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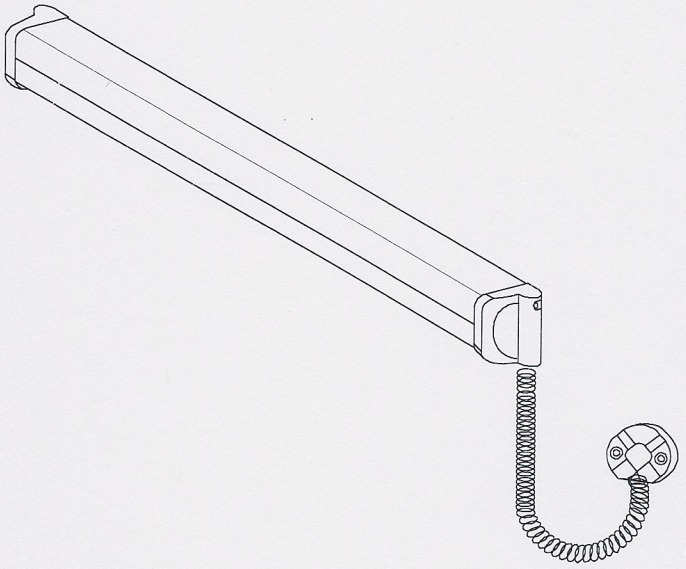
Acugard 3 Sensor System Wiring & Adjustment Manual



WARNING

Do not install or service this product unless you have read and understood the Safety Practices, Warnings, Installation and Operating Instructions contained in this manual.

Failure to do so may result in property damage or bodily injury.

15-10306-3
Rev 7-4-07

Contents

INTRODUCTION

To The Installer The purpose of this manual is to familiarize the installer with the proper installation and operation of this system. It is essential that this equipment be properly installed and operational before the door is used by the public. It is the installer's responsibility to inspect the operation of the entrance system to be sure it complies with any applicable standards. In the United States, ANSI Standard 156.10 may be applicable for this type of door. Other local standards or codes may apply.

At the completion of the installation, this manual should be given to the building owner or responsible party. Instruct the building owner/responsible party on the essentials of the operation of the door and this device.

To The Owner The owner should read and follow these instructions to determine whether the Acugard 3 sensor is operating properly and, if the owner determines there is a problem, he/she should immediately call for performance inspection in accordance with AAADM recommendations. All installation changes and adjustments must be made by qualified, NABCO trained technicians.

During normal use, do not encourage customers to linger near any automatic door. Avoid placing signs, display items, or goods near an automatic door where customers will be inclined to pause. Arrange your layout so that pedestrians will be inclined to pass straight through the doors and on into the store.

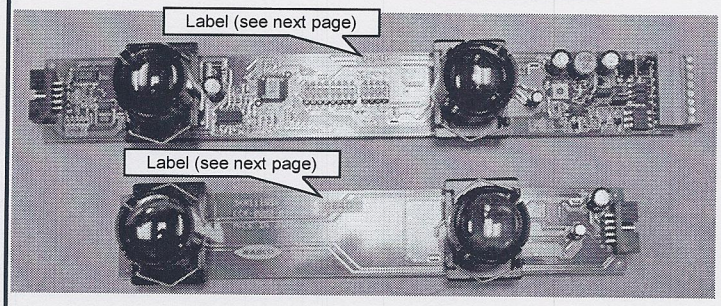
Overview The Acugard 3 detector is an infrared presence detection system that is primarily utilized on automatic pedestrian swing doors. The electronic components come housed in a narrow aluminum extrusion that measures 48" and can be altered to accommodate different door widths. The system comes complete for mounting to the door, and includes a door loop, which encases the wiring from the door to the door jamb.

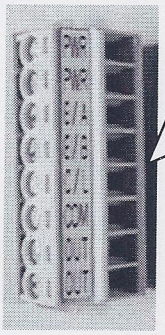
Unlike other door-mounted sensing devices, the Acugard 3's unique electronic architecture allows the modules to be mounted near the top of the door, out of harm's way.

Detection zones can be varied in range by adjustments and in width by changing the positions of both the master and slave modules within the housing. The master module is simply inserted into the aluminum extrusion then connected to the slave module with the attached flat cable. Once installed, master and slave modules may be angled (in addition to being adjustable for distance) as a pair allowing the zone to be directed either closer to or farther away from the face of the door. This allows for quick detection near the edge of the door where it is traveling at a faster rate of speed.

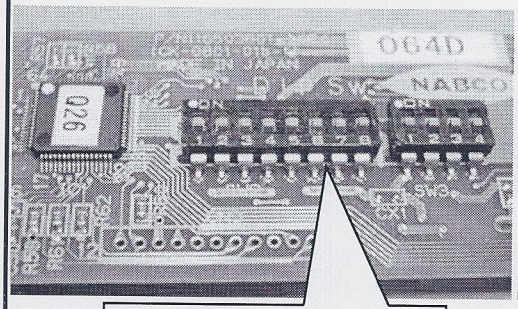
The difference between Acugard 3 and Acugard 2

Acugard 3

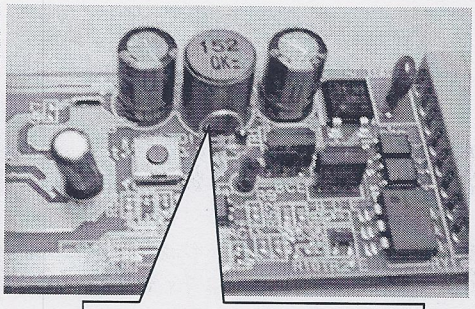




Label
PWR
PWR
E/A
E/B
C/L
COM
OUT
OUT

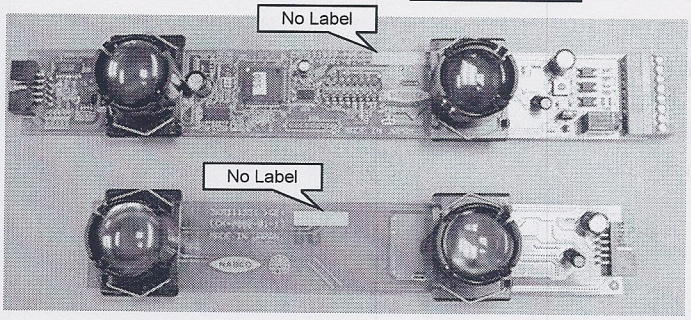


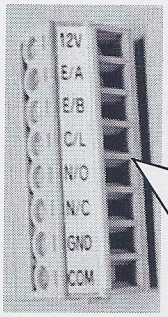
8 pin & 4 pin dipswitches



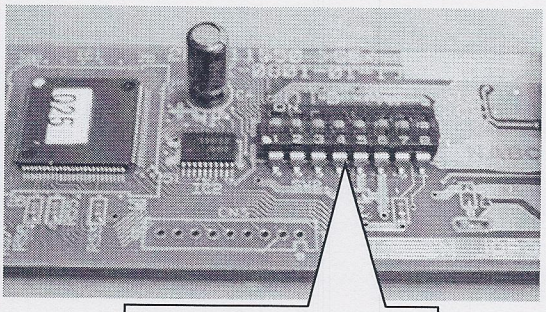
3 capacitors and no jumper

Acugard 2

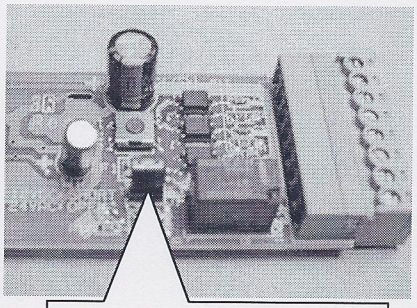




Label
12V
E/A
E/B
C/L
N/O
N/C
GND
COM



8 pin dipswitches

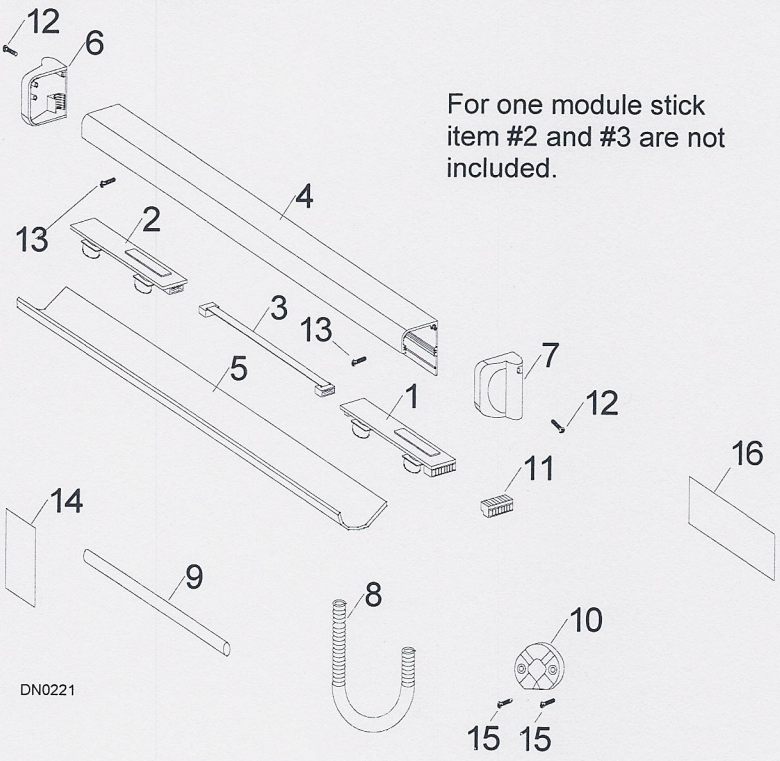


1 capacitor and 1 jumper

	Acugard Manufacturing Label Information
Acugard 2	No Label
Acugard 3	(Early version) 4 digits: YYMW Year: the last 2 digits of the year Month: 1~9, X(=10), Y(=11), Z(=12) Week: A(1st week), B(2nd week), C(3rd week), D(4th week), E(5th week)
	(Later version) 6 digits: YYMSSS Year: the last 2 digits of the year Month: 1~9, X(=10), Y(=11), Z(=12) Serial number: Beginning with 001 The oldest manufacturing number is 067001.
Acugard 3LE	6 digits: YYMSSS Year: the last 2 digits of the year Month: 1~9, X(=10), Y(=11), Z(=12) Serial number: Beginning with 701 The oldest manufacturing number is 069701.

