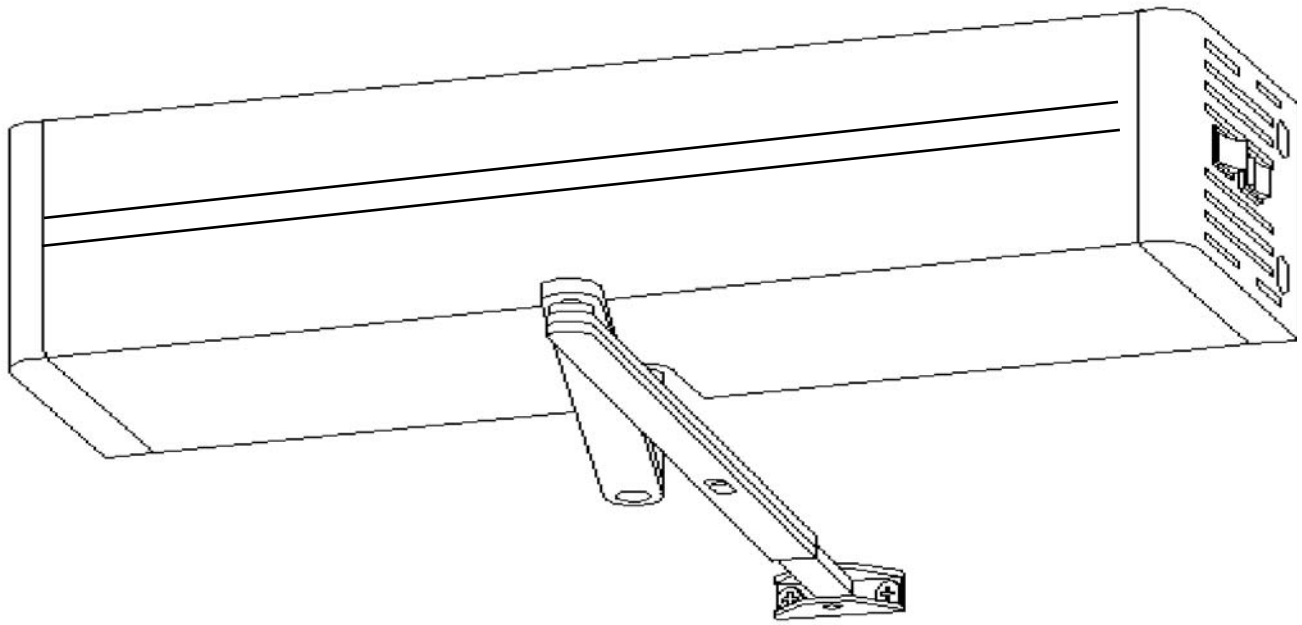
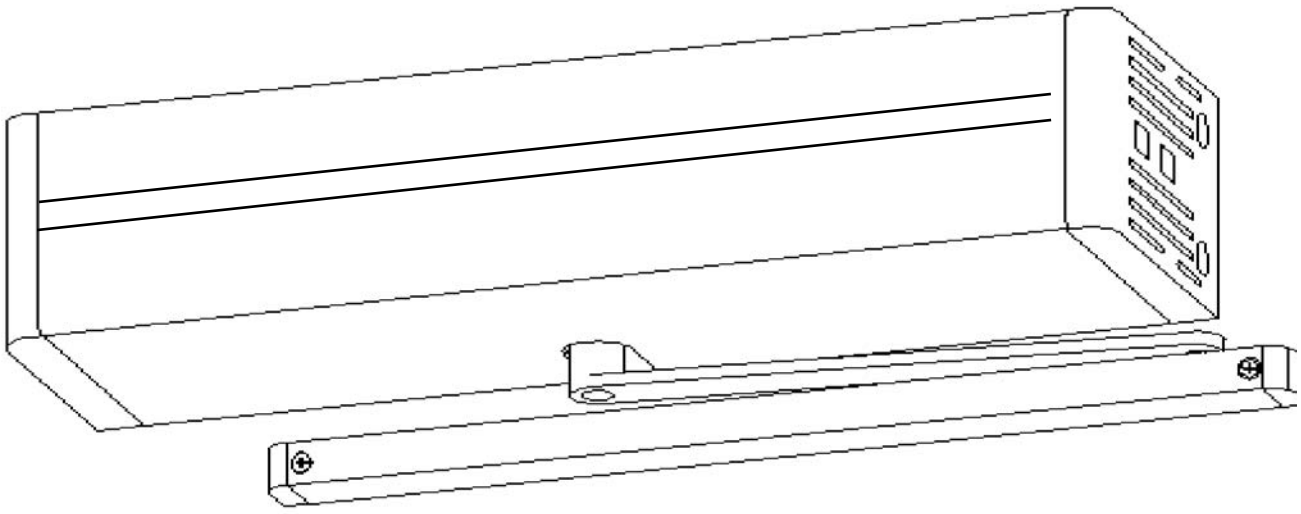
# DORMA ED 800 SERIES
# Service Manual



