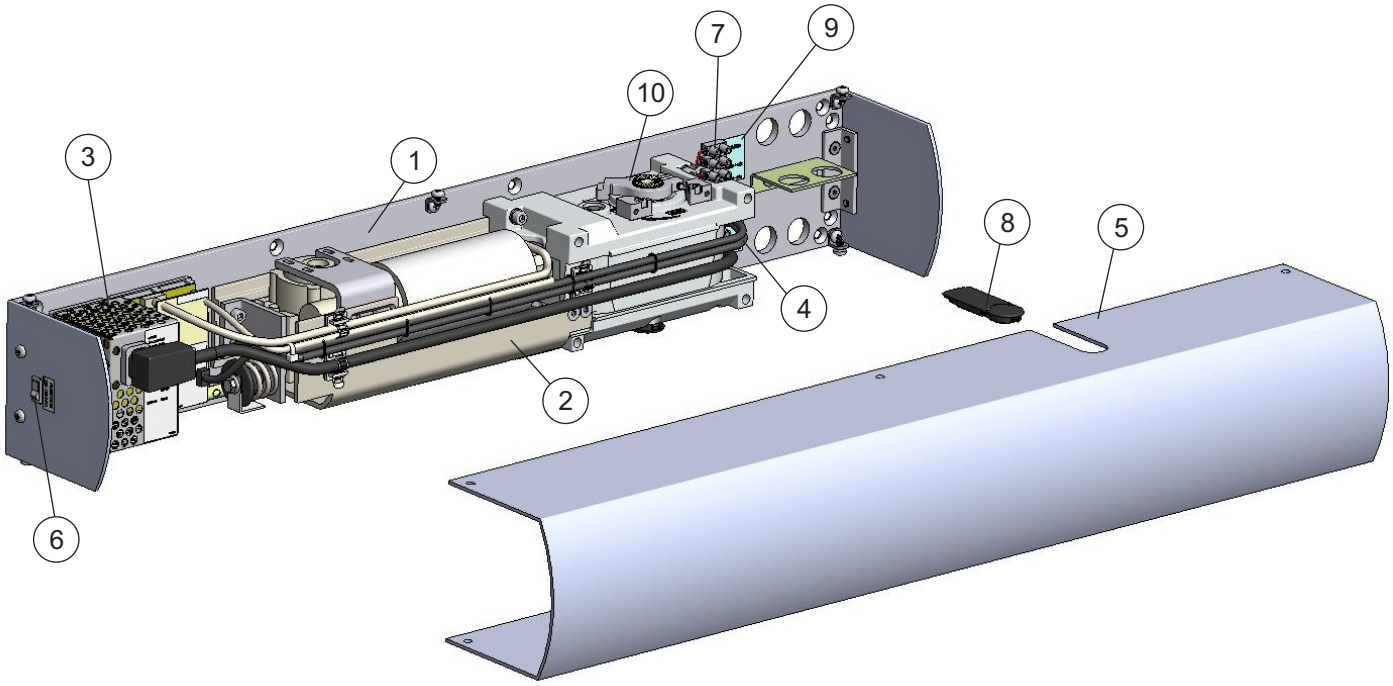
5900 Series
Power Operator
Installation and Instruction Manual



Item No.	Description
1	Back plate
2	Operator (5900MOT)
3	Main control unit (5900CM)
4	120VAC electrical power connection
5	Cover (5900COV)
6	On/Off/Hold open switch
7	Activation inputs
8	Cover cap
9	12/24VDC output for locking hardware
10	Door stop (5900DS)

Tools required:

- Adjustable wrench
- Flat blade screwdriver (potentiometer & terminal size)
- Screwdriver (Phillips size 2)
- Tape ruler
- Torque wrench (up to 25lbf-ft)
- Power drill and set of drill bits
- Center punch
- Wire stripper
- #7 drill 1/4-20 tap (metal frame install)

