NABCO ENTRANCES INC. GYRO TECH

NABCO TECHNICAL TIPS

ISSUE 2 JAN 9, 2004

The Newsletter for Technicians

This is the second issue of our technical newsletter. In this issue we will be introducing our programmable ACUGARD 2 Swing Door Sensing System. Also, in an effort to demystify the topic of motor encoders our second article discusses the methods of checking and testing encoders in the field. On the last page you will find a complete list of all of our Technical Bulletins to date.

Please ensure a copy of this newsletter is distributed to each technician on staff. Thank you!

Inside this issue:

The ACUGARD 2 Swing Door Presence Sensing System

One new product you might not have heard much about yet is the ACUGARD 2 Swing Door Sensing System. The ACUGARD 2 System consists of door mounted sensors for both sides of the door plus an Acusensor 1A for the swing side. The approach side sensor must be purchased separately. The door sensors mount at the top of the door on both sides.

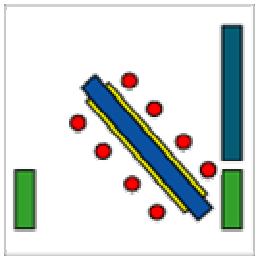
The unique features of the ACUGARD 2 over other door sensors are as follows: The ACUGARD 2 connects directly to the motor encoder on the microprocessor. This allows it to read the encoder pulses as the door opens and closes. When the ACUGARD 2 is put through it's programming sequence, it reads the swing door environment while keeping track of the encoder pulses as it opens then closes the door. This enables the ACUGARD 2 to memorize the door opening and sequentially turn its internal sensor modules "ON" and "OFF" as the door opens and closes. Smart programming such as this enables the system to ignore such things as guide rails or walls as the door opens. This exclusive feature maximizes the swing door detection area unlike any other sensors in the industry, and does not require additional limit switches.

Refer to the diagrams below. As the door opens the active sensors (shown as in red circles) are sequentially turned "OFF" starting from the pivot side of the door as indicated by the white circles, while the sensors closest to the leading edge of the door are left "ON".

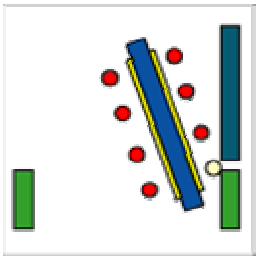
Set-up tip: Step 1: When programming the ACUGARD 2 it is recommended to first program the (U series microprocessor control, so the door control is working properly. Step 2: Unplug both the header mounted approach and presence sensors so that they do not interfere with the ACUGARD 2 programming. Step 3: Activate the auto programming sequence by simply pressing the black reset button on the approach side door sensor stick. The microprocessor memorizes the pressed side sensor as the approach side. The red LED will begin to flash first slowly then faster. The door will then open, and close after a short pause. If programming was successful, the red LED will go off and the unit will then be ready for service.

continued next page ..

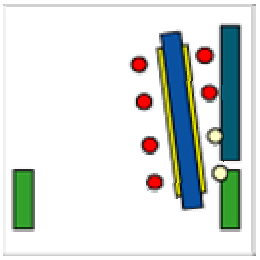
1. Door begins to open



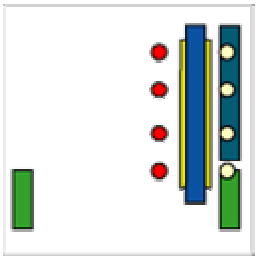
2. Module closest to pivot is switched off leaving other modules still active



3. As door opens, other modules are switched off.



4. All modules switched off at full open point



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(ACUGARD 2 continued …)

At this point you can plug in the Acusensors back in. At the back of the installation manual is a list of LED error codes should programming not be successful.

If desired, the installer can also change the module angle and sensitivity as well as output relay hold time. The ACUGARD door sticks operate on 12 VDC and use a form C relay output. A separate 12 VDC power supply (part # 14-10285) is available.