ED 800J



ED 800T

software level 3.27M

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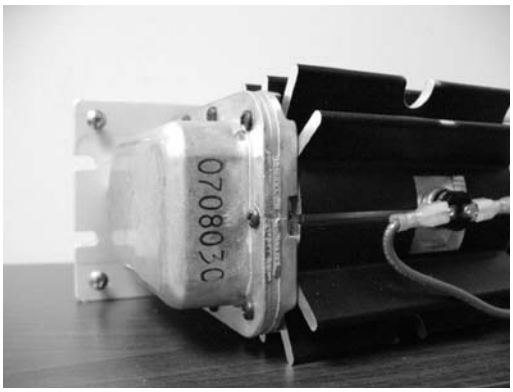
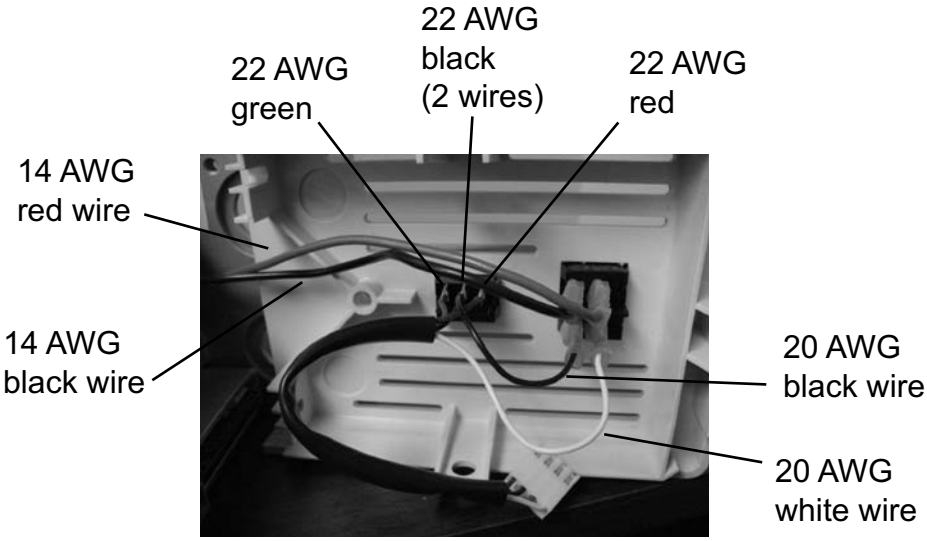
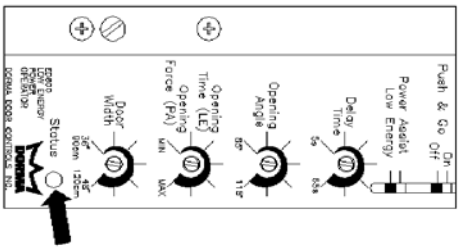



Location of serial number




Wiring for end cap switches

The ED800 Series Service Manual contains product information that is intended to supplement product information which is covered in the ED800 Series Installation Instructions. Users of the Service Manual should also be familiar with the Installation Instruction.