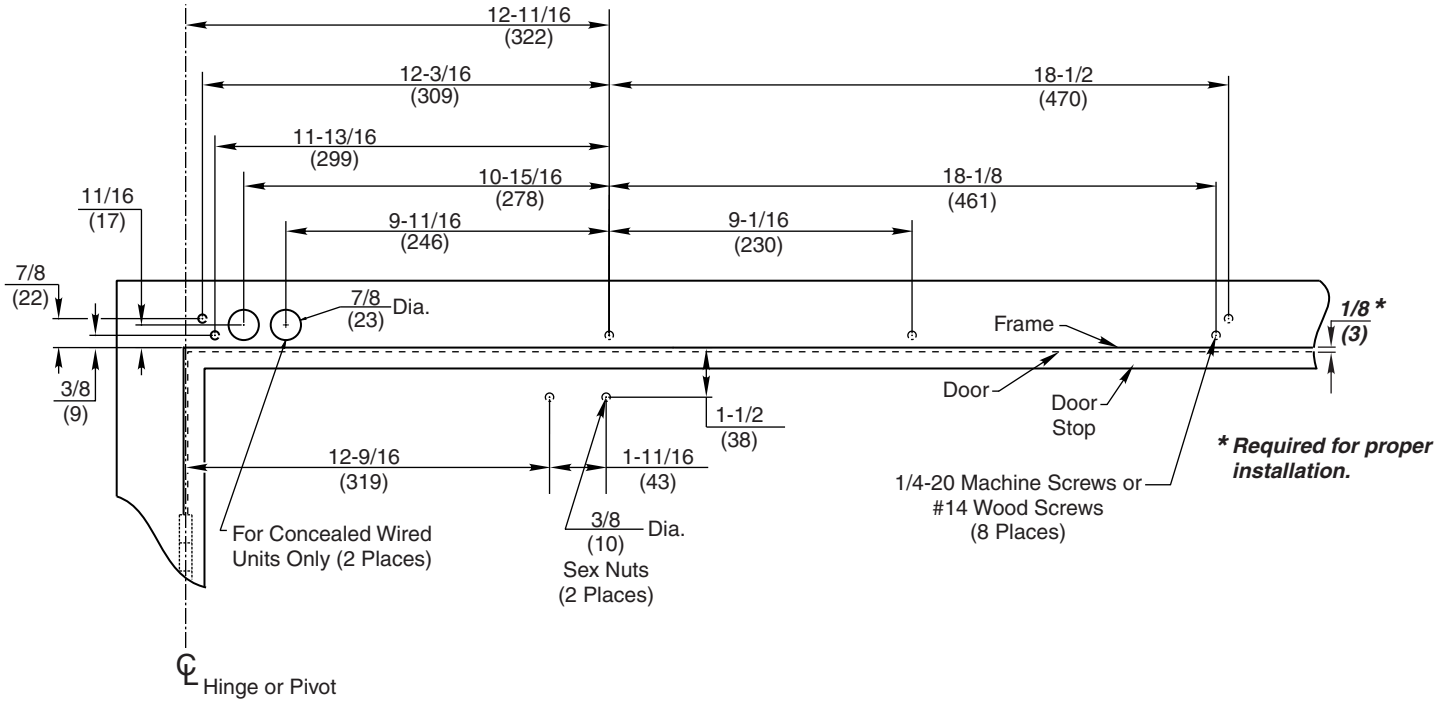
Glazing Material: the glazing material for swinging doors shall comply with ANSI Z97.1
Use screw pack and hardware provided to mount operator.

WARNING: To reduce the risk of injury to person, use this operator only with: Pedestrian Swing doors.

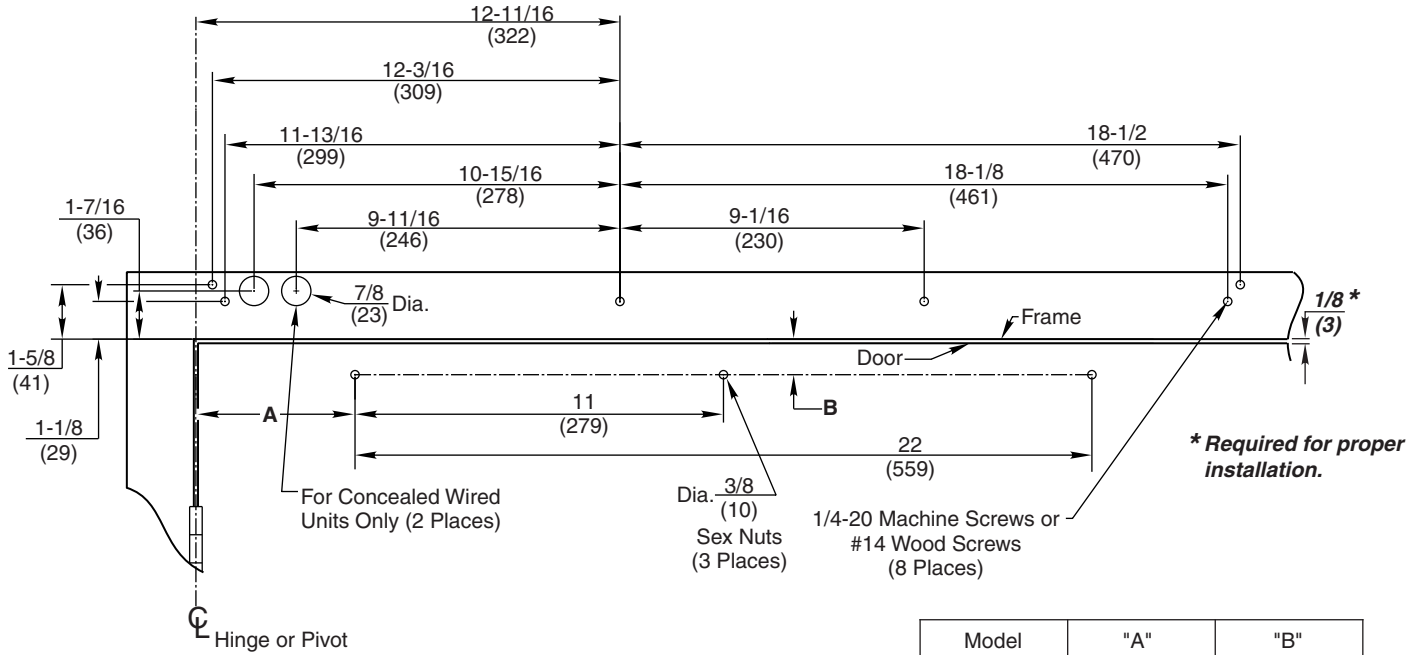
Complies with the following: ANSI/BHMA A156.19, UL325, UL10C, FCC, Part 15, Sub Part B, CSA C22.2 No. 247

