

DOR-O-MATIC®

Super-Nova®

Installation & Adjustment Instruction Manual For: 87100 Surface-Applied Super-Nova, and 87300 Recessed Super-Nova (Revision D)

> The Super-Nova is a door-mounted activating and safety system for use only Astro-Swing, Dor-O-Matic on Middle-Swing and Senior-Swing, automatic swinging door operators. may be used on aluminum, hollow metal, or wood type doors.

DOR - O - MATIC®

7350 W. Wilson Ave.

Harwood Heights, IL 60656

Toll Free:

1-800-543-4635

In Illinois:

708-867-7400

Sales Fax

708-867-0291

Engineering Fax:

708-867-1177

Booklet No. 87000-984 Price: \$15.00



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OVERVIEW

Note: This manual applies only to Super-Novas manufactured after January 1996 which have "Revision D" marked on the circuit board. Revision D Super-Novas cannot be mixed with Revision B or earlier Super-Novas on the same system or in the same vicinity.

<u>FUNCTION</u>: The Super-Nova is a door mounted activating and safety device for use with Dor-O-Matic Astro-Swing, Senior-Swing, and Middle-Swing automatic door controls. Revision D added the following features and improvements over previous models:

- Separation of High- and Mid-Range now allows independent adjustability of the activation and safety patterns when the door is fully closed.
- Number of frequencies doubled from two to four making it easier to install in small vestibules without cross-talk problems.
- New locations of transmitters provides for increased detection area.
- ZONES: There are three detection zones produced by the Super-Nova. These zones are the High-, Mid-, and Low-Ranges. Figure 1 and Figure 2 are meant *only* to give you a feel for the *approximate* areas covered by these zones. The actual zones are elliptical and will vary according to adjustment.

SINGLE DOOR SAFETY (SWING) SIDE HIGH-RANGE ACTIVATION (APPROACH) SIDE

Figure 1: Approximate coverage areas for a single door.

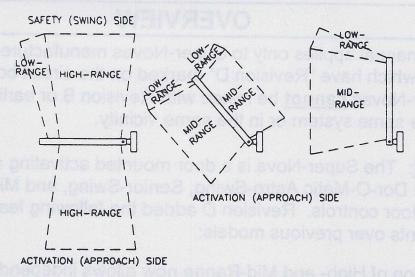


Figure 2: Approximate coverage areas of all ranges for one door of a pair.

Mid-Range: This is the wide zone directly in front of the face of the door. It is not active when the door is fully closed. It's size is dependent on the size of the door and must be adjusted to meet the current ANSI/BHMA A156.10 or ANSI/BHMA 156.19. The Mid-Range will detect objects in the door's path during the opening or closing cycle.

High-Range: This is the variable length zone directly in front of the face of the door. This zone is *only on* when the door is in the <u>fully closed</u> position. The size of this zone is fully adjustable.

Approach Side: The High-Range acts as an activation device, opening the door when someone approaches. It's size is dictated by ANSI 156.10 or ANSI 156.19 (48" in most cases). Even with this feature, the Super-Nova will not usually suffice as the sole activation device since the approach zone is not covered when the door is open. A motion detector is usually used to supplement the Super-Nova on the approach side. This zone can be adjusted up as shown in Figure 1 and Figure 2 or all the way down so that it will not activate the door at all.

Swing Side: On the swing side, the High-Range acts similar to a safety mat by preventing the door from opening if someone is standing in the swing path. The size of the pattern is dictated by ANSI 156.10 / ANSI 156.19.

Low-Range: This is the narrow zone which protrudes from the edge of the door. It is used to monitor the leading edge of the door. The Low-Range monitors the leading edge of the door for objects which are in or could soon enter the swing path of the door.