## STATUS LIGHT

The ED 800 controller module is equipped with a status light which indicates the current state of the software program by a series of green flashes. In addition, the status light can indicate problems with the installation or adjustment of the ED 800, or problems with the actual unit by a series of red flashes.

**If the status light indicates a problem by a series of red flashes, the ED 800 will not accept an open trigger and will not operate under power until the problem is corrected, and the unit is turned off and then turned on.**

However, the ED 800 will always operate as a manual door closer.

## STATUS LIGHT CODE - SUMMARY

| NUMBER OF **GREEN** FLASHES | INDICATES |
|---|---|
| 1 | Test (Factory use only) |
| 2 | Learning |
| 3 | Latch Stop |
| 4 | Latch Stop - Push & go on |
| 5 | Opening |
| 6 | Back Stop |
| 7 | Balance |
| 8 | Closing |
| 9 | Abort |

| NUMBER OF **RED** FLASHES | INDICATES |
|---|---|
| 2 | Overcurrent |
| 4 | Short Connecting Arm (too much preload), or Pull set for Push |
| 5 | Long Connecting Arm (too little preload), or Push set for Pull |
| 7 | Encoder Cable |
| 10 | Open Motor Lead or Disconnected Encoder, Worn Brushes, Damaged Control Module. |

| | |
|---|---|
| **NO LIGHT** | No power to unit, or unit is overheated and in a cool down state (should continue to run after it has cooled). **Caution: Motor may be hot!** |

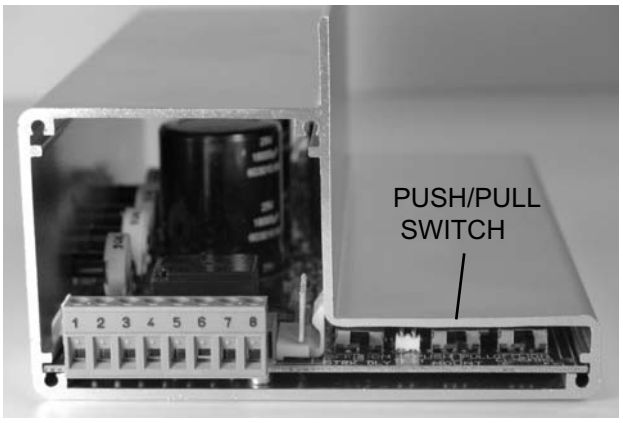
**STATUS LIGHT CODE - DETAIL**

| | |
|---|---|
| 1 green flash | Indicates that unit is in Test Phase. Test Phase is used in the final assembly process and for factory diagnostics. This code is normally not used in the field. |
| 2 green flashes | Indicates that the unit is in Learn Phase. Immediately after the unit is turned on, it enters the Learn Phase. During this time, the software determines the spring power of the TS 83 door closer and the closed position of the door by opening the door slowly to about $10^{o}$-$15^{o}$, then allowing the door to close. The door will open three times to determine this information. If there is an electric strike or electric latch retraction which is controlled by the ED 800, it will remain energized during this phase. If the door is latched or locked during this phase, the software recognizes this condition and defaults to a safe, predeter mined value for door closer spring power. In this case, it is possible that perfect balancing of the door upon obstacle conditions may not be achieved since the software was unable to obtain an actual spring power reading. If the door is held open during the Learn Phase, the software will wait until the door has closed to complete the Learn Phase. |
| 3 green flashes | Indicates that unit is in Latch Stop Phase. After completing a successful Learn Phase, the unit enters Latch Stop Phase. During this phase, the unit will accept an activation trigger, provided the busy swing (safety) circuit is open. If an activation trigger is received while the busy swing (safety) circuit is closed, the unit remains in Latch Stop Phase, however the trigger is remembered and activation occurs when the busy swing (safety) circuit is opened. |
| 4 green flashes | Indicates that the unit is in Latch Stop - Push and Go On Phase. This phase is identical to Latch Stop Phase, with the exception that one inch of manual door movement from the closed position will also activate the unit, in addition to external activation triggers. |
| 5 green flashes | Indicates that the unit is in Open Phase. In this phase, the door accelerates, then drives at a constant speed to the backcheck position, then decelerates and continues to open at a crawl speed to the fully open position. If an electric strike or electric latch retraction is connected to the ED 800, door movement will be delayed by 1/2 second, the strike or latch retraction will be activated immediately and will remain active until the door reaches approximately $10^{o}$ of opening. The strike or latch retraction will only be activated if the door is between $10^{o}$ and closed when the trigger is received. |

