the user to be in the path of the door leaf when opening.
Check local codes for variations in location requirements.

Another popular type of button has battery-operated transmitters.
They work with a receiver mounted in operator case.
The receiver may be connected to the Control Module for a source of power.
Connect power wires to #12 and #13 for A.C., or #1 and #11 for D.C.
Connect the “COM” and “N.O. outputs from the receiver to terminals #1 and #2 of the Control Module.

Each transmitter setting must be programmed to same setting of the receiver to operate correctly.

Per ANSI/BHMA A156.19, switch is to be installed within view of door at a maximum distance of 144” (3658 mm) from the center of the door and mounted a minimum of 36” (914 mm) and a maximum 48” (1219 mm) from the finished floor.

Decal Application

You've been provided with a double-side decal that meets ANSI/BHMA A156.19, as follows:
A door shall be marked with a decal, visible from the swing side, with the words "AUTOMATIC CAUTION DOOR"

The sign shall be mounted on door at a height 58 in. +/- 5 in. from the floor to center line of the sign
The sign shall be a minimum of 6 in. in diameter with black lettering on a yellow background.

Decal
(104787)

Final Inspection

Before leaving site, test all activation devices and time your door. To reduce call-backs, instruct owner on the legal operation of door, how to turn on and off, function and warranty considerations.

This operator must be installed/serviced by a qualified person. The service technician must be familiar with the latest ANSI/BHMA A156.10/19 standards.

Call factory for technical support
800-729-3839