Acugard 3 master and slave modules are matched and must be used together. The manufacturing number on the later version Acugard 3 modules shows which modules are pairs.

Figure 1
Parts Overview



For one module stick item #2 and #3 are not included.

Note:

Acugard 3 modules now bear a four or six digit serial number on the printed circuit boards of the master or slave modules. Refer to page 5 for details.

Acugard 2 modules do not bear a serial number.

Item	Part #	Description	QTY (Per Stick)	Part Compatibility with previous Acugard 2
1	22-11482	Master Module	1	Not Compatible
2		Slave Module	1	Not Compatible
3		Flat Cable	1	Compatible
4	21-10158-11	Aluminum extrusion	1 (48")	Compatible
5	21-10158-14	Lens	1 (48")	Compatible
6	21-10158-13	Left End Cap	1	Compatible
7	21-10158-12	Right End Cap	1	Compatible
8	21-10158-16	Door Loop	1	Compatible
9	10-0315	7 Conductor Cable	1(20")	Compatible
10	21-10158-15	Door Loop Retainer	1	Compatible
11	----	Wiring Terminal	1	Not Compatible
12	----	End Cap Screw	2	Compatible
13	----	Installation Screw	2	Compatible
14	14-5873	Drill template	1	Compatible
15	----	Cord Cap Screw	2	Compatible
16	----	Decal	1	Not Compatible

CAUTION: To ensure compatibility, when upgrading an Acugard 2 Master or Slave Module to Acugard 3, or when replacing Acugard 3 modules, please note that the modules are a matched set and should not be intermixed. Therefore, be sure to also replace the corresponding module, wiring terminal and face plate. Refer to kit P/N 22-11482 noted in items 1, 2, and 3 above.

1. SPECIFICATIONS

The new features of the Acugard 3 are underlined.

Overall Dimension	Height 2.28" X Depth 1.94" Standard Length 48" Minimum Length 23"
Power Supply	USE "Class 2" Power Supply 12-24 VDC or 24 VAC
Current Consumption	Max. 100mA (12VDC), 2.5VA (24VAC)
Output Rating	CONNECT to "Class 2" Circuit Semiconductor Relay Output 30V/0.1A max. (Resistive load)
Detection Range	98" (2.5m, 8'-2") from floor (Non-detection Zone : 12" or 20")
Detection Time	< 50 ms
Detection Signal Duration	Infinite presence detection
Output Hold Time	0.5 sec, 1.0 sec, 2.0 sec or 4.5 sec
Led Indications	Constant : Red LED = Detection Flashing : Red LED = Error during learning cycle
Operating Temperature Range	-4 ° F to 140 ° F (-20 ° C to 60 ° C)
PCB Dimensions	Master : 10.0" X 1.3" (255mm X 34mm) Slave : 7.8" X 1.3" (200mm X 34mm)
Connection to Door Controller	8 position terminal block on master module
Connection : Master to Slave	Flat ribbon cable with connector and key lock
Function Selections	Switch Bank 1-8: Switches. 1 & 2 - Sensitivity & Non-Detection Zone Switch Bank 1-8: Switches 3 & 4 - Mutual Interference Prevention Modes Switch Bank 1-8: Switch 5 - Motor Type Switch Bank 1-8: Switch 6 - Detection Area Switch Bank 1-8: Switches 7 & 8 - Output Hold Time Switch Bank 1-4: Switch 1 - # of Modules Used Switch Bank 1-4: Switch 2 - Output Logic (N.O. or N.C.) Switch Bank 1-4: Switches 3 & 4 - N/A

2. Before Installation

IMPORTANT

The following information is very important for the proper installation and operation of this system. Please, read and understand before installation.

A) Limit Switch Kit # 11-10307 (See pages 9, 25, 26, 27, 28 and 29)

If you have a unit that does not use an encoder (rev counter) on the motor, such as an the Magnum or Analog control, a Limit Switch Kit is necessary to prevent the swing side Acugard 3 stick from signaling the control due to a wall or a guide rail as the door opens.

If you have a non-encoder system, and there is a no wall or a guide rail, no Limit Switch Kit needed. But terminal # 4 (E/B) on the Swing Side Master Module must be jumpered to terminal # 6 (COM).

If you have a non-encoder operator with one stick on the non-swing side, no Limit Switch Kit needed.

B) Reset Button: This button initiates the sensor setup and learning process. (See figure 6)

IMPORTANT !

When programming the Acugard system, always initiate the programming procedure by pressing the RESET button on the non-swing side only. The system memorizes the pressed side sensor as the non-swing side.

DO NOT initiate the programming procedure by pressing the swing side button.

3. Installation

A) For Non-Encoder installations (i.e. units equipped with the Magnum or analog control)

- If the door opens toward a wall or guide rail, a Limit Switch Kit for the back check signal is necessary to command the swing side Acugard 3 to ignore these as the door opens.
- If the switch is not used, the swing-side Acugard 3 will sense these objects as the door is opening and cause a "detection" thus slowing or stopping the door during the opening cycle.
- If there is no wall or guide rail, no Limit Switch Kit would be necessary and a connection from terminal #4 (E/B) on the swing side Acugard 3 must be made to terminal #6 (COM) with a jumper.

Refer to Figures 15, 16, 17 and 18 for wiring diagrams showing the Limit Switch assembly. Also note that simultaneous pair units must have a back check switch and cam on each operator.

B) For Encoder Installations (i.e. units equipped with the U series control):

- If the door opens toward a wall or guide rail, the Acugard 3 will "learn" this area during the setup and learning process.

4. Acugard 3 Kits

Before beginning installation, we recommend that you confirm that you have all the necessary parts.

Note: Acuvision P/N 14-10823-01 or Acusensor P/N 14-8902-B are available as an alternate to the Acumotion's listed in the following kits. Contact Customer Service for more information.

(A) Microprocessor Control

For GT-300/400 with Microprocessor Control (Two sticks per door)
Installation Kit Part #:
11-11391-30: Single Door with two sticks - see wiring figure 13 page 23
11-11391-31: Simultaneous Pair with two sticks per door - see wiring figure 14 page 24

No.	Part #	Part Name	Microprocessor (U04 to U19) (Refer to the above part number suffixes)	
			-30	-31
1	21-10158-30	Acugard 3 stick (Master/Slave)	2	4
2	21-10157	Microprocessor Harness for Acugard	1	2
3	21-10159	Harness, Acugard to Microprocessor	1	2
4	14-10364-40	Acumotion-A	1	1

B) Magnum Control

For GT-300/400 with Magnum Control (Two sticks per door)

Installation Kit Part #:

11-11391-50: Single Door with two sticks - see wiring figure 15 page 25

11-11391-51: Simultaneous Pair with two sticks per door - see wiring figure 16 page 26

No.	Part #	Part Name	Magnum (Refer to the above part number suffixes)	
			-50	-51
1	21-10158-30	Acugard 3 stick (Master/Slave)	2	4
2	11-10307	Limit Switch Kit	1	2
3	14-1218	Wire Nut	12	24
4	14-10364-40	Acumotion-A	1	1

C) Analog Control Box

For GT-300/400 with Analog Control (Two sticks per door)

Installation Kit Part #:

11-11391-10: Single Door with two sticks - see wiring figure 17 page 27

11-11391-11: Simultaneous Pair with two sticks per door - see wiring figure 18 page 28

No.	Part #	Part Name	Analog Control with 850 (Refer to the above part number suffixes)	
			-10	-11
1	21-10158-30	Acugard 3 stick (M,S)	2	4
2	10-3505	850 Lockout Module	1	1
3	11-10307	Limit Switch Kit	1	2
4	14-2101	Transformer 24VAC	1	1
5	14-1218	Wire Nut	24	24
6	14-10364-40	Acumotion-A	1	1

5. Installation Preparations

NOTE : Care should be taken to prevent excessive flexing of the lens cover. Especially, in cold weather.

A) Remove the end cap screws and end cap from the sensor housing extrusion.
CAREFULLY unsnap the Plexiglas lens from the top edge of the extrusion by pulling out and downward. (See Figure 2)

B) Remove the sensor modules from the housing by sliding them out the end of the housing.

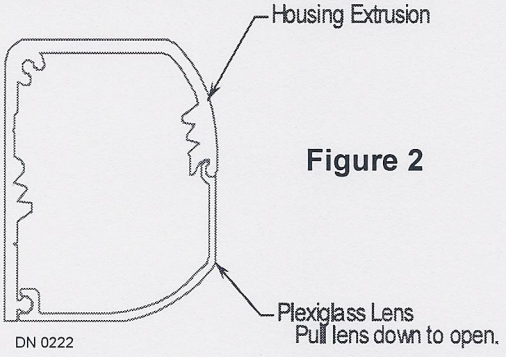


Figure 2

6. Mounting Locations

To begin the installation, determine the desired length of the lens assembly. It should be as long as possible and almost cover the width of the door. However, make sure the lens assembly will not hit the jamb tube when the door is opened or when the door is panicked open. (See Figure 3)
The following dimensions are recommended:

NOTE:
If the Acugard 3 housing must span the door glass, a mounting plate is required between pivot side-stile and lead stile to install the Acugard 3 housing.

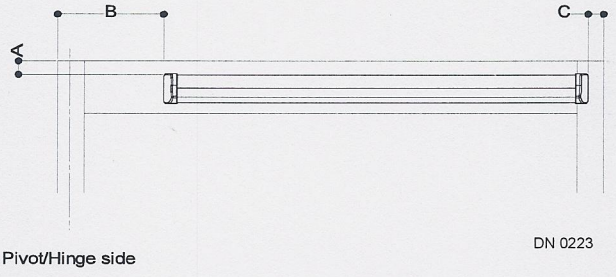


Figure 3

	Dimension	GT- 400 / 500		GT- 300
		Center Pivot Door	Hinged Door	Center Pivot Door
IN SWING	A	1-1/2"	1-1/2"	1/2"
	B	7"	1"	7"
	C	1"	1"	1"
OUT SWING	A	2-7/32"	1-1/2"	1/2"
	B	7"	1"	7"
	C	1"	1"	1"

CAUTION : Maximum mounting height for the modules is 8 feet 2 inches.
IT IS THE INSTALLERS RESPONSIBILITY TO ENSURE THAT THE INSTALLATION MEETS APPROPRIATE ANSI OR PREVALENT CODE SPECIFICATION.