| | |
|---|---|
| 6 green flashes | Indicates that the unit is in Back Stop State, which is the fully open position as determined by the “Opening Angle” potentiometer. |
| 7 green flashes | Indicates that the unit is in Balance Phase. In the Balanced Phase, the ED800 applies a minimal amount of force to maintain the door’s current position. The door may be manually opened or closed, as required. In Low Energy Function, the Balance Phase occurs when the door encounters an obstacle during the Opening or Closing Phases. Once in the Balance Phase, the unit will remain in the Balance Phase as long as there is door movement plus the duration of the delay time potentiometer. Activation triggers received during the Balance Phase will restart the delay timer, extending the time in the Balance Phase.<br><br>In Power Assist Function, the Balance Phase begins immediately upon receiving an activation trigger. Initially, the door will open slowly to approximately 10$^{o}$ to alert the user that the Power Assist Function is active. The unit will remain in the Balance Phase as long as there is door movement plus the duration of the delay time potentiometer. |
| 8 green flashes | Indicates that the unit is in Closing Phase. During the Closing Phase, the door position is continuously monitored from the fully open position to approximately 10$^{o}$. If the door stops moving or is reopened manually, the controller changes to Balance Phase. From 10$^{o}$ to the closed position, the door closes under the control of the latch valve only. |
| 9 green flashes | Indicates that the unit is in Abort State. During Abort State the drive mechanism (shuttle) within the unit returns to the latch check position (approximately 10$^{o}$ of door opening) and waits for the door to close. The Abort State occurs when the controller starts the Closing Phase, however, the door remains stationary, as if propped open. The Abort State also occurs when the controller is set for Low Energy Function with the Push and Go feature turned on and the door is opened briskly beyond 45$^{o}$. |

| | |
|---|---|
| 2 red flashes | Indicates overcurrent. Allow time to recover and cool down which is usually 15-20 minutes. (Caution: Be sure the unit is being used primarily for ADA applications, and the appli cation is within the maximum tolerances that the ED800 is designed for). |
| 4 red flashes | Top Jamb Application - Indicates that the connecting arm is too short (closer is preloaded too much). The connect ing arm should be at a 90$^{o}$ angle to the door when closed. Confirm that ED 800 base plate and arm shoe are located accurately. Improper templating can cause this error code.<br><br>Track Application - Indicates that Push/Pull switch is set incorrectly. Confirm that switch is set for Pull. Confirm the pull side face of the door and frame are flush. Misalignment between the track and the ED800 baseplate due to non-standard frame configuration can cause this error code. |

Connecting arm perpendicular to the door.




| | |
|---|---|
| 5 red flashes | This error code normally occurs in top jamb applications only. Indicates that the connecting arm is too long (too little preload). The connecting arm should be at a 90º angle to the door when closed. Confirm that the ED 800 base plate and arm shoe are located accurately. Improper templating can cause this error code.<br><br>Confirm that the Push/Pull switch is set correctly. Top jamb units set for pull will generate this error code. Top jamb units must be set for push. Units turned on without the main arm installed will display this error code. |
| 7 red flashes | Indicates the encoder cable is not making contact (could be disconnected or damaged). |
| 10 red flashes | Indicates an open motor lead. Confirm that motor leads are connected. Check for worn brushes. |