The ACUGARD 2 can also be installed on older units such as the GT-300/400 analog system or on the GT-710 system. The ACUGARD 2 can be installed to work with or without an encoder but bear in mind, to get the full benefit of the ACUGARD 2's superior programming and set-up features, an encoder should be used.

Having said that, *it is possible to equip many of the older units with encoder motors and thus fully utilize the advantages of the ACUGARD's features.* If you would like more information on this please give us a call.

Did you know …..?

- If you are installing a GT-400 inswing door that must be equipped to panic break out, you must order a longer "panic breakout track". The part numbers for the tracks are as follows: short track 21-0997-01, longer track 21-0998-01 (use -02 for dark bronze)
- There has been a mis-print in the price book. The Bi-fold does not include an MS lock. It is, however, available as an option. Contact Customer Service for pricing information.

- The RECYCLE COUNT (which only goes up to 255) on all U series microprocessors can be easily set back to zero if you have the latest version of the Nabco Handy Terminal. The latest version has a GREEN housing and is also equipped with a buzzer. Follow these steps to clear the RECYCLE COUNT:

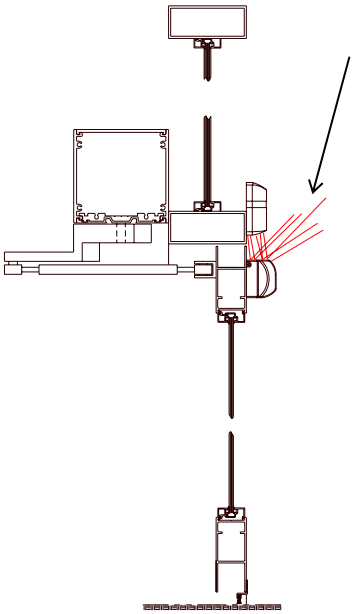
  1. Indicate the RECYCLE COUNT on the Handy Terminal.
  2. Push the "L" button.
  3. "CLR RECYCLE CNT?" will be indicated on the screen.
  4. Push the "Y" button.

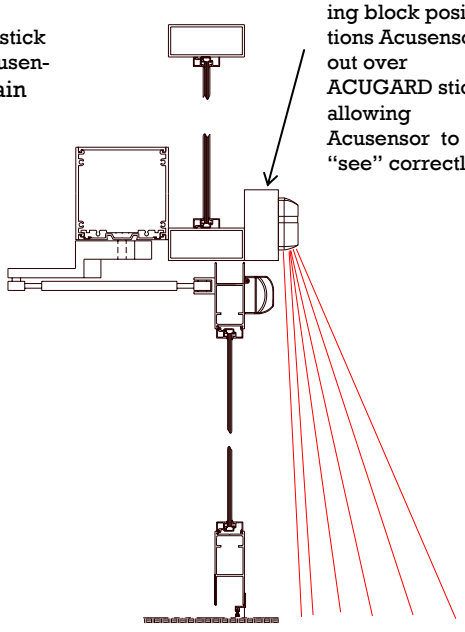
  The RECYCLE COUNT will now be cleared.

- On some applications, it is possible for the swing side Acusensor to remain activated by the door mounted ACUGARD stick while the door is in the closed position. See illustration below. This only happens on outswing C.U. units mounted on doors with butt or offset pivots. When the door is closed, the ACUGARD stick gets positioned directly underneath the Acusensor and causes the Acusensor to go into detection mode. To rectify this problem, we have designed an Acusensor mounting spacer that positions the Acusensor two inches out over the ACUGARD stick so that it is able to "see" beyond the door sensor. The part number for the mounting block is as follows:

~~SPACER, ACUSENSOR / ACUMOTION FOR USE w/o RAIN COVER Part # 14-10531~~ not available

SPACER, ACUSENSOR / ACUMOTION FOR USE WITH RAIN COVER Part # 24-10453





NABCO ENTRANCES INC.
GYRO TECH

NABCO TECHNICAL TIPS

ISSUE 2 JAN 9, 2004

The Newsletter for Technicians

Did you know .....? continued

- On U15 and earlier versions of microprocessors, damage to the motor can occur if the following conditions exist:
  1. When the door is fully closed AND
  2. It is prevented from opening (locked) AND
  3. The Recycle sensitivity is set to 2 or 3 AND
  4. It is continually activated such as the rocker switch set to "Hold Open"

  On the U16, if the door attempts to open against a lock, it will try to open 3 times under full power, then 7 times in creep speed. It will then time out and not try again until the rocker switch has been switched to "OFF" then "ON" again. On earlier versions of microprocessors, we recommend setting the RECYCLE sensitivity to 0 or 1.