7. Mounting of the Unit

A) To prevent metal chips from contaminating and shorting out the printed circuited boards, remove the modules from the housing extrusion. Slide the lens back into the housing extrusion. Using a hack saw, **CAREFULLY** cut the assembly to the desire length. Do not cut too aggressively otherwise the lens may crack.
B) Remove the lens again.
C) Drill 1/8" holes in the housing approximately 2 inches from each end.
D) Pre-position the housing on the door. Mark the 1/8" holes on the door. Drill the holes for mounting screws.
E) Mount the housing to the door using two #6 screws from the parts bag.

8. Door Cord Installation

Each end cap has a knock out to allow the wiring to pass into the Acugard 3. NABCO recommends installing the wiring loop on the inside of the building.

A) Connect the Acugard 3 wire harness to the door control main harness. (See wiring diagrams Figure 13~19)
B) Use the door loop and door loop cover to protect the harness. (See Figure 4)
Drill three holes in the jamb tube or header housing for the door loop cover using the door loop cover template. Guide the harness through the door loop. The eight pin connector will plug into the end of the Master module.
C) Push the cable through the hole in the door frame or the wall and secure the door loop to the door frame or wall using the door loop cover and two screws provided.
D) On the extrusion's end cap, break out the part of the end cap on the bottom to allow wire passage.
E) Drill a 3/8" diameter through the door between the two Acugard 3 extrusions to allow wire to pass between the extrusions near the terminal strip.

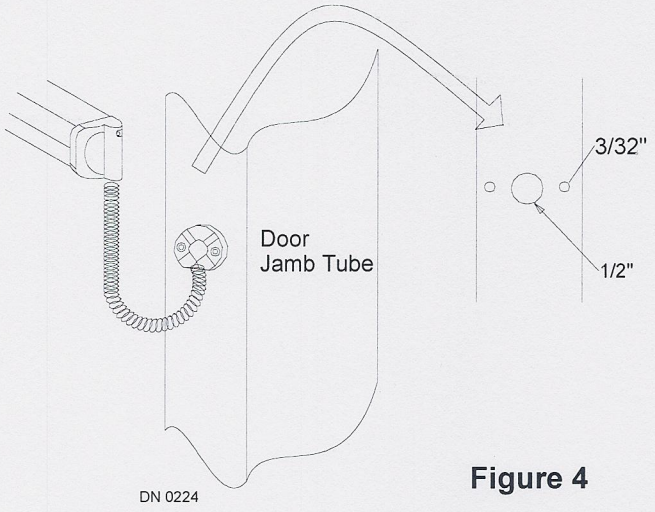


Figure 4

NOTE: Be sure to review all applicable fire rating codes prior to mounting the extrusions onto the door. It may be necessary not only to run separate cables to each extrusion, but also to use special hardware when securing the extrusions to the door. If the through-hole in the door between the two Acugard 3 cannot be drilled, it will be necessary to install a door cord on both sides of the door.

9. MODULE INSTALLATION

A) Basic operation

Each Acugard 3 module consists of one optic, transmitter and a receiver, and functions independently of the other modules. (See figures 5 & 6) The transmitter emits an infrared beam which projects a pattern approximately 10" in diameter at 84" mounting height to the floor. The receiver in turn receives the infrared beam reflected from the floor. This transmission and reception forms a detection angle, which is the basic premise of detection (called triangulation). Should the reflected beam be interrupted, detection will occur. Once detection has occurred, the output from the master module is sent to the controller of the swing door.

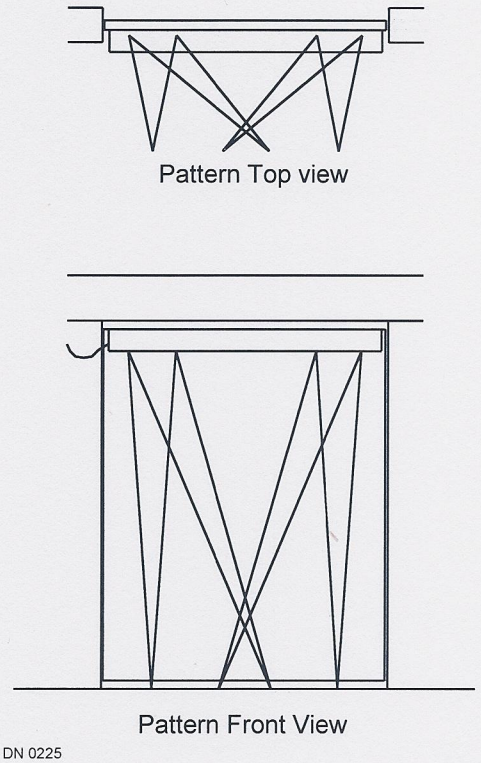


Figure 5

B) Positioning of scanning modules

The position of the master and slave in the aluminum extrusion is important to the operation of the Acugard 3 unit. The correct position of the master/slave combination is ***MASTER ON THE HINGE SIDE*** of the door and the ***SLAVE ON THE LEADING EDGE SIDE*** of the door. (See Figure 7)

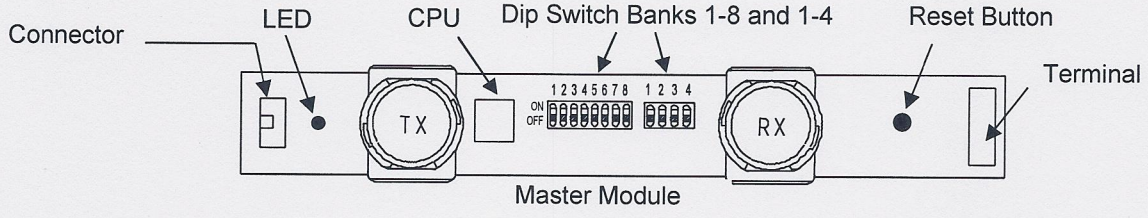
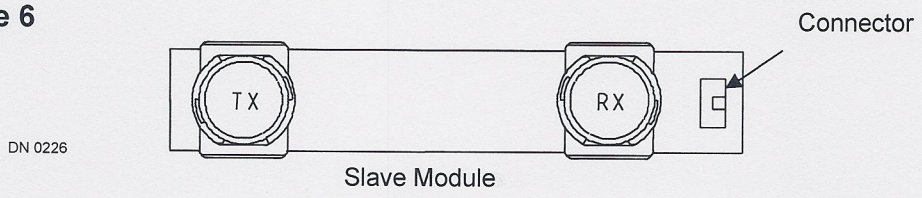


Figure 6



DN 0226

CAUTION:	Be careful not to let the modules "hang" or pull excessively on the connector. The electronics, although built to rugged standards, can still be damaged if abused. Before touching the circuit board, touch the door frame or a grounded metal object to discharge any static electricity you may have on your body. <u>To prevent electro-magnetic interference the excess flat ribbon cable should never be tucked under the circuit board during programming or normal use.</u> Fold up excess ribbon cable and use a small cable tie or tape to hold it together so that it does not hang down.

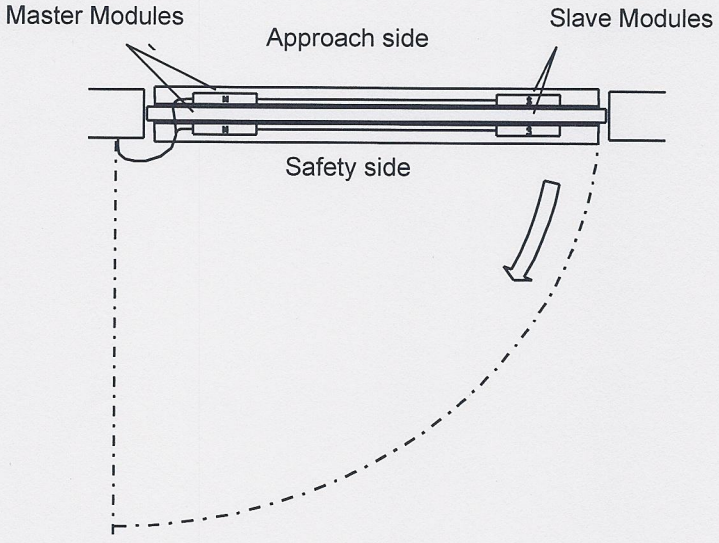


Figure 7

DN 0227

10. Module Adjustments

Figure 8 shows the position of the scanning modules and the resulting mounting angle. It is necessary to choose the correct mounting angle for the desired detection distance depending on the application and the width of the door.

To ensure correct operation, each Master and Slave module in a stick must be mounted at the same angle in the extrusion.

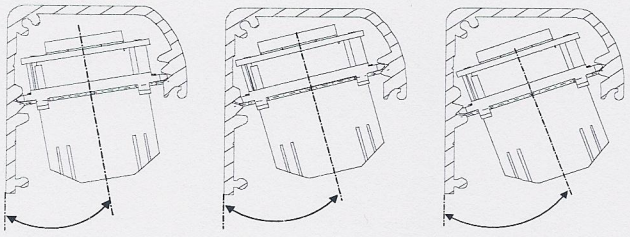


Figure 8

DN 0228

On GT-300/400 with Magnum or analog controls ONLY : If the door opens toward a wall or guide rail, a Limit Switch Kit P/N 11-10307, must be used to prevent the swing side stick from detecting the wall or guide rail.

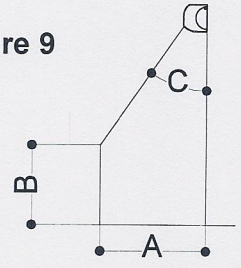
Table 1 at right gives the distance of the infrared (IR) spot (A) from the door for the given angles (C) and Non-Detection Zone (B) off the floor. (See Figure 9) Non-Detection Zone is selected depending on Sensitivity setting. (See Table 2)

Table 1 : Distance (A) of IR spot from Door

Non-Detection Zone (B)	Angle (C)		
	10 °	15 °	20 °
12" (305 mm)	12" (305mm)	17" (432mm)	24" (610mm)
20" (508 mm)	11" (280mm)	16" (406mm)	21" (533mm)

Example (using the table above):
Refer to Figure 9: If a module is set at 15 ° (C) with detection height adjusted to 12" (Non-Detection Zone (B)) off the floor, the IR spot would be located at a distance (A) of approximately 17" away from the door.