Mounting

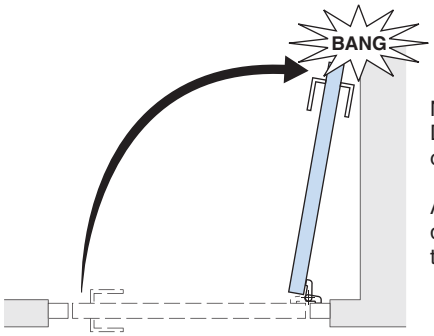
PUSH Side (5930)



PULL Side: 5910 - Rigid Arm & Slide Track
5950 - Double Egress Arm



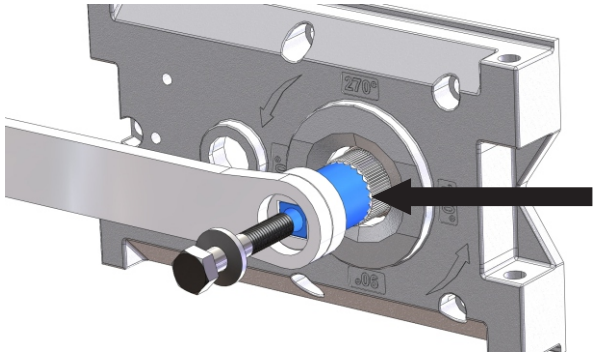
Model	"A"	"B"
5910	4-3/4" (121)	1-1/8" (28)
5950	5-1/4" (133)	1-13/16" (46)



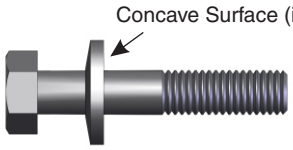
NOTE:
Door must be visible by person operating activation switch(es).

Absolute maximum opening is 110°; door stop is required to prevent damage to door hardware or adjacent walls.

Connect arm adapter to operator.



NOTE: Teeth must be properly aligned.