- The Magnum 2 control was designed not to exceed the ANSI 156.10 specification for opening speed. Therefore the opening speed potentiometer will stall the door if the pot is adjusted past 5/8 turn or about 1'clock. At this point the opening speed of the door will be at the upper level of maximum opening speed as defined in ANSI 156.10

- When installing folding doors for two-way traffic, the motion sensor on the folding side can sometimes detect the door leaf as it passes under it. This usually happens with larger panels. It is then necessary to either space the sensor out away from the face of the header using the mounting block described on the previous page or locate the sensor in another location such as the ceiling away from the folding leafs. If you wish to do the latter, let us know and we will not prep for the motion sensor on the fold side when we build the unit.

- We have developed a test jumper troubleshooting kit to assist technicians in isolating circuits for diagnostics. The part number of the kit is: 11-10431. The kit includes jumpers for isolating main harnesses on analog, Magnum and U series microprocessor controls, and 1100 sliders. There are also jumpers to isolate rocker switches and panic switches.

- When installing holding beams in sliders, it is important to route the emitter and receivers wires so that they cannot get jammed or cut when the sidelite panels breaks out. Also note that if you are installing two sets of beams, both emitters should not be located on the same stile. Emitters and receivers must be alternated. For example, the top set of beams should have the emitter on the right and the receiver on the left. The bottom set of beams should have the receiver on the right and the emitter on the left. This will eliminate and "cross talk" between the sets of beams.

- There are two types of operators available for use on our GT300/400/500 swing door units. Both operators look identical from the outside. The difference is the presence or absence of a "clutch gear" on the inside. The first type, we will call it a "clutch" operator is the standard operator used with the GT 300/400/500 units with Model 1400 analog control or the Magnum 2 control. The "second type, or "welded clutch" operator is used with the U series microprocessor swing door units. The presence of the clutch gear permits the door to be pushed open more easily in the manual mode. The absence of the clutch gear forces all gears plus the motor to spin when the door is pushed open manually therefore requiring more energy to open the door. Because the complete gear train must be engaged, the wind is less capable of grabbing the door and blowing it open hard against the stop. The welded clutch operator can be used on any of our swing door units but the clutch operator can not be used with the U series microprocessor. If you choose to order the welded clutch operator for use with the analog or Magnum 2 control simply indicate this on your order. There is no up charge for the welded clutch operator. One final note: If you want to use the PUSH-N-GO feature on a GT 500 with a Magnum 2 control you must use the welded clutch operator. The motor must spin when the door is pushed open manually so the control will detect this and activate the PUSH-N-GO.

Don't forget to register for our Regional Technical Training Classes !!

We have Regional Technical Training Classes coming up this spring.

The first one is taking place February 18-20, 2004 in Toronto, Ontario and includes AAADM training. The second training class will be held in Boise, Idaho mid to late spring (dates to be announced) Contact: Jan Grabowski @ 1-877-622-2694 ext 514

Register now to be assured a seat!