## FAULT ISOLATION GUIDE

**PROBLEM:** Door does not open completely.

**SOLUTION:** Determine status light code when door is at the maximum opening.

**6 green flashes**

Indicates unit in Back Stop State, which is the maximum opening angle as determined by the Opening Angle adjustment. Re-adjust opening angle, if necessary.

**7 green flashes**

Indicates unit in Balance Phase - check Low Energy/Power Assist switch

**If set for Low Energy:**
Door is contacting an obstacle. Confirm that the swing area of the door is clear. Once obstacle is removed, door should close and continue to operate correctly.

**If set for Power Assist:**

The unit is functioning properly.

**OR**

If door remains in balance, confirm that the door swings freely. Turn ED 800 off. Disconnect the arm from the door. The door must swing freely through the entire range of operation. Check for hinge bind, excessive drag from weather stripping, door dragging on threshold or carpet, excessive resistance from high wind, or pressure differences from one side of the door to the other. The unit is designed to exert a maximum of 15 pounds of force at the leading edge of the door. The source of resistance must be isolated and corrected.

**OR**

Confirm that the door width setting matches the actual door size. The ED 800 is designed to operate on doors from 36 to 48 inches wide. The door weight is not to exceed 200 pounds. The unit must only be installed on doors of proper size and weight.

**PROBLEM:** Door opens slightly for no apparent reason.

**SOLUTION:** Unit is performing a Learn Cycle.

When the ED 800 is initially turned on, a learn cycle is performed to obtain information regarding required opening forces and the closed position of the door. During the learn cycle, the door will open slowly to approximately 10º - 15º, then close. This will repeat 3 times. After completing a successful learn cycle, the unit will accept an opening trigger and operate normally.

The only time a learn cycle will be performed is if there has been a power interruption caused by turning the unit off and on by the end cap switch, or remote switch option.

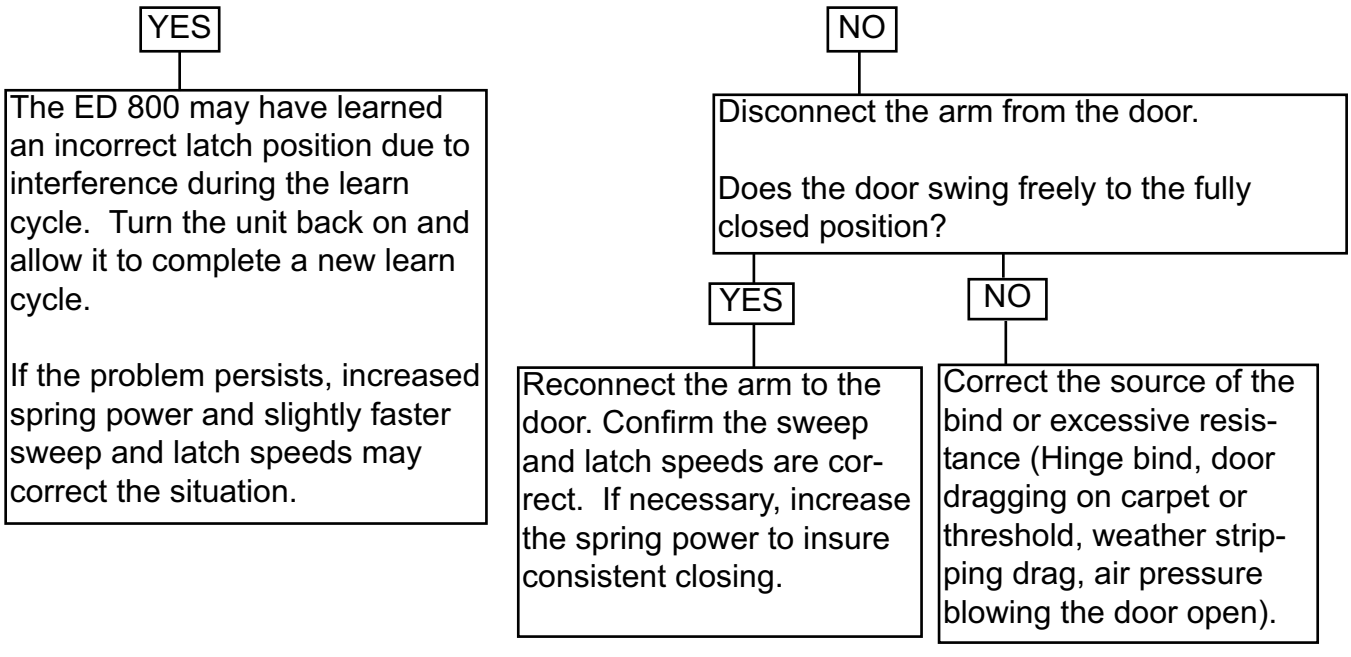
**PROBLEM:** Door opens too slowly.