Figure 9



DN 0229

NOTE : It is recommended that the modules in the approach side stick be installed at 10° and the modules in the swing side stick also be installed at 10°. These settings are suggested starting points.

This sensor cannot detect objects which are located at lower heights, such as pets, low carts, etc.

11. Hold Time Adjustment

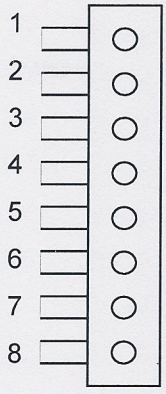
The output hold time is adjusted using Switch Bank 1-8 and setting switches 7 & 8 (0.5 second, 1 second, 2 seconds or 4.5 seconds) on the master module. (See Figure 6 - Module layout)

12. Detection Distance

The Non-Detection Zone distance is adjusted automatically depending upon sensitivity setting. (See Table 2)

13. Wiring Connections

A) For Non-Encoder installation



#1 PWR (Brown) : 12-24 VDC or 24 VAC

#2 PWR (Red) : 12-24 VDC or 24 VAC

#3 E/A : Not used

#4 E/B (Green) : Input for Limit Switch used to ignore the wall (Swing side Only)

#5 C/L (Orange) : Communication line between sensor sticks

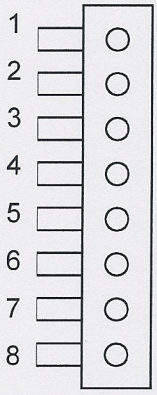
#6 COM (Yellow) : Common of #4 E/B and #5 C/L

#7 OUT : N.O. (Black) Approach Side output, (White) Swing Side output

#8 OUT (Red) : COM Signal Common

Figure 10

B) For Encoder installation



#1 PWR (Brown) : 12VDC

#2 PWR (Red) : 12VDC - Common

#3 E/A (Blue) : Motor encoder input (Phase A)

#4 E/B (Green) : Motor encoder input (Phase B)

#5 C/L (Orange) : Communication line between sensor sticks

#6 COM (Red) : Common of #3 E/A, #4 E/B and #5 C/L

#7 OUT : N.O. (Black) Approach Side output, (White) Swing Side output

#8 OUT (Red) : COM Signal Common

Figure 11

14. DIPSWITCH SETTINGS

(Refer to Figure 6)

NOTE : Factory setting is all "OFF".

A) **Switch Bank 1-8: Switches 1 & 2 : Sensitivity and Non-Detection Zone Setting**
Position switches to achieve the desired Sensitivity and Non-Detection Zone found in Table 2.

Table 2 : Sensitivity and Non-Detection Zone Settings (Refer also to Figure 9)

Non-Detection Zone	Sensitivity	Switch #1	Switch #2
12"	High	ON	OFF
	Medium High	OFF	OFF
20"	Medium Low	OFF	ON
	Low	ON	ON

B) **Switch Bank 1-8: Switches 3 & 4 : Mutual Interference Prevention Modes**
To prevent Acugard 3 sticks on simultaneous pair doors from cross talking, set the switches using Table 3. Each master module must have a unique mode setting.

Table 3 : Mutual Interference Prevention Modes

	Switch #3	Switch #4
Mode 1	OFF	OFF
Mode 2	ON	OFF
Mode 3	OFF	ON
Mode 4	ON	ON

C) **Switch Bank 1-8: Switch 5 : Motor Type**
Position switch 5 to match the type of motor found in Table 4. Note: Analog and Magnum controls use motors without encoders and U Series controls use motors with encoders.

Table 4 : Motor Type

	Switch #5
With Encoder	OFF
Without Encoder	ON

D) **Switch Bank 1-8: Switch 6 : Detection Area**

Refer to Table 5. *Switch 6 will have no effect for units equipped with non-encoder motors.*
Position Switch 6 to modify where the swing side sensor will stop detecting objects. This setting applies to units equipped with encoder motors only.

Table 5 : Detection Area

Sensor Pattern	Switch #6
Reduced Pattern Use if guide rail is present at 90°	OFF
Full Pattern Use if wall is present at 90°	ON

Figure 12 below shows the three types of detection available.

1) Switch #6 ON - Encoder mode with full detection: Used when a wall is present at the 90 degree point. The Acugard 3 will "learn" the area and continues to sense throughout the door's 90° of travel. Wall is memorized at 90° and therefore ignored.
2) Switch #6 OFF - Encoder mode with reduced detection: Use this setting when a guide rail is present at the 90 degree point. The IR spot are reduced as they pass through 90° to avoid detecting the guide rail.
3) Non-Encoder mode : The detection is turned off at back check using a micro switch on the top of the operator.

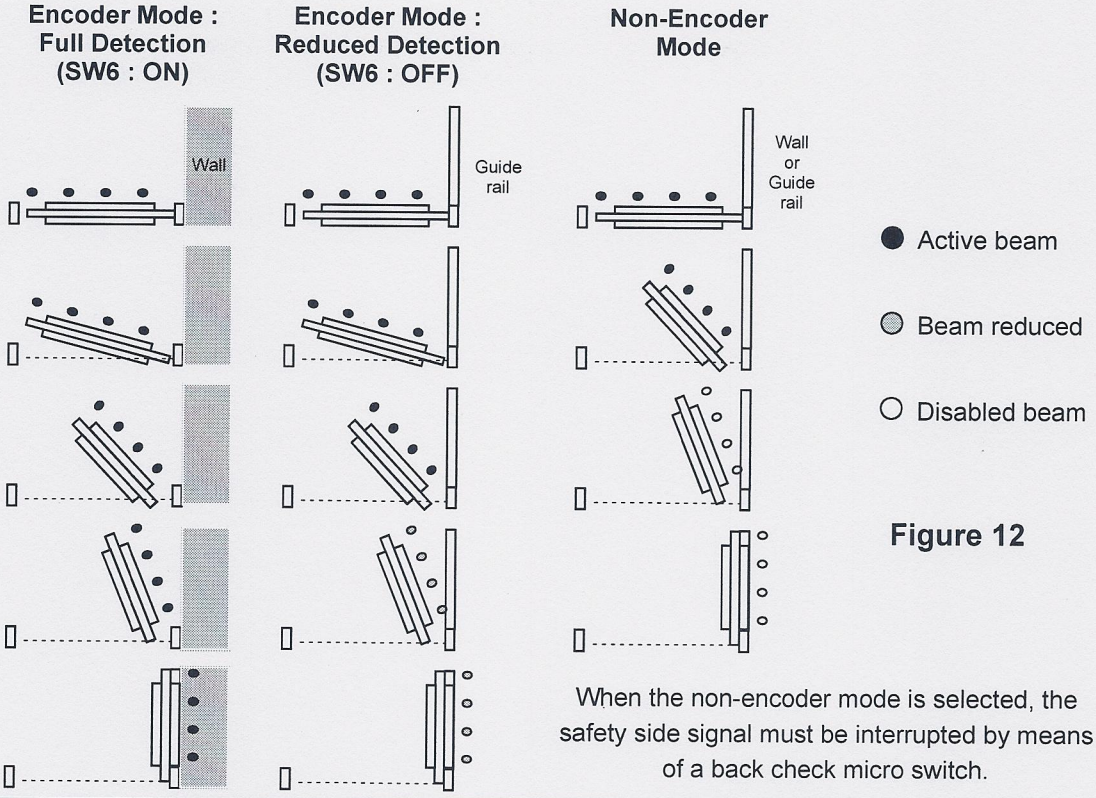


Figure 12

When the non-encoder mode is selected, the safety side signal must be interrupted by means of a back check micro switch.

E) **Switch Bank 1-8: Switches 7 & 8 : Output Hold Time**

Position switches 7 & 8 to change the amount of time a signal is sent to the output terminals. Refer to Table 6.

Table 6 : Output Hold Time

	Switch #7	Switch #8
0.5 second	ON	ON
1.0 second	ON	OFF
2.0 seconds	OFF	OFF
4.5 seconds	OFF	ON

NOTE: If an analog control is being used and the door opens toward a wall or guide rail, switches #7 & #8 must both be ON.

F) **Switch Bank 1-4: Switch 1 : Modules**

Position switch 1 to set the number of modules per stick. Refer to Table 7 below. If both a Master and a Slave Module are used, switch 1 must be in the OFF position. If only a Master Module is used, switch 1 must be in the ON position.

Table 7 : Number of Modules Used per Stick

	Switch #1
Two Modules	OFF
One Module	ON

G) **Switch Bank 1-4: Switch 2 : Output Logic**

Position switch 2 to set the output to Normally Open or Normally Closed. Refer to Table 8.
If output is set to Normally Open (OFF) and detection occurs, the output will close.
If output is set to Normally Closed (ON) and detection occurs, the output will open.

Table 8 : Output Logic

	Switch #2
Normally Open	OFF
Normally Closed	ON

H) **Switch Bank 1-4: Switches 3 & 4 : Switches 3 & 4 must be in the OFF position.**

15. PROGRAMMING

Caution: When programming Acugards, all other sensors must be disconnected except for the door leaf being programmed. This applies to Acugards on pairs also. When programming pairs, each door leaf must be programmed individually. The Acugards being programmed must have full control of the programming process. Other sensors must be disconnected and not allowed to signal the control during this time.

A) Programming Single Swing Doors
(Refer Figure 13 on Page 23 and NOTES on Page 22)

1) If possible, remove any mats from the area for the initial setup process. They can be reinstalled after the initial learning process.
2) Disconnect all sensors including Acugard 3s by unplugging the harnesses inside the header.
3) Turn on the 120 VAC to the control. Program the control, setting all desired parameters.
4) Apply power to the Acugard 3s. Do not connect any other sensors at this time.
5) Refer to Figure 6. Press and release the Reset Button on the master module on the ***NON-SWING*** side of the door.

   The microprocessor memorizes the pressed side sensor as the non-swing side.