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NABCO TECHNICAL TIPS
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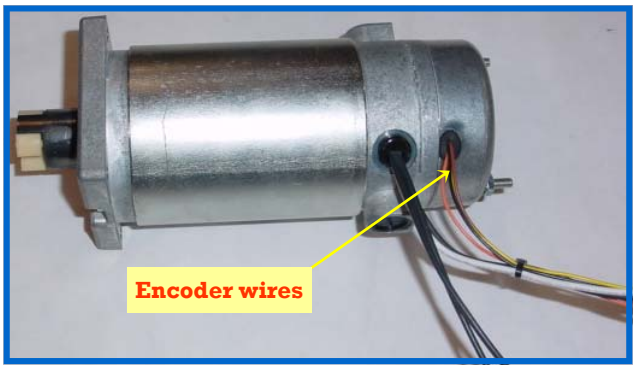
Field Testing Motor Encoders

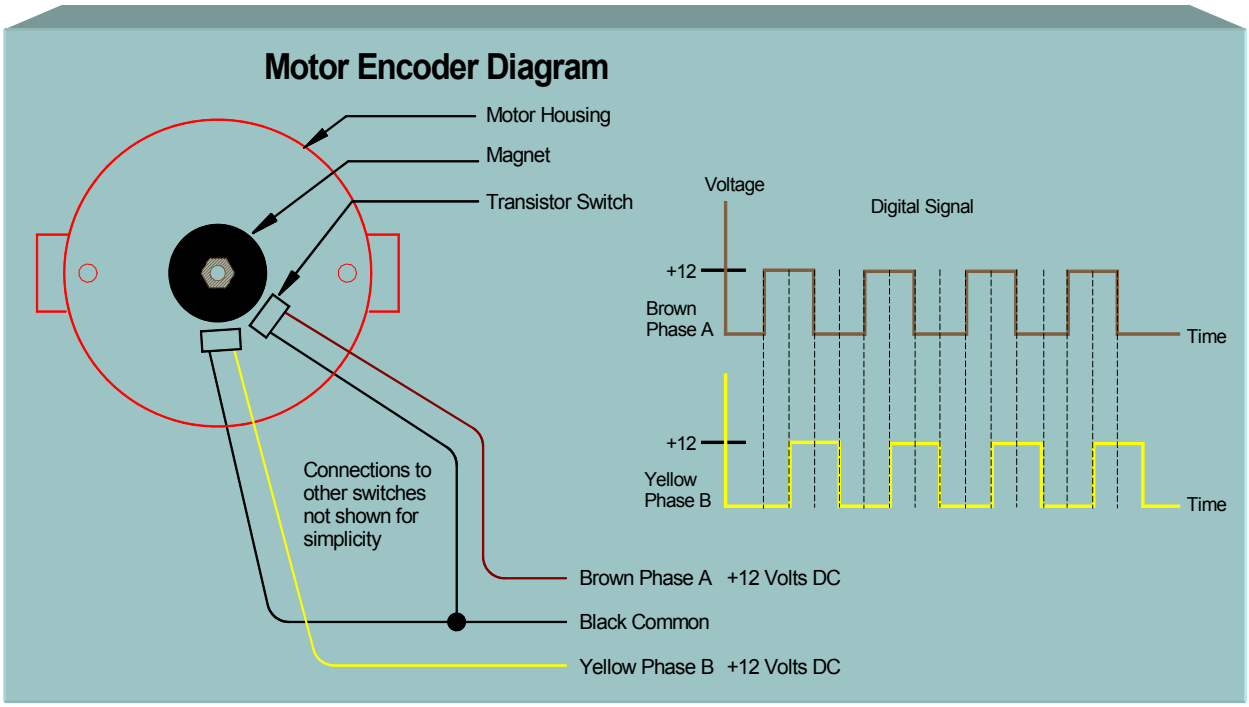
Troubles with motor encoders or rev counters as they are also called, can manifest themselves in the form of stroke error messages, doors opening or closing and stopping or jerking in mid-cycle, or doors not switching into check speed or creeping.

The motor encoder on a microprocessor-based system consists of a series of magnetically sensitive switching transistors which alternately open and close as a magnet (mounted on the motor shaft) spins in front of them. Refer to diagram below. These switches sequentially turn transistors on and off which causes voltage pulses on the Brown and Yellow lines between the encoder and the microprocessor. By monitoring the phase and number of the voltage pulses, the microprocessor can determine whether the door is opening or closing and at what speed. The phase of the signal indicates to the microprocessor the direction of the door. If Phase A is leading Phase B for instance the door might be opening while if Phase B is leading Phase A then the door would be closing. The encoder can be checked in the field with a meter for the presence of voltage pulses on each of the two signal lines. Meter probes are placed between the Brown and Black and then between the Yellow and Black. As the motor is slowly rotated, the signal will fluctuate between 0 and 12 VDC conforming to a square wave signal.