**SOLUTION:** Confirm that the Opening Time (LE) adjustment is correct. MIN is the least amount of time which is the fastest speed. MAX is the greatest amount of time which is the slowest speed. Confirm that the door width setting matches the actual door size.

The fastest opening time to be expected from closed to 80° is about 6 seconds for a 36" door (longer for wider doors). This speed was determined to insure compliance with A156.19, the American National Standard For Power Assist And Low Energy Power Operated Doors.

**PROBLEM:** Door does not close completely after a powered opening.

**SOLUTION:** Turn the ED 800 off. Does the door immediately close?



**PROBLEM:** Door remains in the open position and will not close.

**SOLUTION:** Depress the hold open switch on the end cap to override the time delay. The door should close immediatley. Does the door close?

| YES | NO |
|---|---|
| The ED 800 received a hold open trigger. The door will remain in the hold open position for approximately 15 minutes. | Check for obstacle blocking door from closing. See “Problem: Door does not close completely...” |

**PROBLEM:** The unit is turned on but makes no attempt to open the door when triggered.

**SOLUTION:** Determine the Status Light code.

**2 green flashes:** Indicates that the unit is in Learn Phase. Normally , when the unit is initially turned on, it enters and completes the Learn Phase. Confirm that the door swings freely to the closed position.

**3 or 4 green flashes:** Indicates that the unit is in Latch Stop Phase. The unit will normally accept an open trigger in this phase except when the busy swing (safety) circuit is closed (normally activated by a presence sensor). In this case, the open trigger will be stored until the busy swing (safety) circuit is opened, then the unit will be activated.

**7 green flashes:** Indicates that the unit is in Balance Phase. The unit has attempted to open the door but an obstacle was encountered causing the unit to enter the Balance Phase. Confirm that all latches and deadbolts are retracted and that the door swings freely through the entire opening range.

**PROBLEM:** No status lights.

**SOLUTION:**

**A.** Indicates that the fuse is blown. Replace the fuse with an identical type (3 amp, type AGC, size 1/4” x 1-1/4”).

**B.** Damaged hold open or on/off switch. Replace switch.

**C.** Motor cool down period (motor is hot). The operator will remain in a powered-down state until the motor cools and allows normal operation (Usually not longer than 20 Minutes).

High duty cycles, extended hold open times, strong spring power, heavy or wide doors, and high temperature environments can all contribute to the need for a motor cool down period. Occasional cool down periods do not harm the unit, however the cause of continual cool down periods must be determined and corrected.