6) The Reset button on the approach side stick can be pressed while the door is in any position, however, learning does not begin until the door reaches the fully closed position. Once this happens, clear the detection area of all stepladders, etc, stand back, and observe the red LED on the master module.
   a) The red LED will begin to flash slowly at first; this indicates "Stand by".
   b) The red LED will begin to flash faster.
   c) On a door equipped with a Magnum or analog control, the LED will come ON once then go OFF. On a door equipped with a U Series control, the LED will come ON and the door will open then close. While the door opens, the Acugard 3 will read the encoder signals and learn the rotation of the door. It will readjust the pattern every degree of rotation. If the door butts against a wall, the system will memorize the wall. After the door closes, the LED will turn OFF.
   d) Programming of Acugard 3s will be complete.
7) Once Acugard 3's are programmed and adjusted, disconnect the Acugard 3s by unplugging the Acugard harness inside the header.
8) Connect motion sensor and adjust.
9) Connect presence sensor and adjust.
10) Reconnect Acugard 3's. Door should be ready for operation.

B) Programming Simultaneous Pairs
(Refer Figure 14 on Page 24 and Notes on Page 22)

1) If it is possible, remove any mats from the area for the initial setup process. They can be reinstalled after the initial learning process.
2) Disconnect <u>all sensors</u> including Acugard 3s by unplugging the harnesses inside the header.

> Note: On door equipped with the Gyro Tech "U" Series Microprocessor Controls, set "Extended Time Delay" to "0" and adjust standard "Time Delay" from 0-7 to achieve proper time delay settings.

3) Turn on the 120 VAC to the control. If the pair has two controls, program each control individually, setting both controls identically.
4) If using Microprocessor Controls or Magnum Controls, install "Y" Harness to connect the two controls together.
5) Set mutual interference dip switches 3 & 4 on bank 1-8 differently on each Acugard 3 stick so the units will not cross talk.
6) Plug in the harness to the Acugard 3s on the right hand door leaf only. Do not connect the left Acugard 3s or any <u>other sensors</u> at this time.
7) Refer to Figure 6. On the right door leaf, press and release the Reset Button on the master module on the ***<u>NON-SWING</u>*** side of the door.

> The microprocessor memorizes the pressed side sensor as the non-swing side.

8) The Reset button can be pressed while the door is in any position, however, learning does not begin until the door reaches the fully closed position. Once this happens, clear the detection area of all stepladders, etc, stand back, and observe the red LED on the master module.
    a) The red LED will begin to flash slowly at first; this indicates "Stand by".
    b) The red LED will begin to flash faster.
    c) On a door equipped with a Magnum or analog control, the LED will come ON once then go OFF. On a door equipped with a U Series control, the LED will come ON and the door will open then close. While the door opens, the Acugard 3 will read the encoder signals and learn the rotation of the door. It will readjust the pattern every degree of rotation. If the door butts against a wall, the system will memorize the wall. After the door closes, the LED will turn OFF.
    d) Programming of right Acugard 3s will be complete.
9) Disconnect the right Acugard 3's by unplugging the Acugard 3 harness inside the header. Repeat steps 6 to 8 for left Acugard 3s.
10) Connect motion sensor and adjust.
11) Connect presence sensor and adjust.
12) Reconnect the Acugard 3's on both leafs. Doors should be ready for operation.

Programming Notes:

1. If the LED flashes irregularly, refer to the troubleshooting section at the back of this manual.
2. During programming, no one should be permitted to enter the detection area.
3. On simultaneous pairs, Acugard programming for each door leaf must be done separately.
4. A very dark floor can inhibit reflection and cause programming errors with the Acugard 3s. If this happens, simply spread newspaper or other light material down in the detection area and reprogram the Acugard 3s.
3. Program Acugard 3s by pressing RESET button on the non-swing side only.
   To test the system, activate the door and place an object in the path of the door.
   a.) The swing side sensor will see the object and cause the door to stop or slow down.
   b) The non-swing side sensor will see the object and re-open the door.

If more pattern depth is desired, turn off the 120 VAC power and remove the master and slave modules. Reposition both the master and slave modules at a different angle in the housing. (Refer to Figure 8.) After you turned the power back on you will have to press the Reset Button again. This reinitializing is only necessary when the modules are moved, not because the power is turned off.

The memory settings on the Acugard 3 are retained if the power goes out. Reprogramming is not necessary.

Things to Remember:

1. When automatic entrances doors are located in a retail store, advise the owner not to locate signs or merchandise near the automatic doors - this can cause customers to stop and loiter near the doorway.
2. Once the sensors have been programmed, advise the owner not to relocate items around a doorway. This includes floor mats, signs, displays, etc. This can cause the sensors to false activate.

16. Wiring to Controller

A) GT300/400 Single with U Series Control - with Encoder

Note:
1. Make sure that the green ground wire on the microprocessor control box is properly grounded to the header along with the 120 VAC ground.
2. Connect Brown wire from rocker switch to Brown on main harness with wire nut as shown.

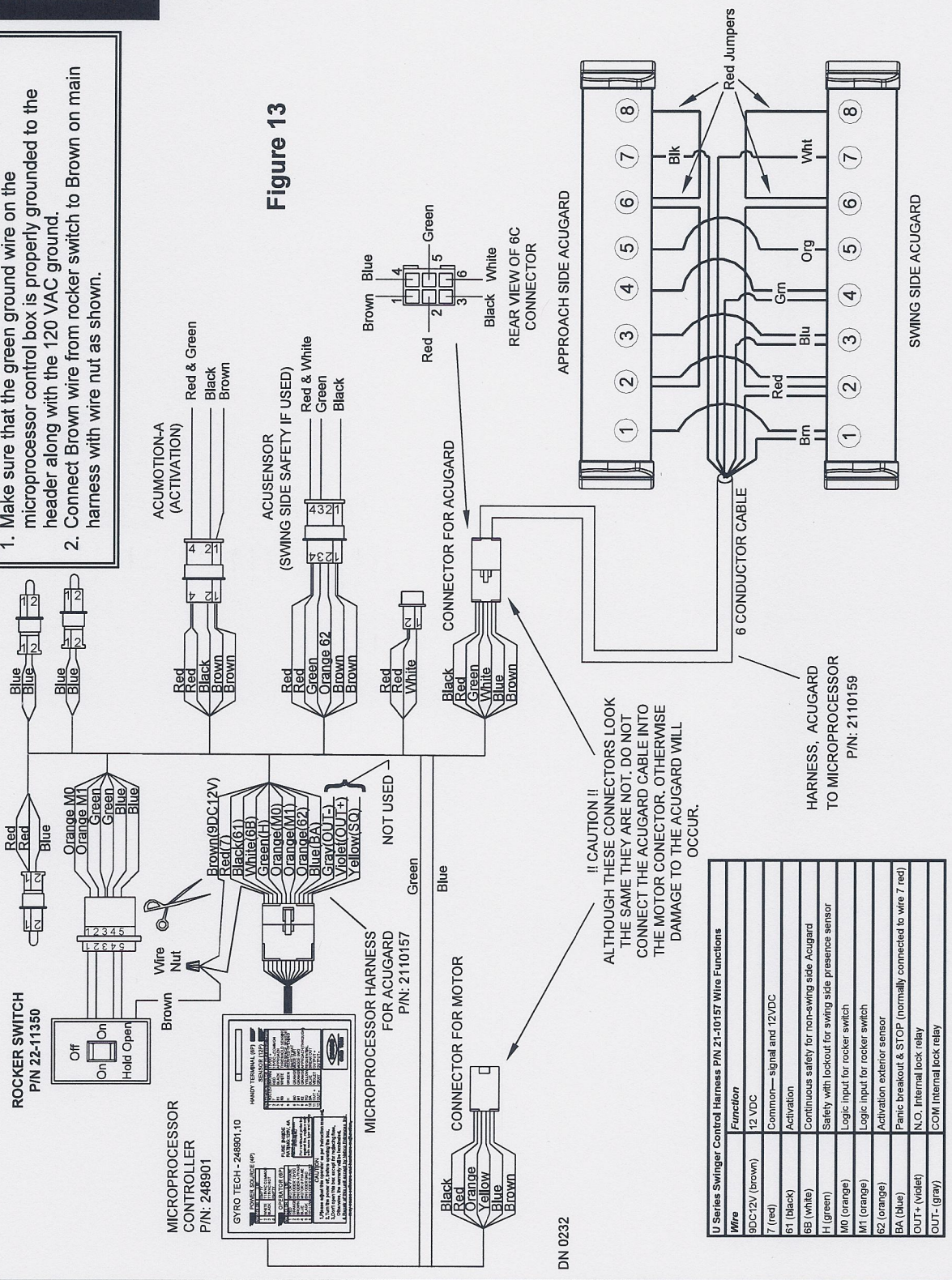


Figure 13

U Series Swinger Control Harness P/N 21-10157 Wire Functions	
Wire	**Function**
9DC12V (brown)	12 VDC
7 (red)	Common— signal and 12VDC
61 (black)	Activation
6B (white)	Continuous safety for non-swing side Acugard
H (green)	Safety with lockout for swing side presence sensor
M0 (orange)	Logic input for rocker switch
M1 (orange)	Logic input for rocker switch
62 (orange)	Activation exterior sensor
BA (blue)	Panic breakout & STOP (normally connected to wire 7 red)
OUT+ (violet)	N.O. Internal lock relay
OUT- (gray)	COM Internal lock relay