PART IDENTIFICATION AND FUNCTION DESCRIPTION

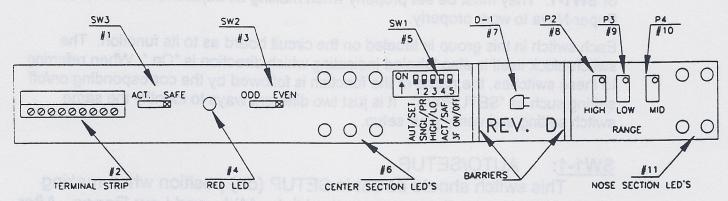


Figure 3: Part Identification for Super-Nova Stick

#1 SW3 ACTIVATE/SAFE Selector:

ACTIVATE:

For activating, or approach side

SAFE:

For safety, or swing side

#2 Terminal Strip:

All wire connections are made here. Make sure all wires are connected as marked and not shorted to adjacent terminals. Also verify that enough insulation is stripped off so that good contact is made between the terminal and the wire.

#3 SW2 ODD/EVEN Selector:

This is an operating frequency selector switch and is used to prevent two units in close proximity from "talking" to each other. It is used in conjunction with SW1-5 to select one of four possible frequencies.

#4 Red LED Indicator:

This LED turns on any time the Super-Nova stick is reading something.

#5 SW1 Computer Function and Set-Up Selector:

This selector has five separate switches referred to as SW1-1 through SW1-5. Some of these switches have a 'double function' depending on the position of SW1-1. They must be set properly when making all adjustments and for the Super-Nova to work properly.

Each switch in this group is labeled on the circuit board as to its function. The switch-block itself is also labeled indicating which direction is "On." When referring to these switches, the name of the function is followed by the corresponding on/off setting such as "SETUP(on)". It is just two different ways to identify the same switch setting and verify your setup.

SW1-1: AUTO/SETUP

This switch should be set in SETUP (on) position when making preliminary adjustments to the High-, Mid-, and Low-Range. After the High-, Mid-, and Low-Range are adjusted properly, set switch to the <u>AUTO</u> (off) position for normal door operation. You may then proceed to fine-tune any of the adjustments, if necessary.

SW1-2: SINGLE/PAIR

- SINGLE (off) for single doors
- PAIR (on) for simultaneous pairs of doors

SW1-3: HIGH/LO RANGE

Only functional when SW1-1 is in SETUP (on) and SW1-5 is in 3F OFF (on),

- HIGH-RANGE (off): To adjust the High-Range LED's.
- LO-RANGE (on): To adjust the Low-Range LED's.

SW1-4: ACTIVATE/SAFE

- ACTIVATE (off): For activating (approach) side of the door.
- SAFE (on): For safety (swing) side of the door.

SW1-5: 3F ON/OFF (double function)

If SW1-1 is in SETUP (on), this switch enables mid-range adjustment.

• 3F ON (off): To adjust the Mid-Range LED's.

• 3F OFF (on): To adjust the High- or Low-Range LED's. (See SW1-3)

If SW1-1 is in AUTO (off), this switch is used in conjunction with SW2 to select one of the four available operating frequencies.

#6 Center Section LED's:

These are the LED's covering the center area of the door (the area straight out from the Super-Nova stick) and are used for the High- and Mid-Range.

- #7 <u>D1:</u> <u>Light receiving diode:</u> All reflected light from the LED's is returned here.
- #8 P2 Pot: Used to adjust only the High-Range detection zone.
- #9 P3 Pot: Used to adjust only the Low-Range detection zone.
- #10 P4 Pot: Used to adjust only the Mid-Range detection zone.

Note: All of these pots have safety limiting screws. Continuous turning of the screw in either direction will not damage the pot, but it will not change the adjustment beyond a set limit.

#11 Nose Section LED's:

These are the LED's covering the leading edge of the door and providing protection out beyond the door swing area. These LED's are used for the Low-Range.

INSTALLATION / SETUP

Note: Each Super-Nova is pre-adjusted at the factory. In many cases, they can be installed and run with minimal changes.

The following steps are listed in the order they are required to be performed.