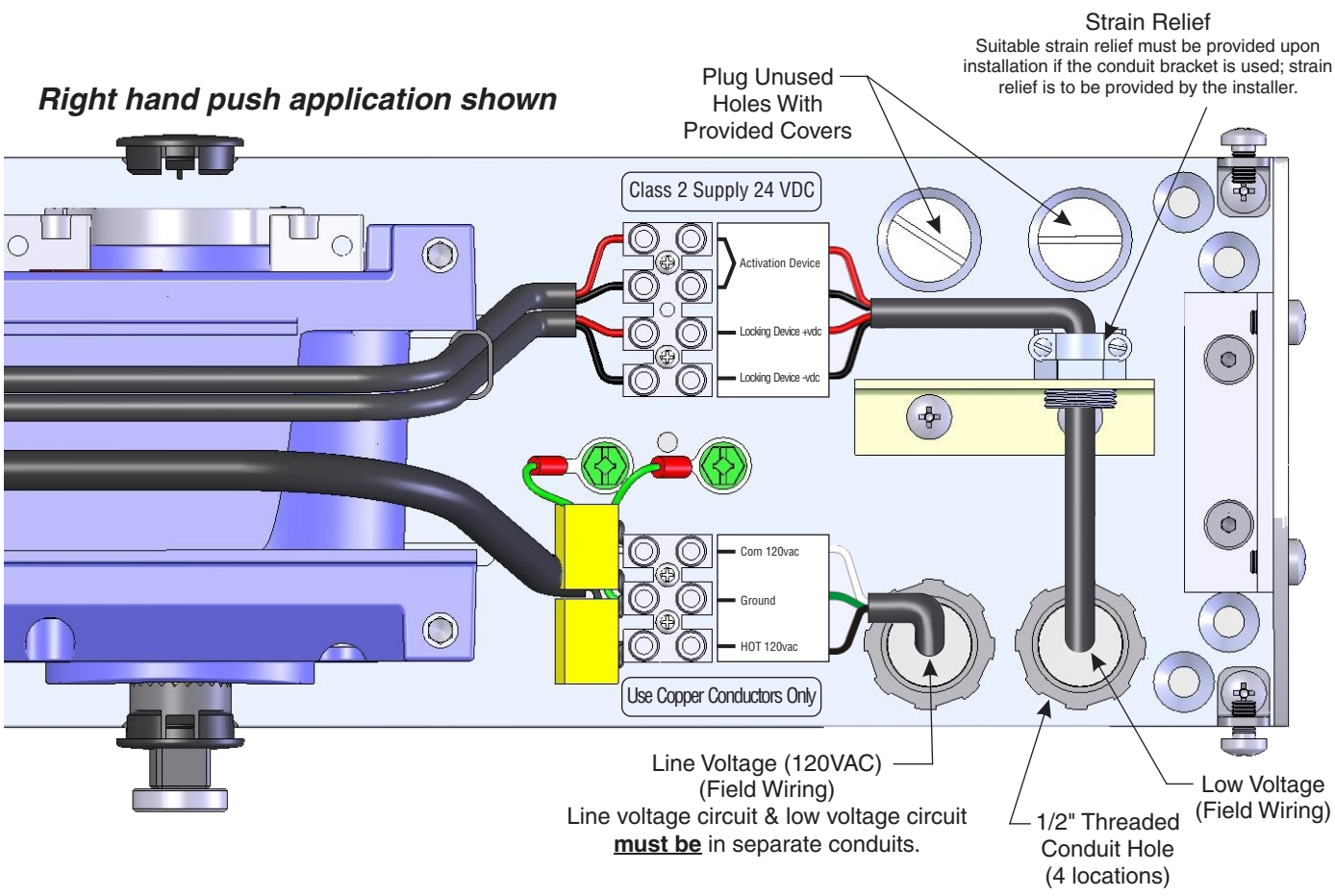


Step 1: Connect arm and adapter to operator first. REQUIRED Torque = 25 to 27 ft-lbs. This can only be achieved with a torque wrench.

Step 2: Connect arm to track last.

Power supply:	120VAC, 60Hz
Power consumption:	max. 75 W
Auxiliary voltage:	24 V DC, max. 400 mA
Internal control fuse:	2 x T 6.3 AH 250 V
Door width:	36-48" (914-1219 mm)
Electromechanical locking device	Selectable: 12V DC, max. 500 mA / 24 V DC, max. 250 mA
Door weight:	100-200 lb. (45-90 kg)
Door opening angle:	Push arm: 80° - 110°, with reveal 0 - 7" (0 - 178 mm)
	Pull arm: 80° - 110°, with reveal 0 - 1/8" (0 - 3 mm)
Opening time (0° - 80°):	variable between 3 - 6 seconds
Closing time (90° - 10°):	variable between 3 - 6 seconds
Hold open time:	1.5-30 seconds (A.D.A. 5 seconds min.)
Ambient temperature:	-4 °F to +113 °F (-20 °C to +45 °C)
Relative humidity (non-condensing)	Max. 85%

Right hand push application shown



Notes: Input connections - torque to 4.8 in/lbs (.55nm)
Permanent wiring is to be employed as required by local codes.
Any unused conduit holes must be plugged with provided covers.
Activation devices: push plates, access control, mats, etc.

Main Control Unit

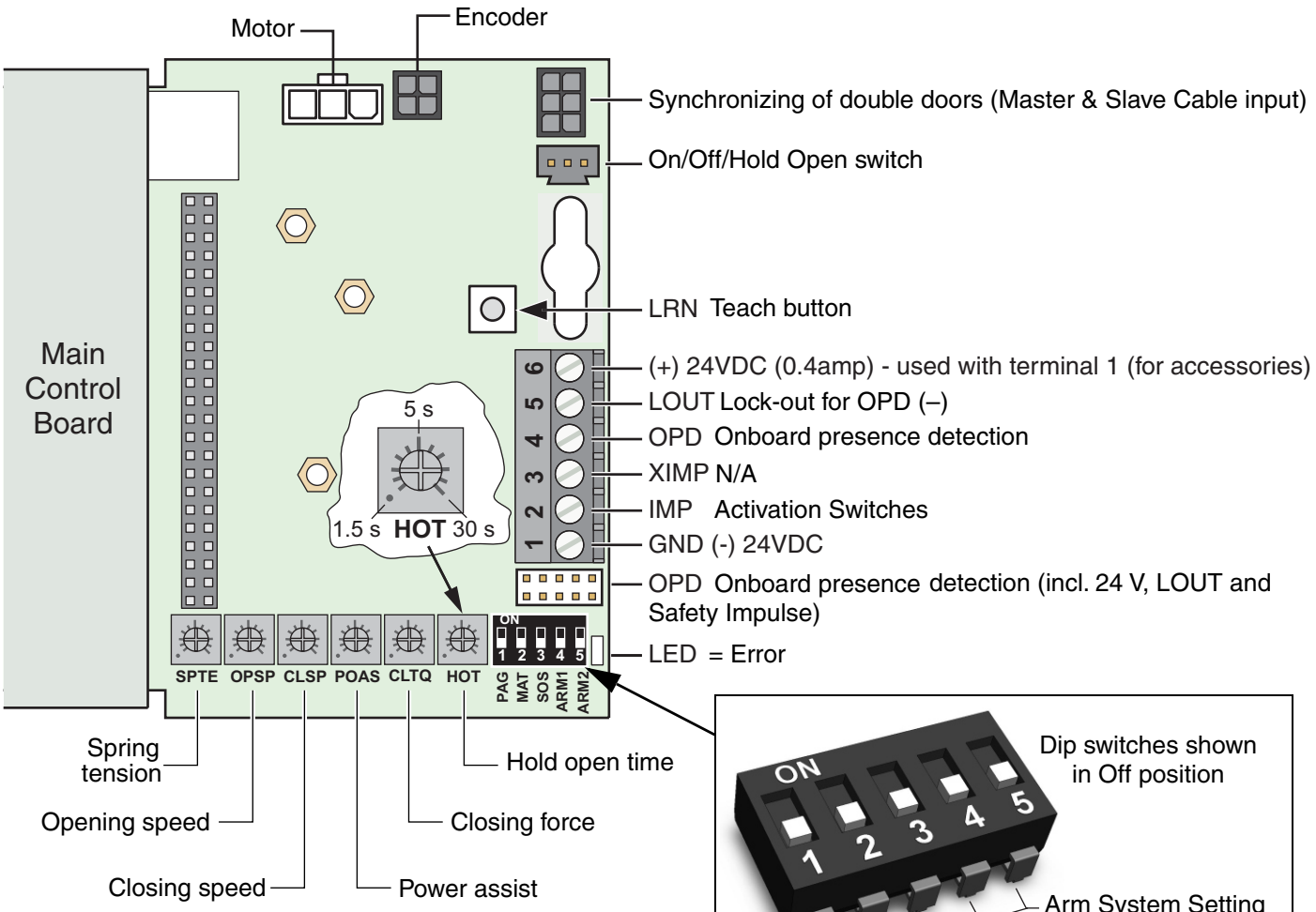
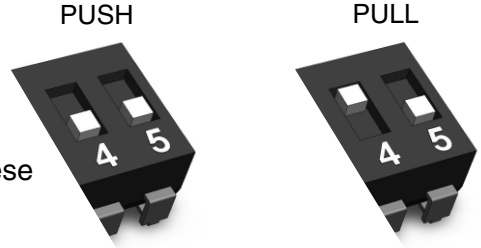