B) GT300/400 Simultaneous Pair with U Series Control - with Encoder

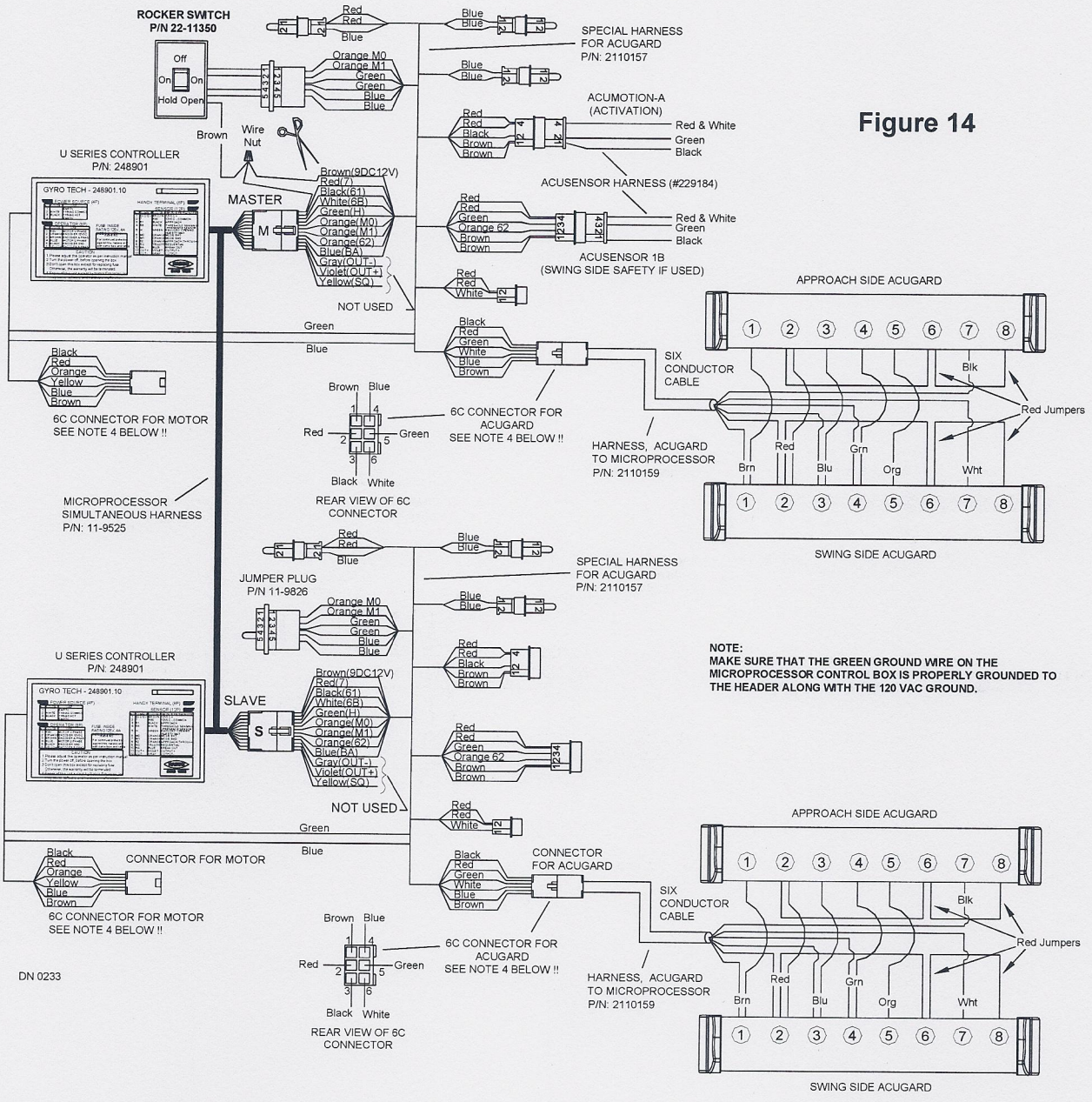


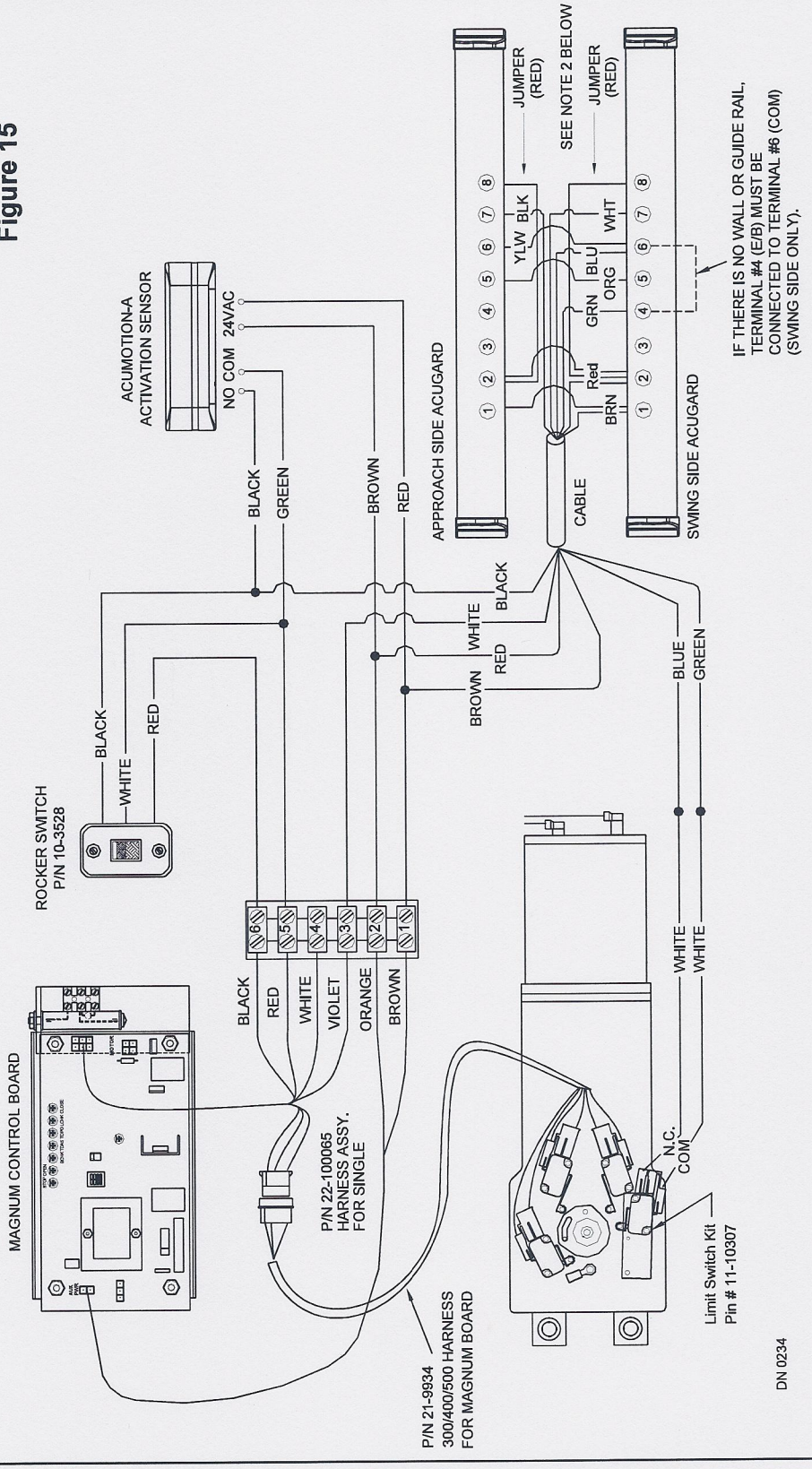
Figure 14

Note:

1. Connect Brown wire from rocker switch to Brown on main harness with wire nut as shown.
2. The rocker switch must be plugged into the harness connecting to the master microprocessor controller. The "Master" and “Slave” connectors are marked with an “M” and “S” on the Simultaneous Pair Harness (P/N 11- 9525) as shown.
3. Master connector can also be identified by a Blue wire in pin # 10. Slave connector has no blue wire at all.
4. !! Caution !! Although the motor and Acugard connectors look the same they are not. Do not connect the Acugard cable into the motor connector. Otherwise damage to the Acugard and/or Control will occur.

C) GT300/400 Single with Magnum Control - Two Sticks per Door - No Encoder

Figure 15



Notes:

1. Limit Switch Kit (P/N 11-10307) is necessary to command the Acugard 3 system to ignore a wall or a guide rail as the door opens.
2. Red jumper and six conductor cable included with Acugard sticks

D) GT300/400 Simultaneous Pair with Magnum Control - Two Sticks per Door - No Encoder