- 1. <u>IDENTIFICATION</u>: The Super-Nova stick must be set for either the activating (approach) or safety (swing) side of the door. The sticks are pre-set at the factory and should work for many applications. The sticks have a colored dot inside the case near the terminal block. This is only an aid for the installer. You are free to change these settings if you like.
 - Install the green dot unit on the activating side of the door.
 - Install the red dot unit on the safety side of the door.

2. **INSTALLATION**:

- FOR SURFACE APPLIED: Locate the green and red dots. Install the sticks on the corresponding sides of the door at the recommended height.
- FOR RECESSED: Recessed Super-Novas are sold as a complete package including the door and pre-mounted sticks. Locate the dots to determine if the sticks are installed on the correct side for your application. If not, you may choose to swap the sticks from one side of the door to the other (this is the recommended method). Alternatively, you may wish to re-program both sticks to their correct functions.

3. **CHOOSING FREQUENCIES**:

- On single doors, separated from other Super-Nova units, SW2 and SW1-5 may be set in any position. You may skip to Step #5, page 10.
- If you are installing a simultaneous pair and/or in a small vestibule, you must make certain to assign non-conflicting frequencies to the units which could "talk" to each other.

A sample installation of four Senior Swings with Super-Novas is shown in Figure 4, page 9. In this example, there are two sets of simultaneous pairs installed in a small vestibule. In this installation, numerous cross-talk problems are possible including but not limited to:

When the door is closed:

- Activation side of Door 1 will face the safety side of Door 3.
- Activation side of Door 2 will face the safety side of Door 4.

When the doors are open:

- Activation side of Door 3 will face the activation side of Door 4
- Activation side of Door 1 will face the activation side of Door 2

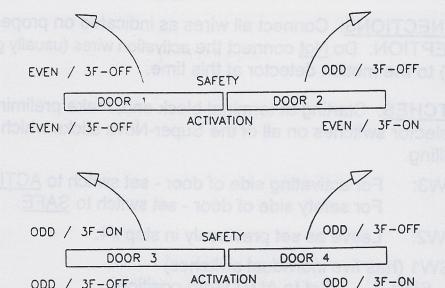


Figure 4: Sample Vestibule Application.

There are four frequencies available on the Super-Nova. They are referred to as Odd/3F-ON, Odd/3F-OFF, Even/3F-ON, and Even/3F-OFF. There are many ways to set this up to work, but the recommended setup is:

Door#	Activation	Safety
Door 1:	Even/3F-OFF	Even/3F-OFF
Door 2:	Even/3F-ON	Odd/3F-OFF
Door 3:	Odd/3F-OFF	Odd/3F-ON
Door 4:	Odd/3F-ON	Odd/3F-OFF

SETTING THE FREQUENCIES: 4.

ODD / 3F-OFF

After you choose which door should have which frequency, you must set the frequency on each stick. You can set the frequency on each stick with SW2 and SW1-5. The chart below shows how to set the two switches for the desired frequency. Note: Since SW1-5 has a double function and is used in setup mode, do not set it up at this time. After range adjustments are made, switch to auto mode, and set SW1-5 for frequency.

Frequency	SW2	SW1-5
Odd/3F-ON	ODD	3F ON (off)
Odd/3F-OFF	ODD	3F OFF (on)
Even/3F-ON	EVEN	3F ON (off)
Even/3F-OFF	EVEN	3F OFF (on)