Figure 1



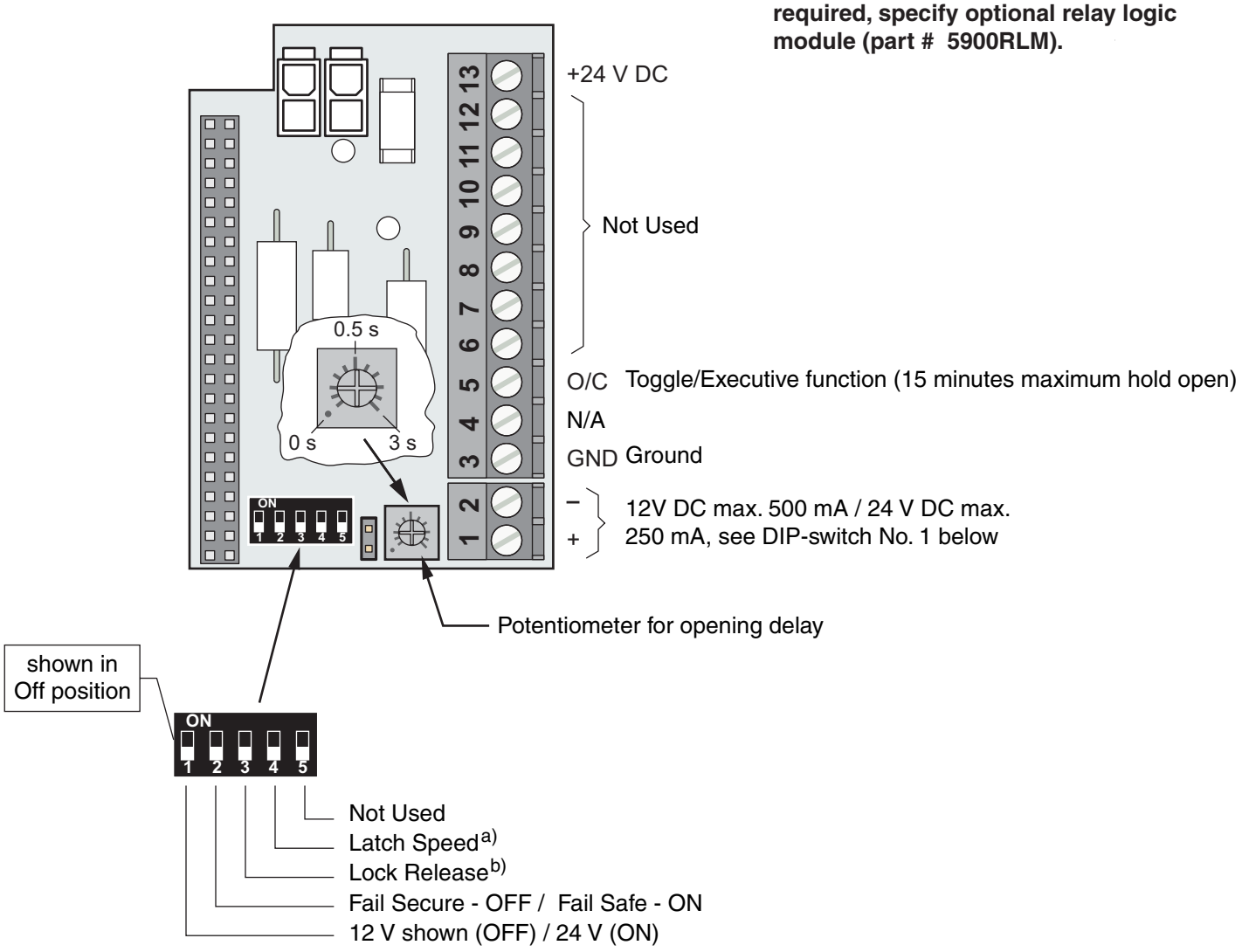
Note: Arm can be changed in the field by following these steps:

- Switch power off
- Select arm configuration on the DIP-switches (See Fig. 2)
- Switch power on

Figure 2

Auxiliary Control Board

NOTE: If auxiliary contacts are required, specify optional relay logic module (part # 5900RLM).

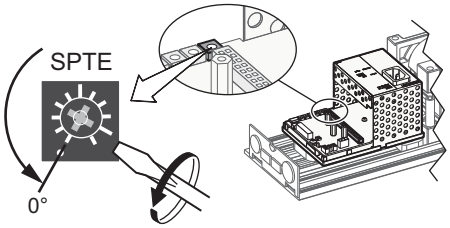


a) The “latch speed” complies with the ANSI/BHMA 156.19 requirements.
Position OFF: Smooth closing
Position ON: Faster, more powerful latch

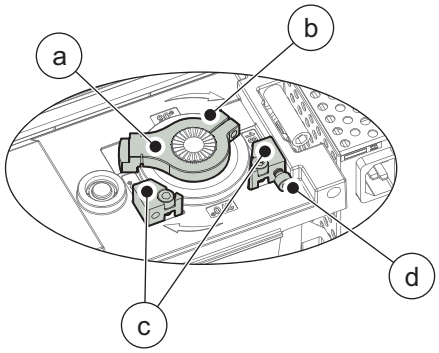
b) Pulls door closer to the jamb to free latchbolt. If the switch is set to ON, the “lock release” is active during the opening delay time set by the potentiometer. For “pair of doors” installations, the “lock release” works in sequence; master then slave.