Encoder Signals

Brown: Phase A	**Orange:** 12 VDC
Yellow: Phase B	**Blue:** Motor Voltage
Black: Common	**Red:** Motor Voltage



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Do you have all of our Service Bulletins?

Following is a list of all of our past service bulletins. If you find you are missing any of these please let us know.

Bulletin # 1 - New U10 Microprocessor Controller
Bulletin # 2 - New Holding Beams
Bulletin # 3 - 1175 Full Open Bottom Guide Change
Bulletin # 4 - Correction to 1175 Installation Manual
Bulletin # 5 - Correction to 1175 Installation Manual
Bulletin # 6 - Clarification of Surface Applied 1175 Dimensions
Bulletin # 7 - Grounding of the 1175
Bulletin # 8 - Night Mode on 1175 Rocker Switches
Bulletin # 9 - External Access to Handy Terminal Connector on 1175
Bulletin # 10 - Instructions for Painting Units in the Field
Bulletin # 11 - Unsynchronized Operation of Microprocessor Controlled Swing Door Pairs
Bulletin # 12 - Warranty Stickers on 710's
Bulletin # 13 - Recommended Settings for the Folding Doors
Bulletin # 14 - Modification for Radio Controlled Transmitters
Bulletin # 15 - Holding Beams Standard in Surface Applied Sliders
Bulletin # 16 - Weight Limit on Sliding Doors
Bulletin # 17 - Rebooting the Acusensor
Bulletin # 18 - Upgraded Push Rod for "Single Fold" Folding Doors
Bulletin # 19 - New U11 Microprocessor replaces U10
Bulletin # 20 - Wiring Correction for Microprocessor Swing Door
Bulletin # 21 - DIP Switch Settings on Acusensor 2
Bulletin # 22 - Maximum Power Draw on the 12 Volt Output of the U10/11 Microprocessor
Bulletin # 23 - 0.12 Amp Maximum Draw for Acusensor Contacts
Bulletin # 24 - Limit Arm Support Location - Model 1175 (this bulletin dealt with modifications required on certain units shipped during a specific time period and sent to specific distributors that received these units.
Bulletin # 25 - Lock & Lock Rod Assembly
Bulletin # 26 - Correction to GT 710 Instruction Manual (P/N 125660)
Bulletin # 27 - Telco Holding Beam Receiver (P/N 1410204-20)
Bulletin # 28 - Setup and Programming Manual U11 Version - Swing Door Systems (March 26, 2000)
Bulletin # 29 - OHC Swing Door Top Pivot
Bulletin # 30 - Model 710 Door Frame Drilling Details
Bulletin # 31 - Mat Harness # 22-0535-01 Shipped Between 3/15/02 & 7/25/02
Bulletin # 32 - Corrections to 1175 Slider Installation Manual & 1400 Folding Door Installation Manual
Bulletin # 33 - New U12 Microprocessor Controller
Bulletin # 34 - Correction to Magnum Installation Manuals & Magnum 2 Retro-fit kits for pre-Magnum and older Magnum Controls
Bulletin # 35 - GT710 Installation Manual - Magnum II (New Casting) Clarification to Pages 9,11,12 and 13

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Thank you for taking time to read our newsletter. We hope you liked it. Because we use color to better illustrate our diagrams, the best way to receive this newsletter is by email. If you are not on our mailing list and would like to be, please contact Jan Grabowski @ 1-877-622-2694 ext 514 or by email : JGrabowski@nabcoentrances.com

We appreciate your questions & suggestions and will endeavor to make this a publication that you will find helpful in keeping you informed and up to date. For comments and suggestions contact:

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