- 5. <u>CONNECTIONS</u>: Connect all wires as indicated on proper template. EXCEPTION: Do <u>Not</u> connect the activation wires (usually green and white) to the motion detector at this time.
- 6. <u>SWITCHES</u>: Starting at terminal block end, make preliminary set-up of all selector switches on all of the Super-Nova sticks which you will be installing.
 - A. SW3: For activating side of door set switch to <u>ACTIVATE</u>. For safety side of door set switch to <u>SAFE</u>.
 - B. SW2: Leave as set previously in step #4.
 - C. SW1 (has five individual switches)
 - SW1-1 Set to AUTO (off) position
 - SW1-2 Set for application:
 - SINGLE(off) for single door
 - PAIR(on) for simultaneous pair
 - SW1-3 This switch can be set either way, since it has no effect on the normal operation of the door.
 - SW1-4 Set for application:
 - ACTIVATE (off) for approach side of door
 - SAFE (on) for swing side of door
 - SW1-5 Leave as set previously in step #4.
- 7. Turn on power to system. Give the door an activation signal by momentarily shorting the yellow and gray wires from the control box or the activation wires (usually green and white) to the motion detector. The door must be allowed to slowly open and close one full cycle without interruption.
- 8. Cycle the door several times, activating it at different times/angles in the closing cycle. Verify that it will re-activate the door at any point in the closing cycle and that it doesn't read walls or other surrounding objects.
- 9. <u>TEST</u>: After this, walk test the doors as explained in the last section of this manual. If the doors pass the walk test, there is no need to go through the adjustment procedures. If the doors do not perform as expected and/or do not provide the right amount of activation or safety, you must go through the adjustment instructions.

ADJUSTMENTS:

Again, these steps *must* be followed in order to assure proper function of the Super-Nova.

PRELIMINARY:

Always start with the door closed and adjust the swing side first.

- 1. SW1 (has five individual switches)
 - SW1-1 Set to SETUP (on) position
 - SW1-2 Set for application: SINGLE(off) for single door PAIR(on) for simultaneous pair
 - SW1-3 Set for HIGH-RANGE (off) (Center LED's)
 - SW1-4 Set for application:
 ACTIVATE (off) for activating side of door
 SAFE (on) for safety side of door
 - SW1-5 Set for 3F OFF (on)
- 2. Turn on power to system. Give the door an activation signal by momentarily shorting the yellow and gray wires from the control box. The door must be allowed to slowly open and close one full cycle without interruption.
- 3. Adjust the Super-Nova detection areas to meet the latest edition of ANSI/BHMA A156.10 or ANSI/BHMA 156.19 When making range adjustments to the Super-Nova stick, it is best to present the stick with a uniform, solid object of a neutral color. Dor-O-Matic suggests holding a piece of brown cardboard (approximately 18" square) in front of you.

ADJUSTING THE SWING SIDE

1. Place the 3-way switch in the "OFF" position. This is a precautionary measure to keep the door from accidentally opening on the installer. If you don't have the 3-way switch, cover the D1 light receiver cell on the activation side with black tape, and be sure that the motion detector activation wires (usually green and white) are disconnected. When removing the tape, be careful not to bend the cell.

Swing-Side High-Range

With the door fully closed, adjust the High-Range with the P2 pot.

- <u>Clockwise</u> rotation <u>increases</u> detection area depth.
- Counter clockwise rotation decreases detection area depth.
- 2. Slowly approach the center of the door on the safety side as shown in Figure 5, page 12. When the red LED comes on, you have entered the detection zone. Note how far away from the door you are. Slowly walk in and out of the detection zone and adjust the P2 pot to always detect you at the distance required from the face of the door. By moving in and out or from side to side, you can very clearly see the size of the High-Range detection area. Make certain it is not reading walls, plants, or any other objects close by.

Swing-Side Mid-Range

With the door fully closed, adjust the Mid-Range with the P4 pot.

- Clockwise rotation increases detection area depth.
- Counter clockwise rotation decreases detection area depth.
- 3. Set SW1-5 to 3F ON (off) to adjust the Mid-Range.