1. Close the door.

2. Set the potentiometer SPTE to 0°.

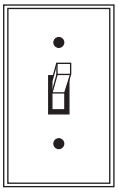


3. Loosen the door stop arm and remove.

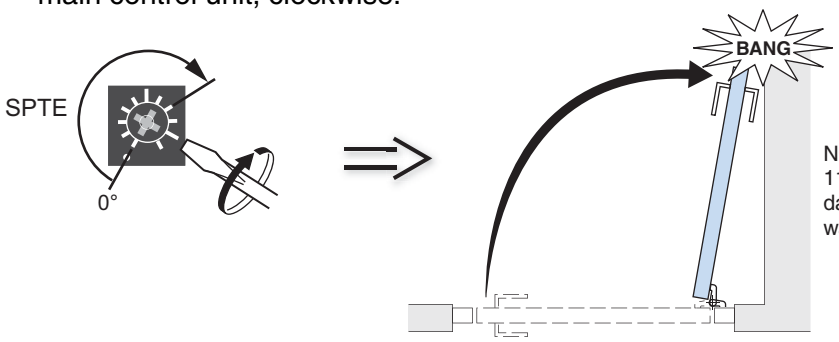


a.Door stop arm
b.Fixing screw
c.Stop block
d.Fine-adjustment screw

4. Switch the electrical power to ON position (the operator will find its closed position).

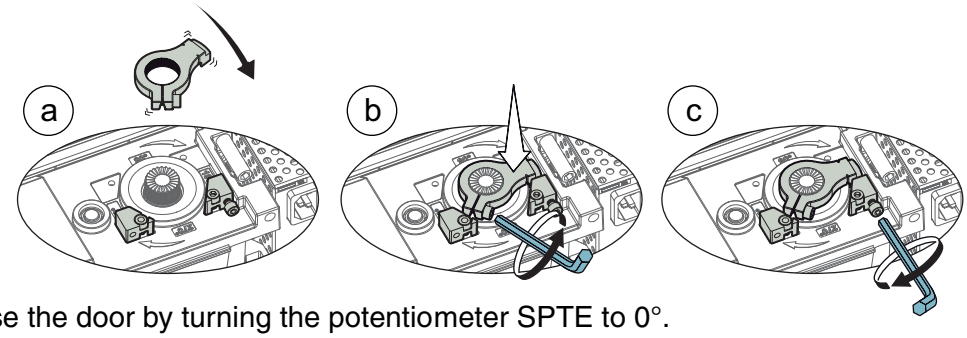


5. Open the door to required position by slowly turning the potentiometer SPTE on the main control unit, clockwise.

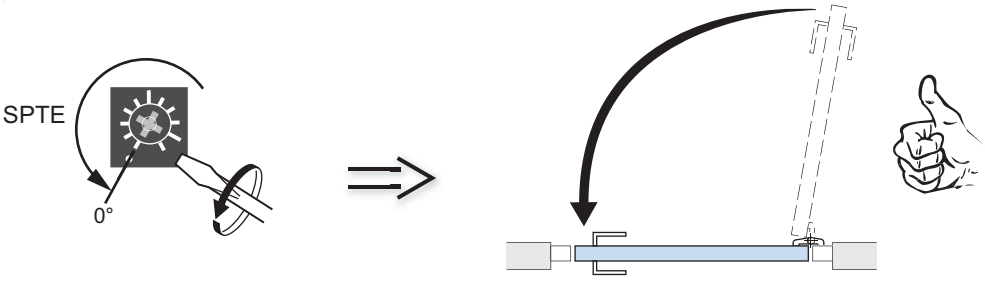


NOTE: Absolute maximum opening is 110°; door stop is required to prevent damage to door hardware or adjacent walls.

6. Mount the door stop arm on the spline (see figure a), as close as possible to the stop block (figure b). Fine-adjust if necessary with the screw on the stop block (figure c).



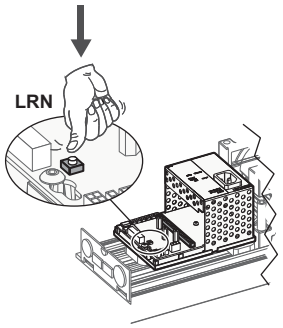
7. Close the door by turning the potentiometer SPTE to 0°.
   Note: Activations are not accepted if SPTE is more than 0°.



Auto-teach – automatically sets backcheck and latch

This procedure is performed by pushing the Teach button (LRN). There will be a 2 second delay before door starts.

Note: Before the teach procedure starts, make sure that the door has been properly closed.



Warning! Remain clear of swing path of door, as door may close rapidly. The door has no safety during auto-learn cycle.

- If any of the parameters “Spring tension” (SPTE), “Closing force” (CLTQ) and “Lock release” (DIP-switch No. 3 on auxiliary control board) are changed after teaching, repeat teaching procedure.
- Operator can be taught with activation units and locks connected.
- The backcheck will be automatically adjusted to 10° and 1 second before open position. The latch will be automatically adjusted to 10° and 1.5 seconds before closed position.

Operation:

Your 5900 Series Operator can be configured in two variations to meet the standards:

1. Push plates are provided to activate the operator. The door also can be used as a manual door.
2. Push to activate can be enabled. In this mode, your door is pushed (or pulled) 5° manually, and then automatically opens to full open position.

If desired, overhead presence devices can be provided for an extra level of protection. These are not required by current ANSI/BHMA A156.19 codes.

Opening:

When an opening signal is received by the control unit, the door is opened at the operator-adjusted opening speed. Before the door is fully open at backcheck, it slows automatically to low speed. The motor stops when the selected door opening angle has been reached. The open position is held by the motor.

If the door is obstructed while opening, it will either stall or stop which can be selected with a DIP switch.

* When stalling - the door will continue to try to open during the hold open time.
* When stopping - the door will, even if hold open time has not expired, close after 2 seconds.

Closing:

The door shall not close with a force greater than 40 lbf (177.9N) at the latch side of the closing stile. It shall not close through the final 10° in less than 1.5 sec. When the hold open time has elapsed, the operator will close the door automatically, using spring force and motor. The door will slow to low speed at latch check before it reaches the fully closed position. The door is kept closed by spring power or extended closing force by the motor.

Note: Operator should be adjusted for the slowest operation in accordance with Americans with Disabilities Act (ADA) and ANSI/BHMA A156.19 Standards.

Opening speed: 5 seconds or more	Latch location: 10° or more
Closing speed: 3 seconds or more	Latch speed: 1.5 seconds or more

Recommended tools: spring force gauge and stop watch

Double doors

For double doors, the master door must be taught first. The master door will open to the full open position during the slave door teaching phase.

The doors can also be taught separately before connecting the sync cable (optional).

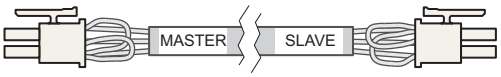
General adjustment

- Set the hold open time with the potentiometer on the main control unit.
- Teach operator while opening is set at maximum opening speed. Turn closing speed (on potentiometer) counterclockwise to slow operator down.
- Connect the required activation units.
- Check that the installation complies with local or state requirements.

Reducing / Increasing the “Spring Tension” (SPTE)

- Loosen the door arm stop. Remove if fitted on the topside, slide down if fitted on the bottom.
- Turn the potentiometer for spring tension (SPTE) clockwise until the door opens to 45°.
- Loosen the drive arm fixing screw.
- Moving the door **towards open position**, reduces the tension, or:
  Moving the door **towards closed position**, increases the tension.
- Tighten the drive arm.
- Turn the potentiometer SPTE to 0°.
- Open the door to required open position by turning the potentiometer SPTE clockwise.
- Mount the door arm stop as close as possible to the open door stop block, fine-adjust with the fixing screw if necessary.
- Turn the potentiometer SPTE to 0°.
- Repeat "Operation Set-Up" steps on page 6.