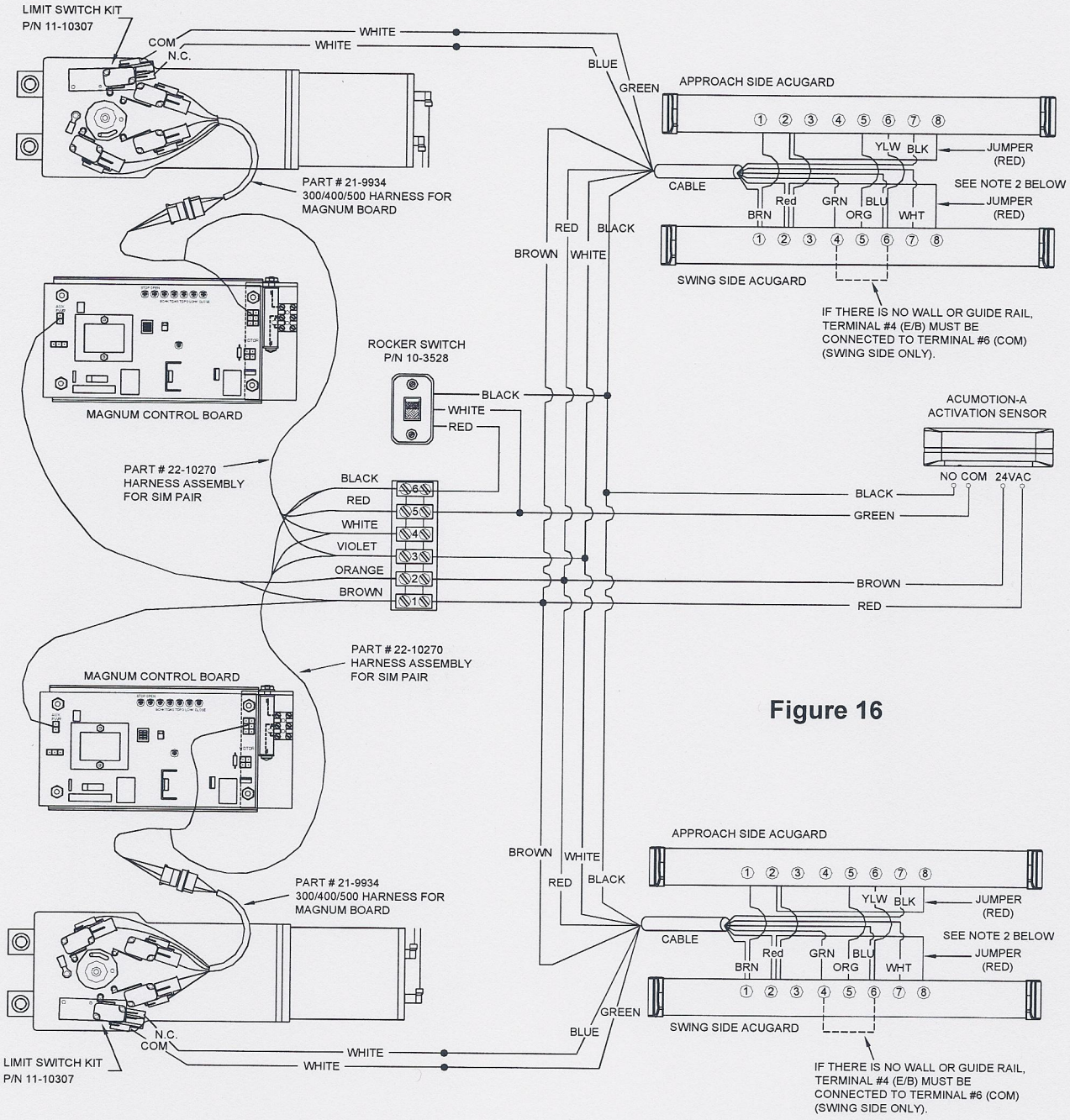


Figure 16

DN 0234

Notes:

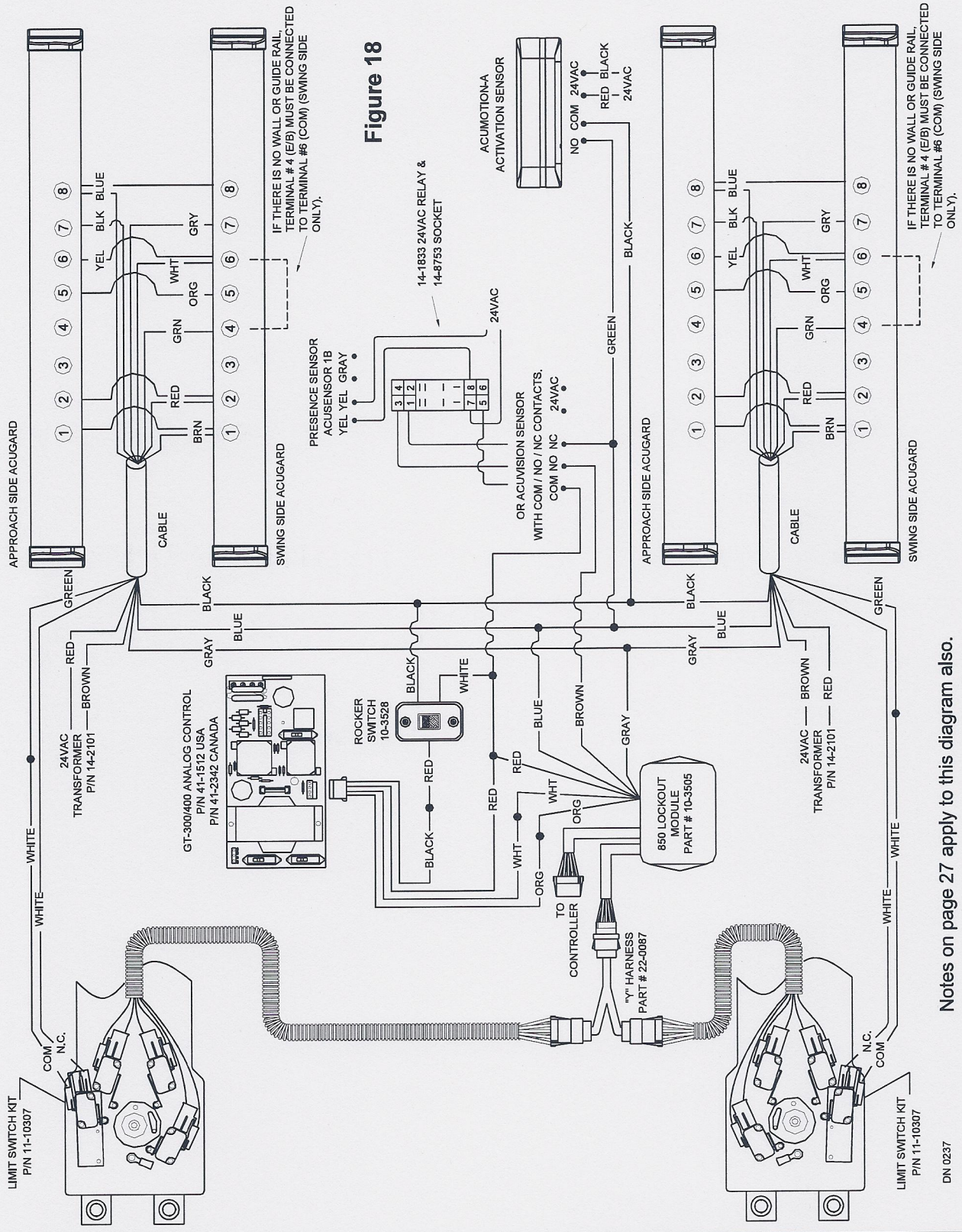
1. Limit Switch Kit (P/N 11-10307) is necessary to command the Acugard 3 system to ignore a wall or a guide rail as the door opens.
2. Red jumper and six conductor cable included with Acugard sticks

E) GT-300/400 Single with Analog Control & 850 Lockout – Two Sticks per Door - No Encoder

NOTE

1. Door will stop when the Swing Side Acugard is tripped while the door is opening.
2. A limit Switch Kit is necessary to command the Acugard 3 system to ignore a wall or a guide rail as the door opens.
3. Set dipswitches 7 and 8 on Acugard to ON
4. Time delay P/N 24-3425 required if Acusensor used for activation in lieu of Acumotion
5. Set slide switch on analog control to "SWING SAFE"
6. A presence sensor must be used with a Model 850 Lockout
7. Set dipswitch # 5 to ON
8. Disconnect soft start leads from control. Plug control leads together and re-connect soft start leads into gray leads on 850 module

F) GT-500 Sim Pair with Analog Control & 850 Lockout – Two Sticks per Door - No Encoder