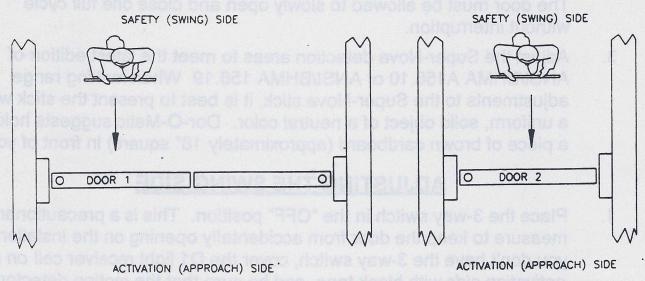


Figure 5: Adjusting the High- and Mid-Range on the Swing Side.

4. Slowly approach the center of the door on the safety side as shown in Figure 5, page 12. When the red LED comes on, you have entered the detection zone. Note how far away from the door you are. Slowly walk in and out of the detection zone and adjust the P4 pot to detect you at approximately the same distance as the High-Range. By moving in and out or from side to side, you can very clearly see the size of the Mid-Range detection area. Make certain it is not reading walls, plants, or any other objects close by. Note: This is just a preliminary adjustment. Fine-tuning of the Mid-Range may be done later.

Swing-Side Low-Range

5. Set SW1-3 to LO RANGE (on) and SW1-5 to 3F OFF (on) to adjust the Low-Range. This will turn off the 6 center section LED's and turn on the 4 nose section LED's.

With the door fully closed, adjust the Low-Range with the P3 pot.

- <u>Clockwise</u> rotation <u>increases</u> detection area depth.
- Counter clockwise rotation decreases detection area depth.
- 6. Approach the edge of the door at a 45° angle as shown on Door 1 in Figure 6, page 13. Adjust the P3 pot to detect you at approximately 12-18" from the door. On a single door in a corridor, it may be necessary to approach at 90° as close to the wall as possible (as shown on Door 2 in Figure 6). In this case, adjust the Low-Range to 70-75% of the High-Range distance. In some cases, it may be necessary to turn the Low-Range down further to prevent it from reading walls or other objects.

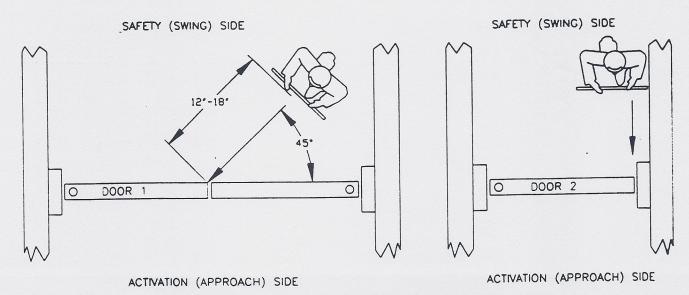


Figure 6: Adjusting the Low-Range on the Swing Side.

- 7. After the safety stick has been properly adjusted, switch SW1-1 to the AUTO (off) position. Now, set SW1-5 for proper frequency.
- 8. Place the 3-way switch in the "AUTO" position. Cycle the door several times, activating it at different times/angles in the closing cycle. Verify that the safety stick is not reading the walls or other stationary objects nearby, causing the door to slow down or stop prematurely.
- 9. If necessary, the Mid-Range adjustment can be fine-tuned for better operation. If the safety stick is not providing adequate safety during the opening or closing cycle, the Mid-Range adjustment can be increased. If the safety stick is giving false readings during the opening or closing cycle, the Mid-Range adjustment can be decreased. Continue fine-tuning the Mid-Range until optimum coverage is achieved.

ADJUSTING THE APPROACH SIDE

Approach-Side High-Range

1. Place the 3-way switch in the "OFF" position. If you don't have the 3-way switch, place an object in the safety zone to keep the door from opening. Very carefully remove the black tape you previously applied to the D1 receiver. DO NOT BEND THE MOUNTING WIRES

With the door fully closed, adjust the High-Range with the P2 pot.