**4 red flashes:** **Top Jamb Application -** Indicates that the connecting arm is too short (too much preload). The connecting arm must be at a 90º angle to the door when closed. Confirm that proper length arm has been supplied. The standard arm length (C886) accomodates reveals of 2”-6”. The (C800R) accomodates reveals of 0”-4”. The extended arm length (C810R) accomodates reveals of 3”-8”, and the (C812R) accomodates reveals of 8”-12”. Confirm that the ED 800 base plate and arm shoe are located accurately. Improper templating can cause this error code. Confirm that the ED 800 base plate is anchored securely to the frame. Excessive header flex or base plate rocking during the Learn Phase can cause this error code.

**Track Application -** Indicates that the Push/Pull switch is set incorrectly. Confirm that the switch is set to Pull. Confirm that the pull side face of the door and frame are flush. Misalignment between the track and the ED 800 base plate, due to a non-standard door/frame configuration, can cause this error code.

**5 red flashes:** **Top Jamb Application -** Indicates that the connecting arm is too long (too little preload). The connecting arm should be at a 90º angle to the door when closed. Confirm that proper length arm has been supplied. The standard arm length (C886) accomodates reveals of 2”-6”. The (C800R) accomodates reveals of 0”-4”. The extended arm length (C810R) accomodates reveals of 3”-8”and the (C812R) accomdotes reveals 8”-12”. Confirm that the ED 800 base plate and arm shoe are located accurately. Improper templating can cause this error code. Confirm that the Push/Pull switch is set for push. Top jamb units which are set for pull will generate this error code.

**Track Application -** Confirm that the pull side face of the door and frame are flush. Misalignment between the track and the ED 800 base plate, due to a non-standard door/frame configuration, can cause this error code.

**Any ED 800 that is turned on without the main arm installed will generate this error code.**

**7 red flashes:** Indicates disconnected encoder. Verify that encoder cable is connected and not damaged.

**10 red flashes:** Indicates an open motor lead , a disconnected encoder, worn motor brushes or a damaged control module. Turn off power and confirm that the motor leads are connected. Check motor brushes for burning or wear and replace if necessary. Verify control module is not damaged.

**PROBLEM:** Door opens and closes continually.

**SOLUTION:** Determine the status of the Push and Go Switch.

**PUSH AND GO ON**

Does the door close completely before reopening?

YES

Turn the unit off for 10 seconds, then turn it back on and allow a new Learn Cycle to be completed. The unit may have learned an incorrect closed position. If problem continues, isolate all external triggering devices to determine if they are functioning properly.

NO

**PUSH AND GO OFF**

Isolate all external triggering devices to determine the source of opening trigger.

The door is encountering an obstacle during the last 10º of closing. Confirm that: the sweep area of the door is clear, the door is not dragging on the threshold or carpet, the door is not binding on weather stripping, the latch bolt is not binding or sticking, there is not excessive hinge bind, there is not excessive air pressure preventing the door from closing completely. Confirm that the latch valve is properly adjusted.

**PROBLEM:** Electric strike does not release properly.

**SOLUTION:** Confirm that the electric strike is wired according to the diagrams shown in the ED 800 Installation Instructions. All external triggering devices must signal the ED 800. The ED 800 automatically delays door activation by 1/2 second and provides a signal to the strike until the door reaches approximately $10^{o}$.

**Electric strike applications that are not wired according to the ED 800 Installation Instructions may not achieve proper strike sequencing.**

Is the strike wired according to ED 800 Installation Instruction?

YES

Isolate the strike and confirm proper operation. Confirm that the power supply is adequate for the strike. (If the ED800 is powering the strike, a 12VDC strike is required. The total amount of current available to power a strike and any other accessory is 500ma from the ED800 accessory power output).

Confirm that there is no tension against the strike keeper plate when the door is closed. Many electric strikes will not release when there is tension on the keeper plate.

Confirm that there are no other obstructions preventing the door from opening. Check for the door: binding on the strike jamb, dragging on the threshold, excessive weather stripping drag.

Confirm that the latch delay switch is set to the “on” position.

NO

Correct the wiring.