17. Limit Switch & Cam Settings

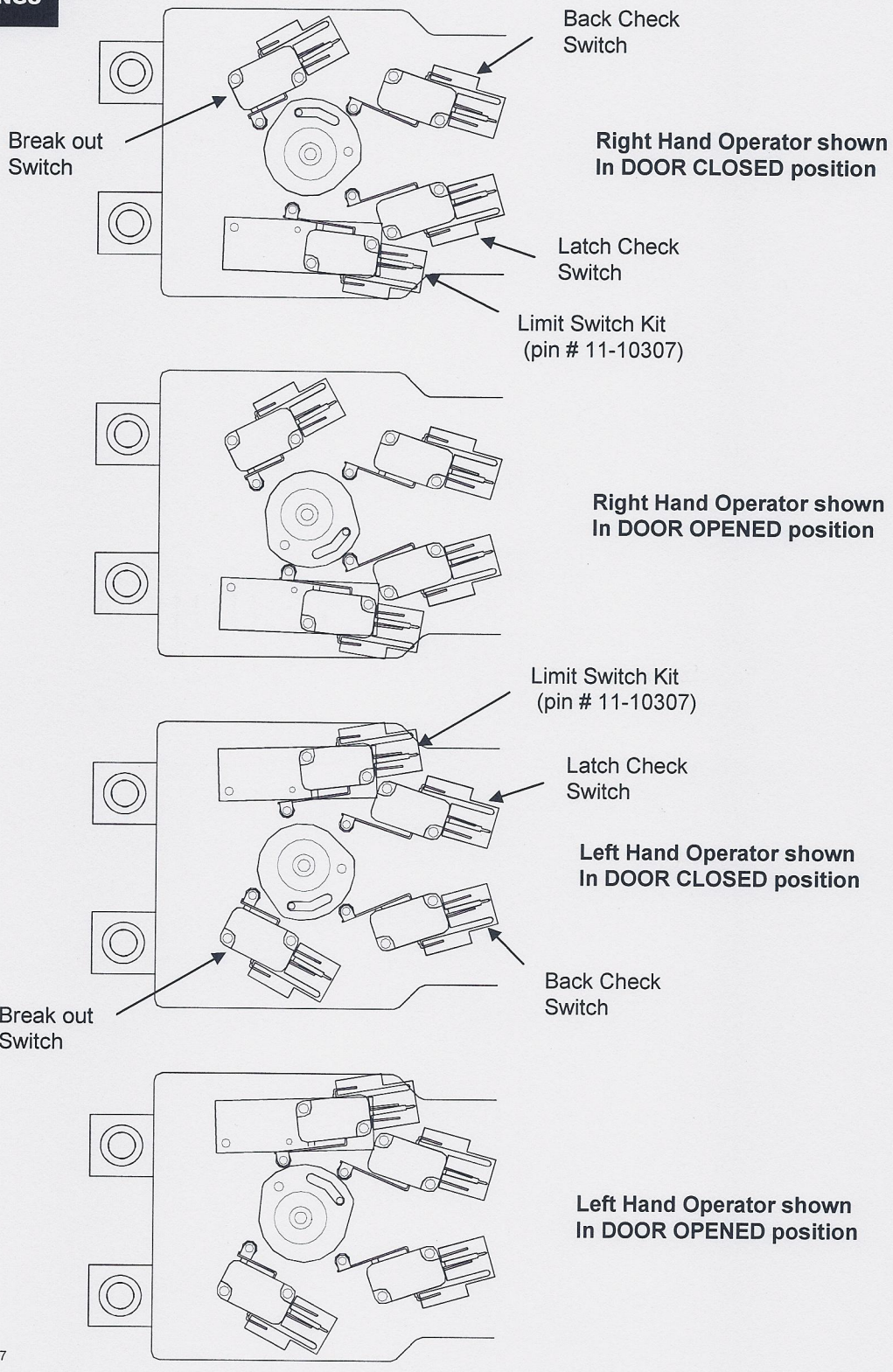


Figure 19

18. TROUBLESHOOTING

NOTE : Before proceeding further, remove sensor power for at least 5 seconds, then re-apply.		
A) LED Status	**Cause**	**Resolution**
After learning, LED is flashing steady.	Learning has not finished yet.	Press the Reset Button again.
	Encoder signals are not stopped.	① Check the wiring of the Encoder. ② Check the Encoder signals.
After learning, LED is ON.	Encoder pulses are incorrect.	① Check the wiring of the Encoder. ② Check the Encoder signals. If it is a Non-Encoder motor, dip switch #5 must be ON.
After learning, LED is not ON when there are objects in the area.	During learning, the sensor encounters point-black reflection with people or objects (stepladder, dangling wires, material) in the detection area.	Re-initiate programming by pressing Reset button. Persons and objects (for example stepladder) should be removed out of the detection area as soon as possible after the Reset Button is pushed.
LED on one side is not flashing.	Communication is broken between the two Acugard sticks.	Check the orange communication line. Ensure wire is not broken or shorted out. Ensure both ends are connected properly.
LED is not ON when there are objects in the area.	Power out.	Check 12-24VDC or 24VAC power source.
LED is ON, but the door does not stop.	Wiring problem	Ensure wiring on swing side Acugard is connected to Safety circuit. Check for poor connections.
	Wrong setting on Handy Terminal (U Series microprocessor only)	Ensure SIGNAL SLOW is set to N with Handy Terminal
LED is flashing : Long - Short - Short - Short	Master PCB is defective.	Replace module.
LED is flashing : Long - Short - Short	Slave PCB is defective.	Replace module.
	Cable between Master and Slave is broken.	Replace cable.
	Incorrect dip switch setting.	Check switch bank 1-4: switch 1 for # of Modules used.
LED is flashing : Long - Short - Long - Short	Cable between Master and Slave is broken.	Replace cable.
LED is flashing : Long - Long - Short	Encoder pulses are incorrect.	① Check for correct encoder wiring. ② Check the Encoder signals with voltmeter. ③ Check the operator for drive train slippage.
	Other sensors (including Acugard on the other door leaf) signaled the control during programming.	Disconnect all other sensors (including presence sensors and Acugards on the opposite leaf) during programming.
	No activation signal	Ensure the non-swing side stick is connected to the activation circuit and the common wire. check circuit for problems and rewire if there are mistakes.

Troubleshooting (continued....)

A) LED Status	Cause	Resolution
LED is flashing : Long - Long - Long - Short	Sensor is defective.	Replace sensor

B) Door Status	Cause	Resolution
Programming of Acugard was not successful	Miss-detection occurred due to different mounting angles of Master & Slave modules	Mounting angles of both Master and Slave modules must be identical on each stick. Re-position modules.
	Miss-detection occurred due to insufficient reflection of infrared signal from floor.	Place newspaper or other light material on the floor in the detection area of the door and re-program Acugards.
	Acugard received electrical interference between master and slave modules	Ensure the flat ribbon cable between master and slave modules is not tucked up behind the modules.
Door is stopped halfway.	The sensitivity is too high.	Decrease sensitivity on Swing Side Acugard.
Door recycled near the latch check area while closing.	Sensor may be detecting the jamb tube or the other door.	Slave PCB should be moved toward hinge side.
	Mutual Interference. (Simultaneous Door only)	Check that dip switches #3 & #4 on bank 1-8 are adjusted for Mutual Interference prevention.
Door doesn't stop when there are objects near the back check area on swing side.	*U Series microprocessor control only* Setting on Dip switch #6 - bank 1-8 is not correct.	The swing side area is disabled as the door passes the 90 ° angle. Check Dip switch #6 on bank 1-8.
Door stays open around the fully opened position.	*U Series microprocessor control only* Setting on Dip switch #6 - bank 1-8 is not correct.	The swing side sensor is detecting objects that there is out of the 90 ° range. Check Dip switch #6 on bank 1-8.
	Magnum or Analog control only Swing Side Acugard is activated and holding door open. Limit Switch Kit for non-encoder unit is not installed properly.	Check the Limit Switch and the wiring. Safety signal must be interrupted via Limit Switch when door is in back check area.
	All Controls: The sensor on the push side of the door is ghosting	Changing the location of goods, floor mats, or display items near the door will cause the sensor to ghost.

C) Misc.		
Intermittent detection	Lens may be dirty.	Clean the lens with a soft cloth
	Sensitivity set too low	Increase sensitivity via dipswitches 1 & 2 on bank 1-8.
	U Series microprocessor control only Bad Ground on microprocessor control	Check Green grounding wire on Controller.
	Interference from other sensors (including Acugard on other leaf) during programming.	Disconnect the harness of all other sensors during the programming process.
	Module lenses are not in the same slot. May have been twisted during installation.	Remove module and install so that each lens on the module is positioned in the same slot.
Door re-opens	Wiring problem	Acusensor for safety should have connected to H (green), not 62 (orange).

Troubleshooting (continued....)

C) Misc.		
Poor detection area	Mounting height greater than 98".	Change mounting location.
	Modules are angled too close to doors.	Angle both modules out away from door
Sensors ghosting occasionally	Sensitivity is too high.	Decrease sensitivity via dipswitches 1 & 2 on bank 1-8.
	Mutual Interference	Check that dip switches #3 & #4 on bank 1-8 are adjusted for Mutual Interference prevention.
	Sensor is detecting the jamb tube or the other door.	Slave PCB should be moved toward hinge side.
Doors out of SYNC	There was a recycle.	Set preload properly. Adjust recycle sensitivity. Adjust check speed.
	Time delay setting is incorrect.	U Series Control only - Set EXT TIME DELAY to 0. Magnum or analog control only - adjust time delay potentiometers to synchronize door cycle.
Low sensitivity	Objects are near the detection area	① Objects (for example stepladder) should be removed out of the detection area before the reset button is pushed. ② Objects (for example table, garbage can) at the side of a door should be removed out of the detection area before the reset button is pushed. If impossible, slide both Master and Slave PCB toward the pivot side of door. ③ If the guide rail on the swing side is detected too soon, slide Master or Slave PCB toward the pivot side of door. ④ If hardware on the door is detected, adjust angle of modules away from the door.
	Master and Slave modules are installed at different angles	Ensure both modules are installed in the aluminum extrusion at the same angle. If a module is inserted incorrectly, light is twisted and the sensor receives incorrectly reflected light.
	Optical influence from other sensors	① Ensure other sensors are turned off when programming Acugards (including the sensors on the opposite leaf of a pair). ② If the floor is very reflective, cover the floor with card board or newspaper and reinitiate Acugard programming.
	Electrical noise	① Do not tuck the ribbon cable that connects the two modules up behind the modules. ② Route wiring, adjust module angles, module positions etc. to reduce noise influence. ③ Insert ferrite bead to shield the power cable and the cable between PCBs.
	Unknown causes	Replace Acugard modules.

RETURN POLICY
LIMITED WARRANTY

NABCO Entrances Return Policy - Limited Warranty

NABCO ENTRANCES INC. for its Gyro Tech product line, provides to its distributor a limited warranty, on Gyro Tech products. This warranty is:

NABCO ENTRANCES INC. will exchange or repair, F.O.B. the plant, any component found defective in workmanship and/or material, subject to Nabco's inspection, for a period of one (1) year after installation or 18 months after manufacture, whichever comes first. Warranty does not include field service labor. The installing contractor/distributor will be responsible for installation and field service. This is NABCO ENTRANCES Inc.'s sole warranty.

This warranty does not cover loss or damages resulting from causes beyond the manufacturer's control, misuse, neglect, accidents, windstorms, or other acts of God, or acts of terrorism. Warranty is for normal use and service. The warranty does not apply to equipment that has been repaired or altered so as to adversely affect conditions of operation. Warranty will not obligate NABCO for damages resulting from such alterations, misuse, or acts of God, or acts of terrorism.

Extended Warranties - New Parts and Equipment Only

Two-year warranties on all Gyro Tech entrance systems are available. The two (2) year warranty is the same as the one (1) year warranty except for a period of two (2) years after installation or 30 months after manufacture whichever comes first. All orders requesting a multi year warranty must be included on the purchase order at the time of the original order to establish proper records. Any other extended warranty must be specifically approved and priced by NABCO Management.

Warranty Seal on Operators
All operators will contain a warranty seal placed over the cover and housing. The warranty will become invalid if any operator is returned with the seal broken.

Return of Warranty Parts
NABCO must be promptly notified (within 2 weeks of failure) of all warranty claims. All parts for warranty claims must be returned to NABCO within the following two (2) weeks for US locations and six (6) weeks for all other locations. All parts must be returned freight prepaid and include a Return Material Authorization Tag/Number which is available by contacting the Customer Service Department. All items returned are subject to inspection and testing to determine the cause of failure. If in NABCO's determination:

A. For all items, when the part returned is defective and within the terms of the warranty, it will be repaired or replaced. Any repaired item would carry the full warranty from original installation date. If the piece has been replaced, a credit memo will be issued against the replacement invoice. Warranty parts are shipped prepaid via ground transportation by Nabco. Expedited delivery costs are paid by the distributor.

B. For all items, if it is determined the part returned is <u>not defective and within the terms of the warranty</u> the part will remain the property of the Distributor at the time of this determination. The disposition of the item will be agreed upon with the distributor. The only options considered will be:

1. To return the item at the distributor cost.
2. To return it to stock less inspection and testing costs if the piece has not been used and remains saleable as a new part. A 20% restocking charge will apply and be paid by the distributor.
3. Discarded by NABCO.

Non-warranty Returns
Applications for the return and credit of any parts item must be made in writing to Nabco Customer Service within 60 days of the date of our shipment. Only items listed on attached Nabco RMT tags will be considered.

Parts that have been ordered incorrectly can be exchanged for the correct items provided Nabco Customer Service is notified in writing within 60 days of the date of our shipment and subsequent return authorization has been given. Credit for parts that have been ordered by the distributor and are no longer needed for repair in the field will be subject to the discretion of Nabco. A 20% stocking fee will apply.