- <u>Clockwise</u> rotation <u>increases</u> detection area depth.
- Counter clockwise rotation decreases detection area depth.
- 2. Slowly approach the center of the door on the activate side as shown in Figure 7, page 15. When the red LED comes on, you have entered the detection zone. Slowly walk in and out of the detection zone, and note how far away from the door you are. By moving in and out or from side to side, you can very clearly see the size of the High-Range detection area. The size of the pattern is determined by ANSI and other codes (usually a 48" minimum). Depending upon the installation, the High-Range can be adjusted to be used as an activation device or turned all the way down so that the Super-Nova will not send an activation signal when the door is fully closed.

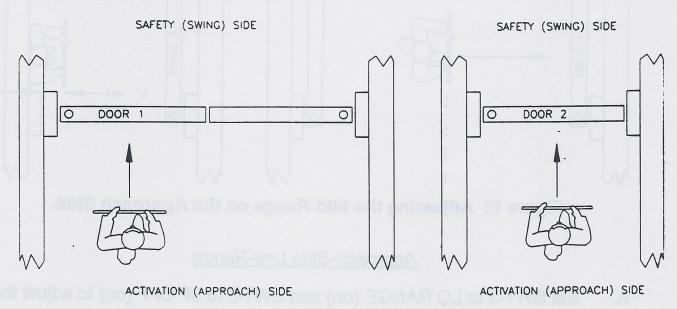


Figure 7: Adjusting the High-Range on the Approach Side.

- Note: The Mid and Low-Range of the approach side must be adjusted with door activated and in normal full open position.
- 3. Place the 3-way switch in the "HOLD-OPEN" position. If you don't have the 3-way switch, the door may be held activated by shorting the motion detector activation wires (usually green and white). These wires should not have been connected previously.

Approach-Side Mid-Range

4. Set SW1-5 to 3F ON (off) to adjust the Mid-Range.

With the door fully open, adjust the Mid-Range with the P4 pot.

- Clockwise rotation increases detection area depth.
- Counter clockwise rotation decreases detection area depth.
- 5. Adjust the Mid-Range pot P4 so that the detection area covers the full door open width (as shown in Figure 8, page 16), but does not detect jambs, walls, or rails. The red LED should turn on any time someone is in the closing swing area of the door. As of this writing, ANSI allows no more than a 5" dead area at the lock stile side of the door opening (See Door 2, Figure 8).

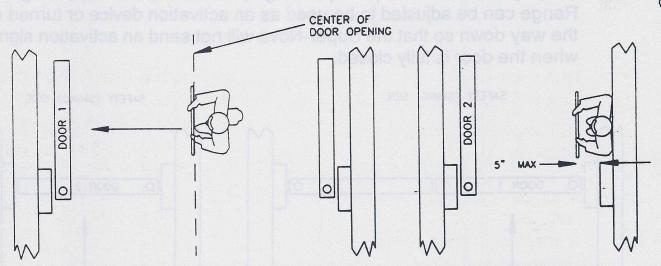


Figure 8: Adjusting the Mid-Range on the Approach Side.

Approach-Side Low-Range

6. Set SW1-3 to LO RANGE (on) and SW1-5 to 3F OFF (on) to adjust the Low-Range. This will turn off the 6 center section LED's and turn on the 4 nose section LED's.

7. Approach the leading edge of the door from the swing side at approximately a 45° angle (as shown in Figure 9, page 17). Adjust P3 to detect you at a point approximately 12"-18" out from nose of door. This is the leading edge protection zone.

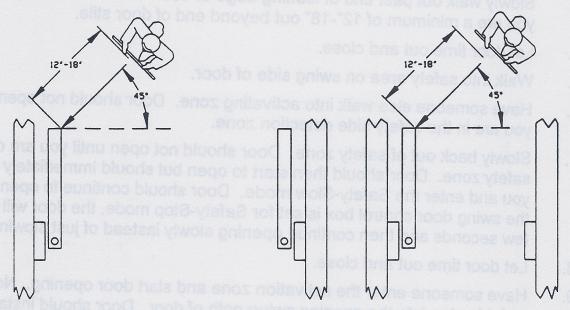


Figure 9: Adjusting the Low-Range on the Approach Side.