Sync cable for double doors (synchronizing of 2 operators)

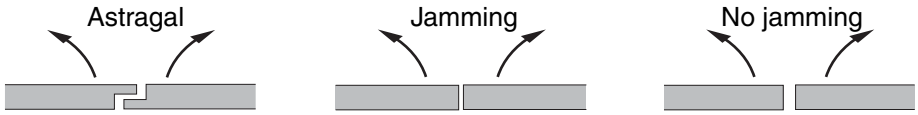


P/N: 59000CAB

Note:
The markings on the sync cable determine which of the operators is the master and slave. Cable length - 10 feet.

How to cut the jumper for double doors

Function		Door Design		Cutting Jumper	
Opening	**Closing**	**Astragal**	**Jamming**	**Master**	**Slave**
Synchronous	Synchronous	No	No	No cutting	No cutting
Synchronous	Asynchronous	Yes	No	Cut black	No cutting
Asynchronous	Asynchronous	Yes	Yes	No cutting	Cut red
Double egress		—	—	Cut black	Cut red



Settings for double doors

Function	Settings	
Common	**Master**	**Slave**
Opening time	X	
Closing time	X	
Hold-open time	X	
Close/continue to open when the door is obstructed	X	
PAG On/Off	X	
Level of Power Assist	X	(X)*
Extended closing force	X	(X)*
OPD Input or Mat Logic Input	X	
Individual	**Master**	**Slave**
Fail Secure/Fail Safe Locking	X	X
Lock release (Enable/Disable)	X	X
Open Delay Time	X	X
Latch Speed (Fast/Slow)	X	X

*For “Double egress doors”, these functions must be set separately for Master and Slave as the arm systems as well as the air pressure may be different.

Notes:

- Locks on the “Master” and “Slave” doors must be connected to the Control Unit on the corresponding operator.
- The OPD is to be connected to the “Master” Control Unit except for “Double egress”, where each OPD must be connected to corresponding Control Unit.
- Door leaf mounted sensors must always be connected to corresponding Control Unit.

Troubleshooting

Fault	Possible reasons why	Remedies/Explanations
The door does not open - The motor does not start	Control switch is set to OFF position	Change the setting of the ON/OFF/Hold open switch
	Electrical power is missing	Check the electrical power switch
	Activation unit does not function	Jump activation input
	Presence detection is activated	Check that there are no objects in the detection zone
	Potentiometer SPTE not turned to 0°	Turn SPTE to 0°
- The motor starts	Mechanical lock is locked	Unlock the lock
	Something jammed beneath the door	Remove object
	Electric strike plate is binding	Select toggle dip switch for lock release
		Adjust strike
	Arm system has come loose	Turn potentiometer SPTE until the door-stop hits the stop-block. Put the door in required open position. Tighten the arm system. Turn SPTE to 0°
The door does not close	Control switch is set to HOLD	Change the setting of the ON/OFF/Hold open switch
	Presence input is activated	Remove objects in the detection zone
	Something jammed beneath the door	Remove object
The operator has unknown spring tension	Too many adjustments carried out	• Turn up the potentiometer SPTE until it is possible to loosen the door arm stop • Remove the door stop and the arm system • Unplug the electrical power and let spring close • Unplug the motor plug • Mount the drive arm from the arm system and find the 0 tension by moving back and forth • Loosen the arm • Connect the motor plug • Connect the electrical power • Turn the SPTE pot to 210° and wait until the spindle stops turning • Mount the door stop against the closing stop block • Turn down SPTE to 0° - operator is now factory set • Turn to section 9 to adjust open stop position

Error Indication

- During normal operation the “Error LED” on the control unit is illuminated.
- An extinguished LED indicates that there is no electrical power.
- A flashing light on the LED indicates that the operator is out of function (see table below).

LED Flash Frequency	Reason	Remedy
One flash, pause etc.	+ 24 V DC external error or sensor monitoring error	Check for short circuit or broken monitored sensor
Three flashes, pause etc.	Control unit defective	Replace control unit
Four flashes, pause etc.	Encoder error	Check the encoder cable on control unit. Open and close the door manually and thereafter check the automatic function. If the operator is still out of function replace the drive unit.
Five flashes, pause etc.	Locking device defective	Check for e.g. short circuit in the locking device
		Replace locking device
	Auxiliary Control Board defective	Replace Auxiliary Control Board
Six flashes, pause etc.	Sync cable not connected or defective (double door only)	Connect the sync cable
		Replace the sync cable
Seven flashes, pause etc.	Slave control unit defective (double door only)	Check the flash frequency on the Slave LED and take necessary measures in accordance with this table.
Eight flashes, pause etc.	Motor overheated	Wait for the motor to cool down
Nine flashes, pause etc.	Blocked door and constant impulse	Toggle impulse

Maintenance (Service by Authorized Personnel Only):

Disconnect power before servicing.
Frequency of maintenance will depend on factors such as traffic, climate, etc. To make sure your operator is working correctly you should periodically check wire connections, tightness of arm connection and screws, and wear and tear on hinges/pivots.
No serviceable user parts!

For assistance, contact Norton Technical Product Support at 877-974-2255.

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