- 8. After the activating stick has been properly adjusted, switch SW1-1 to the AUTO position. Now, set SW1-5 for proper frequency.
- 9. Place the 3-way switch in the "AUTO" position. If you don't have the 3-way switch, disconnect the motion detector activation wires (usually green and white) which were previously shorted. Door should now be in normal operating mode but without the motion detector connected. Door should time out and close. The red LED on the Super-Nova stick should not turn on.
- 10. Cycle the door several times, activating the Super-Nova at different times/angles in the closing cycle. Verify that it will re-activate the door at any point in the closing cycle and that it doesn't read walls or other surrounding objects.
- 11. Have someone help you and give the door a complete walk through test. Make certain all detection zones are functioning properly and not reading any surrounding objects.

WALK TEST

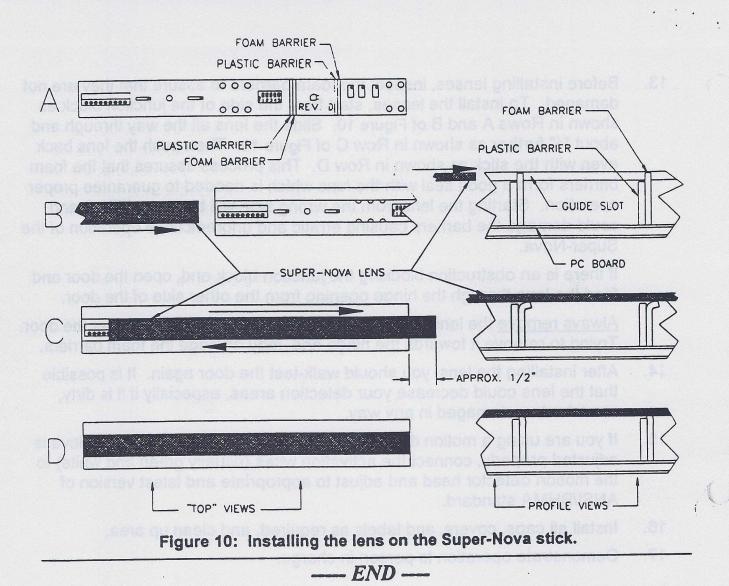
- 1. Enter door area. Door should open fully when you enter the activation zone.
- 2. Walk through door into the holding zone area. Door should remain open as long as you are anywhere in the swing area of door.
- 3. Slowly walk out past end of leading edge of door. Door should not close until you are a minimum of 12"-18" out beyond end of door stile.
- 4. Let door time out and close.
- 5. Walk into safety area on swing side of door.
- 6. Have someone else walk into activating zone. Door should not open any time you are in the safety side detection zone.
- 7. Slowly back out of safety zone. Door should not open until you are out of the safety zone. Door should then start to open but should immediately sense you and enter the Safety-Slow mode. Door should continue to open fully. (If the swing door control box is set for Safety-Stop mode, the door will stop for a few seconds and then continue opening slowly instead of just slowing down.)
- 8. Let door time out and close.
- 9. Have someone enter the activation zone and start door opening. Now quickly step into the opening swing path of door. Door should instantly slow down and continue to open slowly (or stop for a few seconds and then continue to open slowly if the control box is set to Safety-Stop mode).
- 10. If you find the door re-opening when closing, slowing down when opening, or doing anything not considered normal, fine-tuning adjustment may be needed. Observe the red LED's for some indication of which Super-Nova unit is reading something it should not be. If door operates normally, proceed to step #13.
- 11. Fine-tune the appropriate range(s) and perform walk test again. If fine-tuning does not correct the problem, turn off AC power to system, and switch SW1-1 of the problem Super-Nova stick back to the SETUP (on) position. Turn power back on and allow the door to re-size. Then re-adjust any zone as required to eliminate problem.
- 12. Switch SW1-1 back to AUTO (off) and re-walk test door.
 - Note: Every time you move SW1-1 from AUTO to SETUP.to make further adjustments, you must turn all power off and then back on, and allow door to re-size. This resets the program in the Super-Nova stick with the swing control box and permits proper adjustment. After making adjustments, you can just switch back to the AUTO mode and the system will work fine. There is no need to re-set the system.

13. Before installing lenses, inspect the foam barriers to assure that they are not damaged. To install the lenses, start from the side of the junction block as shown in Rows A and B of Figure 10. Slide the lens all the way through and about ½" further as shown in Row C of Figure 10. Then push the lens back even with the stick as shown in Row D. This process assures that the foam barriers form a good seal with the lens which is needed to guarantee proper operation. Starting the lens from the wrong side will be more difficult and could damage the barriers causing erratic and unpredictable operation of the Super-Nova.

If there is an obstruction blocking the junction block end, open the door and feed the lens through the hinge opening from the other side of the door.

Always remove the lens "the easy way" away from the hinge side of the door. Trying to remove it towards the hinge end, may damage the foam barriers.

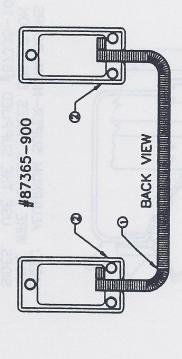
- 14. After installing the lens, you should walk-test the door again. It is possible that the lens could decrease your detection areas, especially if it is dirty, scratched, or damaged in any way.
- 15. If you are using a motion detector, and you are satisfied the Super-Nova is adjusted properly, connect the activation wires (usually green and white) to the motion detector head and adjust to appropriate and latest version of ANSI/BHMA standard.
- 16. Install all caps, covers, and labels as required, and clean up area.
- 17. Demonstrate operation to person in charge.



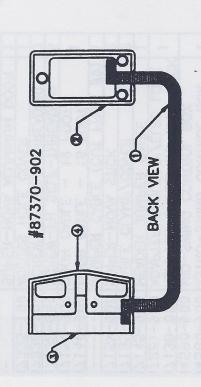
OPTIONAL CABLE SHIELDING KITS

IF CABLES ARE REQUIRED TO BE SHIELDED, ONE OF THESE THREE KITS MUST BE ORDERED AND INSTALLED ON EACH SUPER-NOVA LEAF. EACH KIT CONSISTS OF A COIL SPRING TYPE CABLE SHIELD AND TWO SPECIAL END BLOCKS, WHICH HAVE BEEN MODIFIED TO ACCEPT THE SHIELD.

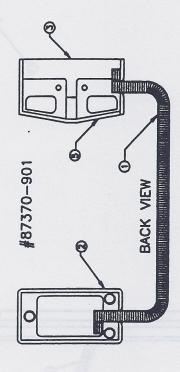
55	PART NUMBER	DESCRIPTION
1	87367-100	SHIELD (CABLE)
2	87366-100	CLAMP (CABLE)
3	87102-600	CAP (UNIVERSAL)
4	87368-102	L.H. END COVER
5	87368-101	R.H. END COVER



NON-HANDED SHIELD ASSEMBLY FOR ALL ALUMINUM DOORS WITH RECESSED OR SURFACE-APPLIED SUPER-NOVAS.



LEFT HAND SHIELD ASSEMBLY FOR WOOD OR HOLLOW METAL DOORS AND SURFACE-APPLIED SUPER-NOVAS.



RIGHT HAND SHIELD ASSEMBLY FOR WOOD OR HOLLOW METAL DOORS AND SURFACE—APPLIED SUPER—NOVAS.

USE THE SUPPLIED #87335-100 THIN NOTE: ALUMINUM SUPER-NOYA DOORS HAVE WIRE ACCESS HOLES DRILLED ON BOTH PLASTIC CAP TO COVER THE HOLE IS NOT USED, AS SHOWN ABOVE. BLACK WHICH

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